European Commission

Evaluation of e-Cohesion 2014-2020

Task 5 report – cross-case analysis

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Table of content

List of tables

1.   Introduction

In total, six in-depth case studies were prepared (as part of Task 3 and Task 5) to enhance the practical knowledge regarding the implementation of an advanced e-Cohesion system in terms of the challenges and lessons learnt in the process of introducing and maintaining an e-Cohesion system; understanding how the processes included in the e-Cohesion systems have led to simplification; identifying the main features and functionalities; understanding discussing good practices so that they could inspire other member states.

During Task 3, which consisted of the analysis of two pilot e-cohesion systems (to further inform the successful delivery of Task 5), we first analysed two e-Cohesion systems identified and proposed as good practices by the Commission. Task 5, which consisted of the in-depth analysis of five good practice systems, took place once the surveys were closed to inform the selection and preparation of these additional case studies. In total, six case studies were prepared during the pilot and the main analysis phases (e-Toetus were one of the pilot case studies in Task 3 and was chosen for further study in Task 5).

Table 1. e-Cohesion systems analysed in case studies

Case study	e-Cohesion system analysed	Country
1	MIS	Greece
2	e-Toetus	Estonia
3	eMS	Interreg
4	Balcão2020	Portugal
5	SFINGE2020	Italy
6	SL2014	Poland

Source: prepared by PPMI consortium

MIS, which was second e-Cohesion system subject to the pilot study in Task 3, was not chosen for further study. This system can be considered a good practice example in several aspects, particularly in terms of in interoperability (it is successfully connected to many external government registers and SFC, where it makes use of the automatic interface solution). However, according to the results of our survey, MIS' degree of self-descriptiveness and user-friendliness, which are important criteria for the selection of best practice solutions, is lower when compared to similar systems (nationally centralised approach, coverage of many different national, regional and Interreg programmes financed by different funds). Because of this, another system was chosen as part of the five in-depth case studies. Nevertheless, this pilot case study is still included in this cross-case analysis as it illustrates important aspects of e-Cohesion.

Each of the six case studies presented here are thoroughly analysed in their dedicated case study reports. The **current report aims to present the cross-case analysis and** conclude on the differences and similarities of these selected e-Cohesion systems. The key criteria that guide this comparison correspond to the themes covered by the case study reports.

2. Methodology of case studies

2.1. Overview of methodology

Overall approach

The case study programme was split into two tasks of the evaluation study. In Task 3, the evaluation team finalised the methodology and prepared the interview questionnaires and case study report templates. Then, the overall methodology and the templates were piloted through two case studies on Estonian e-Toetus and Greek MIS e-Cohesion systems. The second phase of preparation of case studies took place during Task 5, which started once the survey programme was closed. In contrast to pilot case studies, during Task 5, their selection (and the preparation itself) was also informed by the data collected during the surveys of beneficiaries and authorities.

Identification and selection of good practice systems

Based on the information collected through the survey and consultation activities (Task 4), supplemented with the information collected during the desk research-based mapping (Task 2), the contractor prepared a long-list of e-Cohesion systems to be considered as good practice systems and thus could be included for in depth analysis in the Task 5 case studies. This process was organised into the following steps:

- Defining the selection criteria to be used, mainly informed by the results of the surveys, and discussing the criteria with the Commission;

- Applying the selection criteria, preparing the long list of systems and discussing the long list with the Commission;

- Final selection of five systems and getting the approval of relevant MAs that they would be willing to collaborate during the preparation of case studies.

The selection criteria were based on data collected during the surveys of authorities and beneficiaries, taking the satisfaction of beneficiaries as the basis, and comparing the results with the authorities' satisfaction. Therefore, the selected criteria below mostly correspond to the specific survey questions or individual statements.

- The primary criteria related to the overall satisfaction with the systems, scope of their use, usability, only-once encoding;

- The secondary criteria examined the OPs and funds covered, geographical coverage, and whether the systems (including technically enhanced and further developed versions) will be used in the upcoming Programming period (2021-2027).

We only considered those systems that received ten or more responses from beneficiaries. Fewer responses would mean that the selection would be based on a very small number of responses (e.g., user satisfaction criteria would be based on the responses of less than ten respondents, compared to some systems with a few hundred responses). Also, fewer responses would mean that we would have limited information to feed into the case study preparation.

Data that informed case studies

The in-depth analysis of selected e-Cohesion systems built on the information gathered during the initial desk research-based mapping and further in-depth desk research of additional data sources we acquired from relevant national authorities, or the EC. Survey results were also used to inform the preparation of the case studies, especially for reflecting

the beneficiary perspective on the selected e-Cohesion system. However, the key information source was the large-scale interview programme, summarised in the table below. Some of the interviews took place with several people at once, and in total, 84 persons representing different perspectives were interviewed while preparing case studies.

Table 2. Interview programme to inform case studies

	Target group	Purpose/key themes	No of persons interviewed
Policy perspective	Representatives of authorities who have helped design the system, own it and are responsible for its overall coordination.	- Legal and policy background surrounding the e-Cohesion system - Overview of design and deployment process (staff and financial resources, project management) - Plans regarding the development of the system - Key challenges in implementing and coordinating such data exchange system, what works and what does not, needs that still need to be met	13
Technical perspective	Representatives of authorities and/or private contractors who have helped set up the system, maintain the IT infrastructure, provide IT support and are responsible for its operation and technical-level change.	- To discuss various functionalities of the e-Cohesion system and its sophistication - Completion and validation of the desk research-based mapping - Software development (analysis, design, implementation, test, documentation), deployment, hosting, technical and business support (e. g. helpdesk), adaptation, extension, re-engineering, change management) - Future plans regarding the development of the system - Key challenges from the technical point of view	10
User perspective	The beneficiary organisations that have received support for the ERDF and CF interventions most often used the system in question for the electronic exchange of data. It could represent various types of projects. Institutional users with different roles in ERDF and CF management: MAs, IBs, CAs, AAs	- System usefulness and performance in terms of simplification, reduced administrative burden, efficiency gains, reduced error rates, etc. compared with a paper-based system - Key strengths of the system, i.e. features and functionalities that bring the highest benefits to its users depending on their role - Identification of the needs that are not being met - Any suggestions for the improvements needed	61

Source: prepared by PPMI consortium

2.2. e-Cohesion systems selected for analysis

To provide valuable insights for most readers, the case study examples were not merely chosen because they were the highest performing, most user-friendly system, but also to ensure that the case study sample was representative of the different types of systems out there. We aimed to strike a balance between representativeness and gaining a wide understanding of different kinds of systems, whilst highlighting the best available practices among e-Cohesion systems in the EU27.

2.2.1. Selection of Interreg systems

Through discussions with the Commission, it was decided that one Interreg-specific system should be selected for case studies. After deliberated discussions, eMS was finally selected due to its unique position as a free-of-charge community system, its fundamental approach to address the objectives of harmonisation and flexibility, and its success in providing a fully-fledged e-Cohesion and monitoring system used by 36 different programmes from many different member states. Our case study approach addresses general questions regarding the development and operation of most e-Cohesion and monitoring systems. Therefore, lessons learnt through the analysis of eMS will provide valuable insights for realising and using similar (not only Interreg-related) solutions.

