Environmental Materials Information Technology (EMIT) Consortium

Minutes of Steering Committee Meeting

Hosted by: Eurocopter, Marignane, France
13-14 March, 2013

ATTENDANCE

Members

Boeing	Peter Mezey, Joy Fitzpatrick
Eurocopter	Cyrielle Gendre (EMIT Chair); Nicolas Capelle, Romain Reynes
Granta Design Limited	David Cebon, Will Martin, Kim Marshall, Jamie O'Hare, Arthur Fairfull, Julien Paillard, Cyril Journoux, Paul McGrath
Honeywell	Angel Cruz Walker
National Physical Laboratory (NPL)	Graham Sims
Pratt and Whitney/UTC	Philip Michael Morris
Thales	Ben Clifford

Telephone Link

Emerson	Amy Neal
Rolls Royce	Andy Clifton

Apologies

ARL	Wayne Ziegler
Astrium Satellites	Ian McNair
Lockheed Martin	Colin McMillan
NASA Marshall Space Flight Center	Ben Henrie

SUMMARY OF ACTIONS

Minute	Item	Responsible
2.2	Divide UCD I-MS-02 into three separate documents	Granta
7.3	Granta to present Sustainability database at next meeting	Granta
7.5	Granta to assess the risks in the roadmap – particularly access to data provided by external entities suppliers	Granta
7.6	Members are invited to comment on the white paper and roadmap by 12th April.	Members
13.3	Members are requested to send examples of the kinds of reports they need to generate with information about the tables that the various data items come from	Members
13.8	Members are requested to provide feedback on the specific BoM analyses they would like the system to support	Members
14.5(ii)	The workflow description concerned with 'delivering product stewqrship strategy in every-day workflows' needs to be updated to include other risks such as critical materials risk	Granta
16.4	Granta offered to supply NPL with the educational Sustainable Development databas	Granta

17.2(ii)	It is important for the 'Cathy Phillips Indicator' to provide a ranking of substances according to their likelihood of being brought into REACH in future	Granta
17.2(iv)	Granta will review Sue Baker's comments on the changes to the folder structure for th Legislation Table and come up with version 2.	Granta
20.2	Granta will generate voting lists by 12th April for: (i) use cases by rationalizing the workflow and use cases voting lists from the last meeting and 'de-duplicating' functionality with the Integration use cases list. UCDs will be generated for all of the workflows/use cases. (ii) legislation and lists - based on the existing voting list and further input from the members, particularly Boeing.	Granta
20.3	Teleconference at 4pm UK time on Monday 29th April: to review the UCDs and votin process.	Granta
20.4	Members should complete their voting on these two lists by 20th May.	Members
20.5	Teleconference at 4pm UK time on Wednesday 29th May: to review the outcome of th voting process.	Granta
21.2	Granta and NPL to review the member presentation template	Granta, NPL
22	The members were invited to suggest other organizations who may be interested in joining the Consortium	Members
23.1	Granta to visit the suppliers rather than arranging for suppliers to come to an EMIT meeting.	Granta
23.2 (i)	Members are requested to generate lists of standards that they need to comply with fo environmental regulations. Granta will send out a request for the types of informatio needed.	Members, Gra
23.2 (ii)	Granta/NPL will then analyse the returns and formulate a strategy for the technical solution and for approaching the standards organizations to create the necessary business relationships	Granta, NPL

MINUTES DAY 1 (WEDNESDAY 13 MACH, 2013)

1 Introductions

1.1 Cyrielle Gendre welcomed the Consortium to Eurocopter and took the Chair. She welcomed Pratt and Whitney as new members of the EMIT Consortium.

1.2 The Agenda was reviewed. There were no changes.

1.3 The members introduced themselves.

2 Minutes of the last meeting

2.1 The minutes of the meeting held in Cambridge on 3-4 October 2012, were approved.

2.2 The action items from the minutes of October 2012 were reviewed. All actions were completed apart from minutes 13.3(ii) [Webex to discuss predictive lists] and 15.2(ii) [dividing UCD I-MS-02 into three separate documents]. Minute 13.3(ii) was discussed later at this meeting. Minute 15.2(ii) will be completed after this meeting. (ACTION: Granta)

3 Aims and Objectives, Software Development Process

3.1 David Cebon reviewed the software development process and schedule. Granta MI 6.0 was released in November. It includes software development directed specifically at restricted substances management

and reporting, critical materials and Eco Audit. The first quarter of development of MI 7.0 has been completed. There was an opportunity to discuss some of its features later at this meeting. Planning for MI Version 8.0 has begun.

