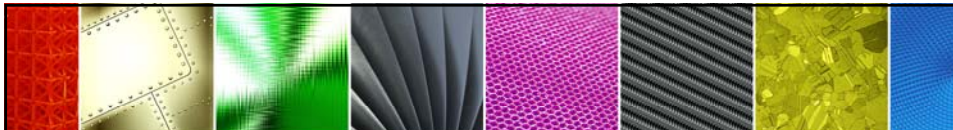


Agenda – day 1

Time	Duration	Session	Session Lead
9:00 AM	00:20	Welcome	Patrick Coulter
9:20 AM	00:15	Agenda review / minutes from last meeting	Dan Williams
9:35 AM	01:00	Software update / demonstration	Dan Williams
10:35 AM	00:15	Coffee break	
10:50 AM	00:30	Member update 1	PSA
11:20 AM	01:00	Technical session 1 - Simulation	Pete Chems
12:20 PM	01:00	Lunch	
1:20 PM	00:25	State of Industry Report	Dan Williams
1:45 PM	00:30	Member update 2	Honeywell
2:15 PM	01:00	Technical session 2 - Data and Knowledge management	Dan Williams
3:15 PM	00:15	Coffee break	
3:30 PM	00:30	Member update 3	GM
4:00 PM	01:00	Technical session 3 - PLM integration	Arthur Fairfull
5:00 PM		Adjourn	
7:00 PM		Consortium Dinner - Walton Hall, Directors' Suite	

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Software update / demonstration

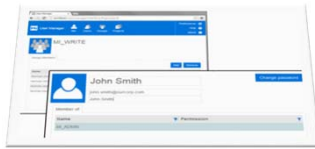
Dan Williams



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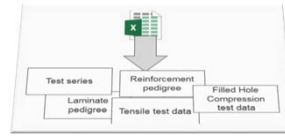
MI Version 8.1 – April 2015



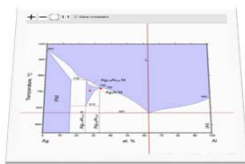
User Management



MI:Explore V2



Multi-table import



Enhanced image support



Additive Manufacturing



Composites qualification

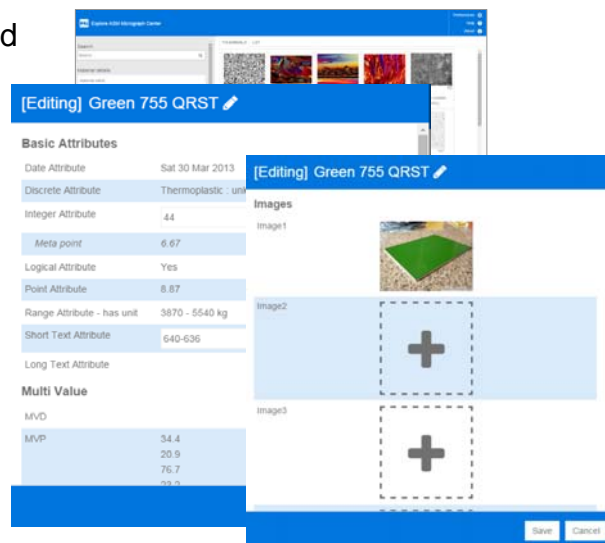
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MI:Explore V2

- Simple, controlled data entry for adding new materials and editing existing records
- Mandatory and read-only fields
- Drag and drop image upload



