# CEIT

by asseco

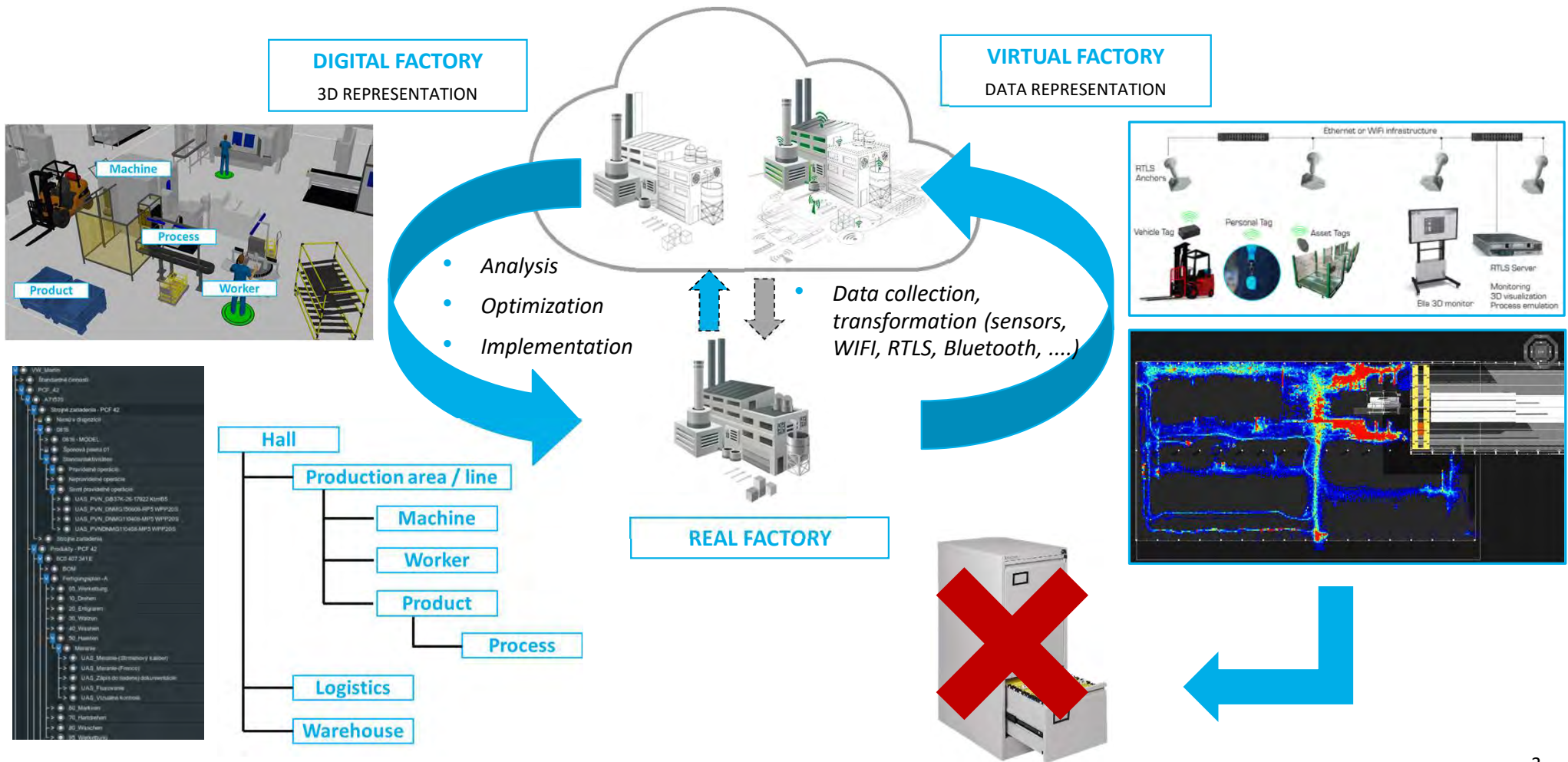# Conceptual designing in CEIT Table

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Zilina, Slovakia          10th June 2021
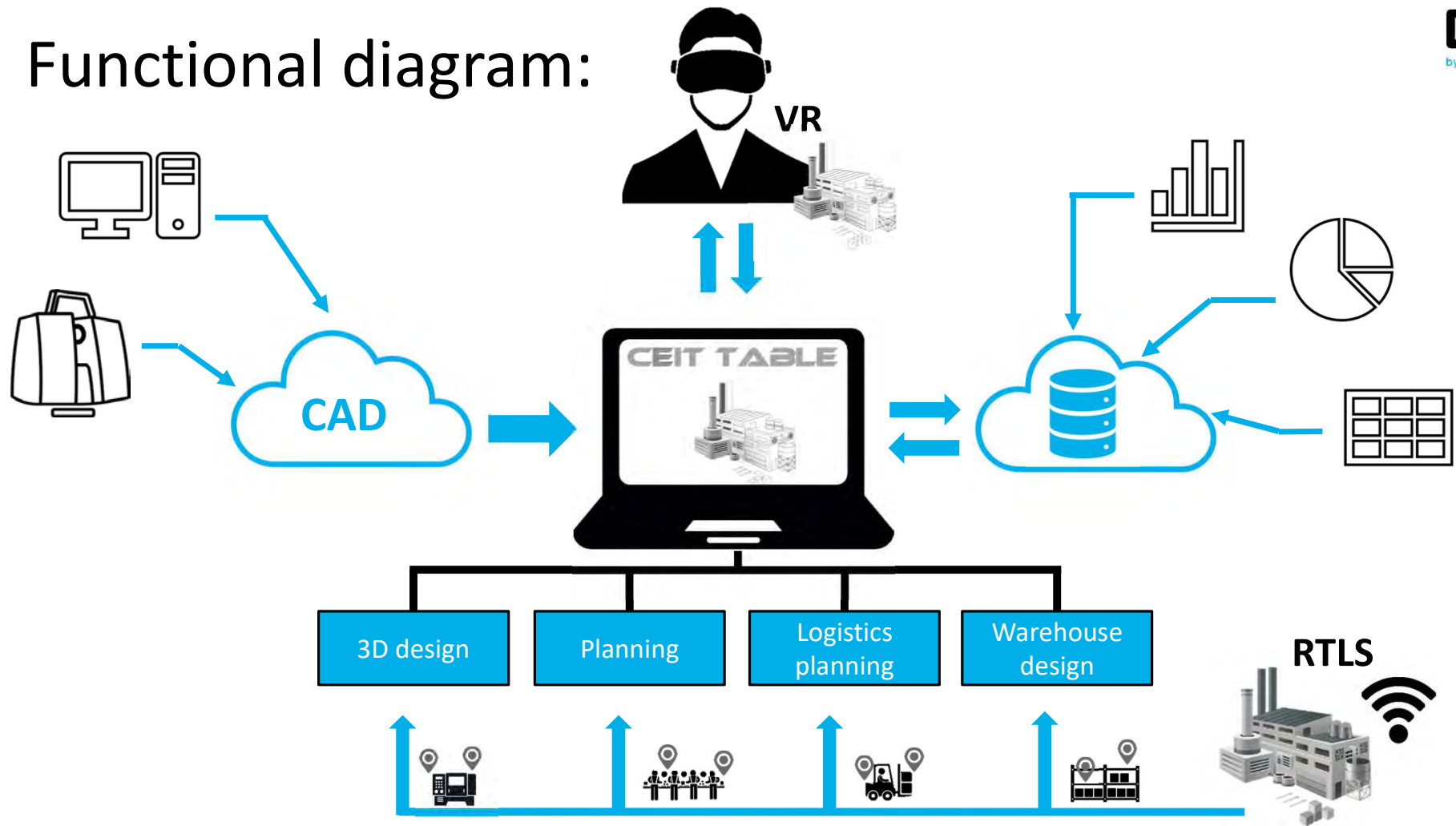
# DIGITAL TWIN

**DIGITAL FACTORY**

3D REPRESENTATION

**VIRTUAL FACTORY**

DATA REPRESENTATION

- Analysis
- Optimization
- Implementation

- Data collection, transformation (sensors, WIFI, RTLS, Bluetooth, ....)

