PPP InfoDay
Brussels, 09-10 July 2012

Objectives 7.1 and 7.2

DG CONNECT Scientific Officers:
Rolf Riemenschneider, Mariusz Baldyga,
Christoph Helmrath, Erastos Filos
FoF ICT Calls Overview

2009

2010

2011

2012

2013

Policies

H2020 proposal end ’11
MAFF Jun ’11

H2020 launch early ’14

FP7 Calls

2009

2010

2011

2012

2013

Virtual Factories

9 July - 2 Dec 2010
(45 M€)

Digital Factories

(35 M€)

10 Jul - 4 Dec 2012

FoF Use Experiments

70 M€

10 Jul - 4 Dec 2012

Smart Factories

July ’09 - Nov. ’09

20 Jul - 1 Dec 2011

Smart Factories

Obj. 7.1
(40 M€)

Manuf. solutions for new ICT products

Obj. 7.2
(20 M€)

Total ICT 245 M€
Country Participation in First 3 FoF ICT Calls

Selected projects (total €175 million)
2009 - 2011 ICT Calls

Germany 36%

- Greece 4%
- Portugal 1%
- Spain 9%
- Norway 2%
- Netherlands 4%
- Italy 12%
- Ireland 2%
- Israel 1%
- Austria 3%
- Czech Republic 2%
- Denmark 1%
- Finland 3%
- France 5%
- Turkey 1%
- Switzerland 4%
- United Kingdom 7%
- Belgium 2%
- Sweden 2%
- Portugal 1%
Participation per Organisation Type

2009 - 2011 FoF ICT Calls

- HES: 22%
- Research organisations: 21%
- Large industry: 35%
- SMEs: 20%
- Other: 1%

Funding (€ million) vs. Number of participants

- Funding (€ million)
- No of participants

FoF-WP2013-InfoDay_09-10Jul12
FoF-ICT Calls
Experience after 3 Calls & 36 Launched Projects

FoF is:
- of shorter term scope
- Attractive to industry
- SME-friendly

2011 Call
- 40 M€
- 10 projects

2010 Call
- 45 M€
- 10 projects

2009 Call
- 35 M€
- 8 projects

Manufacturing of new ICT products

2011 Call
- 20 M€
- 2 projects

ICT
Smart Factories
Virtual Factories
Digital Factories

FoF-WP2013-InfoDay_09-10Jul12
Horizon 2020: Moving beyond R&D
Last Call FP7 Work Programme 2013 (ICT)

Mainly ICT Use Experiments (2 types):
- Application experiments (SME users)
- Equipment assessments (SME suppliers)

4 Thematic Areas:
- Robot solutions for new manufacturing applications
- Simulation services for engineering & manufacturing
- Intelligent equipment in custom manufacturing and/or re-manufacturing
- Innovative laser applications in manufacturing

How:
- IPs coordinated by R&D institutes or industry associations: launching open calls
- IP size: up to approx. 15 M€, 3-4 years duration
- Individual experiments: 200-500 k€ (up to 18 months duration)

Budget:
- 70 M€
What’s proposed for WP2013

Objective 7.1: Application Experiments
   a) Robot solutions for new manufacturing applications (IPs)
   b) Simulation services for engineering and manufacturing (IPs)
   c) Constituency building and road-mapping (CSA)

Objective 7.2: Equipment Assessment
   a) Intelligent equipment in custom and/or re-manufacturing (IPs)
   b) Innovative laser applications in manufacturing (IPs)
   c) Establish network of innovation multipliers (CSA)
   d) Rapid build-up of new manufacturing skills (CSA)

