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This action is funded by the European Union

ANNEX 2

of the Commission Implementing Decision on the Annual Action Programme 2016 Part III in favour of the Asia region to be financed from the general budget of the European Union

Action Document for

Asi@Connect (successor to Trans-Eurasia Information Network – TEIN)

WORK PROGRAMME FOR GRANTS

This document constitutes the work programme for grants in the sense of Article 128(1) of the Financial Regulation (Regulation (EU, Euratom) No 966/2012) and in the following sections concerning grants awarded directly without a call for proposals: one section 5.3

1. Title/basic act/ CRIS number	Asi@Connect (successor to Trans-Eurasia Information Network – TEIN) CRIS number: 2015/038-230 financed under the Development Cooperation Instrument
2. Zone benefiting from the action/location	Regional Asia The action shall be carried out at the following locations: Afghanistan, Australia, Bangladesh, Bhutan, Cambodia, China, Chinese Taipei, Hong Kong, India, Indonesia, Japan, Korea, Laos, Malaysia, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam. (Other Asian countries may join during the course of Asi@Connect. Developed country participants may carry out project activities for the benefit of developing country participants)
3. Programming document	REGIONAL PROGRAMMING FOR ASIA MULTIANNUAL INDICATIVE PROGRAMME 2014-2020
4. Sector of concentration/ thematic area	3.2.1 Regional Integration and Cooperation 3.2.1.1 Provide and further develop a dedicated regional high capacity, high quality Internet connectivity network for research and higher education, also leveraging the e-infrastructure developed for public service projects and access to the Internet for

	LDCs			
5. Amounts concerned	<p>Total estimated cost: EUR 36.835.000</p> <p>Total amount of EU budget contribution EUR 20.000.000</p> <p>Co-funding contributions by National Research and Education Networks (NRENs) of Asian developing countries¹ for international carrier Internet connectivity links and network management EUR 6.300.000</p> <p>Other Contributions/Payments</p> <p>Korean Ministry of Science, ICT & Future Planning (MSIP) EUR 5.600.000</p> <p>The China Education and Research Network (CERNET) EUR 1.550.000</p> <p>Agency for Science, Technology and Research (A*STAR), Singapore EUR 450.000</p> <p>Australian Academic and Research Network (AARNet) payment EUR 1.500.000</p> <p>Hong Kong Academic and Research Network (HARNET) payment EUR 600.000</p> <p>Research and Education Advanced Network New Zealand (REANNZ) payment EUR 435.000</p> <p>Singapore Advanced Research and Education Network (SingAREN) payment EUR 400.000</p>			
6. Aid modality(ies) and implementation modality(ies)	<p>Project Modality</p> <p>Direct management [grants – direct award]</p>			
7. DAC code(s)	<p>22040</p> <p>Information and communication technology (ICT).</p>			
8. Markers (from CRIS DAC form)	General policy objective	Not targeted	Significant objective	Main objective
	Participation development/good governance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Aid to environment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Gender equality (including Women In Development)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Trade Development	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Reproductive, Maternal, New born and child health	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	RIO Convention markers	Not targeted	Significant objective	Main objective

¹ Developing countries in Asia on the DAC List of ODA Recipients Effective as at 1 January 2015 for reporting on 2014, 2015 and 2016 flows (<http://www.oecd.org/dac/stats/daclist.htm>)

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	Biological diversity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Combat desertification	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Climate change mitigation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Climate change adaptation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Global Public Goods and Challenges (GPGC) thematic flagships	N.A.			

SUMMARY

The Trans-Eurasia Information Network (TEIN) was launched at the Asia-Europe Meeting (ASEM-3) Summit in Seoul in October 2000. The project began in December 2001 with the installation of a France-Korea dedicated high-capacity Internet connection (TEIN-1). At the start of TEIN-4 in April 2012, and to promote Asian leadership concerning research and education Internet connectivity in the region, the day-to-day management of the project was transferred from DANTE (Delivery of Advanced Network Technology to Europe) to the Korean organisation TEIN*CC. According to a recent TEIN-4 evaluation (February 2016), the transition in TEIN management from an EU organisation GÉANT (formerly DANTE) to a newly created Korean organisation TEIN*CC in 2012 has been overall smooth and should be seen as an example of best practice.

One measure of project success is that between 2012 and 2014, the overall volume of traffic over the network doubled, with researchers across Asia-Pacific collaborating in areas such as telemedicine, e-learning, water resource management, climate and weather prediction, plant phenomics and plant pest and disease diagnostics. TEIN-4 is already contributing to fulfilling a number of Sustainable Development Goals (SDGs) including key challenge SDG 9.5 (*Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers*) and cross-cutting SDG 9.b (*Support domestic technology development, research and innovation in developing countries,...*).

In 2017, a number of TEIN-4 beneficiary countries will begin to fully fund their TEIN access links. So whilst the TEIN project provides vital assistance to Asian partner country research and education communities, the trend is towards self-reliance. This trend, a clear indicator of project sustainability, is expected to continue during Asi@Connect (successor to TEIN). The strategic direction is therefore clear: several developing countries are moving to fully fund their access links to TEIN, so the project focus will be on assistance to LDCs whilst also providing products and services applications to network users and promoting research collaboration in line with the SDGs. This strategy is evidenced in the work packages of the proposed Asi@Connect project.

1 CONTEXT

1.1 Sector/Country/Regional context/Thematic area

The EU has long fostered high-capacity and high-performance research and education Internet networks as enablers of global research and education collaboration and as a motor and "test bed" for new technologies that may be commercially implemented. Indeed, the advanced networks installed in many developing countries for research and education purposes use the same infrastructure to also provide capacity for many other services, generating additional added value in public and private activities in society at large ².

The TEIN-4 project is already contributing to fulfilling a number of Sustainable Development Goals (SDGs). Using TEIN, researchers across Asia-Pacific are collaborating on projects in areas such as telemedicine, e-learning, water resource management, climate and weather prediction, plant phenomics and plant pest and disease diagnostics. This contributes to both key challenge SDG 9.5 (*Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers*) and cross-cutting SDG 9.b (*Support domestic technology development, research and innovation in developing countries,...*). Under Asi@Connect, cross-cutting SDG 9.c (*Significantly increase access to ICT and strive to provide universal and affordable access to Internet in LDCs by 2020*) will be addressed. Indeed, concerning SDG 9.c, research shows that access to the Internet exerts a strong influence on economic growth rates for a range of large and developed economies, contributing to the eradication of poverty in the long term, a primary objective of cooperation under the Development Cooperation Instrument³. In less developed countries, the potential influence of Internet access on growth rates is even larger given their opportunity to "leapfrog" to the use of the latest Internet technologies^{4,5}.

