Leverage the asset of big data

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What is BIG DATA?

**Big data** is the synonym for the analysis of a *huge amount* of data from *various sources* in *high performance* with the aim of getting *more economic benefit* out of it.

The data sets are becoming so large and complex that it gets difficult to process them using on-hand data management tools or traditional data processing applications.

**Big data, big value … huge opportunity**

Source: Reuters
What is BIG DATA?

The first big data project: 1880 United States Census

• More than 50 million people have been asked for
  • Demographic data, e.g. age, gender
  • Mortality, civil status, birthplace of the parents
  • Tax data and infrastructure
• The analysis and processing of the data took seven years
• Herman Hollerith was ordered to develop a tabulating machine for the Census in 1890
• With 43 Hollerith machines and 500 employees the Census of 1890 was analyzed in two years
Volume
Number of records and files
Yottabytes
Zettabytes
Exabytes
Petabytes
Terabytes

Variety
Foreign data (Web, etc.)
Company data
structured, semi-structured, not structured
Engineering data / Text / Presentations / Videos / Pictures / Tweets

Velocity
Data generation in high performance
Data transfer in real time
Milliseconds / Seconds / Minutes / Hours

Analytics
Recognize correlations, consequences, patterns, forecasting
Data mining / Text mining / Image analysis / Visualization / Dashboards

Big Data elements
• It may (but not always) involve terabytes to petabytes (and beyond) of data

Challenges:
Companies have difficulties identifying the right data and determining how to best use it
Variety

The data comes from many resources

Much data today is not natively in structured format

The ownership of data is fragmented across the organization

Challenges:

Transforming such content into a **structured format** for later analysis is a major challenge
Velocity

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• Mass of data is not mandatorily a problem if you have enough time for the analysis. But do you really have it?

Challenges:

• Quicker analysis (real-time processing)
• Short response times (concurrent queries)
• Analysis of different information types (numbers, text, images)
Analytics

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• Transformation of data in valuable information
• Uncover hidden patterns, unknown correlations and other useful information

Challenges:
• Selecting the right data out of all internal and external sources
• Veracity and quality of data
Can you estimate the huge value of all the data in your company?

- Opportunities to capitalize on Big Data exist in numerous corners of a large and global company
- Transcat’s focus is mostly in Engineering and Manufacturing

(Source: Survey of TCS 2013)
Big data benefits

• Greatest benefits for Engineering and Manufacturing

Product quality / Defect tracking
• Better detection of defects in design and manufacturing
• Monitoring of product data quality
• Boost quality
• Reducing unnecessary iterations in product development, e.g. design time, design improvements by defining company standards and embedding industry standards

Drive efficiency across the extended enterprise
• Increasing the efficiency of engineering and manufacturing processes
• Integration of datasets from multiple systems to enable effective and consistent collaboration

Supply planning and supplier performance data
• Improve relationship with suppliers
• Better contract negotiations
Transcat Company Profile

- More than 2,000 global customers
- 200+ employees at 7 locations
- Founded in 1987
- Transcat PLM
  - DS Business Partner
  - Germany & Austria
- Transcat Software
  - Software Development Division
  - Germany & Slovakia
- June 2012: Management buy out from Dassault Systèmes
Transcat Software Offering

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• **Process Assurance, Methodology and Compliance**
  - XFileV5 – Analyze, Identify, Structure
  - xCompare – Compare, Validate, Document
  - myPLM – Application Management, MultiCAD
  - Q-Checker – Methodology, Quality, MBD
  - Q-PLM – Automation, PDM
  - Q-Monitor – Quality Metrics

• **Lite3D portfolio – neutral formats:**
  Visualization, Data exchange, Long-term archiving, MBD
Analyze, Identify, Structure

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Is the data consistent and ready for collaboration and re-use?

Goal
• Interchanging consistent set of documents
• From unstructured to structured files

Tasks
• Root Documents need to be found
• Links need to be verified (broken & ghost links)
• CATIA V5 structure is complex
• Consistent data exchange requires complete package
XFileV5 – Consistent CATIA V5 data

Managing and exchanging CATIA V5 data
Development supported by German Automotive OEM’s and Dassault Systèmes

Features:
- Identification of root documents
- Detection of links to CATIA and non CATIA data
- Listing of missing documents
- Have components been renamed?
- Without loading the files in CATIA
- Interactive and batch

Too little or too much data sent
Costly analysis sending and receiving data
Can you tell me the difference?

