Measuring Intangible IS Assets (data, rules, processes) Assessing Enterprise Architecture

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Abstract:

In a fast-growing digital economy, the growth is based on Intangible Assets mainly. Information and its right governance are becoming the fuel of this growth. When governing information with help from a suitable Information System, many business opportunities are within grasp. Conversely, when a company is weak in managing information, keeping the control of the digital economy growth becomes a real nightmare:

- Firstly, low-level of risks control as information traceability is not really enforced and security concerns arise: where is the right information? Who is authorized to read, update information? How to correlate data with each other in a secure and responsive way? Who is empowered to access and derive some benefit from a piece of information?

- Secondly, misalignment with international business regulations and standards which deeply hinder competitiveness of a company in many domains: health sector (hospitals, clinics, patient folder, etc.), financial and accounting sectors (Fpml, IAS, Basle, Solvency, archiving regulations, etc.), manufacturing and retail (products and foods traceability), real-estate (real-time stock market), education sector, green economy and its business regulations, etc. For IT specialists, the question to deal with is how to measure the value of Intangible Assets managed through the Information System; it means a company's Data, Rules and Processes. Amongst approaches to take into consideration, the current momentum around the Enterprise Architecture field must be studied.

Key words: Information system Assets, IS Rating, Intangible Asset, Master Data Management, Business Rules Management System, Intrinsic Value, Use Value, Business Value.

1. INTRODUCTION IN RELATION TO IS/IT CHANGES

The relationship between Information System and its underlying IT systems is changing over time. As of today, both are heavy intertwined whereas the separation of concerns between IS and IT systems has been encouraged since the beginning of the computer science. Is this interrelation a worry in digital economy and how to regain a better alignment between IS and IT? Definitely this is a big issue as the data quality is collapsing within organizations while the digital economy demands a better risks management in relation to new businesses and the green growth. Indeed, this new way of doing business required a huge growth of information systems: more databases, more real-time and responsive information management including the Internet of Objects (RFID) and the Global Positioning System (GPS). To regain the control of IS/IT, we state that IS Assets must be managed as real assets shared between IS and IT systems, removing the implementation of them in opaque and frozen IT software.

2. TERMS AND DEFINITION

First of all, IS Assets must be defined as a part of Intangible Assets existing within a company. New accounting approaches, such as IAS/IFRS, suggest interesting taxonomy of Intangible Assets in order to assess them from a financial point of view: brands, intellectual property, patents, customer knowledge, partner relationships, etc. and last but not least the Information System. All are related to the "price to book" (PTB) of a company, it means its value existing beyond its usual balance sheet. This PTB concept is a significant and acute indicator to understand the sustainability of a company over time.

Then, a focus on the IS Assets allows us to figure out that three types of those assets must be identified: Data, Rules and Processes. Only these three types of IS Assets are needed and sufficient. All Information Systems is based on data, rules and finally processes. Other concepts such as applications, services, ERP, infrastructure… are not in the scope of IS, but IT systems. To guarantee the IS to be fully gauged, three types of value must be distinguished: Use Value, Business Value and Intrinsic Value.

- The Use Value of IS deals with an assessment of company's working procedures used by IS stakeholders to communicate, build, maintain and run their Information Systems.

- Regardless of working procedures, the Business Value of IS tackles the Information Systems quality to align them with business strategy and operational requirements. One significant aspect is the responsiveness, in other words the IS ability to react quickly to change. The Business Value also encompasses the computation of market values, including financial measurement of the IS Assets as required by financial regulations such as IAS-IFRS.

- Intrinsic Value is the actual value of IS Assets regardless of its Use Value and its Business Value. In other words, when a rating is established to measure the Intrinsic Value, then the quality of working procedures and financial considerations are ignored.