1.1.1 Public Policy Assessment and EU Policy Framework

The Europe 2020 Strategy sets objectives for the growth of the European Union (EU) by 2020 and includes the Digital Agenda for Europe as one of its seven

² An Asi@Connect project is included in the *"Regional Programming for Asia, Multiannual Indicative Programme 2014-2020"* under section *"3.2 Regional integration in South and North-East Asia and other regional support"*, Specific objective *"4. Provide and further develop a dedicated regional high capacity, high quality Internet connectivity network for research and higher education, also leveraging the e-infrastructure developed for public service projects"* with the main expected result of *"Establish a dedicated regional Internet network of at least 10Gbps for use primarily by the universities and higher education institutions who are members of national research and education networks (NRENs) in Asia, connecting them with Europe and globally"* (p.10-11).

³ REGULATION (EU) No 233/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 March 2014 establishing a financing instrument for development cooperation for the period 2014-2020.

⁴ *"The great transformer: The impact of the Internet on economic growth and prosperity"* James Manyika & Charles Roxburgh, McKinsey Global Institute, October 2011.

"Across a range of large and developed countries, the Internet exerts a strong influence on economic growth rates. Our research shows that the Internet accounts for, on average, 3.4 percent of GDP across the large economies that make up 70 percent of global GDP".

⁵ World Bank.2016. *World Development Report 2016: Digital Dividends*. Washington,DC: World Bank. doi:10.1596/978-1-4648-0671-1. License: Creative Commons Attribution CC BY 3.0 IGO

flagship initiatives⁶. High-capacity and high-performance research and education Internet networks are part of EU's Digital Agenda aiming to empower researchers with easy and controlled online access to facilities, resources and collaboration tools, bringing to them the power of ICT for computing, connectivity, data storage and access to virtual research environments⁷. The Digital Agenda proposes to better exploit the potential of Information and Communication Technologies (ICTs) in order to foster innovation, economic growth and progress⁸. By funding R&E Internet networks in developing countries (see section 3.2), the EU recognises the role of research and education networks in the transformation of developing economies into knowledge societies.

1.1.2 Stakeholder analysis

The main objective of the project is to continuously upgrade the advanced TEIN pan-Asian research and education Internet connectivity network to further enable research and education collaboration across Asia and globally. As such the primary target group of Asi@Connect are the National Research and Education Networks (NRENs) and their member universities and research institutions. NRENs typically connect all major research and educational institutions in a country and are therefore centrally placed for reaching out to a wider range of research and education organisations in the country. The end-users and beneficiaries of the Internet connectivity provided by Asi@Connect are the staff and students of higher education institutions across Asia, and more widely those researchers collaborating in Asia, the EU and globally via TEIN. The governments of Asi@Connect partner NRENs are stakeholders who highly value the development of high-capacity, high-performance pan-Asian research and education Internet networks. Developed Asia-pacific countries will make payments to access Asi@Connect and/or contribute international network connectivity to the project, whilst developing countries provide the co-funding contributions of the National Research and Education Networks (NRENs) for purchase of their Asi@Connect international Internet connectivity links and network management costs (see section 5.5). End-beneficiaries of the project also include the people in developing countries who benefit directly from ongoing TEIN R&E collaborations including telemedicine, e-learning, water resource management, climate and weather prediction, earth monitoring, plant phenomics and plant pest and disease diagnostics. Under Asi@Connect, the network infrastructure will be leveraged as appropriate to bring down costs of internet access to populations, exerting a positive influence on developing countries economic growth rates.

⁶ "EUROPE 2020 A strategy for smart, sustainable and inclusive growth", COM(2010) 2020 final, Brussels, 3.3.2010.

⁷ Under the e-Infrastructures' activity of the Digital Agenda.

⁸ "A Digital Agenda for Europe" COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS, COM (2010)245 final, Brussels, 19.5.2010.

The seven pillars of the Digital Agenda are: Achieving the digital single market, Enhancing interoperability and standards, Strengthening online trust and security, Promoting fast and ultra fast Internet access for all, Investing in research and innovation, Promoting digital literacy, skills and inclusion, and ICT-enabled benefits for EU society

1.1.3 Priority areas for support/problem analysis

Ensuring and further developing high bandwidth network connectivity links will remain an important part of Asi@Connect in order to further enable R&E collaborations within Asia, with the EU and globally. In alignment with the ASEM chair's statement⁹, and to leverage the e-infrastructure developed, about half the project's budget is allocated to activities like NREN capacity development, building local network engineering expertise, deploying advanced network engineering products and services, promoting new and scale-up existing TEIN-enabled R&E collaborations and addressing the digital divide in developing Asian countries.

As part of the project sustainability strategy, the EC percentage co-funding contribution for network connectivity links has decreased progressively from 80% under TEIN-2 (2002) to about 60% at present under TEIN-4. This trend will continue under Asi@Connect with the developing countries expected to fund a progressively greater share of their network connectivity costs. This is a successful strategy as a number of TEIN-4 beneficiary countries will begin to fully fund their TEIN links in 2016/2017. Specifically, India's government owned National Knowledge Network (NKN) India is setting up its own 10 Gbps link from Mumbai to connect with GÉANT¹⁰ in Amsterdam and intends to allow Asi@Connect traffic to utilize this link at no cost. NKN will also provide free international connectivity to the neighbouring countries of Bhutan, Bangladesh and Nepal. As from April 2016, The Philippines and Sri Lanka will fully fund their connectivity to the TEIN PoPs (Point of Presence) of Hong Kong and Singapore respectively. This means that during Asi@Connect, there will be no EU co-funding of connectivity links for India, Bhutan, Bangladesh, Nepal, Sri Lanka and The Philippines in the period 2016-2021. So whilst the project provides vital assistance to Asian partner country research and education communities, the trend is clearly towards self-reliance for connectivity. This trend, a clear indicator of project success, is expected to continue during Asi@Connect.

For developing countries, a cost sharing model is used to distribute costs between partners fairly in relation to the bandwidth of each country's international connectivity link, also smoothing out extremes of access circuit costs to help partners in the countries where telecommunications costs are the highest. The planned co-funding share for connectivity and network management during Asi@Connect for each developing partner country NREN is indicated in the table below.

