A Decision Architecture Whitepaper
Part 2/2
Decision Architecture in EA Standards and Agile Programming

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1 Purpose of the Whitepapers
This is the second of two whitepapers on Decision Architecture (DA). The first one focused on defining DA and supporting why it is important for many types of enterprise decisions. This second white paper explores DA in government and open standards. Standards like TOGAF, FEA and DODAF give structure and process to enterprise design, change and evolution. This paper also explores how DA affects an agile environment and the success of an RFP effort (Request for Proposals).

2 Goals of this Whitepaper
The goal of this white paper is to review government and other standards to see how they support Decision Architecture. Most of these standards apply to unstructured decisions with only DMN aimed at structured, rule based decisions.

Additionally, Decision Architecture's support for agile processes is developed. This is undertaken because agile processes are widely used by people aware of Enterprise Architecture.

The framework for this paper is the use of the ten DA measures developed in Part 1, *Introduction to Decision Architecture And Why Is It Important to Making Agile, Acquisition, Gap Resolution and Other EA Decisions,* These measures are applied to the standards and agile process to evaluate how well they support decision-centered methods.

3 Decision Architecture in EA Standards
The sub-parts of this section introduce the major Enterprise Architecture Standards and assess them using ten Decision Architecture measures. These assessments are followed by introductions to other EA methodologies that support Decision Architecture.

3.1. TOGAF
TOGAF 9.1[1] is an open standard and is generally considered the de facto global standard for Enterprise Architecture. In Section 1.2 of the standard (Executive overview), the authors state (emphasis added): "*Developing and sustaining enterprise architecture is a technically complex process which* ***involves many stakeholders and decision processes*** *in the organization*." Also, in the introduction to the ADM (Section 5.1.1), the TOGAF main process flow, they state: "*While using the ADM, the architect is developing a* ***snapshot of the enterprise's decisions and their implications at particular points in time.***" Indeed, a major part of the ADM, Phases B thru E is the development and resolution of gaps, the difference between "what is" and "what needs to be" (Chapter 27). Resolving gaps requires decisions. The TOGAF authors recognize this with: "*If done well, the ADM can be used to trace specific decisions back to criteria, and thus yield their justification*".

Finally, in Section 41.5.2, as part of the governance process, the authors state that a decision log is "a log of all architecturally significant decisions that have been made in the organization. This would typically include: product selections, justification for major architectural features of projects, standards deviations, standards lifecycle changes, change request evaluations and approvals, and re-use assessments."

Yet, in spite of all the stated importance of decision-making, TOGAF never mentions that there are Decision Architectures made up of the building blocks shown in Figure 1 (introduced in Part 1, reprinted here). In fact, TOGAF almost exclusively treats a decision as an outcome rather than a process and only once in its 650 pages mentions "alternatives" and the evaluation of them.

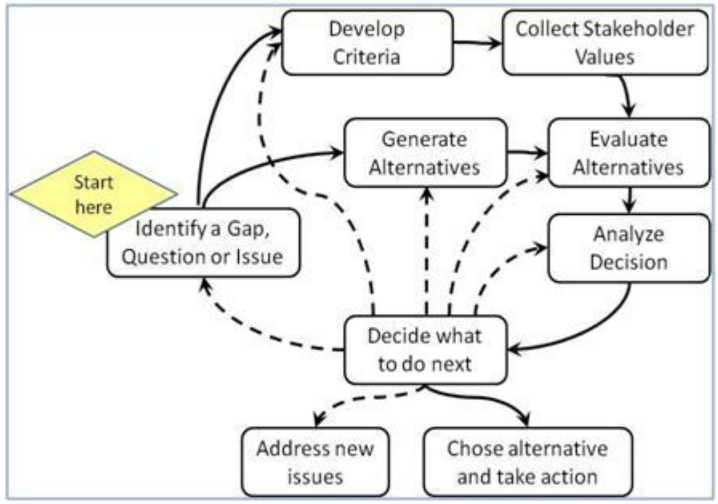

Figure 1: The decision building blocks??

It is partially this lack that drove the development of the Decision Architecture. In the table below TOGAF is evaluated based on the ten measures introduced in the earlier white paper.

