

SIMUL 2021

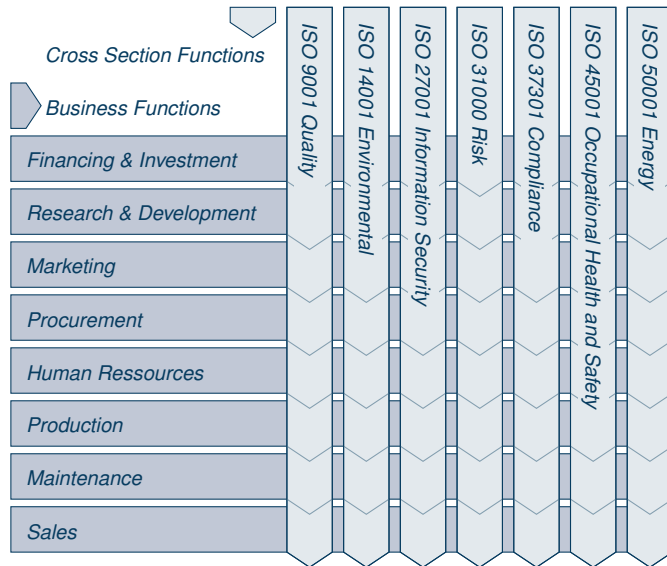
Requirements for Highly Integrated Management Systems

Simulation Expands Past-oriented Documentation to Future-oriented Optimization

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A network of functions



(based on Neumann (2017))

Integrated Management Systems

IMS serve two purposes

- 1 To facilitate process documentation
w.r.t. comprehension, optimization, implementation
- 2 To be used for certification
e.g. ISO 9001 quality management systems

However, the described processes are **past-oriented**
... and so are Integrated Management Systems

The neglected chances of simulation

Processes can be used to simulate change and its possible consequences

The majority of companies uses some sort of management system
... and, thus, documents processes

Then, why isn't this process knowledge exploited more, simulationwise?

We see two possible causes:

A lack of tools

A lack of knowledge

The absence of simulation

Lack of tools (cf. Foos (2020))

45 criteria for IMS software established
9 software tools checked

2 tools support all criteria

Only rudimentary simulation capabilities

Nonetheless, the importance of future-orientation seems to be literature's consensus - **so, how to solve this discrepancy?**

Lack of knowledge

Module descriptions
of 96 modules in 46 study programs
at 34 German UAS checked
35 modules deemed relevant

Only 3 mention *simulation* in their manuals

Highly Integrated Management Systems

A Highly Integrated Management System combines a holistic documentation with multi-perspective simulations across different management systems.



<i>Model Requirements</i>		<i>Planning Scenario Complexity</i>	
<i>Additional Real-Data-Driven Simulation</i>		<i>Digital Twin for Ad Hoc Planning</i>	
<i>Additional Data-Driven Simulation</i>		<i>Integrative Planning</i>	
<i>Additional Instance Simulations</i>		<i>Simple Key Indicator Analysis</i>	
<i>Static Documentation</i>		<i>Visualization of Alternatives</i>	
<i>Fundamental Technologies</i>			
<i>Integrated Data Model of the Model Views</i>	<i>Secured Access to Real Data</i>	<i>Process Mining for Model Generation and Monitoring</i>	<i>Release Workflow to Ensure Model Quality</i>

What are the natural next steps?

Toolwise

Establish an HIMS by

**extension of IMS'
existing simulation capabilities**

or

**extension of simulation tools
by management functionalities**

Knowledgewise

Integrate more deeply the

**opportunities, methods,
limitations, and applications
of simulation in education**

of Business Process Management,
Business Information Systems, and
Integrated Management Systems

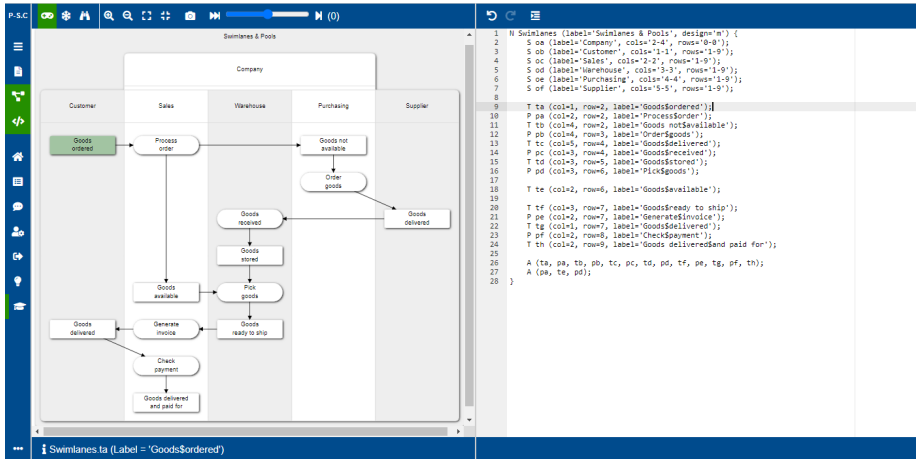
Process-Simulation.Center

A web-based development and simulation environment for Petri nets
on its way to become a Highly Integrated Management System

