Hitachi/Pentaho adatintegrációs és IoT megoldások a gyakorlatban

Szokol Zsolt
Solution Consultant, CEE
2018 június

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Agenda

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- Ipari forradalom 4.0
- Hitachi Lumada platform
- Pentaho adatintegráció

Ipari forradalom 4.0

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Ma

* Első gőzüzemű szövőszék, 1784
* Első sorozatgyártás, 1870
* Első programozható elektronika (PLC) 1969

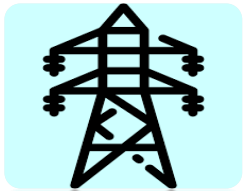
1.0

Gőzüzemű berendezések

A mechanikus gépek 100%-ban történő kiváltása

2.0

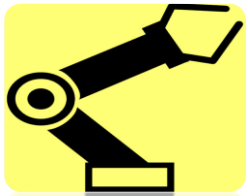
Tömegtermelés elektromos árammal



20%-os csere, szerszámok maradnak, meghajtás változik

3.0

Automatizáció



A korábbi berendezések 80%-os cseréje

4.0

Kapcsolt berendezések

Jelenleg nem kapcsolható berendezések cseréje 50%-ban

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A digitális technológia előretörése

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Európa	Kína	Japán	India	Egyesült Államok
Industrie 4.0	**Made in China 2025**	**Society 5.0**	**Digital India**	**Industrial IoT**

INTERNET OF THINGS

Robotika

Mesterséges intelligencia

Termékek	**Eredmények**
Saját tulajdon	**Szolgáltatás**
Zárt	**Nyitott**
Komponens optimalizáció	**Rendszer optimalizáció**

Növekedés és versenyhelyzet

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Az IoT által teremtett értékek

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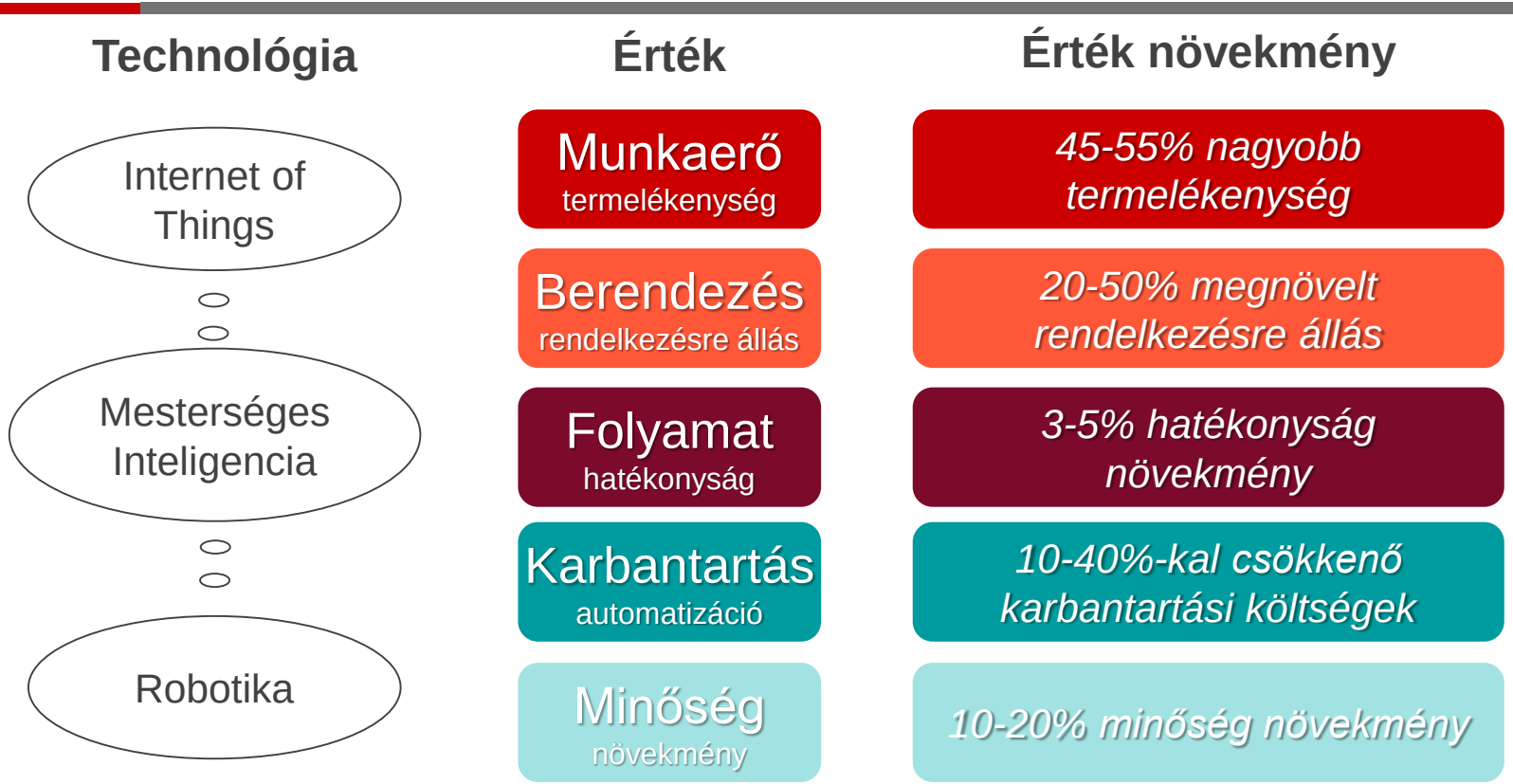

