



## **Rapid Investment Risk Assessment - The Amplios Astrolabe**

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## EXECUTIVE SUMMARY

The purpose of this paper is to introduce the possibility of a significant improvement in risk and opportunity investment assessment to governments and industries globally, with particular emphasis on small-to-medium enterprises (“SME’s”).

Recent international events raising the possibility of nuclear proliferation have added a degree of urgency to the planned release of the tool.

The method proposed is based on the proven methodology of “Failure Mode Effects and Analysis” as required for full implementation of the popular Lean Six Sigma performance improvement tool.

The method builds on the many years of research built into the methods of Scenario Planning, Causal Layered Analysis and ISO 31000.

The resulting tool, with the name the “Amplios Astrolabe” has been tested in several hundred workshop and consultancy projects since 2012.

(The company name “Amplios” is derived from the latin *“amplio”, to perform*. The noun *“Astrolabe”* is derived from an ancient navigation instrument for determination of the location of a traveler.)

The tool is now in working prototype condition, ready for wide distribution as a local prototype which can be downloaded from the Ampliosrisk website..

The path to development of a general, well-populated web-based database for global use has been mapped. Estimated completion time to the first launch is 3 months.

Market research indicates that the tool may be useful for:

- education of government institutions with responsibility for provision of infrastructure to the SME communities;
- education of corporate risk assessment personnel;
- assessment of investment risk for SMEs;
- assessment by banks of credit risk of lending to SMEs;
- assessment by insurance companies of risk of insuring SMEs;
- corporate governance of investment risk for all corporations;
- learning from trial investment experiences via gaming;
- education of students in investment risk assessment;

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# INTRODUCTION

We continually invest in new business ideas to improve our quality of life. To be successful, investments require reliable methods of risk assessment.

## Established methods

Over the past 70 years, societies have developed risk assessment methods based on the methods such as [Scenario Planning](#) and [Causal Layered Analysis](#). [ISO 31000](#) has been developed to provide guidelines for risk management in ongoing business operations. While these are very powerful tools for identifying risks and opportunities for any investment topic in any location, they are quite complex and not convenient for busy executives or entrepreneurial startups.

Both Scenario Planning and Causal Layered Analysis use [Horizon Scanning](#) to search for issues, future events, risks and opportunities which should be considered in making significant investment decisions

## Proposed improved method

In my research for a simpler solution, I have abstracted from these and other established methods a set of rules which permit risk approximation on a rapid basis. In this respect, the method is similar to the ancient Persian navigation tool, the [astrolabe](#). The objective is to generate an immediate answer, which can be revisited later using the more powerful tools, as time permits.

## Reasons for improvement

The main points supporting the need for the research are such as:

1. Major long term economic [recessions occur in long waves](#), causing disconnects between social customs and accumulated wisdom;
2. We are presently in a [major global economic recession](#);
3. [45% of employment opportunities](#) are provide by small-to-medium (“SME”) businesses in the emerging economies;
4. 90% of [SME startups fail](#) with in the first few years;
5. The Internet, Smart-phones and Social Media provide powerful information communication tools not readily available 30 years ago;
6. Successful SMEs form the inventory of enterprises which [eventually become publicly listed corporations](#);
7. Governments realize the importance of the SME community and are [investing in the infrastructure](#) necessary to support them.;Both large and small corporations have obligations to explain the [governance](#) steps taken to assess risk in both new investments and continuing investments in existing facilities.

## Amplios Astrolabe

The purpose of this whitepaper is to introduce a web-based software framework to assist in providing a solution to these issues.

## BACKGROUND

The global recession is causing over-supply in production capacity in many industries in many countries. This is having several major effects:

- the need to “right-size” organizations so that their variable costs can be managed to the available markets;
- the need to train surplus personnel to be ready for alternative employment, including the establishment of their own SME businesses;
- the need for the CEOs of medium-large corporations to meet their growth targets via acquisitions;
- the need for CEOs to consolidate acquired personnel and systems into the existing corporation.

There have been many programs developed to address these effects, with outcomes as follows:

### Right-sizing corporations:

Historically, the methods used to achieve this have in many cases been harsh. The more advanced corporations are using informed advanced methods of preparation of the workforce in this regard.

