

Next-Gen Manufacturing

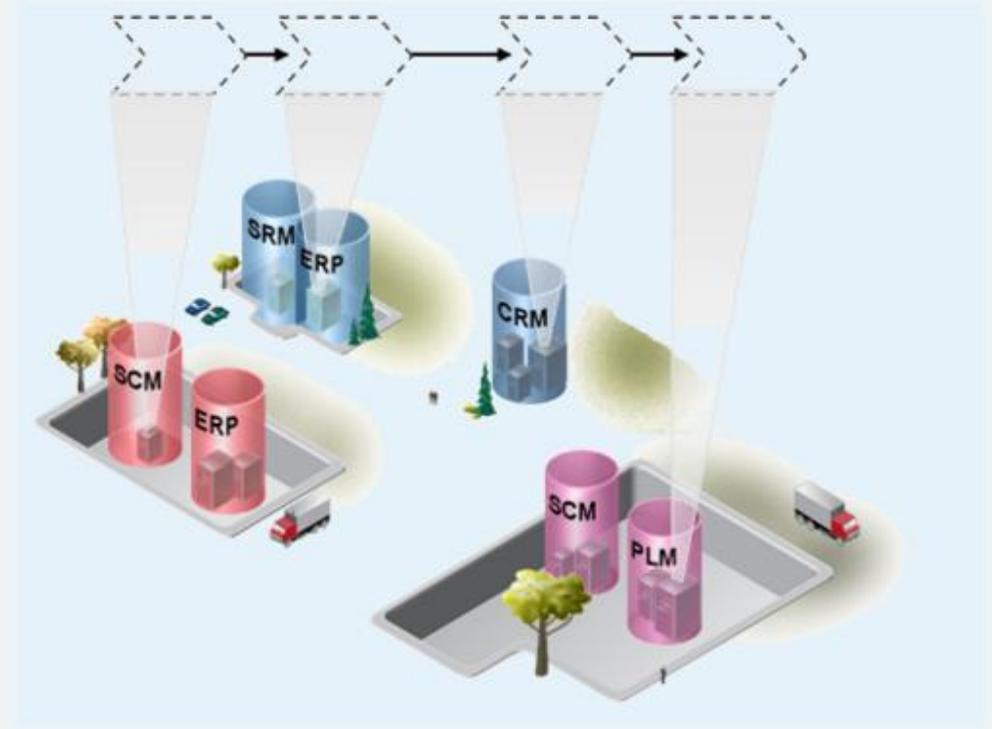
Real-time planning and cutting-edge
process optimization Agent_aa_S powered by composite AI

Cerebrica

1. The problem with industry today:



- That it is still managed by people
- People are not good at changes and cannot work with big data
- People work with outdated systems (ERP, MES, APS) – data silos



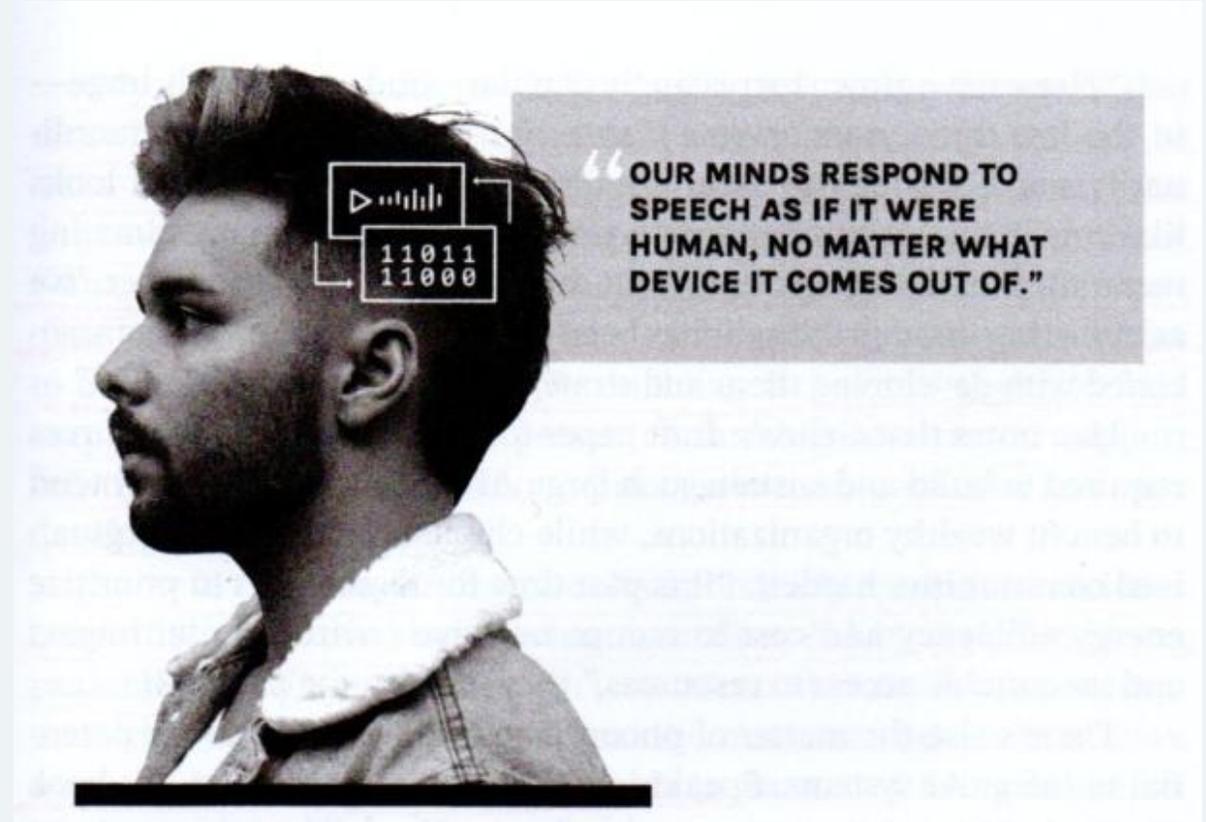
Autonomous management with AI is not possible

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2. The problem of AI today

LLM – based hype

- Good with text work and coding
- No Truth
- No Logic
- No System
- No Learning
- No Responsibility
- **Just a probable story**



Unsuitable for business management

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Solution: Cerebrica Optimizer agent as a gamechanger

Logic based AI (GOFAI +)

- Knowledge extraction and systemic learning
- Integrated univocal data picture of reality
- Best production utilization under emerging constraints
- Replaces people in company management
- Single Source of Truth

