



HYRLES OÜ

Case study:
Process automation re-engineering

Overview

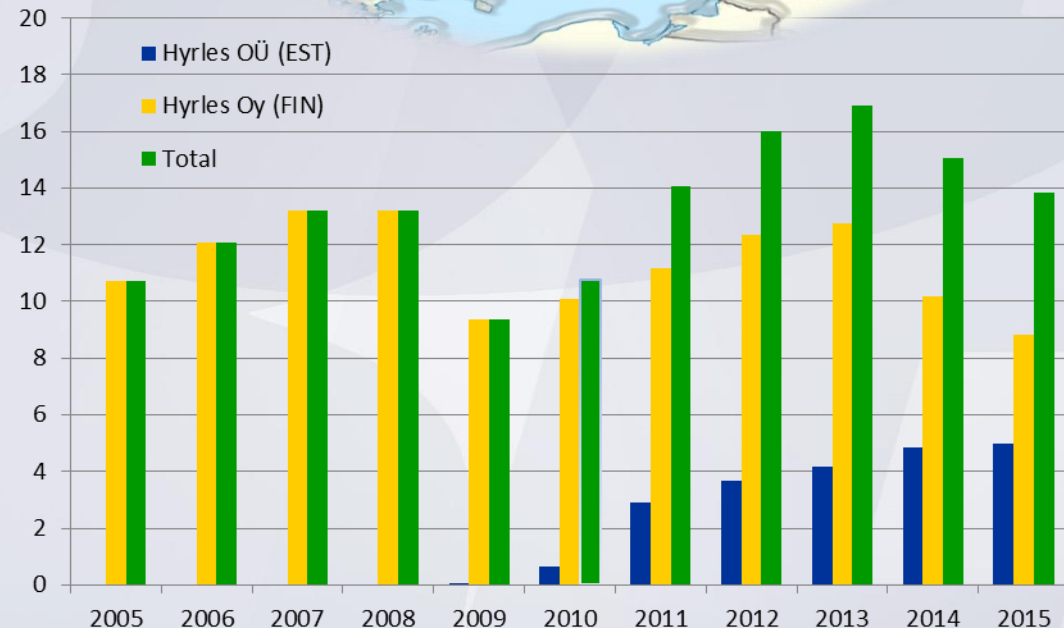
- Mechanical, electronical products, and electromechanical assembly
- 26 years of experience
- Net Sales 2015 MEUR 12,3
- 2 plants in Europe

