



Funded by the Seventh  
Framework Programme of the  
European Union



# Future Internet Public-Private Partnership

The programme for Internet-enabled innovation in Europe



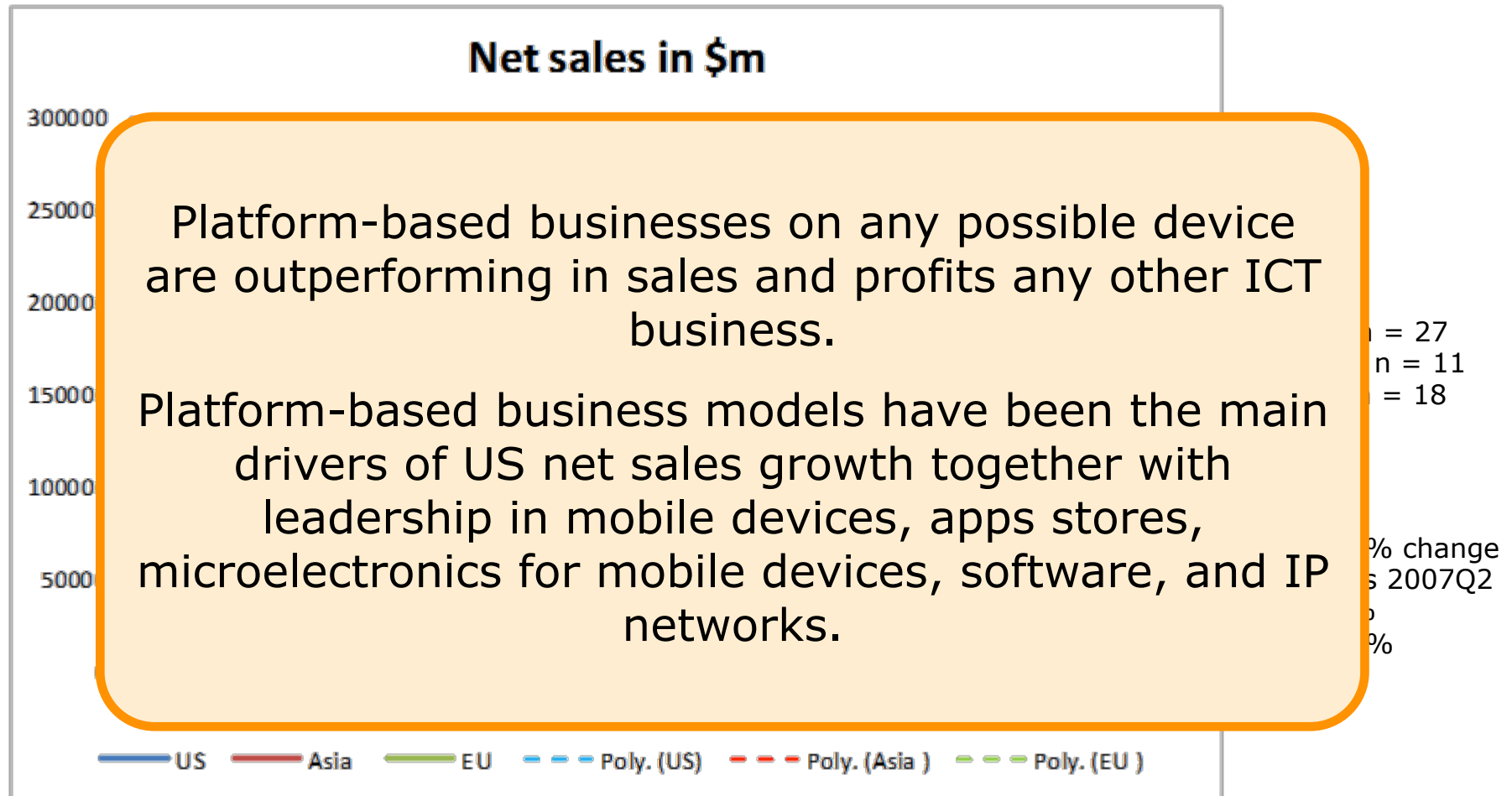
# Future Internet

Public-  
Private  
Partnership

## The Programme

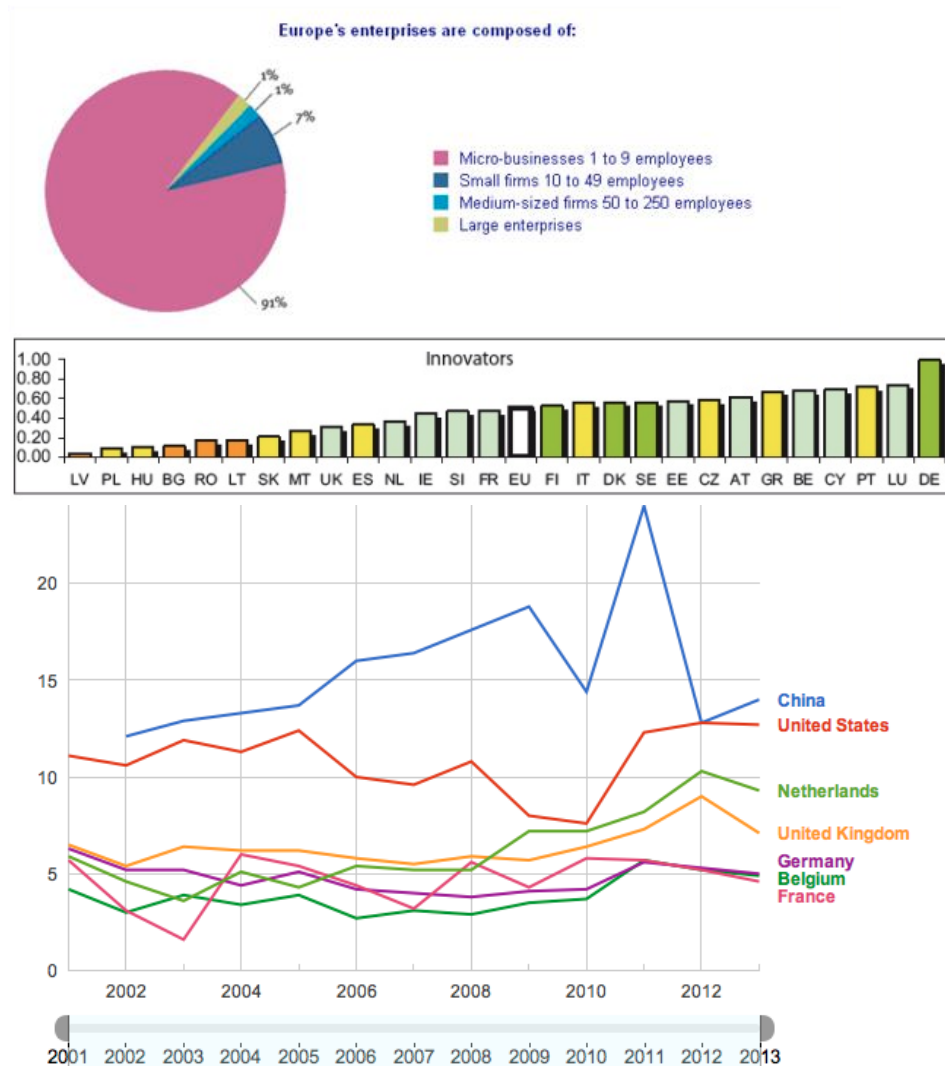
# The ICT world is changing

Sample of 50+ global ICT firms



Source: European Commission

# Importance of SMEs and entrepreneurs



Sources: EU, OECD, GERA

- 99% of EU enterprises are SMEs
- 50% of SMEs involved in innovation
- 8% are active across national borders
- 5-10% of working force are involved in entrepreneurship

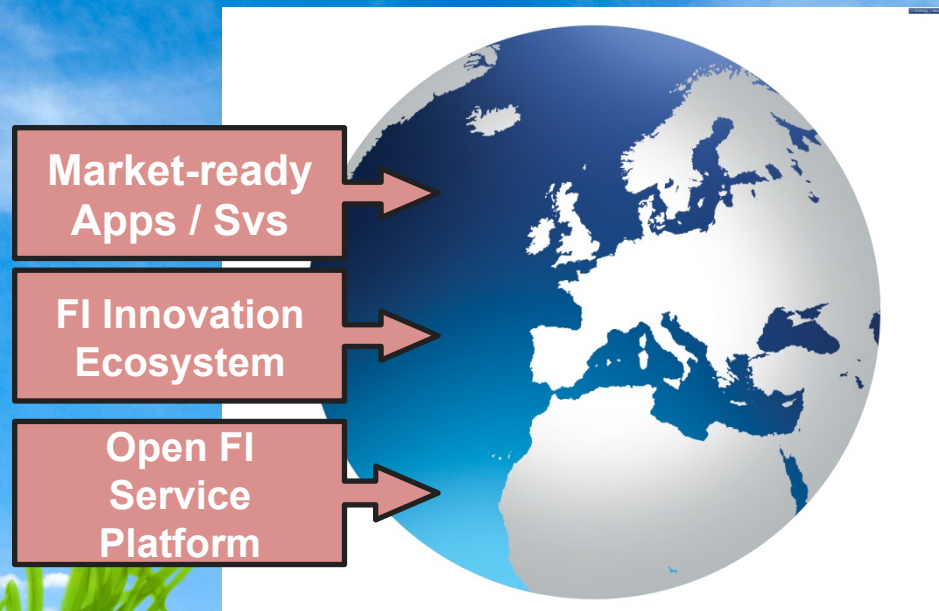


# Major problems for SMEs today

- How to come up with innovative services and features?
- How to take advantage of (Future) Internet?
- How to do business beyond my national border?
- How to come up with the right business model?



# Future Internet PPP for EU



# Main goals of the FI-PPP



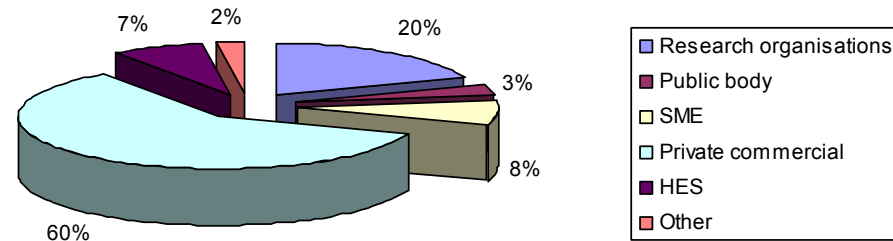
FreeDigitalPhotos.net

- Deliver validated Internet services on consistent and compatible platforms through usage area projects
- Provide a large selection of reusable key technology enablers, called Generic Enablers
- Validate Generic Enablers via large-scale service and application use case trials in different business sectors