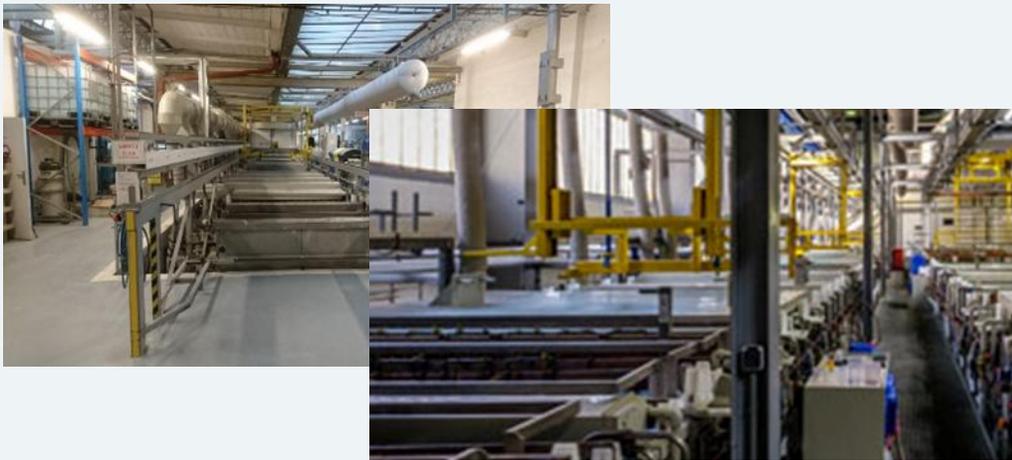


Autonomous **digital worker** - coordinated replanning in less than **10 seconds**

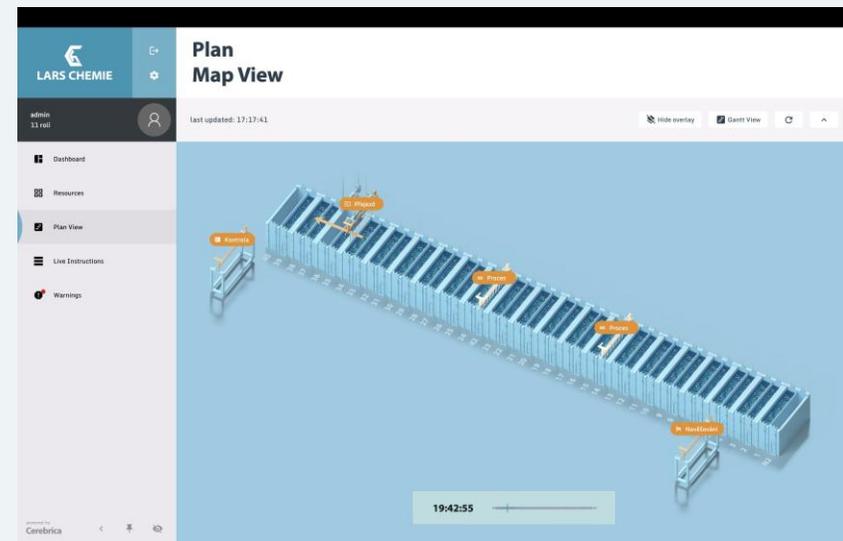
LARS Chemie – new type of company

Pilot customer co-managed by our agent :

- **production capacity increased by up to 30% !**
- expansion of the service portfolio with the same number of employees!



Old production



New production

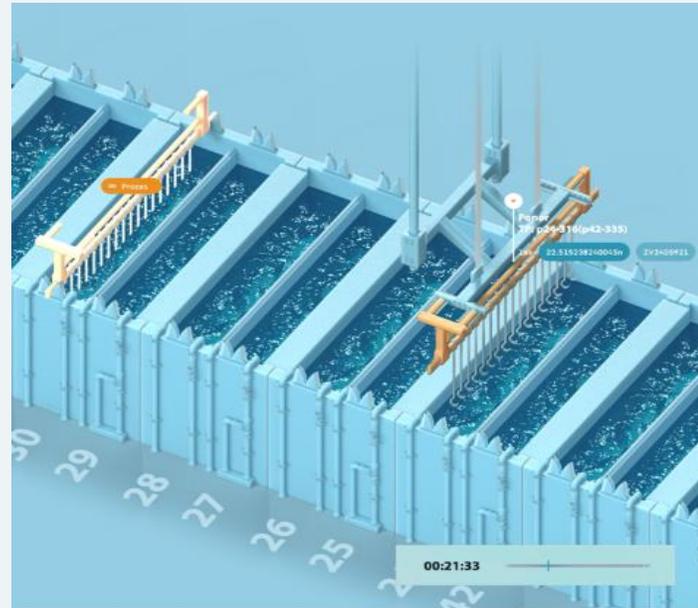
Quantologic AI involved directly into the company's production processes generates tasks and checks their fulfillment

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New LARS factory - a prototype of a biomorphic factory



-  DOT radio: 5G signal coverage and indoor localization
-  5G router or 5G IoT Gateway
-  5G Location probes for indoor