Country	Partner	Partner's co-funding share for international connectivity and network management in %					
		~Sep. 2016	2017	2018	2019	2020	~ Sep 2021

⁹ At the ASEM 10 Summit (Milan, October 2014), leaders welcomed progress in the TEIN, as well as the role of TEIN*CC in the Republic of Korea, and reiterated their further support for the project's implementation. They also underlined the opportunity to leverage the e-infrastructure developed under TEIN for new Asia-Europe projects in areas such as e-learning, e-science, e-health and e-government.

¹⁰ The GÉANT network is a pan-European multi-gigabit data communications network reserved specifically for research and education use. It interconnects all National Research and Education Networks (NRENs) across Europe and provides worldwide connectivity through links with other regional networks. The current phase is due to run from 2015 to 2022 with co-funding by the EC Horizon 2020 programme and the EU NRENs.

Afghanistan	AfgREN	20	20	20	30	30	40
Bangladesh	BdREN	55	100	100	100	100	100
Bhutan	DrukREN	20	100	100	100	100	100
Cambodia	CamREN	20	30	30	40	40	50
China	CERNET	100	100	100	100	100	100
India	NKN	100	100	100	100	100	100
Indonesia	ITB/INHERENT	55	60	60	70	70	80
Laos	LERNet	20	30	30	40	40	50
Malaysia	MyREN	55	60	60	70	70	80
Mongolia	ErdemNet	20	20	20	30	30	40
Myanmar	mmREN	20	20	20	30	30	40
Nepal	NREN	55	100	100	100	100	100
Pakistan	PERN	55	60	60	70	70	80
Philippines	ASTI/PREGINet	55	100	100	100	100	100
Sri Lanka	LEARN	55	100	100	100	100	100
Thailand	ThaiREN	55	60	60	70	70	80
Vietnam	NASATI/VinaREN	55	60	60	70	70	80

(All funding shares are indicative)

Developed countries make payments to the project (TEIN*CC) for access to the network and do not benefit from project funding. .

2 RISKS AND ASSUMPTIONS

The Asi@Connect project budget is comprised of contributions from the EC and governments of 23 Asian countries. In a project with many different governments providing financing, there is always a risk that national budgetary constraints/procedures may result in late co-funding payments to Asi@Connect. However, although payments are sometimes delayed, the risks are well managed within the project and no TEIN partner has so far defaulted on contributions to the project.

It is assumed that Asi@Connect traffic will continue to be allowed to transit over critical connectivity links fully owned by the Japanese NRENs and by India's National Knowledge Network (NKN).

3 LESSONS LEARNT, COMPLEMENTARITY AND CROSS-CUTTING ISSUES

3.1 Lessons learnt

An evaluation of TEIN-4 (February 2016) notes that the project has proven to be highly successful ASEM initiative¹¹. The evaluation report states that a Asi@Connect project is important because the beneficiary NREN partners' – particularly the least developed country group and even the lower middle income and low income countries group – still need EU financial support and help in the short to medium term. Indeed, in October 2014, ASEM leaders reiterated their further support for the project's implementation and underlined the opportunity to leverage the e-infrastructure developed under TEIN for new Asia-Europe projects, thereby lending high level support for an Asi@Connect project (see footnote 9).

Some other conclusions of the TEIN-4 evaluation report are:

¹¹ Evaluation of the “*Trans-Eurasia Information Network (TEIN) 4*”, February 2016, AETS Consortium, FWC COM 2011 - LOT 1, Contract No. 2015 / 364521 /1.

- i) The transition in TEIN management from an EU organisation GÉANT (formerly DANTE) to a newly created Korean organisation TEIN*CC in 2012 has been overall smooth;
- ii) The role played by the Steering Committee and the Governor's meetings in easing the transition path demonstrates the knowhow and experience of those involved and should be seen as an example of best practice;
- iii) The performance of TEIN*CC in upgrading and extending the network, managing network traffic and other technical issues has been extremely satisfactory;
- iv) TEIN*CC's capacity needs to be strengthened in areas including communication/marketing/public relations¹² and financial planning.

Public funding is essential to build and develop research and education Internet connectivity networks. In the EU, the GÉANT network has been fully funded by the EC and EU Member States since 1993. This has allowed major research collaborations to take place across Europe and led to funding efficiencies, avoiding significant fragmentation and duplication of expenditure on pan-European connectivity. Against this background, having the TEIN project under the ASEM umbrella is vital in helping to ensure public funding of research and education Internet connectivity by Asian countries. In this regard, the management of the project by the Korean organisation TEIN*CC is key to building Asian leadership for research and education Internet connectivity in the region.

Although the growth and flow of traffic over TEIN can be measured, data protection laws prohibit deep analysis of the traffic, making it difficult to deduce the applications for which the bandwidth is being used. At the same time, donors and governments need to have a picture of the TEIN usage to help make a case for public funding. TEIN partner NRENs should therefore regularly carry out surveys of their member universities to build a picture of network collaborations and applications.

The project has 23 partners so project coordination and management is complex. It is therefore important to hold project meetings attended by all partners at six monthly intervals to discuss project implementation, including financial management and forecasting, as well as project strategic orientations.

3.2 Complementarity, synergy and donor coordination

E-infrastructures define a global cooperation model being developed by research and education network organisations using high-speed fibre optical backbone connections. The EC's development aid funding of high-speed, high capacity Internet networks for research and education in Asia, Central Asia, China, the Mediterranean rim, Africa, Latin America and the Caribbean is the driver for

¹² TEIN*CC has already carried out short-term website content improvements including a) making the homepage more compelling b) linking off to NREN resources (such as the Case for NRENs portal and the "In the field with R&E networks" impact marketing blog which showcases application case study material around the world, including TEIN related case studies) c) having a dedicated user section in the main navigation populated with case studies giving explicit guidance for institutions and researchers on how to actually connect to the network; and d) improving the media centre to make access to existing marketing collateral and a bespoke press kit easier (see www.tein.asia).

global connectivity of R&E communities and integration to Europe's flagship GÉANT infrastructure¹³. As part of Horizon 2020¹⁴, there are funding opportunities reserved for developing countries available through call-for-proposals. However, participation of developing country universities is extremely low due in part to inadequate Internet connectivity to pursue virtual collaboration. Further development of TEIN is complementary to enabling and promoting the collaboration of Asian universities in Horizon 2020 projects (Under Asi@Connect, steps will be taken to disseminate information on H2020 to Asian researchers).