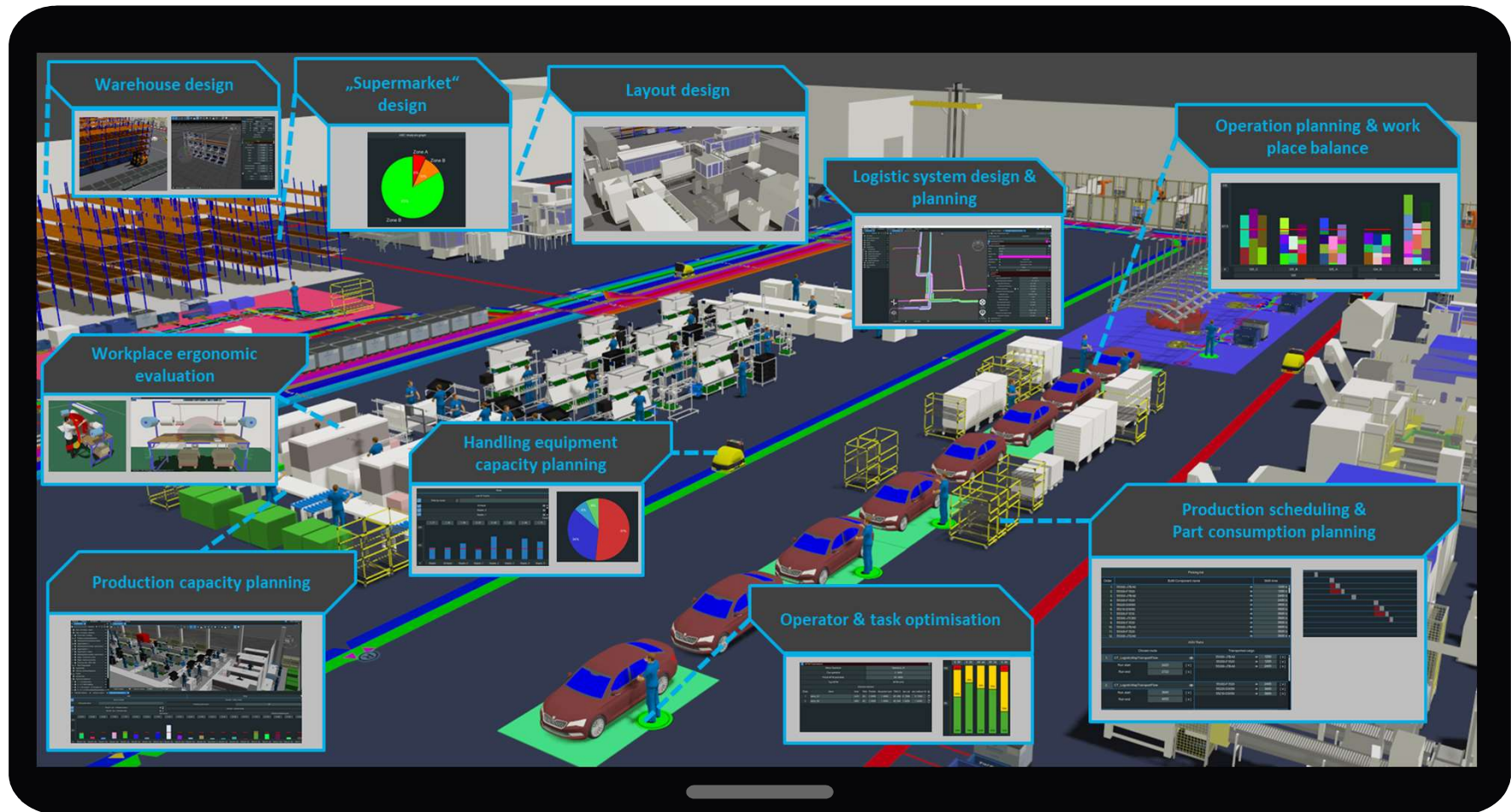Hall

Production area / line

Machine

Worker

Product

Process

Logistics

Warehouse

**REAL FACTORY**

3

CEIT Table

# Functional diagram:



VR

CAD

CEIT TABLE

RTLS

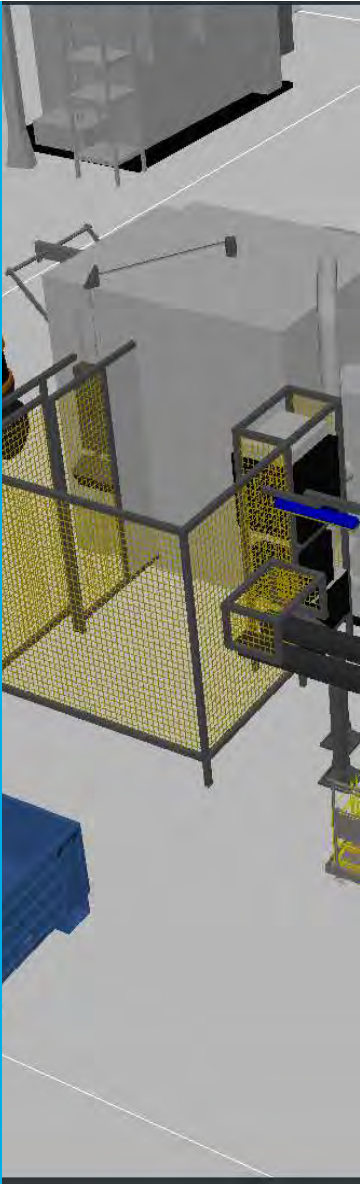| 3D design | Planning | Logistics planning | Warehouse design |
|---|---|---|---|

# Areas of use

# Creation of spatial disposition

- Create layouts using 2D or 3D models
- Physical properties of solids - non-overlapping of machines.
