R&D PROJECTS

Systematic
Paris Region Digital Ecosystem

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WORLD CLASS COMPETITIVENESS CLUSTER

Boost the economy through open innovation

Systematic Paris-Region: A strategy combining key technologies and growth markets
Standing at the crossroads between Software and Digital Technologies, the Systematic Paris-Region competitiveness cluster asserts its place in 5 major industries and services sectors (Transports, Energy, Security, healthcare and Telecommunications). Systematic Paris-Region's 2013- 2018 objectives focus also on 3 key markets: Factory of the Future, Digital cities and IT development for companies and organizations (open systems, Big Data…), all of which are at the heart of the 21st century challenges and that development increasingly relies on the know-how of Systematic members.

Issues of application channels determine the priority technological areas developed by Systematic Paris-Region within the Software and Digital sector: those most promising transformation and innovation for companies in these sectors. These are the following lines: Embedded Systems and Internet of Things, Digital infrastructures, Modeling, Simulation and HPC, Digital Trust, Open Source and Big Data.

The challenge is twofold:
- Develop technologies, companies and markets software and digital
- Transform and develop through the digital competitiveness and innovation in eight industrial sectors and services

Systematic Paris-Region: An innovative growing cluster
Since 2005, the Systematic Paris-Region Cluster has developed 480 R&D projects representing a total R&D investment of €2,5 billion including €900 millions funded by the French Government, Regional economic development agencies and the Paris-Region local authorities. The commitment of all the clusters' actors in the "Open Innovation" way creates synergies between SME's, industrial firms and research laboratories and allows the emergence of innovative projects.

Support growth innovative SMEs

SMEs, innovation powerful drivers, play a leading role in our ecosystem
For the coming years, Systematic Paris-Region is not only committed to developing new R&D projects but also to increasing productivity and to creating new businesses within our cluster specially for SMEs. Systematic stands on an ecosystem comprised of 800 SMEs which represent more than 35 000 jobs in the fields covered by the Cluster. The Cluster's objectives towards SMEs consist in contributing to the emergence of global leaders and consolidating existing SMEs.

To answer this challenge, Systematic Paris-Region leads programs and actions plan for SMES operating in the optics, electronics and software sectors.

The cluster's main objectives

Systematic seeks to boost the economy and employment through innovation, training and partnerships. The researchers, industries, training organizations, French national and local governments involved with the Cluster have three priorities:

- Strengthen the leadership of major integrators in order to secure the sustainability of their R&D activities in the Paris Region.
- Stimulate the creation and development of new high tech businesses with global ambitions.
- Reinforce the Paris Region's attractiveness by developing its image on an international scale in order to attract new global companies' R&D departments.

Lead an innovative ecosystem for a better international attractiveness

Accredited as a "World Class" cluster by the French Government in 2005, Systematic Paris-Region is awarded "Cluster Organization Management excellence Label Gold" and is a member of EIT ICT Labs (Paris, Berlin, Stockholm, Helsinki and Trento). Systematic focuses its development on European and international scene on three priorities:

- Attract capital and talents to the Paris Region
- Help laboratories and companies export their patents and products Face
- Face the challenge of growing global competition from large systems integrators, lowcost software development and new players in embedded systems

The Cluster benefits from recognized experience in cooperation between its members and their European partners. Systematic is already involved in European and international networks, such as: ■ DSP Valley - Belgium ■ bICC-NET - Germany ■ Point-One - Netherlands ■ Maroc Numéric Cluster - Morocco ■ Ciatec (Campinas) - Brasil ■ CPqD (Campinas) - Brasil ■ Centre of Engineering and Technology Transfer (CETT) - Kazakhstan ■ Imagine IT Hanoi - Vietnam

Systematic has opened technological hubs for the benefi of its members in key places on the globe: USA (Boston-Cambridge, MIT), China (Beijing, Z-Park), Tunisia (Tunis, Technopark Elgazala), India (Bangalore) with a view to:

- Promote Systematic (the cluster, the Paris region and its members)
- Facilitate international partnership projects
- Support SME export drive

R&D Financed Projects: 480

Partners:
811 including:
- **465 SMEs**
- **19 Enterprises of Intermediate Size**
- **157 Large companies**
- **142 Research institutes and universities**