It’s not about the overall size of the data; it’s about timely accessing relevant modifications which could be very small.
xCompare – Model Validation

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- **Design Change Validation and Documentation** – Clearly communicate feature and geometry changes between OEM/suppliers, partners and downstream.
- **Manufacturing and Simulation Validation** – Easy identification of shape changes between the design models and manufacturing/simulation models.
- **Data translation validation** – Avoid unacceptable differences caused by translation.

Manufacturing  
Simulation
xCompare benefits

- Saving time with comparing models
- Increase reliability
  - xCompare ensures that ALL modifications are found. No risk of human errors
- Fulfill legal or company requirements regarding documentation

Customer examples
- V5 / V5: Aisin Ai / Drawing Comparison, Dräxlmaier / Tolerances - FT&A
- V5 / JT: BMW, Daimler, Volvo Cars
- V5 / SMG (3DVia Composer): Boeing, Saab Aerospace
Today...
- CAx products have to be customized after installation
- Each CAD version and add-on application need to be launched and supported separately
- Lots of icons on the user’s desktop

With myPLM
- Well organized user interface in a node-structured tree view
- Environment selection for different OEMs
  - GM, Daimler, Airbus, Porsche, …
- Embedded license selection
- Selection of Add-ons
- Administration of user permissions
  - Easy to use for end user
  - Flexible and transparent administration
  - One tool to manage all CAx products
myPLM

Support of MultiCAD environment
- CATIA V5 & V6
- Creo
- Siemens NX

Different license configurations for
- CATIA V5
- CATIA V6 server selection
- Siemens NX

Easier administration with Add-ons
- License-Check, License-Statistic, License-Management
- Active Directory Connect, Offline-Sync
- Software distribution
myPLM benefits

- **One tool to manage all CAx products**
  - Global administration of user authorizations for different CAx applications
  - Global definition for all CAx installations
  - Simple administration of myPLM to manage all CAx installations

- **myPLM global solution for PLM Application Management**
myPLM – Customer examples

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Dr. Ing. h. c. F. Porsche AG
Reducing unnecessary iterations in product development

I am working in line with our design rules...

Designer

Time
Repair & Communication
Time Saved

FEA

Mold Design

Electrical Design

Step Conversion

Suppliers

Volume

Variety

Big Data

Velocity

PLM

Analytics
Boost your quality

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- Establish company and industry standards
- Ensure compliance with these standards
- Consistently validate the contribution of the extended user community
- Provide easy visibility of the product information to any user

Volume
Variety
Big Data
Velocity
Analytics
Overview Q-Checker PLM Integration

Interactive Use
- Launch from CATIA
- Results in CATIA

Monitoring
- Results in Q-Monitor

PLM Integration
- Launch from PDM
- Batch run e.g. over night
- PDM Trigger Check In, Promote
- Data Exchange
- Results in PDM
- Attached report in PDM

Volume
- Big Data

Velocity
- PLM

Analytics
- Analytics
- Big Data

Results in Q-Monitor

Results in PDM

Attached report in PDM
Provide easy visibility of the product information to any user with JT as process format.
Lite3D

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- Industry requires a lightweight, neutral 3D file format
- Reasons: cost, IP protection, independency from vendors, less specialist knowledge
- Requirements for the use of neutral 3D data:
  - Long term 3D archiving (Model based Definition)
  - Data exchange, downstream reuse, mobile devices
  - Corporate-wide viewing of 3D data
Lite3D Platform

Future topics:
- Search
- Data Simplification & IP Protection
- Process Compliance
- Validation
- Viewing & Navigation

Volume
Variety
Big Data
Lite3D
Velocity
Analytics

LiteBox3D

LiteDrop

Volume
Variety
Summary

- Increase of data quality and product quality
- Make these high quality data available to all users (internal and external)
- Support data re-use and collaboration
- Achieve a higher level of efficiency in company and downstream processes
Thank you

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