Environmental Materials Information Technology (EMIT) Consortium
Minutes of Steering Committee Meeting

Hosted by: Granta Design, Cambridge
19-21 March, 2012

ATTENDANCE

Members

Astrium Satellites	Ian McNair
ARL	Wayne Ziegler (by phone)
Eurocopter	Cyrielle Gendre
Granta Design Limited	David Cebon, Will Martin, Kim Marshall, Jamie O'Hare, Arthur Fairfull (Will Marsden and Dan Williams on 21 March)
Honeywell	Mark Bohley (EMIT Chair)
Lockheed Martin	Colin McMillan
National Physical Laboratory (NPL)	Graham Sims
Rolls Royce	Andy Clifton, John Edwards, Cathy Philips (19th only), Gitanjali Nayar (19th only)
Thales	Graham Goring

Apologies

Boeing	Sue Baker
NASA Marshall Space Flight Center	Ben Henrie
Emerson	Bob Rivett and Amy Neale

SUMMARY OF ACTIONS

Minute	Item	Responsible
6.4	John Edwards requested a demonstration and discussion of the supplier web portal. Granta to arrange a meeting or Webex with RR.	Granta (Martin)
9.7	Will Martin will circulate the work so far on coating substitution to EMIT members	Granta (Martin)
13.4	Arthur to send the new 'assigning surface treatment spec' slide to Consortium Members.	Granta (Fairfull)
13.7	Recycling ability is added to the Gateway report for issues concerning two materials (galvanic corrosion, etc).	Granta (Fairfull)
13.8	It was agreed that in future, the EMIT Consortium should vote specifically on the integration use cases.	Granta
16.4	It was agreed to separate-out the two use Cases in the LCA data exchange UCD <Completed DC>	Granta
17.4	Members with examples of complex, nested structures for specifications are invited to share them with Granta, so that these structures can be accounted-for in the solution.	All
21.4	Add use these two use cases on notifications and 'instant' database updates to the use cases spreadsheet. <Completed DC>	Granta
24.2	Webex to review voting spreadsheets	Granta
24.3	Granta to review the 'Green passport for Marine specific - action' and add it to the substance database if it is useful to do so.	Granta
24.4	Arrangements for voting process	Granta/NPL
25.2	It would be useful to generate an overall solution roadmap for members to review and comment at the next meeting.	Granta
26.1	Members were encouraged to discuss EMIT with peers in other companies and other industry sectors.	All

MINUTES DAY 1 (MON 19 MARCH, 2012)

1   Introductions

1.1   David Cebon welcomed the Consortium to Cambridge.

1.2   Mark Bohley took the Chair. He welcomed Thales to their first meeting as a member of the EMIT Consortium. He also welcomed new representatives from Astrium, Eurocopter and Lockheed Martin.

1.3   The members and observers introduced themselves.

1.4   The Agenda was reviewed. There were no changes.

2   Minutes of the last meeting

2.1   The minutes of the meeting held at Honeywell on March 28-30, 2011, were approved.

2.2   The action items from the minutes of March 2011 were reviewed.

Item	Action	Who	Outcome
8.5 (iii)	Boeing will generate a proposal for the re-organization of the Legislation tree, which the Consortium will discuss in a Webex.	Boeing, Granta	No proposal from Boeing yet. Granta will chase Boeing to close this out.
9.5	Granta will investigate a system to maintain 'NOCAS links'.	Granta	NoCAS links: Granta has concluded that this action needs to be delayed until attribute notes have been added to substances. This will happen in the near future.
10.6	Granta, (with input from RR and NPL) to investigate the various risk metrics and perform some case studies to examine how well the proposed approach would work.	Granta (RR, NPL)	This item will be discussed tomorrow.
11.6	Granta agreed to write UCDs to describe how the two indicators (i.e. on candidate list and non/wrong registration) would work.	Granta	These UCDs have not been written yet, but will be completed in the MI8.0 development cycle.
13.4	EMIT members were asked to provide their input on priorities for Gateway development. In particular, inform Granta of: particular desired target CAD/ CAE/ PLM systems; and whether there is a plan that requires this integration in the near/mid term; Which additional stakeholders at your company would have input on these questions?	All Members	No input has been received from EMIT members so far. Granta is modifying its approach to obtaining customer feedback on these issues.
14.2	Granta will develop a case study on obsolescence management, using data provided by an EMIT member (RR?) to test the methodology.	Granta (RR)	Granta has been pursuing a case study concerned with coatings. This will be discussed tomorrow.
19.2	RR to provide information on in-house tool called EnVaid which may have relevant "Wastes and Emissions' data relevant to E-AE-01.	RR	Andy Clifton has had some discussions with the EnVaid authors. The discussion is ongoing.
19.4	Granta to remove E-S-04 'Process Substitution' from the voting list. (N.B. This functionality could largely be performed using the existing MI: Substitute tool.)	Granta	Completed
25.1	Teleconference to be organized on Thurs 13th Oct at 4pm UK time, to discuss the two voting lists and confirm the voting procedure and timetable.	Granta, NPL	Completed

