- Webinar rules:
  - You'll be muted all along the Webinar
  - There's a *Questions* section to ask your questions or send your comments whenever you want
  - The Webinar will be recorded. A link to the recording will be sent to you in a few days

Managing data for Acquisition

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THE REUSE COMPANY

- Introduction to The REUSE Company and the presenter

- Why Acquisition?
- Plan your Acquisition
- Evaluation
- Final steps before contract
- Follow-up after contract

The REUSE Company:

- specialized in the application of reuse methods,
- semantic technologies and artificial intelligence,
- digitalization of the Systems Engineering lifecycle.

"We promote lifecycle management methodologies guided by REUSE, based on a knowledge-centric approach, supporting the notion of authoritative source of truth, offering connectivity to everything, unlimited interoperability,
and providing full support to technical management as in ISO 15288"

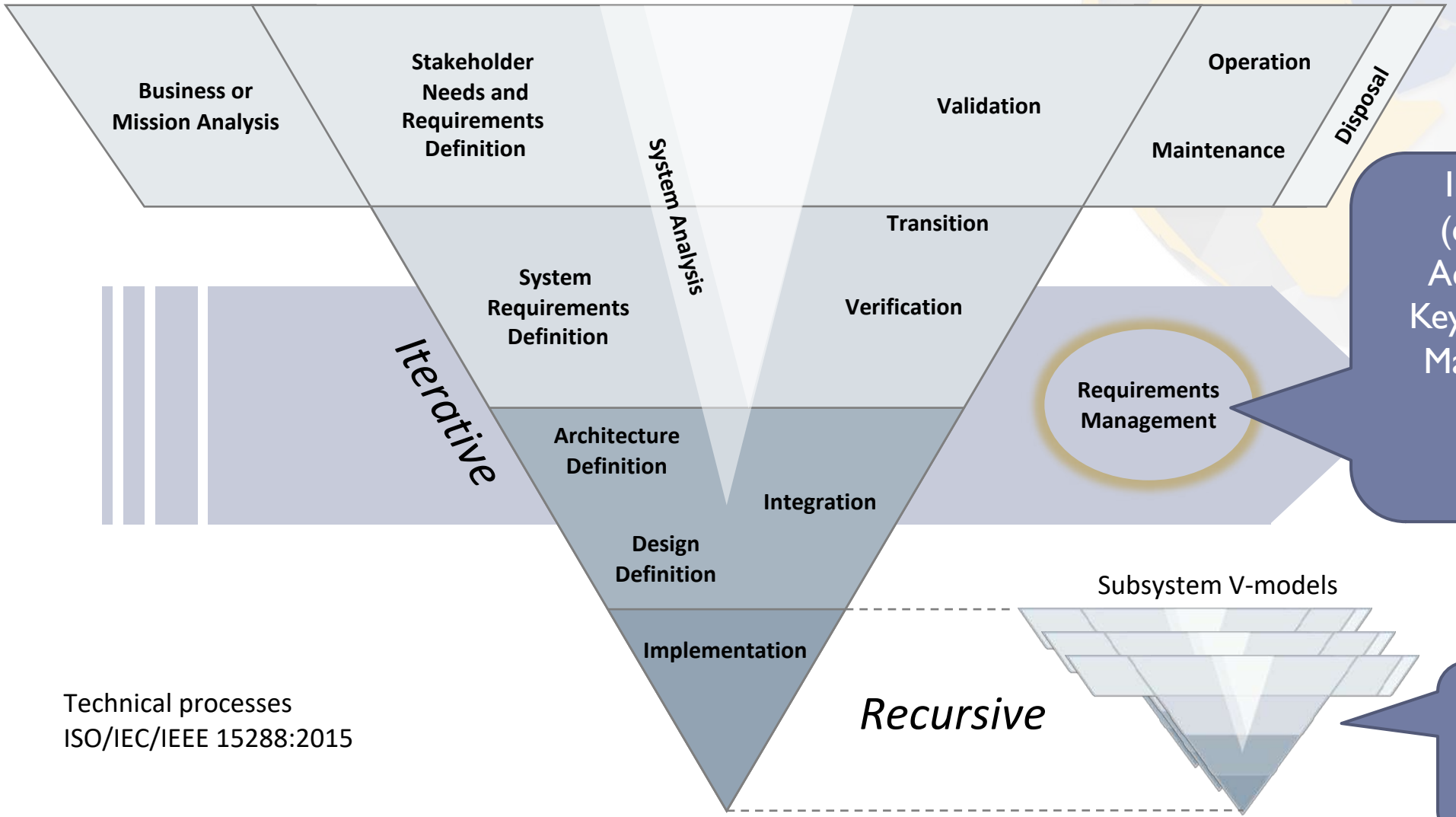
- RQA – QUALITY Studio
- RAT – AUTHORING Tool
- TRACEABILITY Studio
- V&V Studio
- KM – Knowledge Manager
- SES ENGINEERING Studio

