Study on a marketing plan to stimulate the take-up of eID and trust service for the Digital Single Market

FINAL REPORT

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EXECUTIVE SUMMARY

This report is the outcome of the SMART 2015/0046 study on a marketing plan to stimulate the take-up of eID and trust services for the Digital Single Market.

Project description

Context

The eIDAS Regulation[1] sets a predictable regulatory environment for EU citizens, business, and public administrations to confidently go digital through the use of electronic identification (eID) and trust services (i.e., e-signatures, e-seals, e-time stamping, e-delivery service and website authentication).

By leveraging the opportunities of eIDAS, citizens may safely shop online, make use of financial services, access public services, or set up a business. Furthermore, businesses can save millions by benefiting from electronic procurement or participating in tenders, and public authorities can increasingly offer online public services, allowing for more convenient, secure, and transparent service provisioning to citizens.

On top of operational benefits for the civil society, the Regulation contributes to achieve the high-level objective of the EU of enhancing the Digital Single Market (DSM), which has the potential to generate up to EUR 250 billion of additional growth in Europe by improving Europe's competitiveness.

In this context, a legal trust framework by itself does not automatically lead to the realisation of its opportunities. Although demonstrably a large market and interest exist for the use of eID and trust services, many parties are still unaware of the opportunities (and obligations) flowing from the Regulation. If the tools are not taken up effectively, users may be reluctant to increase their online interactions, let alone in a cross border context. This creates a risk for the completion of the DSM.

The legal adoption of the Regulation does not mean the end of the process, but rather the beginning of a new one. To facilitate the uptake of eID and trust services, and therefore contribute to the continuous improvement of the DSM, it is essential that:

- The EU understands how the market for eID and trust services is functioning;

- The EU ensures that stakeholders on the demand side (public or private) are aware of the benefits brought about by eID and trust services, and how to access them;

- Stakeholders from the supply side know the market to figure out which solutions are expected.

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[1] Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on "electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC"

Study objectives

The main study objectives were to devise a market and economic analysis at EU level, and concretely illustrate how global market dynamics and trade opportunities should drive the conception/development of eIDAS-related policy and industrial initiatives contributing to realise a fully integrated DSM.

On the basis of these findings, a "marketing plan" for eID and trust services was to be established. Furthermore, the eIDAS European Observatory, which serves as a virtual network of stakeholders to exchange ideas and good practices was to be supported.

Study team

The study team was composed of experts from the following fields: marketing, market analysis and data collection, communication and dissemination, legal and regulatory, and trustworthy technology.

Public validation

A first public validation workshop on the topic of "Enhancing eID and trust services market analysis" was held on 20 April 2017 at the premises of the European Commission. The interim outcome was presented and deep-dive panels were organised. The panels addressed market analysis, current issues and initiatives, and way forward.

A second public validation workshop was organised on the topic of "Study on a marketing plan to stimulate the take-up of eID and trust services for the Digital Single Market". It was held on 3 October 2017, also at the premises of the Commission.

Participants and Commission's feedback from both workshops was analysed and integrated into the deliverables.

Description of tasks and deliverables

The study analysed the market for eID and trust services and put forward suggestions on how to "market" eIDAS services. The assessment of the existing market (together with first insights regarding the impact of the eIDAS Regulation right after its entry into application) has helped develop a marketing plan aiming at tackling the remaining obstacles to the use of eID and trust services by citizens and businesses. The study comprised four tasks.

Task 1 Enhance eID and Trust Service market analysis

This task contained activities that provided a description and understanding of the market and its trends, as well as an identification of initiatives to stimulate the take-up rate. Furthermore, high potential initiatives were identified and recommendations were formulated.

Task 2 Marketing plan to stimulate the uptake of eID and Trust Services

This task contained activities that performed a communication diagnostic, and developed an adoption strategy and tactics. The final activity in this task was the creation of a marketing plan.

Task 3 Input for the activities related to the European eIDAS Observatory

This task included a variety of activities, addressing an analysis of stakeholder involvement in the eIDAS Observatory, the gathering of evidence-based contributions and data, and the identification of regulatory hurdles.

Task 4 Project and stakeholder management

This task comprised the activities related to project management including creation and follow-up of the project plan, the preparation of the various reports and deliverables, the communication with stakeholders and the organisation of the validation sessions with these stakeholders.

Deliverables

The following deliverables were produced in the course of the project:

- Enhancing eID and trust services' market analysis

- Marketing plan to stimulate take-up of eID and trust services

- Input for the activities related to the development of the eIDAS European Observatory

Furthermore, there were various complementary deliverables including the Inception report, the Stakeholder's consultation report, interim study and (interim and final) progress reports and minutes of specialised ad hoc meetings.

Enhancing eID and trust services' market analysis

The eID and Trust Services market is structured as illustrated in the figure below.
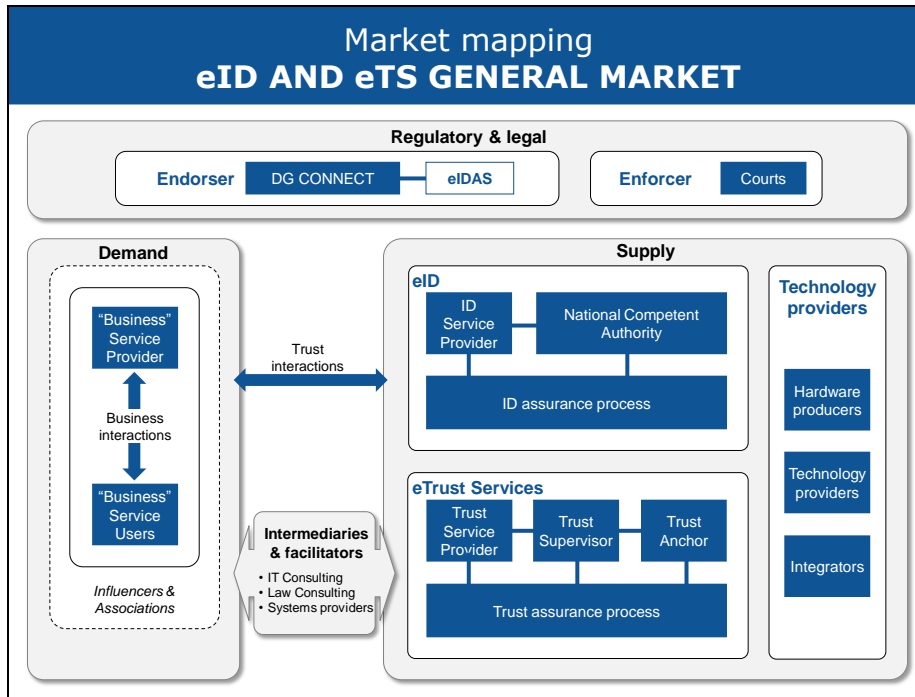
Figure 1: eIDAS market structure

Actors on the demand side conduct 'Trust Interactions' with the supply side actors. The demand side is composed of 'users' of the eID and TS solutions. They can be grouped into two categories. The 'Business' Service Providers that buy and integrate the eID and TS solutions in their activities in order to conduct Business Interactions with the 'Business' Service Users. Business Service Providers can be from the private world such as banks, insurances companies or car rental companies, or from the public world such as ministries, hospitals or universities. Business Service Users are citizens, consumers or companies.

The supply side is composed of ID service providers' whose activities are overseen by a National Competent Authority in charge of managing the identity life-cycle of natural and legal persons in a given Member State. The proper management of eID is granted by an ID assurance process, and also managed at the Member State level. The supply side further contains Trust Service Providers (TSPs), supervised by a National Supervisory Body. After conformity assessment a TSP's qualification status is communicated through a national Trusted List. All EU MS trusted lists are aggregated at the European level in a List of Trusted Lists. National Accreditation Bodies contribute to the assurance process by accrediting Conformity Assessment Bodies who will audit TSP conformity with eIDAS.

Stakeholder consultation

Data was collected in a combination of desk research and sixteen interviews conducted between May and July 2016. Furthermore 107 actors in the eID and TS market

participated in a survey performed in October 2016. The main topics that emerged from this consultation were the following. Regarding the maturity of eID and TS, the landscape is highly diverse across the EU. Nevertheless, it is fair to say that eID and TS are both 'supply-driven' markets, since the maturity of the suppliers is significantly higher than that of the business service providers. Regarding adoption barriers, the most important barrier that was mentioned was the legal complexity. Regarding the Regulation's implementation status, the Regulation was well perceived by all market players, but its implementation is considered to remain complex. Regarding expected support for compliance and adoption, the market expected clearer guidelines on how to implement the Regulation as well as guidance on how to comply with its demands. Finally, it was observed that in general, most players prefer written documents as the means for information exchange, followed by events at the national level to disseminate information.

Market KPIs

To measure the impact and success of initiatives to boost eID and TS adoption, 24 market key performance indicators were defined. These included KPIs on eID adoption and implementation (8 KPIs, including the number of notified eID schemes and the uptake in eGov and financial services applications), as well as on TS adoption and implementation (7 KPIs, including the number of Qualified Trust Service Providers and Trust Services, and the number of Qualified Certificates issued). Furthermore KPIs on general interest on maturity and eIDAS' services (4 KPIs, including the maturity level of deployed trust services and the interest for the EU Trust Mark) were defined, as well as indirect KPIs related to digitalisation of the economy and society were put forward (5 KPIs, including eBanking and eInvoicing use, as well as eIDAS value in supporting cross border sales).

Marketing plan to stimulate take-up of eID and trust services

The marketing plan was built on four pillars (the promotion of a development infrastructure, the development of awareness and trust in the market, support for the development of applications, and the use of enablers) and contained a total of 19 marketing actions.

The marketing plan is structured into general, demand-oriented and supply-oriented actions. Given the market analysis revealed the eIDAS market to be mainly a supplier-driven market, the majority of activities focuses on the demand-side. This includes a.o. the increase of awareness (particularly amongst SMEs) and the facilitation of eIDAS-related education. Also raising the interest of business service providers in using providers that carry the EU Trust Mark, the stimulation of the use of Qualified Web Authentication Certificates (QWACs) and the facilitation of adoption by the private sector are addressed. Regarding the supply-side, the increased use of the EU Trust Mark by Qualified Trust Service providers, the stimulation of the uptake by the development of killer apps, and the consolidation of eIDAS documentation were included.

Input for the activities related to the development of the eIDAS European Observatory

Regarding the eIDAS European Observatory, a strategy was developed to improve the engagement of stakeholders. This included an inbound strategy (search engine

advertising, use of customer relationship management, use of notifications), a proposal for improved structure and features of the observatory, and an outbound strategy (including the use of search engine optimisation and social networks, was well as the management of press relations).

Finally a list of potential topics for further discussion was presented, including a.o. leveraging the eIDAS model on a larger scale, and the possible role of blockchain in electronic identification and trust service delivery.

Description du projet

Le contexte

Le règlement eIDAS[2] établit un environnement réglementaire prévisible permettant aux citoyens, aux entreprises et aux administrations publiques de l'UE de passer au numérique en toute confiance grâce à l'identification électronique (eID) et aux services de confiance (signatures électroniques, sceaux électroniques, tampon électronique. service de livraison électronique et authentification du site Web).

En tirant parti des opportunités offertes par eIDAS, les citoyens peuvent faire des achats en ligne en toute sécurité, utiliser des services financiers, accéder aux services publics ou créer une entreprise. En outre, les entreprises peuvent économiser des millions en bénéficiant d'achats électroniques ou en participant à des appels d'offres, et les pouvoirs publics peuvent de plus en plus offrir des services publics en ligne, permettant ainsi aux citoyens de bénéficier de services plus pratiques, sécurisés et transparents.

En plus des avantages opérationnels pour la société civile, le règlement contribue à atteindre l'objectif de haut niveau de l'UE de renforcer le marché unique numérique (MUN), qui pourrait générer jusqu'à 250 milliards d'euros de croissance supplémentaire en Europe en améliorant la compétitivité de l'Europe.

Dans ce contexte, un cadre de confiance juridique n'entraîne pas automatiquement la réalisation de ses opportunités. Bien qu'il existe manifestement un marché et un intérêt importants pour l'utilisation des services d'identification électronique et de confiance, de nombreuses parties ne sont toujours pas conscientes des opportunités (et des obligations) découlant du règlement. Si les outils ne sont pas utilisés efficacement, les utilisateurs peuvent être réticents à augmenter leurs interactions en ligne, sans parler d'un contexte transfrontalier. Cela crée un risque pour l'achèvement du MUN.

L'adoption légale du règlement ne signifie pas la fin du processus, mais plutôt le début d'un nouveau. Pour faciliter l'adoption des services d'identification électronique et de confiance, et donc contribuer à l'amélioration continue du MUN, il est essentiel que:

- L'UE comprend comment le marché des services d'identification électronique et de confiance fonctionne ;
- L'UE veille à ce que les parties prenantes du côté de la demande (publiques ou privées) soient conscientes des avantages apportés par l'eID et les services de confiance, et comment y accéder;

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[2] Règlement (UE) n ° 910/2014 du Parlement européen et du Conseil du 23 juillet 2014 relatif aux "services d'identification électronique et de confiance pour les transactions électroniques dans le marché intérieur et abrogeant la directive 1999/93 / CE"

- Les parties prenantes du côté de l'offre connaissent le marché pour déterminer quelles solutions sont attendues.

Objectifs de l'étude

Les principaux objectifs de l'étude étaient de concevoir une analyse économique et de marché au niveau européen et d'illustrer concrètement comment la dynamique des marchés mondiaux et les opportunités commerciales devraient orienter la conception / développement d'initiatives politiques et industrielles liées à eIDAS pour réaliser un MUN entièrement intégré.

Sur la base de ces constatations, un «plan de marketing» pour les services d'identification électronique et de confiance devait être établi. En outre, l'Observatoire européen eIDAS, qui sert de réseau virtuel d'acteurs pour échanger des idées et des bonnes pratiques, devait être soutenu.

Équipe d'étude

L'équipe d'étude était composée d'experts issus des domaines suivants: marketing, analyse de marché et collecte de données, communication et diffusion, juridique et réglementaire, et technologie de confiance.

Validation publique

Un premier atelier de validation publique sur le thème «Améliorer l'analyse du marché des services d'eID et de confiance» s'est tenu le 20 avril 2017 dans les locaux de la Commission européenne. Le résultat intérimaire a été présenté et des panels approfondis ont été organisés. Les panels ont abordé l'analyse du marché, les questions et les initiatives actuelles, et la voie à suivre.

Un deuxième atelier de validation publique a été organisé sur le thème «Etude d'un plan de marketing pour stimuler l'adoption des services d'eID et de confiance pour le marché unique numérique». Il s'est tenu le 3 octobre 2017, également dans les locaux de la Commission.

Les commentaires des participants et de la Commission issus des deux ateliers ont été analysés et intégrés aux livrables.

Description des tâches et des livrables

L'étude a analysé le marché des services eID et de confiance et mis en avant des suggestions sur la manière de «commercialiser» les services eIDAS. L'évaluation du marché existant (ainsi que les premières réflexions sur l'impact du règlement eIDAS dès sa mise en application) ont permis de développer un plan marketing visant à surmonter les derniers obstacles à l'utilisation des services eID et de confiance par les citoyens et les entreprises. L'étude comprenait quatre tâches.

Tâche 1 Améliorer l'analyse de marché eID et Service de confiance

Cette tâche comprenait des activités qui fournissaient une description et une compréhension du marché et de ses tendances, ainsi qu'une identification des initiatives visant à stimuler le taux de participation. En outre, des initiatives à fort potentiel ont été identifiées et des recommandations ont été formulées.

Tâche 2 Plan de marketing pour stimuler l'adoption de l'eID et des services de confiance

Cette tâche contenait des activités qui effectuaient un diagnostic de communication et élaborait une stratégie et des tactiques d'adoption. L'activité finale dans cette tâche était la création d'un plan de marketing.

Tâche 3 Contribution aux activités liées à l'Observatoire européen eIDAS

Cette tâche comprenait une variété d'activités, abordant une analyse de la participation des parties prenantes à l'Observatoire eIDAS, la collecte de contributions et de données factuelles, et l'identification des obstacles réglementaires.

Tâche 4 Gestion du projet et des parties prenantes

Cette tâche comprenait les activités liées à la gestion de projet, y compris la création et le suivi du plan de projet, la préparation des différents rapports et livrables, la communication avec les parties prenantes et l'organisation des sessions de validation avec ces parties prenantes.

Livrables

Les livrables suivants ont été réalisés au cours du projet:

- Amélioration de l'analyse de marché de l'eID et des services de confiance
- Plan marketing pour stimuler l'adoption de l'eID et des services de confiance
- Contribution aux activités liées au développement de l'Observatoire européen eIDAS

De plus, plusieurs livrables complémentaires ont été réalisés au cours du projet, y compris le rapport initial, le rapport de consultation des intervenants, l'étude intermédiaire et les rapports de progrès (provisoires et finaux) et les procès-verbaux des réunions spécialisées ad hoc.

Améliorer l'analyse de marché de l'eID et des services de confiance

Le marché de l'eID et Services de confiance est structuré comme illustré dans la figure ci-dessous.
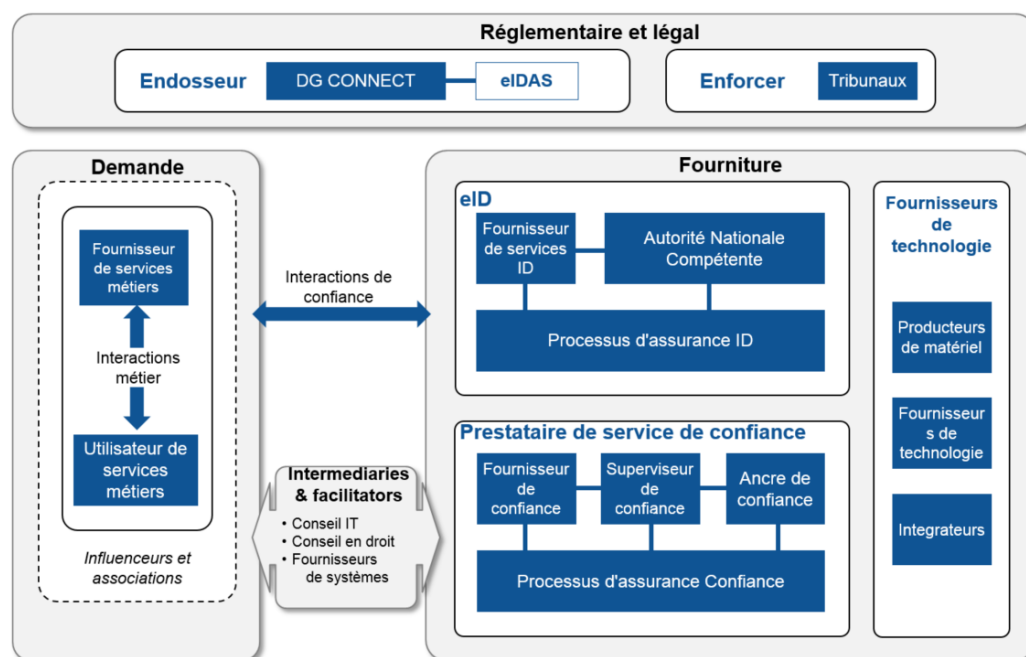
Figure 2: structure du marché eIDAS

Les acteurs du côté de la demande mènent des «interactions de confiance» avec les acteurs de l'offre. Le côté de la demande est composé des «utilisateurs» des solutions eID et des services des prestataires de service de confiance (PSCO). Ces « utilisateurs » peuvent être regroupés en deux catégories. Les fournisseurs de services métiers qui achètent et intègrent les solutions eID et PSCO dans leurs activités afin de réaliser des interactions métiers avec la deuxième catégorie. Cette catégorie est composée des citoyens, des consommateurs et des entreprises. Ces derniers sont classifiés comme utilisateurs de services métiers. Les fournisseurs de services métiers peuvent provenir du monde privé comme les banques, les compagnies d'assurance ou les sociétés de location de voitures, ou du monde public comme les ministères, les hôpitaux ou les universités.

L'offre est composée de prestataires de services ID dont les activités sont supervisées par une autorité nationale compétente chargée de gérer le cycle de vie de l'identité des personnes physiques et morales dans un État membre donné. La gestion correcte de l'eID est assurée par un processus d'assurance ID et est également gérée au niveau des États membres. L'offre comprend en outre des fournisseurs de services de confiance, supervisés par un organe de surveillance national. Après l'évaluation de la conformité, un statut de qualification d'un fournisseur de services de confiance est communiqué par l'intermédiaire d'une liste de confiance nationale. Toutes les listes de confiance des états membres de l'UE sont agrégées au niveau européen dans une liste de listes de confiance. Les organismes nationaux d'accréditation contribuent au processus d'assurance en accréditant les organismes d'évaluation de la conformité qui auditeront la conformité des fournisseurs de services de confiance avec eIDAS.

Consultation des parties prenantes

Les données ont été collectées en combinant des recherches documentaires et seize entretiens réalisés entre mai et juillet 2016. En outre, 107 acteurs du marché de l'eID et des prestataires de services de confiance (PSCO) ont participé à une enquête réalisée en octobre 2016. Les principaux sujets ressortant de cette consultation sont les suivants. En ce qui concerne la maturité de l'eID et des PSCO, le paysage est très diversifié à travers l'UE. Néanmoins, on peut dire que les services d'eID et des PSCO sont tous deux des marchés «axés sur l'offre», puisque la maturité des fournisseurs est significativement plus élevée que celle des fournisseurs de services aux entreprises. En ce qui concerne les obstacles à l'adoption, l'obstacle le plus important mentionné était la complexité juridique. En ce qui concerne le statut de mise en œuvre de la Régulation, la Régulation a été bien perçue par tous les acteurs du marché, mais sa mise en œuvre est considérée comme demeurant complexe. En ce qui concerne le soutien attendu pour la conformité et l'adoption, le marché s'attendait à des lignes directrices plus claires sur la manière de mettre en œuvre la Régulation, ainsi que des conseils sur la façon de se conformer à ses exigences. Enfin, il a été observé qu'en général, la plupart des acteurs préfèrent les documents écrits comme moyen d'échange d'informations, suivis par des événements au niveau national pour diffuser l'information.

KPI du marché

Afin de mesurer l'impact et le succès des initiatives visant à renforcer l'adoption de l'identification électronique et des flux de données, 24 indicateurs clés de performance[3] du marché ont été définis. Ces indicateurs comprenaient des KPI sur l'adoption et la mise en œuvre de l'eID (8 KPI, y compris le nombre de systèmes d'eID notifiés et l'adoption des applications eGov et services financiers), ainsi que sur l'adoption et la mise en œuvre des TS (7 KPI, y compris le nombre de fournisseurs de services de confiance qualifiés et de services fiduciaires, et le nombre de certificats qualifiés délivrés). En outre, des KPI d'intérêt général sur la maturité et les services eIDAS (4 KPI, y compris le niveau de maturité des services de confiance déployés et l'intérêt pour EU Trust Mark) ont été définis, ainsi que des KPI indirects liés à la numérisation de l'économie et de la société. ont été proposées (5 KPI, y compris l'utilisation de l'eBanking et de la facturation électronique, ainsi que la valeur d'eIDAS pour le soutien des ventes transfrontalières).

Plan marketing pour stimuler l'adoption des services eID et de confiance

Le plan marketing reposait sur quatre piliers (la promotion d'une infrastructure de développement, le développement de la sensibilisation et de la confiance dans le marché, le soutien au développement d'applications et l'utilisation de facilitateurs) et comprenait 19 actions marketing.

Le plan de marketing est structuré en actions générales, axées sur la demande et axées sur l'offre. Étant donné que l'analyse du marché a révélé que le marché d'eIDAS est principalement axé sur les fournisseurs, la majorité des activités sont axées sur la demande. Cela comprend, entre autre, l'augmentation de la sensibilisation (en particulier

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[3] Key Performance Indicators, KPIs

parmi les PME) et la facilitation de la formation liée à eIDAS. L'intérêt des fournisseurs de services aux entreprises pour l'utilisation de fournisseurs portant la marque de confiance de l'UE a également été stimulée, l'utilisation de certificats d'authentification Web qualifiés (QWAC) et la facilitation de l'adoption par le secteur privé ont été abordées. En ce qui concerne l'offre, l'utilisation accrue de l'EU Trust Mark par les fournisseurs de services de confiance qualifiés, la stimulation de l'adoption par le développement d'applications tueur, et la consolidation de la documentation eIDAS ont été inclus.

Contribution aux activités liées au développement de l'Observatoire européen eIDAS

En ce qui concerne l'Observatoire européen eIDAS, une stratégie a été développée pour améliorer l'engagement des parties prenantes. Cela incluait une stratégie entrante (publicité dans les moteurs de recherche, utilisation de la gestion de la relation client, utilisation des notifications), une proposition pour améliorer la structure et les fonctionnalités de l'observatoire, et une stratégie de sortie (y compris l'utilisation de l'optimisation des moteurs de recherche, et des réseaux sociaux, ainsi que la gestion des relations de presse).

Enfin, une liste de sujets potentiels pour une discussion plus approfondie a été présentée, y compris, entre autre, le fait de tirer parti du modèle eIDAS à plus grande échelle et du rôle possible du registre des transactions dans l'identification électronique et dans la prestation de services de confiance.

PART I
ENHANCING EID AND TRUST SERVICES
MARKET ANALYSIS

1 INTRODUCTION

A study aimed at supporting the achievement of benefits offered by the eIDAS Regulation…

This report has been prepared in the context of the SMART 2015/0046 study on a marketing plan to stimulate the uptake of e-identification and trust services for the Digital Single Market[4].

The eIDAS Regulation (Regulation (EU) No 910/2014[5]) sets a predictable regulatory environment for EU citizens, businesses and public administrations to confidently go digital through the use of electronic identification (eID) and trust services (TS, i.e. electronic signature, electronic seal, electronic time stamp, electronic registered delivery service and website authentication).

Citizens, businesses, and public authorities will derive significant operational benefits from using such services as online interaction will be made more secure, convenient and transparent.

Moreover, the Regulation has the ambition of contributing to the achievement of high-level objectives of the EU, such as enhancing the Digital Single Market and fostering the EU's leadership position in the eID and trust services domain.

Since a legal framework by itself might not fully ensure the realisation of these opportunities, the European Commission wanted to build a marketing plan aimed at tackling the remaining obstacles for the use of eID and trust services by citizens and businesses

1.1 Objectives of the SMART 2015/0046 project

… through three main objectives

This project pursues three main objectives, which are listed and described below.

O1: Enhance eID and trust services market analysis. In order to facilitate the take-up of eID and TS, it is necessary to raise awareness about the social and economic benefits of using and relying on these services. A prerequisite for that is the in-depth understanding of the supply and demand market, including its size, segmentation, dynamics, drivers, economics and potential barriers.

O2: Define a marketing strategy for the adoption of eID and trust services. The first step for stimulating the uptake of eID and TS is to develop an effective marketing plan. The objective is to ensure that people and businesses can use their own national electronic identification schemes (eID schemes) to access public services in other EU countries where eID schemes are available, and to create a European internal market for electronic trust services, which will promote digital interaction[6].

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[4] https://ec.europa.eu/digital-single-market/en/the-strategy-dsm
[5] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0073.01.ENG
6 https://ec.europa.eu/digital-single-market/en/trust-services-and-eid
Previous study on : "Feasibility study on an electronic identification, authentication and signature policy (IAS) - SMART 2010/0008"

In order to achieve this goal, public authorities, business service providers and business service users, European SMEs and citizens as consumers should be provided the marketing plan and the tools for ensuring the stimulation of the uptake of eID and TS.

O3: Support the development of the eIDAS European Observatory.
Stakeholder engagement is perceived as one of the critical factors for the uptake of eID and TS. To achieve this objective, it is necessary to devise a structured and creative stakeholder engagement concept, which will serve to enable mutual learning experiences for all the stakeholder categories: businesses, public administrations, citizens and the regulator (European Commission).

1.2 Scope of the market analysis

This study has been run on a clear-cut scope...

The market analysis has covered the following scope:

Dimension	eID	eTS
Products and services	▪ All eID means issued by or controlled by public authorities	▪ All products and services covered by the eIDAS Regulation ▪ Qualified and non-qualified trust services
	▪ Closed User Groups and similar closed environments are excluded from the analysis. However, shared solutions such as BankID in Sweden are included.	
Supply and demand sides	▪ While covering all players on the supply side of the eID and TS market, this analysis mainly focused on providers of eID and TS solutions ▪ The demand side analysis is focused on Business Service Providers i.e. not on final users (citizens, consumers, companies)	
Time	▪ This study has covered what existed at the time of the study and ongoing trends/changes that can be observed in the market	
Geography	▪ The geographical scope of this study is the European market (EU28) including all players (whether or not based in the EU) that operate in this market	

... and a limited timing

This report includes the results of the analyses conducted between the inception meeting of this project that took place in Brussels on 10 March

2016 and the date of submission of this report at the end of December 2017.

1.3 Methodology for data collection

The insights presented in this report are the result of the combination of desk research using public data and reports, on the one hand, and the interviews of a selected number of stakeholders representing the supply side of the eID and TS market, on the other.

Desk research

A thorough desk research initiated the process...

The analysis started with desk research aimed at gathering existing research reports on electronic identification and trust services, as well as any relevant information publicly available.

The number of available relevant secondary sources for this study remains limited. Nevertheless, further research was conducted to extract more information about electronic identification and electronic signature.

... leveraging existing publications and reports...

Available information on electronic identification can be found in previous studies funded by the European Commission. In this category, the most useful sources are the following ones:

- The State of the Electronic Identity Market: Technologies, Infrastructure, Services and Policies[7] (2010);

- The different deliverables from the SSEDIC network[8], which consisted in a 3-year consultation period together with over 200 European and international eID experts and many stakeholder organisations (2011–2013);

- The National eGovernment factsheets[9].

... and any public information

Moreover, many interesting studies exist on the electronic identity market, with some of them covering the cross-border usage of eID:

- PBLQ – International comparison of eID means - 2015[10];

- UL – eID solutions in Europe - 2013[11];

- Eurosmart - The Future Digital Identity Landscape in Europe - 2015[12];

- Norden - Nordic digital identification (eID) – Survey and recommendation for cross-border co-operation - 2016[13];

- Open Identity Exchange – Digital Identity Across Borders: Opening a Bank Account in Another EU Country – project report - 2016[14];

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[7] http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=3739

[8] http://www.eid-ssedic.eu/

[9] https://joinup.ec.europa.eu/community/nifo/og_page/egovernment-factsheets

[10] https://www.government.nl/documents/reports/2015/05/13/international-comparison-eid-means

[11] https://ofti.org/wp-content/uploads/2013/04/114-comparison-of-eid-solutions-with-privacy-preserving-characteristics.pdf

[12] http://www.eurosmart.com/news-publications/policy-papers/158-the-future-digital-identity-landscape-in-europe.html

[13] http://norden.diva-portal.org/smash/get/diva2:902133/FULLTEXT01.pdf

[14] http://oixuk.org/wp-content/uploads/2016/02/Digital-Identity-Across-Borders-FINAL-Feb2016-2.pdf

- ▪ White papers and cases on specific Member States published by suppliers such as Gemalto[15].

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[15] http://www.gemalto.com/govt/identity

Regarding trust services, only a few reports can be found, focusing mainly on electronic signatures and already fully used in the IAS2 study.

- The deliverable D4 of the IAS2 study: Enhancing TS market study;
- Study on the supply side of the EU e-signature market (FORMIT)[16].

To enrich the market analysis, websites and publications of Trust Service Providers (TSPs) as well as presentation documents used during events organised by the European Commission were searched and analysed.

Interviews of stakeholders

Interviews with market stakeholders completed the market analysis

Sixteen interviews were conducted by telephone between May and July 2016. The specific purpose of these interviews was to complete the understanding of the market dynamics and related challenges.

Particular attention was given to the geographical and product coverage of the sample. More concretely, we ensured that main parts of the European Union as well as all products and services covered by the eIDAS Regulation were represented.

Products and services	Number of interviews
Electronic identification	7
Electronic signature	7
Electronic seal	3
Electronic time stamp	12
E-registered del. service	5
Website authentication	4

Parts of the EU	Number of interviews
Northern Europe	2
Southern Europe	4
Eastern Europe	2
Western Europe	5
Global player	3

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[16] https://ec.europa.eu/digital-single-market/news/esignature-study-supply-side-eu-e-signature-market-final-study-report-formit

Stakeholders survey

A total of 107 players on the eID and TS market participated in a survey opened for 3 weeks during the month of October 2016.

The survey was used to quantify maturity, identify issues and test the relevance of possible actions

The survey was administered through the web, using available tools of the EC, and branded accordingly. A mix of open and closed questions was used to ensure both richness and interpretability of results.

Respondents were reached through PwC and EC contact bases, as well as through various social network groups, i.e. LinkedIn groups and the Twitter community hosted by the EC.

As an incentive for participation, respondents will receive a short summary of the survey's output.

The participants represented a large number of Member States although participation for some large countries like France was low (only one respondent). The figure below provides an overview of the participation per country or region.

The 107 respondents represent 28 geographies mainly within the European Union

Geographic mix of respondents

Country	Count
Belgium	10
Finland	9
Spain	8
Netherlands	8
UK	8
Austria	7
Germany	6
Italy	6
Hungary	5
Sweden	4
Portugal	4
Denmark	4
Lithuania	4
Romania	3
Norway	3
Greece	2
Switzerland	2
Slovenia	2
Liechtenstein	2
US	2
Serbia	1
Croatia	1
Estonia	1
France	1
Czech Rep.	1
Iceland	1
Israel	1
Worldwide	1

**Figure 3 Geographical mix of the 107 survey respondents
(Source: PwC & EC Survey)**

All steps of the value chain are represented in the sample

All types of players in the value chain were represented in the survey. It was, however, deliberately decided not to focus on business service users, i.e. citizens and companies. This decision was based on information obtained through the previous studies (listed in *Section 1.3 Methodology for Data Collection*, paragraph *Desk Research*). These studies indicated various factors that make obtaining information disproportionally complicated from these parties. The reasons therefore include low awareness of the possibilities offered by eID and TS, lack of insight in added-value, lack of training, and lack of readiness of the technical environment (e.g. card readers, device drivers, etc).

A large share of respondents, i.e. two thirds, are from the supply side, as they are more directly concerned with this topic.

Research bodies are treated separately, as they are not directly part of the market.

The figure below explains the grouping as well as volume indications and details of the profile of respondents in each category.

To facilitate the analysis, respondents are grouped according to their role in the value chain

Categorisation of respondents

Upstream   Downstream

	1st level category	Suppliers		Demand Business Service Providers			
2nd level category	National Authorities	Suppliers – eID, TSP, CA, Hardware	Suppliers – Intermediaries & facilitators	**Private** FS & Insurance	**Private** Others	**Public** users	Research
n = 107	13	36	28	11	8	7	4
	• Ministry of Interior • Population Register Centre • Companies Register Center • Agency for digitalisation • National Post	• Trust service provides • Certification Authorities • Hardware manufacturer • Software manufacturer and provider • Technology provider	• ICT companies • Cyber-security companies • IT consultancy • IT security in Banking • IT services • Software	• Retail banks • Private banks • Postal banks • Finance service provider federations	Various sectors: • Bar associations • Health "Kasse" • Notarial chamber • Telecoms associations • Chemistry • Food services • Telco associations	• Tax authorities • National Police • Universities • Business registration on a governmental level • Economic chambers	• Universities • Research & Development department of private company

Figure 4 Categorisation of survey respondents
(Source: PwC & EC Survey)

A complete data-set was provided to the EC, but results are treated anonymously in order to respect the confidentiality promise made to the respondents.

The full analysis of the survey and its implications are discussed in Chapter 4 of this document, 'Stakeholders consultation survey' of the report.

2 OVERVIEW OF THE EIDAS MARKET

The eIDAS Regulation formulates different rules for eID and for TS. In the ecosystem of electronic interactions, eID and TS service providers can offer such services separately or combined. Also, eID and TS can be invoked by service consumers separately as well as combined, depending on the business scenario. Therefore, for the purpose of clarity, the present study distinguishes the identification market from the trust services market.

On the one side, identity is governed by a Member State's competent authority (e.g. a Ministry of Interior Affairs), who takes care of implementing the country's identity legislation. This concerns the choice of whether to use an identity card, a driving licence, or some other means. In some countries this includes addressing the requirements for providing travel documents for use within the Schengen zone, which may be done in collaboration with another Ministry or government entity. As such, this market is characterised by existing implementations of identification schemes, often paid for by taxpayer money. As per eIDAS Article 8, such identification schemes can have a Level of Assurance (low, substantial or high), and can be notified at the discretion of the Member State.

On the other side, trust services are overseen by a Member State's supervisory body, which a Member State has to establish in the way deemed appropriate. As per eIDAS Article 3, there exist various types of trust services, and they can be qualified or not.

It can be observed that sometimes these markets overlap. Some eID means have as their primary purpose to demonstrate the identity of the bearer and support electronic authentication, while also being equipped with the functionality of electronic signatures, which are a trust service.

The figure below represents the eIDAS market and maps the key actor categories.
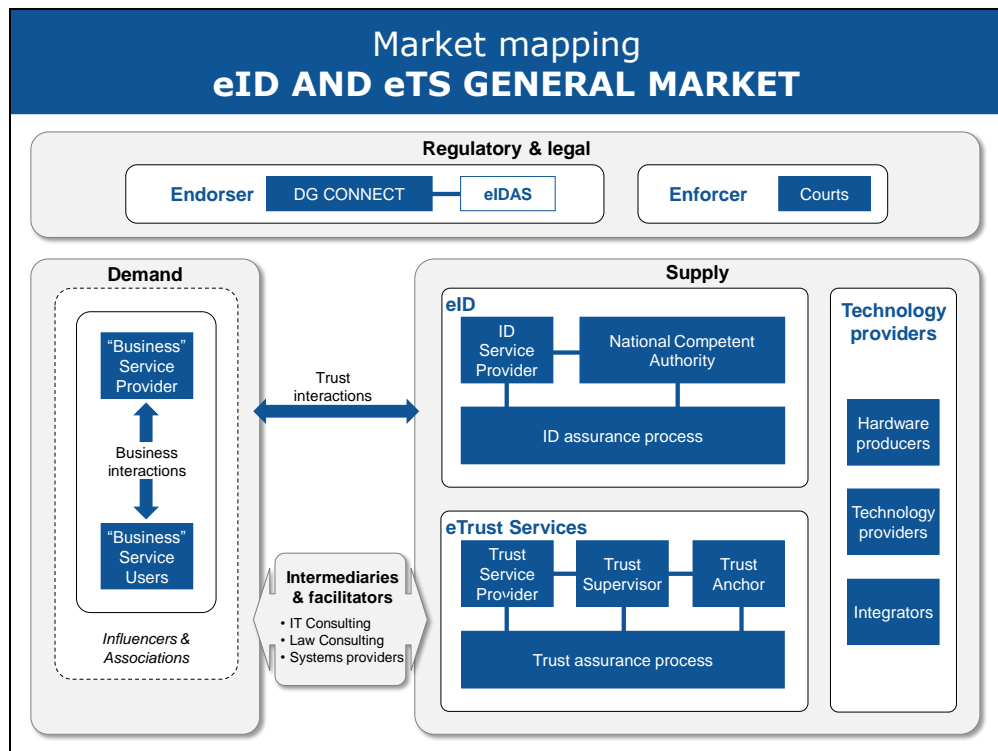
**Figure 5 eID and TS General Market Representation
(Source: PwC Analysis)**

The eIDAS market actors can be classified in different groups according to their role in the market and the value chain. These are further detailed below.

Regulatory & Legal

The regulatory and legal environment is the starting point of the eIDAS Regulation. The Commission fulfils the endorser role, while European and national courts enforce the Regulation.

The regulatory and legal environment is complex, as there are many connections with other European, national or sectorial regulations. The most obvious case is the highly regulated financial sector. eIDAS is here an opportunity to meet regulatory requirements in a cost efficient and user-convenient way. The General Data Protection Regulation is also part of this regulatory and legal environment.

Demand Side

The demand side is composed of 'users' of the eID and TS solutions. They can be grouped into two categories. The **'Business' Service Providers** that buy and integrate the eID and TS solutions in their activities in order to conduct Business Interactions with the **'Business' Service Users.** Business Service Providers can be from the private world such as banks,

insurances companies or car rental companies, or from the public world such as ministries, hospitals or universities. Business Service Users are citizens, consumers or companies.

The demand side conducts 'Trust Interactions' with the supply side.

When considering the demand actors in a broader sense, one should also include all grouping and associations of service providers (e.g. sector associations), and of service users (e.g. citizen and consumer associations) that are also playing influencer roles in the eIDAS ecosystem.

eID Supply Side

ID service providers' activities are overseen by a **National Competent Authority** in charge of managing the identity life-cycle of natural and legal persons in a given Member State. The proper management of eID is granted by an **ID assurance process**, also managed at the Member State level. As explained in section 3.2.1 *Description of eID supply side*, the appropriate Level of Assurance (Low, Substantial, High) for eID is determined in common agreement by Member States in the **Cooperation Network.**

eTS Supply side

eTrust Service Providers (TSPs) are supervised by a **National Supervisory Body** and after a conformity assessment a qualification status is communicated through a national Trusted List, (all EU MS trusted list are aggregated at the European level in a List of Trusted Lists), providing transparency in the qualified status of TSPs and of the QTS they provide. **National Accreditation Bodies** contribute to the assurance process by accrediting **Conformity Assessment Bodies** who will audit and report on TSP conformity with eIDAS. All activities are supervised by **National Supervisory Bodies**, who are in charge of the making the final decision on a TSP's qualification.

Technology Providers (Supply)

Up-stream in the supply value-chain are all **technology providers** such as hardware and software producers, technology providers and integrators. They provide the means for eID and TS services. They may also provide services.

Specifically, on the eID market, they are responsible for supplying hardware, firmware and software components that enable the building of eID schemes. This includes components of eID means such as secure hardware, e.g. smartcards, SIM and other tokens, as well as the applications that implement electronic identification and authentication, including identity federation.

Intermediaries and Facilitators

Last but not least, **intermediaries and facilitators** of the eIDAS ecosystem help to make the connection between the supply and the demand side. They can take many forms and support adoption in many ways such as providing advice (law firms, advisory firms), solutions (enterprise systems, digital process solutions, etc.), or playing the role of implementer of TSPs solutions.

These actors are playing a key role in facilitating the adoption of eID and TS, and are potential targets of the communication plan.

All these actors and their sub ecosystems are presented further in this document, mainly organised around the eID and the TS markets.

3 DESCRIPTION AND ANALYSIS OF THE ELECTRONIC IDENTIFICATION MARKET

3.1 Introduction

The enhancement of the Digital Single Market can bring an additional growth of EUR 415 billion

Digitalisation offers many opportunities. This high potential for our society is confirmed by the strong ambition to develop this potential at the European level. The potential related to the enhancement of the Digital Single Market across the European Union, for example, has been estimated at up to EUR 415 billion[17] of additional growth through the improvement of Europe's competitiveness.

However, the uptake of online communications and transactions requires trust and security. To create trust in online transactions, the first step is to be able to offer reliable digital identities in order to allow any party to know and to trust the identity of the counterparty.

Digital identity is a key enabler to build trust in electronic exchanges

Thus, today, digital identity has become a key aspect, and much attention is paid to and considerable efforts are focused on establishing a reliable and secure way to manage digital identities.

Moreover, from a European perspective, the lack of a common and integrated approach to digital identity has prevented EU citizens and businesses from really gaining benefits from the Digital Single Market. Each Member State has implemented its own electronic identification mean(s) and legal framework. This results in a need to achieve and improve interoperability of interconnected systems to promote and share Member States' solutions and to adopt the ones developed by other Member States. The various initiatives launched to connect eID schemes or use eIDs in a cross-border setting have shown the complexity of such interconnection (e.g. the partnership between Estonia and Finland). However, significant experience has been gained through Large Scale Projects (LSPs) such as STORK/STORK 2.0, epSOS, Peppol, SPOCS, e-Codex and their consolidation in e-SENS.

The eIDAS Regulation will ensure interoperability between Member States and set the conditions for mutual recognition

In this context, the eIDAS Regulation has been designed with the objective of ensuring interoperability between the electronic identification solutions developed and recognised in each Member State, and setting a unique legal framework regarding the legal value of this identity and liability in case of fraud.

Before going into further details about the eIDAS Regulation, it appears useful to firstly clarify what the concept of the eID scheme is about. For definitions, we refer to the eIDAS Regulation, Article 3 Definitions. There it is stated that an *'electronic identification scheme' means a system for electronic identification under which electronic identification means are issued to natural or legal persons, or natural persons representing legal persons.* A national eID scheme can be supported by various eID means, e.g. smartcards and/or mobile applications, which implement access to electronic services in practice.

To reach its objective, the Regulation sets the conditions for achieving mutual recognition and enhancing interoperability of eID. However, it does not oblige any Member State to introduce and use an electronic

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[17] https://ec.europa.eu/commission/priorities/digital-single-market_en

identification means at national level or to notify an eID scheme to the European Commission.

A Member State may establish one or more eID means for the benefit of its citizens. Such eID means can be classified as low, substantial or high. The notification[18] of an eID means at 'substantial' or 'high' level by a Member State to the European Commission has two implications:

1. It becomes mandatory for all other Member States to make their e-government services accessible to citizens using the notified eID solution.

