

FIRST Project Synopsis

Large scale information extraction and integration infrastructure for supporting financial decision making - FIRST

<Logo> <URL to website>



<http://project-first.eu/>

<Headline>

How to focus on the relevant while making financial decisions in a world of information overkill? – **Ask FIRST first**

FIRST develops and provides a large scale information extraction and integration infrastructure which will assist in various ways during the process of financial decision making.

<Abstract>

The FIRST project provides an information extraction, information integration and decision making infrastructure for information management in the financial domain. This area is extraordinarily faced with the challenges of extremely large, dynamic, and heterogeneous sources of information. The daily work and the business success of all decision makers in this industry depend on the availability of highly trustable, easily acquirable information.

Within the international financial industry not only individual market participants are negatively affected by information overflow and information asymmetries, but also financial flows and financial stability within entire industries of the global economy. This may also have severe consequences as has been observed in the current financial and economic crisis. Information is amongst the most valuable assets in the financial industry and reducing information asymmetries and increasing transparency by providing a fast, real-time, automatic and more comprehensive information base can help preventing false decisions.

<Project description> <Image>

FIRST addresses the extreme challenges of dealing in real-time with vast and constantly growing amounts of heterogeneous data and information in financial markets. The financial industry represents a role model for critical, information-bound domains. Especially the end-users of information as for instance financial analysts, investment managers, market regulators, financial advisors, and individual investors rely on their ability to quickly identify and interpret relevant information. By using this information these user groups try to identify dynamically evolving and potentially risk bearing situations (e.g. shocks and crashes). Relevant and correct information assists these users in staying ahead of the market to place their ideal investment decision, detect market manipulation, or simply to give advice to a client. The problem hereby evolves through the vast amounts of information opportunities which make it nearly impossible for a user to concentrate on the essential information.

Therefore, FIRST develops and provides an Information and Communication Technology (ICT) infrastructure that will:

- Collect and process massive amounts of heterogeneous, structured and unstructured data as for instance textual data, largely scattered web information from blogs, bulletin boards etc., or historical data from economic databases
- Integrate this data into a financial knowledge base for further analysis
- Exploit this data by developing and employing a range of highly scalable online

