



A key component of the Michelin DataInfrastructure

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Agenda

- Michelin's at a glance
- Architecture supporting our Digital Journey
- Leverage PI system in our context
 - Asset Management
 - Discrete manufacturing contextualization
- Results and Business impact

THE MICHELIN GROUP

**114 000
PEOPLE**

**21,9 BILLIONS €
NET SALES**

**171
PAYS**

**69
PLANTS**

**A WORWILWIDE
INDUSTRIAL
FOOTPRINT CLOSE TO
OUR CUSTOMERS**

**17 sites
15 000 p.**

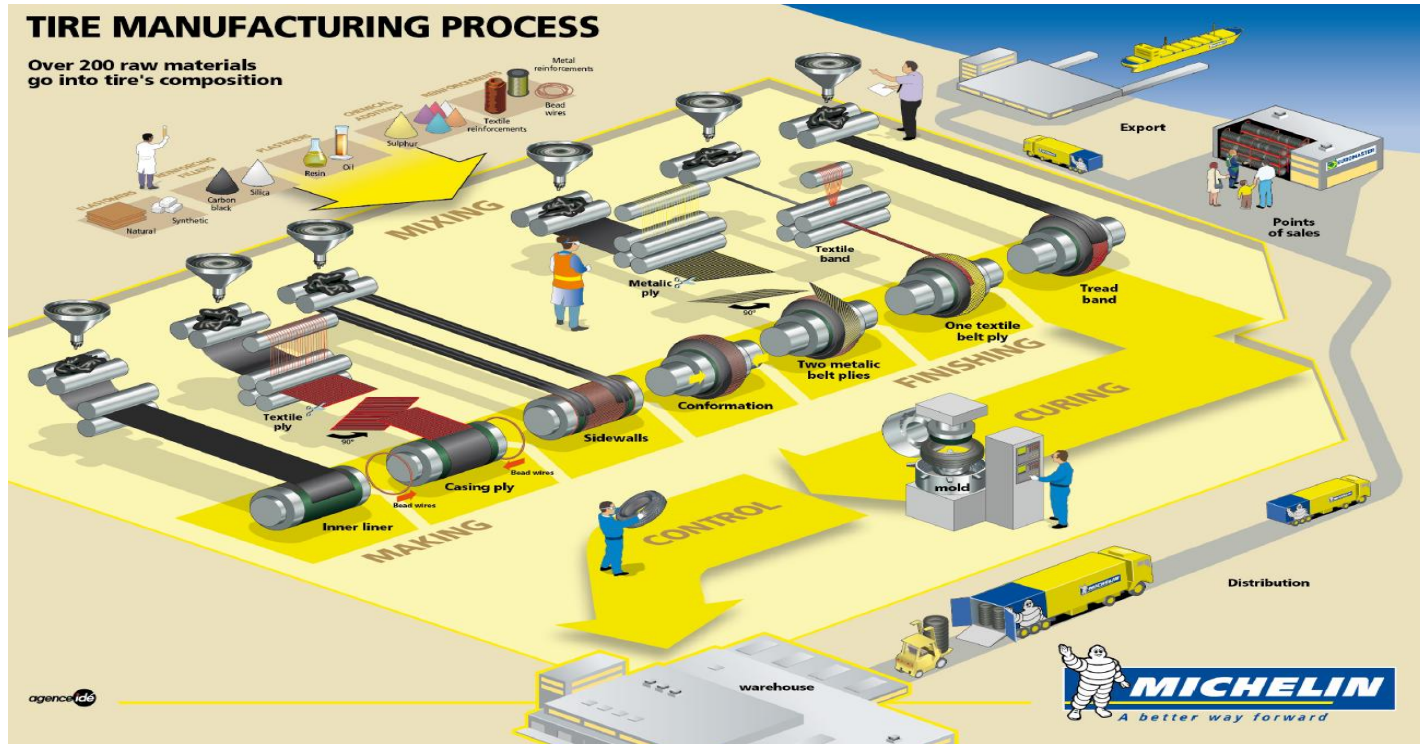
**40 sites
39 000 p.**

**9 sites
12 000 p.**

**2 sites
4 000 p.**

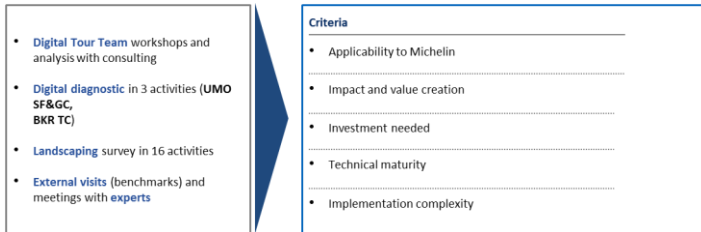
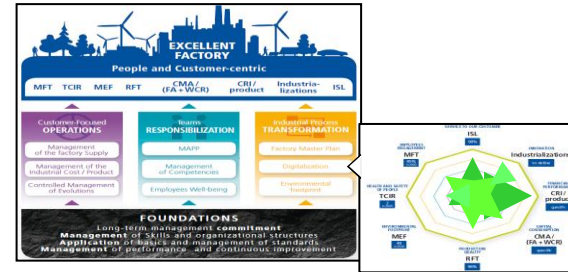
Total : 68 sites, 70 000 p.

