VEROCOST PROJECT

The objective of VEROCOST project was to develop a prototype Decision Support Information System (DSS) that demonstrates how it is possible, using appropriate technologies and methodologies, to improve decision-making regarding the prioritization of coastal defence and protection interventions.

In more detail, the prototype makes use of a multi-criteria and cost-benefit analyses that enable the identification and suggestion of prioritized areas for intervention following a scientific, and as objective as possible, approach by also conveniently incorporating the socio-economic impact of an erosion event.

In order to validate the approach and potential of the DSS, the project envisaged its testing on sample areas, with a view to future replicable use in other areas and for other contexts.

Project activities included:
- ☐ collection and processing of all required data in order to assign an estimate of the economic value of the coast for the areas subject to beach nourishment/combined interventions envisaged by a Regional Master Plan and awaiting implementation
- ☐ selection of a test or pilot Area, based on the estimate described above, for which Area new data are acquired in order to:
  - update shoreline forecasts in the absence and presence of assumed interventions
  - perform an economic assessment of the associated impacts, by homogeneous risk ranges
  - implementation of a decision support information dashboard (DSS) that allow regional and national bodies to profitably make use of the results of the experimentation for the purpose of programming, planning and design of interventions already ascertained or to be suitably identified.

Extract from 'ItaliaSicura'

"...it is then necessary to include **operational efficiency** - applying a **cost-benefit analysis** approach - at least as a general approach for planning interventions."

"... it is certainly possible and necessary to apply methods based on cost-benefit analysis, even if simplified and with first approximation data, in order to achieve the highest results for the same cost".

"... efficiency assessment, cost/benefit analysis and analytical study of risk and residual risk post-intervention are concepts that represent a decisive step forward in natural disaster risk management culture and policy"

The idea behind the project

Develop a prototype of a Decision Support Information System (DSS) regarding the prioritisation of defence and coastal protection interventions.

The prototype will use a multi-criteria and cost-benefit analysis to identify and suggest priority areas for intervention following a scientific and multidisciplinary approach.

What is a DSS?

