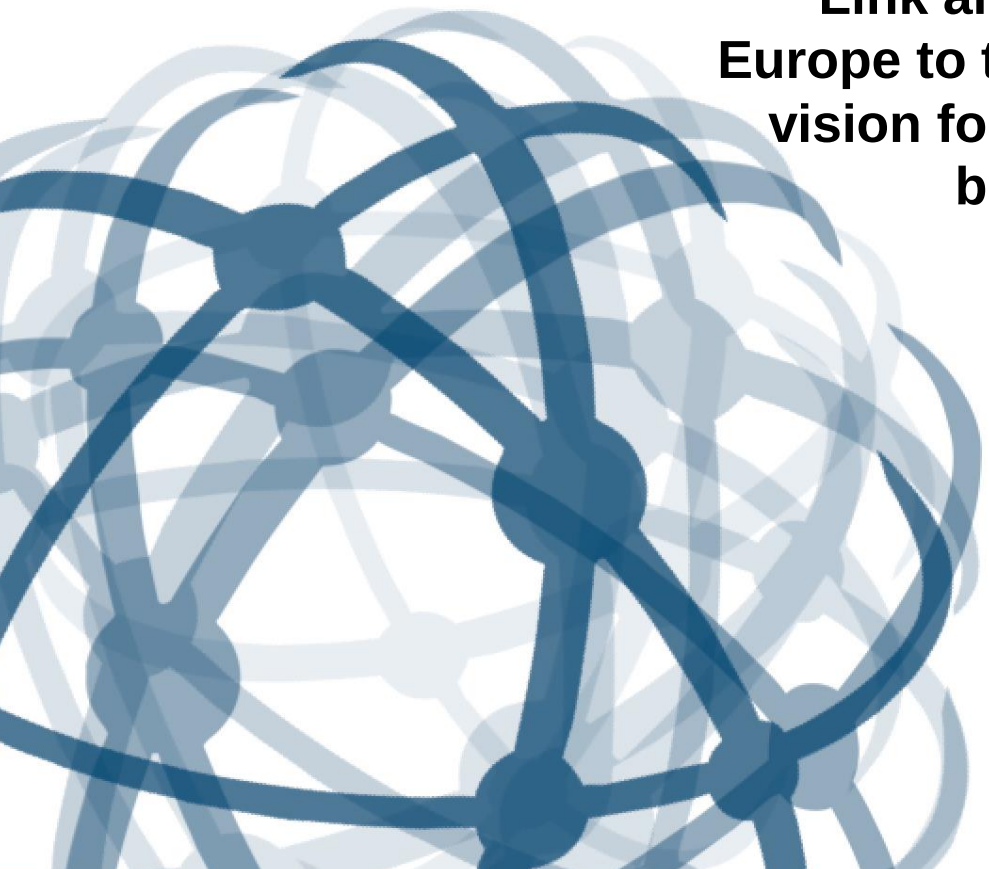
FI-LINKS
Linking FI Globally

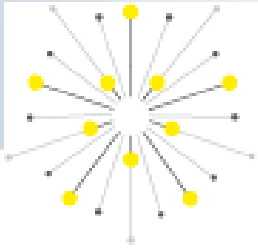
Link and Evangelize the FI-PPP from Europe to the world towards a long-term vision for FI-PPP technologies and the benefit of FI European industry



Session Internet des Objets
PCN TIC, Paris, 24 Octobre 2014
Pierre-Yves DANET
Orange Labs

www.fi-links.eu

Future Internet PPP



FUTURE INTERNET PPP

/THE FUTURE. NOW.

- The FI-PPP follows an industry-driven, holistic approach encompassing R&D on network and communication infrastructures, devices, software, service and media technologies;
- In parallel, it promotes their experimentation and validation in real application contexts, bringing together demand and supply and involving users early in the research lifecycle.
- The FI-PPP platform (FI-WARE) will thus be used by a range actors, in particular SMEs and Public Administrations, to validate the technologies in the context of smart applications and their ability to support «user driven» innovation schemes.
- That FI-WARE platform will support Generic Enabler (**GE : free use, opensource**) developed and Specific Enablers (**SE : Open API, fair and acceptable price**) developed by the Use case projects.
- **Several instantiations** of that platform are being set up all over Europe (FI-Ops) in order to give access to a large number of third party developers (ex: ImaginLab in Brittany, Com4Innov in PACA).
- A first validation of this platform is being done by the 5 **Use case projects** i.e. FI-CONTENT2 which has developed 3 media cases (Virtual Games, Connected TV and Smart City Guide.

http://www.fi-ppp.eu

Total investment by industry and the public sector: 500 million euro, including 300 million euro EC contribution

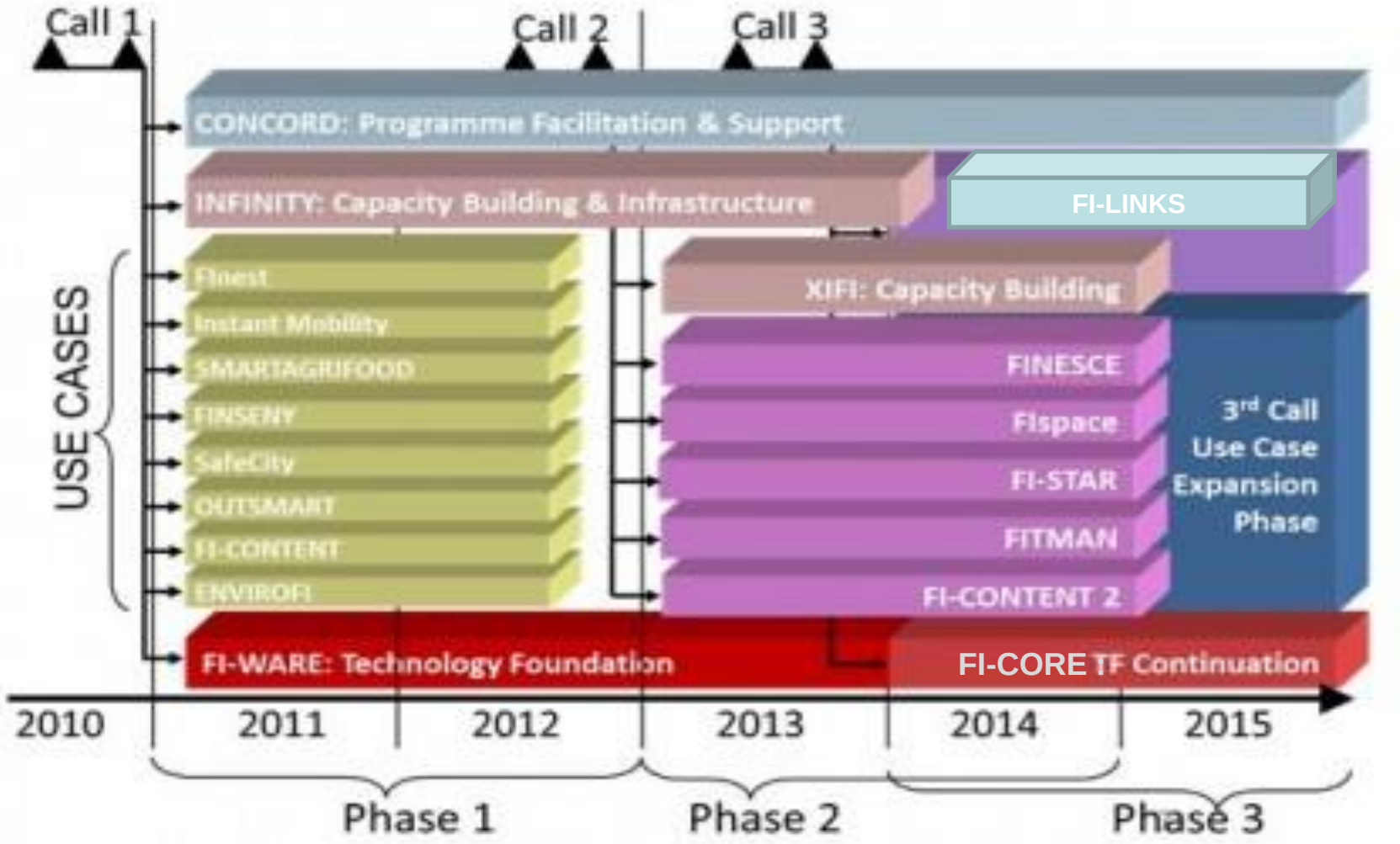
Number of partner organisations: 158 (phase 1 projects), 125 (phase 2 projects), up du 2000 (phase 3 accelerators)

Industry share in the program: 68% (phase 1 projects), 60% (phase 2 projects)

Countries represented: 23 (phase 1 projects), 21 (phase 2 projects)

Number of accelerators: 16 from 15 European countries in charge funding up to 2000 projects

