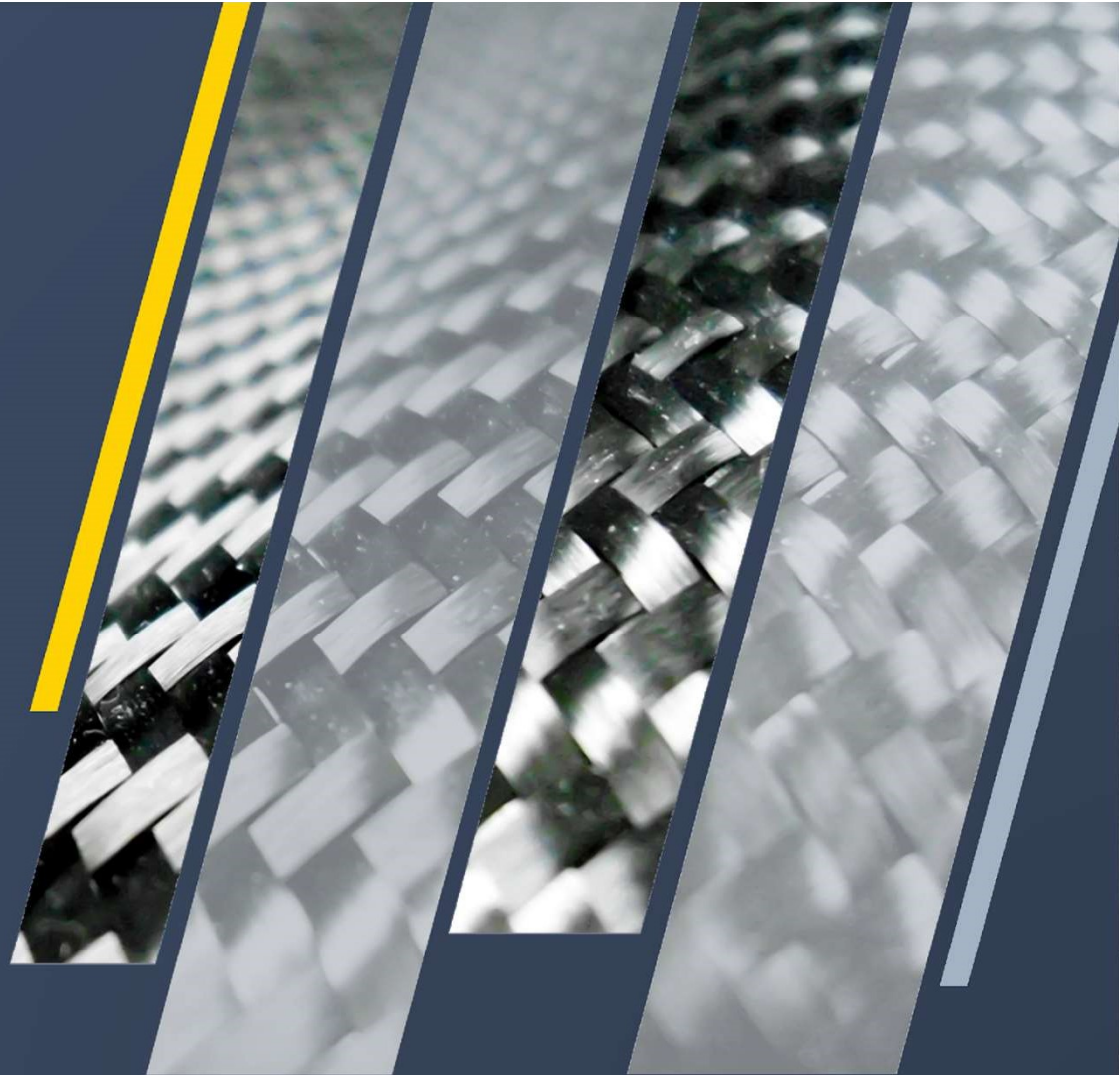




# Introducing Granta

January 2020

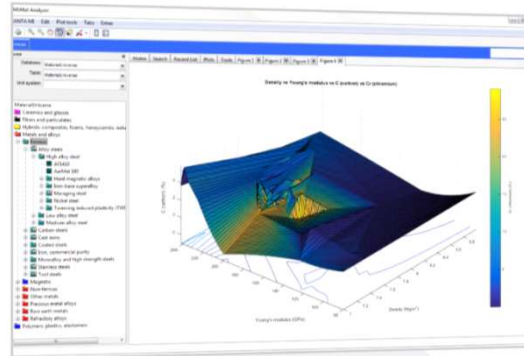


# What is Granta?



## Strong pedigree

Cambridge University spin-out,  
R&D record, passion for materials...



## The ANSYS Business Unit focused on Materials Information Technology

The market leaders by \$ revenue,  
# customers, # employees, R&D spend,  
implementation experience, ...



## Exceptional collaboration

Customers, Industrial Consortia, Educational  
Symposia, strategic partnerships

Software

Information

Services

Network

# Materials: the next step for digital transformation

When you make a product, you consider four factors

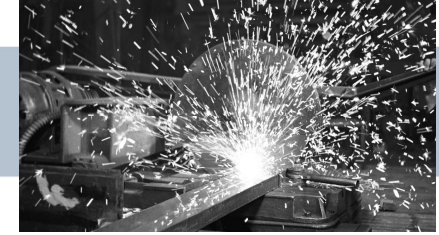
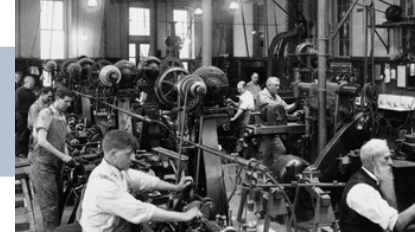
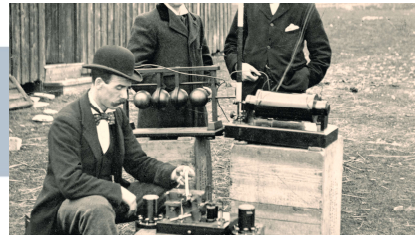
Shape

Function

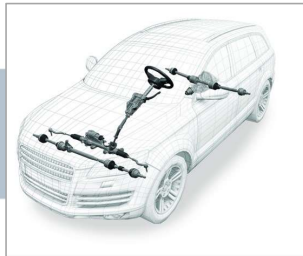
Manufacturing

Material

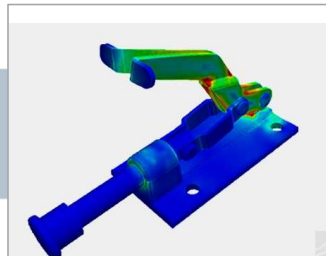
Industrial  
era



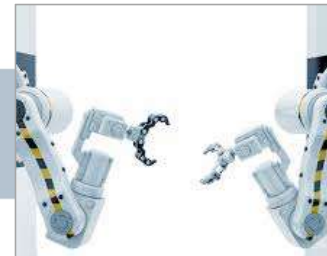
Digital  
transformation



CAD



CAE

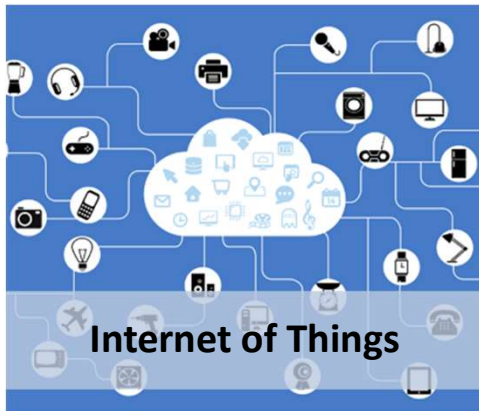


CAM



Materials information  
technology

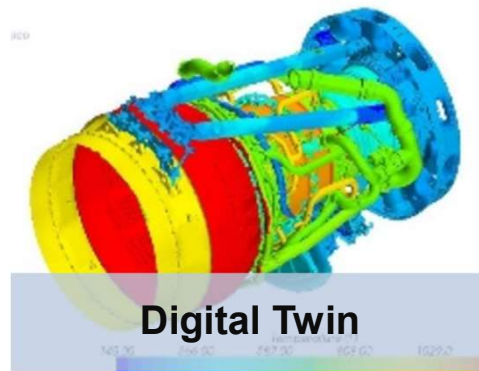
# Key trends: Digital Transformation



**Internet of Things**

“Smart materials to generate \$70bn in revenue in 2022... high demand from industries operating in IoT.”