Lars Anderberg

- **Current position:** Application consultant, The REUSE Company
- Requirements Engineering and Acquisition Support consultant for 20+ years
- INCOSE ESEP Certified

Why Acquisition?

System Development - V-model



In case of (complex) Acquisition: Key activity to Manage data

RM ++

May represent (simple) Acquisition

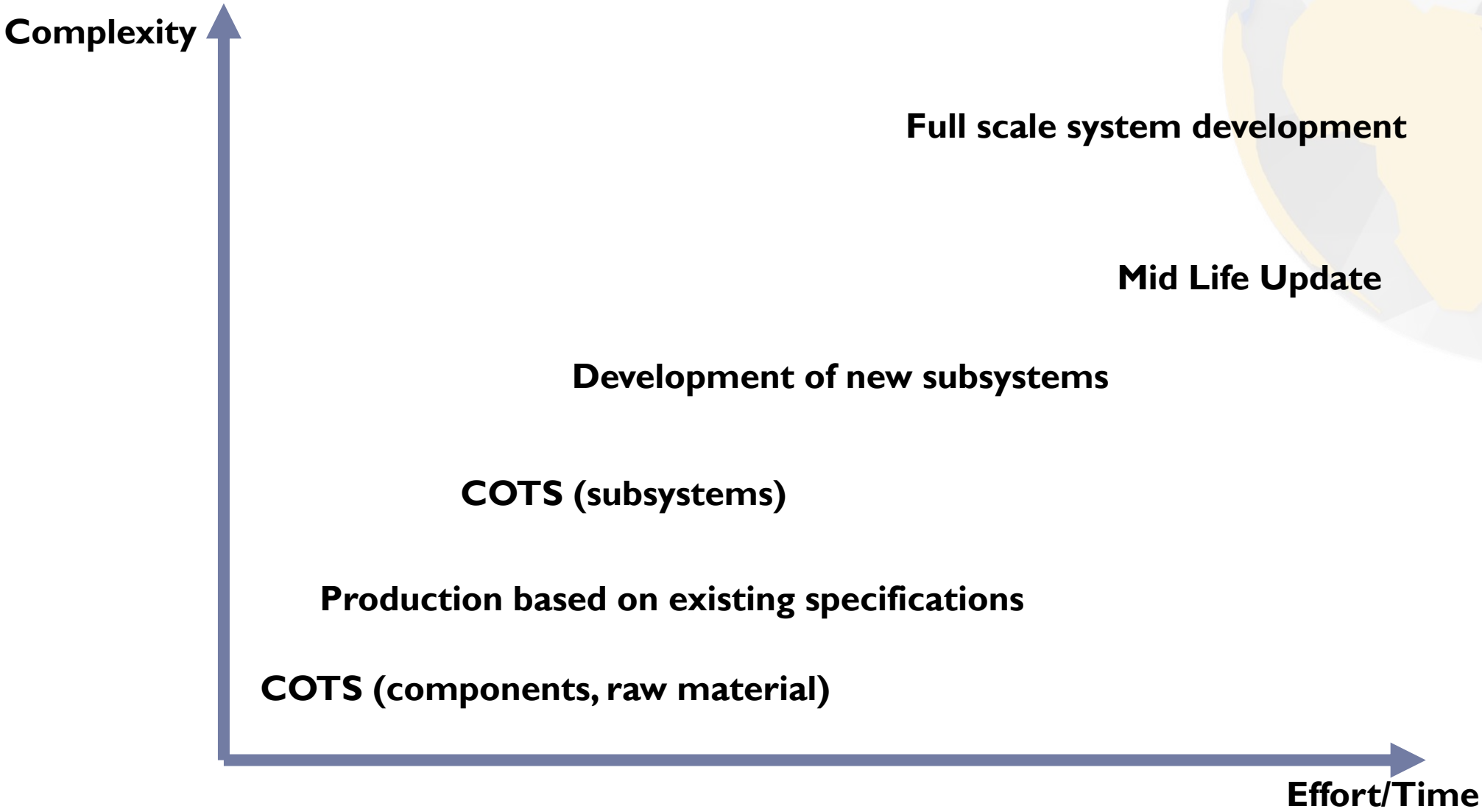
Technical processes
ISO/IEC/IEEE 15288:2015