Future Internet PPP timesc



FI-LINKS Objectives

- EU Enterprises
- EU Regions
- Worldwide FI actors

- Best Practises
- Roadmap
- FI Policies

- Technology adoption
- Marketplaces population

FI-WARE
Open APIs for Open Minds

FI-Lab
Spark your imagination

FI-Ops
Easing your operations

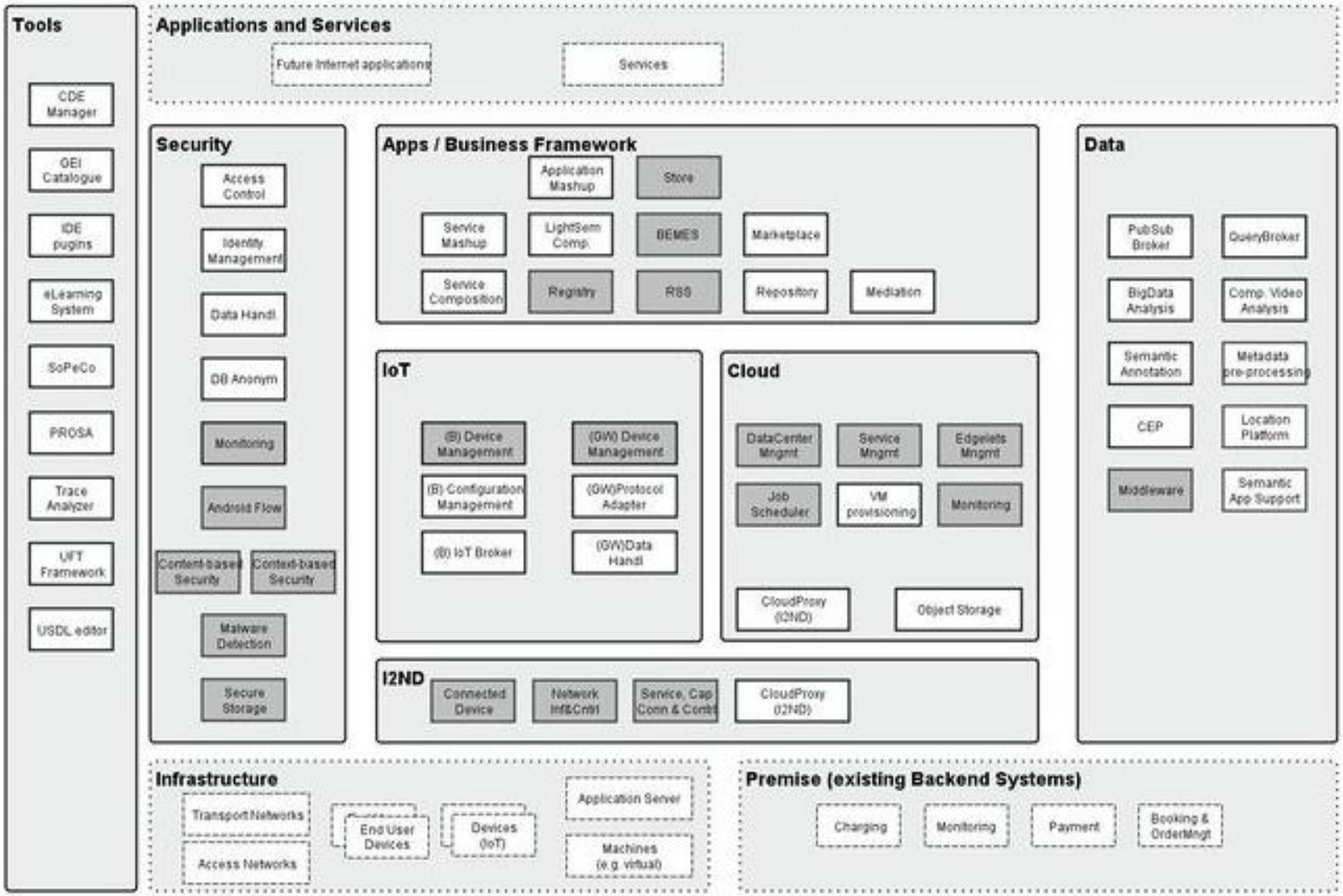
What's that ?

FI-WARE, FI-Lab, FI-Ops: what's that?

➔ They are 3 products

- FI-WARE:
  - Provide Generic Enablers
  - Something you can use in different ways for your « own »platform
  - Common part to break the silos
- FI-Lab
  - A sandbox to test and use Generic Enablers
  - Cloud facilities distributed through Europe (5+12 data centers)
  - What you get: free Virtual Machines (5) + 10Gb + **real data from Smart Cities**
- FI-Ops: for platform providers
  - Tools to deploy and federate the data centers using FI-WARE framework

FI-WARE: architecture overview



FIWARE Generic Enablers

Cloud Enablers

Object Storage
PaaS Management
Monitoring
Edgelet Management
Software Deployment and Configuration SDC
IaaS Data Center Resource Management DCRM
Cloud Proxy
Job Scheduler
IaaS Service Management SM

Apps Enablers

Repository
Marketplace
Store
Light Semantic Composition
Revenue Sharing System
Business Calculator
Service Composition
Service Mashup
Mediator
Application Mashup
Business Modeler
Registry

I2ND Enablers

Network Information and Control NetIC
Service Capability Co
Connected Devices

Advanced Web Users Interfaces

blers

Big Data Analysis
Meta-Data Preprocessing
sing CEP
Broker
Compressed Domain Video Analysis
Communication Middleware
Enhanced Query Broker
Location Platform
Semantic Application Support

IoT Enablers

Gateway Data Handling
Gateway Protocol Adapter
Backend Device
Gateway Device Management
Backend IoT Broker
Backend Configuration Management

Security Enablers

Privacy
Database Anonymizer
Identity Management
Privacy Enhanced Identity Management
Context-based Security and Compliance
Content-based Security
Data Handling
Android Flow Monitoring
Access Control
Malware Detection Service
Security Monitoring

Open Specs and API: opportunities for SMEs

- Open Secs: **FREE**
  - Documentation is available
  - You can understand the main features of a Generic Enabler: (can be re-use for multiple verticals and associated service platforms)
  - Your comments are more than welcome!
  - Become part of the community and share with us, and with your ecosystem
- API: **FREE**
  - For your developers to plug your own software on top of Generic Enablers
  - To develop your own instances of Generic Enablers and be compliant & interoperable
  - Open or create your platform/services to/for other verticals
  - Again, your comments and contributions are more than welcome!
- **Licence models (for concrete software)**
  - 70% are now in Open Source => you can contribute !

FIWARE Generic Enablers

Cloud Enablers

Object Storage
PaaS Management
Monitoring
Edgelet Management
Software Deployment and Configuration SDC
IaaS Data Center Resource Management DCRM
Cloud Proxy
Job Scheduler
IaaS Service Management SM

Apps Enablers

Repository
Marketplace
Store
Light Semantic Composition
Revenue Sharing System
Business Calculator
Service Composition
Service Mashup
Mediator
Application Mashup
Business Modeler
Registry

I2ND Enablers

Network Information and Control NetIC
Service Capability Connectivity and Control S3C
Connected Devices Interfacing CDI
Cloud Edge CE

Data /Context Enablers

Semantic Annotation
Big Data Analysis
Meta-Data Preprocessing
Complex Event Processing CEP
Publish Subscribe Broker
Compressed Domain Video Analysis
Advanced Communication Middleware
Media Enhanced Query Broker
Location Platform
Semantic Application Support

IoT Enablers

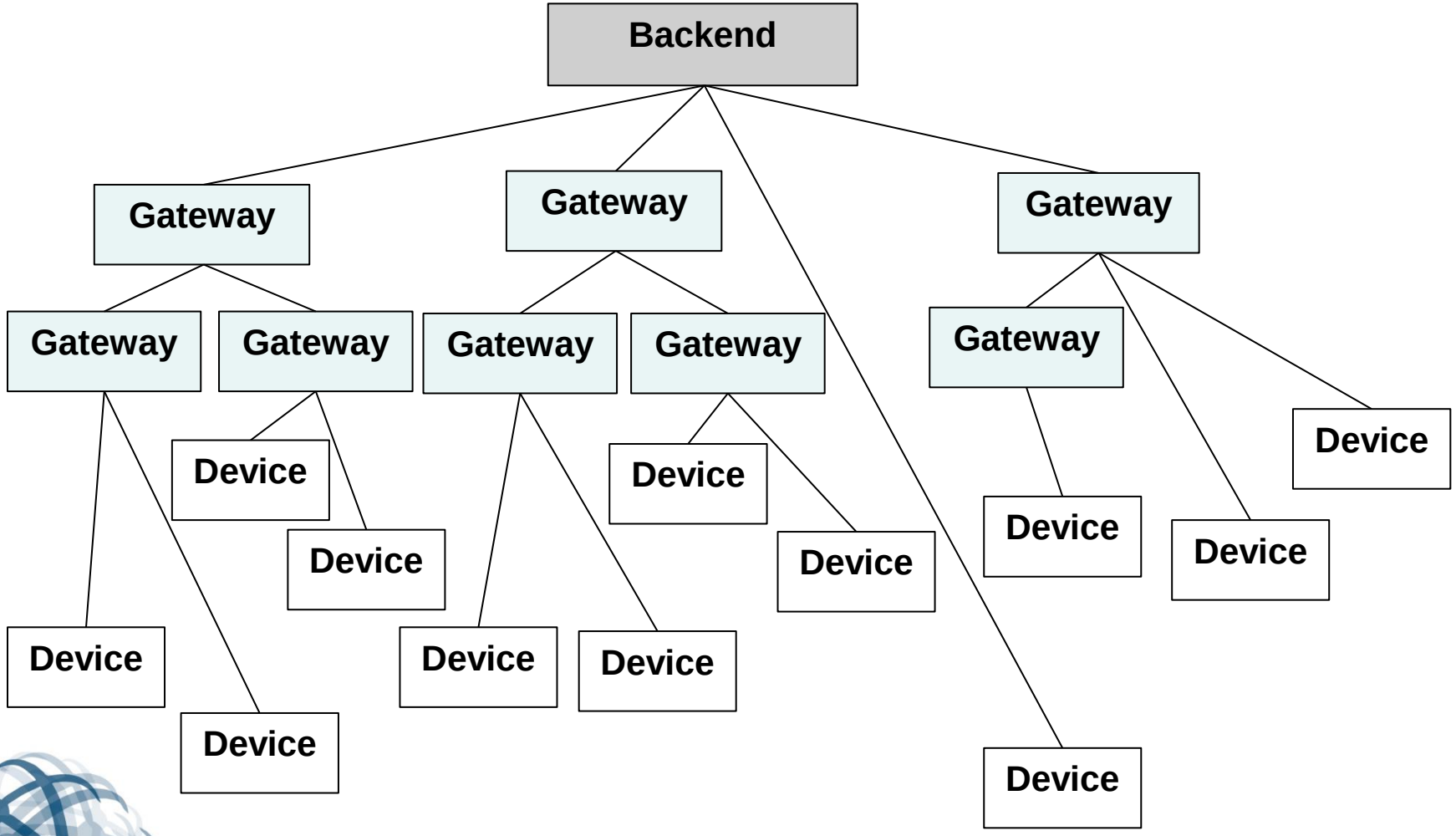
Gateway Data Handling
Gateway Protocol Adapter
Backend Device Management
Gateway Device Management
Backend IoT Broker
Backend Configuration Management

