

Rapid technical assessment

v1.0.0

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The challenge

Faced with an arbitrary technical value proposition, how do we create a rapid, consistent and systematic approach to evaluating it?

Section 1

Evaluation process

Evaluation preparation

- Business goals provide the evaluation context
 - They inform all evaluation stages
- Have a clear definition of the **ask**
- Every *ask* is different
 - Nail it down up front
 - Helps to prevent wasting time, going down rabbit holes
 - You can have a verified model without this but you will come unstuck at analysis and reporting

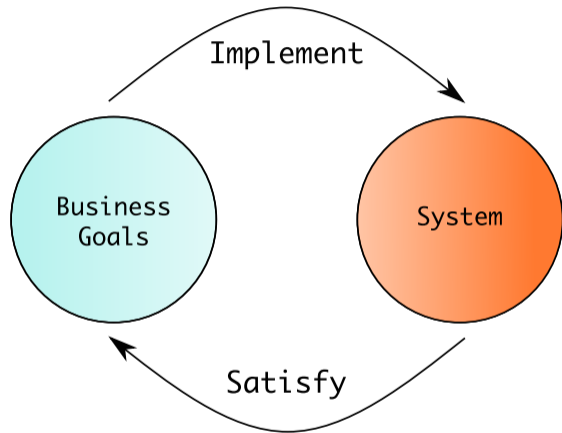


Figure 1: Establish the business context first

Evaluation execution

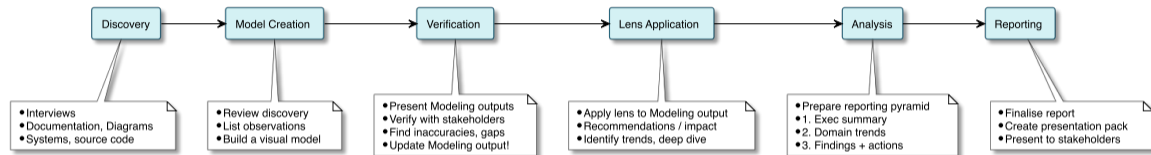


Figure 2: Evaluation process

- High level process looks the same across evaluations
- Can be supported with templates, schedules

Scaling evaluation for a team

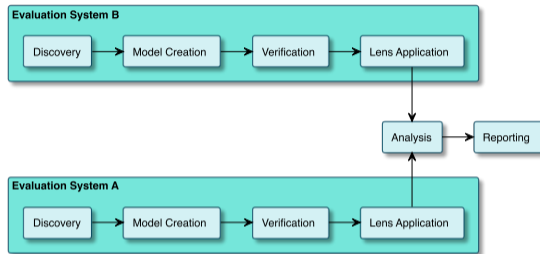


Figure 3: Stages up to final analysis steps are independent

- Work can be parallelised into multiple streams of work
- Final analysis and reporting are blocked on all streams completing

Section 2

Creating a lens for software systems

What we're looking for

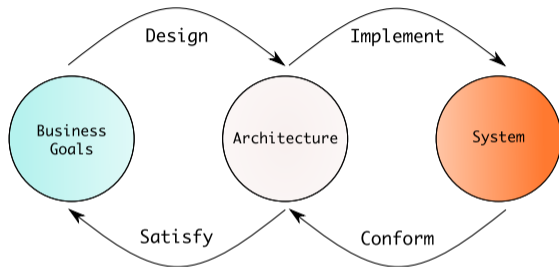


Figure 4: Architecture

- Architecture is always present
 - It can be implicit as organic, shared knowledge and so hidden from us
 - It can be explicit, documented but not in directly measurable form
- We need to surface it for viewing through our lens
 - What we find will differ from what is presented
- Examine the **Implementation** (source of truth) to measure how well the system **Satisfies** the business goals

What does an architecture lens look like for us?

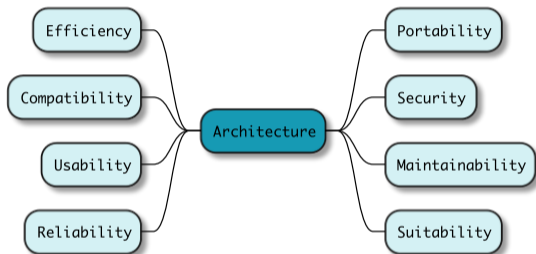
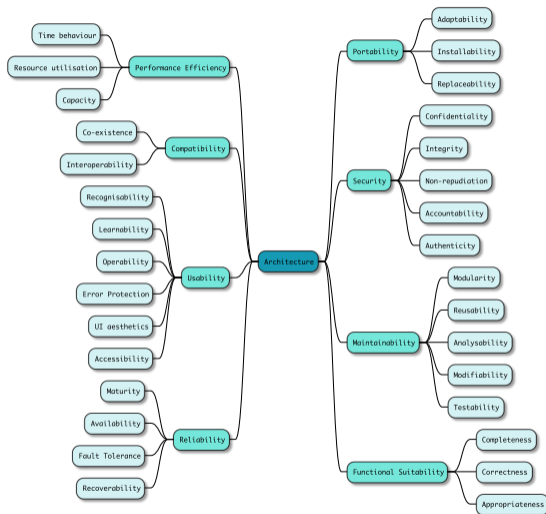


Figure 5: High level aspects of a Quality Model

Key notes

- We need to make it concrete
 - Technology neutral
 - Broadly applicable
 - *"Compare apples to apples"*
- Here we will use measurable **quality aspects** to make architecture visible
- Start with high-level, universal aspects
 - I don't encounter much variation in aspects at this level

Make the architecture aspects measurable



Key notes

- This breakout is adapted from ISO/IEC 25010 - Product Quality Model
 - See ISO OBP
 - Adapt as needed
- Faced with any technology proposition,
 - Define what each attribute means in the context of the presented system
 - Every system is different, every context will be different
 - Score the presented system based on the impact to business requirements

Figure 6: Measurable attributes of aspects

Minimise blind spots

Most evaluations in a commercial context are based on the evaluators pointing at **arbitrary** things based on their own experience.

