3. CAM: from island to an integrated approach

15:45 – 16:30

Wim Ottenhoff

Today's (known) challenges of manufacturing industry

First time right

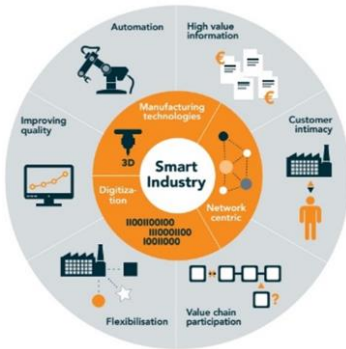
faster

Cost reduction

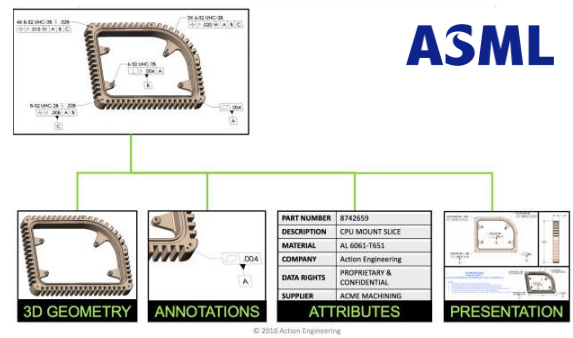
Increased complexity

And some new challenges…. (or opportunities?)

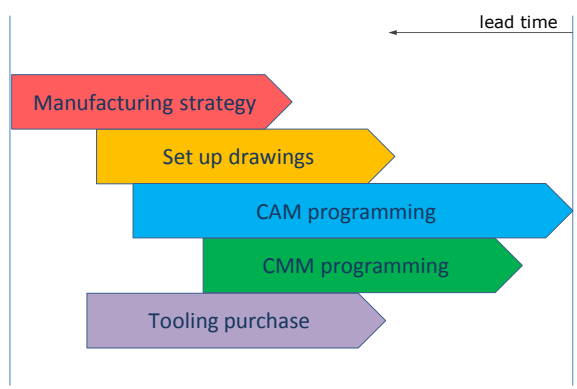
Smart Industry



Drawing replaced by
Model Based Defintion (PMI)



The solution is concurrent engineering

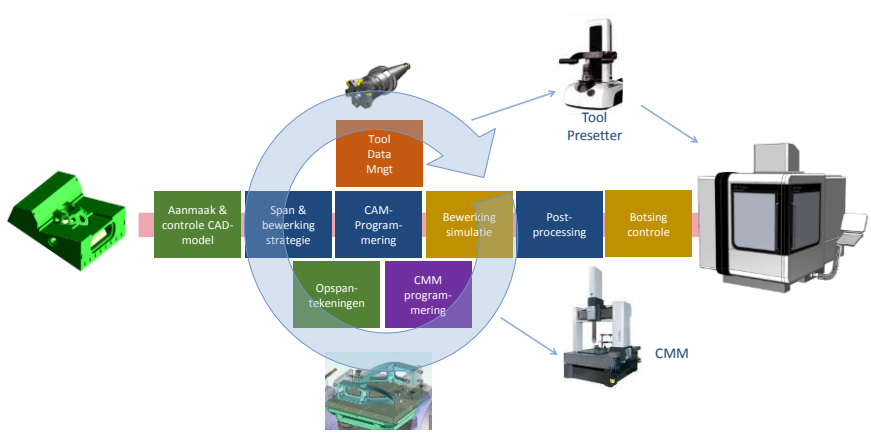


Concurrent engineering requires a different approach

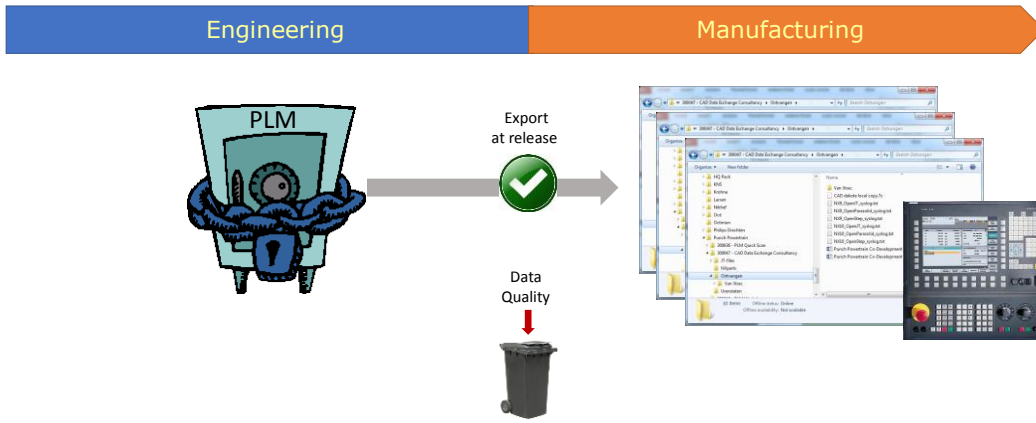
- Integrated processes and data management
- All information digital available
- 100% prepared
- Standardization

- Fundament for reuse and further automation!

