

Moneo Data Science Toolbox

Aplica Inteligencia Artificial
de un modo sencillo y económico



Moneo → Digitaliza de tu Empresa

ifm Group



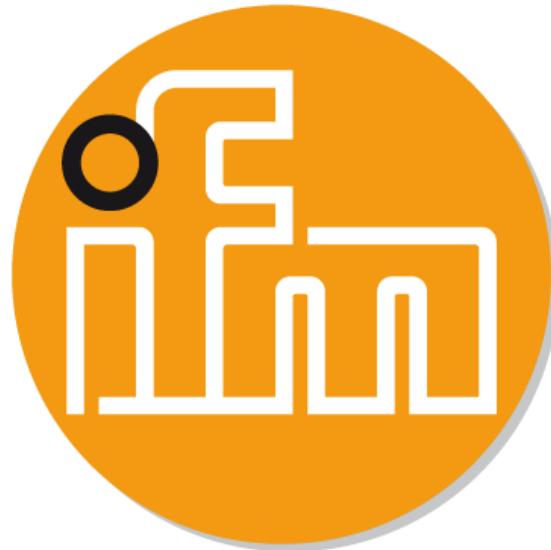
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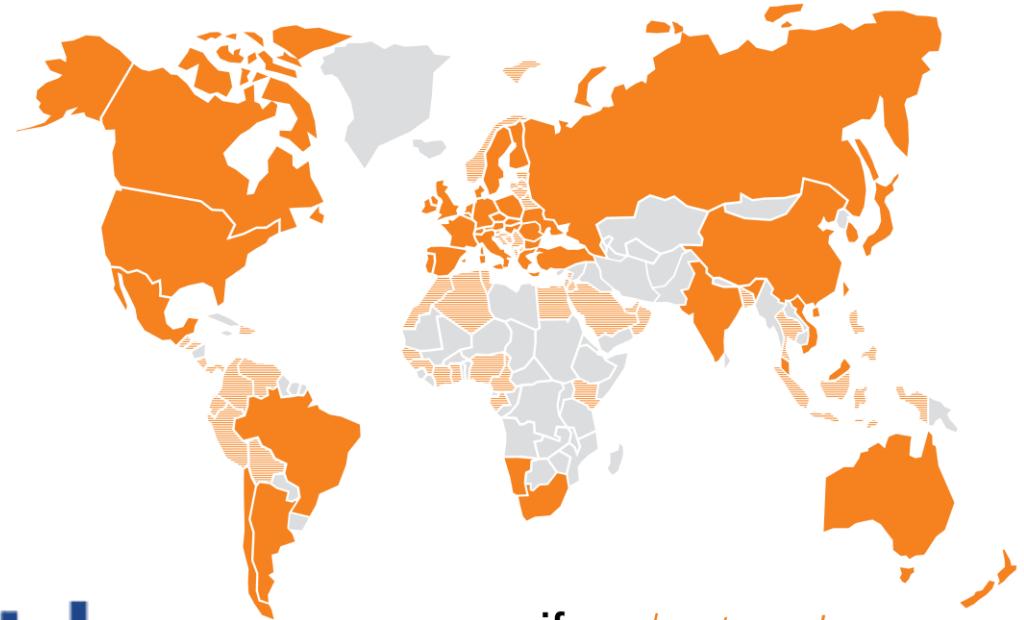


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ifm software
ifm solutions
ifm service



ifm – *close to you!*

 **statmath**
data.science.solutions.

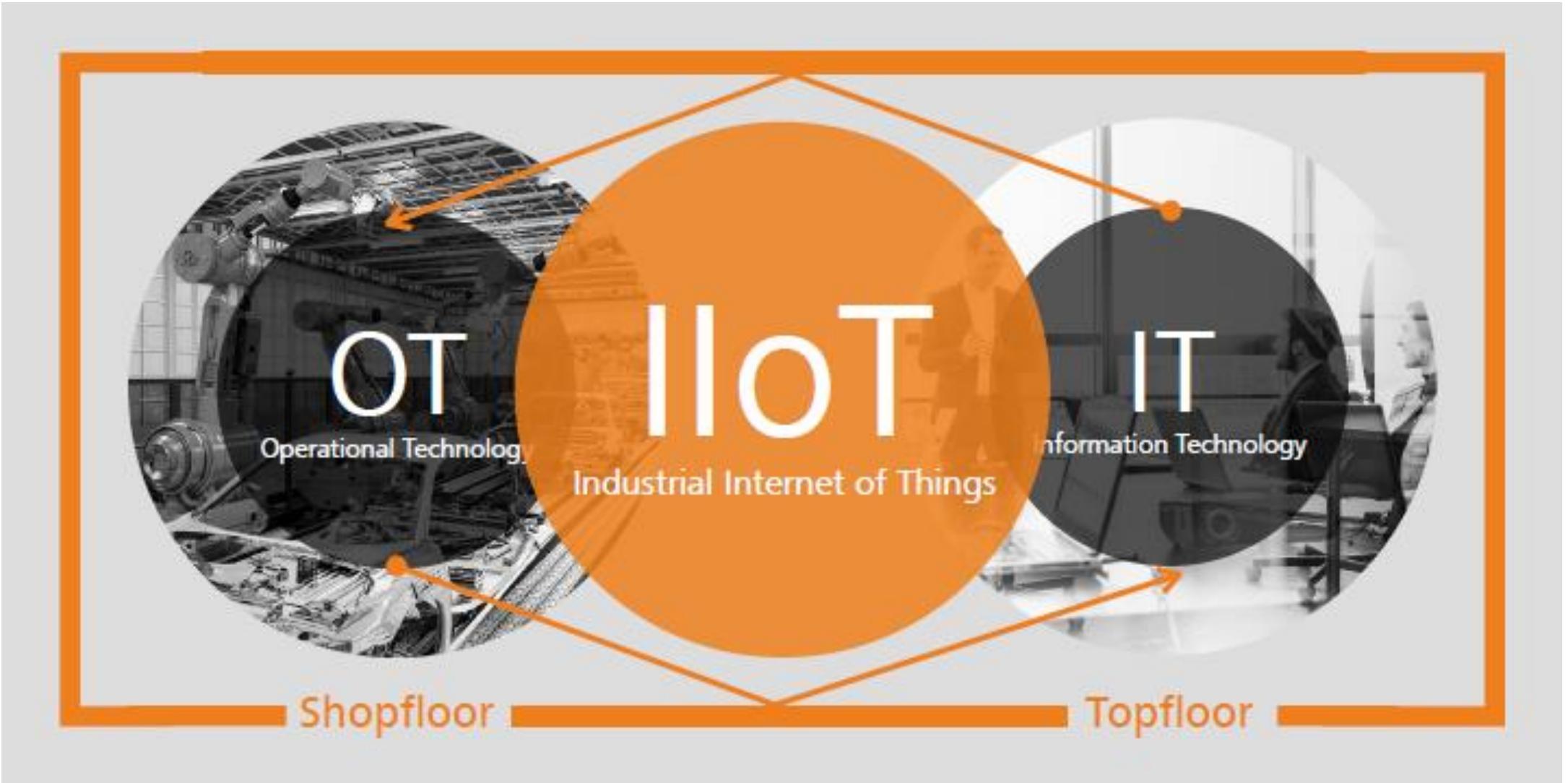
OPEN INDUSTRY 4.0
ALLIANCE



 **GIB**
an ifm company

Moneo → Digitaliza de tu Empresa

Tu Partner



Moneo → Digitaliza de tu Empresa

Moneo – Elimina Barreras

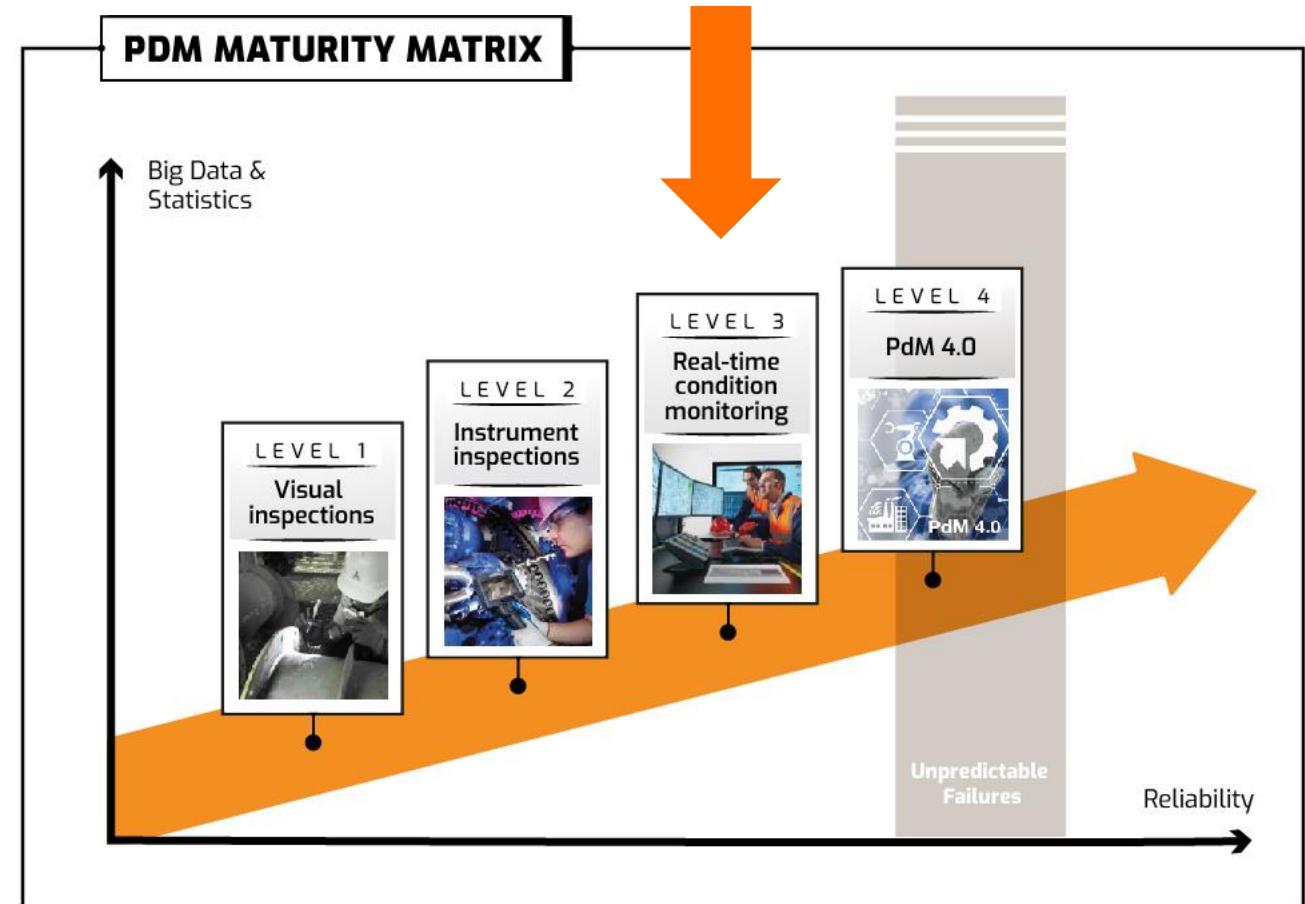
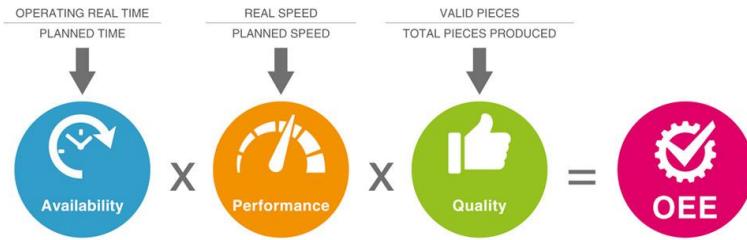


REAL TIME MONITORING CON MONEO

- **Reduce tiempo de implementación**
- **Reduce costes de proyectos**
- **Evita la necesidad de perfiles especializados**
 - **Conectividad para tod@s**
 - **Big Data para tod@s**
 - **Ánalysis avanzado para tod@s**
 - **Inteligencia Artificial para tod@s**