*Allied Market Research report*



**Digital Twin**

“We invested over £1bn in self-funded R&D in 2017... producing our first all-digital engine design.”

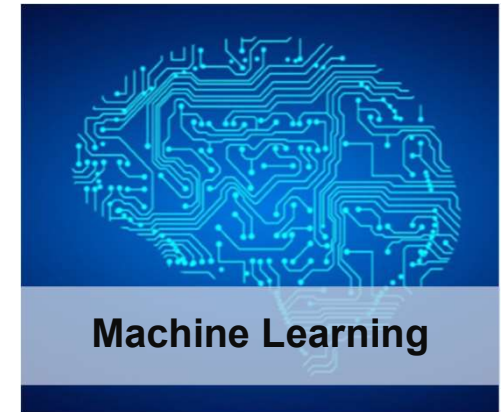
*Rolls-Royce Annual Report 2017*



**Digital Thread**

“Creating a digital thread... from design through to production... and ultimately the scrapyard.”

*Airbus Annual Report 2017*



**Machine Learning**

“Poor data quality is enemy number one to the widespread, profitable use of machine learning.”

*Harvard Business Review 2018*



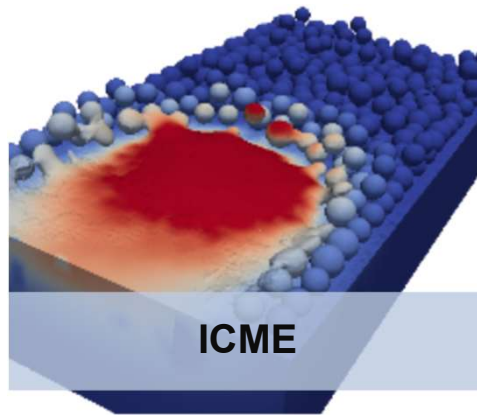
# Key trends: materials and processes



**Additive Manufacturing**

“AM market expected to reach \$11bn by 2022 with CAGR of 27% since 2016.”

*Gartner*



**ICME**

“Cost-effective, rapid, revolutionary design of fit-for-purpose materials, components, and systems.”

*NASA Vision 2040 report*



**Regulatory and environmental**

“Members are tracking the impact of 10,500 chemicals and 125 international regulations.”

*EMIT Consortium*



**Lightweighting & electric vehicles**

“Global lightweight materials market to surpass \$186 billion by 2020.”