25.2	Votes will be due by 4[h] November. Completed voting sheets should be emailed to Graham Sims and copied to David Cebon.	All	Completed
25.3	Follow-up Teleconference to be organized on 14th November to review the outcome of the two prioritization votes.	Granta, NPL	Completed
25.4	Next six-monthly meeting to be organized by Granta in Cambridge, UK on 19-21 March 2012	Granta, NPL	Completed
26.1	Members reminded to feed into chart on their Beryllium interests for NPL	All	Completed
26.2	Andy Clifton to send Will Martin contact details to Derk-Jan van Heerden of the Aircraft Fleet Recycling Association, who is developing a database of substances contained in spare parts.	RR	Completed

3 Aims and Objectives, Software Development Process

3.1 David Cebon reviewed the software development process and schedule. Granta MI 5.0 was released late in 2011. It includes software development directed specifically at restricted substances management and reporting and Eco Audit. MI 6.0 is currently under development. There will be an opportunity to discuss some of its features at this meeting. Planning for MI Version 7.0 has begun and MI8.0 is at the 'discuss' brainstorming stage. Various use cases will be discussed and fleshed-out at this meeting. All aspects of the restricted substances solution and Eco Audit will be discussed during the meeting, with a focus on the 'BoM Journey' through the product engineering process.

3.2 Key aims of this meeting are:

    (ii)   Integrate:
- Software, data and reporting
- BoM Management systems
- Workflows to maximize benefits

    (iii)   'Demo' MI 6.0 (Release Q3, 2012):
- Reference data: Restricted substances, eco impact, substitution
- 'Gateway' software connections

    (iv)   'Report' functionality for MI 7.0 (Release Q3, 2013)
- Major Features: review and refine SRDs

    (v)   'Discuss' functionality for MI 8.0 (Release Q3, 2014)
- Compile New Use Cases, prior to prioritization vote

4 Member Report Eurocopter

4.1 Cyrielle Gendre presented a report on activities at Eurocopter. The Granta MI implementation at Eurocopter involves: The AMAZE (Advanced Materials Database), Substance Tracker (and its extension); Substitution, selection and Value Analysis; Lifecycle Assessments; Other M&P applications and opportunities.

4.2 The first 'substance tracker' was homemade in Excel. A project was launched to replace substance tracker with Granta in 2010. The main aim is to avoid obsolescence problems, to prevent supply chain disruptions.

4.3   Tracking of substances in preparations, protection codes and painting codes is well underway. There is less information for the contents of standard articles.

4.4   The analysis of banned and targeted substances is based on the ECPDSL (Eurocopter substance list). Data comes from many sources and has to be validated and cleaned. Validated substances are stored in the Granta MI database. The output is banned and targeted paints, preparations, standard articles, etc. The next step is to integrate REACH Article #33 information.

4.5   The EC Lifecycle Assessment tool is based o n EC's own LCA methodology. The aim is to reduce environmental impacts through M&P decisions during design. It is expected that several different tools will be used, including the Granta EcoAudit tool.

5   Member Report - Astrium

5.1   Ian McNair is part of the Astrium M&P organization. He has responsibility for REACH. Astrium is using SAP/EHS for REACH and Granta for M&P data. Most of Astrium's interest is in the substance area - for components they build themselves. The two tools have different approaches - one for design and one for procurement. Ian is trying to bring these together. Many of Astrium's in-house materials are not currently represented in the Material Universe. This is a strong focus for Ian in the coming months. The database has to be complete.

5.2   ESA have a software tool that they require Astrium to use for materials selection and approval. There is not a strong link between customer requirements and regulatory requirements, eg for REACH. They now have a corporate-wide tool for management of safety data sheets.

5.3   Astrium is intending to be much more engaged in EMIT activities in future. ESA is using a Granta MI system for a European space materials database. There is scope for a tie-up between the three organizations.

6   MI7.0 MSDP Report

6.1   David Cebon presented a report on the environmental components of Granta MI6.0 and 7.0.

6.2   MI 6.0 will be released this quarter. Software items to be included in MI6.0 will be as follows:

	Category	Code	Use Case	Explanation
	Under consideration for MI6.0, Q3 2012			
Demonstrator	Input Data	E-I-05	Supplier Declaration Portal	An outward facing web portal to MI: Restricted Substances allowing suppliers
	Report	E-R-06	Find substances across all products	Given a substance, locate all of its uses in products (across the enterprise)
Needs E-R-04	Assess Business Risk	E-AR-09	Assess standard industry parts	Engineering systems can sometimes contain large numbers of standard
In Progress	Report	E-R-04	Record ID Translation	Translate material/process/part Identifiers for legacy parts in CAD systems or
	Assess Environ. Impact	E-AE-07	Reusing and combining Eco Audit	Write the results of an Eco Audit into a record in the Articles table. Enables
Partial soln	Assess Environ. Impact	E-AE-05	Hole filling for Eco Audit reports	If customer data is not available for Eco-Audit reports, get fallback data from
Done	Implanted Client	E-C-02d	Implanted clients for Siemens NX	Gateway implanted client running in Siemens NX CAD system. Key use
	Assess Environ. Impact	E-AE-10	MI:Viewer interface for BoM	MI:Viewer interface to allow the input and management of a Bill of Materials (BoM)
Added	Report	E-R-11	Reference to coating and other specs	New UCD added to MI6.0

