

# Smarttwin





## DIGITAL TWIN – FASHION OR NECESSITY?

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**SmartTwin (ST)** - Solution known as «Enterprise Digital Twin» means the paradigm connection of physical and digital world through the interaction of a person, equipment and analytical software. Enables control and improvement of production cycle operations, thereby simplifying operational activity, saving resources, diminishing the number of failures, extending the service life of the equipment



## BENEFITS

- + Improving production time on 10% to 50%
- + Reducing cost of products on 3% to 10%
- + Increasing volume of product supplied up to 25%
- + Reducing lead time on 10%-40%
- + Reducing unnecessary amount of produced products – on 20% to 30%
- + Average ROI in 8-12 months for the most of customers



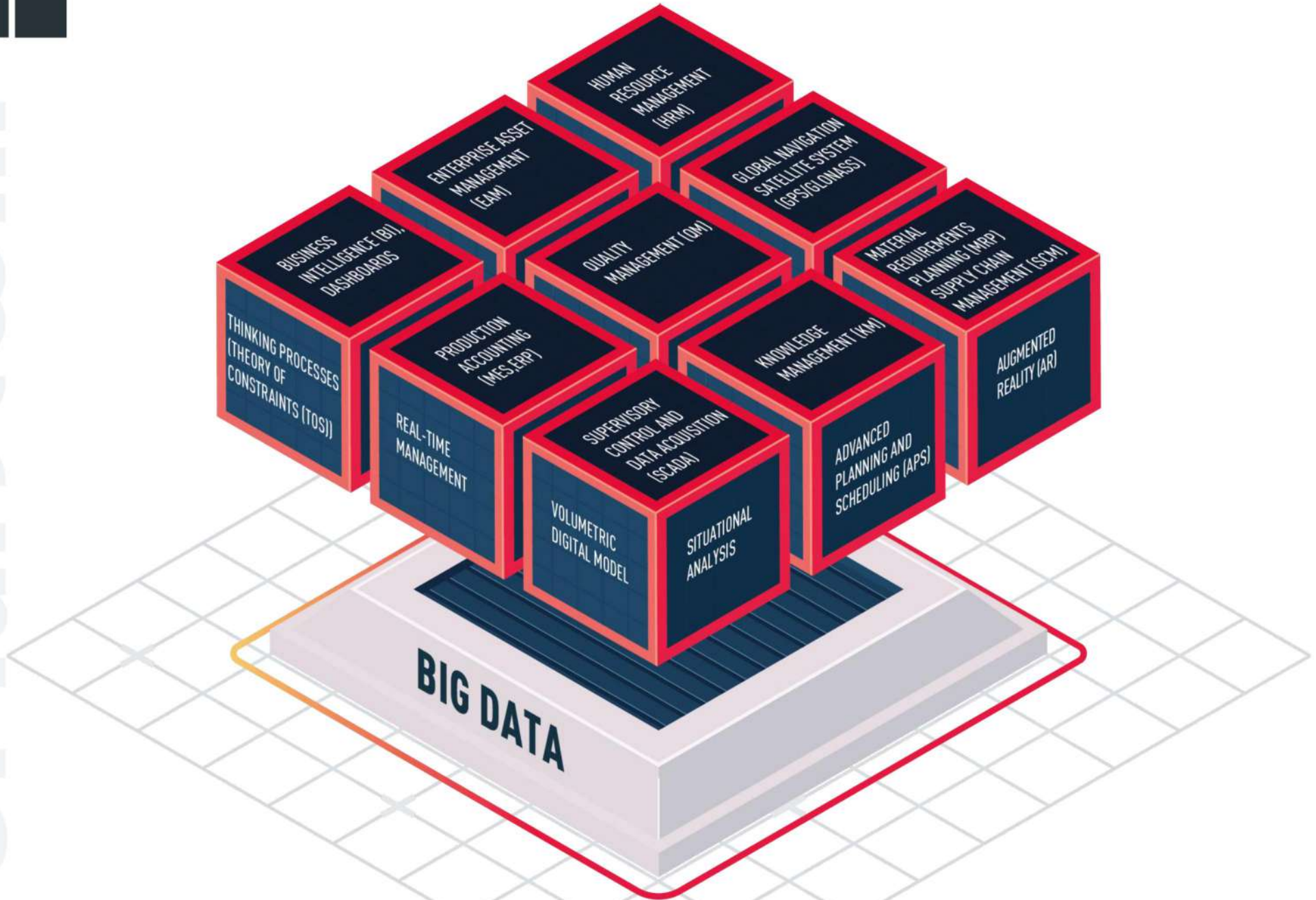
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# INFORMATION SYSTEMS

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## STRATEGIC DECISIONS

- + The only entry point for obtaining information
- + Data accumulation and plenty of objects to control
- + Modeling of divisions activities and objects locations
- + Production analysis
- + Optimization and simulation of production operations
- + **Management of the enterprise and decision support!**



