Slide 1

Integrated systems for operational planning and crisis management

Perspective and business cases

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Slide 2

Planning and crisis management is about…

Decision-making prior or during a real "crisis" incident such as
- Natural hazards
- Technological accidents
- Human actions

Aiming to minimize…
- Human casualties
- Environmental damage
- Infrastructure damage
- Disorders in social and economic life

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Slide 3

Why is this important?

Because major threats such as
- Industrial accidents
- Natural hazards
- The climate change
- Other human activities
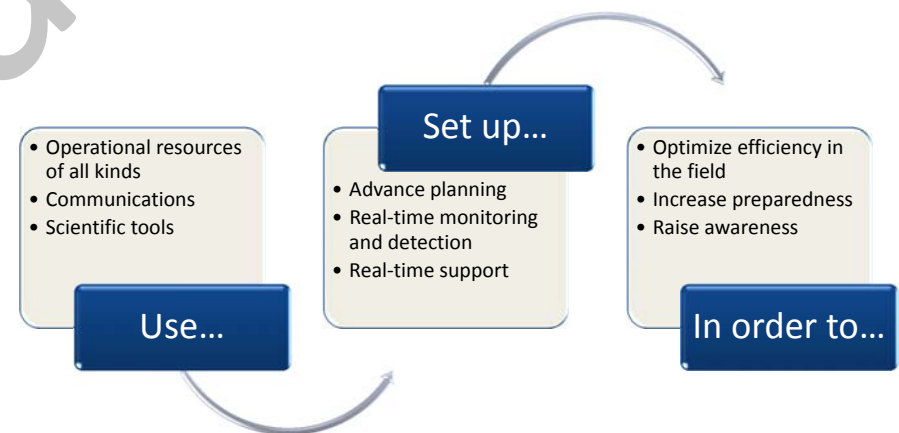
…cannot be overseen or managed "by experience" alone!

The challenge is to be as efficient as possible

Achieve minimal…	By making "optimal" use of…
Social life disorder	Time
Infrastructure damage	Money
Environmental damage	Resources
Casualties	Knowledge

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Slide 4

Planning and management resources

Use…
- Operational resources of all kinds
- Communications
- Scientific tools

Set up…
- Advance planning
- Real-time monitoring and detection
- Real-time support

In order to…
- Optimize efficiency in the field
- Increase preparedness
- Raise awareness

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Planning and management resources

Operational resources
- Operational vehicles, airplanes, etc
- Tactical and volunteer human squads

Infrastructures and tools
- Public infrastructures, telecoms, monitoring

Planning
- Simulation and scenarios
- Training and preparedness
- Raise of awareness

Integrated systems: scope

To put together
- Current practice
- New technological tools

To promote rationalistic development of
- Systems and monitoring tools

To support
- Advance planning
- On-field actions
- Strategic decisions

New tools are available

Real-time monitoring
- WSNs, cameras, etc

Simulation software
- Industrial accidents, forest fires, oil spills, floods, etc

Operational logistics and Knowledge Engineering
- Custom combinatorial optimization

Geospatial data platforms
- Spatial information management tools

Communications and applications
- AVL, location-based, context-aware applications

Our perspective

- Operational planning and crisis management can be efficient when all the tools and resources available are integrated in a way that all the stakeholders get all possible support when they need it
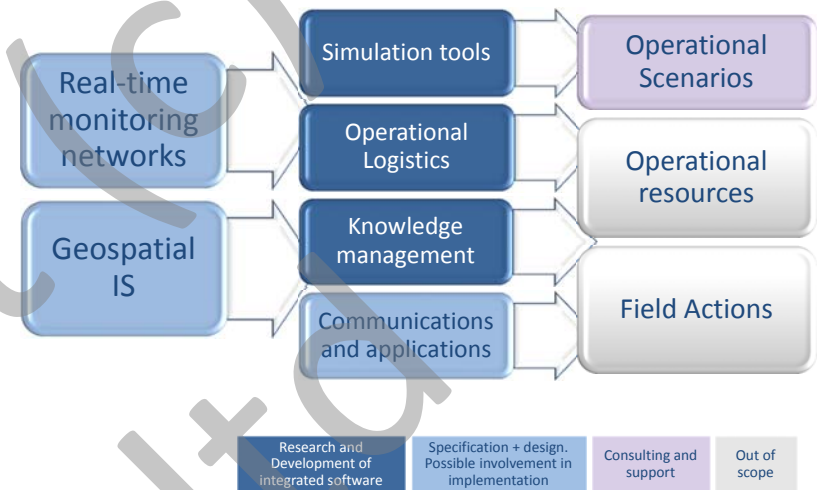
Our vision