2. The Member State that has notified an eID means must offer an online authentication means in order to enable verification of the data of the electronic identification.

While made mandatory for public services, access to private sector applications remains in the hands of the Member States

Lastly, it is important to point out that the Regulation encourages the involvement of the private sector[19]. Thus, each Member State can decide to either open or expand the application of their eID scheme by including the private sector or not. In addition, according to the non-discrimination principle, a Member State is not authorised to establish differences in the treatment applied to the private sector.

The eIDAS Regulation has set down a progressive implementation plan. As of 29 September 2015, a 'voluntary' regime is in effect. Indeed, Member States can notify eID schemes to the European Commission, but the recognition of the notified eID schemes and means by other Member States remains voluntary. Germany was the first Member State that announced its intent to notify its eID scheme and it has successfully completed the notification process on 26 September 2017. This was followed by Italy's pre-notification on 24 November 2017 of SPID (Sistema Pubblico per la gestione dell'Identità Digitale), which covers 8 eID service providers, including 3 providers that issue eID means up to level of assurance "high".

The mandatory cross-border recognition of notified eID schemes and means applies as from September 2018. As from this date, citizens and companies, equipped with a notified eID means, will be able to access online public services in every Member State.

Key drivers of adoption at the national level will help us understand the key success factors for cross-border usage

From a market perspective, the Regulation:

- provides the infrastructure needed to make national eID schemes interoperable;

- facilitates the possibility for the private sector to connect to it; and

- facilitates the development of a significant number of applications for the holders of a notified eID means, i.e. e-government services, and possibly beyond, including private services.

To adequately support the uptake of eID usage in a cross-border context, it is crucial to understand all drivers and barriers associated with eID usage. Before the eIDAS Regulation, cross-border usage was studied and

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...., Member State can take the initiative to notify one or more eID schemes, it is up to the EU-wide Expert Group to accept the eID scheme, and to classify it at the appropriate level.

[19] eIDAS Recital 17 states, 'Member States should encourage the private sector to voluntarily use electronic identification means under a notified scheme for identification purposes when needed for online services or electronic transactions.'

piloted extensively in the LSPs and their successors, as well as in bilateral co-operation (such as Spain & Portugal, and Estonia & Lithuania/Belgium). As such, the analysis of the uptake in a cross-border context will provide us further indications of what key success factors influence the eID uptake.

The remainder of this chapter is structured as follows:

The next two sections are dedicated to the description of the eID market structure, the players, and the distinctive properties of eID schemes across Europe.

The subsequent section discusses the key drivers for the eID adoption at the Member States' level.

Finally, the last section presents:

- the key considerations expressed by the interviewed stakeholders related to eIDAS and the eID usage in a cross-border context; and

- a list of proposed initiatives to support the market at this time of the implementation process.

3.2 Description of the eID market structure and players

3.2.1 Description of eID supply side

The eID supply side is, at this stage, very 'National', i.e. driven by Member States. They are free to delegate part of their activities to third parties from the private or public world.
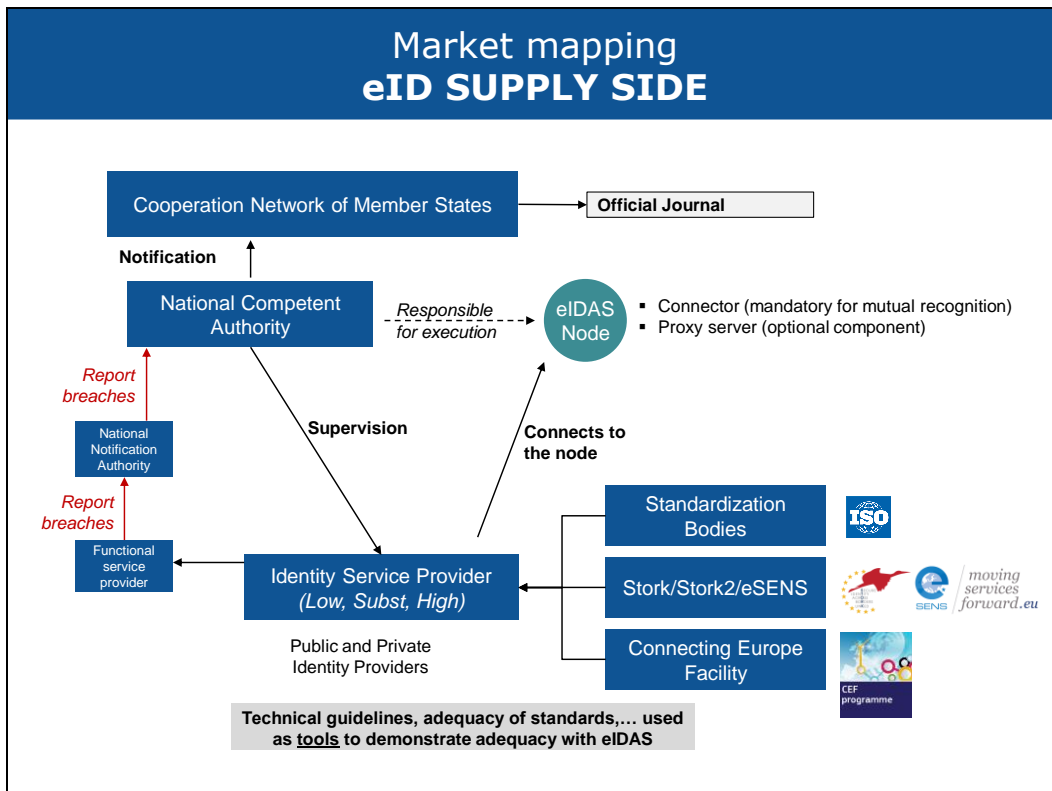
At the heart of the eID supply ecosystem are the **Identity Service Providers**. They are responsible for reliable identification and authentication of individuals, in accordance with the respective levels of assurance (low/substantial/high). This role is typically performed by public sector players, e.g. ministries and public sector agencies, or by organisations that are mandated by the state. In some countries, such as-but not limited to - the UK and Nordic countries, this role is assumed by multiple private sector players, such as banks and MNOs (mobile network operators).

The role of Identity Service Providers is tightly coupled with the way they are organised. In the case where Identity Service Providers are public sector bodies, they either rely on the agencies for secure document issuance or delegate this role to private sector players. In the case of Identity Service Providers from the private sector, they rely on their own supply chain, i.e. smartcards in the case of banks, or SIM (Subscriber Identity Module) in the case of MNOs.

Identity Service Providers are overseen by the Member State's **National Competent Authority** (e.g. a Ministry of Interior Affairs). Its role is to take care of implementing the country's identity legislation.

The National Competent Authority is responsible for discussing and notifying a national eID scheme to the **Cooperation Network**, which is made up of all Member States. The role of the Cooperation Network is to build consensus on technical aspects of the eID node and on the assurance level of the notified schemes and means.

In order to demonstrate the adequacy of their eID scheme and means with eIDAS, identity service providers can rely on technical guidelines from **interoperability initiatives** such as Connecting European Facilities (CEF), and its building blocks and services. CEF covers services for eDelivery, eID, eInvoicing, eTranslation, and eSignature. While eID and eSignature offer their own added value, they also further enhance the other services. Further interoperability initiatives are undertaken by the **standardisation bodies**.

However, while these are made available to the Member States, the final decision remains in the hands of the National Competent Authority.

On a more technical aspect, Identity Service Providers will have to connect to the **National eIDAS Node**. The set-up of the node is the responsibility of the National Competent Authority. According to the eIDAS Regulation, the Node must provide a Connector to other Member States' eIDAS node, allowing access to the services related to the notified eID means from those other Member States. If a Member State decides to notify its eID scheme, it should also provide a proxy server, to redirect requests from other Member States towards their eID service provider.

The high level functioning of the eIDAS Node is represented in the figure below.
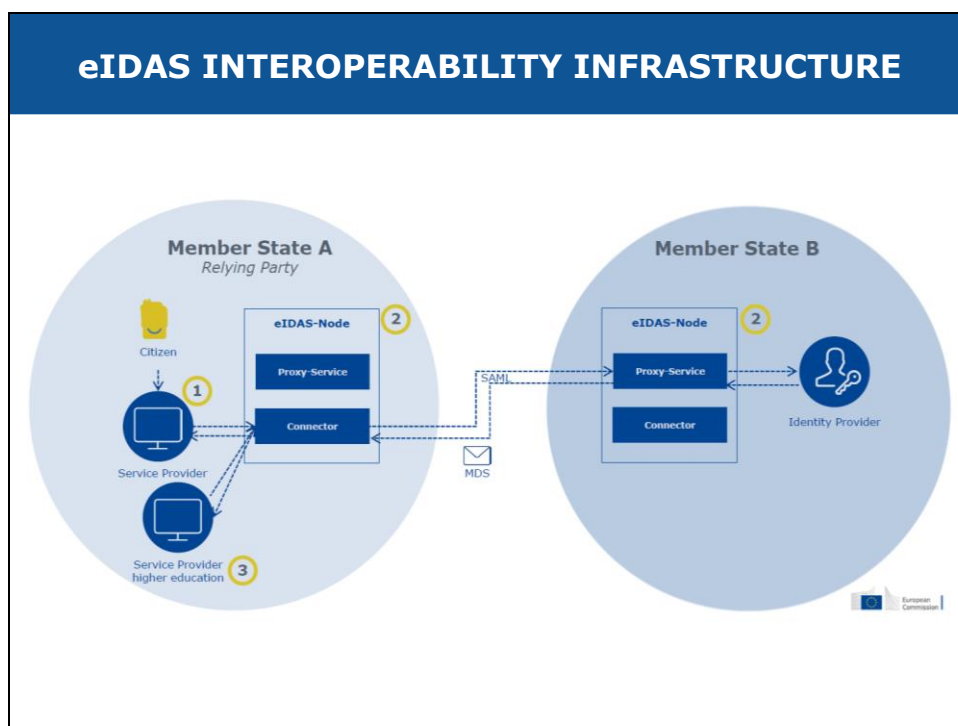
Figure 7 eID Interoperability Infrastructure
(Source: DG CONNECT Webinar on eIDAS, 07/03/2017)

The market is driven by the governments

The supply dynamics in the eID market are fully dependent on the national eID schemes regulated by the public authorities in each Member State. However, it does not mean that the involvement of private sector players is excluded.

Public and private sector players co-exist in the market...

eID means can be managed by public and private sector players. While public eID means are produced and managed under the supervision of governments, the private ones are under the responsibility of the private sector. Examples of Member States where eID means are managed by the private sector or both by private and public include notably UK, Luxemburg, Finland, Sweden, Estonia and Italy.

Even when considering public eID means, both public and private players can play a role along the various activities involved in the process of production and implementation of eID means. Virtually any step in this process can be done by a public sector or a private sector entity. In many cases, public and private sectors collaborate closely.

... assuming different roles in each Member State

The scope of this study includes the eID means that are part of the national eID schemes and which hence can be used to access public services and, optionally, private services. It excludes purely private eID means.

3.2.2 Description of eID demand side

The following paragraphs depict the demand side for eID solutions. The demand side representation (in the figure below) holds for both for eID and TS services. The main difference lies in the types of applications and use-cases that stem from these services.
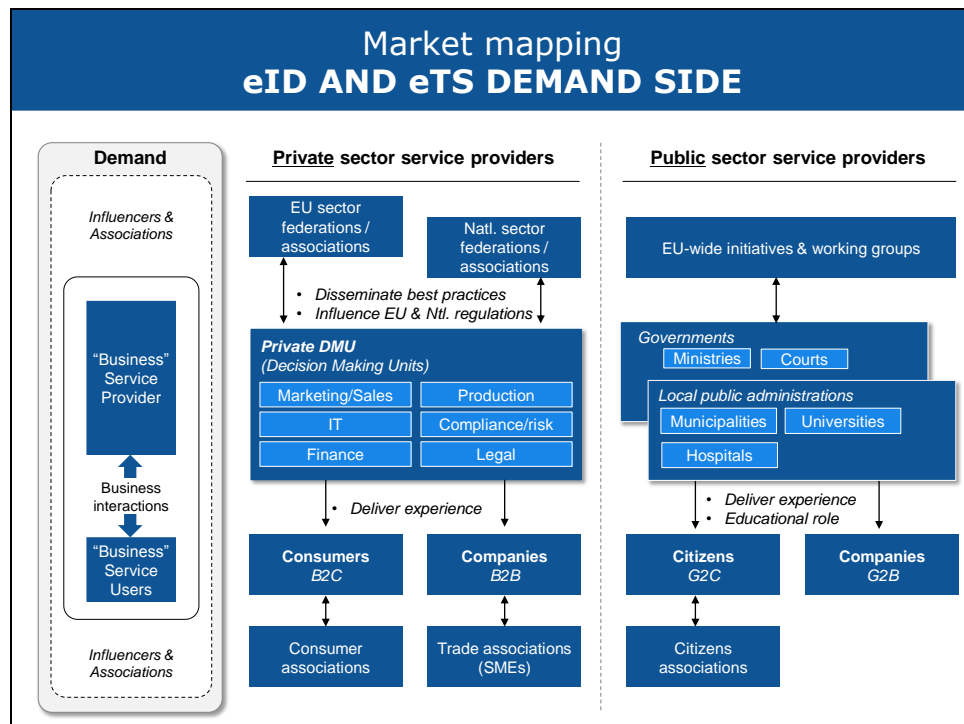
**Figure 8 Mapping of eID Demand side actors
(Source: PwC analysis)**

The two main types of actors are the **'Business' Service Providers** and the **'Business' Service Users**. The providers can be from the Private or Public sectors, each with dedicated use-cases.

Private Sector Business Service Providers are banks, insurance companies, and large corporations providing services to their clients, namely consumers or companies. Often, the decision-making units of these players are complex and multifaceted, i.e. Marketing, Sales, Production, IT, Compliance, Risk, Finance and Legal. As we will see further, the heterogeneity of the players, their different concerns, and their maturity is an important adoption barrier.

These Private Sector Service Providers are grouped in **sector associations and federations at the national or European level**, with the objective of defending their interests, setting new standards and facilitating exchange of best practices between their members. As such, they play a significant role in facilitating the adoption of eID (and TS) services in Europe.

The Business Service Users as well are grouped into associations to defend their interests, and act as relays of information and facilitators between their numerous adherents. They play a key role in generating buy-in and promoting eIDAS-services and their application towards the business service users.

The second type are the **Public Sector Business Service Providers**, e.g. Ministries providing services to citizens or companies, Hospitals providing services to patients or doctors, Universities providing services to students.

Service providers from the public sector are grouped into working groups and contribute to common, EU-wide initiatives around eID and its use-cases.

Citizens can also be grouped into 'citizens-associations' in charge of defending their rights, e.g. when it comes to data privacy management. They should also be included in the Marketing Plan.

3.3 Distinctive properties of national eID schemes

National eID schemes highly differ between Member States due to...

Each Member State has followed its own agenda regarding electronic identification, and most have developed their own national eID scheme. This has resulted in varying levels of adoption and maturity between Member States when it comes to eID, technology, security, etc. By way of illustration, Belgium and Finland issued their first electronic identity card as early as 2000 approximately, while some other Member States still have no or only limited eID means in place today, resulting in different levels of maturity.

In this section, we discuss the main differences between eID schemes implemented across Europe:

- the general approach to identity management;
- the mode of collaboration with the private sector; and
- the characteristics of eID means.

3.3.1 Approach to identity management

... cultural differences when it comes to identity management ...

In some Member States, there is a strong culture of identity and of the eID card (e.g. Spain, Belgium and Germany). In these countries, the eID means is the simple extension in the digital sphere of the strong identification of each citizen existing in the physical world allowing Member States to fulfil one of its sovereign duties, namely the management of identities.

It is in this group of Member States that we find the few cases where holding an eID card is compulsory for citizens, which applies for example to Belgium, Estonia and Spain.

However, there are also Member States where identity management is considered more controversial, and having a central database with identity information on all citizens raises privacy issues (e.g. UK and France).

In some of these countries, market-driven development (i.e. private sector initiatives) has resulted in the creation of a scheme verified and coordinated by the public authorities.

3.3.2 Collaboration mode with the private sector

... as well as different modes of collaboration with the private sector...

While all governments rely on private providers for the supply of hardware and software components of eID means and the building of the infrastructure, additional collaboration with the private sector differs at two main levels:

- the issuance of eID means;

- the use of the eID means as an authentication means to access private sector services.

As already described in the previous section, some Member States are relying on private operators to issue eID means with a public sector mandate (e.g. Austria, Iceland, Liechtenstein, Luxembourg, the Netherlands and Sweden), while in other Member States, eID cards are issued by public bodies (Belgium, Estonia, Finland, Italy, Lithuania, Portugal and Spain).

In several countries, citizens have at their disposal both private and public eID means to access e-government services (e.g. Austria, Finland, and Norway).

3.3.3 Characteristics of eID means

… and differences in the characteristics of the eID means in place

Several types of eID means co-exist across Europe. The PBLQ benchmark[20] study highlighted the following types of eID means:

- username-password;

- username-password with text message verification;

- software-based certificates;

- smartcards with contact or contactless chips on which a certificate is placed;

- mobile ID (mobile phone or a combination of mobile phone and contactless smartcard is used). Regarding mobile eID means, only a limited number of Member States have developed such a solution, e.g. Estonia, Sweden, Austria and Portugal. Furthermore, at least Belgium and the Netherlands are also working towards such a solution.

Another significant difference is the presence or absence of an e-signature functionality attached to the eID means allowing holders of the eID means to sign online transactions. In such cases (e.g. Estonia and Belgium), the role of the eID means combines identification/authentication and electronic signature.

It is also important to take into consideration the level of assurance (LOA) offered by the eID means, especially in the cross-border context. The LOA of an eID means depends not only on the means itself but also on the issuing process. The eIDAS Regulation has introduced three levels of assurance: high, substantial and low. The LOA of an eID means will be agreed to by the Cooperation Network.

3.3.4 Drivers for adoption of eID at the national level

We now discuss the key drivers that are associated with the usage of eID at the national level, from a business service user perspective.

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[20] https://www.government.nl/documents/reports/2015/05/13/international-comparison-eid-means

Equipment is a necessary condition but is not sufficient in itself	Of course, having the eID is one of the conditions to be met for achieving adoption among citizens, but it has been proved that it is not sufficient. Indeed, in Belgium and Spain for example, having the eID card is compulsory, so the eID means itself is deployed on a large scale. However, to use the card one needs a card reader and driver software, which needs to be appropriately configured. This relative complexity has resulted in a limited adoption, typically constrained to specific applications such as tax applications.
High perceived benefits and trust are needed	Results of several studies and surveys, notably in the context of the SSEDIC network[21], coupled with interviews conducted in the context of this study, led to the conclusion that cases with high adoption rates are characterised by high perceived benefits of the eID means in the eyes of business service users. Furthermore, cases with high adoption rates elicit trust created by the public authorities in terms of security and privacy of the provided service.
Perceived benefits result from the number of available applications …	Reaching a high level of perceived benefits results from the combination of the number of eID-enabled applications and the convenience offered by the eID means.
	Indeed, as described by a UL study comparing eID solutions across Europe[22], 'the more (public and private) services are available, the higher the level of perceived usefulness is' since 'online authentication/digital signing is appreciated only in relation with the services that are being offered to the card holders'.
… and the convenience of the solution	Convenience is key as the business service users seek ease of use and simplicity. Many interviewed stakeholders mentioned that the complexity and the low user-friendliness of certificate-based solutions are the key barriers to increasing adoption levels. A good example of the existing need for easy-to-use solutions is the recent success of mobile eID solutions in several European countries (such as in Austria – see p. 22).
	The key factors that play a role in the eID adoption and their interaction are presented in the following figure.
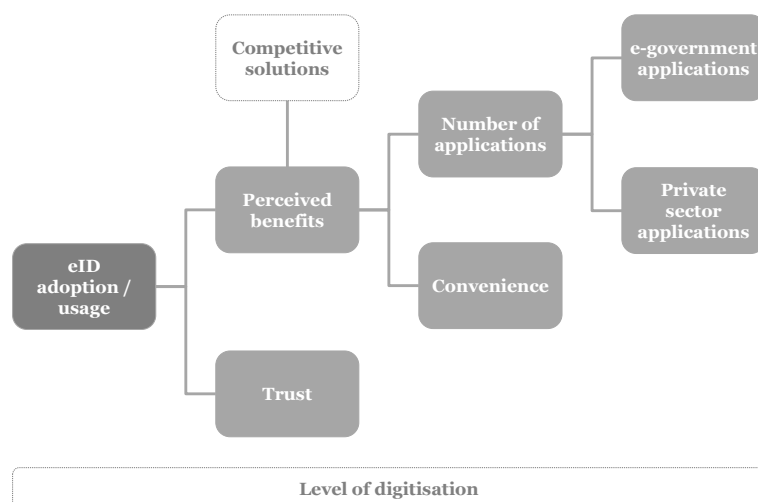
Figure 9 Drivers of eID adoption at the business service user level (Source: PwC analysis)

In addition, the role of structural factors related to the general level of digitalisation of a Member State should not be neglected as it frames the accessible market for eID means.

3.3.5 Number of available eID-enabled applications

Public and private sector efforts complement-arily contribute to eID adoption

A close collaboration between public authorities and the private sector is the only way to achieve high levels of adoption and usage. eID-enabled e-government applications are necessary to develop usage, and to constitute a first user base, while it is only through private sector applications that frequent use and a high level of usage of an eID means can be achieved.

As it is commonly agreed that a citizen has contact with a public administration on average only twice a year, e-government services do not provide the frequency of use that makes it possible to turn the eID means into a valuable and convenient tool. Only private sector applications can offer such a frequency (e.g. online banking and payment apps).

One should note that the equivalence of QESig enabled by national eID means offers also potential for greater eID services adoption, and are a potential important source of usages. As an illustration, PDF-based quotations from small & medium enterprises do not need any specific "application" and can rely on off-the-shelf generic applications based on National eID means.

Achieving high perceived benefits of the eID means among business service users therefore requires the following conditions to be met:

1. high investment in e-government applications, and

2. openness and support to see the private sector integrate the eID means in their services.

1) High investment in e-government applications

Public sector applications are a prerequisite

In most Member States, since eID schemes are in the hands of the public authority, the development of eID-enabled e-government services is the necessary condition to develop usage, and to constitute a first user base. The availability of eID-enabled e-government applications is the necessary first step to ensure a satisfying number of applications.

e-government is a hot topic in the EU...

In most Member States as well as at the EU level, e-government is a high priority on the agenda as it helps to reduce paperwork, increase efficiency, and save money for public authorities. This is clearly indicated in the eGovernment Action Plan 2016–2020[23]. Dematerialisation of public services is one the main reasons why Member States have developed or are developing eID schemes, i.e. are developing a secure authentication means allowing citizens to connect to online public services.

For example, the digital by default e-gov programme[24] (digitalisation of 25 most-used government services) launched in the UK expects to save £1.8bn per year mainly because staff will spend less time processing

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[23] ....pa.eu/digital-single-market/en/egovernment-action-plan-digitising-european-industry

... but the level of ....v.uk/service-manual/start

maturity highly varies between Member States

digital transactions compared to offline alternatives, and less money will need to be spent on estates and accommodation, postage and packaging and supporting IT systems.

However, the level of maturity of e-government highly differs between Member States. According to the 'Future-proofing eGovernment for a Digital Single Market' report[25] published in June 2015, Member States with similar maturity have been grouped in clusters based on their level of digitalisation, i.e. level of efficiency and effectiveness in internal procedures, and *penetration,* i.e. usage of e-government services.
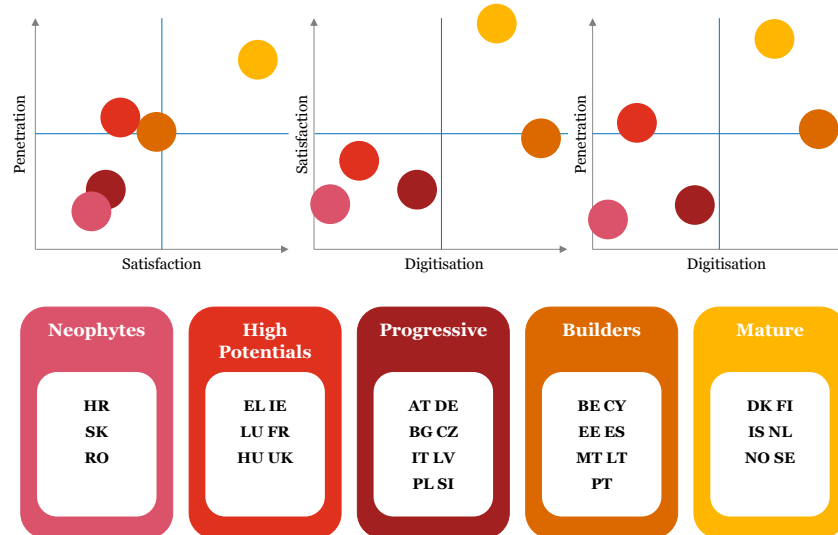
Figure 10 Clusters of e-government maturity (Source: EU eGovernment Report 2015[26])

The benchmark described the different clusters as follows:

Neophytes Cluster: scores very low on both penetration and digitalisation, resulting in weak e-government that insufficiently exploits ICT opportunities, and is dependent on significant efforts, which are essential to move towards e-government maturity.

High Potential Cluster: characterised by a wide contrast between the level of digitalisation (low) and the level of penetration (medium-high). This cluster is getting things right, but the lower level of digitalisation implies that public administration processes could increase in efficiency and that cost savings could be realised if the necessary action were to be initiated. It also shows that, despite the efforts required, citizens are confident of the e-government potential and use online services.

Progressive Cluster: characterised by a low level of penetration, yet a medium level of digitalisation. This means that countries in this cluster have been working on a digital approach, but there are some factors that constrain full distribution of satisfying e-government services.

Builders Cluster: characterised by the highest level of digitalisation but a medium-low level of penetration. This suggests a scenario where the

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[25] https://ec.europa.eu/digital-single-market/en/news/eu-egovernment-report-2015-shows-online-public-services-europe-are-smart-could-be-smarter
[26] https://ec.europa.eu/digital-single-market/en/news/eu-egovernment-report-2015-shows-online-public-services-europe-are-smart-could-be-smarter

innovation process has been carried out efficiently, but online interactions with government are nonetheless not yet common practice for citizens in these countries. Satisfaction is higher than in three other clusters (all but the Mature Cluster). This means that, in these countries, the public administration is doing well, with a structured approach to innovation. However, the lack of penetration prevents government from completely exploiting the advantages of digitalisation.

Mature Cluster: has the highest level of penetration and a high level of digitalisation, displaying a successful process of innovation, making it possible to exploit the opportunities offered by ICT.

The Mature Cluster also achieves quite a high level of satisfaction, showing a market-oriented approach that succeeds in meeting users' needs.

eID must also be properly embedded in e-government services

In addition to a well-developed e-government offering, it is, of course, necessary that eID be used to access these online services. In this perspective, a lot of work still needs to be done since only 12 Member States show a 'good' level of eID deployment according to the 2016 e-government factsheets. Figure 5 presents the results of this assessment of the level of deployment of eID in e-government services across the European Union.

Figure 11Level of deployment of eID in e-government services (Source: EU eGovernment Factsheets 2016[27])

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[27] https://joinup.ec.europa.eu/community/nifo/og_page/egovernment-factsheets#eGov2016

The EU Digital Economy and Society Index (DESI) provides a view on progress made in terms of a digital society. It is structured around five principal dimensions: connectivity, human capital, use of internet, integration of digital technology, and digital public services.
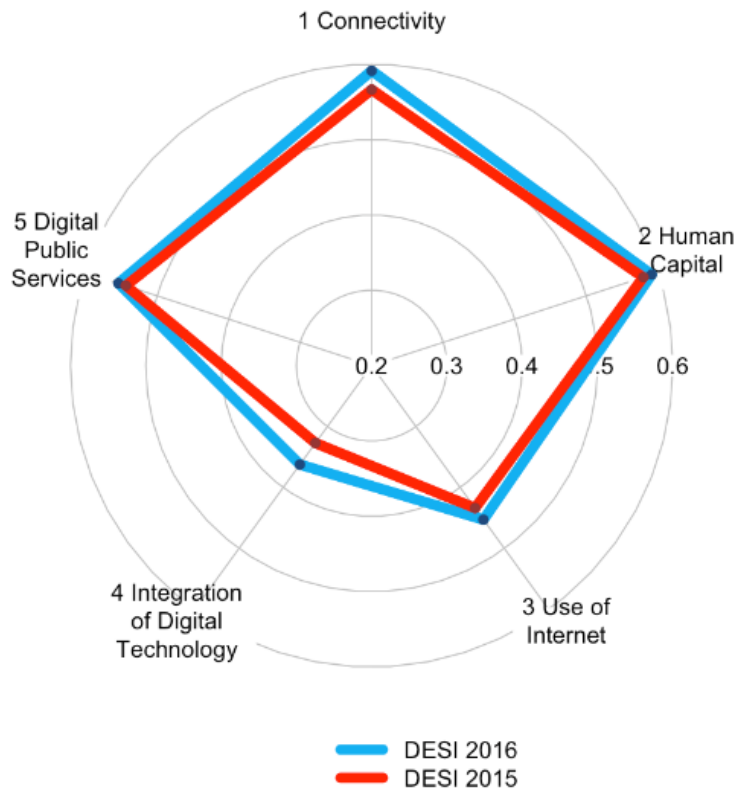
Figure 12 DESI radar chart (Source: Digital Single Market website[28])

The above indicates clearly that the integration of digital technology in particular can still be significantly improved. This is an area where, of course, the integration of eID and electronic trust services still holds great potential.

The EU eGovernment Action Plan '16-'20 will play a key role

The EU eGovernment Action Plan 2016–2020[29] aimed at accelerating the digital transformation of public administrations in the Member States and the Commission will play a key role in the deployment of eID in e-government services across the European Union. Indeed, to achieve its first strategic objective, 'Modernise public administration', the Action Plan sets out as one of the concrete actions to accelerate the uptake of eIDAS services, including eID and eSignature.

Priority should be given to the most successful applications...

To drive adoption across Europe, it is important for the Commission and Member States to focus on e-government applications that drive the largest usage. In this perspective, it is very important and interesting to look at the most successful applications across Europe.

Despite the lack of available information and figures regarding the usage per e-government application, tax applications, social and security

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[28] https://ec.europa.eu/digital-single-market/en/desi
[29] https://ec.europa.eu/digital-single-market/en/european-egovernment-action-plan-2016-2020

services and e-health & e-prescriptions have been identified as the most successful e-government applications.

Online tax application was often the first public service mentioned by eID stakeholders when they were asked about the services that currently lead the list of services with the highest usage. For example, Belgium reported that 3.57 million citizens used the tax-on-web for their tax applications in 2015[30]. This success will without doubt be reinforced and spread across Europe in the coming years as several Member States are making the use of such online tax application mandatory. For example, in France, while only 40% of households filled in their tax applications online in 2015, it will become mandatory for all citizens to fill in the tax application online as from 2019. It has already become mandatory as from 2016 for citizens with annual revenues above EUR 40 000 (17% of households are affected by this measure)[31].

While being already successful in the selected number of Member States that implemented it, e-health and e-prescription applications have also been cited by several stakeholders as the most promising applications for eID in a near future. This potential is confirmed by facts and figures reported by a study realised by Stanković and Stančić on the development of health care e-services in the European Union[32]:

- Member States that have implemented such systems have reported significant savings, from 30 to 50 minutes per day, through reduced paperwork and faster communication. The UK expects from its e-prescription service total savings estimated at around 179 million pounds a year at the level of the entire health care system.

- These positive returns can be achieved by Member States in a short-term period as demonstrated by the Estonian case with first financial gains reported 2 years after implementation.

- These services seem to address an existing need among citizens as there is a high proportion of satisfied users of such services. In Estonia, 47% of citizens use e-health records while e-prescription services have been elected the most preferred e-government application in Estonia.

More advanced countries, in terms of digitalisation, are making mandatory the online access of government services, and they are developing and following a digital-by-default approach (e.g. Denmark and Estonia).

... and to those with strong visibility & focus

Finally, use cases that relate to concrete actions of the EU eGovernment Action Plan 2016–2020[33], such as e-procurement or the European e-Justice Portal, will *a priori* receive enough support and visibility to drive usage and create tangible benefits.

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[30]https://encrypted.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUK Ewi89uvJgcvQAhVCmBoKHdy8BAIQFggfMAA&url=http%3A%2F%2Ffinances.belgium.be%2Fsites%2Fdefault%2 Ffiles%2Fdownloads%2F2016-04-26-conference-de-presse-tow.pdf&usg=AFQjCNFNYRQsH_YyccRzUCG3JimtNtSWHg

[31] http://www.lefigaro.fr/impots/2016/04/13/05003-20160413ARTFIG00006-impots-des-declarations-en-ligne-obligatoires.php

[32] https://bib.irb.hr/datoteka/786912.9-01_Stankovic_Stancic_Development_of_Health_Care_e-Services_in_the_EU.pdf

[33] https://ec.europa.eu/digital-single-market/en/european-egovernment-action-plan-2016-2020

2) Openness and support to see the private sector integrate the eID means in their services

Some private sector applications drive most of the usage

Member States with the highest adoption scores are often supported by the development of the usage of private sector applications (e.g. Estonia, Sweden and Denmark).

A benchmark study about eID deployment in 10 European countries realised within the SSEDIC network[34] reported impressive adoption scores for some Member States where eID remains a citizen's choice. In Sweden, the BankID means counted 6.5 million active users, while 75% of Danish citizens owned a NemID in 2014.

In these particular cases, it is interesting to note that most of the usage comes from private sector applications, i.e. eBanking and payment.

- In Denmark, 75% of annual transactions using the NemID issued by the public authorities come from the eBanking applications[35].

- In Sweden, the majority of transactions realised with the BankID issued by the banks comes from eBanking applications (66%) and SWHISH, which is a real-time payment app (14%)[36].

Private sector applications bring many benefits that will favour adoption

When a successful collaboration has been achieved between public authorities and the private sector, it leads to several benefits that ultimately positively impact the adoption of the eID means. The main benefits are the following:

- Additional eID-enabled applications are offered to business service users, increasing the value of the eID means.

- Private sector applications offer more frequent possibilities of use in many cases, compared to e-government services, and thus increase convenience for end-users.

- The development of private sector applications within the national eID scheme reduces the risk of the development of competitive private eID means and associated cannibalisation.

The last benefit can be illustrated by the example of Finland. As reported by the UL report[37], Finland was the first European country to introduce PKI cards (national eID cards - FINeID) in 1999. However, ten years later, only 300 000 citizens (out of five million in total) had applied for the cards. The reasons are multiple: not only is the FINeID card not mandatory, it also appears that the bank-authentication method (printed OTPs) was better known and therefore more frequently used in the online environment, even for non-banking services.

The private sector will embrace eID subject to two conditions

In this light, two main conditions need to be met to see the private sector develop eID-enabled solutions:

1. openness of the eID scheme to the private sector;

2. a clear positive business case for the private sector.

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[34] http://www.eid-ssedic.eu/images/stories/pdf/deliverables2013/D3.3.1%20eID%20deployment%20extended%2010%20MS.pdf
[35] https://www.nemid.nu/dk-da/om_nemid/aktuelt/statistik_om_nemid/
[36] https://www.bankid.com/om-oss/statistik
[37] https://ofti.org/wp-content/uploads/2013/04/114-comparison-of-eid-solutions-with-privacy-preserving-characteristics.pdf

The openness of the eID scheme to private operators is the necessary condition for eID-enabled applications to be developed in the private sector.

The private sector must have access to the eID scheme and the service related to the eID means

Openness of the eID scheme can be realised in various ways. Three models emerge:

1. eID scheme opened to the private sector (e.g. Belgium, Estonia, Germany and Lithuania): this model is characterised by the issuance of a single national eID means (often a national eID card) by the public authorities but third parties (i.e. private sector companies) can connect to the national eID scheme and use the eID means as an authentication means to access their online services. To be successful, private sector companies should be able to use system interfaces for free or for a limited fee, and clear standards for interfaces must be published.

2. Multi-means eID scheme (Austria): in this specific model, the eID solution is issued and controlled by public authorities but is not dependent on specific hardware. The eID solution can be integrated into smartcards from the private and public sectors (bank card, healthcare card, town card etc.).

3. Private sector as eID issuer (e.g. Sweden, Norway and UK): the third model, which actually drives the largest usage, relies on eID means issued by the private sector and that can be used to access online e-government services.

A traditional eID scheme (e.g. in Belgium) can be combined with a multi-means scheme. One possible way for such a combination is using the traditional eID means to create ('bootstrap') a mobile-only eID means. Once the mobile-only eID means is created, it can be used in mobile authentication protocols without a need for the traditional eID to be involved.

eID usage must bring clear benefits for the private sector

The benchmark study realised in the context of the SSEDIC network also pointed out the positive effects that the eID solution's independence of a material device has on the number of applications available. 'It seems the more eID is independent of a 'material device' (a chip card issued by the government, opposite to possibilities to have an eID on mobile devices, combined in other chip cards, e.g. bank identities), the more variations we see on available applications.'

When an eID scheme is opened to the private sector, players need a clear positive business case to embed eID solutions in their online services.

Studies realised in the context of the SSEDIC network, focusing on the eID adoption in the private sector, highlighted the following potential drivers and barriers for adoption[38]:

Main drivers	Main barriers
▪ (Legal) requirements to verify identity or specific information about the client (e.g. age, address) ▪ Level of security required for the transaction ▪ Electronic signatures enabling legally binding transactions, e.g. signature of contracts ▪ Ability to outsource the management of user identity data & part of the authentication process ▪ An already established user network ▪ Reduction of user support costs, e.g. password help desk	▪ Lack of awareness about what eID is ▪ Lack of need to change existing authentication services ▪ Inconvenient transitioning authentication to eID ▪ Too high cost of eID services ▪ Unsatisfactory usability of eID ▪ Concerns about additional hardware needed by users ▪ Expected low demand by users for eID ▪ Lack of feeling comfortable with eID technology ▪ Uncertainty about eID Regulations ▪ Reduced ability to acquire quality information about users

Promotion efforts should focus on key features that meet the specific challenges of an industry

e main barriers equally impact the private sector, main drivers related to the private sector's adoption of eID will relate more to specific situations per industry.

As an illustration, a specific adoption survey realised by the SSEDIC network in 2013[39] showed that, apart from the security of the payment transactions, the verification age feature is seen as very valuable for the adult entertainment industry.

This study also confirmed the importance of taking into account these differences in the value offered by the different features of the eID for marketing actions and business case exercises: 'further development and marketing of the eID technology, as well as corresponding sample business cases should especially focus on these features'.

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[38] http://www.eid-ssedic.eu/
[39] http://www.eid-ssedic.eu/images/stories/pdf/deliverables2013/D2.3.3%20eID%20adoption%20survey%20-%20Leisure%20sector.pdf

3.3.6 Convenience for business service users while gaining their trust

In addition to the number of available applications, convenience of the solution and trust of business service users will impact the adoption of eID at the business service user level.

More sophisticated eID means lack of interest and awareness…

An adoption survey targeting citizens, realised by the SSEDIC network in 2012[40], identified the three main reasons expressed by business service users for not using more sophisticated eID solutions (eID embedded in public register – PKI, eID in combination with a one-time password generated by a token, or biometric information-supported eID):

1. low interest in such solutions;

2. lack of awareness; and

3. complexity of these solutions.

Additional information is presented in the following figure:

Reasons for not using eID	Description	% of respondents
1 **Low interest**	▪ The most important reason for not possessing or using an advanced eID solution is the absence of perceived need to use them in most applications	> 40%
2 **Lack of awareness**	▪ A significant part of citizens give as main reason for not using an advanced eID mean for a specific application that they were not aware that these mean was available for this specific solution.	15-20%
3 **Complexity**	▪ Complexity of the eID method remains a barrier towards adoption, especially for eID method using a hardware device (a chip card/reader combination protected by PIN code)	10%

Figure 13 Reasons for not using sophisticated eID solutions (Source: SSEDIC network[41])

These insights lead us to conclude that the perceived benefits of the use of more sophisticated eID means are limited to very specific applications which require high levels of security.

Indeed, according to this SSEDIC adoption survey, usage of more sophisticated eID means is limited to e-banking purposes, professional activities and e-government applications or any other applications using the eID means issued by the public authorities.

For other types of online transactions, perceived benefits of more sophisticated eID means remain limited.

… but also a lack of convenience

The other key perceived conclusion is the negative impact of the lack of convenience offered by eID means using a hardware device (e.g. chip card/reader combination protected by a PIN code).

Mobile eID seems to successfully tackle this issue

⊦ /stories/pdf/deliverables2012/D2.3.2%20eID%20Adoption%20Survey%20Y2.pdf
⊦ /stories/pdf/deliverables2012/D2.3.2%20eID%20Adoption%20Survey%20Y2.pdf

In this perspective, mobile eID solutions seem to represent a turnaround in the market as they significantly increase the convenience for business service users.

Member States that have developed a mobile eID solution have shown extraordinary adoption rates. An SSEDIC.2020 study dedicated to mobile eID[42] realised in 2015 reported the following figures:

- In Estonia, although there are about ten times fewer active mobile e-ID users than ID card users, the mobile e-ID users generated almost one quarter of the total monthly transactions in 2015 (2.5 million out of 10.5 million transactions).

- In Austria, while the eID smartcard has never reached the level of 100 000 active cards, already more than 500 000 mobile IDs had been activated in 2015.

- In Norway, the mobile identity launched in 2014 has doubled the average number of transactions per user to 12 transactions per month, while only 10% of the population had already been using the mobile ID solution.

Mobile eID offers several benefits…

This success is explained by the several benefits offered by mobile eID means. The study highlighted the following elements as the main benefits offered by mobile eID:

- No specific hardware (card-reader) is needed.

- No specific software (card-driver) is needed, just the browser.

- Many of today's devices like tablets can no longer be used with smartcards.

- Mobile eID reflects the current lifestyle and internet access practices like with tablets.

- Most citizens carry their mobile phone all the time (although most also have their health insurance card in their pocket).

… but remains difficult to implement for Member States

However, development and implementation of such solutions is not easy for Member States. Two main implementation models can be pointed out from existing examples, depending on where the private key is stored:

1. SIM card-based model: the private key is stored on a specific SIM card enabling cryptographic operations. The main disadvantage is that the deployment and management of the specific SIM card is in the hands of Telco operators. These operators own the SIM, and use it for Over-the-Air (OTA) provisioning, including deployment of further services. They may be interested in renting out space on the SIM, but may also require a benefit or fee in exchange.

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[42] http://subs.emis.de/LNI/Proceedings/Proceedings251/29.pdf

2. <u>Central authentication model</u>: the private key is stored in a data centre. The main disadvantages are the specific and centralised architecture required to implement such a system, and the fact that the demonstration of 'sole control' over the private key is more complicated. Nevertheless, the model has been successfully implemented, e.g. in Austria.

The private sector is ready to seize this opportunity

As proof of the high potential offered by mobile eID for developing eID means, it is sufficient to look at the many initiatives from the private sector. For example, the GSM Association, which represents the interests of mobile operators worldwide, has developed Mobile Connect[43], a framework allowing each affiliated mobile operator to become a provider of mobile eID. In Belgium, four banks and three mobile operators have recently established a Belgian mobile eID[44] called *itsme*.

While not in the top 3 of main reasons expressed by business service users for not using more sophisticated eID solutions, the lack of trust is also a recurrent concern among eID stakeholders. Trust is seen as a prerequisite for achieving adoption among business service users. It is also mentioned as a key reason for the success of eID means in the Nordic countries, i.e. high trust placed in public authorities.

It should be pointed out that solutions that seem to offer great convenience may actually deteriorate trust in the system. Various NFC bank cards illustrate this. They are a convenient payment means, because they allow the holder to make payments below 25 euro without entering a PIN. However, it can be observed that NFC-based attacks are possible, which can only be mitigated by isolating the card 'at rest' in a metal enclosure (a 'Faraday cage'). In this way the card will not respond to the NFC protocol.

3.3.7 Overall level of digitalisation

Structural factors also play a role in eID adoption

The level of eID adoption also depends on the following two types of structural factors related to the overall digitalisation in the Member States:

▪ access: broadband penetration, mobile penetration.

▪ usage: use of internet by citizens and businesses, level of digitalisation within businesses and public services.

Access to the internet is no longer an issue in the EU

According to figures of the Digital scoreboard published by the European Commission (2015)[45], the 'Access' factors no longer represent a key issue in the European Union.

▪ Only few Member States show a penetration of broadband in households that is lower than 70%: Cyprus, Poland, Portugal, Lithuania, Greece, Romania and Bulgaria. For businesses, the penetration is above 80% for all Member States except for Bulgaria.

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[43] http://www.gsma.com/personaldata/mobile-connect
[44] http://www.lalibre.be/economie/digital/une-solution-belge-d-identification-mobile-devoilee-avant-la-fin-2016-578cd31635705dcbd7023d2e
[45] https://ec.europa.eu/digital-single-market/en/digital-scoreboard

However, the level of usage strongly varies between Member States

More differences are shown in the usage of internet, especially when it comes to specific use cases:

- Frequency of the general use of internet reaches a satisfactory level in almost all Member States: except for Bulgaria and Romania, more than 60% of citizens used the internet in the last three months.