What means an integrated approach in Manufacturing Engineering?

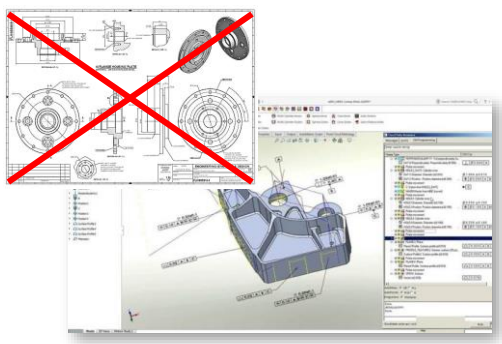


Need for PLM in manufacturing



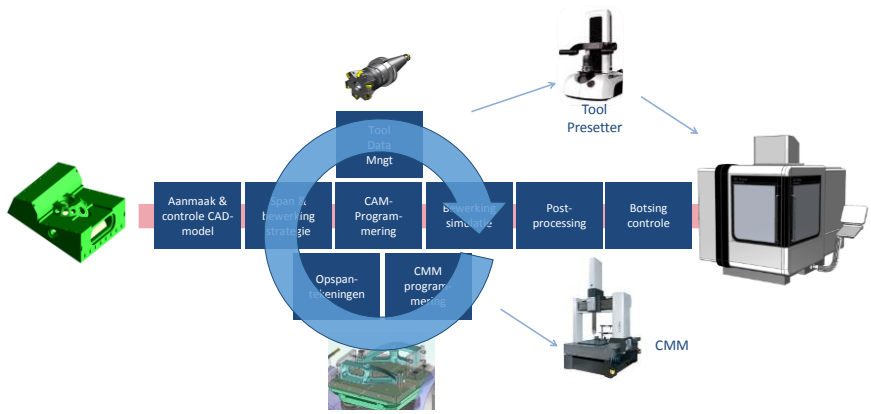
PLM is fundament for reuse and automation in manufacturing

- Reuse in Feature Based Machining
- Reuse (MBD/PMI) in inspection: CMM programming

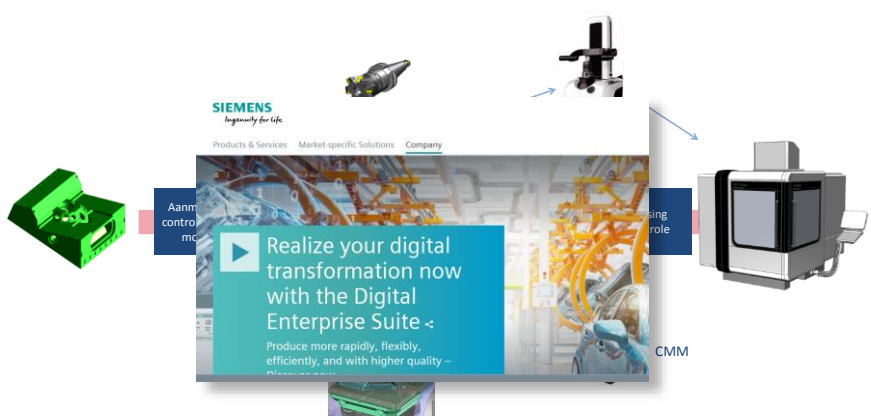


PMI = Product and Manufacturing Information MBD = Model Based Definition

Best-in-class versus integrated applications



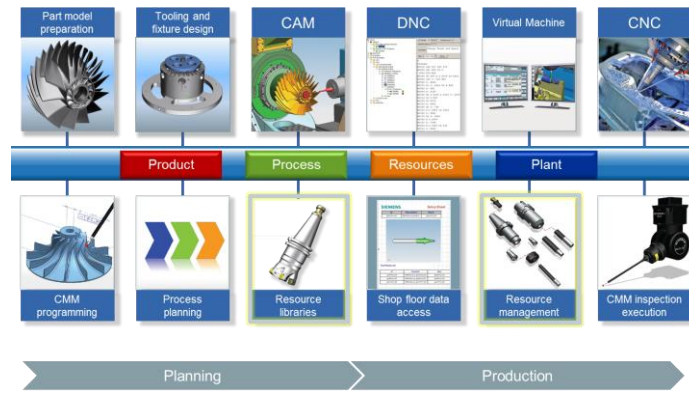
Best-in-class versus integrated applications



