

# Bureau Hyperborea



Applied Science & Ship Design

# About us

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Our company carries out the research and development activity to solve complex scientific and technical problems

Our priority area is ship design and holistic analysis of sea and river transport systems

Our skills and expertise in applied mathematics and informational technologies give us an ability to solve R&D problems in various fields - from mathematical modeling to engineering design

Our advantage is a multidisciplinary approach to scientific and technical problems

Our aim is to provide a high-quality assistance to our partners

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# Key Areas



## Ship Design

- Initial and conceptual design. Optimization of ship main particulars for various types of ships
- Development of ship propulsion models for ice and open water conditions
- Optimization of engineering decisions at preliminary design stages
- Technical and economic models of vessel operation
- Applied numerical methods in the field of hull strength and resistance prediction



## Mathematical Programming and Operations Research

- Tactical voyage planning. Situational and combinatorial methods to solve transport planning problems
- Supply chain optimization. Vessel scheduling
- Vessel routing in non-stationary weather and ice conditions
- Operational planning of port operations





# Key Areas

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## Simulation modeling

- Models of motion and interaction of active agents in GIS- space
- Non-stationary and stochastic models of environmental conditions
- Discrete-event modeling of production processes
- Models of system dynamics in ecology and agriculture
- Probabilistic models and risk analysis



## Data analysis & IT

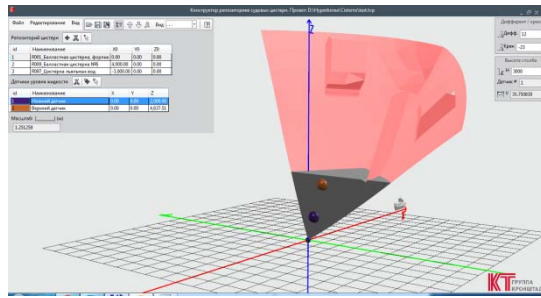
- Object-oriented design and programming
- Databases of environmental conditions with geoinformation references
- Analysis of cargo flows in marine transport systems
- Solutions based on subject-oriented high-level frameworks: AnyLogic, Powersim, ModelMaker
- Engineering software development and consulting



# Experience

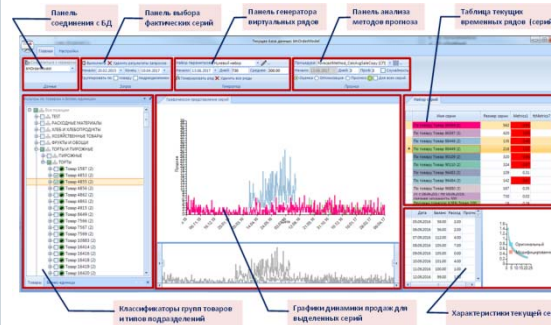


## JSC Kronshtadt Group



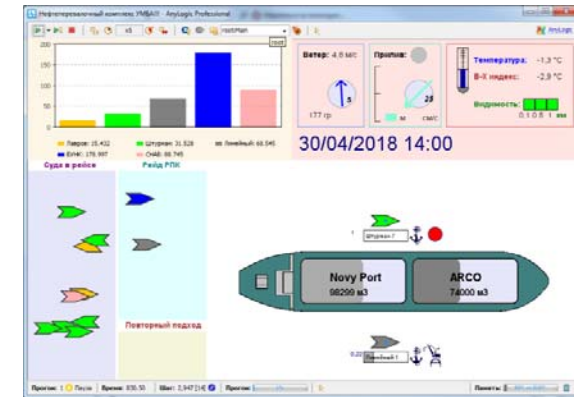
Applied software for calculation of filling levels of tanks with an arbitrary geometry, at any angles of heel and trim, and with an arbitrary arrangement of sensors

## Run-Retail Company



Applied statistical analysis and forecasting of sales dynamics.

## Morstroytechnology Ltd



Simulation modeling of the oil transshipment terminal

# Contacts

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