New Ontology for Risk

Make Sence, Inc.

Make Sence Florida, Inc. (MSFI) anticipates a significant contribution of Correlation Technology to the risk management domain. After an extensive and careful review of the risk management industry and its qualifying forums, websites, blogs, webinars, podcasts and conferences, MSFI has found a clear omission regarding two vital topics: fundamental risk knowledge and the complete mapping of enterprise risk. Risk topics covered across a multitude of industry outlets address enterprise risk management (ERM), governance, risk management and compliance (GRC), policy management, audit management, compliance management and enterprise resource planning (ERP). Despite being the cornerstone upon which any risk practice or discussion must be framed, the foundational understanding of risk, interactions of risks with each other, and business processes have not been fully addressed or mapped except within financial and quantitative risk studies. Make Sence Florida, Inc. has dedicated significant resources to creating this never-before-seen ontology that fully maps general categories of enterprise risk, operational risk, and strategic risk. Regardless of the risk maturity stage of a given organization, this ontology will allow enterprises to gain comprehensive and complete understanding of risks faced, and how such risks will affect various business processes. The affected business processes and the consequences of risks to these functions are described and analyzed in other MSFI ERM dossier components. This new ontology provides a complete enterprise risk structure under which all enterprise risk can be identified, discovered and mapped out from beginning to end. Utilizing the ontology, correctly identified specific risks can be mapped into risk sequences allowing enterprises to more accurately formulate mitigation strategies to transfer, absorb, reduce or eliminate risks faced.

The following sections provide the MSFI rationale for choosing to structure the ontology in the way shown. The information below is separated according to the corresponding ontology parts, and is connected with paragraphs describing the relationship of one ontology domain to the other remaining ontology domains. It is important to note that MSFI recognizes the attention that has been given to financial risk by various industries and has chosen to accept an external taxonomic model of financial risk as opposed to formulating a redundant ontology. Further, all risk definitions are based on, or taken from financial and insurance industry definitions in an effort to retain congruence to existing industry standards. In all ontology sections, a dotted line with an arrow signifies “at least one risk is a member of” the risk group to which the arrow is pointing. A solid black line with an arrow signifies, “all types of a specific risk is a member of” the risk group to which the arrow is pointing.

Business Risk Ontology

Red Icon

- RISK – is the umbrella under which all risks can exist.

Orange Icons

- INHERENT/INCIDENTAL RISKS – contain all risks that can either exist or be created by controllable actions (incidental), or exist due to uncontrollable circumstances (inherent).

Yellow Icons

- UNINSURABLE/INSURABLE RISKS contain all risks that are either completely insurable or completely uninsurable, or have at least one member that is uninsurable or insurable. Any risk that has a possibility of financial gain cannot, by definition, be insurable. Any risk that has only the possibility of financial loss or no loss is insurable.

Pink Icons

- DYNAMIC/STATIC – the icons are in juxtaposition to describe the opposing natures of dynamic and static risk. No dynamic risk can be insured due to the possibility of financial gain. All static risks are insurable because only the possibility of financial loss exists, or in some cases, no loss, but no gain.

- SPECULATIVE/PURE – the icons are in juxtaposition to describe the opposing natures of speculative and pure risk. Pure risk can only be a member of insurable risk because there exists only the possibilities of financial loss or no loss, but no chance of financial gain. Speculative risk, according to the definitions used by Make Sence Florida, Inc., has "the possibility of either a financial loss or financial gain exists, such as in the purchase of shares or betting on horses. Unlike pure risks, speculative risks are *usually* not insurable." Make Sence Florida, Inc. recognizes that by definition "usually" denotes the existence of speculative risks that may indeed be insurable. However, MSFI research has shown that insurance companies do not insure these risks due to the possibility of financial gain, which is a fundamental principle that dictates the insurability of a risk or risk event. Therefore, speculative risks can only be a member of uninsurable risk, and cannot be a member of insurable risk, as it pertains to enterprise risk.

- FUNDAMENTAL/PARTICULAR RISKS – the icons are in juxtaposition to describe the opposing natures of fundamental and particular risk, but remain close in order to describe the similarity in relationship to uninsurable and insurable risk. At least one fundamental risk is uninsurable, and at least one is insurable. Fundamental risks can also be either incidental or inherent as well. Fundamental risks can be controlled or uncontrollable in either insurable or uninsurable scenarios. Likewise, particular risks display the same risk sets, but are more likely to be insurable than uninsurable. This relationship is described by the positioning of the icon in relation to insurable risk.