- Generation of service areas based on valid regulations from the ergonomics and maintenance point of view of.
- Collision control.
- Evaluation of production disposition areas (production, storage, logistics).
- Tour in a virtual environment.



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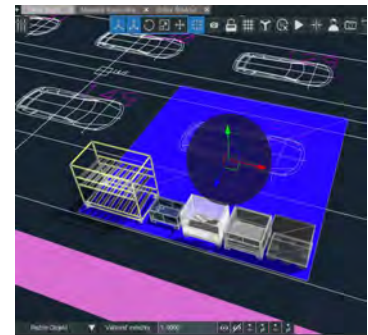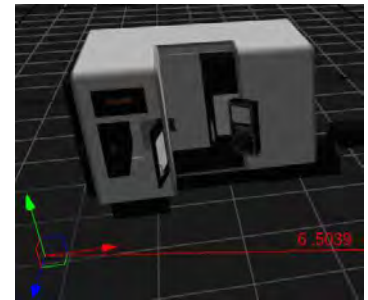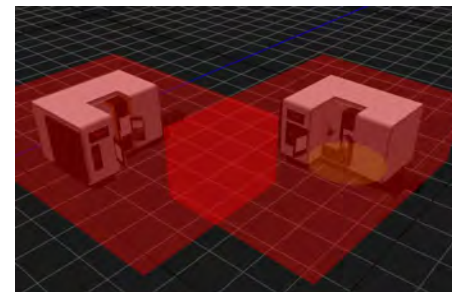
# Production capacity planning