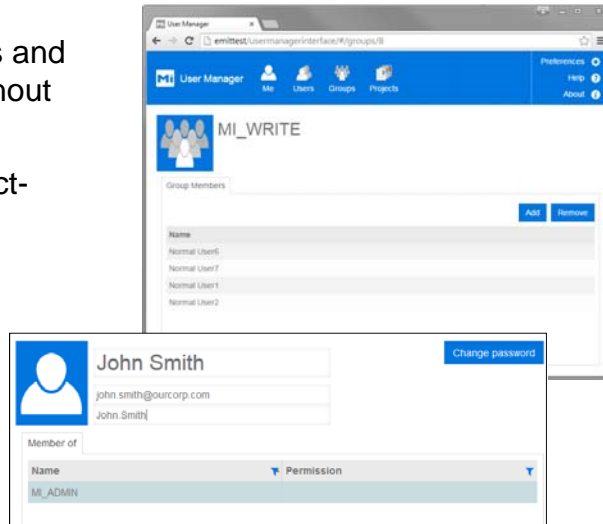
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User Manager

- Manage users and their roles without involving IT
- Support project-based access control



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Update 1 – July 2015



Performance improvements



Data Updater – apply updates

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Update 2 – October 2015



Performance improvements



Export enhancements



Easy access to documentation

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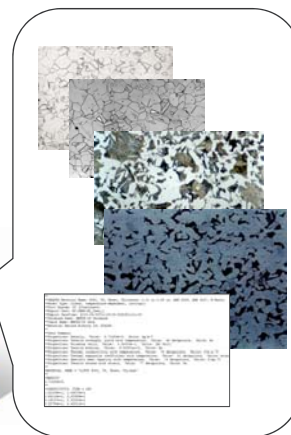
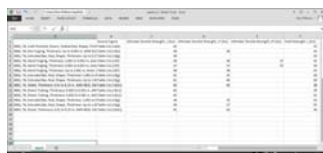
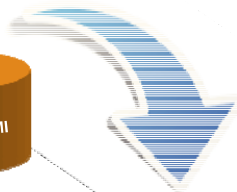


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Export enhancements



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MI9 – planned additional capabilities (1/3)

- Export enhancements
 - Export files when using Excel exporter
 - Export images when using Excel exporter
 - Export subset information when using Excel Exporter
 - Export datasheet directly to Excel from Viewer
- Workflow
 - More autonomy for end users; more control for enterprises
 - Core engine development now; out-of-the-box workflows in 2016
 - Highest priorities: material request/approval workflows
- MATLAB toolkit
 - Library of routines to integrate with MI
 - Example applications
 - E.g. design allowable generation, CAE model fitting, etc.

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Data analysis stories - vote

Story description	Total
The tool should make sure users of fitted curves can see the original data to understand why the particular fit was chosen	105
The analysis tool should allow the user to interact with the curves during the workflow - not just a black box	65
I want a tool to fit curves through data and generate fit parameters, e.g. polynomials, power laws, etc.	52
Capturing the traceability and history of what analysis you've done - so the analysis can be repeated at a later date	42
I want a tool to smooth noisy data	40
I want a tool to perform averaging operations on sets of data	37
The workflow should generate summary reports - e.g. statistical summaries of curves - and write these back to the database	37
I want a tool to extrapolate new data from existing data	20
I want a tool to help with the identification and/or removal of outliers from a set of data	20
The tool should allow the user to pick the points on a curve to use for a multi-point model, e.g. select more points in an area of interest	20
Analysis processes should capture additional metadata, e.g. max, min, mean, standard deviation, etc. and write these back to the database	17
I want a tool to break a curve into different sections and apply different models to different sections	15
A tool to check certain criteria are met, e.g. curves must be monotonic increasing etc. - is it a valid curve?	15
The analysis tool should allow for more than one analysis option e.g. different fatigue fits depending on the data - not just a black box	15
I want a tool to derive damage model parameters for a material	0

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MATLAB toolkit

API Core functionality



1. **Libraries** to connect to Service Layer from MATLAB, Python, R, etc.
2. **MATLAB UI** to make libraries easy to use. Search, Import from clipboard, etc.



Deployment

Option 1. **Matlab Users**
Core Libraries + Demo
app + Documentation

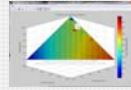


Option 2. **Not Matlab Users**
Compiled application

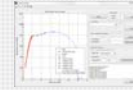


Plug-ins for specific applications

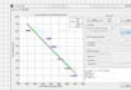
GRANTA Apps for demos, etc.