Purple Icons

- REWARDED/UNREWARDED RISK – rewarded risks by definition are "risks taken to grow profits and value." Since the objective of rewarded risk is financial gain, rewarded risks can only be dynamic, speculative or fundamental risks. Unrewarded risks, by definition, are "risks taken to protect assets and enterprise." Since there is no possibility of financial gain, unrewarded risks can only be particular, pure or static risks.

Blue Icon

- FINANCIAL RISK – all external and internal risks faced by an enterprise are financial risks. Financial risks taken by an enterprise can only grow profits and value, or protect assets and enterprise.

Dark/Light Green Icons

- EXTERNAL/OPERATIONAL RISKS – external risks can only represent external financial risks to an enterprise. External risks can be members of all other risks and must be a part of any discoverable risk set. Operational risks can only represent internal financial risks to an enterprise. Operational risks can be members of all other risks and must be a part of any discoverable risk set.

The MSFI Operational Risk Ontology features the described connections of all operational risk. Operational risk is the direct or indirect loss resulting from failed or inadequate business processes, people and systems, or from external events. Note the exclusion of all risks featured in the Enterprise Risk Ontology. This is to simplify the ontology and reduce redundancy. Although each ontology stands alone, MSFI views each ontology as a section of a global ontology related to the fundamental understanding of the enterprise risk universe. In this way, the Operational Risk Ontology "connects" to the Enterprise Risk Ontology by way of the featured duality of the "Operational Risk" icon. Likewise, the Operational Risk Ontology can be "connected" to the Strategic Risk Ontology by way of the dual "Operational Risk" icon. Therefore, all operational risks can be mapped to either the Enterprise Risk Ontology, or the Strategic Risk Ontology.

Operational Risk Ontology

Brown-Green Icons

- SOCIAL, TECHNOLOGICAL, ECONOMIC, ENVIRONMENTAL, POLITICAL, LEGAL, ETHICAL RISKS – are all members of external risk. This is due to the domain in which a specific risk exists or is introduced in relation to the enterprise.

Dark Green Icon

- EXTERNAL RISK – is a member of internal risk in the operational ontology section. Operational risk, by definition, is "the risk of direct or indirect loss resulting from inadequate or failed business processes, people and systems or from external events." External risks pose a direct threat to the business functions of an enterprise, creating internal risks which then become operational risks.

Light Blue Icons

- BUSINESS PROCESS, TECHNICAL AND SYSTEMS RISKS – are all members of internal risk. This is due to the domain in which a specific business process, technical, or systems risk exists or is introduced in relation to the enterprise.

- FRAUD RISK – has at least one member that is an internal risk, and at least one member that is an external risk. External fraud risks are risks that pose a direct threat to an enterprise through the external domain in which the fraud risk exists or is introduced. Internal fraud risks are risks that can result in a direct or indirect loss relating to business processes, people and systems.

Light Green Icon

- OPERATIONAL RISK – is comprised of all other risks in the operational ontology section. This is due to the domain in which all other risks must exist or must be introduced in order to be considered operational risks. Operational risk is the umbrella term that contains all members of risks in this ontology section.

The MSFI Strategic Risk Ontology can be "connected" to the Operational Risk Ontology through the "Operational Risk" and "External Risk" icons. The Strategic Risk Ontology has been created to display a new system of mapping strategic risks, or risks taken to grow profits and value, also known as rewarded risks. This ontology seeks to map the relationship between opportunity risk and protecting assets and value, also known as unrewarded risk. MSFI views rewarded risk as representing a strategic opportunity that can be mapped into a risk that can protect assets and enterprise. This conversion of rewarded risk into unrewarded risk would then ripple through the other ontology sections and change the relationships between strategic, operational and enterprise risk as a whole. Likewise, unrewarded risks can be converted into risks taken to grow profits and value. Again, this conversion changes the relationships between strategic, operational, and enterprise risk. In this way, the Strategic Risk Ontology can be "connected "to the Enterprise Risk Ontology through the "External Risk," "Unrewarded Risk" and "Rewarded Risk" icons.

For instance, if an enterprise takes an unrewarded risk to protect assets and enterprise by moving the company location out of a flood zone, there may exist an opportunity to take a rewarded risk by utilizing the capital saved to grow profits and value. Likewise, if an enterprise takes a rewarded risk to grow profits and value by investing in new machinery from an international third party vendor, there may be an unrewarded risk that must be taken to protect those assets, such as buying insurance to cover shipping risks. In either case, the risk faced by the enterprise will change the strategic, operational and enterprise risk landscape.