A complex Manufacturing process achieved in about 150 units



Michelin's Industry has started its digitalization journey

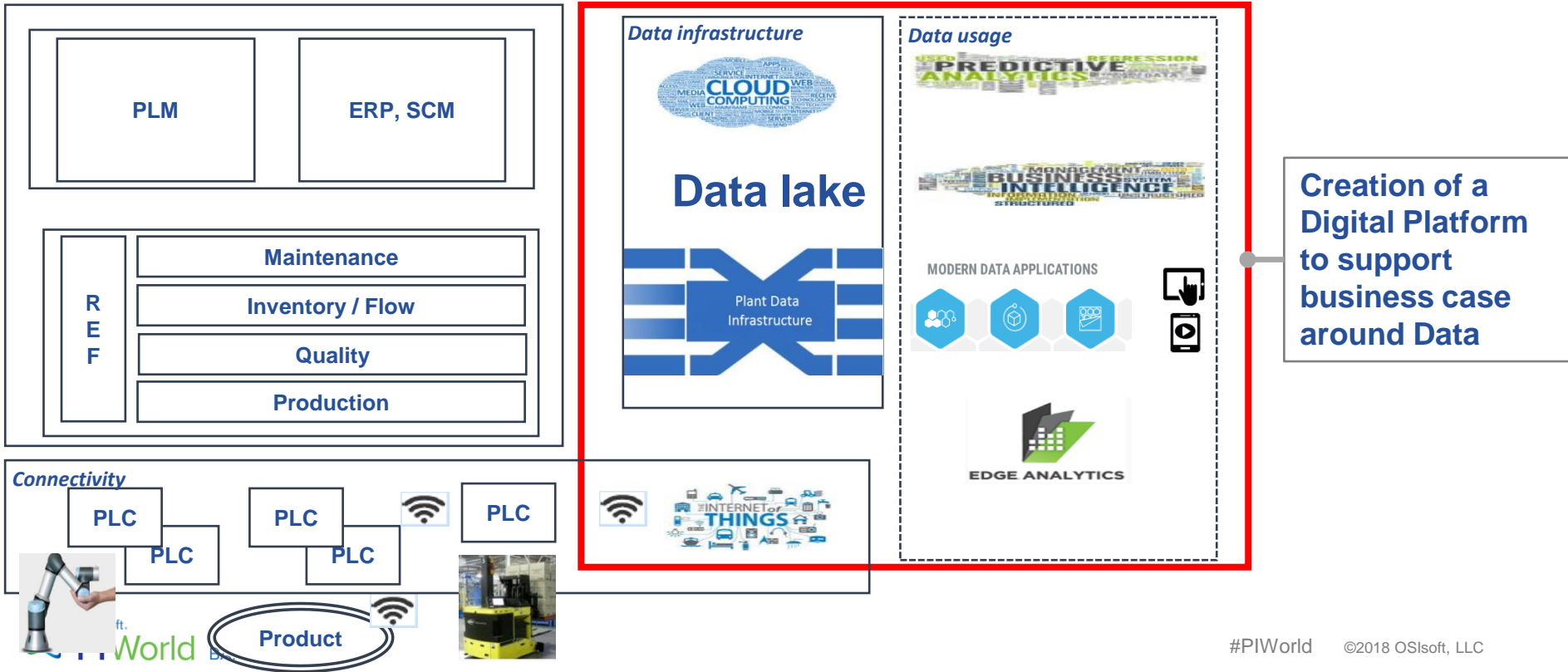
Digitalisation as a lever to the Excellent Factory