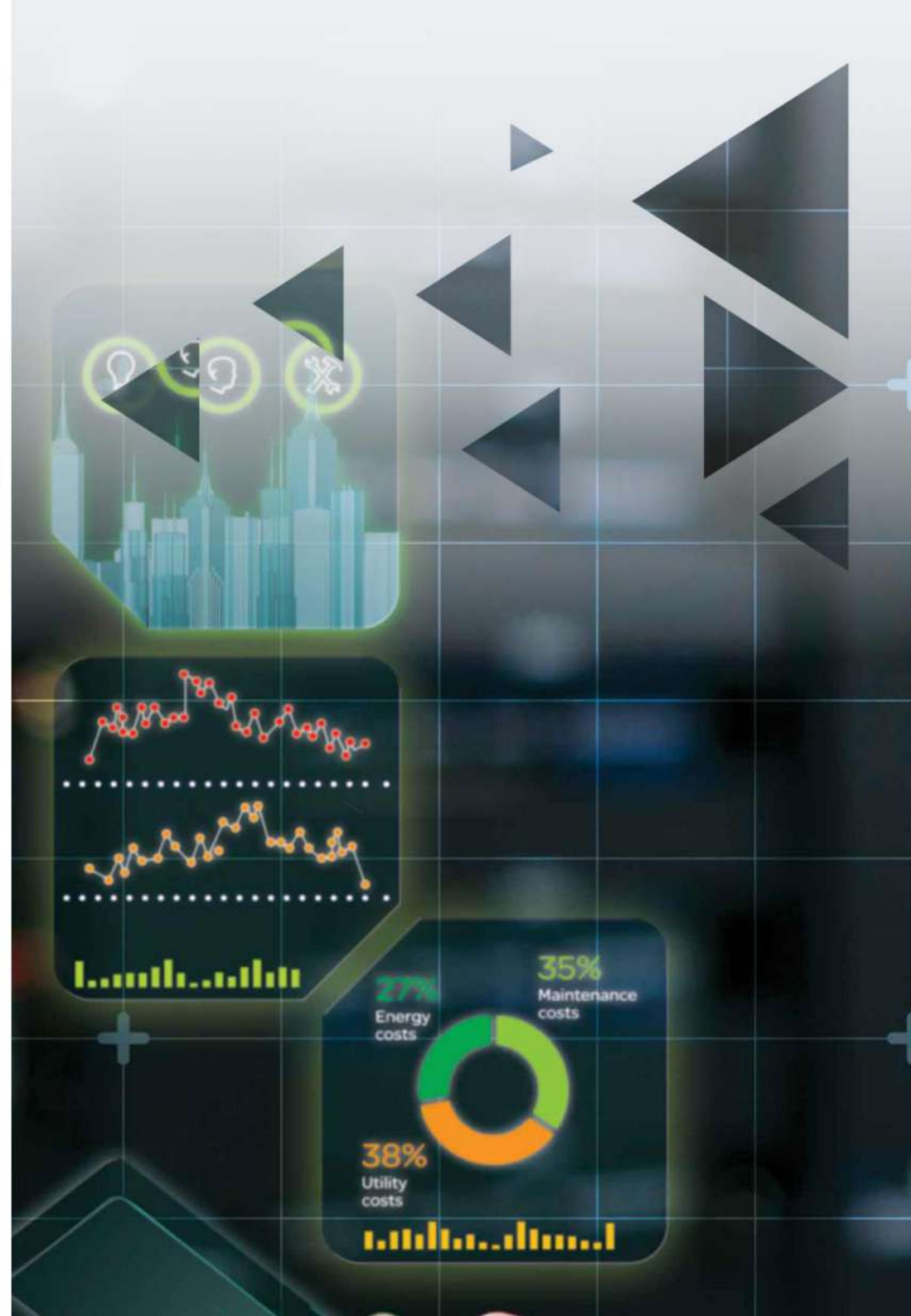
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# PRODUCTION PROCESS SUPPORT

- + Visualization of analytical, statistical and dynamic information
- + Up to 50% acceleration in resolution of various production tasks
- + Repairs and downtime duration and quantities reduction
- + Machinery and equipment maintenance costs reduction
- + Work planning and monitoring of operation condition of equipment





# PRODUCTION PROCESS SUPPORT

- + Planning of cargo placement and control of warehouse capacities
- + Railway and truck traffic management
- + Asset management
- + Technological processes visualization
- + Providing timely and reliable information

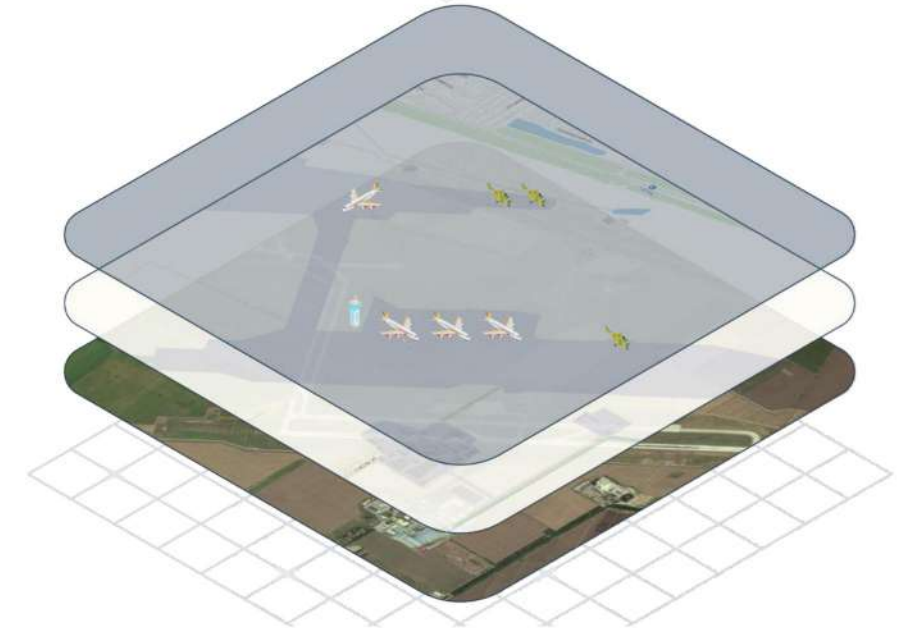
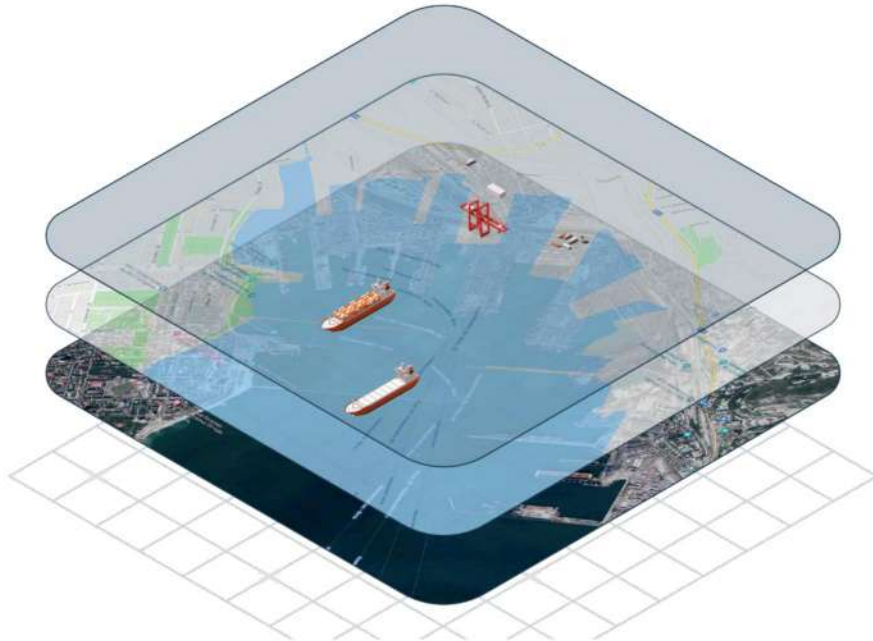


