

## Update: Materials Strategy Software Consortium



[www.emitconsortium.com](http://www.emitconsortium.com)

## The Materials Strategy Software Consortium



### What is it?

Collaborative projects that drive the development of software to manage materials data and apply it to challenges of selection, substitution and cost optimization.

### 2012 projects:

- Material & Process Cost Analysis for New Product Development
- Material Substitution workflows (recruiting now)
- Material cost estimation (TBC)

# MI:Optimize

**Specify the design**

**Find candidate materials which meet engineering and strategic objectives**

**Enterprise Material Optimizer**

**Summary of your requirements**

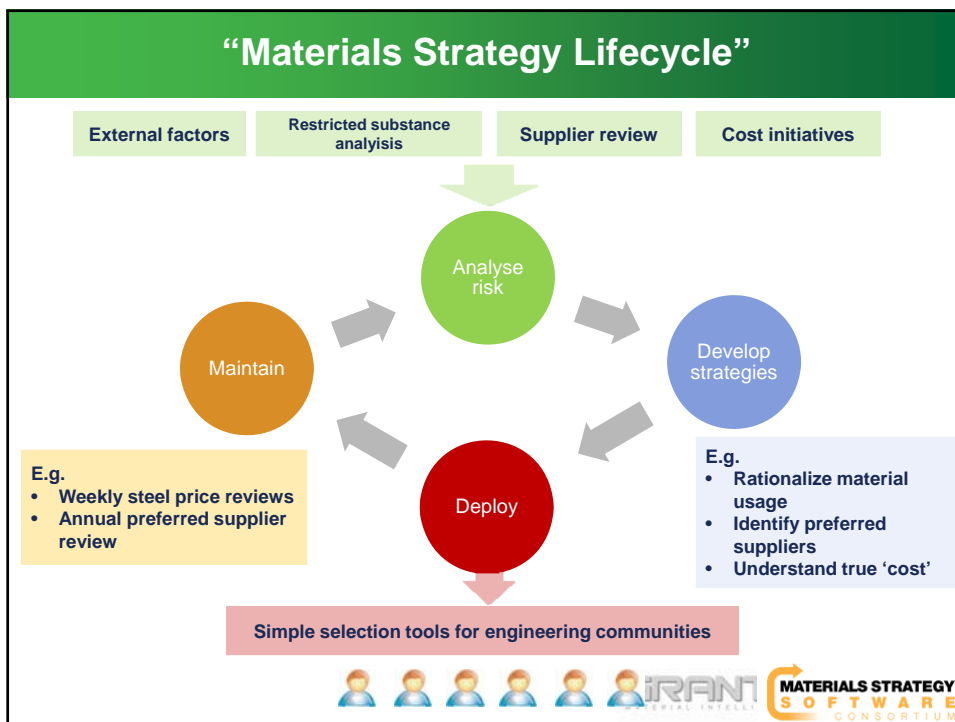
Objective	Cost	For a Beam in bending
Design	No design load in length, section shape fixed	I am free to change section area
Preference material	None selected	
Preference design characteristics	Hot Set	
Additional criteria	Heat deflection temperature @ 45MPa a 100 °C	Linear mold shrinkage 2 to 3 %
	Water absorption @ 24 hrs a 1 %	

