eENVplus - eEnvironmental services for advanced applications within INSPIRE

CIP – Pilot Actions
Grant agreement no: 325232

Starting date: 01 January 2013

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GISIG

Key objective

- to support INSPIRE and SEIS implementation
- through deployment and integration of value-added eEnvironment services
- available at national level and through past/on-going key EC-funded project
- eENVplus provides Members State and the GI Communities, with tools addressing a **multi-level interoperability stack:**
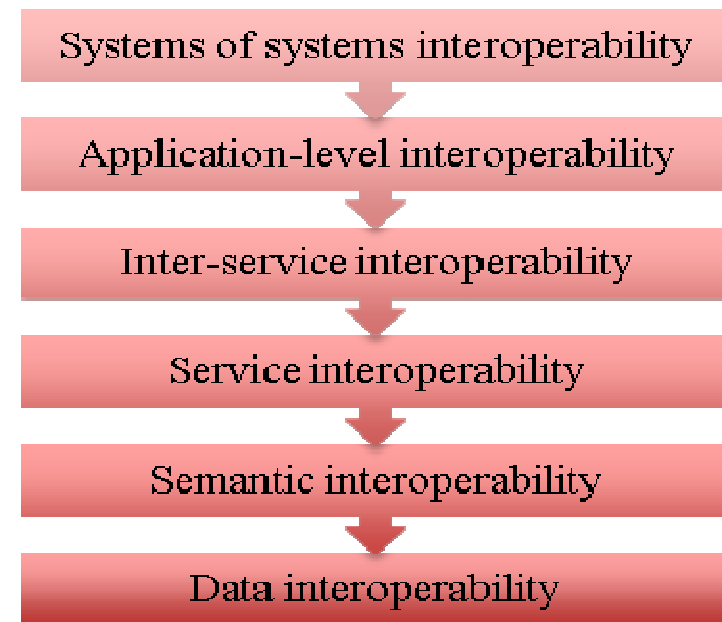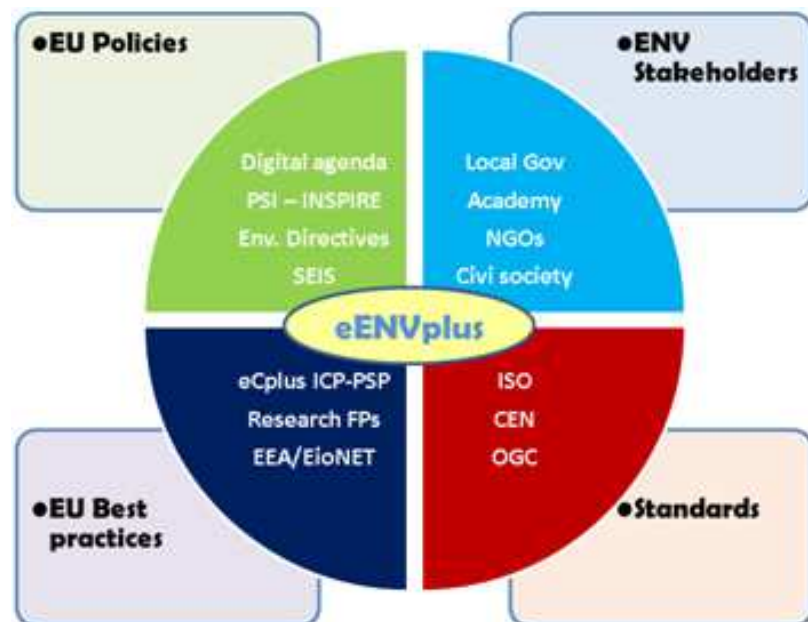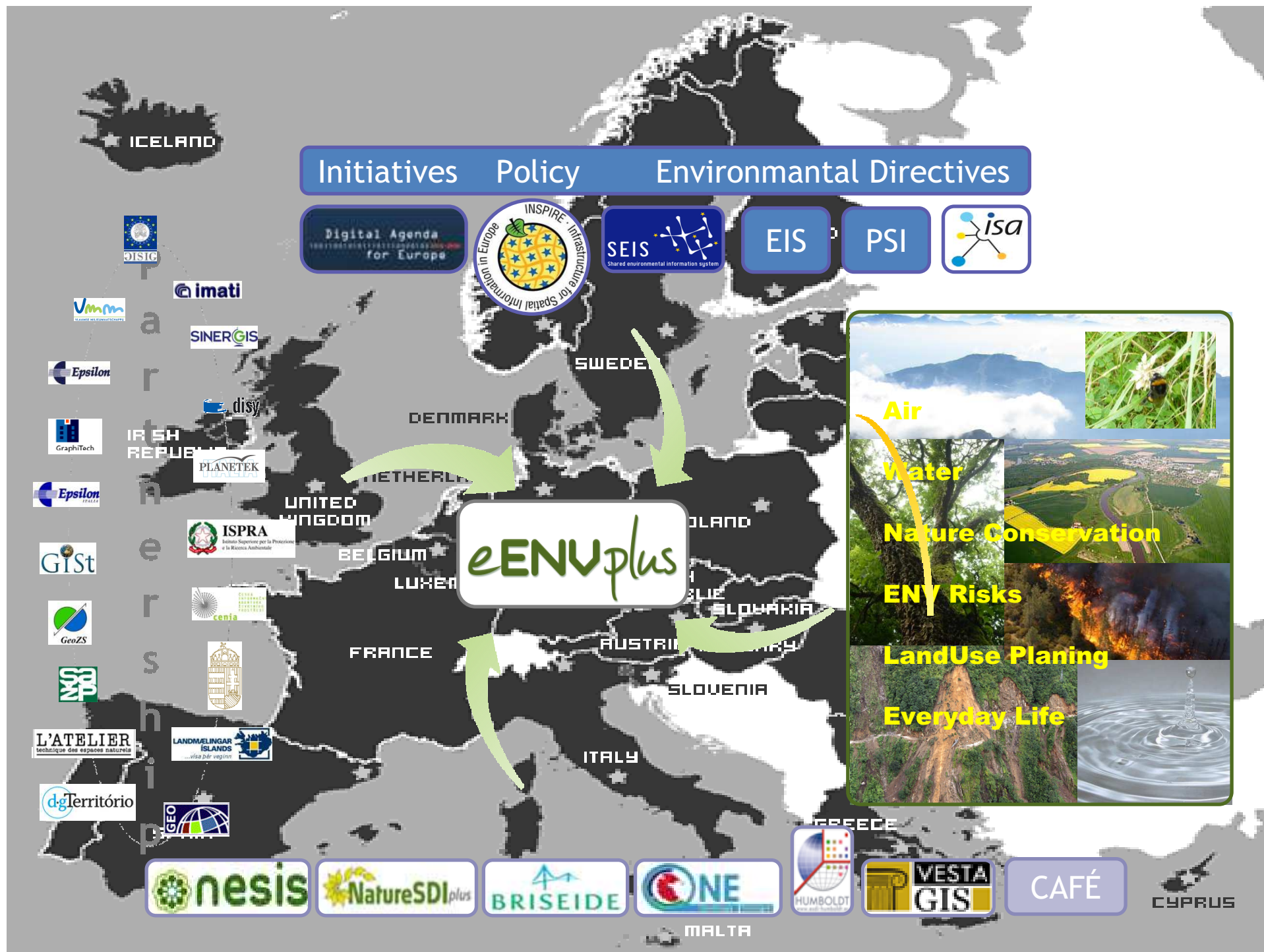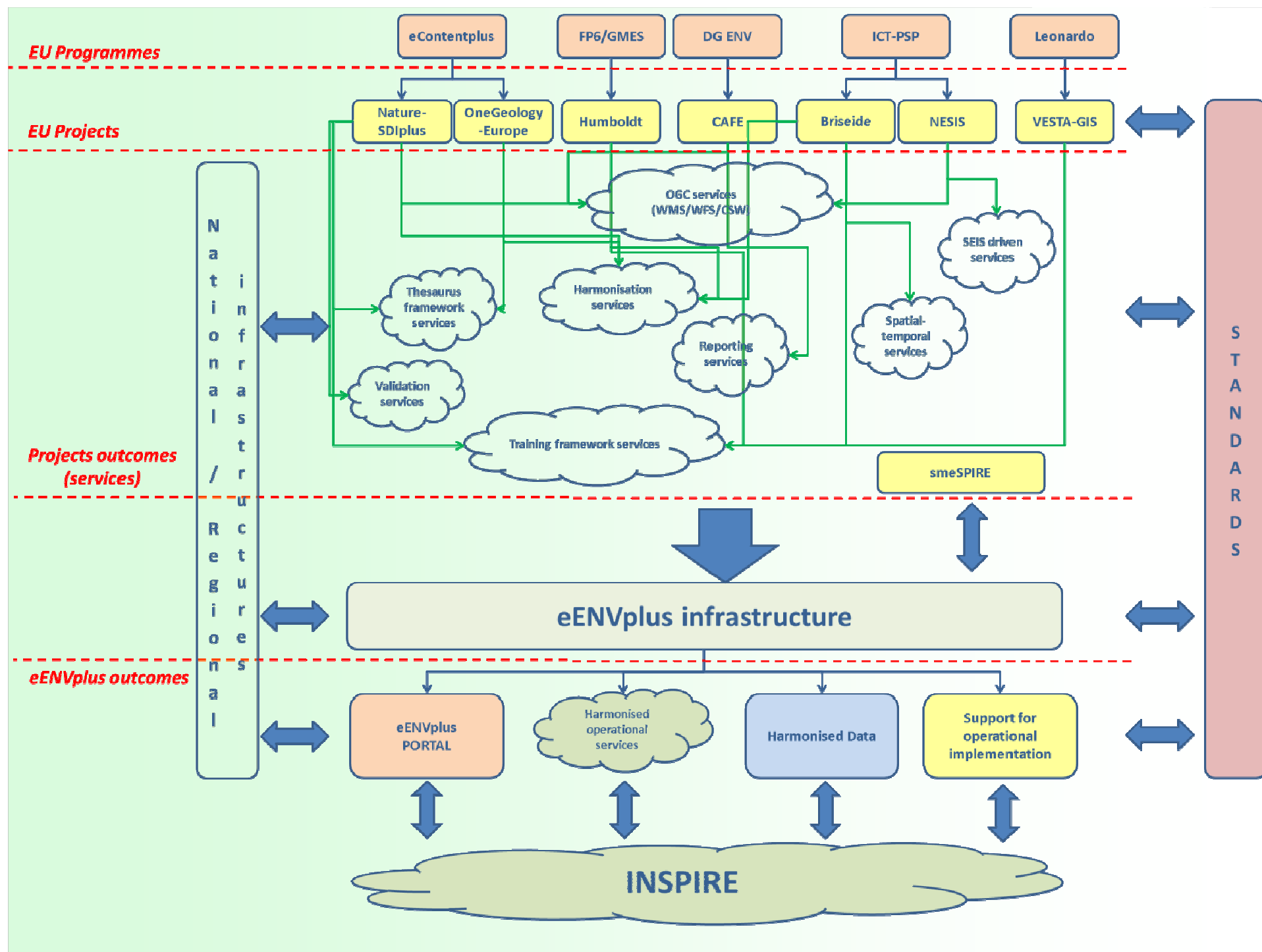
European projects background