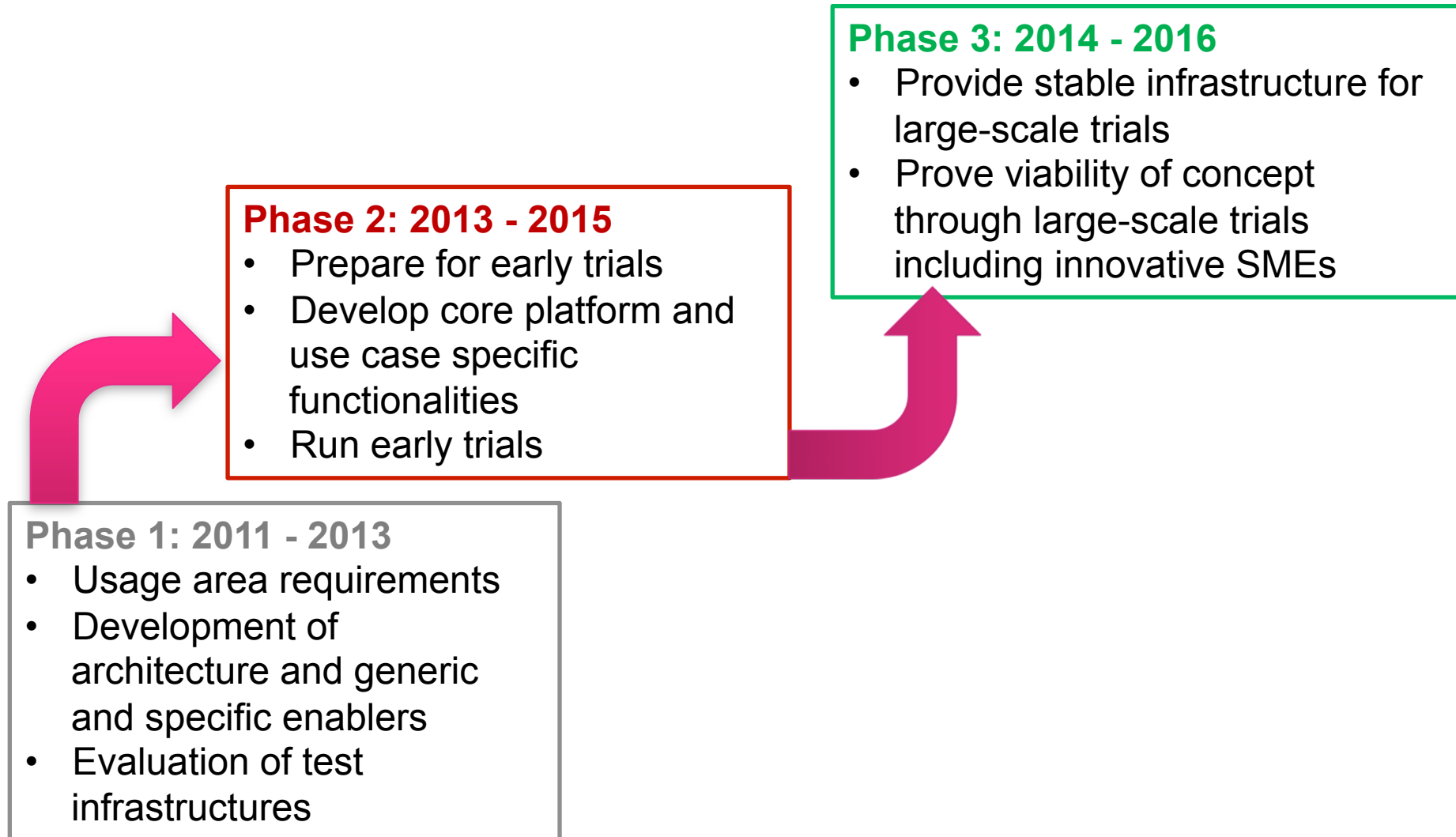
# FI-PPP investment since 2011

- Total investment by industry and public sector: 500 million euro (incl. 300 million euro by EC)
- Partner organizations and companies: 250+
- Industry share in the programme: 68%+
- Countries represented: 23+

Participant Type (by EC funding)