Forrás: McKinsey

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Hitachi és az IoT

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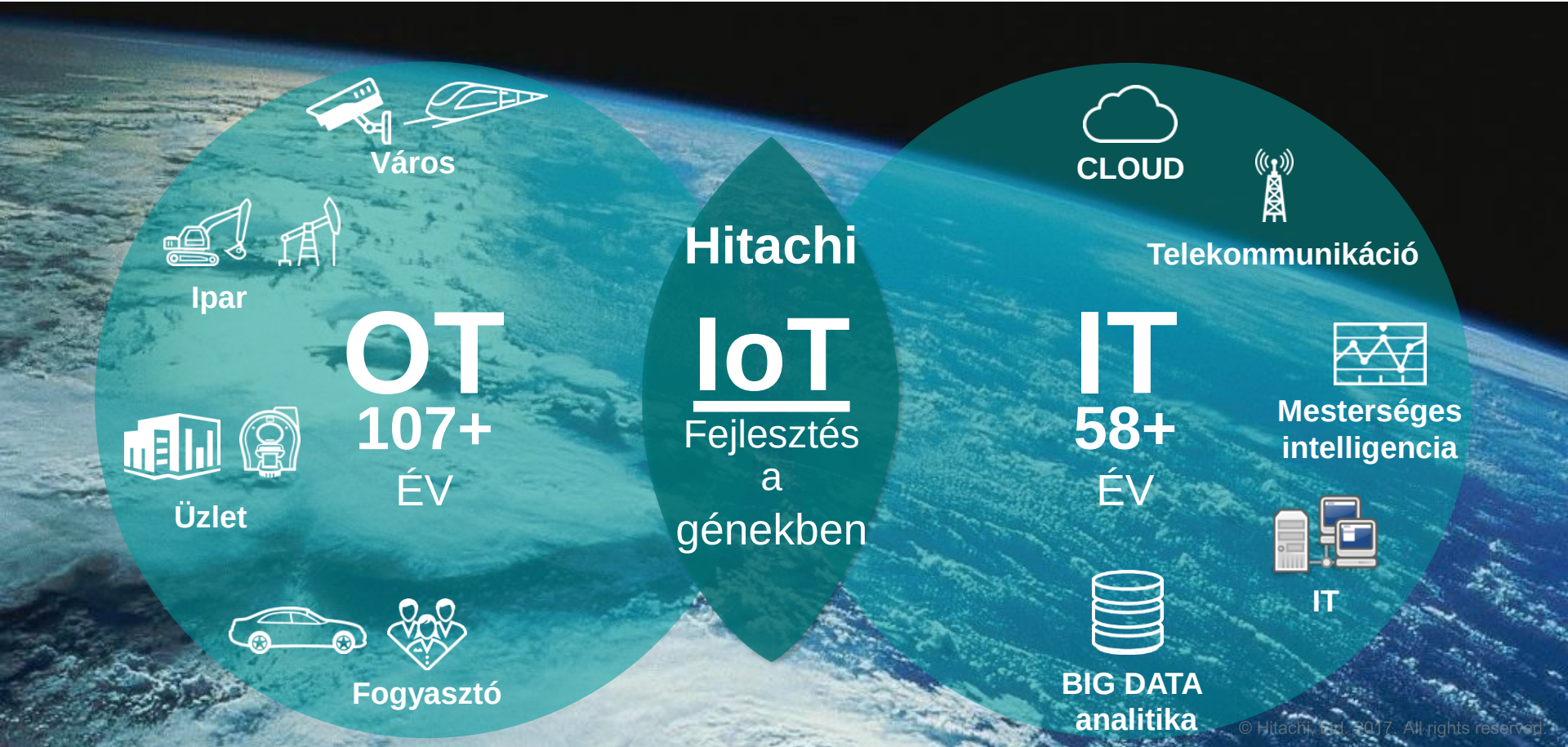

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Az adat az új olaj.

Értékes, de feldolgozás nélkül nem használható.

Clive Humby, matematikus, a Tesco klub-kártya megalkotója, 2006

“illuminate” + “data”

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>6 millió kapcsolt Hitachi berendezés

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Welcome, admin!

You are now using Lumada to monitor the state of your most important assets. Focus on the details you care about, share real-time data with your team, and make money-saving decisions fast. It's your platform, your data. Do what you want with it.