3.2 David noted that the Granta:MI 6 release date was delayed by 3 months to November. Consequently it was decided to shift the EMIT development process by 6 months. Consequently, instead of doing the 'Report' step for MI 8.0 Major Software Development Projects (MSDPs) at this meeting, we will repeat the 'Review' step, which was done at the last meeting. This ties-in well with the review of software architecture that has been undertaken at Granta in the past 6 months.

3.3 Key aims of this meeting are:

(i) Integrate:

- Architectural review
- Overall EMIT roadmap
- Refinement of Workflows to maximize benefits to all user groups

(ii) 'Demo' MI 6.0 (released) and MI7 (work in progress):

- Critical materials
- Remote I/O
- Surface Treatment Specs
- XML BoM import

(iii) 'Preview' functionality for MI 7.0 (Release Q4, 2013)

(iv) 'Review' functionality for MI 8.0 (Release Q4, 2014)…Review use cases for prioritization vote after meeting

4 Member Report Boeing

4.1 Peter Mezey and Joy Fitzpatrick presented a report on Granta MI activities in the environmental area at Boeing.

4.2 Status of Implementation: Boeing is currently in the process of loading all of their in-house information into the Restricted Substances Database. Key implementation milestones:

(i) Complete reference data load by April 2013
(ii) Custom reporting: March 2013 Two custom reports are working. These facilitate getting the data out for users. There have been some very useful side-effects of these projects.
(iii) Data update methodology – weekly cycle of refreshing data to be implemented by March 2013
(iv) Weekly reports of changes – delta reports are generated and circulated. These have proven to be a very useful way of spotting changes, omissions, etc.

4.3 Major obstacles to full implementation:

(i) There are some performance issues on access to tabular data. There were significant improvements in performance when Granta released a patch for MI6.

(v) User configuration of reference data

(vi) Reports: Improve ability to generate ad hoc reports; access to tabular data and improvement of documentation.

(vii) Improve run-time of out of the box REACH reports, improve CAS to MSDS linkage time.

4.4 System Vision: There is a lot of interest in centralized RSDB functionality in Boeing, communicating with MSDS, internal specifications, 'FIMS' specs and program-specific lists. Work is focusing on satisfying user workflows and automating uploading of new specs and system maintenance.

4.5 EMIT Influence: Software tools that support basic functionality: data in, data out and data maintenance. It is important for Granta to provide headers for FIMS specs. Granta MI provides: Linkages, reference data and fallback links to allow BoM analysis.

4.6 Being able to influence product development and validation of issues is a huge benefit of EMIT membership. The most important ROI arguments are concerned with efficiency: Removing many existing manual tasks.

4.7 Top 3 issues:

(i) Data in and out

(ii) Performance

(iii) Historical data – "what were the contents of the product; what was the state of the data at the time the product was ordered?" (This is also a significant issue at Pratt and Whitney.) "Run this report as of one year ago"

4.8 Peter gave a screen-shot demonstration of the Boeing system. He explained the structure of the Boeing database. Specifications have a 'Base Spec' plus a number of local variations. These are stored as separate records and rolled-up into a single tabular attribute as appropriate. There is integration to other databases using hyperlinking tools – for example to link-in qualified suppliers from the corporate suppliers database or links to relevant IHS databases. Peter explained some of the new Boeing custom reports.

4.9 Lessons learned in developing this system: Architecting the system schema is not too difficult if you have the right people to ask. Data loads have been taking a lot of time… particularly mining and interpreting existing data for specs and converting it to the new system. This takes substantial involvement from expert users.

5 What's new in Granta MI version 6.

5.1 Julien Paillard presented some of the new features in MI6.

(i) Advanced search: The search interface has changed significantly: Search results are now presented in the large area on the right of the screen, with contextual information. The Search algorithm has also been improved, particularly for searching on material names, with varying punctuation.

(viii) Multi-value attributes ('real materials data'): Discrete and Point multi-value attributes can take one of several values, with qualifiers applied to the data. This makes data display simpler, tidier and easier to use.

(ii) Easy Admin: There have been a large number of improvements to the MI: Admin interface, to improve its usability.

(ix) Remote Import ('upload anywhere'). This web application enables users to upload data into the database from different network domains.

(x) There have been many other updates – in databases, MI: Gateway and Surface treatment data.

5.2 Will Martin presented information about the Surface Treatments Specifications (STS) project in MI6. He showed the new STS database and assigning of surface treatment specs to parts within a Materials Gateway in Pro/E. The output can be displayed on the new REACH dashboard. All REACH reports now understand surface treatment specs.