- While a selected number of Member States show very high scores in terms of online banking (>80% of citizens using online banking in Finland, Denmark, the Netherlands, Estonia and Sweden), six Member States have fewer than 30% of citizens using online banking (Portugal, Italy, Cyprus, Greece, Bulgaria and Romania).

- Online shopping: Italy, Cyprus, Bulgaria and Romania have fewer than 30% of citizens ordering products or services online.

- Online interactions with public services: seven Member States with less than 40% (Croatia, Cyprus, Czech Republic, Poland, Italy, Bulgaria and Romania).

The objective of these figures is not to assess in detail the various Member States on the basis of these dimensions but to highlight the fact that situations are very heterogeneous as far as digitalisation is concerned. The ambition in terms of uptake of eID and initiatives to support this uptake must take these differences into account, and decisions must be taken accordingly.

In conclusion, eID adoption is the result of multi-dependent factors

From this section, we can conclude that adoption is the result of a complex combination of multi-dependent factors.

Focusing on one specific factor will often not be sufficient to have a significant impact on the eID uptake, for instance it will be difficult to persuade the private sector to develop eID-enabled applications if the current levels of eID means equipment and usage are low. Conversely, trying to convince business service users of the benefits of a solution, without providing enough available applications at the same time, will not increase the level of adoption either.

eID usage in a cross-border context is linked with adoption at the national level

As cross-border eID will be based on eID means issued and already used at the national level, an interdependence of usage at both levels can be expected. Citizens who have adopted the eID means at the national level to a high extent can indeed be expected to be better positioned to use their eID means in a cross-border context. On the other hand, citizens who are not used to the eID means as an authentication means to access services online in their home country will be less favourably inclined to using it for cross-border transactions.

Moreover, regarding public sector applications, the lack of accessible e-government services will equally impact citizens from this Member State and every other European citizen who wants to access an online public service from this Member State with a notified eID means.

Efforts should support the different drivers of adoption

Consequently, efforts must be directed towards achieving the following objectives:

- Persuade Member States to open their eID scheme to the private sector.

- Support eID-enabled applications for e-government

- ▪ Help private sector players build positive business cases for the use of eID.

- ▪ Raise awareness and promote benefits of eID for business service users.

3.4 Considerations and proposed initiatives related to eID usage in a cross-border context

eIDAS has not reached a sense of urgency among all Member States yet

With only pilot projects realised between Member States with a focus on the technical aspects of the interconnection, the cross-border usage of (notified) eID means is only in its early phases. Moreover, since there is no mandatory recognition of eID means notified by the Member States until 2018, the sense of urgency among stakeholders remains low on this topic.

This section, based on interviews from a selected number of stakeholders and the review of past initiatives (e-Sens, Stork, Stork 2.0), discusses:

1. a series of considerations and challenges to cope with for the uptake of the usage of eID in cross-border transactions;
2. a list of proposed actions to tackle identified challenges.

3.4.1 Key considerations and challenges

Cross-border usage is highly –but not only- impacted by national dynamics

The cross-border usage of eID is expected to be impacted by the adoption rate at the national level. A high rate of adoption for cross-border transactions will indeed be unlikely if adoption is low at the national level.

There is, however, one important exception in the case of eID-based cross-border services. Even in Member States where adoption is low, the convenience advantage provided by such services should overcome competition from the physical world. For example, if a German student is registering for an exchange semester at a Spanish University, it will be more difficult for him to use the non-digital way of registering, i.e. going on site, than when registering in a university in his home country.

Member States must set the adequate 'environment' for cross-border adoption

Cross-border usage of eID means relies on some conditions to be met by each player in the value chain, i.e. Member States, private sector and business service users. These conditions are listed in Figure 7 below:

Stakeholders	Conditions
Member states (as responsible of the eID scheme)	▪ Member states should notify eID means to allow their citizens to use them in other Member states
Member states (as responsible for e-government services)	▪ Member states must realize required development to make their e-government services accessible through eID means notified by other Member States ▪ Member States should continue to develop e-government services that will be accessible both by their own citizens and the citizens of other Member States using a notified eID mean
Private sector	▪ To increase the number of eID-enabled services available in a cross-border context, the private sector needs to be convinced of accepting notified eID means
End-users	▪ Equipment of citizens remains a pre-requisite for usage. End users will still have to be equipped with a notified eID mean from their home country ▪ Such as at the national level, citizens must have trust in the eID mean and the security of the system and privacy regarding its personal data

Figure 14 Conditions for a successful uptake of cross-border eID usage (Source: PwC analysis)

Interviews revealed obstacles to meeting conditions for successful uptake

However, the interviews revealed obstacles for meeting these conditions, some of them possibly requiring active support from the European Commission:

1. The Member States' interest and investment are not equal.

2. Implementation of the eIDAS Regulation is far more complex than initially expected by the Member States.

3. The variety in emerging business models prevents the Member States from having a clear view on which direction to take.

4. Making a business case is not straightforward for the private sector.

5. Stakeholders require proofs-of-concept to embark on the adventure.

3.4.1.1 The Member States' interests and investments are not equal

Not all Member States have the same willingness to invest time and efforts in eIDAS

Member States display strong differences in their willingness, involvement and investment with regard to eID development. Generally, involvement and financial investment are higher in western countries than in eastern countries.

Member States with High Involvement

Some Member States will have their technical infrastructure allowing for cross-border eID ready far before the 2018 deadline. Some Member States will possibly have their technical infrastructure ready by 2017. Most of them are also willing to leverage these new cross-border possibilities by opening their national (both private and public) applications to other EU citizens, and by developing new ones.

This group consists of countries that can leverage their existing national infrastructure (e.g. Estonia and Austria). This means that the cross-border solution can be built on an existing infrastructure that is performing well and is compatible with the new regulatory requirements.

Some other enthusiastic countries are starting 'from scratch' (e.g. UK) as they do not have a central database, central registry of addresses and an eID card system in place.

For these more 'enthusiastic' countries, connection to the eIDAS node is key, notably to connect the private sector with a strong drive from the financial industry (e.g. Netherlands, Finland and UK).

Member States with Low Involvement

These Member States are more prone to wait until the last minute to complete the work. The minimum will be that every Member State has developed an interoperable node since they will be forced to accept notified eID means from other Member States.

The main reason for these Member States lagging behind is the lack of understanding of the action to be taken, and the implication of the Regulation. Notably, in some countries, the lack of clear allocation of eID matters to a specific ministry combined with poor inter-ministry communication may partly explain the low level of involvement and accountability.

Some less involved countries might be adopting a 'fast follower' posture, waiting to benefit from a 'plug-and-play' connectivity package compliant with the Regulation. More precisely, an integration package called 'Sample Integration' has already been made available in a first preliminary version since November 2015. The countries solely relying on this solution might be underestimating the additional work needed, such as version management, system maintenance, incidents management and security breach notification.

3.4.1.2 Implementation of the eIDAS Regulation is far more complex than initially expected by the Member States

It raises many unexpected issues and questions…

Feedback from interviewed stakeholders makes it clear that a lot of issues and a lot of questions are raised by the implementation of the eIDAS Regulation.

Major issues relate to the three following areas:

1. technical connection to the eIDAS node;
2. interpretation of the eIDAS Regulation;
3. exchange of personal data.

Connection of national eID schemes is not a formality

'The devil is in the details'

Experience from Member States that have already started to work on the connection of their eID scheme to the eIDAS node has shown that many issues appear only when work on the details of the infrastructure is started.

Despite the fact that technical standards were developed by the Member States through the assistance of the Directorate-General for Informatics (DIGIT)[46], issues have been identified along the process:

- The first type of issue concerns the cross-border exchange of information between Member States, mainly to do with differences in middleware systems and proxy services-based systems.

- The second type of issue concerns the receipt and handling of eID notified information, i.e. within a Member State. This process appears more complex than initially expected, particularly with regard to matching records and treating the unique identifiers.

Challenges in mapping existing eID Member State means against the eIDAS defined Levels of Assurance

Assurance levels require a political decision

Member States are having difficulties finding out how to deal with the different levels of assurance introduced by the eIDAS Regulation. The major challenge today is said to be the determination of the level of security that is relevant to accessing e-government services, notably because it requires discussions at a political level in addition to the technical/functional level. Furthermore, this requires achieving alignment between Member States so as to ensure trust among citizens.

Exchange of personal data remains key to enable e-government services

Exchange of additional data is considered as necessary for e-government services

Most of the time, e-government applications are using a set of personal data to serve the customer. In a cross-border context, this implies access to data that are potentially stored in the user's home country. This exchange of data is not covered by the eIDAS Regulation (e.g. only data on the certificate), which means that Member States have to engage in bilateral discussions if they want to go further.

Indeed, each Member State has developed its own data infrastructure management, and the main issue will be to be able to make these data infrastructures interoperable.

For example, the successful collaboration between Estonia and Finland started with a strong political agreement for data exchange at an ambitious level, and these countries are now working very hard on data exchange and eID solutions. A high commitment to digital trust between the two countries was a key prerequisite.

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[46] http://ec.europa.eu/dgs/informatics/index_en.htm

Regarding these different issues, Member States seem to wait and see if additional guidelines and direction will be provided by the European Commission or covered by related initiatives. The eGovernment Action Plan 2016–2020[47] contains various initiatives, including the 'Once Only Principle' and the 'Digital by Default' strategy. The former aims to facilitate citizen/government electronic interaction by enabling reuse of information provided by the citizen once it has been provided to a government entity. Reliable capturing of this information and sharing/reusing across the different back-office functions holds great potential for citizens and governments alike. Using the 'Digital by Default' approach, government services will by default be created and offered digitally.

Generally, Member States have expressed a lack of visibility about the overall process, and especially regarding the potential support that Member States will receive in the coming months.

3.4.1.3 From infrastructure to clear business models

Stakeholders are looking for more information in order to take decisions

In the past, the focus for discussions and pilot projects has been the development of the infrastructure that will enhance interoperability. To take the topic to the next level and see concrete use cases being developed, stakeholders have expressed the need to focus their efforts and discussions on the elaboration of business models.

In this context, the term 'business model' should be understood as covering many non-infrastructure-related dimensions of the implementation, particularly:

- eID means (types, issuers etc.);
- the authentication process;
- applications;
- storage and exchange of data;
- financing of developments (public, private etc.);
- pricing method towards the foreign private sector.

While stakeholders are looking with enthusiasm at the different initiatives that exist across Europe, the strong differences in terms of business models, solutions and ways of working also raise doubt among stakeholders about the right direction to take. This is because they want to ensure that their deployments are both efficient and compatible with directions chosen by other Member States.

Two examples of regional initiatives with highly differing business models:

- In the case of Estonia and Finland, governments have reached a political agreement to centralise all information on a common database, accessible by both countries through their respective eID schemes.

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[47] https://ec.europa.eu/digital-single-market/en/news/communication-eu-egovernment-action-plan-2016-2020-accelerating-digital-transformation

- In the case of Norway and the UK with BankID, the initiative was driven by the financial sector, with approval of the governments.

While Member States will, of course, always have their particular features, they are looking for more discussion and knowledge sharing regarding how each Member State is implementing the eIDAS Regulation.

So far, such efforts seem only to have been undertaken by the financial services industry.

3.4.1.4 Building the business case for the private sector

Building the business case remains very difficult for the private sector

Some Member States (e.g. Austria) have reported that the eIDAS Regulation has strongly increased the interest of private sector business service providers in electronic identification. These companies anticipate an extension of their reachable customer base through cross-border eID means.

However, the absence of a homogeneous framework for the access of cross-border authentication services by the private sector prevents them from easily building a business case. As each Member State is responsible for determining the terms and conditions governing access to their authentication services for cross-border applications, the private sector will potentially face 27 different conditions, procedures and costs to access these services.

This situation makes the process of building a business case very time consuming and costly for private companies, and raises the need for simplification or homogenisation.

Possible heterogeneous pricing towards foreign private sectors could result in different cost bases depending on nationality, and ultimately in market-distorting decisions, such as price changes or retreat from some geographic areas. Such a situation would run counter to the idea of the 'Single Digital Market'.

3.4.1.5 Stakeholders require proofs-of-concept to embark on the adventure

There is an expressed need to be able to raise interest…

To take the topic to the next level, interviewees have expressed the need to focus efforts on creating tangible results, and on embarking key stakeholders on the adventure by showing them the benefits offered by cross-border eID usage. Positive business cases are key for on-boarding and guiding politicians to take the necessary decisions, for persuading the private sector to invest in eID, and for increasing awareness among citizens with concrete use cases.

… by creating proof-of-concepts with concrete use cases

Bringing focus means prioritising efforts by selecting areas of work that are offering the largest potential in terms of usage and/or financial benefits.

This selection can be related to specific use cases:

- In the public sector, key use cases to consider are education, health care, tax & social security services, and public services for businesses.

- In the private sector, the largest potential can be found in the industries of financial services (banking and insurance), e-

commerce, transport (e.g. car rental companies) and online gambling & alcohol.

Leveraging specific national or regional dynamics can help obtain tangible results while focusing the efforts on a smaller perimeter (geography, target population etc.).

▪ National focus: some Member States have a specific situation that exposes them to flows of citizens from other EU countries. The UK and Luxembourg attract a lot of foreign workers, making a case for local banks. Another example is France, which sees a significant number of European citizens using its health care system.

▪ Regional focus: some regions, such as the Nordic countries, are especially active in cross-border flows and exchanges.

3.4.2 Proposed initiatives

3 areas of support have been identified

Based on the previous section, it is possible to propose key areas of action for the European Commission in order to accelerate the achievement of objectives set for the eIDAS Regulation.

The support should pursue the following objectives:

1. ensure proper implementation of the requirements related to the eIDAS Regulation at the Member State level;

2. remove hurdles preventing public and private sector stakeholders from taking initiatives;

3. create tangible results by focusing on selected perimeters.

3.4.2.1 Ensure proper implementation of the requirements related to the eIDAS Regulation at the Member State level

Proper implementation of the Regulation will require information

First of all, as the level of information remains unequal between stakeholders, the European Commission should continue its efforts to inform key stakeholders about the process of the eIDAS implementation and, notably, clarify the type of support they can expect from the European Commission until 2018. What is more, the European Commission should ensure a proper sharing of information regarding the various issues faced by the Member States as well the solutions found to address these issues. We understand that such efforts have already been made in the past, and that the 'eIDAS Observatory' will go in this direction too. Such initiatives should be continued.

Hesitant Member States require specific attention

Then, more specifically, dedicated efforts should be deployed to support 'hesitant' Member States in this process and ensure that all Member States will be ready by 2018 in compliance with the Regulation.

These dedicated efforts should pursue the following objectives:

▪ make sure that all Member States understand the Regulation, the related requirements and key implications for them;

▪ raise the sense of urgency by leveraging the experience from more advanced Member States to highlight the importance of starting the process early: key attention points, level of complexity, support that can be received, and what they have to do on their own;

▪ incentivise 'hesitant' Member States by promoting the financial support that can be granted through the Connecting Europe Facility (CEF)[48] fund in order to build the infrastructure necessary to connect the eID scheme to the eIDAS node and every public and private sector application.

3.4.2.2 Remove hurdles preventing stakeholders from taking initiatives

Remove factors that prevent stakeholders to take initiatives

Any hurdles preventing stakeholders from taking initiatives, making decisions, and investing in cross-border eID should be removed as soon as possible.

Firstly, the high level of heterogeneity of existing initiatives and the lack of feedback and information regarding these initiatives seems to prevent some stakeholders from being sure about the direction to follow. It is thus very important for the European Commission to facilitate exchanges between stakeholders.

Secondly, due to the proven importance of the private sector in the adoption of eID means, it is crucial for the European Commission to make the necessary efforts to remove any hurdles that prevent them from considering using notified eID means. More concretely, this means easing the process for developing a business case by making all the necessary information available, increasing the sense of urgency among Member States to define conditions and fees for the private sector, or promoting the use of eIDAS-based solutions in sectorial/thematic Regulations[49].

This should include making a one-stop shop location available where one can find all required information to use an eID to authenticate in a cross-border scenario, and to accept such an authentication in a transaction. The same for signing/sealing/timestamping. This should address how to do that yourself, and how to validate a transaction or document that has been signed/sealed/timestamped by a third party.

3.4.2.3 Create tangible results by focusing on selected perimeters

Create tangible results by focusing efforts to make promising use cases happen

In order to raise interest from all stakeholders (politicians, private sector companies, etc.), the European Commission should support efforts aimed at creating tangible results by focusing on use cases offering the greatest potential, and in which main stakeholders are already interested due to the opportunity offered by the eIDAS Regulation. Moreover, some specific dynamics at the regional level provide more potential for each use case.

In order to identify promising use cases, the main sources used were (i) the past efforts related to eID usage in a cross-border context (e-sense, Stork and Stork 2.0 projects), (ii) the event organised by the European Commission related to the eIDAS Regulation as well as (iii) the desk research and interviews of stakeholders realised in the context of this study.

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[48] https://ec.europa.eu/inea/en/connecting-europe-facility

[49] For example in the PSD2 Directive EU 2015/2366 there is are references to authentication and strong authentication, without any mention to eIDAS, and particularly without an indication or explanation how these relate to the corresponding eIDAS terms.

Education, health care, public services for businesses, and tax and social services are the key use cases to focus on in the public sector

In the public sector, the main potential comes from use cases in the domains of education, health care, public services for businesses, and tax and social services:

- **Education:** student enrolment at a university in another Member State, registration for and access to e-learning environments, e-surveys enabling cross-border surveys in an academic context or online verification of academic attributes for job qualifications.

- **Health care, i.e. eHealth:** access to electronic health records across Europe for patients and health care professionals, e-prescriptions as well as online real-time insurance verification.

- **Public services for businesses:** authentication of identity and validation of powers to access an online service on behalf of a legal entity.

- **Tax and social services:** access to online tax applications or any social security services such as pensions.

The following figure reflects the result of an attempt to seize the potential related to each domain:

Domains	Estimated target population	Rationale
Tax and social services	10 000 000	▪ 7 million EU citizens work and live in an EU country other than their own ▪ 1.1 million EU citizens live in one country but work in another (frontier or cross-border workers) and 1.2 million are posted to another country each year ▪ All EU citizens who own a holiday home in another EU country
eHealth	3 500 000	▪ In 2011, Belgium and France reported respectively ~80 000 invoices and ~435 000 patients with E111 forms (health care treatment during a temporary stay in the country) or E112 forms (specific authorisation to come in the country to receive a medical treatment) ▪ Extrapolation of the ratio of these cases vs country population (~0,7%) to the EU population leads to an estimated number of ~3 500 000 patients
Education	500 000	▪ 272 000 students and 57 000 staff spent time abroad via the Erasmus programme in 2013-2014 ▪ E-learning is expected to grow in the next years but, according to the European Commission, only around 30% of students in the EU are in digitally supported schools
Public services for businesses	100 000	▪ A study estimated that 11 862 foreign-owned businesses in UK were owned by European owners in 2012 ▪ An extrapolation based on the country vs EU populations leads to an estimated number of close to 100 000 foreign-owned businesses owned by EU citizens

Sources:
▪ Erasmus fact sheets – 2013/2014 - European Commission
▪ Memo EU Labour Mobility within the EU – 2014 – European Commission
▪ Cross-border health care in the European Union : Mapping and analysing practices and policies – 2011 – World Health Organisation
▪ Foreign-owned registered businesses in the UK – 2012 - Office for national of statistics

Figure 15 Estimated potential per use case domain in the public sector (Source: PwC analysis)

In the private sector, the main potential will come from banking, insurance, e-commerce, rental and online gambling

As it is the case at the national level, involvement of the private sector will be key to increase the number of opportunities to use eID means in a cross-border context.

In the private sector, the main potential identified so far lies in the banking and insurance industry. Next, potential seems to exist in sectors such as e-commerce, rentals and online gambling.

No other sector has the same imperatives as the financial services industry as far as strict identification of customers is concerned. Thus, this sector has clear drivers for using eIDAS compliant solutions.

The interest on the part of the banks is due to a combination of very strict regulatory rules (concerning security, strong authentication of parties to a transaction, know-your-customer (KYC) and interoperability) and significant business potential. An example is the Anti-Money laundering Directive, whose revised version received the political agreement by the co-legislators on 20 December 2017. The agreed text makes indeed explicit reference to eIDAS notified eID means as a possible way to fulfil Know-Your-Customer/customer due diligence requirements for non-face-to-face interactions. Another example is the Delegated Regulation on Regulatory Technical Standards (RTS) on strong customer authentication and common and secure communication under the Payment Services Directive (PSD2) which was adopted by the Commission on 27 November 2017. The RTS was based on the draft submitted by the European Banking Authority. Also in the RTS, reference is made to eIDAS notified eID means as a possible solution for strong customer authentication.

According to the Green Paper on retail financial services[50], fewer than 3% of European consumers purchase banking products such as credit cards, current accounts and mortgages from another Member State. When it comes to consumer credit, Europeans buy only 5% of their loans from abroad. An interesting statistic concerns the UK, where 50% of new accounts are opened by foreigners, which proves the real added value of the eID means as an enabler of the digital on-boarding of clients from other Member States[51].

Regarding the insurance business, a global digital insurance benchmarking report realised by Bain in 2015[52] informed that, in the next few years, 79% of insurance customers said they will use a digital channel for insurance interaction. Moreover, the part of new premiums sold online should increase from 8% to 15% in life insurance and from 10% to 23% in property and casualty insurance.

In addition to the financial services industry, other private sectors could be interested in eID means being used on a cross-border level. Interviewed stakeholders have mentioned sectors such as transport (especially the car rental activity) or online gambling.

The potential offered by the above sectors has been roughly estimated in the context of this study in order to better understand the volumes that can be expected. The following figure presents the estimated target population for each sector.

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[50] http://ec.europa.eu/finance/consultations/2015/retail-financial-services/index_en.htm
[51] http://oixuk.org/wp-content/uploads/2016/02/Digital-Identity-Across-Borders-FINAL-Feb2016-2.pdf
[52] http://www.bain.com/Images/GLOBAL-DIGITAL-INSURANCE-2015.pdf

Domains	Estimated target population	Rationale
E-commerce	**70 000 000**	▪ 53 % of EU citizens shop online but only 16 % engage in cross-border e-commerce transactions
Banks and Insurances	**15 000 000**	▪ Primary target population is composed of all EU citizens working, living or investing in another EU Member State ▪ With the objective to create a Single Market of financial services, the target can significantly increased in the future
Online gambling	**7 000 000**	▪ According to figures published by the European Commission, the online gambling market has around 6.8 million consumers in the EU
Car rental	**5 000 000**	▪ Only 3.4% of UK adults had rented a car in the previous year while around 40% of leisure car rentals took at an airport, implying a significant proportion of cross-border transactions ▪ Extrapolated at the EU level, this rough estimation gives an annual target population of less than 5 million persons

Sources:
▪ Erasmus fact sheets – 2013/2014 - European Commission
▪ Memo EU Labour Mobility within the EU – 2014 – European Commission
▪ Foreign-owned registered businesses in the UK – 2012 - Office for national of statistics
▪ Digital Agenda Scoreboard - May 2016 - European Commission
▪ Mintel - Car and Van Hire - 2013
▪ Gambling – European Commission - http://ec.europa.eu/growth/sectors/gambling_en

Figure 16 Estimated potential per use case domain in the private sector (Source: PwC analysis)

Banking and insurance

In these 2 sectors, the potential of cross-border use cases, creating an opportunity to use a notified eID means as an authentication means, concerns EU citizens who go and live, work or invest in another Member State. Therefore, the estimated population for these use cases should be added up with the target population for the 'public sector' use cases, and can consequently be estimated at around 15 million citizens.

E-commerce

While 53% of EU citizens shop online, only 16% engage in cross-border e-commerce. While cross-border online shopping is advancing, progress is rather slow, having increased by only 7% over the last five years. It represents an average target population of close to 70 million EU shoppers. Most people (72%) had completed between one and five purchases/orders online over the last three months at the time of the survey[53].

Car rental

Short-term car rental offers an estimated potential of five million cross-border transactions per year. Indeed, the members of Leaseurope[54] have reported that 23.5 million short-term rentals were realised in 2014. According to Euromonitor[55] studies, 40% of leisure car rentals were carried out at airports, implying a high probability of cross-border transaction. In addition, the high percentage of renting cars at airports confirms the cross-border nature of this market. Regarding the means in which a car rental was executed, 60% of car rentals were transacted online in 2013. This use case will not offer frequent usage for users, and will probably impact a limited part of the EU population only. According to a Mintel market report realised in 2013, mentioned in a study from the Competition and Market Authority (2015)[56], only 3.4% of UK adults had rented a car in the previous year. Extrapolated to the EU level, it represents an annual target population of fewer than 15 million persons.

Online gambling

According to figures published by the European Commission, the online gambling market has around 6.8 million consumers in the EU. What is more, the variety of operators offering services is very wide. While no statistics have been found on the importance of cross-border online gambling, it is interesting to point out that identity and authentication seems to represent an issue for many players in this market, creating a potential for adopting eID as an authentication means. For example, the Belgian national lottery is confronted with a problem of fake profiles for online gambling. In this light, compulsory registration with eID is conceived as a potential means to ease and secure authentication.

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[53] https://ec.europa.eu/digital-single-market/en/digital-scoreboard
[54] http://www.leaseurope.org/
[55] http://www.euromonitor.com/
[56] https://assets.publishing.service.gov.uk/media/55a3cdd940f0b62889000001/Short-term_car_rental_in_the_EU.pdf

Based on this exercise, we have tried to develop a grid that allows the potential of a specific sector to be assessed against a series of dimensions:

- The sectors that should face a high volume of cross-border transactions with customers living in other Member States or just arriving in a Member State. This qualifies sectors such as transport (airlines, car rental etc.), e-commerce and logistics.

- Then, the sectors that should face the necessity of identifying their customers, or would be ready to invest more in security regarding the authentication of their customers: hospitality, transport (airlines, railways, bus lines etc.), car rental across Europe, and home rentals.

- A specific case concerns sectors that need to verify an attribute of their customers to provide them access to their services, e.g. gambling, adult entertainment, and alcohol/tobacco.

A systematic approach could be undertaken in order to assess the potential of all industries across the European Union.

4 DESCRIPTION AND ANALYSIS OF THE TRUST SERVICES MARKET

4.1 Introduction

A market with multiple dynamics

The trust services market as defined by the eIDAS Regulation is made up of several sub-markets, each with their own dynamics. Indeed, this market gathers various products that are driven by completely different market dynamics. The most obvious example of this consists in comparing the website authentication market, which is mature and dominated by a few global providers, with the e-registered delivery service market, which is mainly driven by national initiatives and is still rather small.

The eIDAS Regulation provides a toolbox to increase trust...

Behind this conceptualisation of a trust services market in the context of the eIDAS Regulation, there is the ambition for providing the market with a toolbox of trust services that have clear legal value in order to increase trust in electronic transactions within the Digital Single Market.

As summarised by Didier Gobert in his analysis of the eIDAS Regulation[57], the creation of a homogeneous legal framework at the European level, i.e. the eIDAS Regulation, pursues several objectives:

1. remove existing barriers to an efficient Digital Single Market (DSM);

2. increase digital trust;

3. increase legal security as the same rules are applicable to everyone in all Member States.

... based on a unique legal framework

Regarding the first objective (barriers to DSM), past initiatives were not successful. The Directive of 1999 regarding electronic signature[58] did not offer the necessary level of homogenisation. In practice, market players face different rules depending on the Member States in which they operate. Indeed, significant differences have been observed in the implementation of the Directive at the national level notably due to differences in the interpretation of the Directive, in the technical standards to be applied, and in the derogations.

Qualified trust services ensure the highest level of security...

The same applies for the other trust services (electronic seal, electronic time stamp, eRegistered delivery service). Since no European legal framework had been put in place, some countries introduced their own national laws for some of these services while others did not. As a result, market players have had to adapt their offerings and practices to meet technical and legal requirements, resulting in high cost.

... and a certain legal validity

To secure the second objective (digital trust), the Regulation clearly makes the distinction between qualified and non-qualified trust services. Both qualified and non-qualified trust services, and the providers that offer them, will be subject to conditions (from a legal, technical, operational and procedural nature). For non-qualified trust services, these conditions still exist but are less stringent.

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[57] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31999L0093&from=EN
[58] http://www.droit-technologie.org/upload/dossier/doc/273-1.pdf

The third objective of the Regulation (legal security) is covered by the label of 'qualified trust services', which relieves users of the burden of proof. Non-qualified trust services only benefit from a non-discrimination clause consisting in stating that their legal value cannot be contested only because they are in an electronic form or do not meet the requirements of a qualified trust service.

These benefits offered by qualified solutions are justified by the strict requirements that a service provider must follow to see one or several of its services being qualified. The satisfaction of these requirements is checked both before and after their being granted. Before offering a qualified trust service, a service provider must first go through an authorisation process, which includes an evaluation by a conformity assessment body and verification by the national supervisory body that takes the final decision on whether or not to grant the qualified status to the trust service provider and the trust service it provides. Once it has been established that it has been added to the national trusted list, which is published and maintained by the relevant Member State, the TSP will be subjected to periodic monitoring to ensure that it continues to meet the requirements.

The key question remains how to boost the uptake of trust services

From a market perspective, the key question is to understand what is needed to support the uptake of these trust services in the European Union, and how the qualification label will impact the dynamics in the market. To answer this question, it is necessary to identify the different parties involved on the supply and demand sides, as well as the dynamics observed in terms of market structure. It is also key to identify and understand the key drivers of adoption of these services as well as the existing barriers.

This market analysis was realised just prior to the implementation of the eIDAS Regulation[59]. For this reason, gathering the perspectives of the market players and the types of issues that they are facing in this transition period was also considered as a critical point to support the market in this process. All together, these insights allow one to identify the existing needs for support in the market and the types of actions that may be required.

4.2 Description of TS services

The TS market gathers several trust services

The concept of 'electronic trust services (eTS) market' groups together a variety of trust services. The eIDAS Regulation lists and defines (Article 3) the following services: electronic signatures, electronic seals, electronic time stamps, electronic registered delivery services, and website authentication (and the certificates corresponding to these services).

It is important to mention at this stage that, although the concept of 'trust services market' originated in the context of the creation of a European legal framework, it is still difficult to find proofs of this unique market in the field. As it will be described in the next sections of this report, the structure and dynamics of the market of the various services

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[59] The rules on trust services entered into force on 1 July 2016.

included in the TS market show strong differences (in terms of technology, players, size, growth etc.).

Regarding this matter, the IAS2 study already stated that 'the concept of an TS market needs to be broadly interpreted since we consider a large set of services which are not as such substitutable given their often very different technical and functional characteristics'. It also confirmed the strong heterogeneity of this market by stating that 'the European TS market is strongly heterogeneous and different segments can be distinguished, responding to different user needs'.

4.3 Description of TS supply side

A market with many actors

The supply side of TS is rather complex, as trust must be assured and communicated to ensure proper market functioning.

Trust is generated through two main processes:

1. The TSP qualification process; and

2. The anchoring process through the Trusted List.

Furthermore, there is a breach notification process that also helps to ensure that things work properly. These processes and actors are mapped in the figure below.
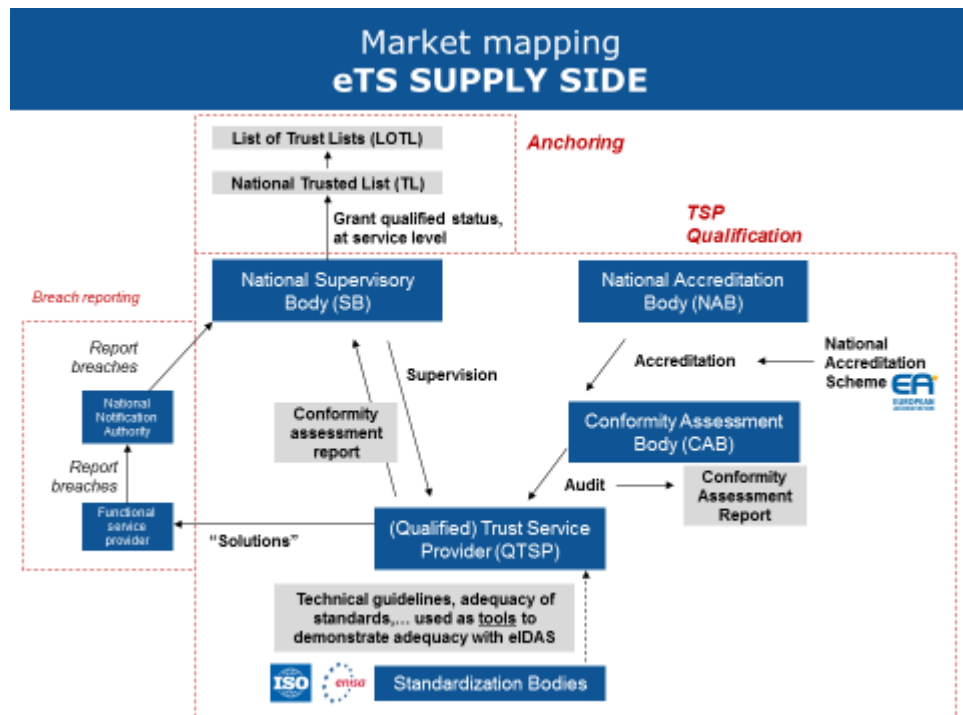
Figure 17 Mapping of TS supply side
(Source: eIDAS FAQ and eIDAS event of 19/12/2016)

TSP qualification process[60]

A National Supervisory Body (NSB) is in charge of the qualification and will bear the ultimate responsibility for granting the 'qualified' status to TSPs.

Each EU MS National Accreditation Body (NAB) is in charge of the accreditation of Conformity Assessment Bodies (CAB) as competent to carry out conformity assessment of a qualified trust service provider and the qualified trust services it provides against the requirements of eIDAS Regulation (EU) 910/2014.

The 'eIDAS' accredited Conformity Assessment Body then assesses the conformity of the Trust Service Provider and the qualified trust service it intends to provide with the applicable requirements of the Regulation.

The trust service provider notifies the national supervisory body its intention to become qualified together with the **conformity assessment report** issued by the conformity assessment body. The conformity assessment report must prove the compliance with the requirements of the Regulation, and not with standards. **Standards** might nevertheless be a tool used by trust service providers to demonstrate their compliance with the requirements of the Regulation.

The supervisory body then verifies whether or not the trust service provider and the qualified trust service it intends to provide meet the requirements of the Regulation in order to be granted the qualified status.

It is worth emphasising that the final decision is in the hands of the supervisory body. The latter may rely upon the information provided in the conformity assessment report but is equally entitled to request further information and may take a duly justified decision that goes against the conformity assessment report.

Anchoring Process

Upon positive verification, the qualified status is granted and the qualified trust service provider, together with the qualified trust service it provides, is added to the **Trusted Lists** that are established, published and maintained by Member States (therefore at the national level, not the EU level).

Note that national Trusted Lists are aggregated in the List of Trusted Lists (TSL), available on the Trusted List Manager provided by the EC[61].

Trust mark

The eIDAS Regulation introduced the possibility for a QTSP to display a trust mark in Article 23. Once the qualified status has been granted, the QTSP can display the corresponding trust mark[62] on its website. This trust

The supply side shows a highly fragmented character...

S FAQ page https://ec.europa.eu/digital-single-market/en/news/questions-answers-trust-eidas and eIDAS event of 19/12/2016 'eIDAS Trust Services: 6 months on after the switch-over ser.tsl.website/tools/
mplementing Regulation (EU) 2015/806 of 22 May 2015 laying down specifications relating to EU trust mark for qualified trust services

mark serves as a visual indication that the QTSP adheres to everything required to rightfully claim the status of 'qualified' TSP under eIDAS.

The analysis of the supply side of the TS market highlights its fragmented character. Strong differences have been identified between market players on the following dimensions: the scope of their activities, the DNA of their organisation, and their market coverage.

Scope of activities

The analysis of market players based on the typology proposed by the IAS2 study indicates two main characteristics:

1. The types of players and their scope of activities differ between TSPs and other supply-side players such as software producers or technology providers.

2. Many supply-side players belong to more than one of these categories.

Indeed, technology providers and hardware producers are mainly international players for which trust services only represent a part of their business. Some examples of such players are Toshiba, JavaCard Technology, Gemalto, Panasonic, Giesecke & Devrient, and Wacom.

As a result of the different legal frameworks that existed across Europe, the TSPs are mainly national players. In recent years, a phase of consolidation has started with the acquisition of national champions by international companies looking to penetrate new geographic areas and/or complete their service portfolio.

Another interesting aspect that emerges from the market analysis is the fact that players tend to belong to several types. For example, there are hardware producers that tend to become solution integrators (e.g. Gemalto). Moreover, if in the past TSPs provided the market only with services built and integrated by other players, it seems that they are increasingly internalising these activities, i.e. integrating vertically.

DNA of players

We have observed an increase in the variety of the types of players that operate in the TS market.

In the past, service providers were mainly either public organisations or private organisations established to deliver eID, electronic signature or e-delivery services related to public authorities. In some cases, e.g. Belgium, the same service provider delivered services related to both eID and electronic signature. In recent years, entrants on the market are offering various types of services. These entrants have very diverse DNA: European postal service operators, European internet service providers, security network operators, non-European digital signature leaders, software vendors or start-ups.

The following figure shows some examples of players per DNA type:

Figure 18 Examples of TS market players per DNA (Source: PwC analysis)

Coverage of Trust Service Providers

... and different market coverage

The European TS market is made up of a large number of players with very different coverage in terms of both services and geography.

Some providers can be characterised as 'niche' players, as they mainly focus on a specific trust service (e.g. Signaturit focusing mainly on electronic signature), while other providers are 'generalists' that offer a broad range of trust services (e.g. Izenpe offering signature cards, electronic signature certificates, e-seal certificates, time stamping, etc.).

Regarding the geographical coverage, some players are 'national', focusing mainly or solely on their home market, some are 'regional' focusing on a wider scale (e.g. in the Scandinavian or Baltic countries), and some are even larger with an international customer base (e.g. Trustweaver).

The exception of the website authentication market

The website authentica-tion market is mature and dominated by global players

The website authentication market is very particular when compared to other trust services. Firstly, it is the only one not directly related to ensuring the individual electronic transaction as such. Rather, it is based on automatic website recognition by popular browsers. Secondly, the market for website authentication is far more mature than the markets for other trust services, and more global as it is dominated by fewer providers.

For instance, in 2014 there were already more than one thousand times more certificates used on the web than in 1996. This growth is illustrated by the following figure.
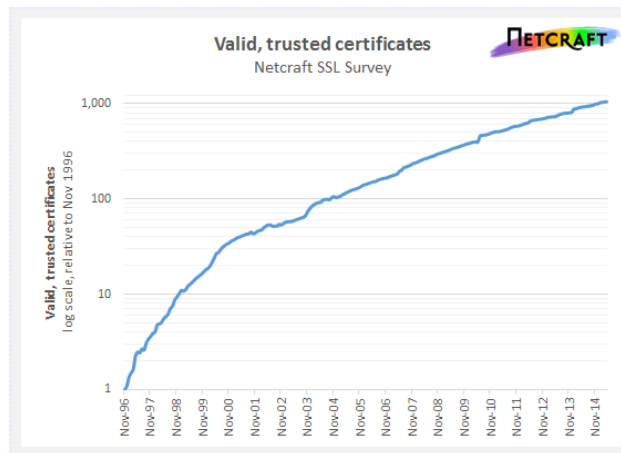
Figure 19 Evolution of the number of website certificates (Source: Netcraft[63])

As illustrated in the next figure, still based on Netcraft figures, the top-3 market players account for more than three quarters of the global website authentication market. The European market is no exception. Recently European providers started to make inroads into this market, illustrated by the recent D-Trust (Germany) qualified certificate for website authentication offering.
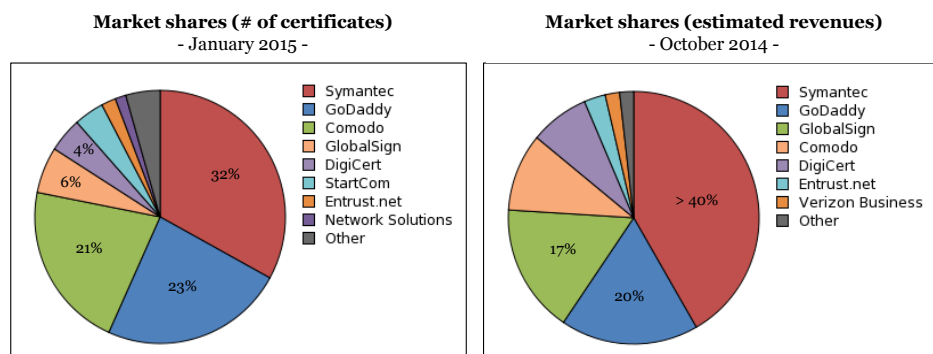
The market is concentrated in the top three CAs, accounting for more than three-quarters of all SSL certificates in use on the internet

In revenues, the market share of Symantec is boosted to over 40% while GlobalSign comes in third place with almost 17% share (vs 6%)

Figure 20 SSL website certificate market share (Source: Netcraft64)

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[63] http://www.netcraft.com/internet-data-mining/ssl-survey/
[64] http://www.netcraft.com/internet-data-mining/ssl-survey/

4.4 Description of TS demand side

4.4.1 Description of the demand side players

The demand side of the TS market is similar to the one of eID and is presented in the figure below.
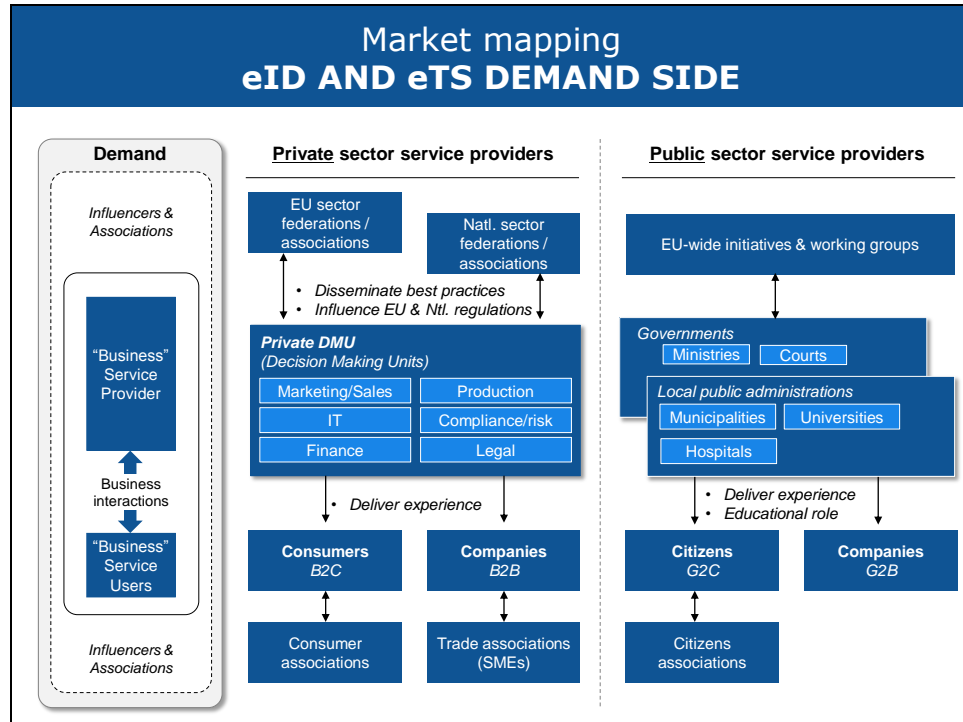
Figure 21 Mapping of TS Demand side actors
(Source: PwC analysis)

Business service providers

As presented in part '3.2.2 Description of eID demand-side' of this document, the demand side of the TS market consists of 'Business Service Providers' and 'Business Service Users', with a clear distinction between private and public sector service providers.

4.4.2 Key use cases and drivers of adoption

From a high-level perspective, the demand for trust services mainly comes from the public sector and the financial services industry as they are invariably the two top sectors mentioned by interviewed TSPs.

This feedback confirms the important role played by the public sector in the TS market due to the large volume of transactions and the broad reach in terms of users such as stated by the IAS2 study: 'Many market players see an important role for public institutions in making businesses and citizens more familiar with TS.' The capacity of the public authorities to boost the TS uptake is also related to their capacity to make the use of the digital way mandatory for certain forms of interaction with public institutions requiring the use of a trust service. For instance, in Belgium, notaries must register all acts electronically with the Ministry of Finance.

However, de-averaging this picture allows us to point out very specific usage patterns depending on the trust services and better understand the related drivers of usage.

Electronic signatures

Electronic signatures show successful use cases in every department

According to a study by Arthur D. Little[65], the main arguments for adopting electronic signatures are the reduction of costs and the increase of speed of the overall business.

The reduction of costs comes from the decreasing of processing costs such as scanning, recording, archiving, printing and mailing and from resource expenses (a shorter process cycle results in lower personnel expenses). In parallel, business processes are made more efficient by increasing the overall agility of enterprises (reduced process cycles, speed of closing business) and through the real-time tracking and coordination of the business.

Electronic signature brings added value for business processes in every department of an organisation, e.g. sales, HR or procurement.

Specific situations and challenges of the different sectors seem to play an important role in the key use cases that offer the largest potential in terms of usage.