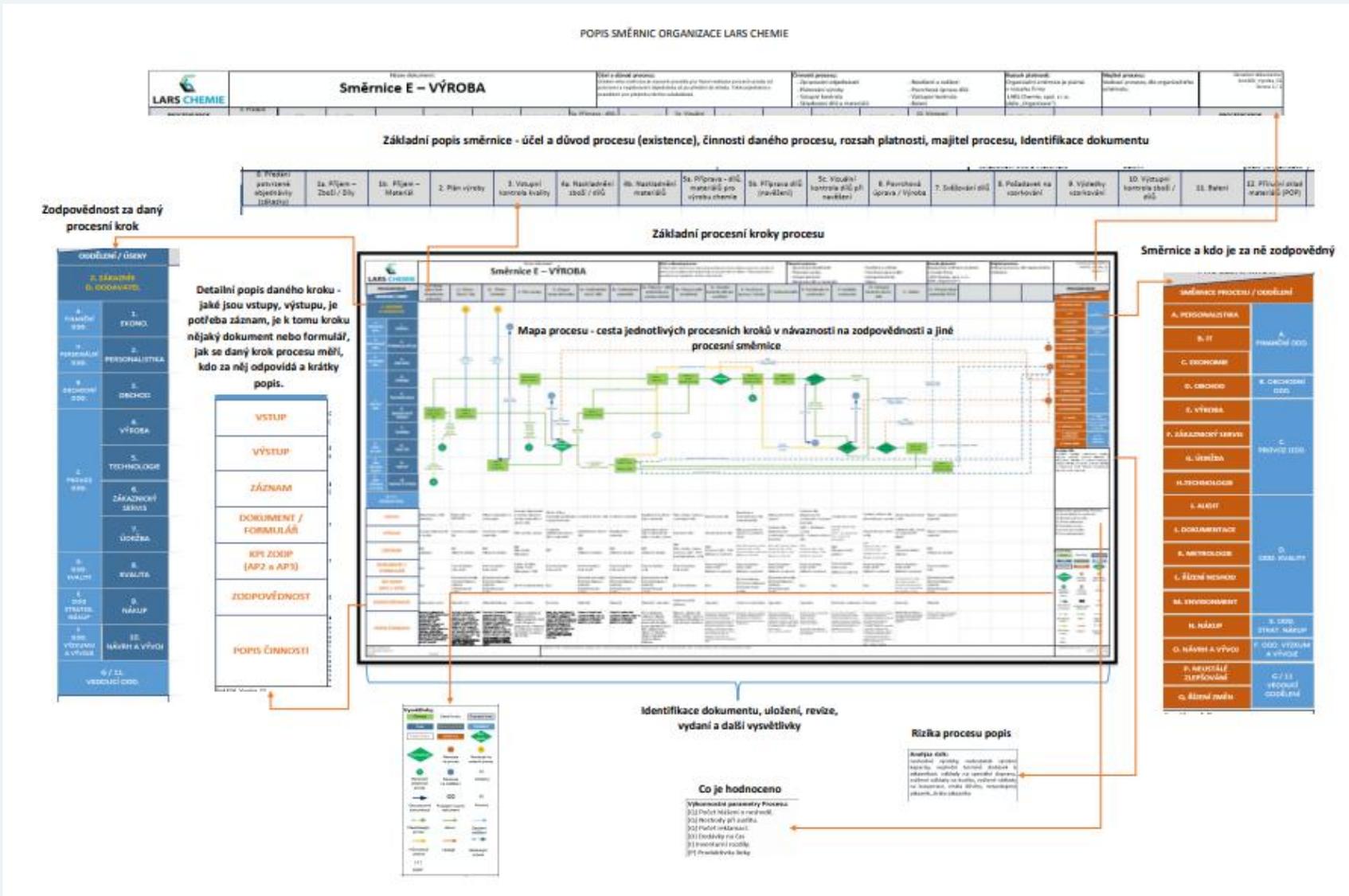


Efficiency increase
approx. 30%

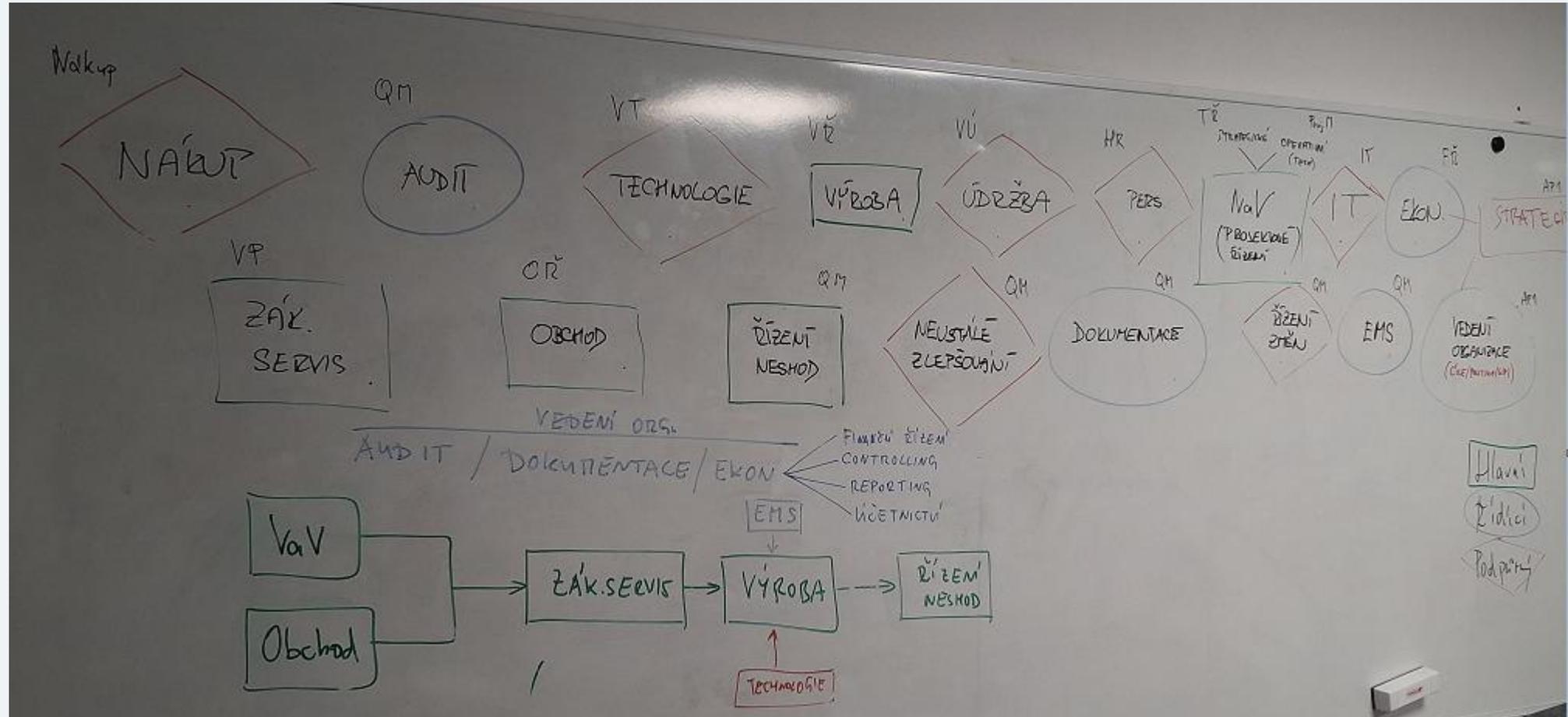
Biomorphic transformation of industry: resilience, self-reconfiguration, recalibration...system learning...autonomously operating company driven by customers