# Three phases of the FI-PPP



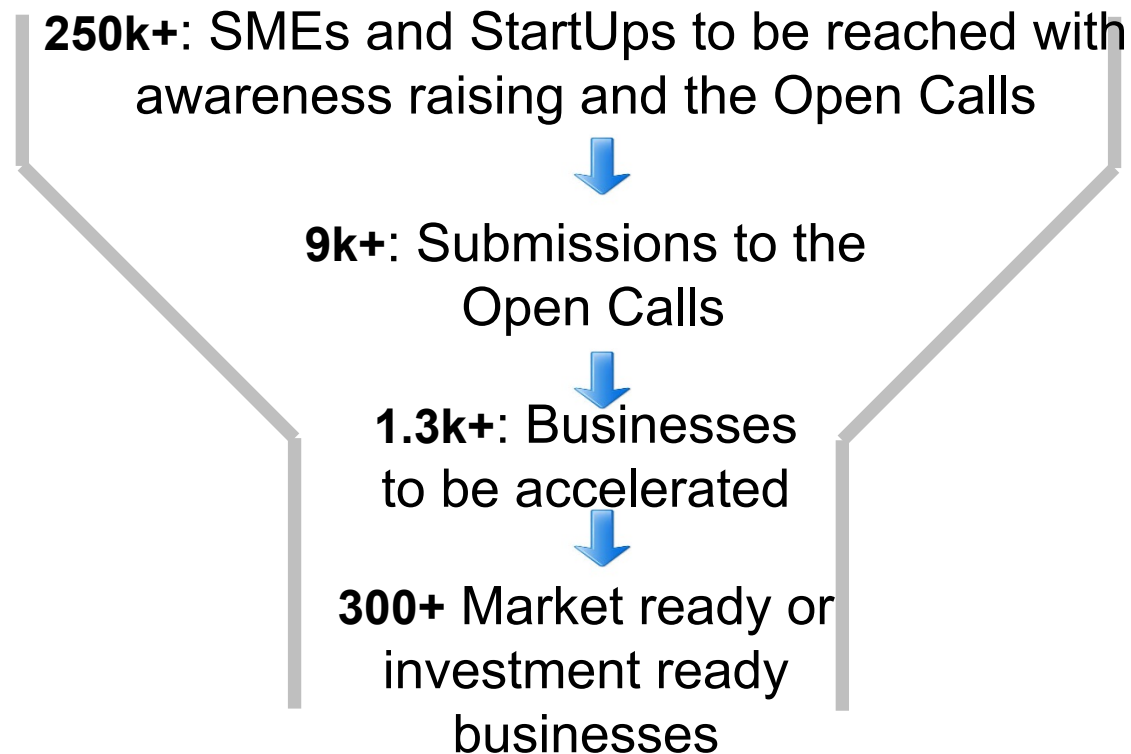


# 80 million euros for innovative SMEs in Phase 3



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# Phase 3: Future Internet Accelerators



# Future Internet

Public-  
Private  
Partnership

**FI-WARE for SMEs and  
Web Entrepreneurs**

FI: Access from everywhere, making the most of the network and capabilities of devices