Moneo → Digitaliza de tu Empresa

PdM



Moneo → Digitaliza de tu Empresa

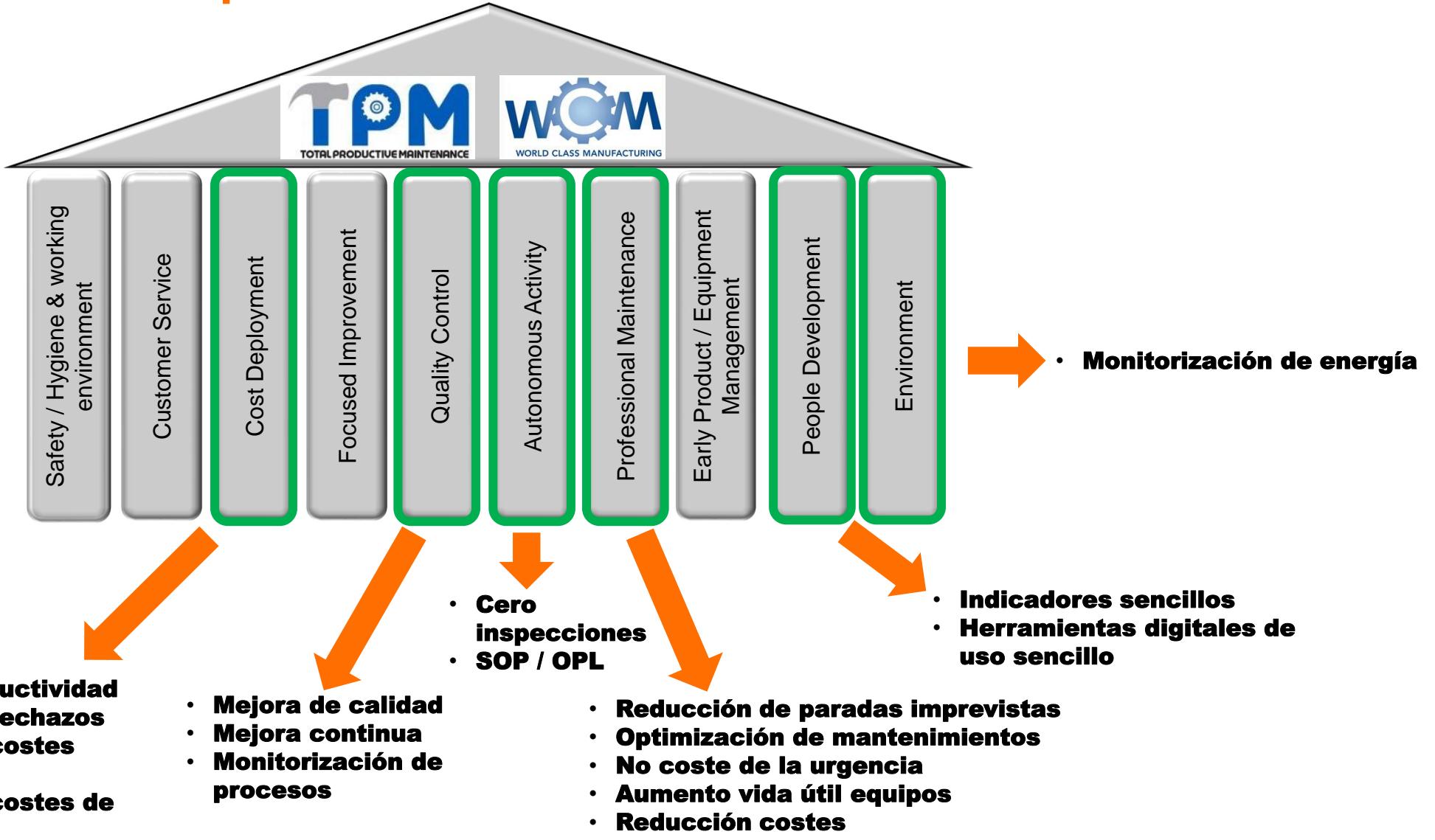
Moneo – Real Time Monitoring



MONITORIZACIÓN EN TIEMPO REAL

- **Estado de Salud de Máquinas Productivas**
- **Estado de Salud de Equipos Auxiliares**
- **Consumos Energéticos**
- **Indicadores de Calidad**
- **Parámetros de Proceso**
- **Indicadores Productivos**

Beneficios Departamentales



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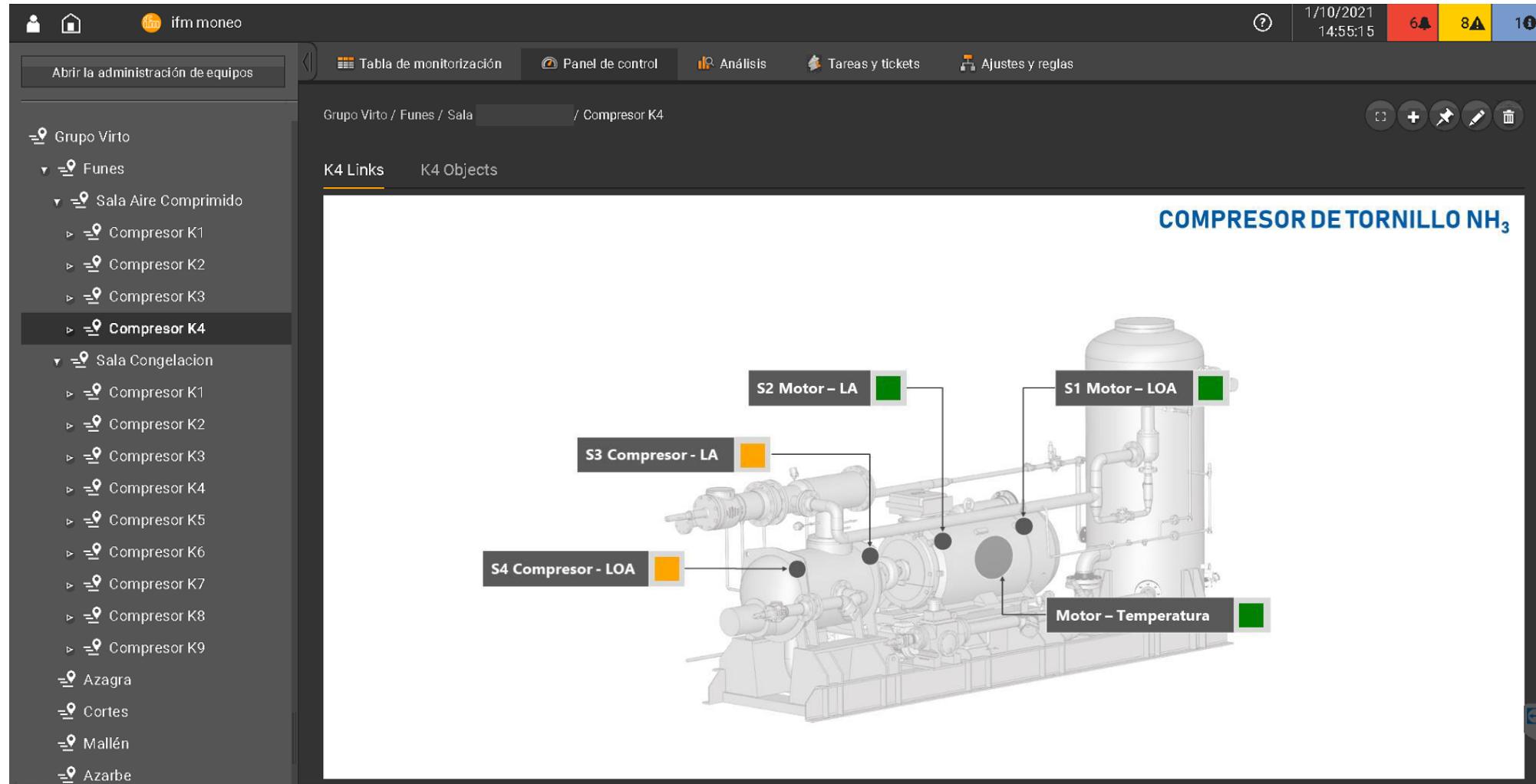
Moneo – Real Time Monitoring



- **Uso sencillo sin necesidad de desarrollo de software**
- **Generación automática de BBDD**
- **Generación Drag & Drop de pantallas**
- **Generación Drag & Drop de herramientas de análisis avanzadas**
- **Data Flow Modeler para cálculo en tiempo real**
- **Conexión vía web browser**
- **Solución multi usuario**