Our lens allows to harness this but with focus, removing the arbitrary element. Goals,

- Be fast
- Be consistent
- Be repeatable

Generally speaking broader experience leads to better pointing at stuff.

Section 3

Step Details

Discovery

Data collection

- Interviews
- Document collection
- Stakeholder map
- Process maps
- History and timeline construction
- Process and system metrics
- Business drivers
- Contractual and regulatory obligations
- Etc



Stats vector created by storyset - www.freepik.com

Creating a model

1 - Build a visual representation

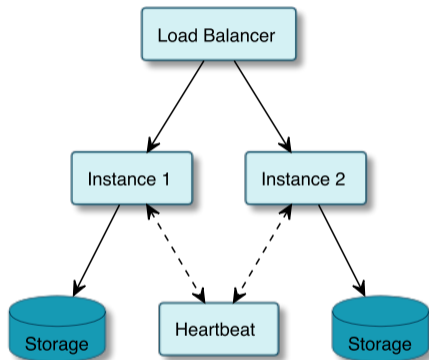


Figure 7: Initial model

2 - Add labeled observations

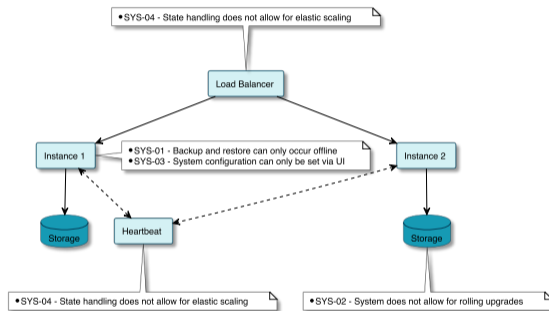


Figure 8: Annotated model

Evaluating

ID	Observation	Functional Suitability			Reliability		Maintainability					Compatibility		Portability			Usability			Efficiency			Security									
		Appropriateness	Completeness	Correctness	Maturity	Fault Tolerance	Recoverability	Testability	Modifiability	Re-useability	Modularity	Analysability	Co-existence	Interoperability	Adaptability	Installability	Replaceability	Operability	Recognisability	Learnability	Aesthetics	Accessibility	Time Behaviour	Capacity	Resource Utilisation	Confidentiality	Integrity	Availability	Accountability	Assurance		
SYS-01	System backup and restore can only occur offline	-3 ▾	0 ▾	0 ▾	-1 ▾	-1 ▾	-3 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	-1 ▾	-1 ▾	0 ▾	-3 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	-1 ▾	-3 ▾	0 ▾	0 ▾	
SYS-02	System does not allow for rolling upgrades	-1 ▾	0 ▾	0 ▾	-1 ▾	-1 ▾	0 ▾	-1 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	-1 ▾	-3 ▾	0 ▾	-3 ▾	0 ▾	-1 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	-1 ▾	-3 ▾	0 ▾	0 ▾
SYS-03	System configuration can only be set/changed via UI	-1 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	-1 ▾	-1 ▾	-1 ▾	0 ▾	-1 ▾	0 ▾	-1 ▾	0 ▾	-3 ▾	0 ▾	-1 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾
SYS-04	State handling does not allow for elastic scaling	0 ▾	0 ▾	0 ▾	0 ▾	-1 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	-3 ▾	0 ▾	0 ▾	-1 ▾	0 ▾	0 ▾	0 ▾	0 ▾	0 ▾	-3 ▾	-1 ▾	0 ▾	0 ▾	-1 ▾	-3 ▾	0 ▾	0 ▾	0 ▾
		-5	0	0	-2	-3	-3	-2	-1	-1	0	-1	0	-1	-5	-7	0	-8	0	-1	0	0	0	-3	-1	0	-1	-5	0	0	0	

Figure 9: Scoring of the solution for negative attributes

For each *Observation*,

- Mark how it affects each quality attribute
 - E.g. *Very Positive, Positive, None, Negative, Very Negative*
 - Numeric values for each (3, 1, 0, -1, -3) - change as necessary
- Separate positive and negative effects or they can cancel each other out
 - Even with security or risk assessments, always collect positive elements as well
- This allows you to spot trends for analysis

Section 4

Appendix

Sample scenarios

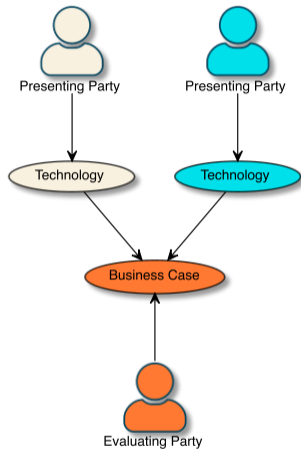


Figure 10: Scenario - RFP

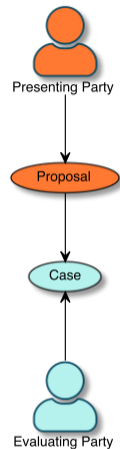


Figure 11: Scenario - Internal tech-led funding request

Here's a thing: Technology selection process

Example from a Request For Proposal (RFP),

*Requirement 17.3.4 Solution must be able to support 75 concurrent **multi-edit users** at all times.*

This is not a general industry term. Where does it come from?

- Internal : Process has weak Architecture Group support
- External : Process has been captured by competing party

How do you find out?

- Ask for clarification
- Use a search engine

Most processes have a mixture of internal and external contributions in the requirements - the volume and ratio will influence your chances of a successful outcome.

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