The following list gives an overview of key use cases per sector.

- Banks: digital on-boarding and contracting (new account openings, loans, (credit) card applications, etc.).

- Insurance: digital sales and contract management.

- Health care: digital contracting and administrative forms.

- Human resources: digital hiring process (electronic signature of labour contract, non-disclosure agreements, employee/safety policy document).

- Real estate: sales and contracting.

For each particular situation, a trade-off is made between security and usability, resulting in different choices regarding the most relevant service, i.e. qualified versus advanced versus simple electronic signatures.

Electronic seals

E-seals enable increased security for autmatically processed documents

Key use cases for electronic seals can be gleaned from the experience in Estonia, which established a legal framework for electronic seals as from 2009.

The *raison d'être* of electronic seals is to prove that documents or other information sent electronically really originates from the institution that sent them, and that the document has not been altered in the meantime. An electronic seal is particularly relevant for transactions for which the natural person who sent the document or information in the name of the company has no importance.

More concretely, most successful use cases for e-seals in Estonia are the following ones:

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[65] http://www.adlittle.com/downloads/tx_adlreports/ADL_2014_Digital-Signatures.pdf

- ▪ Banks: issuance of payment order confirmations;

- ▪ Real estate: delivery of property valuation reports;

- ▪ Administration: delivery of powers of attorney, for example those sent to the Estonian Motor Vehicle Registration Centre by leasing companies;

- ▪ Education: issuance of certificates by the National Examination and Qualifications Centre.

In Spain, the electronic seal was created to allow the automatic processing and exchange of documents between public administrations.

Based on the above examples, it can be assumed that processes with a large volume of transactions that can be done automatically are eligible for electronic seals subject to the condition that a certain level of security is required. Examples of such processes include the processing of e-invoices or the delivery of digital payslips.

More specifically, the electronic seal is a promising tool to tackle the increasing document forging issues across Europe. In France, for example, the document forging issue represents an annual cost estimated at €20 billion, with the majority relating to the payment of unemployment insurance benefits[66]. The 2D-Doc, a technical solution developed at the French level allowing a secure 2-dimension bar code to be printed on any kind of document (invoice, banking detail, income statement and so on), can resolve any issue related to addressing fraud. While several large producers of proof of address (e.g. telecom/energy providers) have announced that they will integrate this technology in their invoices, only one has done so to date.

The number of non-cash payments in the EU reached 103.2 billion payments in 2014, eligible for the issuance of a digital payment order confirmation.

The payslips use case represents a potential of 3.3 billion payslips per year. According to the Labour Market and Labour Force Survey statistics[67], the number of persons in employment reached 217.8 million in 2014 in the European Union. With on average 15 payslips per year per worker, this results in 3.3 billion payslips per year. No statistics seem to exist regarding the level of digitisation of payslips, but no significant constraint preventing the digitisation of such documents has been identified. An estimated digitisation rate of 10% to 20% seems feasible in the coming years.

Seals have also been included in the European Banking Authority's recent 'Discussion Paper on future Draft Regulatory Technical Standards on strong customer authentication and secure communication under the revised Payment Services Directive (PSD2)'[68]. Furthermore on 27 November 2017 the Commission adopted the Delegated Regulation C(2017) 7782 final on Regulatory Technical Standards (RTS) on strong customer authentication and common and secure communication under PSD2 on the basis of the

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[66] http://www.reso-club.com/index.php

[67] http://ec.europa.eu/eurostat/statistics-explained/index.php/Labour_market_and_Labour_force_survey_(LFS)_statistics

[68] https://www.eba.europa.eu/documents/10180/1303936/EBA-DP-2015-03+%28RTS+on+SCA+and+CSC+under+PSD2%29.pdf

draft submitted by the European Banking Authority (EBA) which requires the use of qualified electronic seals or qualified website authentication certificates for the communication between payment providers.

In the case of e-invoices, some statistics exist regarding the current share of e-invoices in the total number of invoices per country.

Enterprises sending e-invoices
- % ; 2015 -
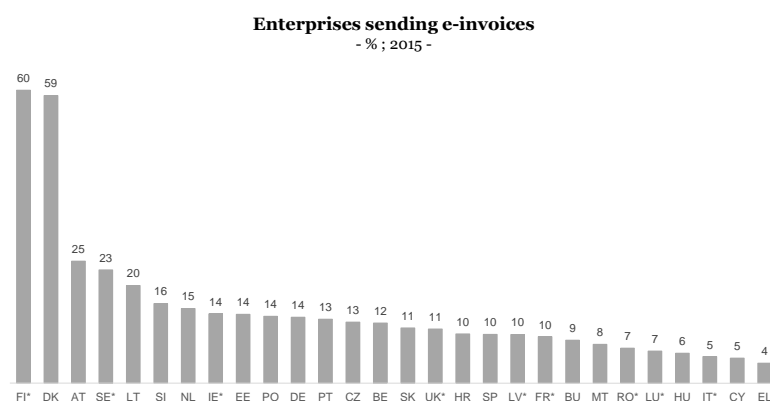
Source: Digital agenda scoreboard
* Figures 2014 for Ireland, Italy, Luxembourg, Latvia, Romania, Sweden, UK ; 2013 for Finland and France

Figure 22 Part of enterprises sending e-invoices (Source: Digital agenda scoreboard[69])

However, this potential for electronic seals seems to be dependent on cultural differences. For example, in Estonia, the usage of electronic seals on e-invoices has not emerged as a successful use case since nobody needs a 'signature' on an invoice.

Electronic registered delivery service

From a usage in systems dedicated to the public sector...

Existing electronic registered services have mainly been developed as a means to exchange electronic documents with public administrations (e.g. PEC in Italy and DE-Mail in Germany), limiting the potential to a few use cases.

The real potential for electronic registered delivery services derives mainly from its adoption as the digital form of registered mail.

... to the digital alternative to traditional registered mail

The potential depends on the national habits as regards the use of registered mail. Some statistics on registered mail in some European countries reveal the opportunity represented by this service in Europe. The market for registered mail covering 15 Member States representing 44% of the EU population amounts to 1.16 billion registered deliveries per year. Extended to the whole EU population, it represents a total market of 2.6 billion registered deliveries per year.

It is interesting to note that the usage of the registered mail varies highly among Member States, from an average of 1 registered delivery per

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[69] https://ec.europa.eu/digital-single-market/en/digital-scoreboard

capita in Member States such as Estonia, Cyprus, Greece and Malta and

Volume of registered deliveries per year
- mio ; 2010/2011 -

	BU	CY	EE	FR	EL	ES	HU	LV	LT	MT	PL	PT	RO	SK	SI
	12	1	2	254	10	201	117	4	7	0	415	56	33	36	11
# of registered delivery per capita	2	1	1	4	1	4	12	2	2	1	11	5	2	7	5
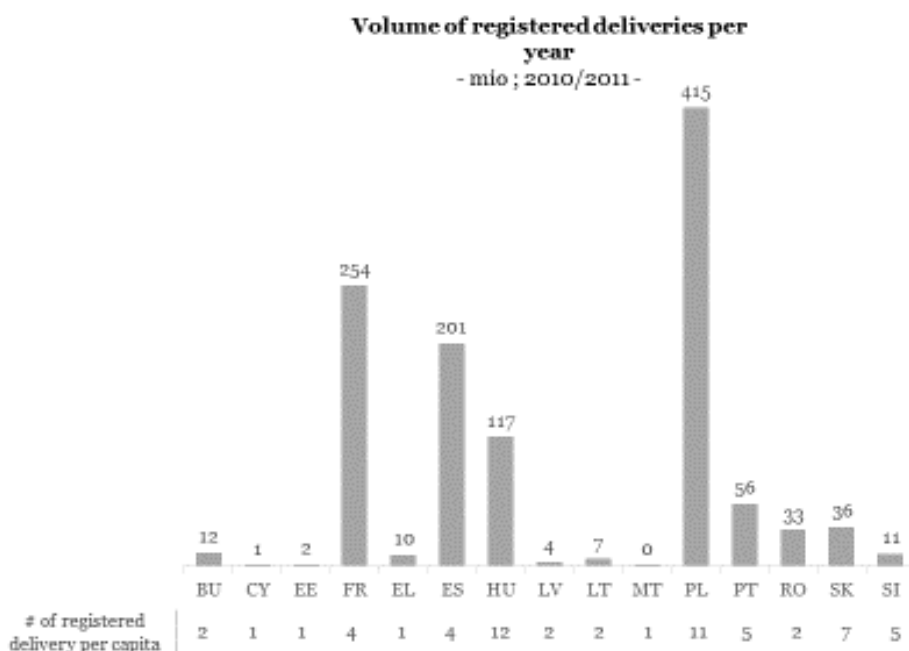
July 2016

more than 10 per capita in Hungary and Poland.

Figure 23 Volume of registered deliveries per year (Source: ERGP report with data on indicators on the postal market 2013[70])

If about 10% of this volume could be digitalised, the market for electronic registered mail would reach 260 million e-registered deliveries per year.

Stakeholders note that the eRegistered Deliveries market is strongly influenced by the development of "eBoxes". eBoxes are central, secured document and communication repositories between Governments and citizens.[71]

Electronic time stamp

The usage of electronic time stamping is often related to the usage of other trust services such as the electronic signature or electronic seal.

Stakeholders reported a use case from Belgium, related to the services provided under the eHealth Platform where an intensive usage of time stamps is made.

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[70] http://ec.europa.eu/internal_market/ergp/docs/documentation/2014/ergp-13-33-rev.1-ergp-report-on-market-indicators_en.pdf

[71] Belgian ebox: https://www.belgium.be/fr/services_en_ligne/app_ebox_social_security, Danish e-boks: https://www.e-boks.com/danmark/en/ and Indian POCSO ebox for child protection: http://ncpcr.gov.in/

- Prescriptions in hospital: doctors deliver electronic prescriptions and these prescriptions are timestamped to avoid ex-post prescriptions.

- Ambulant prescriptions: in ambulant care electronic prescriptions are also possible. These prescriptions are also time stamped. Starting January 1 2018, electronic prescriptions will be mandatory so the volume will rise.

- "Chapter IV" is an administrative procedure in which for a particular treatment to be reimbursed, an approval must be asked on beforehand. The procedure is (partly) electronic and the electronic requests are timestamped.

Overall these represent about 20 million timestamps each month for the Belgian market only.

Website authentication

Regarding website authentication, a significant part of the usage of this service cannot be related to specific use cases since it is used by any website owners to secure the access of their website for their users. Nevertheless, TLS/SSL certificates can also play a key role for more specific use cases, such as for securing the communication channel between Payment Service Providers under Regulatory Technical Standards of the Payment Services Directive 2[72].

These differences in terms of use cases and related potential will be key in order to focus and size the efforts in relation to this potential.

4.4.3 Barriers to adoption

Some barriers continue to prevent broader adoption

Despite a growing interest in the benefits offered by trust services, several barriers continue to prevent wider adoption of trust services by business service providers.

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[72] PSD2: Directive EU 2015/2366 of the EP and Council of 25 November 2015 on payment services in the internal market – refer to http://ec.europa.eu/finance/payments/framework/index_en.htm

The combination of insights gathered through the desk research and the interviews of stakeholders have highlighted the following main barriers:

- complexity and lack of user-friendliness of most existing solutions, relying on physical means and tokens;

- lack of awareness, understanding and certainty of the legal value offered by these services;

- existence of national laws or sectorial Regulations preventing the use of trust services;

- complexity and cost related to the implementation of these services;

- lack of a European web browser.

Complexity and lack of user-friendliness of certificate-based solutions

The lack of convenience remains a major blocking point

Several interviewees mentioned the complexity and low user-friendliness of certificate-based solutions as a recurring issue preventing the broader adoption of such solutions in the market.

The mandatory use of a material support such as a smartcard or a USB token for qualified solutions makes the solution complex to implement and manage for the business service providers. Additionally, the lack of convenience of these solutions for the business service users results in limited adoption among business service users and reduces the potential for business service providers.

As an illustration, in Belgium, some insurance companies wanted to implement a qualified digital signature for online contracting but, as they do not deliver any hardware, they had to rely on the national eID card, which has a relatively low level of adoption (high availability of equipment but low usage stemming from low adoption, promotion and education).

On this point, several stakeholders expect to see a significant positive evolution in the market since the eIDAS Regulation recognises and favours remote (qualified) trust services. The development of remote trust services should increase adoption among business service users, as certificates will no longer have to be locally stored (on a physical device, for example), as well as reduce the cost for business service providers.

User-friendliness is critical, as the positive return for the company/organisation implementing such a solution depends on the adoption of the dematerialised process by the business process and the business service users. Not all companies have the power to force business partners to adopt specific ways of interacting. Yet, in France, an important service provider has forced all its business partners to secure their communications with certificates, generating additional business for TSPs.

Lack of awareness and understanding about the legal value of these solutions

Uncertainty about the legal value…

Common feedback from a high majority of interviews concerns the negative impact on their business from the lack of awareness and understanding about the legal value of these solutions. The uncertainty

about the legal value of these solutions often offsets the initial enthusiasm generated by the dematerialisation project.

...can offset the business opportunity

Several interviewees pointed out the lack of understanding of the dematerialisation process offering legal value among public and private sectors. Specifically, legal teams in companies are not familiar with these concepts (or with eIDAS) and are very hesitant to support the adoption of these services.

It was brought up that in most companies, Business teams are always very enthusiastic, IT teams are willing to perform the necessary studies, but Legal teams are often blocking or slowing down initiatives.

Existence of laws at the sectorial or national level preventing the use of trust services

This legal uncertainty is partly created because of laws that do not recognise or allow trust services

In the course of our interviews, we discovered that some laws (at the national or European level) or procedures in the public sector do not allow the use of trust services.

- In Belgium, certificates include the national register number but at the same time the Privacy Commission prevents the use of the national register number in any transaction.

- Use of trust services and the eIDAS Regulation are not yet included in other regulations such as tax regulations.

- In Greece, users of e-Justice are obliged to use the e-registered delivery service in some legal procedures while it is prohibited to communicate with the court.

Complexity and cost related to the implementation of these services

Successful deployment is a tough task

The implementation of trust services brings significant challenges that need to be overcome.

A report from Arthur D. Little based on the interview of 50 market experts in Europe[73] pointed out as main issues related to implementation of digital signatures the adaptation of existing applications or systems, the difficulty to embark clients and business partners in the usage of such services, and the required investment/implementation cost.

Indeed, a majority of companies have systems and processes designed around traditional methods of contractual communication. Any change could become very labour-intensive and costly. Companies interested in adopting such technologies are dependent on trusted, easy-to-implement and convenient solutions that do not increase the complexity of workflows.

The second main issue reported in this survey relates to the acceptance of business partners and customers. Ease of usage for both will determine their level of acceptance.

The third issue comes from an existing impression among business service providers that implementing digital signature solutions will require a high investment. This issue is often resolved by a clear business case,

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[73] http://www.adlittle.com/downloads/tx_adlreports/ADL_2014_Digital-Signatures.pdf

depending notably on the solutions' pricing model and on the frequency of usage.

Strangely enough, this issue has not been mentioned as such by TS market players during the interviews realised during the course of this analysis. One reason could be that this barrier comes earlier in the decision-making process of a business service provider, before the discussions with a potential TSP are actually started.

Lack of European web-browser

Website certificate services are highly dependent on the willingness of web-browsers to have a default recognition of the Trusted List. As of today, no web-browsers recognise the Trusted List by default, preventing the service providers (companies, banks, etc.) to show the eIDAS Trustmark on their website.

Absence of a universal validation means for these certificates

Some stakeholders noted that a key barrier to the adoption of eSignatures for digital communications, e.g. emails, is the fact that some Trust Service Providers' Root Certification Authority Certificates (as trust anchors) are not widely distributed. The absence of a universal validation means for these certificates, by mail clients, provides a technical barrier to authenticating digital signatures.

This means that if a recipient needs to validate a digitally signed email the sender has to provide a URL link in order to facilitate the download of the relevant certificate from the respective TSP's Certificate store/directory by the recipient. These cumbersome tasks are technical barriers to many users who are unfamiliar with certificate management.

Nevertheless, vendors such as Adobe enabled the validation of electronic signatures for many years in their mass-market solutions such as Adobe Reader. However, the receiver of the signed document still has to configure his Adobe Reader software (and potentially his local firewall) to ensure the validation is performed correctly.

It can be observed that the Commission makes the CEF building blocks available to anybody. Within the CEF eSignature building block the Digital Signature Services (DSS74) component is provided, an extensive e-signature tool. DSS (Digital Signature Services) is an open-source software library for electronic signature creation and validation. DSS supports the creation and verification of interoperable and secure electronic signatures in line with European legislation. In particular, DSS aims to follow the eIDAS Regulation and related standards closely.

DSS can be re-used in an IT solution for electronic signatures to ensure that signatures are created and verified in line with European legislation and standards. DSS allows re-use in a variety of different ways: in an applet, in a stand-alone application or in a server application. DSS can also be used as a reference implementation for IT solutions which do not directly re-use it.

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[74] https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/DSS

4.4.4 Generic Security & Legal Benefits of Trust Services to Stakeholders

The main benefit of electronic signatures is the combination of their convenience of being electronic, protecting the integrity of contents and of origin, and being legally recognised. So contracts or communications signed electronically can be used in a secure and convenient way. Furthermore, if the signature is a qualified electronic signature there is presumption of legal compliance.

For the recipient this means he can verify the authenticity of the origin of the email, countering spoofing attacks, and he can also rely on the integrity of the email's content and enclosures.

The main benefit to a user visiting a website that presents a QWAC[75] certificate supplied by a qualified Trust Service Provider, accredited/supervised under an EU regulatory framework, is that such a certificate provides a high degree of assurance that the website is genuine.

4.5 Main market dynamics observed in TS market

Desk research and realised interviews revealed the following key dynamics in the market:

1. a market with high growth prospects but with uncertainties regarding the direction it will take;

2. a very dynamic supply side, resulting in increased competitive pressure.

1) A market with high growth prospects but with uncertainties regarding the direction it will take

A growing market benefiting from the digitisation trend

In the context of the IAS2 study, a sample of 34 Trust Service Providers (TSPs) showed an average compound annual growth rate (CAGR) of 6% between 2008 and 2012.

This figure was judged as rather conservative by the IAS2 study team compared to other indicators regarding (past and future) TS market development found through their desk research. Notably, in France, the research firm Xerfi-Precepta was expecting:

- a yearly increase of 12.5% between 2013 and 2017 of the global digitalisation market;

- a yearly increase by at least 15% for the eArchiving market, including the market of securing electronic exchanges.

The future remains uncertain in its shape...

This trend was confirmed by Forrester in 2015[76]: 'We expect Europe-based providers like Kofax (Softpro) and North America-based providers like Adobe, Barracuda Networks, DocuSign, and Silanis to show strong growth in Europe (and the wider EMEA region) over the next two years.'

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[75] Qualified Website Authentication Certificate
[76] http://event.lvl3.on24.com/event/10/01/43/8/rt/1/documents/resourceList1435023531468/brief__four_predictions_f.pdf

Moreover, according to a forecast realised by IDC[77] in 2016, the Western European trust services market should grow by 5.1% per year between 2014 and 2018, surpassing the growth rate of the overall IT services market (2.8% per year) over the same period.

... as until now it has strongly depended on national dynamics

The Regulation is expected to positively impact the market dynamics. According to IDC, the eIDAS Regulation is seen as 'a spur that will intensify the level of growth for TS market'. It is, however, still difficult to anticipate precisely how, firstly because the role that the qualification will play in the market is unsure and, secondly because the new legal framework is European whereas the market is still mainly driven by local dynamics.

Indeed, national initiatives, laws as well as cultures have laid the foundations of the trust service market in each Member State:

- Countries with a broadly adopted eID solution with e-signature modules tend to show a 'monopoly' of this solution (e.g. Estonia).

- The types of solutions that are mainly adopted depend on the culture of the Member State (e.g. strong certificate-based culture in Germany versus openness for non-certificate-based solutions in Spain).

- Countries with strong US-based companies show more appetite for less secured solutions (e.g. Ireland and the Netherlands).

- The stronger adoption of some trust services in some Member States, and even the existence of some TSPs, is often due to the obligation of using them in specific contexts (often in interaction with public authorities).

  o The TS market leader in Slovenia has based its development of the mandatory use of e-registered delivery service in judicial procedures.

  o Mandatory use of digital certificates for e-tendering and e-prescription is also a key driver of growth for the Greek market leader.

2) A very dynamic supply side resulting in an increase of the competitive pressure

Competitive pressure is increasing in the market

The observation of the supply side of the TS market confirms the very dynamic character of this market while identifying several trends that are reshaping the competition landscape:

1. broadening of the product portfolio of TSPs;

2. entry of international companies into the European market;

3. development of end-to-end solutions dedicated to specific sectors or use cases; and

4. reinforcement of ambitions to operate in several Member States.

1. Broadening of the product portfolio of Trust Service Providers

TSPs tend to broaden their product portfolio

Driven by the demand from their clients to limit the number of suppliers for such services, Trust Service Providers (TSPs) tend to progressively

cuk.com/eidas-will-drive-the-convenience-of-and-confidence-in-digital-transactions-in-the-eu/

broaden their product portfolio. Interviewed supply-side representatives indeed largely recognised that being able to offer a large range of products and services allow them to meet the demand from clients (e.g. a single partner for all trust services solutions).

This trend is particularly visible among Certification Authorities that are developing their offering to become full TSPs. This strategic move can be realised through the development of new solutions (e.g. Izenpe, Sertifitseerimiskeskus) or via partnerships with other providers (e.g. Dhimyotis).

This situation makes some TSPs fear that these players will stop selling certificates to 'competitors'. The reasons for this are that TSPs issuing certificates can either prevent business service users from using these certificates in a competitive signature solution or charge the competitors much more for the certificates and so create a market barrier.

2. Entry of international companies in the European market

There is a growing interest from international companies

US-based companies have started to enter the market, but their market shares remain limited, sometimes opposed by national preferences. An interviewed TS player has in fact seen a significant number of new clients following the acquisition of a national competitor by a US-based company.

The pressure from global players should go up in the next years as many acquisitions have been realised in recent years, especially in the US, with the clear objective to seize opportunities offered by regions outside of North America.

Strong ambition among US-based players to seize the opportunities offered by the EU market

Following the acquisition of Silanis Technology by Vasco, the CEO of Silanis, Tommy Petrogiannis, declared that 'E-signatures have largely been a North American phenomenon until now and, with VASCO's vast resources, global footprint and established partner channels, we will be able to lead the international race against DocuSign and quickly bring e-signatures to enterprises in regions outside of North America' [78].

The ambition to seize the opportunities offered by the EU market is, of course, more obvious when the acquired company is a European company such as in the case of the acquisition of the French TSP OpenTrust by DocuSign. In June 2016, DocuSign announced the launch of an ambitious 'Invest for Europe' initiative[79] aimed at 'leveraging the Regulation change that is around the corner' and thus be 'ready to further empower Europe's digital transformation'. This initiative is described by Keith Krach, Chairman and CEO of DocuSign as 'the boldest initiative in our company's history in terms of size, scope and magnitude of investment. It encompassed two years of technology breakthroughs, extensive platform development, three global acquisitions, and data centres in Amsterdam, Frankfurt and Paris.'

The following table presents the major acquisitions on the electronic signature market in the recent years.

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[78] http://www.businesswire.com/news/home/20151013006672/en/Silanis-Technology%E2%80%99s-Acquisition-VASCO-Fuel-Growth-Global
[79] https://www.docusign.com/press-releases/docusign-unveils-invest-for-europe-initiative-in-advance-of-new-eu-Regulation

Date	Acquirer	Target
2010	Symantec (US, security products)	Verisign - Authentication BU (US, authentication)
2011	Adobe (US, digital document solutions)	EchoSign (US, electronic signature)
2014	Kofax (US, smart process applications)	Softpro (DE, electronic signature)
2014	Citrix (US, File sync and sharing)	RightSignature (US, electronic signature)
2014	DocuSign (US, electronic signature)	Comprova (BRA, electronic signature)
2015	DocuSign (US, electronic signature)	OpenTrust (FR, trust services)
2015	DocuSign (US, electronic signature)	ARX (ISR, electronic signature)
2015	VASCO Data Security Int. (US, security products)	Silanis Technology (CA, electronic signature)

3. Development of end-to-end solutions dedicated to specific sectors or use cases

Sector-/use case-driven approach drives the go-to-market of several TSPs

Another observed market trend relates to TSPs (which may or may not be issuing certificates), which tend to position themselves as end-to-end solution providers for specific sectors or specific use cases.

It is a way for these players to create a competitive advantage and differentiate themselves from competitors while meeting the real demand from business service providers, i.e. having a specific process dematerialised.

These players do not only sell a trust service; they also sell a solution that includes a trust service. Many examples can be found in the market, including:

- Trustweaver: cloud-based compliance clearing house using e-seals and timestamping.

- UnifiedPost: document processing and delivery platform using e-seals and timestamping.

- Connective: end-to-end solutions dedicated mainly to the financial services industry using electronic signatures and timestamping.

- Deutsche Post: multi-channel mail platform using e-registered delivery service.

This trend confirms that trust services are only a series of tools allowing an online transaction to be conducted with a high level of security and legal validity to be ensured. For many interviewed TS market players, the majority of the requests coming from their clients relate to broader dematerialisation projects. The usage of trust services is thus strongly

linked to the dematerialisation ambitions in the public and private sectors.

4. Reinforcement of ambitions to operate in several Member States

Automatic recognition of qualified trust services across Europe allows TSPs to expand more easily beyond the borders of their home country.

eIDAS spurs the cross-border ambitions of many TSPs

Realised interviews have confirmed the positive impact of the eIDAS Regulation at this point. Indeed, all interviewed TSPs have stated that their ambition is to lever the eIDAS Regulation, and to expand/foster their presence in other European countries. Most interviewees confirmed their intention to either migrate towards QTSP services, or to continue offering those services. Moreover, for players with an already international customer base, the eIDAS Regulation allows them to be able to consider the European market as a unique market, at least in terms of a regulatory framework.

However, this ambition is very often limited to neighbouring countries in which they already have a presence. Moreover, the priority expressed by TSPs remains to organically grow in their home country thanks to an expected growing demand (notably thanks to the new regulatory framework) and the expansion of their product portfolio.

4.6 Perspectives on eIDAS and related initiatives

As stated before, many arguments and concrete facts tend to confirm that the eIDAS Regulation should accelerate market growth:

The eIDAS Regulation is expected to accelerate market growth

- The Regulation will improve the case for suppliers since the heterogeneity of the legal frameworks at the European level was pointed to as one of the main barriers to the development of the TS market by the stakeholders having participated in the IAS2 study.

- International players have started to take action in order to seize the opportunities offered by a homogeneous European market (e.g. many acquisitions of European players, such as the acquisition of OpenTrust by DocuSign).

- Several examples at the Member States level have proven that the market is positively reacting to a clear legal framework for such services (e.g. e-registered delivery service in Italy or electronic seal in Estonia).

All interviewed supply side representatives confirmed the expectation to see the eIDAS Regulation contribute to an accelerated growth in the market.

In their views, the eIDAS contribution will mainly come from a clarification of the legal value of these services within the European Union, which will help persuade more organisations and companies to adopt these services. The removal of the legal barriers that prevented them from easily offering their services in other Member States is also seen as a major accomplishment of the Regulation.

However, these interviews have also revealed considerations regarding the implementation of the eIDAS Regulation. Some of these can be seen

as key conditions to be met or current hurdles to be removed in order to ensure that the market will benefit from the full potential of eIDAS.

4.6.1 Key considerations regarding eIDAS Regulation

Feedback and thoughts from interviewed stakeholders have been consolidated around four key considerations:

1. Becoming qualified is a must-have for almost every player.

2. Understanding of the Regulation and its implications remains insufficient.

3. The main concern is about ensuring equal treatment between players.

4. Specific issues raise the concerns of stakeholders.

Becoming qualified is a must-have for almost every player

Many players will go for the qualification

The feedback gathered through the interviews tends to demonstrate that the market players reserve a warm welcome for the qualification provided for by the eIDAS Regulation. It is illustrative to consider that SWIFT, the Society for Worldwide Interbank Financial Telecommunication, opted for inclusion in the Belgian Trusted List. There was no regulatory requirement immediately applicable, but given the company's attention to top-quality security, it decided to become registered in the TL.

Many reasons have been mentioned depending on the type and situation of interviewed players.

Being qualified is the raison d'être of many players

Firstly, offering the highest levels of security and trust is in the DNA of many Trust Service Providers (TSPs), making the decision to become qualified self-evident. This is because offering products compliant with the highest security standards is the *raison d'être* for many TSPs. All interviewed representatives from companies currently present on the European Trusted List have confirmed the importance of the qualification for their company.

The qualified label will set a new reference in the market

Secondly, despite the fact that the qualification does not currently appear as a must from a demand perspective (no pressure is felt by TSPs from their clients to offer qualified services), several other TSPs are anticipating the importance of the qualified label in the market. In their view, the qualified label could set a new reference in the market. In order to avoid any damage to their business, some TSPs are thinking about becoming qualified. In this context, the qualification will serve branding purposes as these players let us understand that the majority of the trust services they will sell in the future will be non-qualified ones.

Qualified solutions have a strong advantage, i.e. certain legal value

The third reason is the fact that the qualified solutions are the only solutions to offer full certainty regarding legal validity. Indeed, several players have mentioned the legal validity of the products as the main key driver of adoption among the business service providers. Moreover, a player that currently focuses on no-certificate-based solutions fears that the fact that the legal validity of non-qualified solutions will remain open to the interpretation of judges will negatively impact the relative attractiveness of its solutions.

However, this value differs between services

Nevertheless, the value of the qualification seems to slightly differ between services. Doubts have mostly been expressed regarding the

added value of the qualification for the website authentication service. An interviewed market player indeed pointed out that the market has reached a high level of maturity without the qualification label and therefore did not see any need for such a label in this market. Moreover, uncertainty seems to exist among TSPs regarding the integration of the European label in browsers. Several TSPs mentioned that there will be no value in becoming qualified if the browsers will not recognise this label and make it visible to their users.

Understanding of the Regulation and its implications remains insufficient

A deep understanding of the Regulation and the related requirements seems limited to TSPs that either have been involved with the European Commission or have participated in the development of implementation standards or that have invested a lot of time in investigating the Regulation.

Only a small proportion of TSPs have a sufficient level of understanding of eIDAS and are prepared accordingly

The vast majority of TSPs lack information and understanding since the information is difficult to find and all Member States were not really eager or equipped to adopt implementation laws at their level and publish relevant information intended for the market players. In several Member States (among which Belgium, Slovenia and Spain), the process to become qualified was apparently still unclear less than one month before the date on which eIDAS entered into force.

This situation is explained firstly by the lack of resources supervisory bodies have to dedicate time to this topic and to collaborate with TSPs to prepare for it. In some Member States, such as Malta, there is no structure in place to address this topic.

To illustrate this lack of understanding of the Regulation and its implications, it was unclear for an interviewed TSP that the qualification per service had to be done separately.

The main concern is about ensuring equal treatment between players

Some TSPs fear that the rules will not be the same for everyone

Several interviewees have the impression that the current legal framework does not guarantee that the rules will be the same for everybody, creating the risk of seeing an unfair market.

Indeed, the fact that each Member State is responsible for setting and running the implementation procedures compliant with the eIDAS Regulation creates a fear among TSPs that some Member States could be more indulgent than others as regards the requirements. Two stakeholders mentioned in particular that until now the supervisory bodies of different Member States have included different parameters in their assessment processes for providers to get onto the national Trusted List. If, despite the eIDAS Regulation, such differences should persist, it will result in a lower cost to become qualified and operate qualified services for TSPs from more indulgent Member States versus TSPs facing strict implementation rules. Today, no complete eIDAS CAB accreditation scheme has been defined at the EU level. The European co-operation for Accreditation (EA) has promoted an optional framework at the EU level for such accreditations based on ISO/IEC 17065 and TSI EN 319 403. But that framework leaves open the specification of the conformity assessment scheme (i.e. the exact set of controls and criteria) to be used

by the CAB to conduct the assessment of a specific type of QTSP providing a specific type of QTS. Such missing part can either be specified by the CAB itself, the NAB or by a third party including the NSB. No standard is currently addressing this missing piece in the accreditation and conformity assessment puzzle. For information, the French NSB has specified a national conformity assessment scheme against which assessed conformant QTSP/QTS will benefit from presumption of compliance with the eIDAS requirements (in France).

All CABs currently reported to the EC and accredited in line with Art.3(18) of the eIDAS Regulation have specified their own scheme. This may be the source of disparities in the treatment of TSPs even before the various treatments that may be reserved to them by NSBs once they are notified with the wish from a TSP to become qualified together with the corresponding conformity assessment report. This could potentially be mitigated by a European conformity assessment scheme.

This fear is also fed by the fact that some Member States are not equally equipped to implement the Regulation.

More specifically, several players have raised the risk of seeing state-owned TSPs getting a more favourable treatment. They actually wonder whether state-owned TSPs will get impartial treatment from the respective state-owned supervisory bodies.

Specific issues raise the concerns of stakeholders

With eIDAS come other issues

As for any significant change in a legal framework, the implementation of the eIDAS Regulation is creating specific issues due to interferences with existing laws at the national level or requirements introduced by the Regulation which will impact the business model of some players.

The eIDAS Regulation creates legal uncertainty for trust services that were recognised by national laws. An interviewed player reported the specific case of electronic seals in Spain. Electronic seals were recognised for years in Spain with a legal validity ensured by a national law. However, these electronic seals are no longer valid under the eIDAS Regulation because they use certificates of a natural person while the eIDAS Regulation only recognises electronic seals with certificates of a legal person. This means that all electronic seals delivered under the Spanish law are no longer valid until their providers make their services qualified under eIDAS.

4.6.2 Proposed initiatives

The European Commission is expected to play a role of facilitator

TSPs expect to see the European Commission play a 'facilitator' role in the trust services market and contribute to the suppression of any barriers that could prevent them from developing their activities.

Several players also mentioned that they expect that the European Commission will not go beyond this role, letting market rules apply to avoid 'over-regulating' the market.

This role can be translated into four main objectives:

1. Set rules for a fair market.

2. Facilitate recognition of eIDAS by other legislations.

3. Support Trust Service Providers in the transition.

4. Increase general awareness and understanding on the demand side.

For each objective, a specific target population and concrete actions have been identified, which are summarised in the following figure.

Set rules for a fair market

Ensure that the rules will be the same for everyone

Following their fears of seeing unequal treatment between TSPs, they expect that the European Commission will ensure that the rules will be the same for everyone.

More concretely, this consists mainly in taking all concrete measures towards Member States in order to ensure that they will properly implement eIDAS. Requirements, procedures and timing regarding the qualification process should be uniform across the European Union.

Two open questions raised by some TS market players require an answer in order to avoid any uncertainty or distortion in the market:

1. the existence of state-owned TSPs, which raise the risk that they will get favourable treatment from public supervisory bodies;

2. the differences in experience and resources among Member States, which imply the risk of seeing the Regulation being implemented with different degrees of robustness.

Furthermore, the possibility of creating a European conformity assessment scheme could be considered.

Concrete actions could therefore be directed towards Member States, while clear communication with TSPs needs to be undertaken to allay their fears.

Facilitate recognition of eIDAS by other legislations

Remove legal hurdles coming from national or sectorial laws

The majority of interviewed TSPs expressed their expectations that they would see the European Commission contributing to the removal of legal barriers that today prevent the use of digitalisation and thus trust services in particular cases.

Based on the identification of most impacting legal barriers for the TS adoption, a concrete action plan needs to be set up in order to make the trust services recognised and their use possible.

These efforts should simultaneously be led at the EU level with a specific sectorial legal framework (e.g. for the financial services industry) and at the Member State level (e.g. an e-justice legal framework).

Support Trust Service Providers in the transition and further uptake

To see the demand side benefits from the eIDAS Regulation, it is first necessary that the supply side, and especially the TSPs, have integrated into their strategy the types of trust services they will supply to the market. The interviews of TS stakeholders have allowed us to understand that only a minority of TSPs have really understood the Regulation and are preparing for it accordingly.

It is thus crucial that the European Commission increase its support towards the TSPs, first of all by ensuring a better dissemination of the

information among TSPs, notably regarding the Regulation and its legal implications.

Secondly, more specifically in relation to this phase of transition, the European Commission should find ways to make the process more transparent for TSPs. Since the national bodies have been pointed to by several TSPs in several Member States as the bottleneck in their preparation for the eIDAS implementation, the European Commission should develop innovative ways to on-board Member States by making joint information and communication efforts towards the market.

Increase general awareness and understanding on the demand side

Awareness among the demand side has always been relatively limited. Many stakeholders have expressed their hopes of seeing the eIDAS Regulation make it possible to change this situation and seeing the European Commission make the market benefit from its position, visibility and image to promote these services.

More concretely, this can be achieved through joint efforts with TSPs to win business service providers over while the focus should be oriented towards the Legal teams within public and private organisations.

5   STAKEHOLDERS CONSULTATION SURVEY

The following parts provide details on maturity, adoption status and barriers, eIDAS implementation as well as guidance on relevant solutions and actions. These insights will be used to build guidelines for the Marketing Plan.

The details of the survey methodology and sample description are available in part 1.4 'Methodology for data collection'.

5.1   Maturity on eID and TS

Respondents were first asked to state their maturity on a number of products from 'high' to 'none'.

The first striking insight is that maturity varies strongly per service. The most mature one is **eSignature**, with 69% of respondents stating a 'high' maturity. **eID** and the **eCertificates** are very mature as well, with 62% and 59%, respectively.

The services that are 'derived' from the eCertificates, i.e. eStamp, eSeal and eRegistered Delivery, are still in their early stage of adoption with 44%, 31% and 22%, respectively.

The high level of maturity of eSignature can be used as a referential or 'target maturity' for other technologies.

The figure below highlights the stated maturity for all 107 respondents of the sample.
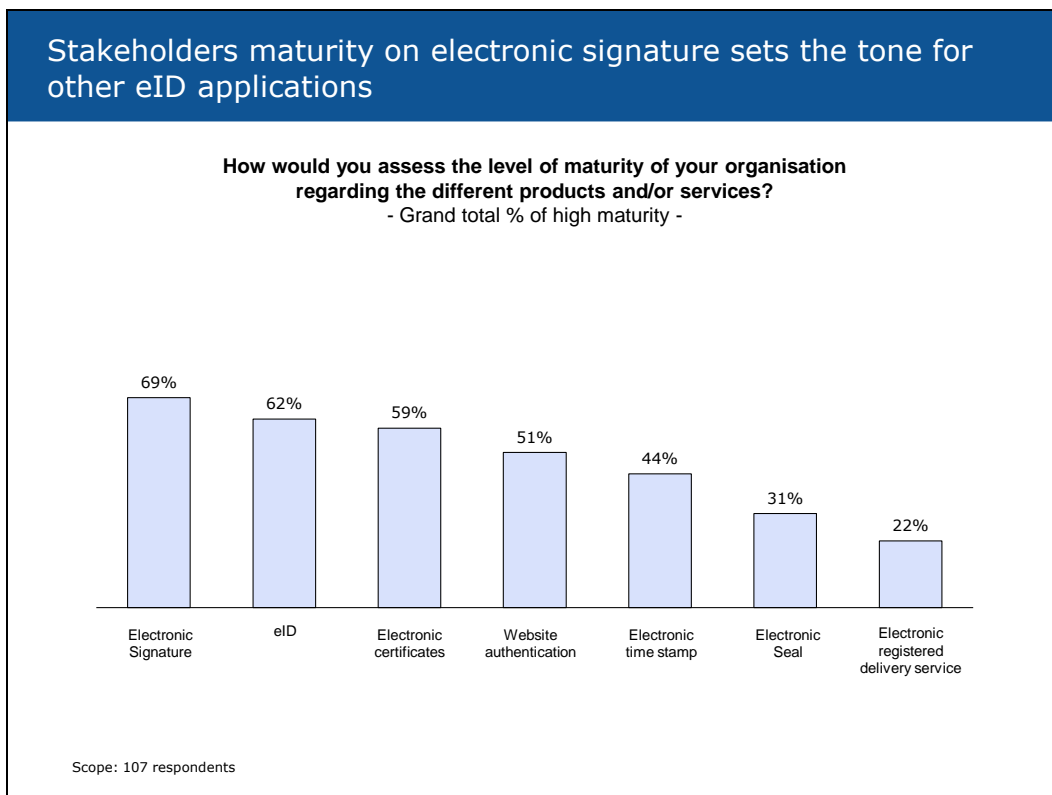
Figure 24 Stated maturity per service – All respondents
(Source: PwC & EC Survey)

It appears that eID and TS are 'supply-driven' markets, since the maturity of suppliers is much higher than among business service providers.

Marketing Plan implication: *For all services, the marketing plan could pay specific attention to reaching the business service providers as they have the lowest maturity.*

This observation is valid overall, but also for each type of service. The largest supplier-maturity gaps appear to be on the eSignature and the eSeal services.

eRegistered delivery services show a low maturity, both on the supplier and business service providers side, requiring specific attention.

The figure below describes the maturity for each type of service, with a focus on suppliers and business service users.
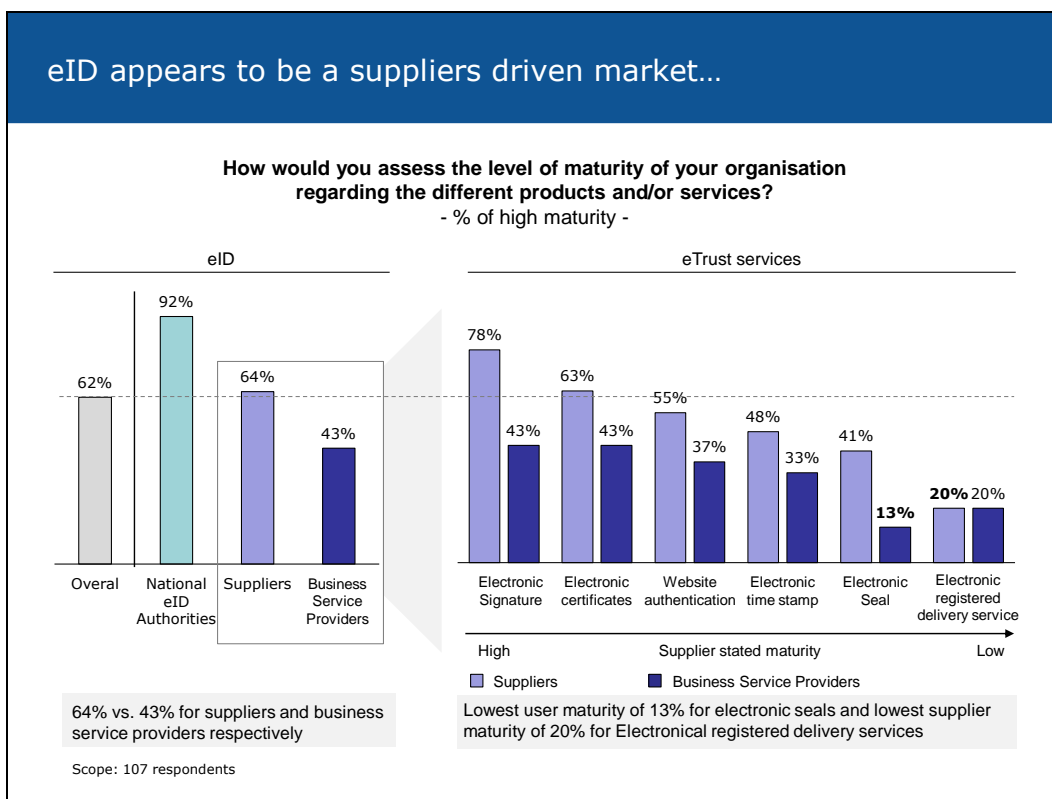
Figure 25 Stated maturity per service – Suppliers vs. business service providers (Source: PwC & EC Survey)

The National eID authorities are more mature on the same services, i.e. eID, eSignature and eCertificates. This is probably because these services were the focus of their efforts over the last years.

As explained in the next sections, both suppliers and Business Service Providers strongly rely on national authorities for guidance on the implementation of eIDAS. As such, it is key that the national authorities increase their maturity on eStamp, eRegistered services and eSeals, to be able to transmit their knowledge to other players.