Security Enablers

Privacy
Database Anonymizer
Identity Management
Privacy Enhanced Identity Management
Context-based Security and Compliance
Content-based Security
Data Handling
Android Flow Monitoring
Access Control
Malware Detection Service
Security Monitoring

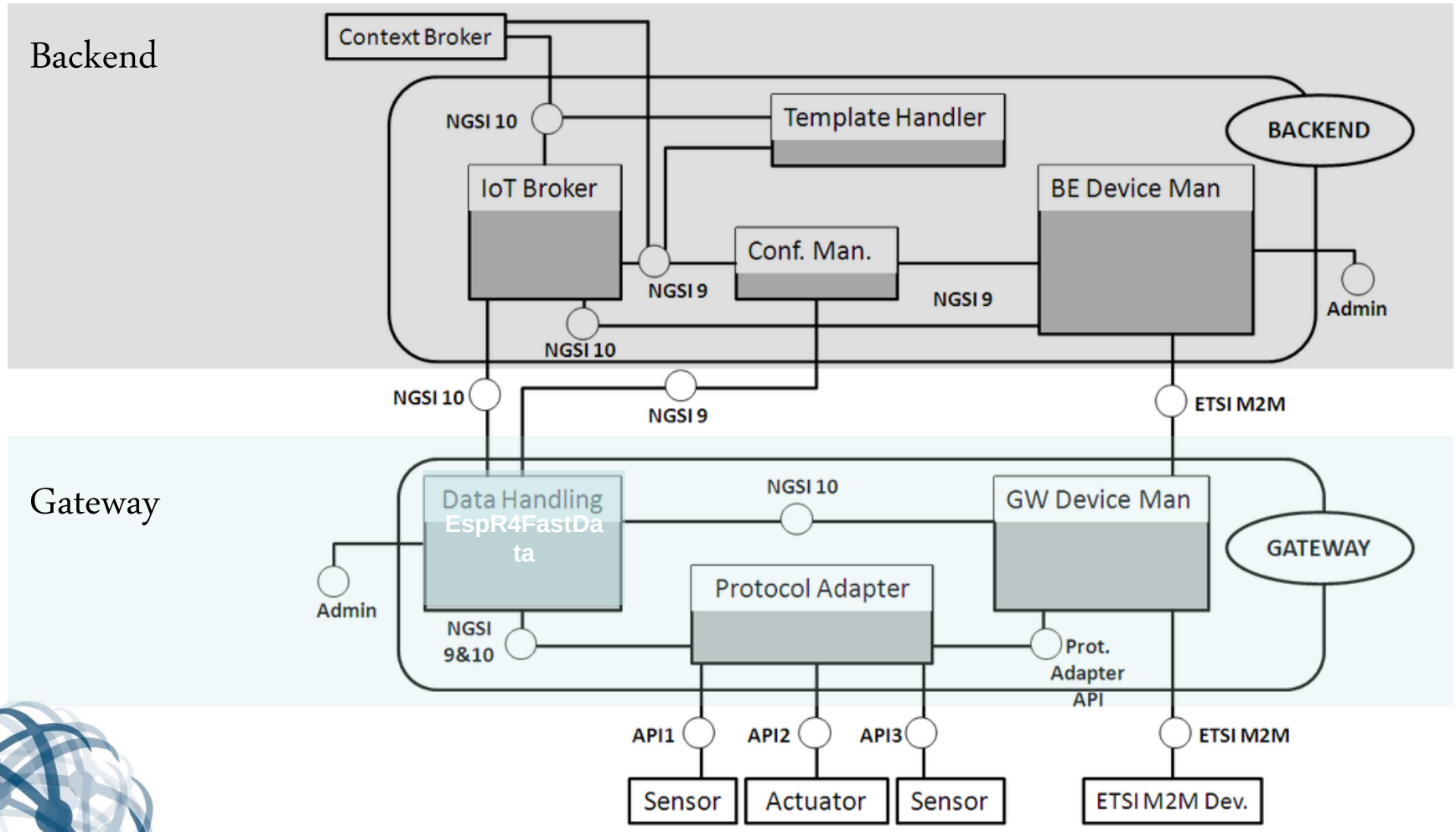
FIWARE IoT Chapter

Gateways



FIWARE IoT Chapter

Location of the Data Handling GE



Internet of Things (2)

- Multiple implementations are linked to industrial partners technical choices
- Backend Configuration Manager: Orion vs IoT Discovery
  - **Orion** is a fully integrated version of Configuration Manager (IoT) and Context Broker (Data & Context Management)
  - **IoT Discovery** is a Configuration Manager with optional features as geographical discovery (which are the things in this geographical area)
- Gateway Protocol Adapter
  - At least one instance per specific protocol
  - Available: Zigbee, Coap & EPC Global (RFID)
- Other examples in other technical chapters:
  - Security: Identity Management
  - Data & Context Management: Context Broker

Phase 2 = Large Scale Trials

FI-LINKS
Linking FI Globally

FIspace
Business Collaboration

FIcontent

fistar

FITMAN

FINESCE

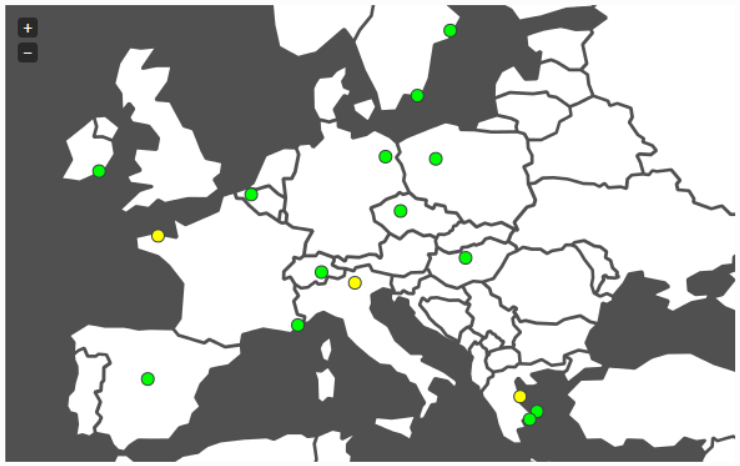
Phase 2
Use case trial sites

FI-WARE Nodes

FI-LINKS
Linking FI Globally

FIWARE Lab | Cloud | Store | Mashup | Data | Account | Help&info | Login

Nodes



Node	Overall	Nova	Neutron	Cinder	Glance	Keystone P.	Support
Lannion							
Trento							
Prague							
Gent							
Budapest							
NITOS-UTH							
Berlin							
Poznan							
Stockholm							
C4I							
Spain							
Waterford							
Karlskrona							
Zurich							
ATHENS_UPRC							
Athens_Neuropublic							

FI-Ops
Easing your operations

Phase 3 = Adoption

FI Accelerators

Geographical Coverage:

= Country

= City

European cities/regions

- Amsterdam
- Barcelone
- Bruxelles
- Birmingham
- Florence
- Rotterdam
- Valladolid
- Helsinki
- Trente
- Guildford
- Maribor
- Messine
- Stockholm
- Århus
- Berlin
- Vojvodina
- Oulu
- Murcie
- Málaga
- Paris
- Cracovie

Regional involvment

- FI-Links conducted a study over 180 regions with the objective to identify which should be the most attractive regions in order to help them in activating developers ecosystems to develop innovative applications on FI-WARE.
- Criteria used were :
  - ICT as one of the top smart specialisation topic
  - European ICT Pole of Excellence (EIPE)
  - Already involved in FI-PPP (experiment, nodes, accelerators)
  - Having an active ICT cluster
- The winners are :
  - Berlin : 4 points
  - Brittany, Rhône-Alpes, Piedmont, Tuscany, Andalusia, Madrid, Skåne : 3 points
  - Paris, Vienna, Bruxelles capitale, Midtjylland, Region North Jutland, Aquitaine, Auvergne, Nord, Guyane,Midi-Pyrénées, Poitou-Charentes, Provence-Alpes-Côte d'Azur, Helsinki-Uusimaa, Bavaria, North Rhine-Westphalia, Lombardy-Brianza, Greater Poland Voivodeship, Lublin Voivodeship, Masovian, Voivodeship, Pomeranian Voivodeship, Aragon, Canary Islands, Catalonia, Comunidad Valenciana, Extremadura, Galicia, País Vasco, Gävleborg, Värmland, Västerbotten, West Midlands : 2 points

Action plan in France

- France has been identified as a relevant country and 3 regions has been contacted due to their ecosystems of ICT actors :
  - Brittany with the Pôle Image&Réseaux which is already involved as one of the FI-Ops node and also in one accelerator (FI-C3), a startup Week End is organised 13-16 November in Rennes
  - PACA with Pôle SCS which is already offering a FI-Ops node
  - Ile de France with Pôle Cap Digital and Systematics which are active in promoting the FI-WARE technologies to their members

➔ **The objective of FI-LINKS is to help FI-WARE to become sustainable in these French regions**

FI-LINKS contribution to WP14-2016 IoT Topics

- In the IoT domain, there are a number of adapters to different IoT gateway protocols and devices but more could be done there as well. For example, Device Management, OS for devices, semantics at the device level, peer2peer communication between objects, could be added.
- Links to 5G networks including SDN/NFV is mandatory
- Security mechanisms should be studied for the IoT domain.

Thank you for your attention!

