White Paper
The Art of Judgment: Value Judgment

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Ceri has thirty years in the IT industry, originally delivering complex control systems and subsequently broadening focus to Enterprise Architecture, Governance and transformation of the IT function. Working as a chief architect, consultant and coach, he enables FTSE 250 organizations to make medium and long term decisions on the shape of the Enterprise Architecture and positioning of the IT function.

He advocates putting people at the heart of technology and business change with focus on the human enablers and constraints. His work deals with the way in which rigorous engineering and architecture disciplines are integrated with the cognitive and behavioural capabilities of the people who practice them.

This white paper is the second in a series that explores the role of judgment in Enterprise Architecture. In particular, it focuses on the relationship between Enterprise Architect, the information and the personal qualities that enable successful execution of that role.

The title is taken from a seminal book by Sir Geoffrey Vickers - The Art of Judgment *(Ref [1])* - focused on the types of judgment involved in perceiving the environment and decision making in the shaping of policy.

Architecture and design are decision-centric, human processes that apply human values to information within the context of defined objectives. Rational and intuitive decisions are made constantly by individuals and groups. Vickers proposes that as part of an overall Appreciative System, there are three distinct types of decision-making:

1 **Reality judgment**: concerning what is or is not the case;

2 **Value judgment**: concerning what ought or ought not be;

3 **Instrumental judgment**: concerning the best means available to reduce the mismatch between *is* and *ought*.

This White Paper focuses on Value Judgment. This type of judgment is constrained by the quality and nature of the Reality Judgment that provides the raw material with which to explore and define what ought to be.

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Value Judgment starts with how we represent reality…

To help us simplify, we distinguish between the different types of Judgment as if they are clearly distinct and normalized processes. However, we have to recognize that the boundaries implied are not clean and tidy. The demands of our *Value Judgment* determine how to represent reality, and what information to include or exclude. For example, if we value reduction in complexity of the IT estate, the reality data we collect and represent focuses on key sources of complexity such as inter-dependency between systems, close coupling and sensitivity to change.

In short, we look for data of significance. Often, we are limited by information already available and easily found, but occasionally discovery is commissioned for a specific purpose such as a survey of the IT estate and its condition in preparation for letting an outsourcing contract. The need for readily available information is a key driver for the type of repository often provided by Enterprise Architecture tools, populated in priority order determined by the priorities implied in the business and IT strategies and project portfolio.

How we represent the data is a critical enabler and constraint on the nature and quality of the Value Judgment we can exercise.
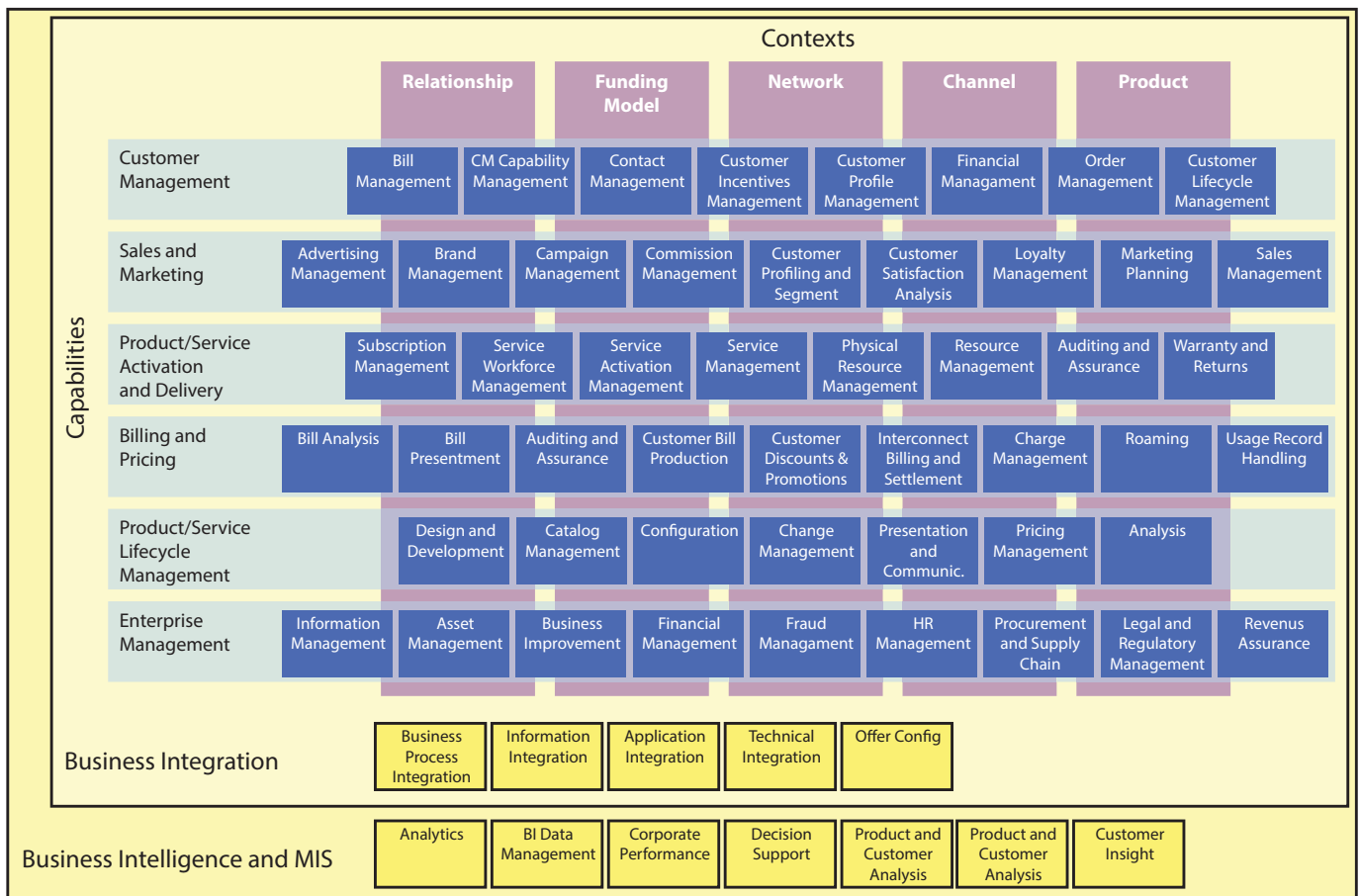