2.2.2. Selection of systems covering national/regional OPs

Given that it was decided that one out of five systems should cover Interreg, four systems that cover national/regional OPs were selected from the long list of systems. This final selection was mostly guided by ensuring geographical balance and implementation approach (centralised versus decentralised).

Table 3. Selected national/regional e-Cohesion systems

System	Country	No of OPs covered/type	Comment
Balcão2020	Portugal	Centralised system (many OPs)	A centralised system for the entire country. Scores high in terms of only-once encoding and self-descriptiveness of the system. Many positive comments by beneficiaries in an open-ended question on good practices.
SL2014	Poland	Centralised system (many OPs)	Centralised system that covers a large country. Covers national, regional and Interreg programmes. Overall satisfaction with the system is high. Many positive replies on what could be considered good practices in an open-ended question. Interesting to further explore the complexity and connectedness with other systems (e.g., generators for applications at the regional level)
SFINGE2020	Italy	OP-specific system (one OP covered)	OP-specific, a regional system covering one regional programme. High overall satisfaction, also high satisfaction with the majority of other criteria.
e-Toetus	Estonia	Centralised system (one OP)	Centralised system for a small country, which covers only one OP. When considering all other criteria, scores very high in overall satisfaction (at the top) and among the top systems.

Source: prepared by PPMI Consortium

3. Cross-case analysis – key results

3.1. Introduction

Based on the information from the case studies, we draw a synthesis showing similarities and differences between the six systems, their starting points, development approaches, operation and maintenance, legal provisions, supported processes, provided features, advantages and drawbacks.

Integrated or decoupled e-Cohesion systems

In many cases, the e-Cohesion related functionality forms an integrated part of the transactional monitoring system. e-Cohesion and transactional monitoring (activities related to checking, approving of applications, progress reports and payments claim) are in these cases supported by one unified system using the same user interface, same database, and role models. This is the approach of systems like eMS (Interreg), MIS (Greece), SFINGE2020 (Italy) and SL2014. In consequence, the terms e-Cohesion and monitoring are often used synonymously.

There are also constellations in which the e-Cohesion system is a decoupled entity. In these cases, the front-office functionality exists more independently from the back-office functionality. Independence hereby means that if one system is out of order, the other one can still work. Also, one system can be individually developed and replaced if technical progress or additional requirements make this favourable. Both systems have their own database and are connected by bi-directional interfaces. In these cases, the transactional monitoring system existed before the e-Cohesion system, later developed to collect, and exchange information. This is the case for Balcão2020 and e-Toetus.

This decoupled model of e-Cohesion and monitoring systems is the model that European legislators had in mind. Consequently, e-Cohesion is described as a task of the member states, while the monitoring system is described as a task of the managing authority (MA). Except for Balcão2020, all analysed systems were developed in the same organisational context as the monitoring system.

Similarities and differences of e-Cohesion systems

e-Cohesion is a complex phenomenon that comprises various aspects. Thus, similarities and differences exist on different levels.

The context in which e-Cohesion systems operate, whether they are used by only one, a few, or by many programmes, and whether it is used by only one member state or on a cross-country level, plays an important role. At the same time, it's important to consider if the system is only used for programmes of one or different funds – e.g., both ERDF- and ESF-financed programmes. Some fund-specific aspects, like handling participant data, influence the behaviour and complexity of solutions. As ESF programmes process privacy-sensitive data, necessary measures to ensure data security and meet elevated GDPR related requirements also affect ERDF financed projects if managed in one integrated solution.

Out of our six examples, eMS and SFINGE2020 are the systems that only support ERDF programmes; the remaining systems support a variety of additional funds. Further, only SFINGE2020 supports one regional programme and e-Toetus one national programme; all remaining e-Cohesion systems support several different programmes.

The functioning and features of the system are also impacted by the different groups of beneficiaries using the solution. It makes a difference when only public organisations from one member state (the case for MIS, which is used for both national and regional programmes) or a whether wide range of different types of public and private beneficiaries located in different countries use the system (the case for eMS). Another important aspect is if programmes using the e-Cohesion system adhere to one common or at least similar management and control systems as those heavily define structures, processes and rules that need to be considered by the system.

3.2.   Development

e-Cohesion systems use different IT technologies such as databases, programming languages, and frameworks. This area is characterised by rapid progress and what was state of the art seven years ago sometimes turns up to be outdated nowadays. Systems like MIS implement a multi-tier architecture that can change the technology of one part of the system without affecting other parts. Following this approach, it's possible to change components of the presentation layer and offer a higher user experience without changing the underlying business logic or database. This leads to high reusability and flexibility.

New development methodologies emerge that move in the direction of agile approaches. The development of SFINGE2020 and JEMS (the replacement of eMS) makes intense user integration and prototyping and provides a constant flow of extended and improved programme versions. All six e-Cohesion systems in our case study sample were realised in multiple cycles of analysis, design, and implementation, each of which focussed on one prioritised module at a time. Centralised agencies supported by private suppliers developed all six e-Cohesion systems in these in-depth case studies. In this regard, the combination of IT skills and business knowledge of programme implementation is crucial.

3.3.   Legal aspects

Legal provisions and the attitude towards these are also significant. In this respect, it's important whether the deadline of e-Cohesion, namely the 31.12.2015, was met, whether the system is mandatory for beneficiaries and what kind of (national and regional) rules exist regarding handling verification documents.

e-Cohesion-related legal requirements directly triggered the development of eMS, SL2014, Balcão2020. Primarily focusing on effectiveness and compliance, eMS implemented the minimal requirements thoroughly. Next to e-Cohesion related requirements, fields that must be recorded and stored according to the applicable rules formed one of the major reference points of SL2014 development. In line with e-Cohesion being legally defined as a task of member states, Balcão2020 represents a national solution connected to individual monitoring systems of regional programmes. In the cases of MIS, e-Toetus and SFINGE2020, national initiatives also had positive impacts.

In four of the six examples, namely MIS, SFINGE2020, Balcão2020 and SL2014, the use of the system is legally mandatory. e-Toetus is not legally mandated but is the only official solution presented. According to our research, all programmes officially present eMS as the only or mandatory solution. This eliminates the necessity to maintain parallel processes and oblige authorities to provide solutions of high usability.

3.4.   Key requirements

Key principles

The concept of **only once encoding** describes the reuse of already submitted information and exists on different levels. Within the e-Cohesion system itself, it may be realised:

- on the project level;
- on the programme (project-crossing) level;
- or on a programme-crossing level.

Only once encoding is largely enabled by **interoperability**, which refers to the extent to which authorities of a specific programme have access rights to the system and share data among themselves. **Interoperability can then be extended to the national, cross-national, and EU-level**. The former refers to the extent to which the e-Cohesion systems introduced and/or developed for the current period 2014-2020 are linked[1] with other relevant electronic exchange systems such as central monitoring systems and national registers and databases. The latter refers to the extent e-Cohesion systems are compatible and/or complementary with systems such as the System for Fund Management (SFC)[2] and other systems of electronic exchange of data developed by EU-level actors.

eMS only make use of already submitted information on the project level. Information related to the application is reused in progress reports and information from previous progress reports. However, partner-related information submitted in the context of one project needs to be re-entered if the same partner is also active in another project. Other systems like e-Toetus, SL2014 and MIS reuse information on the project and programme-crossing levels.