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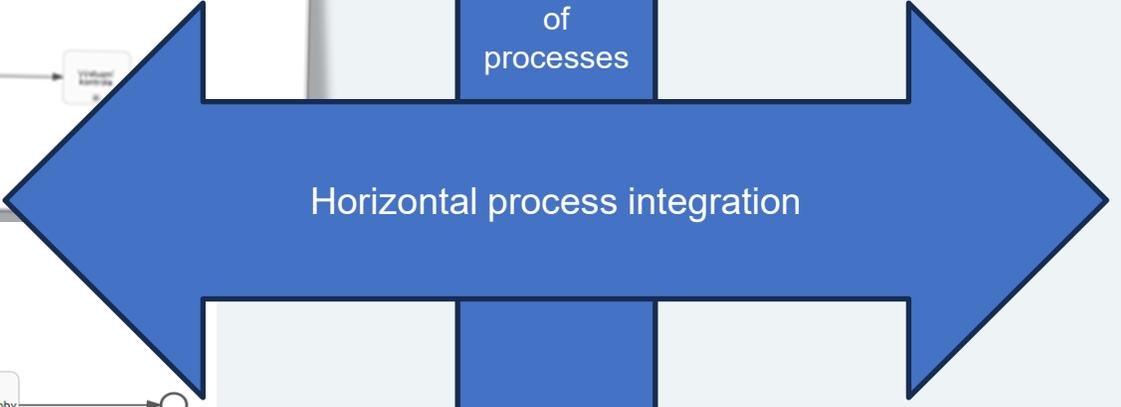
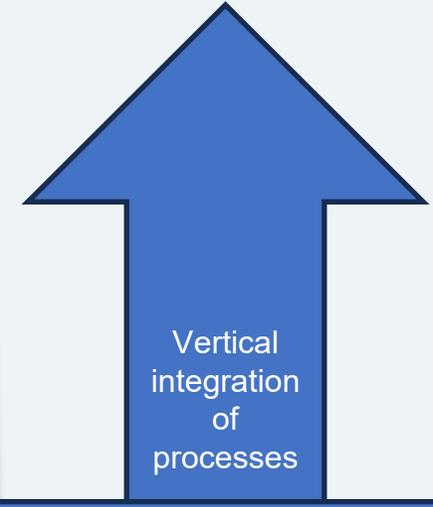
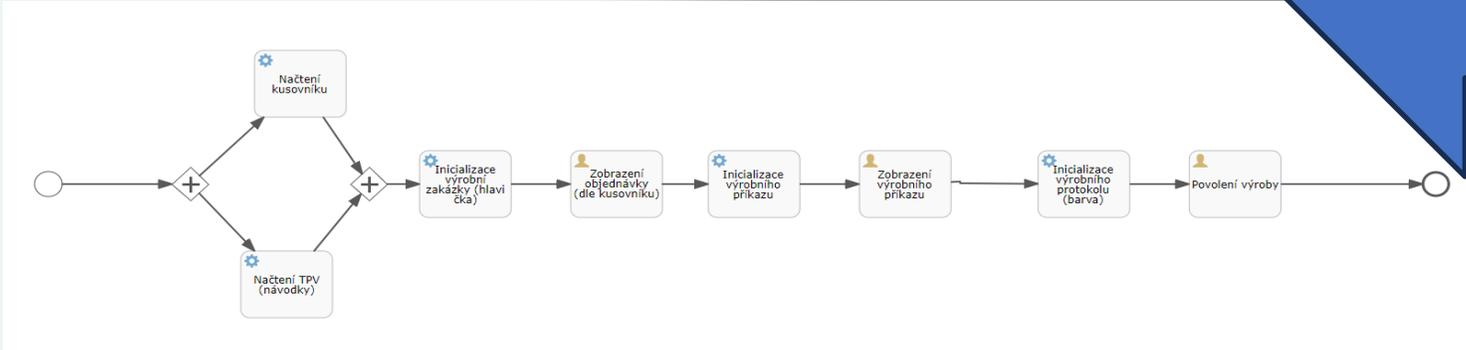
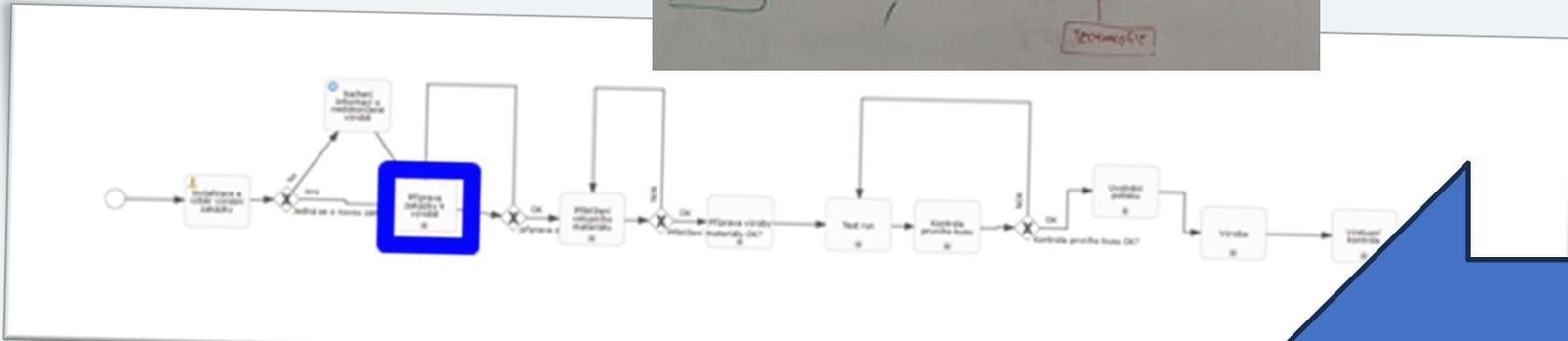
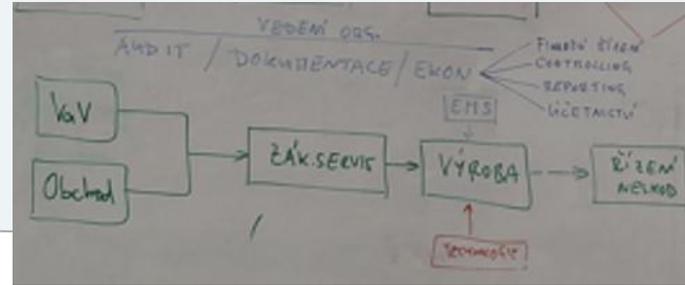
The Directive and its context