Moneo → Digitaliza de tu Empresa

moneo



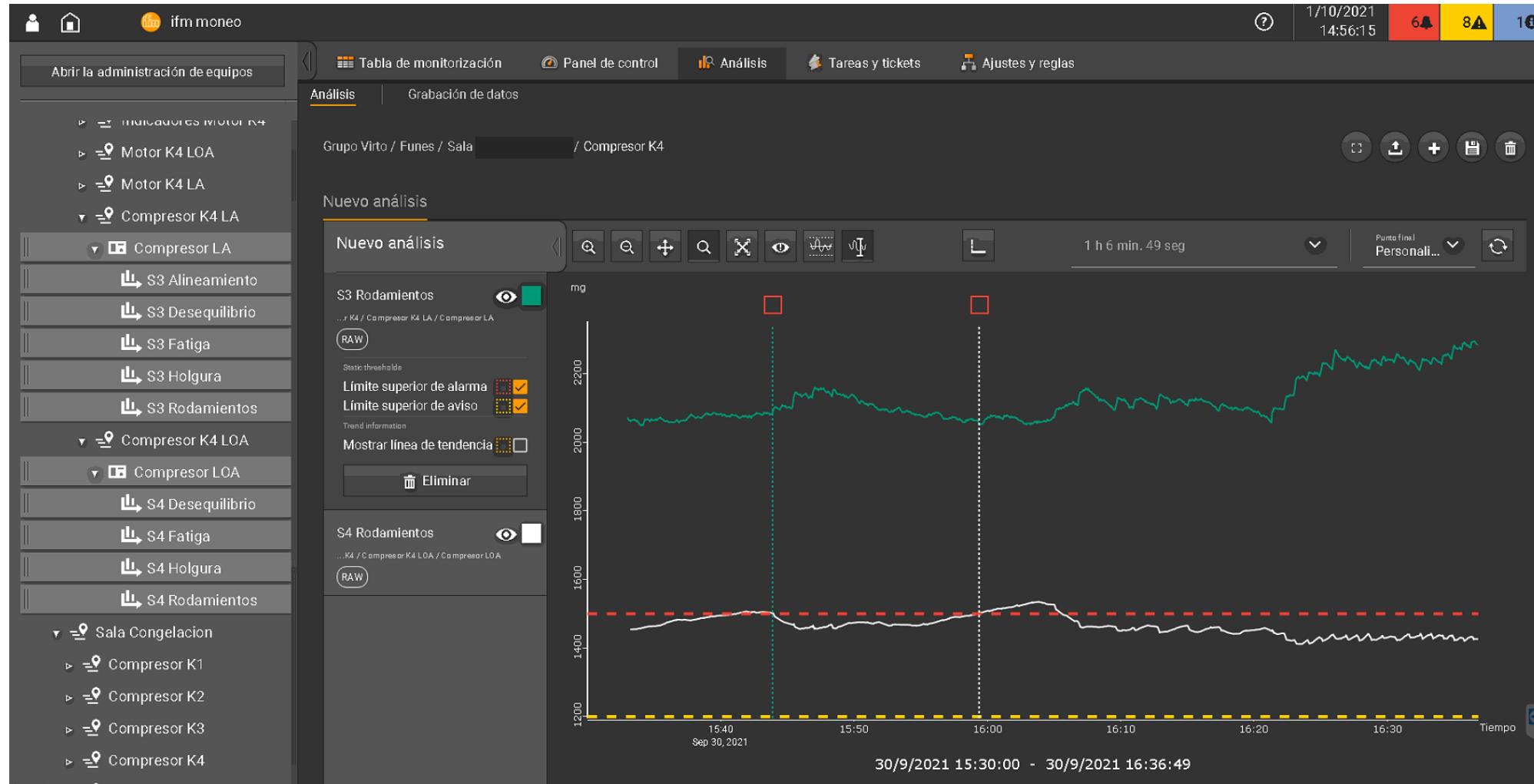
Moneo → Digitaliza de tu Empresa

moneo

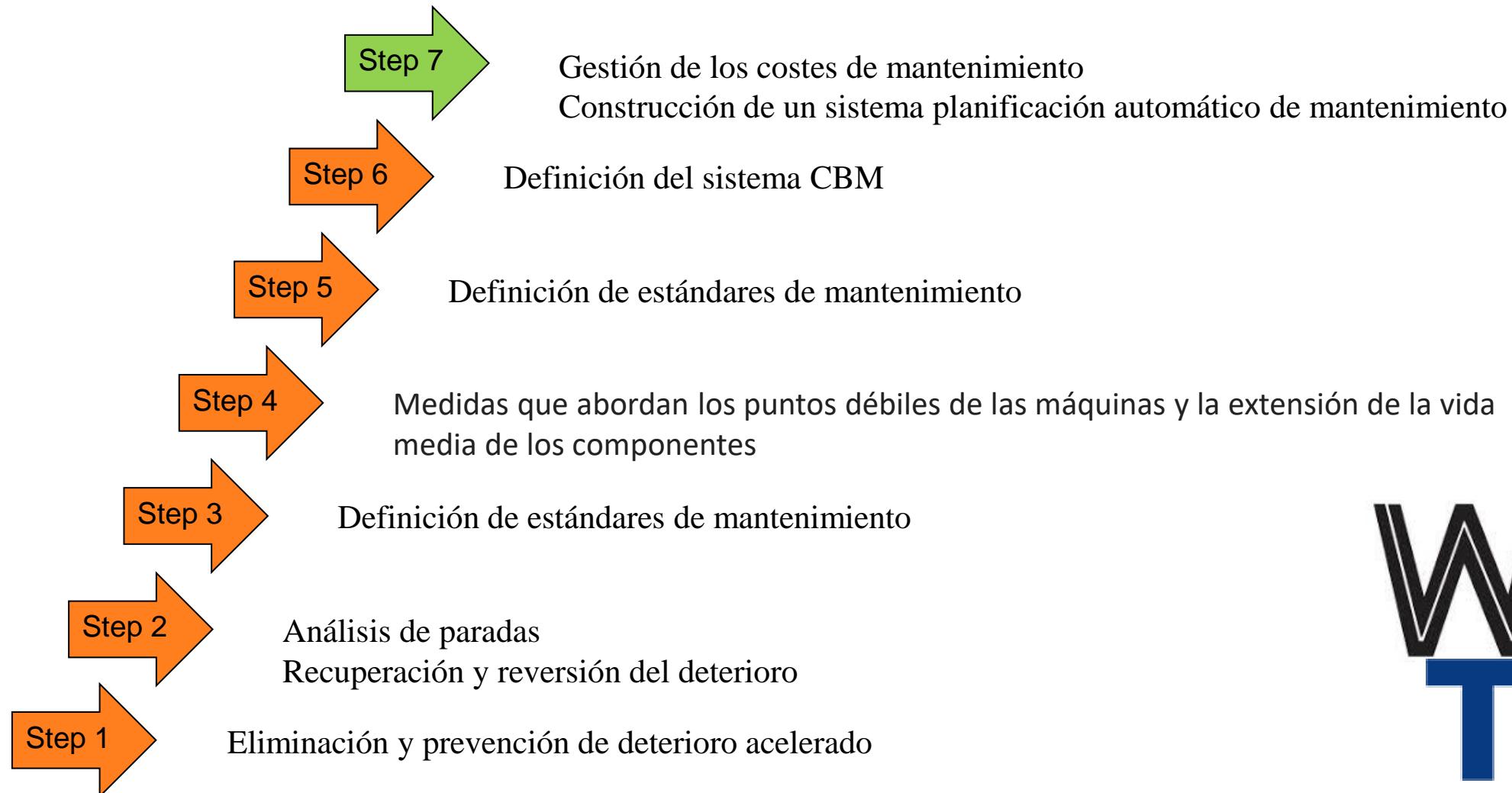
The screenshot shows the ifm moneo software interface for monitoring and control. The top navigation bar includes icons for home, help, and system status, along with the date and time (1/10/2021, 14:54:58). The main menu tabs are Tabla de monitorización, Panel de control, Análisis, Tareas y tickets, and Ajustes y reglas. The left sidebar shows a tree view of assets: Grupo Virtro, Funes, Sala Aire Comprimido, Sala Congelacion, and several compressor units (K1-K9, Azagra, Cortes, Mallén, Azarbe). The current view is for 'Compresor K4' in 'Sala Aire Comprimido' in 'Funes'. The main content area displays monitoring panels for 'K4 Links' and 'K4 Objects'. The 'K4 Links' panel includes sections for 'Desequilibrio S1 - S4', 'Holgura S1 - S4', 'Alineamiento S2 - S3', and 'Temperatura motor'. The 'K4 Objects' panel includes sections for 'Motor LOA', 'Motor LA', 'Comp. LA', and 'Comp. LOA' for each of the four compressor units. A detailed 3D model of the compressor unit is shown on the right, with callouts to specific components: S2 Motor - LA, S1 Motor - LOA, S3 Compresor - LA, S4 Compresor - LOA, and Motor - Temperatura.

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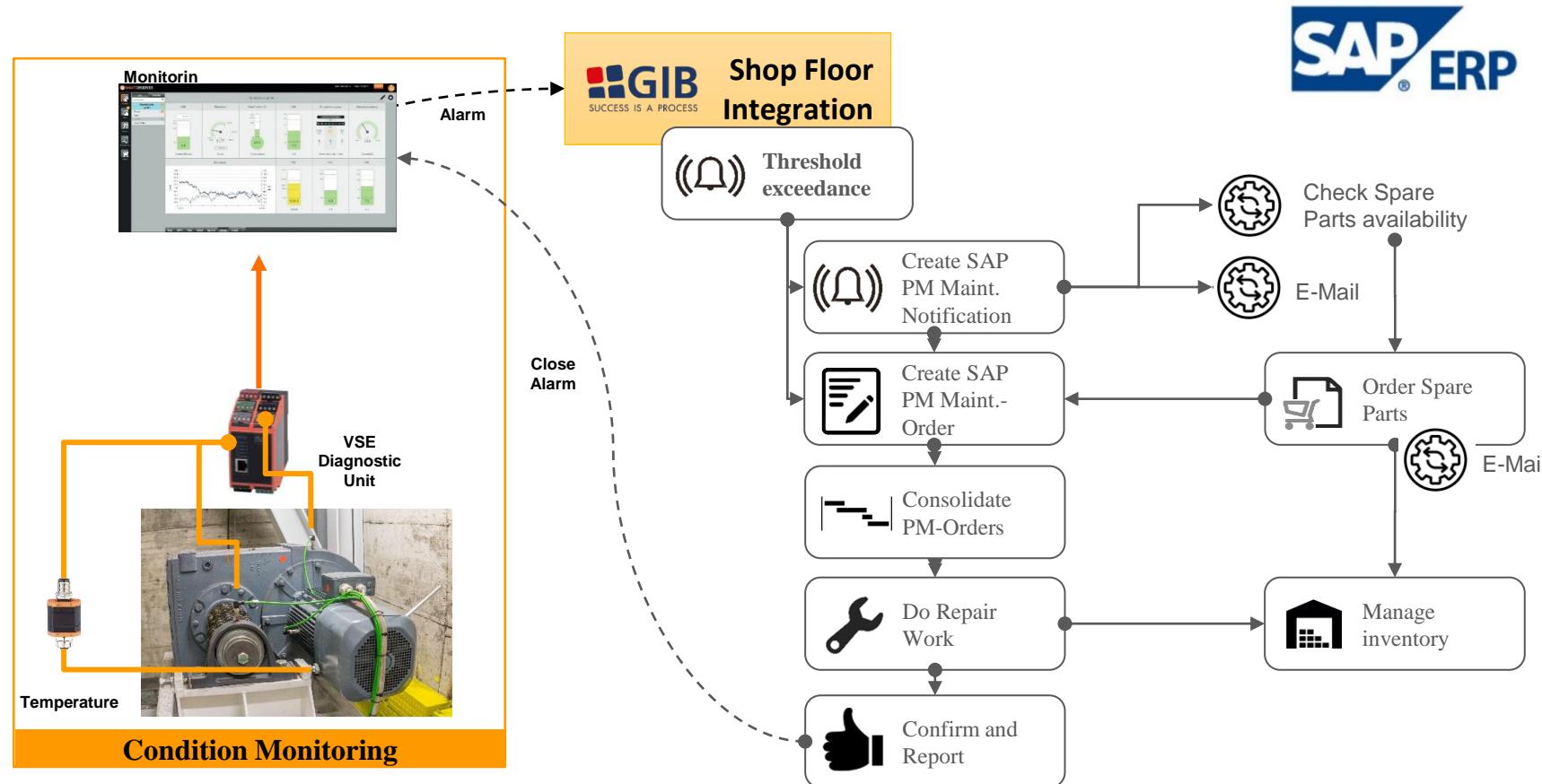


Digitalización del Mantenimiento



Digitalización del Mantenimiento

Shop Floor Integration to SAP (Plant Maintenance)