Asset Avatar Types

Add an asset avatar type to define the common properties among your asset avatars.

Add New Asset Avatar Type

Learn more about Asset Avatar Types

Asset Avatars

Asset Avatars represent the trucks and shovels connected to Lumada. Data from each asset is securely transmitted and captured in your asset avatar.

Add New Asset Avatar

Learn more about Asset Avatars

Gateways

Add a gateway to securely connect and communicate with Lumada on behalf of your assets.

Add New Gateway

Learn more about Gateways

Kapcsolt eszköz: Hitachi UX Industrial Printer

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eserved

Ipari nyomtató „Asset Avatar” példa

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Printer Status		
Value	Printer Status	READY|STANDBY|FAULT
Value	Print Count	39640
Value	Cum. Hours of Operation	183 hrs
	Uptime Last 7 Days	99%

Printer Control		
Value	Label	“Lumada”
Value	Label Cfg.	
Scheduled	Timestamp	3 hours: 20 min

Printer KPIs		
KPI	Ink consumption average	0.011 ml/hr
KPI	Makeup Consumption average	4.027 ml/hr

Printer Properties		
Static	Model#	UX-D160W
Static	Serial#	UX2341
Static	Ink Serial#	IN2334
Static	Makeup Serial #	MK876
Static	Geolocation	First Asembly
Static	Geo Co-ord	30, 60, 65

Printer Sensor Telemetry		
Sensor	Ink Level	733 ml
Sensor	Makeup Level	
Sensor	Ink Viscosity	98%
Sensor	Ink Type	18
Sensor	Ink Pressure	0.001
Sensor	Temperature	23 C

Printer Preventative Maintenance		
Derived	Refresh Ink Hours	1848 Print hours
Derived	Change filter	1848 Print hours
Derived	Clean Print head	4 days

Consumables Demand Forecasting		
Derived	Ink Forecast	10 cases
Derived	Makeup forecast	9 cases

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Ipari nyomtató „Asset Avatar” példa

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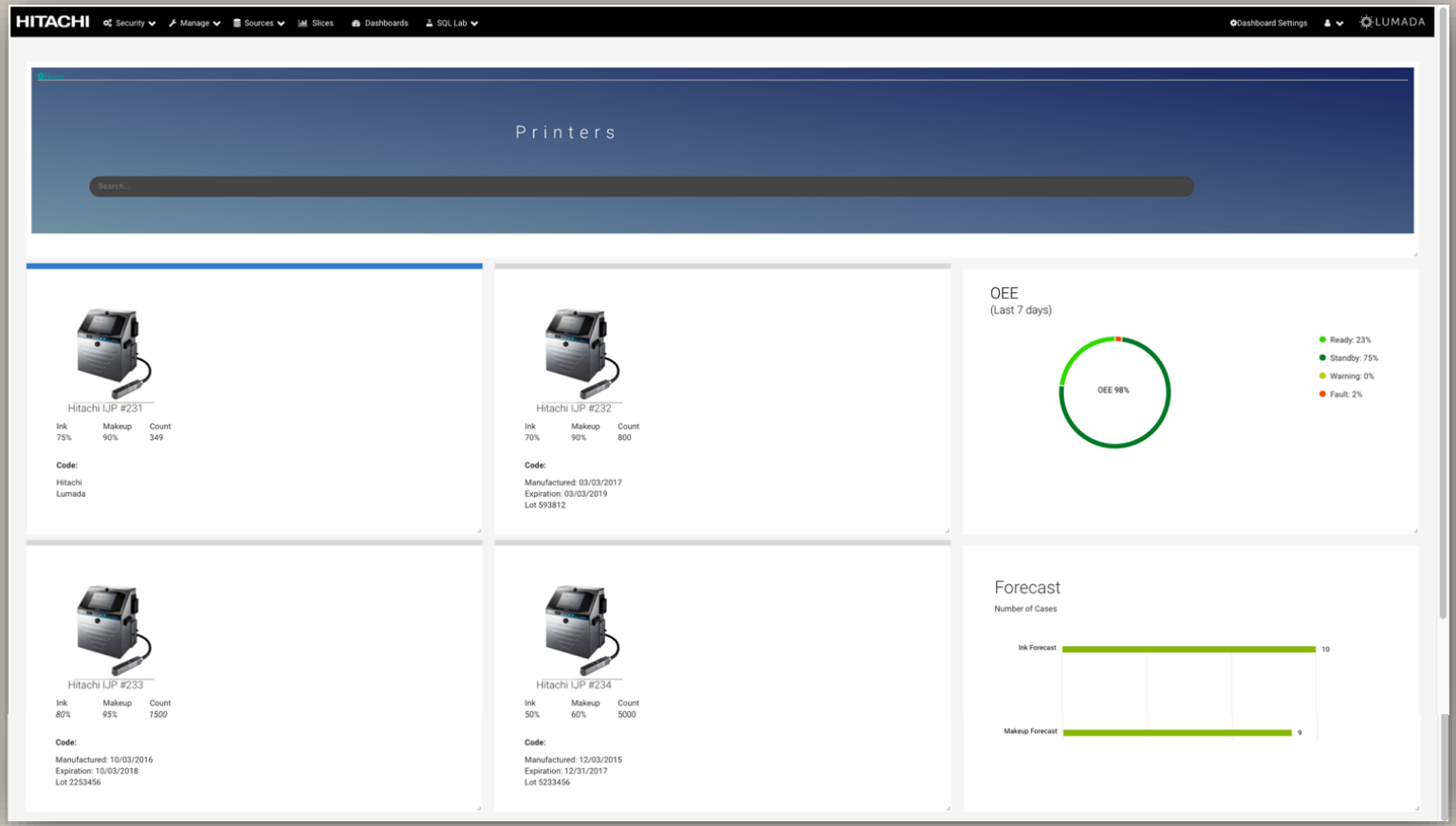