5.3 Jamie O'Hare presented some new developments in BoM handling functionality in MI6 to import a large Bill of Materials in XML format. He presented the process of generating a Critical Materials report on a BoM exported to file by a Gateway.

6 Member Report Eurocopter

6.1 Cyrielle Gendre gave a report on recent activities at Eurocopter.

6.2 AMAZE database: This project started in 2008. It involves three Eurocopter sites. The aim is to have a single source of material data and design data in Granta MI. The database contains legacy data and internal and external test data, including pedigree information, particularly for mechanical properties. It provides data for use by the design office, eg for composite materials.

6.3 Substance Tracker 'BEST'. This project focusses on the environmental impacts of materials and processes. The Granta database is almost finished, with 'go live' planned for later in 2013. It contains a number of sources of data including the Eurocopter Priority Declarable Substances List (EPDSL), MSDS data sheets, standard articles, CM codes, etc. It is planned to use Granta Substitution tools for substance substitution, particularly for paints.

6.4 Cyrielle gave a live demonstration of the BEST database. She showed links from Material records to MSDS records and Process Specs.

6.5 Romain Reynes presented Eurocopter's LCA approach, which is to analyze each life cycle phase of the product, during design. The aim is to join-together all of their LCA data in a single Granta database, with a tool to compare materials and processes.

6.6 Status of Implementation: The aim is to get global environmental impacts and to link the mechanical properties database with environmental issues for a single global view. A key milestone is a pilot project which needs to be completed in mid 2013. Substance Tracker should be in production within 6 months. Major barriers are collecting all the necessary LCA data, and the slow response from the IT department.

6.7 Top issues:

(i) Predictive lists and substitution policies
(ii) Process for collecting LCA data

7 EMIT Manifesto, Vision and Architectural Plan

7.1 Jamie O'Hare presented the EMIT product vision. He referred to the EMIT Consortium White Paper (issued to members today). The most important focus of the project is concerned with business risk – due to restricted substances, critical materials and environmental performance. Materials and processes are fundamental to addressing these risk. The EMIT vision is an "M&P-centric view of the world". The data system needs to be able to handle complex unstructured data, with a 'hub-and-spokes' architecture connecting materials information to other business systems, with a suitable data model and practical tools for use by designers and engineers. Much of the necessary functionality has been developed. Granta has

learned a lot from the experience of implementing the system. This will lead to future development of tools and data structures needed to deliver the updated vision.

7.2 Two tools are needed to handle the necessary information during the design process: a web-based tool for BoM handling and analysis, and a Gateway interfaces to CAD, CAE and PLM. These must both be connected to the master corporate M&P database, along with data from 3rd-party sources and from a Supplier Portal. A set of modules is needed to plug-into these tools: for restricted substances, Eco Audit, cost, risk, etc.

7.3 Graham Sims mentioned the future need to look at the wider issues of Sustainability: people, planet, profit (i.e the three pillars referred to frequently of social, economic and environmental aspects). David mentioned that Granta has a project in this area in the Educational market. Granta offered to present this at the next EMIT meeting. (ACTION: Granta)

7.4 David Cebon presented Granta's strategic plan for realizing the architectural and product vision outlined in the White Paper. He described the 'MI-Core' architectural project which has focused on: (i) a 'gap analysis' for the current system, based on functional limitations and performance issues; (ii) development of solutions to resolve the gaps; (iii) evaluation of these solutions against user workflows.

7.5 Joy Fitzpatrick wondered whether Granta had assessed the risks in the roadmap – particularly access to data provided by external entities supplier. David agreed that this is a good idea and undertook to perform a risk assessment. (ACTION: Granta)

7.6 David Cebon also presented Granta's proposed EMIT product development roadmap. Members were invited to comment on the white paper and roadmap by 12th April. (ACTION: All)

7.7 Will Martin presented a set of 'tactical' projects for MI6 and MI7, concerned with building and maintaining the restricted substances database while the replacement for tabular data is in progress. The important tactical projects are:

(i) Performance and timeout issues with large databases
(ii) Data Updater – perform a project during the spring to improve MI6 functionality and an 'MI-Core' architectural review about the way that Data Updater works.
(iii) Tabular data maintenance tools – to account for automated conflict resolution on import; Tabular data resolution actions; Version control.
(iv) Procedures for handling duplicate CAS numbers and merging legislations.

8 Member Report Thales

8.1 Ben Clifford presented a report on activities at Thales. Thales is particularly interested in Life Cycle Assessment. They are concerned to make products more sustainable and to respond to customer demands for information about environmental performance.

