

Process Mining @ ZIMMER BIOMET

PROCESS MINING CAMP 2016
GIANCARLO LEPORE

The Group



ZIMMER BIOMET

Your progress. Our promise.™

Current situation



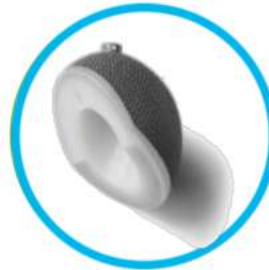
Robin T. Barney

Senior Vice President, Global Operations and Logistics

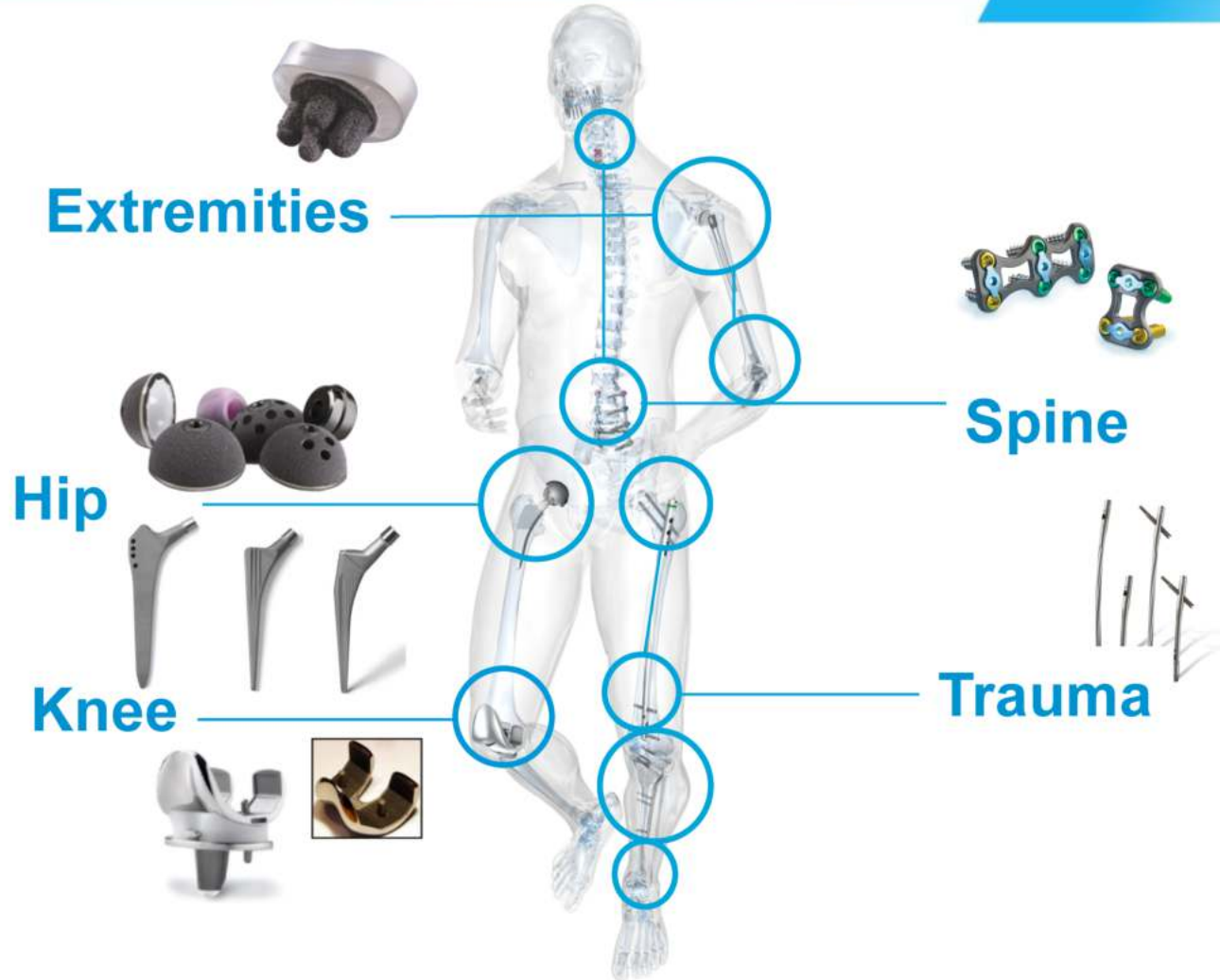
«This is a marathon (although we are clocking a fast paced time), not a sprint. Pace yourselves and your organizations. Set stretch goals yes, but realistic ones»

(Barney, 2015)

...from raw to finish.