Kapcsolt eszköz : Hitachi Sullair kompresszor

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Sullair LS szériájú kompresszor „Asset Avatar” példa

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Compressor Properties		
Static	Make	Sullair
Static	Model	LS 90
Static	Model Year	2017
Static	Vin	WO4275277
Static	Location	33.45143, 86.04871

Compressor Status		
Value	Load Cycles	570.00
Value	Load Time	486.62 hrs
Value	Run Time	648.23 hrs
Value	Engine Starts	40.00

Key Sensors		
KPI	Discharge Pressure	109.19 psi
KPI	Package Outlet Pressure	107.88 psi

Compressor Sensors		
Sensor	Discharge Pressure	109.19 psi
Sensor	Discharge Temperature	186.00 F
Sensor	Compressor Flow	2.69 %
Sensor	Package Outlet Pressure	107.88 psi
Sensor	Separator Pressure Drop	1.50 psi
Sensor	Load Pressure	105.00 psi

Maintenance		
Maintenance	Fluid Filter Maintenance	04-01-2017
Maintenance	Air Filter Maintenance	04-01-2017
Maintenance	Separator Maintenance	04-01-2017
Maintenance	Oil Change	04-01-2017

Alerts		
Alert	290	high temp 1
Alert	304	high pressure fault
Alert	407	High pressure above unload setting
Alert	266	analog input below minimum

Sullair LS szériájú kompresszor „Asset Avatar” példa

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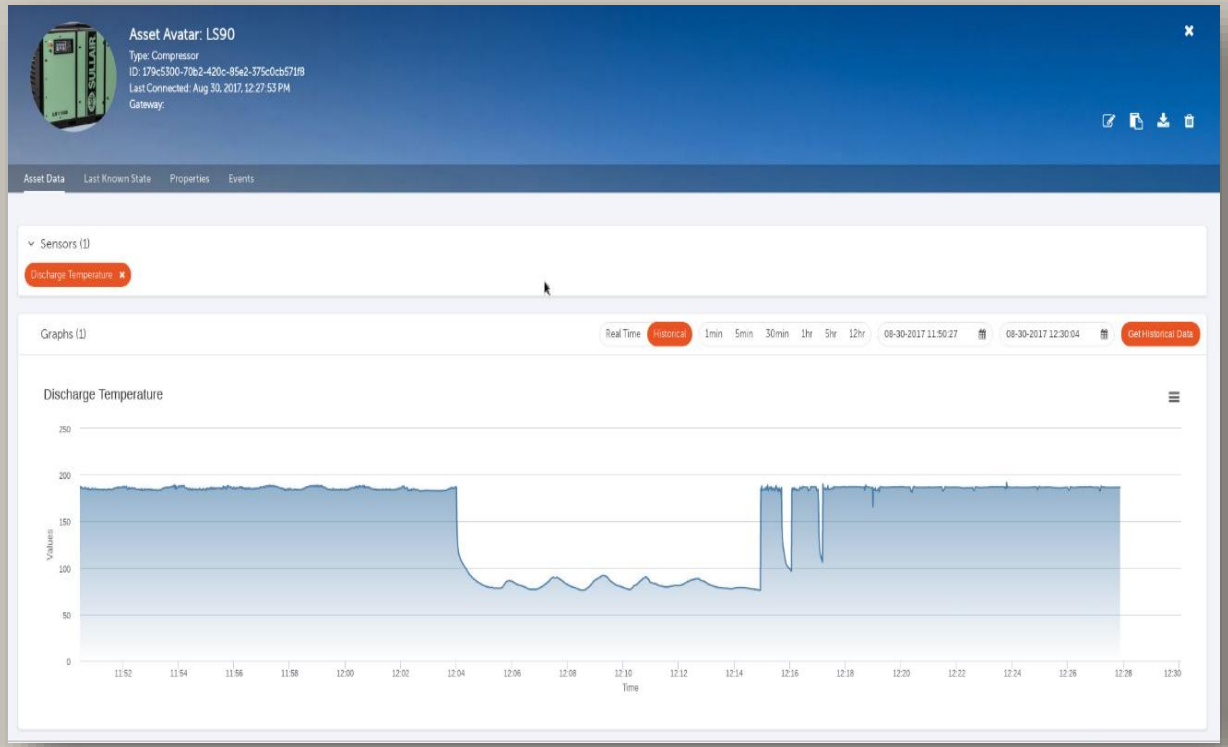