- **NESIS** - A Network to enhance a European Environmental Shared and Interoperable Information System (ICT PSP project)

- **NATURE-SDIplus -** Best Practice Network for SDI in Nature Conservation (eContentplus project)

- **BRISEIDE** – Bridging services, information and data for Europe (ICT PSP project)

- **OneGeology Europe -** Making digital geological spatial data more easily discoverable, accessible and useable

- **HUMBOLDT** - Towards the Harmonisation of Spatial Information in Europe (FP6 GMES project)

- **CAFE** – Development and demonstration of technical IT solutions for data exchange and reporting under the CAFE Directive using INSPIRE services"

- **VESTA-GIS** – Development of a training infrastructure (LdV)

Partnership

■ **National Agencies:**

☐ Environmental Agencies: VMM (BE), ISPRA (IT), CENIA (CZ), SAZP (SK), MRD (HU) with support of GEO (HU); moreover, EPSILON in close cooperation with GR EA

☐ Mapping Agencies: DGT (PT), NLSI (IC, in close cooperation with IC EA)

☐ Thematic Agencies: Geological (GeoZS, SLO), Nature (ATEN, FR)

■ **Technical partners:** CNR-IMATI, Epsilon, Sinergis, Graphitech, disy, EPSIT, PKH

■ **University:** GEO

■ **Standardization Body:** GISt (Secretary of CEN TC/287 Geographical Information)

■ **European Association:** GISIG (eENVplus Coordinator)

19 partners from 12 countries

Pilots / Scenarios / Use Cases

- In 10 pilots, 3 cross-border
- Pilots (10): the actual implementation of the scenarios in a geographical area
- Scenarios (9): the different use cases considered by eENVplus, which the applications correspond to
- Use Case (26): a methodology used in system analysis to identify, clarify, and organize system and user requirements

- Offering examples on how the eENVplus outcomes can be utilized in a variety of different situations (ENV aspects) and users' needs
- Providing streamline of the tools available to the project into the main flow of INSPIRE compliance
- Proposing interoperability among applications (existing or planned)
- to create a more complete thematic (integration among complementary issues) or regional example (integration among cross-border cases)

Pilots in Belgium and Italy	Pilot in France	Pilot in Iceland
SEIS for air quality data.	Natural Areas INSPIRE Compliance Toolbox.	INSPIRE Geoportal.

Pilot in Belgium	Pilot in Greece	Italy-Slovenia cross-border pilot
Utility services, the case of sewage networks in Flanders.	Forest Fire Management.	Geological Map Harmonization in Italy and Slovenia.

Czech-Slovak cross-border pilot	Hungary-Slovakia cross-border pilot	Pilot in Portugal
Csspire (Everyday life issues connected to Environmental aspects).	Window on the Protected Areas- Mobile Conservation Map.	Urban Landuse Planning.