# FI: Gathering, publishing, processing and analyzing private and open data at large scale





# FI: Easing connection to the physical world



# FI: Ensuring Privacy, Security and Trust





# FI: Enabling Co-Creation through advanced Data/Services Composition and Mashup



# FI: Offering rich web-based user interfaces





# FI: Reaching target users, monetize





# FI-WARE = Advanced OpenStack-based Cloud + Rich library of Generic Enablers



# FI-WARE: Matching developer needs

## What

**Rich web-based User Experience**

**Connect apps to the physical world**

**Manage open data at large scale and transform it into knowledge**

**Benefit from open innovation (crowd-sourcing, apps composition)**

**Reach target users, monetize**

**Ensuring Privacy, Security and Trust**

**Take the most of infrastructures while keeping costs lower and under control**

**access from everywhere, adapt to devices**



## How

**Advanced UI Enablers**

**IoT-M2M Enablers**

**Data/Context Enablers**

**Integration and Composition Enablers**

**Business & Delivery Framework (revenue-share, cross-selling, ...)**

**Security Enablers**

**Advanced Cloud Enablers**

**Enablers easing interface to Network and Devices**

**Built-in APIs & tools**

# FI-WARE Generic Enablers

## Cloud Enablers

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

## I2ND Enablers

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

## IoT Enablers

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

## Security Enablers

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

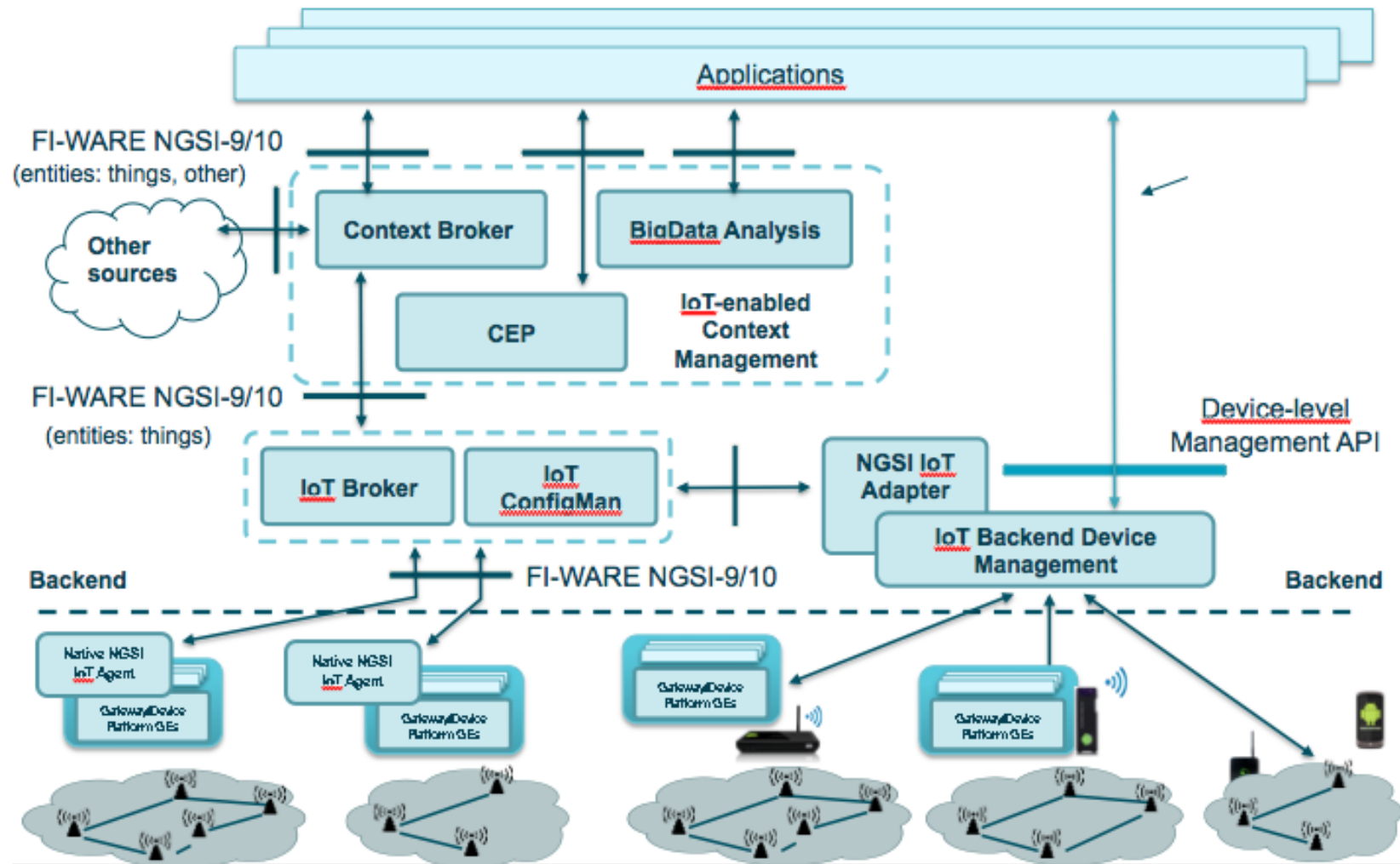
## Apps Enablers

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

## Data /Context Enablers

Semantic  
Big Data Analysis  
Annotation  
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

# FI-WARE Context-IoT-M2M enabler framework





# Free APIs & Open Specs available



Welcome to the FI-WARE Catalogue! Here you will find all the information, documentation and tools you need as a developer to start using a Generic Enabler Implementation.

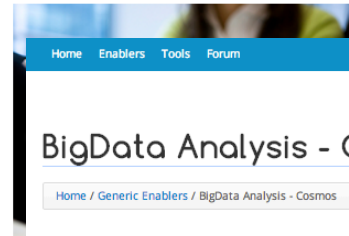
## About the Catalogue



## View the Enablers



## Tools



## Security Monitoring

Home / Generic Enablers / Security Monitoring

Overview Creating Instances Documentation Downloads Instances Terms and conditions

### Service Level SIEM (SLS)

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## Access Control - THA Implementa

Home / Generic Enablers / Access Control - THA Implementation

Overview Creating Instances Documentation Downloads Instances Terms and



### What you get

The API allows to manage authorization policies, and based c for requests to REST APIs of other GES/services in FI-WARE. T REST architecture style, and uses the XACML (eXtensible Acc policy syntax and evaluation, as well as for the authorization



Chapter:  
Data/Context Management  
Version:  
Updated:  
2013-10-24  
Rating:  
Average: 5 (1 vote)  
Contact Person:  
Francisco Romero Bueno  
frb@tid.es

Please login to be able to subscribe to this GEI.

### What you get

Cosmos is an Implementation of the Big Data GE, and it is based on Hadoop ecosystem. Current version of Cosmos allows users to:

- Upload big data files to HDFS by means of a SFTP injection server.
- Upload big data files to HDFS by means of HttpFS (in addition to standar WebHDFS).
- Upload and run MapReduce Jobs from the Master node.

There is also a module in charge of receiving context data from Orion (Context Broker GE Implementation) and storing it in HDFS.

### Why to get it

Big Data processing is the technology used to process huge amounts of previously stored data in order to get relevant insights in scenarios where latency is not a highly relevant parameter. These insights take the form of newly generated data, which will be at disposal of applications using the same mechanisms through which initially stored data is available. If you are developing a data scenario which such requirements, Cosmos is the tool you are looking for.

### Open specification reference

The Open Specification of the GE can be found via the FI-WARE website.



# FI-WARE, FI-LABS, FI-OPS



- FI-WARE: A catalogue of Generic Enablers
- FI-Lab: A free sandbox to test and use Generic Enablers
- FI-Ops: Tools to deploy the FI-WARE framework



# Everything is on fi-ware.org

**FI-WARE**  
OPEN APIs FOR OPEN MINDS

HOME ABOUT ▾ BLOG **CATALOGUE** **FI-LAB** **DEVELOPERS** ▾ CONTACT

Search

**€200,000 in prizes for social apps**

**FI-WARE**

EDUCATION SOCIAL INCLUSION  
CITIZENSHIP CROWDSOURCING  
HEALTH

Participate until April 24<sup>th</sup>

Present your idea for the **Smart Society Challenge** #FIware800k

Campus Party™

**FEATURED VIDEO**

FI-WARE AND ENTREPRENEURSHIP

**FOLLOW US ON TWITTER**

**Tweets** Follow

**Carlos Ralli Ucendo** 14 Apr  
@carlosralli  
On my way to Santander to talk on @FIware at Jornadas Atlánticas event.  
Retweeted by FI-WARE  
Expand

**FI-WARE** 23h  
@FIware  
VIDEOS| FI-WARE, FI-Lab and

FI-WARE is an innovative, open cloud-based infrastructure for cost-effective creation and delivery of Future Internet applications and services, at a scale not seen before. FI-WARE API specifications are public and royalty-free, driven by the development of an open source reference implementation which accelerates the availability of commercial products and services based on FI-WARE technologies.

# Wiki.fi-ware.org

## FI-WARE Architecture

Following is a description of the Reference Architecture linked to the Enablers (GEs) being supported in each chapter is provided, including the Enabler (GE) exposes to application developers or it uses to connect.