8.2 Phase 1 (2011, 2012) is largely complete. The Granta Eco Audit tool has been applied to two internal projects and a gate review has been completed. (One of these has shown the Use Phase to dominate the life cycle, while another single-use product has large embodied energy in the material.) Phase 2 has begun. Key milestones are to integrate Thales data into the database and to handle bills of parts in Pro/E. The main obstacles are to obtain data from suppliers on parts/components and mapping of parts/component data onto entities in the MI database.

8.3 The ultimate plan is to integrate Granta MI into the Thales 'Workbench' system, which is used day-to-day by designers/engineers. It is expected that this could be achieve in 3-5 years.

9 Member Report UTC/Pratt and Whitney

9.1 Mike Morris gave a presentation on the Product Hazardous Material Management Program at Pratt and Whitney (P&W).

9.2 He described P&W's current process (Spec PWA328) for managing substances and disclosure requirements and handling deviations from the specification. They also have an in-house Access Database which connects BoMs to parts to specs to materials to substances. This enables the identification of substances in BoMs and reporting on the substance content of BoMs. Mike suggested that EMIT should consider handling deviations from specs. (NOTE: Granta)

9.3 P&W's strategy for future products is to identify and control use of hazardous materials during design. Materials specifications are key to the way that substances are invoked.

9.4 Key milestones are

(i) Develop a prototype to test data structure and processes
(ii) Develop standards for in-house material specs
(iii) Develop lists of qualified parts

10 Member Report Honeywell

10.1 Angel Cruz Walker gave an update from Honeywell Aerospace. Angel is an 'end-user' of the MI system. Key milestones in Honeywell are driven by the MDMC: for model data, fatigue data and composites data.

10.2 The Puerto Rico office provides environmental compliance information for most of Honeywell. Honeywell has 3 home-grown tools. These are: Spec Index; Material to Spec; Spec to Chemistry. EMIT is driving usage focused on the RSDB as a data resource for research and reporting purposes, particularly 'where-used' information. Honeywell is currently testing the way the database can be used for non-metallic data. The main ROI argument is based on reduced time to perform analyses.

10.3 The final system will be owned by M&P, used for design, analysis and material selection. This is expected to link with Teamcenter by 2015. The system will also be connected to a home-grown LIMS database (Laboratory Information Management System).

10.4 A key issue is handling of specifications. Other issues are data loading and linking the various databases for information searches. These will help in performing BoM analysis and consolidating home-grown tools.

10.5 Honeywell is involved in the ASTM F40 Committee on declarable substances and conflict materials, particularly for non-aerospace applications.

10.6 Angel demonstrated some parts of the Honeywell non-metallic materials database. These included substance records and material specifications. They are using MI Toolbox to export Excel reports for customers.

11 Member Report Rolls Royce

11.1 Andy Clifton gave a brief update (by phone) on activities at Rolls Royce.

11.2 With the ADS group (UK Aerospace, Defense Security), there has been an effort to generate standardized impact indicators for ADS products. The most importance of these are; (i) access to primary resources, (ii) hazardous materials, (iii) emissions to air, (iv) energy use, (v) water use, (vi) waste and recyclability. A four-year Engineering Doctorate has been setup with the University of Surrey, to investigate and

quantify these environmental indicators. The position has been offered and the project should start later in 2013. The Doctorate woud be collaboratively funded by RR, GKN, BAESystems, Granta, and Bombardier; with management through ADS.

11.3 There is a lot of interest in the UK and EU on conflict materials. The US experience with the Dodd Frank Act is being monitored closely.

11.4 SAMULET: This is a UK TSB funded project concerned with integrating environment and sustainability considerations into the design and decision process. The project has now concluded.

(i) It focused on 3 indicators: CO2/energy; Material criticality; Hazardous substances.
(ii) A case-study was performed on a turbine blisk.
(iii) The CO2/Energy footprint estimation methods for manufacturing processes in Eco Audit were found to be too simple for RR's process energy values. RR's process energy data are not modeled on a single variable, but rather on a number of parameters. This has caused RR to think carefully about how it considers manufacturing and embodied energy.
(iv) There was a lot of interest in the materials criticality work. The material purchasing and design teams in RR want access to this functionality. RR would like a bespoke set of metrics to quantify the criticality of material choices.
(v) The materials stewardship group would like to use the RSDB for assessing where substances are used within the organization.
(vi) RR are also interested in a bespoke set of metrics, because the metrics of interest are very context dependent.

11.5 A second Engineering Doctorate has been running for one year at the University of Surrey: to develop a global framework to support the management of chemicals in a global environment. Key factors include regulation and competence; culture; HS&E maturity, etc.