Strategic Risk Ontology

As in the Enterprise Risk Ontology, "Incidental Risk," "Inherent Risk," "Uninsurable Risk" and "Insurable Risk" icons follow the same member relationship. However, in order to show the conversion of strategic opportunity to grow profit and value into asset and enterprise protection and vice-versa, it is necessary to allow for each of these members to have "at least one risk that is a member of" another available ontology member. This is denoted by dotted lines with double arrowheads. The double arrowheads describe the two-way relationship between corresponding members.

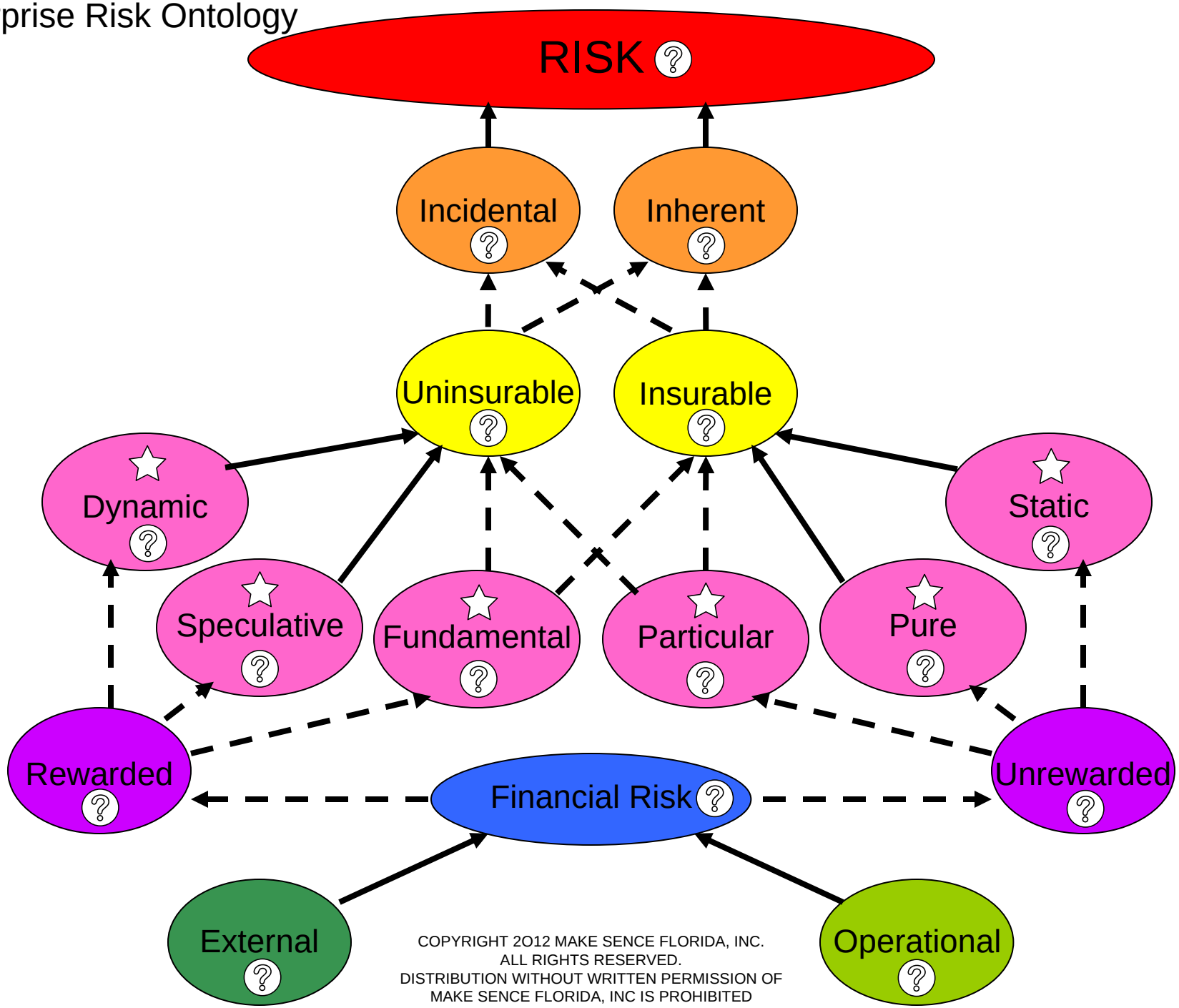
Note that only external risks can be considered rewarded risks. This is due the influencing membership of external risks to strategic risks. For instance, any risk to grow profits and value must be external to the enterprise, because any internal risk taken can only be considered operational risk because it protects assets and enterprise. In this way, only operational risks can be unrewarded risks.