3.3 Cross-cutting issues

High-speed, high-capacity broadband connections to the Internet are an essential element in modern society, offering wide social and economic benefits. Asi@Connect addresses cross-cutting SDG 9.b (*Support domestic technology development, research and innovation in developing countries,...*) and cross-cutting SDG 9.c (*Significantly increase access to ICT and strive to provide universal and affordable access to Internet in LDCs by 2020*).

4 DESCRIPTION OF THE ACTION

4.1 Objectives/results

The Trans-Eurasia Information Network (TEIN) was launched at the Asia-Europe Meeting (ASEM-3) Summit in Seoul in October 2000. The project began in December 2001 with the installation of a France-Korea dedicated high-capacity Internet connection (TEIN-1). Currently, TEIN-4 provides dedicated high-capacity, high quality internet connectivity between research and education communities in 19 Asia-Pacific countries and globally (Afghanistan, Bhutan, Myanmar and Mongolia are TEIN partners but as yet without connectivity to TEIN).

Using TEIN, researchers across Asia-Pacific are collaborating on projects in areas such as telemedicine¹⁵, e-learning, water resource management¹⁶, climate

¹³ The EU funds dedicated high-speed, high capacity Internet networks for research and education in Europe (GÉANT), Asia (Trans-Eurasia Information Network, TEIN), Central Asia (CAREN), China (ORIENTplus), the Eastern Mediterranean rim EUMEDCONNECT, Africa (AfricaConnect), Latin America (ALICE2 now RedCLARA) and the Caribbean (C@ribNET). To date, the EU has contributed about €100 million to the regional networks (excluding GÉANT).

¹⁴ Horizon 2020 is a €80 billion European research funding programme of duration 2014 to 2020.

¹⁵ Through telemedicine, technology and communications have radically changed healthcare in the Asia-Pacific region, enabling remote diagnosis and underpinning international collaboration. Traditionally telemedicine has been held back by the bandwidth requirements needed to transmit high-quality images between hospitals. Combining the fast and stable network connections provided by TEIN and Digital Video Transport System (DVTS) equipment, which runs on a standard PC, high-quality live streaming of surgery and consultations from operating theatres to remote classrooms is made possible. This allows medical professionals across the region to adopt complex clinical techniques, such as endoscopic surgery, that they can then use themselves to benefit local patients.

¹⁶ Australia's Water for a Healthy Country Flagship (CSIRO) includes research collaboration via TEIN, bringing together interdisciplinary teams to solve complex water resource challenges in the context of a changing climate and increasing population. The programme is working to increase access to safe water and to inform policies and strategies that support effective water resource management in India, China and the Mekong region.

and weather prediction¹⁷, climate change mitigation¹⁸, plant phenomics¹⁹ and plant pest and disease diagnostics²⁰.

The specific objective of Asi@Connect is to provide and further develop a dedicated regional high capacity, high quality Internet connectivity network for research and higher education, also leveraging the e-infrastructure developed for public service projects. The main expected result is the establishment of a dedicated regional Internet network of at least 10Gbps for use primarily by the universities and higher education institutions who are members of national research and education networks (NRENs) in Asia, connecting them with Europe and globally (see footnote 2).

The expected results include a well-functioning and resilient high capacity, high quality Internet connectivity network, an increase in the number of higher education institutions connected to Asi@Connect, a growth in volume of traffic over the network, an increase in the number of network enabled research and education collaborations and more people with access to the Internet generally and remote areas in particular.

4.2 Main activities

The main activities are to:

- i) Regularly tender the Internet connectivity network links to meet the growing bandwidth requirements of each developing country NREN as well as review/change the network topology to optimise network technical performance.

¹⁷ High quality climate and weather prediction can be produced only through complex global climate simulations. TEIN brings all the social and economic advantages of sophisticated and powerful climate and weather modelling to developing countries researchers, linking them to huge "cloud" computing resources and large climate datasets at minimal cost, turning global climate predictions into estimates of, for example, local flood threats and crop yields, aimed at safeguarding livelihoods. TEIN is also used to transfer vast amounts of real-time meteorological data from the Deutscher Wetter Dienst (DWD) to PAGASA (Philippine Atmospheric, Geophysical and Astronomical Services Administration), driving its forecasting to give timely warning of tropical storms and saving lives in the Philippines.

¹⁸ The FireWatch Indonesia Project is a fire monitoring system covering the whole of Indonesia, generating valuable fire monitoring information to effectively fight fires, through early fire detection, minimizing the spread of fires into Indonesia's forest and peatland habitats. (<http://indofire.dephut.go.id> and <http://indofire.landgate.wa.gov.au>).

¹⁹ To meet world population demands for food it has been estimated that the production of rice, the world's most important staple food, must increase by 24% by 2050. As well as the challenges involved in growing more rice on less land and water, farmers need new rice varieties adapted to changing climatic conditions. The main objective of the International Rice Research Institute (IRRI) in the Philippines is to help farmers improve their yields and thus sustain their livelihoods. TEIN allows IRRI's researchers working in a number of different rice growing countries in Asia and Africa to share large genomic datasets as well as high-resolution geographic information system (GIS) data on growth, survival and agronomic characteristics of rice varieties and yields.

²⁰ Australian researchers have built a remote microscope network with microscopes in countries including Thailand, Laos, Cambodia, Vietnam, Malaysia and Indonesia connected via TEIN. The microscope network is revolutionising plant pest and disease diagnostics in South East Asia by allowing non-experts in remote locations to interact with diagnostic experts in real time providing fast and accessible information on outbreaks of exotic plant pests and diseases.

- ii) Run a Network Operating Centre (NOC) to manage the Internet connectivity network links (circuits) and monitor/analyse data traffic
- iii) Enhance the capacity of the developing country NRENs so that they are able to play a full role in developing Asi@Connect usage and impact in their respective countries
- iv) Develop local network engineering expertise in developing country university IT departments and NRENs to optimally utilize Asi@Connect Internet capacity and equipment
- v) Provide advanced network engineering products/services and associated training/capacity development to developing country NRENs and promote Asi@Connect as a test bed platform for Future Internet technologies
- vi) Promote new and scale-up existing research and education collaborations to directly benefit people in developing countries
- vii) Develop Internet access to underserved rural and remote locations as well as help bring down costs of local internet access at national level.

