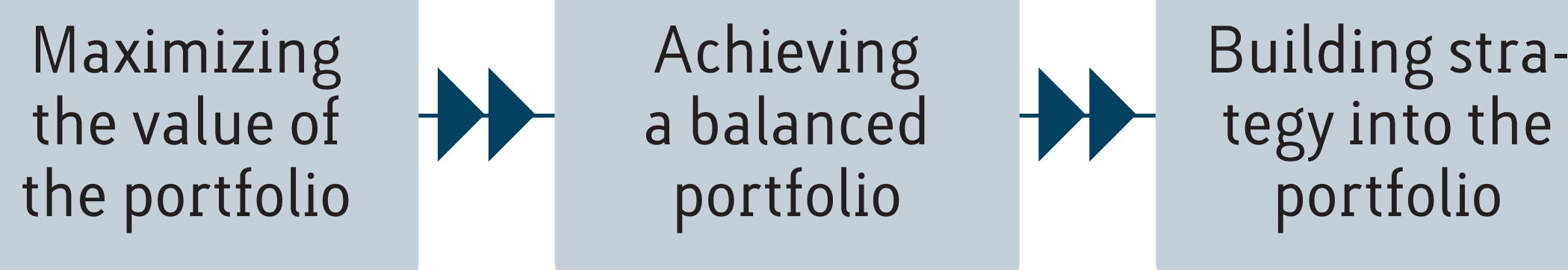


R&D Portfolio Management

The portfolio decision process is characterized by uncertain and changing information, dynamic opportunities, multiple goals and strategic considerations, interdependence among projects, and multiple decision makers and locations.



Some Limitations

- inadequate treatment of multiple, often interrelated, evaluation criteria;
- inadequate treatment of interrelationships among projects;
- inability to handle non-monetary aspects; e.g. diversity among projects;
- no explicit recognition and incorporation of the experience and knowledge of the R&D managers
- perceptions by R&D managers that the models are difficult to understand and use.

Claim Description

Symbol SLF
Name Sensor-Network deployed by SLF
Type Boolean
Project Real-time avalanche and landslide analysis through sensor networks
Settle date 31.07.2009
Price Minimum price: 0, maximum: 100
Payment Winner-Takes-All

Field of research

Research on sensor-networks

State of the art

The fluid-dynamics models used so far in predicting mass movements such as avalanches rely on speculative equations and very little is known about the internal structure of avalanches. Field measurements only provide insight into shape characteristics (e.g., avalanche speed).

Goal of the research

The sensor network measures the displacement/velocity field inside a flowing bulk. Before the material is released, the sensor nodes are spread onto the surface or inside the material. After release, the information of each node is monitored to determine the flow structure. The main tasks are twofold: constructing a sensor network and interpreting the data to build more accurate fluid-dynamics models.

Expected Results

Deployment of a sensor-network under real conditions to predict the risks of avalanche

Measure of success

The SLF deployed a network of 100 nodes in an alpine area to predict the risks of avalanche. The results obtained by the sensors, as well as the treatments using fluid-dynamics models, allow us to obtain valid results with an error margin of 20% during a season (01.11 to the 30.04).

Prediction Market for R&D Portfolio Management

R&D Portfolio Problems	Prediction Markets Solutions	Design Propositions
Data collection and actualisation	Reduced to BUY/SELL, contributed by everybody	Interface design Group sessions
Comparison criterion selection	Implicit in BUY/SELL, aggregated in the price	Claim description IPO process
Judgment negotiation	Automatic market making between buyers/sellers	Market maker

Prediction Market Solutions

- Using a relatively basic mechanism, based on the buy and the sell of contracts, prediction markets can aggregate very efficiently and in real-time the information disseminated between a wide range of actors, making superfluous the implementation of a specific actualization process. In addition, this quote not only represents the actualized consensus concerning the value of the project, but also represents the evolution of this consensus during the whole project life.
- Using implicit comparison criteria, prediction markets enable to reach a great diversity of appreciation criteria in a completely transparent way and to aggregate them in a price, representing the actual consensus on the claim. This is particularly true when an ontology, shared by all actors, is used to describe the projects claims, enabling each trader to have the same reference frame.
- Using an automatic market-maker, prediction markets enable obtaining a continuous negotiation of the value of each project of the portfolio among all the actors, according to their relative influence on the market. In addition, this mechanism allows obtaining a greater adhesion towards the decisions since the price at a given moment is the result of the negotiation of all actors concerning the advisability of carrying out a given project.

Design Propositions

- A prediction market for R&D should integrate a standard framework to support claim formulation
- A prediction market for R&D should integrate an easy IPO mechanism to support the innovation process
- A prediction market for R&D should occult the financial mechanisms to reduce the trader's learning curve and increase his incentive
- A prediction market for R&D should allow the combination of group sessions with individual sessions to increase incentive of the traders
- A prediction market for R&D should integrate an automatic negotiation agent i.e. market maker to increase the quality of the evaluation