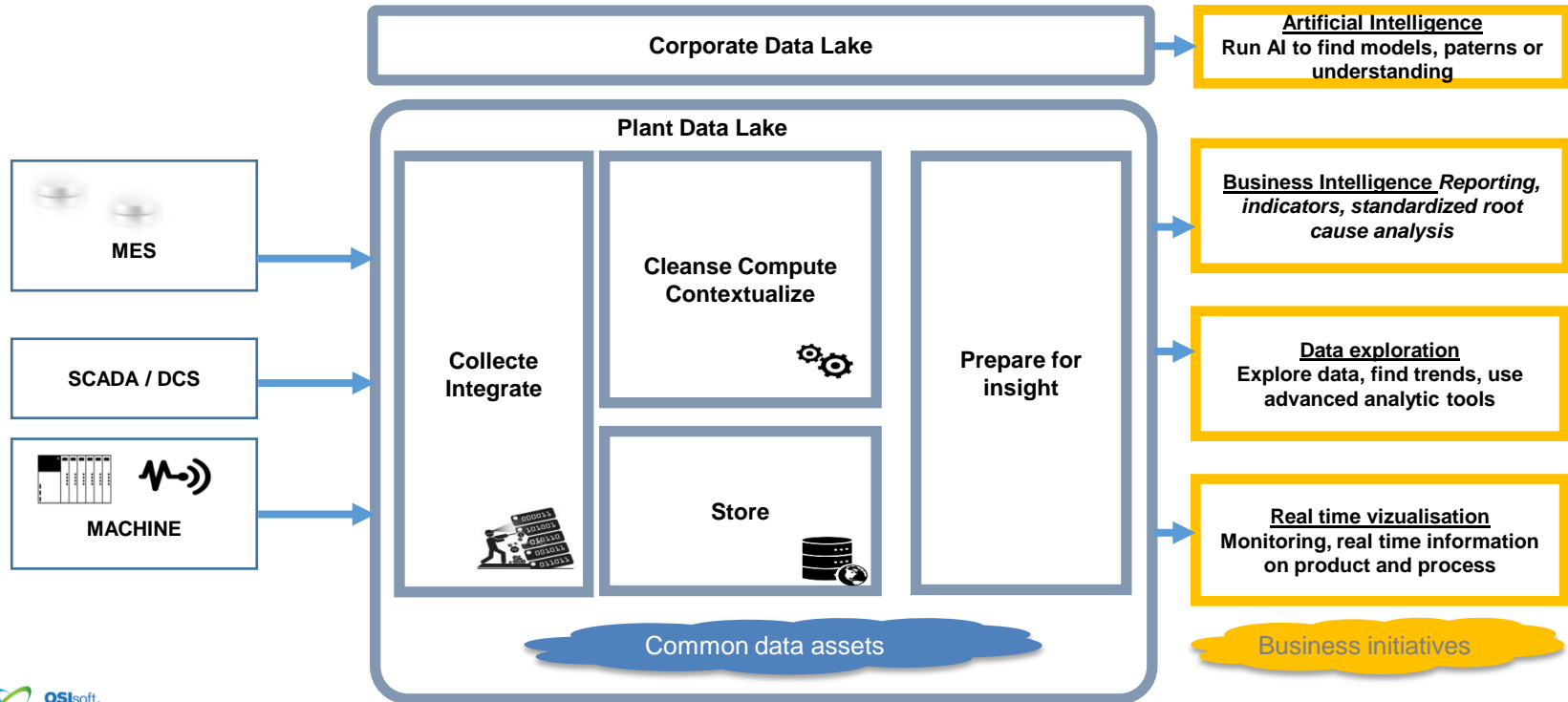
A 6 months Digital Tour to define the roadmap

“Think big, start small, roll out fast”

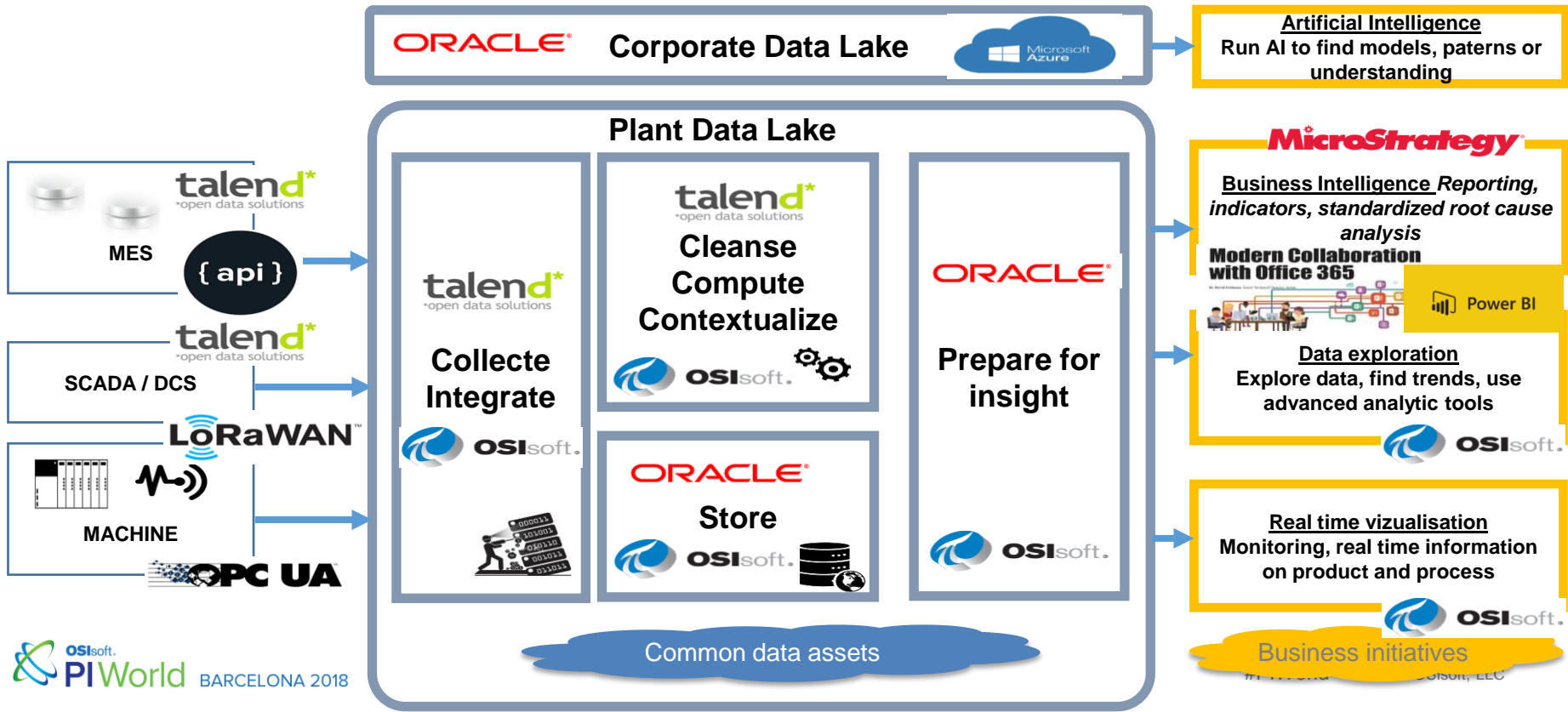
The architecture strategy is adapted to accelerate value creation



