Report on Policy Action Plan

EPES Project

Eco-Process Engineering System For Composition of Services to Optimize Product Life-cycle

FoF-ICT-2011.7.3-285093

Public Project Report

Project Facts:		
	Duration:	36 Months (September 2011 – August 2014)
	Programme:	FP7 – ICT
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Authors and EPES Project Partners

tecnalia *Inspiring Business*	**Fundacion Tecnalia Research & Innovation** **http://www.tecnalia.com**	**Spain**
ATB	**ATB** **Institut für angewandte Systemtechnik Bremen GmbH** **http://www.atb-bremen.de**	**Germany**
sisteplant	**Sisteplant SL** **http://www.sisteplant.com**	**Spain**
VTT	**VTT Technical Research Centre of Finland** **http://www.vtt.fi**	**Finland**
ESTECO	**Esteco S.p.A.** **http://www.esteco.com**	**Italy**
tamoin GRUPO	**Grupo Tamoin SA** **http://www.tamoin.com**	**Spain**
nkt cables	**nkt Cables GmbH** **http://www.nktcables.com**	**Germany**
EADS INNOVATION WORKS	**EADS Innovation Works UK** **http://www.eads.com**	**UK**

Summary

This document represents the Deliverable D700.6.1 *Report on Policy Action Plan* of the EPES Project and it explains the actions planned to be undertaken by the EPES Consortium towards gathering recommendations for European policy makers and building a *Policy Action Plan* (PAP).

The EPES Project Consortium began by analysing three key Initiatives of the EU Commission within the frame of the "Europe 2020" strategy, which are relevant for the scope of the project:

➢ *"Digital Agenda for Europe"* **Initiative**, which aims to deliver "sustainable economic and social benefits from a digital single market based on fast and ultra-fast internet and interoperable applications"

➢ *"Innovation Union"* **Initiative**, which aims to achieve a strategic approach to innovation, being closely aligned and mutually reinforcing EU and national/regional policies

➢ *"Resource Efficient Europe"* **Initiative,** which supports the shift towards a resource-efficient, low-carbon economy to achieve sustainable growth

The purpose of this analysis was to identify relevant areas for European policy makers and the obstacles they are facing. Out of the relevant areas, those have been selected which are actionable within the scope of the EPES project. Then, a broad strategy for the EPES Project has been devised for tackling the obstacles within these actionable areas, also delineating the expected impact of the proposed actions.

The strategy and targeted impact are not defined in detail at this stage; their definition is an iterative process, so the actions to be taken as part of the PAP, as well as the metrics for measuring their impact, will be more detailed in the next versions of this deliverable.

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Abbreviations

a.m.	afore mentioned
AmI	Ambient Intelligence
AmIEMeasure	AmI-based Energy Use related Process Measuring System
API	Application Programming Interface
DAEI	"Digital Agenda for Europe" Initiative
e.g.	exempli gratia = for example
etc.	et cetera
EU	European Union
i.e.	id est = that is to say
ICT	Information and Communication Technology
IT	Information Technology
IUI	"Innovation Union" Initiative
PAP	Policy Action Plan
R&D	Research and Development
REEI	"Resource Efficient Europe" Initiative
SME	Small and Medium Sized Enterprise
SW	Software
w.r.t.	with respect to
WP	Workpackage

1   Introduction

1.1   Document Purpose

This document presents the deliverable D700.6.1 *Report on Policy Action Plan*, which is the result of Task T740 *Policy and Societal Impact* from Work Package WP700, *Exploitation and Dissemination*.

It summarizes the activities which have occurred within the first year of the EPES project, explaining the strategy of the EPES Consortium towards gathering recommendations for European policy makers and working towards a Policy Action Plan (PAP).

1.2   Approach

The EPES project intends to identify the policy priorities actionable within the frame of the project and which are under the umbrella of the Commission's ICT Programme and Europe 2020 priorities.

