


AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)


IEPM'03 Porto
May 26-28, 2003



International Conference on Industrial Engineering and Production Management

Accelerating Innovation in Practice in New Product Design


Dr. Mikel SORLI
Dr. Dragan STOKIC,
Ana CAMPOS
Alvaro GOROSTIZA



Porto, Portugal
May 2003

AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

INDEX



- INTRODUCTION TO AIM PROJECT
- AIM APPROACH
- STATUS OF THE PROJECT
- TRIZ (Inventive Problem Solving)
- CONCLUSIONS

Porto, Portugal
May 2003

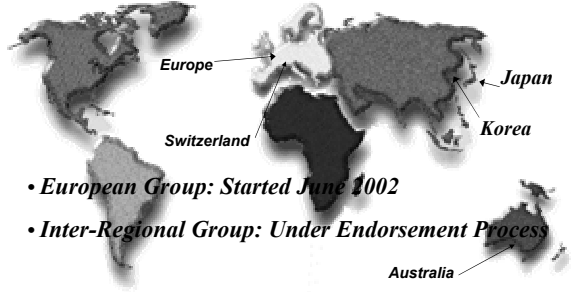
AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

INTRODUCTION TO AIM PROJECT

Porto, Portugal
May 2003

AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

AIM: IMS Project



- European Group: Started June 2002
- Inter-Regional Group: Under Endorsement Process

Prague Czech Republic 16-18 October 2002

AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

AIM Consortium: European Group

- **LABEIN, Centro Tecnológico:**
Project Co-Ordinator and Research Partner
- **Institute for Applied Systems Technology Bremen GmbH (ATB):** Research Partner
- **Cutting Tools Ltd. (Ctools):** SME end-user
- **Schmalbac-Lubeca (S-L):** Large company end-user
- **Motherwell Bridge Engineering Services Ltd. (MBES):** Large company end-user
- **SchlumbergerSema Group, sae:** Software developer and exploitation manager

Porto, Portugal
May 2003

AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

AIM: Acceleration of Innovative Ideas to Market

Nowadays Situation

- Innovation and getting innovative products to the marketplace are critical factors in the success of industrial companies.
- Process innovation (flexible, agile production) is also very important to bring novel products quickly to market.
- For this:
 - all useful ideas/knowledge must be collected
 - this collective talent/knowledge should be processed and developed for best potential benefits in terms of innovation.

Porto, Portugal
May 2003

AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

EXPECTED RESULTS

Project goal:


- To develop a system supporting collection of all useful knowledge throughout the extended enterprise.
- For new and existing process and products.
- Transform & use this knowledge for fostering industrial innovations.
- Combining ideas and feedback from the whole product life cycle:
 - customer interaction
 - customer service and field engineers
 - suppliers
 - pooling of knowledge between multiple sites.

Porto, Portugal
May 2003

AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

Key Concepts


- Knowledge Management
- Extended Enterprise
- Innovation



Porto, Portugal
May 2003

AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

Key Concepts (I)




- **Knowledge Management:**
 - > Storing, organising and delivering knowledge to make it "real" for people who need it.

Porto, Portugal
May 2003

AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

Key Concepts (II)

Extended Enterprise:




- > Concept covering all actors along the product life cycle:
 - customer,
 - after-sale services
 - field engineers
 - depts. Within the company
 - multiple sites of the same enterprise
 - sub-contractors
 - engineering companies
 -

Porto, Portugal
May 2003

AIM Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

Key Concepts (III)



- **Innovation:**
 - > Final stage of a development process,
 - > Result achieved and implemented successfully
 - > Well accepted into the Market

Porto, Portugal
May 2003

AIM

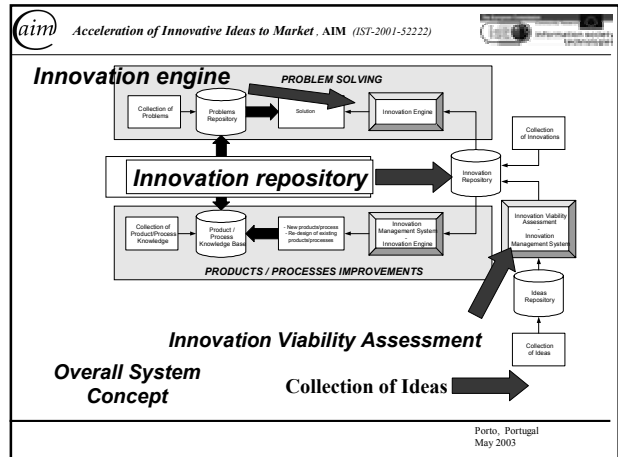
APPROACH

Porto, Portugal
May 2003

AIM Methodology - Concept

- **COLLECTION OF INNOVATIVE IDEAS AND PRODUCT/PROCESS KNOWLEDGE**
- **IDEA AND INNOVATION REPOSITORY:**
 - Innovation Viability Assessment
 - Innovation Management
- **INNOVATION REPOSITORY**
- **INNOVATION ENGINE**

Porto, Portugal
May 2003



Collection of Innovative Ideas:

- **Rule Based Reasoning (RBR) and Case Based Reasoning (CBR) in combination with ontologies.**
- **Related to data bases including detail models of the products and processes.**
- **CBR is used to provide a list of "similar" problems and ideas already stored in the system.**

RBR is applied for problem areas where rules can be defined.