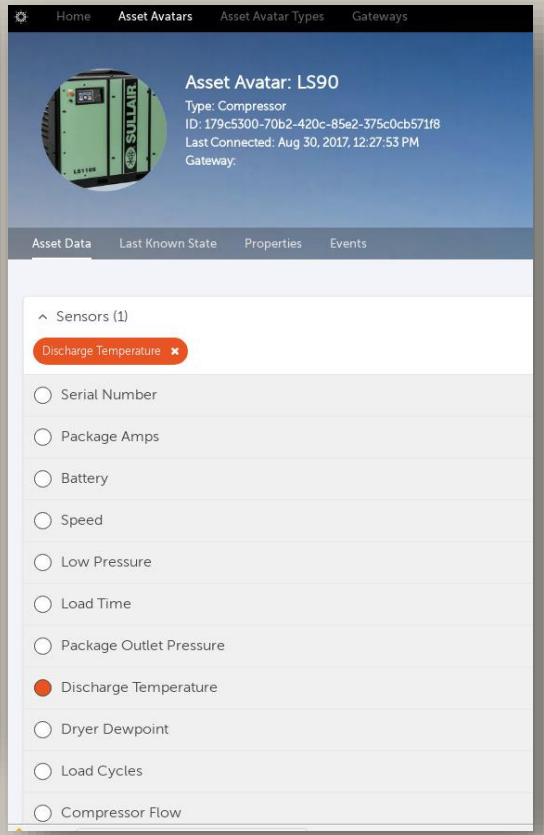

Kapcsolt eszköz: Hitachi Excavator EX5600

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Hydraulic Excavator
EX5600-6 „Asset Avatar” példa

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Excavator Properties		
Static	Model Code	EX5600-6
Static	Equipment Type	Hydraulic Excavator
Static	Engine Gross Power	2 x 1,119 kW (1,500 HP)
Static	Operating Weight Backhoe	537,000 kg
Static	Operating Weight Loading Shovel	533,000 kg
Static	Backhoe Bucket - SAE, PCSA Heaped	34.0 m^3
Static	Backhoe Bucket – CECE Heaped	30.0 m^3
Static	Loading Shovel Bucket - Heaped	27.0 – 29.0 m^3

Key Sensors		
KPI	After Cooler Temp 1 (Left)	51.73 C
KPI	After Cooler Temp 2 (Left)	53.03 C
KPI	After Cooler Temp 1 (Right)	54.07 C
KPI	After Cooler Temp 2 (Right)	52.95 C

Virtual Alarms		
Derived	After Cooler Performance Score	92 %
Derived	Anomaly Score	4 %

Alarms: Int Man Press		
Alarm	Int Man Press Failed Low	OFF
Alarm	Int Man Press Below Normal	OFF
Alarm	High Int Man Temp	OFF
Alarm	Int Man Temp Ckt Failed Low	OFF
Alarm	Rapid rise int man temp	OFF
Alarm	Int Man Press Failed Low	OFF
Alarm	Int Man Press Below Normal	OFF

Alarms: Coolant		
Alarm	Coolant Level Below Normal	OFF
Alarm	Low Coolant Level	OFF
Alarm	High Coolant Temp	OFF
Alarm	Very Low Coolant Pressure	OFF

Excavator Sensor Telemetry (Other)		
Sensor	Battery voltage	27.39 V
Sensor	Ambient Temperature	32.80 C
Sensor	Fuel Gauge	5.49 %

Excavator Exhaust Sensor Telemetry		
Sensor	Exhaust temperature #1(Left)	380.03 C
Sensor	Exhaust temperature #2(Left)	416.94 C
Sensor	Exhaust temperature #1(Right)	382.27 C
Sensor	Exhaust temperature #2(Right)	343.81 C

Excavator Status		
Sensor	Hour Meter	11118.93
Alarm	ECM Communication Error	OFF
Operations	Status	Shift Change
Operations	Shift	Night

Alarms: Other		
Alarm	Low Power Cylinder	OFF
Alarm	Contamination Alarm	OFF
Alarm	Emergency Switch ON	OFF
Alarm	Injector Sol Driver Cyl Below Normal	OFF
Alarm	High Fuel Temp (Most Sever Level)	OFF

Alarms: Oil		
Alarm	Very Low Oil Pressure (Left Engine)	OFF
Alarm	Engine Oil Temperature High (Left Engine)	OFF
Alarm	Engine Oil Temp Above Normal (Left Engine)	OFF

Excavator Engine Sensor Telemetry		
Sensor	Engine Speed	1690.83 H
Sensor	Engine Oil Temperature	97.41 C