- Cloud Hosting
- Data/Context Management
- Internet of Things (IoT) Services Enablement
- Applications/Services Ecosystem and Delivery Framework
- Security
- Interface to Networks and Devices (I2ND)

### Security Chapter

- Security-Monitoring: Mulval Attack Path Engine Open API Specification
- Security-Monitoring: Mulval Attack Path Engine Web Application Open API Specification
- Security-Monitoring: Scored Attack Paths Open API Specification
- Security-Monitoring: Remediation Open API Specification
- Security-Monitoring: Service Level SIEM Open API Specification
- Security-Monitoring: IoT Fuzzer Open API Specification
- Security-Monitoring: Android Vulnerability Assessment Open API Specification
- Identity Management Open API Specification
- Privacy Open RESTful API Specification
- Data Handling Open RESTful API Specification
- Access Control Authorization Open RESTful API Specification
- Context-based Security & Compliance Open RESTful API Specification
- DBAnonymizer Open RESTful API Specification
- Secure Storage Service Open API Specification
- Content Based Security Open RESTful API Specification
- Malware Detection Service Open API Specification
- Android Flow Monitoring Open Specification



### Cloud Hosting Chapter

- FIWARE.OpenSpecification.Cloud.DCRM
- FIWARE.OpenSpecification.Cloud.SM
- FIWARE.OpenSpecification.Cloud.SelfServiceInterfaces
- FIWARE.OpenSpecification.Cloud.CloudEdge
- FIWARE.OpenSpecification.Cloud.ObjectStorage
- FIWARE.OpenSpecification.Cloud.SDC
- FIWARE.OpenSpecification.Cloud.PaaS
- FIWARE.OpenSpecification.Cloud.Monitoring
- FIWARE.OpenSpecification.Cloud.JobScheduler
- FIWARE.OpenSpecification.Cloud.Edgelets

Open  
Specs

### Data/Context Management Chapter

- FIWARE.OpenSpecification.Data.BigData
- FIWARE.OpenSpecification.Data.PubSub
- FIWARE.OpenSpecification.Data.CEP
- FIWARE.OpenSpecification.Data.Location
- FIWARE.OpenSpecification.Data.MetadataPreprocessing
- FIWARE.OpenSpecification.Data.CompressedDomainVideoAnalysis
- FIWARE.OpenSpecification.Data.QueryBroker
- FIWARE.OpenSpecification.Data.SemanticAnnotation
- FIWARE.OpenSpecification.Data.SemanticSupport
- FIWARE.OpenSpecification.Data.Middleware

## Materializing the FI-WARE Vision



- Materializing Cloud Hosting in FI-WARE
- Materializing Data/Context Management in FI-WARE
- Materializing Internet of Things (IoT) Services
- Materializing Applications/Services Ecosystem
- Materializing Security in FI-WARE
- Materializing the Interface to Networks and Devices
- Materializing Advanced User Interfaces in FI-WARE
- Materializing Common base technologies in FI-WARE
- Materializing FI-WARE Cross-Chapter functions

From description  
to  
concrete softwares

# Edu.fi-ware.org

- Detailed courses per Generic Enabler

You are currently using guest access (Login)



Home Available Courses My Courses My Dates My Activities News

Home ► ...tData - GE location within the FiWare architecture

**Navigation**

- Home
- Site pages
- ▼ Current course
  - ▼ **...tData - GE location within the FiWare architecture**
    - Participants
    - General
    - ...tData - GE location within the FiWare architecture
    - ...GE - Esper4FastData - Introduction to CEP concepts

**News forum**

**Gateway Data Handling GE - Esper4FastData - GE location within the FiWare architecture**

Gateway Data Handling GE - Esper4FastData - GE location within the FiWare architecture

**Gateway Data Handling GE - Esper4FastData - Introduction to CEP concepts**

Gateway Data Handling GE - Esper4FastData - Introduction to CEP concepts

**Gateway Data Handling GE - Esper4FastData - Quickstart**

Gateway Data Handling GE - Esper4FastData - Quickstart

**Search forums**

**Go**

Advanced search

**Latest news**

(No news has been posted yet)