FIWARE websites

- Everything is on www.fi-ware.org
- But you have other interesting entry points:
  - catalogue.fi-ware.org a kind of executive summary per Generic Enabler
  - edu.fi-ware.org the e-Learning platform to discover Generic Enablers Features
  - wiki.fi-ware.org the place to find many more details

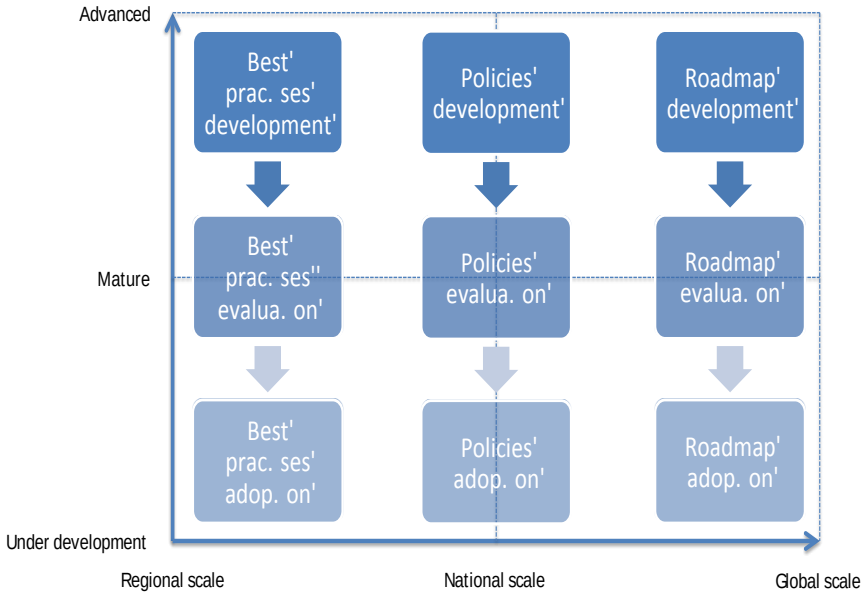
- And then, you will be able to create your account on FI-Lab to play and test Generic Enablers
  - lab.fi-ware.org

FI-LINKS Activities

1. **Develop a consistent roadmap of the technical and business directions** of the Future Internet research and innovation and the road ahead:
   - Benchmark the quality of FI-PPP technologies and business models against the equivalent research and innovation schemes in the international domain
   - promote the establishment of a shared medium (2020) and long-term (2030) vision for FI technologies.
2. **Promote the adoption of FI-PPP technologies across Europe and beyond Europe (**mainly Latin America – e.g. Chile, Guatemala, Mexico, Argentina, etc. – Canada, Brazil, India,…Japan? and collaborate with US when needed**) evangelising on the further development** of the FI-PPP
3. **Engage the relevant stakeholders** in the global and EU regional context
4. **Identify and profile potential issues** regarding **specific policies** or regulation by comparing the policies in the European regions and feed the FI-LINKS roadmap
5. **Ensuring broad visibility** of the FI-PPP via FI-LINKS activities by promoting FI-PPP results in the European Future Internet (FI) scene and beyond, and organize relevant European-wide workshops.

From regional to global scale impact

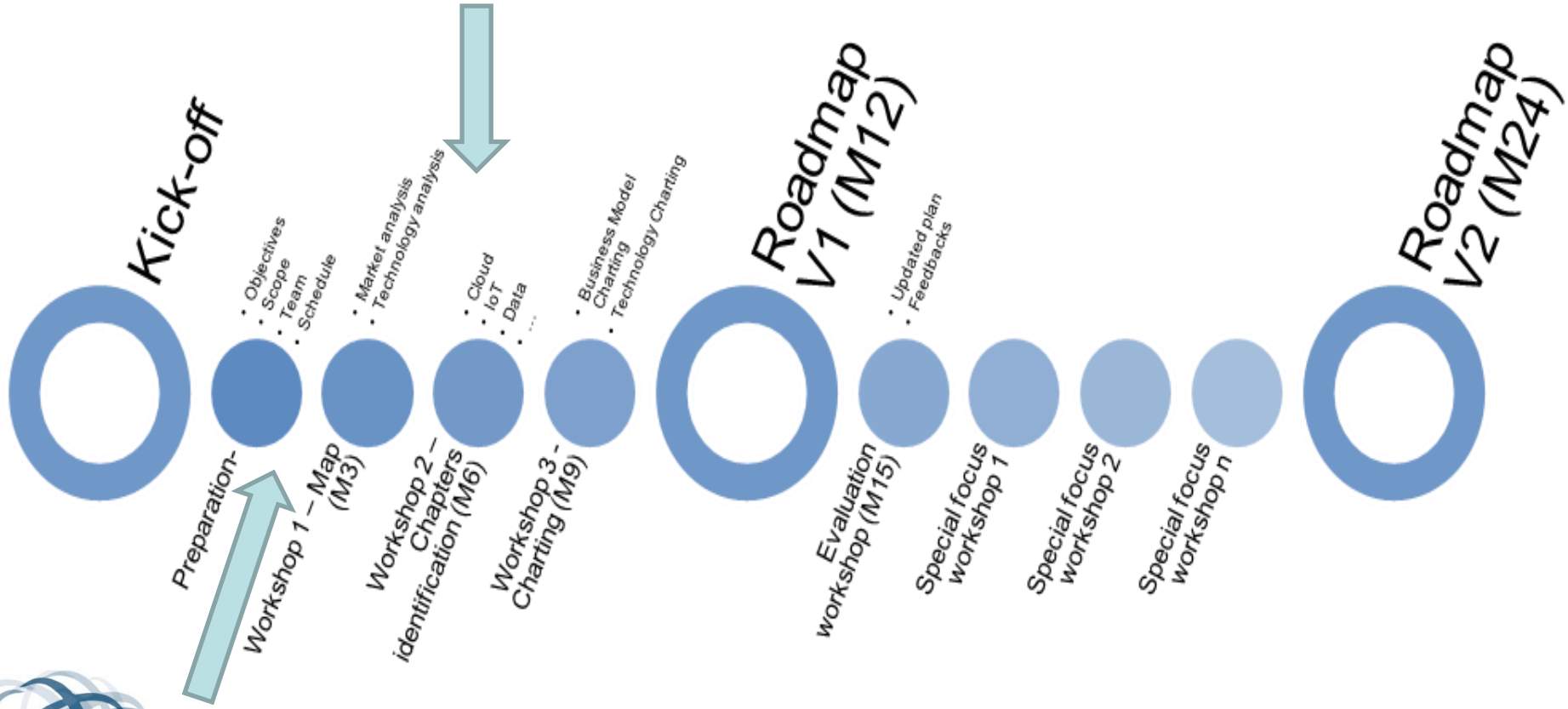
- Understanding global context and expose it in a Technology and Business FI roadmap, aimed at informing about FI deployment directions
  - a valuable asset to EU industries and to EU public bodies in order to define future plans for technology development and adoptions
- FI-LINKS will play a crucial role in benefiting less mature FI communities, (such as the ones in the SouthAmerica) and allowing them to join a mature and open source platform for the creation of FI-PPP based solutions in their countries



- Policies and best practices will be of particular added value for EU regions (and hence public bodies), to develop a short actions to favourite the adoption of FI technologies (short-medium term impact) and help the roadmap.
- Organizing EU-wide strong events and workshops with the relevant players to ensure the evangelization and adoption of FI-PPP

Roadmap timeline

- First map M6



Input to workprogramme M2 (deadline 10th July)

The FI-LINKS Project Overview

FI-LINKS
Linking FI Globally

- An integral part of the FP7 FI-PPP Program of projects dedicated to promoting the "future internet" for Europe
- A Coordination Action
- Runs (estimated) from June 2014 → May 2016 *(2 years)*
- Supported by €1.4 m funding from the EC
- 7 Partners (Coordinator: UPM) + *collaboration external experts/relevant organizations in the selected third countries countries*

POLITÉCNICA

orange™

CREATE-NET

Telefónica
Telefónica Investigación y Desarrollo

ENGINEERING

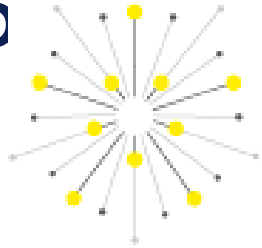
InterInnov

Martel Consulting

Link and Evangelize the FI-PPP from Europe to the world towards a long-term vision for FI-PPP technologies and the benefit of FI European industry

Session Internet des Objets
PCN TIC, Paris, 24 Octobre 2014
Pierre-Yves DANET
Orange Labs

Future Internet P



FUTURE INTERNET PPP

/THE FUTURE. NOW.

http://www.fi-ppp.eu

- The FI-PPP follows an industry-driven, holistic approach encompassing R&D on network and communication infrastructures, devices, software, service and media technologies;
- In parallel, it promotes their experimentation and validation in real application contexts, bringing together demand and supply and involving users early in the research lifecycle.
- The FI-PPP platform (FI-WARE) will thus be used by a range actors, in particular SMEs and Public Administrations, to validate the technologies in the context of smart applications and their ability to support «user driven» innovation schemes.
- That FI-WARE platform will support Generic Enabler (**GE : free use, opensource**) developed and Specific Enablers (**SE : Open API, fair and acceptable price**) developed by the Use case projects.
- **Several instantiations** of that platform are being set up all over Europe (FI-Ops) in order to give access to a large number of third party developers (ex: ImaginLab in Brittany, Com4Innov in PACA).
- A first validation of this platform is being done by the 5 **Use case projects** i.e. FI-CONTENT2 which has developed 3 media cases (Virtual Games, Connected TV and Smart City Guide.