HYRLES OY Finnish plant

- Established 1989
- Facility 8500 m²
- Personnel 110
- Turnover 7,3 M€

HYRLES OÜ Estonian plant

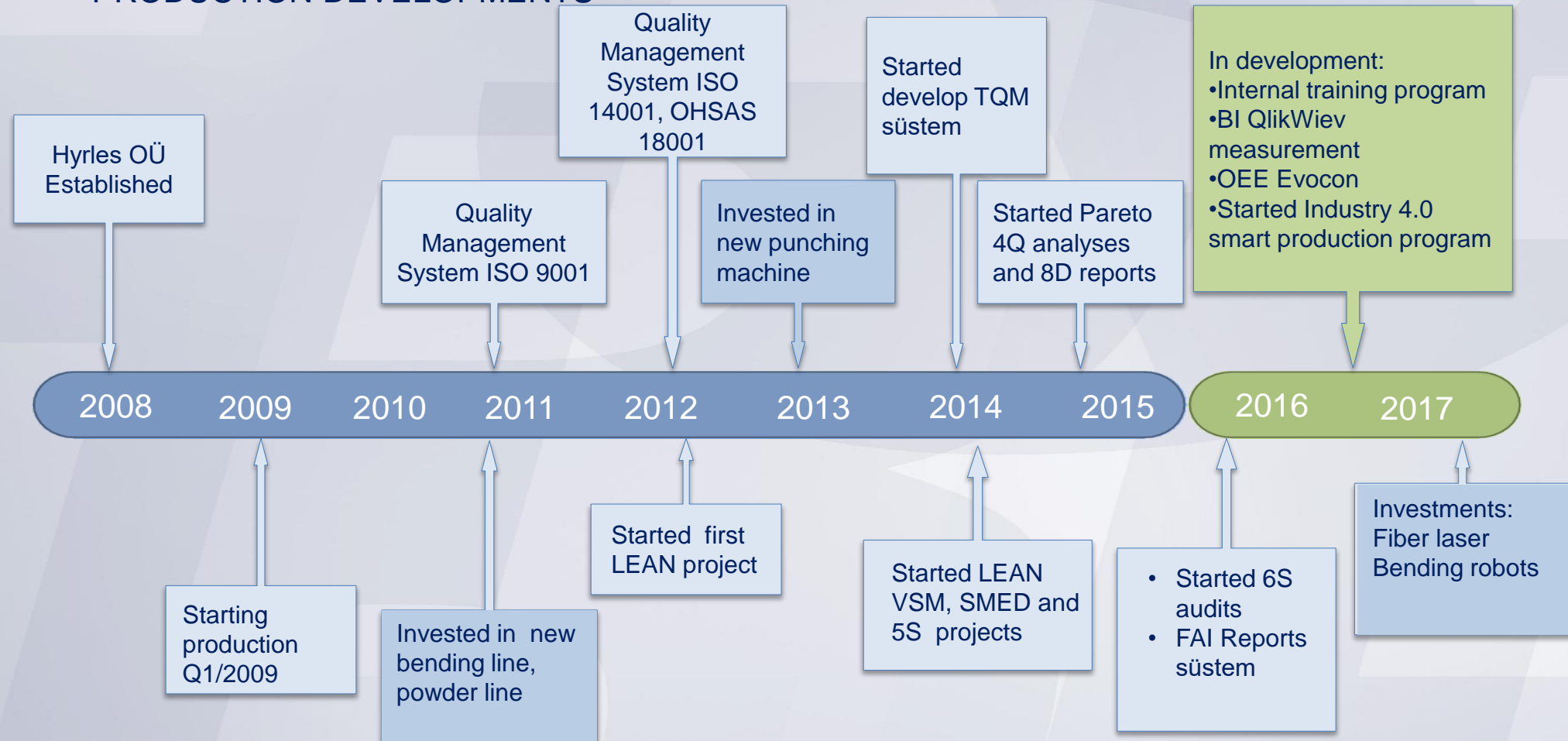
- Established 2008
- Facility 4300 m²
- Personnel 62
- Turnover 5,01 M€





Continuous improvement

HISTORY OF QUALITY, ISO, OHSAS LEAN MANAGEMENT SYSTEMS AND SMART PRODUCTION DEVELOPMENTS







Change will never be this slow again

Gordon Moore 1965

HYRLES

ESTONIAN
ICT CLUSTER



European Union
European Regional
Development Fund



Investing
in your future

WTF?



6 IT companies from Estonian ICT Cluster joint forces To make reference case with Estonian manufacturer

tieto



ERICSSON 

Columbus[®]
Once you *know* how...

FUJITSU

PROEKSPERT



Business Drivers



Wider overview of business

Faster time to market

Shared expert knowledge

Innovation with shared investments



Better understanding of IT's value for Hyrles

Additional manufacturing experience for IT companies

Cooperation experience for IT companies
(joint resources)