### Training of entrepreneurs:

This involves the introduction of several concepts which will be new to the outgoing workforce members. In most cases, the training can be web-based.

### Growth via acquisition:

This strategy has significant risk implications.

### Consolidation of acquired personnel and systems:

This involves significant culture change in the consolidated organization and several technical issues such as the migration of data from the acquired company systems to the acquiring company systems.

## SOLUTION

The proposed solution is web-based business intelligence software with attributes such as the following:

### Software Architecture

The architecture of the prototype tool is founded on my vision that an investor with responsibility to invest wisely a substantial amount of money (e.g. > USD 1 million) should be able to enter, into a web search prompt, a combination of investment topic (e.g. industry name) and location (e.g. city, state or country) and receive immediate guidance as to the 200 most important future events to be taken into consideration.

These will have been selected by the system from a candidate list of more than 2 million future events with which the system will have been populated.

Central to the method is the separation of a future event from its trend and its consequences. This enables to communication of a risk as a combination of the label of a future event, its trend and consequences from the very different points of view of the various industry players. For example “real estate rezoning to residential” is a future event which may have a trend of “increasing”, with positive or negative consequences for individual players.

Note that this separation of future event labels from the variable consequences does not occur under ISO 31000.

Once the investor and his colleagues have considered the recommended 200, they will choose 20 of these to form an investment scenario matrix.

The investment scenario matrix prompts them to interactively make assumptions about the degree of impact of each of the scenario matrix events on the business case and the probability of occurrence of each of them within the investment time frame. Impacts can be positive or negative.

A simple weighted average of the scenario matrix events guides the investor in their decision as to whether or not to invest any more time resources on the investment topic (negative or low positive result indicates that they should be evaluating a different topic).

Trial runs of the method have demonstrated that such evaluations can be performed within a matter of a few hours per investment topic.

## Data Attributes

The database consists of a row for each future event registered, with the label of the future event expressed in less than 40 characters. This improves communication of ideas and fits conveniently in tweets and graphics labels. A full list of the data attributes can be found [here](#).

## Data Sources:

The main data sources are:

- The “Risk Factors” declared by publicly listed corporations advising their investors of the risks of investing in the industry / company;
- The plans of government for the industry in the selected location;
- The plans of the military to defend the state and its infrastructure;
- Government regulations for the industry in the selected location, covering such as:
  - Food Safety
  - Occupational Health and Safety
  - Hazardous Materials
  - Transport Safety
  - Environmental Pollution
- The experience of the users of the database

## Demonstration of the system

A demonstration of the system being used in several case studies can be viewed at the following link: [http://amplios.com/Risk\\_Demo.html](http://amplios.com/Risk_Demo.html)