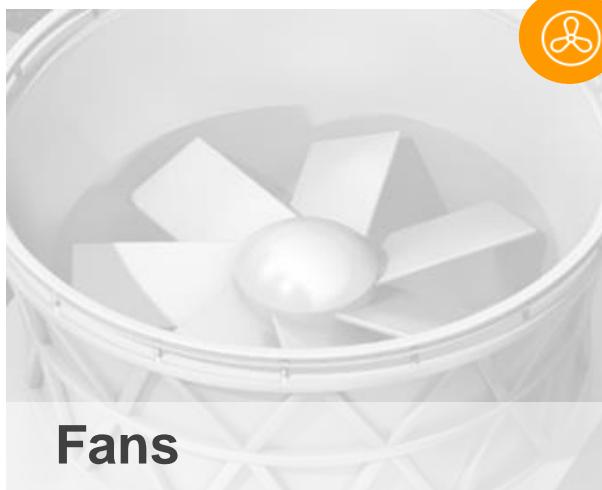


Moneo → Digitaliza de tu Empresa

Aplicaciones



Pumps



Fans



Compressors



Cooling Groups



Spot Gun Cooling



Robots



Linear Axis



Gear Boxes

Aplicaciones



Conveyors



Lifts



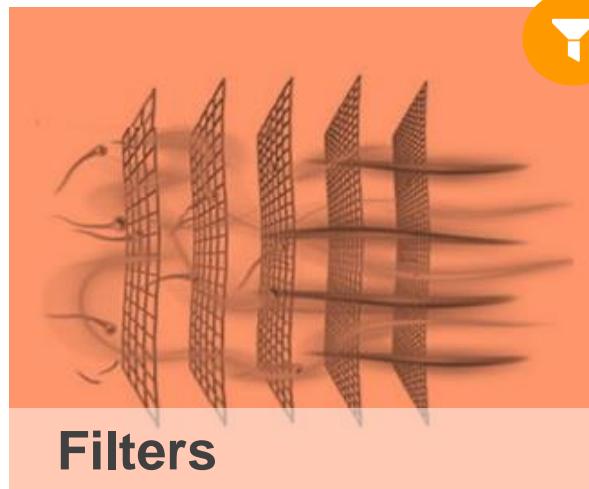
Motors



Bearings



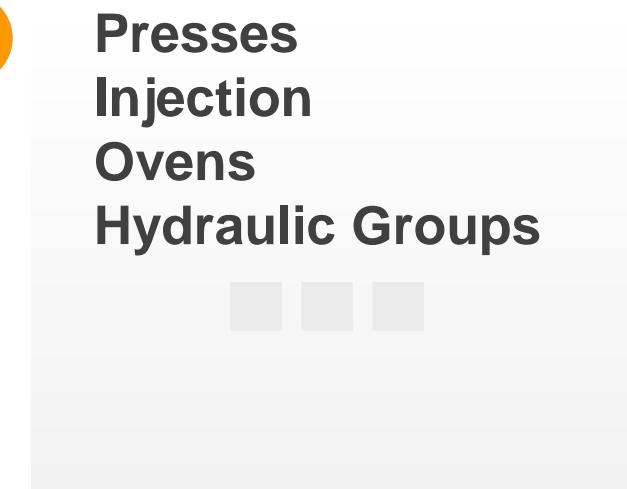
Valves



Filters



Machine Tool



Presses
Injection
Ovens
Hydraulic Groups



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Consumo Aire Comprimido



Consumo Agua



Consumo Corriente Eléctrica



Soplantes



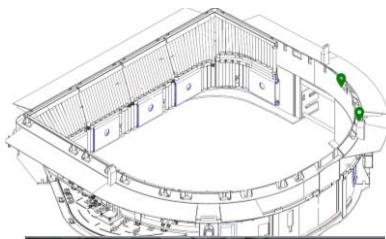
Depósitos



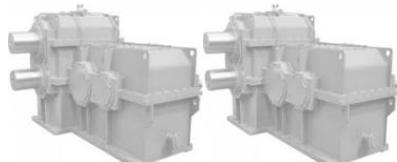
Mezclador



Horno Arco Eléctrico



Tren de Laminado Y Cajas de Acabado



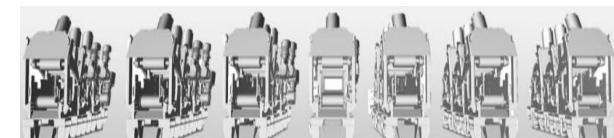
Filtración



Torres de Refrigeración



Colada Continua



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Casos de éxito

Grupos Hidráulicos



Máquina Papel



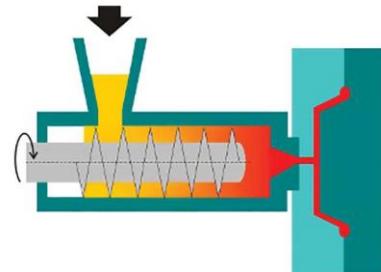
Prensas - Smart Stamp



Lubricación



Inyección de Plástico



Estampación en Caliente

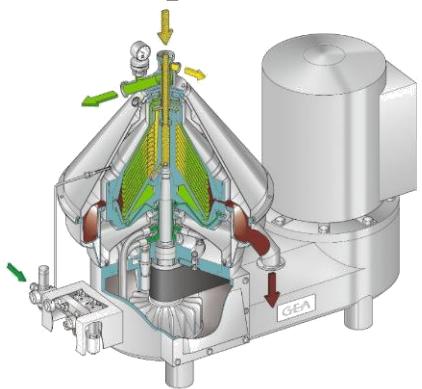


Pintura y Cataforesis

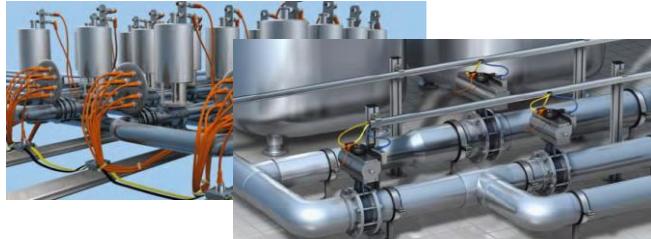


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Separador



Valvulas



Homogeneizador



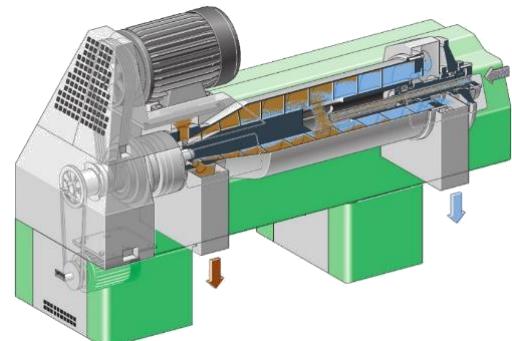
Compresor frío



Dosificador



Decantador



Desnatadora leche
Clarificador



Aqua refrigeración



Mezcladores



Pasteurizador
Intercambiador calor



Chiller
Ventilador refrigeración



Bombas

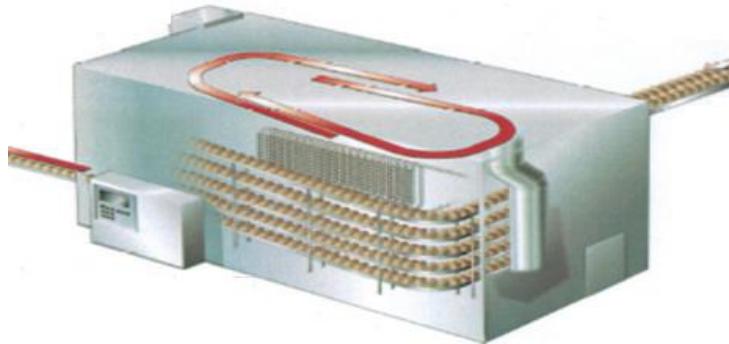


Conveyors



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Enfriador