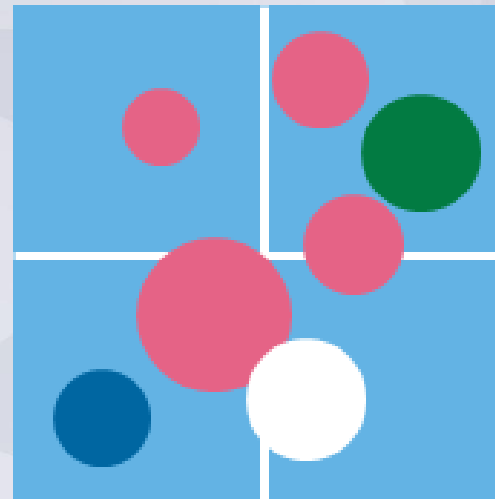
Goals and assumptions for case study

To analyze Hyrles's process, technical capability and value chain

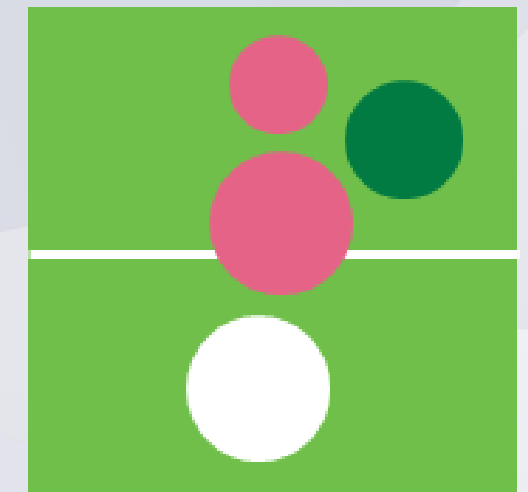
To look opportunities to increase production efficiency

To evaluate business risks and possibilities to hedging them

To benchmark Hyrles for Industry 4.0 principles



"As is"



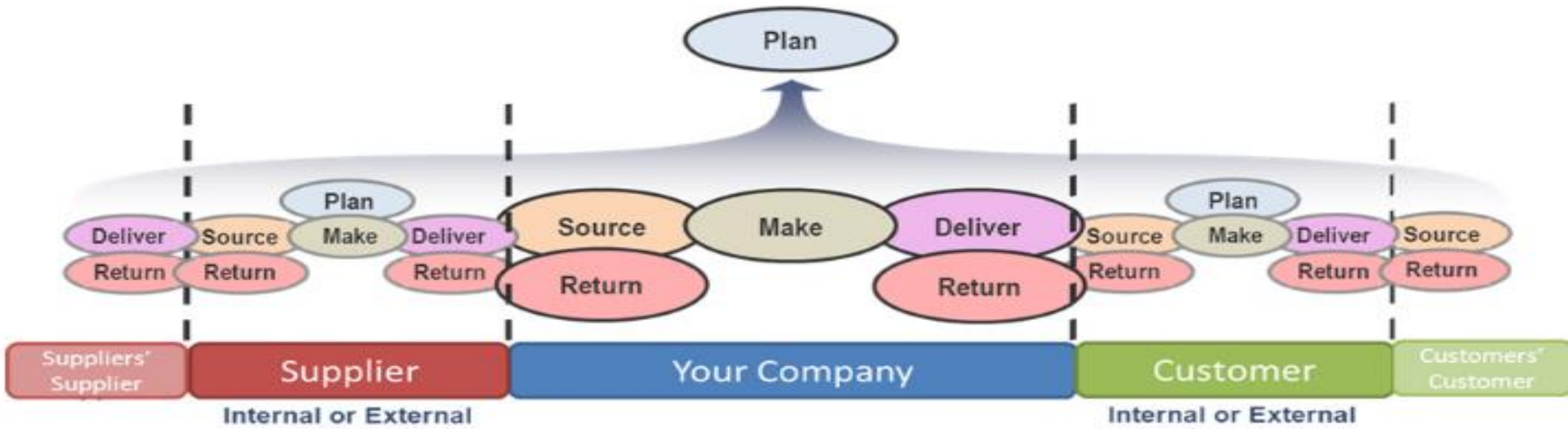
„To be"

- Modernised portfolio
- Managed with cloud capability
- Higher business agility
- Reduced costs
- Improved quality
- Continuous improvement



Process mapping and Supply Chain Operations Reference (SCOR) Model

- Best Practice Methodology for standardisation
- Common understanding with suppliers and customers gives value for whole Supply Chain actors





Example: Production planning and Machinery Center utilisation – As Is with normative time