Project or Organization:	TOGAF	5=Always, 0=Never
	Measure	
1	There is an attitude that decision-making is an important part of all processes.	1 – TOGAF does lip service to the importance of decisions
2	For each decision to be made, the stakeholders and ownership is clear.	5 – TOGAF is very strong in identifying the stakeholders and issue ownership
3	The objective of decision-making activities is clearly known.	5 – TOGAF is very strong in developing issues to be addressed.
4	Multiple alternatives are generated for each decision to be made.	0 – The importance of multiple alternatives is not mentioned in TOGAF
5	Information and analysis used to evaluate alternatives clearly supports the decision-making process.	1- TOGAF is weak in suggesting decision-making processes
6	An appropriate decision-making method is used for each decision to be made.	0 - TOGAF is weak in suggesting decision-making processes
7	Risk consideration is a core part of the decision-making process and based on information uncertainty and ambiguity.	3 – Object/event risk is covered in Chapter 31, but is not overly strong
8	It is clear when a decision has been made.	5 – TOGAF is strong in issue management
9	Decisions are recorded, reviewed and reused.	4 – TOGAF repositories are strong
10.	There is decision buy-in.	2 – While stakeholder identification and issue development are good, other Decision Architecture elements that build buy-in are missing.
	Total in Column	26

Where TOGAF is very strong in identifying issues and stakeholders, it is weak in other Decision Architecture measures. FEA and DODAF are stronger in these areas.

3.2. Federal Enterprise Architecture (FEA)

The Federal Enterprise Architecture (FEA) is the EA of the US federal government[2]. Like TOGAF, it is a compendium and organization of management best practices for aligning business and technology. One best practice in FEA that addresses decision-making is Alternatives Analysis (Note that this is different from "Analysis of Alternatives" as used in DODAF, Section 3.3).

Alternatives Analysis includes the definition and comparison of viable alternatives to fulfill business and information management requirements. Details on Alternatives Analysis are spelled out in *OMB Circular A-11 Section 300*[3]*.* Specifically, in *Part II: Planning, Acquisition and Performance Information; Section A: Alternatives Analysis,* a section of the budget for an acquisition covered under the Circular are the results shown in Figure 2.

Here the comparison between alternatives is based solely on risk adjusted life-cycle costs and benefits analyses. Both of these criteria for alternative comparison are in terms of net present value (NPV). The OMB has, in an effort to reduce all measures to their dollar values, reduced the decision making to a comparison of NPVs. There is great comfort in having a single dollar value for each project, but, is this value sufficient for actually committing resources? Using only NPV has the following weaknesses[5]:

- The accuracy of the data is suspect (sometimes off by an order of magnitude[4]; using a single indicator of project value only combines inaccurate estimates, thus compounding the error).
- Risk estimates are added to NPV and are often no better than pulling numbers out of the air, compounding the error further.
- NPV penalizes projects with longer-term launch dates.
- NPV assumes that risk is spread out evenly over the life of a project, which is often not true.
- Measuring everything in terms of dollars is foolhardy. Much information is lost is trying to fit everything into one measure.

Section A: Alternatives Analysis (All Capital Assets)

In selecting the best capital asset, you should identify and consider at least three viable alternatives, in addition to the current baseline, i.e., the status quo. Use OMB Circular A-94 for all investments and the Clinger Cohen Act of 1996 for IT investments to determine the criteria you should use in your Benefit/Cost Analysis.

1. Did you conduct an alternatives analysis for this investment? Yes___ No___
   a. If "yes," provide the date the analysis was completed? ____________________
   b. If "no," what is the anticipated date this analysis will be completed? ____________________
   c. If no analysis is planned, please briefly explain why: ____________________

2. Alternatives Analysis Results:

Use the results of your alternatives analysis to complete the following table:

Alternative Analyzed	Description of Alternative	Risk Adjusted Lifecycle Costs estimate	Risk Adjusted Lifecycle Benefits estimate
Baseline	Status quo		
1 -			
2 -			
3 -			

Figure 2: Part II, Section A of OMB Circular A-11.

Based on this discussion, FEA is measured for its support of Decision Architecture in the table below.