All e-Cohesion systems considered in the case studies are also connected to external databases. eMS use web services provided by the European Commission to automatically calculate exchange rates of different currencies. It also provides an interface to automatically transfer partner and project related information to KEEP, a platform that publishes information on Interreg programmes. All other five systems are connected to various government registers to integrate statistical information and partners (e.g., address, date of birth, type of organisation).

Apart from MIS, none of the six systems uses the SFC2014 automatic interface solution to exchange information. First, it needs to be said that the connection to SFC2014 forms more a part of the monitoring system than part of the e-Cohesion system. Second, the number of transactions and the amount of data transferred within each transaction are in most cases considered too small for making the development and maintenance of such a solution economically feasible. This may change, as some authority representatives stated during case study interviews that the information requirements (i.e., the number of transactions per year and the amount of data transferred within each transaction) for SFC2021 are more extensive than those of SFC2014.

Most of the time, beneficiaries directly interact with intermediate bodies (IBs) and MAs. Either by using the same database (e. g. MIS, eMS, SFINGE2020, SL2014) or by integrating interfaces that directly connect the e-Cohesion with the monitoring system (e-Toetus,

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[1] Information is exchanged directly between the systems, without the need to extract information from one system and upload it to the other

[2] SFC2014's main function is the electronic exchange of information concerning shared Fund management between Member States and the European Commission during the period 2014-2020 covering the EU funds falling under the responsibility of DG REGIO, DG EMPL, DG AGRI, DG MARE and DG HOME.

Balcão2020), data transmitted by beneficiaries is immediately accessible for users of all roles having respective access rights.

Key processes

All e-Cohesion systems in our case study sample support the key processes of the e-Cohesion initiative, such as project implementation, which primarily entail creating and submitting progress reports and payment claims. These processes consist of clearly defined transactions that are repetitively executed in the same way and cause most of the overall administrative burden of project implementation. Audits, on the spot checks and ad hoc communication constitute less standardised project implementation processes. As a result, these are less frequently completely supported by e-Cohesion systems. In this respect, SFINGE2020, SL2014, MIS and e-Toetus form exceptions as they replace emails by providing appropriate communication features. In these cases, all project-related information is centrally accessible in one place.

Apart from SL2014, all systems directly support project selection and change requests. In contrast to processes related to progress reports and payment claims, the handling of applications and change requests is more often connected to programme or call specific requirements. MIS and eMS offer programme- and call-specific settings to address these demands. A new version of SL2014 that will be used for the 2021-2017 programming period will offer an application module that allows programmes to extend application forms with additional fields.

3.5.   Usefulness

The most important impacts of e-Cohesion, which users of all roles mention, relate to data integration and central accessibility of relevant documents in one place. The consequential improvements in communication and transparency are highly appreciated. In this regard, there is no significant difference between the e-Cohesion systems in our case studies. The same is true regarding reducing errors and repetitive data exchange and increasing data quality. Also, the standardisation and acceleration of processes play major roles. Systems that integrate powerful e-signature features (like e-Toetus and SL2014) offer the advantage of fully paper-free processes that decrease the effort for transport and storage.

Systems that offer unified solutions in decentralised and inherently heterogeneous contexts (like eMS and Balcão2020) help create a growing workforce that can more easily work in different programmes. This increases capacity.

All case study systems provide powerful e-Cohesion related functionalities to support information exchange between authorities and beneficiaries, such as automatic calculation, validation, status tracking and notification. Next to simple validations such as checks for missing values and wrong data type, systems like SL2014, e-Toetus, SFINGE2020, Balcão2020 and MIS validate more complex rules that implement demanding calculations and business logic (to prevent double funding, for example). Programmes that use eMS also use plugin technologies to implement complex validations that are programme specific.

In addition, SL2014 provides features to manage information on staff costs and procurements, which can be connected to individual expenses. The handling of unstructured verification and other supporting documents is also crucial. In this respect, SL2014 and MIS offer powerful features to archive, search and retrieve documents. SL2014 and e-Toetus also support the exchange of legally binding documents by integrating an e-signature feature based on advanced and qualified certificates.

3.6.   User-friendliness

e-Cohesion systems support the interaction of applicants and beneficiaries for information collection and communication during project selection and implementation phases. It is important to consider that most applicants and beneficiaries do not use e-Cohesion systems daily. Public and foremost private organisations whose core business is not the implementation of funding projects use the e-Cohesion system only monthly or even less frequently. The fact that applicants and beneficiaries do not frequently use these front-end systems implies important requirements regarding clarity of structure, self-descriptiveness, ease of use, flexibility, error tolerance, learnability, adherence to user expectations and provided help functionalities. Also, system performance and stability are key for higher levels of user-friendliness.

All systems subject to one of our case studies offer a high degree of user-friendliness. However, because eMS supports a wide range of programmes located in different member states and embedded in different organisational contexts, this system is more technologically and conceptually complex. As a result, the degree of eMS user-friendliness is lower than that of the other systems. eMS also made less use of feedback from beneficiaries and institutional users. Of course, the diversity of eMS users and, therefore, variance in user needs and demands makes this a more complex endeavour. Indeed, frequent collection, analysis and consideration of user feedback is vital to realise continuous improvements. In this respect, Balcão2020 and e-Toetus provide best practices. Also, providing appropriate helpdesk services and documentation and performance, stability and response time positively influence user-friendliness. These are aspects that e-Toetus and MIS users mentioned as strengths of their system.

SL2014 and e-Toetus succeeded in integrating a user-friendly e-signature feature based on advanced and qualified certificates, which is highly adopted by users and result in totally paper-free processes. Some eMS using programmes and MIS using programmes endorse the closed-user-group principle and realise paper-free processes based on a simple e-signature only. Second to convenience, users also appreciate control of workflow and flexibility. Users of SFINGE2020 appreciate the fact that the system allows them to execute the processing flexibility in a way that fits their needs and preferences.

3.7.   Good practices

The case studies revealed a lot of good practice examples, some of which regard overarching characteristics. Considering the whole development life cycle, **all six e-Cohesion systems in our case study sample followed an incremental and iterative evolutionary development approach characterised by a high degree of user integration, prototyping, continuous improvements, and frequent releases of new versions.** A user-centric approach also focuses on improving and streamlining activities that cause a most administrative burden. A move to agile approaches can be observed in systems development for the 2021-2027 period that further emphasise these activities (as seen from the development of JEMS, MIS, SFINGE2020, e-Toetus, and Balcão2020). Considering the development team, the combination of IT skills and knowledge of programme implementation is crucial.

All systems provide interoperability both on a conceptual and technical level. However, they still report difficulties in this regard, particularly on harmonising concepts. These difficulties are echoed in the findings from our survey and during the webinar with programme authority representatives.