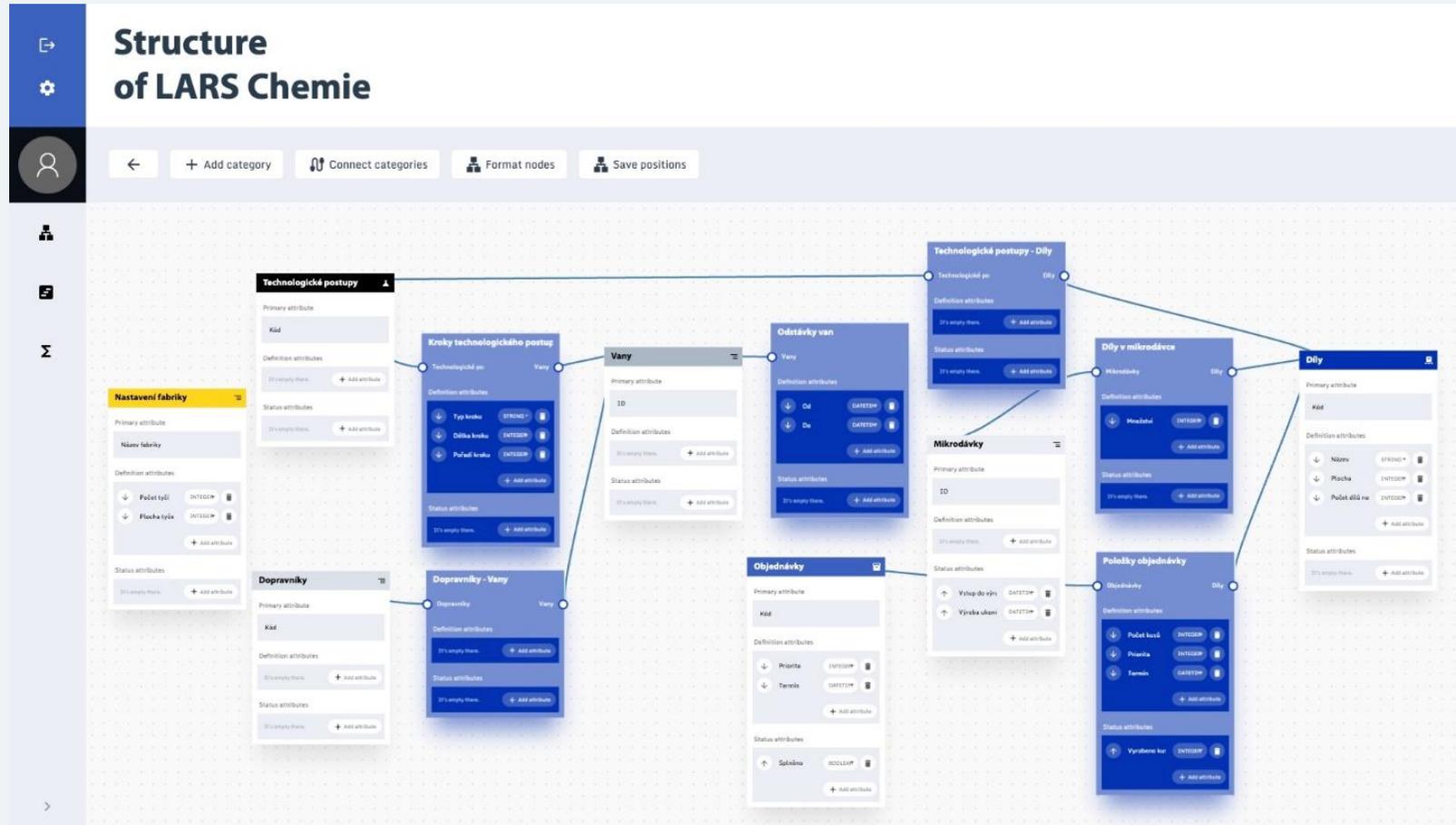
Basic LARS process model including assistance roles



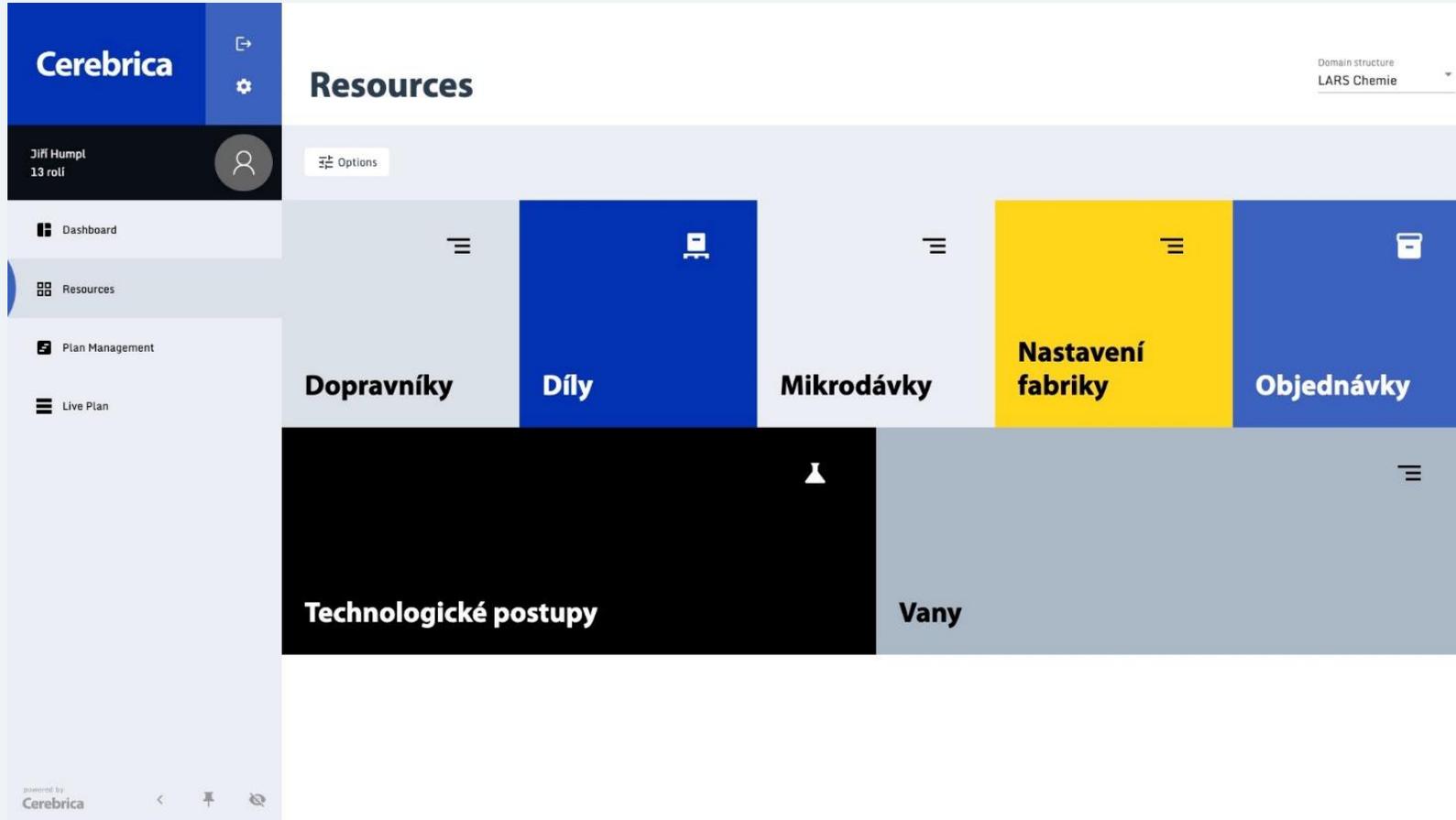
Functional architecture of complex optimization: "head content" of the "manager" agent