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# INTERACTIVE MULTILAYERED VISUALIZATION

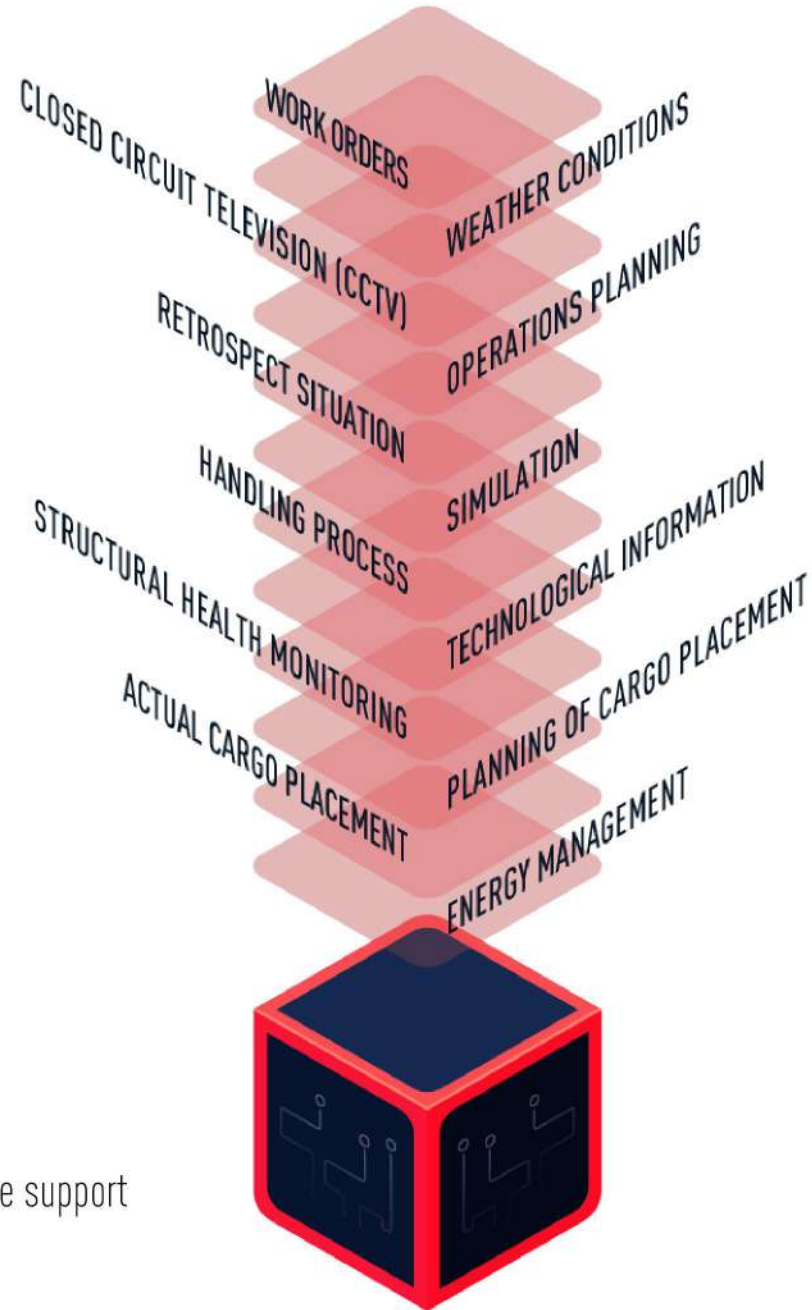


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# EVERYTHING IN "SINGLE-WINDOW" MODE