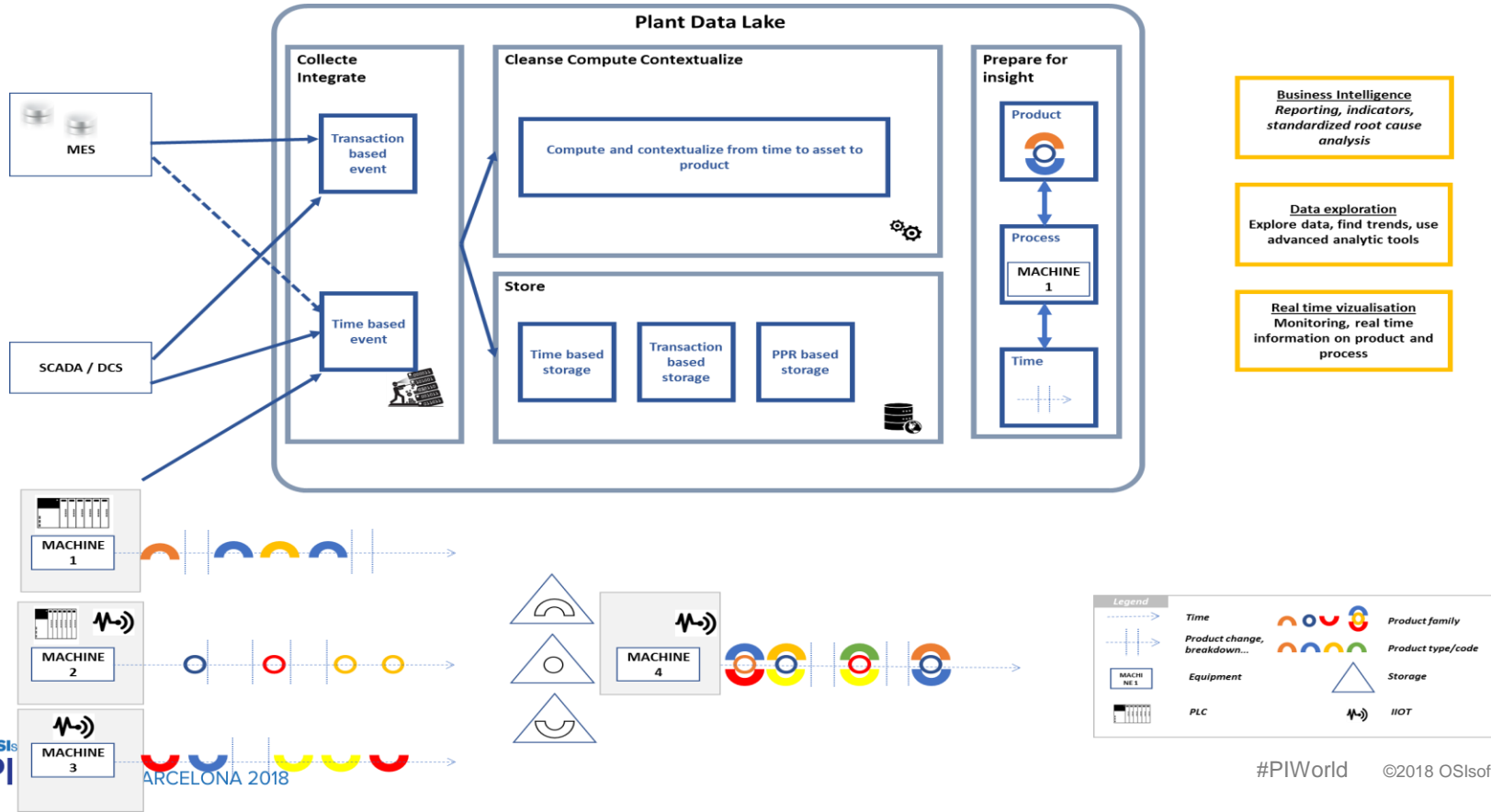
The Digital Platform V1 provide a set of capabilities to support Top Down and Bottom Up approach