**Results**

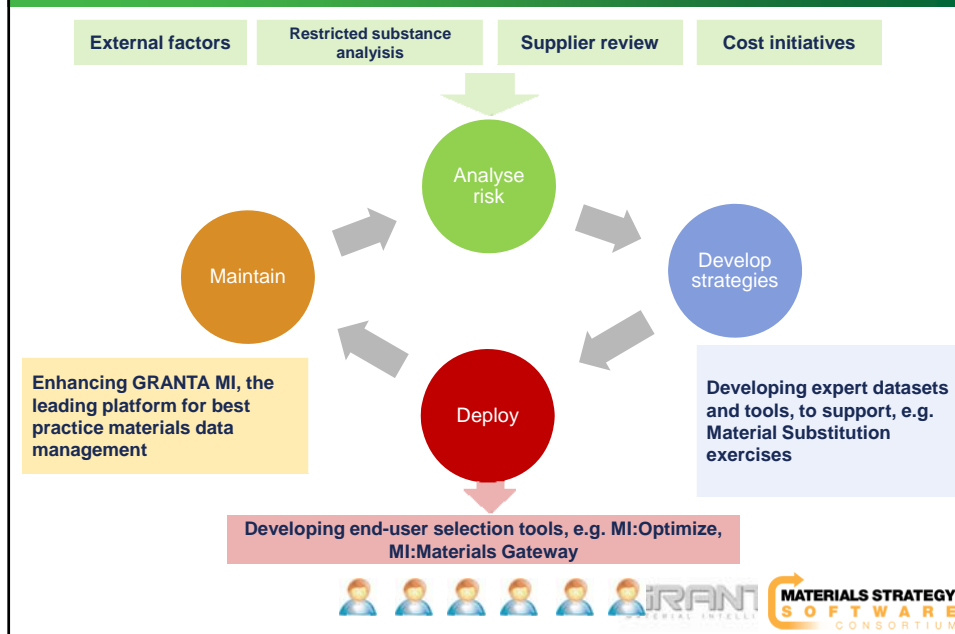
**Additional reports**

- Approach Table Report**: Lists key properties of material that meet your criteria. Can be exported to Excel.
- Pass/Fail Report**: Indicates why specific material were included or excluded from the results.
- Performance vs. Impact (Strength)**: For comparing the calculated performance of the part to the impact strength of candidate materials.
- Performance vs. Yield (Strength)**: For comparing the calculated performance of the part to the yield strength of candidate materials.
- Performance vs. Young's Modulus**: For comparing the calculated performance of the part to the Young's modulus of candidate materials.

# "Materials Strategy Lifecycle"



## How does the Consortium Help?

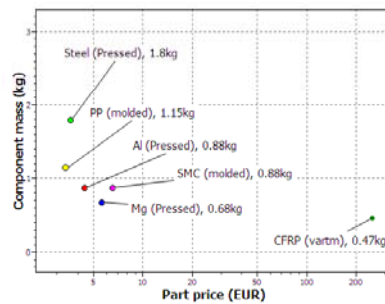
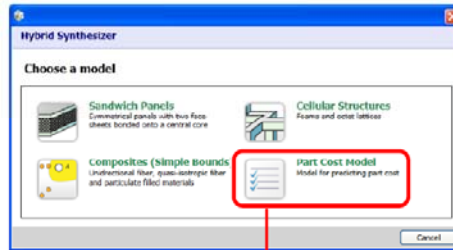


## Project overviews

Project name	Material & Process Cost Analysis
Mission statement	Visualization and analysis of the cost implications of candidate materials in new product development / new market analysis
Platforms	CES Selector
UCDs	S-CO-01, S-CO-02
Participants	Rhodia, Constellium (Alcan), Sirris, Hutchinson
Granta Lead	Charlie Bream

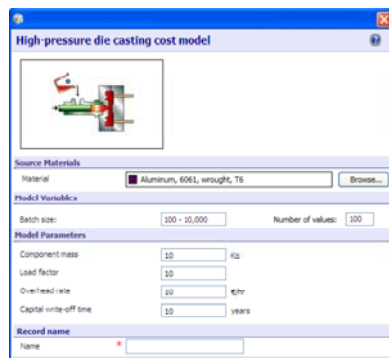
## Material & Process Cost Analysis

- Aimed at advanced innovation and material marketing groups
- Participants include Rhodia, Hutchinson, Constellium (Alcan) and Sirris
- First beta version released June 2011
- Makes use of CES Synthesizer technology to apply a process cost model directly to materials in CES
- Key value is ability to validate models with other companies in pre-competitive environment

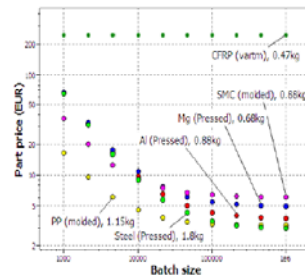
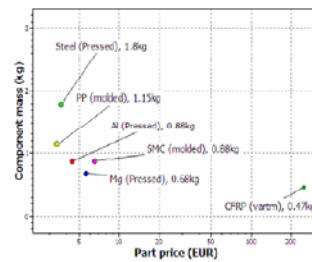


## Beta tool screenshots

### CES Selector Plugin



- Creates new records in database
- Individual Material & Process combination
- Investigate impact of model parameters
- Simple to create/apply new cost models



# MPCA Phase II

Focus of Phase II will be on chaining multiple processes

Phase II kickoff meeting at JEC in Paris (March 2012)

<http://www.grantadesign.com/strategy/paris.htm>

## Materials and Process Cost Analysis Phase II Kick Off Meeting



March 29 (afternoon), Paris

The kick-off meeting for Phase II of the Materials and Process Cost Analysis project, coordinated by the Materials Strategy Software Consortium, will be held in Paris this Spring (the meeting is arranged to be convenient for anyone attending the JEC Composites Show). This Project aims to develop new tools for the early assessment and visualization of the cost and competitiveness of manufacturable parts. Project participants should register below. Anyone interested in finding out more, with a view to joining the project or using the resulting technology, is also welcome to register.