These activities are to be implemented through several work packages (WPs). For activities which fall under the scope of WP2, 3, 4, 5 and 6, TEIN*CC is to solicit proposals on a continuous basis from project partners. Any proposed activity under WP2, 3, 4 and 5 should have a regional dimension and must benefit by preference the DCI-eligible countries. In addition for WP5 any proposed collaborations should leverage the Asi@Connect e-infrastructure aiming to generate wide societal benefit or potential benefit. For WP2, WP3, WP4, WP5 and WP6 the "Governors' Meeting" should discuss and reach consensus on the activities to be carried out. The advisory "Steering Committee" should assess and provide technical guidance on any proposed activities, including those coming from the "Governors Meeting". The final decision on activities to be carried out is taken by the contracting authority (represented by the EC project manager) in consultation with the project Coordinator (TEIN*CC).

WP1: Network Procurement and Management

This work package includes tendering by TEIN*CC of the Internet connectivity network links on a regular basis to maximize benefit from the downward cost trend in purchasing bandwidth. The network topology will also be regularly reviewed to extend the network to further Asia countries and to improve network technical specifications like reduced latency to the EU, seeking also to upgrade resiliency and security.

Each Asi@Connect partner country is linked to one of the four interconnected network hubs currently located in Beijing, Hong Kong, Mumbai and Singapore. Each TEIN hub operates routers and ancillary equipment to handle the internet traffic which will be maintained and upgraded as necessary. The circuits and data traffic are managed by a Network Operating Centre (NOC) currently located in Hong Kong and operated by Tsinghua University (Beijing). Specifically, the Asi@Connect NOC i) provides regular engineering and operation services ii) monitors the connectivity and network routing equipment at the Beijing, Hong Kong, Mumbai and Singapore network hubs to ensure high performance and security and iii) troubleshoots and resolves any network problems. The Asi@Connect NOC may also assist the beneficiary countries in introducing advanced Internet services to run high performance research and

education applications over the Asi@Connect network such as IPv4/v6 multicast, MPLS (Multi-Protocol Label Switching) and QoS (Quality of Service)²¹.

WP2: Capacity development of developing country NRENs

This work package is to enhance the capacity of the developing country NRENs in managing their national R&E networks and promoting international R&E collaboration²². The activities range from carrying out assessments of NREN needs to "on the job training" with other NREN partners on e.g. financial administration, tendering, communication and public relations.

WP3: Research and Education Network Design & Operations and associated capacity development

Most campuses in developing Asian countries are not optimized to utilize Asi@Connect Internet capacity and equipment. Some countries in Asia have underdeveloped national research and education network infrastructure. This places limitations on their usage of Asi@Connect for research and education purposes²³. The purpose of this work package is to develop local network engineering expertise in developing country university IT departments and NRENs, also seeking to promote national investment for renovating campus networks and NREN facilities²⁴. Activities include technical training for universities, NRENs and regional Network Operator Groups (NOGs)²⁵, direct engineering assistance to improve networks, network security and performance monitoring, wireless infrastructure to improve faculty and student access and DNS stability, security and country code top-level domain (ccTLD) technical assistance. A sustainable "train-the-trainers" approach will be adopted where possible. Partners/specialised entities in implementing these activities include the Network Startup Resource Center (NSRC), the Asia Pacific Network Information Centre (APNIC) and the Asian Institute of Technology (AIT).

²¹ See for example: "2015 TEIN NOC Workshop", a five day hands-on technical workshop focused on network monitoring and management, network design considerations for research and education institutions and sessions on software defined networking. <https://nsrc.org/workshops/2015/nsrc-tein-ait-noc/>

²² This follows directly from the TEIN4 evaluation report (February 2016) which concludes that unless capacity deficits are addressed, some NRENs will not be able to play a full role in developing TEIN usage and impact in their respective countries.

²³ Well-developed campus network infrastructure allows an individual university to connect to their National Research and Education Network (NREN) and to local Internet Exchange Points. Enabling the networks to keep those connections agile helps each university to become opportunistic and react quickly to changes in pricing, available bandwidth or national policy and is critical to establishing effective interconnections with other universities and RENS.

²⁴ The urgency and need for scaling network training and capacity building has driven a high demand for services, which has in part been catalyzed by large European Commission-funded programs for R&E network expansion in Africa, Southeast Asia, Central Asia and other regions. Addressing the need to scale training and capacity building services more effectively will reduce the risk that the current rapid build-out of R&E networks will result in underutilized capacity, infrastructure and equipment.

²⁵ *"Networking the Internet Community Rise of the NOGs"* by Bevil Wooding.
"NOGs fill a significant role in the international Internet-community ecosystem. These volunteer communities of technical specialists, security experts, software programmers, analysts and enthusiasts provided an important forum for knowledge and resource sharing, skill development, relationship building and global networking...Today, NOGs exist in every region of world and are widely regarded as an important point of objective, expert support for the development and nurturing of technical talent and the management of critical Internet resources".

WP4: Deployment of specialized network products, services and applications and associated capacity development

This work package is to provide advanced network engineering products/services and associated training/capacity development to Asi@Connect partners e.g. PerfSONAR, Software Defined Networking (SDN), OpenFlow and cloud services. Applications to be widely deployed include identity federation like eduroam and edugain and the underlying technologies that support these services²⁶. The use of the Asi@Connect network as a test bed platform for Future Internet technologies and applications will be promoted.

WP5: Promoting Asi@Connect-enabled research and education collaboration for societal benefit

There are several ongoing R&E collaborations currently enabled by TEIN which generate wide societal benefits. These collaborations include telemedicine, e-learning, water resource management, climate and weather prediction, sensor networks in agriculture, earth monitoring, crop research, plant phenomics and plant pest and disease diagnostics. This work programme is primarily on identifying and assessing new collaborations, and scaling-up existing collaborations that directly benefit people in developing countries. The activities include i) developing specific communication messages and strategies on topics such as climate change mitigation and adaptation, agriculture, crop research, health and tele-medicine, ii) developing a website with user-friendly navigation and a visually attractive feel and look, promoting research collaboration as well as products and services to highlight the tangible benefits of the project and network, iii) funding R&E collaborations and iv) promotional activities like organising workshops and conferences bringing together a range of participants from researchers to network & computing specialists and engineers, and carrying out feasibility studies.