Integrated approach and the Siemens portfolio

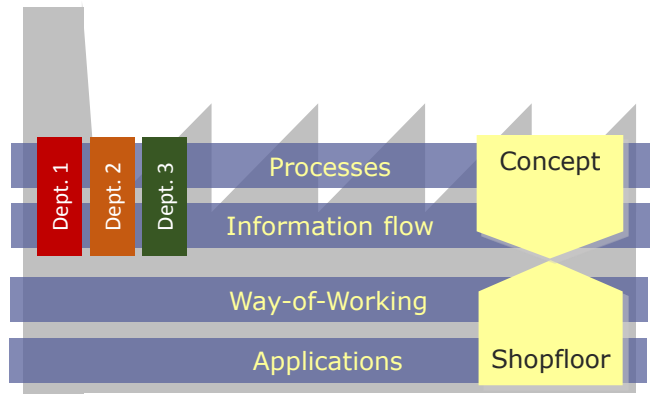
- Focus on engineering and manufacturing process
- Focus process integration
- Powerfull applications
  - NX CAD/CAM
  - Teamcenter PLM
- Open interfaces

SIEMENS



But where to start?

Translate integrated approach to a vision

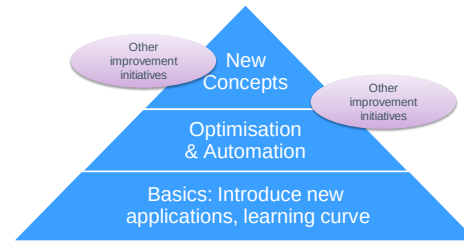


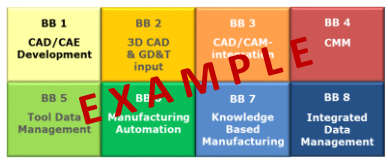
Inventory application landscape

- What information in what application?
- What is the master and what is derived?
- Integrated approach is not necessarily all information in one application!

Vision → roadmap → project plans

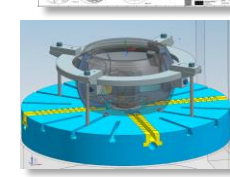
- Translate PLM vision to an implementation strategy
- Define roadmap for transition from old to new situation
- Translate this to crisp annual plans
- This approach is essential for success!





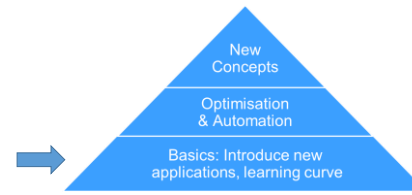
What does this imply for manufacturing engineering (1)

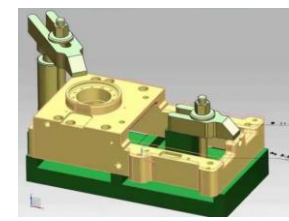
- Focus on process '*From CAD-model tot first article*
  - Start with stepwise introduction of new applications and new WoW
  - Out-of-the-box and based on best practices
- An integrated approach from day one
  - Data securely managed up to the NC-controler
  - Digital only
- Combine this with standardization and reuse
  - CAM program set-up, tool data management, feeds & speeds, etc.
  - Focus from technical perfect to optimum process
  - The fundament for further automation



What does this imply for manufacturing engineering (2)

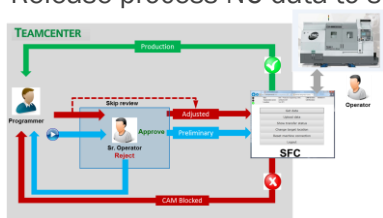
- Follow pilot / roll-out principle
  - Include findings of pilot in roll-out
  - Create room for learning-by-doing
- Next level area's:
  - Automating CAM with templates and wizards
  - Feature Based Machining (FBM)
  - Reuse of PMI in CAM
- Tune activities on related area's
  - Reuse of CAD and PMI in inspection (CMM)
  - Reuse of PMI for 'bubbling' of FAI drawings





Example first step of a CAM/PLM implementation

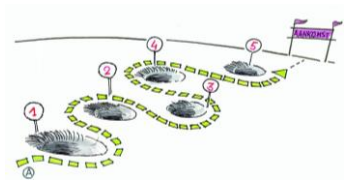
1. Introduction of CAM for 3..5 axis programming (NX)
2. CAD and CAM-data management in PLM (Teamcenter)
3. Toolpath verification and machinecode simulation (ISV)
4. Creation of set-up drawings in CAD (NX)
5. Basic Tool Data Management (MRL)
6. Release process NC data to shopfloor (SFC)