12 CAD/CAE/PLM Integration

12.1 Arthur Fairfull presented a session on CAD/CAE/PLM integration issues.

12.2 Arthur recapped the function and operation of Granta:MI Gateways in CAD, CAE and PLM systems. Key operations are: Assigning materials in CAD and PLM; Getting up-to-date material property values for CAE (Gateways for Abaqus CAE and ANSYS); on-demand product analytics – combining product geometry information from CAD/PLM with materials properties and strategies. (Gateways for: Pro/E and Creo2.0 (***new***), Siemens NX, Autodesk Inventor and CATIA v5 (***new***) and Teamcenter (***new***).)

12.3 Arthur presented a video demonstration of Granta's new CATIA v5 Gateway… browsing, selecting and assigning materials and processes, running BoM analytics for mass roll-up and Eco Audit, generating formatted reports, etc.

12.4 Arthur described the new Teamcenter Gateway. The initial implementation assumes use of Teamcenter with Siemens Nx working together. The system supports (i) the 'design centric' view, where materials are assigned in Nx and these feed into Teamcenter; (ii) the 'PLM centric' view, where the master is Teamcenter and the materials flow down to Nx. Arthur presented a screen-shot demo of (ii): assigning a material within Teamcenter, running a BoM report in Teamcenter and having this material information flow into Nx, where the same report can be run for the CAD model. This provides material functionality that Teamcenter itself cannot support at present.

12.5 Drivers for Gateway Integrations:

(i) Planned for next 12 months:

- Gateway for Hypermesh
- Continued development of Gateway for PLM:
  - Enhanced Gateway for Teamcenter
  - New Gateway for Windchill
- Enhanced core functionality:
  - Improved user-interface
  - Additional automated deployment options for large CAD
- Functionality prioritized by the MDMC: particular focus on version control and version options for assigned materials and CAE materials models

(ii) Prioritized by EMIT

- Enhanced reporting in PLM
- BoM analytics
- Enhanced handling of process and surface treatment specs

(iii) Prioritized by Materials Strategy Consortium

- Integration of materials selection and substitution capabilities in Gateway.

12.6 Arthur presented the Integration voting spreadsheet for MI8 from the last EMIT meeting. The top voting items were:

(i) Find all parts/components that use a particular material
(ii) Guided materials selection

MINUTES DAY 2 (THURSDAY 14 MACH, 2013)

13 Restricted Substances Software

13.1 Will Martin led a discussion on development of the restricted substances software.

13.2 He described the way that the new architectural plans map onto the user workflows that were voted-upon after the last meeting. Key user workflows addressed were:

(i) Assess Risks (Search)
(ii) Support substance phase outs
(iii) Historical BoM analysis
(iv) Deliver product stewardship strategies
(v) Maintenance tools

13.3 It would be useful to have examples of the types of queries that users are likely to want to make for the database. Members are requested to send examples of the kinds of reports they need to generate with information about the tables that the various data items come from. (ACTION: All)

13.4 Will discussed the proposed new web-based BoM Analyzer tool. This will replace the existing BoM Generator Excel plugin. He described the basic workflow:

(i) Import a BoM from a file. This may be generated by a CAD, PLM or ERP system and is likely to be in one of many different formats: xls; Granta XML formats; industry XML formats; Granta MI database, etc.
(ii) Map BoM references to records in Granta MI: material references, part references, etc
(iii) Edit BoM and add data to support analysis. Mike Morris pointed-out the need for a 'health-check' report for the information on each item in the BoM.
(iv) Run reports: Eco Audit, REACH, etc
(v) Improve performance by changing design – eg re-selecting materials
(vi) Save BoM to disk or the database.

13.5 Peter Mezey noted that it may be necessary to process BoMs with hundreds of thousands of parts. It may be necessary to stitch-together the outputs of several different analyses – one for each major system. Peter also noted that it would be beneficial to generate weight data within the BoM Analyzer – eg calculated for in-house designed parts and imported from other systems for bought-in components. (NOTE: Granta)

13.6 Boeing has a 'Bridge' system that manages and normalizes BoMs from a number of different sources. It would be useful for Granta to discuss BoM analysis requirements with the architect, Rick Williams and with Technical Fellow Brenda Fukai-Allison. (NOTE: Granta)

13.7 Will presented a technology 'spike' for a BoM Analyzer tool, based on a Web App. This had a 'grid' tool for representing the BoM, and a charting tool – which plotted materials selection charts. The spike showed a 1000-line BoM being rendered in less than a second and materials selection charts with 3000 'bubbles' being rendered almost instantly. It is planned to develop the first version of this tool during the Granta MI 7 development cycle.