WP6: Helping to bridge the digital divide in developing countries

In line with cross-cutting SDG 9.c (*Significantly increase access to ICT and strive to provide universal and affordable access to Internet in LDCs by 2020*), the purpose of this work package is to create and enable opportunities to build regional and national infrastructures and capacity to address the digital divide in countries such as Bhutan, Cambodia, Laos, Indonesia, The Philippines and Pakistan. This includes the establishment of non-profit carrier-neutral Internet-Exchange Points (IXPs)²⁷ and deployment of wireless community networks in underserved rural and remote areas to improve quality and bring down costs of local internet access to populations. IXP and wireless community network development includes strategic community outreach and training, a train-the-trainers approach where possible, as well as the provision of equipment for both

²⁶ See <https://wiki.refeds.org/display/OUT/The+Value+Proposition+for+Identity+Federations>

²⁷ “*Internet Traffic Exchange: Market Developments and Policy Challenges*”, Weller, D. and B. Woodcock (2013), OECD Digital Economy Papers, No. 207, OECD Publishing, <http://dx.doi.org/10.1787/5k918gpt130q-en>

“IXPs reduce the need for “tromboning” of traffic out of the country or region. The availability of in-region points of exchange allows for more direct routing of traffic, increasing service quality and reducing costs of internet access to the population”.

operational and training purposes²⁸. NREN infrastructure and experts may also be important players in linking Wireless for Community sites to the wider Internet, potentially helping with backhaul and other technical project parameters, leveraging the Asi@Connect infrastructure as appropriate. Partners/specialised entities in implementing these activities include the Internet Society (ISOC)²⁹, the NSRC³⁰ and APNIC, as well as NRENs and universities.

4.3 Intervention logic

Asi@Connect addresses cross-cutting SDG 9.b (*Support domestic technology development, research and innovation in developing countries,...*) and cross-cutting SDG 9.c (*Significantly increase access to ICT and strive to provide universal and affordable access to Internet in LDCs by 2020*). By providing the Asian countries with international dedicated high-capacity internet links, the project will increase the ability of developing Asian countries to participate alongside the advanced Asian countries in collaborative research, education and health programmes. Asi@Connect is expected to play an ongoing catalytic role in the further development of national research and education collaboration. The project is also expected to accelerate the rate at which new applications can be developed and deployed, and allow users to participate in global research programmes – such as the EC’s Horizon 2020 – where high-capacity internet connectivity is essential.

5 IMPLEMENTATION

5.1 Financing agreement

In order to implement this action, it is not foreseen to conclude a financing agreement with the partner country, referred to in Article 184(2)(b) of Regulation (EU, Euratom) No 966/2012.

5.2 Indicative implementation period

The indicative operational implementation period of this action, during which the activities described in section 4.1 will be carried out and the corresponding contracts and agreements implemented, is 72 months from the date of adoption by the Commission of this Action Document.

Extensions of the implementation period may be agreed by the Commission’s authorising officer responsible by amending this decision and the relevant contracts and agreements; such amendments to this decision constitute technical amendments in the sense of point (i) of Article 2(3)(c) of Regulation (EU) No 236/2014.

²⁸ One component of the Wireless for Communities projects is on empowering women entrepreneurs by providing training on the use of ICT and Internet-based services and helping them to set up micro-enterprises.

²⁹ "Promoting the Use of Internet Exchange Points: A Guide to Policy, Management, and Technical Issues" By Mike Jensen, Internet Society reports

³⁰ Over the past 20 years, the NSRC has assisted in facilitating the design and deployment of the first open and neutral Internet Exchange Points in numerous countries in Africa, Asia-Pacific, Latin America and the Caribbean.

5.3 Implementation modalities

Grant: direct award Asi@Connect (direct management)

(a) Objectives of the grant, fields of intervention, priorities of the year and expected results

The objectives of Asi@Connect are to i) continuously upgrade the advanced pan-Asian research and education Internet connectivity network further enabling research and education collaboration across Asia and globally ii) develop capacity of developing country NRENs iii) build capacity in network engineering expertise at university and NREN level for developing countries iv) deploy advanced network engineering products and services to NRENs and their universities in developing countries v) scale-up ongoing TEIN R&E collaborations with the potential to generate widespread societal benefits and vi) leverage the Asi@Connect infrastructure to address the digital divide in developing Asian countries and promote economic growth. Expected results are detailed in the attached logframe.

(b) Justification of a direct grant

Under the responsibility of the authorising officer by delegation, the grant may be awarded without a call for proposals to TEIN*Cooperation Centre. Under TEIN-4, TEIN*CC has been selected by TEIN project partners and the EC as the Asian organisation to be entrusted with the day-to-day management of the project. At the ASEM-10 Summit (Milan, October 2014), leaders welcomed progress in the TEIN, as well as the role of TEIN*CC in the Republic of Korea, and reiterated their further support for the project's implementation. The TEIN-4 evaluation report (February 2016) notes that the transition in TEIN management from an EU organisation GÉANT (formerly DANTE) to a newly created Korean organisation TEIN*CC in 2012 has been overall smooth should be seen as an example of best practice. The evaluation concludes that the performance of TEIN*CC in upgrading and extending the network, managing network traffic and other technical issues has been extremely satisfactory.

Under the responsibility of the authorising officer by delegation, and as required by art.190 (1), f of RAP of FR, the recourse to an award of a grant without a call for proposals is justified since TEIN*CC has been established under the ASEM umbrella by the TEIN project partners for its technical competence and high degree of specialisation.

(c) Essential selection and award criteria

The essential selection criteria are the financial and operational capacity of the applicant.

The essential award criteria are relevance of the proposed action to the; design, effectiveness, feasibility, sustainability and cost-effectiveness of the action.

(d) Maximum rate of co-financing

The maximum possible rate of co-financing for this grant is 60 % of the eligible costs of the action.

In accordance with Articles 192 of Regulation (EU, Euratom) No 966/2012, if full funding is essential for the action to be carried out, the maximum possible rate of co-financing may be increased up to 100 %. The essentiality of full

funding will be justified by the Commission's authorising officer responsible in the award decision, in respect of the principles of equal treatment and sound financial management.

(e) Indicative trimester to conclude the grant agreement

Third trimester 2016

(f) Exception to the non-retroactivity of costs

The Commission authorises the eligibility of costs as of July 2016.

5.4 Scope of geographical eligibility for procurement and grants

The geographical eligibility in terms of place of establishment for participating in procurement and grant award procedures and in terms of origin of supplies purchased as established in the basic act and set out in the relevant contractual documents shall apply, subject to the following provisions.

In accordance with Budget [Article 8(3) and 8(4) of Regulation (EU) No 236/2014] and with regard to the regional nature of this action, the Commission decides that natural and legal persons from the following countries, territories or regions shall be eligible for participating in procurement and grant award procedures: Australia, Canada, Japan, Korea, New Zealand, Switzerland, the United States, Hong Kong, Singapore and Chinese Taipei. The supplies originating there shall also be eligible.

