



# The Enterprise Analyzed

Bringing technology decision into business focus

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The development of business practical, yet mathematically sophisticated, financial models capable of linking enterprise operations to metrics of revenue, expense and risk, is increasingly becoming a strategic priority for value performance driven organizations. Assaying enterprise operations financially is indispensable for effective enterprise value management. UniSpec, Inc., IT Enterprise Architecture Solutions to Serve the Citizen, is leading the way with the introduction of a new generation of such enterprise valuation and risk models.

Currently enterprise management and policy decisions are predicated upon a variety of qualitative assessments; the most sophisticated incarnation being balanced score card models. Faced with the alternative of going without any assessment of enterprise operations and initiatives, balanced score card models have been implemented and nurtured through IT governance programs to bridge the ever growing evaluation gap between defined strategic business goals and enterprise operations and initiatives; the gap created in the absence of meaningful quantitative financial models for assaying enterprise operations and initiatives. So thorough is the acceptance of this quasi approach today, that “enterprise financial modeling” is now synonymous with balanced score card modeling.

Evolved over the years through practical experience, balanced score cards have in fact attained a degree of correlation to an organizations actual value performance. The strength of this correlation is, regrettably, too weak to provide a solid foundation for effective value performance management. This lack of correlation is borne out by the fact that balanced score card assessments cannot be meaningfully, with any degree of confidence, turned into financial measures. Subsequently the use of balanced score card models has not ended the cycle of continuous, and sometime highly contentious, debates surrounding the enterprise management process.

Effective enterprise value management can only be realized through core business metrics of revenue, expense and financial risk. The measure gap is a direct impediment to effective enterprise value performance management, leaving enterprise business decisions opaque. With both the public and private sector fixated on value performance based enterprise management the measure gap has become an untenable situation.

## **The Challenge of Enterprise Financial Modeling**

Numerous attempts have been made over the years to bridge the enterprise measure gap, with an increasing sense of urgency in step with information technology's spread from the back office to the entire organization. Unfortunately, the lack of any definable progress over the years has given increasing countenance to the IT governance scorecard paradigm. Backed by years of frustration with attempted enterprise financial modeling, it is now seriously considered that the mathematical problem of financially modeling enterprise operations is either mathematically intractable at best or impossible at worst.

That a satisfactory model has never been constructed, until now, is not surprising given the mathematical techniques repeatedly employed in the past. Utilized were mathematical approaches developed prior to the information economy. Designed for non-interacting serial business processes, a hallmark of the pre-information economy, these tools are quite simply inadequate. Today's information technology enable business processes and organizations are ever evolving structures more akin to the complexity and structure of a spider web.

This complexity is embodied by the fact that, while it is very easy to decompose the operations and business processes of a modern enterprise organization into isolated elements, reconstituting those individual elements back into a comprehensive and competitive organization is by no means straight forward; there are numerous ways to organize an operation, each varying in degree of business fitness. This new business complexity defines the crux of the challenge of operating and managing today's enterprise operations.

It is not surprising that this newly rising business complexity is in no way interpretable in terms of the linear business models of a generation past. The mathematical tools required to submit the complexity of today's technology embedded organizations to financial analysis are to be taken from a more sophisticated set normally associated with disciplines such as financial engineering, portfolio risk analysis, probability theory and information theory.

## **The Enterprise Analyzed: A Statistical Risk Modeling Approach**

UniSpec is at the forefront of quantitative enterprise analysis and modeling with the introduction of a new generation of robust enterprise business valuation and risk models. By applying broadly the ideas of the newer generation of mathematical modeling theories (complexity theory, network theory, financial engineering and newer element of computational probability theory) to modeling the complex interactions between business productivity and technology UniSpec is bridging the measure gap.

Our approach is a model-free approach. Every enterprise environment is unique in its organization of the web of people, business process, and technology and subsequently how operations give rise to corresponding business complexity. This fundamental issue of unique business complexity severely limits the utility of using a canned model or tool. Instead we take a methodological approach, model-free, flexible enough to encapsulate the unique complexities of each client environment, robust enough to capture the financial metrics so crucial for proper business decision-making in a business practical manner.

## ***Modeling Background***

The enterprise operational environment taken as a whole, (people, process and technology included), is understood, utilizing complex network theory, as a set of interacting and growing networks of business process, people and technology. The subsequent output of this combined structure, business productivity, measured in terms of revenue, expense and risk, is statistically modeled and interpreted in terms of the business dynamics enabled by the defining network structure of an organization.