Project or Organization:	FEA	5=Always, 0=Never
	Measure	
1	There is an attitude that decision-making is an important part of all processes.	2 – FEA us stronger than TOGAF but still lacking
2	For each decision to be made, the stakeholders and ownership is clear.	4 – FEA is good in identifying the stakeholders and issue ownership
3	The objective of decision-making activities is clearly known.	4 – FEA is good in developing issues to be addressed.
4	Multiple alternatives are generated for each decision to be made.	4 - FEA uses Alternative Analysis encouraging the development of multiple alternatives
5	Information and analysis used to evaluate alternatives clearly supports the decision-making process.	2- Limited to NPV
6	An appropriate decision-making method is used for each decision to be made.	2 – Limited methods
7	Risk consideration is a core part of the decision-making process and based on information uncertainty and ambiguity.	3 – Risk is totally in terms of NPV
8	It is clear when a decision has been made.	5 – FEA is strong in issue management
9	Decisions are recorded, reviewed and reused.	4 – FEA repositories are strong
10.	There is decision buy-in.	2 – some effort at buy-in
	Total in Column	32

Since FEA forces the comparison of alternatives, from a Decision Architecture viewpoint, FEA is stronger than TOGAF, but is still limited. That said, it is not as strong as DODAF in how the alternatives are compared.

3.3. Department of Defense Architecture Framework (DoDAF)

The Department of Defense Architecture Framework DODAF[5] is much more oriented to consideration of alternatives than TOGAF and FEA. Its Decision Architecture is called Analysis of Alternatives (AoA)[6]. Analysis of Alternatives grew out of the acquisition community's need to choose the best system early in the purchasing (development) cycle. AoA is described in many handbooks, the best being that by the USAF[7]. AoA has been successful enough that it has also been adopted by DHS[8].

In brief, AoA requires the development and comparison of multiple alternatives in a matrix format (example in Figure 3). Here they are compared across a number of MOEs (Measures of Effectiveness, i.e. Criteria), risk and Total LCC (Life Cycle Cost).

	Critical						Non-Critical			Risk	Total LCC $(M)
	Mission Task 1			Mission Task 2			Mission Task 3				
	MoE 1-1	MoE 1-2	MoE 1-3	MoE 2-1	MoE 2-2	MoE 2-3	MoE 3-1	MoE 3-2	MoE 3-3		
Alt 1 (baseline)	G	Y	R	G	G	Y/G	G	R	G	R	$1,200
Alt 2	R	Y/G	G	R/Y	R	G	G	Y/G	Y	G	$1,450
Alt 3	Y/G	G	R	G	Y	Y/G	Y	G	G	R	$1,457
Alt 4	G	R	G	R/Y	G	Y	R/Y	G	R	G	$1,786

Figure 3: Matrix comparison of alternatives in AoA

Where the FEA only uses an equivalent of LCC, AoA uses this plus risk and performance comparisons to justify selecting an alternative.

In a study by the GAO[9] on the effectiveness of AoA, they found; "A robust AOA can be a key element to ensure that new programs have a sound, executable business case". The authors concluded: "While many factors can affect cost and schedule outcomes, we found that programs that had a limited assessment of alternatives tended to have poorer outcomes than those that had more robust AOAs." Further "The narrow scope and limited risk analyses in AOAs can be attributed in part to program sponsors choosing a solution too early in the process, the compressed timeframes that AOAs are conducted under, and the lack of guidance for conducting AOAs."

The GAO paper highlights six measures of AOA adequacy:

- The range of alternatives developed greatly affect the project's ability to stay on time and budget
- Risk assessment is necessary to avoid cost and time overruns

- Choosing an alternative too early exacerbates overruns
- Making decisions takes time – projects that skimped on time generally had high cost and time overruns
- Projects that had Decision Architecture guidance succeeded more often than those that had none
- Comparing risks for new programs is especially important

These all support the measures being used here as is evident in the table below.