### Outline agenda

2.00	Welcome, Introduction
2.15	Project goals and vision
2.30	Review of existing technology, with case studies
3.30	Coffee
3.45	Review Phase II Use Cases / requirements
4.45	Wrap up, fix next meeting
5.00	CLOSE (JEC continues until 6pm)
8.00	Meet in Paris for dinner

There is no cost for attending the kick-off meeting, but registration is required.



# Project overviews

Project name	Material Substitution
Mission statement	Identify – and understand the implications of – candidate substitutes for materials which are withdrawn, obsolete or unavailable
Platforms	GRANTA MI
UCDs	S-SUBST-xx
Lead Sponsor	Various from both MSSC and EMIT consortia
Granta Lead	Dan Williams





# Scope

## Data developments could include:

- “Universe” datasets to fill holes in knowledge and support “out of class” substitutions
- Specific datasets to cover an area of high priority interest, e.g. coatings, paints, adhesives

## Expert tool developments:

- A number of improvements to existing tool, e.g. those in UCD spreadsheet
- Additional capabilities for expert users, e.g. new reports

## Deployment tool developments:

- Workflows to support deployment of substitution results
- End user “Apps”
- Gateways



# MI:Substitute UCD spreadsheet

#	Name	Description	UCD	Notes
<b>Workflow</b>				
1	Access Control	Tie to access control: only certain users can use MI Substitute	S-SUBST-06	<a href="#">download</a>
2	Assignments	MI Substitute users can assign substitutes to datasheets so subsequent users can see recommended alternatives	S-SUBST-03	<a href="#">download</a>
3	Toolbar launch	If user is viewing a datasheet, Substitute button in toolbar launches tool with this material as	S-SUBST-07	<a href="#">download</a>
4	Relevant Groups	If an attribute group contains no attributes which can be used in a substitution calculation, don't offer it	S-SUBST-08	<a href="#">download</a>
5	Find Similar	"Find Similar" button on datasheets - quickly find materials with a similar composition, mechanical behaviour, etc.	S-SUBST-09	<a href="#">download</a>
<b>Substitution algorithm</b>				
6	Fallback Links	a.k.a. "hole filling" - make use of Fallback Links to e.g. Material Universe to plug holes in databases	S-SUBST-02	<a href="#">download</a>
7	Weightings	Allow users control over relative importance of attributes during substitution		Requires discussion - no UCD yet
8	Attribute Support 1	Support for text attributes		Requires discussion - no UCD yet
9	Attribute Support 2	Support for tabular data		Requires discussion - no UCD yet
10	Attribute Support 3	Support for functional data		Requires discussion - no UCD yet
<b>Report</b>				
11	PI Report Improvements	Improvements to readability of Potential Issues Report	S-SUBST-12	<a href="#">download</a>
12	XY Charts	Use bubble charts for graphical analysis of substitution candidates	S-SUBST-13	<a href="#">download</a>
14	Material Rejection	Reject materials and remove from reports	S-SUBST-14	<a href="#">download</a>
<b>Supporting tools / features</b>				
15	Intelligent Linking	An automated tool to help admins populate fallback links	S-SUBST-01	<a href="#">download</a>
16	Lessons Learnt	Capture lessons learnt so that MI Substitute users are aware of potential issues	S-SUBST-05	<a href="#">download</a>



## Phase II

A Phase II would allow GRANTA MI customers to:

- ▶ Be heard above the crowd: prioritize functionality in future versions
- ▶ Share and validate ideas and case studies amongst a diverse group of industries
- ▶ Cost share developments
- ▶ Get more value from your software investment

Requirements:

- ▶ Commitment to attend Webex/meeting schedule
- ▶ Willingness to share ideas, beta test tools and provide feedback
- ▶ Minimum GRANTA MI threshold spend

Several MI customers have agreed to participate in a Substitution Phase II project

Goal is 10 GRANTA MI customers

Aim for Phase II kickoff in June/July 2012



## Potential project

Project name	Material Cost Estimation
Mission statement	Allow GRANTA MI customers to generate approximate material prices for in-house materials to support selection and optimization within their organization
Platforms	GRANTA MI
Lead Sponsor	TRW Automotive
Granta Lead	Dan Williams

- Allows customers to extend the Material Universe concept of approximate pricing to their own grades and typical pricing
- To be discussed further at Granta German User Meeting, Munich, April 2012





## Calendar

<b>March 2012</b>	<b>MPCA Project Phase II kickoff (Paris)</b>
<b>April 2012</b>	<b>Consortium projects session at Granta German User Meeting</b>
<b>May 2012</b>	<b>Automotive Workshop, Detroit, MI</b>
<b>June/July 2012</b>	<b>Substitution Phase II kickoff (Webex)</b>