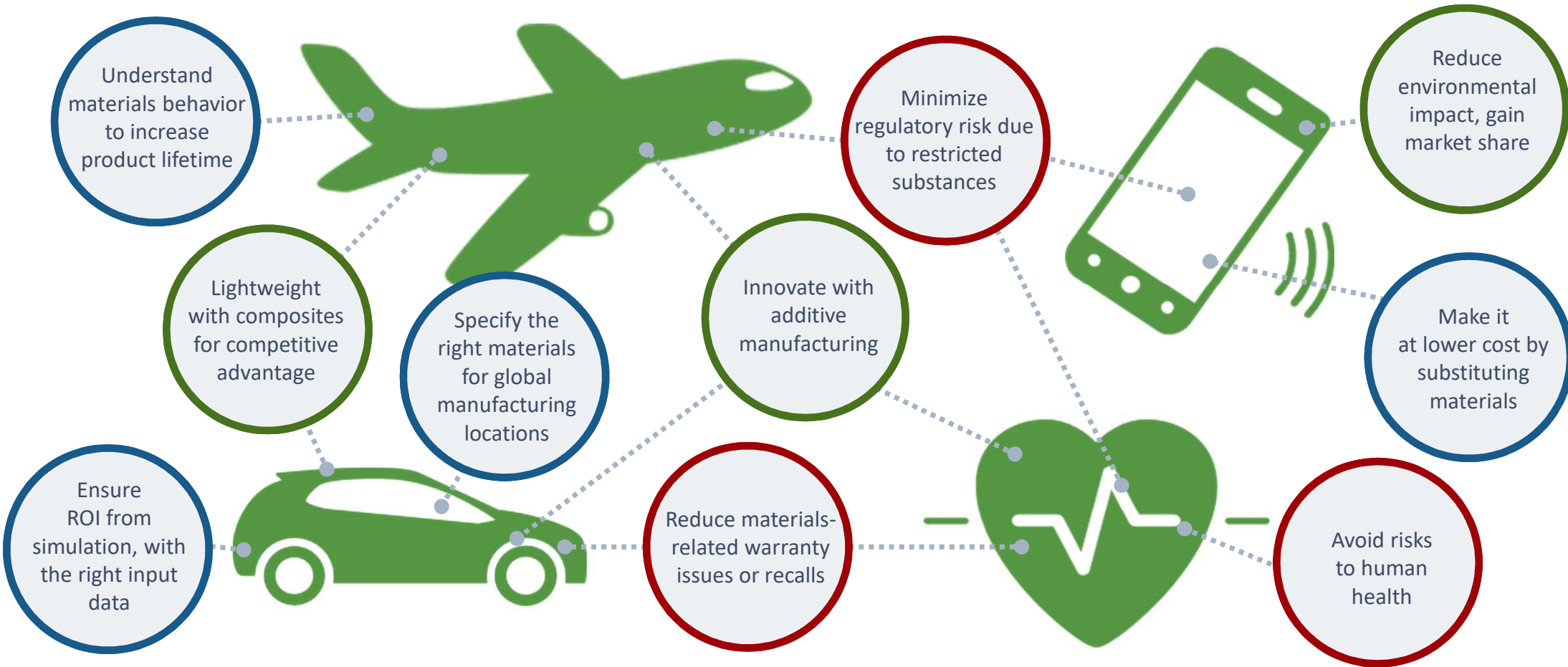
*Transparency Market Research report*

# Why materials information matters

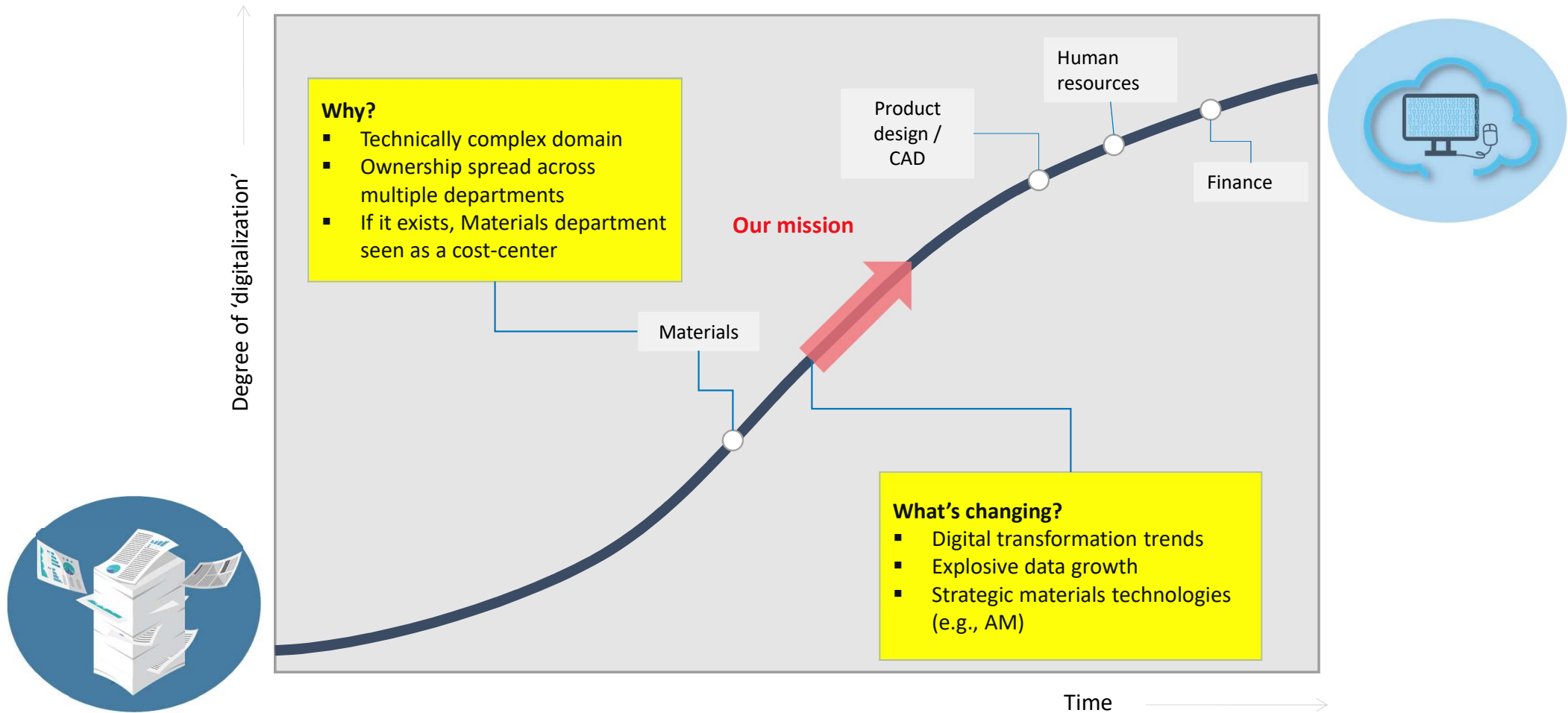
Growth

Profit

Risk



# The digital transformation curve: materials lags behind



## Our mission

“

To lead materials information technology –  
to advance materials engineering and education,  
and to enable better, greener, safer products.

”



# Granta Design history



**1994**  
Foundation



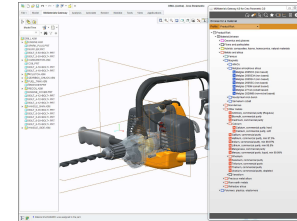
Materials selection  
and data management

**2000-02**  
Industry  
focus



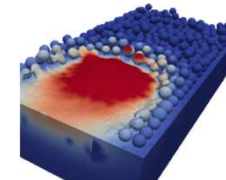
Roll-out at key  
customers, especially  
in Aerospace

**2006-08**  
Take-off!



Support for CAD,  
CAE, PLM

**2012-15**  
Moving  
downstream



ICME, Additive,  
Machine learning...

**2019-2020**  
Materials 4.0

**1995-99**  
Education  
focus

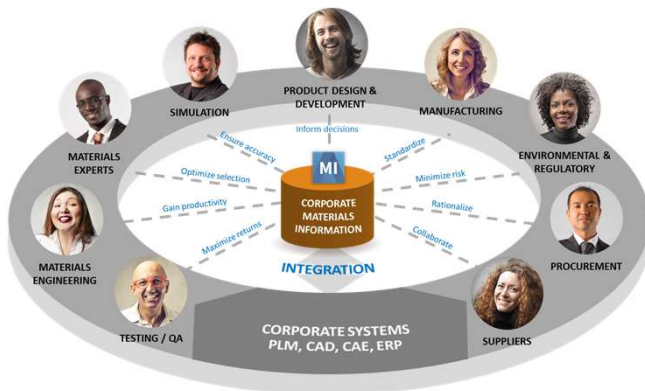
**2003-05**  
Key product  
launches  
GRANTA MI  
CES Selector, CES EduPack

**2009-11**  
Expansion  
Strengthen customer base,  
strategic partnerships,  
first AM project

**2016-18**  
Success stories  
Implementation & ROI  
across diverse  
industries

**ANSYS**

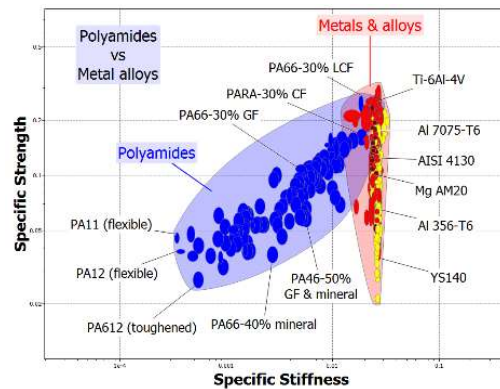
# Our product lines



## GRANTA MI™

The leading system for materials information management in engineering enterprises

The platform for material intelligence



## GRANTA Selector™

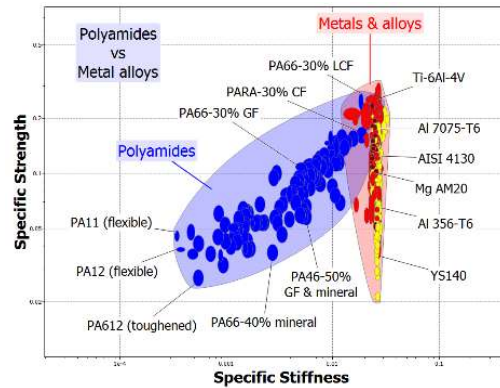
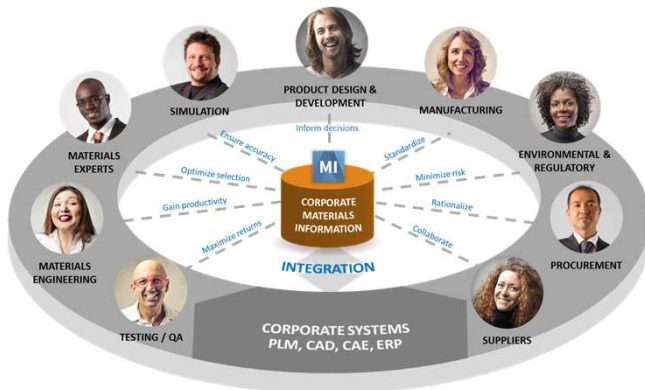
Smart materials decisions  
PC product for materials experts



## GRANTA EduPack™

World-leading resources for materials teaching in engineering, science, and design

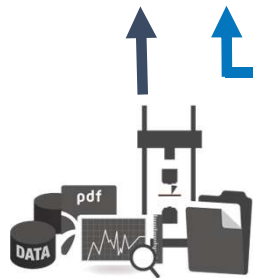
# Materials information and resources



**GRANTA MI™**

**GRANTA Selector™**

**GRANTA EduPack™**



Customer's proprietary information



Comprehensive library of materials property data



Unique teaching resources

# Delivering value

GRANTA MI



*"\$10m p.a. of savings due to... reduced data loss, avoiding duplicate testing, legacy data capture, and cost avoidance."*



*"Ensuring consistency through PLM integration."*



*"Time-critical responses to 'patient on the table' queries."*



*"A few weeks work has already saved 2m Euros."*



*"Allows us to develop concepts and gives us tools for actually going out and selling materials."*