Optimizer – phenomenal model



Optimizer – composition of phenomena at the basic level

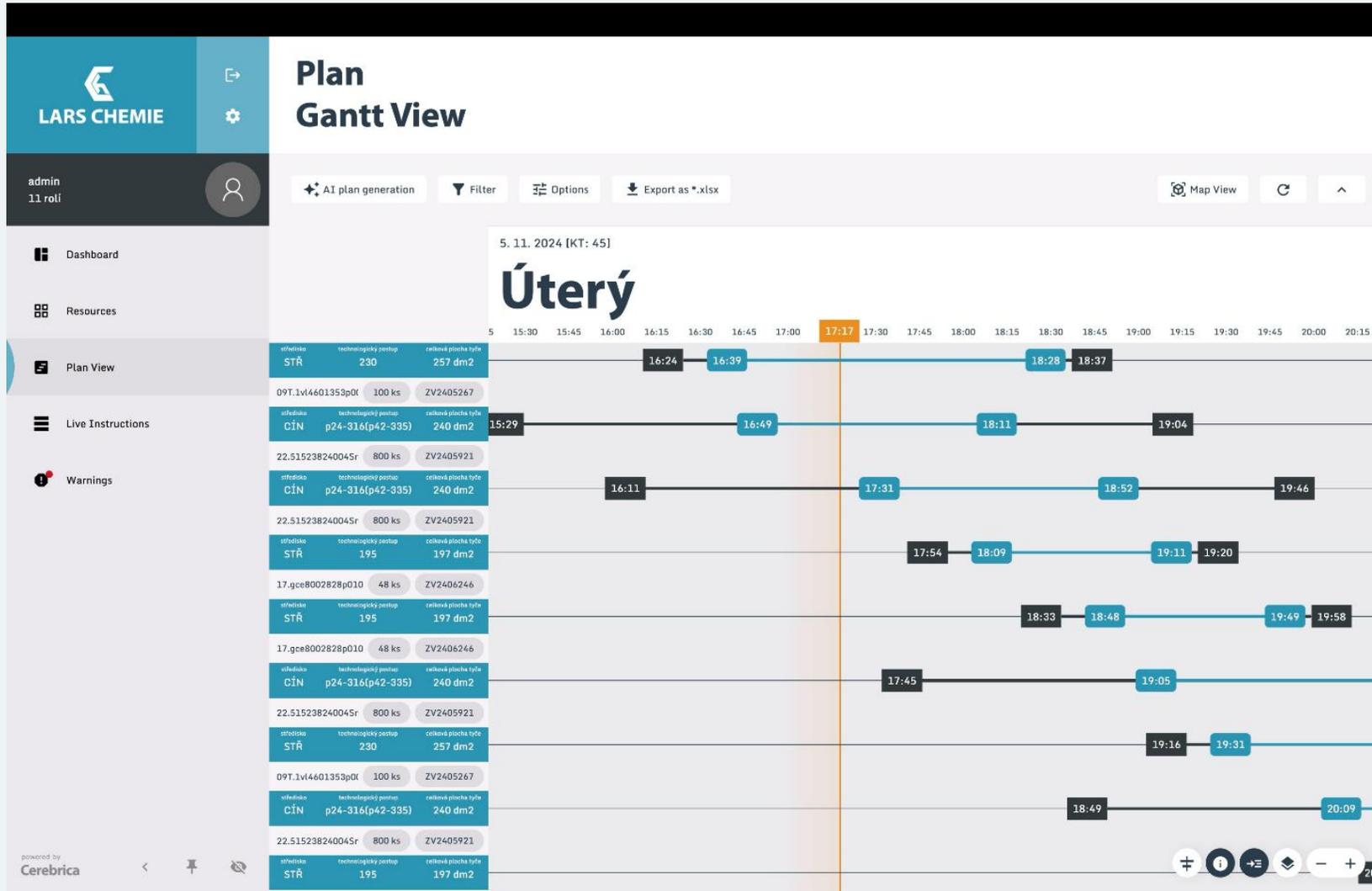
- The screenshot displays the Cerebrica 'Resources' dashboard. The top navigation bar includes the Cerebrica logo, a user profile for 'Jiří Humpl' with '13 rolí', and a 'Domain structure' dropdown set to 'LARS Chemie'. The main content area is a grid of tiles: 'Dopravníky' (grey), 'Díly' (blue), 'Mikrodávky' (grey), 'Nastavení fabriky' (yellow), and 'Objednávky' (blue) in the top row; 'Technologické postupy' (black) and 'Vany' (grey) in the bottom row. A left sidebar contains 'Dashboard', 'Resources', 'Plan Management', and 'Live Plan'. The bottom left corner shows 'powered by Cerebrica' and navigation icons.

Optimizer - phenomenon as a composite data type

The screenshot displays the 'Díly' (Parts) section of the Cerebrica software. The interface includes a sidebar with navigation options: Dashboard, Resources, Plan Management, and Live Plan. The main content area shows a table of parts with the following columns: Kód (Code), Název (Name), Plocha (Area), Počet dílů na týč (Number of parts per rod), and Možnosti (Options). The table lists 13 different part types, each with a unique code, name, area, and quantity, and an 'Odstranit' (Remove) button.

