



Training material



Contract No. NMP2-CT-2006-026673





Presentation 1

Pegasus Overview



Contract No. NMP2-CT-2006-026673



- **To develop a new and innovative methodology for automotive SMEs:**
 - Delivering integrated engineering and new processing concepts specifically (but not exclusively) for plastic moulded components.
- **To provide enhanced capabilities for SMEs to design a new generation of sustainable knowledge-based services and products**
- **To deliver a working demonstration of the above**





Consortium

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Number of partners:	22
Number of EU Member States:	8*
Duration:	4 years
Budget:	More than €9M
EC contribution:	More than €5M

*Belgium, France, Germany, Poland, Portugal, Spain, The Netherlands, UK





Consortium

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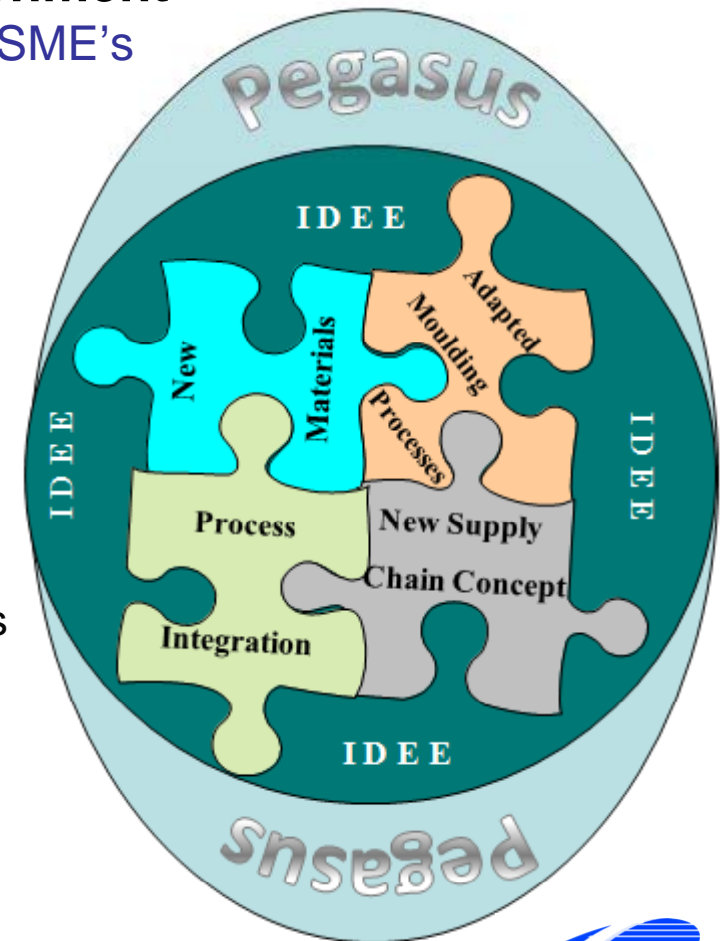
AIMPLAS	Spain	Setemip	France
Smithers Rapra	UK	LMS	Belgium
Plasdan	Portugal	Bostik	Netherlands
Schneider Form	Germany	Smart (Daimler)	Germany
Tacit Connexions	UK	EuPC	Belgium
Addcomp	Netherlands	SMMT	UK
Bax	Netherlands	TNO	Netherlands
QS Grimm	Germany	ICT Fraunhofer	Germany
Acteco	Spain	TU Delft	Netherlands
Jacob Composite	Germany	U Minho	Portugal
Osowaplast	Poland	DSM Resins	Netherlands



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- **Integrated Design and Engineering Environment**

- Software system for automotive supply chain SME's combining:
 - Knowledge Management (KM)
 - Knowledge Based Engineering (KBE)
 - Process Integration & Automation technologies
- Fast, multi-disciplined and objective evaluation capabilities based on existing Aerospace models.
- The IDEE will facilitate:
 - Collaboration on customised high-tech services
 - Decision making processes from concept to production, including technical, environmental and economic consideration.