Target Groups

eENVplus

National Environmental Agencies

Local ad Regional Environmental Authorities

Thematic Communities

Private sector and SME's

Providers

Data Providers

ENV Services

Administration and Public Bodies

IT Services

Research Groups

Citizens

NGOs

SW Developers

Users
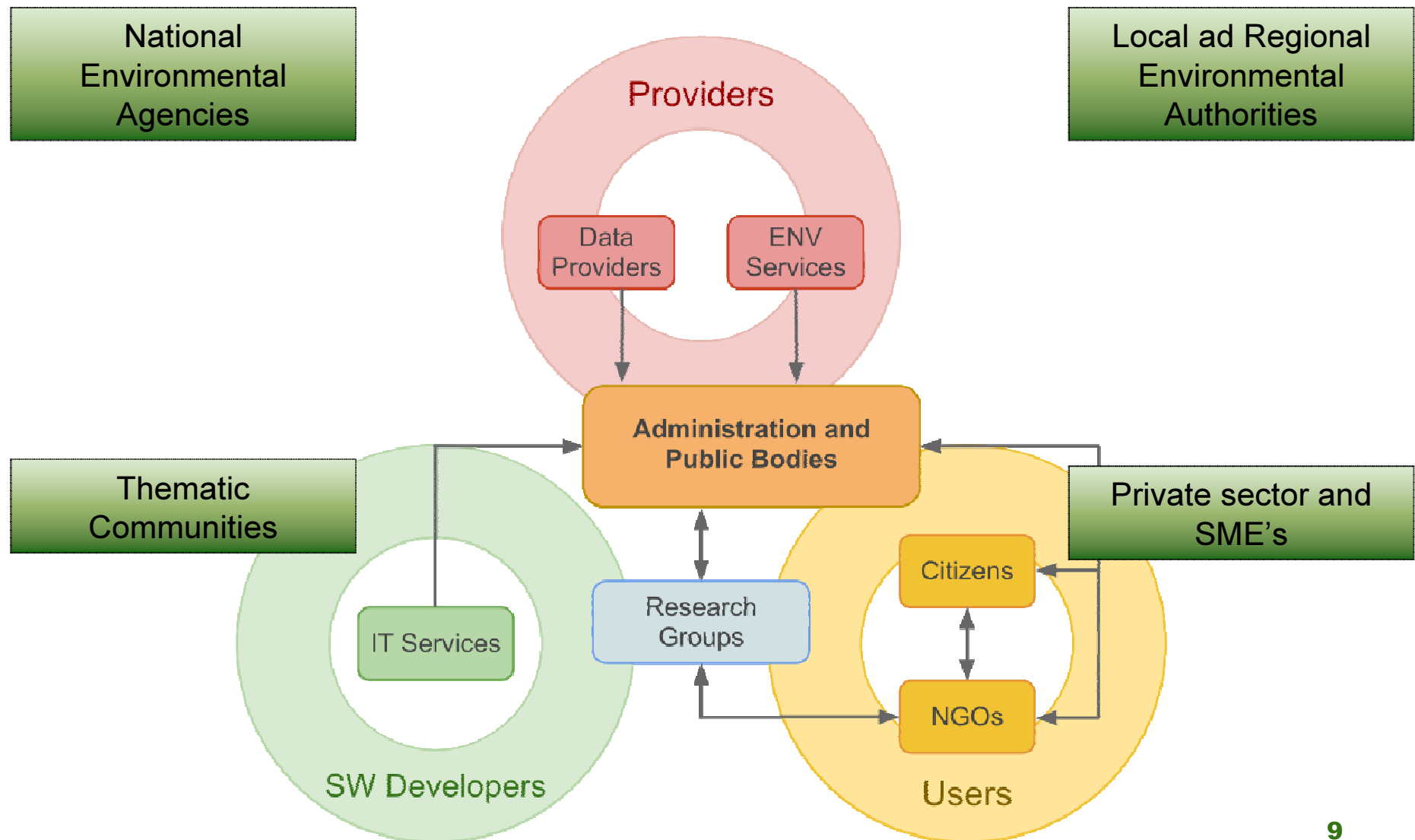
Metadata / data harmonisation   (1/2)
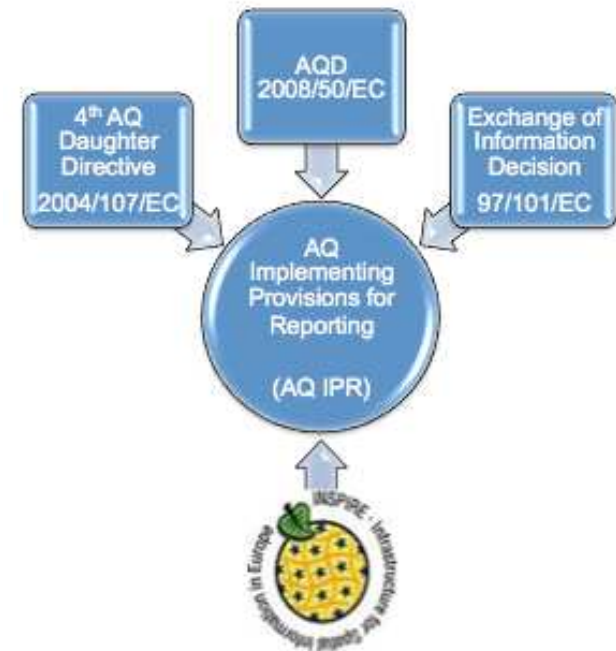
METADATA

- IR for metadata from 2008
- Good awareness between stakeholders
- consolidated solutions (INSPIRE geoportal tools)

DATA

- the complexity for understanding the models
- the physical building of the harmonised data through tools often complex and with not sufficient support
- the validation processes of the produced data which until now cannot be objectively and uniquely defined.

Metadata / data harmonisation   (2/2)

- implementing the environmental monitoring and reporting processes by the integration and adaptation of the existing EU directives (INSPIRE, ISA, eGov) and their implementing rules and guidelines, driving the process by the requirements and the constraints coming from the **operational application** of the directives in regional, national and European context.

Services requirements

- Five main classes of services has been identified
  - ☐ Ingestion, harmonisation and validation services
  - ☐ Data access services
  - ☐ Processing services
  - ☐ Metadata services
  - ☐ Advanced services

- The data access services represent the entry point for data processing ➜ an easy-to-use solution for setting data access services according to the reference standards

Semantic interoperability

■ the need to have at disposal a shared understanding on terms and meanings related to the different environmental themes. This is driven:

☐ at top level by the INSPIRE directive but, overall,

☐ by the harmonisation processes requested in operational analysis of heterogeneous datasets and services.