Apart from SFINGE2020 and e-Toetus, all e-Cohesion systems in the sample are used for different programmes. Therefore, programmes need standardised rules, concepts, structures, and processes. In the case of MIS and SL2014, programmes adhere to similar management and control systems. In the case of Balcão2020, the system itself defined necessary standards of e-Cohesion related processes, concepts, and tools.[3] For eMS, in the heterogeneous context of Interreg programmes, the HIT initiative[4] delivered standardisation of concepts and tools. Additional standardisation of processes and roles resulted from eMS development itself. Considering the competing objectives of standardisation, which is to realise efficient and simple solutions, on the one hand, and flexibility – to meet programme specific requirements, on the other, **the first choice is always to harmonise as much as possible**. **The best practice here is plugin approaches that do not affect the system's core (i.e., its source code).**

All systems also connect external systems to use data exchange and other services (e.g., validation and calculations). By doing so, they often realise only once encoding on a system-crossing level. The advantages of fully paper-free processes are widely accepted. Working e-signature features are already implemented (e-Toetus and SL2014) or aimed to be implemented in future versions (e.g., Balcão2020 and JEMS).

3.8.   Challenges and drawbacks

Developing and maintaining an e-Cohesion system is a demanding task. Even our six best practice systems show drawbacks related to different areas. One aspect which is often mentioned regards performance, response time and stability of the system. This regards MIS, SFINGE2020, eMS, Balcão2020, and SL2014. At the beginning of the SL2014 operation, this had a large impact on system performance. The situation improved when the hosting was moved to a cloud-based server infrastructure, which offers a flexible calculation and memory server capacity adaptation. Another common theme regards the handling of unstructured supporting documents. Issues appear, for example, because of file size or file type restrictions.

Users of MIS, Balcão2020, e-Toetus and eMS criticise a lack of self-descriptiveness and training. For some users of Balcão2020, MIS and e-Toetus, the flexibility of the systems should be improved. Because of the missing support of the application phase, users of SL2014 criticise the lack of data integration. For different reasons, users of MIS, SL2014 and eMS also mention problems regarding the processing of financial data. In the case of MIS, this regards data exchange with e-PIP, the system that supports financial management. For SL2014, there is a lack of convenience because, in some cases, users must manually calculate financing. For eMS, this constitutes rounding issues and appearing errors when financing rates change during project implementation.

Interoperability, both conceptual and technical, represents the major challenge for all e-Cohesion systems in our sample. The standardisation of concepts, rules, processes, and structures demands ongoing efforts. Specific requirements exist both within programmes (e. g., different calls) and on programme crossing level. Even so, is the development and maintenance of interfaces to external systems.

Another common challenge is caused by the change of the requirements regarding the recorded and stored fields. For example, the Polish system for the new period was almost finalised when these requirements were published in autumn 2020. Relying on the approach

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[3] Whilst this standardisation is widely appreciated by most users, some still criticise the lack of flexibility.

[4] Harmonisation and implementation tool initiative aimed at harmonising and simplifying concepts and tools across programmes. For more information: https://www.interact-eu.net/#o=hit-2021-2027

of microservices, the responsible agency decided to develop an additional component to cover additional fields. From a user perspective, this component will be seamlessly integrated into the existing solution, but it nonetheless represents a specific element of its own. In the context of the fields that must be recorded and stored, another challenge is caused by GDPR related requirements. Even if these are mostly related to ESF and sensitive data connected to participants, they must be considered in systems used for other funds too.

The development teams are also confronted with growing user expectations regarding user-friendliness and flexibility. Today's users are much more experienced in handling e-business and e-government solutions and expect state of the art implementations. Because performance and stability are considered critical to system usefulness and user-friendliness, the definition of needed capacities and the assurance of reliability and scalability are also considered a challenge.

3.9. Summary

In this section, we have synthesised the good practices showcased throughout these six case studies.

Table 4. What makes a good e-Cohesion system?

Aspect	Action
Development	**Evolutionary development approach** - characterised by a high degree of prototyping, continuous improvements, and frequent releases of new versions (Exemplified by Balcão2020, EMS, e-Toetus, MIS, SFINGE2020) **User-centric approach** – systematic collection of user feedback, user involvement in testing prototypes of new features, consideration of user needs (Exemplified by Balcão2020, EMS, e-Toetus, MIS, SFINGE2020) **Versatile development team** - the combination of IT skills (may involve procurement of private software developer) and knowledge of programme implementation (Exemplified by Balcão2020, EMS, e-Toetus, MIS, SFINGE2020, SL2014)
Legal aspects	**Elimination of paper-based parallel processes** – by making the use of the system mandatory or the sole official solution, it eliminates the necessity to maintain parallel processes and oblige authorities to provide solutions of high usability. (Exemplified by e-Toetus, SL2014)
Key Requirements	**Supports the exchange of structured data** – the mere upload of unstructured data (e.g., forms as pdf-files) inhibits further data processing. (Exemplified by Balcão2020, EMS, e-Toetus, MIS, SFINGE2020, SL2014) **Data centralisation** – by supporting all key processes (including those not yet outlined in minimum requirements, e.g., application, change requests, and communication features), all project-related information is centrally accessible in one place. (Exemplified by Balcão2020, EMS, e-Toetus, MIS, SFINGE2020) **Interoperability beyond programme level** – allows for the fulfilment of once-encoding and extraction and verification of information on a wider scale. (Exemplified by Balcão2020, e-Toetus, MIS, SFINGE2020, SL2014)
Usefulness	**Provision of integrated e-signature feature** - offers the advantage of fully paper-free processes that decrease the effort for transport and storage. (Exemplified by e-Toetus, SL2014) **Addresses processes that cause most effort** – offers efficient support for activities that otherwise would cause most of the administrative burden

Aspect	Action
	(capturing expenses, handling supporting documents). (Exemplified by Balcão2020, SFINGE2020, SL2014) ● **Offers flexibility** – users can fulfil tasks according to their preferences and programmes to meet specific requirements. (Exemplified by SFINGE2020)
User-friendliness	● **Self-descriptiveness and help features** – considering that most beneficiaries do not use the system often, functionalities such as tooltips, etc., help users navigate the system. (Exemplified by Balcão2020, SFINGE2020, SL2014) ● **Automatically embedded validation and automatic calculations** – helps to verify the information and reduce error rates, which reduces administrative burdens for both beneficiaries and institutional users. (Exemplified by Balcão2020, EMS, e-Toetus, MIS, SFINGE2020, SL2014) ● **Provides appropriate performance and stability** – has appropriate server capacities to provide sufficient response time. (Exemplified by e-Toetus)

