

SUBJECT-ORIENTED SUPPLY CHAIN DESIGN AND EXECUTION



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TODAY'S SUPPLY CHAINS



DIGITALIZATION OF SUPPLY CHAINS

- IT impacts today's supply chain design
 - Sensor technology
(location, condition, status)
 - Robotics
(automated un-loading, picking, autonomous driving,...)
 - UI innovation
 - Innovative production technologies
 - Advanced data analysis
 - Connected devices enable global near real-time information and analytics

Source: Kearney, A. T. (2015). Digital supply chains: increasingly critical for competitive edge. *European Excellence in Supply Chain Management*

DIGITALIZATION OF SUPPLY CHAINS

- Challenges of digitalization
 - Supply chain integration
(IT integration across all areas of a company, IT integration with supply chain partners, paperless freight,...)
 - Supply chain automation
(condition monitoring, track and trace, autonomous vehicles)
 - Supply chain analytics
(real-time logistics data analytics for supply chain improvement)
 - Supply chain reconfiguration (platforms for carrier selection and transactions, digital platforms for collaborative freight consolidation and sustainable transport)

Source: Kearney, A. T. (2015). Digital supply chains: increasingly critical for competitive edge. *European Excellence in Supply Chain Management*

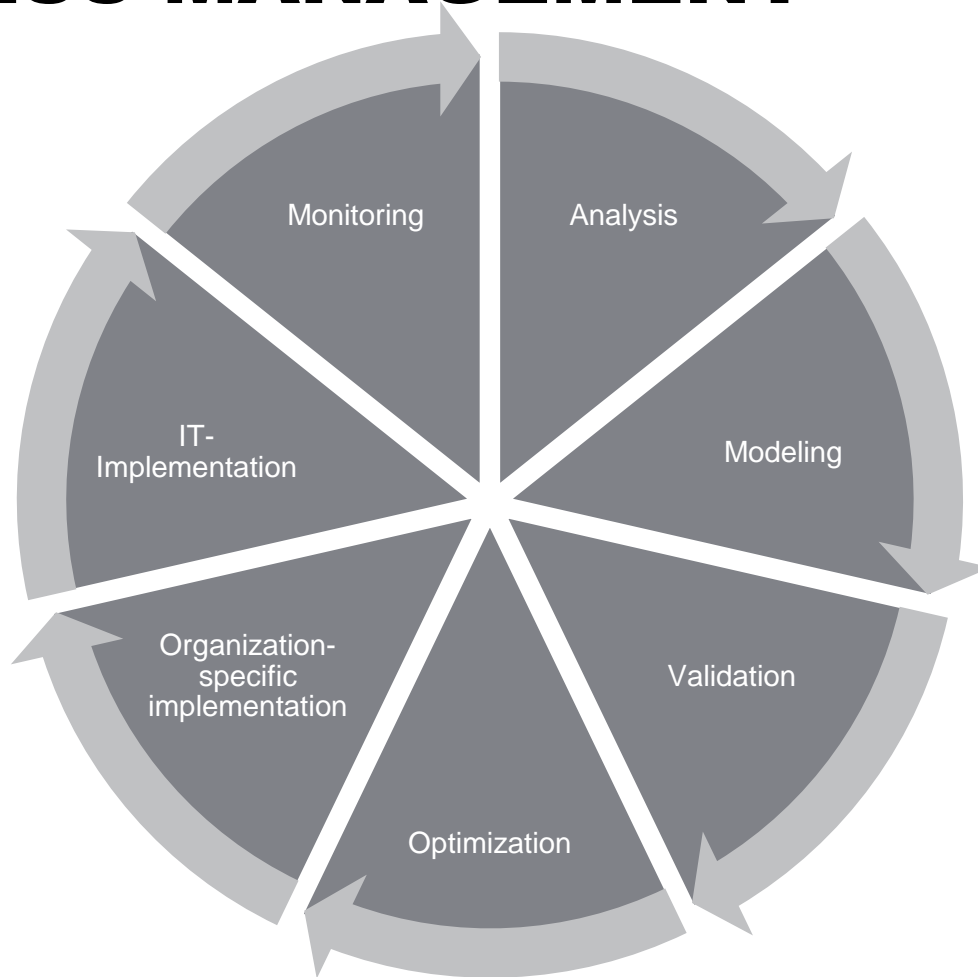
HOW COULD S-BPM HELP WITH RESPECT TO THE DIGITALIZATION OF SUPPLY CHAINS?