- Because you don't do everything from scratch within one single organisation

- Acquisition may be used to:
  - Acquire components or raw material
  - Acquire (more or less) Off-The-Shelf products or systems
  - Outsource production
  - Outsource complete development of a (sub) system
  - … and so on

If your Organisation is a Procurement Agency then the whole idea is to do this!

Scope of Acquisition, examples



2 pages

39 pages

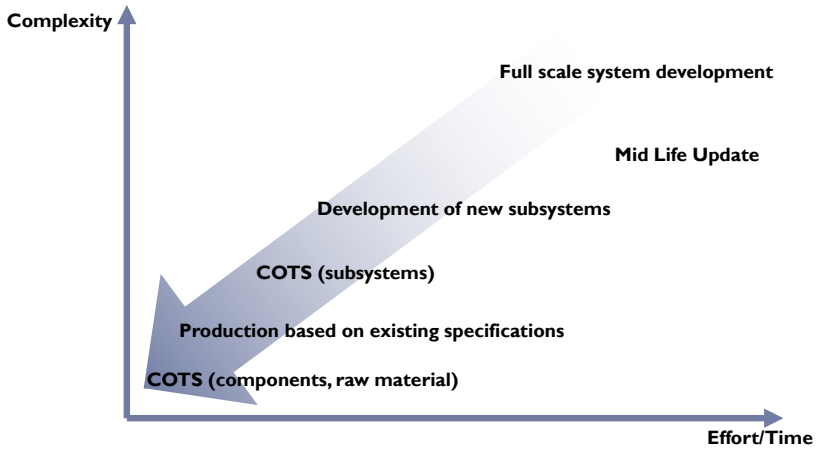
INTERNATIONAL STANDARD

ISO/IEC/ IEEE 15288

First edition
2015-05-15

Systems and software engineering — System life cycle processes

Ingénierie des systèmes et du logiciel — Processus du cycle de vie du système

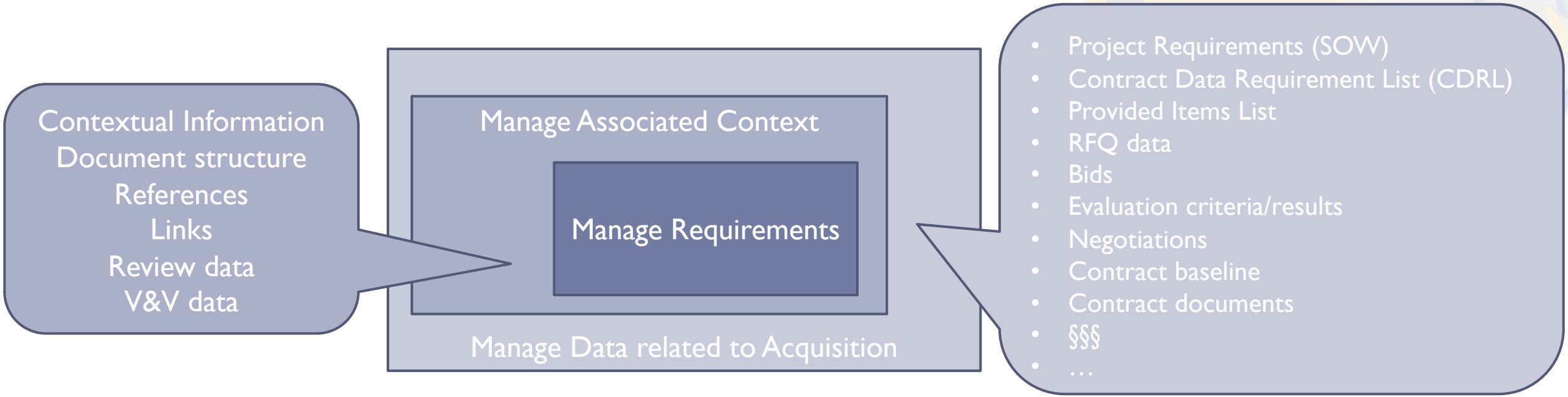


"Requirements management encompasses those tasks that record and maintain the evolving requirements and associated context and historical information from the requirements engineering activities. Requirements management also establishes procedures for defining, controlling and publishing the baseline requirements for all levels of the system-of-interest."