Source: prepared by PPMI consortium

Table 5. Cross-case analysis

	MIS	EMS	SL2014	e-Toetus	Balcão2020	SFINGE2020
Introduction	Centralised system used by all ERDF (including several Interreg programmes), CF Programmes; Public beneficiaries only; private companies and individuals use another e-cohesion front office system (PSKE); from the level of IBs, state aid projects are also managed by MIS. More than 8.000 users used the system in 2020; First version launched in 2007, current version from 2016	Community system for Interreg Programmes; Used by 37 different Programmes; Full-Fledged-monitoring system; free-off-charge for Interreg Programmes Operational since 2015	Centralised system used by almost all ERDF (including several Interreg programmes), CF programmes, ESF programmes More than 100.000 users Operational since 2015	Centralised system used by one single multi-fund programme (ERDF, CF, ESF) Approx. 3000 beneficiary users in 2020 Front office component of an overall monitoring system (SFOS transactional monitoring, SFCS analytical monitoring) Operational since 2015	Centralised system used by programmes financed by (ERDF, CF, ESF, EMFF, EAFRD) Approx. 270.000 users Operational since 2015	Individual decentralised system for Emilia-Romagna ERDF programme Approx. 28.000 users First version launched in 2008 current version from 2016
Legal Framework	Use of the system is mandatory; no parallel paper-flow e-cohesion related requirements were a significant point of reference	Adheres to minimum requirements/provisions set up by EC; Programme specific context is decisive (e., g., handling of verification documents)	Use of the system is mandatory	Not obligatory legally but only officially provided solution. Several national e-government initiatives since 2003 (Principles of Estonian Information Policy) e. g. widespread use of digital authentication and e-signature, national legal provisions to implement 'only once encoding'.	Use of the system is mandatory for ERDF and CF. According to Article 125 1303/2013, the system was built on a national level (in contrast, monitoring systems are programme specific).	Use of the system is mandatory for applicants and beneficiaries Corresponding national and regional initiatives to improve e-government related processes. (Simplify administrative procedures for citizens, enterprises and other private and public organisations)

	MIS	EMS	SL2014	e-Toetus	Balcão2020	SFINGE2020
Development and operation	Centrally developed by special MIS Agency; Combination of methodologies (RUP and SCRUM); Incremental development of modules (prioritised) System is centrally operated by special MIS Agency Programmes share identical management and control system (apart from Interreg)	Developed by Interact in cooperation with mainly four Interreg Programmes (core group); continuous adaptation and extension due new requirements; Conceptual basis provided by HIT + definitions of roles/workflow by core group; incremental development of modules (prioritised) System is operated by individual programmes; Interact provides centralised Helpdesk (Second level support); documentation; events (information exchange)	Main starting point was information needs that derive from EC provision regarding fields that must be recorded and stored. Rather top-down, linear approach; Programmes share similar management and control systems	Developed by private supplier Continuous adaptation to meet prioritised requirements Feedback of affected users (including beneficiaries) is continuously collected and analysed	A national agency (Portuguese Cohesion and Development Agency) is responsible for development and operation. The development and hosting services are provided by an external service provider. Authorities were involved during the development (requirement identification and definition)	The first version was launched in 2008, which supported project selection (application phase) only. This version was continuously extended by additional features and functionalities to support additional processes. External developer (IT skills and knowledge of programme implementation)
Key principles	Only once encoding on programme-crossing level; Interoperability: - e-PIP (management of costs and financing) - wide range of national registers - makes use of automatic interfaces to SFC2014	Only once encoding on project level; Interoperability: all roles have access to integrated data; Interfaces: - European Bank (automatic currency calculation) - Keep - No interface to SFC2014	Only once encoding on project-crossing level; Interoperability: beneficiaries only communicate with one responsible authority each. Exchanged data is directly visible for all roles involved in transactional monitoring. Interfaces: - to LSI systems (local information systems that support project selection) - Teryt (statistical data, addresses) - BGK Zlencenia (Payments) - No interface to SFC2014	Connected to many governmental registers (such as e-Business register) Only once encoding, reuse of and validation against information stemming from external databases.	The system is connected to many different national registers. Because of GDPR related provisions 'only once encoding' is not implemented on national level	The system is connected to the national monitoring system as well as to other governmental registers. No interface to SFC2014 Only once encoding (reuse of information from external databases)

	MIS	EMS	SL2014	e-Toetus	Balcão2020	SFINGE2020
Processes	Full support of project selection and implementation	Full support of project selection and implementation	Only supports project implementation; Exchange of payment claim (=progress report) good support of ad hoc communication fully paper-free processes (supports different types of digital certificates);	Full support of project selection and implementation	Full support of project selection and implementation	Full support of project selection and implementation Focus on change requests and communication
Functionalities	Automatic calculation; Validation checks Status tracking Notifications Access to previous versions Feature to risk assessment Feature to support ad hoc communication	Automatic calculation; Validation checks Status tracking Notifications Access to previous versions	Automatic calculation; Validation checks Status tracking Notifications Access to previous versions Feature to manage information related to staff Feature to manage information related to procurements and contracts Document management functionality to manage unstructured documents (verification and other supporting documents) Feature to support ad hoc communication	**Automatic calculation; Validation checks Status tracking** Notifications Access to previous versions	Automatic calculation Validation checks Status tracking Notifications Access to previous versions	Automatic calculation Validation checks Status tracking Notifications Access to previous versions Features to support ad hoc communication e-signature
Usefulness	Improvements in communication; collaboration and transparency; Acceleration and standardisation of processes; Reduction of errors Increase of data quality	Reduced costs/risks for programmes; Interact provides additional services (documentation; second level support, formation events; continuous improvement; information platform) Growing workforce with eMS skills Positive impact on Interreg/Interact image	Accessibility of integrated data Communication with authorities More efficient processes Total paper-free processes Increased data quality and validity	Integrated access to all relevant information -> because of this better communication Reduced repetitive information exchange Increased transparency Increased legal compliance	Standardisation of processes on programme / fund crossing level -> single point of access for beneficiaries. Dashboard overviews, summaries and status of projects	Simplified and accelerated processes Reduced repetitive transmission of identical information.

	MIS	EMS	SL2014	e-Toetus	Balcão2020	SFINGE2020
	More efficient handling of invoice-related information Audit trail			e-signature -> totally paper-free processes		
User-friendliness	User-friendliness is evaluated as being average	User-friendliness is evaluated as being average	High degree of self-descriptiveness Helpdesk and documentation give appropriate support System does not prescribe a specific order of steps User-friendly integration of e-signature	Helpdesk functionality Good response time, high stability	Easy to use, self-descriptive Good help functionality	Easy to use, self-descriptive Flexible
Drawbacks	Lack of self-descriptiveness Handling of financial data Performance and stability Flexibility	programme specific features => complexity Rounding issues (lack of persistence) Changing financing rates (=>wrong values) Communication features Performance and stability User-friendliness / navigation	Lack of data integration (project selection, withdrawals and recoveries) Performance problems during specific periods Tedious handling of unstructured documents (name conflicts, size-restriction) Calculation of financing rates, and flat rates Support for Interreg programmes (other currencies than Euro)	Complex national rules (confusing wording) Insufficient online help (but good helpdesk) Lack of self-descriptiveness Lack of flexibility (prescribed order of steps) Forecasts are not covered by the system	Lack of e-signature feature Handling of large files (supporting documents) Lack of flexibility regarding the order of steps Insufficient performance and stability (continuously improved though)	Response time and stability Notification can be improved Handling of supporting documents (restricted size)
Good Practices	Continuous improvements	Standardisation and flexibility Programme crossing approach on European level.	Functional approach Good support of effort-intensive activities (excel upload of expenses)	High degree of internal operability – prefilled information from connected systems (only once encoding – legally	Used on a programme and fund crossing level => standardisation => learn effects => reduction of administrative burden	Focus on simplification and acceleration of the daily work.