The approach applied by the EPES Consortium is presented next (also see Figure 1-1 below). A starting point has been the analysis of three key Initiatives of the EU Commission, which are used as reference documents for the development of the PAP: the "Innovation Union" Initiative (IUI, aiming to achieve a strategic approach to innovation, being closely aligned and mutually reinforcing EU and national/regional policies), the "Digital Agenda for Europe" Initiative (DAEI, aiming to deliver "sustainable economic and social benefits from a digital single market based on fast and ultra-fast internet and interoperable applications"), as well as the "Resource Efficient Europe" Initiative (REEI, supporting the shift towards a resource-efficient, low-carbon economy to achieve sustainable growth)

The purpose of this analysis was to identify areas which are both relevant for European policy makers, but also actionable within the scope of the project. The results of this analysis are the first inputs for a broad strategy for the EPES Project towards the development of the PAP.
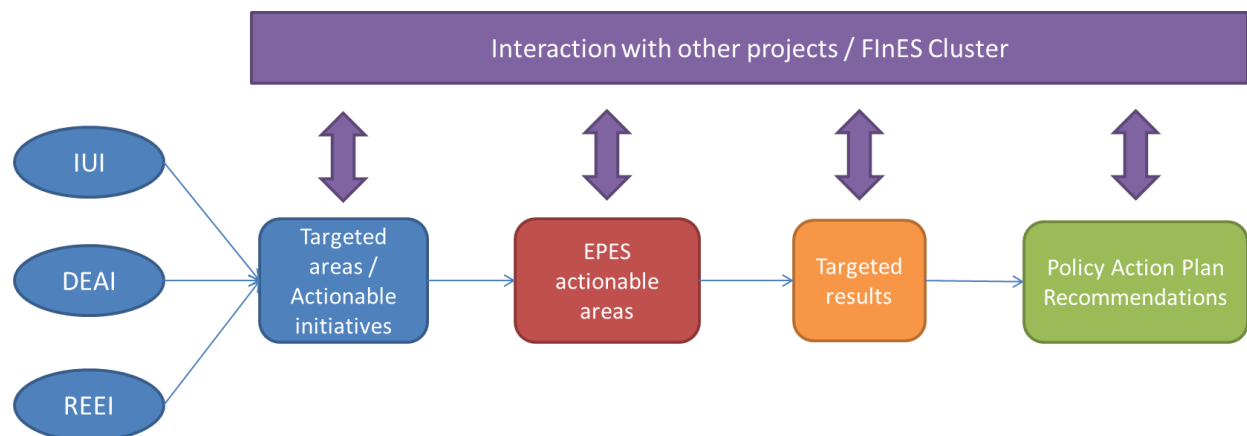

Figure 1-1. Approach for collecting PAP recommendations

The EPES Consortium is also constantly analyzing potential societal stakeholders, groups and policy makers that are relevant to the adoption of project results, in order to support the development of targeted actions to acquire their motivation and to sustain the deployment of the project results.

Clustering is also an important activity where relevant research areas can be identified. The EPES Project is part of the FInES Cluster[1]. Interaction with other projects is expected to offer valuable insight into identifying relevant policy priorities and synchronizing actions to be taken under the PAP.

At this stage, the strategy towards the development of the PAP and the targeted impact are not defined in detail. In order to react swiftly and be flexible to changes in priorities, the definition of the PAP is an iterative process, so new and more detailed actions to be taken as part of the PAP, as well as improved metrics for measuring their impact, will be detailed in future versions of this deliverable.

1.3   Document Structure

The document is structured as follows:

Section 1 – presents the purpose of the document and the report's position in the project, as well as approach applied.

Section 2 – provides the motivation for a PAP, with the help of Communications within the three relevant Initiatives of the EU Commission

Section 3 – presents the EPES actionable areas which will contribute to building a Policy Action Plan, also highlighting their applicability in EPES's collaboration with three selected projects and within the FInES Cluster.

Section 4 – presents the conclusions drawn, in the form of the planned process for achieving the expected results, and the strategy for using these results to generate recommendations collected in a Policy Action Plan.

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[1] http://www.fines-cluster.eu

2   Motivation

This section presents the motivation driving forward the development of a PAP.

The current EU research challenges are presented, as seen through three Initiatives relevant for the EPES Project. For these challenges, the broad actions proposed at EU Commission level are captured here for reference.