Maintenance		
Maintenance	Down Hours	2.38 H
Maintenance	Last Failure	Electric
Maintenance	Time Since Last Failure	3 M 6 D 5 H

Megelőző karbantartás

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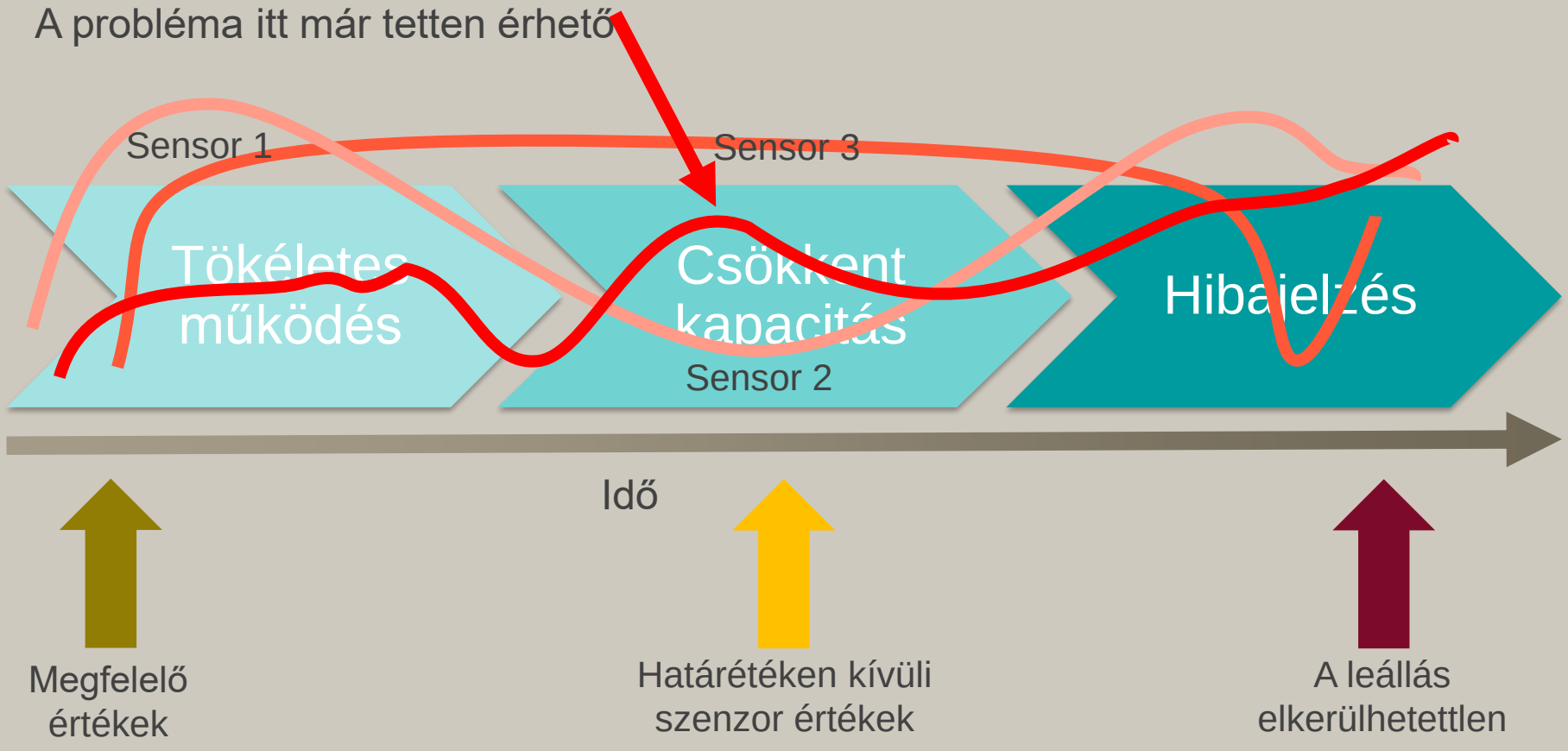