2016	2/2(Tue) 8 16	3/2(Wed) 8 16	4/2(Thu) 8 16	5/2(Fri) 8 16	6/2(Sat) 8 16	7/2(Sun) 8 16	8/2(Mon) 8 16	9/2(Tue) 8 16	10/2(Wed) 8 16	11/2(Thu) 8 16	12/2(Fri) 8 16	13/2(Sat) 8 16	14/2(Sun) 8 16	15/2(Mon) 8 16	16/2(Tue) 8 16	17/2(Wed) 8 16	18/2(Thu) 8 16	19/2(Fri) 8 16	20/2(Sat) 8 16	21/2(Sun) 8 16	22/2(Mon) 8 16	23/2(Tue) 8 16	24/2(Wed) 8 16	25/2(Thu) 8 16	26/2(Fri) 8 16	27/2(Sat) 8 16	28/2(Sun) 8 16	29/2(Mon) 8 16	1/3(Tue) 8 16	
EM2510 I	57%	63%	25%	37%			28%	15%	58%	30%	38%			57%	70%	44%	59%	36%			56%	24%	48%	28%	15%				15%	
EM2510 II	46%	55%	74%	74%			31%	77%	40%	42%	44%			14%	67%	84%	79%	54%			59%	33%	28%	47%	16%				4%	
EMK 3610	66%	87%	43%	63%			35%	59%	38%	47%	71%			61%	91%	72%	5%	20%			16%	48%	13%	47%	24%					
EMZ 3610	24%	68%	15%	7%		55%	25%	8%	31%	29%		54%	67%	10%	13%	15%	13%		3%		6%	31%	27%	9%	27%					
MKeermestus	16%	6%	6%	8%			13%	13%	3%	7%	37%			26%	33%	17%	1%	15%			3%	85%	53%	8%	11%				16%	
CNC Keerm.	48%	27%	25%	3%			20%	32%	23%	10%	55%			2%	12%		89%				6%	19%	11%	24%	7%					
1 m painutus	34%	65%	24%	64%			75%	76%	88%	80%	45%			50%	38%	43%	75%	77%			72%	31%	1%	68%	60%				31%	
2 m painutus	29%	45%	28%	42%			48%	10%		62%	88%			38%	7%	84%		40%			97%	27%	21%	68%	3%				35%	
2.5 m painut	12%	28%	19%	19%			1%	3%	9%	20%	3%			1%	5%	30%	15%	19%			5%	4%	3%	29%	13%					
3 m painutus	9%	76%	71%	85%			100%	99%	1%	23%	24%			89%	58%	55%	1%	6%			66%	28%	10%	57%	7%					
Painutusrob	32%		6%	11%		42%								33%	51%		38%												25%	
Salvagnini	28%	3%	29%	3%			33%	6%	2%	6%	4%			31%	25%	7%	2%	25%				1%	7%	1%	1%				1%	
H 618	99%	10%		13%				39%	46%	9%	21%			80%	62%	87%	12%	19%			17%	43%	4%	27%	6%					
H 824 WT	3%	47%	14%	39%			47%	0%	22%	8%	18%			5%	8%	1%	36%	42%			15%	5%	11%	14%	5%				18%	
H 824 WT 4e		10%		69%			100%				2%				1%	9%		2%				4%	2%	17%	7%					
Punktkeev	7%	20%	13%	98%			37%	20%			6%			89%	20%	7%		0%				89%	32%	5%	67%					
Servalihv				4%					3%					1%	6%														9%	
Värviilin	6%	1%	55%	62%			36%	68%	56%	56%	43%			37%	28%	46%	93%	22%			9%	20%	23%	46%	20%				23%	
Kokkupanek	21%	22%	25%	48%			40%	63%	53%	26%	43%			29%	48%	46%	24%	72%			41%	61%	5%	22%	74%				35%	14%

2016	2/2(Tue)	3/2(Wed)	4/2(Thu)	5/2(Fri)	6/2(Sat)	7/2(Sun)	8/2(Mon)	9/2(Tue)	10/2(Wed)	11/2(Thu)	12/2(Fri)
	8 16	8 16	8 16	8 16	8 16	8 16	8 16	8 16	8 16	8 16	8 16
EM2510 I	57%	63%	25%	37%			28%	15%	58%	30%	38%
EM2510 II	46%	55%	74%	74%			31%	77%	40%	42%	44%
EMK 3610	66%	87%	43%	63%			35%	59%	38%	47%	71%
EMZ 3610	24%	68%	15%	7%		55%	25%	8%	31%	29%	
MKeermestus	16%	6%	6%	8%			13%	13%	3%	7%	37%
CNC Keerm.	48%	27%	25%	3%			20%	32%	23%	10%	55%
1 m painutus	34%	65%	24%	64%			75%	76%	88%	80%	45%
2 m painutus	29%	45%	28%	42%			48%	10%		62%	88%