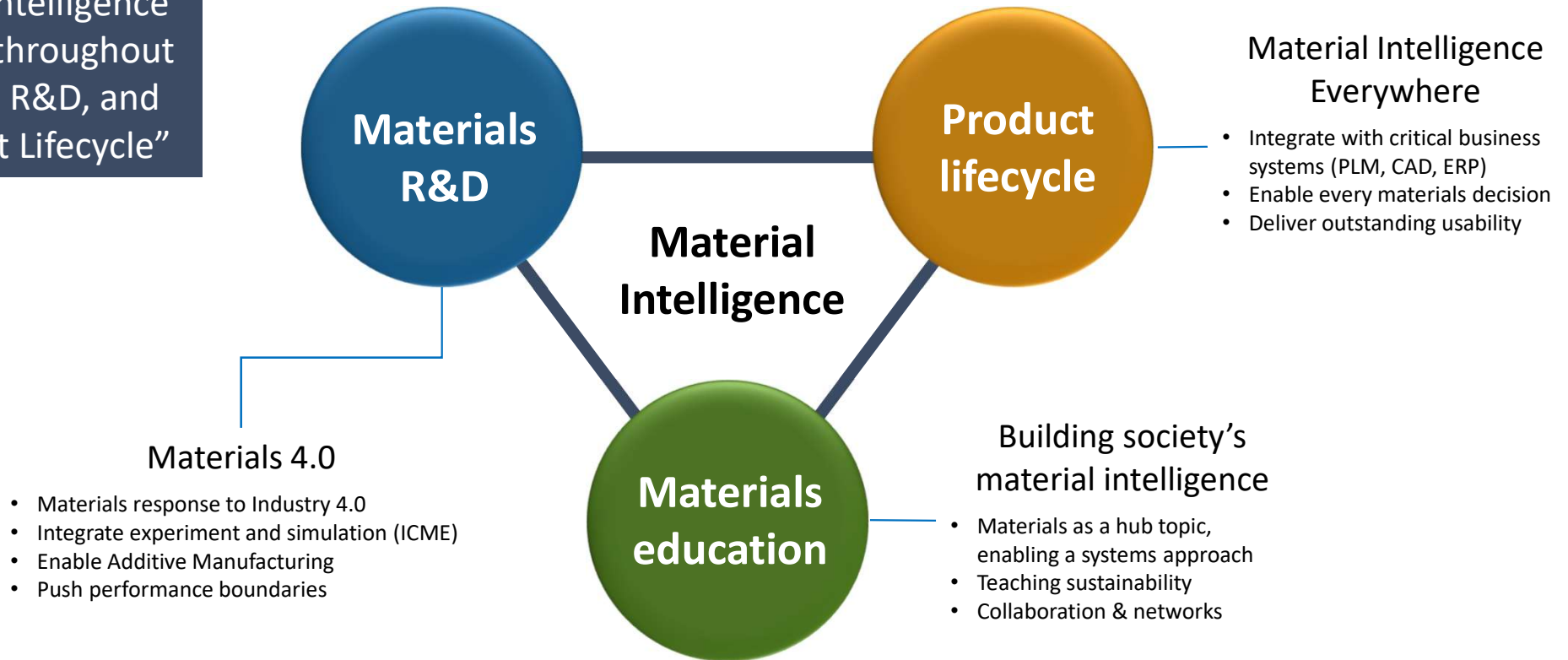


Our Materials Education Symposium hosts



# Our vision

“Material intelligence integrated throughout Education, R&D, and the Product Lifecycle”





# Our team and network



## 180 Granta staff

- The world's largest team solely focused on materials information technology
- Unrivalled implementation experience

## Selected Sales & Service partners

Our network: consortia, technology partners, materials data partners, industry collaborative projects, and academic collaborations.



# Selected customers

All trademarks are the property of their respective owners and are used solely for descriptive purposes.

