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A New Simulation-based Approach to Schedule Personnel Deployment Times in Decentrally Controlled Production Systems

Project Sim4PeP

Short Resume of the Presenter

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- Study of industrial engineering at the Technical University of Chemnitz, Germany, and the Università degli Studi di Modena e Reggio Emilia, Italy
- Research associate at Technical University of Dresden, Germany working field: Factory planning, production planning and control

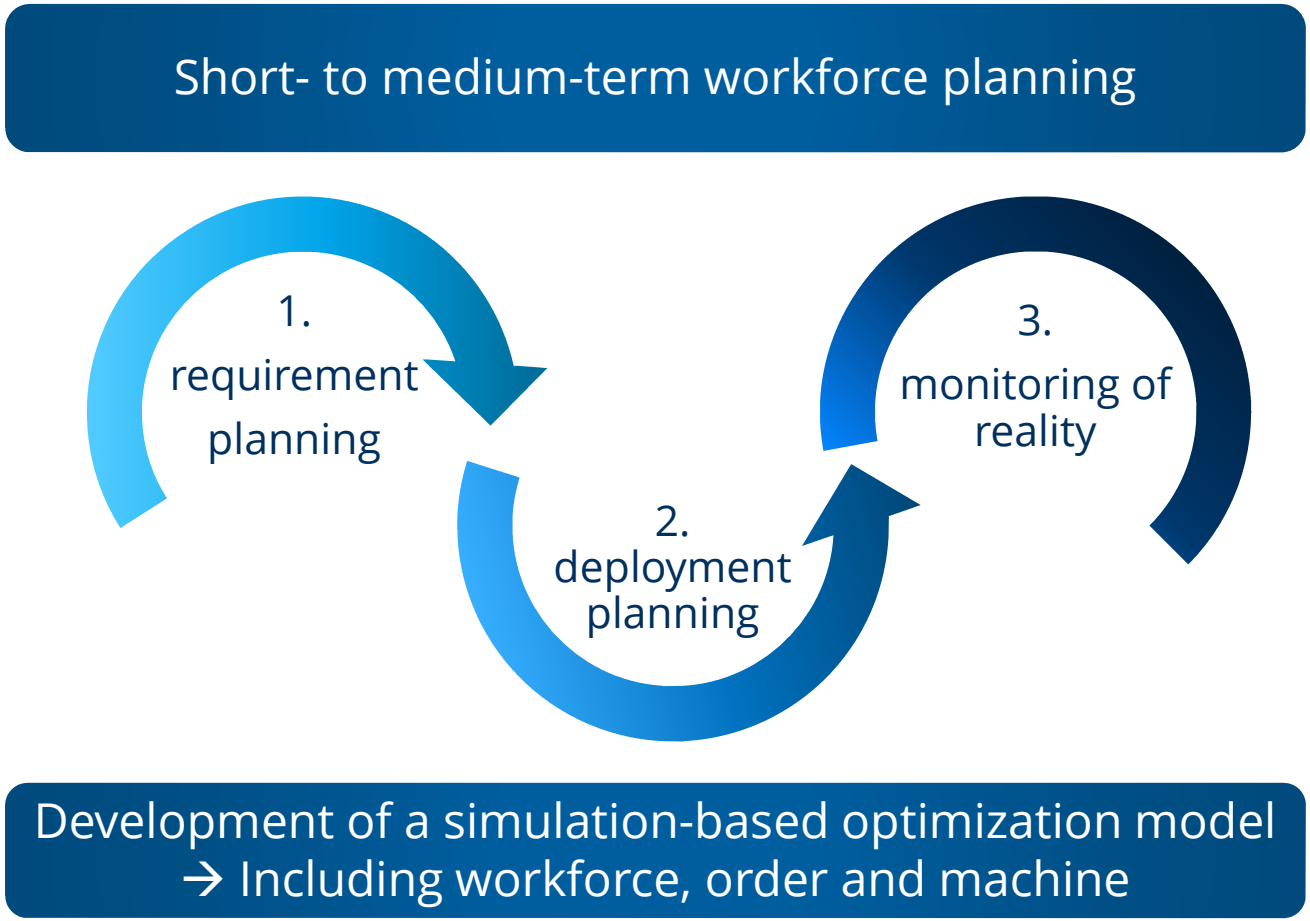
Structure

Introduction: Dilemma of requirement planning

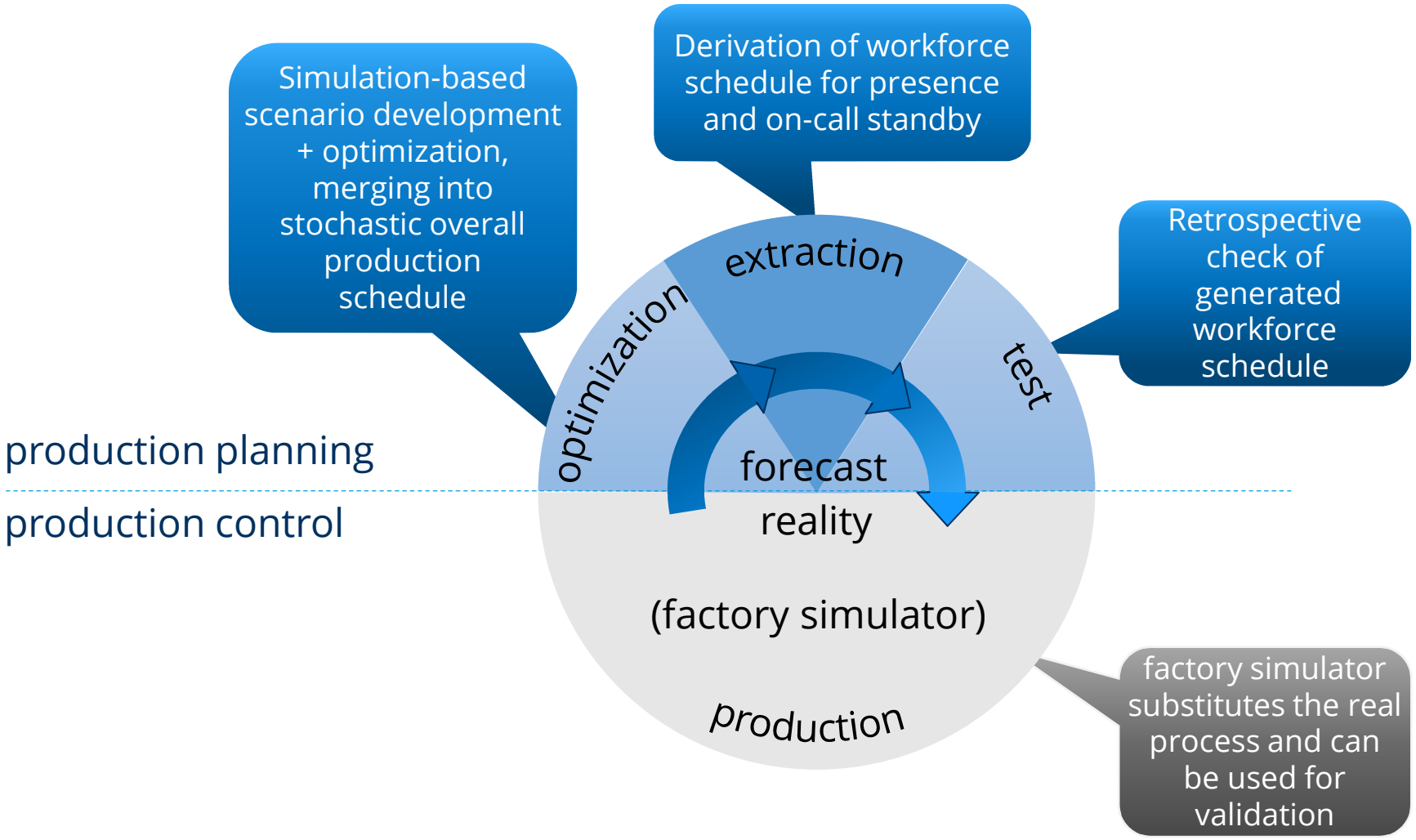
efficient
workforce deployment

synchronization in time

Method: Vision



Method: Procedure

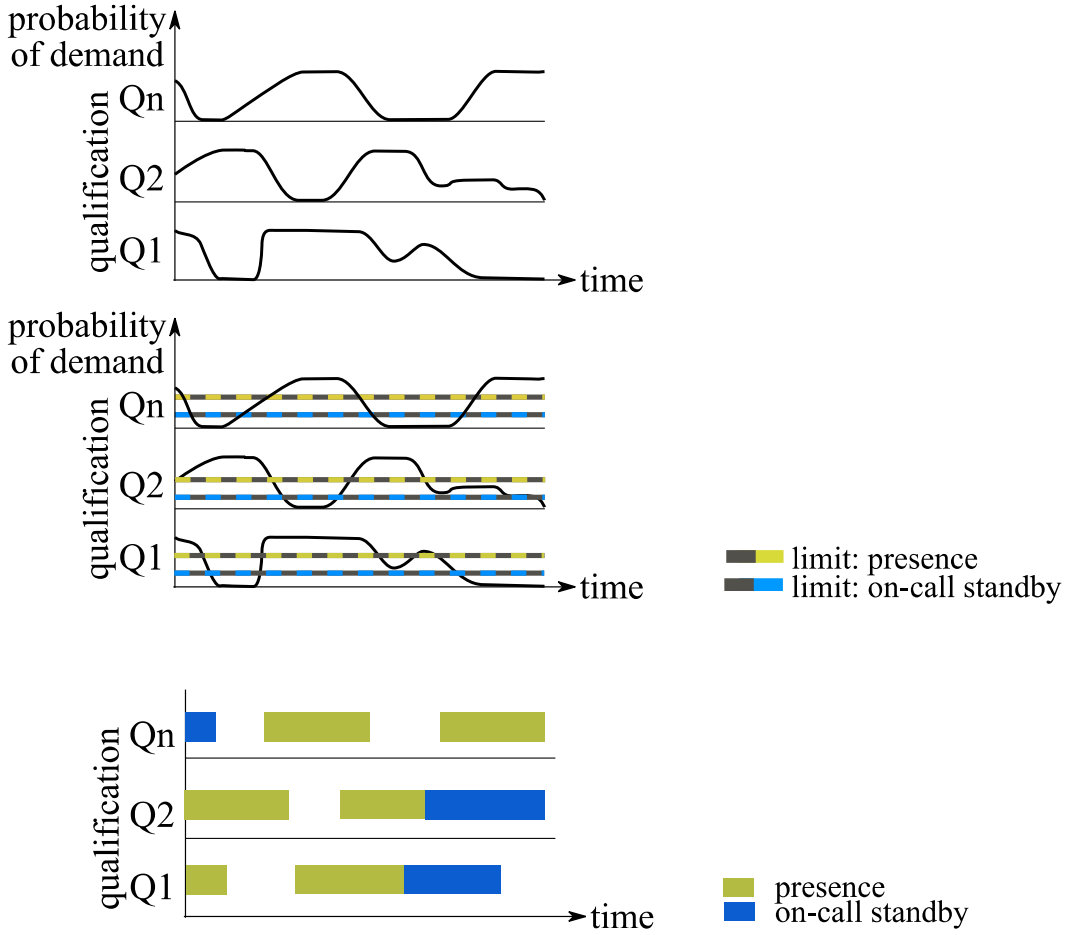


Method: Derivation of Workforce Schedule

① **stochastic workforce schedule**

② **adding tolerance limits**

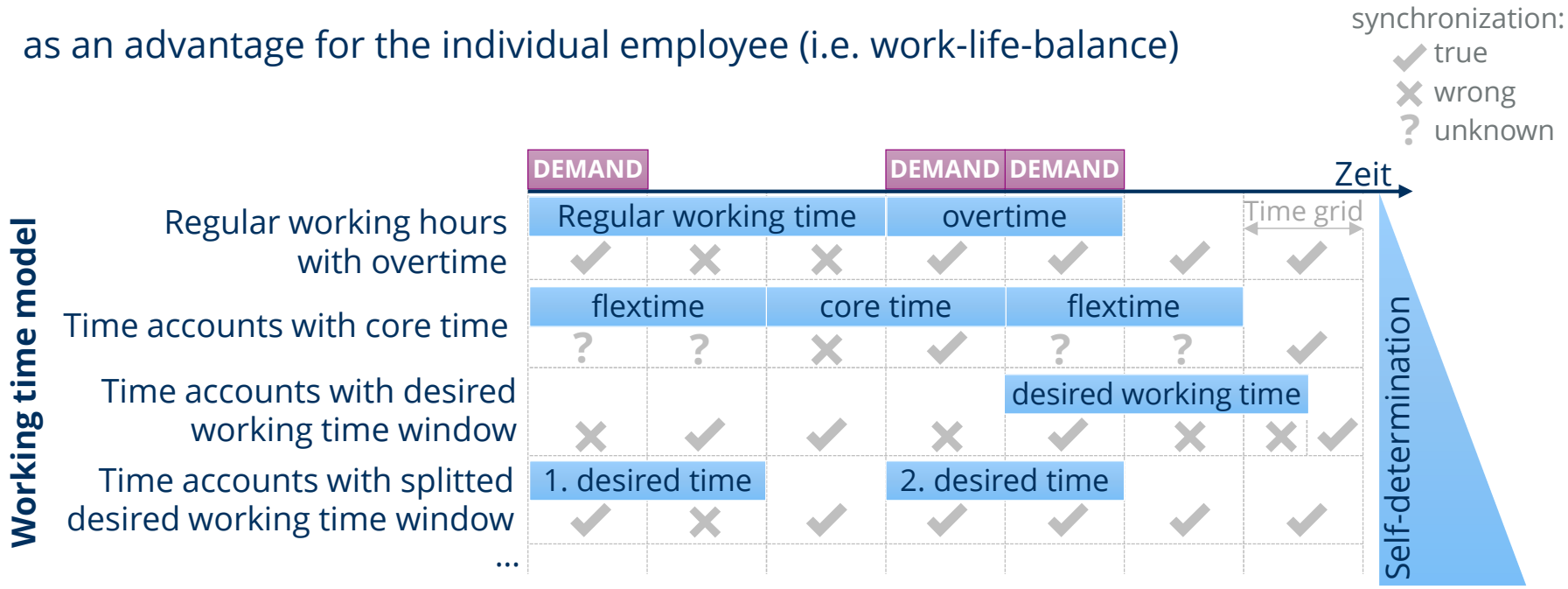
③ **deterministic workforce schedule**



Method: Synchronization of Supply and Demand

Flexible working hours

- contribute to better synchronization of capacity supply and demand
- may cause conflicts between requirements from production system and workers
- as an advantage for the individual employee (i.e. work-life-balance)



Research Focus of the Project

Deterministic derivation in the stochastic field

- Limitation of flexibility (decentrally controlled system)
- Determining deterministic workforce times from the stochastic forecast

Flexible working time

- Influences of different working time models
- Matching the different requirements between production system and workers

Computing time and method initiation

- Computational efficiency and runtime
- Triggering points and model-internal time pattern

Conclusion

Aim of Project

Enabling decentrally controlled systems
by developing a method
to generate workforce attendance schedules

Long Term Goals

Employee

- Self-determination with working hours

→ High motiviation
→ Work-Life-Balance

Corporate

- Efficient workforce deployment

→ Maximum flexibility
→ High productivity
→ Minimum costs