■ ➜ shared terminologies and services to drive

☐ the harmonisation of the data content

☐ the provision of semantic services exploiting the harmonised content of the exposed data.
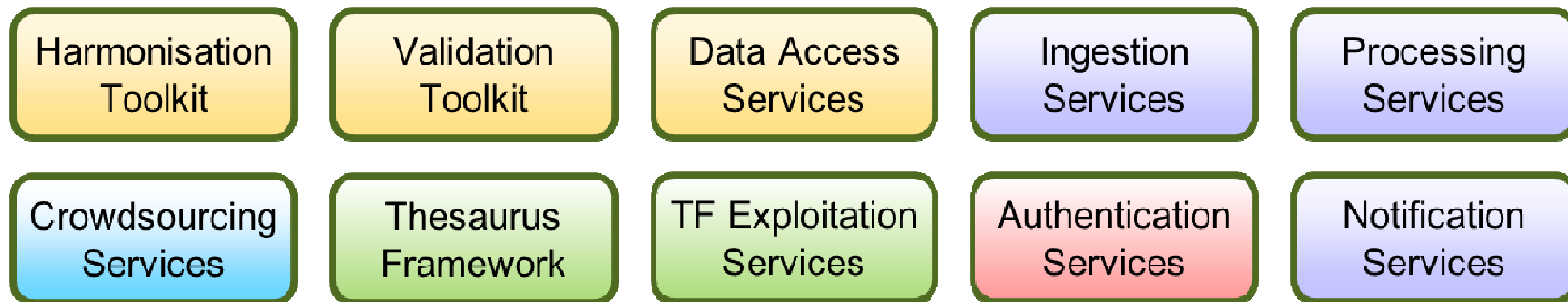
Strategic requirements   (1/2)

- the feasibility to replicate the developed services in different thematic contexts as well as location contexts
  - to drive the design of the processing services to be independent by the data format and extent,
  - to separate the data ingestion by the data processing but respecting the IPR on data.

- The re-use needs ➔ open software development trend **minimizing the use of licensed tools** and components **to guarantee the re-usability** of the produced tools with low cost and low licences constraints.

- scalable design ➔ to modulate and to distribute the infrastructure components in distributed computational resources

Strategic requirements (2/2)

- Making the eENVplus services operational means to make operational also the involved stakeholders which have to manage and exploit the designed technological solutions

- ➔ to support the stakeholders for building the capacity in organizing, managing and exploiting these new technologies through a set of actions focused on:
  - ☐ Increasing the awareness
  - ☐ Sharing the knowledge
  - ☐ Stimulating the cooperation and collaborations

- ➔ the exploitation of the Training framework

eENVplus

- eENVplus infrastructure is composed by a set of components combined into the nodes of the infrastructure

Software components

Harmonisation Toolkit	Validation Toolkit	Data Access Services	Ingestion Services	Processing Services
Crowdsourcing Services	Thesaurus Framework	TF Exploitation Services	Authentication Services	Notification Services

Data structure components

Geo DB   INSPIRE'd DB   Metadata   Triple store   Crowd data

The eENVplus infrastructure is composed by different nodes which are linked between them through input/output interface protocols realised by the ingestion services (input) and data access service (output).
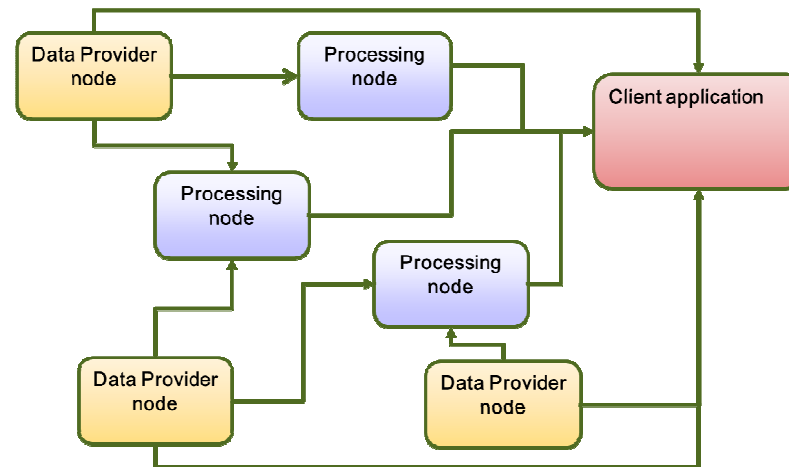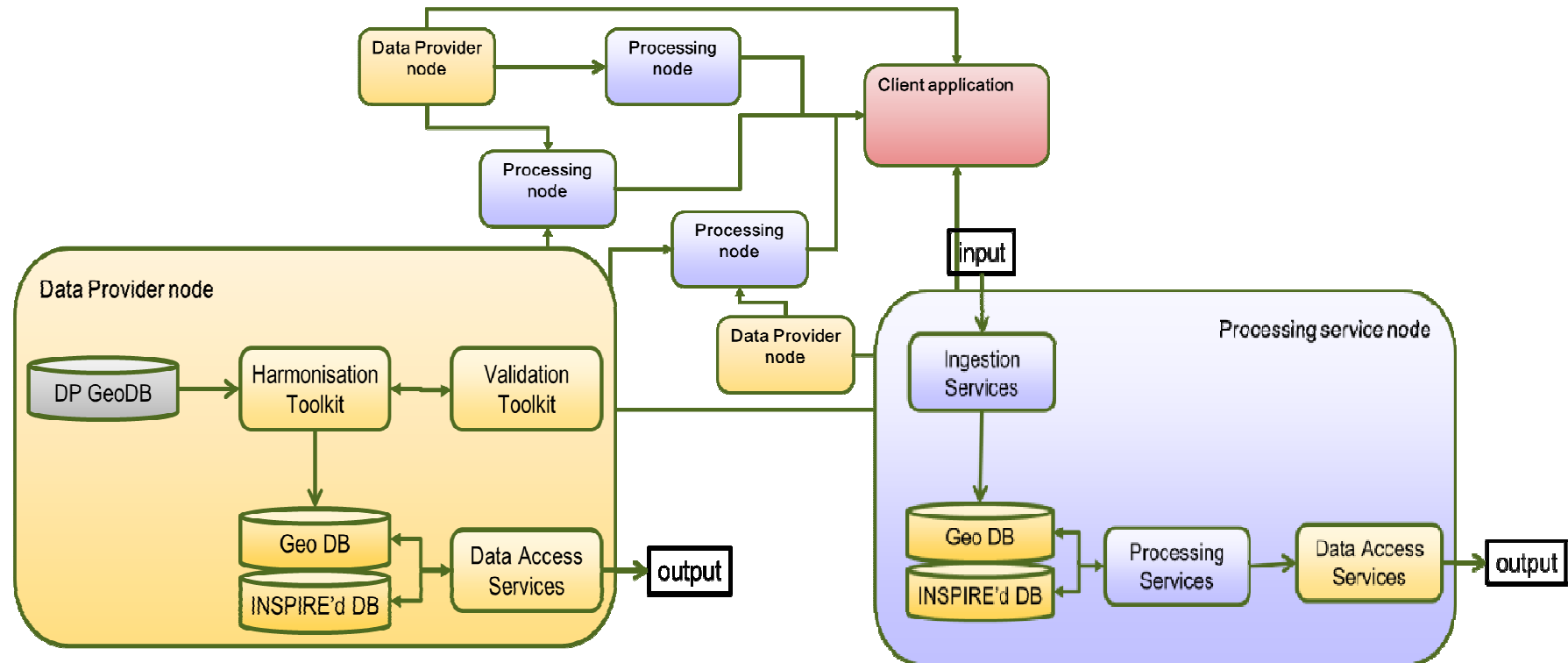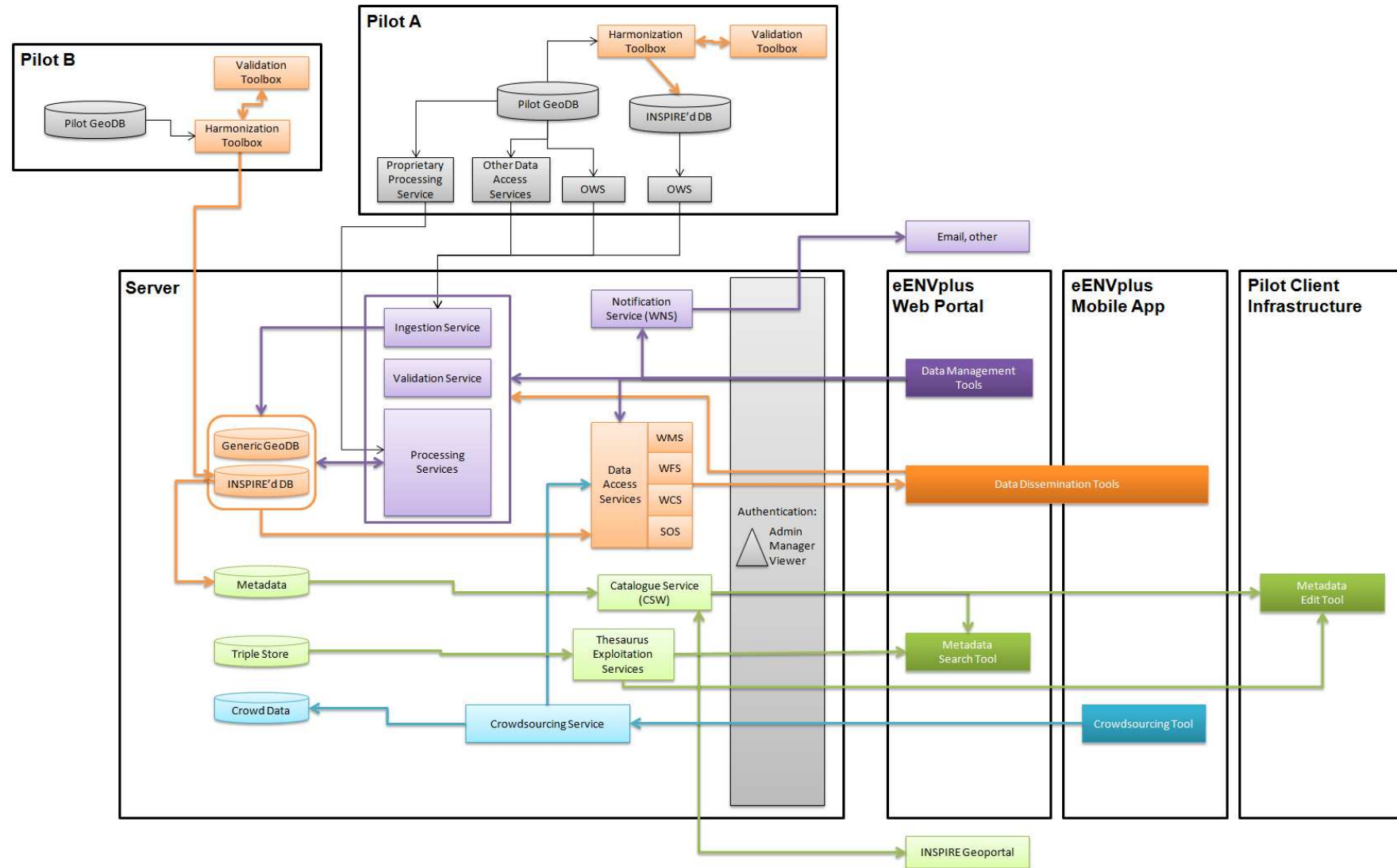
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Underlying content, INSPIRE data Themes