Provide advanced, sophisticated and customized solutions to support planning and crisis management, by combining know-how in

- ➢ Simulation of natural processes
- ➢ Operational logistics and combinatorial optimization
- ➢ Knowledge Management
- ➢ Geospatial information systems
- ➢ Sensor networks architectures and integration
- ➢ Open, distributed and heterogeneous software architectures

Our capacities

Real-time monitoring networks
Geospatial IS
Simulation tools
Operational Logistics
Knowledge management
Communications and applications
Operational Scenarios
Operational resources
Field Actions

Research and Development of integrated software | Specification + design. Possible involvement in implementation | Consulting and support | Out of scope

Business cases

Civil areas and public transport hazards

Oil spill accidents

Industrial technological accidents

Forest fires

Natural hazards: Landslides, floods, etc

More cases possible…

Business cases (1)

Civil areas and public transport hazards

- ➢ Simulation of hazardous gas flows in the open, metro tube, stadiums, etc
- ➢ Area evacuation risk assessment
- ➢ Monitoring and real-time alerts
- ➢ Integration with transport management systems
- ➢ Scenario management for raising public awareness and preparedness
- ➢ Decision support for resource allocation

Business cases (2)

Oil spill accidents
- Evaluate hazards caused by possible oil spills in common tanker routes
- Monitor important areas using satellites
- Re-route ships in the area to avoid through-traffic
- Scenario management for optimizing preparedness
- Integrate with sea traffic management systems

Business cases (3)

Industrial technological accidents
- Simulation of hazardous gas flows in the event of fire, leakage or explosion in fuel repositories (3D)
- Risk assessment for population in the area
- Optimal vehicle routing integrated with flow simulation
- Integration with fleet management
- Real-time event assessment and data flows
- Scenario management for awareness and preparedness
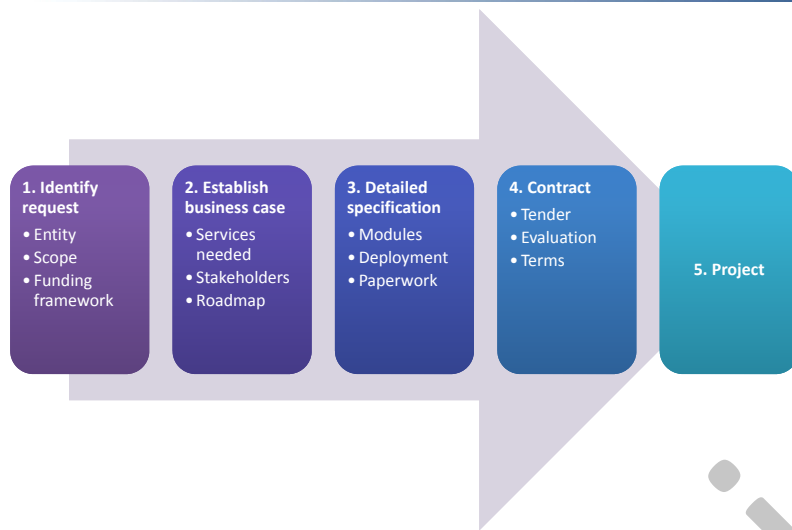
Business cases (4)

