



A time machine for the digital twin in process simulation

April 8th, 2021

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Who are we?

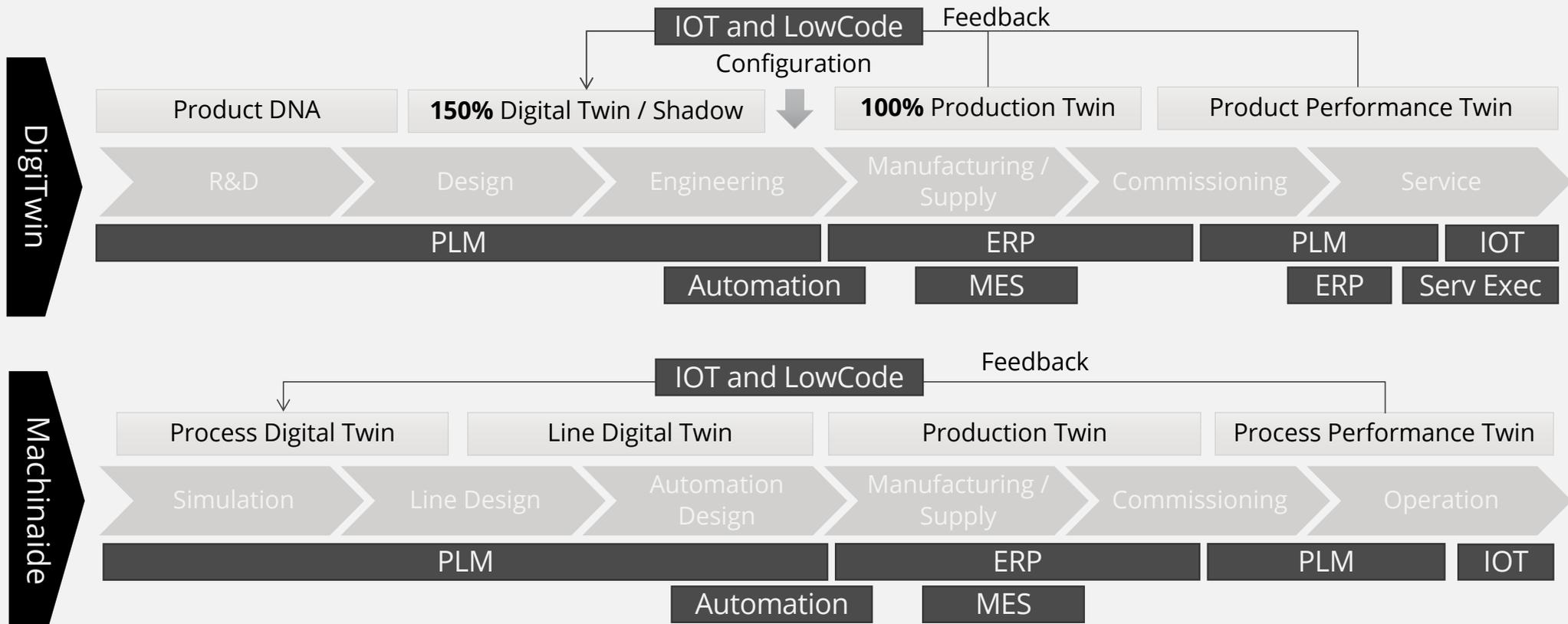
- Ideal GRP
 - Digital Solutions powerhouse covering the Nordic Countries and Baltic region
 - Through our solutions, we can realize a Digital Twin for the product, production, and performance which allows design, analysis and simulation of products and production processes in the digital environment
 - Models are enriched with performance data from the Digital Performance Twin to make a complete Closed Loop PLM environment
- Machinaide Team
 - Markus Ranta - CTO
 - Pasi Kallankari – Project management
 - Harri Taskinen - Architect
 - Niclas Busck – Manufacturing expert
 - Fernando Garcia – Manufacturing expert



What?

- The lifecycle of a product consists of a multitude of different digital twins from design to manufacturing, service and operation
- Digital Twins can be utilized for improving the process / product in different lifecycle aspects including performance, optimization, simulation and analysis of real data from IoT
- Connecting information from IoT and multiple other Digital Twins to a Process Digital Twin under one application is what we are after
- The result should be easy to use and usable with any device

From Product DNA to Process Performance Twin



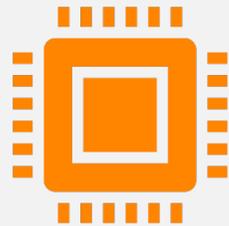
Why?

- Our ideation is based on specific needs and adding value
- These include following use cases:
 - As a manufacturing process supervisor, I want to get an overall view about the process performance to be able to improve the process
 - As an OEM I would like to get an HMI to display how my products are contributing to customer process to improve customer productivity
 - As a manufacturing process supervisor, I want to be able to replay a video of the process, I want to have the video viewed in sync with the process data signals for better understanding of the process
 - As an OEM I want to understand what kinds of customer process improvements can be provided to the customer based on the measured data to improve customer value
 - As a Service Engineer, I want to be able to be able to access the service history and usage as well as current BOM of my product from anywhere at any time to facilitate preventative repair actions

How?

- Create a simulation in Plant simulation of the factory > Process Digital Twin
- Smart Factory Application created using LowCode
 - Connect data of multiple digital twins into one place
 - Utilize data from multiple sources
 - IoT data from MindSphere
 - PLM data from Teamcenter
 - Allow running tool from different devices
 - LowCode was selected as it gives ready interfaces to many applications and development / maintenance is fast and easy

Smart Factory Application



Availability

Run simulations from any device, anywhere in the world

Server running on powerful PC; enables, for example, quick simulations directly from your phone

Multiple users can easily perform simulations with (almost) zero training



Benefits

Replay production to visualize what have happened

Customize settings and KPI's measured so simulations made by users can be easily compared

What next?

 Using real-time data, and not only history

 Accelerated learning > what if?

 Predictive maintenance

 XR

 Better collision detection using Process Simulate

 Embedded Visualization in Smart Factory App

Demo Video

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Tecnomatix Plant Simulation

Plant Simulation Status

Connect with Plant Simulation

Set Simulation Speed(%) 80

Sim start time 2020/01/15 13:27:00.000

Sim end time 2020/01/15 13:40:40.000

	Bridge	Trolley	Hoist
Basic consumption [A]	100.00	100.00	100.00
Drive consumption [A]	150.00	150.00	150.00
Speed limit [m/s]	0.25	0.20	0.10

Obstacle Robot_KUKA X-pos 20.50 Y-pos 1.00

USER WORKFLOW

1. Connect to Plant Simulation
2. Enter time to simulate & simulation attributes
3. Set Plant Simulation settings
4. Watch simulation / Wait for it to end
5. Open report
6. Analyze your simulation
7. Repeat

Thank You
Questions?

Solution
Partner
Smart Expert
Digital Industries
Software

SIEMENS

Gold
Microsoft Partner



9.4.2021



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