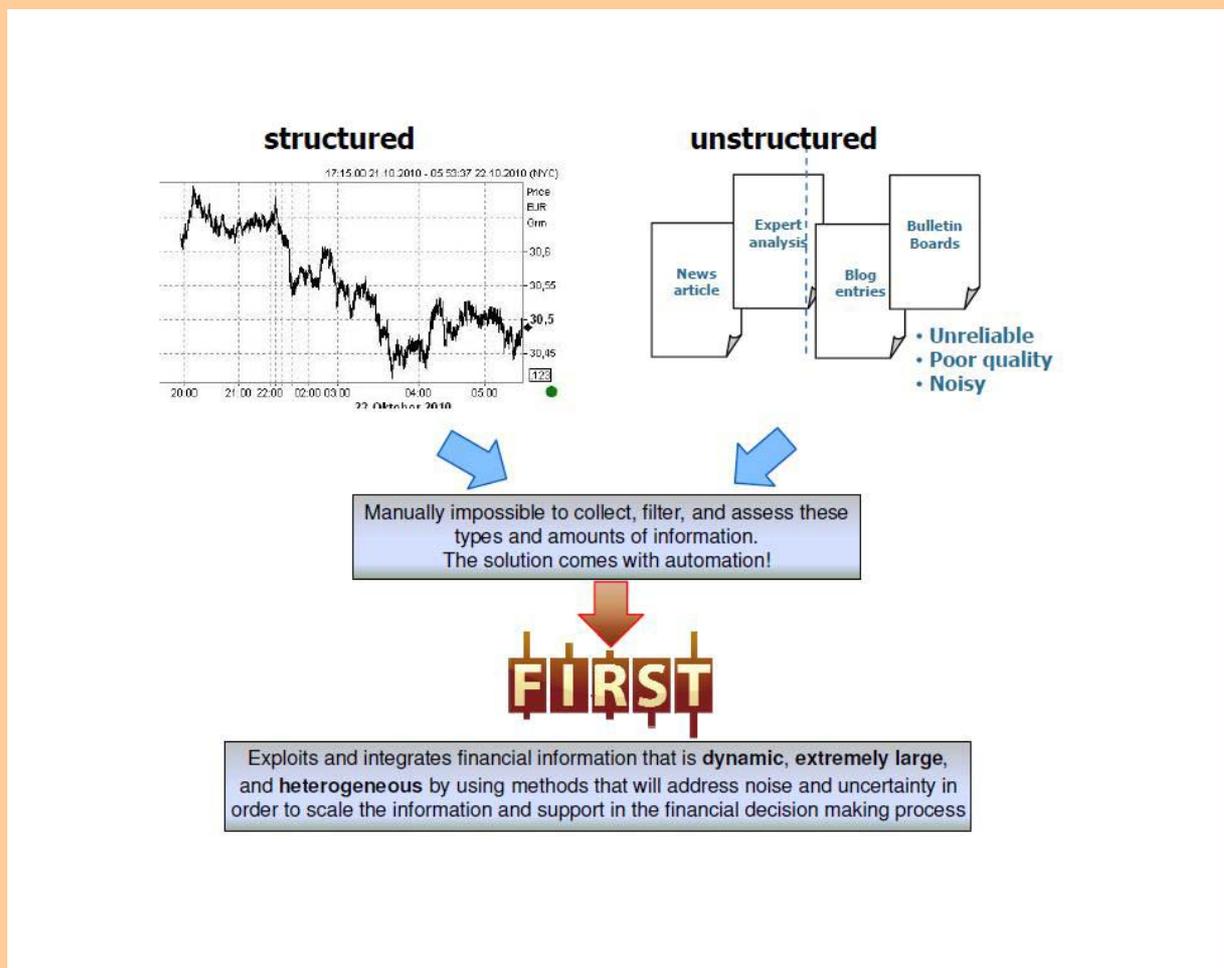
event detection and prediction models, visualization models, and decision-support models that will deliver pertinent information to the decision maker.

The FIRST project has three visionary use-cases which explain the potential power of the project's results and will be used for evaluation purposes.

A first use case lies in the area of investment management and risk management. Investment and risk managers usually have to deal with large and unstructured amounts of market and company information. An investment manager or an internal risk manager has to manually collect, filter, assess, and most importantly interpret the heterogeneous information about the financial investment that he is willing to make or willing to sell to others. By using FIRST this process will be automated and hence is less time consuming. It also supports an investment or risk manager's interpretation about the quality of the asset that he is trying to assess.

A second use case scenario is associated to online retail brokerage and related to the first case. The difference here is that the focus lies on private investors who in general unlike the investment manager do not have the ability or the time to collect and analyze new information about financial markets in real time.

Another possible use-case scenario is connected to market surveillance. Financial markets are often influenced by rumours. Some of them are true and some others false. Sometimes false rumours are even intentionally placed in order to distract and mislead other market participants. In both cases, FIRST assists by providing a plausibility checking methodology that identifies hoaxes and assesses the consistency of new information with other reliable sources.



<Technical details>

The FIRST project main result will be an **Integrated Financial Market Information System** based on a pluggable open architecture framework for non-ICT skilled end-users for on-demand information access and highly scalable execution of financial market analyses. Furthermore, FIRST will demonstrate in principle domain-independent applicability of the tools and infrastructures by developing an – as generic as possible – domain-independent Graphical User Interface (GUI)-based prototype.

FIRST will also deliver:

- a Data Acquisition Infrastructure for acquiring and accessing massive amounts of historical heterogeneous information and live feeds of unstructured or semi-structured information
- an Ontology Infrastructure with tools for manually and semi-automatically capturing and maintaining the domain knowledge models
- a Semantic Information Extraction System for scalable information extraction with inherent addressing of noise and uncertainty in the information sources, interpretation of existing and new information sources, and relating extracted information fragments to the knowledge base
- an Information Integration Infrastructure for integrating and consolidating information from heterogeneous (unstructured, semi-structured and structured) information sources
- a Decision Support Infrastructure for integrating information from the knowledge base into financial event detection models, visualization models, decision models, and for scalable execution of these models