- Various National datasets related to many INSPRE Annex I-II-III Data Themes, are considered for eENVplus (some are under IPR, many are Open Data)

- After the 1st data analysis, not all of them will be harmonised

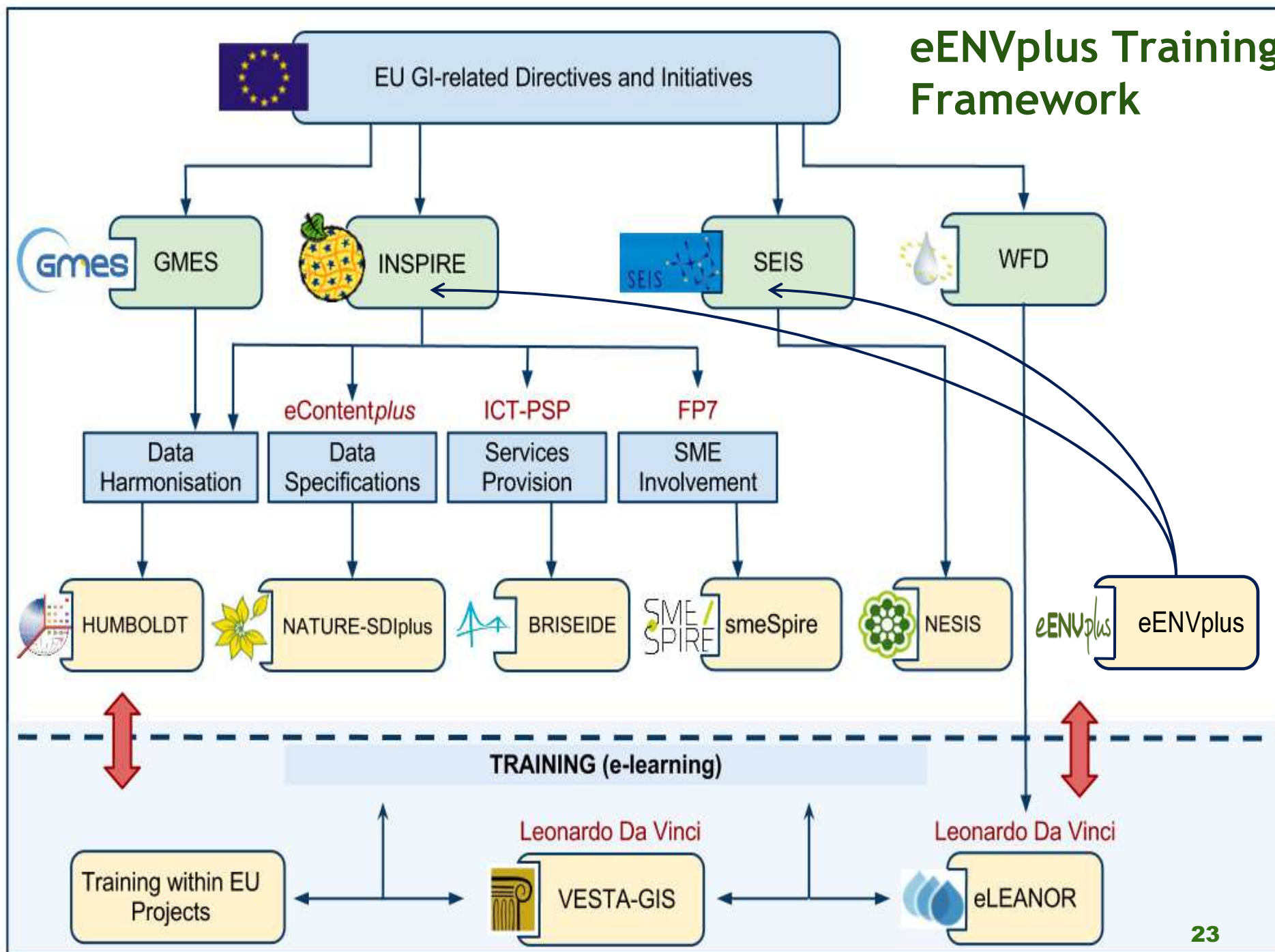| Pilot Applications:	EP01	EP02	EP03	EP04	EP05	EP06	EP07	EP08	EP09	EP10
ANNEX I										
1. RS: Coordinate reference systems								☐		
4. AU: Administrative units								☐		☐
6. CP: Cadastral parcels				☐						
8. HY: Hydrography			☐	☐			☐			
9. PS: Protected sites			☐	☐		☐	☐			
ANNEX II										
2. LC: Land cover				☐		☐				☐
3. OI: Orthoimagery										☐
4. GE: Geology								☐		
ANNEX III										
1. SU: Statistical units										☐
4. LU: Land use				☐						☐
5. HH: Human health and safety				☐						
6. US: Utility and governmental services			☐	☐						
7. EF: Environmental monitoring facilities	☐	☐			☐		☐			
8. PF: Production and industrial facilities				☐						
11. AM: Area mng/rest/reg zones & rep. units	☐	☐						☐		
12. NZ: Natural risk zones									☐	
13. AC: Atmospheric conditions	☐			☐						
14. MF: Meteorological geographical features						☐				
17. BR: Bio-geographical regions				☐	☐					
18. HB: Habitats and biotopes				☐	☐					
19. SD: Species distribution				☐	☐					