WHAT IS S-BPM ABOUT?

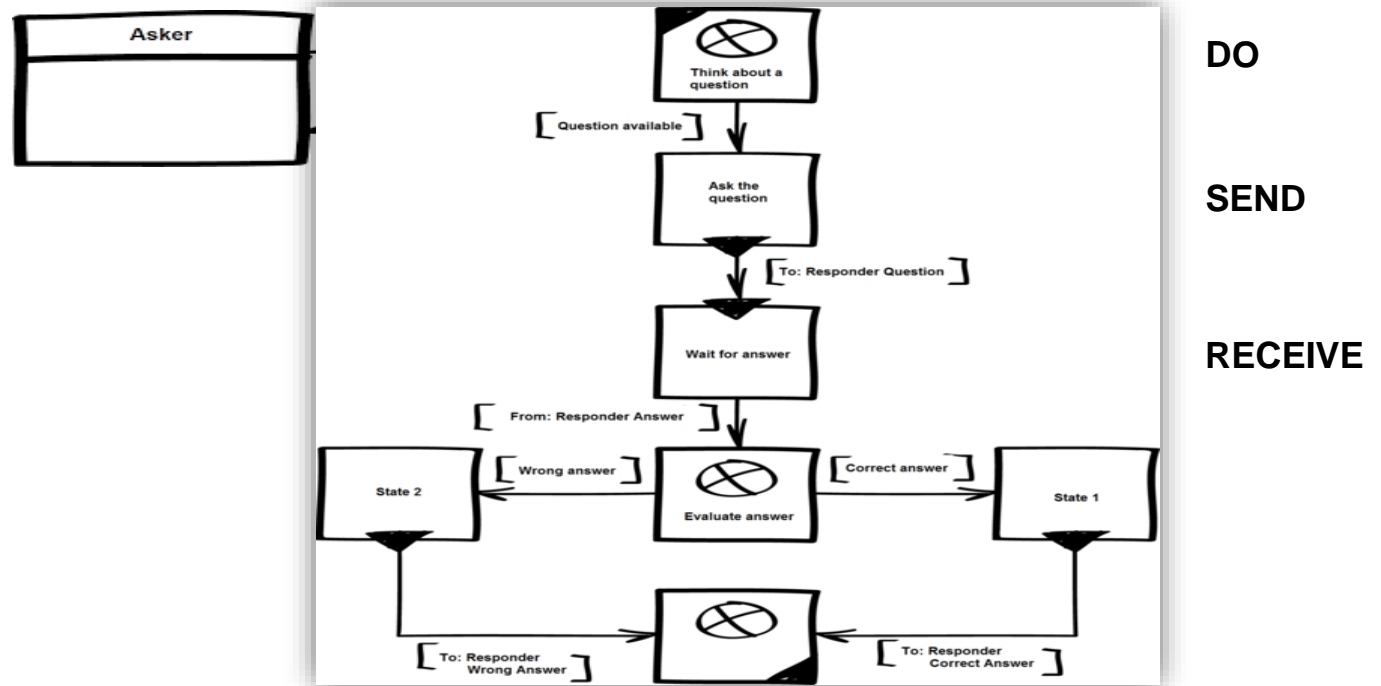


SUBJECT-ORIENTED BUSINESS PROCESS MANAGEMENT



Source: Fleischmann et al. (2014): Subject-Oriented Business Process Management. Springer Publishing Company, Incorporated.