Total investment:
€2.5 billion

Total funding:
€900 millions

Digital Trust & Security Working Group:
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Factory of the Future Working Group:
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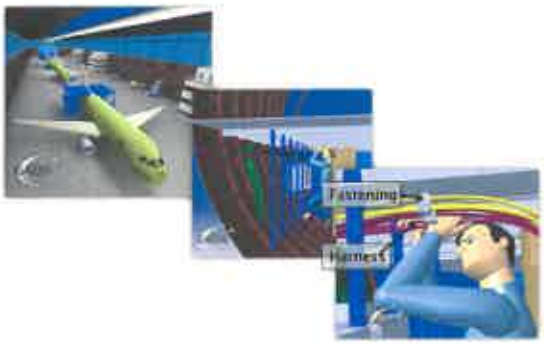
OLDP

On Line Digital Production

COMPLETED PROJECT

Develop the basis of the first on line, web 2.0 type, services platform in Digital Production in order to set up an advanced node of a future world wide network, supported by hubs for extented enterprise. Provide to the french industrial community, and especially the SME, a seamless process and tools to co-develop and co-monitor the production chain on the extended enterprise scheme.

PROGRESS BEYOND THE STATE OF ART



MAJOR PROJECT OUTCOMES

Publications : 8

Products : 4
Industrial softwares CATIA-DELMIA-3DVIA, MKM (virtual mannequin), ILOG, PERTINENCE suite.

Services : 1
1 dissemination platform under feasability evaluation

Business creation
New business model services around shared/owned software suite

CONTACT

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PARTNERS

Large companies:
ALTIS SEMICONDUCTOR , DASSAULT AVIATION , DASSAULT SYSTEMES , EADS INNOVATION WORKS , ILOG (IBM)

SMEs:
INTERCIM , TROCHET

Research institutes, universities:
CEA FONTENAY , IRISA , SUPMECA

PROJECT DATA

Coordinator:
EADS INNOVATION WORKS

Call:
FUI 6

Start date:
July 2009

Duration:
18 months

Global budget (M€):
8.3

Funding (M€):
3.0

Plate forme pour la Robotique Organisant les Transferts entre Utilisateurs et Scientifiques

COMPLETED PROJECT

PROTEUS goal was to put Modern software tools at the service of the French Robotic community, academic as well as industry. It means Modelling software and Generation tooling in association to a web portal to create the French robotic community web reference -

Robotic community often suffers of the two syndromes :

1. the "Not Invented Here" syndrome linked to the belief that what you develop will be better than what exists
2. Time consumed due to maintenance of the software application is very important with respect to the research problem at hand. PROTEUS pushed forward a solution that limits these shortcomings by providing a robotic software product called RobotML.

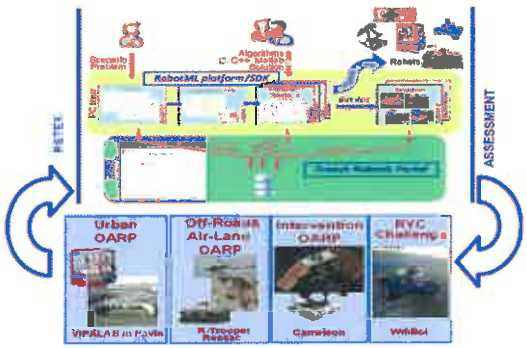
Moreover, the research work takes a lot of time in order to reach its market through adapted structures such as small and medium enterprises or directly be used by big players that often have to redesign the complete application from scratch. To answer to this challenge PROTEUS project created a website, connected to the tools designed above, allowing the community to share their scientific problems by sharing the models as well as associated simulators providing solutions to partake with intellectual properties rights. This methodology will pave the way towards a shortened time-to-market.

PROTEUS is a success as it put in place the different elements described in the picture. It allowed the community to open to new approaches providing actual tools distributed through open-source channels for their kernel. It allowed many interactions between the software AND the robotic communities and led to ask question on how to deepen these links. It allowed some of the partners to be integrated to European Robotic groups discussing of these same projects and to acquire the associated legitimacy. Youth challenge has seen its first occurrence and will be online for at least the next four years.

PROGRESS BEYOND THE STATE OF ART

The main achievement of the PROTEUS project was to put in place robotic applications through models and generation. it meant several "sub" achievements:

1. Software and robotic communities worked together.
2. The set of products required was built;
3. The Open Access Robotic Platforms were created.
4. A European cooperation was started.



