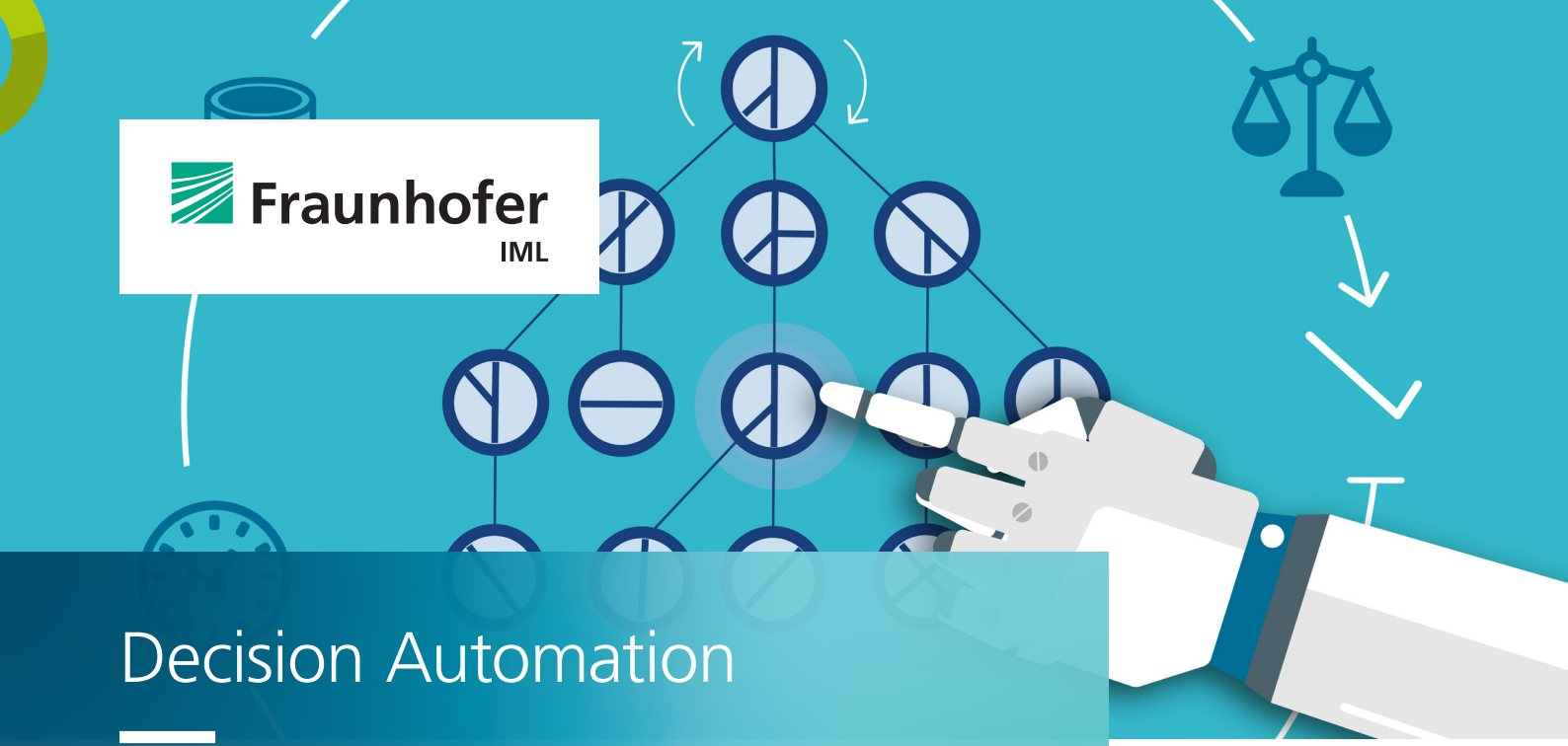

Decision Automation

Make optimal decisions

Challenge

In production and logistics, planning processes end with decisions to be made and the implementation of the chosen options for action begins. Unfortunately, the desire to be able to make these decisions unambiguously based on clear objectives is rarely fulfilled. Instead, the available options for action have to be weighed up according to different, sometimes contradictory, objectives. To improve flexibility and responsiveness, decision-making processes in intralogistics and global supply chains must be systematically digitized. However, measures for implementation are only in the initial stages at best.

Vision

In the future, decisions will be made automatically, i.e. without human participation. The use of intelligent systems offers great potential, especially in regard to the negotiation of services in logistics and production capacities. The operator sets goals and priorities on the basis of which decisions are then made autonomously. This makes it possible to consider a multiple of options for action. Once the process has been digitally mapped, decisions can also be implemented directly, e.g. by cyber-physical-systems, and an automated success control can take place through a permanent target-performance comparison.

Research objectives

- automation of negotiation- and decision-making processes
- structuring of decision situations
- automated implementation of decisions
- permanent success control through sensor technology

Start »decision support« toady!

For more than 12 years, we have been dealing with decision support systems, which combine operative and planning data on a user-friendly interface. Based on this, we integrate optimization algorithms and plan within scenarios, on the basis of which logistics planners can make optimized decisions. For the development of decision support systems, it has proven to be a good idea to first analyze the logistics and decision processes. Goals and priorities are then formally documented and thus made visible in technical interviews with those

responsible for the process. The selection of methods is the next step in support. While in some cases, the evaluation based on key figures and the visualization of existing data is already sufficient; in other cases, more complex methods for forecasting and evaluation are needed. Trend analyses, machine learning methods and simulations provide future-oriented scenarios with detailed information about possible courses of events. Together with catalogues of measures, options for action can be generated and evaluated. If the actual decision is to be made by the assistance system, further methods such as case-based closing or artificial intelligence are used.

Unsere Leistungen

- implementation of decision support systems
- recording of decision-making processes
- method evaluation and selection
- design of negotiation system
- implementation of a multi-agent-system

Your benefits

- acceleration of decision-making processes
- increase in the quality of decisions
- support of cross-company negotiation processes

Selected references

- **Industry partner:** food producer
  Challenge: optimization of planning effort, leveling of daily delivery quantity
  Results: reduction of weekly program planning effort by **80 %**

- **Industry partner:** automotive OEM
  Challenge: optimization of the weekly program planning
  Result: increase oft program allocation / filling rate by **8-12 %**, reduction of capacity adjustments by **20 %**

- **Industry partner:** Schenker AG
  Challenge: decision support for per- sonnel allocation
  Result: labor saving of 10 %

- **Research project:** Industrie 4.0 Legal Testbed (legaltestbed.org)
  Challenge: conclusion of legally valid contracts conducted by machines
  Results: digital testbed (software) for automated business processes, recom- mendations for actions with regard to new legal standards

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