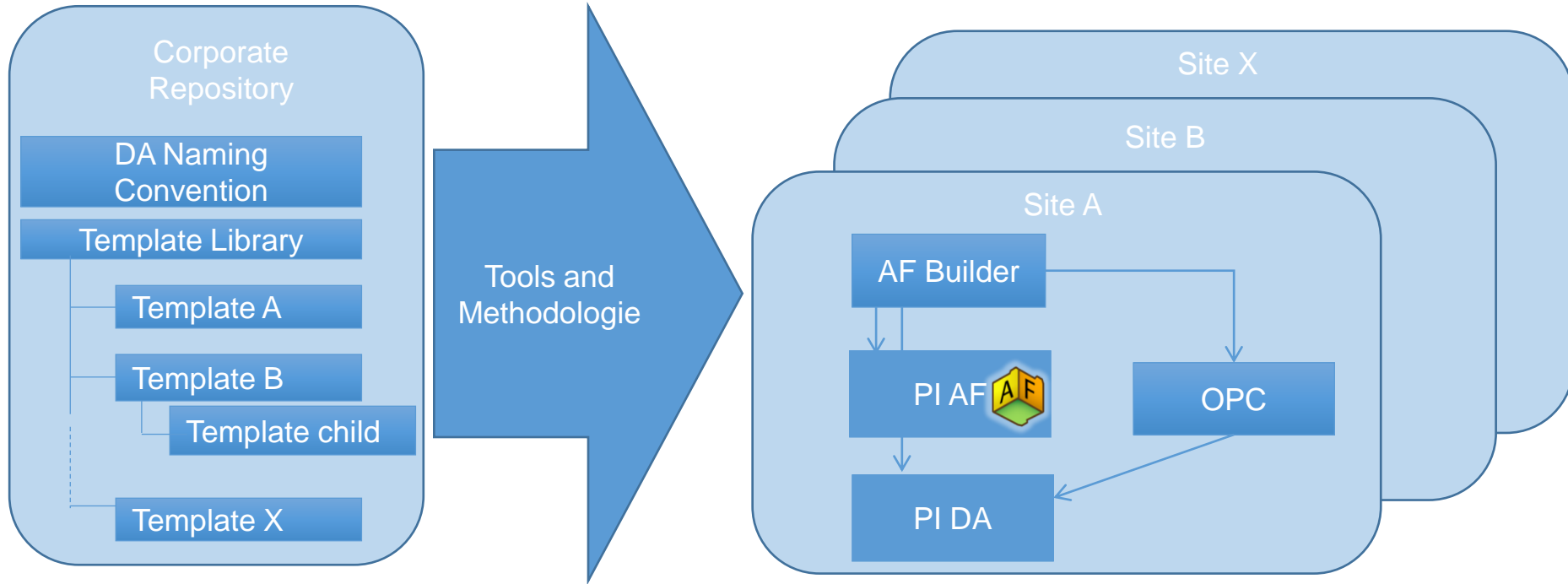
The Digital Platform V1 provide a set of capabilities to support Top Down and Bottom Up approach



Data storage is adapted to technical constraints (Write/Access decoupling) and business requirements (History / Product-Process Navigation)