Product use



Manufacturing flow



Cut



Forge



Blast



Mill



Lathe



Polish



Measure



Blast



Laser Marking



Pre Clean



Coating External



Final Clean



Pack / Seal



Shrink Wrap



Sterilization



DC Eschbach

Tackle the marathon



Network visualisation with Disco

Speed Strategy

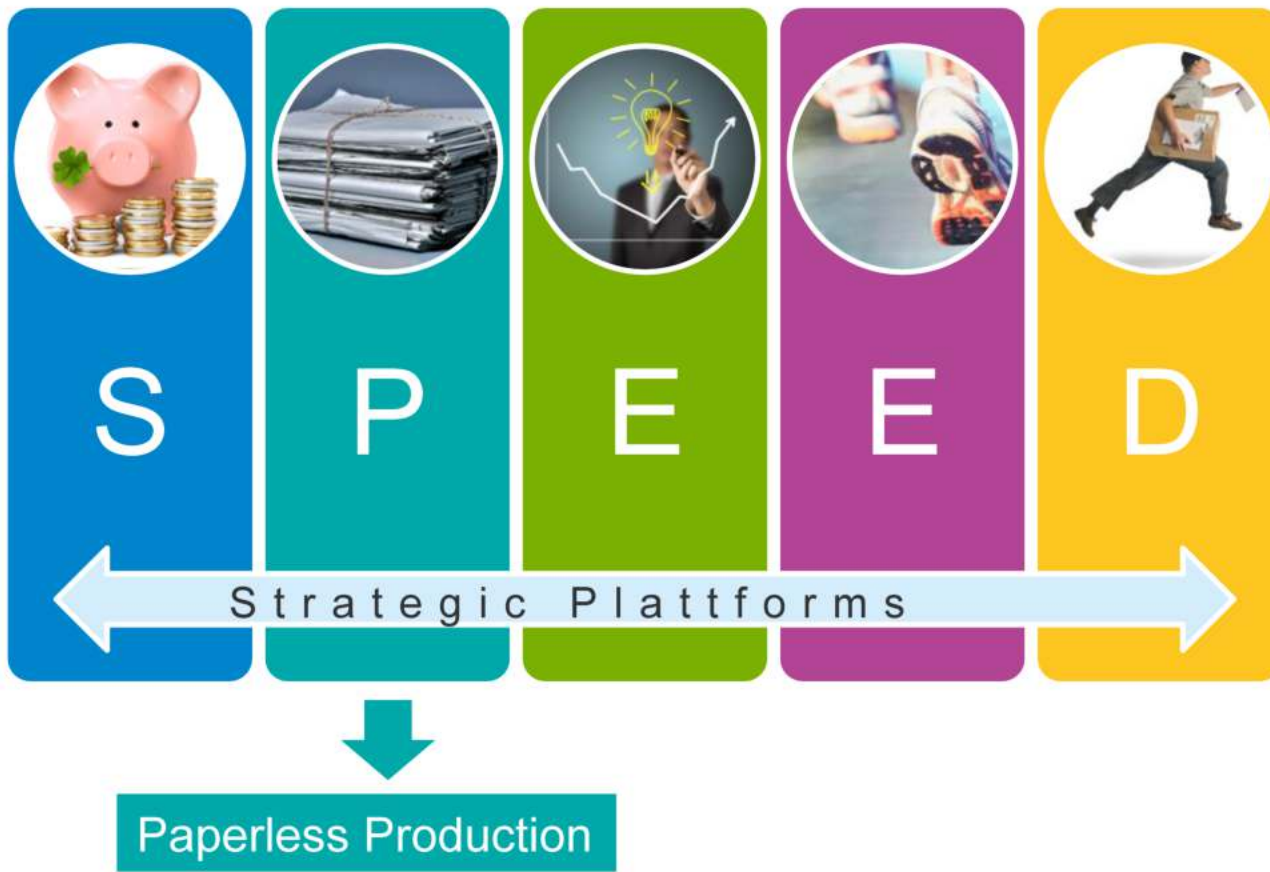


SPEED2018

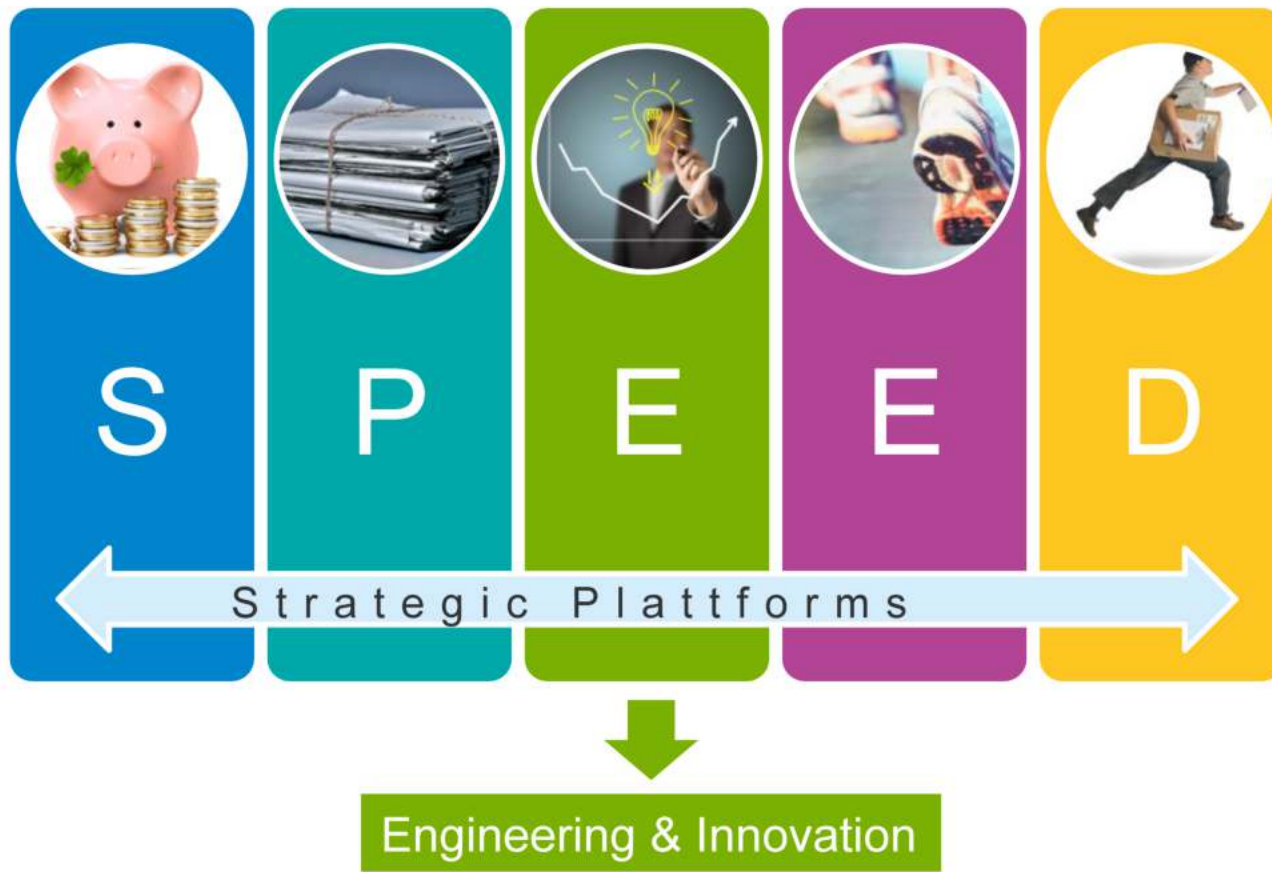


Standard cost Reduction

SPEED2018



SPEED2018



SPEED2018



↓
End to End – Throughput time Reduction

SPEED2018



Delivery Performance - Liefertreue



**Where do we
start?**

Extended workbench



Cut



Forge



Blast



Mill



Lathe



Polish