Két világ találkozása…

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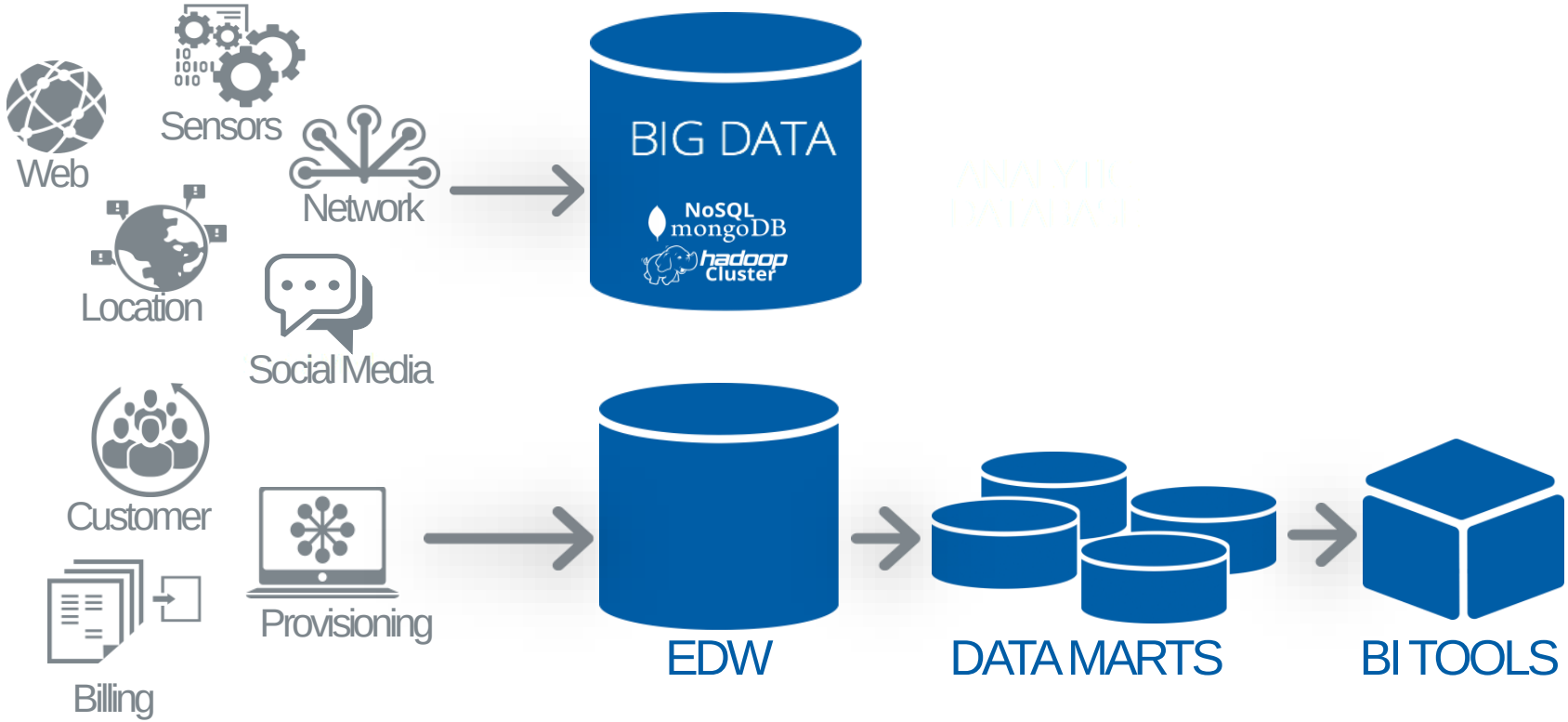

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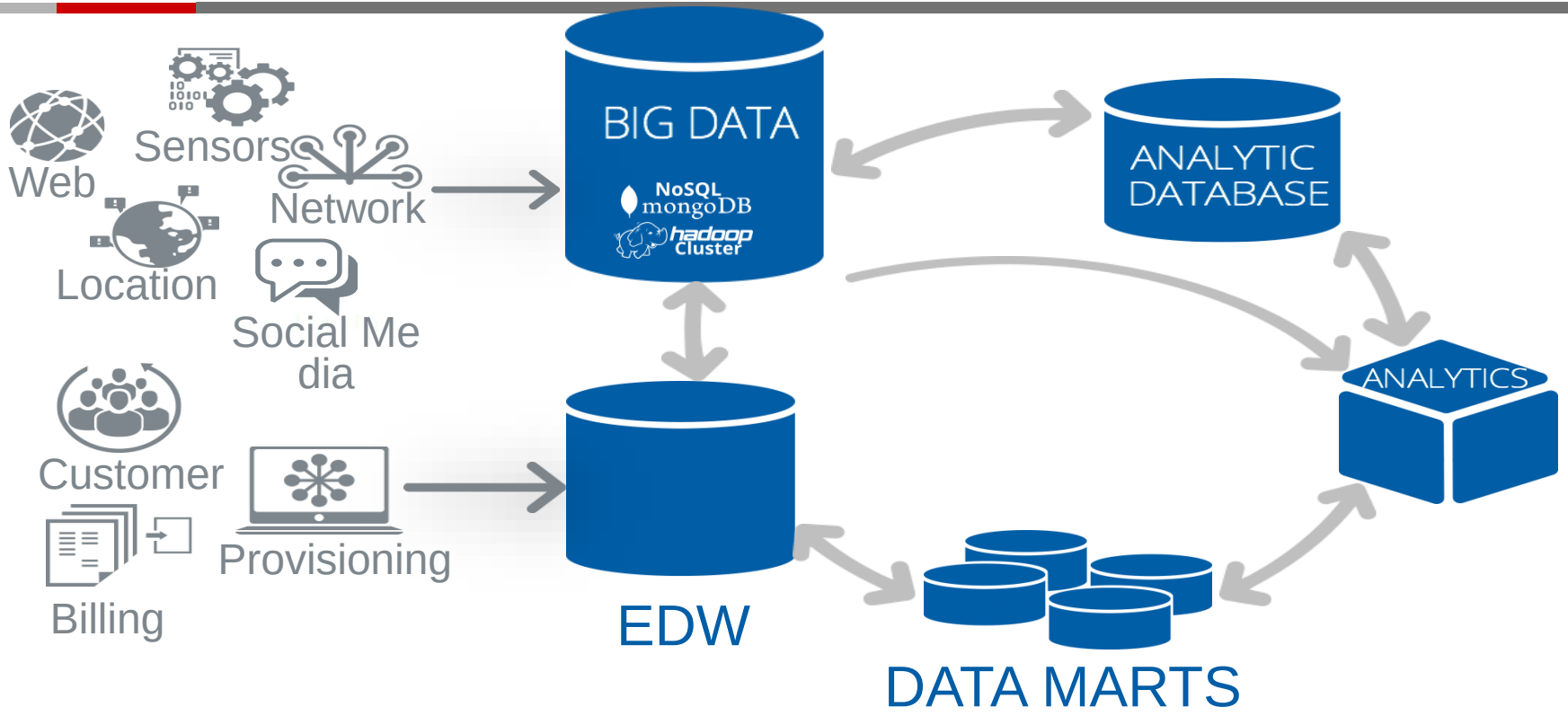