	MIS	EMS	SL2014	e-Toetus	Balcão2020	SFINGE2020
	All programmes use a similar management and control system exchange with other MS and EC Interoperability, interfaces to many different external systems	User-involvement in development Incremental development	Staff and procurement management E-signature Features to support ad hoc communication Similar management and control systems -> less programme specific requirements Balance between convenience and control Cloud based server infrastructure (higher scalability)	demanded on national level) Client-focussed (continuous collection, analysis of user experience) Prototyping -> agile approach of development	Centralised agency for development and operation Integration of users during the development process (to ensure user-friendliness) Interoperability: connection to many different governmental registers	Combination of IT skills and knowledge of programme implementation. Completeness of process support (including communication) Connection to governmental registers
Challenges	Maintenance of interfaces	More participating programmes right from the start; Increased expectations Balance between standardisation and flexibility	Estimate server capacity User expectations Deadline (EC requirements regarding fields to be recorded and stored were published in autumn 2020)	Complexity of legal provisions (national) GDPR	Interoperability, maintenance of interfaces User expectations Only once encoding should be mandatory on national level (legal provision) GDPR e-signature feature	Interoperability, maintenance of interfaces User expectations

Annexes

Annex 1: primary and secondary selection criteria

Primary criteria

Overall satisfaction with the systems

We will take the following questions and will calculate the overall satisfaction score per system aggregating the responses for all questions and statements below. "Strongly agree" will be assigned with 4, "strongly disagree" with 1. Thus, the overall satisfaction score will range from 1 to 4.

Authorities	Beneficiaries

Authorities

Do you agree or disagree with the following statements describing the user-friendliness and effectiveness of the e-Cohesion system?

	Strongly agree	Agree	Disagree	Strongly disagree	Do not know / cannot answer
The system is clear and self-explanatory	○	○	○	○	○
Using the system does not require extensive training	○	○	○	○	○
With time and more experience using the system, it helps me to carry out tasks more efficiently	○	○	○	○	○
The system helps users to understand which steps to follow	○	○	○	○	○
The system's user interface is easy to operate	○	○	○	○	○
The system does not prescribe the order of steps; I can carry out steps in the workflow in a flexible way, according to my personal preferences	○	○	○	○	○
The response time and stability of the system is always adequate, even during times of high traffic (e. g. before the end of a call for applications)	○	○	○	○	○
The Help functionality within the system and user documentation are useful	○	○	○	○	○
The help desk service provided by the relevant authorities provides useful assistance	○	○	○	○	○
The e-signature is very useful; it has helped to save substantial resources and increased security	○	○	○	○	○

Beneficiaries

Do you agree or disagree with the following statements describing the user-friendliness and effectiveness of the indicated electronic data exchange system you used:

	Strongly agree	Agree	Disagree	Strongly disagree	Do not know / cannot answer
System is clear and self-explanatory	○	○	○	○	○
Using the system does not require extensive training	○	○	○	○	○
With time and more experience using the system, it helps me to carry out tasks more efficiently	○	○	○	○	○
The system helps users to understand which steps to follow	○	○	○	○	○
The system's user interface is easy to operate	○	○	○	○	○
The system does not prescribe the order of steps; I can carry out steps in the workflow in a flexible way, according to my personal preferences	○	○	○	○	○
The response time and stability of the system is always adequate, even during times of high traffic (e. g. before the end of a call for applications)	○	○	○	○	○
The Help functionality within the system and user documentation are useful	○	○	○	○	○
The help desk service provided by the relevant authorities provides useful assistance	○	○	○	○	○
The e-signature is very useful; it has helped to save substantial resources and increased security	○	○	○	○	○

Authorities

Please assess the following statement: the benefits (e.g. reduced administrative burden, simplified procedures) of the introduction of the e-Cohesion system exceed the associated costs (e.g. financial, time) for the following processes:

	Strongly agree, benefits exceed costs	Agree, benefits exceed costs	Disagree, benefits do not exceed costs	Strongly disagree, benefits do not exceed costs	The system does not support this process	Do not know / cannot answer
Checking and approving applications	○	○	○	○	○	○
Preparing and signing contracts for grants (or other forms of support)	○	○	○	○	○	○
Managing contract amendments	○	○	○	○	○	○
Assessing and approving progress reports	○	○	○	○	○	○
Verifying and approving payment claims	○	○	○	○	○	○
Planning and implementing management verifications or on-the-spot checks	○	○	○	○	○	○
Planning and carrying out audits	○	○	○	○	○	○

Please assess the following aspects and the impact of exchanging data through the e-Cohesion system, compared with paper-based processes or email exchanges. Has using the e-Cohesion system led to improvements in the following areas:

	Strongly agree	Agree	Disagree	Strongly disagree	Do not know cannot ans
It has reduced the repeated transmission of the same information	○	○	○	○	○
Improved communication between beneficiaries and authorities	○	○	○	○	○
Resulted in a faster exchange of information between beneficiaries and authorities	○	○	○	○	○
Increased the transparency and accessibility of relevant information	○	○	○	○	○
Reduced costs relating to the management of projects	○	○	○	○	○
Improved data quality and integrity	○	○	○	○	○
Improved data security and privacy	○	○	○	○	○
Increased legal compliance (e.g. reduced risk of double funding, fraud, etc.)	○	○	○	○	○
Resulted in standardisation of programme management processes (e.g. the requirements of different programmes/priorities were streamlined because the system requires more standard information to be collected)	○	○	○	○	○
Other aspects	○	○	○	○	○

Beneficiaries

Please assess the following statement: the benefits (e.g. reduced administrative burden, simplified procedures) of the introduction of the electronic data exchange system between beneficiaries and authorities exceeds the associated costs (e.g. the time and effort required to use it) for the following processes:

	Strongly agree, benefits exceed costs	Agree, benefits exceed costs	Disagree, benefits do not exceed costs	Strongly disagree, benefits do not exceed costs	The system does not support this process	Do not know / cannot answer
Creating, submitting or modifying applications for funding	○	○	○	○	○	○
Processing contracts for grants (or other forms of support)	○	○	○	○	○	○
Creating, submitting or modifying progress reports	○	○	○	○	○	○
Creating, submitting or modifying payment claims	○	○	○	○	○	○
Submitting documents relating to management verifications on-the-spot checks	○	○	○	○	○	○

Please assess the following aspects and the impact of exchanging data using the electronic system, compared with paper-based processe email exchanges. Has using the electronic data exchange system led to improvements in the following areas:

	Strongly agree	Agree	Disagree	Strongly disagree	Do not know cannot answe
It has reduced the repeated transmission of the same information	○	○	○	○	○
Improved communication with programme authorities	○	○	○	○	○
Resulted in the faster exchange of information with programme authorities	○	○	○	○	○
Increased the transparency and accessibility of relevant information	○	○	○	○	○
Reduced costs relating to the management of projects (e.g. by eliminating parallel paper flow, shipping and document storage costs)	○	○	○	○	○
Improved data quality and integrity	○	○	○	○	○
Improved data security and privacy	○	○	○	○	○
Increased legal compliance (e.g. reduced the risk of irregularities, mistakes etc.)	○	○	○	○	○
Other aspects	○	○	○	○	○

Scope of the use of the system

The following questions will inform the examination of how extensively the systems are used: whether they are used for the entire cycle of project from application to reporting.