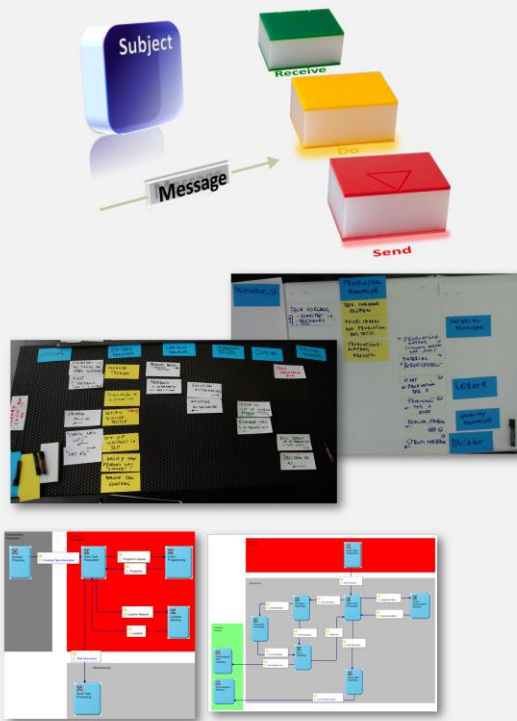
SUBJECT-ORIENTED PROCESS MODELING



Quelle: https://en.wikipedia.org/wiki/Subject-oriented_business_process_management

GENERATING EXECUTABLE MODELS INTERCONNECTED WITH EXISTING IT-LANDSCAPE

Subject-Oriented Process Modeling

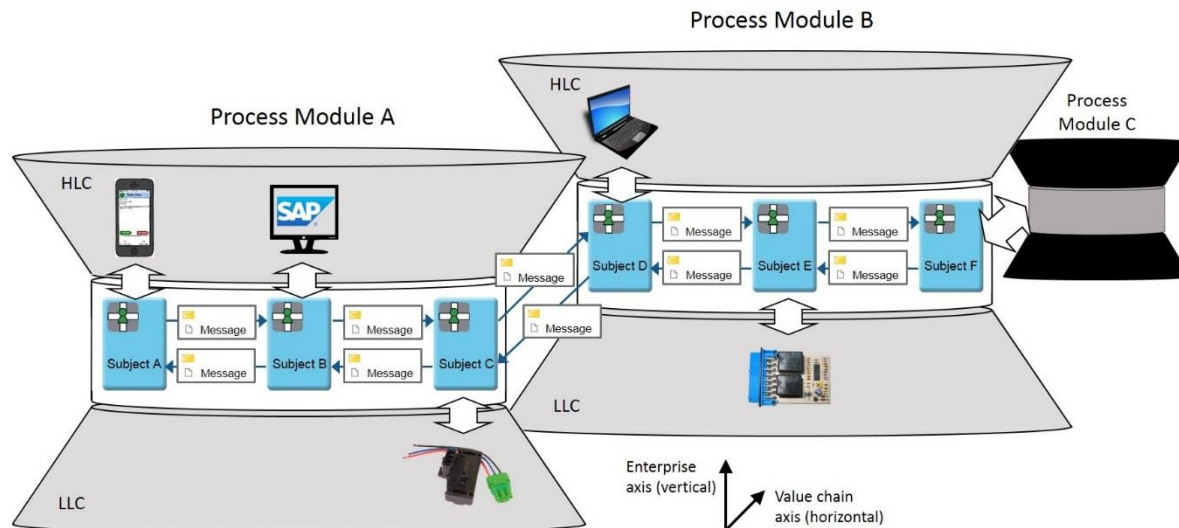


Subject-Oriented Process Execution



SUBJECT-ORIENTATION IN THE PRODUCTION INDUSTRY

- S-BPM to support communication across different control levels
- Support of Industrial Standards such as OPC UA, B2MML, IEC 61131-3 to interconnect different actors (from sensor to human)



Source: Neubauer, M., & Stary, C. (2017). *S-BPM in the Production Industry*. Springer International Publishing.