Budget: 70 M€
Objective 7.1 focus is on:

a) Robot solutions for novel SME users (IPs)
   - Reflecting industrial robotics paradigm shift: Towards more flexible, energy-efficient & adaptable service robots
   - Key functionalities: Mobility, reconfigurability, dexterity, safety in human-robot interaction
   - Innovative: integration of new materials, advanced sensors, controls
   - Under realistic conditions (manufacturing environments)

b) Simulation services for engineering and manufacturing SMEs (IPs)
   - Application experiments will target simulation services including a cloud-based service infrastructure for engineering and manufacturing users, particularly SMEs.
   - Driven by the requirements of first-time users, individual experiments shall bring together all actors of the value chain.

c) Constituency building & road-mapping (CSA)
   Build R&D constituencies & develop research and innovation agendas in:
   - Analytics, simulation and forecasting
   - Architectures & services for the manufacturing enterprises of the future
A possible consortium profile under Objective 7.1a)

- SME first-time users
- Take / up Innovation expertise
- Application Experts (industry-oriented) RTD
- Robot system integrators / manufacturers (incl SMEs)
- Architectures, benchmarking, metrics, certification bodies

Baseline user requirements /options

Use

Brokering / dissemination / exploiting synergies

R1

R2

Use

User 1

User 2

... 

User n
Key hints for 7.1a) robotics proposals

- Attention: the ICT Work Programme: Challenge 2 - Cognitive Systems and Robotics has a different scope. Objective 7.1 a (robot solutions) focuses on downstream testing and validation, not on “upstream” R&D.
- Focus on application experiments, rather than whole R&D cycle. Clear support of the proposed research by application scenarios.
- Experiments (not longer than 12-18 months) with clearly defined goals to be reviewed and judged by the promised “return-on-investment” e.g. in terms of exploitable technology (IPR) results and the mechanisms for delivering those results to the market.
- Broader involvement of SMEs in pre-designated topics.
- Smaller core consortium, more networking beyond the project.
- Application domains are not predetermined, but should be traditionally “robot-resistant”.
- Robotics components development is not main aim
Simulation services for engineering and manufacturing

Objective 7.2b)

Experiments to facilitate adoption of HPC-cloud-powered simulation services:

- Lower barrier for **novel users** via a ‘**one-stop-shop**’ for simulation services, including training, visualisation, analytics
- Up-dating and porting simulation code of **tool vendors** to cloud-based infrastructure and services
- **HPC resource providers** to build an operational prototype of a commercial cloud of HPC resources

Across the value chain
(1) first time users from the manufacturing domain especially SMEs,
(2) SW vendors and tool providers,
(3) HPC resource and service providers.
Bringing HPC-Cloud-based simulation services to the fingertip of engineering/manufacturing SMEs

SME first-time users of simulation codes

Application experts

Established simulation code providers

Cloud and parallelisation experts

Commercial cloud providers

HPC resource providers

Pan-European «Cloud» of HPC Resources

FoF-WP2013-InfoDay_09-10Jul12
Objective 7.1.b) Simulation services for engineering and manufacturing

**Integrating Project (IP)**

- General level of the IP
  - Duration up to 48 months
  - ~10-50 simulation experiments
  - Funding > 50% already defined at the outset, rest through "competitive calls" (→ flexibility)
  - Very small number of innovation pilots, which bring simulation services to the fingertips of SMEs in engineering and manufacturing
  - Horizontal tasks cutting across the experiments: brokering, portal, dissemination, common HPC cloud services, synergies.
  - Involve the whole value chain: first time users, application experts, technology suppliers, system integrators, and service providers → HPC-cloud providers shall build on existing infrastructures as far as appropriate

- Individual Application Experiments
  - Duration up to 18 months (with 2 or more users)
  - Funding ~ 200-500 k€ (no formal limitation)
Objective 7.2: Equipment Assessments for Sensor-based & Laser-based Applications