6.3   Other items under development in MI6.0 are:

(i)   Important work on the reports and BoM generator

(ii)   Proper reference to specs – materials, coatings, etc

(iii)   Critical materials

(iv)   ProE and NX Eco Audit

(v)   Coatings substitution

(vi)   Installers
- Custom reports
- Excel 2003, 2007 and 2010 BoM generators

(vii)   Enhanced databases
- Eco Audit DB
- RSDB

6.4   Software items under consideration for inclusion in MI7.0 are as follows:

Code	Use Case	Explanation	Further Information	Score	Count
E-AE-08	LCA data exchange	Ability to import and use a third party eco database (ecoinvent, GaBi etc,) within Eco Audit.	UCD	24	7
E-AR-00	Display risk metrics on material, coating, substance and	There are various sources of business risk associated with environmental issues including the risk of	UCD	22	7
E-ER-02	Design for risk reduction	A set of tools available within designer's native computer environment, intended to help designers reduce risk:	UCD	20	5
E-AE-03	Assess resources used in manufacture of a product	Resource use - energy, materials, water, 'fly to buy ratio'... how much material is bought-in compared to how much ends	UCD	18	5
E-S-02	Substance substitution	Suggest possible alternative substances for a given combination of material+substance (eg flame retardant)	UCD	17	7
E-C-02	Implanted clients for specified CAD/CAE/PLM	Each CAD, CAE and PLM requires its own 'binding' for the implanted client technology.	UCD	13	5
E-S-05	Material selection accounting for restrictions due to	In some cases, Access Control could be used to filter out materials that are not allowed because of substance	UCD	12	5
E-AE-01	Estimate wastes and emissions	Estimate wastes and emissions generated by a manufacturing process. Solid and liquid wastes, air-borne and	UCD	10	3
E-I-03	Connect to external substances databases	Interface Eco tools with external restricted substances databases - eg EMARS/Insight, SAP	UCD	6	2

To be discussed in this meeting (annotation pointing to rows E-AE-08 through E-S-05)

6.5   John Edwards requested a demonstration and discussion of the supplier web portal. Granta to arrange a meeting or Webex with RR.   (ACTION: Granta)

6.6   Potential confusion over 2 use cases with the same names E-S-03?

7   Update on ADS Activities (Aerospace, Defence, Space and Security companies organisation)

7.1   Andy Clifton reported on activities of the ADS DfE (Design for Environment) working group. The long lifecycle of aerospace products requires information about access to resources, the likelihood of disruption to the supply chain and what impact will such a disruption have on the business. Physical exhaustion or resources is unlikely, however a number of other factors need to be considered, eg geopolitical stabilty.

7.2   Fourteen materials were identified in the EU report. This is being used as a de-facto list of critical 'materials' for all industries. However it has given an unrealistic assessment of criticality for aerospace, because the result depends on the context.

7.3 ADS priorities are: (i) Develop a standardized framework for assessment along with (ii) improved and standardized data sets.

7.4 The ADS DfE working group has setup an Engineering Doctorate (EngD– an industrially placed PhD. Student) on sustainability indicators. Granta is supporting this initiative.

8   Update on AIA Activities

8.1 Mark Bohley gave an update on the joint AIA/ASD activities. A hot topic at the February meeting was the impacts of Registration.

8.2 Some key impacts of registration are:
- Substance disappearance: (Na and K Dichromate)
- Last minute pressure
- 600% increase in costs
- Substances disappear from the market as they go onto Annex XV
- Formulation changes accelerated as registration deadline approached.

8.3 A new trade association, the Aerospace Environmental Group (AEG) has been formed. A rapid response nework has been formed.

9   Restricted Substances Database - Development Plans

9.1 Will Martin gave an update on database development. RSDB version 1.006 was released with MI v5.0. It included a number of new items of legislation and various new schema changes and functionality to support MI5. There are now 82 lists containing 6625 substances.

9.2 Release 2 of the RSDB is under development - ready for imminent release. It includes where-used data for substances contained in Materials, processes and coatings, for SIN List 2.0 substances. It also includes new reports to reference new SIN list data, and update to the coatings database, including typical oil and gas coatings, taking the total number to 143.

9.3 The Spring Release v2.1 will contain:

    (i)   The 'Cathy Philips' Indicator (REACH SVHC prediction indicator);
- Adding the ETUC list
- CMR on CLP
- SIN List 2.0
- Additional attributes - eg high production volume and wide dispersive release

    (ii)   Improvements to the undocumented reformulation indicator;

    (iii)   A beta test release of the materials criticality database.