Expectantly, an organization's specific operational networked topology (in terms of people, process and technology) is the mechanism simultaneously creating and constraining business productivity throughput. Modeling the complex flow of business productivity is the means by which enterprise initiatives can be evaluated for their impacts to business productivity. The approach is broken into two parts:

- Understanding the organizational topology and the subsequent business dynamics as understood by complex network modeling techniques
- Financially modeling business productivity as measured in terms of revenue, expense and risk, creating the mechanism to assay enterprise initiatives and management decisions.

Enterprise ROI is assayed within the context of the above framework and broken into four sub analyses:

- 1. Value Chain Topology Model**
- 2. Incidence Failure Analysis**
- 3. Risk Profiling**
- 4. Enterprise Impact Assessment Analysis**

### ***1. Value Chain Topology Modeling***

Utilizing a consultative approach, a model of a client's organizational topology in terms of people, process, and technology is constructed. Within this structure are the dynamical constraints dictating business productivity throughput. Analyzing an organizations enterprise topology in the context of complex network theory uncovers previously hiding and poorly understood features of an operations productivity throughput.

### ***2. Incident Failure Data Analysis***

Once an understanding of business productivity flow is understood, disruptions to that flow are analyzed. These discrete failures measured in terms of their subsequent business impacts taken together as whole represent the financial risks from an enterprise's operations. Mitigating the occurrence of failures in operations and reducing the vulnerability of productivity to failures is central task for enterprise business management.

Incidences of failure and the corresponding vulnerability, while appearing random in occurrence, are systemic in nature, regulated by enterprise operations. This risk is readily modeled through statistical modeling techniques. Data samples from the history of incidence failures of an organization form a statistical sample from which an organization's risk profile can be modeled. Data is readily available in a variety of forms, from a variety of sources in every organization today; principally from within a client's fault management operations and the lines of business impacted. The gathered data is first analyzed and then modeled at four levels:

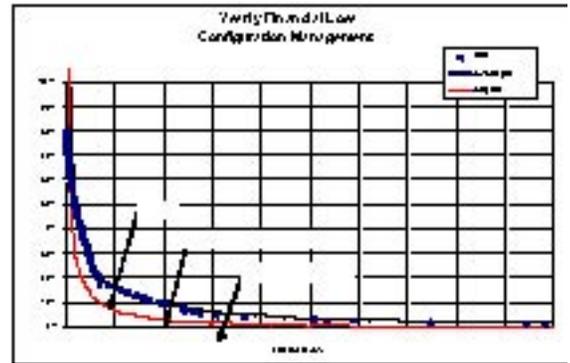
- a) Incidence Root Cause Analysis – Analyzes why failures occur.
- b) Incidence Frequency Analysis – Analyzes the expose of an organization to such failures.
- c) Incidence Failure Life-cycle Analysis – evaluates how effective an organization is in minimizing the consequences of a failure; the longer an incidence is left unresolved the greater the business impact it will have.
- d) Business Impact Analysis – quantifies the business impact of such failures as measured by revenue and expense impacts.

These elements taken as a whole provide the content for assessing the financial risk of an organization to its enterprise operations.

### 3. Risk Mapping and Profiling

Aggregating the incidence failure data analyses and applying statistical modeling techniques, operational financial risk profiles are constructed. This process begins with organizing a client's incident failures into hierarchical risk categories – risk to incidence failures from process, people and technology. This risk road map, in the form of a tree, is developed using the root cause analysis of incidence failures, understood in the context of the organizations network topology as the organizing principal.

The analyzed incidents of technology failure are seed data for developing the operational environment specific financial risk models with in each risk category of the risk tree.



### 4. Enterprise Impact Assessment Analysis

The value chain topology analysis taken with the risk analyses and extended in to the time domain provide simultaneously a method to evaluate the potential financial impact from proposed enterprise initiatives as well as enabling a value performance tracking mechanism. Every proposed initiative can be either mapped to topological changes in the enterprise operational topology or to improvements of specific links or nodes of the network. Both changes are assessable, the former directly with an update of the value chain topology analysis or, in the latter case, through modeling expected changes in the risk profiles achieved as consequence of improved resistance to incidences of failures and decreased vulnerability to such failures.

## Conclusions: Enterprise Business Decision-making

With enterprise operations assayed directly in terms of fundamental financial metrics the once opaque business decisions of the balanced score card approach are now instantly transparent. Thus, the alignment of enterprise initiatives to business strategic goals is ensured. UniSpec is leading its' clients into the 21<sup>st</sup> century enterprise value management with financial models capable of unraveling the business complexity wrought by information technologies forever closing the "measure gap". The UniSpec' suite of Quantitative Enterprise Analysis services are helping enterprise organization become Industry leaders in value performance management. For further information contact:

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