Decision Support Systems (DSS) are IT tools that use data and mathematical models to support decision makers
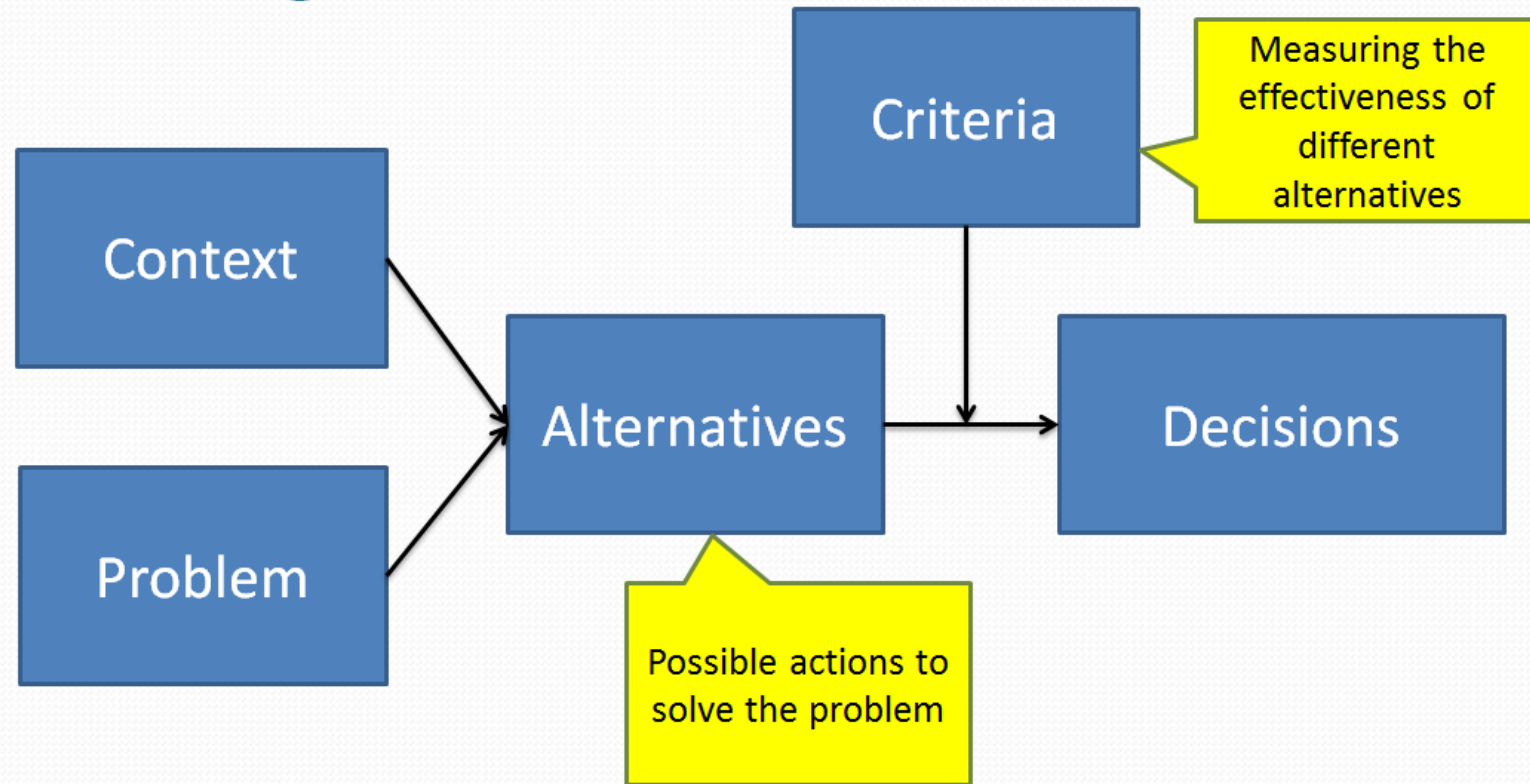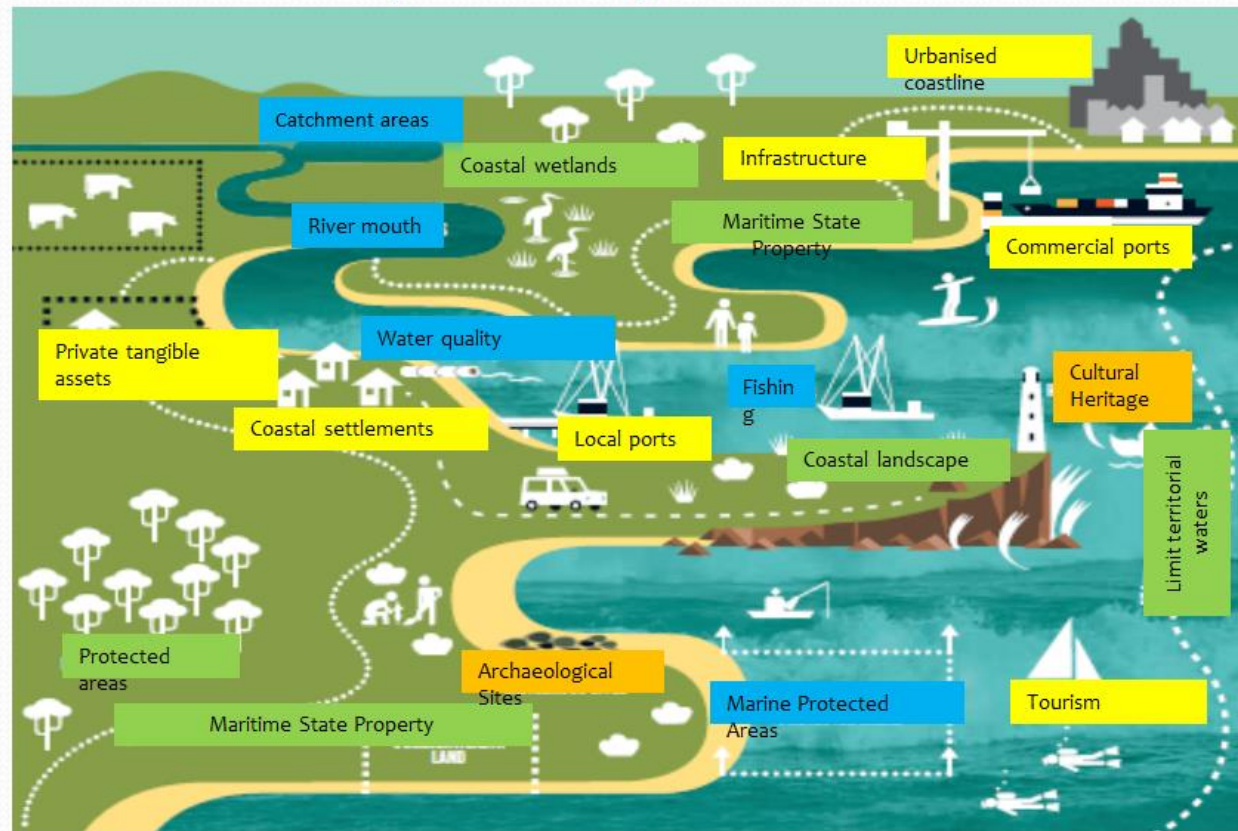
What is meant by Decision?