9.4 For the Summer release v2.2, it is planned to add substance attribute groups and a system to manage NoCAS links.

9.5 Will discussed the workflow for E-S-02 'Substance Substitution'.

    (i)   User identifies a substances

    (ii)   User identifies the use of the substance from a list of available choices

(iii)   Software generates a list of possible alternative substances for this combination of substance and application. Officially approved substitutes are flagged

(iv)   User can view data for the alternative substance.

This UCD is being investigated in the context of Coatings selection. It will link coatings to specifications and will use generic Technology Readiness Levels (TRLs) to guide companies to facilitate identification of suitable alternatives for targeted coatings.

9.6   To move forward with coating substitution Granta need to include some new attributes in the specifications table, including a container for tracing and managing substitution work. The plan is then to generate a new reporting capability / risk dashboard to indicate risk and substitutability.

9.7   Will Martin will circulate the work so far to EMIT members.   (ACTION: Granta)

MINUTES DAY 2 (TUES 20 MARCH, 2012)

10 Critical Materials

10.1 Kim Marshall gave a presentation on work done in collaboration with Rolls Royce on a Research and Development project (SAMULET) concerned with Materials Criticality. The interest is in materials issues that generate a risk to materials supply and price. The database is specifically concerned with supply and price risk. At this stage it does not consider business impact. The critical materials are linked-into the Granta MI Restricted Substances database.

10.2 Five risk metrics have been considered:
- Abundance in the earth's crust (ppm)
- Sourcing and political risk (World Bank Governance Index for countries)
- Environmental country risk - based on the countries in which the element is mined (Yale Environmental Performance Index for countries)
- Coproduction type
- Price volatility (%)

10.3 These are assessed on a 5-point discrete scale... Very Low to Very High. Recyclability has not been considered at this stage.

10.4 Kim showed the demonstration database in Granta MI. This database is undergoing development and validation through this year. The worst case risk scores are rolled-up across all elements.

10.5 Kim showed two mock-up BoM reports, for feedback.
- Buyers interested in the commodity market may be interested in reports by element. Others may be interested in risk by part.
- There was concern that the reports may be too long. It may be useful to be able to specify the minimum risk level to be displayed.
- Another way to report may be the percentage of parts that have high risk indicators.
- The percentage of each element in the part may be of interest from a financial viewpoint.
- It may also be desirable to include restricted substance ratings in the same report.
- Another option would be to present an interactive dashboard/graph allowing the user to specify the indicators to be plotted and various plotting options.

- This information would be needed at a program level and at Product Stewardship Phase-Gate reviews. In this case it could possibly be delivered through a PLM Gateway tool.. However, it may be desirable for the information to be flagged to design teams in CAD as early as possible.

10.6 Still to come are: Finishing off the material database; developing a critical materials reporting capability and beta testing for the SAMULET project by RR.

11 Member Report - Rolls-Royce

11.1   Andy Clifton and John Edwards presented a report on the status of the Restricted Substances Implementation at Rolls-Royce. The two current projects are EDW (Enterprise Data Warehouse) and MORSE (Management of Restricted Substances and Equipment). The current system uses an Access database to pull-together information from products through to substances, including the Global Supplier Portal (GSP). This is being transferred to EDW to clean-up the data, and from there into the MORSE system. Over the next 6 months the business system will be written for MORSE.

11.2 Andy gave an overview of the SAMULET project, which is concerned with evaluation of product designs in terms of life cycle impact and sustainability. This project is now in the final year of a four-year development program. The framework of the proposed software is largely in place. The idea of the software is to store the SAMULET evaluation in the PLM system. This will enable the gap between knowledge on environment/sustainability (owned by corporate HS&E, Materials, Sustainability teams) and the various business units which create products and own the risk.

11.3 EMIT Influence: Ability to evaluate designs in terms of exposure to risk.

11.4 New proposed UCD: Use case for ERP Integration to support RSDB and Article 7(2) declarations in REACH.
- This focuses more on the need to collect and understand total sales volumes across a variety of product ranges and for specific legal entities.
- This capability is critical for businesses that operate at a 'super assembly' level. (Those wo supply a very diverse array of products through a complex supply structure (components, spares, assemblies, modules, whole engines, supplied by different legal entities, etc..)

11.5 Top issues for discussion:
- New UCD on Article 7(2)
- Resource use: Critical Materials (Indicators, for supply disruption, evaluating business risk, etc), Water (assessment based on geographical water stress and regulatory change) and Waste (recyclability, TRL of recycling capability)

12 Member report - Honeywell

12.1 Mark Bohley gave a member report for Honeywell. Key aims of the project has been to store material data in a common location for design usage. The focus has primarily been on mechanical properties and models. Additional benefit is now being gained for non-metallics. The RSDB is currently used for information support.