The Commission's authorising officer responsible may extend the geographical eligibility in accordance with Article 9(2)(b) of Regulation (EU) No 236/2014] on the basis of urgency or of unavailability of products and services in the markets of the countries concerned, or in other duly substantiated cases where the eligibility rules would make the realization of this action impossible or exceedingly difficult.

5.5 Indicative budget

Expected Contributions	EUR
EU contribution	20.000.000
Co-funding contributions by National Research and Education Networks (NRENs) of Asian developing countries for international carrier Internet connectivity links and network management	6.300.000
<i>Other Contributions/Payments</i>	
Korean Ministry of Science, ICT & Future Planning (MSIP) (salary costs of TEIN*CC staff to manage Asi@Connect and general offices costs) and Seoul Metropolitan City (office rent for Asi@Connect project staff)	5.600.000
The China Education and Research Network (CERNET) (co-funding of the 10 Gbps Beijing-Hong Kong link) ³¹	1.550.000
Agency for Science, Technology and Research (A*STAR), Singapore (co-funding of the 10 Gbps Singapore-EU link)	450.000

³¹ The current Beijing-Hong Kong link of 1 Gbps is congested and needs to be upgraded to 10 Gbps. The Beijing-Hong Kong link forms part of the backbone linking TEIN to the EU via the ORIENTplus project which provides a 10 Gbps link from Beijing to the EU (co-financed by China and the EU).

Australian Academic and Research Network (AARNet) payment ³²	1.500.000
Hong Kong Academic and Research NETWORK (HARNET) payment	600.000
Research and Education Advanced Network New Zealand (REANNZ) payment	435.000
Singapore Advanced Research and Education Network (SingAREN) payment	400.000
Total estimated Costs ^{33,34,35}	36.835.000,00

The EU contribution of EUR 20.000.000 and the EUR 2.935.000 total payment of AARNet, HARNET, REANNZ and SingAREN are fungible and used for co-funding of all 6 work packages.

The indicative budget allocation for each work package is as follows:

	EUR
WP1: Network Procurement and Management	15.000.000
WP2: Capacity development of developing country NRENs	2.235.000
WP3: Research and Education Network Design & Operations and associated capacity development	4.400.000
WP4: Deployment of specialized network products, services and applications and associated capacity development	5.200.000
WP5: Promoting Asi@Connect-enabled research and education collaborations for societal benefit	5.500.000
WP6: Helping to bridge the digital divide in developing countries	4.500.000
	36.835.000

The Internet connectivity and management of the network (WP1) are estimated to be EUR 15 million (5 year project duration), representing about 40% of the total project cost (including costs of about EUR 2,0 million for new links to Afghanistan, Mongolia and Myanmar). Capacity development activities account for about 30 % of the total project budget (WPs 2, 3 and 4).

5.6 Organisational set-up and responsibilities

TEIN*CC is the Coordinator ³⁶ and will act as the main interlocutor of the European Commission, representing and acting on behalf of the Asi@Connect project partners. For WP2, WP3, WP4, WP5 and WP6 the "Governors' Meeting" should discuss and reach consensus on the activities to be carried out. The advisory "Steering Committee" should assess and provide technical guidance on any proposed activities, including those coming from the "Governors Meeting". The final decision on i) activities to be carried and ii) selection of specialised entities to implement the activities is taken by the contracting authority as

³² The cash payments of developed country partners are calculated according to their international bandwidth access capacity to the TEIN network.

³³ The Korean National Information Society Agency (NIA) funds the Hong Kong-Singapore 10 Gbps backbone link and the Korea-Hong Kong link. These costs are not included in the Asi@Connect project budget.

³⁴ Japanese TEIN partners (NICT, NII, MAFFIN) fund the Japan-Singapore and the Japan-Hong Kong 10Gbps links, serving to connect Japan to TEIN. As such, the cost of these links is not included in the TEIN project costs. The Japan-USA 10Gbps connection linking Japan and TEIN to the USA is funded by Japan and the USA (the TransPac project) and not included in the TEIN project costs.

³⁵ During 2017, India's National Knowledge Network (NKN) plans to fund Singapore-Chennai and Mumbai-Amsterdam 10Gbps links. NKN will allow TEIN-5 traffic to utilize these links at no cost.

³⁶ "General Conditions applicable to European Union-financed grant contracts for external actions", <http://ec.europa.eu/europeaid/prag/annexes>.

represented by the EC project manager in consultation with the project Coordinator (TEIN*CC). A specialised entity is one with technical competence and high degree of specialisation and must satisfy the same eligibility criteria as the Coordinator (TEIN*CC)³⁷. The costs incurred by such specialised entities are eligible in the same way as those incurred by the Coordinator. The costs for capacity development/training of TEIN*CC staff are also eligible (see section 3.1 Lessons learnt). TEIN*CC may contract GÉANT (Coordinator in the TEIN-2 and TEIN-3 projects and technical adviser to TEIN*CC for TEIN4) to obtain technical advice and assistance as required.

Each project partner is required to confirm its participation in Asi@Connect via a "Letter of Intent (LoI)" or "Letter of Endorsement (LoE)" to TEIN*CC clearly stating its financial contribution and/or contribution of international carrier Internet connectivity if any to the project. Non-profit, public service Internet organisations may also become project partners, subject to the opinion of the "Governors Meeting" and "Steering Committee" and approval of the contracting authority as represented by the EC project manager. The current TEIN-4 project partners are principally the NRENs listed below who represent a total of approximately 7.000 universities/higher education institutions.

Least Developed Countries (LDCs)	
Afghanistan	Afghanistan Research and Education Network (AfgREN)
Bangladesh	University Grants Commission (UGC)/Bangladesh Research and Education Network (BdREN)
Bhutan	Department of Information Technology and Telecom (DIT&T)/ Druk Research and Education Network (DrukREN)
Cambodia	Institute of Technology of Cambodia (ITC)/Cambodia Research and Education Network (CamREN)
Laos	Lao Education and Research Network (LERNet)
Myanmar	Myanmar Research and Education Network (mmREN)
Nepal	Nepal Research and Education Network (NREN)
Lower Middle Income Countries and Territories	
India	National Knowledge Network (NKN)
Indonesia	Institut Teknologi Bandung (ITB)/Indonesian Higher Education Network (INHERENT)
Mongolia	Mongolian Research and Education Network (ErdemNet)
Pakistan	Pakistan Education and Research Network (PERN)
Philippines	Advanced Science and Technology Institute (ASTI)/ Philippine Research, Education and Government Information Network (PREGINet)
Sri Lanka	Lanka Education and Research Network (LEARN)
Vietnam	National Agency for Science and Technology Information (NASATI)/ Vietnamese Research and Education Network (VinaREN)
Upper Middle Income Countries and Territories	
China	China Education and Research Network (CERNet), China Science and Technology Network (CSTNet)
Malaysia	Malaysian Research and Education Network (MyREN)
Thailand	Thailand Research Education Network Association (ThaiREN)
Developed countries	
Australia	Australia's Academic and Research Network (AARNet)

³⁷ The award of (services, supplies, materials) contracts under TEIN is permitted to legal persons from i) non-EU OECD/DAC member countries namely Australia, Canada, Japan, Korea, New Zealand, Switzerland and the United States and ii) the Development Cooperation Instrument "Annex V Non-Developing countries and territories" of Hong Kong and Singapore. By extension, specialised entities may also be from these countries.