## Aerospace & Defense



## Energy & Nuclear



## Automotive & Off-highway



## Industrial & Consumer



## Healthcare products



## Materials producers



# Example partners and collaborations

## Foundation partners



## Software partners



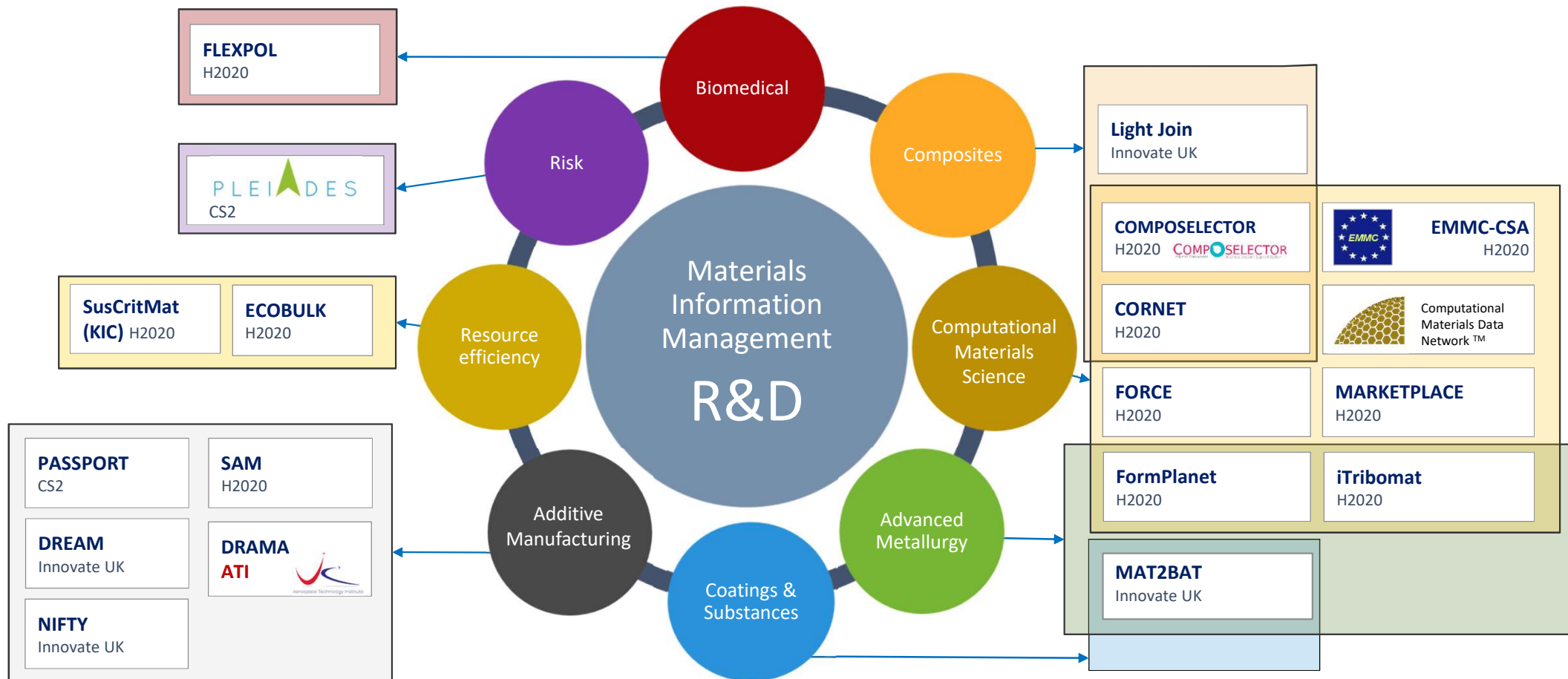
## Data partners



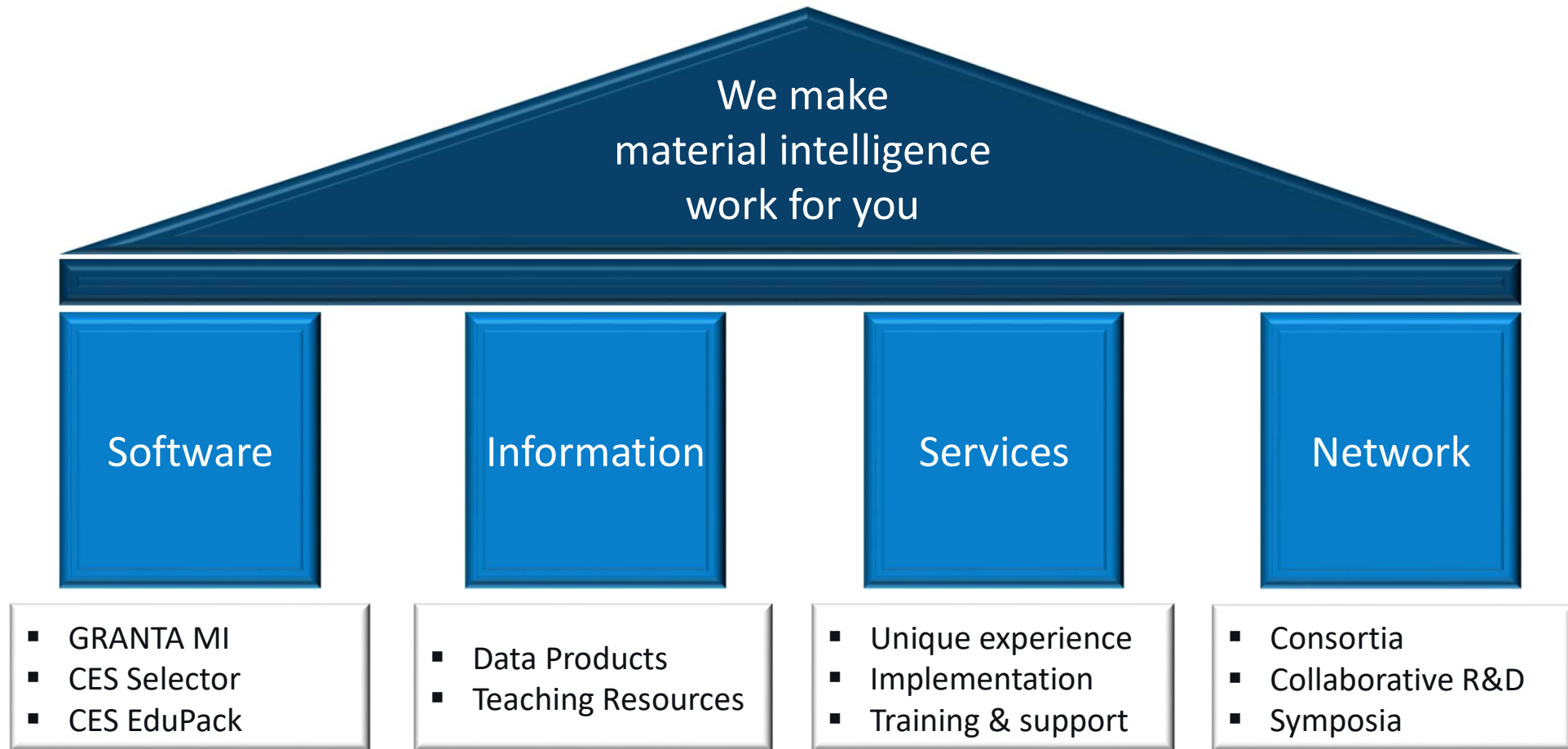
## R&D and educational collaborations



# Granta Collaborative R&D Projects



# Summary – ANSYS Granta



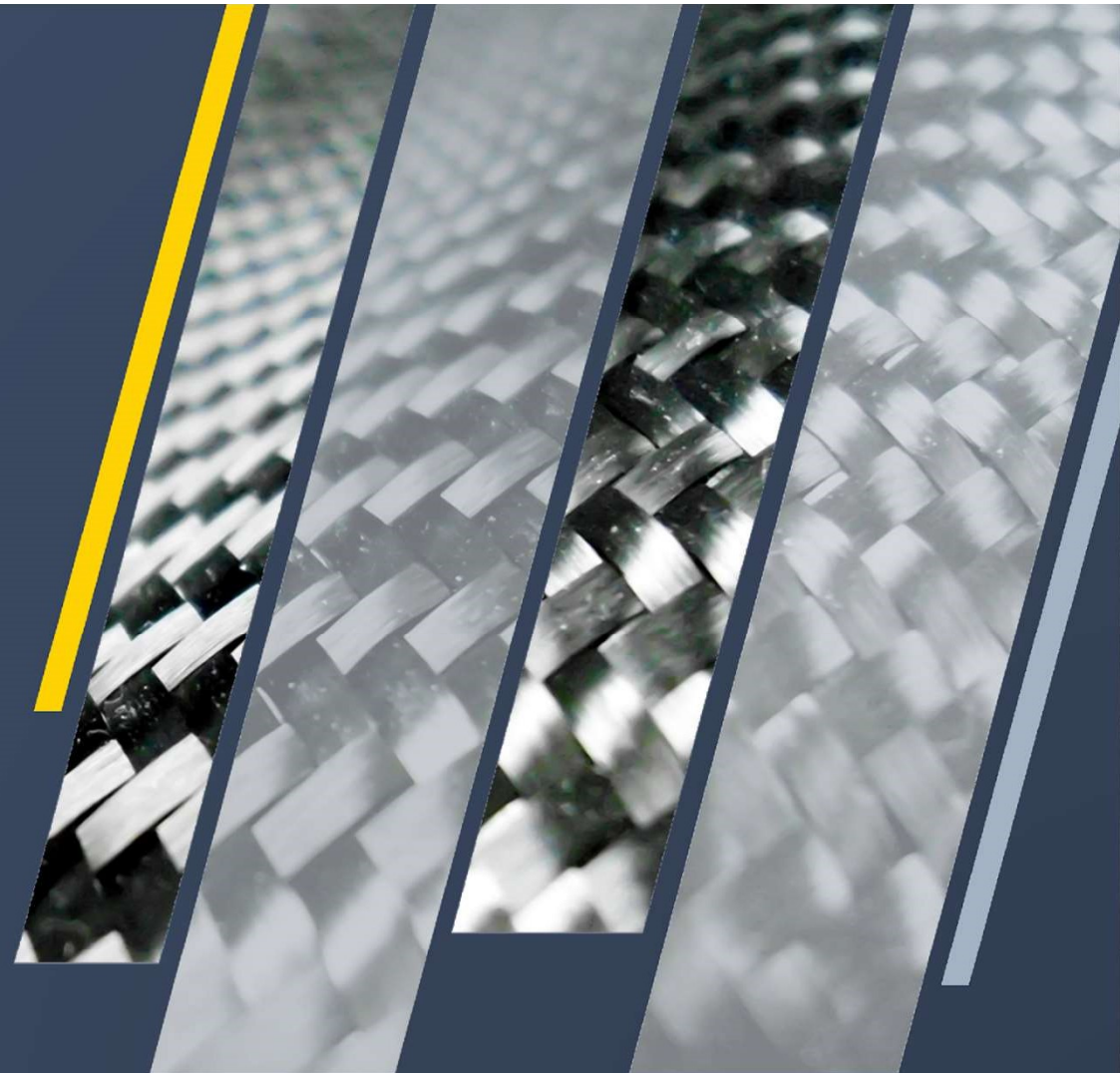


**ANSYS®**

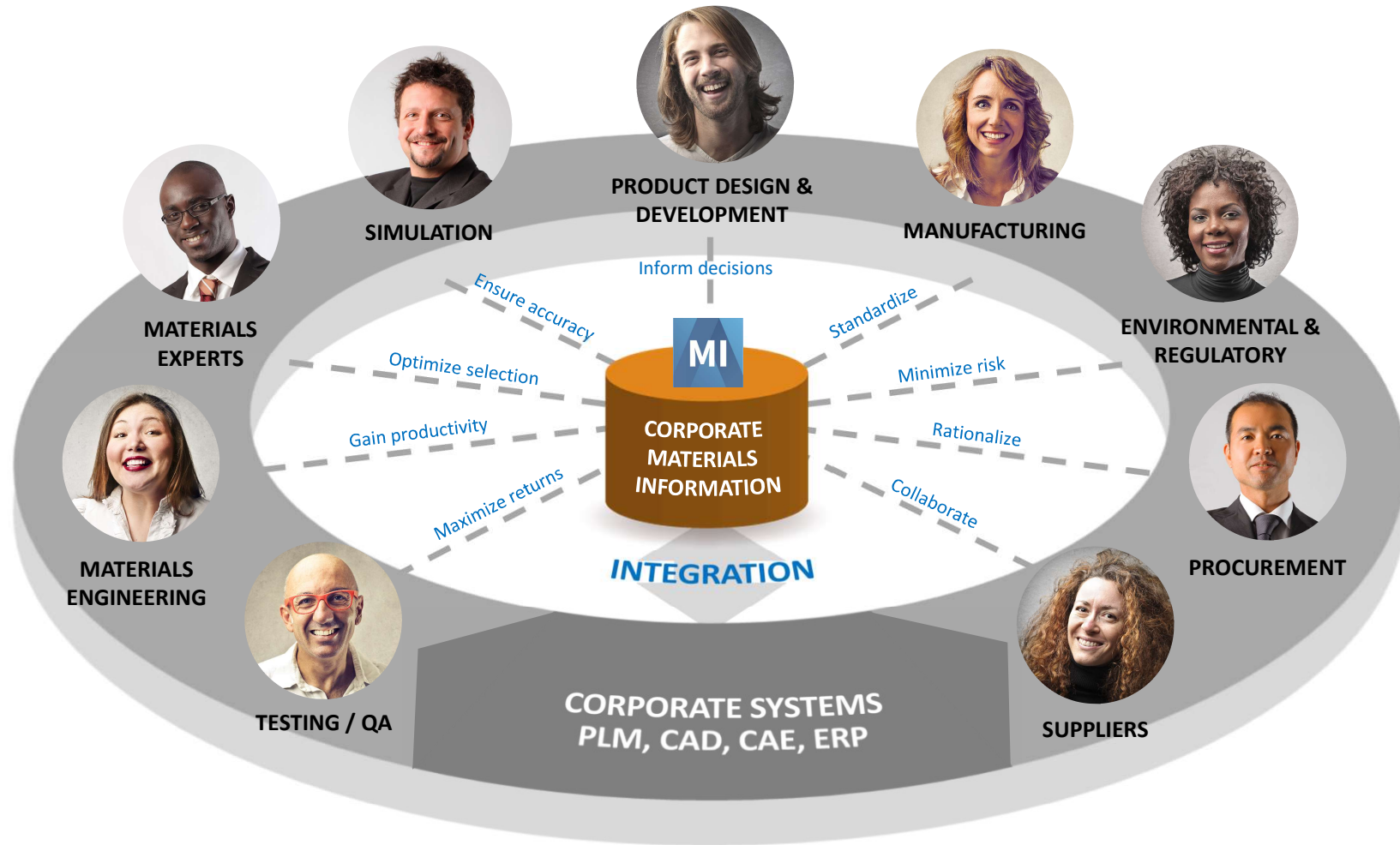
**GRANTA**

# Additional slides

Jan 2019



# GRANTA MI – ‘gold source’ for corporate material intelligence



# GRANTA Selector – Enabling Smart Materials Choices



Innovate  
through materials



Quickly resolve  