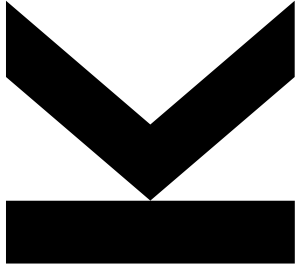
HOW COULD S-BPM HELP WITH RESPECT TO THE DIGITALIZATION OF SUPPLY CHAINS?



PROCESS DIGITALIZATION

- Subject-orientation provides a generic modeling approach ranging from process specification to execution
- Subject-orientation supports modeling different organizational control levels as well as mutual communication.
- Subject-orientation fosters
 - integration of domain experts in process (re-)design and
 - continuous communication flow among different organizational control layers (machine-to-human, human-to-machine, machine-to-machine, human-to-human)
- Subject-orientation supports
 - Digital interconnectivity
 - Operative interconnectivity

HOW DO S-BPM AND SUSTAINABLE SUPPLY CHAINS FIT TOGETHER?

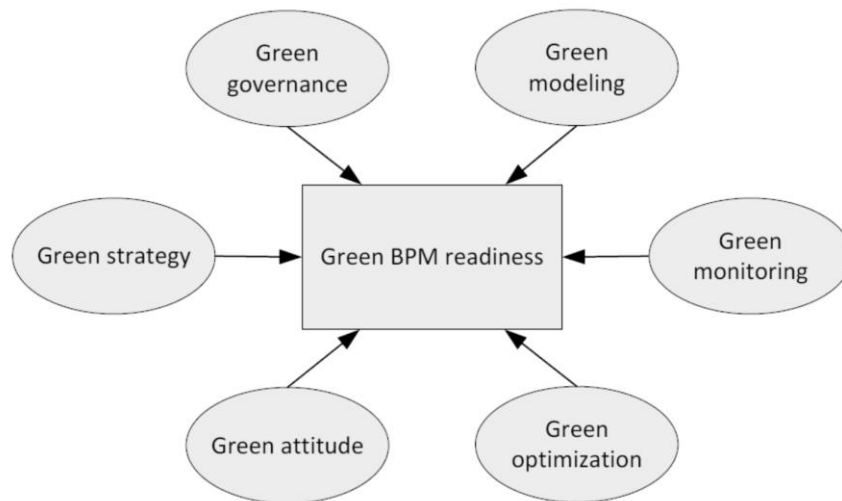


RELATED WORK

- Sustainability has not explicitly been addressed in the S-BPM related literature so far
- Some publications in the superordinate field of BPM review sustainability in business process management and IS research, e.g.
 - Opitz N., Krüp H., Kolbe L.M. (2014): Environmentally Sustainable Business Process Management – Developing a Green Business Process Management Readiness Model. PAICS 2014 Proceedings.
 - Stolze C., Semmler G., Thomas O. (2012): Sustainability in Business Process Management – a Literature Review. AMCIS 2012 Proceedings.
 - Meyer J., Teuteberg F. (2012): Nachhaltiges Geschäftsprozessmanagement – Status Quo und Forschungsagenda. Tagungsband der Multikonferenz Wirtschaftsinformatik 2012.

RELATED WORK – SELECTED SUSTAINABLE BPM ISSUES

- Green IT as enabler for sustainable BPM
 - Lower energy consumption of IT-Systems
 - Information systems for sustainability purposes
- Green BPM readiness model of Opitz N., Krüp H., Kolbe L.M. (2014)



POTENTIAL FUTURE DIRECTIONS FOR SUSTAINABLE S-BPM

- Investigate means to embody sustainability in subject-oriented supply chain management
 - Common key ecological indicators (KEI) for sustainable process modeling and monitoring
 - Design patterns for sustainable subject-oriented processes
 - Usage of sensors to support real-time monitoring of key ecological indicators
- Interdisciplinary discussion on how to measure sustainability in supply chains
- Investigation of the embodiment of the social dimension in supply chain designs (e.g. work related stress related to process designs)

**THANK YOU FOR
YOUR ATTENTION**