Approach – New materials

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- **New Materials:**
 - To develop practical breakthrough materials with required functionality:
 - Intrinsic colouring with nano-particle pigments for Class-A quality finish
 - Powder coatings as environmentally acceptable replacement for conventional painting
 - Innovative adhesives for disassembly “on-command”
 - Electrically conductive polymers to replace conventional wiring
 - Variable density foams for improved pedestrian impact protection





Approach - Processing

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- **Processing:**

- Leading edge technologies adapted, for new materials and integration

Increased customisation:

- Flexible process configuration on-demand through integration:

- Multi-material moulding
- Debond-on-command
- In-mould assembly
- Back and/or over-moulding.

- Component integration:

- Multiple functionality; eg one-piece side-panel and integral light cluster
- Electrically conductive pathways



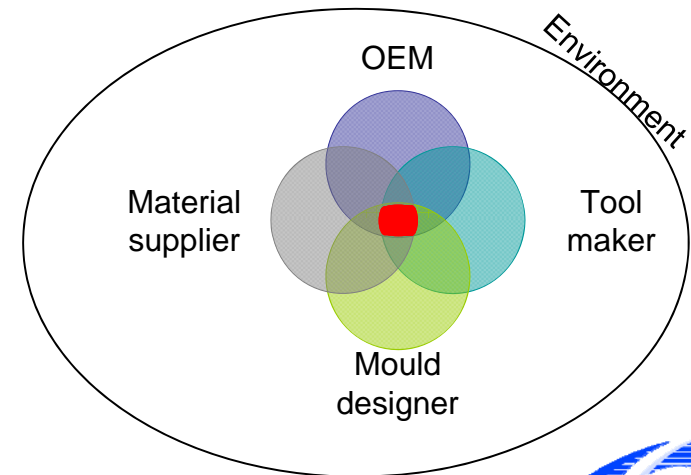
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Deliverable Benefits - IDEE

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- **Capture and retention of valuable knowledge**
- **Automation of repetitive product and tooling design processes**
 - Max. efficiency across collaborating supply chain SME's/partners
- **Reduced prototyping through modelling, analysis and optimisation**
 - Reduced costs and environmental impact
 - Max. exploitation of new Pegasus materials and processes
- **Late selection of configuration options**
 - Enables "5-Day Car" concept



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Deliverable Benefits – New Materials & Processes

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- **Integrated manufacturing with fewer steps**
 - Lower material and energy consumption
 - Reduce number of vehicle components
 - Eliminate assembly tasks
 - Max. exploitation of Pegasus IDEE capability
- **Improved vehicle Life Cycle sustainability**
 - Reduce weight for lower CO2 emissions
 - Easier disassembly and increased recyclability
 - Quicker/cheaper vehicle repairs
 - Better passenger and pedestrian safety
- **Improved materials and processing techniques**





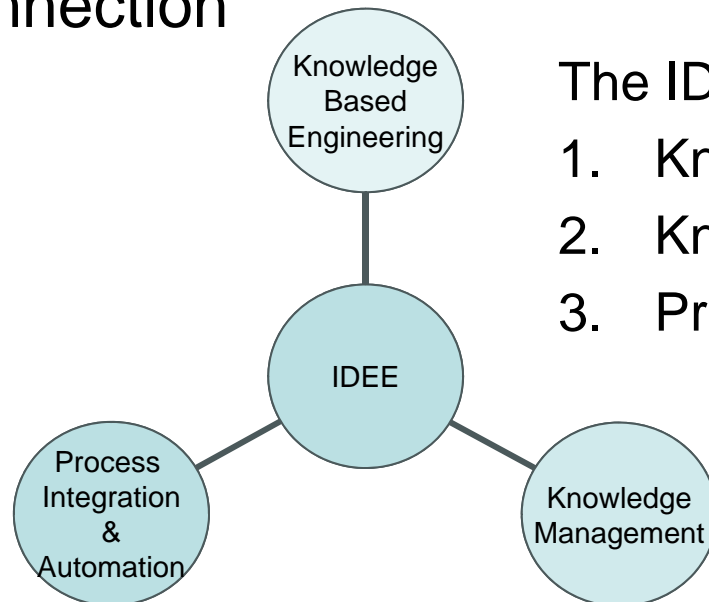
Work plan

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- Integrated Design & Engineering Environment (IDEE)
- Functional materials development
- Processing Development
- Technology integration
- Economic & Environmental impact assessment
- Demonstration



