The Future Internet Public-Private Partnership (FI-PPP)

- The aim of the FI-PPP is to place Europe in the best position to capture new opportunities in the Future Internet, derived from digitalization of economy sectors.

- This requires creating a generic, open and standard platform (FIWARE) and meeting point (FILAB) around which a dynamic innovation ecosystem can be created engaging developers and entrepreneurs.

EC provides half of the funding: Industry driven, major industry players involved.

---

FACTS:
- €300 million investment by the European Commission & Programme participants
- 23 countries represented (2 from outside Europe)
- 158 partners
- 68% industry share
- 18 academic institutions

Open APIs for Open Minds

FIWARE
FI-Lab
A FIWARE Generic Enabler (GE):
- set of general-purpose **platform functions** available through **RESTfull APIs**
- Building with other GEs a **FIWARE Reference Architecture**

**FIWARE GE Specifications** are open (public and royalty-free)

**FIWARE GE implementation (FIWARE GEi):**
- Platform product that implements a given GE Open Spec
- There might be multiple compliant GEis of each GE Open Spec
- Available FIWARE GEis published on the **FIWARE Catalogue**

**The FIWARE project will deliver at least one reference implementation** of FIWARE GEs:
- Based upon results of previous R&D projects
- Publicly available **Technical Roadmap** updated in every release
- Licensed with no costs within the FI-PPP program
- Commercialized under FRAND conditions or license as open source
FIWARE: Targeting developers 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**

- Advance Web UI & middleware
- 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
FIWARE Instances

- Future Internet Applications run on top of “FIWARE Instances” that are built by “FIWARE Instance Providers” upon:
  - selection of FIWARE GEis (products) from the FIWARE Catalogue
  - assembly of selected FIWARE GEis with proprietary added-value products
FI-LAB (FIWARE Open Innovation Lab)

- FI-LAB will be a **case example of a FIWARE Instance**. It:
  - Provides [Cloud hosting](#) capabilities so third parties can run experimental Future Internet Applications and test them.
  - Make [Generic Enablers](#) implementations available for experimentation:
    - Global accessible instances provided “as a Service”
    - Deployable as dedicated instances by application providers using Cloud blueprint management functions.
  - Will be operated under central control and be accessible from a dedicated website.

- Entrepreneurs can setup accounts for free, adhering to certain terms and conditions for 9 months (other test usage limited to 2 weeks).

- Liaison with so-called application sponsors (e.g., cities) to enrich the environment.
Opportunities for all

Application sponsors (business, cities, etc)
- Connect to innovators
- Put their data at work
- Visibility, promotion
- Costs saving
- Better service to customers
- Corporate Reputation

Entrepreneurs, Developers
- Ability to test with real data
- Ability to run trials with real users
- Visibility, promotion
- Hosting of permanent showcase
- Connection to potential customers
- Acceleration of product development

FIWARE Technology Providers
- Added value to just the technology
- Connecting to entrepreneurs: Revenue-sharing opportunities
FIWARE Accelerator programs
Next: 80 M€ of funding for SMEs and Web entrepreneurs developing products on top of FIWARE:

- to be canalized through incubators, accelerators, SME associations
- projects starting end 2014
- 16 projects established to organize open calls for SMEs for different application domains (see next page)
- FICHe is one of these:
  - For Health domain
  - Lead from Oulu
  - Runs in three phases:
    1: 15k€ 80 teams 2 months Business model
    2: 50k€ 40 teams 3 months Proof of concept
    3: 150k€ 20 teams 7 months Proto development

Applications: http://www.f6s.com/fiware
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<td>01 Aug 15 – 30 Sep 15</td>
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<td>Health</td>
<td>Environment</td>
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<td>Smart Cities</td>
<td>Transport</td>
</tr>
</tbody>
</table>
| SpeedUp! Europe | Agriculture | Energy | Smart Cities               | 10 Sept 14 - 10 Dec 14 ]
Accelerator status

Overview of Proposals by Phase

Base: 14 accelerators

- Proposals Started: 5,784
- Proposals Submitted: 3,217
- Proposals Already Selected*: 346*

* = data available for 8 accelerators

Expected Applications: 3,025

15 Countries:
- Spain 25%
- Germany 10%
- Italy 9%
- Finland 4%
- Lithuania 4%
- Belgium 4%
- UK 4%
- Netherlands 4%
- Poland 3%
- Portugal 3%
- Denmark 3%
- Hungary 2%
- Greece 2%

Map showing top 15 countries based on proposals submitted.
Accelerator status

% of answers:
- **55%** Single Chapter
- **45%** Multiple Chapters

By Business Markets:
- Manufacturing
- Government
- Telecom Media
- Business Service
- Retail
- Art Entertainment
- Accommodation Food Service
- Marketing
- Education
- Transport
- Healthcare
- Utilities
- Agriculture

Consumer Targeted Sectors:
- Education Culture
- Health Wellness
- Other
- Leisure Gaming
FIWARE Technology
## Available FiWare Software (GEs)