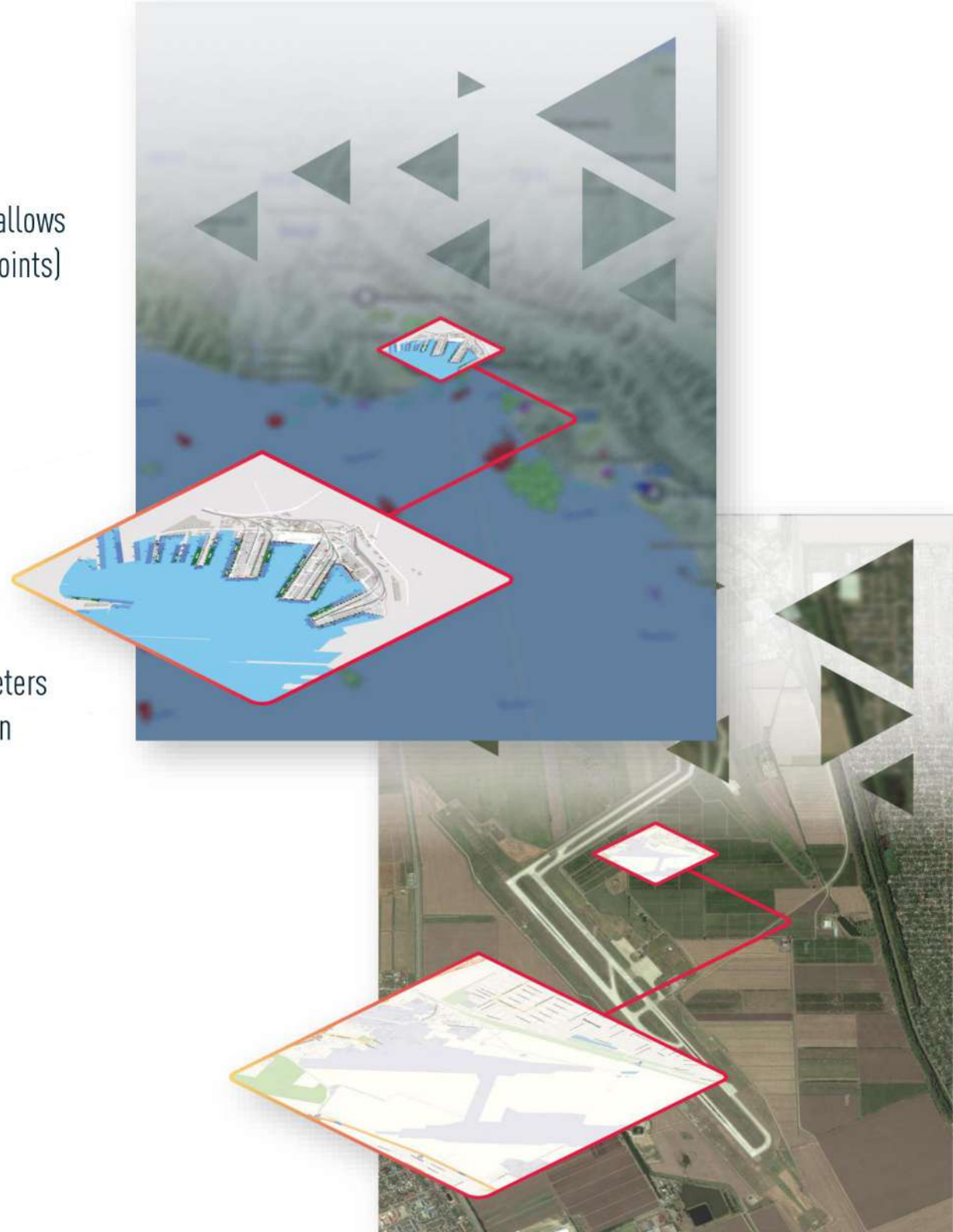
+ Multi-language user interface support

22 READY  
made information layers +



## ABOUT THE SYSTEM

- + Accurate geographic coordinates display of area allows to determine correct distance between objects (points) on the map
- + 2D and 3D display
- + Zoom-in-out support
- + Interactive displaying of objects and their parameters in real time and retrospect (location and condition changes of objects) in layers
- + Adding and editing map objects
- + Geolocation services support