- Planning of technological procedures and operations.
- Planning and verification of production equipment capacities.
- List of devices used.
- Precise definition of the so-called "Release" of operations to production facilities.
- Import of production program.
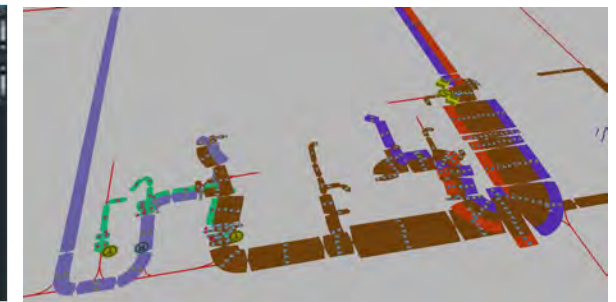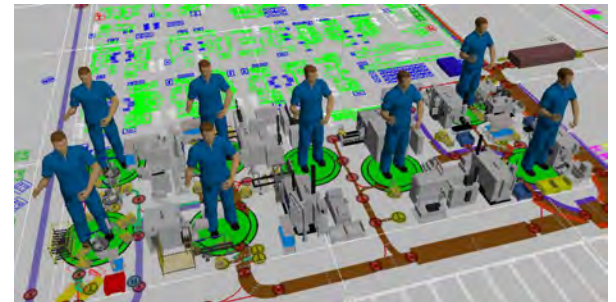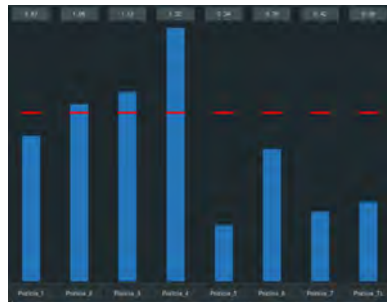- Validation of the production plan against production capacities.
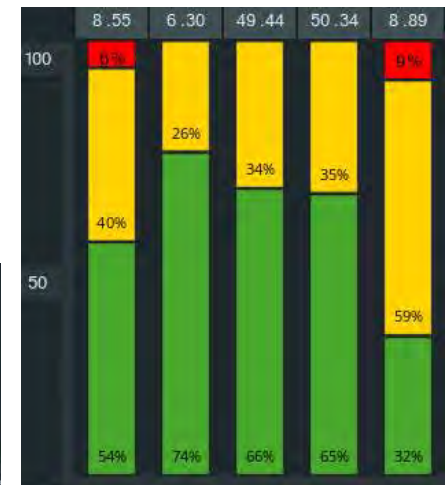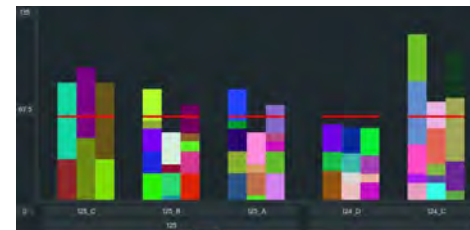


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# Personnel capacity planning

- Creation of work procedures
- Defining and parameterizing operations.
- Time management.
- Breakdown of operations into actions.
- Classification of operations according to added value
- Operator load calculation.
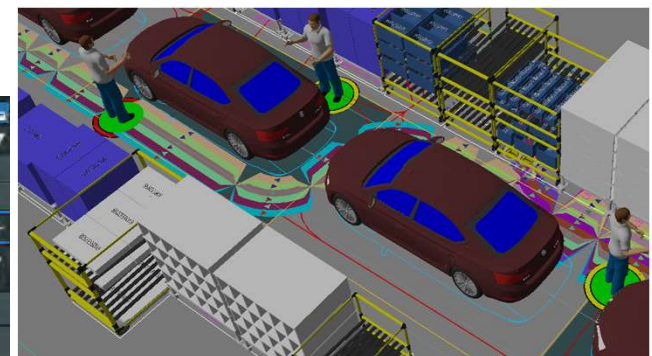- Creation of a dot plan.
- Visualization of operators' movement.