12.2 Current status: Chemistry data collection is outside of Granta MI. Honeywell is working on possible links with design through Teamcentre and NX. Cleaning the Honeywell data to enable links to work. Key obstacles are the need for common objects - Notes, Specs and Documents and old systems with too much data. It needs to be possible to link to Specifications and Documents.

12.3 The structure of the current software system is divided site specific, multiple tools, etc. Databases for Spec-to-Chemistry and Part-to-Spec.

12.4 The final system should be that M&P owns the data and the design community accesses the data through Teamcentre. Full Teamcentre roll-out will be in 2015. It is vital for material specifications to be assigned to materials.

12.5 EMIT projects Honeywell would most like to support:
- Industry data to assess standard parts
- Granta MI Gateway for Teamcentre
- A key need is for the software to call-out materials as a 'Specification Objects' 'AMS-QQ-A-250/11'

12.6 Granta MI needs to be able to manage new systems in Teamcentre going forwards, but also to process legacy BoMs in MI Viewer.

12.7 Future uses for the software: Expand beyond materials, include Honeywell test data, fungus, outgas, chemical compatibility, flammability, chemistry.

12.8 Key ROI argument: 'speed of analysis'. Instead of spending time on collecting data for BoM analysis, this will be done automatically and the engineering teams can spend their times on value-added decision making.

12.9 Top three issues:
- How have companies linked BoMs to Granta?
- What level assessments are being performed?
- How have companies used Granta for material selection?

13 MI7.0 MSDP E-C-02: 'CAE/CAD/PLM Integration'

13.1 Arthur Fairfull discussed integration technology functionality and development priorities. He recapped the MI Materials Gateway concept and showed how it interacts with the Bill of Materials on one side and Granta MI on the other. Gateway has a core set of reusable code that is used for all implementations, with a light-weight integration layer. Arthur demonstrated material assignment using the MI Gateway working in Pro/Engineer.

13.2 Gateway also provides a platform for product analytics, including eco-assessment, REACH reporting, cost modelling, etc. Each of these options comprises (i) report configurations, (ii) dashboard configurations, (iii) some specialist details.

13.3 Arthur presented the roadmap approach. Over the next few months work will focus on Gateway for PLM (Teamcenter in the first instance.) This will be followed by implementing Gateways for a broader range of systems and applications.

13.4 Near and mid-term release goals are: (i) Browsing MI v5.0 Integrated databases; (ii) Assignment of finishing specifications; (iii) Assignment of text attributes from database to CAD model; (iv) Ability to create xml BOM Reports, in addition to pdf reports. Arthur to send the new 'assigning surface treatment spec' slide to Consortium Members.   (ACTION: Granta)

13.5 The MDMC has started to spend one entire day of their meetings to discuss integration issues. The focus of breakout sessions at the January meeting was on CAE, CAD and Product Analytics.

13.6   Arthur presented a spreadsheet of use cases that cut-across the various applications and Consortia, based on the breakout sessions at the MDMC and other use cases from EMIT and Granta. He described each of the use cases briefly.

13.7   It was suggested that Recycling ability is added to the Gateway report for issues concerning two materials (galvanic corrosion, etc).   (ACTION: Granta)

13.8   There was discussion about how to prioritize Integration Use Cases. It was agreed that in future, the EMIT Consortium should vote specifically on these use cases.   (ACTION: Granta)

14 Member Report - Thales

14.1   Graham Goring discussed the implementation project at Thales. The aim is to demonstrate that LCA is possible within Thales DfE process. The aim is for all UK business units to have access to EcoAudit by the end of 2012.

14.2   The aim is to have an Ecoinvent database setup in Granta MI, alongside the REACH database. The final system will have access for both Engineering and EH&S staff. The trial involves both electronic systems and mechanical assemblies. The initial trial is nearing completion.

14.3   Thales have an internal Chemical Information System (TCIS) with many chemicals, preparations, materials, PCBs, processes as well as the contents of purchased articles. They also have an in-house restricted substances reporting tool and an in-house LCA tool.

15 Member Report - Lockheed Martin

15.1   Colin McMillan gave a member report for Lockheed Martin. The main aim of the implementation project are (i) to get visibility of materials and substances information and get the appropriate data to the appropriate person; (ii) to enhance collaboration between engineering functions, EH&S, etc; (iii) to anticipate the implementation of a DoD LCA standard, being proposed by the OSD for procurement.

15.2   A LM corporate test environment is coming online and a fast LCA process is being discussed with the rapid prototyping group.

15.3   Major obstacles: The corporate group doesn't have any mandate.   There is concern about cost implementations of environmental considerations. The aim is to move all materials databases from the divisions onto a corporate server.

15.4   ROI arguments:
   - Costs created by lack of data visibility - eg duplicate testing
   - Cost avoidance by upfront ESH considerations
   - Costs of being reactive.