In the next section 2.1, the areas and actions defined in the Initiatives are filtered to select only those which are actionable within the scope of the EPES project.

2.1   Overlap between EPES Project Scope and EU Commission Initiatives

The EPES Project intends to develop a novel eco process engineering system which will support the Product Service System. Within the project, ICT Tools and a methodology will be produced, aiming to support:

- Continuous improvement of products in operation along their life cycle
- Applying best up to date technologies for end of life disposal of products and for improving future product designs

In this way, product engineering teams can exploit sustainability intelligence to adapt design, operation and disposal strategies through managed "eco-constraints" relevant to their market contexts.

Figure 2-1 below illustrates the overlap existing between the actionable areas within the EPES project and the Europe 2020 Flagship Initiatives.
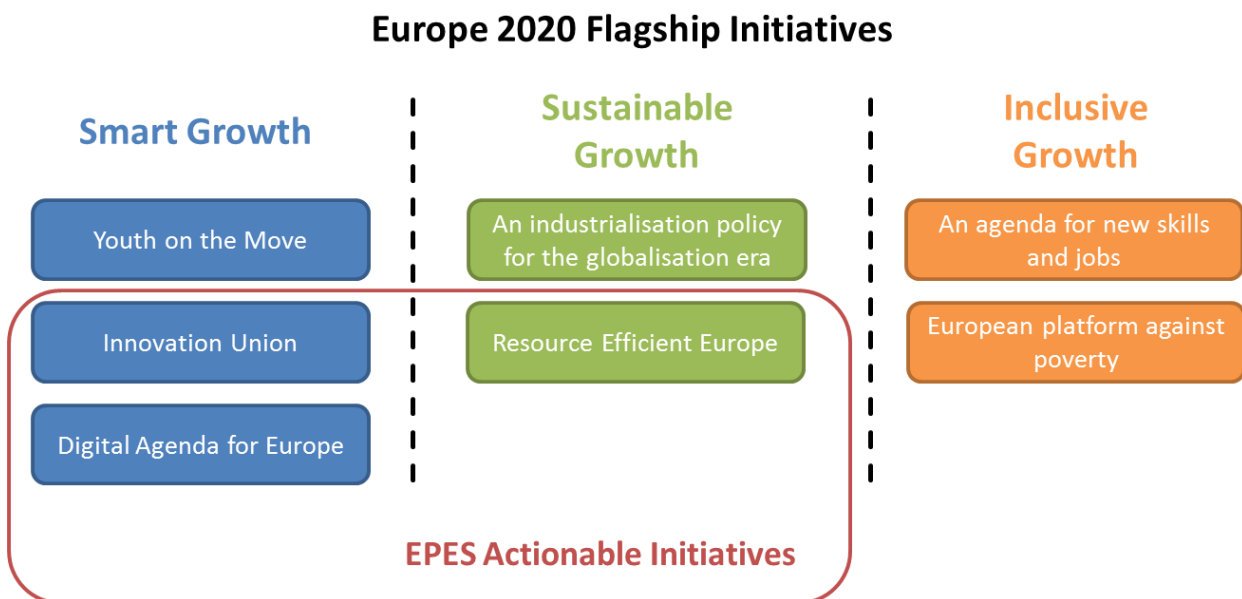

Figure 2-1. Europe 2020 Flagship Initiatives which are actionable within EPES

The EPES project can contribute to the "Innovation Union", "Digital Agenda for Europe", and "Resource Efficient Europe" Initiatives, as they address areas which are actionable within the scope of the project:

> ➢ *"Digital Agenda for Europe"* **Initiative**
>> – Aims to deliver "sustainable economic and social benefits from a digital single market based on fast and ultra-fast internet and interoperable applications"

- ➤ *"Innovation Union"* **Initiative**
  - – Aims to achieve a strategic approach to innovation
  - – Closely aligned and mutually reinforcing EU and national/regional policies
- ➤ *"Resource Efficient Europe"* **Initiative**
  - – Supports the shift towards a resource-efficient, low-carbon economy to achieve sustainable growth

The next sections present these initiatives, showing what obstacles they identify and what general actions they suggest for alleviating the existing problems.