European Union
European Regional
Development Fund



Investing
in your future

Example: The actual situation

2016	1/2(Mon)	2/2(Tue)	3/2(Wed)	4/2(Thu)	5/2(Fri)	6/2(Sat)	7/2(Sun)	8/2(Mon)	9/2(Tue)	10/2(Wed)	11/2(Thu)	12/2(Fri)	13/2(Sat)	14/2(Sun)	15/2(Mon)	16/2(Tue)	17/2(Wed)	18/2(Thu)	19/2(Fri)	20/2(Sat)	21/2(Sun)	22/2(Mon)	23/2(Tue)	24/2(Wed)	25/2(Thu)	26/2(Fri)	27/2(Sat)	28/2(Sun)	29/2(Mon)	1/3(Tue)
EM2510 I	69%	95%	96%	85%	93%			85%	91%	92%	94%	63%			87%	90%	92%	82%	96%			76%	104%		98%	55%				7%
EM2510 II	90%	97%	102%	97%	106%			69%	91%	78%	99%	96%			75%	65%	95%	63%	99%			75%	63%		90%	40%			86%	96%
EMK 3610	94%	105%	84%	88%	79%			82%	97%	58%	90%	20%			63%	79%	97%	87%	74%			46%	14%		24%	29%			8%	10%
EMZ 3610	82%	56%	108%	86%	99%	3%		84%	89%	94%	89%	99%	100%	100%	96%	76%	74%	55%	65%			61%	15%			34%	100%	100%	93%	
MKeermestus	36%	30%	20%	40%	54%			14%	12%	10%	31%	25%			77%	90%	34%	20%	136%			28%	14%		9%	35%			23%	2%
CNC Keerm.	49%	35%	68%	41%	12%			78%	100%	76%	76%	86%			82%	96%	88%	98%	86%			87%	12%		23%	38%				11%
1 m painutus	46%	108%	112%	109%	62%			149%	118%	109%	104%	84%			108%	125%	112%	104%	113%			89%	110%		108%	153%			93%	78%
2 m painutus	107%	51%	67%	51%	57%			68%	69%	69%	47%	15%			51%	75%	95%	100%	62%			35%	45%		63%	66%			35%	50%
2.5 m painut	28%	47%	61%	56%	115%			49%	6%	16%	86%	48%				46%	48%	38%	42%			48%	28%			23%			49%	
3 m painutus		44%	52%	87%				62%	49%	97%	40%	122%			100%	100%	154%	103%	100%			90%	78%		99%	99%				4%
Painutusrob	42%	63%	0%		29%	155%	100%	40%	46%	100%	82%				54%	100%	137%	68%	169%	62%		34%	100%		71%	83%				82%
Salvagnini		33%	67%	88%	39%			17%		40%	78%	24%			49%	49%	44%	34%	25%			49%			25%	4%				4%
H 618			16%	37%	40%			27%	21%	29%	20%	58%			88%	49%	74%	61%	71%			50%	58%		66%	51%			56%	55%
H 824 WT	24%	33%	68%	38%	19%			51%	48%	79%	95%	98%			65%	73%	33%	102%	100%			31%	100%		100%	100%			100%	113%
H 824 WT 4e	35%	75%	10%	12%					26%	162%	76%	37%			5%	42%	61%	41%	27%			75%	31%		20%	77%			127%	52%
Punktkeev	27%	34%	28%	49%	66%			15%	23%	46%	12%	50%			47%	100%	14%		17%				69%		97%	54%			31%	18%
Servalihv								37%	16%							7%	33%													5%
Värviin	69%	59%	114%	86%	119%			131%	132%	104%	97%	57%			94%	106%	161%	96%	99%			13%	68%		50%	22%			19%	127%
Kokkupanek	17%	30%	38%	50%	56%			69%	72%	96%	40%	69%			63%	68%	90%	89%	70%			63%	26%		89%	40%			26%	14%