13.8 It would be useful for Members to provide feedback on the specific BoM analyses they would like the system to support. Members are requested to send this information to Will. (ACTION: All)

14 Eco Audit Software

14.1 Jamie O'Hare discussed some of the developments in the EcoAudit area for Granta MI 6. These include:

(i) Eco Audit Gateway
(ii) Phase 1 of the plan for integrated EcoAudit and Restricted Substances reporting
(iii) Phase 1 of the plan for PLM BoM import
(iv) Part numbers in reports
(v) Reports installer
(vi) Critical Materials data module.

14.2 Jamie described the main developments planned for MI 7:

(i) Enhanced style, formatting and consistency of eco reports
(ii) Add new environmental indicators
(iii) Account for manufacturing scrap
(iv) Ecoinvent data module
(v) Begin work on the first version of the new BoM Analyzer Web App

14.3 Jamie discussed new work on accounting for manufacturing scrap within EcoAudit reports. He presented the example of machining a forging. There are three main changes needed to the EcoAudit calculations to incorporate manufacturing scrap correctly:

(i) The additional material (which is removed by machining) has to be manufactured initially – requiring additional energy
(ii) Additional energy will be require for component processing to remove the scrap material
(iii) Energy gained from recycling the removed material will be credited to the material phase.

14.4 Mike Morris asked whether information about the raw material in the forging (and even the amount of ore required) could be stored in the BoM structure. The blank and finished parts would typically have different part numbers. This would facilitate calculation of buy-to-fly ratios. David Cebon noted that it would also be beneficial to store 'as formed' parts with un-heat-treated material properties and the finished part with heat treated material properties. (NOTE: Granta)

14.5 Jamie described the way that the new architectural plans map onto the user workflows that were voted-upon after the last meeting. Key user workflows addressed were:

(i) Set overall strategy
(ii) Deliver product stewardship strategy in everyday workflows. This workflow description needs to be updated to include other risks such as critical materials risk. (ACTION: Granta)
(iii) Designer Interface

14.6 Kim Marshall presented a screen-shot demonstration of the new Eco-audit reports in Pro/E. The Eco Audit dashboard now includes water, cost, RoHS and food compatibility. The calculations for all variants of the report (e.g. in BoM Analyzer and Gateway) have their calculations performed by the same reporting service – so give the same answer for the same BoM. End of life savings have been separated-out as a potential credit at the end of life. In Gateway, water use and cost are provided for the top five contributing parts in the BoM. MI Eco Audit reports show all parts.

14.7 Kim also presented a comparison report for two variants of the same design. Both graphical and tabular numerical comparisons can be generated.

14.8 Ben Clifford would like to select/remove the specific items that are reported by the system. For example, food contact is not applicable to Thales, so they would like to 'switch-off' that functionality. (NOTE: Granta)

14.9 Mike Morris pointed out that he has recently been asked to report on the volume of material sent to landfill at end of life. This is another important metric that could be reported by the tool. (NOTE: Granta)

15 Report on Collaborative Projects

15.1 Kim Marshall discussed the set of seven collaborative R&D projects current being performed at Granta. These projects support the cost of development of software tools and data sets to address eco-design, legislative compliance and business risk issues that are strongly aligned with the interests of EMIT members. Granta is always concerned to ensure that these projects are directed into core development needs and provide the smallest possible distraction from that mission.

15.2 Current projects include:

(i) Accelerated Metallurgy (EU-FP7) (synthesizing new alloys)
(ii) AMAZE (EU-FP7) (additive manufacturing)
(iii) Nanomicro (EU-FP7) (additive manufacturing by laser sintering of powder products)
(iv) StepUp (EU-FP7) (additive manufacture of improved polymers by SLS)
(v) Supersonic (EU-FP7) (deposition of new nano-structured surface treatments and coatings)

(vi) SAMULET (UK-TSB) (Strategic Affordable Manufacturing in the UK through Leading Environmental Technologies)
(vii) Genesi (EU-FP7). (Methodologies for enhanced eco-design and software tool development)

16 Member Presentation, NPL

16.1 Graham Sims described current activities at NPL. NPL's main interests in Grata MI are:

(i) To improve archiving and ease of access to NPL's data and other national data
(ii) Understand where metrology is needed and can make a difference
(iii) Support companys' decision making on sustainable use of materials.

16.2 Granta:MI is currently being implemented, initially for managing composites data. The final system will work across all classes of materials, for archiving in-house and donated data, with different levels of access, depending on the customers.