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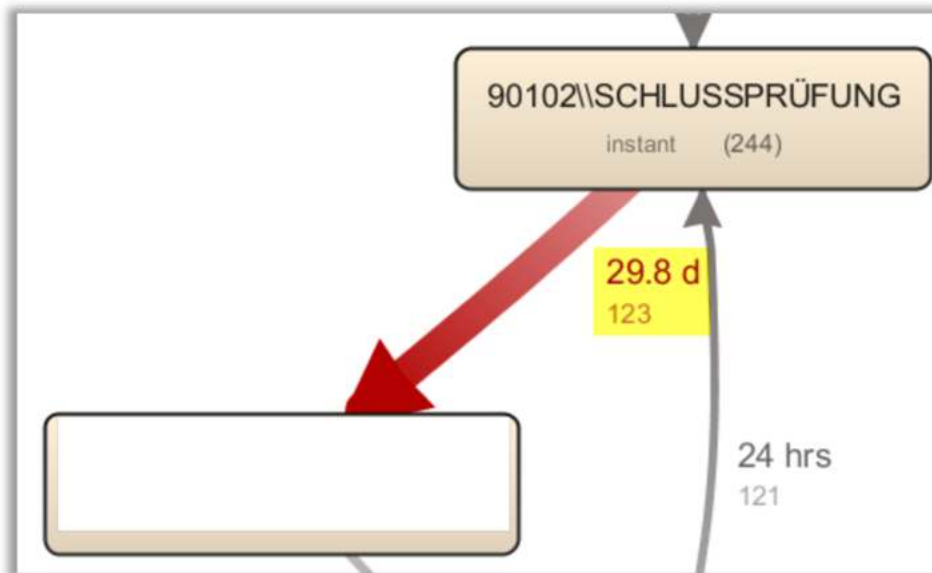
Sterilization



DC Eschbach

Extended workbench

Lieferant Nr.	Lieferant	Aufträge	Frequency Netzwerk	Relative frequency	4Q. 2015					4Q. 2015			Varianten
					Ø DLZ Vorgang [d]	Ø DLZ Vorgang [d]2	Abw. IST vs. SAP [%]	WBZ SAP [d]	Ø DLZ Aufträge [d]	Ø DLZ Aufträge [d]2	Anteil an DLZ Aufträge		
505913		123	2'747	0.37%	29.8	24.9	198%	10	43.0	34.5	69%	6	



Extended workbench



Cut



Forge



Blast



Mill



Lathe



Polish



Measure



Blast



Laser Marking



Pre Clean



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Shrink Wrap



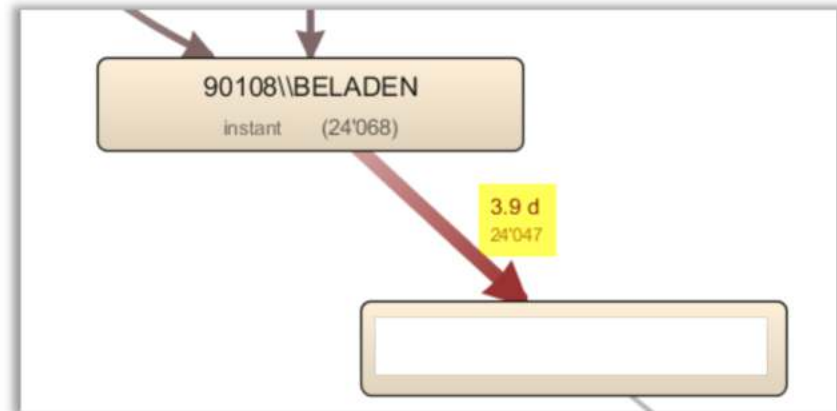
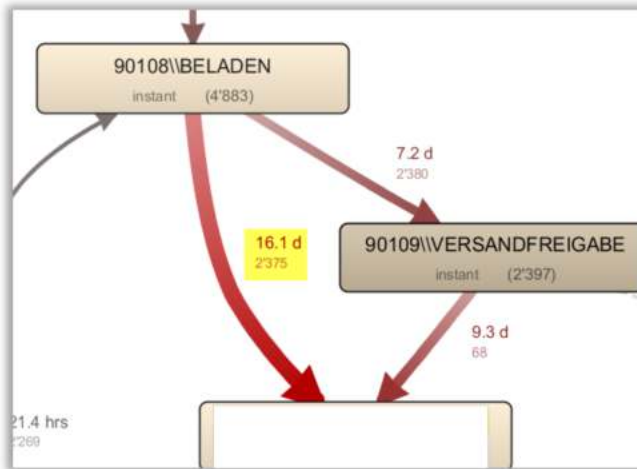
Sterilization