## FIGURE 1



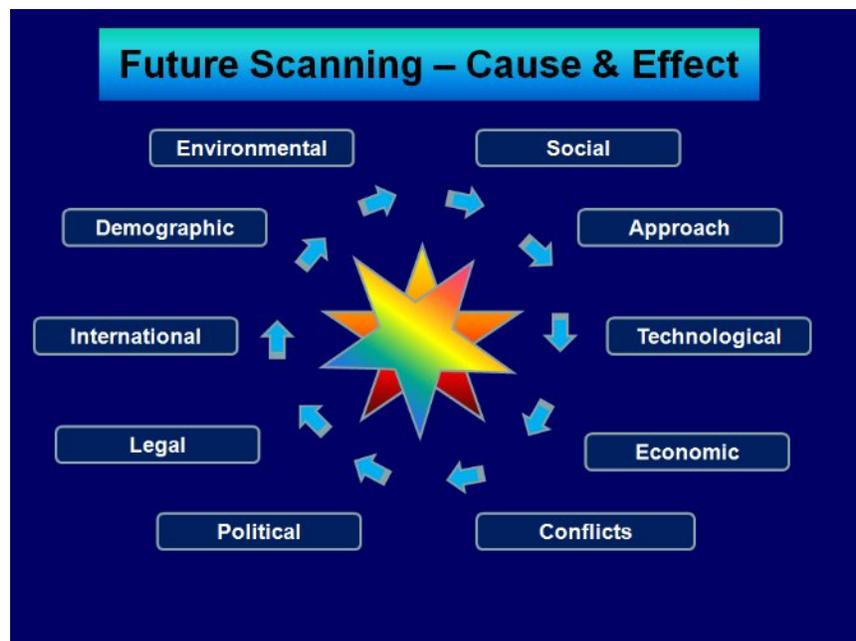
The Persian Astrolabe

SOURCE: <https://en.wikipedia.org/wiki/Astrolabe>

An **astrolabe** (*Greek*: ἀστρολάβος *astrolabos*, "star-taker")<sup>[1]</sup> is an elaborate *inclinometer*, historically used by *astronomers*, *navigators*, and *astrologers*. Its many uses include locating and predicting the positions of the *Sun*, *Moon*, *planets*, and *stars*, determining local time given local latitude and vice versa, surveying, and *triangulation*. It was used in *classical antiquity*, the *Islamic Golden Age*,<sup>[2]</sup> the European *Middle Ages* and *Renaissance* for all these purposes.

FIGURE 2

## SATECPLIDE Horizon Scanning



Traditional horizon scanning as currently taught in the universities encourages the researcher to look at the available future research for issues relating to their particular investment topic in “segments”. These segment arrangements are typically labeled “PEST” (Political, Economic, Social, Technological) or variations of this (e.g. “PESTLIED”).

Those methods do not recognize that events in one segment may cause, or be caused by, events in another segment. Recognition of this brings in to play a very dynamic approach, encouraging the investor to think in terms of what is happening *in between* the future events. For example:

- are **Social** issues caused by **Environmental** issues?
- do **Technological** breakthroughs impact Economic activity?
- are resources **Conflicts** resolved by **Political** means?
- are there alternative **Approaches** available for resolving **Social** issues?
- do **Conflicts** result in **Demographic** shifts?

The SATECPLIDE method pictured above has proven very useful in this regard.

SOURCE: Amplios Research

## CONCLUSION

The development of the Amplios Astrolabe has several potential benefits:

1. Provision to corporate risk officers of a tool for:
  - a. rapid filtering of investment risks and opportunities;
  - b. monitoring the status of investment risks and opportunities;
  - c. educating the corporate personnel in risk and opportunity management;
  - d. corporate governance of investment risk decisions
2. Provision to SME investors of a tool for rapid filtering of investment risks and opportunities;
3. Provision to consultants of a tool for providing investment risk advice to their clients;
4. Provision to students of a tool understanding investment risks and opportunities.
5. Provision of an introduction to the more comprehensive “risk assessment via future studies” methods of Scenario Planning and Causal Layered Analysis.

The Amplios Astrolabe is presently in a working prototype stage whereby full investment risk assessment studies can be commissioned and rapidly performed for any combination of industry and location. Recent strategic foresight studies which have been completed in less the 5 working days include:

- Impact of Nuclear Proliferation on SME investment
- Earth Observation and Telecommunications Satellites
- Graphene energy storage
- Investment in Higher Education
- Impact of BREXIT on global SMEs

A network of support consultants is being established to distribute the benefits of the method globally.

## ADDITIONAL RESOURCES

### ISO 31000 for SMEs

*Risk is intrinsic to doing business. With empirical evidence showing that 50 % of small and medium-sized enterprises (SMEs) close down before completing their fifth year, it is clear that operating a business can be a risky endeavour. Risk has consequences in terms of economic performance and professional reputation, but there are also environmental, safety and social considerations. These risks may be internal or external, direct or indirect. Despite the underlying element of uncertainty, it is often possible to predict risks, and to set in place systems and design actions to minimize their negative consequences and maximize the positive ones. Those risks that arise from disorder can be controlled through better management and governance. In this manner, businesses that adopt a risk management strategy are more likely to survive and to grow.*

*Large firms are better equipped and relatively well structured to deal with risks while maximizing benefits. By contrast, due to various limitations, SMEs are more exposed to the negative aspects of risks. However, due to their flexibility, and if provided with the right tools, they can tap into opportunities to increase their market share, grow and manage risk more effectively.*