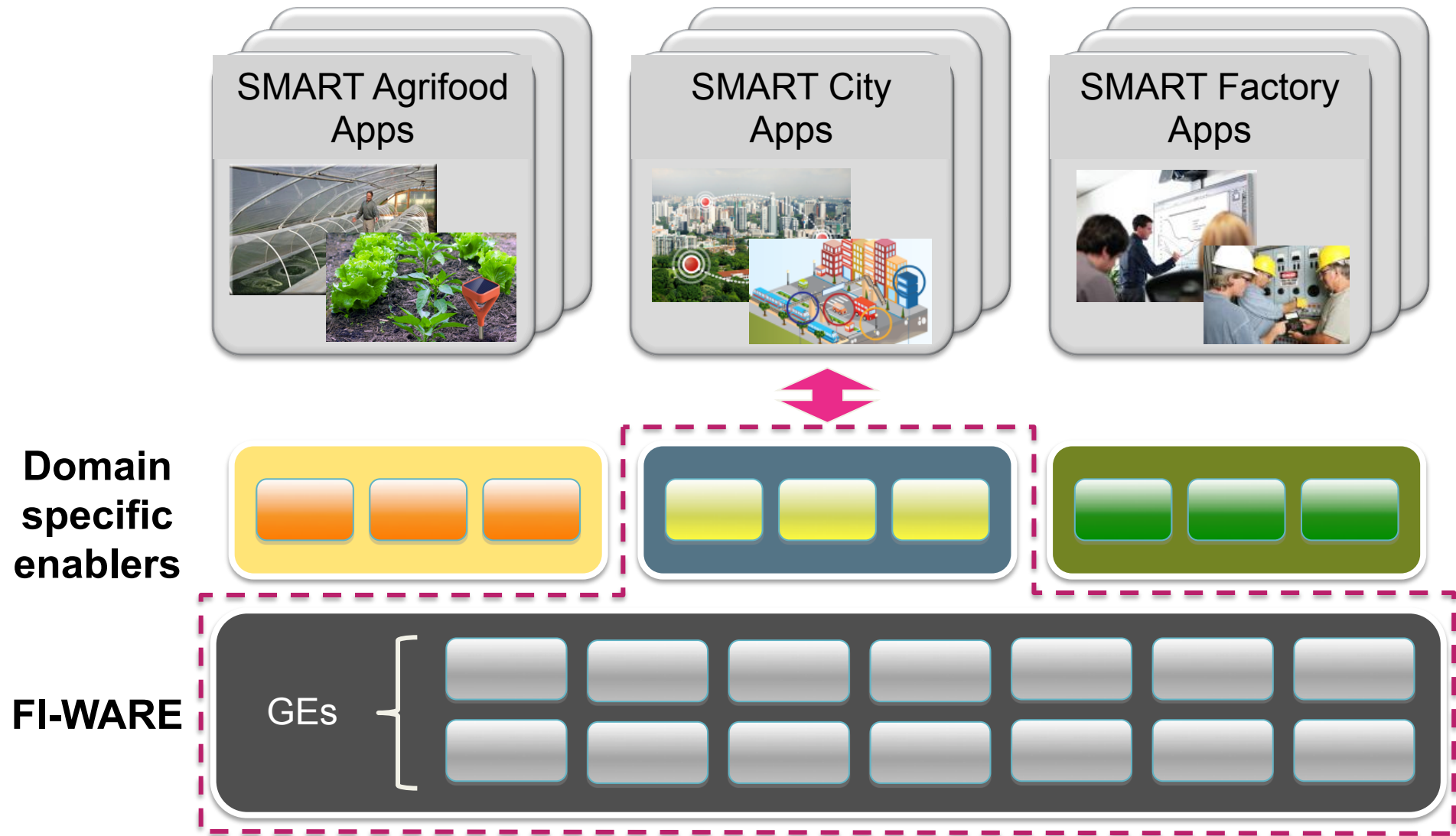
**Upcoming events**

There are no upcoming events

Go to calendar...



# FI-WARE: Commercial instances + Specific enablers already underway










# Future Internet

Public-  
Private  
Partnership

**FI-WARE brought to you  
by iMinds**

# iMinds as gateway to FI-WARE:

## 4 Accelerator projects

<p><b>CreatiFI</b></p>   <p><b>2 open calls</b> focusing on Prototype Design &amp; Development (phase 1) and Commercial Development &amp; Acceleration (phase 2)</p> <p><u>Funding:</u> max. €150k per project</p>	<p><b>FI-C3</b></p>    <p><b>3 open calls</b></p> <p><u>Funding:</u> max. €50k for individuals and €150k for SME's</p>
<p><b>FABulous</b></p>  <p><b>2 open calls</b>, focusing on the 4 following FI-based areas:</p> <ul style="list-style-type: none"><li>• Crowd-sourcing design tools and services</li><li>• Cloud based design tools and services, including IPR management</li><li>• 3D printing mobile apps &amp; services</li><li>• Logistics &amp; manufacturing tools and services</li></ul> <p><u>Funding:</u> max €115k per project</p>	<p><b>Finish</b></p>  <p><b>2 open calls</b> focusing on Food Supply Chain</p> <p><u>Funding:</u> max €150k per project</p>