- Available knowledge collected and organised.
- Mould tool design and optimisation facility tested:
 - For performance, environmental impact, cost etc.
 - Integrated and automated processes via secure web connection



The IDEE combines three technologies:

1. Knowledge Management (KM),
2. Knowledge Based Engineering (KBE)
3. Process Integration & Automation





New Materials & Processes Summary

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- New materials and processes successfully developed for:
 - Intrinsic colouring of parts using nano-pigments
 - Application of Debond-on-Command adhesives (various)
 - Functional foams
 - Conductive pathways, back moulding and Local Fibre Reinforcement
 - All for use with IDEE
- Development continuing for:
 - Clear powder coating of intrinsically coloured parts

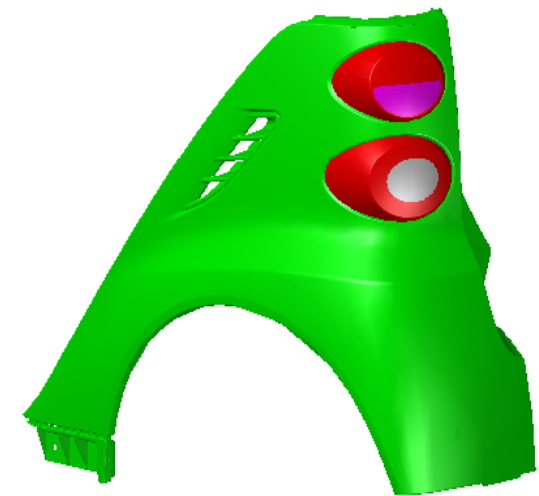




Demonstration Summary

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- New materials and processes demonstration:
 - Parts and tooling designed and optimised using IDEE
 - New rear quarter panel for Smart Fourtwo produced and tested (dimensionally and functionally)
 - New LED light cluster soon to be produced and tested
- Economic and environmental impact analysis:
 - Pegasus rear quarter panel and light cluster evaluated with favourable results





PEGASUS

Pegasus Low Carbon Credentials (1)

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- **Initially, (ultra) Low Carbon Vehicles represent a niche market, requiring a new business/operations model to allow new entrant SMEs to compete.**
- **Pegasus IDEE facilitates niche vehicle/component production by providing tools and methodology to support such a new model:**
 - Promotes holistic SME collaboration
 - Reduces lead time for development and prototyping
 - Enables design integration of component functions and processes for improved production efficiency with respect to energy, materials and time
- **Pegasus demonstrator for Low Carbon Vehicle (LCV) application:**
 - Rear light/quarter panel assembly for Smart Fourtwo (EV & diesel versions)
 - IDEE tools/methodology adaptable to other LCV component applications



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PEGASUS

Pegasus Low Carbon Credentials (2)

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- **Processes for Low Carbon/niche vehicle manufacturing:**
 - Cost and energy-efficient integration of processes/component functionality for max. exploitation of IDEE capability
 - Cost effective light assemblies using energy-efficient LED systems
 - Max. flexibility for specification of low volume configuration options
 - Reduced paint shop energy use and VOC emissions

- **Materials for Low Carbon/niche vehicle design:**
 - Increased application of automotive plastics and other lightweighting options, e.g.
 - Cheaper/higher quality intrinsic colouring
 - conducting polymers
 - Local fibre reinforcement
 - Lightweight bumpers with improved pedestrian safety
 - Improved end-of-life vehicle disassembly



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More information

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Visit project website

www.pegasus-eu.net