A decision is a choice between multiple alternatives, usually carried out in a rational manner. The decision-making process lies in the more general problem solving
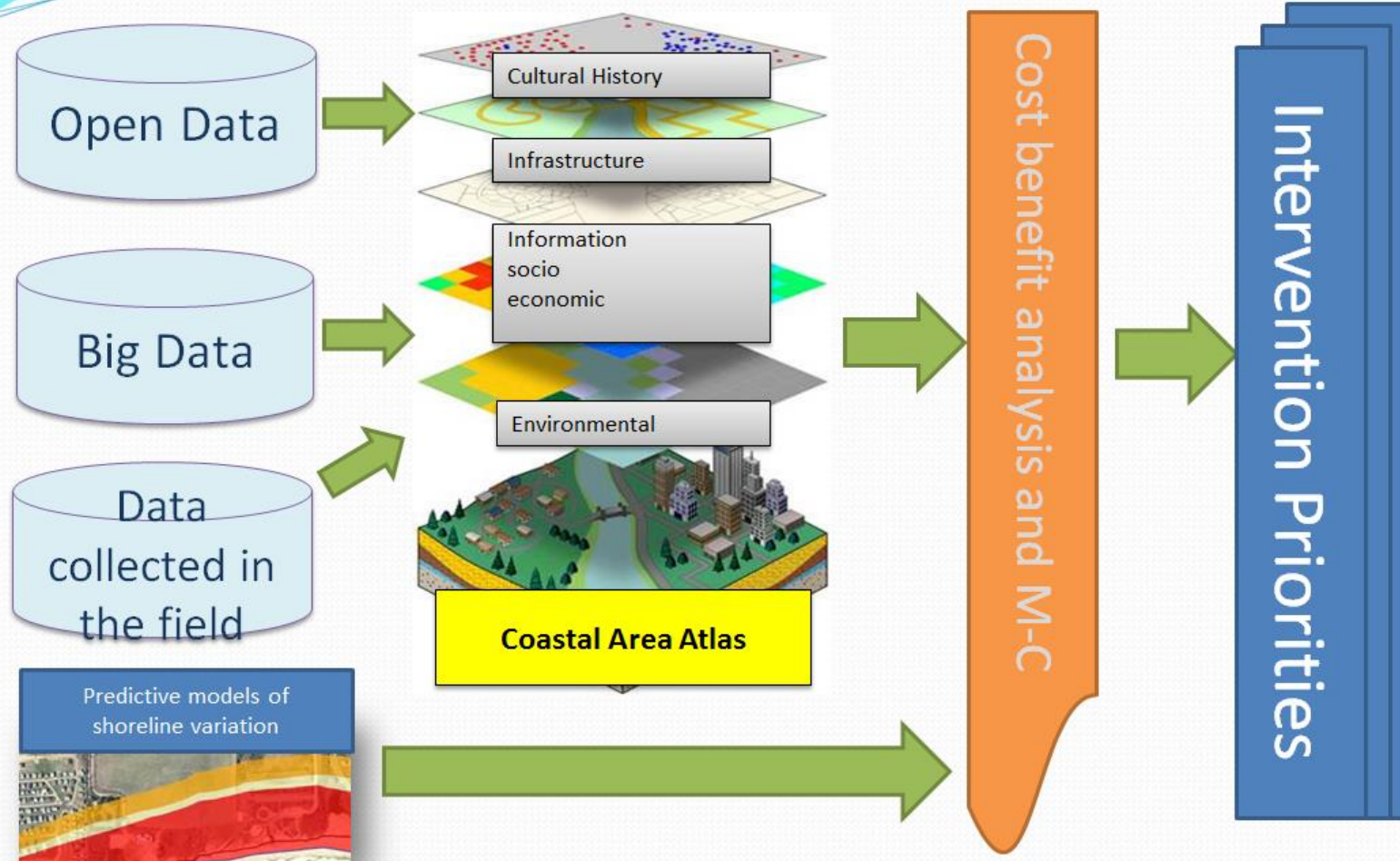
The logical flow of problem solving
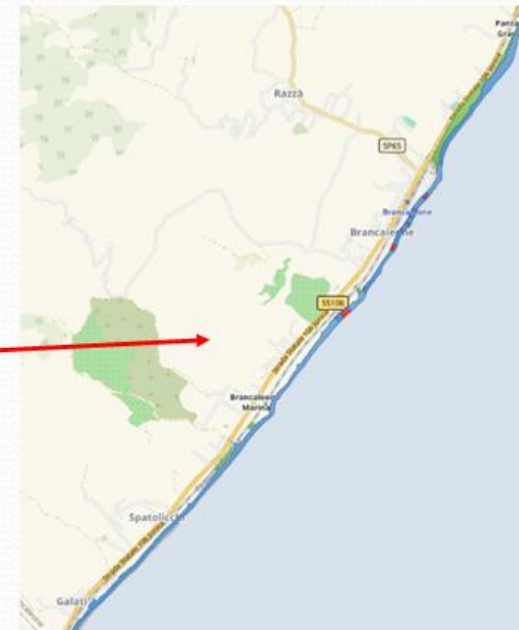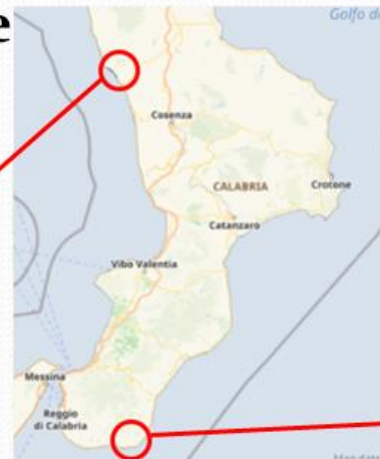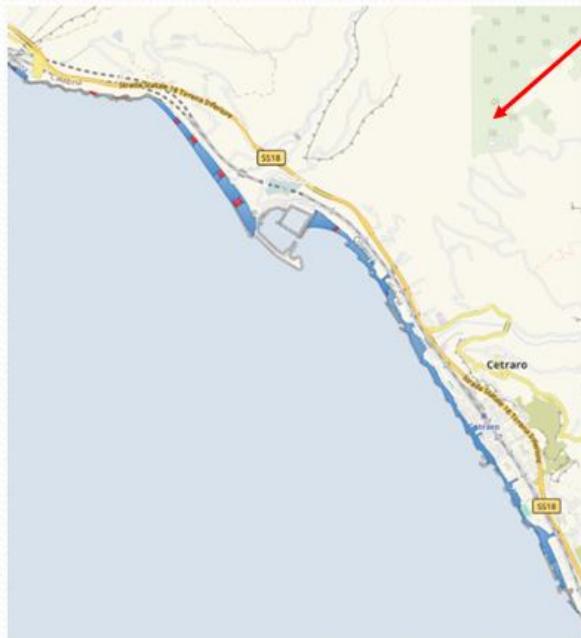
The complexity of the context

DSS Logical Flow

The areas analysed by the prototype realised

Cetraro Brancaleone

The scenarios analysed by the prototype

Three scenarios (Options) were evaluated for each area:

Cetraro

- Option 0 - No intervention
- Option 1 - Mixed hard and soft intervention (breakwaters, hauling, beach nourishment)
- Option 2 -Intervention mixed as in Option 1 and providing regular maintenance nourishment during the observation period

Brancaleone

- Option 0 -No intervention
- Option 1 - With mixed hard and soft intervention (breakwater, beach nourishment, reconstitution of dune areas)
- Option 2 - With mixed intervention as in Option 1 and with subsequent hard intervention (widening of the SS106 and railway bridges over the Bruzzanito torrent. construction of filter weirs on the same torrent)

The logical flow of the prototype

1. Development of forecast data on the change in the coastline in the medium and long term differentiated by intervention option
2. Collection of detailed data on sample areas (e.g. tourism, socio-economic big data, etc.) broken down by type
3. Economic evaluation for each type of data
4. Altitude and risk band analysis

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- Detailed reports for each area and intervention option
  - Cost Benefit Analysis and MC for each area

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Evaluation of feasibility, effectiveness, priority of each intervention