### Apps:
- Application Mashup
- Light Semantic Composition Edit
- Marketplace
- Mediator
- Mediator
- Registry
- Repository
- Revenue Settlement and Sharing System
- Service Composition Engine
- Service Mashup
- Store
- Business Calculator
- Business Modeler

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<th>Wirecloud</th>
<th>COMPEL</th>
<th>SAP RI</th>
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<td>Factory</td>
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### Cloud:
- IaaS Data Center Resource Mgmt
- IaaS Service Management
- Cloud Proxy
- Self-Service Interfaces
- Object Storage
- SW Deployment And Config
- Monitoring
- PaaS Management
- Edgelets
- Job Scheduler
- Scalability Manager

<table>
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<th>Claudia</th>
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<th>Sagitta</th>
<th>Pegasus</th>
<th>ProActive</th>
</tr>
</thead>
</table>
## Available FiWare Software (GEs)

### IoT – Internet of Things:
- Backend IoT Broker
- Backend Configuration Mgr
- Backend Configuration Mgr
- Backend Device Manager
- Gateway Device Manager
- Gateway Protocol Adapter
- Gateway Protocol Adapter
- Gateway Protocol Adapter
- Gateway Data Handling
- Gateway Data Handling
- Template Handler

### DATA:
- IoT Broker
- Orion Context Broker
- IoT Discovery
- IDAS
- OPEN MTC
- ZPA
- EPCGE
- MR CoAP
- Esper4FastData
- Sol/CEP

- Complex Event Processing
- BigData Analysis
- Semantic Application Support
- Context Broker
- Context Broker
- Semantic Annotation
- Stream Oriented GE
- Context Semantic Extension
- Unstructured Data Analysis
- Compressed Domain Video Analysis
- Media-enhanced Query Broker
- Metadata Preprocessing
- Location Platform

- PROTON
- COSMOS
- SAS
- CAP
- ORION
- SANr
- KURENTO
- FLOD
- UDA
- Codoan
- QueryBroker
- MetadataProcessor
- LOCS
# Available FiWare Software (GEs)

## I2ND – Interface to Networks & Devices:
- Cloud Edge (CE)
- Connected Device Interfacing (A-CDI)
- Network Information and Control (OFNIC-Uniroma)
- Network Information and Control (Altoclient)
- Network Information and Control (VNEIC)
- Network Information and Control (VNP)
- Service, Capability, Connection and Control:
  - EPC OTT API (OpenEPC)
  - Network Identity Management
  - Seamless Network Connectivity
  - Network Positioning Enabler
  - SMS - MMS
  - API_Mediation
  - Telecom_AS

## Security:
- Identity Management
- Identity Management
- Identity Management
- Identity Management
- Identity Management
- Data Handling
- Context-based security&compliance
- DB Anonymizer (OSE)
- Privacy Preserving Authentication
- Malware Detection Service (OSE)
- Android Flow Monitoring (OSE)
- Content-based Security (OSE)
- Access Control
- Secure Storage Service (OSE)
## Available FiWare Software

### Security Monitoring:
- Security Monitoring Service Lvl SIEM(SLS)
- Security Monitoring Visual Framework
- Security Monitoring 6LowFuzzer
- Security Monitoring Ovaldroid
- Security Monitoring Attack Paths Engine
- Security Monitoring MulVAL
- Security Monitoring Remediation App
- Security Monitoring ScoredAttackPaths

### MiWi Middleware/WebUI:
- 2D-UI
- 3D-UI
- 3D-UI
- Synchronization
- Cloud Rendering
- Display as a Service
- GIS Data provider
- POI Data provider
- 2D-3D Capture
- Augmented Reality
- Real/Virtual Interaction
- Virtual Characters
- Interface Designer

### Advanced Middleware:
- Adv. Middleware KIARA component
- Adv. Middleware KIARA RPC over DDS
- Adv. Middleware KIARA RPC over REST
- Adv. Middleware KIARA Fast Buffers
Useful FiWare links

- [www.fi-ware.org](www.fi-ware.org) — Main page, contains links to:
- [www.fi-ware.org/blog](www.fi-ware.org/blog) — Blog page
- [edu.fi-ware.org](edu.fi-ware.org) — eLearning training classes
- [lab.fi-ware.org](lab.fi-ware.org) — Cloud services available to test your apps
- [catalogue.fi-ware.org](catalogue.fi-ware.org) — Catalogue of Generic Enablers, Contains links to Documentation & Sources in:
  - [https://forge.fi-ware.org/](https://forge.fi-ware.org/)
- Introductory videos:

NOTE: Above links converted to new url *.fiware.* (without hyphen)
What you get

WebTundra is the Web client for taking realXtend 3D virtual worlds into modern web browsers. The provided TundraSDK and TundraClient can connect to a realXtend Tundra server, implementing the Tundra network protocol via WebSocket and rendering with WebGL. For networked multiplayer usage requires a Tundra server (Synchronization GE server side).

Why to get it

Develop realtime multi-user 3D applications using the realXtend platform, with the Three.js graphics API for WebGL.