Plotting app



Tensile analysis
app



Curve fitting app



New app

Customer Apps



New app

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MI9 – planned additional capabilities (2/3)

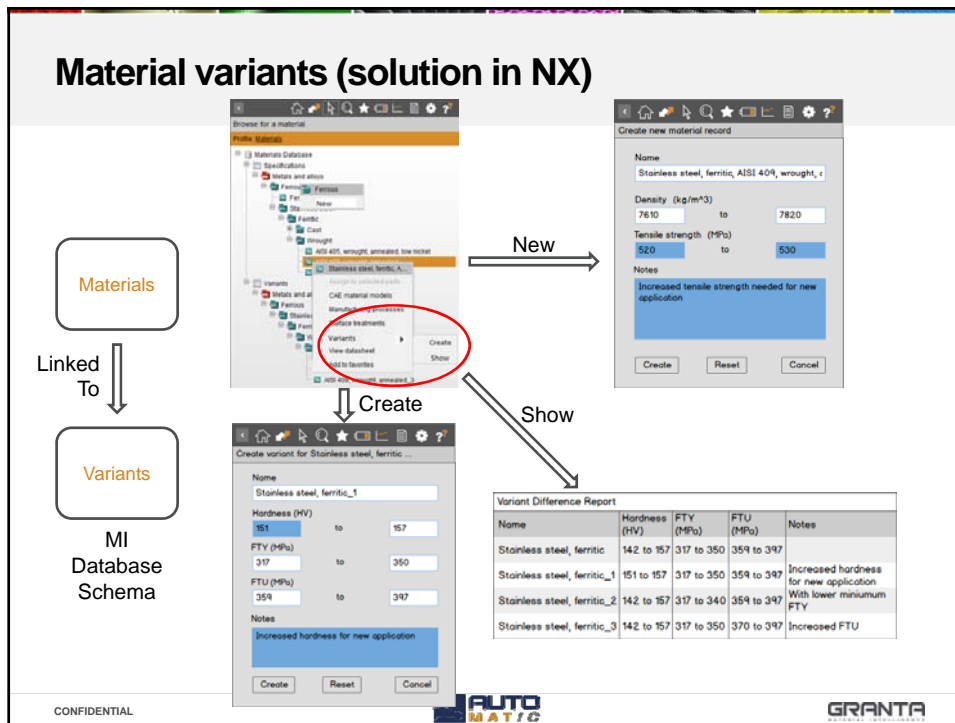
- **CAD/CAE Gateway enhancements**
 - Exporting functional data for CAE: more options
 - Alternatives/Variants: new workflow
- **PLM integration enhancements**
 - New MI:Connect service for federating data from 3rd parties
 - “Where used” in CAD Gateway
 - “Where used” in MI:Explore
- **MI:Explore enhancements**
 - Create personal ‘collections’ of data
 - One-click export to Excel
 - Startup performance improvements
 - New record creation workflows

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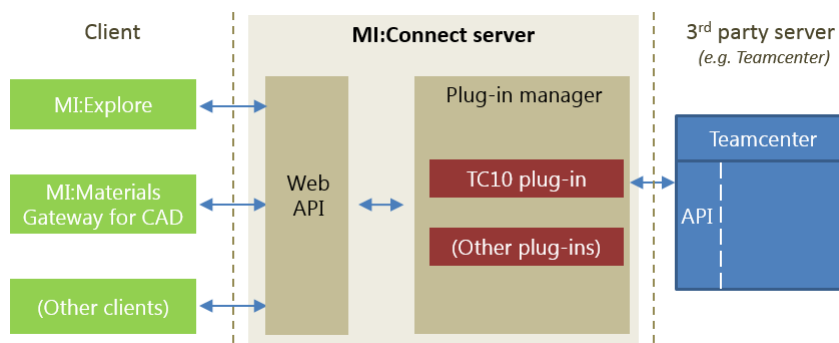
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Material variants (solution in NX)



Enterprise integration of materials information

- Increasing need to integrate GRANTA MI clients with other 3rd party software
 - e.g. to support materials selection tools with “Where Used” data from PLM
- MI:Connect acts as a ‘hub’ to support data transfer between multiple systems



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“Where used” – PLM integration (pre-release)

The screenshot shows the Granta Aerospace Metals software interface. A 'Where used results' dialog box is open, displaying a table of components used in a container. The table has the following columns: Container, Component, Source, Material, and owning_user.