Project or Organization:		DoDAF	5=Always, 0=Never
	Measure		
1	There is an attitude that decision-making is an important part of all processes.		4 – The use of AoA forces a decision-centric view of top level acquisition decisions
2	For each decision to be made, the stakeholders and ownership is clear.		4 – DoDAF is good in identifying the stakeholders and issue ownership
3	The objective of decision-making activities is clearly known.		4 – DoDAF is good in developing issues to be addressed.
4	Multiple alternatives are generated for each decision to be made.		5 – DoDAF's AoA encourages the development of multiple alternatives
5	Information and analysis used to evaluate alternatives clearly supports the decision-making process.		4- Evaluation of MOEs and cost is a good basis
6	An appropriate decision-making method is used for each decision to be made.		3 – Limited methods
7	Risk consideration is a core part of the decision-making process and based on information uncertainty and ambiguity.		3 – Risk is not well tied to all MOEs and cost. It is a single measure.
8	It is clear when a decision has been made.		5 – DoDAF is strong in issue management
9	Decisions are recorded, reviewed and reused.		4 – DoDAF repositories are strong
10.	There is decision buy-in.		3 – The use of AoAs increase buy-in
	Total in Column		39

DODAF, with its use of AoAs, is fairly strong from a Decision Architecture viewpoint. However, it is limited to a single, high level decision matrix without propagation to sub issues.

3.4. Risk Informed Decision Making (RIDM)

While not an EA methodology, Risk-Informed Decision Making (RIDM)[10] is a key part of NASA's risk management process. NASA has realized that it is the decisions made during the course of a program that determine which risks that must be mitigated or accepted during the entire program life cycle. RIDM was developed to address three issues that derailed projects: 1) a mismatch between stakeholder expectations and the resources needed to achieve them, 2) the miscomprehension of the risks being accepted when making commitments and 3) the risk associated with each alternative being considered.

As shown in Figure 4, taken from the NASA Risk-Informed Decision Making Handbook[11] there are three parts to the RIDM process. Part 1 is the identification of alternatives. A major part of this is the exploration of performance objectives and associated measures (i.e. criteria and goals). These are generally in the domains of safety, technical, cost and schedule.

Part 2, Risk Analysis of Alternatives, focuses on discovering the uncertainties associated with each alternative meeting the objects. Typical uncertainties include funding, operating environment, data limitations, technology development, design process, etc. The ability for each alternative to meet each objective is done probabilistically, realizing that decision making is a learning process, and any analysis is only an estimate.

Part 3, Risk Informed Alternative Selection, defines the deliberation that takes place between the stakeholders and the decision-makers. This results in a Risk-Informed Selection Report documenting the process and the results.

