White Paper
The Art of Judgment:
Instrumental 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 third in a series that explores the role of judgment in Enterprise Architecture. In particular, it focuses on the relationship between the 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; [see previous white paper *Reality Judgment*]
2. **Value judgment:** concerning what ought or ought not be; [see previous white paper *Value Judgment*]
3. **Instrumental judgment:** concerning the best means available to reduce the mismatch between is and ought.

This White Paper focuses on Instrumental Judgment. It 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 –

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typically articulated in artifacts such as Roadmaps, Transition Plans and Transformation Plans (this paper refers to them all collectively as the Transition Plans). This is most challenging for the Enterprise Architect 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.

Start from here…

Following on from Reality and Value Judgment a number of Critical Success Factors need to be in place to enable efficient and effective Instrumental Judgment - these are the conditions that are necessary, but not sufficient by themselves for success:

1. Agreed principles of transition: these principles define the key features of the Transition Plan and represent the criteria by which judgment shall be exercised. They set expectations across Stakeholders – if these are not set in advance, then they will emerge in arrears and drive significant rework. Typically they would include objectives such as:
     o Each change unit shall deliver incremental positive net benefit (i.e. benefit-cost)
     o Collections of change units shall deliver synergies – i.e. net benefits that are more than the sum of the parts
     o Each change unit shall, by itself, reduce overall complexity of the IT landscape
     o Each change unit of system capability shall not exceed 3 months from start to finish.

2. Agreed initial constraints: these key constraints provide the decision-makers with the boundaries within which to work and the key tradeoff parameters. Typically, they would include: cost/budget, benefit target, timescales, resources (e.g. people), risk appetite, technologies (e.g. strategic).

3. Agreed estimating model: without this, most discussion of costs and benefits will be taken up bringing to light the unstated assumptions of each stakeholder involved rather than actually exercising Instrumental Judgment. This model needs to be inclusive of all sources of cost, types of resource, timescales and benefits. The key aim here is to use a standard, agreed model for estimation related to all change units, whether qualitative/subjective or quantitative/objective that is not limited to the usual financial and manpower resources. Vickers also draws attention to "…the personal resources of time, attention, intellect, passion, money and power…" – patience, energy and commitment are also finite resources.

4. Standardized types of change units: these are the 'types' of change unit – the aim here is to recognize that although change units differ in detail, they often share features in concept. These may have been already agreed in order to define 'as-is' and 'to-be' Architectures. Examples include: Business Process Outsource, replace system, extend system, renovate, refresh, modernize, remove, decommission.

5. Agreed Architecture Rules: this group of Architecture materials articulates the rules by which the Enterprise Architecture shall evolve. They include any statements of intent that are not specific to future state models such as: objectives, principles, policies, standards and patterns.

…then facilitate the process…

Exercising Instrumental Judgment is probably the most iterative of all the types of judgment in Vickers' model. Value Judgment produces 'to-be' future state targets that may be realistic or aspirational (or both!). The application of key constraints and the estimating of costs and benefits force the hand of the decision makers - Instrumental Judgment is about hard choices and trade-offs. Priorities and uncertainty add to the mix to present the decision-makers with the challenge of making Allocative and Integrative judgment decisions. Vickers differentiates between these types of decisions as they typically require different information and often different people and processes. In Vickers' words: "The claims that the decision maker has to optimize may be incompatible in either or both of two ways. They may be mutually inconsistent in themselves, and whether consistent or not, they may compete for resources too scarce to satisfy them all".

- Allocative Judgment is about the optimal allocation of scarce resources (e.g. money, attention, real-estate) between competing initiatives, aiming to deliver the greatest net benefit in the planning time frame.
- Integrative Judgment is about choosing between mutually exclusive alternatives (e.g. change units) or modifying them so that they integrate in a meaningful way.

The two work together to facilitate optimization of the Transformation Plan as a whole.

The way in which the change units are sliced and diced is a major enabler and constraint for the process by which options emerge, are evaluated and selected. The less coupled the change units are from each other, the greater flexibility in the Transformation Plan – both during its initial creation, and during implementation as it encounters obstacles and unmet assumptions. The chunking approach is critical to this part of the
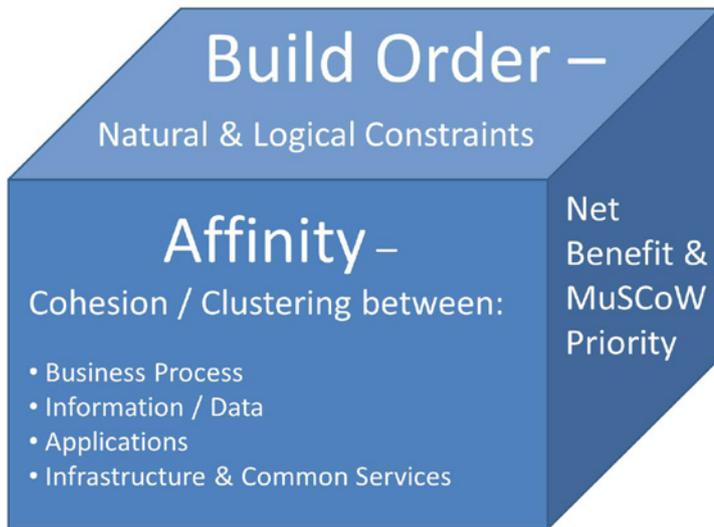
Figure 1 - Dimensions of a Change Unit