16 Progress on Eco Audit in MI 5.0 and 6.0

16.1   Jamie O'Hare gave an update on progress with Eco Audit in MI5.0 Key developments are:
   - Improved BoM generator
   - Run Eco Audit reports direct from BoM generator
   - Comparison reports
   - Increased range of electronic components
   - Use of Material Universie data to fill eco-data holes
   - Save EcoAudit results in database (infrastructure in place)

16.2 Jamie presented improvements to the database in MI 5.0 and demonstrated the Eco Audit capabilities in the Siemens NX Gateway.

16.3 Jamie discussed plans for EcoAudit in MI6. These included:
- Design for business risk reduction (E-ER-02)
- LCA data exchange - eg use of Ecoinvent database (E-AE-02)
- Compatibility between MI:EcoAudit and MI:Materials Gateway.

16.4 There was discussion of the LCA tools used by members. Andy Clifton reported that RR had used TEAM and GaBi but didn't like either. Lockheed Martin has successfully used Sima Pro. In general it was considered that full LCA is not worthwhile and a streamlined LCA is preferable. It was agreed to separate-out the two use Cases in the LCA data exchange UCD. (ACTION: Granta)

16.5 There was discussion of managing BoM data and assessing manufacturing efficiency. Work is ongoing.

16.6 Plans for MI7.0:
- Manufacturing efficiency assessment (A-AE-03)
- Save EcoAudit results in database in future EcoAudits (E-AE-07)
- Use MaterialUniverse to fill gaps in customer data (E-AE-05)
- MI: Viewer interface for EcoAudit
- Account for manufacturing waste and consumables (E-AE-04)

17 Progress on Restricted Substances in MI5.0

17.1 Will Martin gave an overview of progress on restricted substances in MI5 and development work in MI6.0. He demonstrated the new REACH Dashboard and the preferred materials 'tiering' report in the Pro/E Gateway.

17.2 Will gave an overview of assigning specifications in CAD. He described the proposed database schema. All existing REACH reports are being updated. A number of new reports will be generated, including a new Obsolescence Risk report and a new REACH Details report. The BoM generator needs to be updated also.

17.3 Possible next steps:
- Extend Gateway to assign more than one spec per part
- Smarter linking of specs to available substrates.
- More manufacturing processes steps factored into risk assessment.
- Explore more coatings in CAD use cases - Galvanic corrosion risk, whole part cost.

17.4 John Edwards noted that RR specs are often in a tree structure - sometimes up to 8 deep. Specs reference specs. Granta will liaise with RR to get more information. Any other members with examples of complex spec systems are invited to provide them. (ACTION: All, Granta)

18 Member Report, NPL

18.1 Graham Sims presented a report on recent progress at NPL. NPL is about to launch a new Centre for Carbon Measurement. The aim is to provide confidence and reduce uncertainties in "green" data. There are three themes: (i) Earth observation and environmental monitoring (heavy metals, emissions), (ii) Support to carbon trading and (iii) Low carbon technology including PVs, fuel cells, sustainability and LCA.

18.2   NPL is working on various standards in the environment area. A major activity is BS 8905 - Framework for Sustainable Use of Materials: Guidance. Both NPL and Granta are involved in this.

18.3   Graham is attending AMDS 2012 (3rd Asian Material Database conference) and will be highlighting the EMIT project.

19 Coating Substitution

19.1   Keith Legg and Ralph Alexander of Rowan Technology joined the meeting by Webex.

19.2   Keith gave some general background on the effects of regulations in the aerospace and defense industry. In a normal chromate primer there are several components that are at risk due to either being targeted as SVHCs or because there is not sufficient market to continue their manufacture. Chromic acid, Chromate conversion coatings hard Chrome plating and Cobalt salts are at risk as a result of the chemicals submitted for Annex XIV of REACH in Dec 2011. Loss of these substances will have a profound effect on manufacturing. The timeline to the sunset date is very short for the aerospace industry. There is a danger of cyclic substitution... each substitute needs to be substituted eventually.

19.3   The key to a coordinated response is anticipation and planning. Important aspects of this are:
   • Awareness - what is in your products? How are they made? Where are the potential SVHCs
   • Tracking - keep up with regulatory changes, available technology and what others are adopting
   • Planning: What is worthwhile? What are the options?

19.4   Approaches to substitution: From today's technology it is possible to take small or large steps or have a complete technology change, requiring a big step and higher technical risk.

19.5   Rowan already consults for many of the EMIT materials. They are gurus in clean materials and surface treatments. They work with Granta on the database of coatings and surface treatments. They run the ASETS Defence program (www.asetsdefense.org), which is a DoD initiative on clean coatings, and are involved in a number of other initiatives in this area.

19.6   Granta and Rowan are considering working closer together in the area of restricted substances and coatings. It would be possible for Rowan to provide a range of services alongside Granta's restricted substances solution. These include:
   • monthly newsletters
   • short reports on specific issues
   • 'quick answers for subscribers' on regulatory issues
   • technology and substitution assessments
   • qualification and implementation
   • galvanic corrosion resistant design.