The HUMBOLDT Alignment Editor

- The HUMBOLDT Alignment Editor (HALE) is a tool for defining and evaluating conceptual schema mappings.

- HALE is currently being used intensively in the context of the eENVplus "WP3 Harmonisation and Validation" tasks.

- The Data Harmonisation Panel:
  - ☐ Supports a community of experts and organisations that have to deal with spatial data harmonisation.
  - ☐ Disseminates and exploits the HUMBOLDT Tools.
  - ☐ GISIG is one of the Data Harmonisation Panel Founding Members.

- A joint collaborative initiative between the eENVplus project and the Data Harmonisation Panel is under development.
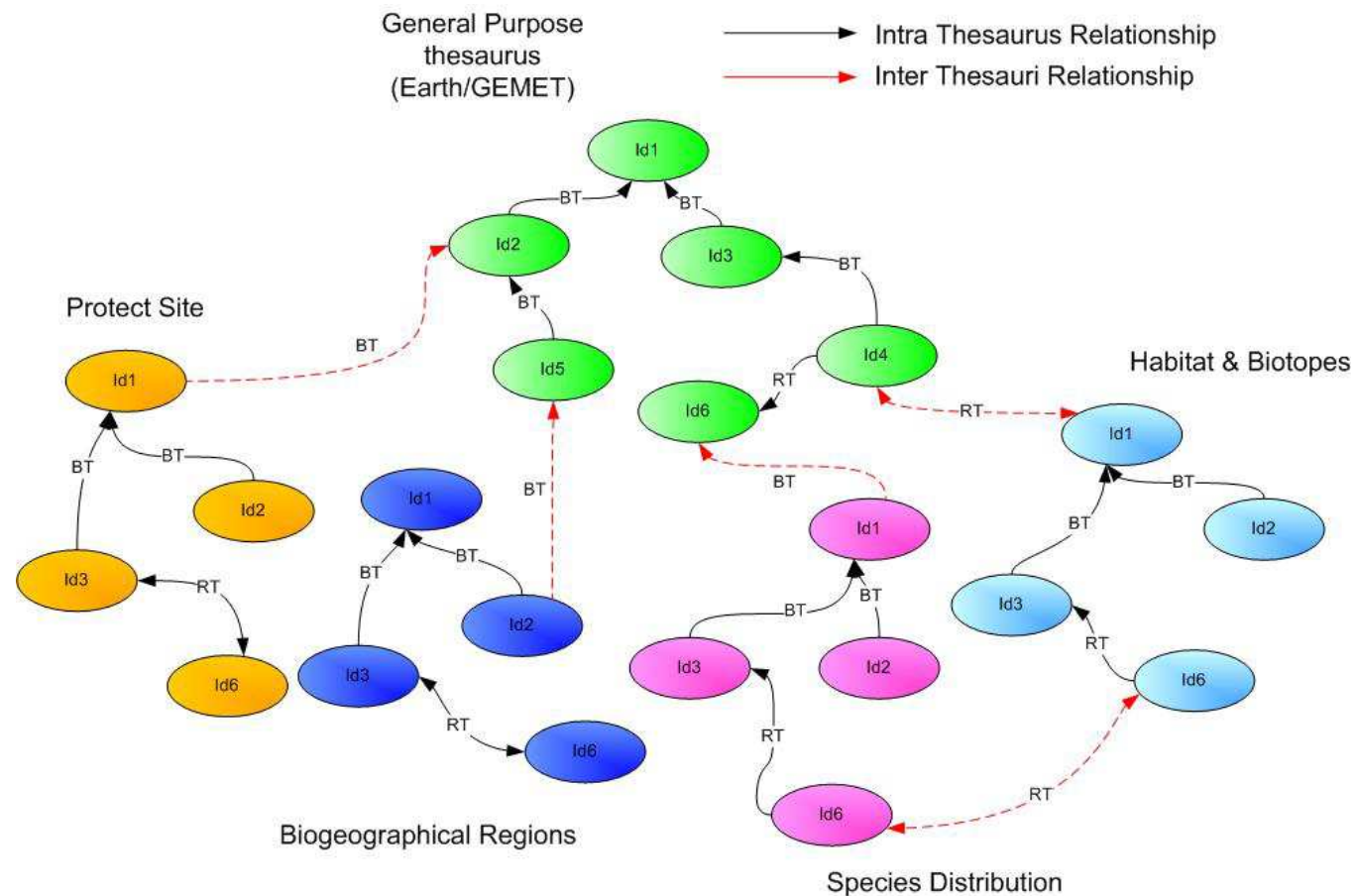
> ➢ integration of different available thesauri

> ➢ cross walking from a thesaurus to another

eENVplus Training Framework

EU GI-related Directives and Initiatives

GMES — INSPIRE — SEIS — WFD

eContent*plus* — ICT-PSP — FP7

Data Harmonisation — Data Specifications — Services Provision — SME Involvement

HUMBOLDT — NATURE-SDIplus — BRISEIDE — smeSpire — NESIS — eENVplus

TRAINING (e-learning)

Training within EU Projects — Leonardo Da Vinci VESTA-GIS — Leonardo Da Vinci eLEANOR

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Contribution to the EU policy

Contribution to the EU policy

to create a European Union Location Framework addressing the EU-wide, cross-sector interoperability framework for the exchange and sharing of location data and services.

a package of legal acts, methodologies, specifications (and standards), guidelines, and training materials required by public administration and stakeholder communities to facilitate the implementation, use and the generalisation of INSPIRE to a wider location context independently of the thematic sector (as part of e-government programmes).