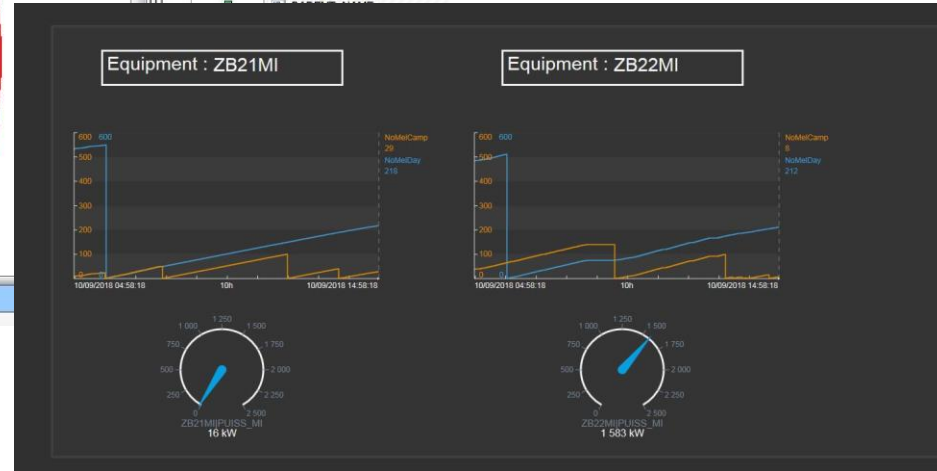
A central Asset Template repository



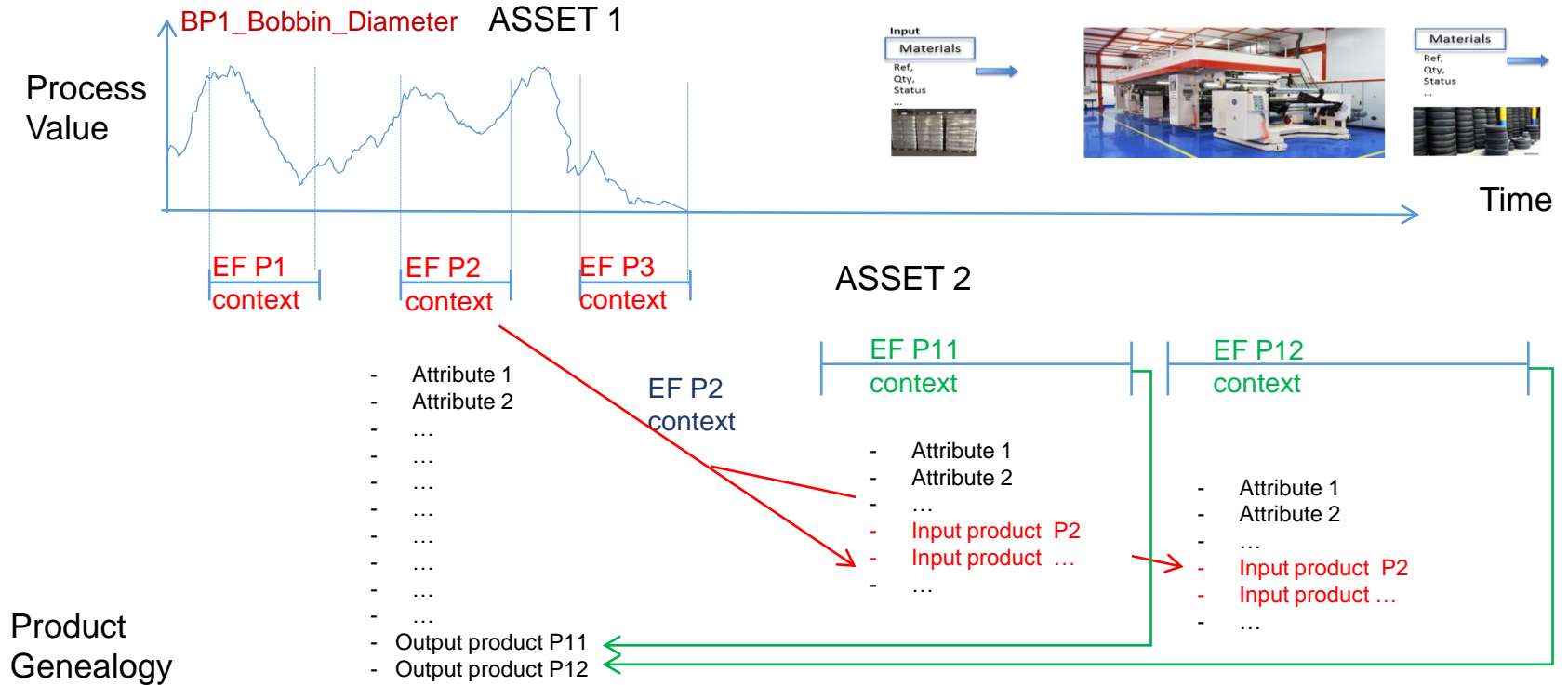
Leverage AF for asset management

The screenshot displays the software's template management interface. On the left, a 'Library' pane shows a hierarchical tree of templates under 'OLS_SF_Develop_V3'. A red circle highlights the 'TPL_ZB_L2_MI_SECTION' template. The main window shows the details for this template, including a 'Filter' section and a tree view of its components. A red circle highlights the 'ENERGY' component, which includes sub-items like 'ZB22BM', 'ZB22HA', 'ZB22HF1', 'ZB22HF2', 'ZB22HF3', 'ZB22HF4', and 'ZB22MI'. Below the tree, an 'Elements' pane shows the 'Event Frame' for the selected template.