19.7   Keith is particularly concerned with the issue of replacing Cadmium in aircraft and military systems, because of potential galvanic corrosion. Rowan is pulling together an industry group to look at replacement of Cadmium.

19.8   Mark Bohley remarked that the subscriber information services would likely be of interest to Honeywell. The opportunities for consulting projects would need to be discussed on a case-by-case basis.

19.9   Ian McNair concurred with the need for information. There is a need to track what is coming down the pike and what is being done about it. Mark Bohley mentioned that the 'PCN Alert' type of facility provided by the electronics industry is missing for materials and coatings.

20 MI7.0 MSDP: BoM Journey (E-R-04; E-AR-09; E-I-05; E-C-02; E-AE-10)

20.1 Will Martin reviewed the BoM journey from early stage design through to end of life. The aim is to identify gaps in the current tool set.

20.2 **Stage of lifecycle:** Conceptual design ==> Detailed design:

Core use case: delivering design objectives (cost, environmental objectives, risk, 'what if' analyses)

Workflows: preferred materials lists, Design (material selection, assignment, analysis, generation of eBoM); Gate assessments / Design reviews

User groups involved: M&P, Designers, Product Stewards, HS&E

Current tools: Gateway for RS, Eco, Risk; BoM Generator tool, E-AE-10 (Building BoMs in Viewer - proposed)?

20.3 **Stage of lifecycle:** Production:

Core use case: Reporting on 'as built' mBoMs (for compliance and risk); Article 7 reports, substitution / redesign / engineering changes

Workflow: Compliance check at the start of production (PPAP or similar); Transfer of eBoM into mBoM. The mBoM is a subset of an eBoM... eg it doesn't contain items that are ordered in bulk, paints, etc. It is the eBoM that contains everything about the product that could be used.. ie is a worst case. The eBoM should be used in compliance reports.

User groups involved: M&P, Quality / Engineering, Product Stewards, HS&E, purchasing, component engineering (electrical)

Current tools: BoM Gemerator tool, E-AE-10 (proposed), PLM Gateway, E-I-05 (supplier portal), E-AR-09 (Part ID translation).

20.4 **Stage of lifecycle:** End of Life:

Core use case: Generate end of life strategy and strategy to recyclers; future product liability.

Workflow: Periodic reviews by EH&S/ Product stewards, go back and find out what is in the product.

User Groups Involved: Legal, EH&S, product stewards

20.5 Will presented two enhanced BoM journey slides: one through the Gateway and one without the Gateway.

MINUTES DAY 3 (WED 21 MARCH, 2012)

21 MI8.0 Discuss

21.1 David Cebon introduced the process to be used for Brainstorming new use cases for Granta MI 8.0. The participants divided into two break-out teams; (i) 'Risk understanders' (Product Stewardship, EH&S...) and (ii) Risk Owners (Product Engineering). The teams brainstormed use cases based on the 'BoM Journey' concept. They completed a standard spreadsheet.

21.2 The 'Risk owners' reported back the following key items:

    (i)   It is necessary for engineering (customer-directed) and product stewardship to communicate on conflicts between design requirements and corporate strategy requirements. It is necessary

for these decisions to be recorded with the design.. eg we have to use Cd-plated connectors. It is necessary to be able to present improvements to design in a clear way.

(ii) There is a lack of tools to answer gate review checklist questions.

(iii) Fallback links to fill gaps on compliance statements

(iv) Is the compliance strategy consistent with the product timeline?

(v) End of life needs to be considered early in design process - eg design for Rare Earth elements to be recoverable.

(vi) Production readiness process - ensure that all documentation is in place.

21.3 The 'Risk understanders' (product stewardship) reported back the following key items, based on a 'scan-watch-act' paradigm

(i) When a designer selects a 'Class A' (banned) material, the system should explain the alternatives and the gaps - ie where no substitute is available.

(ii) Store successful internal substitution projects along side substitute data.

(iii) Trigger a flag if a designer chooses a 'Class A' (banned) substance... some kind of warning flag, justification form, email to product stewardship, plus an explanation to the designer, etc.

(iv) The same kind of BoM analysis and information needs to come from the supply base for bought-in parts.

(v) Compliance reports must be generated for an ever-changing list of substances. An alert system is needed to tell engineering team (eg for new SVHCs on list).

(vi) There needs to be clarity about whether a chemical is used as a manufacturing process substance, as an intermediary or in the finished product.

(vii) Communicate to designers when parts are likely to be non-compliant - eg the mass/surface area ratio for a coated component.

(viii) Need to be able to identify when spare parts need a REACh #33 declaration and push the information/declaration to ERP for delivery to the end-user.

21.4 There was an unscheduled discussion about database updates and Notifications.   (ACTION: Granta)

(i) It was thought useful for Granta to send out notifications to users when items of legislation change. Granta to add this use case to the spreadsheet.

(ii) It may be desirable for some database updates to be made 'instantly' - sent by email and automatically imported. Examples may be changes to the REACH Candidate list. Granta to add this use case to the spreadsheet.