EUROPEAN UNION LOCATION FRAMEWORK

STRATEGIC VISION

Version 0

- **eENVplus** - eENVplus is similarly a CIP ICT PSP funded project which aims to integrate infrastructures and create an operational framework for cross-border sharing of environmental data, compatible with INSPIRE. The project will include a series of pilots to support various environmental scenarios and will develop a multi-lingual thesaurus framework, tools for data harmonisation and validation and a series of e-learning modules. **All of these will be relevant in their own right to the EULF. The eENVplus concept may also be applicable to other policy areas and scenarios.**

EUROPEAN UNION LOCATION FRAMEWORK

STRATEGIC VISION

Version 0

Reusable INSPIRE reference platform

Identify and develop common components for the successful implementation of the INSPIRE Directive in relation to European e-government.

Collaboration, identification of best practices, guidance and the **sharing of components** relate to various aspects of INSPIRE

- ☐ Inventory of existing platforms and tools spanning multiple policy areas;
- ☐ Support existing or initiate new open source projects to address identified gaps;
- ☐ Produce extended multilingual documentation to help create an INSPIRE node based on existing Member States' relevant initiatives;

■The contribution of eENVplus for Are3NA is evident: the outcomes will be reference best practices to be included in the common platform in term of open tools, methodologies, guidelines, training materials, etc.

Semantic interoperability is an important element in many eGovernment and interoperability national agendas.

This ISA action takes care about the divergent interpretation of the data, the lack of commonly agreed and widely used metadata, the absence of universal reference data (e.g. code lists, taxonomies), the multilingual challenge, and so on.

■eENVplus can contribute to the alignment of semantic definitions, metadata and reference data sources promoting, sharing and re-using of sematic asset, experiences and tools and facilitating agreement in key areas.

Main eENVplus goals

- The provision of an **interoperable** solution to share and process geo-spatial data in order to provide added value information and services to be shared in a cross-language, cross-scale and cross-thematic environment

- The provision of **re-usable** solutions, in term of open data, open services, open components, open infrastructures, open applications

- The **contribution to the European policies** and international standards in the frame of the European eGovernment actions, with a special attention to the EU Directives like INSPIRE, PSI, the Environmental Directives (Air, Water, Habitas, Flood, Waste, etc.) based on the best practices coming from the application in real and heterogeneous contexts of the eENVplus infrastructure.

Sustainable perspective

eENVplus

- eENVplus Infrastructure is the base for including new applications and new services also within future projects at a European and National level

- eENVplus will be then the Framework for implementing/use/sharing eEnvironmental services

- That will be part of the long term sustainability plan after the project conclusion

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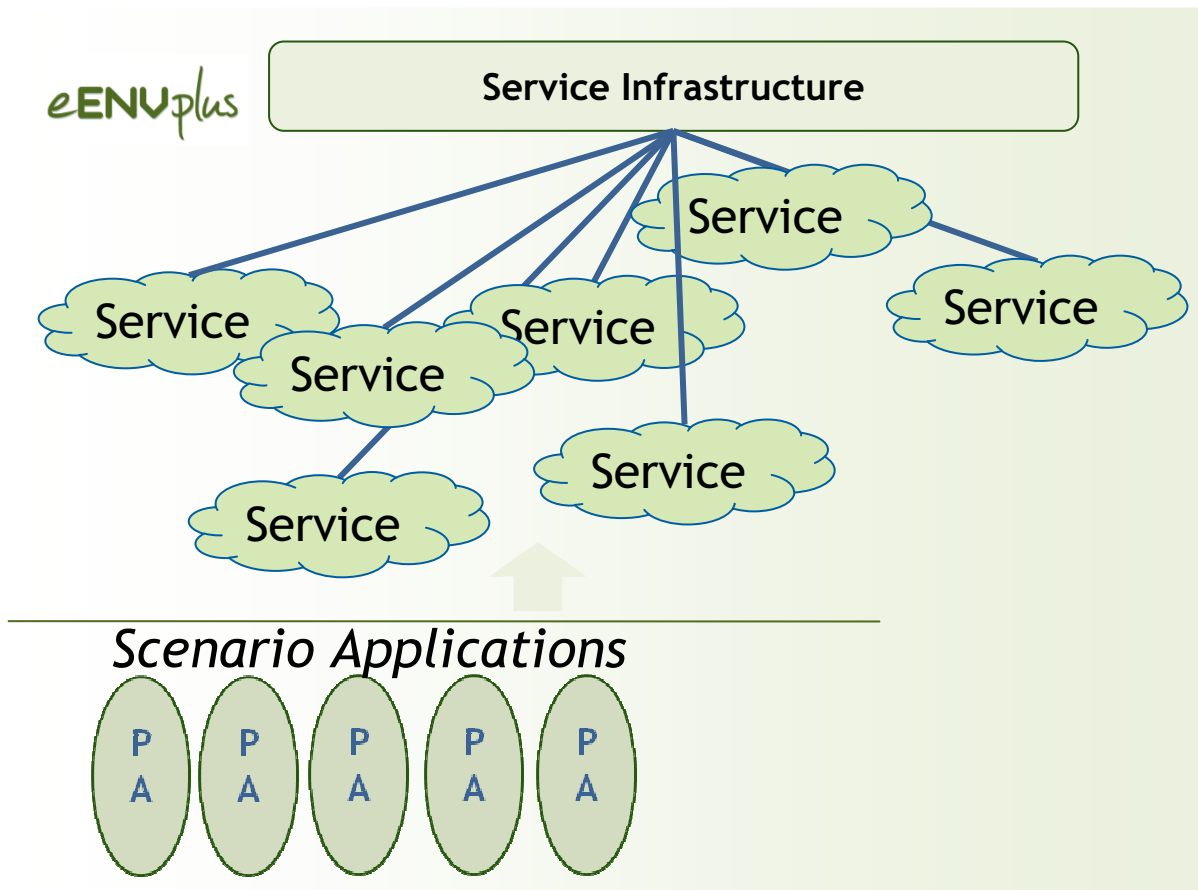
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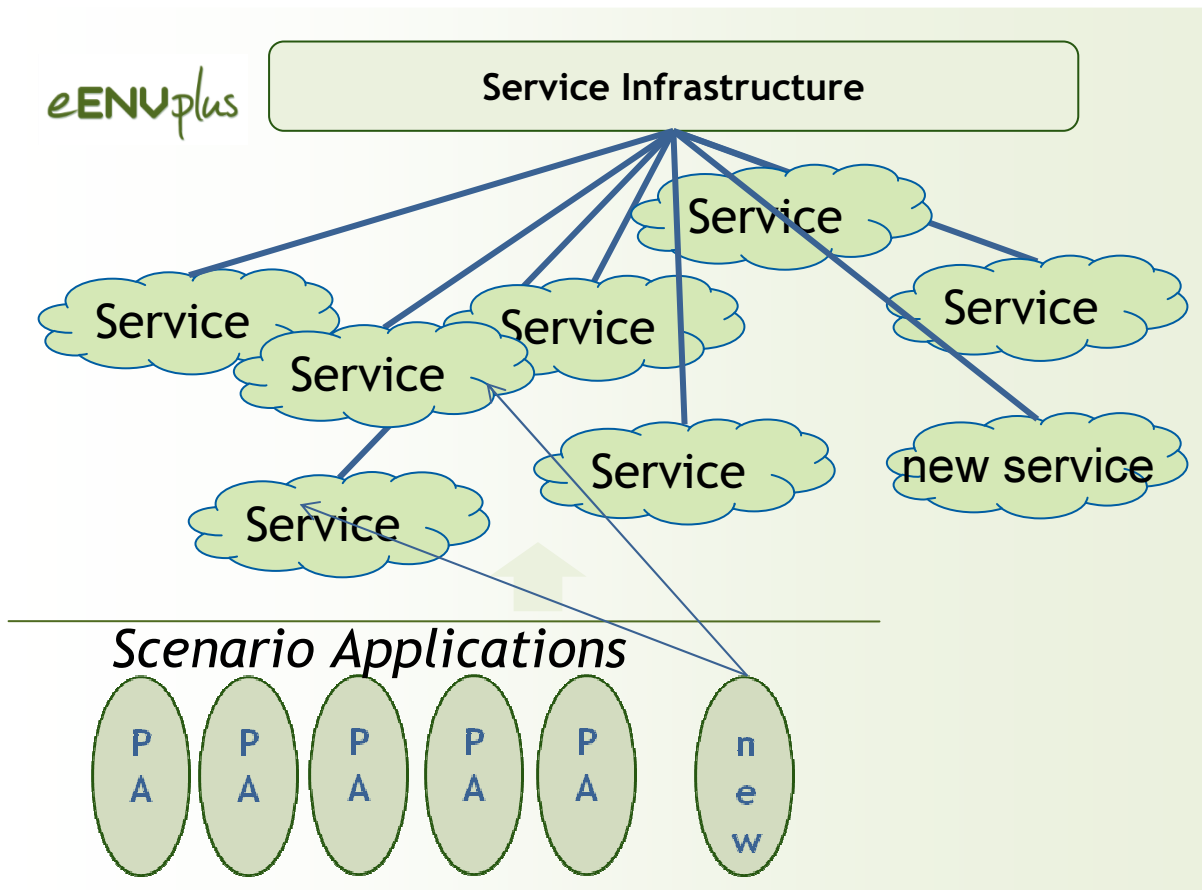
eENVplus — Sustainable perspective