2.2   Digital Agenda for Europe Initiative (DAEI)

"Digital Agenda for Europe" is one of the seven flagship initiatives identified within the Europe 2020[2] strategy, with the purpose of boosting growth and jobs. It is part of the "Smart Growth" initiative, and its overall aim is to deliver sustainable economic and social benefits from a digital single market.

The main obstacles to a digital single market which are identified in the DAEI Communication[3], together with areas identified for tackling these problems, are presented in Table 2-1 below.

Table 2-1. Digital Agenda for Europe: obstacles and actionable areas

Identified obstacles	Actionable areas for tackling problems
Fragmented digital markets	• Opening up access to content • Making online and cross-border transactions straightforward • Building digital confidence • Reinforcing the single market for telecommunication services
Lack of interoperability	• Improving ICT standard-setting • Promoting better use of standards • Enhancing interoperability through coordination
Rising cybercrime and risk of low trust in networks	• Trust and security
Lack of investment in networks	• Guarantee universal broadband coverage with increasing speeds • Foster the deployment of Next-Generation Access networks • Open and neutral internet
Insufficient research and innovation efforts	• Step up efforts and efficiency • Driving ICT innovation by exploiting the single market • Industry-led initiatives for open innovation
Lack of digital literacy and skills	• Digital literacy and skills • Inclusive digital services
Missed opportunities in addressing societal challenges	• ICT for environment • Sustainable healthcare and ICT-based support for dignified and independent living

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[2] http://ec.europa.eu/europe2020/index_en.htm
[3] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0245:FIN:EN:HTML, retrieved on the 1st of June, 2012

	• Promoting cultural diversity and creative content
	• eGovernment
	• Intelligent Transport Systems for efficient transport and better mobility
	• International aspects of the Digital Agenda

2.3   Innovation Union Initiative (IUI)

"Innovation Union" is another one of the seven flagship initiatives identified within the Europe 2020 strategy, with the purpose of boosting growth and jobs.

Like the DAEI, it is part of the "Smart Growth" initiative. As such, this Communication[4] of the IUI identifies innovation as being at the heart of the Europe 2020 strategy, with Europe currently facing what is called an "innovation emergency": an environment that is fragmented and insufficiently innovation-friendly.

The main weaknesses in European research which are identified in the IUI are:

- Under-investment in European knowledge foundation
- Unsatisfactory framework conditions (poor access to finance, slow standardisation, ineffective use of public procurement)
- Too much fragmentation and costly duplication

Under these circumstances, the IUI calls for a more strategic approach to innovation. In particular, in order to achieve the Innovation Union, the following necessary aspects are highlighted:

1. Continued investing in education, R&D, innovation and ICTs

2. Tackling fragmentation

3. Modernising education systems at all levels

4. Completing the European Research Area, so that working and cooperating across the EU can be done as easily as within national borders

5. Simplifying access to EU programmes

6. Boosting the framework programme's contribution to nurturing fast-growing SMEs

7. Getting more innovation out of research

8. Removing barriers preventing entrepreneurs from bringing ideas to the market

9. Launching European Innovation Partnerships

10. Improved work with international partners

2.4   Resource Efficient Europe Initiative (REEI)

The REEI is part of the „Sustainable Growth" group of initiatives under the Europe 2020 strategy. In one of its key Communications[5], it describes the three necessary conditions for enjoying the benefits of a resource-efficient and low-carbon economy:

- Coordinated action in a wide range of policy areas, with political visibility and support

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[4] http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication-brochure_en.pdf#view=fit&pagemode=none, retrieved on the 1st of June, 2012

[5] http://ec.europa.eu/resource-efficient-europe/pdf/resource_efficient_europe_en.pdf, retrieved on the 1st of June, 2012

- Urgent action due to long investment lead-times
- Empowering consumers to move to resource-efficient consumption, to drive continuous innovation and ensure that efficiency gains are not lost

The suggested area which is most applicable to the EPES project's scope is the improvement of products' design, which can both decrease the demand for energy and raw materials, and make those products more durable and easier to recycle. It also acts as a stimulus to innovation, creating business opportunities and new jobs.