Porto, Portugal
May 2003

Idea and Innovation Repository:

a) Innovation Viability Assessment

- **This tools makes a first classification to provide valid innovative ideas to the development team conjugating several methods and techniques:**
 - **Decision Trees.**
 - **Reasoning tools, as RBR or CBR.**
 - **TRIZ and its principles.**

Porto, Portugal
May 2003

Idea and Innovation Repository:

b) Innovation Management

- **"LOGO VISUAL TECHNOLOGY" for the organisation and delivery of knowledge (based on the "humanisation" of thought):**
 - **Knowledge is treated like an object.**
 - **Knowledge can be moved about in physical space.**

Porto, Portugal
May 2003

Innovation repository:

- **Product process Knowledge base**
 - > **Experience-based knowledge of products and processes.**
- **Problems Improvement Potential Repository**
 - > **Knowledge on problems and potential improvements regarding products/processes.**
- **Innovative Ideas and Innovation**
 - > **All ideas and innovations stored using the meta classification.**

Porto, Portugal
May 2003


aim Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

AIM Tool integrates an Innovation Engine based on TRIZ, with two different applications:

- **Innovation generator**
- **Problem Solver**

Porto, Portugal
May 2003

aim Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)



Innovation generator:

- Provides a structured means for the development of ideas into product/process improvements.
- Ideas/innovations collected and stored in the repository will be further developed.
- Structured framework for sharing and working on raw, creative ideas leading to innovations.


Porto, Portugal
May 2003

aim Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

Problem Solver:

Provides a possible solution (previously stored in the repository) to a problem detected:

- Solution based on the products/processes knowledge:
 - Previous similar problems or situations
 - Ideas/innovations stored in the repository
- Supporting also decision-taking process for solving the problem.



Porto, Portugal
May 2003

aim Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

**TRIZ:
INVENTIVE PROBLEM SOLVING**

Porto, Portugal
May 2003

aim Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

Oriented Innovative Thinking Tools:

- **TRIZ (Theory of Innovative Problem Solving)**

> **TRIZ is a useful tool helping to find innovative solutions**

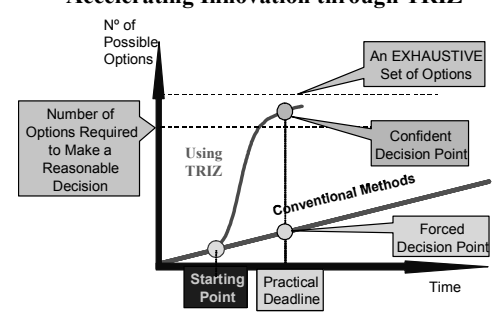
Fundamentals of TRIZ:

1. LAW OF IDEALITY
2. CONTRADICTIONS
3. SYSTEM APPROACH
4. EVOLUTION OF TECHNICAL SYSTEMS

Porto, Portugal
May 2003

aim Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)

Accelerating Innovation through TRIZ



Number of Possible Options

Number of Options Required to Make a Reasonable Decision

Using TRIZ

Conventional Methods

An EXHAUSTIVE Set of Options

Confident Decision Point



Forced Decision Point

Starting Point

Practical Deadline



Time

Porto, Portugal
May 2003


 Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)
 

CONCLUSIONS

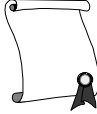
Porto, Portugal
May 2003


 Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)
 



Conclusions

AIM OVERALL OBJECTIVES:

- **INCREASING INNOVATION**
- **ACCELERATING IT INTO THE MARKET**



Porto, Portugal
May 2003




 Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)
 

AIM: Project Objectives

To develop means for:

- **Stimulating the creation and collection of innovative ideas from people involved in the EE.**
- **Processing these ideas and storing them into a structured knowledge repository.**
- **Analysing innovative knowledge to determine which is useful, and which is not.**
- **Delivering the innovative ideas to product and process designers for maximum effect.**

Porto, Portugal
May 2003


 Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)
 

Main utilities to achieve



Ideas/knowledge collection

- **Catching knowledge and innovative solutions from:**
 - **identified product/process problems**
 - **improvements potentials.**
- **Collecting ideas from all involved actors on the product value chain (Extended Enterprise).**

Innovation support


- **Employing innovative methodologies for the best use of deas/knowledge.**
- **Using tools to support innovation along the process.**

Porto, Portugal
May 2003




 Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)
 

AIM Project Benefits

- **Reduction of innovation cycle-time.**
- **Reduction of time and efforts for solving product/process problems.**
- **Improvement of process efficiency.**
- **Reduction of waste.**



Porto, Portugal
May 2003




 Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222)
 

Conclusions

MEANS FOR:

- **CAPTURING AND STRUCTURING INNOVATIVE IDEAS.....**
- **...ON THE EXTENDED ENTERPRISE.....**
- **...IN A WAY THAT THEY CAN BE BEST USED FOR PRODUCT/PROCESS INNOVATION.**


Porto, Portugal
May 2003

 Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222) 

Conclusions

- *Not any methods or tools available until, now similar to AIM*
- *AIM's tool is based on a combination of existing advanced technologies applied at the industrial manufacturing level.*

Porto, Portugal
May 2003

 Acceleration of Innovative Ideas to Market, AIM (IST-2001-52222) 



THANK YOU FOR YOUR ATTENTION

Porto, Portugal
May 2003