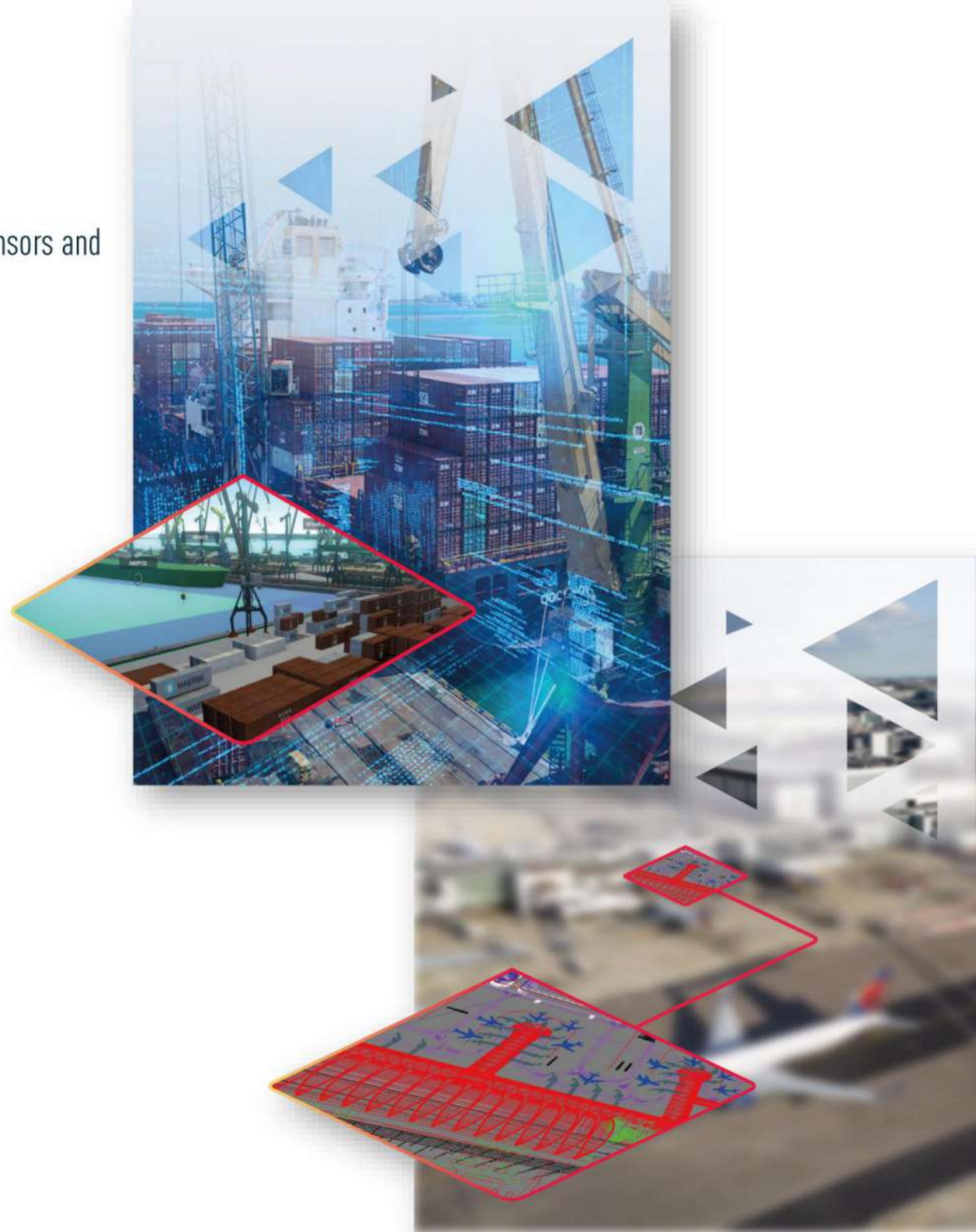


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## ABOUT THE SYSTEM

- + Receiving and displaying data from weather sensors and weather monitoring systems
- + Objects and cargo search
- + Role-based security permissions model
- + Personal user settings
- + Objects change log

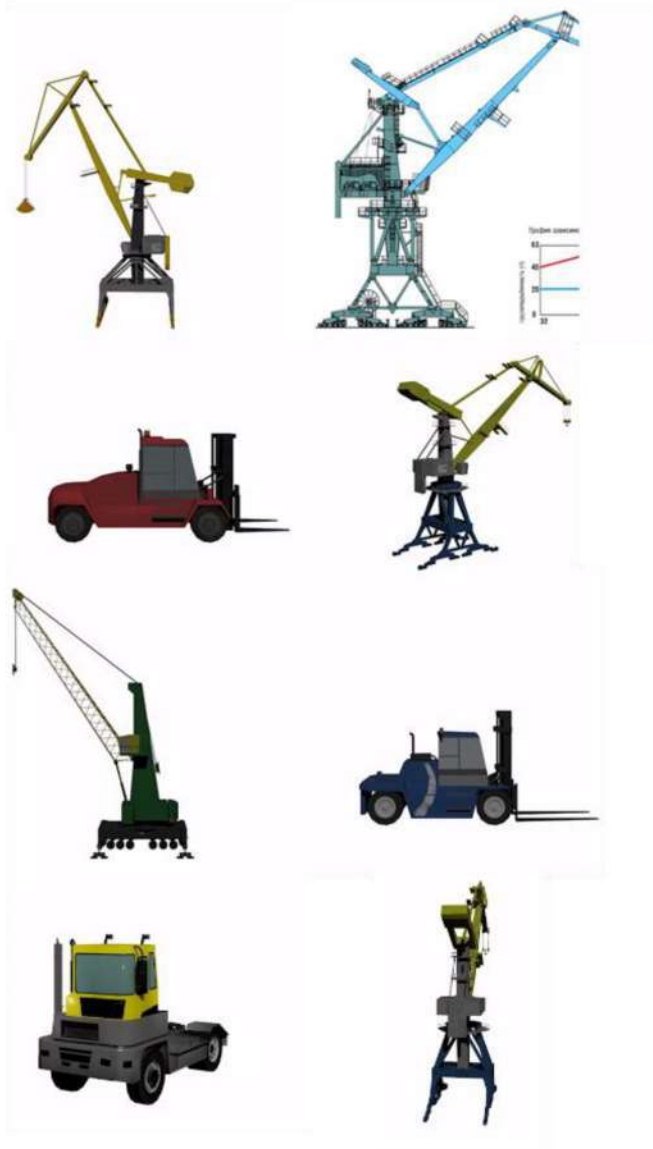






# REALISTIC DISPLAY OF OBJECTS

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# WAREHOUSING

- + Storage places markup
- + Visual planning of cargo placement in storage area
- + Obtaining visual information of the implementation of the cargo placement plan
- + Obtaining visual information about containers actual placement
- + Obtaining visual information about planned containers placement
- + Obtaining detailed cargo information from invoices



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## HANDLING MACHINERY

- + Display of equipment by types and groups
- + Display of the actual location and condition of the equipment in real time
- + Obtaining real time technological information about equipment (fuel level, engine hours etc)
- + Obtaining change log of equipment location and condition, execute visual analysis