MAJOR PROJECT OUTCOMES

Publications : 9

Products : 4

The robotML Platform is a totally new product that expanded the PAPYRUS tool. It is associated to Tools that are themselves issued from the project.

Services : 2

Job creation : 3

Due to their Model-Robotic knowledge three researchers were awarded contracts.

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PARTNERS

Large companies:
DASSAULT AVIATION , THALES OPTRONIQUE , THALES RESEARCH AND TECHNOLOGY

SMEs:
ECA SACLAY , GOSTAI , INTEMPORA

Research institutes, universities:
CEA LIST , INRIA GRENOBLE , ONERA , UNIVERSITE D'ORLEANS , UNIVERSITE DE CAEN BASSE NORMANDIE , UNIVERSITE DE LIMOGES , UNIVERSITE PIERRE ET MARIE CURIE PARIS 6 (UPMC)

PROJECT DATA

Coordinator:
DASSAULT AVIATION

Co-label(s):
ViaMéca;Aerospace Valley

Call:
ANR ARPEGE

Start date:
November 2009

Duration:
48 months

Global budget (M€):
5.4

Funding (M€):
2.2

PUMA

COMPLETED PROJECT

The goal of the Puma project is to break the current wall between the product/process design (PLM world - Product Lifecycle Management) and the shop floor production (MES world - Manufacturing Execution System).

- On one hand, the objective is to transfer the know-how accumulated during the design phases to the production, using the 3D as much as possible.
- On the other hand and in a symetrical way, the objective is to give a feedback of the accumulated production and quality knowledge to the design: for instance, using an as-built view of the final assembly or a report of unexpected events encountered during the production.

PROGRESS BEYOND THE STATE OF ART

In partnership with Dassault Systemes:

- Specification of a common model for shop orders and production data.
- By integrating production data from the MES in a 3D view of the product or sub-product, it is possible to provide a real-time as-built view of the assembly or fabrication of a product (installed parts, parts on hold, unavailable parts, etc.)
- By generating shop order data from the DS Process Planning, it is possible to provide context-dependent 3D work instructions in the MES.

MAJOR PROJECT OUTCOMES

Products : 3

Production Unit Live Collaboration (3D as-built view of the product), Digital Work Instructions Player (3D work instructions in the MES).

Job creation : 2

Business creation

On going

CONTACT

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PARTNERS

Large companies:
DASSAULT SYSTEMES , THALES COMMUNICATIONS & SECURITY S.A.S

SMEs:
BLUWAN , INTERCIM , LUCEOR , VECTRAWAVE , WIZEO

Research institutes, universities:
TELECOM PARISTECH , UNIVERSITE DE VERSAILLES SAINT-QUENTIN-EN-YVELINES

PROJECT DATA

Coordinator:
INTERCIM

Call:
OSEO AIDE A L'INNOVATION

Start date:
April 2009

Duration:
12 months

Global budget (M€):
0.6

Funding (M€):
0.2

QUAUSI

ON GOING PROJECT

QUAUSI is led by 7 industrial companies including the main steps of the chain value in aluminum structural large part French machining with 3 academic partners. The objective of the consortium is to propose some innovative technologies in the sector of machined part qualification by the process and default automatised finishing. The project is mainly based on surface defaults induced by High Speed Machining. The objective is based on the continuous amelioration principle by the exploitation of survey machining data (vibrations, temperatures, efforts...). This principle will enable to avoid the systematic part control by determining the conformity from the machining behavior. The project also includes an automatised finishing process to repair the detected defaults.

TECHNOLOGICAL OR SCIENTIFIC INNOVATIONS

The concept consisting in qualifying a part by the process validation can seem to be simple. From the signals recorded during machining, the system must evaluate if the process has rightly happened, it is not useful to control, the part is conform. The machining data will precise if a quality control is necessary. Thus, the part quality is conditioned by machining survey.

The vibration sensor settlement in the spindle, and the machining conditions survey use the results of scientific works from IRCCyN during previous USINAE project. This system enables to read and record data machining. The software is not linked today to the part defaults. This will be one of the other QUAUSI innovations.

Last, the conditions at the origin of the default identified, it is possible to transfer this information not only to methods office, to improve programming and cutting conditions, but also to finishing team. A finishing flexible mean which will be able to control and treat the part can be imagined.

