



DHI MARKET AREA: ENVIRONMENT AND ECOSYSTEMS

## DECISION SUPPORT SYSTEMS (DSS)

Supporting you in making better decisions for water environments

Decision-makers are increasingly faced with making complex decisions with significant economic, social and environmental implications. Our Decision Support Systems (DSS) can help decision-makers handle this complexity and make better decisions. Data is now becoming more frequently available from remote sensing, autonomous vehicles and affordable *in-situ* measurements. Although this data can be very useful to decision-makers, the challenge is to put individual data points (with individual strengths and weaknesses) into a context where they can be evaluated in both user-friendly and transparent ways. This can be done by combining automated processes, integrated quality control and uncertainty evaluations with numerical models and presenting them in a customised graphical user interface (GUI).

### THE CHALLENGES

- Dealing with and consolidating diverse data types
- Quantifying values associated with the environment
- Raising public stakeholder awareness
- Reducing work delays and thereby reducing costs
- Enabling quick decision-making
- Minimising resource usage
- Enabling scalability during emergencies

### OUR APPROACH

We approach decision-making challenges by pooling the relevant data, experiences, knowledge and best practices from around the world. We then combine them with 'what if' scenarios produced by proven numerical models with quantifiable uncertainties. This pool of knowledge is then shared with as many stakeholders as possible, without compromising confidentiality.

### OUR SOLUTIONS

- Data consolidation within one framework, with the ability to drill down to details
- Scales of impacts based on worldwide experience
- Simple measures which can avoid fatalities and severe impacts
- Forecasting of causes as well as effects
- Continuous evaluation of model performance
- Modular execution on demand

**THE ULTIMATE GOAL** APPROPRIATE AND ACCURATE DECISION-MAKING WITH DSS

## Effective data integration leads to effective decisions



### OUR TOOLS AND SERVICES

At DHI, we have extensive experience and expertise in putting standard data building blocks together in DSS, in ways that are customised to meet the needs of the client. Our tools and services include:

- MIKE Powered by DHI engines, which can simulate a full range of water and water-related processes, including:
  - hydrodynamics in coastal and marine areas, rivers, lakes, and reservoirs
  - water allocation and sharing
  - tsunamis, storm surges, typhoons and flooding
  - climate change and adaptation measures
  - groundwater flows and contamination
  - sediment transport and coastal morphology
  - industrial, wastewater and thermal discharges
  - storm water and sewage networks
  - dredging and reclamation activities
  - oil spills and oil spill response
  - underwater noise
  - ecological responses to developments or impacts
  - individual agent-based responses (ranging from viruses and bacteria, to coral larvae, fish, birds, sharks and vessels)
- Platforms for information management and decision support, including:
  - building blocks that provide customised management, analysis and visualisation of model results and monitoring data
  - WebGIS on OpenGIS platforms — secure on-line access, with customisable access/views/features
  - data management (plots, animations and statistics)
  - scenario management (for example, testing and comparing potential impacts of different decisions, ranking alternatives and cost-benefit analyses)
  - backtracking (audit log/documentation of decisions)
  - APIs to all components for individual customisation
- THE ACADEMY by DHI, to train your staff to build the necessary capacity to sustain and further develop your solutions as new challenges emerge
- specialist consultancy services to help you in designing and establishing your software solution and designing, installing and maintaining your monitoring systems

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