2016	1/2(Mon)	2/2(Tue)	3/2(Wed)	4/2(Thu)	5/2(Fri)	6/2(Sat)	7/2(Sun)	8/2(Mon)	9/2(Tue)
	8 16	8 16	8 16	8 16	8 16	8 16	8 16	8 16	8 16
EM2510 I	69%	95%	96%	85%	93%			85%	91%
EM2510 II	90%	97%	102%	97%	106%			69%	91%
EMK 3610	94%	105%	84%	88%	79%			82%	97%
EMZ 3610	82%	56%	108%	86%	99%	3%		84%	89%
MKeermestus	36%	30%	20%	40%	54%			14%	12%
CNC Keerm.	49%	35%	68%	41%	12%			78%	100%
1 m painutus	46%	108%	112%	109%	62%			149%	118%
2 m painutus	107%	51%	67%	51%	57%			68%	69%



Example: How it should like... with CAPP (Computer Aided Process Planning)

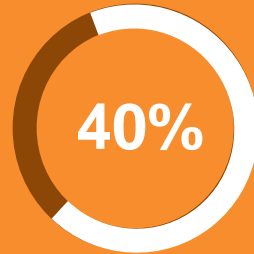
2016	1/2(Mon)	2/2(Tue)	3/2(Wed)	4/2(Thu)	5/2(Fri)	6/2(Sat)	7/2(Sun)	8/2(Mon)	9/2(Tue)	10/2(Wed)	11/2(Thu)	12/2(Fri)	13/2(Sat)	14/2(Sun)	15/2(Mon)	16/2(Tue)	17/2(Wed)	18/2(Thu)	19/2(Fri)	20/2(Sat)	21/2(Sun)	22/2(Mon)	23/2(Tue)	24/2(Wed)	25/2(Thu)	26/2(Fri)	27/2(Sat)	28/2(Sun)	29/2(Mon)	1/3(Tue)			
EM2510 I	100%	100%	100%	100%	100%			91%	91%	91%	91%	100%			100%	100%	100%	100%	91%			100%	100%			5%							
EM2510 II	100%	100%	100%	100%	100%			100%	100%	100%	100%	59%			100%	100%	77%	91%															
EMK 3610	100%	100%	100%	100%	100%			100%	100%	100%	87%	100%			83%	80%																	
EMZ 3610	100%	100%	100%	87%	87%	100%	100%	100%	100%	91%	100%	83%	54%																				
MKeermestus	38%	17%	24%	42%	52%			37%	95%	100%	55%	35%			58%	23%	71%	3%	55%			50%	13%										
CNC Keerm.	89%	97%	94%	94%	86%			27%	37%	71%	37%	0%			8%	9%	4%	5%	5%					23%									
1 m painutus	100%	100%	85%	83%	100%			100%	100%	87%	83%	100%			56%	100%	100%	100%	100%			100%	100%			100%	100%			100%	100%	100%	
2 m painutus		98%	100%	97%	96%			100%	96%	100%	99%	100%			100%	99%	77%	69%	45%			37%	23%			20%							
2.5 m painut	21%	100%	61%	80%	30%	55%		28%	54%	16%	41%	89%			49%	44%	47%	33%	50%			3%	29%										
3 m painutus	100%	100%	100%	100%	100%			100%	100%	57%	100%				100%	100%	100%	100%	100%			100%	100%			100%	100%			100%	100%	46%	
Painutusrob	52%	80%	100%	83%	53%			94%	97%	89%	100%	100%	100%	100%	97%	98%	4%																
Salvagnini	85%	71%	24%	18%	86%			10%	68%	60%	35%	28%			59%	39%																	
H 618	100%	85%	15%	28%	32%			11%	65%	72%	44%	100%			78%	83%	89%	13%	14%			41%	17%			28%	10%			50%	43%	3%	
H 824 WT	80%	83%	85%	28%	100%			99%	100%	40%	32%	29%			95%	100%	100%	100%	80%			81%	55%			1%				17%	32%		
H 824 WT 4e	99%	26%						54%	34%	72%	2%				6%								20%		76%								8%
Punktkeev		41%	6%	56%	87%			98%	65%	40%	20%						55%	100%	100%			95%											
Servalihv								25%	7%	4%	12%	0%						10%							12%								
Värviilii	80%	42%	61%	64%	47%			29%	24%	34%	29%	11%			34%	9%	4%	3%	8%			29%	3%		15%				3%	7%	5%		
KokkupaneK	91%	84%	78%	21%	34%			35%	65%	70%	64%	74%			68%	15%	25%	15%	53%			16%	43%		93%	51%			21%	44%	3%		