3 Actionable Areas

In the previous section, areas of high interest for the Europe 2020 strategy have been presented, together with the obstacles they face. In order to devise a strategy for the EPES project's contribution to these areas, they are filtered even more, to find those specific areas which are directly actionable within the scope of the project.

Section 4 then presents the targeted results within these areas, as well as a strategy for using these results as basis for recommendations within a PAP.

3.1 Actionable Areas within the EPES Project

The DAEI, IUI, and REEI describe areas of interest together with the identified obstacles in a general way, at a high-level view. Out of these, the big groups of actionable areas identified for the EPES project are illustrated at a glance in Figure 3-1 below and in more detail in Table 3-1:
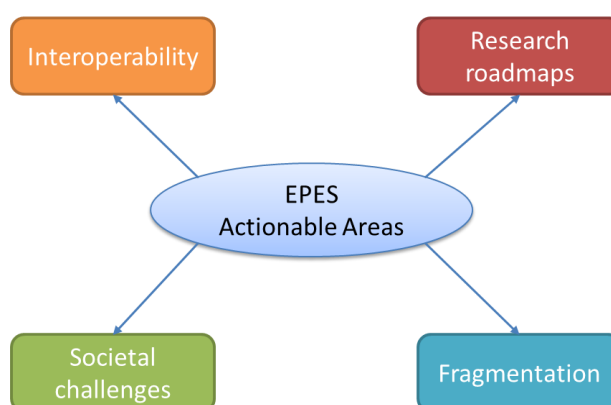

Figure 3-1. High-level view of actionable areas within EPES

Table 3-1. Detailed actionable areas within the scope of the EPES project

Obstacles to be tackled within EPES	Actionable area	Detailed areas to be supported within EPES
Lack of interoperability	Interoperability	• Promoting better use of standards • Enhancing interoperability through coordination
Insufficient research and innovation efforts	Research roadmaps	• Step up efforts and efficiency • Driving ICT innovation by exploiting the single market • Industry-led initiatives for open innovation
Fragmentation and costly duplication	Fragmentation	• Tackling duplication
Missed opportunities in addressing societal challenges	Societal challenges	• ICT for environment

3.2 Interaction with other projects

The plans for the EPES project's interaction with other projects have been described in detail in Deliverable D700.4, *Dissemination Strategy and FInES Cluster Collaboration Plan* (delivered in M6), and also in D700.5.1, *Report on FInES Cluster Activities* (delivered in M12). This section

is dedicated to highlighting those aspects of interaction which fall within the identified EPES actionable areas and which can potentially contribute to the Policy Action Plan.

3.2.1   Individual Projects

This section presents the collaboration between EPES and three other projects (PREMANUS, ComVantage, and Bivee), showing how activities related to their common aspects are expected to contribute to the PAP. Figure 3-2 below shows the overlap of actionable areas between EPES and the considered projects.
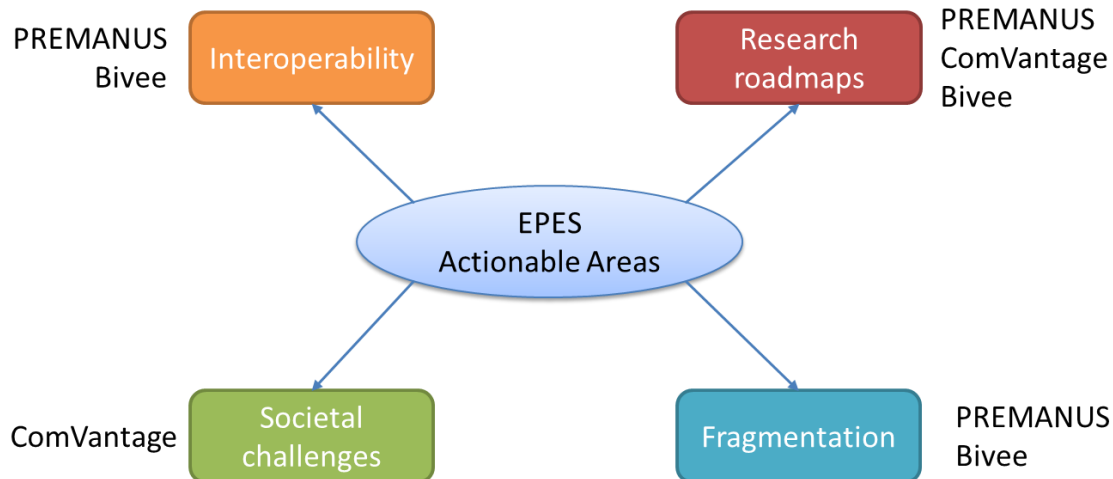