Total investment by industry and the public sector: 500 million euro, including 300 million euro EC contribution

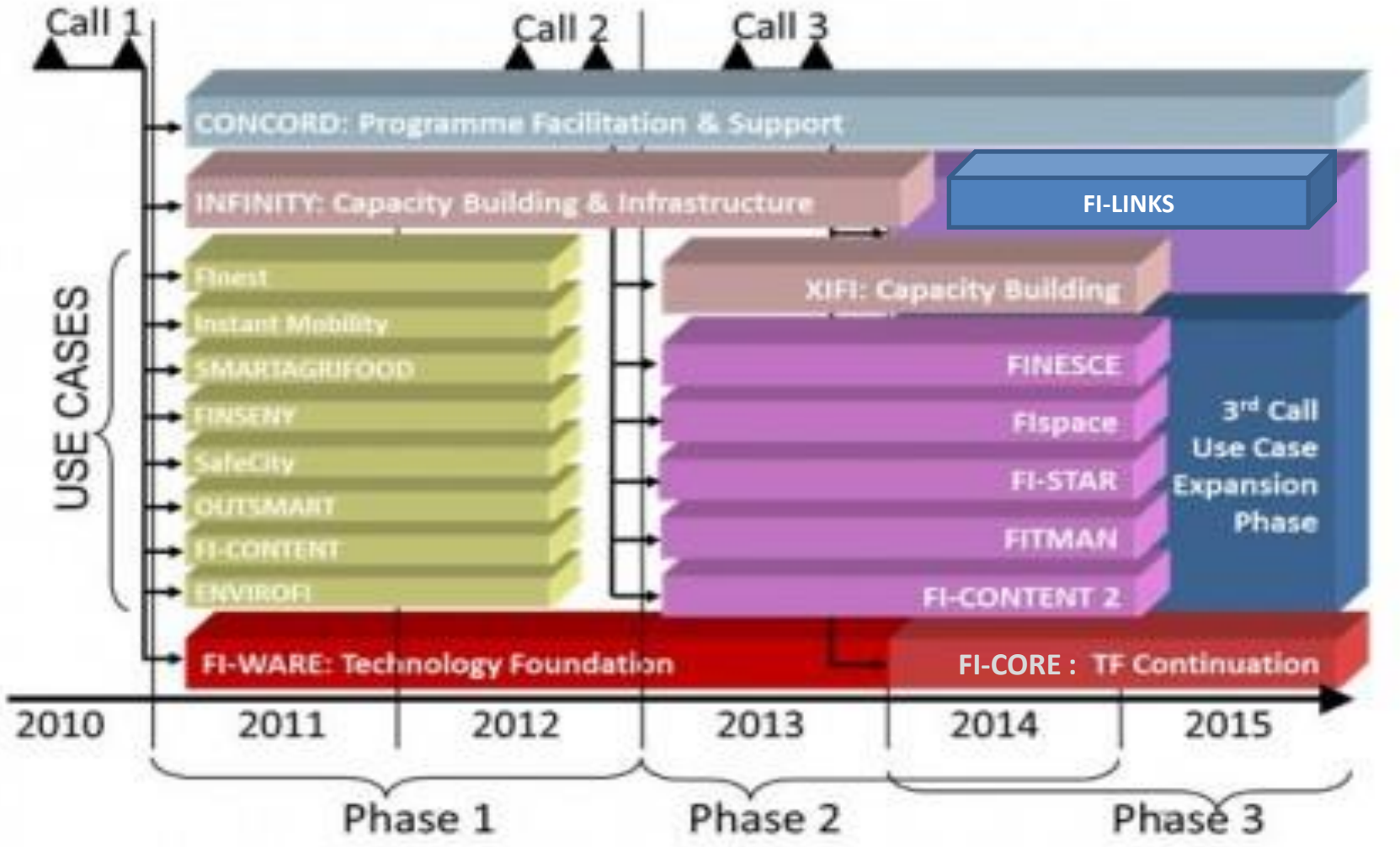
Number of partner organisations: 158 (phase 1 projects), 125 (phase 2 projects), up du 2000 (phase 3 accelerators)

Industry share in the program: 68% (phase 1 projects), 60% (phase 2 projects)

Countries represented: 23 (phase 1 projects), 21 (phase 2 projects)

Number of accelerators: 16 from 15 European countries in charge funding up to 2000 projects

Future Internet PPP times



FI-LINKS Objectives

- EU Enterprises
- EU Regions
- Worldwide FI actors

- Best Practises
- Roadmap
- FI Policies

- Technology adoption
- Marketplaces population


FI-WARE
Open APIs for Open Minds


FI-Lab
Spark your imagination


FI-Ops
Easing your operations

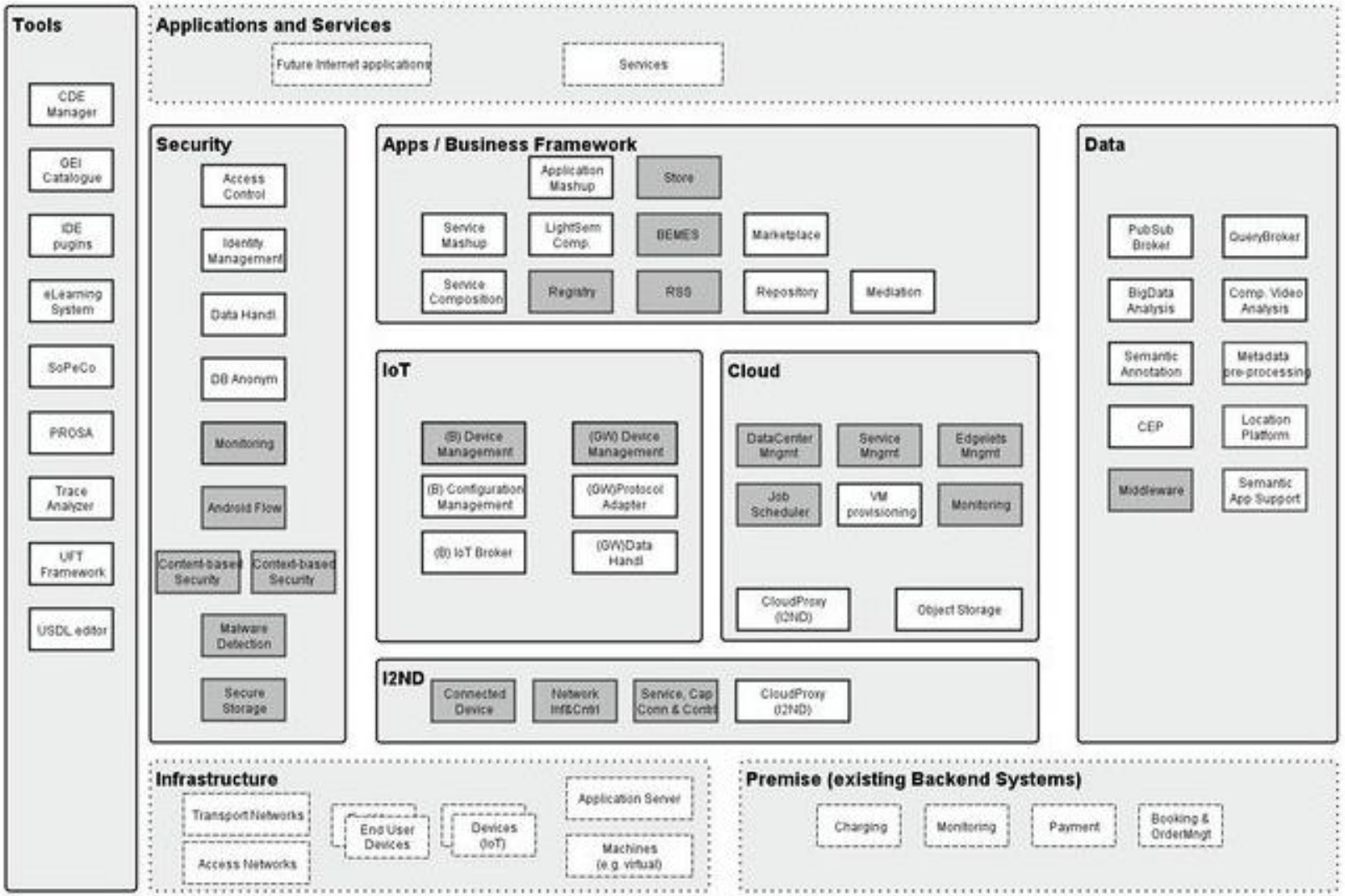
What's that ?

FI-WARE, FI-Lab, FI-Ops: what's that?