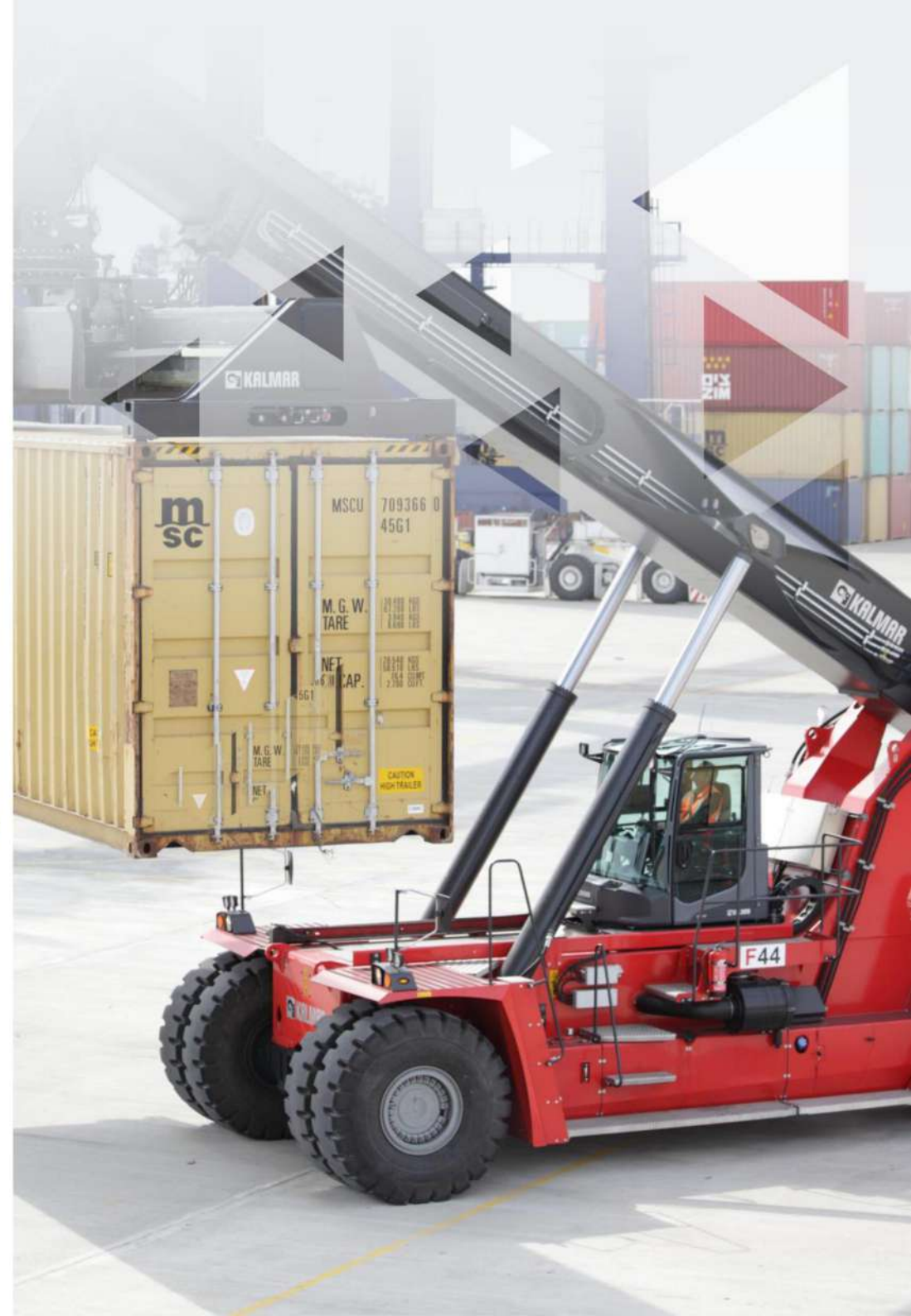
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## SPECIALIZED VEHICLES

- + Location control based on satellite monitoring systems
- + Determination of allowed areas for parking, moving and working
- + Informing vehicles driver's about allowed areas according to work orders
- + Processing of critical violations up to the blocking of further movements of vehicles



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# ENGINEERING NETWORKS AND SYSTEMS

- + Display of engineering networks in 3D
- + Visualization of conditions of hosts, units, sensors with change log
- + Loading objects from computer-aided design (CAD) systems
- + Providing access to drawings of the objects



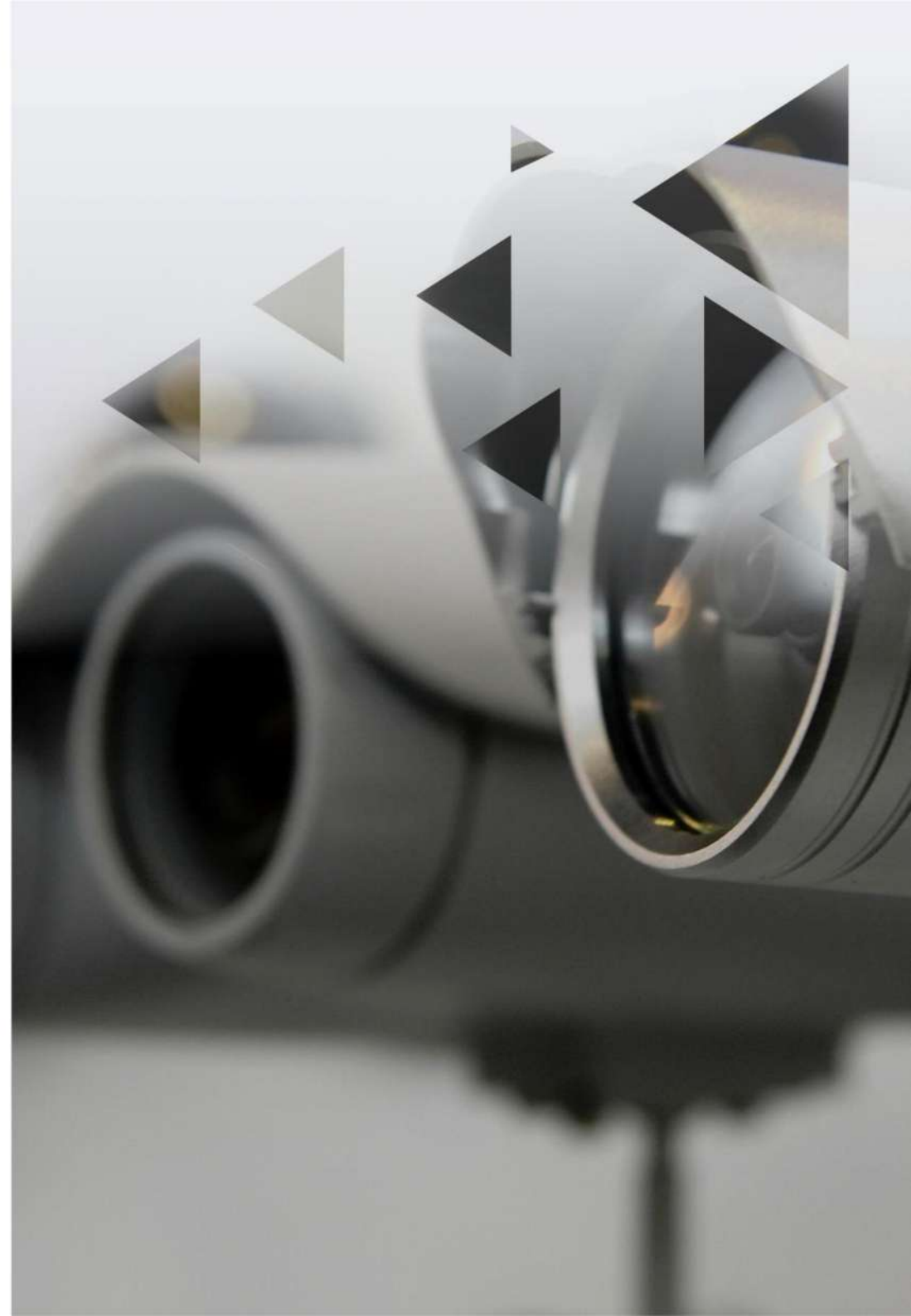
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## SECURITY SYSTEMS