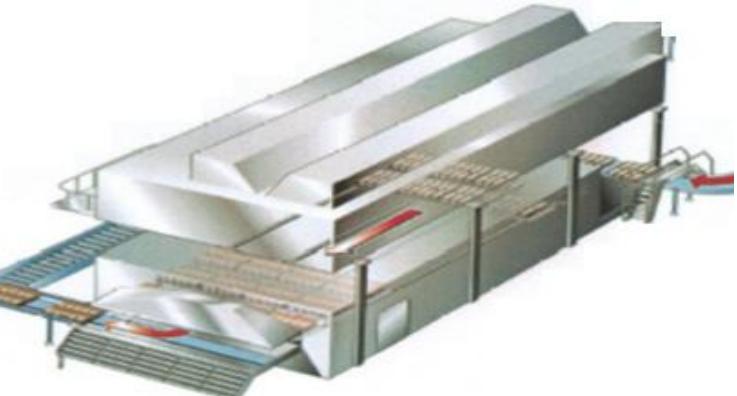
Bombas de Vacío



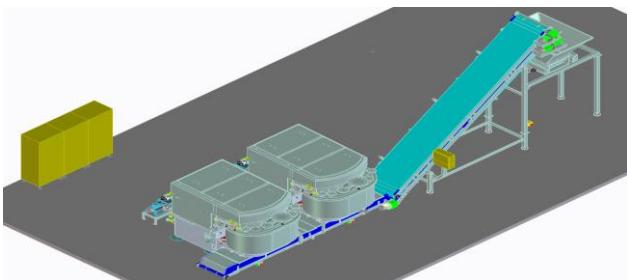
Moldeador



Hornos



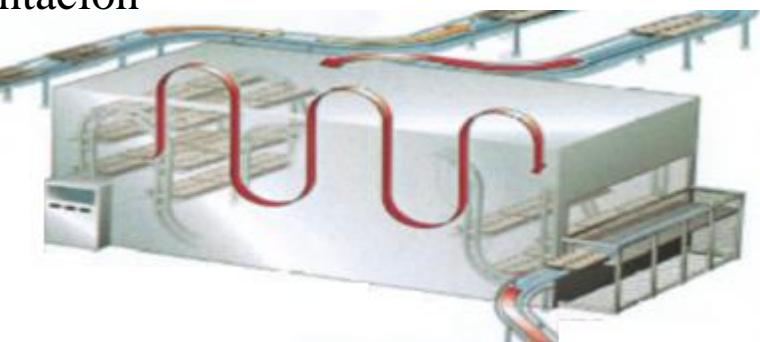
Amasadoras



Conveyors



Fermentación



Consumo Agua



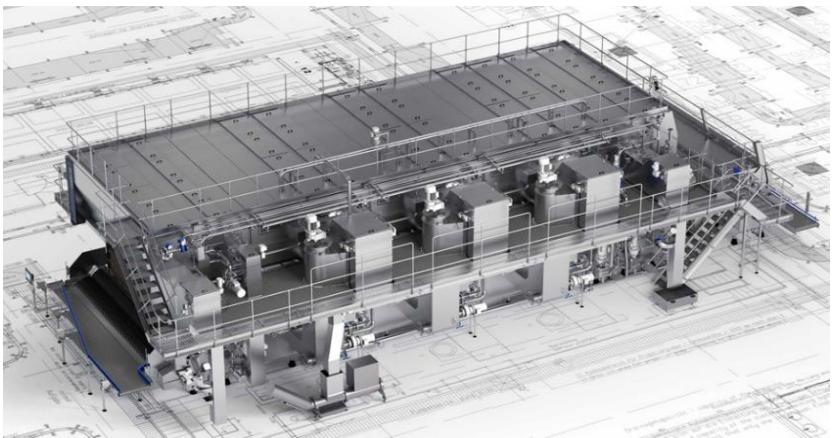
Consumo Aire



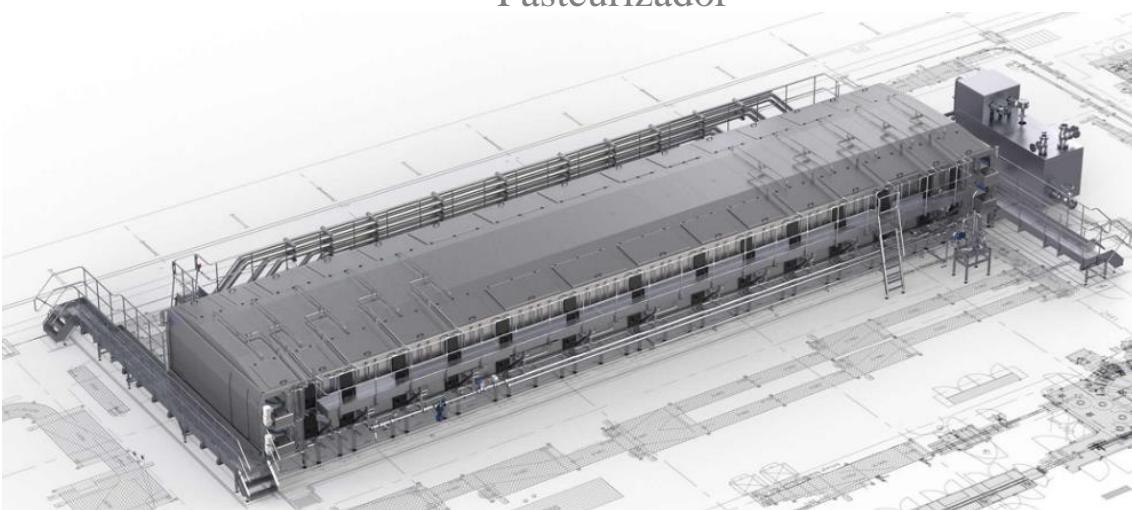
Consumo Eléctrico



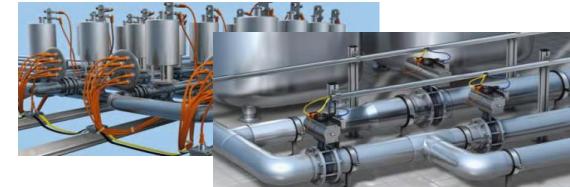
Lavadora



Pasteurizador



Valvulas



Llenadora



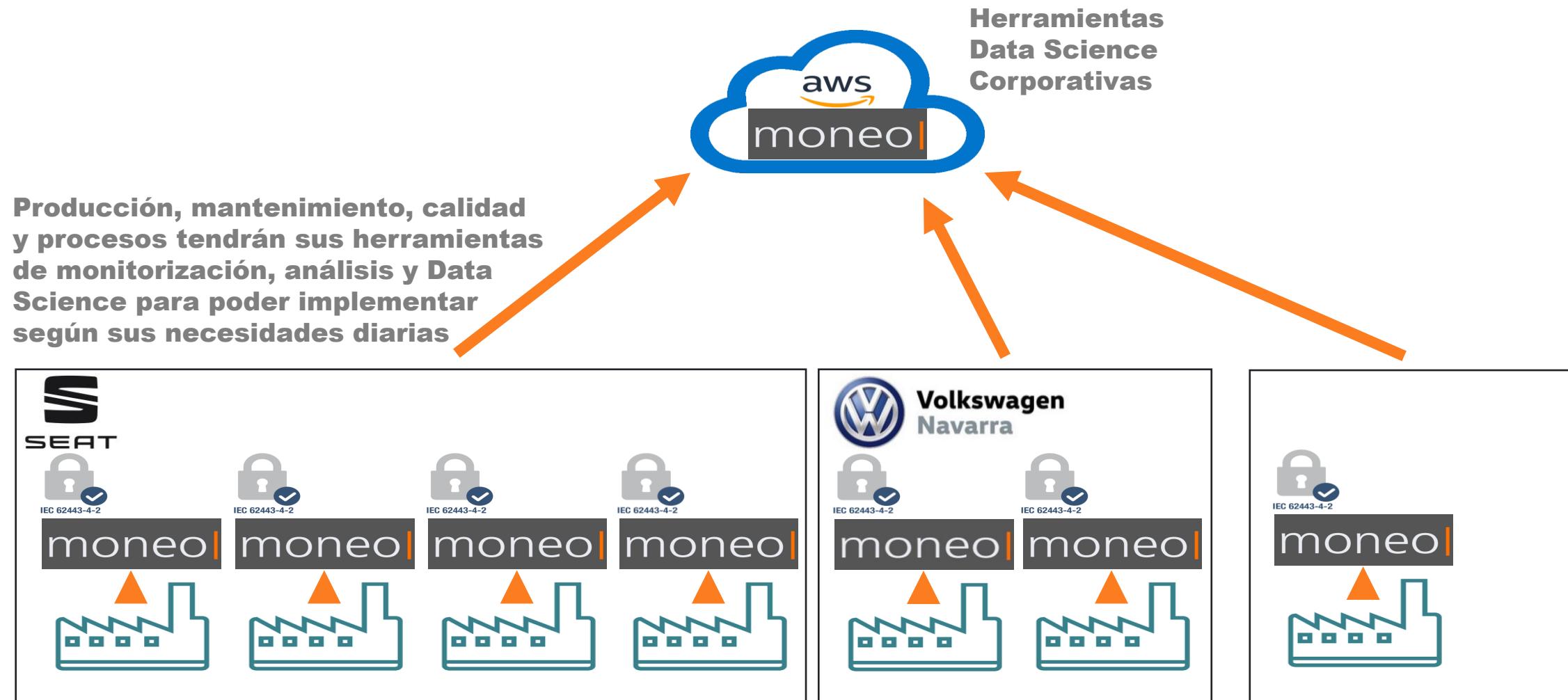
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Moneo como Proveedor Seguro de Información



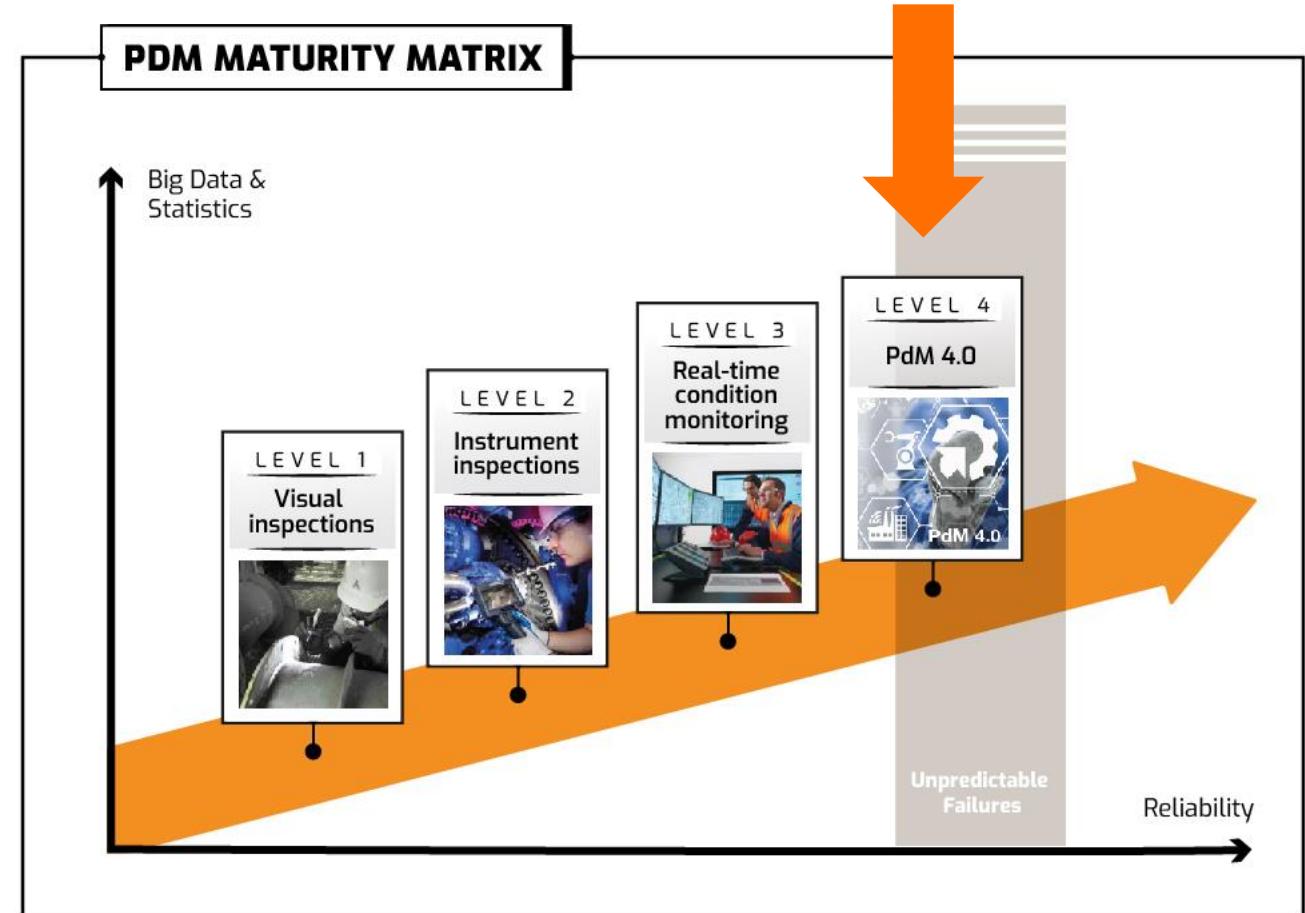
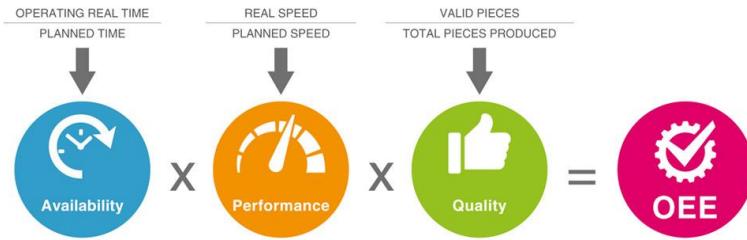
Moneo → Digitaliza de tu Empresa

Moneo como Proveedor Seguro de Información



Moneo → Digitaliza de tu Empresa

PdM4.0



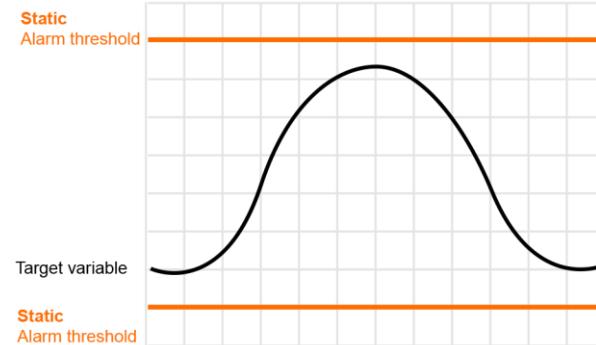
Moneo – Data Science Toolbox

**¿QUÉ DIRÍAS SI TE DIJERA QUE CON
UN SIMPLE WIZARD VAS A SER CAPAZ
DE GENERAR TUS ALGORITMOS DE
INTELIGENCIA ARTIFICIAL EN MENOS
DE 5 MINUTOS?**

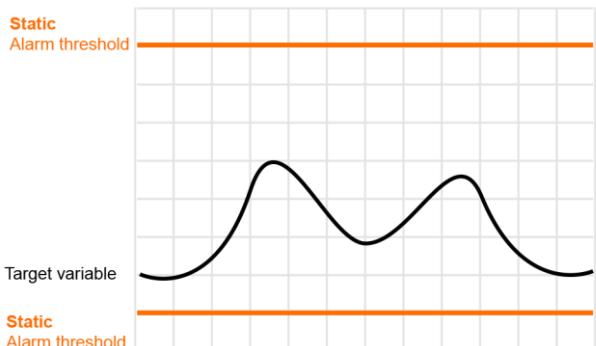
Monitorización Inteligente

Static process monitoring

Normal condition



Anomaly condition

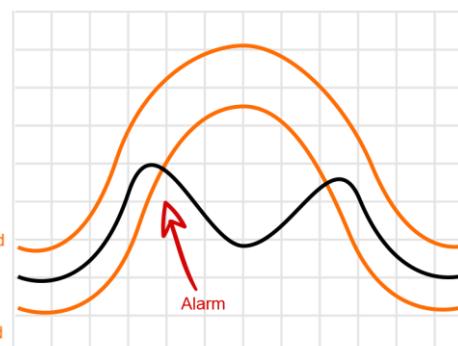


Dynamic process monitoring

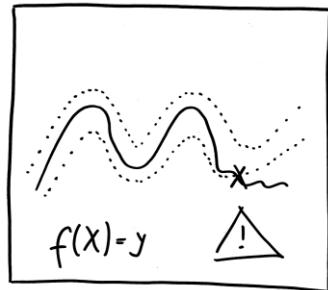
Dynamic alarm threshold
Target variable
Dynamic alarm threshold



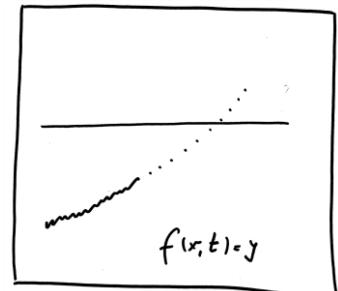
Dynamic alarm threshold
Target variable
Dynamic alarm threshold



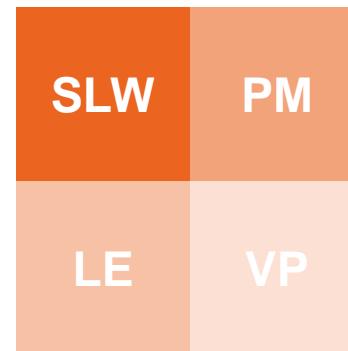
PdM4.0



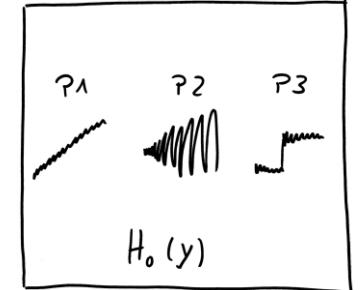
SmartLimitWatcher
Intelligent process monitoring



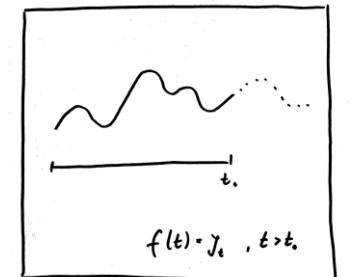
LifetimeEstimator
Predictions for smart maintenance