2016	2/2(Tue)		3/2(Wed)		4/2(Thu)		5/2(Fri)		6/2(Sat)		7/2(Sun)		8/2(Mon)		9/2(Tue)	
	8	16	8	16	8	16	8	16	8	16	8	16	8	16	8	16
EM2510 I	57%		63%		25%		37%				28%		15%			
EM2510 II	46%		55%		74%		74%				31%		77%			
EMK 3610	66%		87%		43%		63%				35%		59%			
EMZ 3610	24%		68%		15%		7%			55%		25%		8%		
MKeermestus	16%		6%		6%		8%				13%		13%			
CNC Keerm.	48%		27%		25%		3%				20%		32%			
1 m painutus	34%		65%		24%		64%				75%		76%			
2 m painutus	29%		45%		28%		42%				48%		10%			



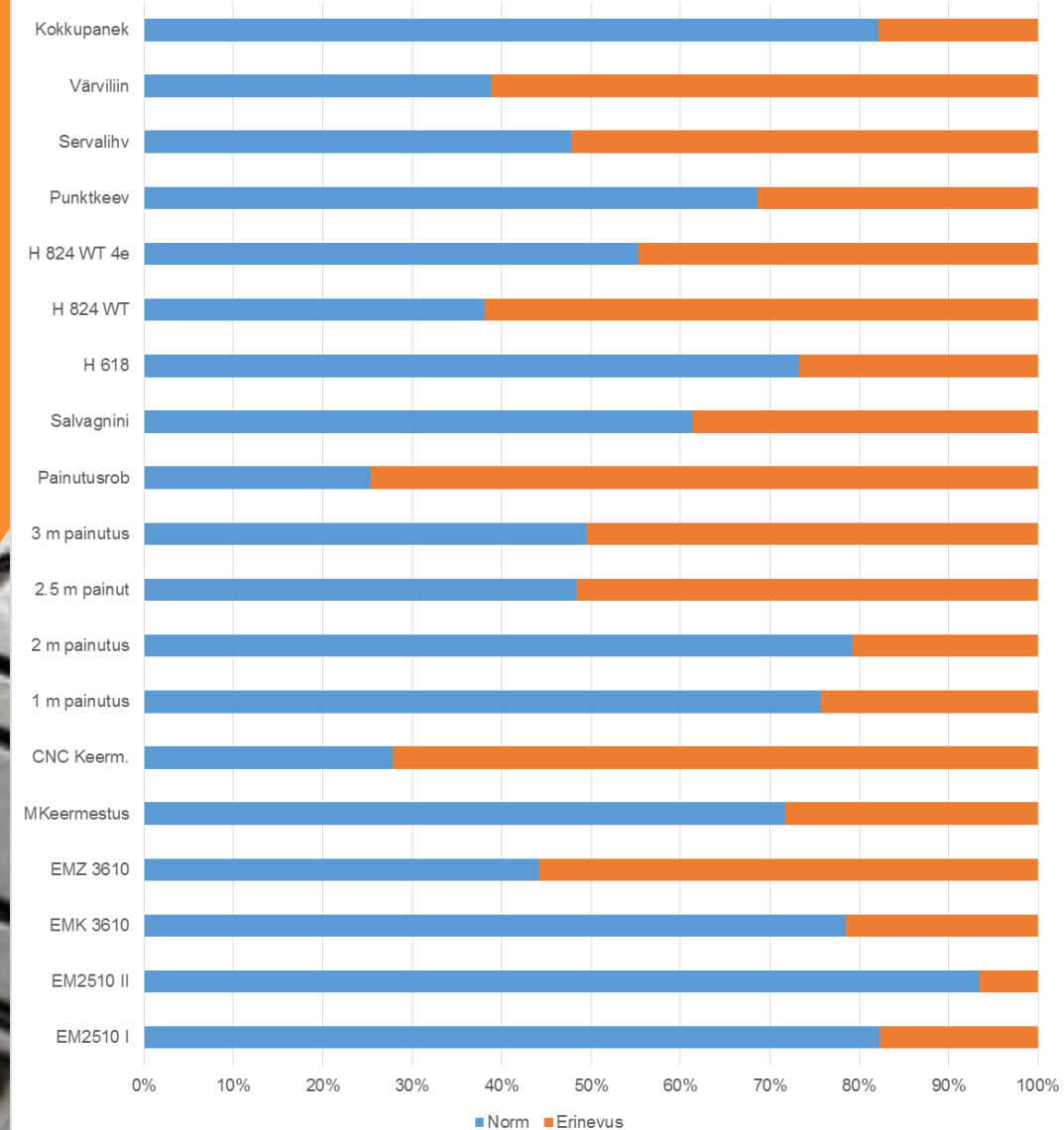
Normative vs Actual Time

- There is hidden potential to be more efficient



- 20% of overtime will affect ab 40-50% of overcost:
 - 1,5 x salary for employees overtime
 - Unplanned energy consumption
 - Increase of all related expences...

Normaegade võrdlus tegelike tööaegadega





Benchmarking Hyrles with Industry 4.0 principles

Current situation

- Most of equipment is from one supplier, which means they are connected
- Production planning is done in ERP (Enterprise Resource Planning)
- Internal production logistics
- Direct connectivity with one key customer

Opportunities

- Process Automation re-Engineering
- Direct connectivity with all key customers
- Full integration of all Information Systems
- Remote diagnostics