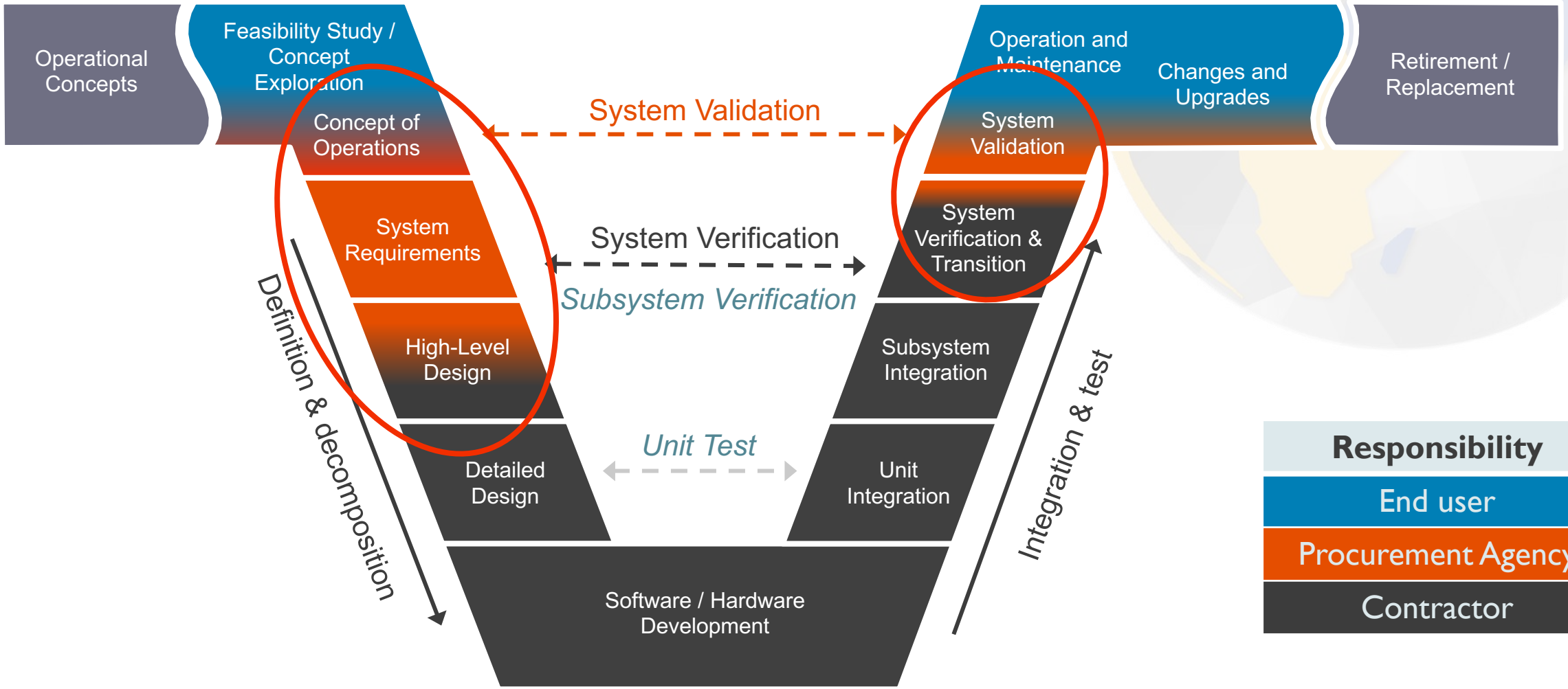
Source: ISO/IEC 29148

- From Requirements Management perspective:
  - Business as usual but transferring data and responsibility calls for special attention
  - Special activities that need Requirements Management support:
    - RFI
    - RFQ
    - Evaluation
    - Negotiations – traceability of parallel proposed updates
    - Contract baseline
  - Manage Data Exchange that supports:
    - Monitor after contract
      - Reviews
      - Verification
    - Change management

What is there to manage?