PatternMonitor
Automated pattern detection



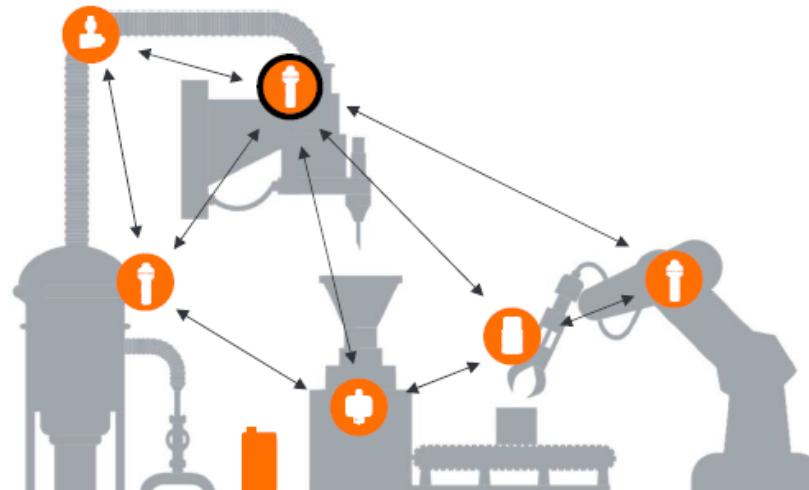
ValuePredictor
Timeseries forecasting



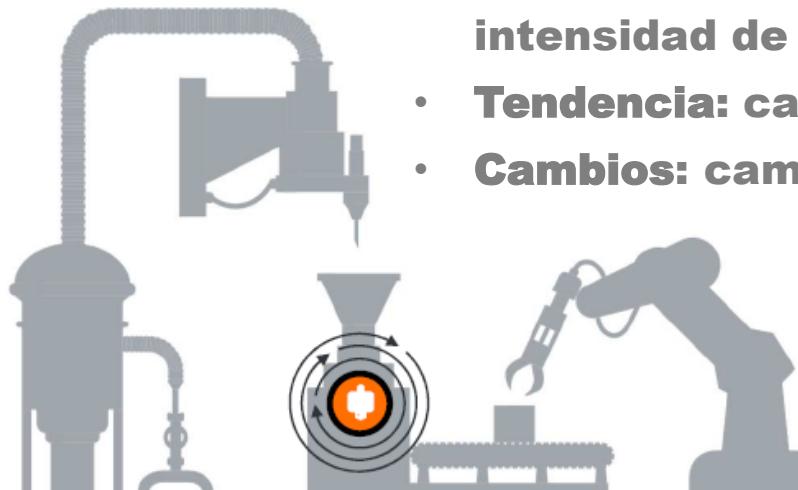
... More features in planning

Diferencias entre SLW y PAM

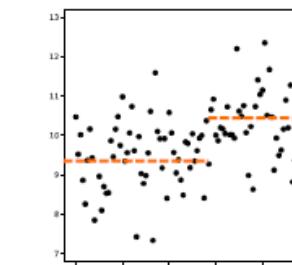
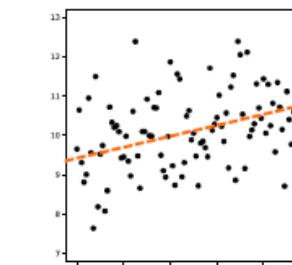
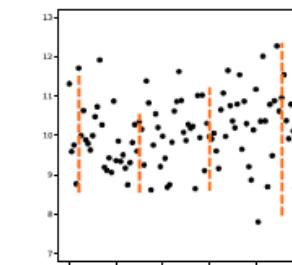
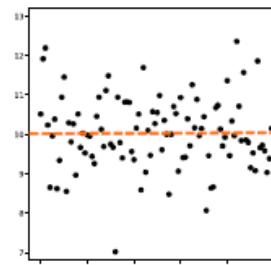
- Usando métodos estadísticos, PAM chequea cambios de la variable crítica del proceso con uno de los siguientes patrones



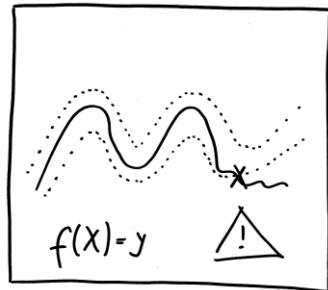
SmartLimitWatcher



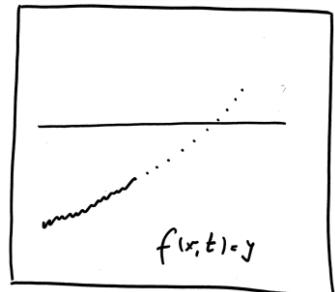
PatternMonitor



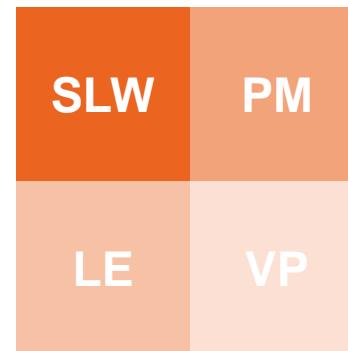
PdM4.0



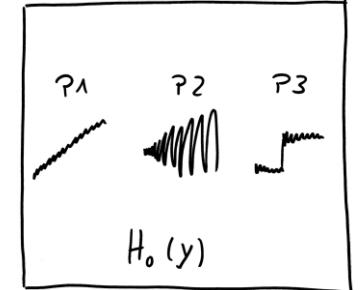
SmartLimitWatcher
Intelligent process monitoring



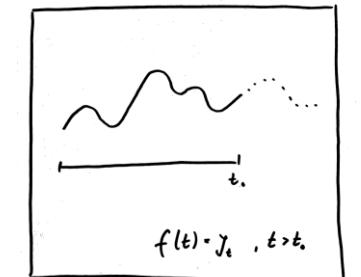
LifetimeEstimator
Predictions for smart maintenance



PatternMonitor
Automated pattern detection



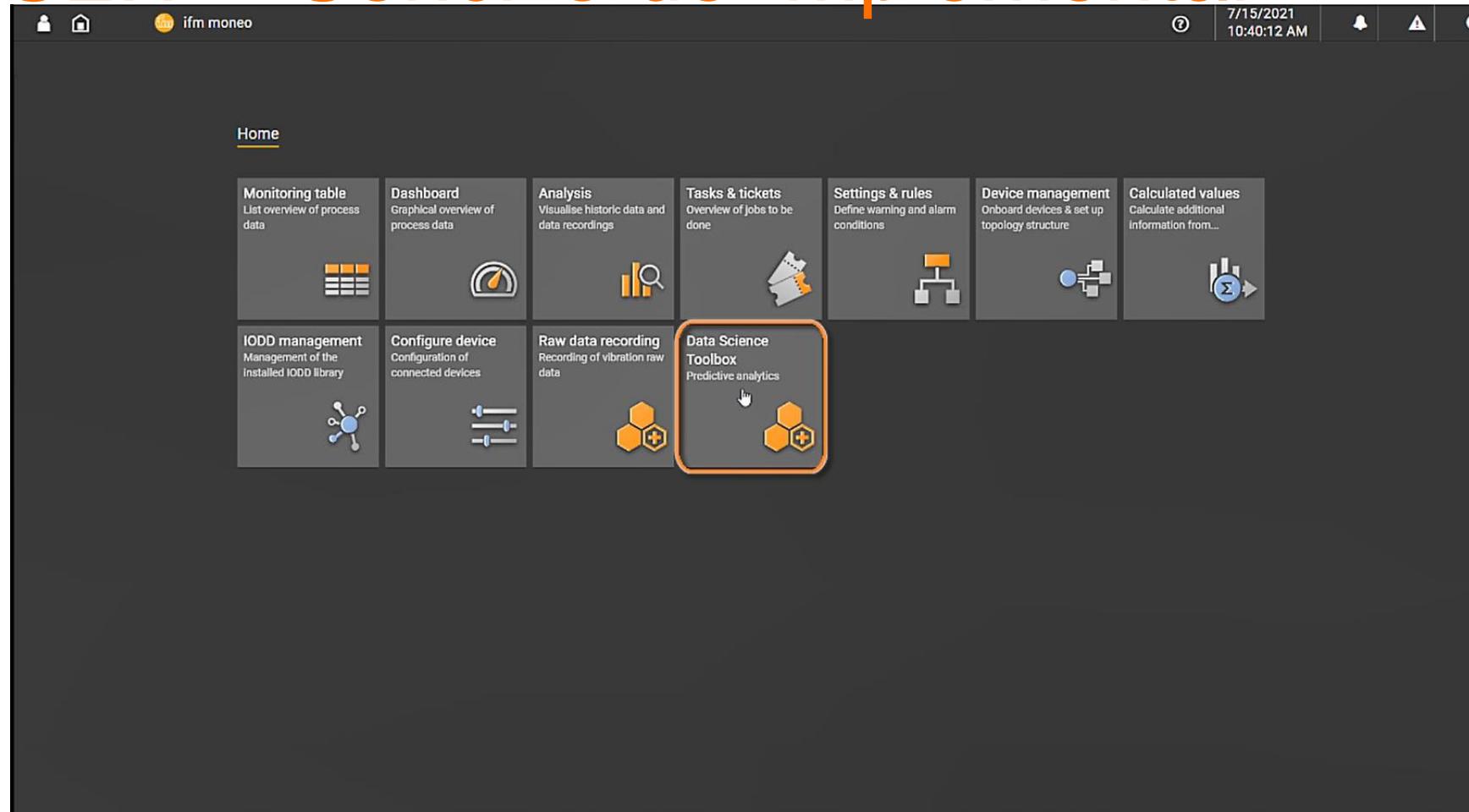
ValuePredictor
Timeseries forecasting



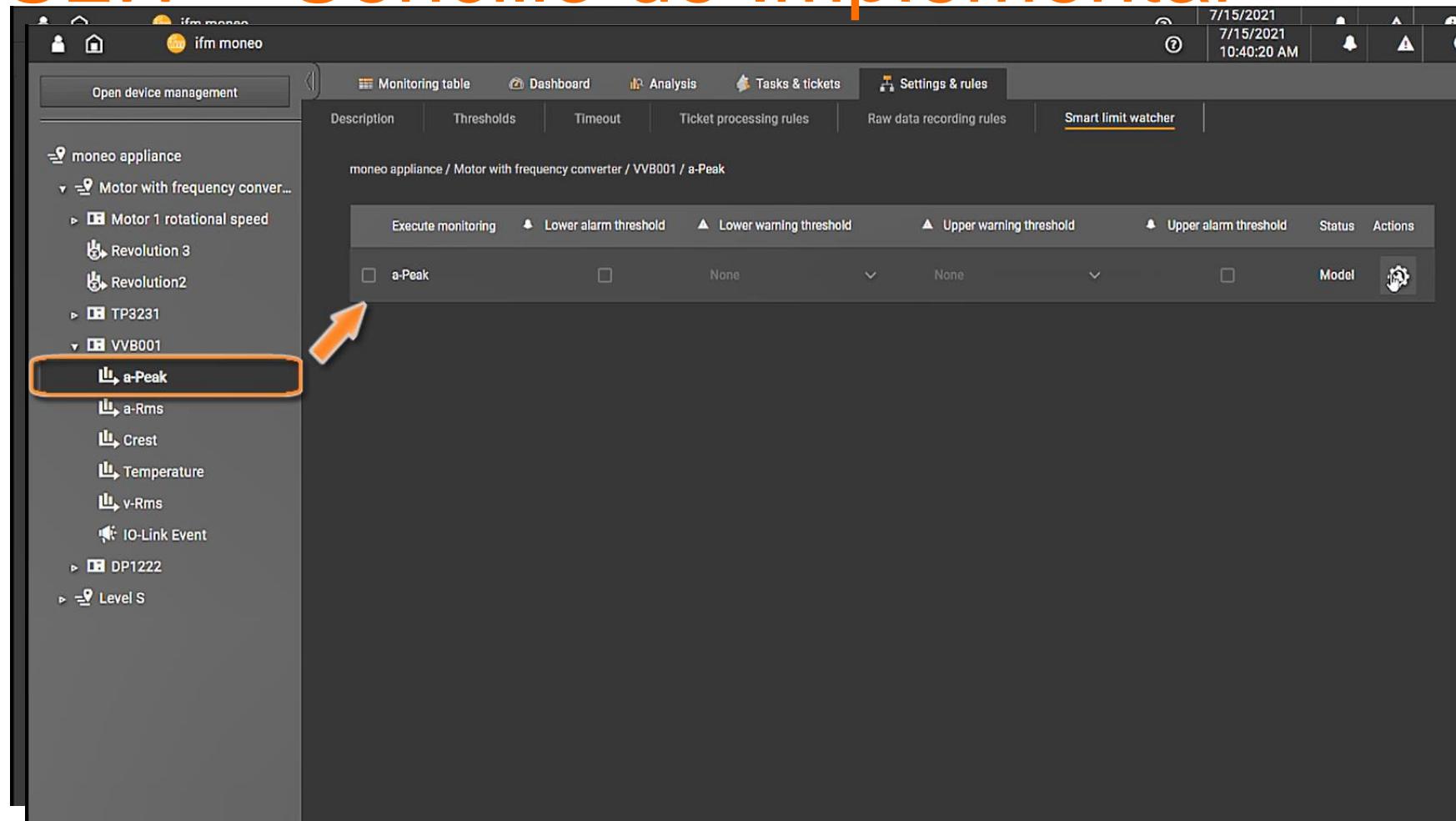
... More features in planning

Moneo – Data Science Toolbox

SLW – Sencillo de Implementar



SLW – Sencillo de Implementar



SLW – Sencillo de Implementar

The screenshot shows the Moneo Data Science Toolbox interface with the SLW (SmartLimitWatcher) configuration process. The interface is divided into several sections:

- Left sidebar:** Lists available data sources under "moneo appliance".
 - Motor with frequency converter
 - Motor 1 rotational speed
 - Revolution 3
 - Revolution2
 - TP3231
 - VVB001
 - a-Peak
 - a-Rms
 - Crest
 - Temperature
 - v-Rms
 - IO-Link Event
 - DP1222
 - Level S
- Configuration steps:** A vertical stack of five steps:
 - Target variable (selected, highlighted in blue)
 - Support variables
 - Calculation
 - Result
 - Apply
- Target variable section:**

The variable you want to set for the SmartLimitWatcher must be selected here. To do this, drag and drop the datasource into the field provided. Just one target variable can be selected here. The diagram shows the selected date range of the historic data which will be used to calculate the model. This period can be adjusted using the date range picker above the diagram.