Authorities	Beneficiaries
To what extent do applicants have to use the e-Cohesion system you indicated in previous questions when applying for funding from the schemes/interventions you supervise? ○ Applicants can only apply through the system, and all documents relating to application process are submitted only through the system ○ Applicants can only apply through the system, but some documents related to application are submitted through other channels (e-mail, paper or similar) ○ Applicants can choose to apply either through the system or by using other channels (e-mail, paper or similar) ○ Applicants can apply only using other channels (e-mail, paper or similar), because the indicated system does not support the application process	**To what extent have you had to use the system indicated when applying for funding for your project/operation?** ○ I could only apply through the system, and all documents relating to the application process were submitted only through the system ○ I could only apply through the system, but some documents relating to application were submitted through other channels (e-mail, paper or simi ○ I could choose to apply either through the system or by using other channels (e-mail, paper or similar) ○ I could apply only using other channels (e-mail, paper or similar), because the indicated system does not support application

To what extent do beneficiaries use the indicated e-Cohesion system for the following processes relating to the projects/operations in the OPs that you manage:

	All documents/reports are submitted only through the system	Documents/reports are submitted both through the system and via other channels (e-mail, paper or similar)	Documents/reports are submitted only using channels other than the system (e-mail, paper or similar)	Do not know / cannot answer
Preparing and signing of contracts for grants (or other forms of support)	○	○	○	○
Submitting payment claims for their projects/operations	○	○	○	○
Reporting on the progress of their projects/operations (all reports other than financial data/payment claims)	○	○	○	○
Providing documents for management verifications or on-the-spot checks	○	○	○	○

When implementing your project/operation, to what extent did you use the indicated electronic data exchange system for the following processes:

	All documents/reports were submitted only through the system	Documents/reports were submitted both through the system and via other channels (e-mail, paper or similar)	Documents/reports were submitted only using channels other than the system (e-mail, paper or similar)	Do not know / cannot answer
Preparing and signing contracts for grants (or other forms of support)	○	○	○	○
Submitting payment claims for your projects/operations	○	○	○	○
Reporting on the progress of your projects/operations (all other reports than financial data / payment claims)	○	○	○	○
Providing documents for management verifications or on-the-spot checks	○	○	○	○
Communicating with relevant authorities in relation to various processes outlined above	○	○	○	○

Authorities	Beneficiaries
What do you estimate to be the share of all relevant data exchanges that take place via the e-Cohesion system, as a proportion of total exchanges between your public authority and beneficiaries? 			0%	0-25%	25-50%	50-75%	75-100%	Do not know / cannot answer	 During the application phase	○	○	○	○	○	○ During the project implementation phase	○	○	○	○	○	○ During auditing activities	○	○	○	○	○	○ During other phases	○	○	○	○	○	○	

Usability: suitability for learning

The following question covering the usability will show whether with time and more experience using the system becomes easier and allows to carry out the tasks more efficiently.

Authorities	Beneficiaries
Do you agree or disagree with the following statements describing the user-friendliness and effectiveness of the e-Cohesion system? With time and more experience using the system, it helps me to carry out tasks more efficiently ○ ○ ○ ○ ○	**Do you agree or disagree with the following statements describing the user-friendliness and effectiveness of the indicated electronic data exchange system you used:** With time and more experience using the system, it helps me to carry out tasks more efficiently ○ ○ ○ ○ ○

Usability: self-descriptiveness

The following question covering the usability will show whether the system is clear and using of it does not require extensive training.

Authorities						Beneficiaries					

Authorities

Do you agree or disagree with the following statements describing the user-friendliness and effectiveness of the e-Cohesion system?

	Strongly agree	Agree	Disagree	Strongly disagree	Do not know / cannot answer
The system is clear and self-explanatory	○	○	○	○	○
Using the system does not require extensive training	○	○	○	○	○

Beneficiaries

Do you agree or disagree with the following statements describing the user-friendliness and effectiveness of the indicated electronic data exchange system you used:

	Strongly agree	Agree	Disagree	Strongly disagree	Do not know / cannot answer
System is clear and self-explanatory	○	○	○	○	○
Using the system does not require extensive training	○	○	○	○	○

Usability: conformity with user-expectations

The following question covering the usability will show whether the system is responsive and stable.

Authorities						Beneficiaries					
The response time and stability of the system is always adequate, even during times of high traffic (e. g. before the end of a call for applications)	○	○	○	○	○	The response time and stability of the system is always adequate, even during times of high traffic (e. g. before the end of a call for applications)	○	○	○	○	○

24

Only-once encoding

The following questions will allow to examine the extent to which the system supports only-once encoding principle.

Authorities	Beneficiaries

When a beneficiary implements a project, does the e-Cohesion system re-use (pre-fill) some information already submitted by the benefic[iary] or obtain such information from other sources?

	This function does not exist	It is very useful; it helps to save substantial time and resources	It is fairly useful; it helps to save some time and resources	It is not useful / its benefit is negligible	Do not k / cann answ
Pre-fills information for beneficiaries based on the project application	○	○	○	○	○
Pre-fills information for beneficiaries based on what they already entered in previous steps	○	○	○	○	○
Pre-fills information for beneficiaries based on information available from various national/regional registers (such as data on employment, companies and similar)	○	○	○	○	○

Does the electronic data exchange system re-use (pre-fill) some information that you have submitted previously, or obtain such informati[on] from other sources?

	This function does not exist	It is very useful; it helps to save substantial time and resources	It is fairly useful; it helps to save some time and resources	It is not useful / its benefit is negligible	Do not k / cann answ
Pre-fills information based on your project application	○	○	○	○	○
Pre-fills information based on what you entered in previous steps	○	○	○	○	○
Pre-fills information based on information available from various national/regional registers (such as data on employment, companies and similar)	○	○	○	○	○

Please assess the following aspects and the impact of exchanging data through the e-Cohesion system, compared with paper-based processes or email exchanges. Has using the e-Cohesion system led to improvements in the following areas:

	Strongly agree	Agree	Disagree	Strongly disagree	Do not know / cannot answer
It has reduced the repeated transmission of the same information	◉	◉	◉	◉	◉

Please assess the following aspects and the impact of exchanging data using the electronic system, compared with paper-based processes or email exchanges. Has using the electronic data exchange system led to improvements in the following areas:

	Strongly agree	Agree	Disagree	Strongly disagree	Do not know / cannot answer
It has reduced the repeated transmission of the same information	◉	◉	◉	◉	◉

Good practice examples as provided by respondents

In addition, answers to the following open-ended question will be checked to identify what good practices respondents identified themselves and how/whether it corresponds to the results of the questions listed above.