22 MDMC Update

22.1 Will Marsden gave an update on recent activities in the MDMC. The MDMC was established in 2002. The original objectives still hold. Will described the current membership and development process.

22.2 The MDMC has recently changed to allow organizations from outside of the aerospace/defense/energy industry sectors to join. It has also altered its agenda to spend one day of each 2.5day meeting on software integration, specifically with CAD, CAE and PLM.

22.3 Will discussed some of the items on MDMC voting lists.

22.4 The next MDMC meeting will be hosted by Rolls-Royce in Indianapolis, USA.

23 Material Strategy Software Consortium Update

23.1 Dan Williams presented an update on the Materials Strategy Software Consortium. This consortium is concerned with making better materials-related decisions in companies. The consortium is more project-based than the MDMC or EMIT and also more Webex based. Its focus is the 'material strategy lifecycle'.

23.2 Current projects are:

(i)   Material and process cost analysis - visualizing the cost implications of materials as early as possible. This project has been driven by material producers. It is aimed at advanced innovation and material marketing groups. The first beta version (based on Granta's CES Selector tool) was released in June 2011. It enables total part cost (including processing) to be assessed. Phase II of this project is about to begin.

(ii)   Material Substitution - develop a tool to identify and understand the implications of substitutes for materials that are withdrawn, obsolete or unavailable. The next phase of development is to involve more customers into a project team and enhance the tool.

(iii)   Material Cost Estimation: A new project will start in April to generate approximate material prices for in-house materials to support selection and optimization within their organization. The lead sponsor it TRW Automotive.

23.3 If EMIT members would like to get involved in any of these projects, they should contact Dan. <Dan.Williams@grantadesign.com>

24 Clarification of Voting Items

24.1 David Cebon described the voting spreadsheets and the voting process that will take place after the meeting. As agreed, there will be three separate votes: (i) MI8.0 initial prioritization of EMIT use cases; (ii) MI8.0 Integration use cases; (iii) Data projects.

24.2 Granta will organise a Webex in approximately 6 weeks time to review the voting spreadsheets. Prior to that the voting spreadsheets will be prepared as follows: (ACTION: Granta)

(i)   MI8.0 Initial prioritization of EMIT use cases: Granta will extract new use cases from the two brainstorm spreadsheets (created today), fill-them out with additional explanation, and put add them to the main list of use cases. Any general use cases concerned with integration will be moved to the 'superceded' area and suitably noted. Granta will also make proposals for projects to be 'parked' outside of the main list, so as to reduce the total number of active use cases under consideration.

(ii)   MI8.0 Integration use cases: Granta will tidy-up the spreadsheet prior to circulation

(iii)   Data projects spreadsheet. Granta will bring this spreadsheet up-to-date and add any further data project that have been identified since the last draft.

24.3   New and upcoming legislations. Granta to review the 'Green passport for Marine specific - action' and add it to the substance database if it is useful to do so.   (ACTION: Granta)

24.4   The dates agreed for the voting process are as follows: (ACTION: Granta)

      (i)   Granta/NPL to circulate the three preliminary voting lists to members by   Fri 20th April

      (ii)   Webex to clarify the voting lists on   Mon 30 April, 4pm, UK

      (iii)   Members send voting spreadsheets to Graham Sims (cc to David Cebon)   Thurs 31st May

      (iv)   Webex to review voting results: Mon 11th June, 4pm, UK

25 Review of meeting

25.1   The breakout sessions worked well. The second day was long so it may have been better to schedule this breakout sessions during the second day to break-up the activities.

25.2   It would be useful to generate an overall solution roadmap for members to review and comment at the next meeting.   (ACTION: Granta)

25.3   The updates from MDMC and Material Strategy Consortium were useful and informative. It would be good to have these annually.

26 Recruitment

26.1   There was discussion of recruitment of further members to the Consortium. Members were encouraged to discuss EMIT with peers in other companies and other industry sectors. Expanding the consortium would add to the development resources available.   (ACTION: All)

26.2   The members made the following suggestions for recruitment:
- Phillipe Tibault, EADS Innovation Works, a member of the DfE working group.
- BAe Systems: Zia Usmani and Terry Reece-Peddler.
- GKN – increasing aerospace interests
- Mark Bohley suggested we contact Automotive companies
- Graham Goring suggested we contact Ian Blackman, the current CEO of the Component Obsolescence Group (cog.org.uk) (Trade Association).

27 Other Business

27.1   There was discussion about mechanisms for Members contacting each other about new upcoming legislations and other 'nuggets of information'.

27.2   It may be desirable to create a LinkedIn group around restricted substances data management. Granta has started a successful LinkedIn group concerned with materials selection.

28 Future Meetings

28.1   The next meeting will be hosted by Emerson in Columbus Ohio. Possible dates are 5-7 Sept or 3-5 October 2012.

DC, GS
March 25th, 2012