Figure 3-2. Actionable area commonalities between EPES and other projects

3.2.1.1   PREMANUS Project

The goal of the PREMANUS project[6] is to overcome the asymmetric distribution of information in the end-of-life recovery of products by connecting OEMs and subcontractors, with a special emphasis on remanufacturing.

To achieve this goal, PREMANUS will provide an on-demand middleware which combines product information and product services within one service oriented architecture. In addition to closing the information gap, the PREMANUS middleware would compute end-of-life-specific KPIs based on product usage data and make recommendations to its users regarding the viability (in terms of profitability, scope, and time) of remanufacturing a product.

The collaboration between PREMANUS and EPES focuses on the following topics within the common actionable areas:

- **Interoperability**
  - Identification and agreements regarding the use of common ICT standards
  - Development that takes into account interoperability and platform compatibility
  - Sharing knowledge and expertise on existing software which can be used to maximize interoperability
- **Research roadmaps**
  - Research on methods and tools for managing data capture on product usage along its life cycle and disposal
  - Collaboration in dissemination: special sessions in conferences, joint workshops, joint presentations, etc.

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[6] http://www.premanus.eu/

- **Fragmentation**
  - ○ Sharing and combining KPIs
    - o Used in EPES for optimizing the maintenance process
    - o Used in PREMANUS for decision support within the remanufacturing process

3.2.1.2   ComVantage Project

The ComVantage project[7] intends to offer a collaborative manufacturing network for companies of any size, in order to achieve competitive advantage and sustainable business operations. The collaboration space will be an extension to existing business and engineering software, which enables the sharing of selected business data and machine data of inter-organisational relevance to increase efficiency and flexibility of production processes throughout a dynamic network of manufacturers.

Within the envisaged web-based collaboration space, experts interact with on-site workforces, customers interact with producing parties, and service technicians interact with construction engineers or diagnostic teams – independent of any location.

The project has the following technical objectives:

- Secure collaboration via a dynamic and decentralised access to information
- Easy to handle and trustful collaboration apps for mobile interaction
- Collaboration apps with verified added-value

The collaboration between ComVantage and EPES focuses on the following topics within the common actionable areas:

- **Research roadmaps**
  - ○ Collaboration on business networks research
  - ○ Collaboration in dissemination: special sessions in conferences, joint workshops, joint presentations, etc.
  - ○ Optimisation of product design and product innovation
- **Societal challenges**
  - ○ Continuous improvement of operational excellence with respect to economical as well as ecological sustainability

3.2.1.3   Bivee Project

The Bivee project[8] seeks to take the risk out of optimising complex supply and productions chains by creating a safe, virtual representation of organisations, products and processes.

The motivation behind the project is that process change and real innovation is difficult to achieve when organisations are closely linked and interdependent, forming a virtual, networked enterprise. Such an enterprise needs to continually improve production processes and needs to have a means to generate ideas for change, test those ideas in a safe environment, implement the ideas, and then monitor their impact.

For this purpose, the project aims to develop a conceptual reference framework, a novel management method, and a service-oriented ICT platform to enable business innovation in virtual factories and enterprises.

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[7] http://www.comvantage.eu/

[8] http://www.bivee.eu/

The collaboration between Bivee and EPES focuses on the following topics within the common actionable areas:

- **Interoperability**
    - ○ ICT platform to enable business innovation in virtual factories and enterprises
- **Fragmentation**
    - ○ Collaboration on KPIs related to innovation
- **Research roadmaps**
    - ○ Collaboration in dissemination: special sessions in conferences, joint workshops, joint presentations, etc.