process, and takes place along one or more of the following dimensions and illustrated in Figure 1:

1. Affinity: the natural clustering and cohesion between process, data, applications and infrastructure define the 'logical' opportunities for chunking

2. Cost and Benefit Profile: differentiating between high and low net benefit capabilities presents opportunities to avoid putting delivery of low net benefit capabilities on the critical path of high net benefit capabilities. There is much to draw on here from the Agile/DSDM movement in terms of MuSCoW prioritization (Must, Should, Could, Will Not) to create change units consisting of capabilities with the same priority.

3. Build Order: there will be a natural order of change that works to minimize rework and duplication. Prioritizing this dimension will tend toward laying foundations first (e.g. Common Services). However, this approach also comes with risks that the overheads incurred by the early initiatives are not spread over all planned initiatives if circumstances change.

4. Business dimensions: the business architecture provides opportunities for chunking along the lines of features such as: customers, products, business function, sales channels, geographies, user communities.

The approach to chunking should have begun to emerge during the Reality and Value Judgment phases as a means of shaping the way in which the 'as-is' and 'to-be' Architectures are articulated. Another key source of continuity across all Judgment phases is the way in which these and intermediate Architectures are articulated and expressed. The Instrumental Judgment phase will spawn a number of transitional Architectures resulting from a number of mini Value Judgment activities – this can be viewed as a sort of recursive/fractal approach that ensures consistency and continuity in the way in which each Architecture state is expressed. The use of Reference Models (see February's paper on Reality Judgment) is critical to maintaining this continuity and facilitating comparison between competing alternatives.
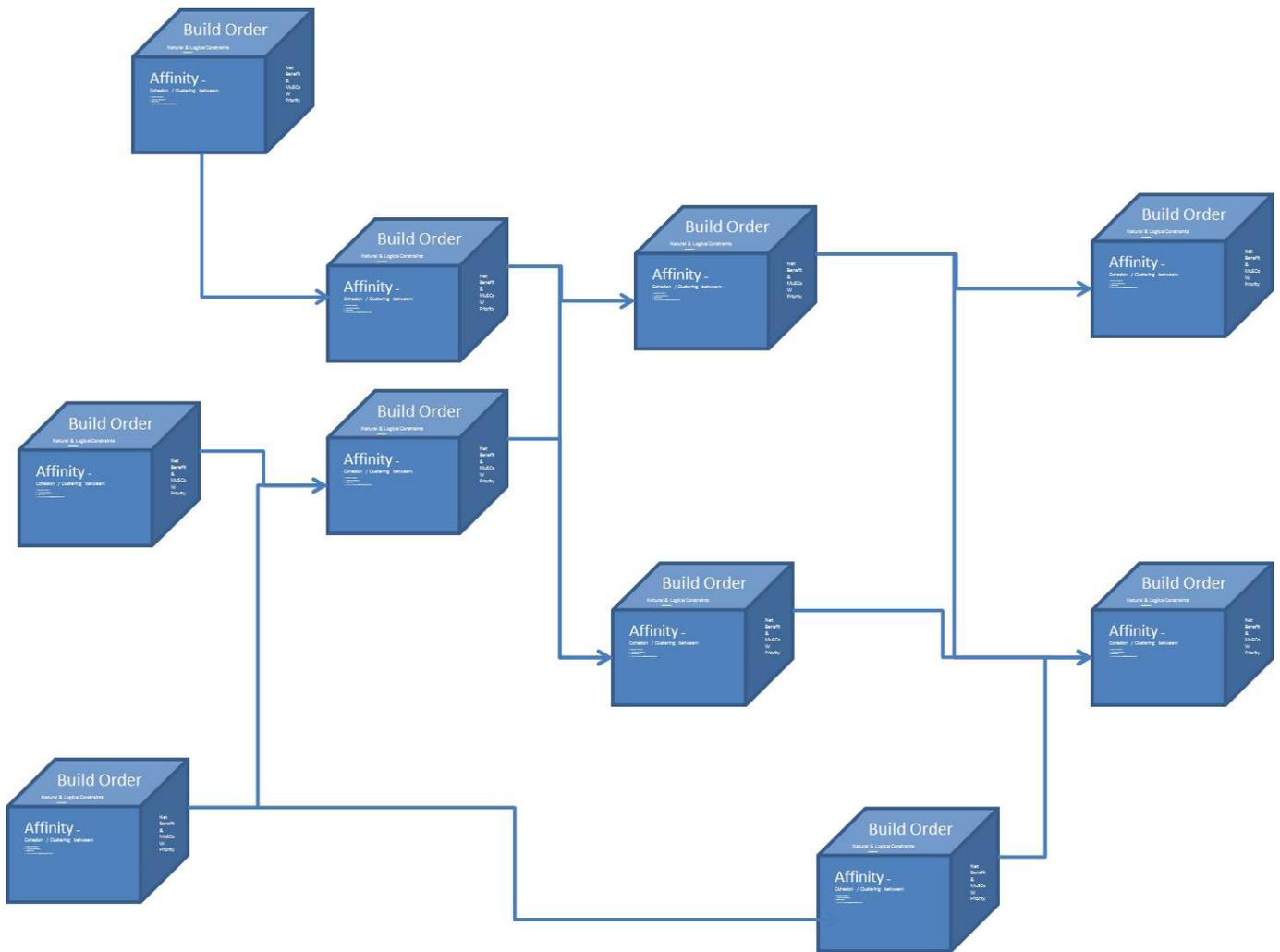
Figure 2 - PERT Chart of Change Units