Authorities	Beneficiaries
What would you indicate as examples of good practice in the e-Cohesion system we discussed in this survey? What are the specific features or functionalities that work really well and result in a considerable simplification of your work?	What would you indicate as examples of good practice in the electronic data exchange system we discussed in this survey? What are the specific features or functionalities that work really well, and result in a considerable simplification of your work?

Secondary criteria

Once the long list of systems is compiled based on the primary criteria, we will further make sure that the final list includes the systems evaluated against the following secondary criteria.

Type of system

When selecting the systems, we will consider their type: whether the system is used for national/regional OPs or for Interreg programmes.

Future plans

Authorities	Beneficiaries
For the programming period 2021-2027, in what form will the current e-Cohesion system be used? ○ The system will be used in its current form, with no major developments ○ The system will be further developed ○ The existing system will be replaced by a new system ○ Do not know / cannot answer ○ Other	

Coverage of OPs

Authorities	Beneficiaries
Please indicate which national/regional Operational Programme(s) or Interreg programme(s) use the e-Cohesion system you indicated in previous question (click here to see a list of all national/regional Operational Programmes and Interreg programmes):	Please select one national/regional Operational Programme or Interreg programme under which you implemented your most recent project/operation (if the OP is not on the list, please select the option 'Other OP / Interreg programme'):

Geographical coverage

When selecting the systems, we will also take their geographical coverage into account to ensure the balance between EU15 and EU13, between federal and centralised countries.

Annex 2: Long-list of e-Cohesion systems

When applying the selection criteria discussed in the previous section, we ranked the systems based on each of the criteria and identified the ones that scored the highest. Based on these rankings, we pre-selected the following e-Cohesion systems and further discussed the list with the Commission. It should be noted that the list includes two systems (e-Toetus and Monitoring Information System (MIS) / Ολοκληρωμένο Πληροφοριακό Σύστημα (ΟΠΣ)) that were already covered during the preparation of two pilot case studies under Task 3.

Secondary criteria							Primary criteria (beneficiaries)						Overall conclusion and reasoning
System	Country/region	Type	No of OPs covered/type	Use in the upcoming period?	Funds covered	No of responses from beneficiaries	Overall satisfaction	Conformity with user expectations	Only-once encoding	Scope of the use of the systems	Self-descriptiveness	Suitability for learning	
BAMOS	Baltic Sea (Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden)	Interreg	OP-specific system (one OP covered)	Further developed	ERDF	32	Among top systems	Among top systems	Among top systems	Among top systems	Among top systems		Interreg system, which covers one OP but many countries. Overall satisfaction is high; scores are high regarding many criteria. All processes supported by the system are fully digitalised – no project-related exchange of information or communication takes place outside of the system.
IMIS	Hungary/Serbia/Slovakia/Croatia	Interreg	OP-specific system (three OPs covered)	No clear info	ERDF	26	Among top systems	Among top systems			Among top systems	Among top systems	Interreg system that covers a few Interreg programmes. Overall satisfaction is high, scores high regarding other criteria. The system supports the implementation phase as well as the application phase and allows the upload and transfer of verification documents. It provides a clear user interface and structure. Regarding the handling of verification documents in other programmes it would be interesting to know. Verification stage could be the potential focus of the case study.
eMS	Many countries covered	Interreg	Centralised system for around 35 Interreg programmes	Replaced by JEMS system, but largely based on the eMS	ERDF	365							It does not rank among top systems, but the overall satisfaction is high and scores average for all the criteria. It is a unique system in terms of how it is implemented (readily available solution for many Interreg programmes); it is used by many countries and many Interreg programmes,
Balcão 2020	Portugal	National/regional	Centralised system	Further developed	ERDF and CF	319			Among top systems		Among top systems		Centralised system for the entire country. Scores high in terms of only-once encoding and self-descriptiveness of the system. Many positive comments by beneficiaries in open-ended question on good practices.
SL2014	Poland	National/regional	Centralised system	Will be replaced, but largely built on the current system	ERDF and CF	934	Among top systems						Overall satisfaction with the system is high. Centralised system. Size of the country. Many positive replies on what could be considered as good practices in an open-ended question. Interesting to further explore the complexity and connectedness with other systems (e.g., generators for applications at regional level)
DMS (Duomenų Mainų Svetainė)	Lithuania	National/regional	Centralised system	Will be replaced, but largely built on current system	ERDF and CF	50	Among top systems	Among top systems	Among top systems	Among top systems	Among top systems	Among top systems	Centralised system. High overall satisfaction by beneficiaries and scores high in most other criteria. Only-once encoding - prefill of information is emphasised by beneficiaries in open-ended question; also scores high in terms of only-once encoding.
SFINGE2020	Italy	National/regional	OP-specific system (one OP covered)	Further developed	ERDF	25	Among top systems	Among top systems	Among top systems	Among top systems	Among top systems		OP-specific system. High overall satisfaction, also high satisfaction with majority of other criteria.
sifesr14.20	Italy	National/regional	OP-specific system (one OP covered)	Further developed	ERDF	17	Among top systems		Among top systems				OP-specific system. High overall satisfaction, also high satisfaction with only-once encoding.
eFondovi	Croatia	National/regional	Centralised system	Further developed	ERDF and CF	214	Among top systems	Among top systems	Among top systems	Among top systems	Among top systems	Among top systems	Centralised system. High overall satisfaction by beneficiaries and scores high in most other criteria. Seems to be quite new system (since 2017), thus could potentially include some innovative functionalities. Quite a few comments by beneficiaries on what are the good practices.
EFRO-Webportal	Netherlands	National/regional	Centralised system	Further developed	ERDF	46		Among top systems			Among top systems		The system is used by all ERDF regional programmes of the Netherlands. Scores high in conformity with user expectations and self-descriptiveness. It fully supports the implementation phase as well as the application phase and makes use of the digital signature to substitute handwritten signatures. Verification documents (copies of invoices) are not uploaded, originals stay on premise and are made available during on-the-spot-checks. Regarding the situation in other decentralised organised member states it would be interesting to know.
FAIR (EPTK)	Hungary	National/regional	Centralised system	Further developed	ERDF and CF	127			Among top systems		Among top systems	Among top systems	High satisfaction by users in terms of only-once encoding, self-descriptiveness and suitability for learning.
e-Toetus	Estonia	National/regional	Centralised system	Further developed	ERDF and CF	65	Among top systems	Among top systems	Among top systems	Among top systems	Among top systems	Among top systems	Centralised system. Scores very high in overall satisfaction (on the very top of the list) and also among the top systems when looking at all other criteria considered.
Monitoring Information System (MIS) / Ολοκληρωμένο Πληροφοριακό Σύστημα (ΟΠΣ)	Greece	National/regional	Centralised system	Further developed / no major changes	ERDF and CF	129			Among top systems			Among top systems	Not on the very top of the list in terms of the overall satisfaction, but the satisfaction is above average. Compared to other systems, this system scores especially high in terms of only-once encoding. Also scores high in suitability for learning.