Figure 1. Hybrid Reference Model based on TMFs eTOM

Typically, a simplified view of the IT landscape is a necessity and often achieved by categorizing systems against some sort of reference model. Simplifying without distortion is an art, not a science.

There is no shortage of reference models to choose from in the industry. Standard models such as SCOR (supply chain), Telemanagement Forum eTOM (Communications), APQC (General Business), TOGAF TRM (Technical Infrastructure) and ARTS (retail), as well as proprietary models can provide useful concepts to draw on. However, adoption should be a conscious act to ensure that they facilitate the *Value Judgment* required.

The main enablers and constraints at issue here are the structural features of these reference models that hard-wire perceptions of granularity, partitioning, bundling and integration of systems, sub-systems (and sub-sub-systems…). Picking and mixing reference models is a highly skilled process as it involves integrating conceptual views of the world, each with its own language and semantics. Sir Geoffrey Vickers considers these issues in detail in *[1] Chapter 4 – The Appreciative System*. He recognizes that reference models are "perceptual schema that define categories of experience that it has been found convenient to group together" and identifies how these perceptual schema resist change to varying degrees:

- **Minimal resistance** when the change is by further differentiation (i.e. granularity) within an existing concept (e.g. dividing 'Infrastructure' into 'Compute Platforms', 'Networks' and 'Storage')

- **Greater resistance** when change comes through the recognition of a wider category under which several established concepts can be subsumed. This is a typical situation when recognizing opportunity for common and re-usable capabilities such as 'Workflow', the bundling of HR, Finance and Procurement into 'ERP' and the convergence of 'unified communications'

- **Greatest resistance** when change involves the dissolution of a concept and its distribution of its contents among others. This, in particular, is the biggest challenge when integrating standard reference models from different sources. Arrival on the scene of concepts such as 'Cloud', Enterprise Service Bus, Business Activity Monitoring and Event Stream Processing have had this effect. This resistance is most acutely felt when categories contain bundles of capabilities that overlap with others.

…it continues with how we use it…

The previous white paper in this series suggested that decision making in Enterprise Architecture (as in all disciplines) is a blend of conscious and unconscious processes. *Value Judgment* is concerned with bringing conscious and unconscious values to determine what *ought* and *ought*

not be. Effective judgment here depends on our ability to integrate these processes and make the unconscious conscious.

To do this, we have to become aware of the unconscious influences that color our perception and judgment. A recent article in *New Scientist [Ref 2 – Stupidity: what makes people do dumb things?]* explores the relationship between intuition and reason and the challenges we all face when interpreting the world and making decisions. It suggests that we have evolved a number of intuitive mechanisms that offer cognitive shortcuts' to help us deal with information overload. When exercising Value Judgment, there are several cognitive biases that, if we can become conscious of, we can challenge to drive better decision-making. These are:
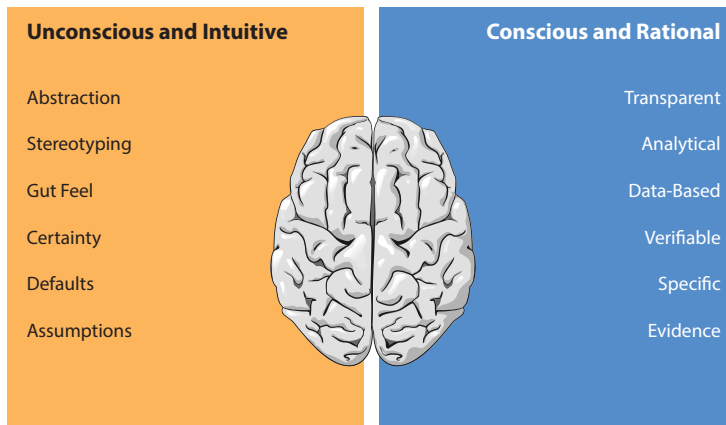
Unconscious and Intuitive	Conscious and Rational
Abstraction	Transparent
Stereotyping	Analytical
Gut Feel	Data-Based
Certainty	Verifiable
Defaults	Specific
Assumptions	Evidence