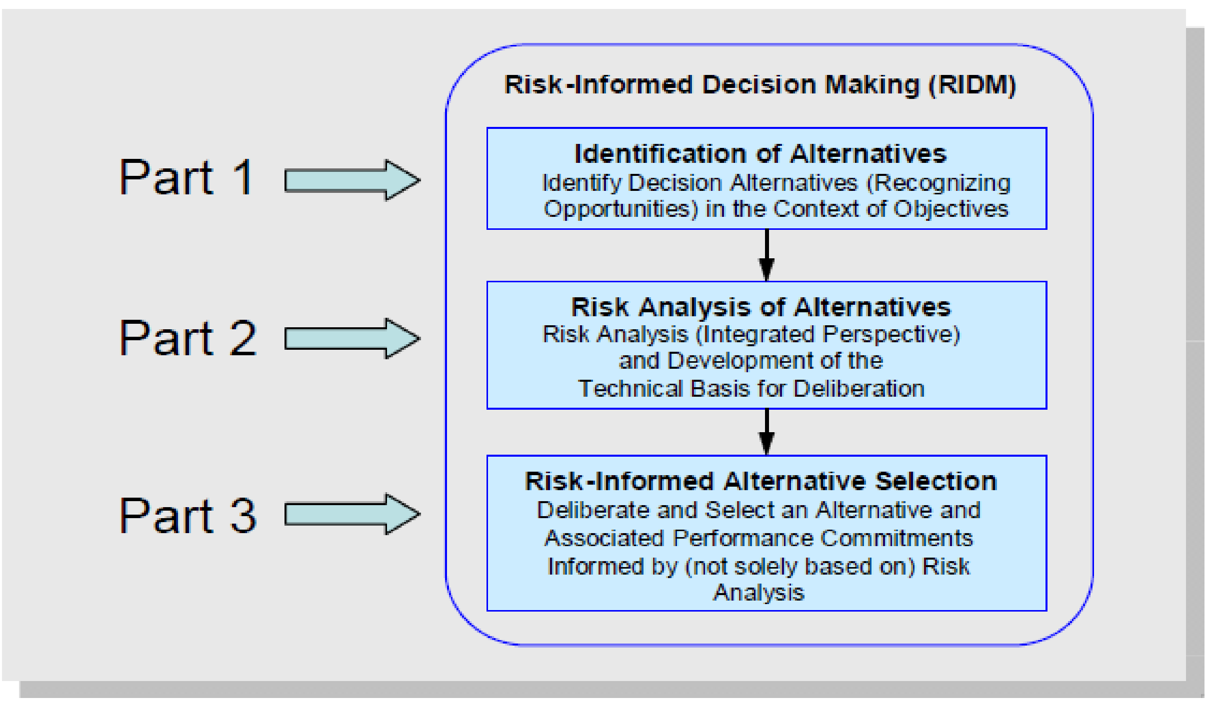

Figure 4: The RDIM Process (Figure 4, The RDIM Handbook)

One point emphasized is that "*risk minimization is not a performance objective*". The RIDM methodology takes a more mature view of risk than those in FEA and DODAF where risk is either combined in cost estimation (FEA) or computed a single measure parallel to the performance measures (DODAF). Here, risk is analyzed for each objective and becomes a major part of the deliberation process. An example from the Handbook is shown in Figure 5.

Alternative		Imposed Constraint Risk			
	Time to Completion	Project Cost	Data Volume	Planetary Contamination	Total*
	Constraint (< 55 months)	Constraint (<$500M)	Constraint (> 6 months)	Constraint (< 0.1% prob.)	
1. Propulsive Insertion, Low-Fidelity Science Package	2.8%	22%	4.1%	1.1%	25%
2. Propulsive Insertion, High-Fidelity Science Package	2.4%	57%	6.4%	3.2%	62%
3. Aerocapture, Low-Fidelity Science Package	3.0%	9.7%	8.7%	5.5%	18%
4. Aerocapture, High-Fidelity Science Package	2.3%	47%	12%	12%	57%

Figure 5: Example of a RIsk Matrix from the RIDM Handbook

RIDM is very mature. Its main weaknesses are in its range of methods, its ability to analyze the decision to suggest what to do next, and its ability to manage decision risk.

Project or Organization:	RDIM	5=Always, 0=Never
	Measure	
1	There is an attitude that decision-making is an important part of all processes.	5 – The use of the RDIM Risk Matrix is very mature
2	For each decision to be made, the stakeholders and ownership is clear.	5 – RDIM is very strong in identifying the stakeholders and issue ownership
3	The objective of decision-making activities is clearly known.	4 – RDIM is not as strong as TOGAF in identifying decision points.
4	Multiple alternatives are generated for each decision to be made.	4 – No specific tools for the development of multiple alternatives
5	Information and analysis used to evaluate alternatives clearly supports the decision-making process.	4- Evaluation of MOEs and cost is a good basis
6	An appropriate decision-making method is used for each decision to be made.	3 – Limited methods
7	Risk consideration is a core part of the decision-making process and based on information uncertainty and ambiguity.	4 – Object/event risk is core
8	It is clear when a decision has been made.	5 – RDIM is strong in issue management
9	Decisions are recorded, reviewed and reused.	4 – RDIM generates good decision records
10.	There is decision buy-in.	5 – Inclusion of stakeholders and subject matter experts is strong
	Total in Column	43

3.5. Decision Modeling and Notation (DMN)

OMG's Decision Model and Notation (DMN)[2] is for structured decisions. It is included here as many EA decisions can be reduced to a structured, business rule form. DMN has been proposed to provide constructs to model decisions so that organized decision-making can be readily depicted in diagrams and optionally automated.

Decision modeling is used to understand and define the operational decisions made in a business or organization. These are the decisions made in day-to-day business processes, rather than the strategic decision-making for which fewer rules and representations exist. The goal of DMN is to automate those decisions that can be, removing humans from the process, thus reducing tedium and mistakes.

For example, a set of rules are shown in Table 1.