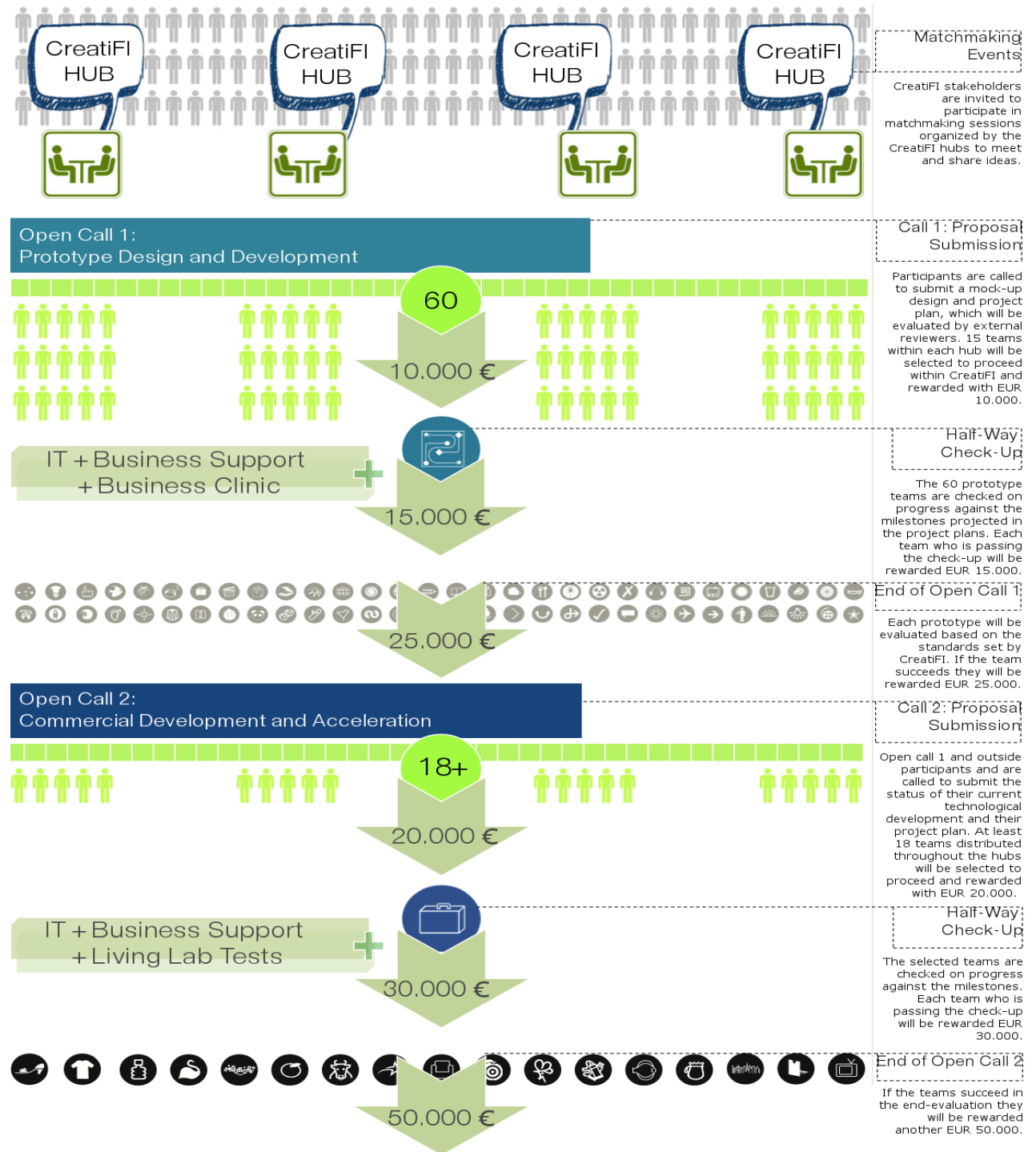
TOTAL BUDGET OF 20 mio€

# Timeline & Approach

- Timing
  - Sept14: Open Calls announcement
  - Oct-Nov14: All iMinds Calls are open
  - Dec14:  $\approx$  75 SMEs and web entrepreneurs selected
  - Jan15: you can start!
- Process
  - Sub-granting model (flexibility for SMEs)
  - Lightweight proposals, challenges
- Requirements
  - Focus your effort on YOUR business
  - Integrate innovation in your products/services
  - Use at least one Generic Enablers

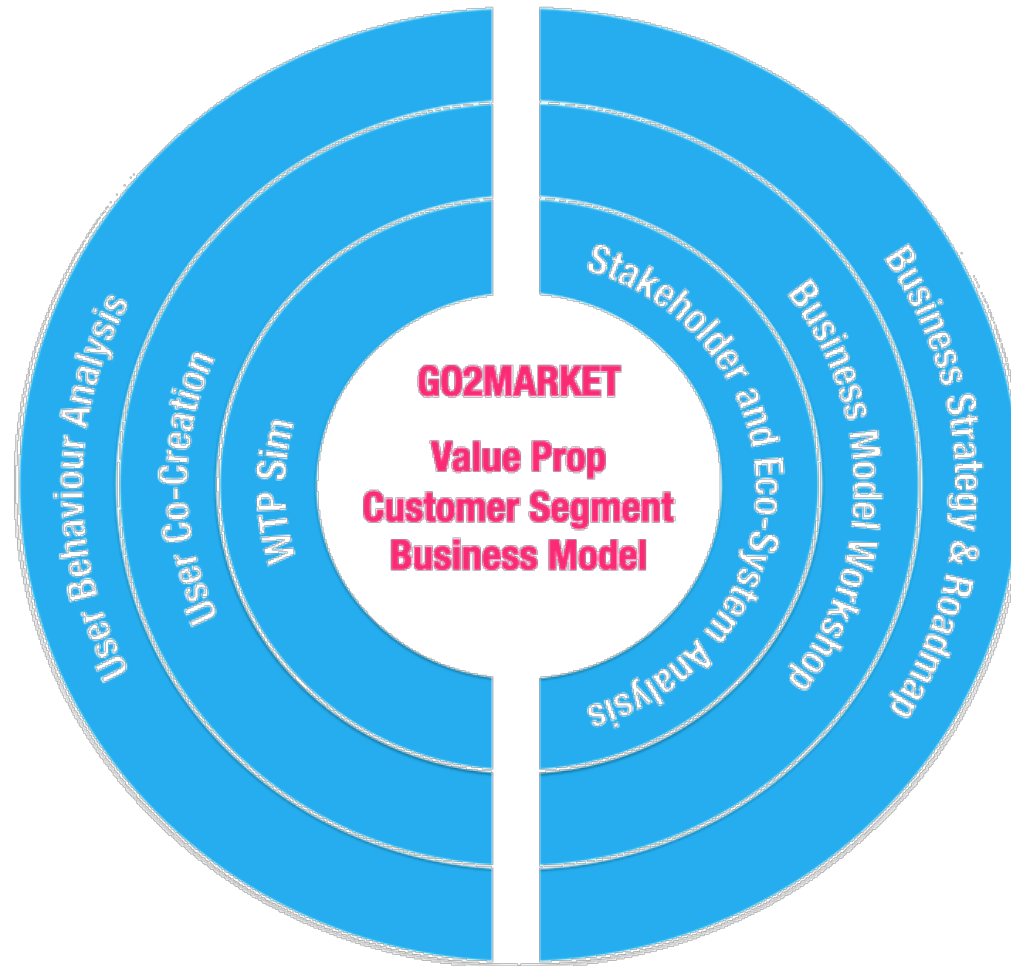


# Example: Open Calls in Creatifi



# iMinds Support for SME

**360° BUSINESS  
INNOVATION**



# Thank you! Contact?

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- [fi-ware@iminds.be](mailto:fi-ware@iminds.be)
- [www.iminds.be](http://www.iminds.be)