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Pentaho az összekötő kapocs

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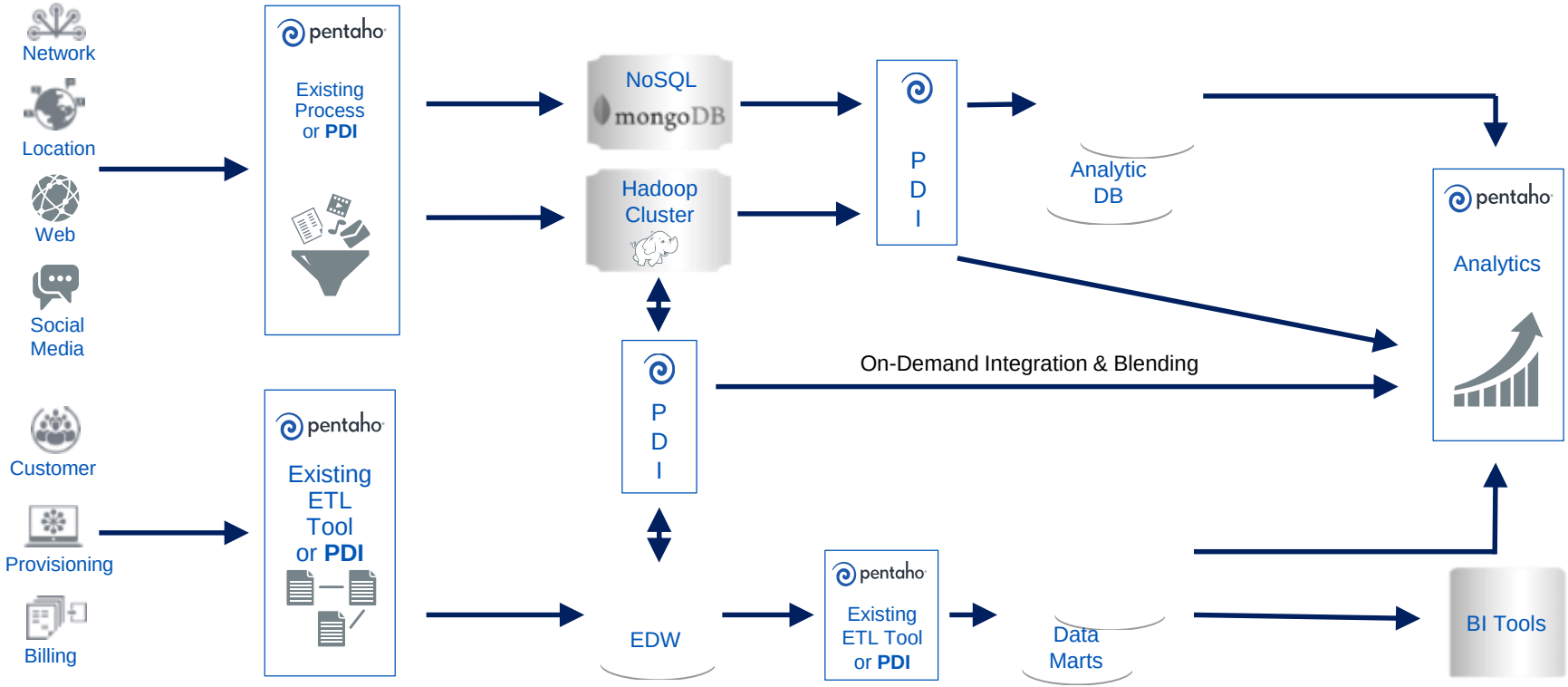

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Köszönöm a figyelmet!

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