materials issues

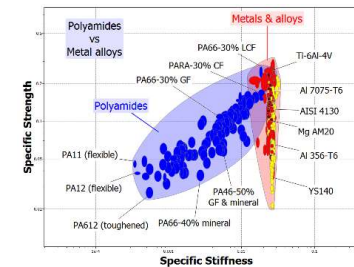


Confirm & validate  
choice of materials



Reduce costs  
of materials and R&D

'Encyclopaedia'  
of materials data

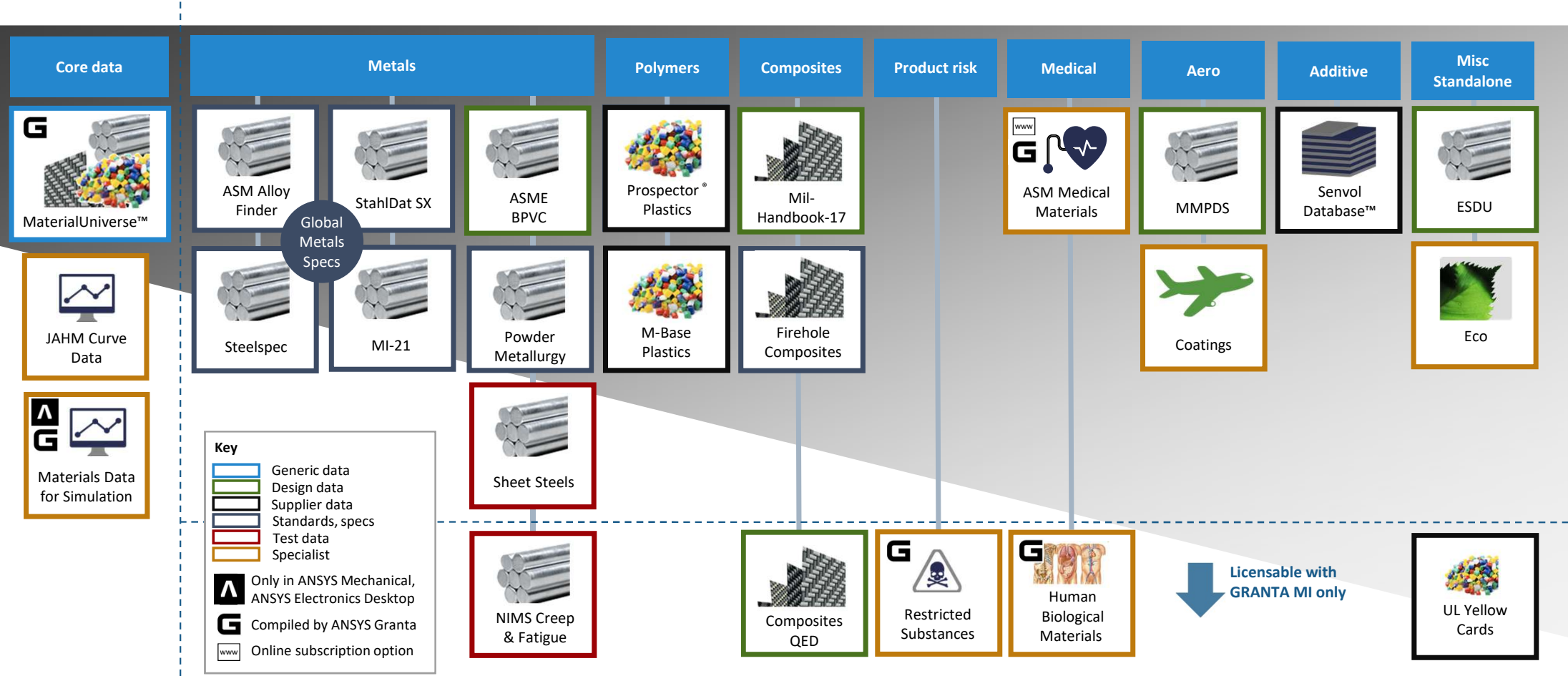


Visualization,  
filtering &  
estimation tools

# Granta for education

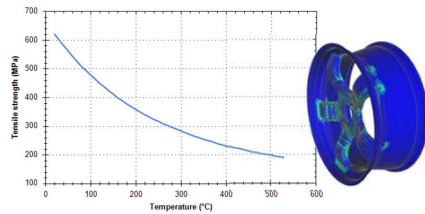


# ANSYS Granta materials data library



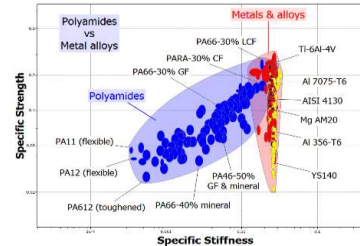


# Products for the ANSYS community in industry



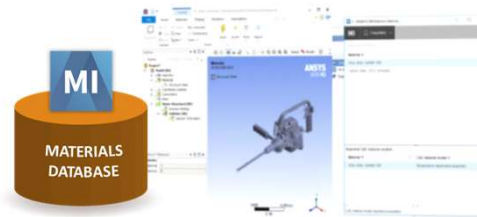
## Materials Data for Simulation

Focused materials data set to support simulation analysts, embedded into ANSYS Mechanical and ANSYS Electronics Desktop



## GRANTA Selector

For anyone making materials choices:  
PC tool with unique materials data  
+ selection tools