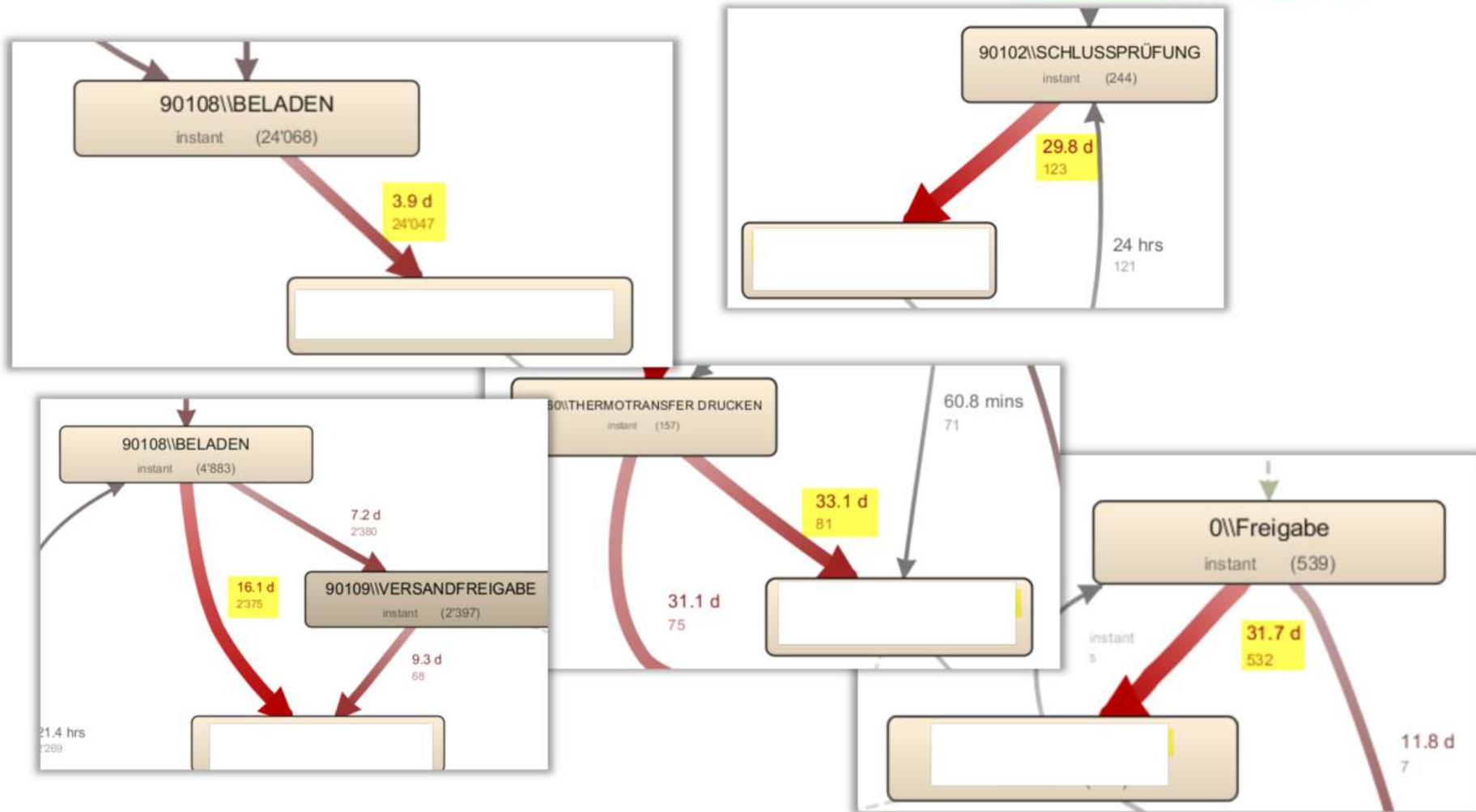
DC Eschbach

Extended workbench

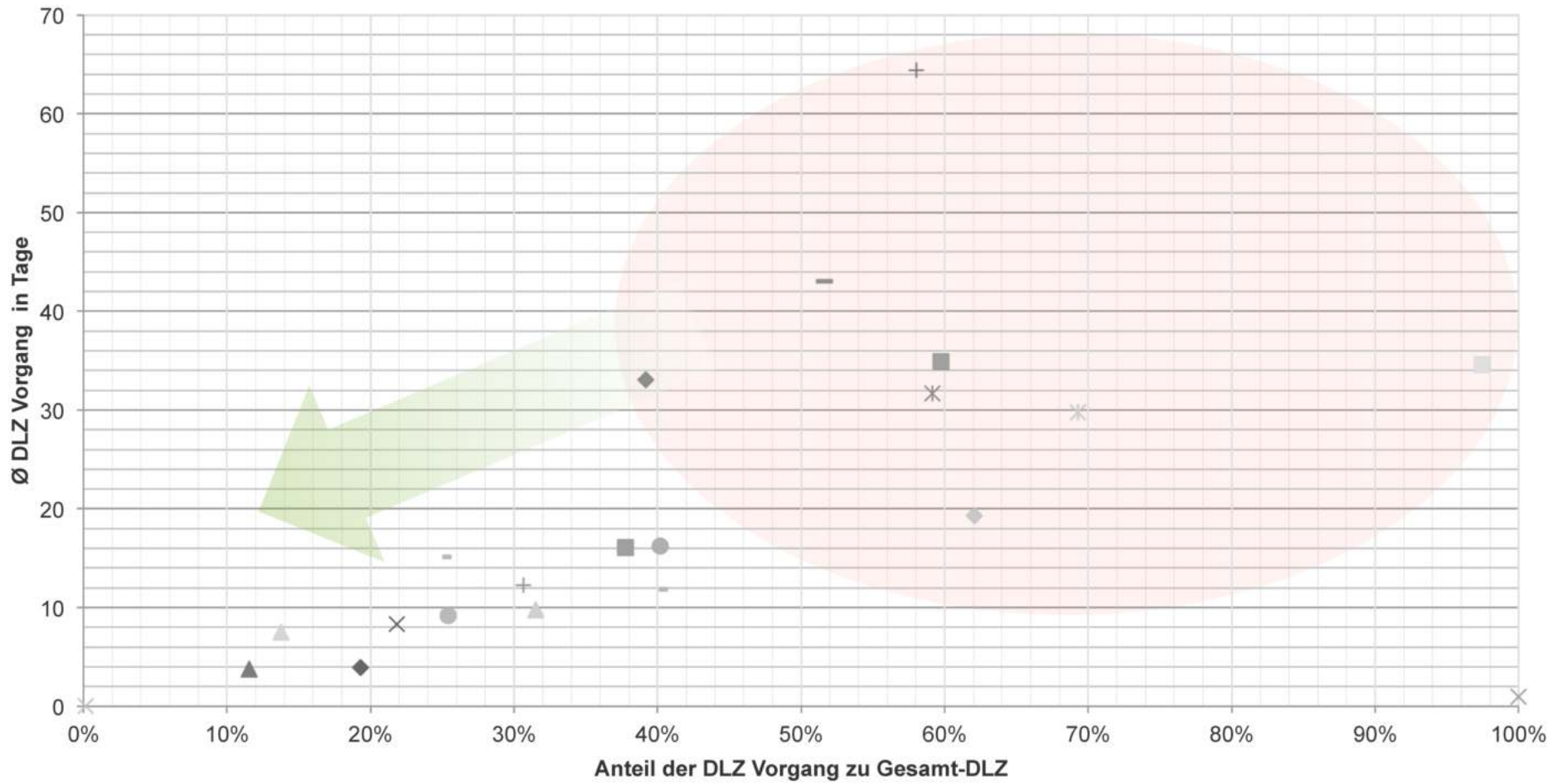
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516545		2'474	52'731	7.49%	16.1	15.2	7%	15	42.6	37.9	38%	40	
501675		1'931	51'823	5.84%	3.9	3.3	400%	0	32.9	19.8	12%	68	