Financial Risk Ontology

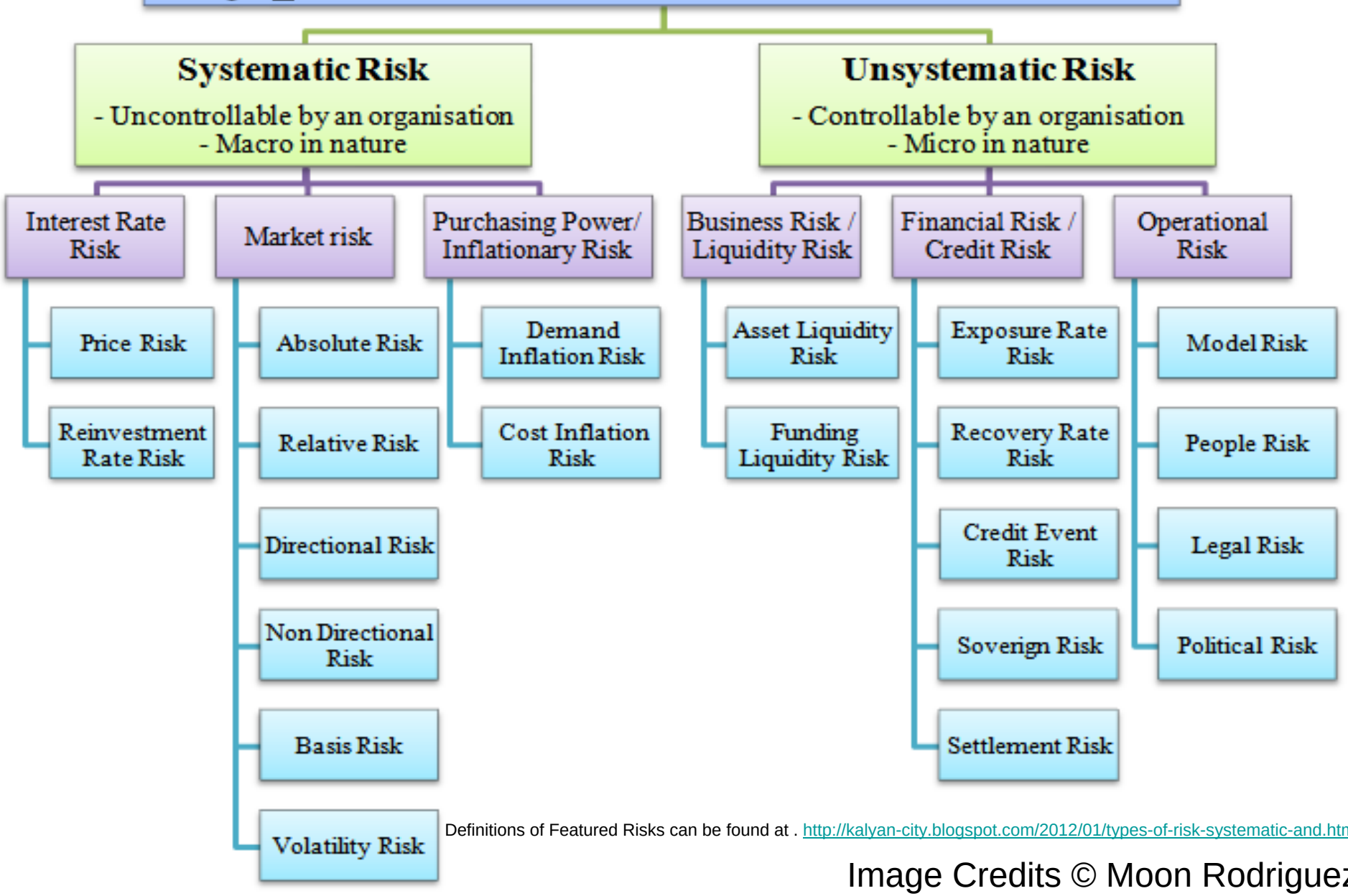
MSFI has chosen to accept a basic external taxonomy of financial risk. This is primarily to the vast array of information available, and the quantity and quality of research already done on this topic. For MSFI and for the purposes of this ontology, financial risk is the glue that holds the sections of the universal ontology together. All members of financial risk can be identified as playing an important role in addressing the cost or value of strategic, operational and enterprise risk to an organization. Financial risk is a quantifiable solution, and as such, is not the primary focus of MSFI research into the risk management industry. Quantitative solutions are relatively easy to come by, but have significant drawbacks when dealing with

qualitative industry issues. Enterprises are discovering that current software solutions are unable to provide to exhaustion the connections and corresponding values of quantitative and qualitative risk. Monte Carlo simulations and risk matrices are the industry-standard way of addressing both quantitative and qualitative risks faced by enterprises. This method is not appropriate to fully identifying the true value of enterprise risk. These issues and more are addressed in other sections of the MSFI risk industry document set.