- + Visualization of the location objects of CCTV system
- + Viewing streaming video from CCTV objects
- + Pan-tilt-zoom (PTZ) cameras control
- + Display covered areas with CCTV system
- + Visualization of the borders and conditions of Physical Access Control System (PACS) objects







# RAILWAY TRANSPORT AND TRUCKS

- + Visualization of the trucks location at map
- + Visualization of the wagons location at railway schema
- + Obtaining information about cargo, carrier, consignee, consignor etc.
- + Obtaining information about actual condition and cargo handling plans



SmartTrucks



# INTELLIGENT LIGHTING AND ENERGY EFFICIENCY

- + Takes into account the level of natural light
- + Control of the elements of the power network in manual mode and / or semi-automatic mode
- + Providing energy efficiency statistics

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# TECHNOLOGICAL MONITORING

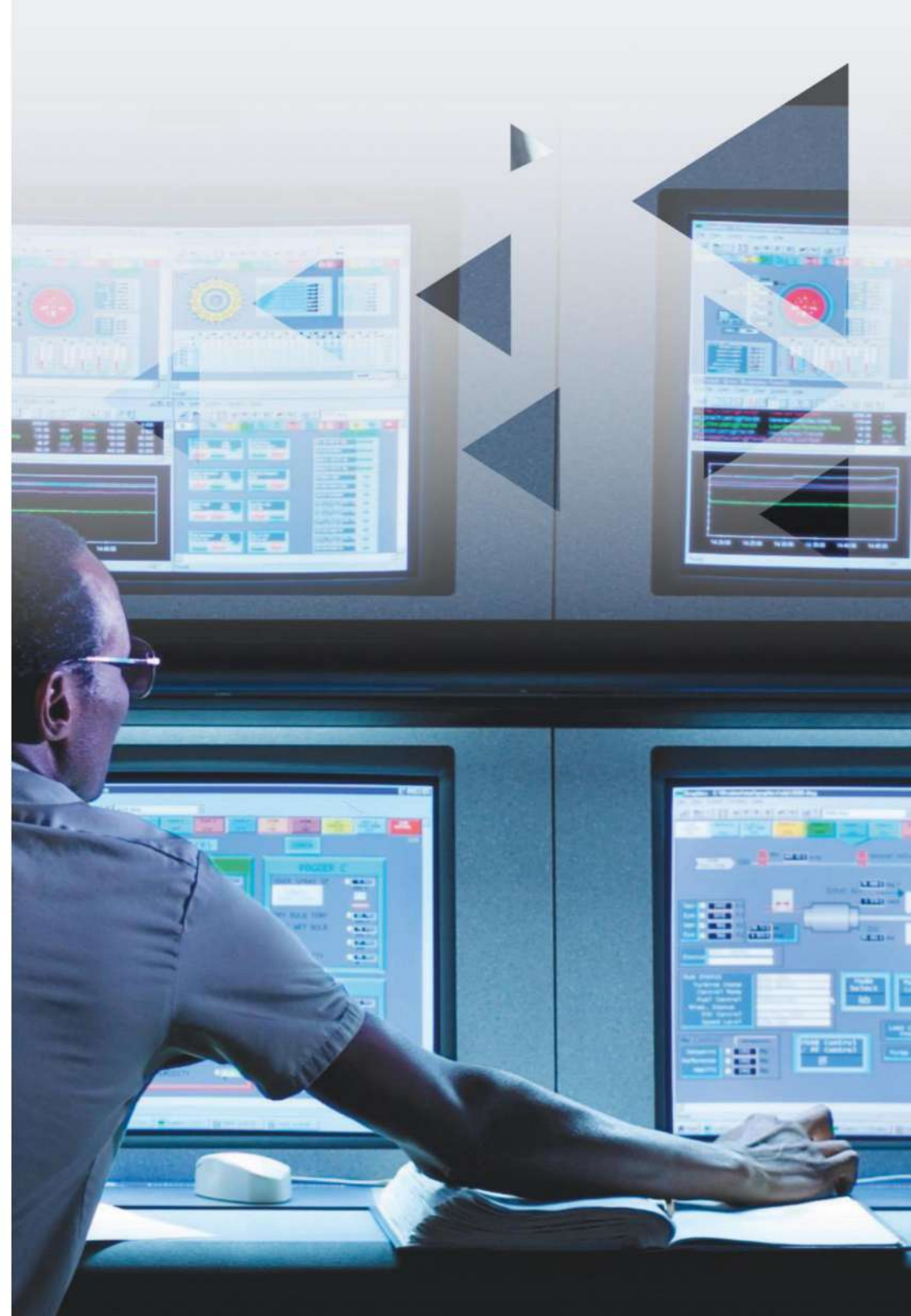
+ Monitoring of technological process parameters