Target variable: moneo appliance / Motor with frequency converter / VVB001 / a-Peak
- Time period section:**

05.07.2021 –

THU JUL 08 2021

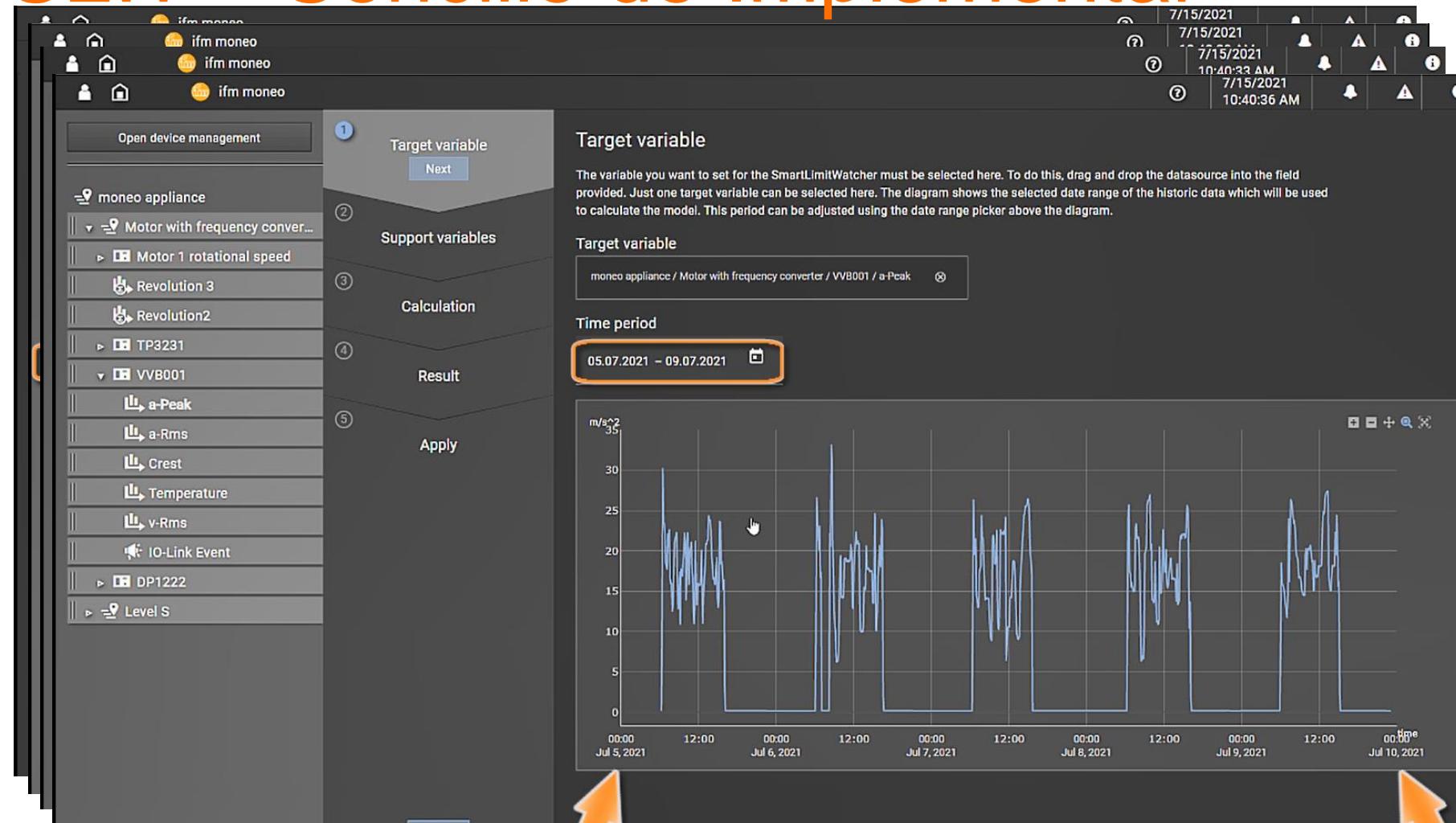
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

0 Jul 9 2021 Jul 10

Jul 11 Jul 12 Jul 13 Jul 14 Jul 15 time

A line graph shows a sharp peak on July 12, with a smaller peak on July 13.

SLW – Sencillo de Implementar



SLW – Sencillo de Implementar

Support variables

To calculate the model, at least one data source must be selected. These should be related to the target variable. For example, the relation could be the datasources located in the same application. To select a support variable, drag the datasource from the navigator into the table. Afterwards use the checkbox to include the datasource in the calculation. The Indicator shows you whether the datasource is suitable for the calculation.

Target variable: moneo appliance / Motor with frequency converter / VVB001 / a-Peak

Indicator	Path	Completeness	Actions
Ok	moneo appliance / Motor with frequency converter / DP1222 / Voltage	100.00 %	!
Ok	moneo appliance / Motor with frequency converter / VVB001 / a-Rms	100.00 %	!
Ok	moneo appliance / Motor with frequency converter / VVB001 / v-Rms	100.00 %	!
Ok	moneo appliance / Motor with frequency converter / TP3231 / Temperature	100.00 %	!
Uncertain	moneo appliance / Motor with frequency converter / Motor 1 rotational speed / Revolution	40.02 %	!

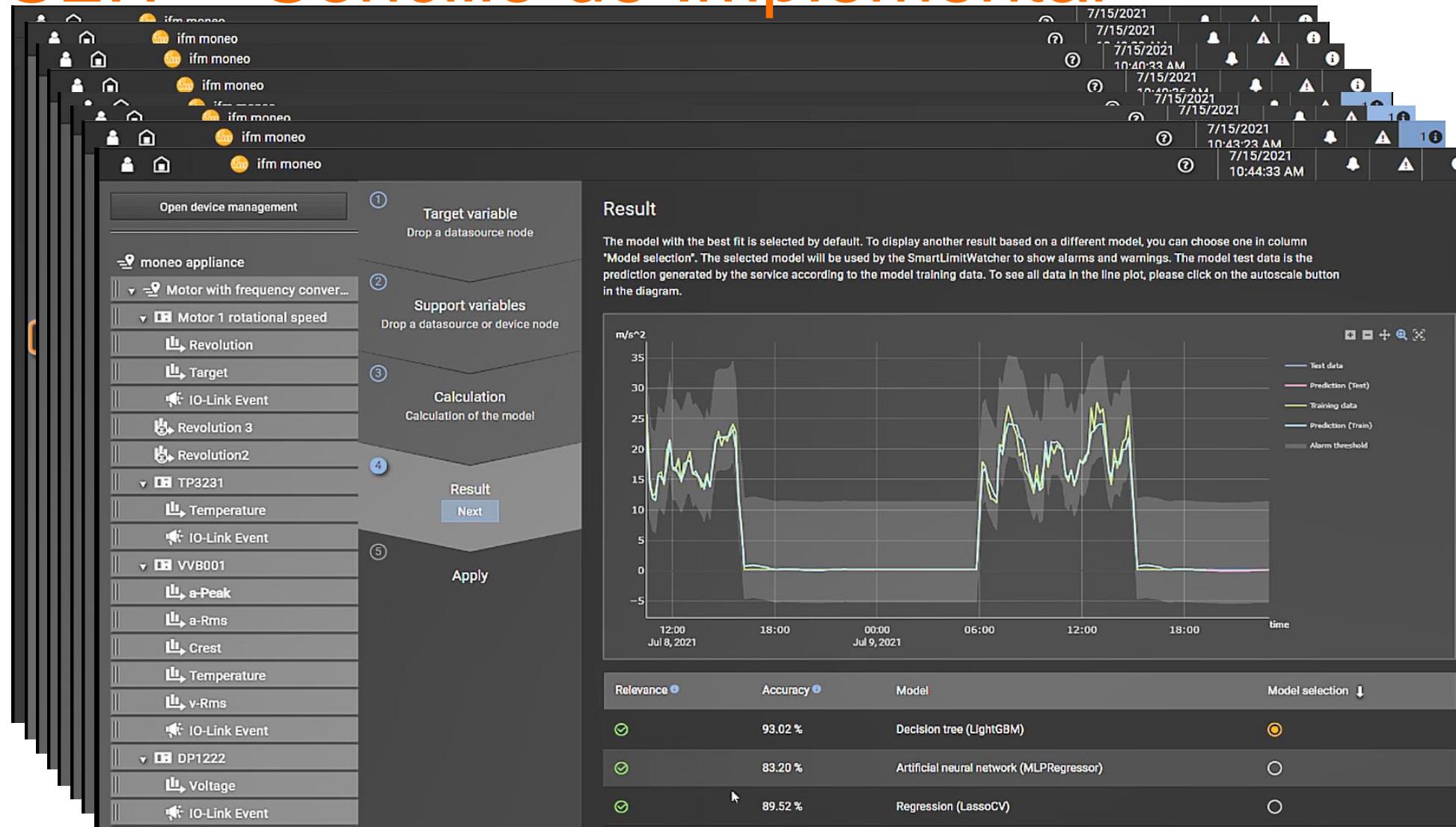
SLW – Sencillo de Implementar

The screenshot displays the Moneo Data Science Toolbox interface, specifically the SLW (Simple to Implement) section. The interface is a wizard-based tool for creating data models. The steps are as follows:

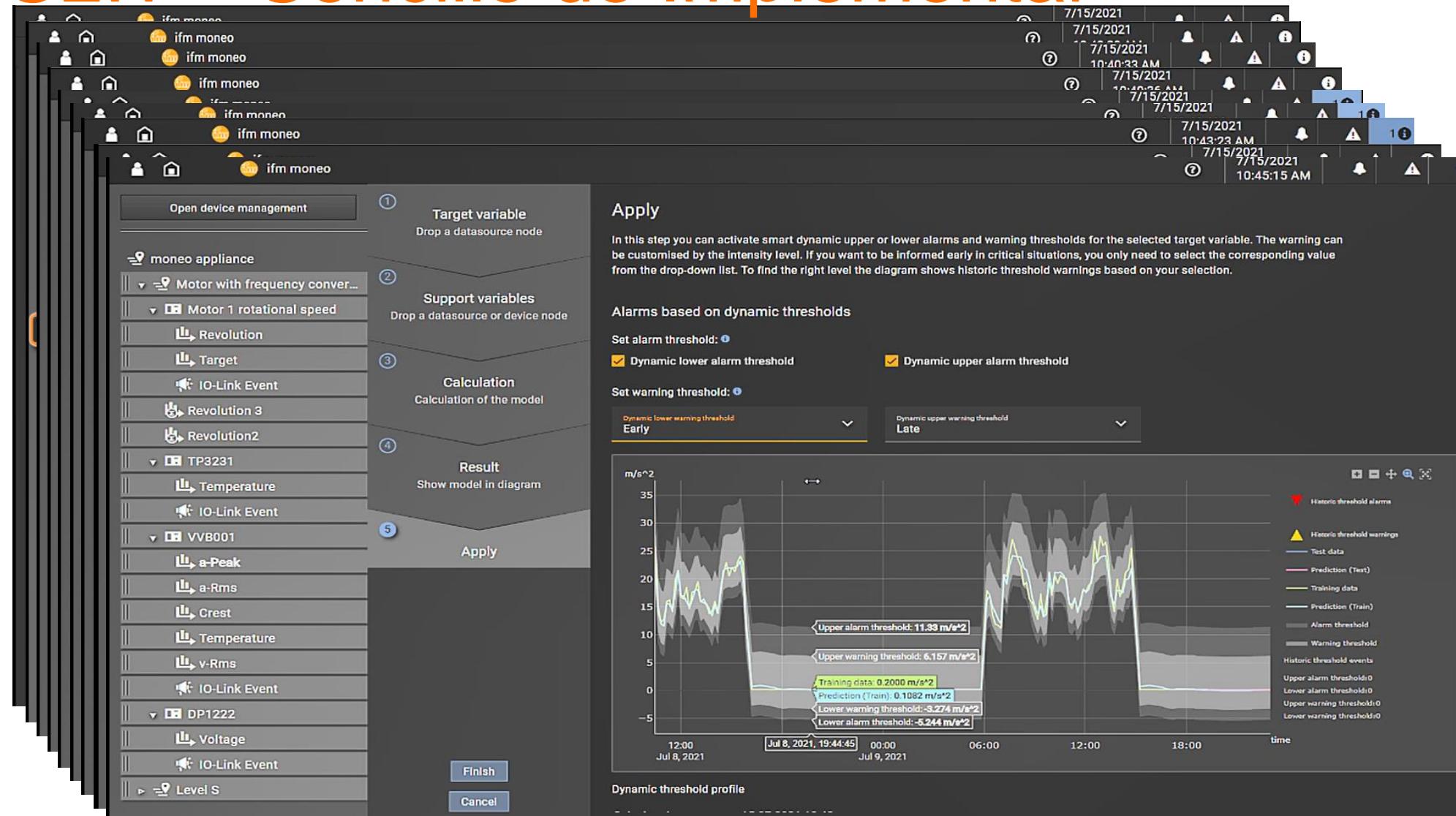
- Target variable:** Drop a datasource node. The target variable is set to "moneo appliance / Motor with frequency converter / VVB001 / a-Peak".
- Support variables:** A list of available data sources is shown, including "moneo appliance / Motor with frequency converter / DP1222 / Voltage", "moneo appliance / Motor with frequency converter / VVB001 / a-Rms", "moneo appliance / Motor with frequency converter / VVB001 / v-Rms", "moneo appliance / Motor with frequency converter / TP3231 / Temperature", "moneo appliance / Motor with frequency converter / Revolution2", and "moneo appliance / Motor with frequency converter / Motor 1 rotational speed / Revolution".
- Calculation:** The "Minimise wizard" is active, showing the calculation steps.
- Result:** The result table shows the calculation status for each variable. The "moneo appliance / Motor with frequency converter / Revolution2" variable is marked as "Ok" with an indicator of 86.12%. The "moneo appliance / Motor with frequency converter / Motor 1 rotational speed / Revolution" variable is marked as "Uncertain" with an indicator of 40.02%.
- Apply:** The final step of the wizard.

Notification Center: A floating notification box in the top right corner indicates that the import of "datasource a-Peak" is completed at 7/15/2021 10:41:12 AM.

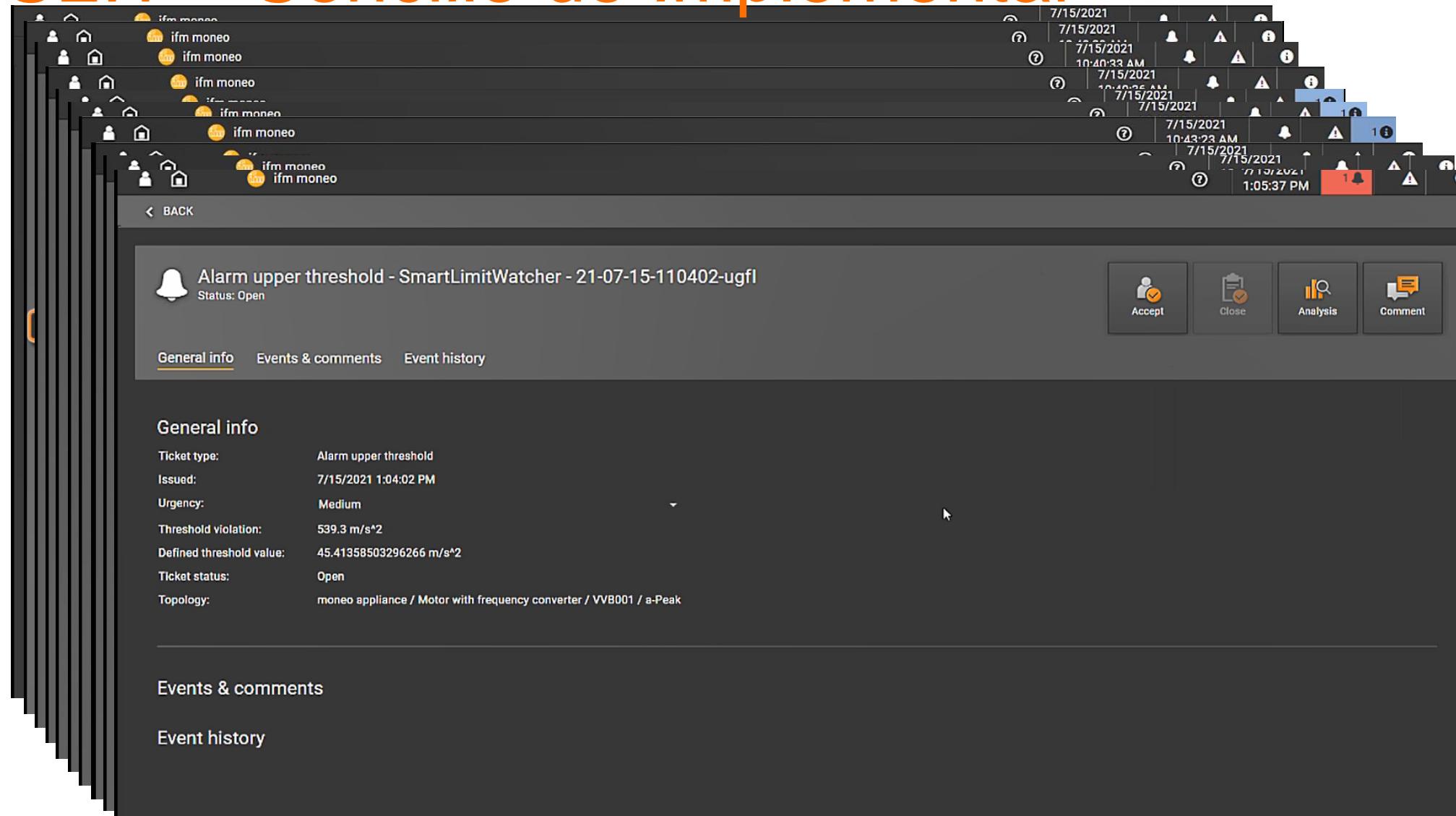
SLW – Sencillo de Implementar



SLW – Sencillo de Implementar



SLW – Sencillo de Implementar

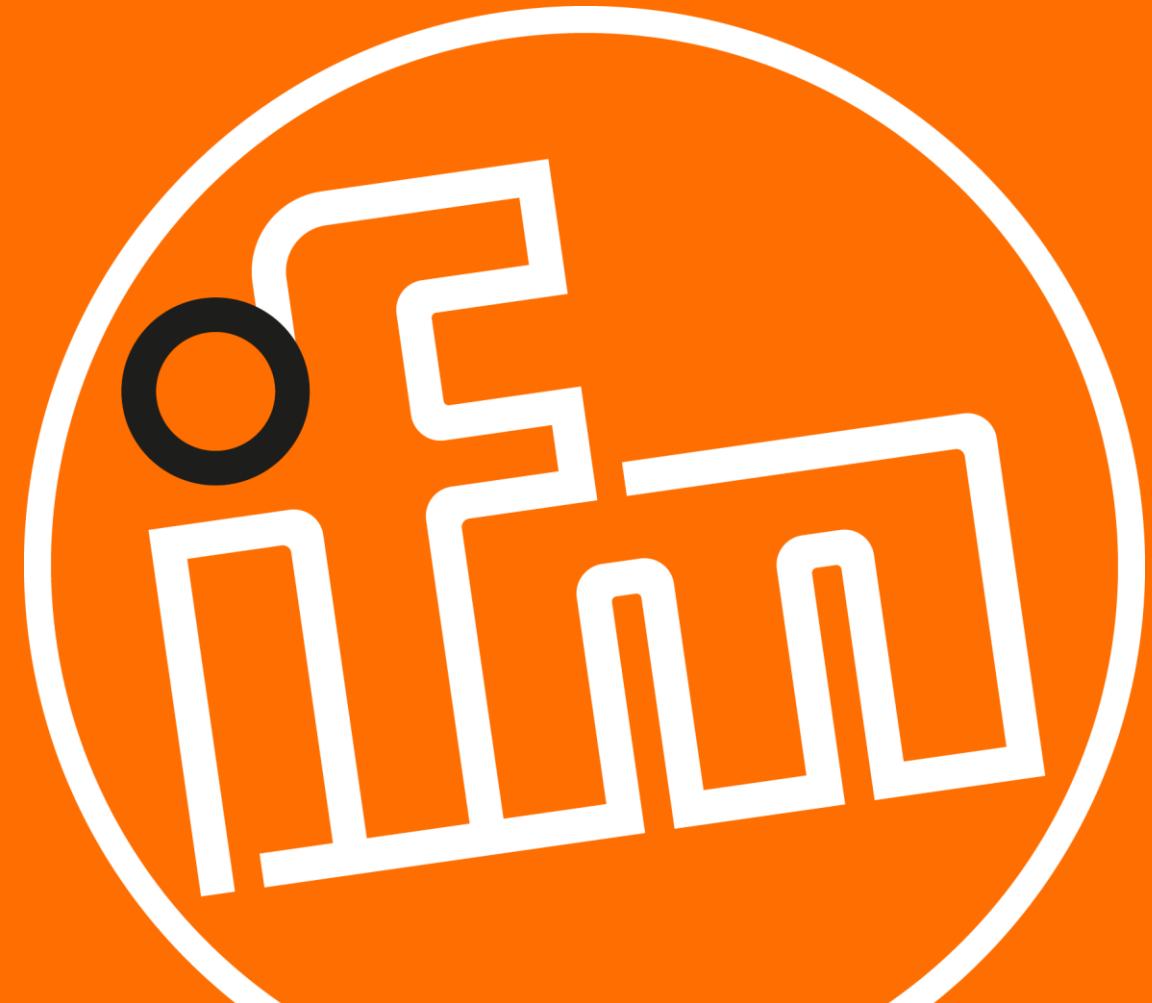


The screenshot displays the Moneo Data Science Toolbox interface. At the top, a dark header bar shows a list of monitoring nodes, each with a yellow icon and the text 'ifm moneo'. Below the header is a timeline of events for July 15, 2021, with various icons representing different types of events. The main content area is a ticket detail page for an 'Alarm upper threshold' ticket. The ticket header includes a bell icon, the title 'Alarm upper threshold - SmartLimitWatcher - 21-07-15-110402-ugfl', and a 'Status: Open'. Below the header are four buttons: 'Accept', 'Close', 'Analysis', and 'Comment'. The 'General info' section contains the following details:

Ticket type:	Alarm upper threshold
Issued:	7/15/2021 1:04:02 PM
Urgency:	Medium
Threshold violation:	539.3 m/s ²
Defined threshold value:	45.41358503296266 m/s ²
Ticket status:	Open
Topology:	moneo appliance / Motor with frequency converter / VVB001 / a-Peak

Below the general info are three tabs: 'Events & comments', 'Event history', and 'General info' (which is currently selected). The 'Events & comments' tab is empty, and the 'Event history' tab is also empty.

Gracias!



Iker Gomez Valencia