# Dimensioning of personnel capacities

- Standardization of operations using the MTM-UAS methodology.
- Classification and categorization of operators.
- Scheduling and sorting of operations.
- Workplace balancing.
- Monitoring work balance.
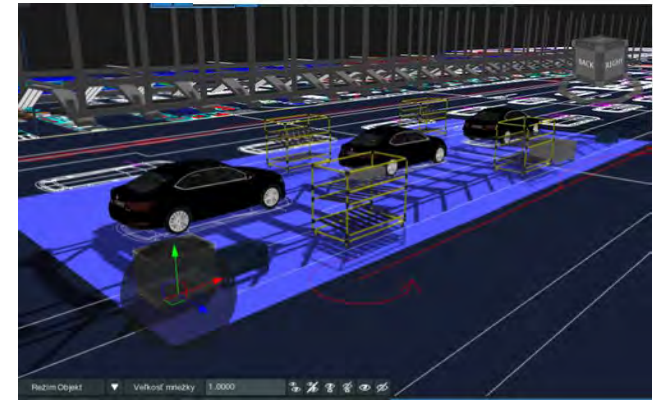- Capacitive dimensioning of operators.

# Parts planning
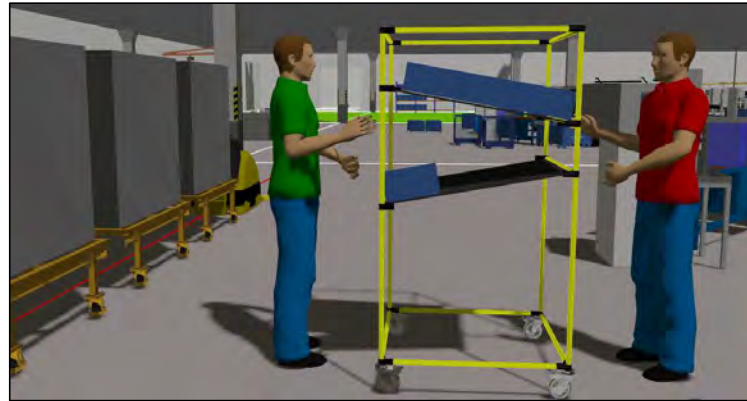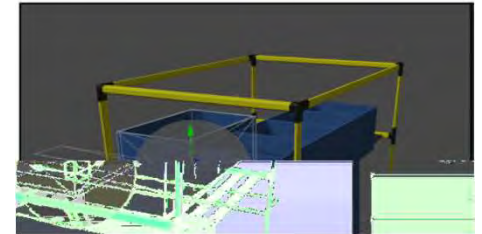
- Spatial design of the workplace
- Capacity evaluation of workplace areas.
- Calculation of parts consumption in the workplace.
- Parts turnover calculation.
- Weighing interval calculation.
- Calculation of the amount of components produced.

# Logistics flow planning

- Logistics network generation.
- Generation of material / transport flows.
- Visualization of material flows
  - Spaghetti diagram
  - Sankey diagram
- Parameterization of transport flows.
  - Type of handling equipment.
  - Speed.
  - Capacity,.....
- Definition and dimensioning of supply circuits.
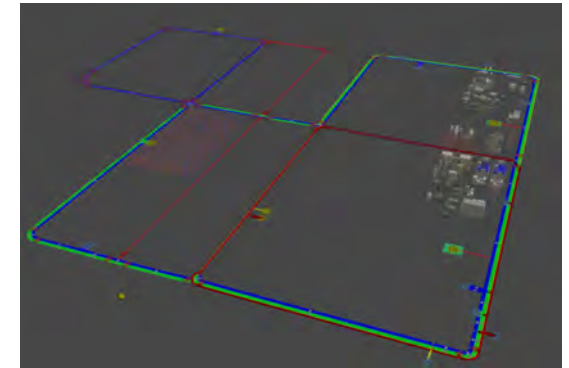
# Capacity verification of technology utilization

- Material transport planning (walking, VZV, train, FTS)
- Evaluation of transport flows:
  - Supply route lengths.
  - Supply time.
  - Capacity need for handling equipment.
- Calculated need for handling equipment based on the planned production volume.
- Interactive evaluation of a change in a production or logistics system parameter.