+ Equipment loading monitoring

+ Monitoring of equipment resource costs

+ Monitoring stock balances

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## TECHNOLOGICAL MONITORING

+ Monitoring of quality indicators

+ Environmental monitoring

+ Energy consumption monitoring

+ Digest and production reports

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# ENERGY MANAGEMENT

- + Providing statistics on the efficiency of the energy resources usage
- + Aligning of measured parameters of resource consumption and a production to a single standardized units of measurement (tonnes, Nm<sup>3</sup>, TOE, Gkal)
- + Energy resource consumption monitoring by areas, workshops and resource allocations schemes

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# SITUATION CENTER

**+** **SmartTwin** is able to self-aggregate in itself all systems (from low- level controllers, IoT, sensors to business systems), thereby being the main element of the **SITUATION CENTER**

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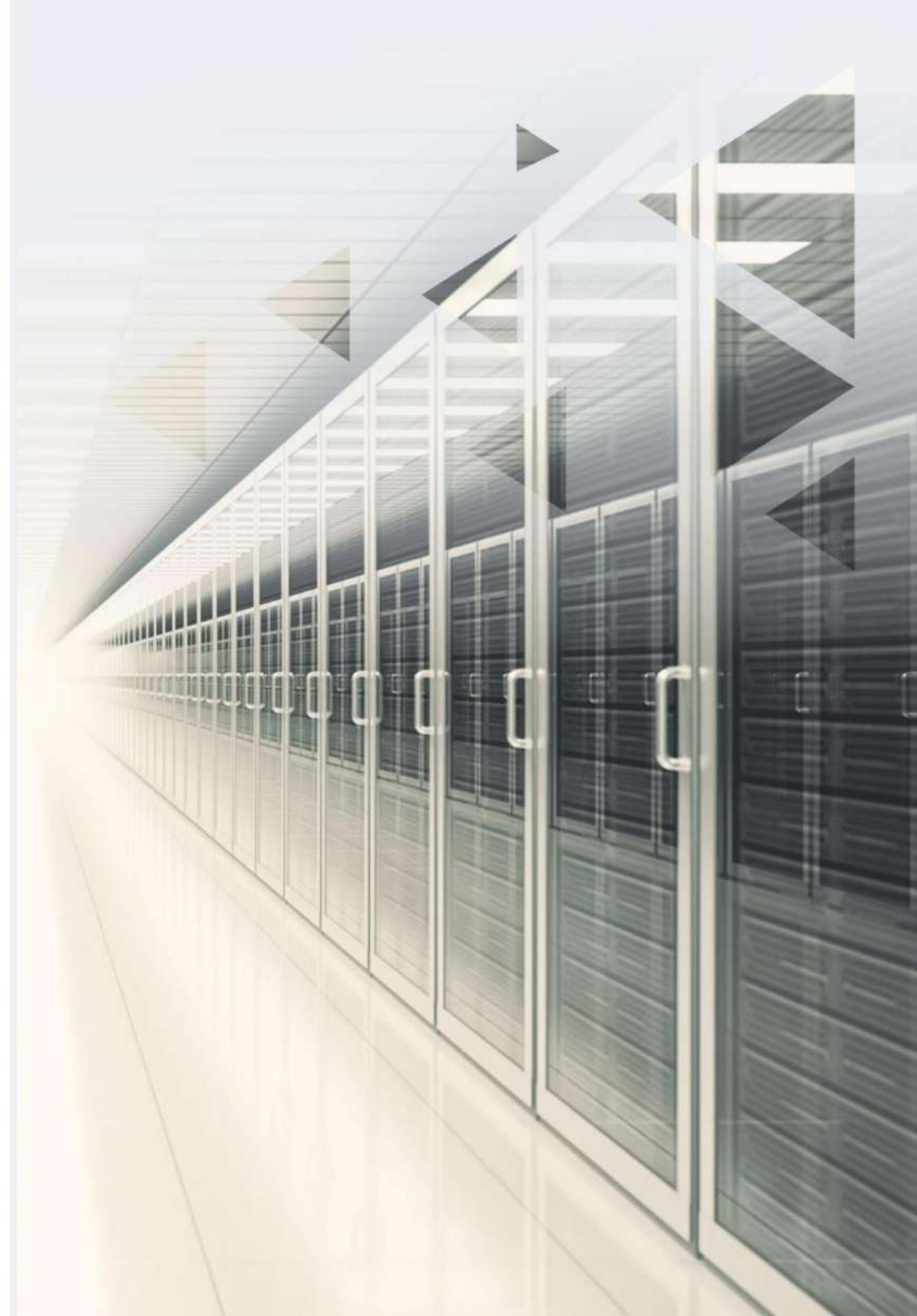




## BIG DATA AND ANALYTICS

- + Accumulation of a high number of indicators values from controllers, sensors, devices and systems
- + Ability to access to any snapshot (as to the history of a separate object and the system as a whole)
- + Analytical processing, forecasting and modeling based on data collected over the entire accumulated history

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# INTEGRATION

- + Providing integration with any information system that is not a closed one
- + Providing wide list of ready connectors to :
  - DBMS Oracle, MS SQL Server, PostgreSQL etc.
  - Solvo.TOS, Master Terminal, iPortman etc.
  - MS Dynamics AX, SAP HANA
  - Red Hat JBoss Fuse, IBM Integration Bus, MS BizTalk Server
  - MOORiNET
  - 1C
  - MS Office etc.

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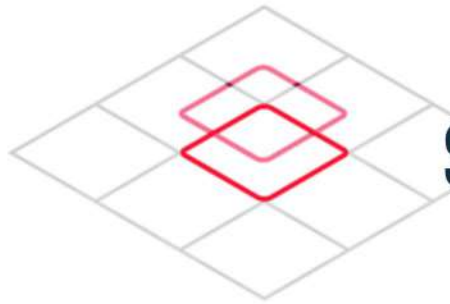






THANKS

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