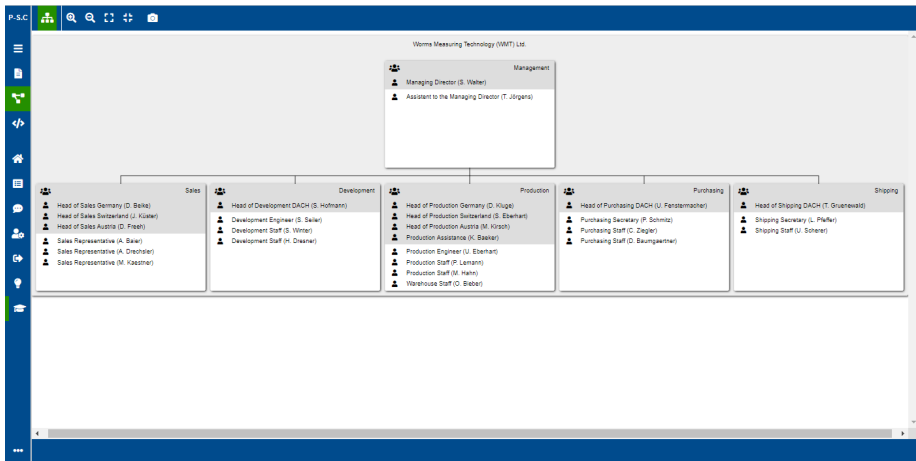
<https://process-simulation.center/index.php?lang=en>

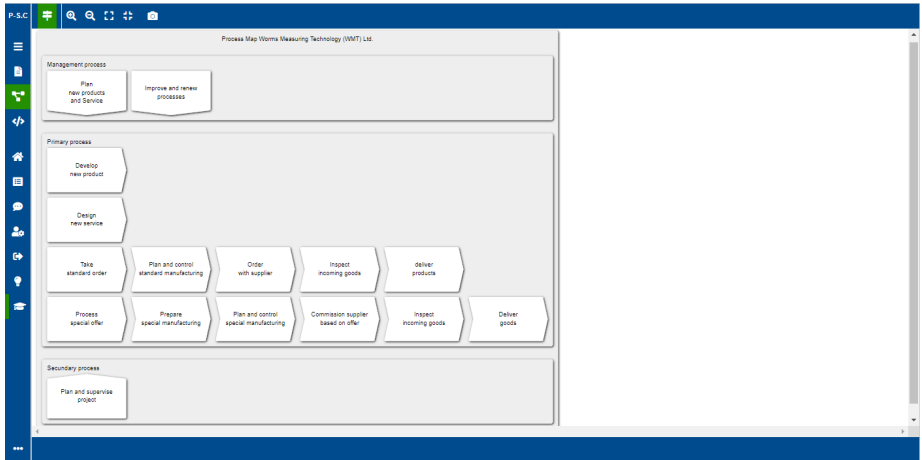


Swimlanes & Pools



Organigrams





Record Sets

The screenshot displays the 'Customer' record set in the Process-Simulation.Center application. The interface includes a top navigation bar with icons for search, zoom, and playback. A central panel shows a table of customer records with columns for CId, CName, and Prio. A search bar is located at the top right of the table. The table contains 10 records, and the status bar at the bottom indicates 'Records 1 to 10 of 48'. The background shows a blurred view of the simulation environment with buttons for 'Customer', 'Machine available', 'Product', and 'Order'.

CId	CName	Prio
1	Kurt A.	1
2	Anna B.	2
3	Otto C.	3
4	Leon A.	1
5	Rudi B.	2
6	Emil C.	3
7	Ilija A.	1
8	Vera B.	2
9	Paul C.	3
10	Carl A.	1

Records 1 to 10 of 48

Feel free to ...

... follow the Group for Applied Process Simulation (GAPS) on the road

<https://www.hs-worms.de/en/gaps/>



... reach out for an exchange on education or implementation!

Foos, J. (2020): *Marktüberblick für Software zum Prozessmanagement*. Diplomarbeit, Hochschule Worms. German, transl. *Market Overview for Process Management Software*.

Neumann, A. (2017): *Integrative Managementsysteme*. Springer Gabler, Berlin, 3. Aufl. German, transl. *Integrative Management Systems*.