3. ENTERPRISE ARCHITECTURE

Two types of Enterprise Architecture frameworks exist. The first, such as Zachman, suggests a taxonomy of information models to deliver when re-engineering an IS/IT or reshaping it. The second, such as Togaf, defines an IT lifecycle program management applied to IS and IT, with additional best practices to use depending on the context of a company. But neither Zachman nor TOGAF provide IS stakeholders with the more important indicator which is the targeted IS and IT Architecture. It means that a company can be very well proficient in Zachman and Togaf while its new IS/IT rely on a bad architecture. This is a very acute limitation of usual EA approach, bringing fatal misunderstanding and disappointments to IS stakeholders.

In other words, it means that EA framework must be completed with an additional point of view, that of IS Assets. The targeted IS/IT architecture must be compliant with a high-end governance of Data, Rules and Processes, which cannot be satisfied with a usual IT implementation in a too opaque and rigid approach of hard-coding systems.

4. THE TARGETED IS/IT ARCHITECTURE

To guarantee the IS Assets to be successfully governed, the IS/IT architecture must rely on a foundation established with three business repositories. Data assets are managed through a Master Data Management system (MDM); Rules assets are managed through a Business Rules Management System (BRMS); and finally Processes are managed through a Business Process Management (BPM). The integration of MDM, BRMS and BPM follows a protocol that cannot be altered without risking failures. It is first necessary to ensure semantic modeling of data, and then handle the business rules within the scope of processes which are reshaped. This novel approach to the IT System, based on the three business repositories as a spine of the IS, gives birth of the concept of a Sustainable IT Architecture.

5. MEASURING IS ASSETS

The measure we propose to gauge IS Assets is dedicated to the Intrinsic Value. Indeed, the IS Use Value benefits from existing approaches such as ISO9000, ITIL, CMMi and CobiT. The IS Business Value is tackled with accounting approaches. As the Use Value and Business Value are dependant on the Intrinsic Value, we need a tool to tackle it first. Beyond the measure we suggest, we didn't identify other approaches dealing with the Intrinsic Value of IS. The approach we have established, called IS Rating Tool, is based on three domains of assessment, applied to each type of IS Assets, it means Data, Rules and Processes.
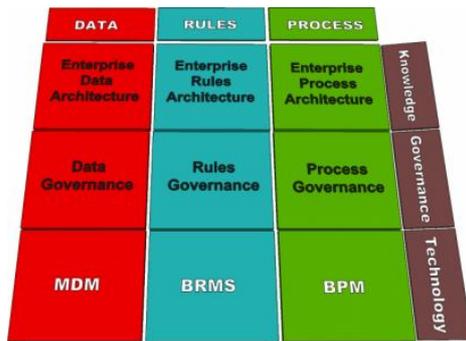
This figure presents the IS Rating Matrix showing how each IS Asset should be managed through its Knowledge, its Governance and its Technology. The scope dealing with the knowledge management is gauged with help from Enterprise Architecture outcomes targeted to Data, Rules and Processes. The governance scope is focus on a list of functions required to manage Data, Rules and Processes such as Version management, Authoring, Traceability, etc. This is not the quality of working procedures or processes applied to deliver projects. Indeed, we focus on the IS Intrinsic Value, not the IS Use Value. Every IS Asset should have a set of governance features to enforce Data Governance, Rules Governance and then Processes Governance. At last, the technology domain is based on the ability to enforce the linking value of MDM with BRMS and BPM[1].

For each cell of this matrix, the IS Rating Tool provides a set of questions to assess its intrinsic value. The figure highlights the Data Governance rating sheet. A mark is computed for each cell and a final consolidated rating is established for the three types of IS Assets (Data, Rules and then Process). A mark is a Performance Level

Percentage translated to a letter from A to D according to this maturity level:

A: >=90%
B: >=50% and <90%
C: >=10% and <50%
D: <10%

Every question is studied with help from 5 situations (low to optimize), it means that the IS Rating Tool relies on about 500 measurement points to assess the Intrinsic Value of Information System. The maturity model is established as follows:

Maturity	Performance	What it means to IS stakeholders
A	>= 90%	High-end system very reassuring for IS stakeholders as it is secure and sustainable
B	>=50% and <90%	Healthy system with opportunities to improve its value. IS stakeholders must remain very careful in order to oversee the ability of the company to succeed in enforcing these improvements
C	>=10% and <50%	Risky system with weaknesses to tackle with care to remove risks. IS stakeholders must demand an urgent plan to regain a better control of the system by managing identified risks
D	<10%	Very risky system that hinders the performance. IS stakeholders must demand a global plan to reshape in depth the whole system, failing which the company will lose the control of the system