Focus is on:

a) Intelligent equipment solutions in custom manufacturing and/or remanufacturing (IPs)
   • For (SME) suppliers of sensor-/actuator-based monitoring & control equipment
   • Application areas: (1) Small volume/small lot size customisation; (2) end-of-life manufacturing operations (e.g. dismantling, recycling, material reuse)

b) Innovative laser applications in manufacturing (IPs)
   • For (SME) suppliers of laser-based manufacturing equipment (e.g. laser, power supplies, handling tools, beam guiding etc.) in cooperation with (globally acting) manufacturers
   • Assessments should target improvements of laser-based manufacturing in terms of quality, speed, flexibility & resource use efficiency

c) Network of innovation multipliers (CSA)
   • Across all take-up projects that will be launched under this call in 7.1 and 7.2 aiming at broad technological, application, innovation & regional coverage

d) Rapid build-up of new manufacturing skills (CSA)
   • Training methodologies & ICT-based tools to attract young talents in engineering & manufacturing
Objective 7.2: Equipment Assessments for Sensor-based & Laser-based Applications

What do they include?
The development of the assessment methodology; the definition of requirements for specific application scenarios; metrics to evaluate the results; assessment of the results

a) In intelligent equipment solutions, in particular:
   - The performance of the sensor-/actuator-based equipment
   - The characterisation of the process
   - The prototype equipment & needed enhancements needed for either
     - (1) Small volume/small lot size customisation; or
     - (2) End-of-life manufacturing operations (e.g. dismantling, recycling, material reuse)

b) For laser-based manufacturing, in particular:
   - The laser, power supplies, handling tools, beam guiding manipulation & quality
   - Sensors to monitor the equipment & the manufacturing process
   - The periphery in general (e.g. materials, housing, safety issues)
Objective 7.2: Equipment Assessments for Sensor-based & Laser-based Applications

**Integrating Projects (IP)**

- General level of the IP:
  - Duration up to 48 months
  - ~ 10-20 individual assessments, funding > 50% already defined at the outset, rest through "competitive calls" (→ flexibility)
  - Involvement of research/competence centre or industry association
  - Eligible costs: organisation of competitive calls, cross-cutting assessment activities, training, dissemination, exploitation

- Individual Assessments
  - Duration up to 18 months
  - Funding ~ 200-500 k€ (no formal limitation)
  - Involve the equipment supplier, the manufacturer using the equipment, a coordinating research/competence centre
  - Execution in production-like environments with final validation in manufacturing line or under an industrial environment very close to manufacturing conditions
  - Eligible costs: management + R&D costs
Objectives 7.1 & 7.2: Instrument CSA

**Obj.7.1c): Constituency building & roadmapping (CSA):**
Build R&D constituencies & develop research and innovation agendas

- In analytics, simulation & forecasting
  - Technological advances in the areas of forecasting, simulation & analytics as key drivers for the success of future enterprises
  - 3D-modelling, real-time simulation, virtual reality and design enabled by advanced computing of simulation

- In architectures & services for the manufacturing enterprises of the future
  - Challenges and industrial needs for integrating agile & flexible manufacturing processes into distributed, interoperable, "green", and context-aware enterprises

**Obj.7.2.c)-d): Networking support and Education (CSA):**

- Establish a network of innovation multipliers in the manufacturing sectors across all take-up projects
  - To facilitate the emergence of a European innovation ecosystem, a network of innovation multipliers competent in manufacturing
  - To establish a single innovation portal for newcomers; sharing of best practices and experiences; dissemination; and brokering between users and suppliers in view of open calls
  - The participation of actors, e.g. regional innovation clusters, chambers of commerce, societal actors, industrial associations, technology transfer departments of large research labs is encouraged

- Support of a rapid build-up new manufacturing skills
  - Training methodologies and ICT-based tools to attract the interest of young talents in manufacturing and engineering.
Thank you

FoF on Cordis:  

Objective Coordinator 7.1:  
Rolf Riemenschneider: rolf.riemenschneider@ec.europa.eu

Objective Coordinator 7.2:  
Erastos Filos: erastos.filos@ec.europa.eu

Brokerage Session  
16:30h