	Conditions								Conclusion	
Rule Pattern	Total Debt to Income Ratio		Mortgage situation		Other loan assessment		Credit Score		Likelihood of defaulting on a loan	
1	Is greater than	80%	is	Poor	is	Medium			is	High
2	Is less than	50%					=>	650	is	Low
3	Is less than	50%	is	Poor	is	Good	=>	650	is	Medium

Table 1: Business rule example

Here there is a need to decide whether an applicant's likelihood of "defaulting on a loan" is; high, medium or low (the alternatives). The criteria (in the DMN world these are fact types) are used to define "Conditions" that include targets such as 80%, Good or a credit score of 650. In the DMN world these are called an "operands" or "fact values". The Business Rules in the table above is a combination of Evaluate Alternatives and Analyze Decisions. The Business Rules combined with the Conclusion is referred to as "business knowledge". Business Knowledge and Input Data, the information on the applicant on their actual condition – the basis for alternative evaluation, are the basic building blocks of DMN as seen in Figure 6.

If this example is "Decision 2" in the figure, then the conclusions are passed on to another decision (Decision 1) that can use them along with other input data or decision results to make some higher level decision.

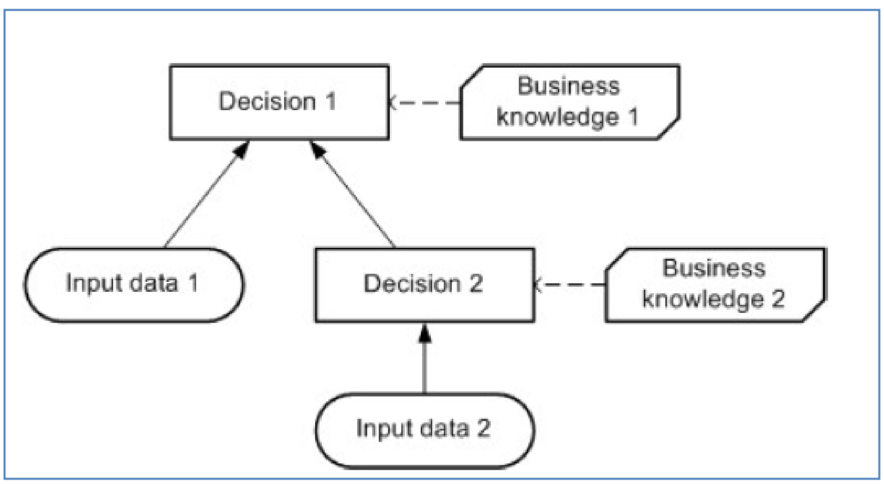

Figure 6: Example of DNM

Figure 7: A simple DMN decision requirements diagram

As a methodology for handling structured decisions DMN is very strong.

Project or Organization:		DMN	5=Always, 0=Never
	Measure		
1	There is an attitude that decision-making is an important part of all processes.		5 – This is core to DMN
2	For each decision to be made, the stakeholders and ownership is clear.		5 – This is core to DMN
3	The objective of decision-making activities is clearly known.		5 – This is clear for structured decisions in DMN.
4	Multiple alternatives are generated for each decision to be made.		5 – In developing the if-then rules multiple outcomes are a key part of the methodology
5	Information and analysis used to evaluate alternatives clearly supports the decision-making process.		5 - It's all in the rules
6	An appropriate decision-making method is used for each decision to be made.		1 – There is only one; if-then rules
7	Risk consideration is a core part of the decision-making process and based on information uncertainty and ambiguity.		4 – DMN can model risk in its rules
8	It is clear when a decision has been made.		5 – The rules always generate a result
9	Decisions are recorded, reviewed and reused.		4 – It is easy to record the result of each rule
10.	There is decision buy-in.		4 – If the rules are developed with the right stakeholder involvement then there will be good buy-in
	Total in Column		43

3.6. INCOSE CSEP

INCOSE (The International Council on Systems Engineering), in its Systems Engineering Handbook[11], builds decisions around decision gates. Decision gates, also known as control gates, are often called "Milestones" or "Reviews." All decision gates are both reviews and milestones; however, not all reviews and milestones are decision gates. Decision gates address the following questions:

- Does the project deliverable still satisfy the business case?
- Is it affordable?
- Can it be delivered when needed?