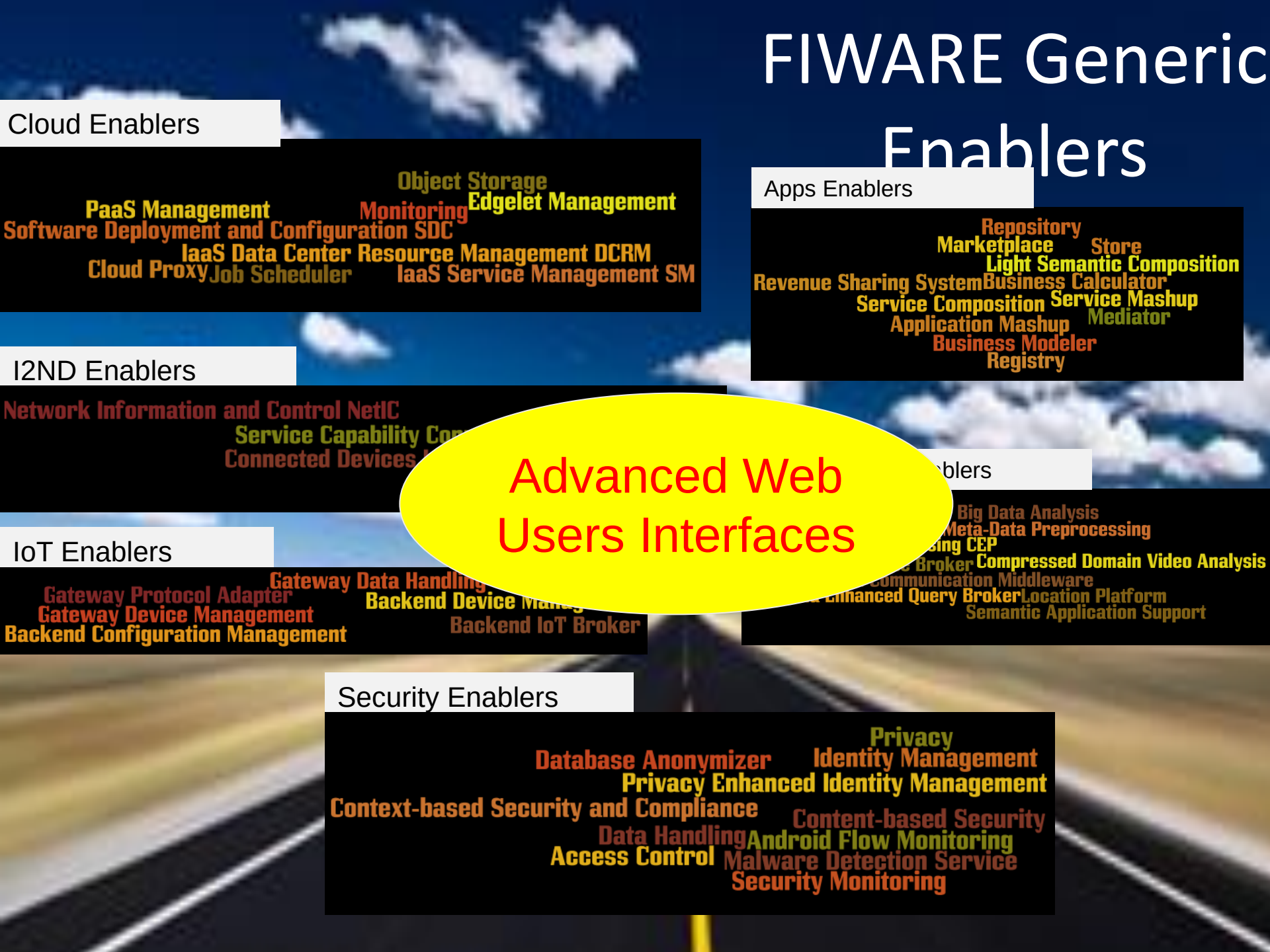
➔ They are 3 products

- FI-WARE:
  - Provide Generic Enablers
  - Something you can use in different ways for your « own »platform
  - Common part to break the silos
- FI-Lab
  - A sandbox to test and use Generic Enablers
  - Cloud facilities distributed through Europe (5+12 data centers)
  - What you get: free Virtual Machines (5) + 10Gb + **real data from Smart Cities**
- FI-Ops: for platform providers
  - Tools to deploy and federate the data centers using FI-WARE framework

FI-WARE: architecture overview



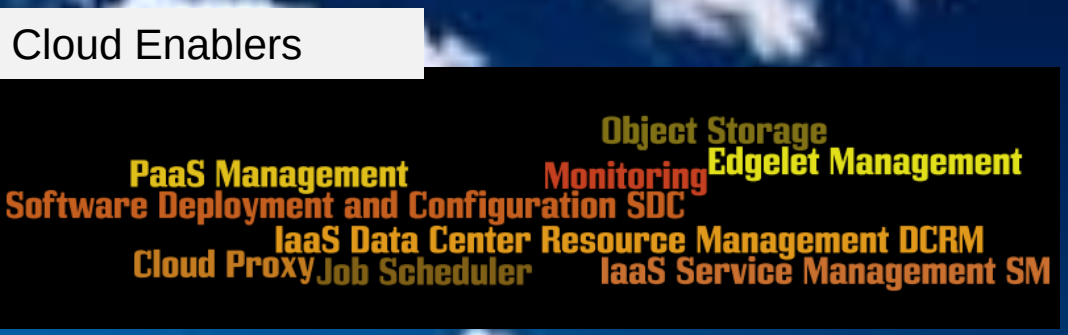
FIWARE Generic Enablers

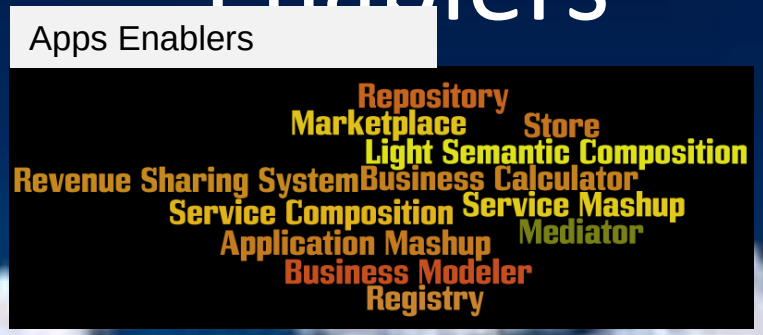


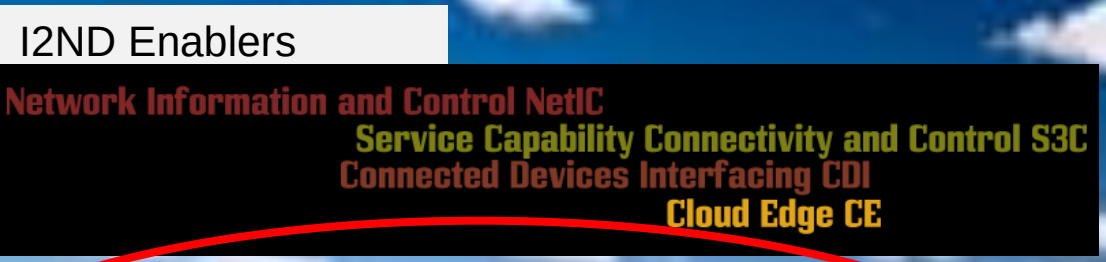
Open Specs and API: opportunities for SMEs

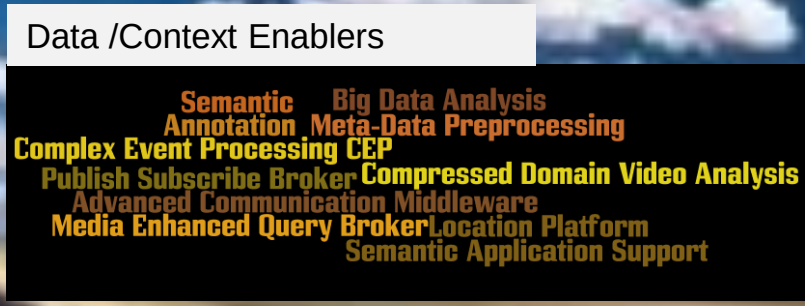
- Open Secs: **FREE**
  - Documentation is available
  - You can understand the main features of a Generic Enabler: (can be re-use for multiple verticals and associated service platforms)
  - Your comments are more than welcome!
  - Become part of the community and share with us, and with your ecosystem
- API: **FREE**
  - For your developers to plug your own software on top of Generic Enablers
  - To develop your own instances of Generic Enablers and be compliant & interoperable
  - Open or create your platform/services to/for other verticals
  - Again, your comments and contributions are more than welcome!
- **Licence models (for concrete software)**
  - 70% are now in Open Source => you can contribute !

