Enterprise Capability Management

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Introduction

There are three different kinds of capability: organizational capability, system capability, and operational capability. Management of organizational capability is addressed in the article called Enabling Businesses and Enterprises. Management of system capability is addressed by the Systems Engineering (SE) management activities described in the articles called Systems Engineering Management and Product and Service Life Management. Management of operational

capability is described herein.
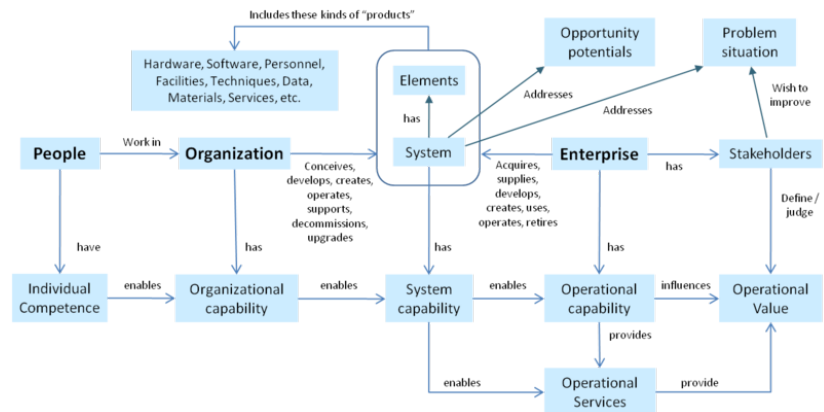
Figure 1. Three Kinds of Capability in the Enterprise: Organizational, System & Operational Capability. (SEBoK Original)

The enterprise has a current and planned (baseline) operational capability, based on its past activities and on its current plans for change. The purpose of the enterprise capability management function is to ensure the possibility of "vectoring" the enterprise away from the current baseline trajectory to a more desirable position where it can better meet its enterprise strategic goals and objectives, given all its resource constraints and other limitations.

Operational capability may need to include elements identified in the Information Technology Infrastructure Library (ITIL) best practices for operations management, starting with strategic operation planning (OGC 2009).

> *The ITIL is a set of practices for IT service management (ITSM) that focuses on aligning IT services with the needs of business. In its current form ..., ITIL is published in a series of five core publications, each of which covers an ITSM lifecycle stage.*

> *ITIL describes procedures, tasks and checklists that are not organization-specific, used by an organization for establishing a minimum level of competency. It allows the organization to establish a baseline from which it can plan, implement, and measure. It is used to demonstrate compliance and to measure improvement.* (http://en.wikipedia.org/wiki/Information_T

echnology_Infrastructure_Library).

Needs Identification & Assessment

The enterprise has key stakeholders that have operational needs they would like the enterprise to address. These operational needs must be identified and assessed in terms of their relevance to the enterprise and the relative priorities of these needs compared to each other and to the priorities of the enterprise itself. The enterprise exists to meet these needs. An operational need is an expression of something desirable in direct support of the enterprise's end user activities. End user activities include such things as retail sales, entertainment, food services, and business travel. An example of an operational need is: "Provide transportation services to commuters in the metropolitan area of London."

Enterprise needs can be much more than eliminating waste, and the challenge for ESE might relate to any or all of the following: countering a perceived threat (business or military), meeting a policy goal (as in government), doing existing business more efficiently, taking advantage of technological opportunities, meeting new operational needs, replacing obsolete systems, creating integrated enterprises with others (on a temporary or permanent basis), and so on.

In addition to operational needs, there are enterprise needs that relate to enabling assets the enterprise has in place that allow the mission to be accomplished. Enabling assets are things such as personnel, facilities, communication networks, computing facilities, policies and practices, tools and methods, funding and partnerships, equipment and supplies, and so on. An enterprise need is an expression of something desirable in direct support of the enterprise's internal activities. Internal activities include such things as market forecast, business development, product development, manufacturing, and service delivery.

The purpose of the enterprise's enabling assets is to effect state changes to relevant elements of the enterprise necessary to achieve targeted levels of performance. The enterprise "state" shown in the figure below is a complex web of past, current and future states (Rouse 2009). The enterprise work processes use these enabling assets to accomplish their work objectives in

order to achieve the desired future states. Enterprise architecture (EA) can be used to model these states and the relative impact each enabling asset has on the desired state changes.
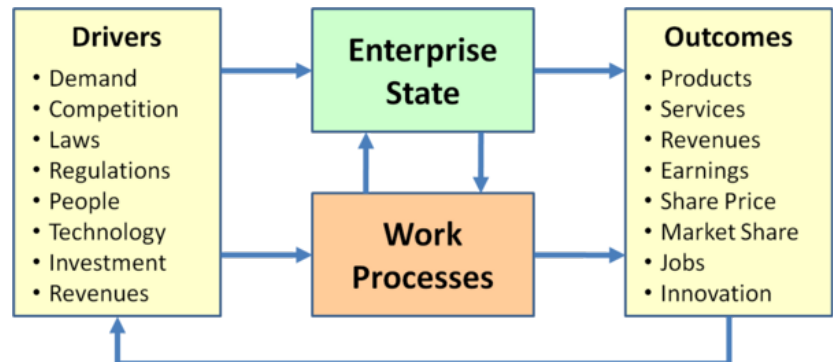
Figure 2. Enterprise State Changes Through Work Process Activities (Rouse 2009). Reprinted with permission of John Wiley & Sons Inc. All other rights are reserved by the copyright owner.