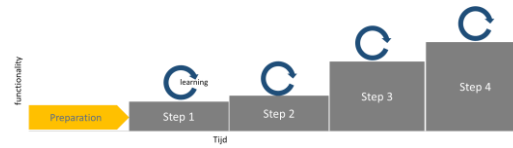


Closing the loop

The pitfall's of PLM (and how to prevent them)

- No IT-project but a new way-of-working
- Not an 'engineering only' party but effects all disciplines
- Defining large projects with (too) late feedback from practice
- Trying to specify all details upfront with no room for learning-by-doing
- Little attention for change management and communication





Change management and communication

- Culture change
  - From technical perfect to optimum process
  - From individual WoW's to one WoW
  - Not everyone is capable te make this change
- Involve all disciplines from day one
- PLM is investing in process and data quality
  - Some will see this as bureaucracy…
- The concepts of PLM are not easy (and boring)
  - Focus on communicating the concepts
  - Invest in experiencing in stead of training

The business motivation

ING

Innovatiekracht industrie noodzaak om concurrentiepositie te verbeteren

Met name in de maakindustrie en foodindustrie liggen nationaal e
internationaal veel kansen voor innovatieve industriële bedrijven c
kwalitatief hoogwaardige producten en diensten. Ook in d
chemische industrie liggen kansen, maar zijn de
omgevingsfactoren uitdagender.

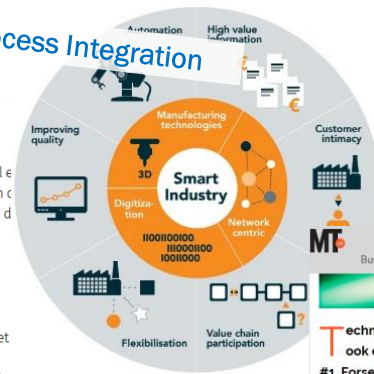
Need for process innovation

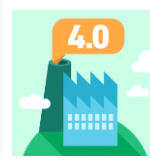
Trends maakindustrie

De product life cycle in de maakindustrie wordt steeds korter. Het noodzaak om sneller en beter te innoveren op het gebied van productontwikkeling om de concurrentiepositie te behouden of te verbeteren. Prijserosie van producten gaat als gevolg van deze ontwikkeling steeds sneller. Het is noodzakelijk excellence e en procesinnovatie door het gehele product gedurende de product life cycle te drukken om marktposities te behouden. Bovendien steeds verder gepersonaliseerd. De seriegrootte wordt als gevolg daarvan steeds kleiner. Bedrijven moeten hier in de engineeringsfase al rekening mee houden door producten modulair op te bouwen.

Smaller series, increased complexity

Process Integration





smart industry
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Technologische innovatie gaat hard in de maakindustrie. Dat heeft ook een schaduwkant. Vijf trends voor 2015.

#1. Forse investeringen in digitalisering

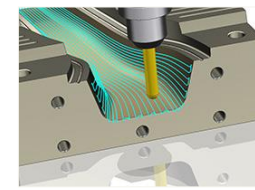
Een uitgebreid internationaal onderzoek wijst uit dat landen als Duitsland, Frankrijk, het Verenigd Koninkrijk en de VS fors investeren in de digitalisering van hun industrie. Zo gaat alleen al in Duitsland bijna meer dan honderden miljarden in de digitalisering van de eigen maakindustrie, aldus Maurits Butter (TNO). De meeste kleinere landen in Europa stimuleren de digitalisering van de maakindustrie ook actief, maar daar is de diversiteit groter. Elk land doet het anders maar de trend is helder: digitalisering van de industrie staat overal op de agenda.

Digitalisation is on the agenda

Business motivation (2)

- Benefits are big, but indirect and not visible on the short term
  - Shared vision and roadmap is key
  - Look for quick wins
  - Start with (simple) metrics from day one

How can we support you



- CAM/PLM Quick Scan
  - Business motivation for your company
  - Inventory current and desired future state
  - Cost/benefit analyses
  - Develop implementation strategy and roadmap
- Translate roadmap to practical implementation steps
- Support in PLM and CAM implementation
- Support Manufacturing Engineers hand's on during transition

Q & A

settels savenije
PLM services

Meer weten? Wim Ottenhoff, Managing Consultant, +31 6 22158720

WHEN BUSINESS, PEOPLE & TECHNOLOGY NEED AN IMPULSE