- Real Time production and logistics planning over whole value chain



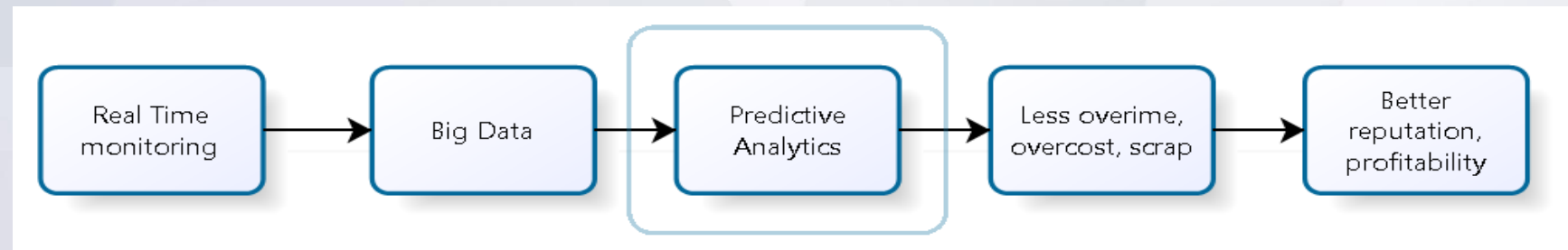
Findings and value from Innovation

- Paperless production
 - Digital documentation and reusable data
 - Faster and synchronized communication
- Manufacturing Execution System – Common understanding of it
 - Fully integrated software(s)
 - Real time monitoring (incl. additional sensors, monitors etc.)
 - Full traceability and batch tracking
 - Advance Planning and Scheduling (CAPP – Computer Aided Process Planning)
- HR management & integration with ERP (Enterprise Resource Planning), MES (Manufacturing execution system)
- Total Quality Management
 - Automated & Digital monitoring of production
 - Data quality monitoring



Conclusion of Case study

- 90 pages of analyze documentation
- 10 + Innovation suggestions for process and technology point of view
- Industry must follow the world of innovation, invest in knowledge and technology (automation and robotization)
- Lack of IT experts with good manufacturing experiences and manufacturing experts with IT knowledge
- Before starting „own product“ a manufacturing company must invest in process and technology innovation
- This pilot will continue ...



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Thank You!