Hong Kong	Hong Kong Academic and Research Network (HARNet)
Japan	National Institute of Information and Communications (NICT), National Institute of Informatics (NII), Ministry of Agriculture, Forestry and Fisheries Research Network (MAFFIN)
Singapore	Singapore Advanced Research & Education Network (SingAREN)
South Korea	National Information Society Agency (NIA)/Korea advanced REsearch Network (KOREN), Korea Institute of Science and Technology Information (KISTI)/Korea Research Environment Open NETwork (KREONET)
Chinese Taipei	Taiwan Advanced Research and Education Network (TWAREN), Academia Sinica (ASGC)
New Zealand	Research and Education Advanced Network NZ Ltd. (REANNZ)

As in TEIN-4, a "Governors' Meeting" will be constituted and comprise of representatives of all co-beneficiaries/other stakeholders. The Chair of the Governors' Meeting should by priority be from a developing country NREN and be elected by the Governors' Meeting. The term of the Chairperson is limited to a maximum duration of 4 years.

As in TEIN-4, an advisory "Steering Committee" will be constituted and include preferably two but at least one NREN representative from each of the country groupings i.e. "Least Developed Countries", "Lower Middle Income Countries and Territories", "Upper Middle Income Countries and Territories" and "Developed countries" as well as a representative of the European Commission, representatives of TEIN*CC, a representative of Korea, a representative of APAN (Asia-Pacific Advanced Network Limited) and a representative of GÉANT. The Steering Committee shall include a representative(s) of India's National Knowledge Network (NKN) and a representative(s) of China's CERNET. Both these developing countries are providing connectivity or co-funding Asi@Connect Internet links between Asia and the EU, thereby playing a determining role in the project and its future. In addition, India is providing free international connectivity to the neighbouring countries of Bhutan, Bangladesh and Nepal, contributing significantly to future sustainability of the project. Other NREN members of the Steering Committee shall be elected by the Governors Meeting respecting the allocation of seats according to each of the abovementioned country groupings. The Chair of the Steering Committee should by priority be from a developing country NREN and be elected by the Steering Committee. The term of NREN Steering Committee members is limited to a maximum duration of 4 years and that of the Chairperson to a maximum duration of 2 years. The principal role of the committee is to provide technical guidance concerning Asi@Connect activities, including monitoring that the spend rate is commensurate with achieving the project objectives within the project duration.

The "Governors' Meeting" and "Steering Committee" shall meet every six months.

5.7 Performance monitoring and reporting

The day-to-day technical and financial monitoring of the implementation of this action will be a continuous process and part of the Coordinator's responsibilities. To this aim, the Coordinator shall establish a permanent internal, technical and financial monitoring system for the action and elaborate regular progress reports (not less than annual) and final reports. Every report shall provide an accurate account of implementation of the action, difficulties encountered, changes

introduced, as well as the degree of achievement of its results (outputs and direct outcomes) as measured by corresponding indicators, using as reference the logframe matrix (for project modality) or the list of result indicators (for budget support). The report shall be laid out in such a way as to allow monitoring of the means envisaged and employed and of the budget details for the action. The final report, narrative and financial, will cover the entire period of the action implementation.

The Commission may undertake additional project monitoring visits both through its own staff and through independent consultants recruited directly by the Commission for independent monitoring reviews (or recruited by the responsible agent contracted by the Commission for implementing such reviews).

5.8 Evaluation

Having regard to the nature of the action, a final evaluation will be carried out for this action or its components via independent consultants contracted by the Commission.

It will be carried out for accountability and learning purposes at various levels (including for policy revision), taking into account in particular the actions like development of applications.

The Commission shall inform the Coordinator at least 30 days in advance of the dates foreseen for the evaluation missions. The implementing partner shall collaborate efficiently and effectively with the evaluation experts, and inter alia provide them with all necessary information and documentation, as well as access to the project premises and activities.

The evaluation reports shall be shared with the partner country and other key stakeholders. The Coordinator and the Commission shall analyse the conclusions and recommendations of the evaluations and, where appropriate, in agreement with the partner country, jointly decide on the follow-up actions to be taken and any adjustments necessary, including, if indicated, the reorientation of the project.

The financing of the evaluation shall be covered by another measure constituting a financing decision.

5.9 Audit

Without prejudice to the obligations applicable to contracts concluded for the implementation of this action, the Commission may, on the basis of a risk assessment, contract independent audits or expenditure verification assignments for one or several contracts or agreements.

The financing of the audit shall be covered by another measure constituting a financing decision.

5.10 Communication and visibility

Communication and visibility of the EU is a legal obligation for all external actions funded by the EU.

This action shall contain communication and visibility measures which shall be based on a specific Communication and Visibility Plan of the Action, to be elaborated at the start of implementation and supported with the budget indicated in section 5.5 above.

In terms of legal obligations on communication and visibility, the measures shall be implemented by the Commission, the partner country, contractors, grant beneficiaries and/or entrusted entities. Appropriate contractual obligations shall be included in, respectively, the financing agreement, procurement and grant contracts, and delegation agreements.

The Communication and Visibility Manual for European Union External Action shall be used to establish the Communication and Visibility Plan of the Action and the appropriate contractual obligations.

The Communication and Visibility Plan shall include (i) dissemination of marketing materials at events (e.g. Asi@Connect backbone map, brochures, leaflets, case studies, posters, USB sticks, stationary) (ii) development of multimedia materials and of the website (iii) launch of press releases and online news articles (iv) increase international cooperation and continuous participation in relevant events to promote Asi@Connect. A specific line within the budget of the action has been envisaged to support communication and visibility activities in the different work packages.

6 PRE-CONDITIONS

N.A.