> **Marketing Plan implication**: *For eStamp, eRegistered services and eSeals, the EC could focus on increasing the maturity of national authorities, as they are a multiplier for suppliers and business service providers.*

The figure below describes the stated maturity of national eID authorities per service.
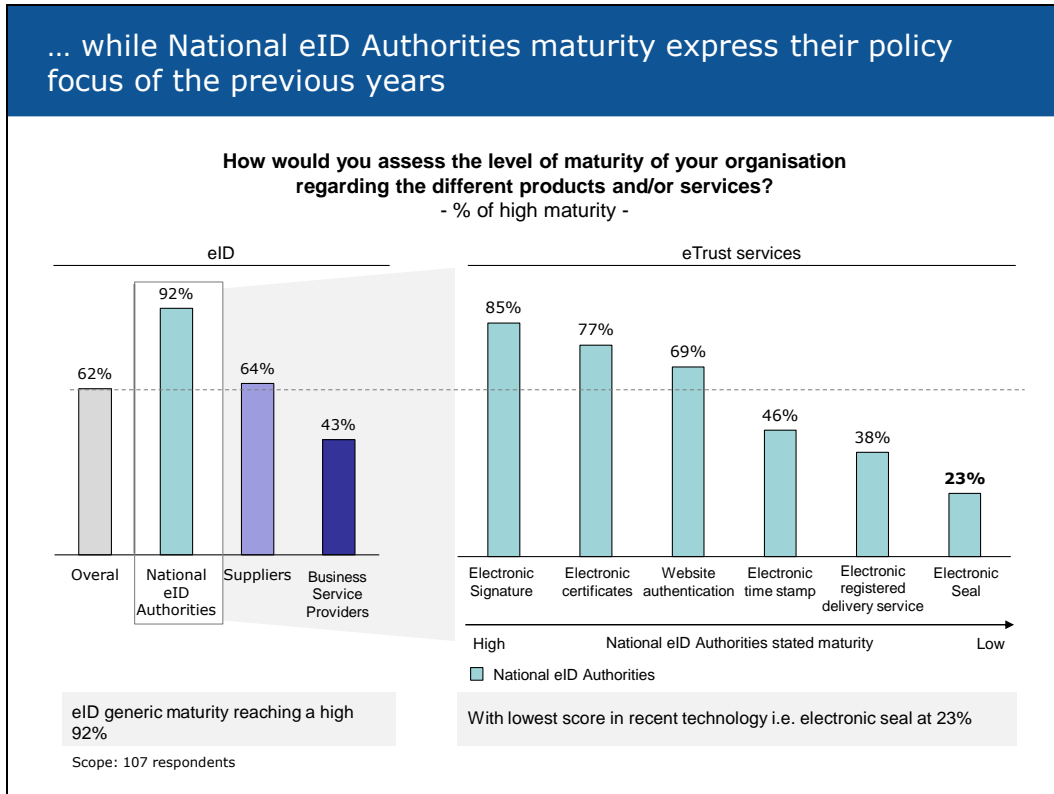
Figure 26 Stated maturity per service – National authorities
(Source: PwC & EC Survey)

5.2 Adoption barriers

In a second step, respondents were asked to identify the most important barriers to the adoption of eID and TS.

A striking outcome is that legal complexity was the most frequent blocking-point cited. The heterogeneity of legal frameworks or the existence of specific national laws that do not recognise eID and TS yet are top issues.

The figure below provides an overview of the importance of such barriers, per type of player.
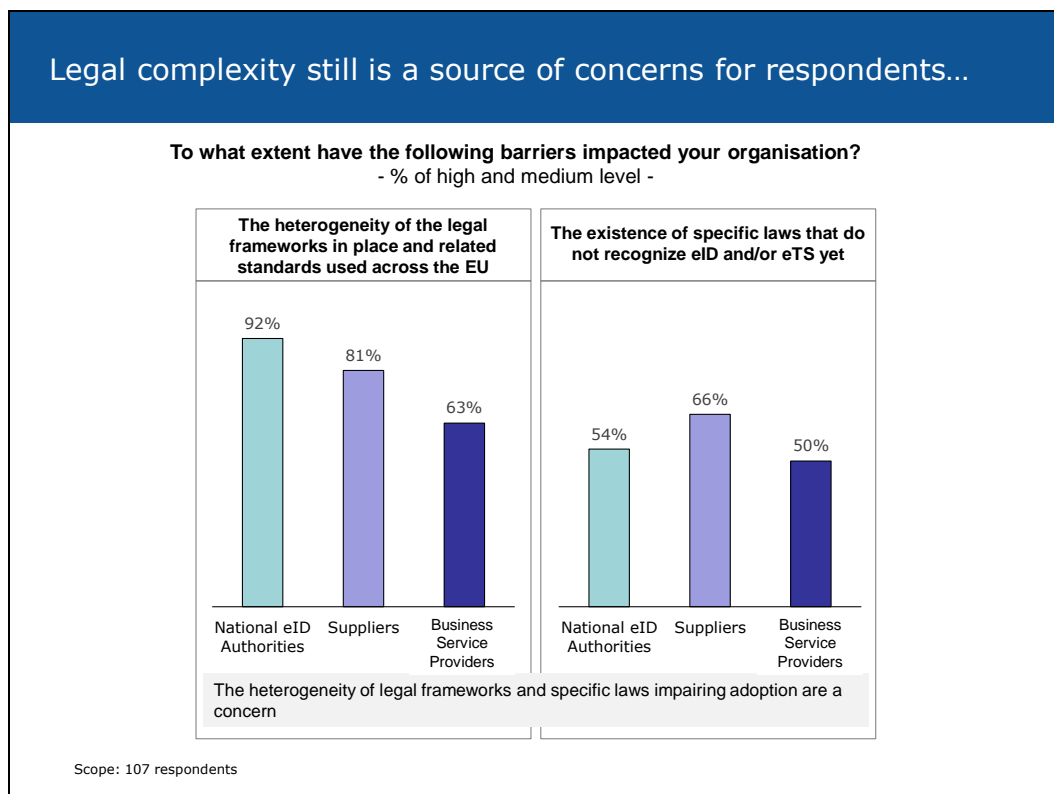
Figure 27 Adoption barriers – Legal complexity
(Source: PwC & EC Survey)

Below are some quotes from respondents on the legal complexity of the Regulation.

Suppliers:

- *'Local legislation and the relation with public eID is inhibiting roll-out'*

- *'Lack of national Regulation to support our services'*

- *'Clarity by all parties concerned in the interpretation of the eIDAS directive'*

- *'Lack of cross-border interoperability (acceptance) of electronic signature and seals'*

Marketing Plan implication: *The EC could induce national bodies to clarify national legal situations when it comes to the Regulation, e.g. prompt them to make existing national texts more accessible.*

For suppliers, the major barrier to adoption is the low market awareness, i.e. among business service providers and business service users.

This perception of low awareness is verified, notably when considering the EU Trust Mark, as depicted in the figure below.
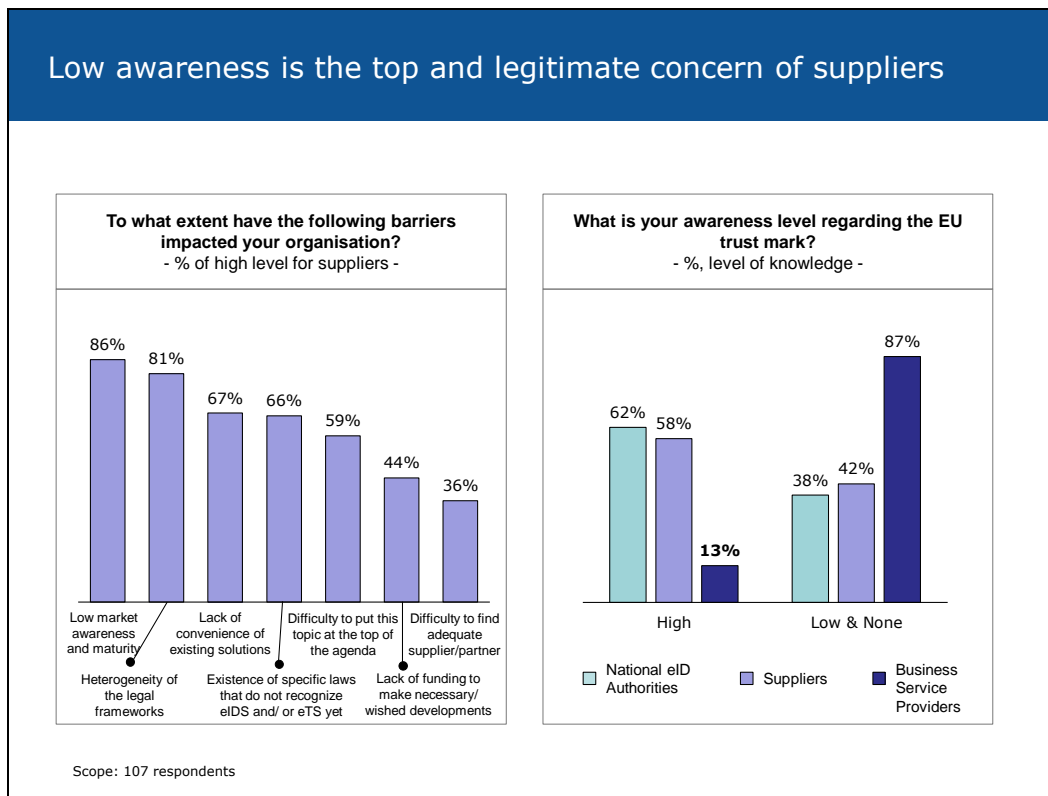
Figure 28 Adoption barriers – Low market awareness
(Source: PwC & EC Survey)

Below are some quotes from respondents on the low market awareness of eID and TS.

Suppliers:

- *'Slow adoption of eIDAS framework (both of eIDAS nodes and eID scheme notification) towards the sept '18 deadline results in a chicken-or-the-egg debate of user demand and service availability. Additionally, the benefits of eIDAS should be clearer for the private sector in order to stimulate demand.'*

- *'Very good initiative but far from the population awareness.'*

Marketing Plan implication: *The EC could focus on business service providers and business service user awareness of the eIDAS and the eID and TS services, e.g. through the promotion of the EU Trust Mark.*

The convenience of solutions offered as of today seems to be an issue as well, that is, compared with identification means and trust services that are <u>already available</u>.

This is notably the case for the banking industry, where some players are also providers of identification means.

Suppliers:

- *'There are many players (mostly banks) in many European markets that hold these eIDs that are widely used in the markets and these players seem to think that they own the business service user identity and limit the use of that information they provide contractually. I.e. you cannot register other eID/authentication service or method using identity provided by us, etc. This is the greatest obstacle in getting newer and better eID services to market. This can be fixed at the legislative level and would greatly support uptake of all eID services in EU.'*

Availability of funding and providers is less of an issue, as shown in the figure below.
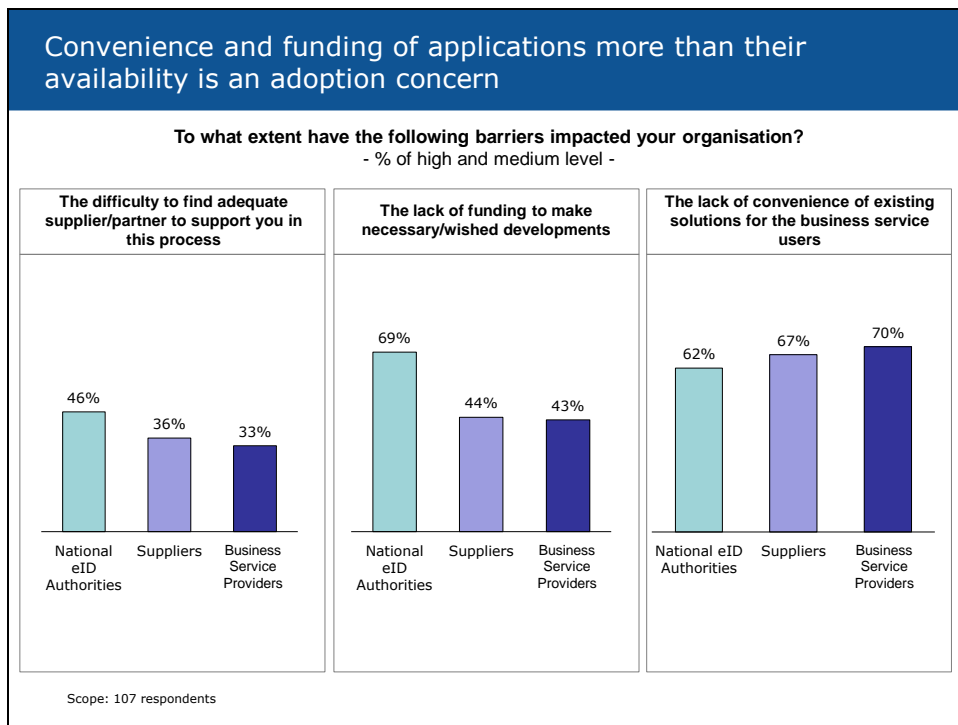
Figure 29 Adoption barriers – Availability of funding and providers
(Source: PwC & EC Survey)

Marketing Plan implication: *The EC could communicate advantages that are offered by qualified services vs. non-qualified ones. These advantages include reliability, security, value in the eyes of the business service users, and particularly cross-border validity.*

5.3 Regulation implementation status, issues and expected facilitating measures

Overall, the eIDAS Regulation has been perceived as very positive by all market players, as shown in the quotes below. However, its implementation remains complex.

National authorities:

- *'Very useful for SINGLE DIGITAL MARKET background at EU level.'*

- *'The Regulation is very visionary but to some extent a bit too abstract when it comes to practical use and implementation.'*

- *'Important in paving the way for reasonable requirements for assurance in eServices.'*

Suppliers:

- *'It is fundamental to my business model.'*

- *'We have seen an increased request for our offerings related to eIDAS.'*

- *'It's a step in the right direction. However, as with any process involving many parties, progress is slow and standards are ambiguous and poorly worded.'*

- *'Very important, but difficult to implement.'*

- *'This is THE tool ... still quite a bit of guidance and education needed to explain it to the business masses.'*

- *'Legal vision, lack of concreteness.'*

Users:

- *'Very important, but difficult to implement.'*

- *'Good, we need a standard for EU and/or the world.'*

With little surprise, national authorities and suppliers are much more in advance in the **implementation** of eIDAS than business service providers.

92% of national authorities and 72% of suppliers are either in progress or in the finalisation phase of the implementation whereas only 36% of business service providers are. The rest of the users are waiting to see where the market is heading and how other users implement the Regulation (17%), looking for more information (30%) or worse, do not even know where they stand in the process (17%).

It is worthwhile distinguishing between public and private business service providers: public users seem to be much more in advance, probably due to their closer connection with national bodies and the wide use of e-government services.

The figure below describes the implementation status per type of player.
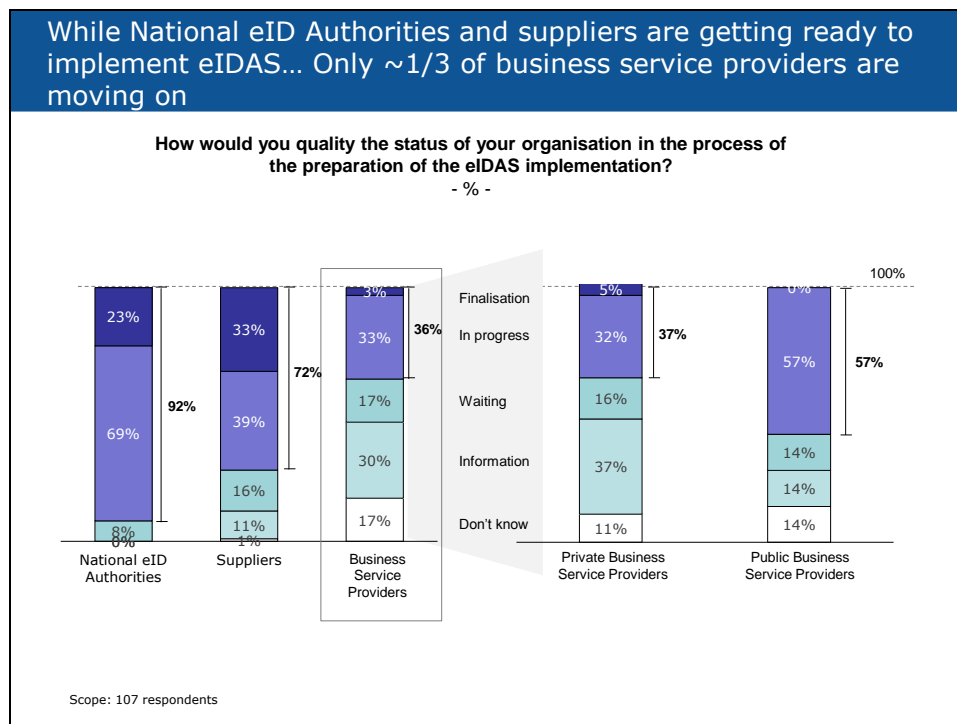
Figure 30 eIDAS Implementation – Status per type of player
(Source: PwC & EC Survey)

The major hurdles to a more widespread **adoption** are business and market adoption risks.

Market players are facing many business uncertainties and are missing some key information to make adequate business decisions (58%), and are concerned by other stakeholders' limited awareness of eIDAS (57%).

Below are some quotes related to business and market adoption risks.

Suppliers:

- *'Users ignore eIDAS and its advantages.'*
- *'EU Regulation is useless for browsers acceptance.'*

The second category of hurdles revolves around heterogeneity of Member States. 52% of respondents believe that differences in implementation will result in interoperability issues or difficulty to create a fair market. 47% of respondents are concerned by interferences with other European or national legislations that have not yet been clarified.

Finally, the difficulty to find information (34%) and the lack of understanding of the Regulation are less important issues with respect to adoption.

An overview of the importance of each type of implementation hurdle is provided in the following figure.
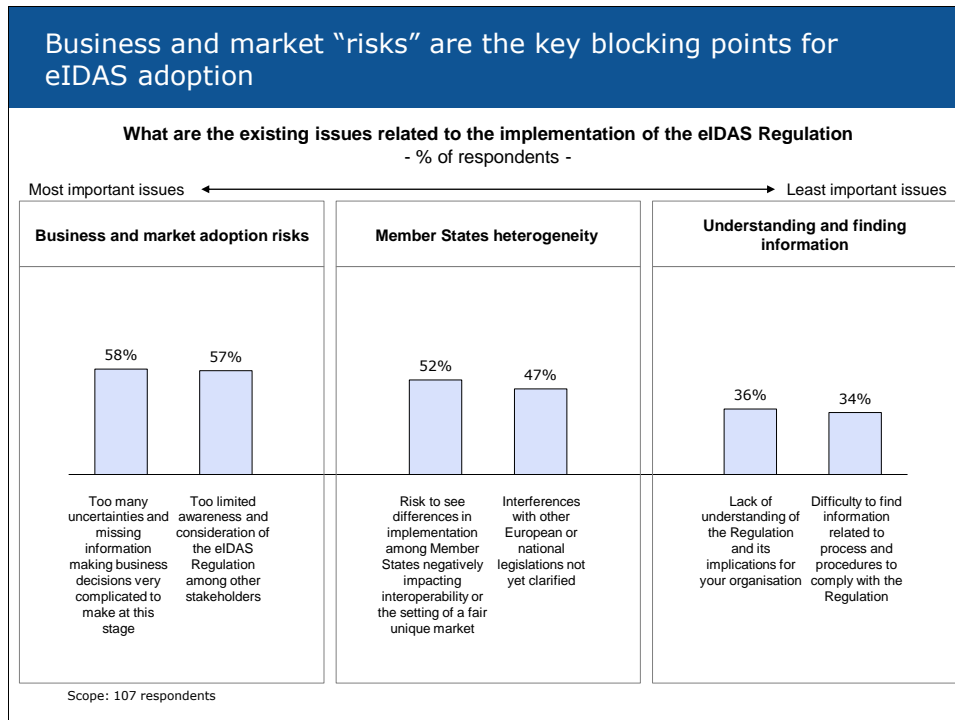
**Figure 31 eIDAS Implementation – Implementation hurdles
(Source: PwC & EC Survey)**

> **Marketing Plan implication**: *The EC could focus on providing information needed to make business decisions, e.g. business cases, implementation examples and success stories, for example.*

In order to overcome their implementation issues, market players can turn to the European Commission, national public authorities, international organisations, TSPs or consulting firms and law firms.

Each type of market player has its preference, as explained in the following paragraphs.

National eID authorities rely strongly on official bodies, i.e. the EC (77%), national authorities (62%) and international organisations (54%).

> **Marketing Plan implication**: ***National eID authorities*** *could be reached preferably through 'official' bodies.*

Suppliers also strongly rely on these official bodies but are also looking for answers from the TSPs (25%) and from consulting firms and law firms (31%).

Marketing Plan implication:

In addition to official bodies, suppliers could be reached via other suppliers, e.g. TSPs connecting to other service firms, or exchange forums.

Consulting firms seem to play a key role in the development of eID & TS adoption, the EC might use them as multipliers, e.g. address consulting companies and law firms specifically in the Marketing Plan.

Finally, **business service providers** are heavily relying on national authorities (90%) to resolve their implementation issues. The role of TSPs to help business service providers is key (47%), and so is the role of consulting and law firms (30%). Half of business service providers also rely on the EC.

Marketing Plan implication: *The EC might try to reach business service providers in an indirect way, i.e. through national authorities and suppliers.*

The figure below provides source organisation preference profiles per type of player.
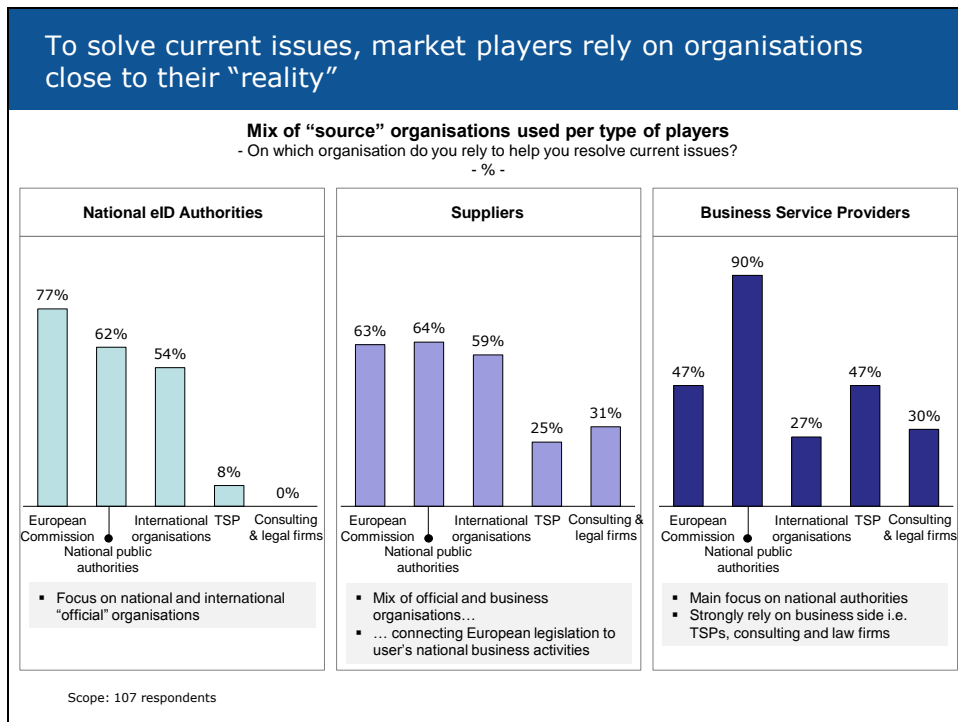
Figure 32 eIDAS Implementation – Organisations relied on to solve implementation issues (Source: PwC & EC Survey)

5.4 Expected support for compliance and adoption

In line with previous insights, the market expects clearer guidelines on how to implement eIDAS (58%), as well as a clear description of processes and procedure to follow in order to comply with the Regulation (55%).

Other tested actions have less potential, i.e. clarifying the role of the EC (22%), providing additional information of the impact of the Regulation (32%) as well as sharing ongoing initiatives (38%).

Marketing Plan implication: *The EC could try to share illustrations of implementations and create forums for clarification. Ideally, clear 'owners' should be found among bodies that function as multipliers, at Member State and industry levels.*

The figure below summarises the relevance of each tested initiative.

The market expects more indications on how to implement and be compliant to the regulation

To what extent the following actions could help you comply with the eIDAS Regulations?
- % of high -

Additional guidelines on implementation and compliance procedure

58%	55%	38%	32%	22%
Design of additional guidelines regarding the implementation of the eIDAS Regulation	Clear description of the process and procedures to follow to comply with the Regulation	Sharing of ongoing initiatives across the EU and learnings from these initiatives	Additional information regarding the eIDAS Regulation and its implications for your organisation	Clarification of the role of the European Commission in the eIDAS implementation and types of supports that can be expected

Scope: 107 respondents

**Figure 33 Relevance of actions to increase compliance with eIDAS
(Source: PwC & EC Survey)**

When it comes to actions relevant to increasing the adoption of eID and TS, respondents (52%) would like a broader promotion of these services among the citizens. The idea is to create a pull demand, from business service users to business service providers, so that the latter can better capitalise on their 'certified' services.

> **Marketing Plan implication**: *Although the business service users are difficult and costly to reach in a marketing plan through mass media, basic actions (e.g., websites) could be taken to promote the EU Trust Mark logo and its value.*

Another very relevant (48%) action would be to share tangible use cases with clear benefits. The reason for this is that many players do not have a clear view on the inevitable costs to be incurred to adopt such services and most importantly on extra-revenue potential.

> **Marketing Plan implication**: *The EC could facilitate the sharing of use cases and business cases among different players. These might be industry-focused, to be relevant for stakeholders.*

The figure below highlights the relevance of each tested action to increase adoption.
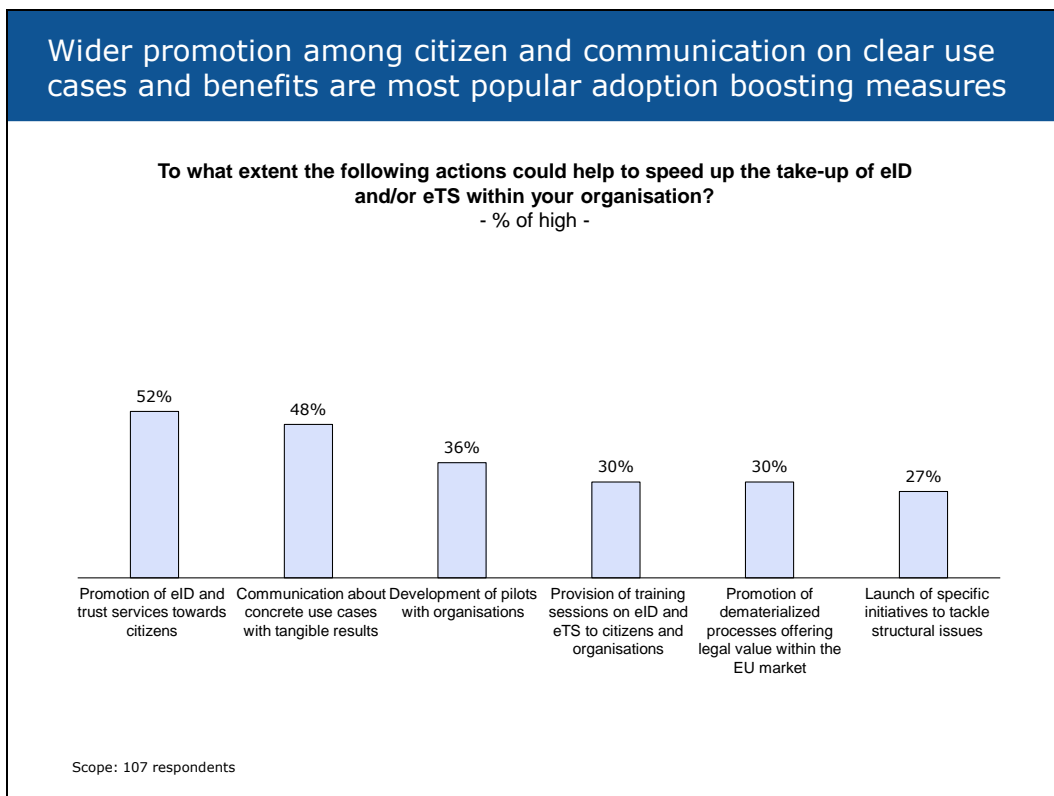
**Figure 34 Relevance of actions to speed up the uptake of eID and TS
(Source: PwC & EC Survey)**

5.5 Preferred means of communication

The last part of the survey focuses on preferred means of communication, both top-down from the EC and collaborative information sharing.

A series of 'channels' were tested to provide insights on the definition of the Marketing Plan.

The main learning is that all types of players (national authorities, suppliers and business service providers) prefer (53%-61%) **written documents** as means for information receipt and exchange. This is probably related to their expectation of clear implementation guidelines and use cases, which do not require 'discussions', i.e. top-down information.

The second most popular (41%-42%) means is **events at the national level**.

Online forums are at the end of the preference list. In the following paragraph, the relevance for each type of player is outlined, and it appears that the digital means are less relevant for business service providers.

The following figure shows the relevance per channel to 1. Receive information on the Regulation and 2. Exchange and share information between peers.
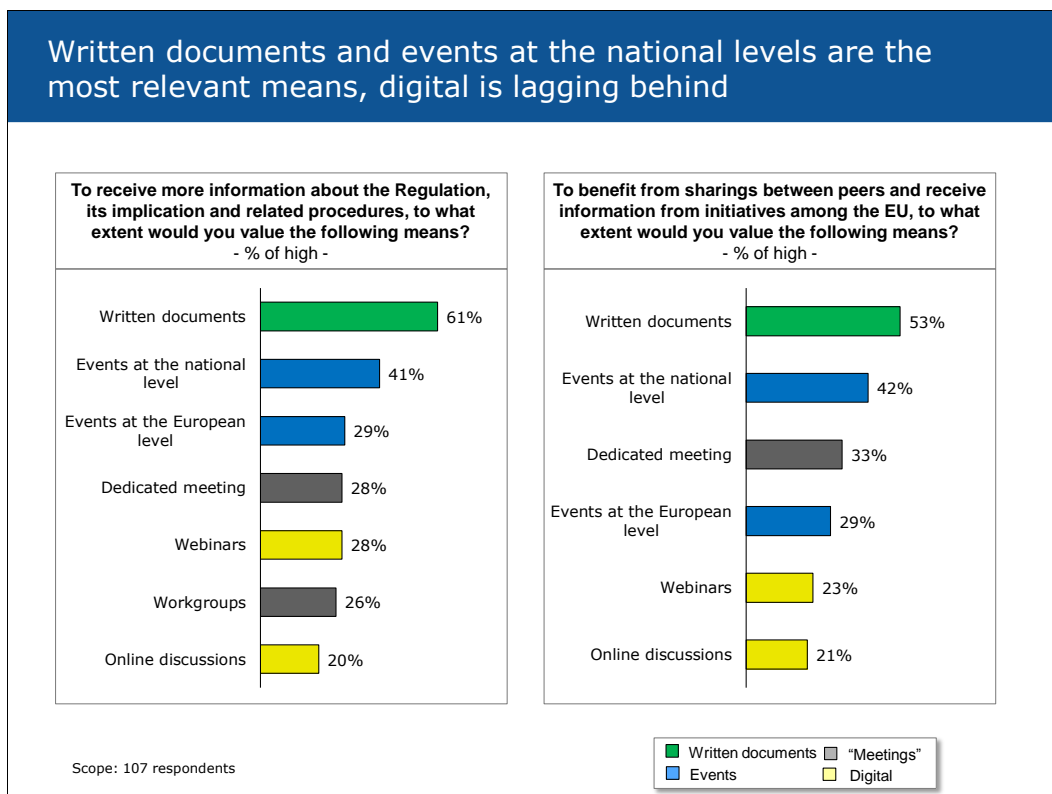
**Figure 35 Communication means preference – All respondents
(Source: PwC & EC Survey)**

The **national eID authorities** prefer written documents (62–69%), followed by events at the national level (38–54%).

This is the population with the highest interest in digital means, i.e. webinars and online discussion (31%).

Workgroups, dedicated meetings and events at the European level are not relevant means to reach these types of players.

The figure below provides more details on preferred means for the national eID authorities.
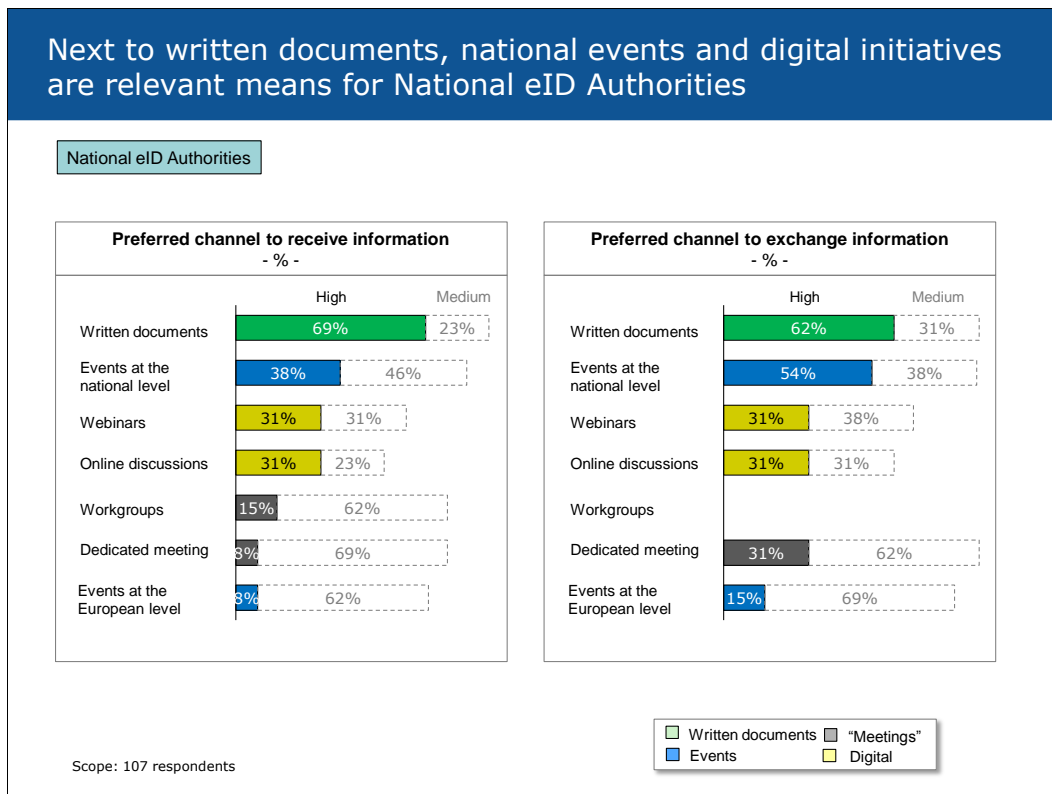
**Figure 36 Communication means preference – National eID authorities
(Source: PwC & EC Survey)**

Marketing Plan implication: *Preferred channels to reach **national eID authorities** seem to be written documents and events at the national level. Digital channels, i.e. webinars and online discussions, are also relevant.*

Suppliers also prefer written documents (47–59%), followed by events at the national level (39–42%). Other means are equally relevant, excepting online discussions, which show only moderate success (22–25%). Interestingly enough, webinars are well perceived by suppliers, probably to combine richness of the exchanges with efficiency of the remote tools.

The figure below provides more details on preferred means for the suppliers.
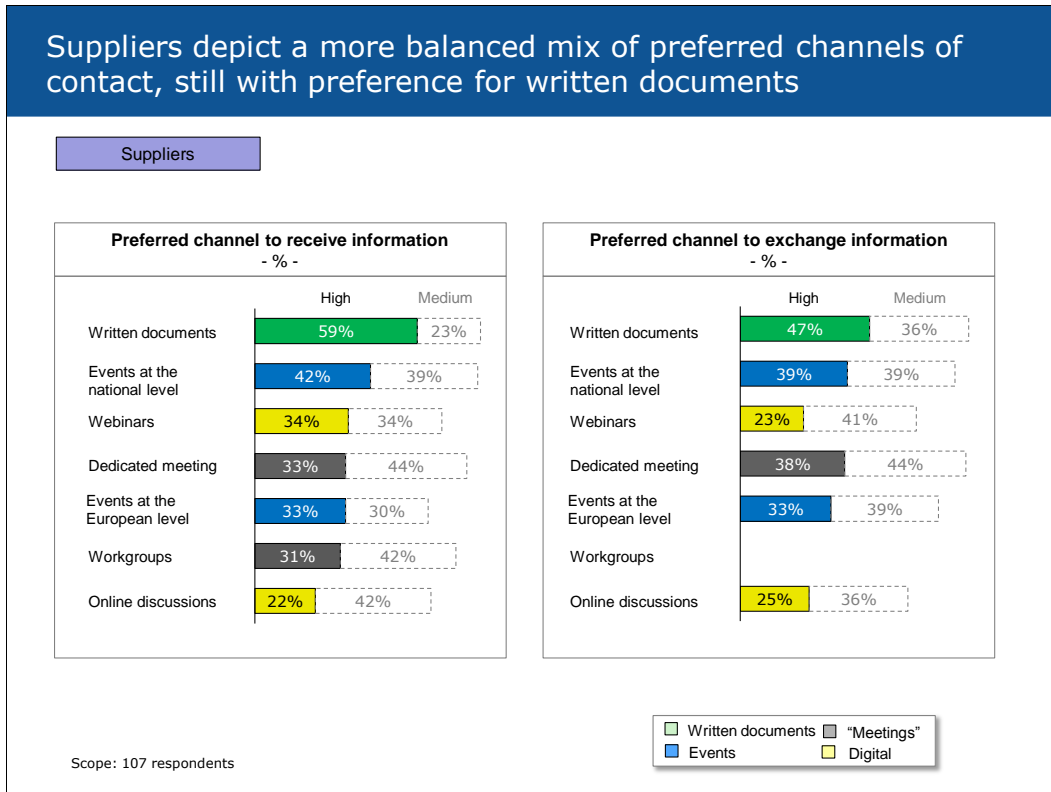
Figure 37 Communication means preference – Suppliers
(Source: PwC & EC Survey)

Marketing Plan implication: *Preferred channels to reach **suppliers** seem to be written documents and events at the national level. Other means are also relevant. Online discussions should be used sparingly.*

Business service providers display a clearly polarised choice of preferences. Like other types of players, they are looking for written documents (60–63%) and find events at national levels relevant means of communication (40–43%).

Their peculiarity lies in the fact that they do not consider digital channels, i.e. webinars and online discussions, as relevant means (13–20% and 10%, respectively).

The figure below provides more details on preferred means for the business service providers.
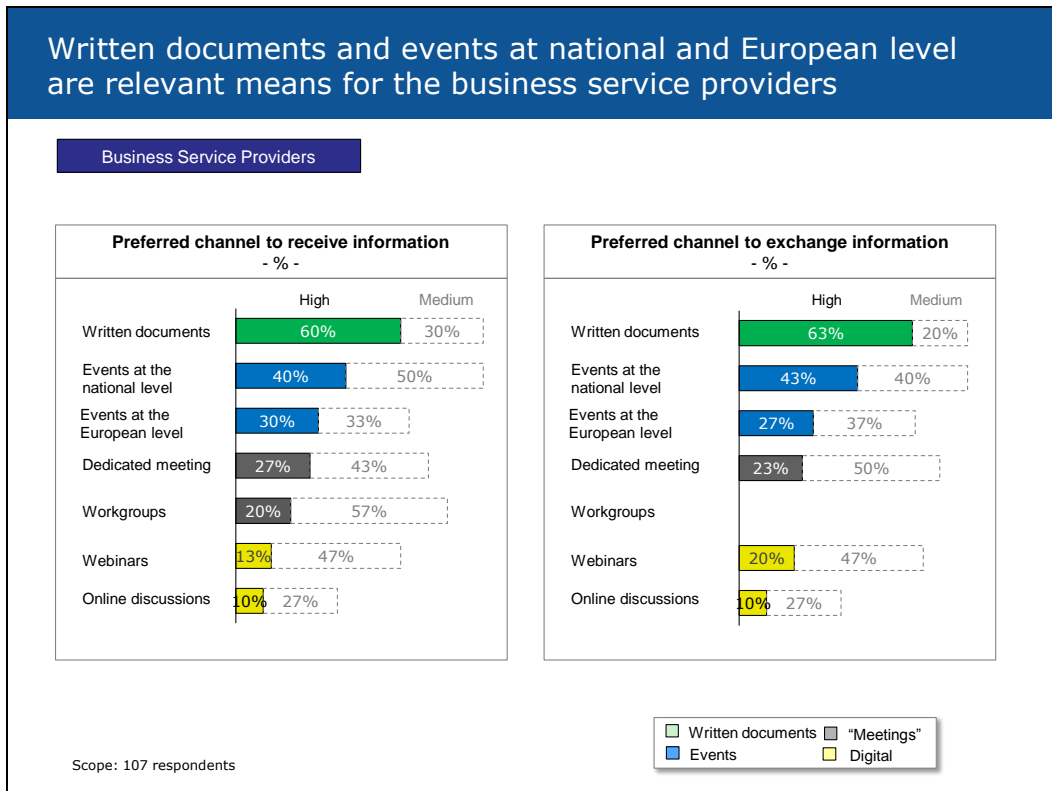
Figure 38 Communication means preference – Business Service Providers
(Source: PwC & EC Survey)

> **Marketing Plan implication**: *To reach the **business service providers**, the EC might focus on written documents and events at the national level. Digital channels are less relevant to reach them directly, they might rather be seen as ways to reach other players and feed them with needed information and materials in order to reach business service providers.*

6   MARKET KEY PERFORMANCE INDICATORS

6.1 Introduction and overview of Market KPIs

KPIs must be actionable

In order to measure the impact and success of initiatives aiming to boost the adoption of eID and TS, a series of market key performance indicators (market KPIs) has been defined.

Relevant market KPIs should meet some criteria, i.e. be:

- connected to EC adoption boosting initiatives;
- measurable, i.e. quantifiable;
- trackable in time, e.g. every year;
- accessible, i.e. require minimum effort for information to be gathered.

A list of market KPIs has been compiled and structured according to two main dimensions: first, the degree of causal relationship between EC initiatives and the market KPI (direct or indirect) and, second, the 'perimeter' (eID, TS, global interest, digitalisation of economy and society).

Some market KPIs measure the direct influence of initiatives, such as the number of TSPs obtaining the 'qualified' status, while other market KPIs are linked to the 'end objective' that is to improve the digitalisation of the economy and society.

The market KPIs that are available have been measured and are presented further below in this document. Gathering processes are proposed for market KPIs that are not available 'off the shelf'.

The two figures below provide a structured presentation of market KPIs as well as their gathering process and status in collection.

KPIs have a clear rationale with properly defined processes and sources

LIST OF MARKET KPIs (1/2)

Direct/ Indirect	Rationale		KPI	KPI definition	Source / process	Status
Directly influenced by EC initiatives (1/2)	eID adoption & implementation	1	Notified schemes	Number of Member States having notified at least one eID scheme	Liaise with Member State Competent Authority (Ministry of Interior,…). This KPI is to be measured in a later stage, as no notifications have been made so far	Process to be set up
		2	Notified mobile schemes	Number of Member States having notified at least one **mobile** eID scheme		Process to be set up
		3	Notified means	Number of Member States having notified at least one eID means		Process to be set up
		4	Notified mobile means	Number of Member States having notified a **mobile** eID means		Process to be set up
		5	eGov applications	Number of processes that can be completed electronically, using eID (citizen and business)	Run a yearly poll through eGov. responsible bodies	Process to be set up
		6	Banking eProcesses	Number of client-facing digital processes using eIDAS (e.g. customer onboarding)	Run a yearly poll through EBF (European Banking Federation)	Process to be set up
		7	"EU Login" notifications	Number of users of eIDAS notified means in the "EU Login" service (share of eIDAS users)	Set up a connection analyser for "EU Login"	Process to be set up
		8	CEF - eID nodes	Number of eID nodes per country – STORK Nodes	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Uptake	✓ 2016
	eTS adoption & implementation	9	Qualified TSPs	Number of QTSPs in each Member State	Yearly data extraction from http://tlbrowser.tsl.website/tools/ under "Records"	✓ 2016
		10	Qualified Services	Number and type of Qualified Services in each Member State		✓ 2016
		11	QSCDs	Number of QSCDs certified in Member States	ec.europa.eu/futurium/en/content/compilation-member-states-notification-sscds-and-qscds	✓ 2016
		12	DSS Downloads	Number of downloads of the Digital Signing Service (DSS) package from Join-UP	Set-up download tracker on Join-Up website	Process to be set up
		13	CEF - eDelivery domains	Number of domains covered by eDelivery per Member State	Cf. KPI 8 (CEF dashboard website)	✓ 2016
		14	CEF - eInvoicing uptake	eInvoicing uptake index (eInvoicing capacity building)		
		15	CEF - Trusted List tests	eSignature: number of Trusted List Conformance tests per Member State		

Figure 39 Market KPIs synthesis (Part 1/2)

LIST OF MARKET KPIs(2/2)

Direct/ Indirect	Rationale	KPI	KPI definition	Source / process	Status
Directly influenced by EC initiatives (2/2)	General interest and maturity on eIDAS and its services	16 Maturity	Stated maturity on each type of trust service, among national authorities and (Q)TSP	Set up a "DG CONNECT yearly survey" among "core group"	✓ 2016
		17 EU TrustMark interest	Number of visits on the EU Trustmark page	Set up a visit tracker for EU Trustmark webpage	Process to be set up
		18 eIDAS observatory activity	Number of visits on the eIDAS observatory page	Set up a visit tracker for eIDAS observatory	Process to be set up
		19 eIDAS Google searches	Weekly number of eIDAS Google searches – Index 100	Direct search on "eIDAS" term on Google Trends	✓ 2016
Indirectly impacted, with many other influencers	Digitalisation of Economy and Society (DESI)	20 eBanking use	Individuals who used the Internet to use online banking, normalised indicator	Run yearly data extraction from the DESI website: http://digital-agenda-data.eu/charts/desi-components	✓ 2014 ✓ 2015 ✓ 2016
		21 eInvoices use	Enterprises sending e-invoices suitable for automatic processing		
		22 Cross border digital sales	Enterprises that did electronic sales to other EU countries		
		23 eGov – Filled forms	Individuals sending filled forms to public authorities, over the internet, last 12 months		
		24 eGov – Availability	Share of the steps in a Public Service life event that can be completed online		

Figure 40 Market KPIs synthesis (Part 2/2)

6.2 Market KPIs on eID adoption and implementation

Market KPIs from 1 to 4 aim to measure the notifications of Member State eID schemes and means with respect to connecting to the node. Although this is a key indicator as connecting to the node is a prerequisite for cross-border interoperability, the actual notifications will only be known later. It is therefore advised to wait until the official notification deadline to measure this KPI.