## GRANTA MI Pro

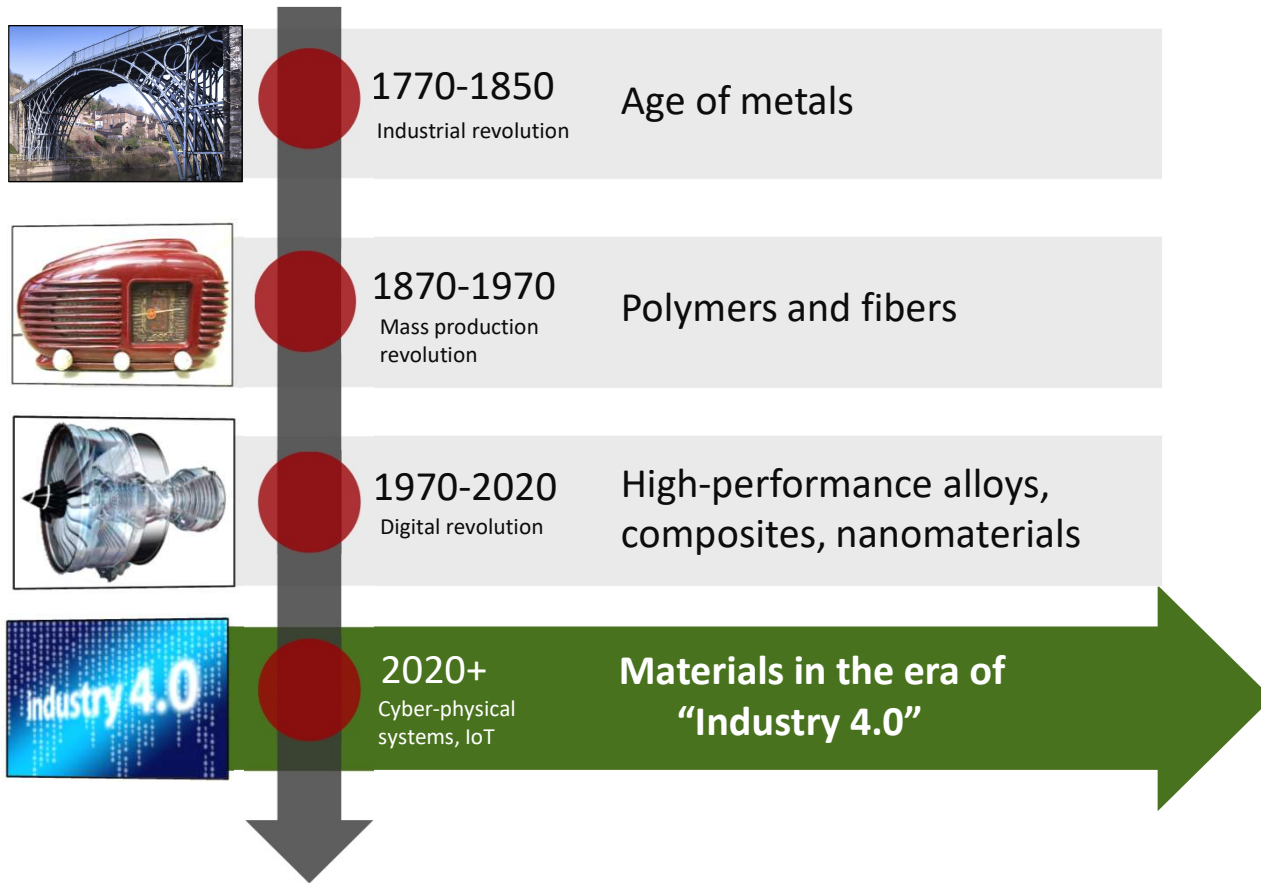
Fast-start materials information management  
solution for design and simulation



## GRANTA MI Enterprise

Comprehensive enterprise  
materials information management

# Materials 4.0 vision



## Convergence of physical and virtual worlds

- **Integrate** experiment & simulation
- **ICME** – multi-scale
- **AM** processes 'born certified'
- **Machine learning** for materials
- **Digital Twin** ...

*Our technology must support these trends: scalability, performance, integration...*

# Material intelligence everywhere vision



MATERIALS  
EXPERT

Meeting future customer requirements...

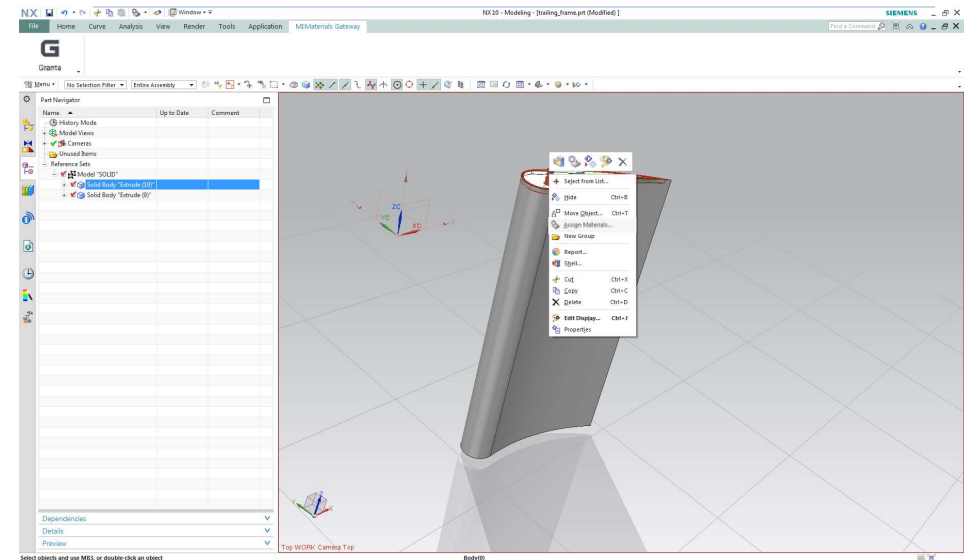
“I’ve received an automated failure report. I want to look at the part, identify the material, and access all available intelligence on that material and alternatives... and I want it immediately.”

IoT

Digital Twin

Digital Thread

Optimized UX



## GRANTA X project

Long-term project to optimize performance, integration, user experience

# The Material Data Management Consortium



Collaborative project, founded in 2002 by NASA, ASM International, Granta Design

**Mission:** The MDMC develops and applies materials information technology that helps to maximize the value of materials engineering for engineering enterprises

## Benefits for members

- Share best practice
- Ensure new / updated solutions meet your needs
- Support and networking

Aerojet Rocketdyne  
Airbus Helicopters  
ASM International  
AWE  
Boeing  
Embraer  
Fokker Aerostructures  
GE – Aviation  
GKN Aerospace  
Granta Design  
Honeywell Aerospace  
IHI Corporation  
Kansas City Plant  
Lawrence Livermore National Lab  
Lockheed Martin  
Los Alamos National Lab  
NASA  
Northrop Grumman  
Raytheon  
Rolls-Royce  
SAFRAN  
Sandia National Labs  
Sulzer  
United Technologies Corp  
US Army Research Labs

# EMIT Consortium

Granta and the EMIT Consortium are working to embed eco design and compliance with environmental regulations into everyday engineering workflows





# What does the acquisition mean for our customers?



The global leader in  
engineering simulation

For ANSYS customers

- A new materials business – for industry and education
- The premier system to manage corporate material intelligence within the ANSYS product family
- Ensure robust, accurate, traceable materials data for simulation



The materials information  
technology leader

- A stronger organization, with even more scope to invest in product and global service capabilities
- Even better connections to the world of simulation for better, greener, safer products