Kód	Název	Plocha	Počet dílů na týč	Možnosti
01.1vcr005291f0001	Připojnice	50	20	Odstranit
01.1vl7616015p0102	D- připojnice, CP	50	20	Odstranit
01.507792	Connection	50	20	Odstranit
02R.1VCR015433F7001	Pas přípojovací	50	20	Odstranit
02R.1VL3401855P0101	Nosník	50	20	Odstranit
02R.1vl1714316p0102	Pas spojovací	50	20	Odstranit
02R.1vl1715500p0101	Pas zadní	50	20	Odstranit
02R.1vl1721823p7101	Pas propojovací	50	20	Odstranit
02R.1vl1722739p0102	Odbočka	50	20	Odstranit
02R.1vl17612095p0105	Spojka	50	20	Odstranit
02R.1vl7601449p0102	Pas	50	20	Odstranit
02R.1vl7625247p0101	Pas izolovaný	50	4	Odstranit

Optimizer – planner diagram



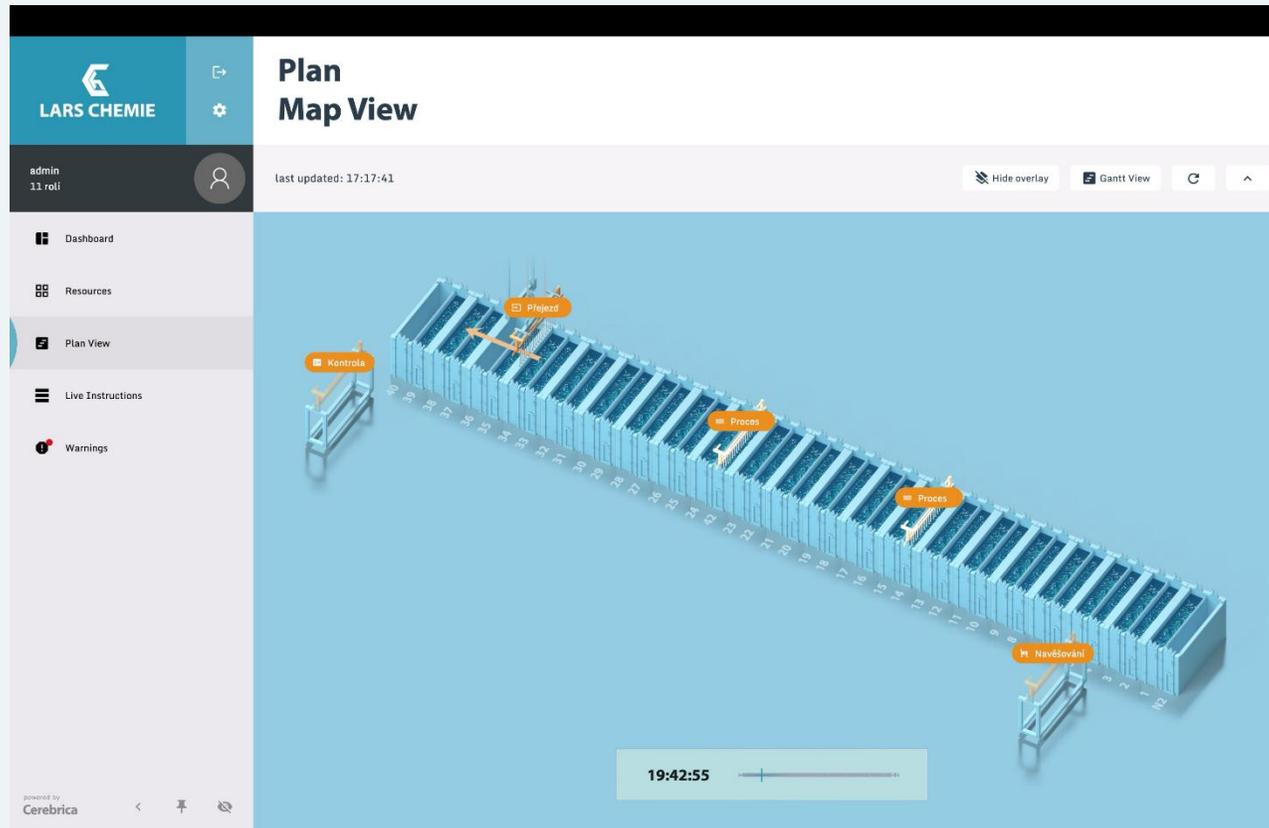
Optimizer – operator screen

The screenshot displays the Cerebrica Plan Management operator interface. The top navigation bar includes the Cerebrica logo, a user profile for 'administrator' with '11 rolí', and a 'Plan Management' title. A 'Generovat nový plán' button is visible in the top right of the main area. The central focus is a large digital clock showing '10:46:10'. Below the clock, there are two task cards:

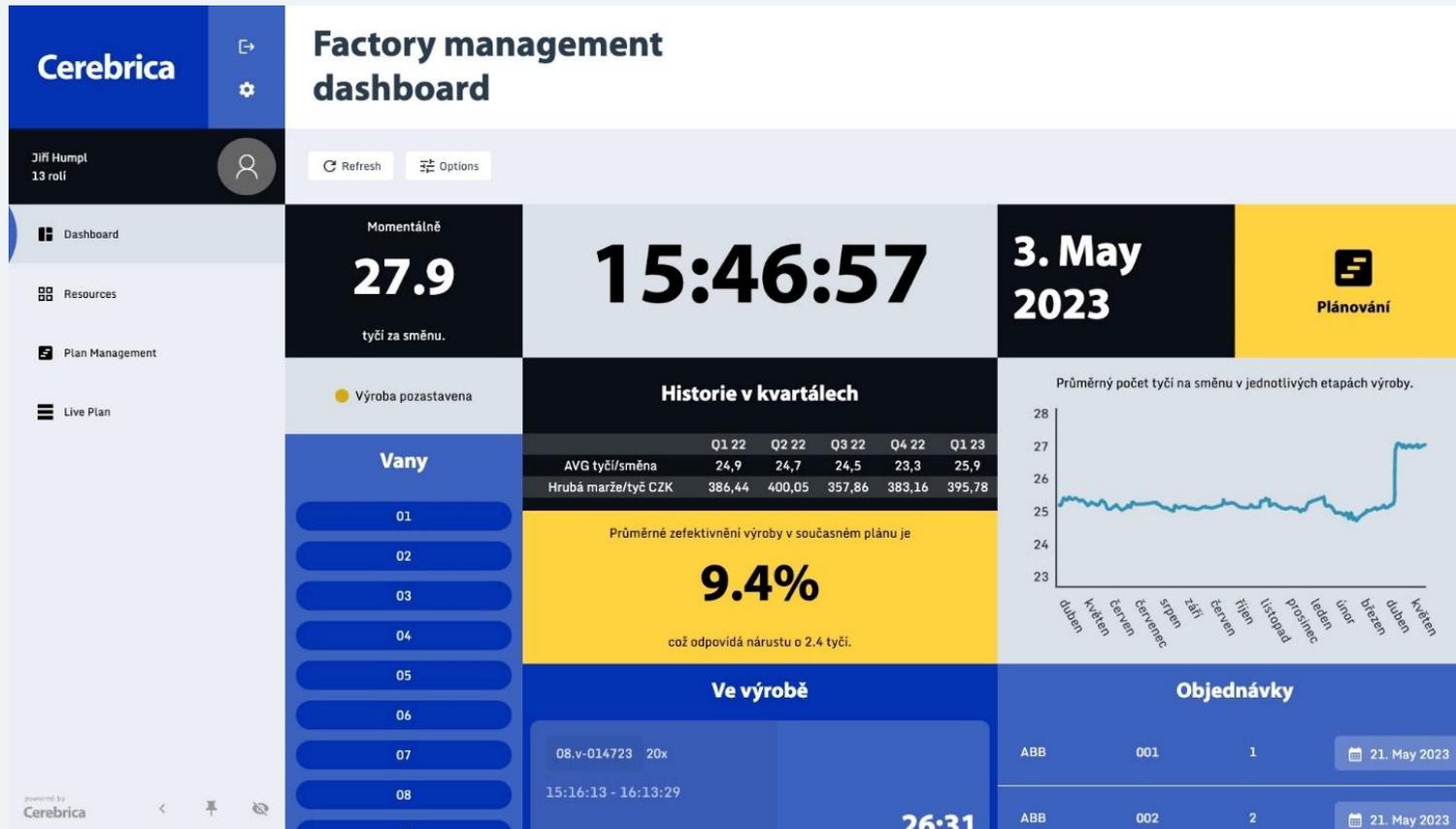
- Příprava** (Preparation): mikrodávkaXX, 10:53 - 10:55. Includes sub-tasks: 10x díl1 and 5x díl2.
- Výroba: 101** (Production: 101): mikrodávkaXX, 10:55 - 12:00. Includes sub-tasks: 10x díl1 and 5x díl2.