STATUS - MAIN PROJECT OUTCOMES

The estimated results QUAUSI could represent from 5 to 10 % of the total value induced by machining from a study carried out by the partners. The economic objective is to do a significant competitivity improvement for French mechanics industry. These estimations with the partners quality involved in this project enable to build economic applications for each consortium member from 2 to 4 M€/year and new activities in exportation.

CONTACT

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PARTNERS

Large companies:
DASSAULT AVIATION

Intermediate size companies:
FIGEAC-AERO

SMEs:
EUROPE TECHNOLOGIES , GEBE2 PRODUCTIQUE , PRECISE , QSA (QUALIFIED SECURITY ASSESSOR) , SPRING TECHNOLOGIES

Research institutes, universities:
ARTS , CETIM , UNIVERSITE DE NANTES

PROJECT DATA

Coordinator:
EUROPE TECHNOLOGIES

Co-label(s):
EMC2;Arve Industries;Aerospace Valley

Call:
FUI 15

Start date:
April 2013

Duration:
36 months

Global budget (M€):
4.6

Funding (M€)
2.0

USINE NUMERIQUE

COMPLETED PROJECT

Significant saving in development cycles and costs of the manufacturing systems are targeted, especially for complex and high technology products in automotive, aeronautic and micro-electronic industry, with the increasing use of enhanced simulation tools Extensive use of 3D display, and immersion technologies, enables friendly understanding of situations, provides communication tools among various specialists, and supports training. Various processes of the production process and related controls are addressed with realistic behaviour rendering.

PROGRESS BEYOND THE STATE OF ART

MAJOR PROJECT OUTCOMES

Publications : 5

11 conferences, 2 Technical paper, 1 press conference, 7 articles in newspapers, 1 technology show.

Products : 6

Industrial software CATIA-DELMIA, CIVA (Non destructive testing), MKM (virtual mannequin).

Business creation : 1

- Start-up GOLAEM

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PARTNERS

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SMEs:
M2M

Research institutes, universities:
CEA FONTENAY , CEA LIST , ENS CACHAN , ESPCI , INRIA , IRISA , SUPELEC GIF

PROJECT DATA

Coordinator:
EADS INNOVATION WORKS

Call:
FUI 0

Start date:
February 2006

Duration:
18 months

Global budget (M€):
12.5

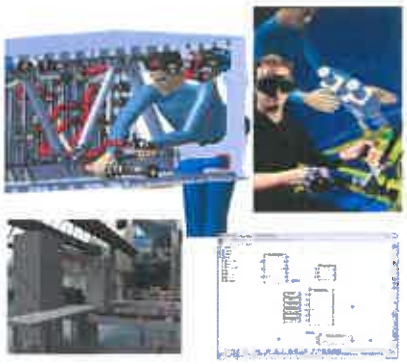
Funding (M€):
4.2

USINE NUMERIQUE 2

COMPLETED PROJECT

- Data base management enabling the production sytems simulation.
- Implement tools for collaborative engineering for digital production in the extended enterprise (intregrators with suppliers network).
- Manage the multi-scale simulation in the production system.
- Implement real time simulation and realistic model behaviour, for a virtual/real synchronous monitoring.
- Integrate in the simulation scenario, a virtual mannequin, with realistic physical and cognitive behaviour.

PROGRESS BEYOND THE STATE OF ART



MAJOR PROJECT OUTCOMES

Publications : 1
12 conferences, 1 Technical papers.

Products : 5
Industrial software CATIA-DELMIA-3DVIA, CIVA (Non destructive testing), MKM (virtual mannequin), NCSIMUL-TOOLSIMUL, ILOG.

Services
1 dissemination platform under feasability evaluation.

Job creation : 2

Business creation : 1

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SMEs:
GIE REGIENOV , M2M , PDF SOLUTIONS , REALVIZ , SPRING TECHNOLOGIES

Research institutes, universities:
CEA LIST , ENS CACHAN , ENSAM PARIS(ARTS) , ESPCI , INRIA , IRISA , SUPELEC GIF , UNIVERSITE DES SCIENCES ET TECHNOLOGIES DE LILLE 1

PROJECT DATA

Coordinator:
EADS INNOVATION WORKS

Call:
FUI 3

Start date:
July 2007

Duration:
24 months

Global budget (M€):
15.5

Funding (M€):
5.5

Systematic
Paris Region Digital Ecosystem

www.systematic-paris-region.org

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