16.3 Related activities:

(i) NPL is a member of the Sustainable Development Group of the Institute of Materials, Minerals and Mining as well as the ADS DfE working group.
(ii) Graham co-chairs the VAMAS G16 pre-normalization research initiative, where there is a project on interoperability of web based databases within TWA 35 (see www.vamas.org)
(iii) Graham is chair of WG4 on 'promotion of global databases' within the World Materials Research Institute Forum (WMRIF) (see http://wmrif.bam.de/)
(iv) Research projects including Engineering Doctorates on sustainable use of materials on University of Surrey scheme.
(v) BSI Committees for Sustainable Development of:
- BS8900 - Managing Sustainable Development
- BS 8905 – Framework for Sustainable Use of Materials: Guidance
- PAS 8910 – Code of practice for sustainable design

(vi) Centre for Carbon Measurement – new centre at NPL (see http://www.npl.co.uk/carbon-measurement/)

16.4 NPL has recently performed a streamlined LCA and sustainability analysis of the proposed Ham Hydro-electric plant (based on three Archimedes Screws), using Granta's EcoAudit tool. This is a 500kW mini-hydro system, located on the Thames river at Teddington. The main impacts are associated with the embodied energy of the materials – concrete, steel, copper, iron. The carbon and energy payback periods are expected to be approx. 10 months. The CO2 savings will be 938 tonnes per year. . It was noted that there is a need to be able to enter energy generated in this case (i.e. a negative energy value), rather than the usual positive value for an energy using product. It would be useful to re-run some of this analysis with Granta's sustainability database. Granta offered to supply NPL with the educational Sustainable Development database. (ACTION: Granta)

17 Restricted Substances Database Roadmap and Demonstration

17.1 Will Martin presented recent developments in the Restricted Substances Database.

17.2 Current status of RSDB: Release 3.1 details:

(i) Coatings TRLs. Will presented the work done with Rowan Technology on adding TRLs for substitute coatings. He demonstrated the selection of substitute coatings, based on TRLs. He

also mocked-up an example of a risk assessment report based on availability of substitutes for some standard applications.

(ii) Cathy Phillips Indicator: Will presented the High Risk of Obsolescence Indicator list. These are substances that are on the SIN list or the ETUC list or the CLP regulation lists. It is possible to filter this list according to substances that are high production volume and/or wide dispersive use. The three lists together include approx 1000 substances. 90% of the 154 substances in the candidate list are on at least one of these three predicitive lists. Will analyzed the 10% of missing substances. Some of these substances are not correctly classified by existing lists, of 'equivalent level of concern'. It would be useful to review Sue Baker's approach within the next couple of weeks. David Cebon noted that it is important to provide a ranking of substances according to their likelihood of being brought into REACH in future. (ACTION: Granta)

(iii) Candidate list – Addition of the 54 substances added on the 19th December 2012 and associated 'Where Used' data.

(iv) Revised folder structure for review. The Boeing proposal for an improved folder structure for substances was presented. Key features are:

- Separate legislation and lists into different top-level folders
- Classify legislations by country, government agency and state (in the US)
- Classify European legislations by Country / Europe then by Directive.

Sue Baker provided a set of detailed comments. Granta will review these and come up with version 2. (ACTION: Granta)

(v) Obsolescence risk profile: Will proposed to add another database Profile, based on obsolescence risk.

(vi) Substance categories. Granta is currently assigning use categories to each substance. These are currently being presented as Boolean attributes, or possibly as multi-value attributes.

17.3 Six month plan:

(i) Last release (v3.1) already delivered: E-D-17 (Cathy Philips indicator), E-D-22 (overall risk indicator) and E-D-19 (risk of source of supply)

(ii) Planned for next release, v3.2 (end April): E-D-15 Legislation folder structure

17.4 Scheduled for v3.3 (end July): E-D-13 (NoCAS), E-D-14 (substance categories), E-D-27 (organic paints and coatings)

17.5 After v3.3:E-D-30 (Electrical Components); E-D-28 (Where-used data for adhesives); E-D-29 (MIL specs for coatings), E-D-18 (Risk metric for undocumented change); E-D-31 (Community Rolling Action Plan – CoRAP)

18 Supplier Portal

18.1 There has been a substantial exercise in Granta planning and 'spiking' functionality for the supplier portal. David Cebon presented the proposed design. Key features are:

(i) The Supplier portal will be a custom written web application

(ii) It will handle:

- Creation and management of user accounts
- Authentication and authorization
- The relationships between suppliers, and the declaration requests they request and supply

(iii) It will contain a simple representations of complex data objects like materials, substances and parts

(iv) When complex data is required, it will be retrieved automatically by reference to the main GRANTA MI database

(v) When required, data will be "exported" from the supplier portal app and imported into GRANTA MI viewer.