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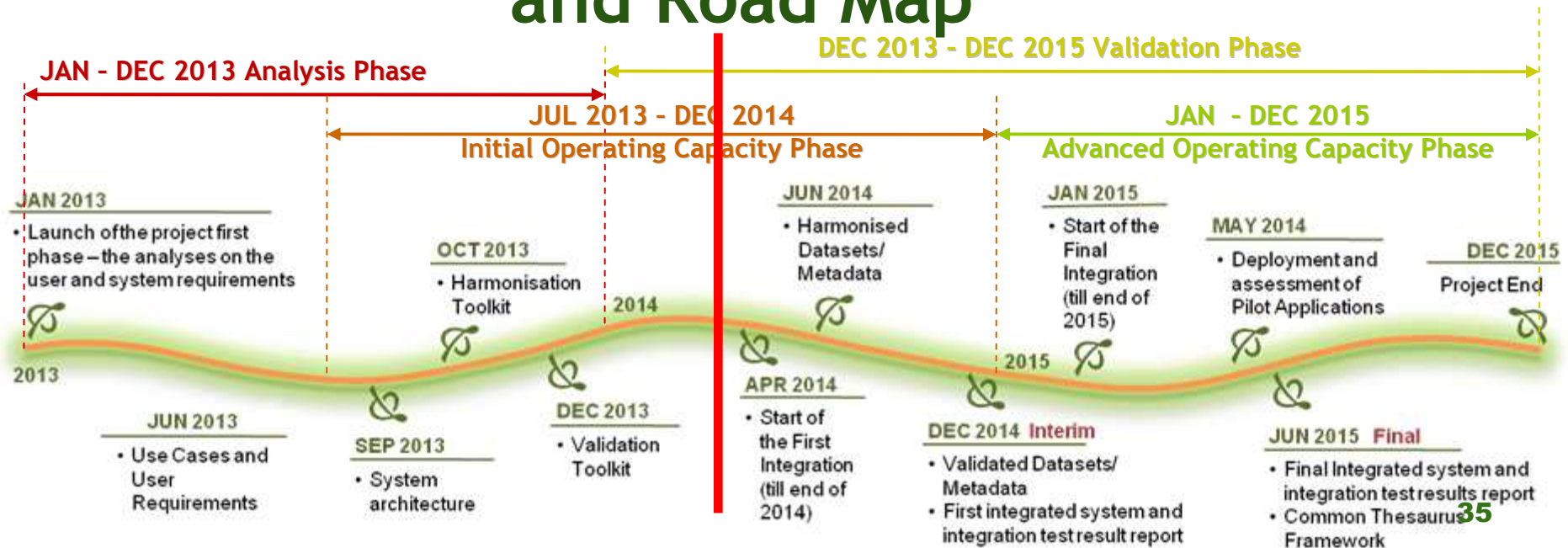- That will be part of the long term sustainability plan after the project conclusion

Macro-actions foreseen by eENVplus

1. Analyse existing operational processes	2. Collect existing technologies (from EU projects)	3. Collect data (from EU agencies)	4. Harmonise data	5. Make existing technology interoperable
10. Implement long-term sustainability mechanisms	9. Define recommendations	8. Train staff	7. Deploy pilots and assess them	6. Release of the open source toolkit

and Road Map

JAN – DEC 2013 Analysis Phase

DEC 2013 – DEC 2015 Validation Phase

JUL 2013 – DEC 2014 Initial Operating Capacity Phase

JAN – DEC 2015 Advanced Operating Capacity Phase

JAN 2013
• Launch of the project first phase – the analyses on the user and system requirements

OCT 2013
• Harmonisation Toolkit

JUN 2014
• Harmonised Datasets/ Metadata

JAN 2015
• Start of the Final Integration (till end of 2015)

MAY 2014
• Deployment and assessment of Pilot Applications

DEC 2015
Project End

2014

2013

JUN 2013
• Use Cases and User Requirements

SEP 2013
• System architecture

DEC 2013
• Validation Toolkit

APR 2014
• Start of the First Integration (till end of 2014)

DEC 2014 Interim
• Validated Datasets/ Metadata
• First integrated system and integration test result report

2015

JUN 2015 Final
• Final Integrated system and integration test results report
• Common Thesaurus Framework

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eEnvironmental services for advanced applications within INSPIRE

Questions?

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