

Environmental Decision Support Network

Future Development Plan
2007-8



EDSnet Vision

- EDSnet will germinate and grow ideas for innovative solutions to address environmental threats through improved decision-making
- It will do this by providing a forum where ‘market pull’ opportunities can connect with ‘science & technology push’ ideas
- Activities will focus on key application areas where advances in core capabilities will enable new products & services

Application Area 1: Tackling Spills & Incidents



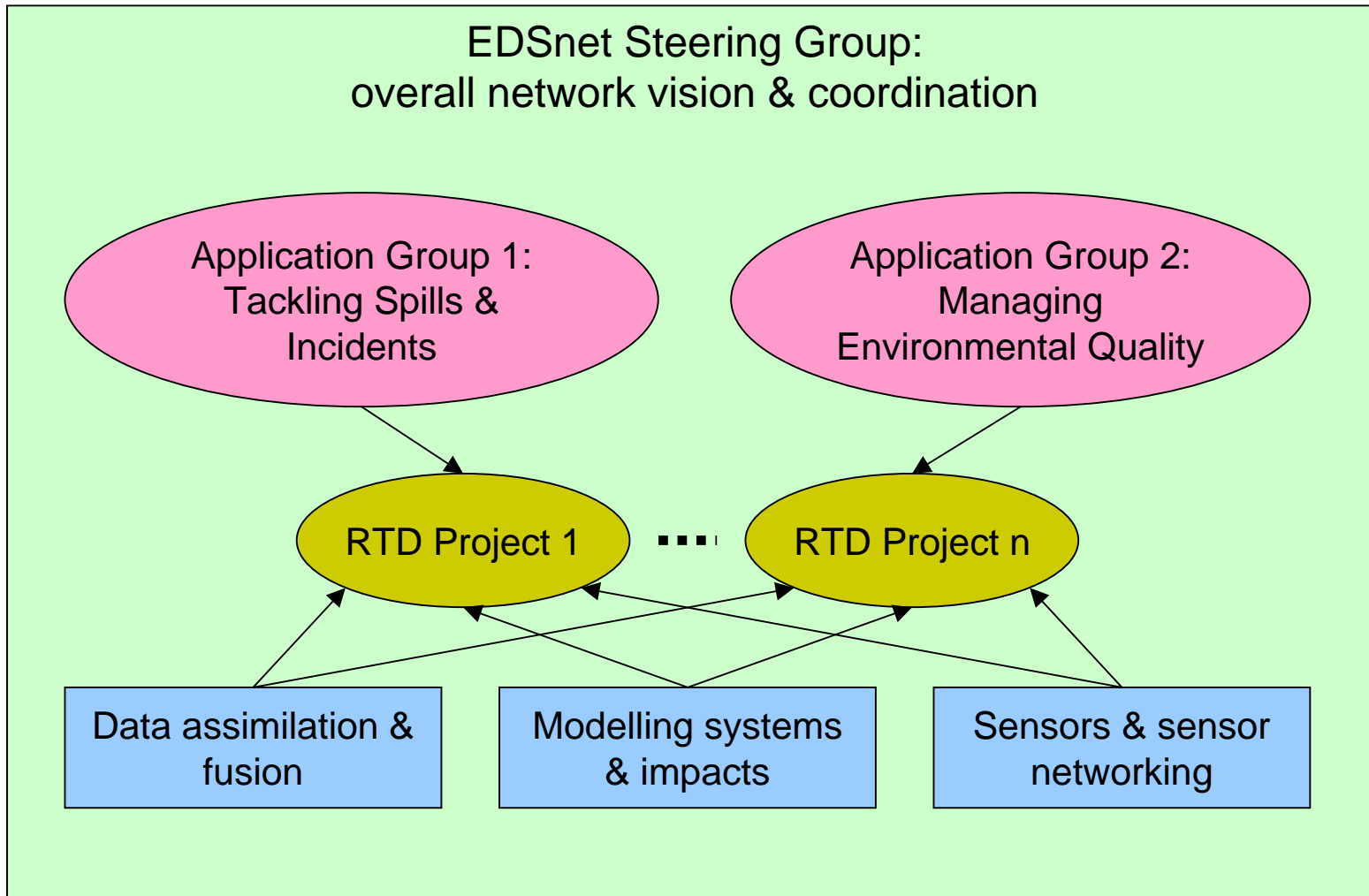
- Goal
 - Development of systems for responding to time-critical events and crises, optimised against environmental, economic & social impacts
- Project topics
 - Integration of enhanced metocean model and observation data within spill trajectory forecasting (some work on this is included in FP6 SANY)
 - Development of socio-economic impact models for use within decision-support tools
 - Application of novel sensor platforms (eg AUVs, disposable sensors) and imaging techniques for detection and quantification of spills

Application Area 2: Managing Environmental Quality



- Goal
 - Development of systems for monitoring the status of complex ecosystems, detecting deviation from norms, and forecasting potential liability or non-compliance events
- Project topics
 - Application of novel low-cost sensors and platforms for enhanced data coverage across sensitive areas
 - Development of techniques for integrating ad-hoc observation data within short-term forecasting of water quality (eg bathing waters)
 - Development of biomarker techniques within longer-term environmental management tools, to avoid chronic loss of ecosystem integrity