<input type="checkbox"/>	<input type="checkbox"/>	IdRecette
<input type="checkbox"/>	<input checked="" type="checkbox"/>	IN_USE
<input type="checkbox"/>	<input type="checkbox"/>	MeiDetect
<input type="checkbox"/>	<input type="checkbox"/>	NoMeiCamp
<input type="checkbox"/>	<input checked="" type="checkbox"/>	NoMeiDay
<input type="checkbox"/>	<input type="checkbox"/>	OPERATION_ID



Leverage EF for contextualization



Leverage EF for contextualization

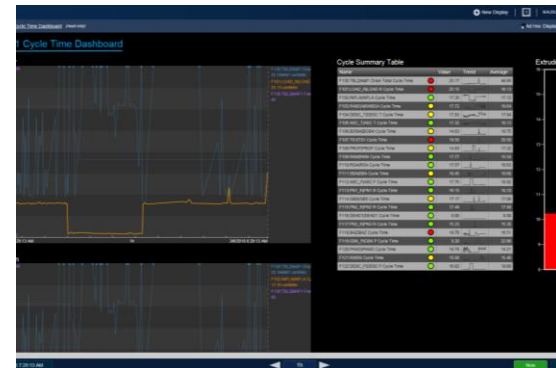
Filter	Name	2.. [04:56:16.6799926] ...	Duration	Start
Template: Trigger_BARCODE_VMIMAXX				
	2018-07-26 14:21:11.825MAXX14		4:57:43,698	26/07
	2018-07-26 16:03:42.608MAXX01		0:15:37,56	26/07
	2018-07-26 16:11:23.389MAXX13		0:10:18,323	26/07
	2018-07-26 16:15:01.141MAXX12		0:08:46,095	26/07
	2018-07-26 16:18:19.092MAXX11		0:08:55,443	26/07
	2018-07-26 16:19:20.168MAXX01		0:19:23,15	26/07
	2018-07-26 16:21:41.713MAXX13		0:10:25,054	26/07
	2018-07-26 16:22:47.237MAXX12		0:07:44,282	26/07
	2018-07-26 16:27:14.935MAXX11		0:05:47,464	26/07
	2018-07-26 16:30:31.519MAXX12		0:36:22,587	26/07

Production Step captured by EventFrame and Push to our dataware

	CREATE_DATE	PROCESS_ID	SITE_ACTIVITY	SITE_CODE					
33 ARD-18207-9BAB-9B092134	ARD05.01.11	BDG (null)	26/07/18 17:40:36	26/07/18 17:43:31	Osisoft	26/07/18 17:50:35	PI_2_FDW_EVT_FRAME + EventFrame_After_insert trigger	N/A	N/A
34 ARD-18207-9FAB-9F005228	ARD05.01.13	BDG (null)	26/07/18 17:34:06	26/07/18 17:41:53	Osisoft	26/07/18 17:50:34	PI_2_FDW_EVT_FRAME + EventFrame_After_insert trigger	N/A	N/A
35 ARD-18207-V7AB-V7024753	ARD05.01.12	BDG (null)	26/07/18 17:35:32	26/07/18 17:40:48	Osisoft	26/07/18 17:50:35	PI_2_FDW_EVT_FRAME + EventFrame_After_insert trigger	N/A	N/A
36 ARD-18207-9BAB-9B092131	ARD05.01.11	BDG (null)	26/07/18 17:34:43	26/07/18 17:40:36	Osisoft	26/07/18 17:50:35	PI_2_FDW_EVT_FRAME + EventFrame_After_insert trigger	N/A	N/A
37 ARD-18207-V7AB-V7024752	ARD05.01.12	BDG (null)	26/07/18 17:32:54	26/07/18 17:35:32	Osisoft	26/07/18 17:40:37	PI_2_FDW_EVT_FRAME + EventFrame_After_insert trigger	N/A	N/A
38 ARD-18207-9BAB-9B092129	ARD05.01.11	BDG (null)	26/07/18 17:31:46	26/07/18 17:34:43	Osisoft	26/07/18 17:40:37	PI_2_FDW_EVT_FRAME + EventFrame_After_insert trigger	N/A	N/A
39 ARD-18207-611505-45128112	0515	CURING N/A (null)	26/07/18 17:33:46	26/07/18 17:33:46	PDO	26/07/18 14:19:00	PRODUCTION_OPERATION_MATRI_Thu Jul 26 17:34:56 CDT 2018	ARD-TCAR	ARD
40 ARD-18207-611505-45128113	0516	CURING N/A (null)	26/07/18 17:33:46	26/07/18 17:33:46	PDO	26/07/18 14:23:41	PRODUCTION_OPERATION_MATRI_Thu Jul 26 17:34:56 CDT 2018	ARD-TCAR	ARD
41 ARD-18207-325573-3H825219	0520	CURING N/A (null)	26/07/18 17:33:41	26/07/18 17:33:41	PDO	26/07/18 14:16:40	PRODUCTION_OPERATION_MATRI_Thu Jul 26 17:34:56 CDT 2018	ARD-TCAR	ARD
42 ARD-18207-325573-3H816694	0519	CURING N/A (null)	26/07/18 17:33:41	26/07/18 17:33:41	PDO	26/07/18 14:19:00	PRODUCTION_OPERATION_MATRI_Thu Jul 26 17:34:56 CDT 2018	ARD-TCAR	ARD
43 ARD-18207-551735-42180422	0632	CURING N/A (null)	26/07/18 17:33:38	26/07/18 17:33:38	PDO	26/07/18 11:56:29	PRODUCTION_OPERATION_MATRI_Thu Jul 26 17:34:56 CDT 2018	ARD-TCAR	ARD
44 ARD-18207-551735-42181376	0631	CURING N/A (null)	26/07/18 17:33:38	26/07/18 17:33:38	PDO	26/07/18 11:56:29	PRODUCTION_OPERATION_MATRI_Thu Jul 26 17:34:56 CDT 2018	ARD-TCAR	ARD
45 ARD-18207-325573-3H821512	0517	CURING N/A (null)	26/07/18 17:33:38	26/07/18 17:33:38	PDO	26/07/18 14:28:16	PRODUCTION_OPERATION_MATRI_Thu Jul 26 17:34:56 CDT 2018	ARD-TCAR	ARD