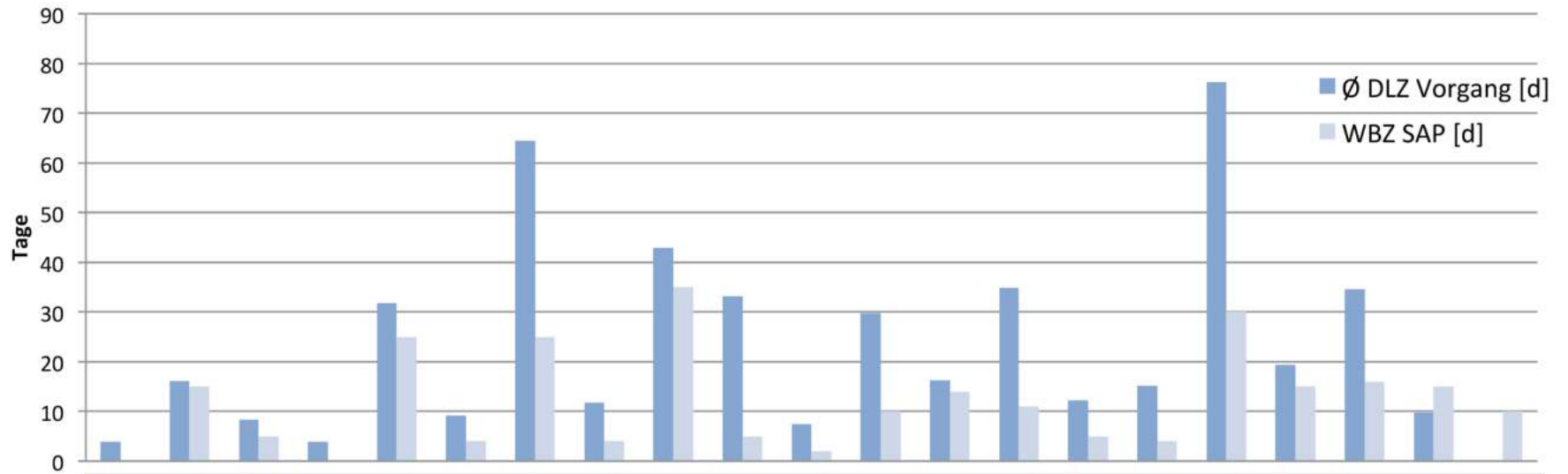
Extended workbench



Extended workbench



Extended workbench



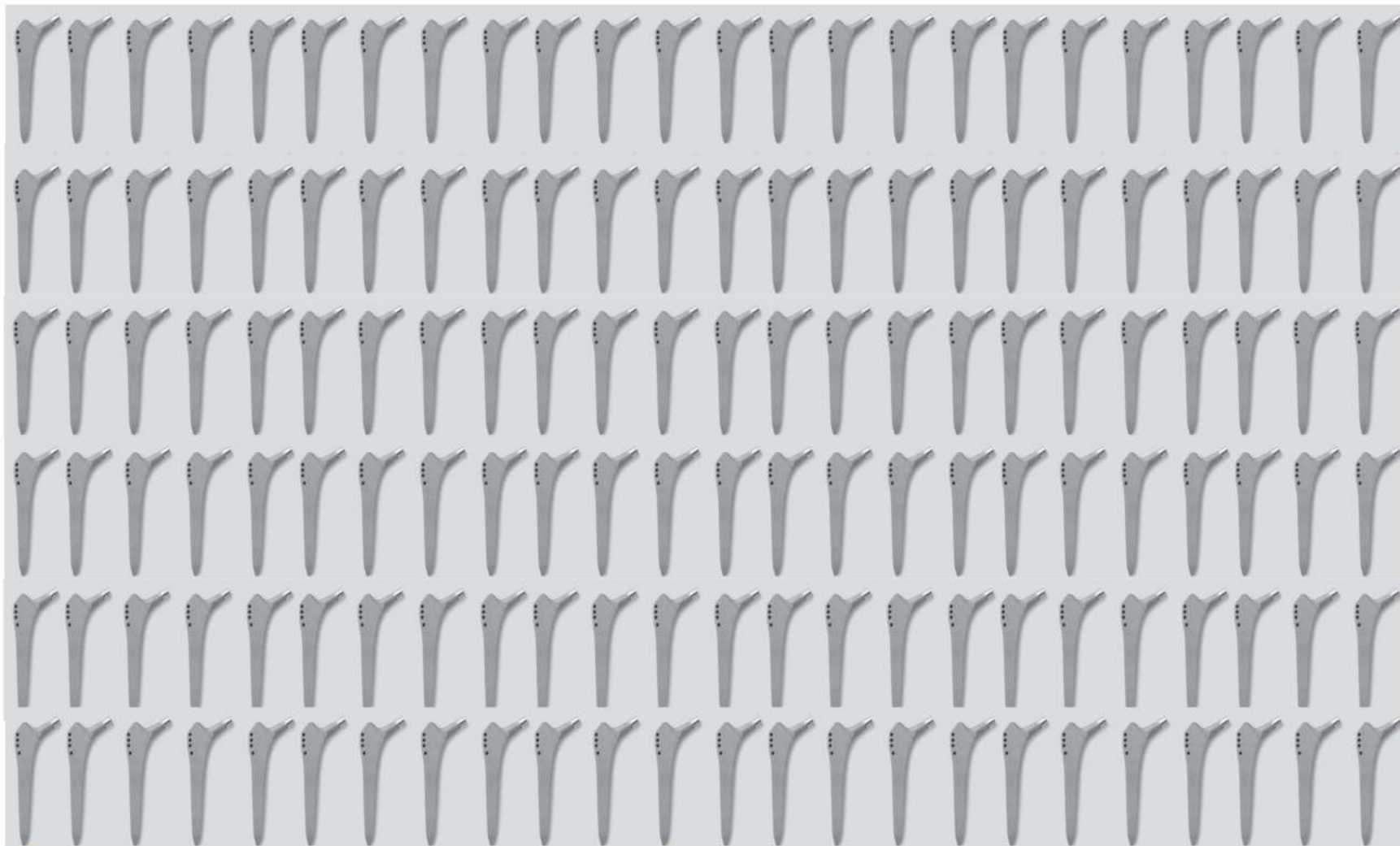


**How did we
manage it before
Process Mining?**

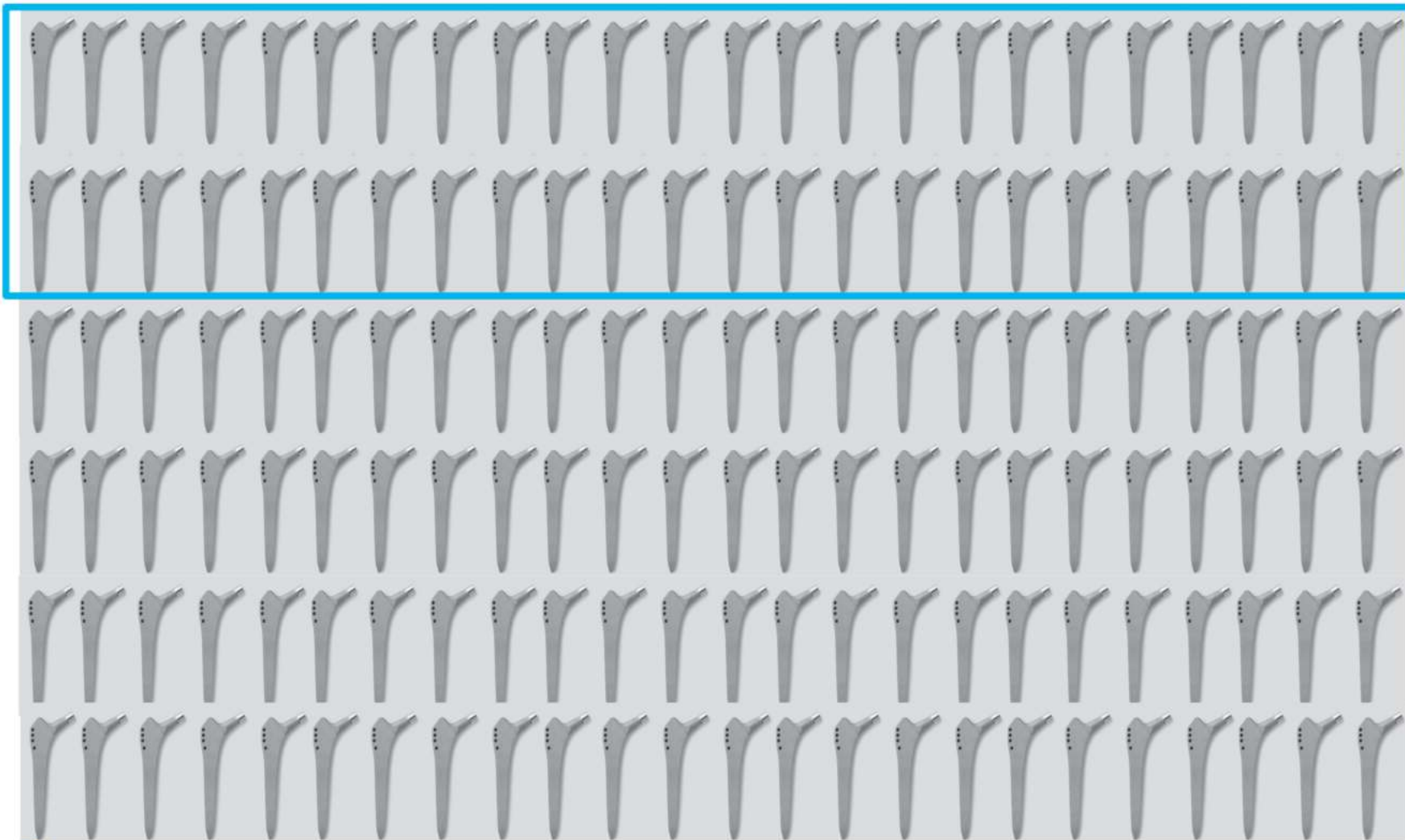
Spaghetti diagramm Alloclassic



Alloclassic family