Figure 2. Cognitive Bias

- Confirmation bias: our tendency to filter out the information that challenges our emergent views and zoom in on the information that re-enforces them

- Stereotyping: our ability to simplify the world by abstracting general types from the specific details

- Resistance to ambiguity: our attraction to certainty, for example, the temptation to accept the first solution to a problem event if it is obviously not the best

- Default position: the way in which we interpret and make decisions not by a process of working from the facts, but by starting with a default position and only shifting from it when the facts become compelling. This is why some things are believed without much evidence, and require alternatives to be backed by a lot

These particularly affect our ability to diagnose or attribute cause and effect (e.g. "we have too many systems because our business processes are diverse" vs "our business processes are diverse because we have too many systems").

One way to effectively manage our cognitive bias in Enterprise Architecture and avoid institutional stupidity is to systematically consider alternative positions and switch on the organization's critical faculties. This often involves challenging a number of orthodox beliefs that often arise in the IT industry:

- **Legacy systems are bad.** Another way of describing a legacy system is: a system that works, everyone knows how to use and has known faults and workarounds.

- **Diversity is bad:** an alternative view might be: diversity avoids lock-in to any particular technology vendor and provides greater resilience, promoting evolutionary change and optimized response within specific business areas.

- **Batch processing is bad:** batch processing also makes very efficient use of scarce resources such as CPU power.

- **Customization is bad:** customization also gives users exactly what they want and facilitates transition to more standard, off-the-shelf systems.

- **Re-use is good:** however, it also creates complex dependencies between components, resistance to change and demands greater maturity in configuration control and test.

- **New is good:** new provides opportunities but also comes with risks. Early adopters take the risks associated with low service quality (e.g. stability, resilience, availability) as an acceptable price of short term business value.

- **Low latency is good:** low latency processing (e.g. Straight Through Processing, High Frequency Trading) is just as good at propagating business errors as good transactions, creating bad feedback cycles as easily as good.

- **Certainty is good:** while in a battlefield situation it is often more important that decisions are made at all than they are the best decisions. There are few circumstances in the commercial environment when this is really the case.

Challenging the orthodox beliefs is not a comfortable process, but one that Enterprise Architects, if they are to be effective and of value to the business, must engage in. The use of high enough quality information may be important in making the case, however soft skills are of greater value and more likely to shift existing bias. Even just bringing the alteratives into view can make a significant difference to perceptions and decision outcomes. Enterprise Architects must be prepared to take personal risks and exercise advocacy to shift inappropriate orthodoxy. Challenging the technology 'silver bullet' approach that is typical of new CTOs and technology strategists is an important activity – anyone or any organization that has a shiny new hammer will see every problem as a nail that needs a good pounding.

A number of other checks and balances are available to help balance our intuitive and rational faculties. These help Enterprise Architects make conscious choices in how we behave that match (or deliberately mismatch) the culture in which they operate. The extent to which our culture encourages subjective or objective positioning, and the extent to which it encourages decision making with high or low levels of uncertainty give us good clues on where to focus.

Examples of these techniques include:

- Metacognition – this is the cognitive psychologist's term for the ability to assess the validity of your own knowledge. This requires a rather more familiar trait to practice – humility.

- Systematically establish awareness of what you don't know – minimizing the information in the "unknown unknown" space *[Ref 4]. Use of a coherent EA framework that is 'MECE' (i.e. Mutually Exclusive, Collectively Exhaustive)* helps to understand where the gaps are.

- Always position at least two options (three if you count 'do nothing' as an option). A dictionary definition of 'judgment' is: 'a choice that you make about something after thinking about several possibilities" – so you need several possibilities.

- Take the RQ (Rationality Quotient) test *[Ref 5]* as a good starting point.

…and concludes with how we address it

The subject of the next white paper – Instrumental Judgment considers the decisions we make in closing the gap between what is, and what ought to be. Enterprise Architects will be familiar with modeling 'as-is' and 'to-be' target architecture – these align pretty well with the use of *Reality* and *Value* judgment. We use *Instrumental Judgment* when trying to work out how far and how fast we want to and can close the gap. In many ways, that is the most difficult process in Enterprise Architecture as it brings a number of additional constraints in to the design process, in particular around cost, timescales, resources, ability to absorb change, risk and motivation. Visioning is the easy part – transition planning is the hard part, implementation even harder.

References

[1] Vickers, G (1995) The Art of Judgment Centenary Edition.
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[2] http://www.newscientist.com/article/mg21729101.800-stupidity-what-makes-people-do-dumb-things.html

[4] http://papers.rumsfeld.com/about/page/authors-note

[5] http://www.kurtkleiner.com/stories/ut.why.smart.people.do.stupid.things.html

[6] http://en.wikipedia.org/wiki/MECE_principle

The author and Orbus welcome your views on this White Paper.
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