Decision gates represent major decision points in the system life cycle. There are at least two decision gates in any project: authority to proceed and final acceptance of the project deliverable.

CSEP is fairly distant from an EA processes. It is included here for completeness.

3.7. FAIR an EA Approach to Risk

Within the EA community, FAIR[12 13 14] (Factor Analysis of Information Risk) is an industry standard risk model for addressing information security and operational risk. FAIR presents a very detailed taxonomy of risk. By estimating the probabilities and costs of the different elements an overall level of risk can be assessed. To execute a FAIR assessment there five steps, shown in Figure 7. Note that this process begins with an accurate model and meaningful measurements.

Figure 7: FAIR Risk Assessment Steps

A FAIR analysis is based on analytical models of business or technical systems, fueled by probabilities based on past events or estimates of them. In order to even use FAIR there has to be some explicit model of the system and pre-knowledge of the probabilities. However, often these models and data are hard to come by. In fact, even when these models are available, they really only represent part of the picture. This was explored in by Steven Vick, in his book *Degrees of Belief.*[15]. "Risk analysis resides outside models. Although it may incorporate their results where it can, it must also incorporate uncertain events, conditions, or processes that no model is able to describe. This requires judgment, and judgment must be quantified as subjective probability."

FAIR is only a risk model and as such cannot be evaluated relative to the ten Decision Architecture measures.

4 Agile

Many agile developers do not see code generation as a series of decisions. They somehow equate decision making with waterfall or spiral processes and not applicable to agile. The goal of this section is to point out how they are wrong. As with the standards above, this is based on the ten measures. Here each are developed individually and then summarized with a table.

4.1. There is an attitude that decision-making is an important part of all processes.

As stated in Part 1, decisions are a process' punctuation marks. This is no different for an agile process. Decision-making in agile development is critical yet poorly understood. Meghann Drury and her colleagues[16,17] have uncovered many agile decision points through a series of experiments interviewing agile developers. They have broken them down into four iteration phases; planning, execution, review and retrospective (Figure 8).

Decisions made
Iteration Planning
Decide iteration goals and scope (user stories and tasks)
Decide priorities within the iteration
Decide which people will be available
Decide capacity for team members
Decide who is the owner of a story
Decide who will work on what
Decide task estimates
Decide if user stories require more discovery work
Decide definition of when a story is 'done' (i.e. completed, when to accept/reject story)
Decide to split or combine user stories
Decide the approach to delivering the story
Iteration Execution
Decide whether iteration scope should be changed (i.e. reprioritize tasks, accept new tasks)
Decide definition of when a feature is 'done' (i.e. completed, when to accept/reject feature)
Decide who will pair together for paired programming
Decide the interface design
Decide how to implement functionality
Decide when to commit code
Decide what tests to create
Decide whether to add/remove/change acceptance criteria
Decide on the architecture/design for functionality
Iteration Review
Decide if delivered product meets customer expectations
Decide whether story estimates need to be modified
Decide whether to continue with the project
Decide whether to accept the iteration content
Decide what stories and defects be scheduled for next iteration, particularly if not completed
Iteration Retrospective
Decide what to improve during the next iteration
Decide what went well to continue during next iteration
Decide what new things team will try in next iteration
Decide root cause if team did not meet its iteration goal
Decide priorities for things to address in future iterations
Decide issues that will most influence team success
Decide whether and how to measure team metrics

Figure 10: Decisions made in Iteration Planning, Execution, Review and Retrospective periods in the iteration cycle.

At each of these thirty two decision points there are optional alternatives, stakeholders, evaluation criteria and all the other building blocks in Figure 1. Certainly not all occur in each iteration, and certainly some are more important than others, but in each scrum a large number of these are addressed.

4.2. For each decision to be made, the stakeholders and ownership is clear.

Agile is customer story driven. As such the customer stakeholders are well understood. However, agile encourages breaking down larger problems in smaller, independent issues. This can create problems if inter-team communication is poor, with project teams creating inconsistent information and user interfaces. If all the teams that interface with an issue are considered customers and their stories understood, then agile is a good process for clear stakeholder and ownership development

4.3. The objective of decision-making activities is clearly known.

Agile stories are efforts in finding objectives. If the stories are viewed through the thirty two types of decisions in Figure 10, then agile is very powerful in defining the decision-making objectives.