Alloclassic family



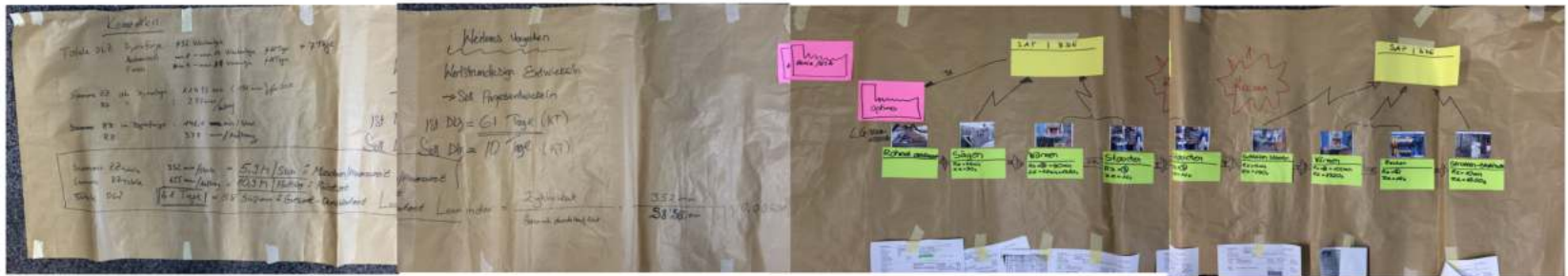
Spaghetti diagramm Alloclassic



Weakness spaghetti diagramm

- Problematic reproduction of the paths, when big amount of articles/variants.
- Extremely extensive job to draw the lines.
- Inappropriate data base for analyses with software.