# Design of warehouses and supermarkets

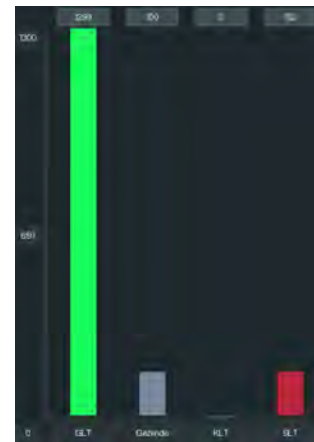- Spatial design of storage spaces.
- Spatial evaluation of warehouse areas.
- Storage system design (rack / stack).
- Calculation of storage capacity needs.
- 3D parametric models of rack / shelving systems.
- Spatial design of the place of preparation / picking / kiting.
- ABC parts classification.
- Identification of Hight-Runers.
- Spatial layout with regard to the effective utilization of operators.
- Capacity verification of operators' needs.
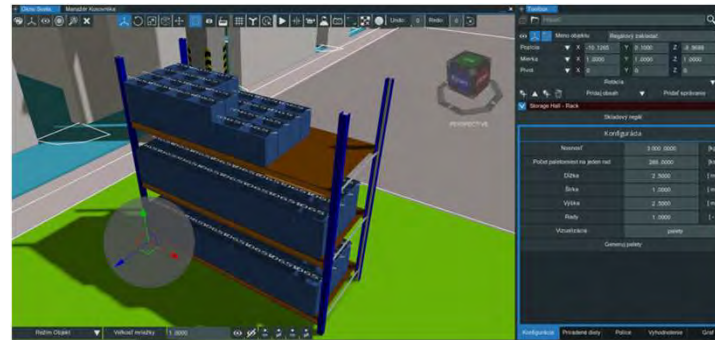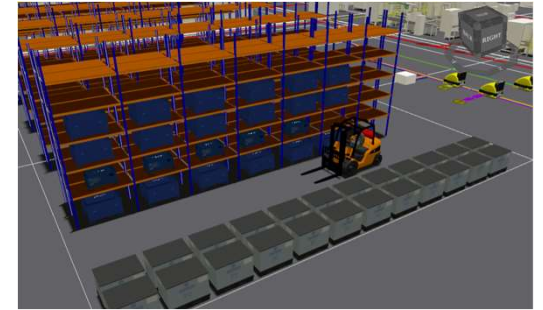
**Savings**
- Efficiency increase of the design and planning process by 10-30 %
- Shortening the time of workshops by 25 %
- Reduction of total operating costs by up to 30 %

**Outputs**
- Design of optimal production layout in accordance with logistics efficiency.
- Creation of a parametric model that interactively evaluates the KPIs of indicators after changing the input parameters.
- Comprehensive and capacity assessment of production, logistics and warehousing processes in one place.
- Balancing of a production machinery and lines.
- Optimization of capacity utilization of operators.
- Optimization and capacity dimensioning of warehouses and supermarkets.
- Ergonomic design of the workplace

**Benefits**
- Visualization of logistics processes
- Answers to the question "what happens when..." Possibility to try several scenarios
- Elimination of possible errors due to non-harmonization of planning activities.
- Interactive team evaluation of the new production starts design.
- Compatible data import and export with other software (Autocad, Microstatio, MS Excel,...)

# Future
## accelerated

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