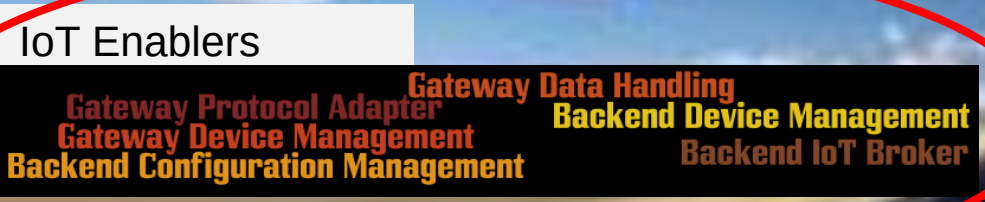
FIWARE Generic Enablers

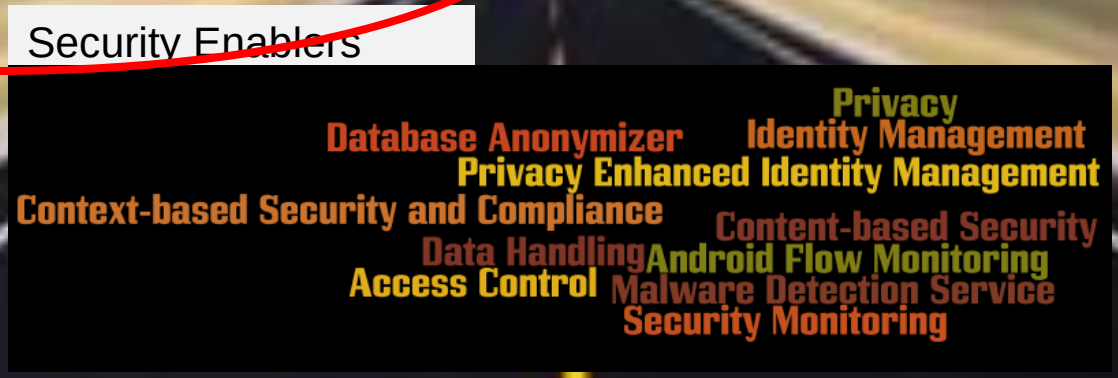






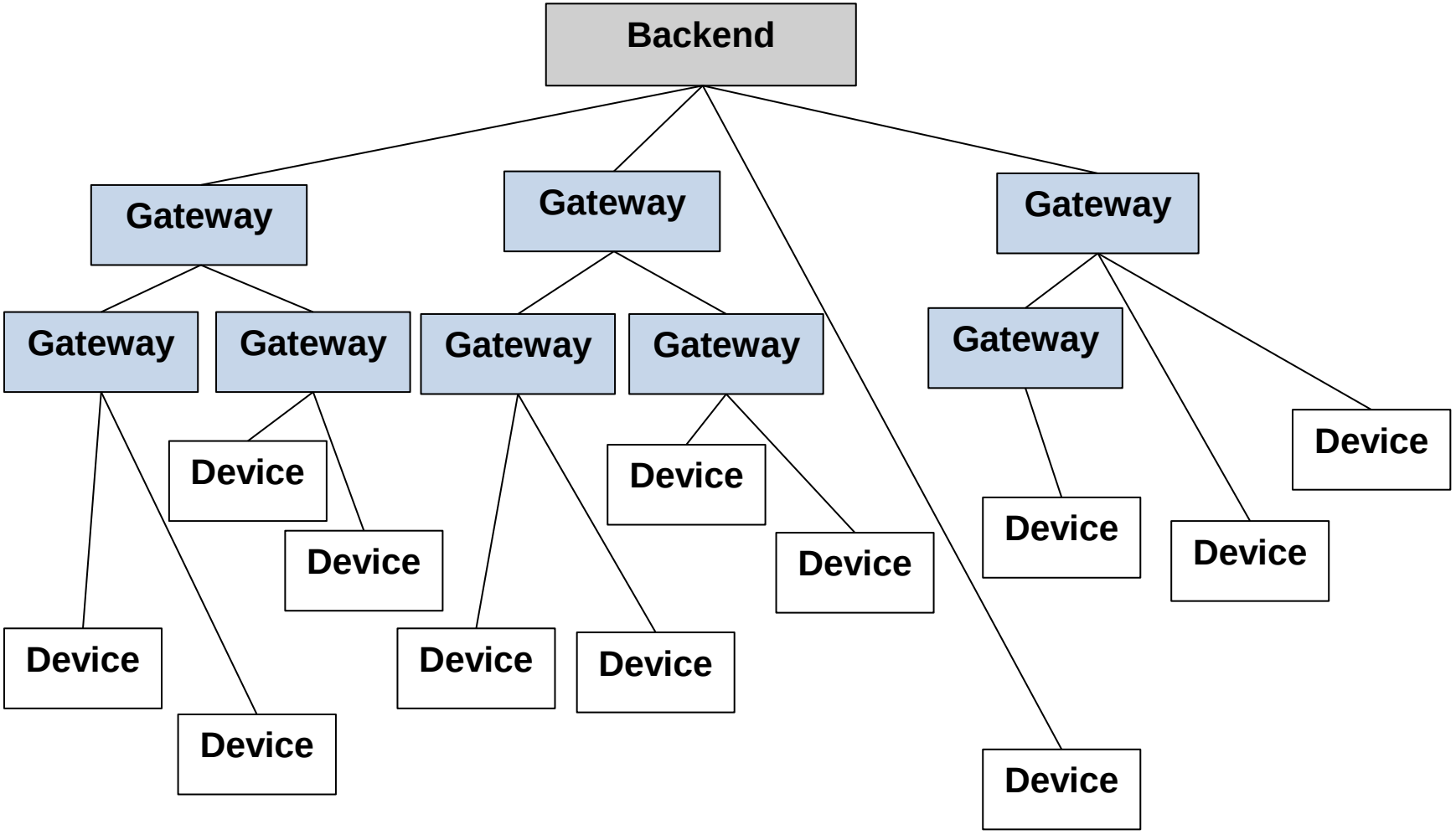






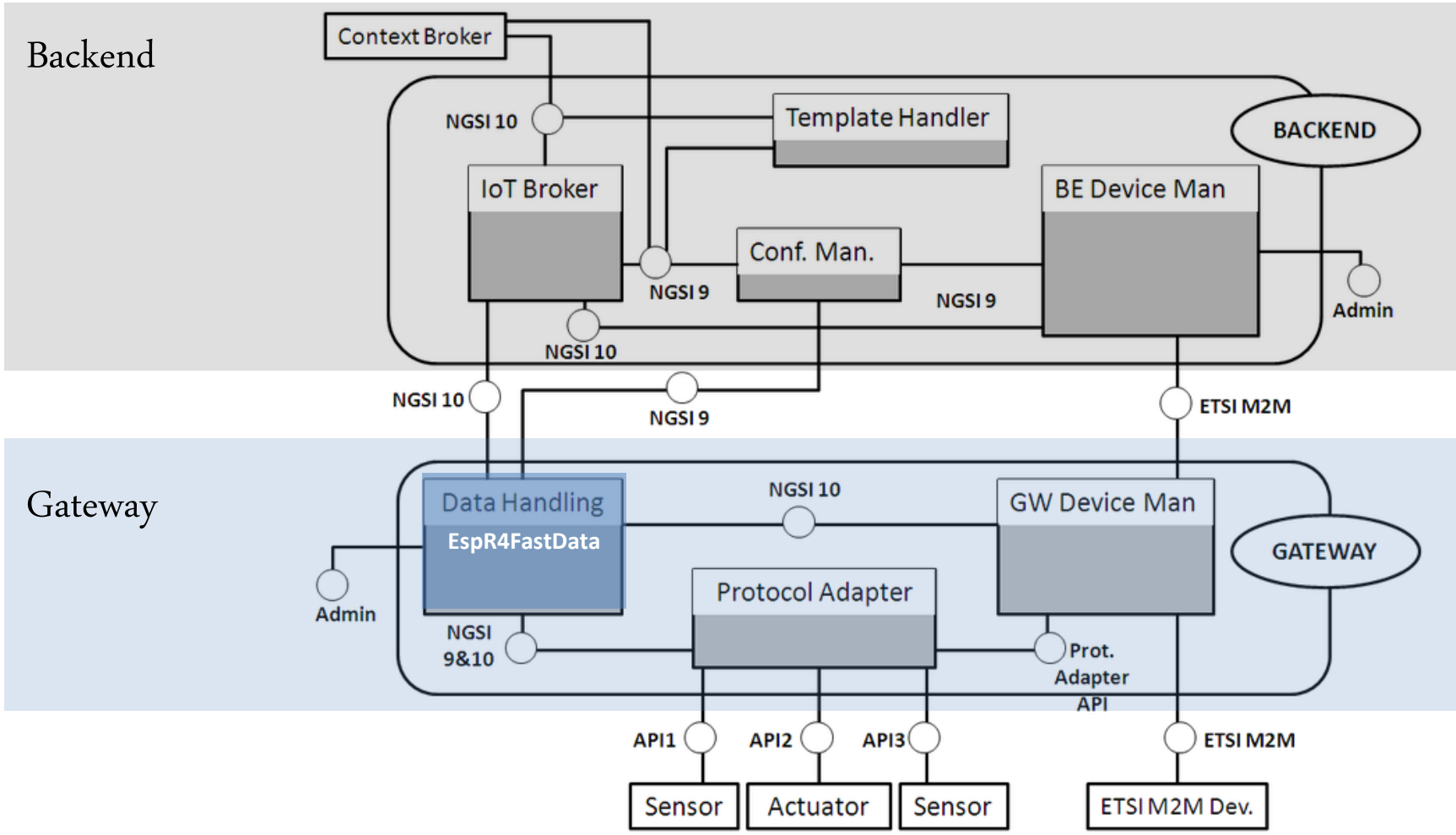
FIWARE IoT Chapter

Gateways



FIWARE IoT Chapter

Location of the Data Handling GE



Internet of Things (2)

- Multiple implementations are linked to industrial partners technical choices
- Backend Configuration Manager: Orion vs IoT Discovery
  - **Orion** is a fully integrated version of Configuration Manager (IoT) and Context Broker (Data & Context Management)
  - **IoT Discovery** is a Configuration Manager with optional features as geographical discovery (which are the things in this geographical area)
- Gateway Protocol Adapter
  - At least one instance per specific protocol
  - Available: Zigbee, Coap & EPC Global (RFID)
- Other examples in other technical chapters:
  - Security: Identity Management
  - Data & Context Management: Context Broker

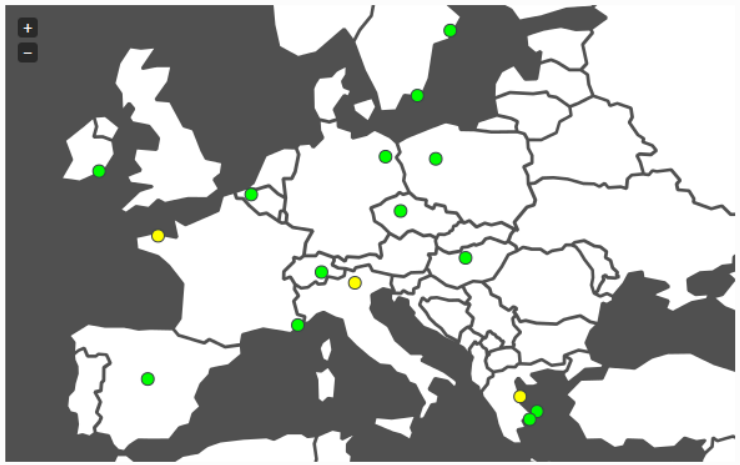
Phase 2 = Large Scale Trials

Phase 2
Use case trial sites

FI-WARE Nodes

FIWARE Lab Cloud Store Mashup Data Account Help&info Login

Nodes



Node	Overall	Nova	Neutron	Cinder	Glance	Keystone P.	Support
Lannion							
Trento							
Prague							
Gent							
Budapest							
NITOS-UTH							
Berlin							
Poznan							
Stockholm							
C4I							
Spain							
Waterford							
Karlskrona							
Zurich							
ATHENS_UPRC							
Athens_Neuropublic							

FI-Ops

Easing your operations

Phase 3 = Adoption

FI Accelerators

Geographical Coverage:

= Country

= City

European cities/regions

- Amsterdam
- Barcelone
- Bruxelles
- Birmingham
- Florence
- Rotterdam
- Valladolid
- Helsinki
- Trente
- Guildford
- Maribor
- Messine
- Stockholm
- Århus
- Berlin
- Vojvodina
- Oulu
- Murcie
- Málaga
- Paris
- Cracovie