The interface also features a sidebar with 'Resources' and 'Plan' sections, and a bottom navigation bar with icons for back, home, and refresh.

Optimizer – manager visualization



Optimizer – KPIs - owner



Vision: Quantologic AI

The agent controls production in real time

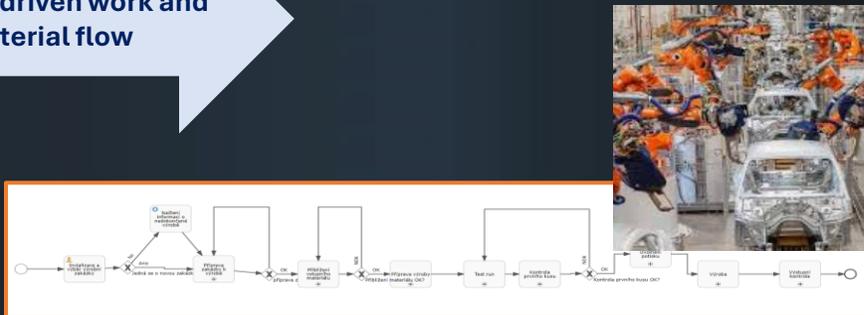
Agent Optimizer with machine awareness decides on the best current configuration and the highest throughput – ABILITY to distribute and evaluate tasks in real time

Assignment and decision flow



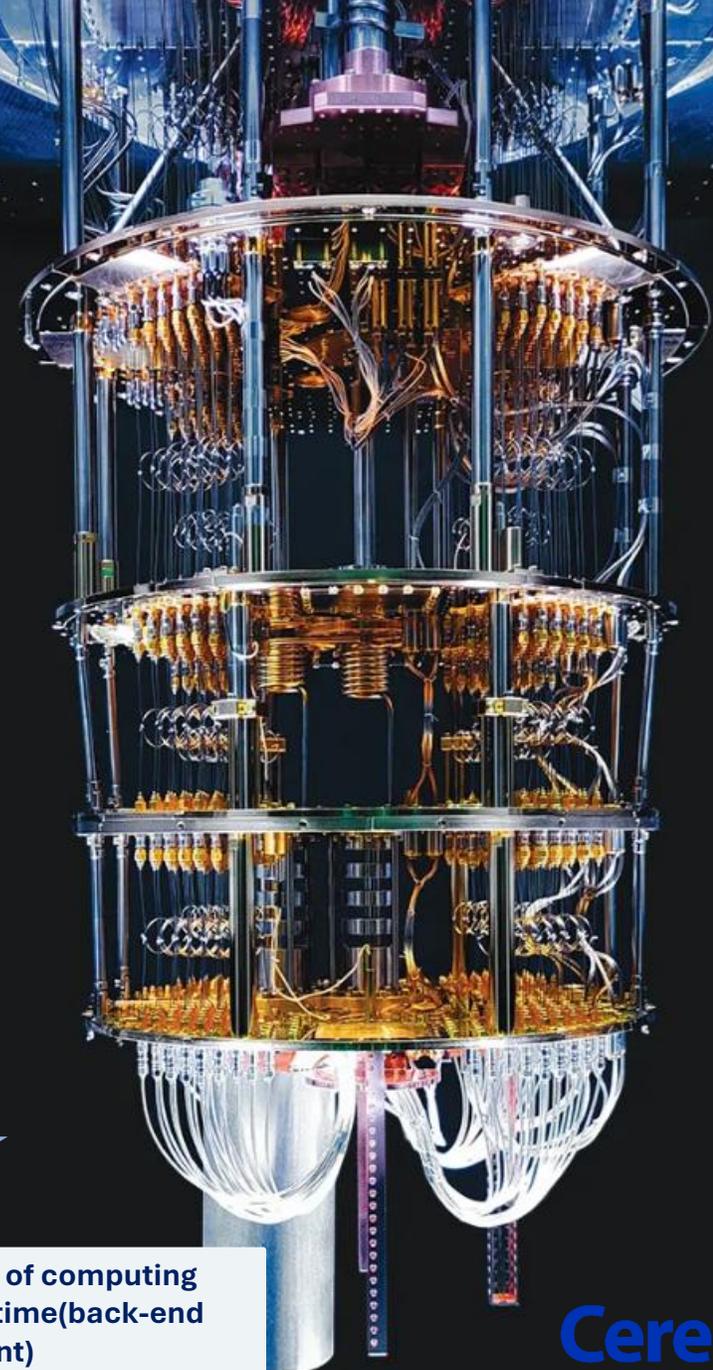
Agent knowledge and reality linkage: a living dynamic process model capturing real-time data and events as inputs for control changes (+supercontrolling)

Process-driven work and material flow



Efficiency flow

Quantum computer capable of computing process optimization in real time (back-end optimization agent)



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Thank you for your attention

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