Enterprise Risk Ontology

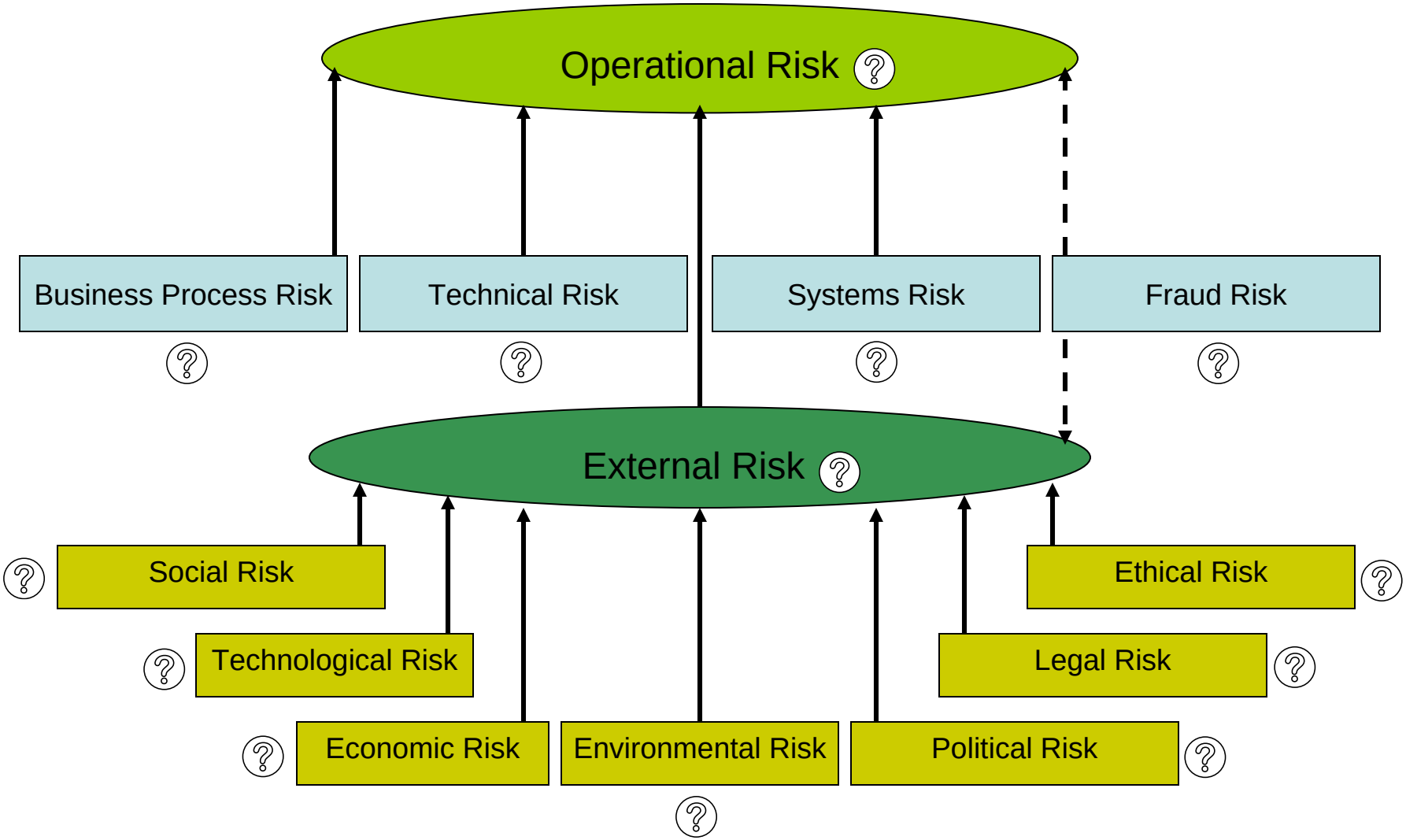


Types of Risk in Finance



Definitions of Featured Risks can be found at . http://kalyan-city.blogspot.com/2012/01/types-of-risk-systematic-and.html

Operational Risk Ontology



Strategic Risk Ontology