3.2.2   FInES Cluster

The EPES Project is a member of the FInES Cluster[9]. It is involved in the following two Task Forces:

- **Task Force on Manufacture and Industry Relationships**[10], with the purpose of involving a broad range of industrial and other enterprises in the work and the results obtained in the various research projects in the FInES cluster, and beyond.
- **Research Roadmap Task Force**[11], with the goal to produce the new FInES Research Roadmap.

As such, the EPES project is ideally placed to contribute with recommendations within the actionable areas of Interoperability & Fragmentation (due to its contacts with the industry in the first task force) and Research Roadmaps (due to its involvement in the second task force).

With the expected re-shaping of the FInES research domain into a Net Innovation research domain in the new Directorate E[12], some adjustments will need to be done. The EPES project is, however, committed to continuing its collaborative activities.

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[9] http://www.fines-cluster.eu

[10] http://www.fines-cluster.eu/fines/mw/index.php/Manufacture_and_Industry_Task_Force

[11] http://www.fines-cluster.eu/fines/mw/index.php/FInES_Research_Roadmap_Task_Force

[12] http://ec.europa.eu/dgs/connect/mission/index_en.htm#DirE

4   Conclusions

Starting from the actionable areas presented in section 3.1, the EPES Consortium has defined expected results and ways to measure and use them in the future as basis for Policy Action Plan recommendations.

Table 4-1 below presents the results, the planned process of achieving these results, and the strategy of the EPES Consortium for using these results to generate recommendations collected in a Policy Action Plan.

The first recommendations will be collected and presented in the second version of the Deliverable D700.6.2, *Report on Policy Action Plan*, which is due in M24 of the project.

Table 4-1. Targeted results and strategy for Policy Action Plan recommendations

Actionable Area	High-level action and Targeted results	Steps to achieving results	Policy Action Plan recommendation strategy
Interoperability	Identification of common standards used by the SME end-users and their technological eco-systems.	• Identify common standards used by the EPES SME end-users and their ecosystems • Evaluate standards based on criteria such as openness, usage, and bodies involved in maintaining them • Select most appropriate/most used standards	• Recommend selected standards to policy makers for reinforcing their position in the industry
	Identification of standards within the key areas of the EPES project that could gain by having higher visibility, while at the same time maintaining the competitiveness of SMEs currently using them.	• Identify companies in different sectors that could use the EPES project results • Use inputs from such companies to make standards more generic (where applicable)	• Recommend generic standards to policy makers for reinforcing their position in the industry
	Usage of open standards and platforms throughout the life-cycle of the EPES project.	• Identify open standards and platforms currently in use with EPES end-users • Investigate tools used in EPES by criteria such as their efficiency, appropriateness, ease of use, licensing status	• Recommend the most used / most appropriate standards to policy makers
Research Roadmaps	Support of targeted development of innovation clusters in the key fields of the projects.	• Within the key fields of the project, identify open problems which are most urgent to the industry • Identify partners which can tackle these open problems • Form innovation clusters	• Outputs from innovation clusters can be used to support recommendations for future research directions
	Recommendations for joint technology roadmaps, from research to commercialisation, based on the lessons learned within EPES. Knowledge transfer activities and dissemination of results.	• Identify similar projects from different clusters and cooperate for generating these recommendations • Dissemination of the results together (each project recommends to other projects of the cluster).	• Extract from joint technology roadmaps the most important directions and forward them to policy makers to help shape future research
Fragmentation /	Build modular systems, which can	• Specify the modules as compo-	• Release libraries as open source

Interoperability	be used as components, instead of developing them anew. A study on the degree of modularity attainable by systems developed for the key areas of the EPES project could help other projects in these areas.	nents, thinking of the usage in the industrial business cases and of the future possible applications • Apply the principles of modularity and loose coupling during development to clearly separate generic from specific components • Group generic components in libraries that can be reused in other projects	software that can be evaluated by industry as candidate for standard software to be used in future projects in the field
Societal Challenges	The project intends to exploit sustainability intelligence through managed "eco-constraints". The metrics used in the projects can serve as basis for generic metrics.	• Identify specific metrics which are useful for exploiting sustainability intelligence • Crystallize project-specific metrics into generic metrics	• Use found generic metrics as recommendations for standard metrics to be adopted within industry