Forest fires
- Real-time fire detection using WSNs or cameras
- Simulation of forest fires
- Evacuation risk assessment
- Optimal vehicle routing integrated with fire simulation
- Integration with AVL systems
- Real-time comparative incident assessment
- Scenario management for awareness and preparedness

Business cases (5)

Natural hazards: Landslides, floods, etc
- Real-time detection
- Simulation (where possible)
- Evacuation risk assessment
- Optimal vehicle routing integrated with simulation
- Integration with AVL systems
- Real-time comparative incident assessment
- Scenario management for awareness and preparedness

Business workflow

Business workflow diagram (arrow):

1. **Identify request**
   - Entity
   - Scope
   - Funding framework
2. **Establish business case**
   - Services needed
   - Stakeholders
   - Roadmap
3. **Detailed specification**
   - Modules
   - Deployment
   - Paperwork
4. **Contract**
   - Tender
   - Evaluation
   - Terms
5. **Project**

Business cases

Case	Local autho-rities	National autho-rities	Private sector	Possible application(s)	Scale
Civil areas and public transport hazards	Yes	Possibly	No	Metro transport security Public events security	Medium to large
Oil spill accidents	Possibly	Yes	Possibly	Dynamic ship routing Coast hazard minimization Resource positioning	Medium to large
Industrial technological accidents	Possibly	Possibly	Yes	Fuel refineries and tanks Chemical industries Power plants	Any
Forest fires	Yes	Yes	Possibly	Real time fire detection Resource management Simulation and scenarios	Any
Natural hazards	Yes	Yes	No	Real time fire detection Resource management Simulation and scenarios	Medium to large

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Optum's Experience

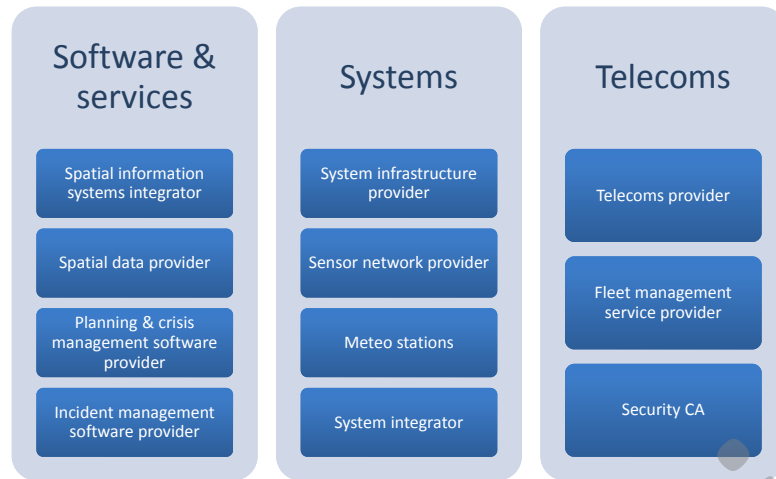| Case	Research	Pilot - small scale	Completed projects
Civil areas and public transport hazards	10+ years	Several	• 1 Greek government project for atmospheric pollution in Athens
Oil spill accidents	10+ years	1 project about ship routing in the Aegean by minimizing oil spill accident risks in island resorts	-
Industrial technological accidents	15+ years	Several	• 3 integrated contingency plans + industrial accidents management systems in Greece
Forest fires	10+ years	3 projects about integrated systems for forest fire management	• 1 large-scale implemented system • 3 contracts in progress • 2 complete studies under evaluation for large-scale systems
Natural hazards	5+ years	Several	• 2 European projects for managing flood risks

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On partners and roles

Every case is unique
- Initial assessment
- Technical specification
- Business roadmap
- Business lifecycle management

Exploitation of any existing partnerships
- GIS software providers
- Spatial data providers
- Existing applications and systems

Possible business partners

Software & services
- Spatial information systems integrator
- Spatial data provider
- Planning & crisis management software provider
- Incident management software provider

Systems
- System infrastructure provider
- Sensor network provider
- Meteo stations
- System integrator

Telecoms
- Telecoms provider
- Fleet management service provider
- Security CA

Thank you!