Two key materials are needed both to capture the output of Instrumental Judgment and facilitate the iterative decision making process:

1. PERT Chart: in two forms – the classical detailed PERT Chart (Figure 2) itemizes each change unit and plots the dependencies between them (start/start, finish/start and finish/finish). For transition planning, this is far more useful than a GANTT. A GANTT is designed to plot activities on a timeline and summarize resource requirements – as soon as dependencies are added, it becomes too complex and inflexible. The second form is a high level variant of the PERT Chart - Transformation Map (Figure 3). This is very useful for expressing themed progression of change units without increasing the complexity and reducing intelligibility by adding explicit dependencies.

2. Intermediate Architectures: as-is, target and intermediate Architectures should all be described using the same concepts, structures, vocabularies and visual tools. If they are not, the stakeholders will struggle to compare them and comprehend the similarities and differences. Each transitional state is a sort of 'future reality judgment' and subject to the same influences as Reality Judgment.
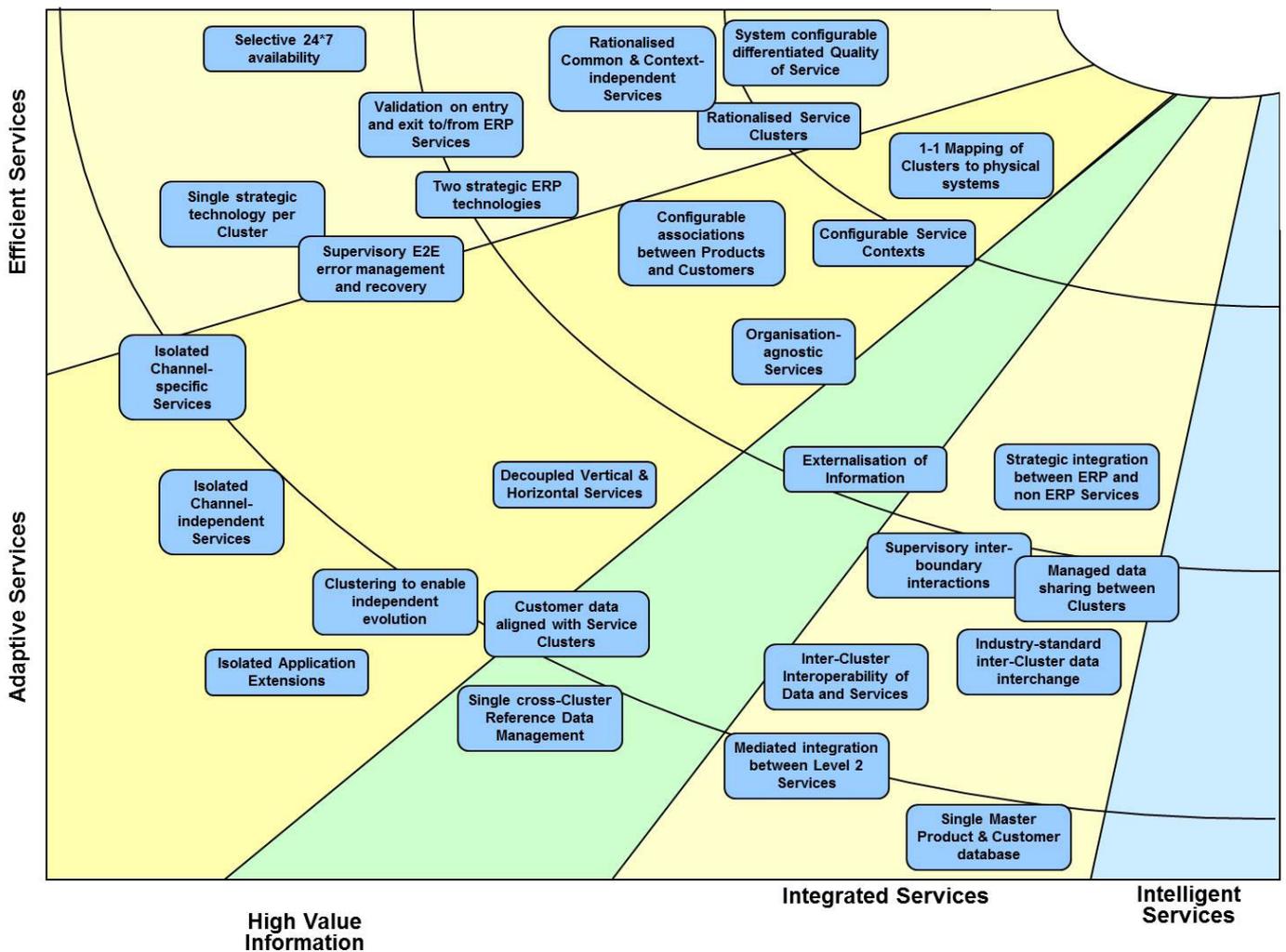
Figure 3 - T-Map of Change Units