Market KPI 5 aims to measure the number of eGovernment applications that can be conducted end-to-end with digital processes compliant with eIDAS. In order to measure this KPI, the EC could connect with national bodies responsible for eGovernment. This would require a short and accurately framed poll to be run.

Market KPI 6 is similar to KPI 5, but in the private sector, with a focus on banking, which is one of the most promising sectors for eIDAS usage. The EC could connect with the EBF (European Banking Federation) to run a yearly poll on the matter.

Market KPI 7 captures the development of eIDAS services by computing the share of eIDAS-based connections relative to the 'EU Login' services from the EC.

Market KPI 8 this KPI is one of the CEF building blocks (as well as KPIs 13, 14 and 15). It registers the number of eID (STORK) nodes that have been notified per country. The figure below provides an overview of the CEF building blocks.
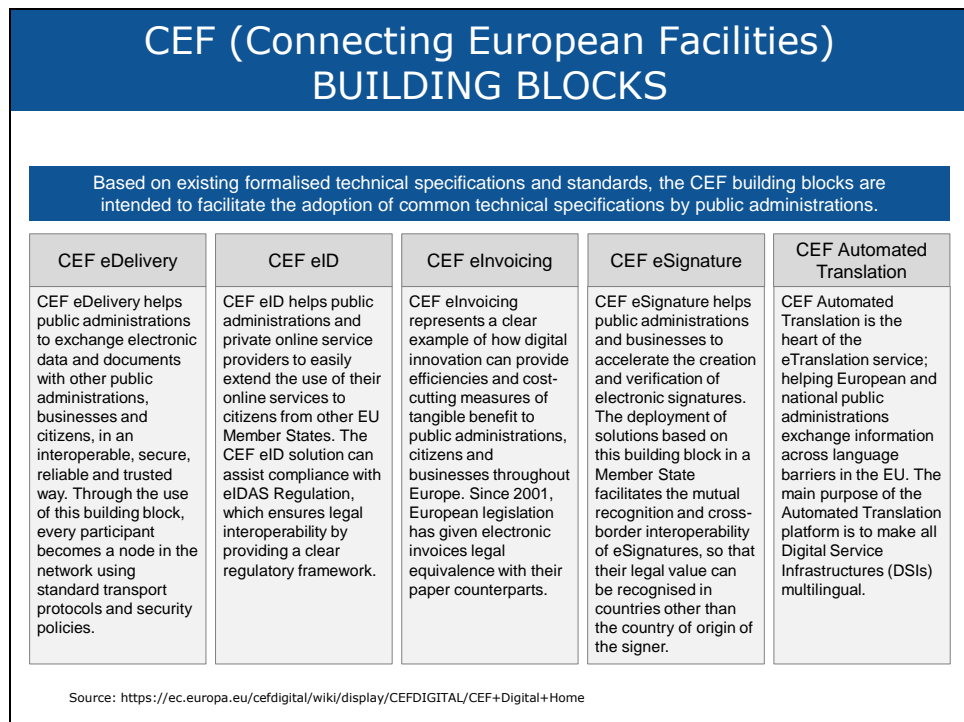
**Figure 41 CEF Building blocks
(Source: CEF Website)**

The figure below summarises the values of the CEF Dashboard KPIs (8, 13, 14 and 15) as of Q3 2017.
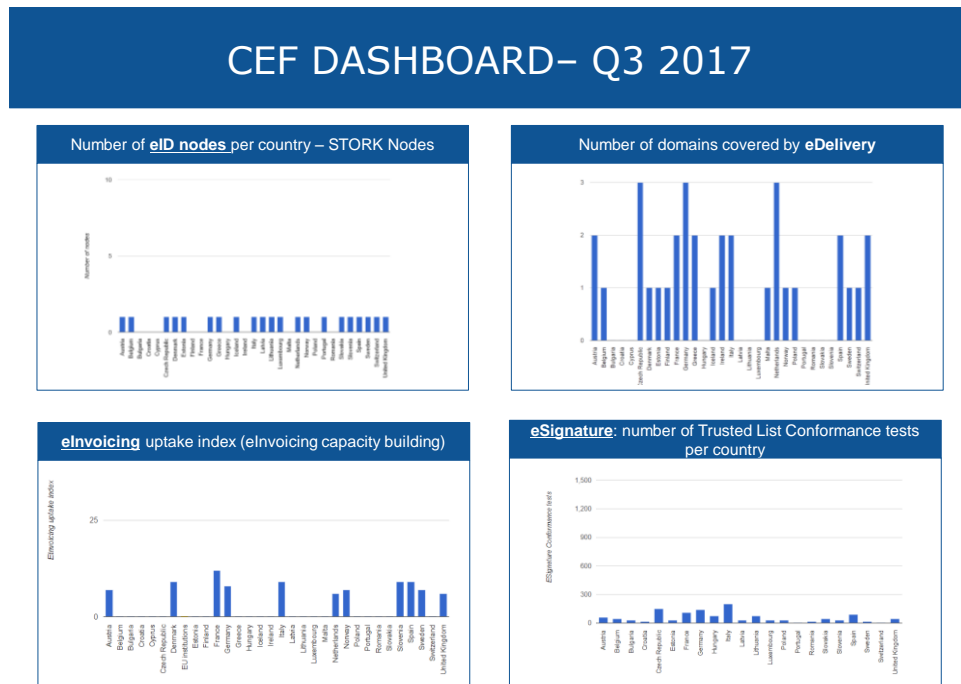
Figure 42 Selected information from CEF dashboard
(Source: CEF Dashboard)

6.3 Market KPIs on TS adoption and implementation

Market KPI 9 measures the number of QTSPs (Qualified Trust Service Providers). The TSPs are qualified if they have at least one qualified service. The figure below provides a view for December 2017, per Member State. At that time a total of 165 QTSPs were on the List of Trusted Lists.

NUMBER OF QUALIFIED TSPs

9 Qualified TSPs

Number of Qualified* Trust Service Providers per Member States
- As of 07/12/2017 -

EU28 + Iceland + Norway TOTAL : 165

24 22 15 15 9 8 7 6 5 5 5 5 4 4 4 4 4 3 3 2 2 2 1 1 1 1 1 1 1 0

Ø = 5.50

IT ES DE FR NO NL SI PL SK RO EL BE PT BG LT CZ HU AT HR MT LI IE UK SE FI EE IS LU LV DK
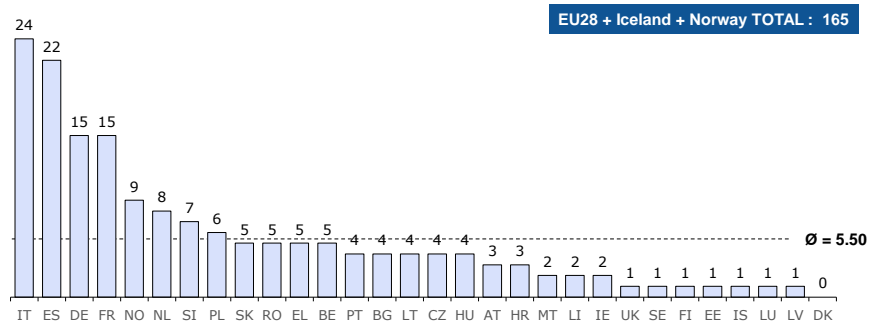
* TSPs with at least one Qualified Services
Source: List of Trust List : https://webgate.ec.europa.eu/tl-browser/#/search/3
Scope: only services with status "Granted", "Recognised at national level" and "under supervision" are included

**Figure 43 Number of QTSPs[80]
(Source: List of Trusted Lists (TSL))**

Only services with either the 'Granted', 'Recognised at national level' or 'Under supervision' status have been included. Services with the 'Withdrawn', 'Deprecated at national level', 'Supervision ceased' or 'Supervision in cessation' status have been excluded.

Market KPI 10 measures the number of (qualified) services available on the List of Trusted Lists. The figure below provides a view for 2017, per Member State. In 2017, a total **322** Qualified Trust Services were on the list.

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[80] This number includes QTSPs that have been taken over but are still present in the TSL/TL. Complementary information is available from SEALED, http://users.skynet.be/fa283208/pdf/Portrait-QTSP-QTS-eIDAS-overview-2017-04-04.pdf
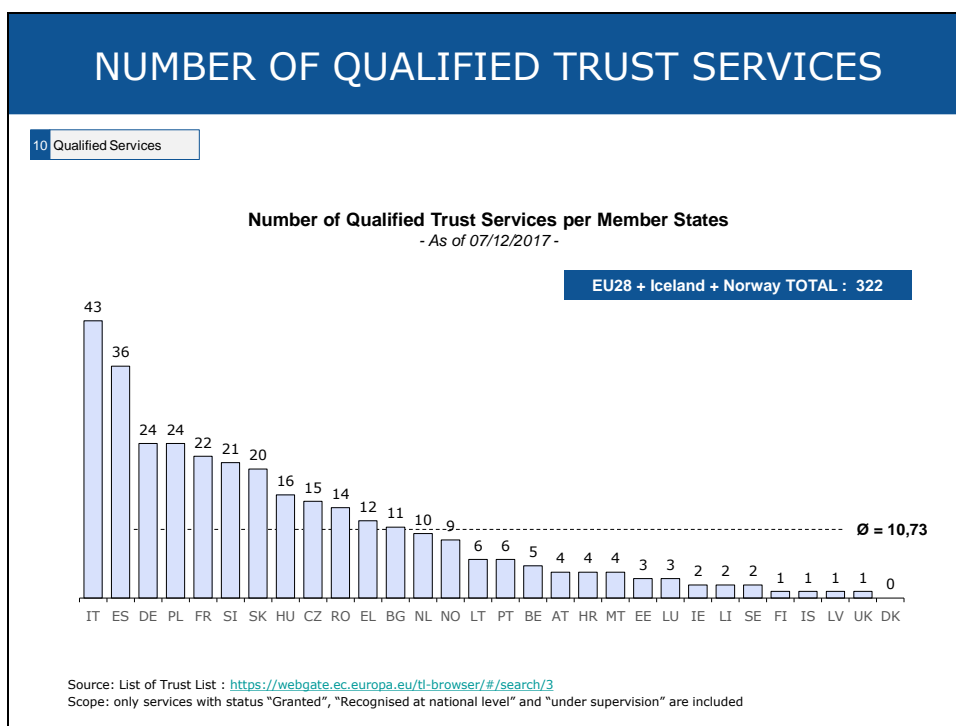
**Figure 44 Number of QTS
(Source: List of Trusted Lists)**

Market KPI 11 refers to the number of QSCDs available in all Member States. This KPI aims to measure the qualification of hardware, operating systems and applications used to authenticate eSignatures. It is available on the eIDAS website [81] directly.

Member State	SSCDs benefiting from the transitional measure set in article 51(1)	QSCDs
AT	12	1
BE	1	0
DE	48	0
EE	12	0
LU	3	0
ES	1	1
FR	26	3

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[81] ec.europa.eu/futurium/en/content/compilation-member-states-notification-sscds-and-qscds

Member State	SSCDs benefiting from the transitional measure set in article 51(1)	QSCDs
HR	1	0
HU	6	0
IT	5	1
LT	15	0
SK	8	0
SE	0	0
TOTAL	**138**	**6**

Market KPI 12 measures the number of downloads of the DSS (Digital Signing Service) package from the Join-Up website.

Market KPI 13 relates to the eDelivery building block and assesses the number of eGovernment domains covered by the eDelivery programme.

Market KPI 14 relates to the CEF eInvoicing building block. It measures the uptake of eInvoicing under the form of an index. This KPI has been measured for 2017.

Market KPI 15 refers to the 'eSignature' CEF building block, and is assessed by the sub-dimension of the number of Trusted List Conformance tests per country. This KPI has been measured for 2017.

6.4 Market KPIs on General interest and maturity on eIDAS and its services

Market KPI 16 'Maturity' provides information on the 'self-stated' maturity from various types of stakeholders towards eIDAS, its services, implications and implementation. The stakeholder consultation survey run by the EC in fall 2016 provides a first set of measurements. This survey could be repeated yearly in a short version, targeting a pool of 'core' stakeholders mainly from the suppliers' and national authorities' side. This type of probing technique is less suitable for the 'business service providers' that are less involved in the topic and thus more difficult to consult repeatedly.

The first set of measurements of stated maturity is available in Part 4 'Stakeholder consultation survey'.

Market KPI 17 aims to measure the usage of the EU trust mark logo, i.e. the number of Qualified Trust Service Providers using the trust mark logo on their web page, as a means of marketing. The number of clicks on logos leading to the Trusted List Browser Tool (https://webgate.ec.europa.eu/tl-browser/#/) would be a relevant indicator as well.

Market KPI 18 tracks the activity on the eIDAS Observatory website. Again, a visit tracker can be set up.

Market KPI 19 gives a global indication of general interest, i.e. from all stakeholders, for the eIDAS topic. Experience shows that the number of Google searches provides a good proxy. The figure below presents the weekly index over the last 3 years.
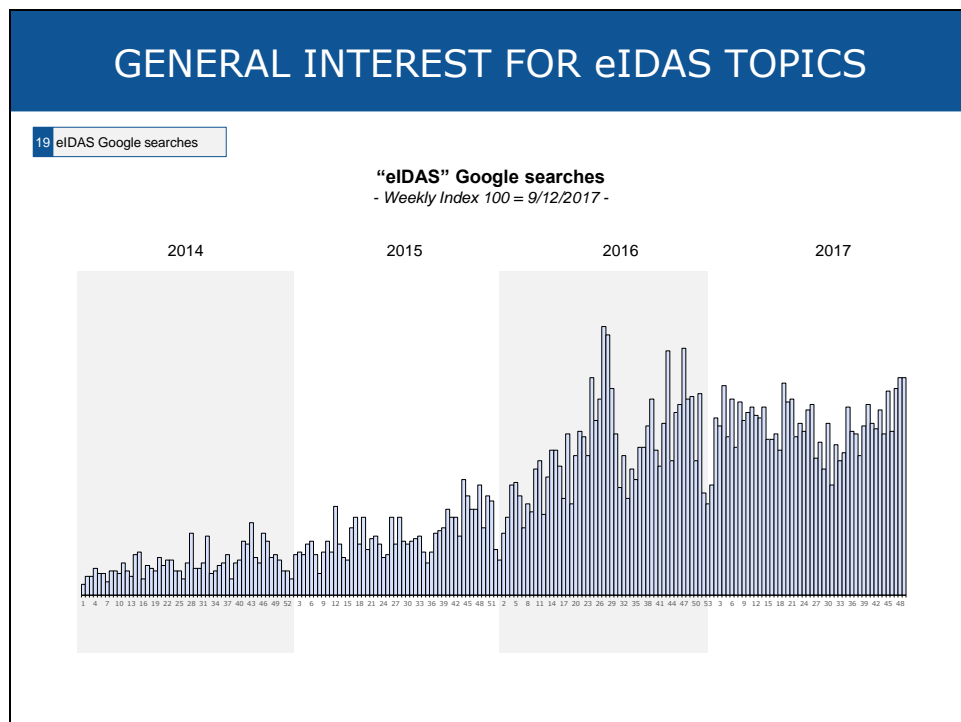
**Figure 45 Google search on 'eIDAS'
(Source: Google Trends)**

6.5 Indirect KPIs on Digitalisation of the Economy and Society

Indirect effects are measured as well

Market KPIs 20 to 23 provide indications on indirect effects expected from eIDAS on society and business. These KPIs are a selection of sub-dimensions of the DESI Index and can be retrieved directly from the DESI website. These KPIs are set apart, as they can be influenced by eIDAS, but also by other factors (international trade, digitalisation of companies, etc.). These KPIs are available for 2014, 2015 and 2016 as shown in the figure below.
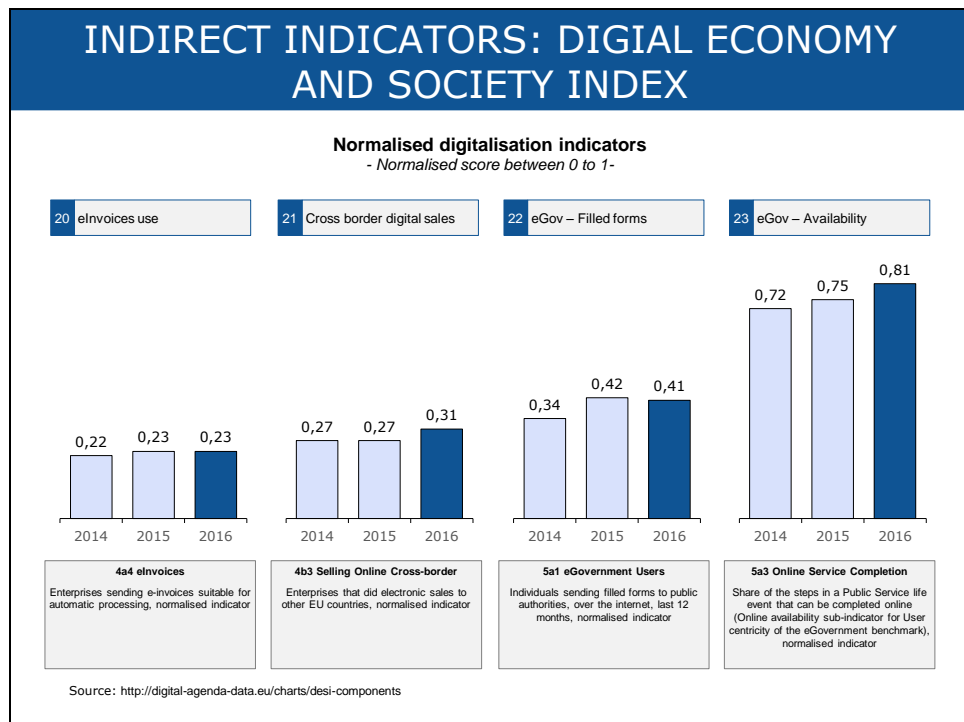
Figure 46 Selected DESI indicators
(Source: DESI website)

'eInvoice' tracks the number of enterprises that are sending eInvoices suitable for automated processing. This KPI is strongly related to eIDAS implementation, more specifically to eTimeStamps, eSignature, eDeliveryServices and most of all eSeals products.

'Cross border digital sales' measures the number of enterprises having engaged in electronic cross-border sales in the EU and is *per se* related to eIDAS.

'eGov filled forms' is a measure of digital usage of government service, and 'eGov availability' is a measure of the range of digital services offered by governments, both favoured by eIDAS.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Needs and blocking points identified through the market analysis

The desk research combined with interviews of a selected number of stakeholders of both eID and TS markets allowed us to identify the key areas where efforts could help to ensure the uptake of eID and TS.

The main issues reported by interviewed stakeholders relate to

- Lack of awareness and understanding of the Regulation and its impact,

- Uncertainties regarding the way forward.

This both regarding the supply and the demand sides. Furthermore, all interviewed stakeholders, but mainly the business service providers, are looking for tangible use cases with concrete advantages.

Required support on the eID market

Identification at the national level is and remains a Member State matter. Therefore, the eIDAS Regulation addresses cross-border identification rather than intra-Member State identification. But even there, Member States remain sovereign. However, given the implications eIDAS can have beyond the public services and taking into account the inputs gathered during the desk research and consultation, the study team suggests that the support of the European Commission should focus on both the public and private sector, because they both wield the powers to change. The public sector is the pristine source of the legitimacy of identification and trust services, operating the Member State's chosen mechanisms such as Base Registers (e.g. National Register of Natural Persons, of Legal Persons). The private sector has the capacity to drive change through its digital channels, attracting users to their applications.

Achieving a proper implementation of the eIDAS Regulation in all Member States will require specific efforts to inform, follow and support Member States in the implementation of the eIDAS Regulation, especially the Member States with lower observed involvement. The European Commission should both 'lead by example' and play a 'promoter' role towards Member States, to encourage them to develop and notify eID schemes. Key factors to consider here are the sharing of best practices, the willingness of the Member States to open their systems to the private sector so the private sector can make use thereof[82], and the support for mobile eID means.

Usage of eID depends on the availability of applications. For this, the involvement of a development community and of the private sector are key. The stakeholders called for the European Commission to help in building business cases, to identify attractive applications. As

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[82] A typical example is the use of a Member State 'national authentication gateway', which can be invoked from a private sector's website or portal. In this way, the Service provider of the website can leverage on the government authentication. However, the legal, technical and financial conditions for invoking a 'national authentication gateway' should be both transparent and technically 'open', i.e. using 'open' protocols such the Security Assertion Markup Language (SAML).

convenience is considered an important attribute, the EC should facilitate the promotion of mobile schemes and means.

Required support on the TS market

In this context, actions from the European Commission should pursue two main objectives.

First, a fair market, with the same rules for all market players, should be ensured. There should be no perception that qualification process requirements vary between Member States, or that state-sponsored TSPs are favoured (e.g. postal operators).

Second, it can be observed that a significant part of the TSPs searches for clear information and explanations about the Regulation, its impact and the processes related to its implementation. Providing such information would also contribute to an enhanced adoption of trust services by the demand side. The European Commission is expected to play an active role in removing existing legal barriers by notably facilitating the recognition of trust services in other legislations at EU or national level. The TS uptake will also require an increase in the general awareness and understanding on the demand side.

7.2 Guiding principles for the marketing plan

The market analysis allows us to define the guiding principles for development of the marketing plan. These are now discussed.

Guiding principles for the eID market

The marketing plan for eID should be segmented, steer efforts by priorities, and position the EC as a key partner for the private sector

As regards eID, the following principles have been derived from the market description and analysis:

1. Build a two-tier action plan towards Member States.

2. Prioritise efforts towards proofs-of-concept.

3. Be a facilitator for the private sector.

4. Ensure that markets are open to new eID schemes, i.e. eIDAS compliant solutions.

1. Build a two-tier action plan towards Member States

On one hand, increased efforts must be deployed towards less involved Member States. These efforts should be dedicated to raising the sense of urgency in these Member States. This should include educational content, for example using cases from other Member States, where tangible benefits resulted. On the other hand, more 'inspirational' content should be developed and experience-sharing actions should be initiated towards Member States that are already highly involved in this topic.

2. Prioritise efforts towards proofs-of-concept

To achieve concrete results, the best approach is to focus the efforts on cases offering the most potential. Priority should be given to use cases with potential in terms of volume of usage but also to stakeholders showing a strong willingness to deploy cross-border eID usage.

3. Be a facilitator for the private sector

To increase the interest of the private sector in adopting eID means in cross-border transactions, hurdles must be minimised. Since private sector players will continue to face 28 different Member States with their own eID scheme(s), the demanding information gathering process may cause some actors to be reluctant to join. The European Commission could become a single point of contact for the private sector, consolidating in a comprehensive manner the information published in the 28 Member States (description of eID scheme, tariffs, procedures, points of contact and so on).

4. Ensure that markets are open to new eID schemes

As some geographic areas have already developed eID solutions driven by the private sector, e.g. the financial services players in the Nordic countries, there should be legislative room for an adoption of eIDAS compliant solutions, or an eIDAS compliance process for existing solutions.

Guiding principles for the TS market

The marketing plan for TS should create more proximity with the market players and adequately target the different DMUs in public and private organisations

As regards TS, the main guiding principles are:

1. TS promotion should be service-specific

2. Increase market awareness

3. The short-term priority is to give full clarity to TSPs

4. Increase the reach by decentralising communications

5. Develop joint efforts with TSPs

6. Zoom into legal value confirmation

1. TS promotion should be service-specific

The TS market is composed of many facets. The survey revealed that the maturity of TS differs significantly. Hence promotion of TS should be performed in a service-specific (signature, validation, time stamping, sealing, delivery …) way.

2. Increase market awareness

Awareness remains low, especially on the downstream side of the TS market, i.e. among business service providers and business service users. This causes uncertainty among suppliers, due to their low visibility on revenue upside potential. The EC should promote awareness, depending on the product, either among all market players or focused on users.

3. The short-term priority is to give full clarity to TSPs

Trust Service Providers are key stakeholders since they have a significant impact on the type of products developed and are in the front line towards the demand side. Considering this importance and the lack of awareness and understanding among TSPs identified through the interviews, significant efforts should be deployed to resolve this issue, particularly regarding the use of trustworthy systems and the qualification scheme.

4. Increase the reach by decentralising communications

Decentralisation of actions and communications will be key to reach a broader scope of stakeholders. Only a very limited number of stakeholders have the time and resources necessary to come to Brussels, and digital communications are not the most relevant means to receive and discuss complex information

5. Develop joint efforts with TSPs

Trust Service Providers spend a lot of time and energy educating the demand side. Several interviewed TSPs shared their openness to joining efforts with the European Commission in this exercise. The European Commission can lever the energy and drive of TSPs to reach a larger audience on the demand side.

6. Zoom into legal value confirmation

As legal uncertainty has been one of the main blocking points for TS adoption for years, the necessary efforts have to be made to ensure that the benefits of the eIDAS Regulation are known and recognised in the market. Further promotion of cross-border recognition of legal effects should be considered, particularly for products such as eSignature and eSeal.

Communication principles

The survey has shed light on some preferences as regards 'source-organisations' and means (or 'channels') to be employed among stakeholders. This is summarised below per type of player.

Preferred source-organisations

National eID authorities prefer to be reached through 'official' bodies. In addition to official bodies, suppliers should be reached via other suppliers, e.g. TSPs connecting to other service firms, or suppliers-exchange forums. The European Commission should try to reach business service providers in an indirect way, i.e. through national authorities and suppliers. Consulting firms and law firms have a key role to play in the development of eID and TS adoption. The European Commission should use them as multipliers by for instance addressing consulting companies and law firms specifically in the Marketing Plan.

Preferred channels

Preferred channels to reach national eID authorities are written documents and events at the national level. Digital channels, i.e. webinars and online discussions, are also relevant. Preferred channels to reach suppliers are written documents and events at the national level. Other means are also relevant. Online discussions should be used sparingly. To reach the business service providers, the European Commission should focus on written documents and events at the national level. Digital channels are irrelevant to reach them directly, they should rather be seen as ways to reach other players and feed them with

needed information and materials in order to reach business service providers.

PART II
MARKETING PLAN

MARKETING PLAN

1   INTRODUCTION

1.1 Objectives of the Marketing Plan

The objective of this work stream is '*to develop a Marketing Plan with a view to raising awareness and stimulate take-up of eID and eTrust services to public administrations, service providers and business end users, European SMEs and citizens as consumers[83]*'.

More specifically, the Marketing Plan should include '*an in-depth marketing and communication strategy plan which should thoroughly develop a targeted marketing communication campaign plan that disseminates accurate and consistent messages, targeted to key stakeholder groups and to be monitored to an appropriate level of detail*'.

1.2 Methodology for building the Marketing Plan

This Marketing Plan was developed according to the following 7 steps.

1. Exhaustive identification of the types of <u>stakeholders</u> on the supply and the demand side of the eID and TS market

2. Mapping <u>interactions</u> between different types of stakeholders

3. Listing <u>issues</u> per type of stakeholders as identified in PART I (Market analysis)

4. Definition of the types of <u>messages</u> needed to solve the issue

5. Selection of the appropriate communication <u>means</u> for each target as well as distribution principles i.e. direct or indirect through multipliers or intermediaries

6. Definition of 'realisation' and 'success' <u>KPIs</u>

7. Finally, sizing of efforts and set timing.

This approach resulted in 14 proposed marketing 'actions', described further in the remainder of this document.

This Marketing Plan is multi-sources and capitalises on previous work, i.e.

- Insights from PART I: MARKET ANALYSIS (including desk research, stakeholders' interviews and stakeholders' survey)

- Insights from stakeholder events e.g. 'eIDAS Trust Services: 6 months on after the switch-over' (19/12/2016)

- Information shared by the Commission during the e-SENS closing event on 2 and 3 March 2017 (Brussels, Belgium)

- Information published by the Commission on the CEF wiki[84].

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[83] As stated in the tender for 'SMART 2015/0046'
[84] https://ec.europa.eu/cefdigital/wiki/

2 PRINCIPLES OF THE MARKETING PLAN

A series of guiding principles have been defined to frame the initiatives of the Marketing Plan. They set the direction for the communication content and distribution mode.

2.1 eIDAS Observatory as the cornerstone of the Marketing Plan

The eIDAS Observatory has been identified as a cornerstone of the Marketing Plan, as it represents an efficient means to reach multiple objectives.

First, it combines a role of an **information crossroad** with that of an first-level repository. As an information crossroad, it is a connector to the community, and it points to key sources of information such as the Official Journal, the DG CONNECT website, the CEF Digital portal and INEA's website. As a first-level repository, it contains selective documents, uses cases and software components. Those can be stored and easily shared through this platform.

Second, it serves as an **interactions catalyst** by allowing and animating forum discussions.

Finally, the Observatory is a **recruitment tool** to onboard new members in the community and recruit participants to events, webinars or workshops.

The detailed strategy about the eIDAS Observatory is outlined in the PART III: *Input for the activities related to the development of the eIDAS European Observatory*

2.2 Leverage intermediaries as eIDAS champions

To reach the large number of stakeholders, the European Commission should try to leverage intermediaries as multipliers. Such intermediaries can be European, national or sectorial associations and federations. Leveraging on their position and their network will allow to use them as multipliers.

This approach can, of course, be combined with a more direct reach and a digital reach through the eIDAS Observatory and social media.

2.3 Industry-focused plan

Stakeholder research[85] reveals that stakeholders, mainly from the demand side, have very sector-specific questions, particularly regarding legal impact and business cases. Therefore, capturing and tackling the sector-specific challenges is critical to secure the effectiveness of the Communication Plan.

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[85] Stakeholders' interviews and survey

2.4 Focus on proof-of-concepts

As the cross-border use of eID and TS services is still in its early stages of development, providing proof-of-concept will unlock the market by unveiling new possibilities. In this exercise, it is key to consider all kinds of profiles and roles available in the Decision-Making Unit (DMU) of business service providers i.e. legal, finance, commercial or risk & compliance.

2.5 Two-tiered eID marketing plan towards Member States

A segmented approach is required when dealing with Member States.

On one hand, increased efforts must be deployed towards less involved Member States. These efforts should mainly be dedicated to raising the sense of urgency in these Member States with a lot of educational content, for example using business cases and use cases from other Member States, with tangible benefits.

For these Member States, exposing the financial support options offered by the EC, e.g. via the CEF, is important as it facilitates building up the required infrastructure.

On the other hand, more 'inspirational' content should be developed and experience-sharing actions should be initiated towards Member States that are already highly involved in the eID and TS topics.

2.6 Six roles that the European Commission can fulfil in the execution of the Marketing Plan

The EC can take six main different yet complementary roles in the execution of this Marketing Plan.

1. **'Sponsor'**

   - Provide funding or orient towards sources of funding (CEF)

2. **'Influencer'**

   - Lead direct discussions with major stakeholders, national bodies, trade or consumer associations, etc.) to influence towards the expected outcome

   - Support discussion in some other forums (CAB Forum, for example)

   - E.g. through direct communication, targeted workshops, lobbying, etc.

3. **'Standard setter'**

   - Set interoperability standards, enabling cross-border interactions

   - E.g. through 'partner' standardisation bodies and ENISA

4. **'Information generator'**

   - Generate content on available information or generate new insights

   - E.g. Press, written documents, case-studies (shared on eIDAS Observatory)

5. **'Community builder/facilitator'**

   - Connect various stakeholders to discuss and exchange on specific topics

   - E.g. during events or on online forums

6. **'Information exchange facilitator'**

   - Centralise and make explicit already available sources of information, i.e. redirect to other bodies (pointers to Member States, standardisation bodies, etc.)

   - E.g. on the eIDAS Observatory

3 MARKETING PLAN OBJECTIVES, STRUCTURE AND OVERVIEW

The following section highlights the key aspects of the Marketing Plan, i.e. its main objectives per target, presents and evaluates the relevance of various channels against each target, and provides an overview of the 13 marketing actions identified.

3.1 Four pillars of the Marketing Plan

Based on the market description, four main objectives shave been identified, translated in 'pillars' of the Marketing Plan:

- Promote the development of **infrastructure** enabling the development of eIDAS compliant use-cases

- Develop **awareness and trust** in the market

- Support the development of **use-cases**

- Ensure that **enablers** are in place to support each of the previous pillar. Notably, knowledge must be easy to access (specifically legal and technical knowledge).

The figure below describes the four pillars, and their interactions.
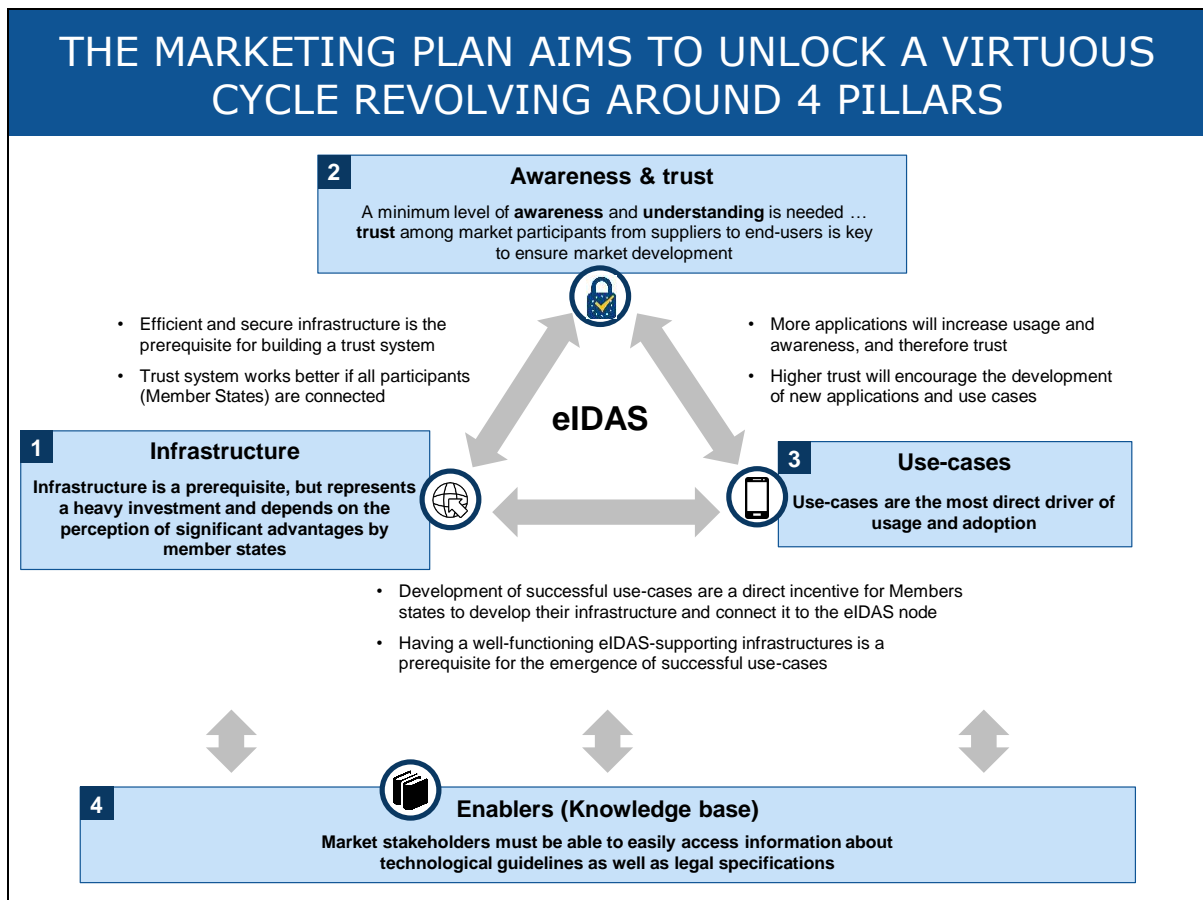
Figure 47 Four pillars of the Marketing Plan

This virtuous cycle will be the basis for the definition of all marketing actions.

Of course, each target will have specific role to play to reach these four objectives.

- The main targets to drive development of infrastructure are, of course, the **national eID authorities**.

- Trust must be built by **QTSPs**, which should communicate on the EU trust mark towards the demand side, who in turn should well perceive and understand this trust. Awareness about eIDAS in general and the new use cases it can enable must be raised on all actors of the demand side, i.e. business service providers and users.

- Development of new applications and use-cases will be facilitated by connecting demand and supply players. **Demand side** must be aware of the field of possible use-cases and services provided by suppliers. Adoption by business service users will be either natural thanks to their attractiveness or promoted by the business service providers themselves.

- Knowledge sharing is mainly targeting **'core' market actors** i.e. (Q)TSPs and business service providers.

The different roles of each target in the marketing plan is described in the figure below.
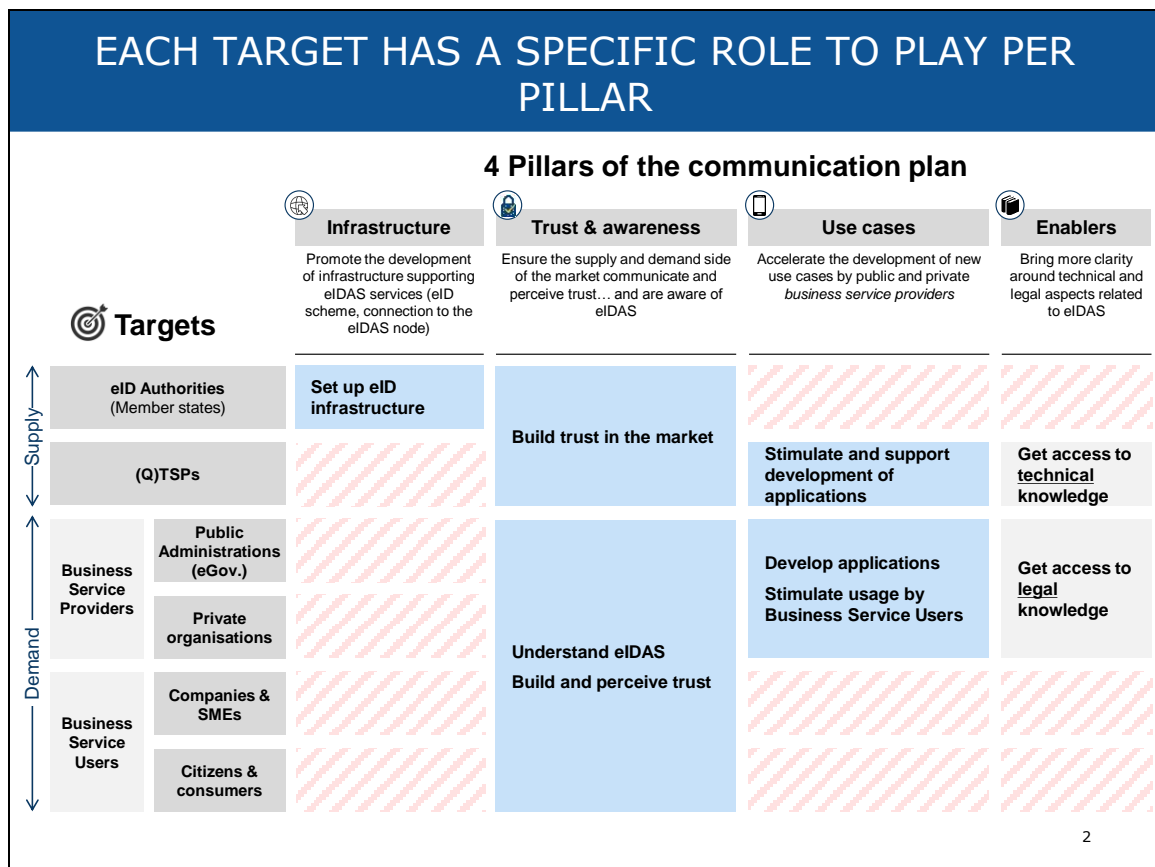
Figure 48 High level role of each target in the Marketing Plan.

3.2 Channels toolbox and fit per target

Before deciding on marketing actions that should be deployed by the European Commission, the relevance of different channels for each target must be assessed in order to create a 'communication toolbox'.

According to the classic marketing literature, channels can be classified in three main categories depending on their level of control and role in the marketing cycle, i.e. 'Owned', 'Paid' and 'Earned'.

The figure below presents a list of channels that can be used by the European Commission and their suitability for each target of the communication plan.

		Supply		Demand			
				Business Service Providers		Business Service Users	
Channels		eID Authorities	(Q)TSPs	Public Admin. (eGov)	Private organi-sations	Companies &SMEs	Citizens & consumers
1 Owned	eIDAS Observatory	Medium	High	High	High		Low
	EU banners (e.g. Berlaymont)	Low	Low	Low	Medium		High
	"Controlled" Social Medias	High	High	Medium	Medium		Low
	DG CONNECT events	High	High	Medium	Medium		Low
	Support (Q&A, chat-bot, hotline)	Low	Low	High	High		Medium
	Webinars	High	High	High	High		Low
	Other DGs & commissioners	Low	Low	High	High		Low
2 Paid	Above the line (TV, Radio,…)	Low	Low	Low	Medium		High
	Digital advertising	Low	Low	Low	Medium		High
	Direct Marketing	Low	Low	Medium	Medium		Low
	Sponsored books & publication	Low	Low	Medium	Medium		Medium
	Press	Low	Low	Medium	Medium		High
3 Earned	Web - search engine & Wikipedia	Low	Low	High	High		Medium
	Uncontrolled Social Media	Low	Low	Medium	Medium		Low
	3rd party events (e.g. assoc.)	High	High	High	High		Low
	Academic & publications	Low	Low	Medium	Medium		Medium

Figure 49 Relevance of each channel per target of the communication plan.

3.3 Overview of 19 marketing actions identified

Nineteen marketing initiatives have been identified, with clear targets and contributions to one of the four pillars of the Marketing Plan.

The figure below presents these 19 initiatives per target and objective. They are summarised briefly hereunder and are developed in greater details in sections 4, 5 and 6 of this document.
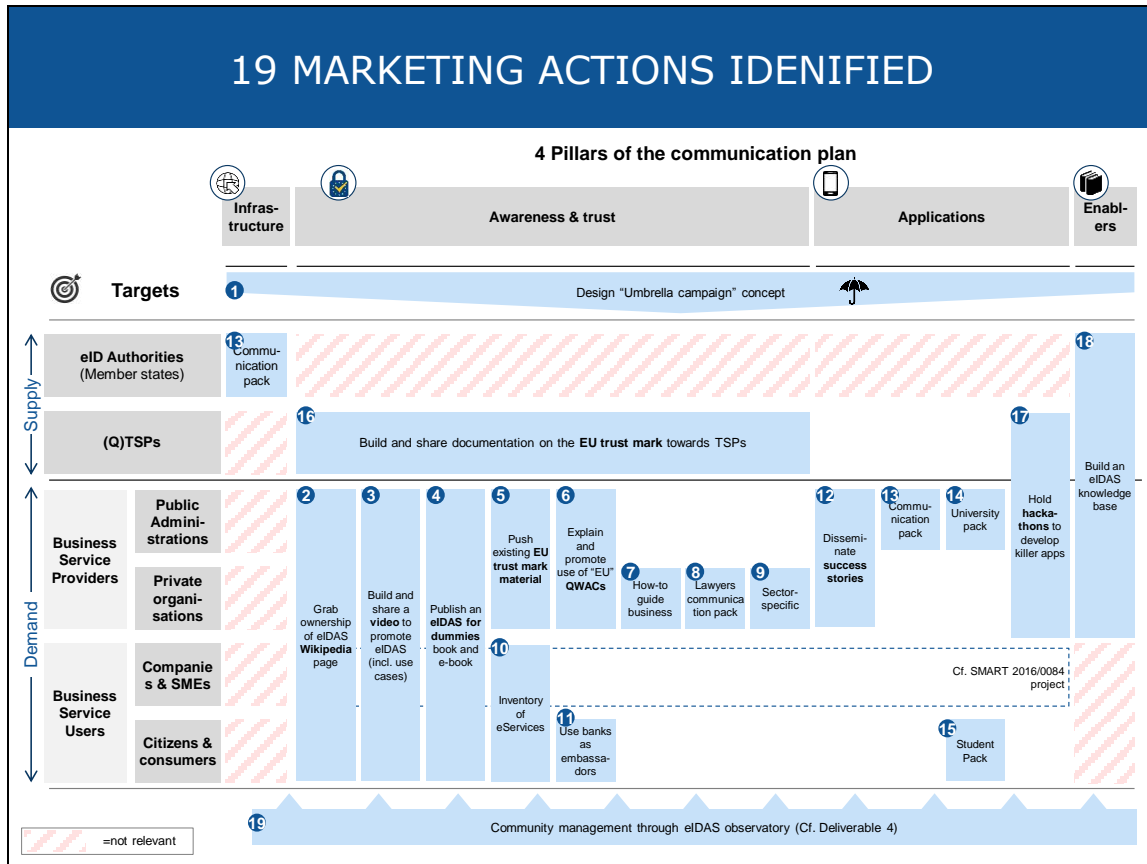
Figure 50 Overview of marketing actions.