Container	Component	Source	Material	owning_user
WF01-WingFlap_D	n_inlk_2_DWA/1	CAD	Carbon steel, AISI 10...	dan (dan)
WF01-WingFlap_D	n_inlk_3_DWA/1	CAD	Carbon steel, AISI 10...	dan (dan)
WF01-WingFlap_D	n_inlk_1_DWA/1	CAD	Carbon steel, AISI 10...	dan (dan)
WF01-WingFlap_D	n_inlk_3_DWA/1	CAD	Carbon steel, AISI 10...	dan (dan)
WF01-WingFlap_D	n_inlk_4_DWA/1	CAD	Carbon steel, AISI 10...	dan (dan)
WF01-WingFlap_D	n_inlk_4_DWA/1	CAD	Carbon steel, AISI 10...	dan (dan)
WF01-WingFlap_D	n_inlk_1_DWA/1	CAD	Carbon steel, AISI 10...	dan (dan)

The dialog also includes 'Export' and 'Close' buttons at the bottom right. The background shows the main software interface with search and collection filters.

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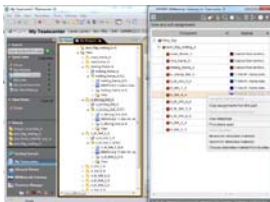
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Extending “Where used” functionality

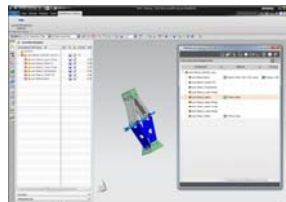
Functionality now available across Granta products, supporting different user groups and use cases

- PLM
 - Siemens Teamcenter – for cross-product line reporting, what other parts use this material?
- CAD (new)
 - Siemens NX – guidance for designers, from materials used in previous / existing products
- MI:Explore (new)
 - Specialists using MI:Explore can also now also access this product-level information

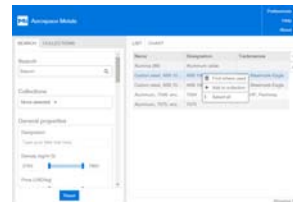
PLM



CAD



MI:Explore



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MI:Explore – collections

SEARCH COLLECTIONS

Create Delete Import Export Details

Filter...

Best colors for anodizing

My favourites

Project X color scheme

THUMBNAILS LIST CHART

116C 117C 118C 2706C

2707C 2708C 271C 660C

Showing 'My favourites' (8 of 934)

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MI9 – planned additional capabilities (3/3)

- Performance, security & scalability enhancements
 - Startup times
 - Datasheet display times
 - Tree browsing times
 - Times to import/delete large quantities of data
- Data synchronization
 - Further improvements to core technology, now being used to deliver RSDB updates to our customers
 - Available for beta testing in MI9
- Miscellaneous improvements
 - Typically dozens of small improvements per update

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MI10 – current top priorities

- ‘Enterprise’ capabilities
 - More out-of-the-box Workflows
 - Usage logging / tracking
 - Authentication / Authorization
 - Data synchronization
 - Further 3rd party integration improvements
- End user capabilities
 - Improvements to user experience: installation and use
 - Productivity enhancements: import, manage, export
 - In Gateway, enhanced CAE data transparency/traceability
 - CAE model preview, prior to assignment/import
- Plus always time in the plan for small, customer-driven improvements