…and make the judgment calls…

So far in this paper, we've considered preparation for and facilitation of the decision-making process. Making the decisions requires hard choices to be made between competing change propositions to recognize constraints, optimizing across the change unit portfolio and even, sometimes, redefining the challenge and going back to Reality Judgment.

Even with good conditions in place, decision-making is still ultimately based on instinct, intuition and exercising of personal power. All that a systematic approach to decision-making can realistically do is provide transparency on the extent to which decisions are rational, informed and intuitive. There are no rights and wrongs here – however, it is critical that if a decision is intuitive, then it is seen as such rather than dressing it up as rational.

It is often the case that intuitive decision making is not consciously injected as an abuse of power; it is simply a pragmatic response to impending decision deadlines in the face of slow impact assessment and tradeoff analysis. Gearing up for rapid impact assessment, tradeoff analysis and consideration of alternative scenarios is a pre-requisite

for effective decision-making. At this point, Instrumental Judgment becomes more art than science. It is notoriously hard to define the qualities of a good transition plan, but many Enterprise Architects and senior management KIWISI (Know It When I See It). While we can't realistically codify these criteria, there are a few things worth noticing and aiming for:

1. Good Enough: the transition plan should be 'good enough' – it is not feasible to make the perfect decision, as the time taken to execute the decision making process itself undermines the value of the decision and quality of information used to make it. Setting the threshold for 'good enough' enables this, as does rigorous time-boxing. Vickers observes: "alternatives are too many and time is too short…rapidly narrow the choice based on coarse criteria and then seek 'good enough'".

2. Resilience, not Robustness: 'all or nothing' plans that depend on very large change units or collections of change units are typically brittle and do not stand the test of time. Change units should be defined so that they can start from a variety of baselines, be re-ordered and injected into the overall plan at a variety of points – this is needed to facilitate the initial Instrumental Judgment , but also to flex the plan as implementation encounters reality or priorities change.

3. Keep choices available: either/or choices should be deferred as far into the future as is practical – but without procrastinating. This enables options to be kept open for as long as possible, again to flex the plan as implementation encounters reality or priorities change.

4. Hedge the bets: recognize the imperfections that are likely in all Judgment phases, so that multiple decisions (e.g. for a number of change units) do not disproportionally depend on a single assumption or 'fact'.

The subject of the next white paper – *The Art of Judgment: The Appreciative System* - brings together Reality, Value and Instrumental judgment as an integrated whole. It considers the iterative nature of the processes involved, emergence of expectations and Architecture, and, critically, what an Enterprise Architect can do to blend the analytical and human dimensions of decision making.

References

[1] Vickers, G (1995) The Art of Judgment Centenary Edition. ISBN: 0-8039-7362-4

[2] http://en.wikipedia.org/wiki/Geoffrey_Vickers

The author and Orbus welcome your views on this White Paper. If you would like to get in touch please feel free to do so through the following:

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