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[1] As established with the ACMS IS Foundation (Agility Chain Management System). See www.sustainableitarchitecture.com

6. EXAMPLE OF A COMPANY USING THE IS RATING TO CONDUCT A MULTI-YEAR PLAN

This IS plan is aimed at improving traceability and agility of systems to enforce a better business-IT alignment. With help from a better data and rules governance based on MDM and BRMS, this company has decided to decrease its level of hard-coding software for the benefit of business repositories associated with effective business governance functions: version management, authoring of data and rules, auditing, history management and traceability, overseeing of master data and key business rules in real time, etc. Note: the last row (grey) of the IS Rating matrix establishes the three consolidated marks for Data, Rules and Processes respectively.

The first use of the IS Rating Tool raises a consolidated mark CCB

This company has a huge risk in Data management (C) and Rules management (C). Its ability to well manage its Processes (B) doesn't prevent this company from facing a serious IS crisis because of a data and/or business rules loss of control. More precisely, according to its detailed IS rating outcomes, we have to study why its data knowledge is so poor (only 5% = D)? From this first rating, the company's stakeholders should demand detailed information describing the IS plan to manage data and rules risks.

Once this plan will be delivered, a further IS rating will be done to gauge the IS improvement. This company could decide to raise its data consolidated mark to the "B" level within a year and then attain a "BCB" rating which would be reassuring for its stakeholders.

Then, after a full year of work on data knowledge improvement, the company's rating goes up to "BCB" (see the next rating card).

The second use of the IS Rating Tool raises a consolidated mark BCB

On the basis of this new rating, the company has a huge interest in improving its business rules management to reach a 'B' level rather than a poor 'C'. The key factor to succeed seems to deploy a stronger approach in rules governance, as shown in its detailed IS rating outcomes (21% = C).

After delivering works on rules management, this company achieves this objective and attains a new rating "BBB" (see the next rating card).

The third use of the IS Rating Tool raises a consolidated mark BBB

"BBB" is an excellent rating, very reassuring for all IS stakeholders. By analyzing its detailed percentage levels per IS assets (see its detailed IS rating outcomes) additional improvements can be identified to target the "AAA" level.

Don't forget, the rating can be established both at the scale of the whole IS but also within a smaller scope such as a subsystem, a software package, a subsidiary, a web application, etc.

A progressive path to leverage your IS Intrinsic Value and drive your Enterprise Architecture

As shown with this quick example, the IS Rating Tool is aimed at assessing:
- the effectiveness of your Enterprise Architecture,
- your ability to deliver the right business governance functions to IS Stakeholders,
- and your IT ability to take benefit from the linking value of MDM with BRMS and BPM.
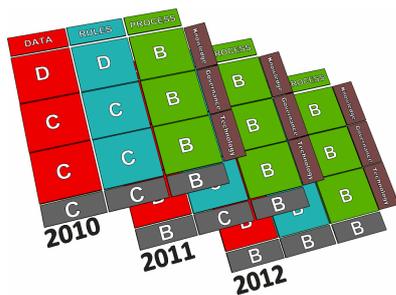
Nowadays, there are no companies having a full AAA rating for every IS Asset based on Data, Rules and Processes. It is impossible to attain this rating in a one-step approach. Furthermore, defining from scratch a road-map to deploy your Enterprise Architecture in compliance with data, rules and processes governance is not easy. This is the reason why the IS Rating Tool provides companies with a concrete approach to define a progressive path supporting a real IS restructuring. Indeed, with help from the IS Rating matrix, you are able to define and explain your natural path to target the better IS Intrinsic Value in your context, based on a multi-year plan.

Beyond the Intrinsic Value, you should also tackle the Use Value and the Business Value of your IS with help from other methods and frameworks like CobiT and CMMi (see our website to get further information).