*It is well known that SMEs constitute the vast majority of enterprises around the world, and serve as the mainstay of trade and economic growth. They serve as key drivers of innovation, social integration, and employment, representing 60 % of private sector jobs. Given the importance of SMEs to economic growth and development, attention to the issue of SME risk management becomes quite essential.*

*SMEs have little guidance on how best to manage risk and where to turn to for advice. Studies find that while most SMEs adopt some form of loss prevention and reduction measures, they do not engage in a formal risk management process and a vast majority totally ignore risk treatment.*

Source: [iso 31000 for smes.pdf](#)

## Investment Risk Governance

*Governance is how and when decisions are made and includes accountability as a key consideration. Governance provides clarity over roles and responsibilities and identifies the processes that are essential for the organization to continue and to function effectively. Governance documents describe how management (including the Board of Directors if there is one) directs the company.*

*Governance functions include planning and budgeting, performance measurement, assurance and auditing, procurement, hiring, assessing and dismissing staff as well as control over all day-to-day operations.*

*The management of an organization, enabled by its governance arrangements, can be described as “coordinated activities to direct and control an organization”.*

*Risk management is defined as “coordinated activities to direct and control an organization with regard to risk”. The parallels between these two statements demonstrate how closely risk management and governance are linked.*

*Reporting relationships are often shown in an organization chart that identifies the flow of authority in the organization. While such a chart may be a first step, it is only the beginning of mapping the governance of an organization. If the organization is legally incorporated there will be a Board of Directors and a Chief Executive Officer. For very small organizations, there may simply be an owner and governance relationships that are not written down. It is a best practice to develop, approve and communicate the governance arrangements ISO 31000: Risk management – A practical guide for SMEs to employees, and to periodically review them to ensure that they are relevant as business conditions evolve.*

*Documenting the organization's governance includes identifying approval pathways and criteria for decisions, the span of control for each major division or manager, the documentation required to support business planning as well as how strategic and tactical targets are established and progress is monitored. Governance-related documentation should also reference applicable legislation, regulations, guidelines, as well as internal and external policies that relate to governance and control.*

*It is critical that the description of governance reflects current arrangements and the levels of authority that have been established. The presence of current, clear and effective governance is essential to creating an effective risk management framework.*

## Horizon Scanning

**Identification and analysis of the drivers:** The next step is to identify the key drivers that will influence the listed key forces at macro and micro-level. Micro-environmental key forces are those that have a direct influence on the issue you are dealing with. For example, if you are dealing with the future of a specific manufacturing sector, micro drivers can be related to the sector market trends, specific regulations on manufacturing, new technologies, etc.

Macro-environmental key forces are broader and possibly are global. They relate to social, technological, political, economic and environmental forces that might have an impact on the issue considered.

The aim is to start building a conceptual model of the relevant environment that includes critical trends and forces and maps out the cause-and-effect relationship among the forces. It will also be possible to identify what are the major trends and uncertainties, which are the most important in determining the key decision factors and which represent underlying or 'driving' forces for significant change in the future.

At this stage it is possible to sort-out these forces by clustering them and by analysing that not all the identified forces are equally important or equally uncertain.

This step may require some desk research in order to adequately define the driving forces. Research may cover markets, understanding new technology, political factors, economic forces, and so on. The aim is to spell out the main elements of the driving forces by also identifying major trends and break in trends.

*The list of the driving factors should include Social, Technological, Economic (macro), Environmental, Political and Values (STEEPV).*

*These driving forces can be elicited in an extended scenario workshop with the support of a facilitator.*

**Source:** <http://www.foresight-platform.eu/community/forlearn/how-to-do-foresight/methods/scenario/>

## Data Attributes

The database consists of a row for each future event registered, with attributes such as:

- Register id number
- Future event label
- Future event story
- Future event source
- Source document preparation date
- Source document copyright status
- Related industry
- Related location
- Contributor id
- Entry date

Risk Management Service Providers

<http://www.coherentadvice.com/philosophy.php>

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