Greenville SC - USA - US1

Tire Building - Cycle Time Monitoring



CHALLENGE

Multi-post tire building machine with known cycle time drift

- Trends or shifts in performance are often not recognized until the previous day's data can be analyzed.
- Retrieval of historical cycle time data is tedious and slow

SOLUTION

PI AF for Equipment Model
PI Vision for real time visualization

- PI allows us to monitor this data in real time and retrieve historical data almost instantaneously
- This will allow operators to recognize and correct cycle time issues in real time.

RESULTS

- On 2 out of every 11 cycles we were losing 4cmin or an average of 0.72cmin per cycle. Roughly a 3.5% degradation in performance.
- A 3.5% loss in cycle time on this type of machine means approximately 75 tires less per shift

Valladolid - Spain - VLD

Quality Monitoring



CHALLENGE

Understand multifactor correlation on a discrete multistep process

- Upstream process parameters impact downstream results
- Finish product characteristics are not aggregated with upstream context

SOLUTION

PI AF for Equipment Model
PI EF for Product/Operation contact

- PI allows us to monitor process parameter in real times
- We push the data in the datalake using PI Integrator
- We identify correlations applying Advanced Analytics tools on a dataset in dataware

RESULTS

- 1500 product and process characteristics collected along the production line
- Multi-variable correlation analysis available in real time for the quality technician

Take Away

- Data driven approach first
- The magic tool does not exist, use software for its capabilities
- Start with a toolset mastered by the teams
- Empower each contributor through a shared single source of true : the data
- It's a journey, and we're just at the beginning

Questions?

Please wait for
the **microphone**



State your
name & company

Please rate this session in the mobile app!



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 TAPADH LEIBH 고맙습니다
 БАЯРЛАЛАА MISAOTRA ANAO
 DZIĘKUJĘ CI NGIYABONGA TEŞEKKÜR EDERIM GRACIES OBRIGADO شكرا SALAMAT
 KÖSZÖNÖM DANKIE TERIMA KASIH DANKON TANK TAPADH LEAT SALAMAT
 СПАСИБО МУЛТJUMESC
 PAKMET CIZGE OSIssoft.
 GO RAIBH MAITH AGAT MAHADSANID  PIWorld
 БЛАГОДАРЯ GRACIAS HVALA FAAFETAI ESKERRIK ASKO
 TI БЛАГОДАРАМ MAHADSANID HVALA ХВАЛА ВАМ
 TAK DANKE MAHADSANID TEŞEKKÜR EDERIM
 RAHMAT MERCI DANK JE EΥΧΑΡΙΣΤΩ GRATIAS TIBI GRAZIE
 HATUR NUHUN AČIŮ SALAMAT MAHALO IĀ 'ŌE TAKK SKALDU HA ДЗЯКУЙ DI OU MÈSI
 GRAZZI ПAKKA PĒR ありがとうございます ǃAKUJEM
 PAXMAT CAĜA SIPAS JI WERE TERIMA KASIH MATUR NUWUN
 CẢM ƠN BẠN UA TSAUG RAU KOJ
 WAZVIITA TI БЛАГОДАРАМ СИПОС
 FALEMINDERIT