Regional involvment

- FI-Links conducted a study over 180 regions with the objective to identify which should be the most attractive regions in order to help them in activating developers ecosystems to develop innovative applications on FI-WARE.
- Criteria used were :
  - ICT as one of the top smart specialisation topic
  - European ICT Pole of Excellence (EIPE)
  - Already involved in FI-PPP (experiment, nodes, accelerators)
  - Having an active ICT cluster
- The winners are :
  - Berlin : 4 points
  - Brittany, Rhône-Alpes, Piedmont, Tuscany, Andalusia, Madrid, Skåne : 3 points
  - Paris, Vienna, Bruxelles capitale, Midtjylland, Region North Jutland, Aquitaine, Auvergne, Nord, Guyane,Midi-Pyrénées, Poitou-Charentes, Provence-Alpes-Côte d'Azur, Helsinki-Uusimaa, Bavaria, North Rhine-Westphalia, Lombardy-Brianza, Greater Poland Voivodeship, Lublin Voivodeship, Masovian, Voivodeship, Pomeranian Voivodeship, Aragon, Canary Islands, Catalonia, Comunidad Valenciana, Extremadura, Galicia, País Vasco, Gävleborg, Värmland, Västerbotten, West Midlands : 2 points

Action plan in France

- France has been identified as a relevant country and 3 regions has been contacted due to their ecosystems of ICT actors :
  - Brittany with the Pôle Image&Réseaux which is already involved as one of the FI-Ops node and also in one accelerator (FI-C3), a startup Week End is organised 13-16 November in Rennes
  - PACA with Pôle SCS which is already offering a FI-Ops node
  - Ile de France with Pôle Cap Digital and Systematics which are active in promoting the FI-WARE technologies to their members

➔ **The objective of FI-LINKS is to help FI-WARE to become sustainable in these French regions**

FI-LINKS contribution to WP14-2016
IoT Topics

- In the IoT domain, there are a number of adapters to different IoT gateway protocols and devices but more could be done there as well. For example, Device Management, OS for devices, semantics at the device level, peer2peer communication between objects, could be added.
- Links to 5G networks including SDN/NFV is mandatory
- Security mechanisms should be studied for

Thank you for your attention!

FIWARE websites

- Everything is on www.fi-ware.org
- But you have other interesting entry points:
  - catalogue.fi-ware.org a kind of executive summary per Generic Enabler
  - edu.fi-ware.org the e-Learning platform to discover Generic Enablers Features
  - wiki.fi-ware.org the place to find many more details

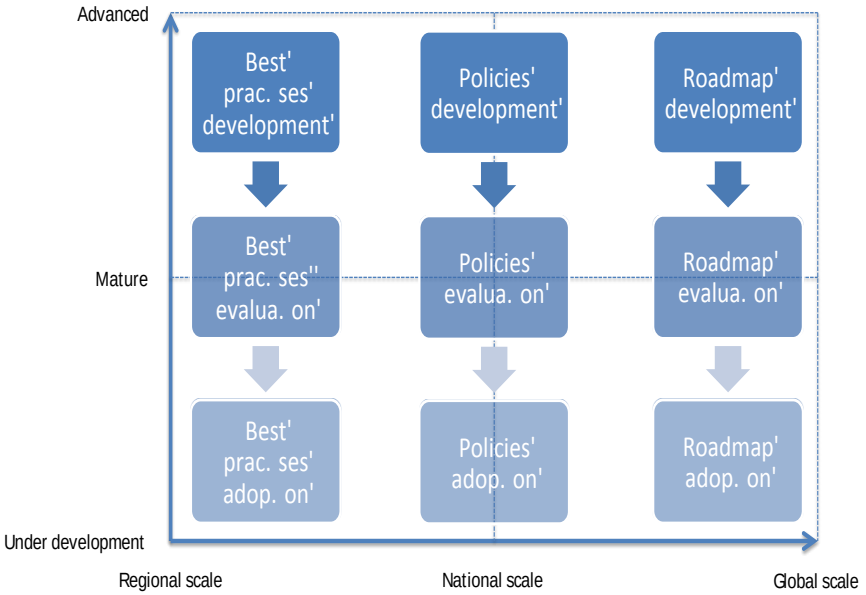
- And then, you will be able to create your account on FI-Lab to play and test Generic Enablers
  - lab.fi-ware.org

FI-LINKS Activities

1. **Develop a consistent roadmap of the technical and business directions** of the Future Internet research and innovation and the road ahead:
   - Benchmark the quality of FI-PPP technologies and business models against the equivalent research and innovation schemes in the international domain
   - promote the establishment of a shared medium (2020) and long-term (2030) vision for FI technologies.
2. **Promote the adoption of FI-PPP technologies across Europe and beyond Europe (**mainly Latin America – e.g. Chile, Guatemala, Mexico, Argentina, etc. – Canada, Brazil, India,…Japan? and collaborate with US when needed**) evangelising on the further development** of the FI-PPP
3. **Engage the relevant stakeholders** in the global and EU regional context
4. **Identify and profile potential issues** regarding **specific policies** or regulation by comparing the policies in the European regions and feed the FI-LINKS roadmap
5. **Ensuring broad visibility** of the FI-PPP via FI-LINKS activities by promoting FI-PPP results in the European Future Internet (FI) scene and beyond, and organize relevant European-wide workshops.

From regional to global scale impact

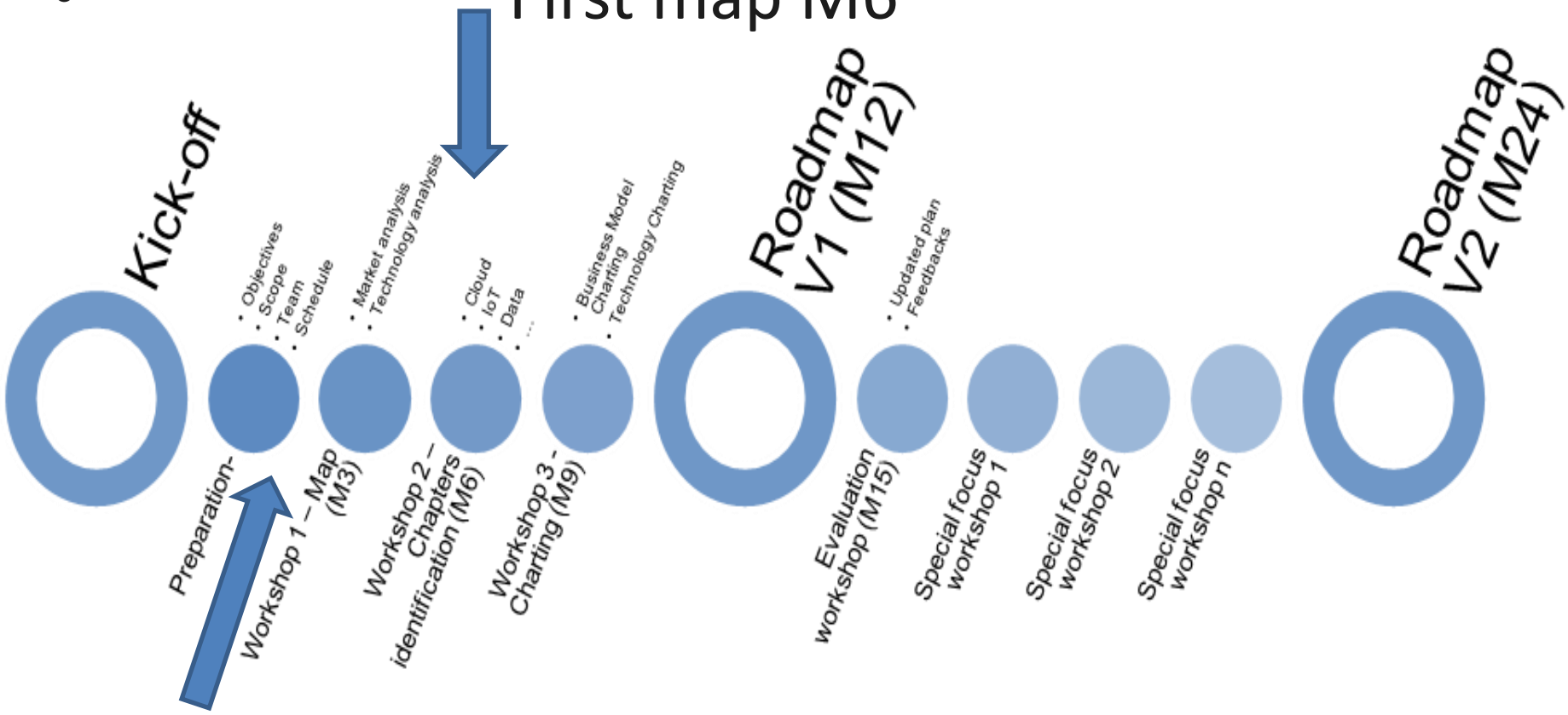
- Understanding global context and expose it in a Technology and Business FI roadmap, aimed at informing about FI deployment directions
  - a valuable asset to EU industries and to EU public bodies in order to define future plans for technology development and adoptions
- FI-LINKS will play a crucial role in benefiting less mature FI communities, (such as the ones in the SouthAmerica) and allowing them to join a mature and open source platform for the creation of FI-PPP based solutions in their countries



- Policies and best practices will be of particular added value for EU regions (and hence public bodies), to develop a short actions to favourite the adoption of FI technologies (short-medium term impact) and help the roadmap.
- Organizing EU-wide strong events and workshops with the relevant players to ensure the evangelization and adoption of FI-PPP

Roadmap timeline

- First map M6



Input to workprogramme M2 (deadline 10th July)

The FI-LINKS Project Overview

- An integral part of the FP7 FI-PPP Program of projects dedicated to promoting the "future internet" for Europe
- A Coordination Action
- Runs (estimated) from June 2014 → May 2016 *(2 years)*
- Supported by €1.4 m funding from the EC
- 7 Partners (Coordinator: UPM) *+ collaboration external experts/relevant organizations in the selected third countries countries*