18.2 In the ensuing discussion, Mike Morris noted that it will be necessary to have the flexibility to collect a variety of different types of declarations, including substances and materials.

18.3 Peter Mezey noted that Boeing has an existing supplier portal which manages user accounts and authentication. It would be necessary for the Granta portal to interface appropriately with this system. (NOTE: Granta)

19 Tour of Helicopter Production Facilities

The group was treated to a fascinating tour of helicopter production facilities in Eurocopter, including the Starflex composites plant and the Super Puma and Squirrel production lines. Many thanks to Cyrielle Gendre for organizing this.

20 Clarification of voting items and voting process

20.1 There was discussion of the next voting stage. The following was agreed:

20.2 Two voting lists will be generated: (ACTION: Granta)

(i) Granta will generate a voting list for use cases by rationalizing the workflow and use cases voting lists from the last meeting and 'de-duplicating' functionality with the Integration use cases list. UCDs will be generated for all of the workflows/use cases.

(ii) A voting list for legislation and lists will be generated based on the existing voting list and further input from the members, particularly Boeing.

The UCDs and the voting list will be sent to members by 12th April. (ACTION: Granta/NPL)

20.3 There will be a teleconference at 4pm UK time on Monday 29th April: to review the UCDs and voting process. (ACTION: Granta)

20.4 Members should complete their voting on these two lists by 20th May. (ACTION: All)

20.5 There will be a teleconference at 4pm UK time on Wednesday 29th May: to review the outcome of the voting process. (ACTION: Granta/NPL)

21 Review of Meeting

21.1 There was a discussion of the format of the meeting:

(i) Mike Morris commented that the member presentations were particularly valuable for him. It may be worthwhile to add more time to these.

(ii) There was discussion about whether we should have parallel sessions during the meeting – for example, separate sessions for Eco Audit and Restricted Substances functionality. The members were generally not in favour this because a lot of the discussion is common to both – for example, discussions of the underlying architecture and infrastructure.

(iii) It was agreed that this meeting was too short and consequently we ran out of time. In future we should go to 2.5 day format. The exact arrangements will depend on whether we hold an open workshop on the first day.

21.2 There was a discussion of the Member presentation template. Mike Morris suggested that the template is less prescriptive and focusses on broad objectives: current projects, the major issues, most important things you would like to share, etc. Granta and NPL will review the template. (ACTION: Granta, NPL)

22 Recruitment of New Members

The members were invited to suggest other organizations who may be interested in joining the Consortium. The current list of members is: Boeing; EADS Astrium Satellites; Emerson Electric; Eurocopter; Honeywell; Lockheed Martin; NASA; NPL; Rolls-Royce; Thales; United Technologies Corporation; US Army Research Labs (ARL). (ACTION All)

23 Other Business

23.1 The meeting with suppliers planned for this week was abandoned because of lack of interest from the suppliers. The aim of the meeting was to verify our plans for supplier declarations. After some discussion, it was concluded that it would be better for Granta to visit the suppliers rather than arranging for suppliers to come to an EMIT meeting. AIA has suppliers that are affiliate members. ADS should have some names in the UK also. Andy Clifton may be able to help. (ACTION: Granta/All)

23.2 Meeting with Standards organizations. The aim of the proposed meeting with Standards Organizations (ASTM, ASME, SAE, etc) was to develop a plan for the best way to get key standards into the database. It was concluded that it would be better for Granta to talk with the organizations separately, rather than arranging a special session of an EMIT meeting. We need to understand exactly what standards are needed in the database and what they are needed for, before approaching the standards organizations. It was agreed that the best way to do this would be for the members to generate lists of specs and standards that they use. P&W would be willing to generate a list of specs and standards used in military and civilian engines. Boeing is willing generate a similar list. Honeywell has access to many industry specs also. Eurocopter mainly uses European standards. (ACTION: Members)

(i) Granta will send out a request for the types of information needed. (ACTION: Granta)

(ii) Granta/NPL will then analyse the returns and formulate a strategy for the technical solution and for approaching the standards organizations to create the necessary business relationships. (ACTION: Granta, NPL, All)

24 Future Meetings

Boeing offered to host the following meeting, at a location to be decided. Provisional dates: 24-26 Sept 2013

25 Thanks to Eurocopter

David Cebon thanked Cyrielle and her colleagues at Eurocopter for their generous hospitality and for a very well organized and enjoyable meeting and tour.

DC, KM, GS
28 March 2013