Enterprise needs are related to the enterprise efficiencies achieved through the performance of enterprise activities. The main goal of enterprise needs is to maximize the efficient utilization of enterprise assets, or in other words, enhance productivity, and find and eliminate waste. Waste represents that which does not contribute to the enterprise mission or that cannot reasonably be expected to be accomplished by the enterprise. An example of an enterprise need is: "Decrease power required for operation of enterprise data centers." (Power is a limited asset that consumes scarce enterprise funds that could be used for delivery of other more valuable services to its customers.)

Capability Identification & Assessment

The capabilities of an enterprise should exist for the sole purpose of meeting mission and enterprise needs. Hence, there will be both mission and enterprise capabilities to identify and assess how well they meet these needs. An example of an operational capability is: "Transport 150,000 passengers per hour among 27 nodes in the network." A supporting enterprise capability might be: "Process 200,000 tickets per hour during peak loading." There is a baseline capability due to capability development up to that point in time, plus any additional capability planned for the future. The desired levels of capability (based on needs assessment) are compared to the baseline capability to determine the capability gaps for the enterprise. This activity will also determine points of excess capability.

The gaps should be filled and the excesses should be eliminated. The projected gaps and excesses are sometimes mapped into several future timeframes to get a better understanding of the relative timing and intensity of change that might be required. It is typical to use time "buckets" like near-term, mid-term, and far-term, which, for some long-lasting capabilities, might correspond to five, ten, and twenty years out respectively. Of course, for fast-changing capabilities (like consumer products) these timeframes would necessarily be shorter in duration, for example, one, two and three years out.

Enterprise Architecture Formulation & Assessment

Enterprise architecture analysis can be used to determine how best to fill these capability gaps and minimize the excess capabilities (or "capacities"). Usually a baseline architecture is characterized for the purpose of understanding what one currently has and where the enterprise is headed under the current business plans. The needs and gaps are used to determine where in the architecture elements need to be added, dropped, or changed. Each modification represents a potential benefit to various stakeholders, along with associated costs and risks for introducing that modification. Enterprise architecture can be used to provide a model to understand how the parts of the enterprise fit together (or do not) (Giachetti 2010).

The enterprise architecture effort supports the entire capability management activity with enterprise-wide views of strategy, priorities, plans, resources, activities, locations, facilities, products, services, and so on (ISO/IEC/IEEE 15288 (ISO/IEC/IEEE 2015) and architectural design process: ISO/IEC 42010 (ISO/IEC 2011) and ISO 15704 (ISO 2000)).

Opportunity Identification & Assessment

The enterprise architecture is used to help identify opportunities for improvement. Usually these opportunities require the investment of time, money, facilities, personnel, and so on. There might also be opportunities for "divestment," which could involve selling of assets, reducing capacity, canceling projects, and so on. Each opportunity can be assessed on its own

merits, but usually these opportunities have dependencies and interfaces with other opportunities, with the current activities and operations of the enterprise, and with the enterprise's partners. Therefore, the opportunities may need to be assessed as a "portfolio," or, at least, as sets of related opportunities. Typically, a business case assessment is required for each opportunity or set of opportunities.

Enterprise Portfolio Management

If the set of opportunities is large or has complicated relationships, it may be necessary to employ portfolio management techniques. The portfolio elements could be bids, projects, products, services, technologies, intellectual property, etc., or any combination of these items. Examples of an enterprise portfolio captured in an architecture modeling tool can be found in Martin (2005), Martin et al. (2004), and Martin (2003). See Kaplan's work (2009) for more information on portfolio management, and ISO/IEC (2008) for information on projects portfolio management process.

Enterprise Improvement Planning & Execution

The results of the opportunity assessment are compiled and laid out in an enterprise plan that considers all relevant factors, including system capabilities, organizational capabilities, funding constraints, legal commitments and obligations, partner arrangements, intellectual property ownership, personnel development and retention, and so on. The plan usually goes out to some long horizon, typically more than a decade, depending on the nature of the enterprise's business environment, technology volatility, market intensity, and so on. The enterprise plan needs to be in alignment with the enterprise's strategic goals and objectives and with leadership priorities.

The planned improvements are implemented across the enterprise and in parts of the extended enterprise (glossary) where appropriate, such as suppliers in the supply chain, distributors in the distribution chain, financiers in the investment arena, and so on. The planned changes should have associated performance targets and these metrics should be monitored to ensure that progress is being made against the plan and that the intended improvements are being implemented. As necessary, the plan is adjusted to account for unforeseen

circumstances and outcomes. Performance management of enterprise personnel is a key element of the improvement efforts.

Enterprise Capability Change Management

In an operational context (particularly in defense) the term "capability management" is associated with developing and maintaining all aspects of the ability to conduct certain types of missions in a given threat environment. In an industrial context, capability refers to the ability to manage certain classes of product and service through those parts of their life cycle that are relevant to the business. Changes to enterprise capability should be carefully managed to ensure that current operations are not adversely affected (where possible) and that the long term viability of the enterprise is maintained. The following seven lenses can be used to facilitate change management: strategic objectives, stakeholders, processes, performance metrics, current state alignment, resources, and maturity assessment (Nightingale and Srinivasan 2011).

Capability management is becoming more often recognized as a key component of the business management tool suite:

> *Capability management aims to balance economy in meeting current operational requirements, with the sustainable use of current capabilities, and the development of future capabilities, to meet the sometimes competing strategic and current operational objectives of an enterprise. Accordingly, effective capability management assists organizations to better understand, and effectively integrate, re-align and apply the total enterprise ability or capacity to achieve strategic and current operational objectives; and develops and provides innovative solutions that focus on the holistic management of the defined array of interlinking functions and activities in the enterprise's strategic and current operational contexts.* (Saxena 2009, 1)

There is a widespread perception that capability

management is only relevant to defense and aerospace domains. However, it is becoming more widely recognized as key to commercial and civil government efforts.

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