For Granta customers

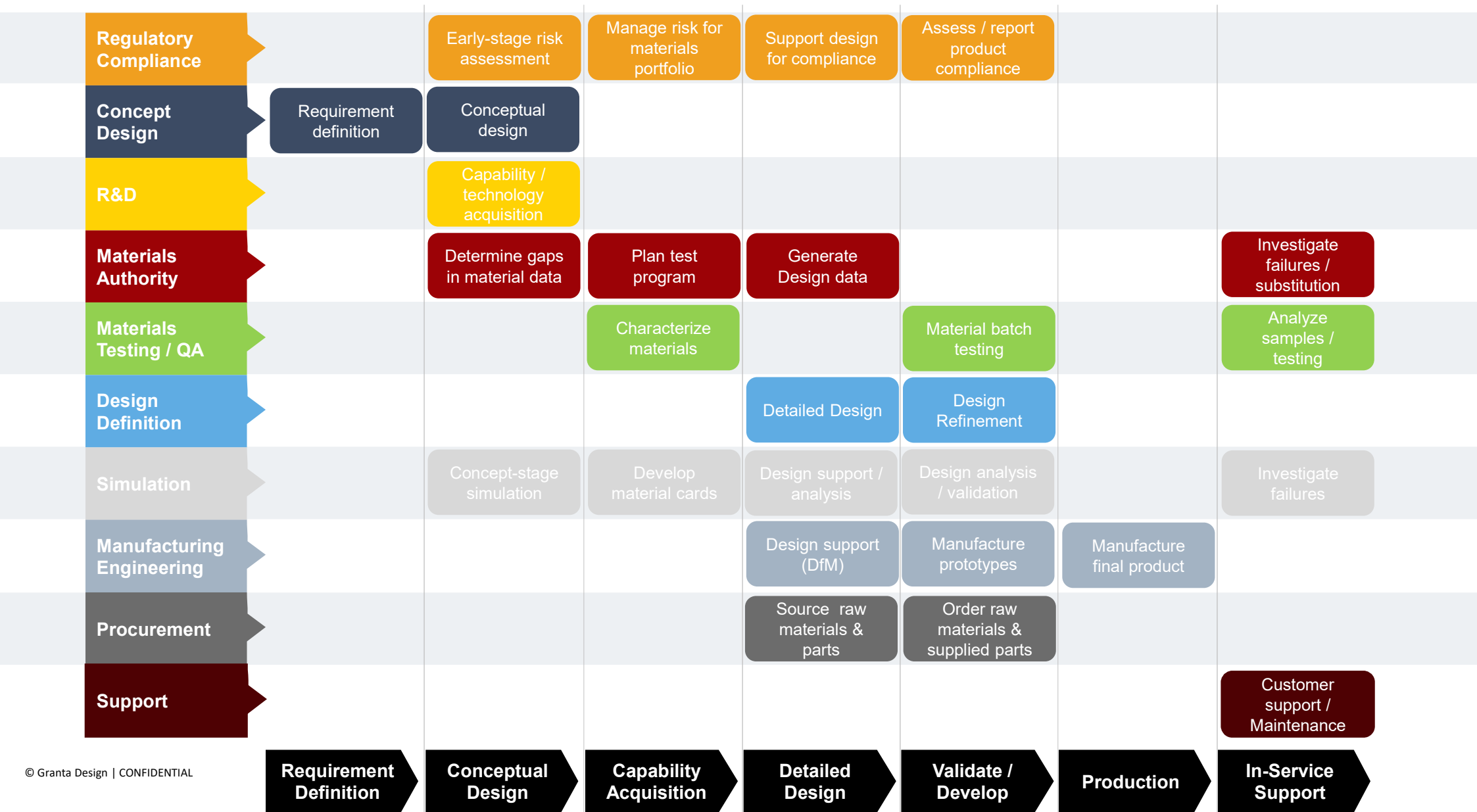
# Commitments to customers



- Granta continues as a new Business Unit within ANSYS
- There is no change in our support for all sectors that we serve:
  - Engineering enterprises, Research, Education
- All products, customer commitments, collaborations, planned events continue
- Granta and ANSYS are committed to collaboration and open eco systems
- Both organizations have a strong track record
- It is our intent to continue to support and develop all existing Granta integrations
  - E.g., with third party CAD, CAE, and PLM systems
- Your Granta account management and service teams are unchanged

# The big picture: 'Digitalization' of business processes





# More information



**Watch the video**

“What is the value of materials data management?”

[www.youtube.com/user/GrantaDesign](http://www.youtube.com/user/GrantaDesign)

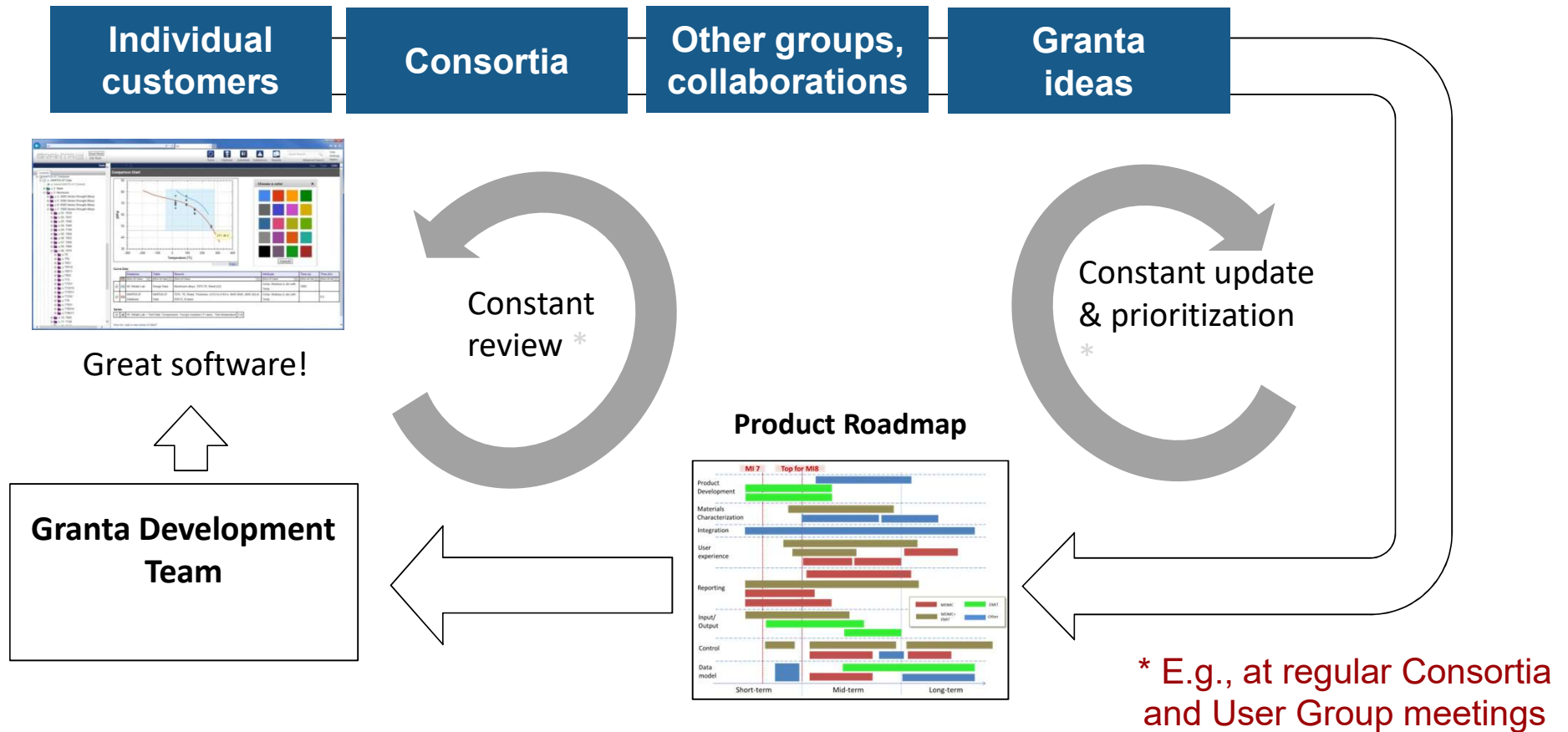


**Read the White Paper**

[www.grantadesign.com/download/pdf/whitepaper.pdf](http://www.grantadesign.com/download/pdf/whitepaper.pdf)



# Development in collaboration with our network



# Why work with Granta?

The materials information technology experts

The world's largest, most experienced group, by far.

- People
- Innovation
- Product breadth & depth
- Partners
- Customers
- R&D (overall spend and customer involvement)
- Implementation
- Involvement in the academic community