First, there is a general initiative with interest for **both the demand and the supply** side.

1. Design an 'Umbrella campaign' to ensure all marketing actions are consistent with one another. E.g. topic around 'trust' or common visuals such as an 'eIDAS character'.

Second, are all the initiatives targeting the **demand side**.

2. Take ownership of the eIDAS Wikipedia page.

3. Build and share a video presenting eIDAS and its possible use cases.

4. Publish or commission an official[86] 'eIDAS for dummies' book and e-Book.

5. Explain the EU trust mark concept to the business service providers, so they know about this trust anchor when dealing with trust suppliers.

6. Explain and promote use of 'EU' QWACs.

7. Build a "how-to-make-the-most-of-eIDAS" guide for businesses, outlining how to obtain the maximum value out of the Regulation and all the services that are enabled by it

8. Create a "lawyers communication pack", situating eIDAS in the larger spectrum of legal instruments, explaining its legal value and benefits, and providing pointers to practical legal implementation regarding electronic communication, document exchange, contracting, website authentication etc.

9. Develop sector-specific approach to solve concrete issues

10. Build an inventory of all e(gov)Services available for citizens and consumers

11. Use banks as ambassadors to increase widespread adoption

12. Disseminate success stories to make sure best practices are perceived by the market players.

13. Build and share a communication pack towards Member states (eID authorities and Public Administrations), presenting targeted use cases to different ministries and the benefit they bring.

14. Build and disseminate a 'University communication pack' to present advantages of digital cross-border processes to universities, as well as use cases.

15. Build and disseminate a 'Student communication pack' to facilitate communication of universities towards students. The purpose is to market the eIDAS cross-border processes to students.

Third, are all initiatives with the **supply side** as main target.

16. Disseminate the EU trust mark material towards QTSPs to incentivise its usage.

17. Hold hackathons putting demand and supply together, along with the developers' community in order to develop new applications.

18. Consolidate available documentation about eIDAS (technology, legal, market players, etc.) in a central repository.

Finally, the management of the community through the **eIDAS Observatory**.

19. Manage community through the eIDAS Observatory.

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[86] Considering Thales already published 'The eIDAS Regulation for dummies', available from https://www.thalesesecurity.com/resources/.../eidas-dummies-guide

3.4 Summary of the 'channel strategy'

In order to reach the target in the most efficient way, digital channels and intermediaries must be leveraged.

The distinction can be made between three major types of channels that can be used by the European Commission.

1. **Intermediaries**

   Intermediaries are used to reach a larger audience. They are for example, European associations or federations to reach out to the private and public organisations as well as the broader public, national digitalisation agencies to reach out to public administration or EU commissioners to carry the message towards relevant bodies of Member States. Intermediaries can be reached out via a series of channels such as events, meetings or response to ad hoc requests.

2. **Direct contacts**

   Direct contacts are the most resource-consuming ones, and should therefore be oriented towards stakeholders with the highest individual market contribution (i.e. eID authorities and (Q)TSPs). Direct contacts are the closest to current activities of the DG CONNECT team.

3. **Mass/digital channels**

   Mass and digital channels are a key component of the marketing plan.

   First, they will be used to animate the community of stakeholders and listen to market needs, i.e. through the eIDAS Observatory.

   Second, they will be used to disseminate marketing materials (books, videos, papers, etc.) to a larger audience.

   Greater details about the eIDAS Observatory strategy are available in PART III: *'Input for the activities related to the development of the eIDAS European Observatory'.*

The figure below depicts the channel approach for the marketing plan.
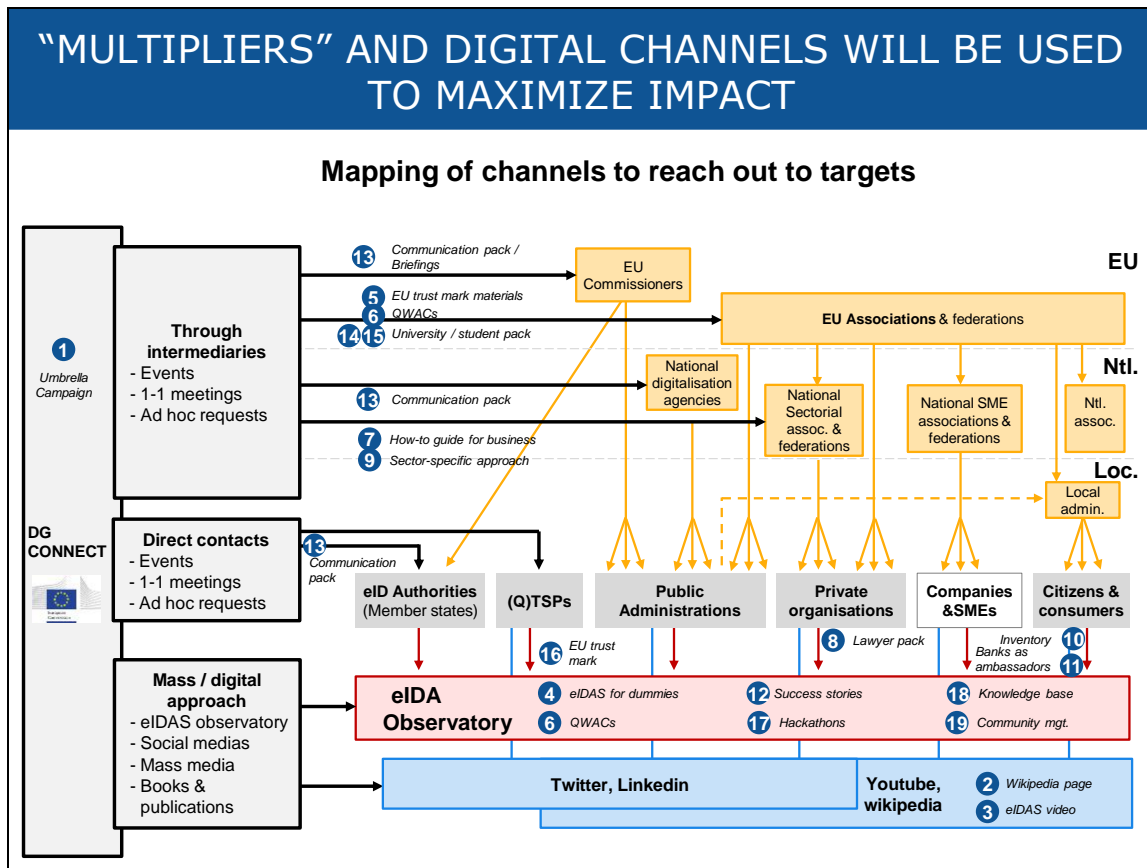
Figure 51 Mapping of channels.

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The next parts of this document present each of the 14 actions in greater detail.

4: 'General' actions: 1 and 19

5: Demand-oriented actions: 2 to 15

6: Supply-oriented actions: 16, 17 and 18

4 'GENERAL' ACTIONS

This section presents marketing actions targeting both demand and supply stakeholders.

Issue	Target	Action	Message	eID	eTS
Variety of target profiles	• All targets both from the supply and demand	**Action #1:** Design an 'umbrella campaign' concept	• The message shared should explain the very high-level benefits of eIDAS	✓	✓
Need for increased participation and interactivity in the eIDAS Observatory	• All targets both from the supply and demand. Mainly Trust Service Providers and Business Service Providers	**Action #19**: Manage the eIDAS community through the eIDAS Observatory	• Cf. D4 *'Input for the activities related to the development of the eIDAS European Observatory'*	✓	✓

Figure 52 Summary of 'general' actions

4.1 Create a coherent, integrated campaign across all stakeholders

Issue

The variety of targets and actions of the communication plan requires to build an 'umbrella campaign' theme. The purpose is to create coherence across all actions and channels to maximise their impact since targets will be able to establish a link between different touchpoints.

Targets

All targets from the communication plan including both supply and demand actors.

4.1.1 Action #1: Design an 'umbrella campaign' concept

Message

Use consistent, overarching theme for all other actions.

Here are some examples of themes that could be replicated across all marketing actions:

- Common design and graphic charter

- A humanised representation or eIDAS, i.e. 'eIDAS guy'

- Easy-to-understand presentation 'tagline' such as 'Digital and safe Europe' or 'Digital Safety and Trust', 'Digital future of trust and identity', etc.

Tools & means

Hold workshop(s) with a creative agency, presenting the other initiatives and brainstorming on possible overarching 'umbrella campaign' concepts.

Channels/Diffusion method

Cf. all other marketing actions

Investment needed & organisation

EUR 15K to design the umbrella campaign

'Realisation' KPIs

- Umbrella **visuals** are defined
- Umbrella **tagline** is defined
- **Transformation into a variety** of other marketing actions is defined

'Success' KPIs

- Number of other marketing actions based on this 'umbrella campaign'
- **Impacted Market KPIs[87]**
- None directly

4.2 Animate the stakeholder community

4.2.1 Action #19: Manage the eIDAS community through the eIDAS Observatory

The complete strategy and recommendations on the eIDAS Observatory are available in the PART III: *Input for the activities related to the development of the eIDAS European Observatory*

4.3 Manage Crisis

4.3.1 Crisis management plan

Stakeholders expect a crisis management plan in case of vulnerability, security or privacy breaches, such as the Estonian eID crisis in 2017. This was due to a programming error in the cryptographic library (RSAlib), which exposed a weakness. As a consequence, the Estonian government had to publicly announce a mitigation plan for a large amount of their eID cards.

The idea is to avoid a loss of trust in the system, especially if such crisis would happen in the context of a Notified eID scheme.

At this stage the crisis management plan is not defined, but the target audience would definitely include key stakeholders i.e. Trust service providers, member states, etc. but also broader audience that can be reached through the social networks.

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[87] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

5 DEMAND-ORIENTED ACTIONS

This part outlines the actions targeting the demand-side of the eIDAS market, i.e. end users and business service providers.

The figure below provides an overview of the key targets, messages and tools used to address the demand-side of the market

Issue	Target	Action	Message	eID	eTS
Low awareness about eIDAS	• Citizens • Consumers • SMEs • Business service providers	**Action #2**: Take ownership of eIDAS Wikipedia page	• What is eIDAS? • What will it mean for private individuals? • How can I recognise eIDAS-compliant, i.e. safe process/websites? • Where can I find official documents?	✔	✔
		Action #3: Build and share a video/series of videos to promote eIDAS with key possible use cases that eIDAS will allow	• What is eIDAS? • What will it mean for private individuals? • New, future use-cases • What does the EU trust mark stand for?	✔	✔
Scattered and multidisciplinary information	• Lawyers/Law students • Technology professionals/students • Anyone with interest in eIDAS and the new use cases it unveils	**Action #4**: Publish an 'eIDAS for Dummies' book	• Explain and present eIDAS with a lot of common sense, but also more details on legal and technical aspects.	✔	✔
Low awareness and adoption among SMEs	• SMEs • Sectorial associations	This action is the focus of another study particularly addressing SMEs - SMART 2016/0084	• n/a	✔	✔
Low awareness of EU trust mark among business service providers	Risk, compliance and IT officers from: • Banks • Insurances • Universities • eGovernments • Fintechs	**Action #5**: Push existing EU trust mark material towards business service providers through multipliers	• Explain the EU trust mark and that TSPs with this logo provide highly secure Trust Services, as set out under eIDAS Regulation i.e. are QTSPs		✔
Low take up of EU QWACs	• Business service providers	**Action #6**: Explain and promote use of QWACs	• Explain how EU QWACs can be used. Promote their usage as a 'European solution'.		
Companies that do not know how to turn theory into practice	• (potential) Business service providers	**Action #7**: Build a "how-to" guide for businesses	• Using e-signature is easier than being thought and saves money and time in long term • Qualified services reduce risks • Open new channels to costumers • Explain the advantages of them in order to empower clients	✔	✔
Lawyers are not aware of the possibilities of eIDAS	• Lawyers (In-house / Government level / outside counsel)	**Action #8**: Build a lawyers' communication pack	• Lawyers would help the businesses to understand the possibilities eIDAS gives • Lawyers are in the position to drive the change in business processes • You can make more money by being aware of the system	✔	✔

Issue	Target	Action	Message	eID	eTS
Many sectors do not see how the eIDAS can benefit to them specifically	• Transport • Health • Retail • Insurance, Agriculture • Energy	**Action #9**: Deploy sector-specific approaches	• eIDAS-services can benefit to your business by increasing efficiency and speed, or by reducing costs. • It can also bring new business by allowing for new services and opening access to new geographies markets	✔	✔
End-users are not aware of existing e-services, hence their low usage.	• All EU citizens, consumers and other end-users	**Action #10**: Build an inventory of available e(gov)services	• Provide a matrix with Members States and the services they offer to their citizens. Specific attention should be brought on services available to foreign EU citizens i.e. cross-border uses.	✔	✔
Lack of critical mass of eIDAS service users	• Banks • Banks' associations	**Action #11**: Use banks as ambassadors	• Banks should be ambassadors of eIDAS-services as they can reach a large share of the population. They should promote the use of eIDAS compliant processes e.g. digital onboarding and communicate around it	✔	✔
Lack of inspirational success stories	• Business service providers	**Action #12**: Disseminate success stories	• Real-life use cases on similar industries or situations • Tangible benefits they bring in user satisfaction, new income, cost savings or risk management	✔	✔
Some Member States have not notified yet their eID scheme to connect to the eIDAS node + eGov applications remain limited in some MS	• National Competent Authority for eID • Ministries of Economy, Finance, Justice, Education, Health	**Action #13**: Build a Public Administration Communication Pack with arguments to promote eID, TS, and eGov applications	• Holistic message that highlights the benefits from eIDAS for each Ministry • Supported by showcasing	✔	✔
Education as key cross-border use case	• Universities	**Action #14**: Create and disseminate a 'University Pack'	Explain how universities can benefit from remote, digital cross-border student on-boarding processes to 1. increase the number of international visiting students, 2. improve their image as international organisations and 3. improve their cost effectiveness.	✔	✔
	• Students	**Action #15**: Create and disseminate a 'Student Pack'	• Explain to students how they can benefit from eIDAS services when they are going for a semester abroad, and how it can add value in their professional life later	✔	✔

Figure 53 Summary of demand-oriented initiatives

5.1 Increase awareness among citizens and consumers

Issue

Citizen and consumer awareness is low on eIDAS, its advantages and the new use cases it unveils. As a result, companies (business service providers) have difficulty demonstrating the added valued of eIDAS-compliant processes vs. processes already in place.

Target

1. **Citizens** i.e. private persons that conduct 'transactions' with governments and official bodies, e.g. local authorities, federal bodies, universities, hospitals, etc.

2. **Consumers** i.e. private persons that conduct 'transactions' with private organisations, e.g. banks, insurances, online stores, …

5.1.1 Action #2: Take ownership of the eIDAS Wikipedia page

The Wikipedia page is a main source for quick information about the eIDAS Regulation. Indeed, it attracts a significant volume of visitors (more than 4 000 per month) as depicted in the graph below.
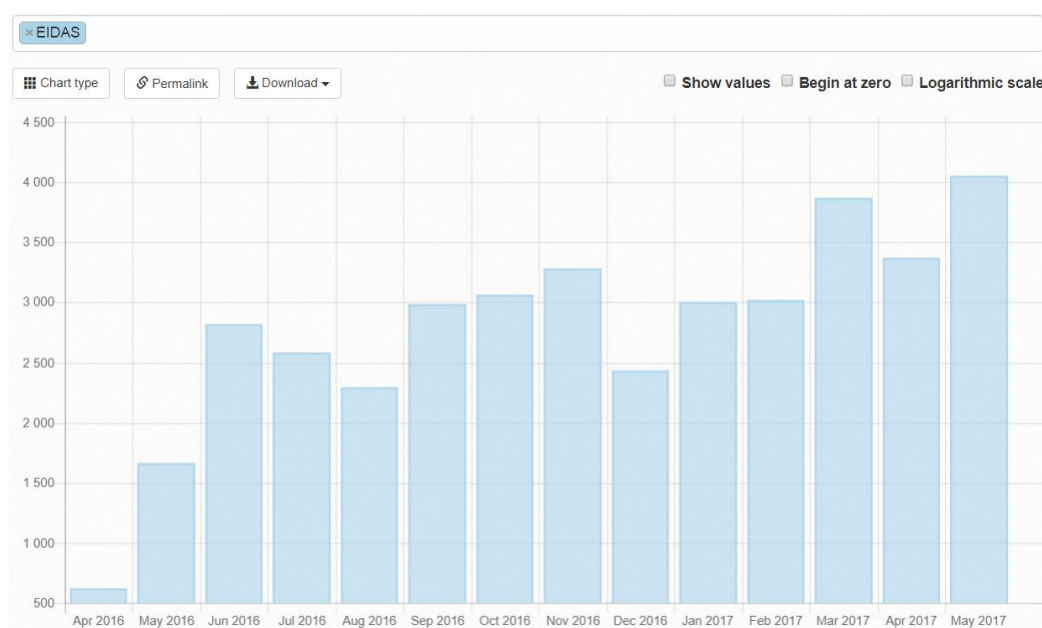
Figure 54 Volume of visits on the eIDAS Wikipedia Page
(Source: wmflabs.org1[88])

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[88]https://tools.wmflabs.org/pageviews/?project=en.wikipedia.org&platform=all-access&agent=user&start=2015-07&end=2017-05&pages=EIDAS

Message

Complete the legal and technical information about eIDAS already on the Wikipedia page with simple and tangible explanations.

- What is eIDAS?

  'The Regulation (EU) N°910/2014 on electronic identification and trust services for electronic transactions in the internal market (eIDAS Regulation) adopted on 23 July 2014 provides a predictable regulatory environment to enable secure and seamless electronic interactions between businesses, citizens and public authorities.

  In this regard, the eIDAS Regulation:

  - Ensures that people and businesses can use their own national electronic identification schemes (eIDs) to access public services in other EU countries where eIDs are available.

  - Creates a European internal market for electronic trust services – namely electronic signatures, electronic seals, time stamp, electronic registered delivery service and website authentication – by ensuring that they will work across borders and have the same legal status as traditional paper-based processes.

- What **will** it mean for private individuals? – New, future use-cases:

  o Trans-border tax declaration

  o Remotely register with another member states local population register in case of a move within the EU

  o Remotely open a bank account in another EU Member State

  o Remotely contract signature for a new job

  o Facilitated identity verification to open bank accounts and open utility contracts in another EU Member State

- Where can I find official documents?

  o Website of the European Legislation:

  http://eur-lex.europa.eu/

  o Website of the Official Journal:

  http://eur-lex.europa.eu/oj/direct-access.html

  o eIDAS information website:
  https://ec.europa.eu/futurium/en/content/eidas-Regulation-Regulation-eu-ndeg9102014

o eIDAS Observatory website: https://ec.europa.eu/futurium/en/eidas-Observatory

Tools & means

- eIDAS Wikipedia page in English (and possibly other languages)

Channels/Diffusion method

- No specific promotion of the Wikipedia page, this is a 'Pull' channel.

Investment needed & organisation

- 4 man-days, by DG CONNECT team or outsourced

- 1 man-day from DG CONNECT team to review the page

'Realisation' KPIs

- Simple definition of eIDAS and presentation of key use-cases are on the Wikipedia page (Yes/No)

'Success' KPIs

- Number of view of the eIDAS web page

Impacted Market KPIs[89]

- None directly

5.1.2 Action #3: Build and share a video to promote eIDAS with key possible use cases that eIDAS will allow

Message

Explain eIDAS in a simple and tangible way.

- What is eIDAS?

- What **will** it mean for private individuals? – New, future use-cases

- How can I recognise eIDAS-compliant, i.e. safe process/websites (EU trust mark)?

Tools

- Short video (1-2 minutes)

- Organise a contest to make a creative video, to ensure to address the right audience i.e. 'citizens talking to citizens' or 'young people talking to young people'

- Video should be targeted towards specific use cases. An example is the the "Digital Platform for Attorneys" promotional video. It can be found under the following link: https://vimeo.com/199290307

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[89] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

- However, the expected 'buzz' effect seemed not achieved (fewer than 4,000 views since October 2015). Some first thoughts on improvement are presented here below:

    o Greater impact by going more 'to the point'

    o Visuals should be more modern (e.g. infographics to maintain production costs reasonable)

    o More use cases can be presented, targeting citizens but also small and large businesses

    o Use case presented can be more 'projective' e.g. assuming for example PSD2 and the Financial Single Market are in place

    o Focus also on 'greater benefits' than personal time savings, e.g. market competitiveness and government efficiency

Channels/Diffusion method

- eIDAS Observatory
- YouTube
- Twitter
- LinkedIn

Investment needed & organisation

- Write Terms of Reference for creative agencies: 5 man-days of DG connect or outsourced
- Review, assess and select proposals submitted by creative agencies: 5 man-days of DG Connect or outsourced
- Finance the creation of a 2-minute video: EUR 10K
- Diffuse video: 5 man-days of DG connect or outsourced

'Realisation' KPIs

- Video is produced (Yes/No)

'Success' KPIs

- Number of views on different channels

Impacted Market KPIs[90]

- **Market KPI 16**: Maturity
- **Market KPI 18**: eIDAS Observatory activity
- **Market KPI 19**: eIDAS Google searches

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[90] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

5.2 Facilitate education of people 'interested' in eIDAS

Issue

Useful information about eIDAS is multidisciplinary, i.e. legal and technical, and scattered (in the regulation, in standardisation bodies, in Certificate Accreditation Bodies, etc.), making it difficult to access all relevant information in a single point.

Target

1. **Lawyers/Law students:** Have an interest in understanding the high-level content of eIDAS, although they are specialised in this topic.

2. **Technology professionals/students:** Have an interest in understanding the high-level content of eIDAS, although they are specialised in this topic.

3. **Anyone with interest in eIDAS and the new use cases it unveils:** Students, business owners, managers in large organisations, etc.

5.2.1 Action #4: Publish an 'eIDAS for Dummies' book and e-book

Message

As Commission, being the authoritative source, explain and present eIDAS with a lot of common sense, supported by relevant details and guidance on legal and technical aspects.

Tools

'eIDAS for Dummies' book/e-book. We propose to have both a print and an electronic version. The pricing should not aim for profit but to ensure maximum distribution. Paper version should at least cover production costs. The electronic version can be free of charge. Please note that a supplier of trust services hard and software has already produced a first version[91].

Channels/Diffusion method

- Usual 'for dummies diffusion channels'
- eIDAS Observatory
- Twitter
- LinkedIn

Investment needed & organisation

- Select the author: 5+ man-days from DG CONNECT
- Align on book content: 5 man-days from DG CONNECT
- Writing content: external writer(s) – EUR 20K
- Review of content: 15 man-days from DG CONNECT

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[91] https://www.thalesesecurity.com/resources/ebooks/eidas-dummies-guide

Manage project, interact with project management, interactions with publisher, etc.

'Realisation' KPIs

- eIDAS for dummies book is published – Print version
- eIDAS for dummies book is published – Electronic version

'Success' KPIs

- Number of books sold
- Number of e-Books downloaded (Free of charge)

Impacted Market KPIs [92]

- **Market KPI 16**: Maturity
- **Market KPI 18**: eIDAS Observatory activity

5.3 Increase awareness among SMEs

5.3.1 Cf. SMART 2016/0084

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[92] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

5.4 Raise awareness of business service providers on the EU trust mark

Issue

Awareness on the EU trust mark logo remains low among intermediary business providers. Increasing this awareness is key in order to support trust in the market. If business service providers see the EU trust mark as competitive differentiators, QTSPs will have a greater incentive to display it as well. Increasing the display of EU trust mark logo by QTSPs is also foreseen in the initiative 4.3.1 *'Build and share documentation on the EU trust mark towards (Q)TSPs'*.

Target

Risk, compliance and IT officers from:

1. **Banks**
2. **Insurances**
3. **Universities**
4. **eGovernments**
5. **Fintechs**

5.4.1 Action #5: Push existing EU trust mark material towards business service providers through multipliers

Message

Explain the EU trust mark and that TSPs with this logo provide highly secure Trust Services, as set out under eIDAS Regulation, i.e. are QTSPs.

Tools

- EU trust mark web page
  - https://ec.europa.eu/digital-single-market/en/eu-trust-mark
- EU trust mark FAQ:
  - https://ec.europa.eu/digital-single-market/sites/digital-agenda/files/eu_trust_mark_qa_final.pdf
  - The current FAQ is designed mainly for QTSPs. A new version targeting mainly business service providers should be envisaged.

Channels/Diffusion method

- Diffusion should be made through intermediaries, at the European level, e.g.:
  - European Banking Federation (http://www.ebf-fbe.eu)
  - European Universities Association (http://www.eua.be/)
  - European Fintech Alliance (https://www.fintech-alliance.eu/)
  - European consumer credit association (http://www.eurofinas.org/)

- o CEF team within DG DIGIT

- o DG-FISMA

- Leverage other EC bodies to promote the EU trust mark

- During events and workshops, the DG Connect team can further promote the EU trust mark, also on 'non-eIDAS professionals', i.e. the demand side.

Investment needed & organisation

- 2 man-days to write the new FAQ, oriented towards business service providers from DG CONNECT or outsourced

- EUR 1 000 for formatting by a design agency

- 10 man-days needed to contact and on-board multipliers

'Realisation' KPIs

- Number of intermediaries (e.g. sector associations) contacted

- Number of business service providers that received the message

- Number of QTSP receiving the message

'Success' KPIs

- Number of QTSPs using the logo on their website (common KPI with Action #10)

Impacted Market KPIs[93]

- **Market KPI 17**: EU Trust Mark Usage

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[93] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

5.5 Stimulate demand for QWACs

Issue

Limited take up of eIDAS Qualified Website Authentication Certificates (QWACs) versus the large and mainly US driven uptake of SSL/TLS certificates

Target

All business service providers currently relying on American SSL/TLS certificates

5.5.1 Action #6: Explain and promote use of 'European' QWACs

Message

Explain how EU QWACs can be used. Promote their usage as a 'European solution'.

Tools

- Written document
- ENISA publication[94] on QWACs
- Infographics

Channels/Diffusion method

- Business service provider intermediaries (Cf. previous action)
- eIDAS Observatory

Investment needed & organisation

- Creating the written document and infographic: 5 man-days from DG CONNECT or outsourced
- Design the infographics by a design agency ~ EUR 2 000

'Realisation' KPIs

- Written document is ready
- Infographics are ready

'Success' KPIs

- Number of downloads of written document/infographics

Impacted Market KPIs[95]

- None directly (but could be integrated in the *TS adoption & implementation* KPI)

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[94] https://www.enisa.europa.eu/publications/qualified-website-authentication-certificates
[95] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

5.6 Facilitate adoption by private sector

5.6.1 Action #7: Build a "how-to" guide for businesses

Issue

There are still companies and organisations that do not know how to turn theory into practice.

Target

"Businesses" are here Functional service providers that should be encouraged to provide eIDAS-based services to the business services users. This means that SMEs are also a key target of this initiative.

Message

- Using e-signature is easier than being thought and saves money and time in long term
- Qualified services reduce risks
- Open new channels to costumers
- Explain the advantages of them in order to empower clients
- Focus on simple messages built around easy solutions such as pdf-based solutions and widely-spread tools.

Tools & means

- Video
- FAQ document
- Open source library
- Private sector tools such as e.g. Adobe pdf-tools and corresponding guidelines
- Case-studies

Channels/Diffusion method

- Chambers of commerce
- eIDAS Youtube
- training sessions
- collaboration with private sector, e.g. Adobe
- public information campaign

Investment needed & organisation

- Creating the written document: 20 man-days from DG CONNECT or outsourced
- Promote the document through the eIDAS observatory: 5 man-days from DG CONNECT

'Realisation' KPIs

- Written document is available and published on the eIDAS Observatory

'Success' KPIs

- Number of downloads of the document on the eIDAS Observatory

Impacted Market KPIs[96]

- None directly

5.6.2 Action #8: Build a lawyers' communication pack

Issue

Many lawyers are not sufficiently aware of the possibilities of eIDAS

Target

Lawyers (In-house / Government level / outside counsel)

Message

- Lawyers would help the businesses to understand the possibilities eIDAS gives
- Lawyers are in the position to drive the change in business processes
- You can make more money by being aware of the system

Tools & means

- A written document and sample materials redirecting towards further links for an in-depth info
- Incorporating the topic in universities' curriculums, e.g. by sponsoring a chair or research
- Special training sessions

Channels/Diffusion method

- National law societies
- Bar associations
- eIDAS observatory
- eIDAS Wikipedia having the links

Investment needed & organisation

Creating a written document targeting lawyers – 10 man-days from DG CONNECT or outsourced

Promoting the materials towards Bar associations - 5 man-days from DG CONNECT

'Realisation' KPIs

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[96] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

- Number of Bar associations that have published guidelines

- Number of languages in which it has been translated

- Number of training sessions

'Success' KPIs

- Number of access to the different materials

Impacted Market KPIs[97]

- None directly.

5.6.3   Action #9: Deploy sector-specific approaches

Issue

Many sectors do not see how the eIDAS can benefit to them specifically, from new business opportunities to paper-work simplification. This requires to first get a clear view on their current issues.

Target

All sectors that have a high potential for 1) cross-border administrative tasks (e.g. cross-border farm lands, small/medium retail chains,…) and 2. cross-border client base (transport, health, retail, insurance and energy).

Message

eIDAS-services can benefit to your business by increasing efficiency and speed, or by reducing costs.

It can also bring new business by allowing for new services and opening access to new geographies markets.

Tools & means

Trade shows, sector-specific events, communication, channels (existing), e.g. "farmers today".

Channels/Diffusion method

Branch-organisations, national authorities

Investment needed & organisation

The team should be a mix of eIDAS experts and sector experts, exact investment and time needed will depend on sectors, their issues and the solutions that will be identified and deployed.

'Realisation' KPIs

- Number of sectors for which an approach has been defined and deployed

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[97] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

'Success' KPIs

- Adoption of services designed for specific sectors

Impacted Market KPIs[98]

- None directly.

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[98] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

5.7 Increase visibility on available e(gov)Services

5.7.1 Action #10: Build an inventory of available e(gov)services

Issue

End-users are not aware of existing e-services available from national or EU administrations, hence their low usage.

Providing an inventory of existing e-services available to EU-citizens by public administrations, and state of mutual recognition between national eIDAS would encourage their spontaneous usage by citizens.

Target

All EU citizens, consumers and other end-users.

Message

Provide a matrix with Members States and the services they offer to their citizens. Specific attention should be brought on services available to foreign EU citizens i.e. cross-border uses.

Tools & means

Webpage published on the eIDAS observatory

Channels/Diffusion method

eIDAS Observatory

Investment needed & organisation

Publication and maintenance of the inventory on the eIDAS Observatory.

'Realisation' KPIs

- Matrix is published and maintained up-to date

'Success' KPIs

- Usage level of eGov services

Impacted Market KPIs[99]

- **KPI 23:** eGov – Filled forms

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[99] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

5.8 Leverage key private sector players to increase citizen eID-services adoption

5.8.1 Action #11: Use banks as ambassadors

Issue

One of the reasons for low adoption is the lack of critical mass of users of eIDAS-service e.g. eID-based services.

Target

Banks, to reach to their clients.

Message

Banks should be ambassadors of eIDAS-services as they can reach a large share of the population. They should promote the use of eIDAS compliant processes e.g. digital on-boarding and communicate around it.

Tools & means

Argumentation pack on how banks can benefit from eIDAS services for clients-exposed processes.

Channels/Diffusion method

Bank associations (EBA) or direct connection to banks. Relevant profiles are process managers, head of compliance, head of customer experience.

Investment needed & organisation

Reaching out to banks and bank associations: 20 man-days from DG CONNECT

'Realisation' KPIs

- Number of banks/associations contacted

'Success' KPIs

- Number of banks using processes based on eIDAS services

Impacted Market KPIs[100]

- None directly

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[100] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

5.9 Inspire the business service providers to create new usages/applications

Issue

Business service providers still need inspiration on the real-life use cases and tangible benefits they bring

Target

All business service providers from private and public organisations

5.9.1 Action #12: Disseminate success stories

Message

- Real-life use cases on similar industries or situations. Focus is on industries with a high number of cross-border trust transactions (car rental, cross-border healthcare, cross-border taxation …) or looking to expand internationally (Financial services, insurance …).

- Tangible benefits they bring in user satisfaction, new income, cost savings or risk management

Tools & means

- One or two-pagers with presentation of the solution and the benefits it brings

Channels/Diffusion method

Success stories can be gathered through 3 different channels:

- On the Observatory, e.g. through a template for success stories gathering

- Through intermediaries that have a preferred relationship with business service providers of a specific sector or industry, e.g. associations and federations

- On an ad-hoc basis by the DG CONNECT team that has a transversal view on the market

Once gathered and reworked by the DG CONNECT team, success stories can be disseminated through the eIDAS Observatory, e.g. through newsletters.

Investment needed & organisation

No dedicated extra resources are needed as this is part of the activities of the eIDAS Observatory. Time needed from the DG CONNECT team is to review the success stories written by other stakeholders. This is estimated to be one day per month.

Time must also been foreseen on stakeholders' side to provide content and write success stories, although we do not include it the sizing exercise.

'Realisation' KPIs

- Success stories-gathering form is available on the eIDAS Observatory.

'Success' KPIs

- Number of success stories published on the eIDAS Observatory.

Impacted Market KPIs [101]

- **Market KPI 5**: eGov applications

- **Market KPI 6**: Banking e-Processes

- **Market KPIs 20, 21, 22, 23, 24**: All DESI indicators

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[101] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

5.10 Promote the benefits of eIDAS towards Member States

Some Member States are less advanced in developing their eID schemes. They will thus have more difficulty notifying them in order to connect to the eIDAS node.

In order to increase adoption of eID and TS services, Member States must work on 3 enabling aspects:

- Develop their **own eID scheme**, and if possible a mobile eID scheme. While not all have completed it, most Member states have at least started to develop their own eID scheme.

- They should then **notify** their scheme to the eIDAS Cooperation Network in order to have it recognised for cross-border access to public services.

- Finally, Member States should make sure to develop some **eGovernment applications** to promote the use of eID and TS.

Reaching these objectives requires promoting the advantages provided by eIDAS towards different stakeholders within Member Stats i.e. technical, legal, political and across different ministries i.e. Interior, Economy, Tax, Justice, Education, Health, etc.

The idea is to respect Member State sovereignty with respect to connecting to the eIDAS node by promoting advantages, not influencing decisions.

Advantages of both eID and eTrust Services will be promoted.

According to the stakeholders' consultation report of the PART I: eIDAS Market Analysis, national authorities preferred communication means are **written documents**. As such the DG CONNECT team will make sure to provide adequate support in elaboration of such written documents where needed.

Target

The first target is, of course, the **National Competent Authorities** (NCA) responsible for the 'Identity'. Less Mature Member States should be targeted first.

However, **administrations other** than the NCA, e.g. Interior, Economy, Finances, Justice, Education, Health must be targeted as well, since they will ultimately also be the beneficiaries of national eID schemes and a connection to the eIDAS node.

To ensure adequate impact, it might be necessary to move up through the relevant decision-making levels.

The targets can be approached 'vertically' on a Member State level, i.e. all different Ministries within one Member State … or 'horizontally' on a functional level, i.e. all similar Ministries across Member States. The preferred approach is to be defined on a case by case basis.

5.10.1 Action #13: Build a Public Administration Communication Pack with arguments to promote eID, TS, and eGov applications

Message

We propose to build a holistic message that highlights the benefits from eIDAS for **each** Ministry. Benefits will be explained and reinforced with some **showcasing** from most advanced countries (e.g. Germany, Netherlands) of the best practices within each government administration.

As an illustrative application, the first eIDAS compliant connection was established in a pilot between Austria, Germany, Belgium and the Netherlands in the framework of the e-SENS programme funded by the EC. In this scenario, Austrian and German citizens are able to access Dutch eGovernment applications (in Demo mode).
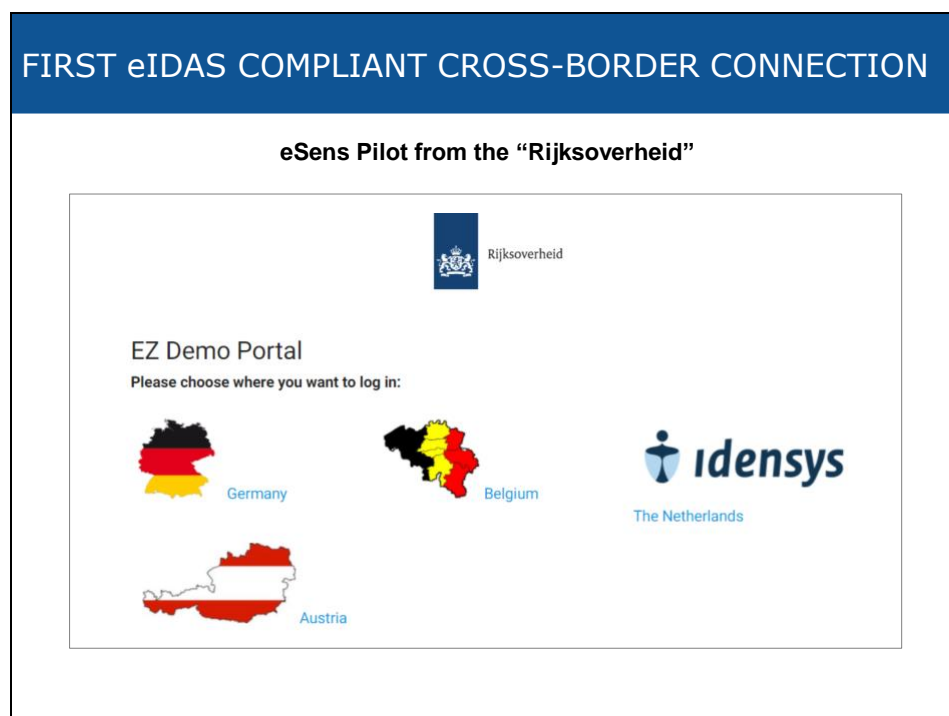
Figure 55 e-SENS Pilot from the Rijksoverheid

Although all messages targeting the public authorities will be grouped in a single, comprehensive document, arguments should cover all types of beneficiaries, i.e. ministries. Specific arguments are listed here below.

- **National Competent Authority for (e)ID (or Ministry of Interior):**
  - Possible reuse of (mobile) eID schemes from advanced member states
  - Procedure to benefit from funds available from CEF

- **Ministry of Economy**

    o Explain how digitalisation and eIDAS will benefit to the economy (cost savings, cross-border trade, opening of the economy, reaching new markets, etc.)

    Cross border use cases:

    o Reference can be made to the Polish BIZNES.GOV.PL website that provides services to entrepreneurs notably with digital services for the 'business lifecycle', i.e. all paperwork needed to run a business in Poland. BIZNES.GOV.PL was part for the e-SENS programme and ran a pilot on cross-border digital signatures for businesses. *(e-SENS Pilot: Business Lifecycle in Poland[102])*

- **Ministry of Finances**

    Cross border use cases:

    o Income tax declaration by foreigners

    o Indirect cross-border tax collection, e.g. road fines

    o Reference should be made to the eTendering pilot (part of the e-SENS programme). This pilot homogenises the eTendering processes across EU Member States and therefore makes governments' demands more transparent and improves the value of taxpayers' money. *(e-SENS Pilot: eTendering[103])*

- **Ministry of Justice**

    o Provide examples of e-Justice applications that facilitate digital processes related to justice e.g. direct taxes, documents and certificates retrieving, legal digital procedures, etc.

    Cross-border use case:

    o Reference should be made to the e-SENS programme 'European Account Preservation Order' that aims to facilitate debt recovery processes across member states. *(e-SENS Pilot: European Account Preservation Order procedure (EAPO[104])*

- **Ministry of Education**

    o Provide examples of e-Education applications, e.g. national and cross-border registration to universities or other higher education bodies, retrieving education certificates, etc.

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[102] https://www.esens.eu/uploads/media/Business_lifecycle_pilot_in_Poland.pdf
[103] https://www.esens.eu/sites/default/files/success_story_etendering_01.pdf
[104] https://www.esens.eu/sites/default/files/success_story_ejustice_01.pdf

Cross-border use case:

o Focus on e-SENS pilot with the University of Stockholm, where foreign students can register using an eID based system. *(e-SENS Pilot: eRegistration to University of Stockholm*[105]*)*

- **Ministry of Health**

    Provide examples of e-Health use cases

    Cross-border use cases:

o Single digital health profile that provides access to critical health information in case of emergency intervention outside usual country of residence *(e-SENS Pilot*[106]*)*

o Real time, cross-border verification of health insurance status *(e-SENS Pilot: eConfirmation*[107]*)*

    National use cases:

o Single health profile that includes past diagnostics, prescriptions and insurance status

o eID-based reimbursement management and platform

- **EU Agencies**

o Supra-national agencies have a "leader" role to play as well as strong potential benefits from eIDAS services. This applies to both regulatory agencies (such as EMA and EASA), and executive agencies (such as INEA and EMEA). As an illustration, the European Medicines Agency (EMA) could implement eIDAS supported services, particularly the utilisation of digitally signed emails and forms. EMA already has the capability to digitally sign its Marketing Authorisation (PDF) documents issued to pharmaceutical corporations. EU Agencies should be able to automatically verify the authenticity and integrity of digitally signed mails received.

- Generally, the messages should focus on both **national** and **cross-border** use cases e.g. tax declarations for a foreigner, etc.

- A key barrier for development of eGov applications by public administrations is the multitude and disconnection of databases. As such it is important to find best practices of how other Member States handled this situation, i.e. interconnecting different data sources and linking   with   the   national   (e)ID   scheme

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[105] https://www.esens.eu/sites/default/files/e-sens_pilot_se_education_final.pdf
[106]https://www.esens.eu/sites/default/files/success_story_e_health_esens_pilots_the_way_for_secure_01.pdf
[107]https://www.esens.eu/sites/default/files/success_story_e_health_e_conf_highquality_2.pdf

Tools

- '*Argument and Documentation Pack*' for the promotion of eIDAS and eGovernment.

- The stakeholder's consultation report revealed that government bodies were expecting written documents in communication regarding eIDAS.

Channels/Diffusion method

- **eIDAS Observatory**

- **DG CONNECT team**

- Provide input in the form of briefing contributions to different **Commissioners**, on request.

  o Vice President, Digital Single Market

    – To promote digitalisation of the economy

  o Commissioner, Digital Economy and Society

    – To promote digitalisation of the economy

  o Commissioner, Economic and Financial Affairs, Taxation and Customs

    – To promote economic benefits of eIDAS-based applications for international business activity

    – To promote facilitation of cross-border taxation processes

  o Commissioner, Internal Market, Industry, Entrepreneurship and SMEs

    – To promote cross-border business-cycle digital processes

  o Commissioner, Justice, Consumer and Gender Equality

    – To promote cross-border justice related processes and justice efficiency

  o Commissioner, Education, Culture and Sport

    – To promote facilitation of cross-border education-related processes

Investment needed & organisation

- Creating the 'Argument and Documentation Pack': 50 man-days from DG CONNECT or outsourced

- Review the documentation pack: 5 man-days from DG CONNECT

- Present and convince during meetings/events: to be defined

'Realisation' KPIs

- 'Argument and Documentation Pack' is created (Yes/no)
- Number of commissioners on-boarded on the communication initiative

Impacted Market KPIs [108] (=success KPIs)

- **Market KPI 1**: Notified schemes
- **Market KPI 2**: Notified mobile schemes
- **Market KPI 3**: Notified means
- **Market KPI 4**: Notified mobile means
- **Market KPI 5**: eGov applications

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[108] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

5.11 Accelerate adoption of digital processes for universities

Issue

Education represents a key cross-border use case of eIDAS, notably to support the student exchange programme Erasmus.

Target

1. **Universities**

2. **Students**

5.11.1 Action #14: Create and disseminate a 'University Communication Pack'

Message

Explain how universities can benefit from remote, digital cross-border student enrolment processes to 1. increase the number of international visiting students, 2. improve their image as international organisations and 3. improve their cost effectiveness.

An initiative to develop an **eIDAS enabled Erasmus Student eCard** has been launched under CEF. The purpose of this initiative is to support the use of nationally issued eID for students' authentication across borders by promoting the uptake and use of the eID DSI among public and private sector entities. In addition, the objective is to support the integration of the eID DSI in existing e-service/system/online platforms in higher education sectors (e.g. such as universities) to facilitate the mobility of students in the European Union.

Tools

A university pack made of an explanatory document on advantages and examples of how Universities can benefit from digital enrolment processes

- Best practices and a step-by-step guide should be made available.

- Reference should be made to the University of Stockholm since it is one of the most advanced in the matter as it participated in a pilot project in the frame of the e-SENS programme.

- Reference should be made to the eIDAS enabled Erasmus Student eCard when it becomes usable.