EDSnet Structure



Technologies for measuring and monitoring networks



- Call text:
 - Technologies to assess the chemical and ecological status of water bodies for cost-effective monitoring campaigns
 - Miniaturised sensing systems and wireless network technology
 - Chemo- and bio-sensors with low maintenance requirements
 - Technologies for sensing a wide range of parameters - including those required for the Water Framework Directive
 - Relevant participation of industrial partners as well as of SMEs is requested
- Expected impact:
 - Substantial reduction of labour-intensive field sampling and measuring campaigns
 - Temporally and spatially dense data provided by these technologies is expected to reveal previously unobservable phenomena
 - Strengthening the European industrial competitiveness in this field.

Coastal Ad-hoc Monitoring System - CAMS

- Concept
 - Miniaturized, low-cost sensor package
 - Short-term deployment on structures or vessels of opportunity such as small leisure craft or work boats
 - Sensors for fundamental water quality parameters (eg dissolved oxygen, salinity, turbidity)
 - And/or
 - Advanced 'lab on chip' biosensor technology
 - GPS module will log location of each measurement
 - Data telemetered on return to shore, using an RF modem
 - Limited mission time (up to 1 week) will avoid biofouling

CAMS Structure

- WP1 Management
 - coordination, reporting, contract administration
- WP2 System specification
 - specify the functionality of the system which can meet the requirements of target end-user markets
- WP3 Sensor configuration
 - develop three sensor devices to measure key parameters, designed for a 5-day deployment duration
- WP4 Module development
 - marinisation of an existing module for data acquisition, GPS receiver and wireless modem, and interfacing to the WP3 sensors
- WP5 Software development
 - configuration of existing sensor networking technologies & protocols under TinyOS
- WP6 Pilot system
 - construction of a pilot system to validate the technologies, comprising sensor modules (WP4), land-based data node (existing) and software (WP5)
- WP7 Commercialisation
 - establishing engagement with key users, defining needs to inform system specification, and examining device economics to assist exploitation business planning
- WP8 Dissemination
 - building awareness of the project and its potential impacts

Fostering improved co-operation between marine science and the private sector

- Call text:
 - Co-operation between marine scientists, the oil & gas industry and the telecommunication sector is growing
 - New perspective for cooperation between the commercial sector and environmental R&D
 - The marine science community and the private sector should be encouraged to find areas of synergy where common initiatives can be developed
- Expected impact:
 - Improved knowledge transfer (dissemination and exploitation)
 - Innovative approaches aimed at protecting, restoring and/or using marine systems and resource in a more sustainable way
 - Direct involvement of the main stakeholders in the public and private sectors
 - An effective interface to the public and private sectors to enable widespread understanding and acceptance of marine science and private sector activities.

European Marine Science Applications Consortium (EMSAC)



- Concept
 - Focus on five(?) main application markets:
 - Offshore oil & gas
 - Marine renewable energy
 - Marine telecommunications
 - EEZ & ICZM
 - Aquaculture
 - Marine aggregates?
 - Work within four(?) major geographic domains:
 - North Sea
 - Mediterranean
 - Baltic
 - Black Sea
 - External territories?

EMSAC Structure

- WP1 – Management
 - Coordination, administration, reporting
- WP2 – Oil & gas
 - Build on TRENDS Thematic Network (FP5)
- WP3 – Marine renewable energy
 - Planning, installation, operations management & maintenance
- WP4 – Marine telecommunications
 - Seabed cable laying: routing, surveying, laying, maintenance
- WP5 – EEZ & ICZM
 - Requirements of UNCLOS, EU Maritime Green Paper
- WP6 – Aquaculture
 - Fish farming, shell fisheries, marine biomass
- WP7 – Dissemination & engagement
 - Reports & workshops, North Sea, Baltic, Mediterranean, Black Sea, peripheral regions
- WP8 – Strategic priorities
 - New initiatives for collaboration, policy implications

ICT for Environmental Management and Energy Efficiency

- **Specific International Cooperation Action (SICA)**
 - Environmental disaster reduction and management
 - Assessment of natural hazards and communities' vulnerability
 - Development and interoperability of rapidly deployable ICT-based solutions
 - Public warnings and emergency management

Networked, Embedded and Control Systems



- Control of large-scale complex distributed systems:
 - Efficient, robust, predictable, safe and secure behaviour for large scale infrastructures such as seaports etc.
 - Key challenges include
 - Generic modelling and design methods, dynamically reconfiguring architectures, languages and scalable algorithms for the control of evolvable, distributed and adaptable systems
 - Temporal and spatial uncertainties such as delays and bandwidth in communications and node availability
 - Integrating advances in sensor networks for closing the control loop
 - Research should strengthen and consolidate European excellence in systems sciences and engineering
 - International cooperation with the USA, Russia and W. Balkans is encouraged.
- Expected impact:
 - Low-cost monitoring of the environment and natural resources