Open Specification reference

3D-UI

WebTundra is an open source reference implementation of the FI-WARE Advanced Web Interfaces client core. It integrates 3D UI with realtime synchronization. Other GEs like Virtual Characters, Interface Designer, 2D-UI, POI and GIS clients etc. can be integrated to it as plugins. The Entity-Component based scene model from realXtend is used as the internal representation and programming model. WebTundra's network and scene modules are the client side implementation of the Synchronization GE. The 3D UI part is implemented as a view to the synchronised data, using the Three.js renderer. Limited XML3D support is provided to read the scene from an xml description instead of using a remote server. Mapping between the realXtend EC model and the XML3D specification is described in the 3D UI Open Specification.

- See FIWARE.OpenSpecification.MWI.Synchronization for more information about the real-time synchronization protocol and the scene model in WebTundra.
- See FIWARE.OpenSpecification.MWI.3D-UI for the xml3D specification and how we map it to the realXtend EC model.
- See threejs.org for more information and demos of the underlying graphics renderer used.
edu.fi-ware.org eLearning training classes

FIWARE
Open APIs for Open Minds

Home  Available Courses  My Courses  My Dates  My Activities  News

Home ▶ POI GE

Navigation

Home
▶ Site pages
▶ Current course
▶ POI GE
▶ Participants
▶ General
▶ Topic 1
▶ Courses

Topic 1

Introduction to POI Data Provider GE

This course introduces to

* general benefits of points of interest system
* specific benefits of FI-WARE POI Data Provider Generic Enabler
* developing a web client to utilize a FI-WARE POI Data Provider Generic Enabler

Useful links
lab.fi-ware.org  Cloud services to test apps

<table>
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<tr>
<th>Name</th>
<th>Type</th>
<th>Status</th>
<th>Visibility</th>
<th>Container Format</th>
<th>Disk Format</th>
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lab.fi-ware.org  Mashup to prototype apps
Query

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<th>Verb</th>
<th>URI</th>
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<tbody>
<tr>
<td>GET</td>
<td>/radial_search</td>
<td>Provide the POIs within a given circle</td>
</tr>
<tr>
<td>GET</td>
<td>/bbox_search</td>
<td>Provide the POIs within a given bounding box</td>
</tr>
<tr>
<td>GET</td>
<td>/get_pois</td>
<td>Provide the POIs listed by the query</td>
</tr>
</tbody>
</table>

**/radial_search**

Return the data of POIs within a given distance from a given location.

```
GET /radial_search?parameters
```

**Mandatory parameters:**

- lat=latitude - Latitude of the center of the search circle [degrees]
- lon=longitude - Longitude of the center of the search circle [degrees]

**Optional parameters:**

- radius=radius - Radius of the search circle [meters], default is implementation dependent
- category=category - POI category/categories to be included to results. Several categories can be given by separating them with commas. If this parameter is not given, all categories are included.
- component=component - POI data component name(s) to be included to results. Several component names can be given by separating them with commas. If this parameter is not given, all components are included.
- max_results=max_results - Maximum number of POIs returned.
- start_time=start_time - When time of interest begins. See 'Time format' below. Optional, requires end_time.
- end_time=end_time - When time of interest ends. See 'Time format' below. Required, if start_time is defined.
- min_minutes=min_minutes - Minimum time of availability in minutes. Optional. If start_time is defined, default: a short time > 0.

**Time format**

Basic rule: ISO 8601 adaptation format [1] is used for times. However, it is allowed to leave the time zone definition out. If time zone is missing, the local time zone of the POI is used. *This specification does not require implementation of time zone functionality.* E.g.: ‘2014-01-23’, ‘2014-01-23T13:34’

Sample query:

```
```

Sample result:
How to use the GEs?

• Use the ready running instances available in the FILAB servers as such

• Launch your own instance as a new FILAB virtual server using available images

• Combine several GE’s by using the ready blueprint templates in the FILAB (this does not work yet reliably in the FILAB)

• Download the sources and instructions and install/use them as such together with your own application sw in your own client/server (or in your own FILAB virtual server)

• Download the sources and modify them according to your own needs and install/use them in your own client/server (or in your own FILAB virtual server)
Demos

POIs on map:

3D Helsinki traffic real-time monitoring:

http://poi.webhop.org/

http://130.206.81.111/fidemo/
Example Business Ideas (using MiWi GEs)

• Using 3D – internet
  • Hospital design using collaborative virtual 3D models
  • Wellbeing applications based on gamification, e.g. running against yourself in virtual 3D environment
  • Educational healthcare applications:
    • Virtual surgery
    • Physical therapy movements
  • Virtual Gym Instructor, Avatar with Kinect movement tracking
  • Running Treadmill/Exercise Biking in virtual environment, using cave or Oculus
  • Virtual Healthcare teams, expert collaboration
Example Business Ideas (using MiWi GEs)

• Using Augmented reality
  • Scanning patient’s treatment history by pointing with AR device
  • Fitness trail navigation
  • Virtual Yellow sticker notes for memory disordered

• Using Point of Interest
  • App finding closest emergency help, open pharmacy etc.
  • Hiking maps

• Using IoT
  • Patient monitoring system, combined events generate alerts

• Using Security:
  • Protecting user’s e.g. patients private information