Channels/Diffusion method

- eIDAS Observatory

- National education bodies

  o European Universities Association (http://www.eua.be/)

- Student organisations and associations such as AIESEC (www.aiesec.org)

- Erasmus+ Programme platform in the Commission

    o http://ec.europa.eu/programmes/erasmus-plus/organisations_en

Investment needed & organisation

- Build the explanatory document: 20 man-days from DG CONNECT or outsourced
- Validate explanatory document: 2 man-days from DG CONNECT
- On-board multipliers: 2 man-days from DG CONNECT

'Realisation' KPIS

- Creation the university pack (yes/no)
- Number of universities reached

'Success' KPIS

- Number of universities with at least one eIDAS-compliant digital processes
- Number of students using the eIDAS-compliant digital processes (common KPI with Action #6)

Impacted Market KPIs [109]

- None directly

5.11.2 Action #15: Create and disseminate a 'Student Communication Pack'

Message

Explain to students how they can benefit from eIDAS services when they are going for a semester abroad, addressing all types of formalities

1. Digital on-boarding processes to apply and register to other EU Member States universities.
2. Moving and residence registering
3. Opening a bank account
4. Handling administration with telecom providers, utility providers, …

The purpose is to 1. facilitate the whole process for students and 2. help universities to promote the e-enrolment processes that are available.

Tools

- A 'Student Pack' explaining the benefits, functionalities of e-enrolment for students and highlighting all universities, banks, etc. are already using cross-border on-boarding processes in their destination, to facilitate life of the students.

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[109] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

Channels/Diffusion method

- Pushed to universities by European entities working on education such as:

  - The Commission's DG for Education and Culture , DG EAC (http://ec.europa.eu/dgs/education_culture/)

  - Erasmus+ Programme platform in the Commission (http://ec.europa.eu/programmes/erasmus-plus/organisations_en)

  - European Universities Association (http://www.eua.be/)

- … then distributed by universities directly to the students

- The pack should also be available for download in the eIDAS Observatory website and on Erasmus pages of Universities.

Investment needed & organisation

- Create the 'Student Pack': 10 man-days from DG CONNECT or outsourced

- Validate content of the 'Student Pack': 2 man-days from DG CONNECT

- On-board multipliers: 2 man-days from DG CONNECT

- DG EAC is also a key multiplier when it comes to education, they should be involved in the initiative as well.

'Realisation' KPIs

- Creation the 'student pack' (yes/no)

'Success' KPIs

- Number of students using the eIDAS-compliant digital processes (common KPI with Action #5)

- Assessment of availability of eIDAS material by students.

Impacted Market KPIs [110]

- None directly

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[110] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

6 SUPPLY-ORIENTED ACTIONS

This part outlines the actions targeting the supply-side of the eIDAS market i.e. National Competent Authorities, Trust Service Providers, Identity Service Providers, etc.

The figure below provides an overview of the key targets, messages and tools used in to address the supply-side of the market

Issue	Target	Action	Message	eID	eTS
Low display rate of the EU trust mark by QTSPs	• QTSPs • TSPs	**Action #16**: Build and share documentation on the EU trust mark towards (Q)TSPs	For QTSPs: • Highlight the purpose of the EU trust mark • Explain the benefits for the QTSPs that use it For TSPs: • Explain the conditions to be able to use the logo • Highlight the benefit of transparency and assurance send to the clients and prospects		✔
Low adoption due to unavailability of 'killer apps'	• Developer communities • Large corporations with international footprints • Public bodies with high administrative intensity and/or international exposure, e.g. population services, tax, etc.	**Action #17**: Hold hackathons to develop killer apps	• Organise hackathons to define and build prototypes of applications that can benefit the eGovernment or the private world, based on new opportunities stemming from eIDAS, i.e. cross-border	✔	✔
Market players are looking for guidance through written documents	• (Qualified) Trust service providers • Business Service Providers	**Action #18**: Build an eIDAS knowledge base	• Centralise all technical and legal information that can serve as implementation guidelines	✔	✔

Figure 56 Summary of supply-oriented initiatives

6.1 Increase use of EU trust mark by QTSPs

Issue

As of today, all specifications regarding the usage of the trust mark have been made available by the Commission (User guide, FAQ), but not all QTSP use the EU trust mark on their website.

Analysis reveals that out of 167 QTSPs (entitled to use the logo), only 13 display it on their homepage, and 4 display it on another page. That represents a 10% adoption rate.

Target

QTSPs

6.1.1 Action #16: Build and share documentation on the EU trust mark towards TSPs

Message

- Highlight the purpose of the EU trust mark
- Explain the benefits for the QTSPs that use it

Tools

EU trust mark documentation

- User manual:

  https://ec.europa.eu/digital-single-market/sites/digital-agenda/files/eutm_user_manual.pdf

- FAQ:

  https://ec.europa.eu/digital-single-market/sites/digital-agenda/files/eu_trust_mark_qa_final.pdf

Channels/Diffusion method

- eIDAS Observatory
- Direct contact with management or marketing team from QTSPs (cf. List of Trusted Lists)
- A workshop/webinar can be organised to target more QTSPs simultaneously.
- LinkedIn/Twitter communities

Investment needed & organisation

- Identify and contact appropriate person (Marketing or top management) for all QTSPs: 5 man-days from DG CONNECT or outsourced

'Realisation' KPIs

- Number of QTSP contacted

6.2 Stimulate uptake by developing killer-apps

Issue

Slow adoption of eIDAS services is also due to the lack of available 'killer-applications'. These killer-apps are needed to drive the initial awareness, usage and acquaintance with the eIDAS technologies.

Killer-apps can be from the public sector, e.g. 'Tax-on-web', or private sector, e.g. 'ItsMe'.

We propose to facilitate the organisation of 'hackathons' with a twofold objective.

- Develop killer-apps
- Raise awareness on eIDAS and the potential it offers

Target

1. **Developer communities**
2. **Large corporations with international footprints**
3. **Public bodies with high administrative intensity and/or international exposure, e.g. population services, tax, etc.**

6.2.1 Action #17: Hold events/hackathons to develop killer apps

Message

Organise hackathons to define and build prototypes of applications that can benefit eGovernment or the private world, based on new opportunities stemming from eIDAS, i.e. cross-border.

Tools

Events sponsored by the European Commission and/or by private and public organisations, with a specific scope, but no geographical limitations.

Young, talented developers and entrepreneurs are invited to develop and present their applications over a limited time frame, e.g. 2 or 3 days ('hackathons') or a few weeks (e.g. 'Summer of Code').

The most viable projects are selected by the public or private organisation, get further financing, are finalised and marketed.

Channels/Diffusion method

- The organisation or such events should be driven by industry to frame the possible developments and to secure interest of

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[111] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

participating organisations e.g. banks, hospitals, insurances, lotteries…

- …therefore we suggest to opt for European sectorial organisation as a mobilisation channel.

- Hackathons should be organised for the sectors with the most potential e.g. fintechs, banks, insurance, e-Health, e-Justice, e-Tax, e-Education, online gambling, etc.

- Some organisations are specialised in the organisation of hackathons (e.g.www.hackathon.io) and should be leveraged in the organisation of such events.

Investment needed & organisation

As a first hackathon we propose to tap into the sector with highest cross-border potential and affinity with technology, i.e. the fintechs.

Combining eIDAS with PSD2 offers a great potential for new business in the fintech world.

For each hackathon, the following investment and organisation is needed:

- **Find and onboard partner organisations** with potential interest in the development of new eIDAS-based apps: 20 man-days from DG CONNECT or outsourced

- **Identify and invite participants** from the developers community: 20 man-days from DG CONNECT or outsourced

- **Organise** the event (location, set-up, security, material, catering, etc.): 30 man-days from DG CONNECT or outsourced

- **Communicate** around the event, to ensure visibility of eIDAS and the potential it offers: 15 man-days from DG CONNECT or outsourced

- **Manage** the project from the DG CONNECT perspective: 15 man-days from DG CONNECT

'Realisation' KPIs

- Number of hackathons organised

- Number of participants – Developers

- Number of participants – Business service providers

- Number of participants – eGovernment bodies

'Success' KPIs

- Number of (cross-border) applications developed

- Number of uses of the applications

Impacted Market KPIs [112] (=success KPIs)

- **Market KPI 5**: eGov Applications

- **Market KPIs 20, 21, 22, 23, 24**: All DESI indicators

6.3 Consolidate available documentation about eIDAS

Issue

Market participants are looking for documentation about implementation guidelines notably around technical guidance.

Target

'Core' stakeholders, i.e. trust service providers (qualified but also non-qualified).

6.3.1 Action #18: Build an eIDAS knowledge base

Message

Provide visibility on documentation available or in development, relevant to trust service providers and business service providers. For example:

- Official eIDAS text and its implementing acts

- Available standards that serve as guidance in implementation…

- … and the ones still in development

- Any local legal precisions or decisions

Tools

- Written documents to be downloaded on the eIDAS Observatory

- Link towards other official sources, e.g. ENISA

Channels/Diffusion method

- eIDAS Observatory

Investment needed & organisation

Limited additional time is needed from the DG CONNECT team since this activity is more about leveraging available materials than creating new ones

'Realisation' KPIs

- Number of documents or links available on the eIDAS Observatory.

'Success' KPIs

- Number of downloads of documents

- Number of 'clicks' on available links

Impacted Market KPIs [113]

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[112] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

- **Market KPI 18**: eIDAS Observatory activity

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[113] Cf. PART I: Market Analysis Section 6 *'Market key performance indicators'*

7   RESOURCES, TIMING AND ORGANISATION

The following table outlines the key steps for each initiative, the proposed timing, and

Task	Resp.	'17 Q4	'18 Q1	'18 Q2	'18 Q3	'18 Q4	'19 Q1	'19 Q2	'19 Q3	'19 Q4	Costs
TOTAL mandays for DG CONNECT	DGC	13	20	25	16	26	16	6	6	6	**88.000**
TOTAL mandays for DG CONNECT or externalised	DGC/ext.	11	43	73	43	36	46	8	3	3	
1. Design "Umbrella campaign" concept											15.000
Brief agency, hold creative workshops and validate proposition	DGC	4									
Build and propose "umbrella concept"											
2. Grab ownership of eIDAS Wikipedia page											
Write	DGC/ext.	4									
Review	DGC	1									
3 Build and share a video to promote eIDAS with key possible use cases that eIDAS will allow											
Write RFP	DGC/ext.		5								
Review propositions	DGC/ext.			5							
Produce video											10.000
Diffuse video	DGC/ext.				3	3					
4. Publish an "eIDAS for Dummies" book											
Select the author	DGC	2									
Align on book content	DGC		5								
Write content											20.000
Review content	DGC/ext.			5	5	5					
5. Push existing EU trust mark material towards functional service providers through multipliers											
Update FAQ for functional service providers	DGC/ext.	2									
Design FAQ											1.000
Contact and onboard mulitpliers	DGC		5	5							
6. Explain and promote use of "European" QWACs											
Create written documents and infographics	DGC/ext.		5								
Design infografics											2.000
7. Build a "how-to" guide for businesses											
Create the written document	DGC/ext.		10	10							
Promote the document trhough the eIDAS observatory	DGC				5						
8. Build a lawyers' communication pack											
Create written documents	DGC/ext.		5	5							
Promoting the materials towards Bar associations	DGC				5						
9. Deploy sector-specific approaches		*to be assessed case by case*									
10. Build an inventory of available e(gov)services											
Create and publish a web-page listing available services		*falls under the Observatory team*									
11. Use banks as ambassadors											
Reach out to banks and banking associations	DGC		5	5	5	5					
12. Disseminate success stories											
Review & publish success stories written by stakeholders	DGC/ext.		3	3	3	3	3	3	3	3	
13. Build communication pack towards Member states to promote eID, eTS, and eGov applications											
Creating the *"Argument and Documentation Pack"*	DGC/ext.		50								
Review the "Argument and Documentation Pack"	DGC		5								
Present and convince during meetings / events:											
14. Create and disseminate a "University Communication Pack"											
Build the explanatory document	DGC/ext.		20								
Validate explanatory document	DGC		2								
On-board multipliers	DGC			2							
15. Create and disseminate a "Student Communication Pack"											
Create the "Student Pack"	DGC/ext.		10								
Validate content of the "Student Pack"	DGC		2								
On-board multipliers	DGC			2							
16. Build and share documentation on the EU trust mark towards (Q)TSPs											
Identify and contact appropriate person	DGC/ext.		5								
17. Hold hackathons to develop killer apps											
Find and on-board partner organisations	DGC/ext.			20							
Identify and invite participants	DGC/ext.				20						
Organise event	DGC/ext.					30					30.000
Communicate around the event	DGC/ext.					5	5	5			10.000
Project management from the EC	DGC					5	5	5			
18. Build an eIDAS knowledge base	DGC	-	-	-	-	-	-	-	-	-	
19. Manage the eIDAS community through the eIDAS Observatory	DGC	6	6	6	6	6	6	6	6	6	Cf. Part III

Legend

X	Mandays to be executed by DG CONNECT teams
X	Mandays to be executed by DG CONNECT teams **OR** externalised
	Work to be externalised

e needed resources and investment[114].

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[114]   For numbers, the 'continental' spelling is here adopted, i.e. points in thousands and up, and commas in decimals.

Figure 57 High level timing and budget

PART III
INPUT FOR THE ACTIVITIES RELATED TO THE DEVELOPMENT OF THE EIDAS EUROPEAN OBSERVATORY

1   OBJECTIVES, AUDIENCE AND CHALLENGES OF THE EIDAS OBSERVATORY

The eIDAS Observatory aims to fulfil three major **objectives**.

1. **Discover** relevant trends, good practices or mechanisms in the functioning and use of eID and trust services as well as possible issues that could create regulatory hurdles

2. **Analyse** modalities of functioning and use of eID and trust services; provide data, tools and databases to support eID and trust services; find ways to overcome regulatory hurdles

3. **Recommend** to EU policy makers ways to shape effective EU policies for eID and trust services to build trust and security online and enhance transparency in the market; propose codes of conduct

The eIDAS Observatory aims to involve a large **diversity** of stakeholders. These show significant differences in terms of:

- Area and depth of expertise regarding eID and TS

- Source of interest in the topic (suppliers, regulators, private sectors, citizens, etc.)

- Level of interest and related willingness to invest time in eID/eTS initiatives

- Current involvement in eID and TS initiatives (only a limited number of stakeholders are currently involved)

- Location (spread across Europe and beyond)

In this context, managing the eIDAS Observatory implies a series of **challenges**:

- Stakeholders are speaking different 'languages' depending on their level of expertise

- Stakeholders have different expectations depending on what is at stake for them

- With the exception of core stakeholders, most stakeholders are only ready to dedicate limited time and resources

- Level of engagement of stakeholders must be maintained almost exclusively by remote means

2 KEY STAKEHOLDERS AND THEIR INVOLVEMENT IN THE EIDAS EUROPEAN OBSERVATORY

The eIDAS Observatory should be targeting 3 main types of stakeholders, each with specific needs and expectations. Some needs might be common.

The figure below provides an overview of the different types of target users of the platform, and their needs. These are presented in greater detail below.
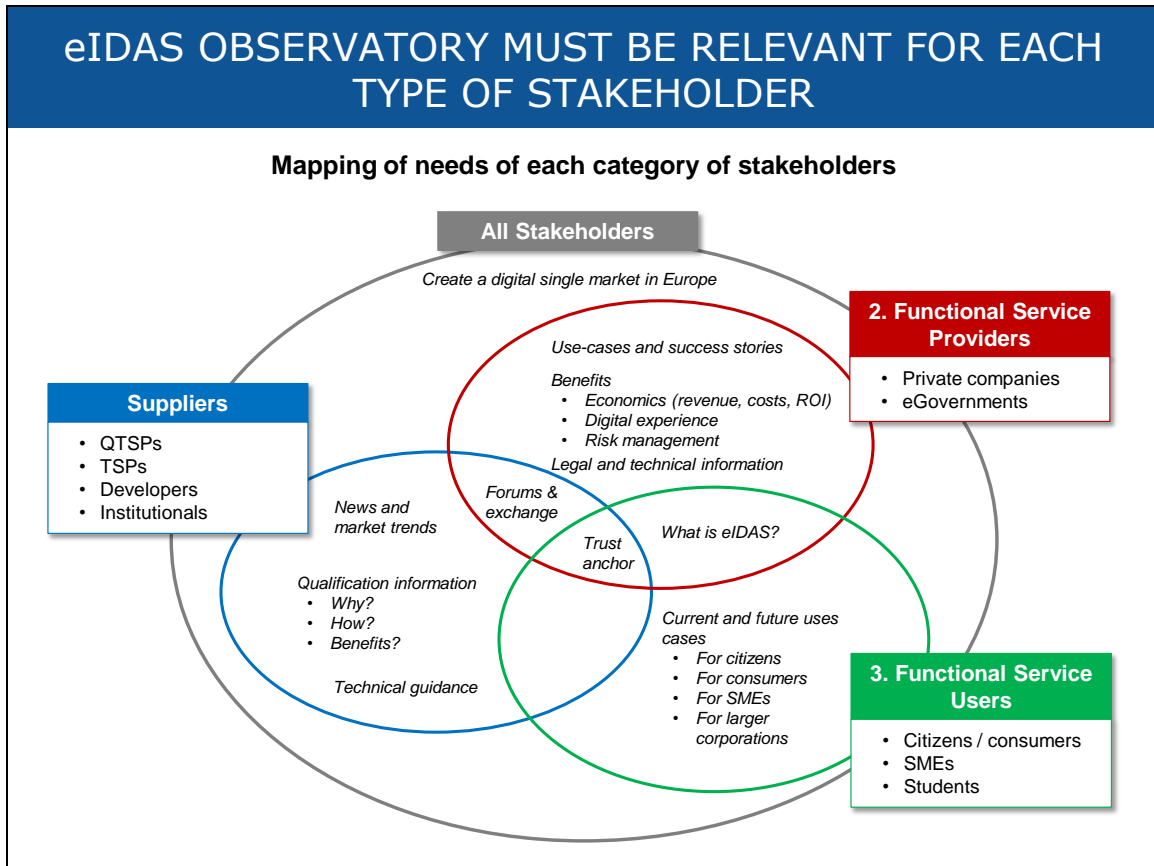
Figure 58 Needs mapping per stakeholder type

1. The Suppliers

This category of platform users is made up of QTSPs, TSPs, developers and institutional players such as national eID authorities.

Five main needs have been identified for the suppliers

- Get **news** on latest market developments and be aware of **market trends**.

- Get access to information on the **Qualification process:**

    - What are the benefits of becoming a Qualified Trust Service Provider?

    - How to become Qualified? What is the process? What are the available guidance materials?

- Get access to **technical guidance** information.

- **Exchange** with Business service providers, e.g. communicate their expertise and present potential use cases to the demand side.

- Access to the 'Trust anchor' information, i.e. **EU trust mark** benefits and use conditions.

2. Business service providers

Business service providers are a key target of the eIDAS Observatory as they should be convinced and inspired to create new usage. Six needs have been identified.

- The first need of business service providers is to understand what **eIDAS** is all about. They need a simple and clear presentation of the Regulation.

- They also need to understand what are the possible **future use cases** that are enabled by eIDAS

- They must understand the **benefits** it can bring for them in terms of

  – Economics (cost, revenue and ROI)

  – Improvement of digital experience for their clients

  – Better management of risk, e.g. higher security, legal value, etc.

- Access to the 'Trust anchor' information, i.e. **EU trust mark** benefits and use conditions

- The business service providers that have an interest in developing usage might be interested in **having an exchange with or asking questions of suppliers**. This can be achieved through forums.

- Finally, the most advanced of them might be looking for more **detailed information** on technical or legal aspects of the Regulation. This information should be available in the eIDAS Knowledge base on the eIDAS Observatory.

3. Business service users

Business service users must have access to more basic information, with the main objective to raise awareness and build trust across a broad audience. Their needs revolve around 3 topics:

- Of course, they must get access to a **simple presentation** of the eIDAS Regulation, what it changes, and why it was created.

- They must then understand what will be the **possible implications** for them as citizens and consumers, so that when new usages will arise, they will adopt them faster. Dedicated use cases should be available for the 4 main categories of business service users:

  - Citizens (interacting with eGov)

  - Consumers (interaction with private organisations)

  - SMEs

  - Larger companies

- Finally, they should be aware of the **trust anchor** and be able to recognise it.

The next chapter presents concrete recommendations on how to improve the effectiveness of the eIDAS Observatory in meeting those needs.

3 RECOMMENDATIONS ON POSSIBLE ACTIVITIES RELATED TO THE EIDAS EUROPEAN OBSERVATORY

Recommendations on how to improve the eIDAS Observatory are structured in 3 blocks.

Firstly, a presentation of the engagement strategy, which seeks to make sure stakeholders are visiting the platform and finding what they are looking for, and to improve communication towards the external world. Secondly, a proposal for structuring the website and its content. Thirdly, a systematic review of all marketing actions and an eventual implication for the eIDAS Observatory. Finally, some high-level recommendations on phasing for transformation.

3.1 Engagement strategy

The engagement strategy aims to provide questions and concrete action points for the following 3 questions:

1. How to make sure relevant content is provided quickly and in a targeted way?

2. How to attract new users on the platform? (Inbound strategy)

3. How to increase visibility and communication to the community but also to the external world? (Outbound strategy)

The figure below provides an overview of the key propositions and improvement areas.
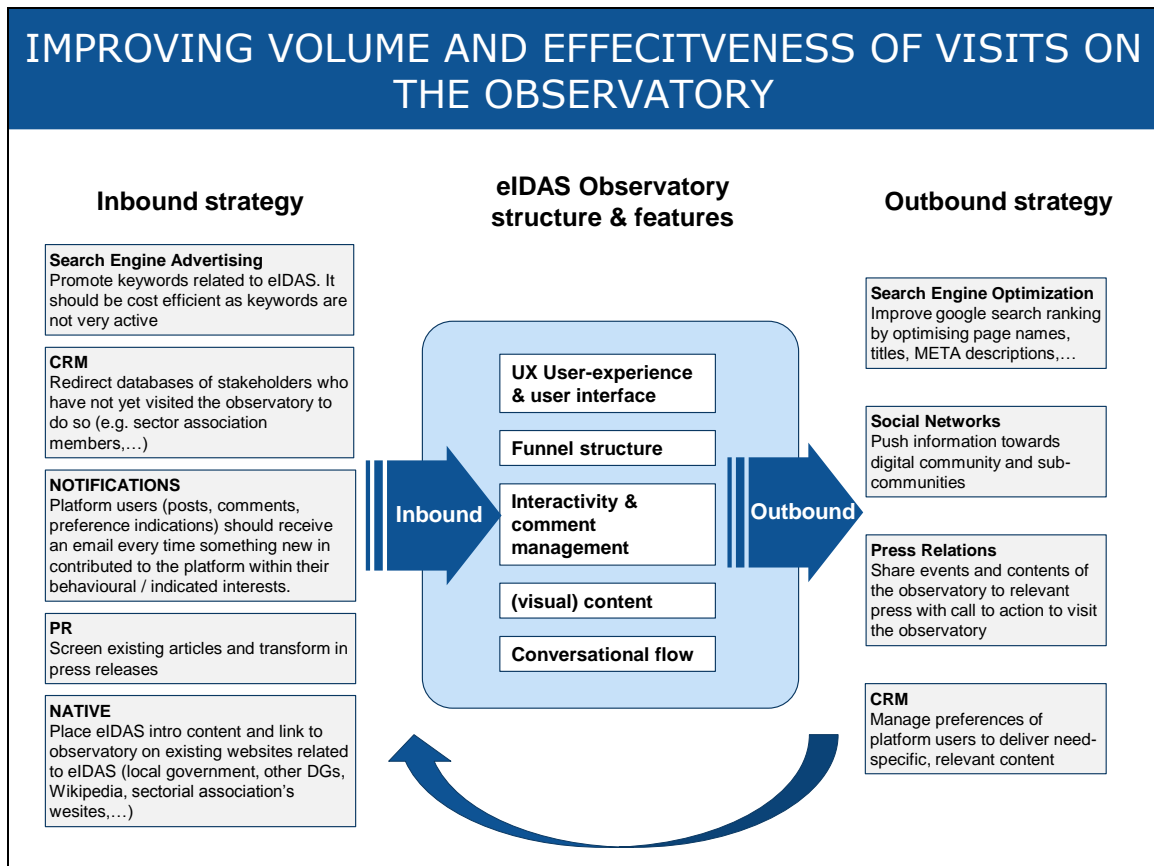

Figure 59 Engagement strategy of the eIDAS Observatory

3.1.1 eIDAS Observatory structure and features

3.1.1.1 *User experience and user interface*

The user experience and user interface defines the series of touchpoints that the users will have with the platform. It covers the look and feel, level of customisation and relevance of the website for each stakeholder.

It is recommended that a specific experience for the different types of users be provided, i.e. allow different stakeholders to navigate the site differently (suppliers, business service providers and business service users), and possibly use subcategories, i.e. per industry, for citizens, consumers, students, SMEs, larger companies, etc.

The main objective is to quickly provide relevant content to users of the platform (within 15 seconds maximum).

3.1.1.2 *Funnel structure*

Where UX and UI focus on the overall intuitiveness and optimal experience for visitors of the platform, a clear funnel structure will help different stakeholders get to information that is relevant for them on the platform.

In order to create the best funnel structure, a mapping of all different stakeholder groups and the places of relevant information on the platform for them must be done. Some information might be relevant for different stakeholders, but they might access it with different paths, e.g. landing pages.

Based on these different paths, the funnel structure will define the ideal path that a user must follow to access specific information that is relevant.

E.g. A supplier will easily find an updated Regulation chart as it concerns this stakeholder group.

To facilitate the access to relevant information some techniques can be used such as:

- **Direct access** to a specific page based on the Google search made. For example, if the search was 'what is eIDAS', the user should be directed to the page that presents eIDAS, if the search is 'how to become qualified' the user should be directed to a more advanced and specialised page for TSPs.

- Some **questions** might be asked when visiting the website for the first time e.g. 'I am a… TSP…. citizen… company….' Then 'I look for… an overview of eIDAS Regulation …use cases…'.

- Finally, some more general topics must be **put forward** if they are of interest for the user profile and/or section. For example, a slide with 'What's new' can be visible on the side.

3.1.1.3 Interactivity and comment management

The platform must provide interactive modules. Forums are a good way to develop interactivity, provided the participants are able to find forums that are addressing topics relevant to them, i.e. segmented forums.

Currently, the forums are segmented on 'ideas' and 'issues' but not on specific topics that might differ in relevance for different audiences, thus making it less easy for them to find and interact with topics of interest to them. Creating more segmentation could optimise this function.

Another way to increase interactivity is to hold frequent surveys and polls to visitors, so they feel consulted.

To stimulate interactivity and participation on the platform, we should stimulate visitors and stakeholders by engaging them. Asking frequent questions (related to eIDAS, e.g. linked to an actual topic, opinion, etc.) or launching polls more regularly (and afterwards creating content out of the results) can increase interaction.

Comment management is key to avoid irrelevant or disrespectful comments.

If there is more interaction on the platform, moderation is key. Posts and comments should be reviewed to keep the atmosphere positive and constructive.

3.1.1.4 (Visual) content

Content should be created to meet specific needs of users. Content should be visual as well, not only text, to improve the experience of users. As of today content is much too unstructured and lacks visual appeal.

Although the current content on the platform may be very relevant and interesting to our stakeholders, it is not presented in an appealing way. Research shows that (even in B2B context), visual stimuli attract people more and make them engage more with the content. Adding some visual content (pictures, infographics, video content) to the platform will help attract attention from visitors and reduce early drop-out. Even in a professional context, people still react to basic stimuli like visuals, which will improve the overall experience on the platform and make the visit more positive.

For example, newsletters could be more visual, pictures could be added to posts, faces of key people should appear, colour codes can be used to represent topics or user groups, etc.

3.1.1.5 Conversational Flow

Conversational flow is an appealing and innovative way to orient platform users towards the right section or content through a very limited series of short questions. For example, the first question could be I am a Company/individual? Then the second could be 'I am looking for use

cases/official information? In a few questions visitors might access relevant sections.

The benefit of creating a conversational flow lies simply in the fact that people are engaged. Where a standard form or navigation can look complex or time-consuming, a conversational flow engages people throughout the process. This creates a higher completion rate in forms and less drop-out when navigating pages because people more easily find what they are looking for. This can be used in different ways, but a basic way could be to use it as a search function on the platform.

3.1.2 Outbound strategy

The outbound strategy aims to maximise visibility towards the external world and the engagement of stakeholders with the platform. It is tightly connected to the inbound strategy since outbound content will generate visits from new potential users.

3.1.2.1 *Search Engine Optimisation (SEO)*

People looking for eIDAS information are not finding it through Google today. The organic page ranking is not qualitative. To reach a higher ranking in search results, content published on the Observatory should be optimised with regard to search engine algorithms. To achieve this, articles and posts should be optimised in terms of

- Page names

- Articles and posts titles

- META data of pages, articles and posts

An SEO-tool will allow to scan the platform for the most important keywords but this should be complemented with an in-depth analysis of present content vs content that is needed to attract audience interest. In other words, compare the SEO-tool result with the desired set of keywords (the keywords that our audience is using in Google and Bing)

3.1.2.2 *Social Networks*

Content published on the platform must be shared towards the community through social networks (LinkedIn, Twitter). This activity is already well developed in the current state of the eIDAS Observatory.

Adhering to the eIDAS Observatory social networks should be much easier (more obvious buttons, one-click subscription, etc.)

3.1.2.3 *Press Relations*

Pushing available and new content to the press will make it possible to reach new audiences, untapped so far. Again this is highly linked to the inbound strategy since new press releases will generate visits to the Observatory.

3.1.2.4 *CRM*

Management of databases (CRM) of <u>current users</u> of the platform and their preferences is key to ensure dissemination of relevant content. Users should be able to manage their interests (topicality) and their contact preference (frequency of contacts mainly).

3.1.3 Inbound strategy

The inbound strategy aims to attract new users to the platform and secure the activity of existing ones.

3.1.3.1 Search Engine Advertising (SEA)

SEA will allow to promote the eIDAS Observatory towards new potential users. Advertising can be segmented and highly targeted, and should be done on a campaign per campaign basis, e.g. first banking professionals, then University members, etc.

At this stage the costs associated with SEA should be limited since a first analysis reveals that eIDAS-related search terms are not very active yet on the web.

In a second stage, we should consider actively advertising platform contents such as articles and/or interesting content pages/surveys, etc. By buying AdWords from Google to highlight these contents we will generate an additional new and interested audience for the platform.

Relevant terms to buy could be for example eIDAS, eID, TS, Trusted List, EU trust Mark, eSeal, eTimeStamp, eCertificate, etc.

3.1.3.2 CRM

Management of databases (CRM) of potential users of the platform is key to generate new traffic. Sources of new users can be generated by the commission itself (e.g. during events, etc.) or gathered within databases of partner organisations such as sectorial associations.

3.1.3.3 Notifications

In order to incite existing users to come back on the platform and participate in discussions, they should receive notifications whenever a relevant activity has occurred. Relevant activities are for example news or posts in forums that are in line with their preferences, or in which they have participated previously.

This mechanism could be installed by providing an opt-in for members to subscribe to updates based on their interests. With a couple of clicks members can indicate their interests, the desired frequency of their updates (immediately triggered, a daily summary, a weekly summary) and the specific topics they want to follow (news updates, forum posts/questions related to their interests, etc.

These notification updates will increase activity and platform visits, because we will stay top-of-mind in a relevant way.

3.1.3.4 Press Relations

Existing articles should be screened and selected for the purpose of creating new ones. This way available content on the web will be re-used on the platform with a lesser workload. It is, however, not recommended to use RSS feed flows since the 'copied' or 're-used' articles will not get a

high ranking in Google searches, which gives priority to the original publication.

3.1.3.5 Native websites

Native websites are the ones that already exist, outside of the eIDAS Observatory, and are somehow connected. For example, websites of industry associations, national eID websites, the Wikipedia page, pages from other DGs. These native websites are key source of new visits on the page. As many contacts as possible should be established with managers of native websites to attract new volumes.

3.2 Content structure

The following sections propose a preliminary structure for the eIDAS Observatory.

The first principle is to define segmented 'entry keys' or platform sections. This aims to create spaces where stakeholders and platform users will find relevant content for their specific needs.

The second principle is to build a global content base and to make it available only in relevant sections. Some content might be relevant for one stakeholder only, some for only a few and some for all.

This represents a major evolution compared to the current platform that is unsegmented and highly targeted at the 'usual suspects', i.e. (Q)TSPs.

The figure hereunder presents the proposed preliminary structure for a future platform.
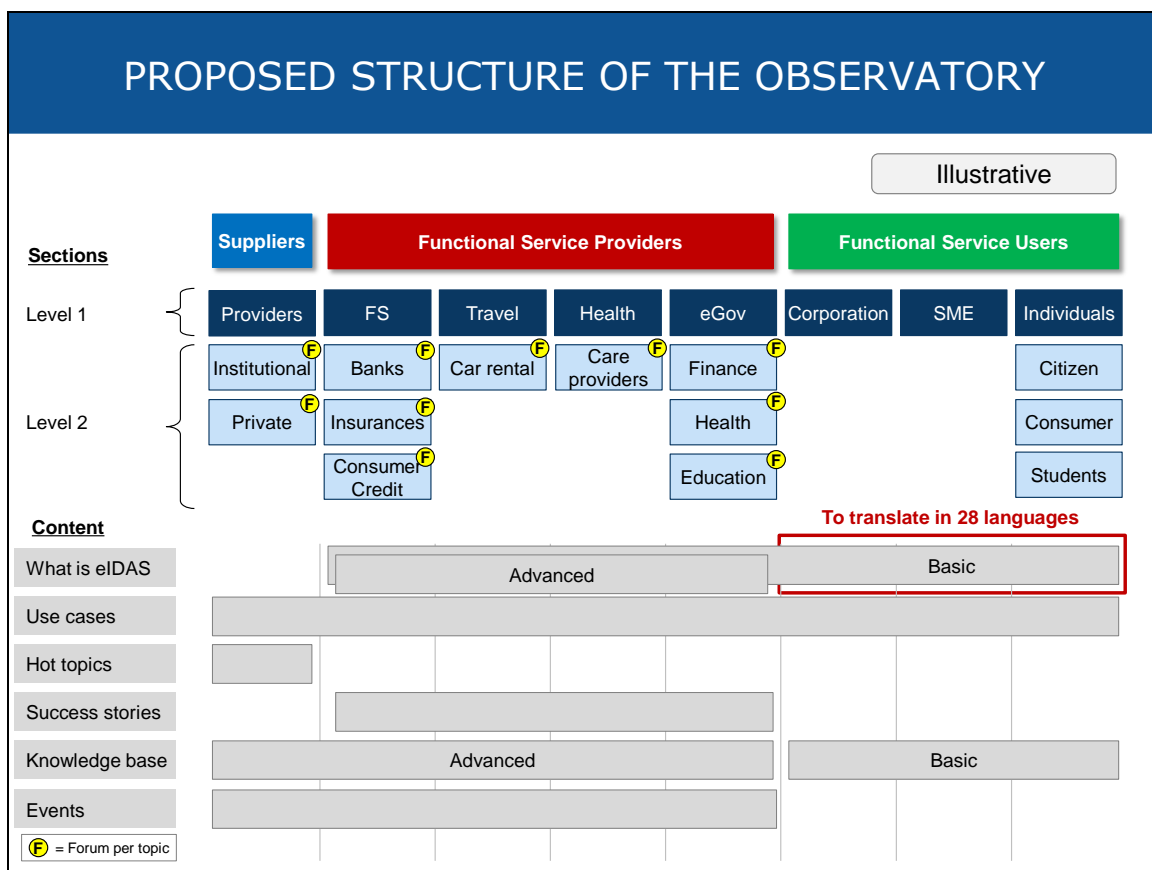
Figure 60 Preliminary structure of the future eIDAS Observatory

As presented in the figure, forums would take place within specific interest areas.

We do not advise to have forums for a broad audience (individuals) since these are more complex and time consuming to manage.

3.3 Review of other marketing actions

A series of marketing actions to promote the adoption of eID and TS services has been identified in PART II of this document (MARKETING PLAN). The following section is a systematic review the implication of each action on the eIDAS Observatory.

Action #1: Design an 'umbrella campaign' concept

Implications for the eIDAS Observatory:

- Communicate about the new umbrella campaign
- Use the umbrella campaign in all materials used on the Observatory

Action #2: Take ownership of the eIDAS Wikipedia page

Implications for the eIDAS Observatory:

- Make sure that the eIDAS Observatory is mentioned on the Wikipedia page.

Action #3: Build and share a video to promote eIDAS with key possible use cases that eIDAS will allow

Implications for the eIDAS Observatory:

- A link to the video should be available on the eIDAS Observatory.
- A new post should be targeting participants to the eIDAS Observatory to communicate on the availability of the video, for further diffusion.
- The video should clearly promote and redirect towards the Observatory.

Action #4: Publish an 'eIDAS for Dummies' book

Implications for the eIDAS Observatory:

- A link to the 'For Dummies' publisher page should be available on the eIDAS Observatory.
- A new post should be targeting participants to the eIDAS Observatory to announce the book's publication.
- The 'For dummies' book should clearly point towards the eIDAS Observatory.

Action #5: Push the existing EU trust mark material towards business service providers through multipliers

Implications for the eIDAS Observatory:

- A <u>link</u> to the existing material on the EU trust mark page should be available on the eIDAS Observatory (https://ec.europa.eu/digital-single-market/en/eu-trust-mark).

- A new <u>post</u> should be targeting the participants to the eIDAS Observatory to communicate on the EU trust mark.

- All materials should be available on the 'Knowledge base' section.

Action #6: Explain and promote use of 'European' QWACs

Implications for the eIDAS Observatory:

- Diffuse written document explaining how EU QWACs can be used.

Action #7: Build a "how-to" guide for businesses

Implications for the eIDAS Observatory:

- Diffuse the "how-to" guide for businesses

Action #8: Build a lawyers' communication pack

Implications for the eIDAS Observatory:

- Diffuse the "lawyers' communication pack".

Action #9: Deploy sector-specific approaches

Implications for the eIDAS Observatory:

- Ad-hoc, depending on approach selected.

Action #10: Build an inventory of available e(gov)services

Implications for the eIDAS Observatory:

- Publish and maintain the page covering mapping available services.

Action #11: Use banks as ambassadors

Implications for the eIDAS Observatory:

- No specific impact on the eDIAS observatory.

Action #12: Disseminate success stories

Implications for the eIDAS Observatory:

- Build and make available a template to gather success stories from market participants.

- Share success stories to whoever relevant i.e. in segmented audiences.

Action #13: Build a Public Administration Communication Pack with arguments to promote eID, TS, and eGov applications

Implications for the eIDAS Observatory:

- Make sure the communication pack is available for download in the relevant section.

- A new <u>post</u> should be targeting participants to the eIDAS Observatory to communicate on the availability of the 'Argumentation Document'.

Action #14: Create and disseminate a 'University Pack'

Implications for the eIDAS Observatory:

- The 'University Pack' should be available for <u>download</u> on the eIDAS Observatory.

- A new <u>post</u> should be targeting participants to the eIDAS Observatory to communicate on the availability of the 'University Pack'.

Action #15: Create and disseminate a 'Student Pack'

Implications for the eIDAS Observatory:

- The 'Student Pack' should be available for <u>download</u> on the eIDAS Observatory.

- A new <u>post</u> should be targeting participants to the eIDAS Observatory to communicate on the availability of the 'Student Pack'.

Action #16: Build and share documentation on the EU trust mark towards QTSPs

Implications for the eIDAS Observatory:

- Cf. Action #5

Action #17: Hold hackathons to develop killer apps

Implications for the eIDAS Observatory:

- Use the eIDAS Observatory to communicate and organise the hackathons.

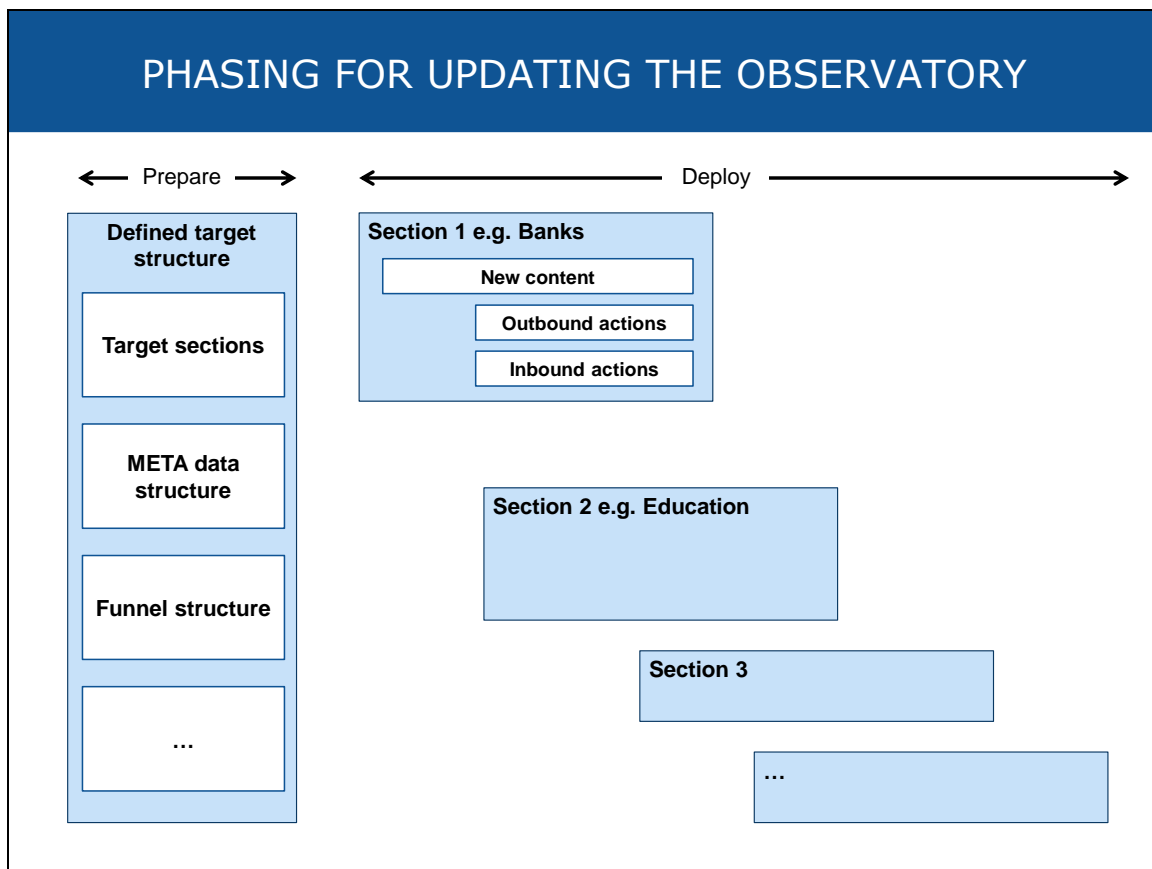- Communicate on the outcome of the hackathons through <u>posts</u>

Action #18: Build an eIDAS knowledge base

Implications for the eIDAS Observatory:

- Ensure all useful documents and communication packs are available in the eIDAS 'Knowledge base' section.

3.4 Phasing

The following figure sketches a high level phasing for transforming the Observatory.

Figure 61 High level phasing of transformation

A first phase should consist in restructuring and re-thinking the Observatory.

- Define target sections

- Define META data structure

- Design the funnel structure (how each user will access its relevant content, etc.)

- …

The EC can then enter in a roll-out approach.

- A specific target community should be chosen, e.g. banks, existing and new content must be made available to have a first topic to discuss.

- The outbound and inbound actions can be launched, for this specific target!

- Then the next target community can be chosen, etc.

This approach enables concentrated efforts by addressing each target community one at a time, and making sure that there is (i) a specific section for this community, and (ii) that there is available content before starting the inbound and outbound strategies.

3.5 Issues for further discussion on the eIDAS European Observatory

Hereunder are some suggestions for topics to be further discussed on the Observatory:

- Recognition of eIDAS outside the EU

    o A source of discussion topics can be found e.g. in at least two Horizon2020 projects (FutureTrust and LIGHTest). These projects research into how to connect the eIDAS ecosystem with other systems, and how to weave a global ecosystem for electronic identification and trust services.

- An EU eIDAS Blockchain

    o There are various initiatives that look into using a blockchain for identity purposes. Within the FutureTrust project, a blockchain prototype is constructed that will form an alternative to the XML-based list of trust list. The namecoin project (namecoin.org) looks into a global blockchain for identity. Similar initiatives include bitnation, shocard and evernym.

- eIDAS and GDPR

    o As identification data is by definition personal information, all Member States that operate a national identification scheme need to comply with the General Data Protection Regulation (GDPR).

- eIDAS and PSD2

    o As the second Payment Services Directive (PSD2) refers to strong authentication, which can be interpreted as multi-factor, and as eIDs typically provide a second factor (and potentially introduce even biometric recognition as a third factor), there is a natural relationship between eIDAS and PSD2.

- Digital on-boarding for banks, e.g. link between eIDAS and KYC and AML4

    o The outcome of " eID and digital on-boarding: mapping and analysis of existing on-boarding bank practices across EU" – SMART 2016/0094, discusses the potential contribution of eIDAS in the fields of Know Your Customer and Anti-Money Laundering. This contribution lies a.o. in its cross-border identification support through the eIDAS nodes that are being constructed across Europe.

European Commission

Study on a marketing plan to stimulate the take-up of eID and trust service for the Digital Single Market

Luxembourg, Publications Office of the European Union