4.4. Multiple alternatives are generated for each decision to be made.

While iteration, a main concept in agile, is the development of changes to the initial solution to the problem, it does not encourage comparison of multiple solutions. Iterative design encourages a serial hill-climbing toward a local maximum rather than discovering a superior solution in a completely different design space area and comparing alternatives in a parallel manner. This difference may seem trivial, but it is not. Experiments in mechanical engineering design[18] showed a dramatic difference in the quality of the results when comparing hill-climbing iteration and the generation of independent alternatives for evaluation. There is no difference with code design.

Some agile developers use a parallel design process creating multiple alternative designs at the same time. This is done either by encouraging a single designer to develop multiple alternatives or by assigning the same issue to different designers, each of whom makes one draft design. After user testing the best ideas from each of the parallel versions are used to generate a strong solution to the issue.

4.5. Information and analysis used to evaluate alternatives clearly supports the decision-making process.

A key part of this measure is the development and application of criteria to serve as a basis for alternative evaluation. In a waterfall process this is an up-front exercise. In agile it is not[19]. In agile, criteria are developed from user stories. This is a very strong approach but is often not solidified in a way to be used to compare alternatives.

4.6. An appropriate decision-making method is used for each decision to be made.

Agile does not espouse any particular decision-making method.

4.7. Risk consideration is a core part of the decision-making process and based on information uncertainty and ambiguity.

Agile has risk management implicitly built in with its feedback cycles, the continuous testing of software and co-located teams. But it can: [20]

- Miss important aspects of the program that are outside the teams line of sight
- Make it difficult to measure the risk impact
- Encourage pushing risky things off to meet schedule
- Lose connection to the outcomes– focusing on a local effect
- Lack the ability to manage decision risk

4.8. It is clear when a decision has been made.

Scrum cycles are clear decision points and thus freeze what is developed at that point.

4.9. Decisions are recorded, reviewed and reused.

The decision making process is not a key part of agile, so while the stories and results are well documented, the decision process is not.

4.10. There is decision buy-in.

Agile is a very accepting design process. What is developed is user tested and iterated on based on user feedback. Following this philosophy leads to good buy-in.

Project or Organization:		Agile	5=Always, 0=Never
	Measure		
1	There is an attitude that decision-making is an important part of all processes.		1 – Seldom
2	For each decision to be made, the stakeholders and ownership is clear.		4- 5 – This is core to agile but depends inter-team communication
3	The objective of decision-making activities is clearly known.		4- 5 – Agile stories support objectives
4	Multiple alternatives are generated for each decision to be made.		1 – Not emphasized in agile
5	Information and analysis used to evaluate alternatives clearly supports the decision-making process.		1-3 - It's all in the rules
6	An appropriate decision-making method is used for each decision to be made.		0 – None are suggested
7	Risk consideration is a core part of the decision-making process and based on information uncertainty and ambiguity.		3 – Good foundation but room for much more
8	It is clear when a decision has been made.		5 – Scrum cycles generate results
9	Decisions are recorded, reviewed and reused.		1-2 – not much support here
10.	There is decision buy-in.		5 – If method is followed, good buy-in
	Total in Column		25 - 30

As can be seen, agile is missing some of the key elements provided by a Decision Architecture. Many of these missing elements are recognized in the literature. Also, as the success rate of meeting time and cost targets for software development remains low (See the Chaos Report discussion in Part 1), it's possible that attention to the weaknesses identified here may help improve these.

5 Summary

This white paper has compared EA standards and the agile methodology to the Decision Architecture measures. The results, from this author's evaluation, are shown on the right. As can be seen, TOGAF is fairly weak as a Decision Architecture standard. DoDAF and RDIM are strong for unstructured issues and DMN strong for structured situations.

Methodology	Score
TOGAF	26
FEA	32
DoDAF	39
RDIM	43
DMN	43
Agile	25-30

It is also evident that agile processes might benefit from a decision-centric integration. It would be interesting to perform some experiments comparing agile teams trained by a Decision Architect with those operating as currently defined.

6 References

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