Value stream mapping



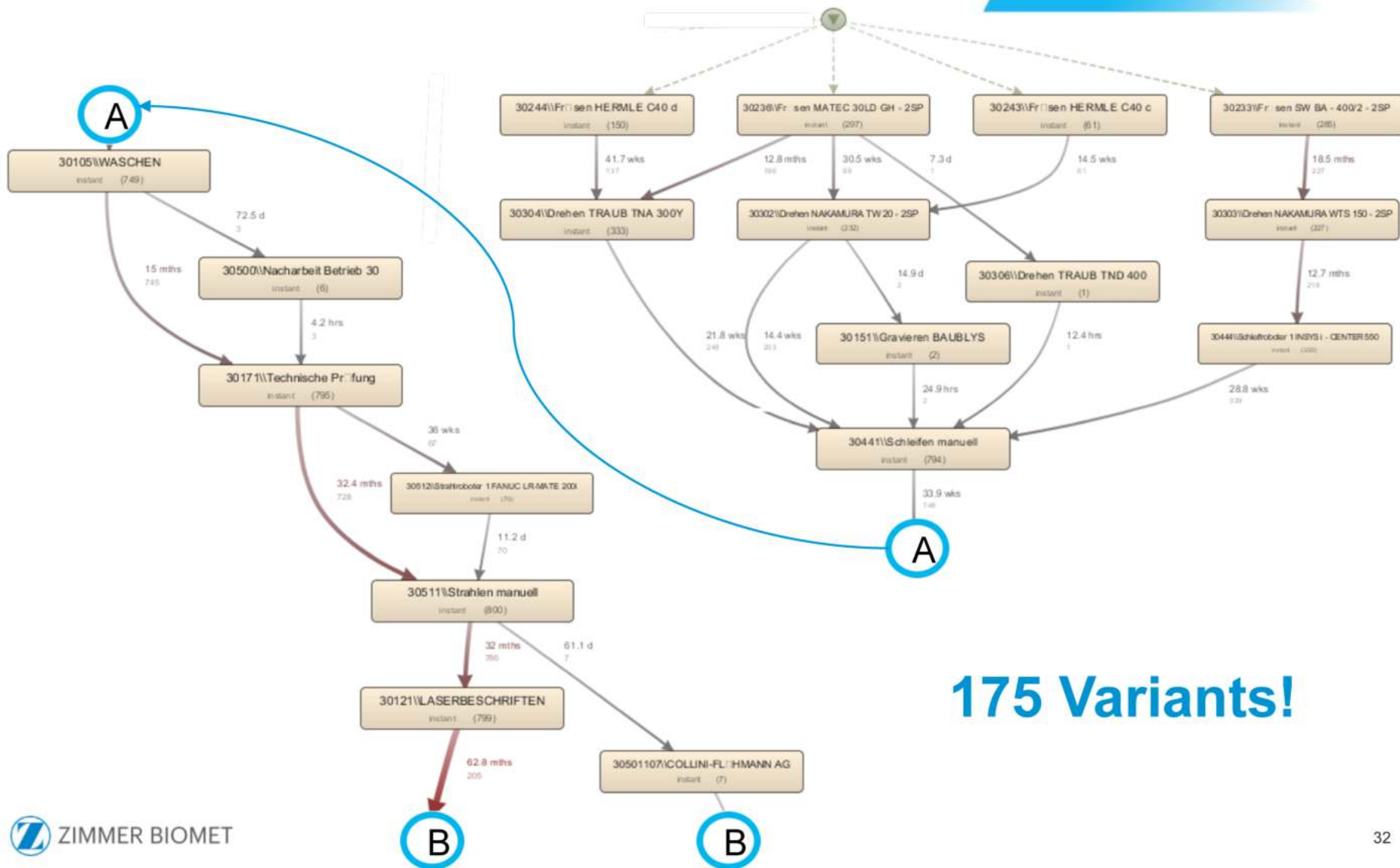
Weakness value stream mapping

- Problematic reproduction of VSM, when specific workstations produce more than one family.
- Extremely extensive job to draw VSM.
- VSM takes a snap shot.



**How do we
manage it with
Process Mining?**

Alloclassic value stream analyses with process mining I/II



Alloclassic value stream analyses with process mining II/II



“Look at this! What’s going on after blasting! I was not aware of it! I’ll contact the responsible product builder”

Strength process mining

- Very fast processing of big data volumes
- Very good visualization tool
- Turn High level Analyses into detailed Analyses very easy and fast!
- Possibility to export data in order to perform analyses with other tools.

Important considerations

ERP System export:

- Amount of the data being exported
- Quality of the Data
- Interface to Disco (automatic vs. manual import)
- Repeatability of the data extract
- Start and end date definition for the export

Access database

DISCO Datenexport

Materialstamm

Beschaffungskennzeichen

Materialart Enderzeugnisse (FERT / ZPRO / ZDR1)
 Auswahl ROH/VERP/HIBE permanent ausgeschlossen

Forecast Family (z.B. auch U* möglich)

Fertigungsauftrag

Auftragsart

Steurer

SAP-EckEnde, von: bis:

Auftrag abgeschlossen:

Export

Output Version: (auch mit Text, ohne Sonderzeichen)

Output Ablage: [I:\INFO\900_Transit\971_DISCO\o2d_Daten](#)

Fortschritt der Aufbereitung

Daten generieren + CSV Export

Doppel-Klick: Hinweis: sehr lange Laufzeit möglich!

Import

Standardwerte für Selektionslistenfelder

118050 - solterm1 #1.3 Release : 2015-12-11

Important considerations

ERP System export:

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Plausibility check:

- Amount of cases
- Plausible variants
- Plausible throughput time



**Lessons
learned?**

Lessons Learned

- It is important to know in what kind of environments analyses are performed. Our company has high volume / high mix production, so this needs to be considered when choosing a method.
- It is fundamental, before starting with an analysis method, to know why something has to be done and what kind of outcome is required.
- Furthermore, it is important to think about what is going to happen with the outcome. Do I need electronic data for further analyses?



**What does
Process Mining
mean for us?**

Summary

- First step into analyses of big data.
- New efficient method for process optimization workshops.
- Sensitization of people through visualization of material flows.



**Any questions
or remarks?**

**THANK YOU FOR YOUR
ATTENTION**



ZIMMER BIOMET

Your progress. Our promise.™

Giancarlo Lepore / PVE
Eindhoven, 10.6.2016