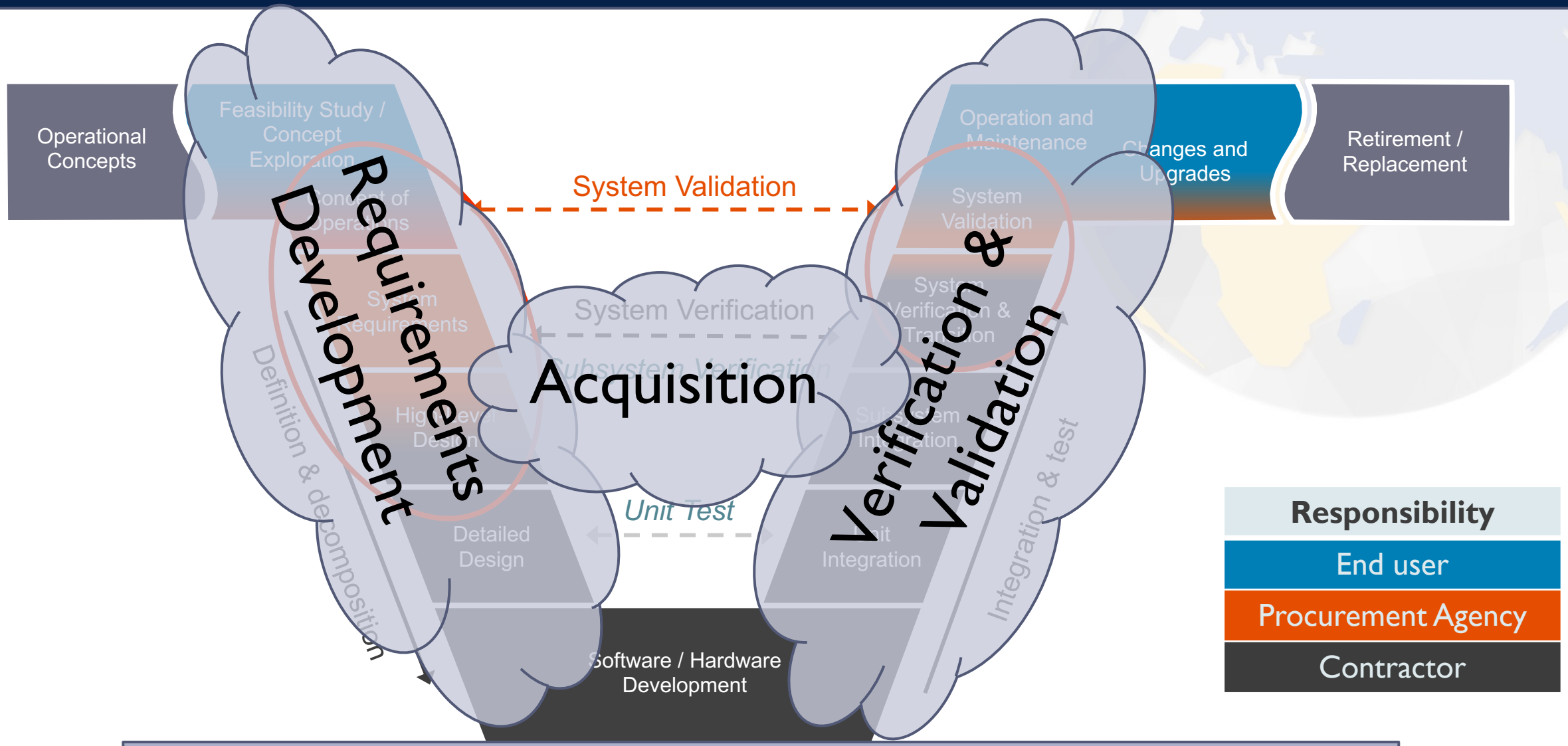


Different parties' roles



Supplier development processes

Where is data generated?



Requirements Management

Requirements have three main purposes:

1. The **What** – Document the stakeholder need and evolve these requirements into system requirements to ensure that the overall operational goals can be met through a purchase of an effective and efficient system solution.

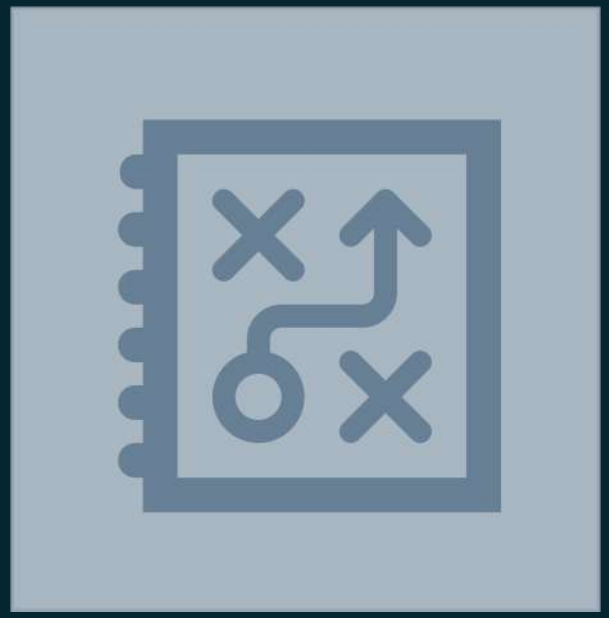
2. The **How** – Document the rules, methods and standards to ensure a system solution with the right quality, which is possible to use in our operational context.

3. The **Proof** – Feed into the verification process to ensure that the system meets the system requirements, ensuring that we have designed the thing right.

   Feed into the validation process to ensure the system meets the stakeholder need and to ensure we have designed the right thing and solved the right problem.

- Basis for Evaluation and Contract in Acquisition Projects
  - Collect RFQ
  - Evaluate Bids
  - Contract Award
  - Monitor Project Progress
  - Verification / Project Acceptance

Remember:
Develop your Requirements with these issues in mind



Plan your Acquisition

Acquisition is like sailing in an archipelago…

- … with rocks
- Plan your route!

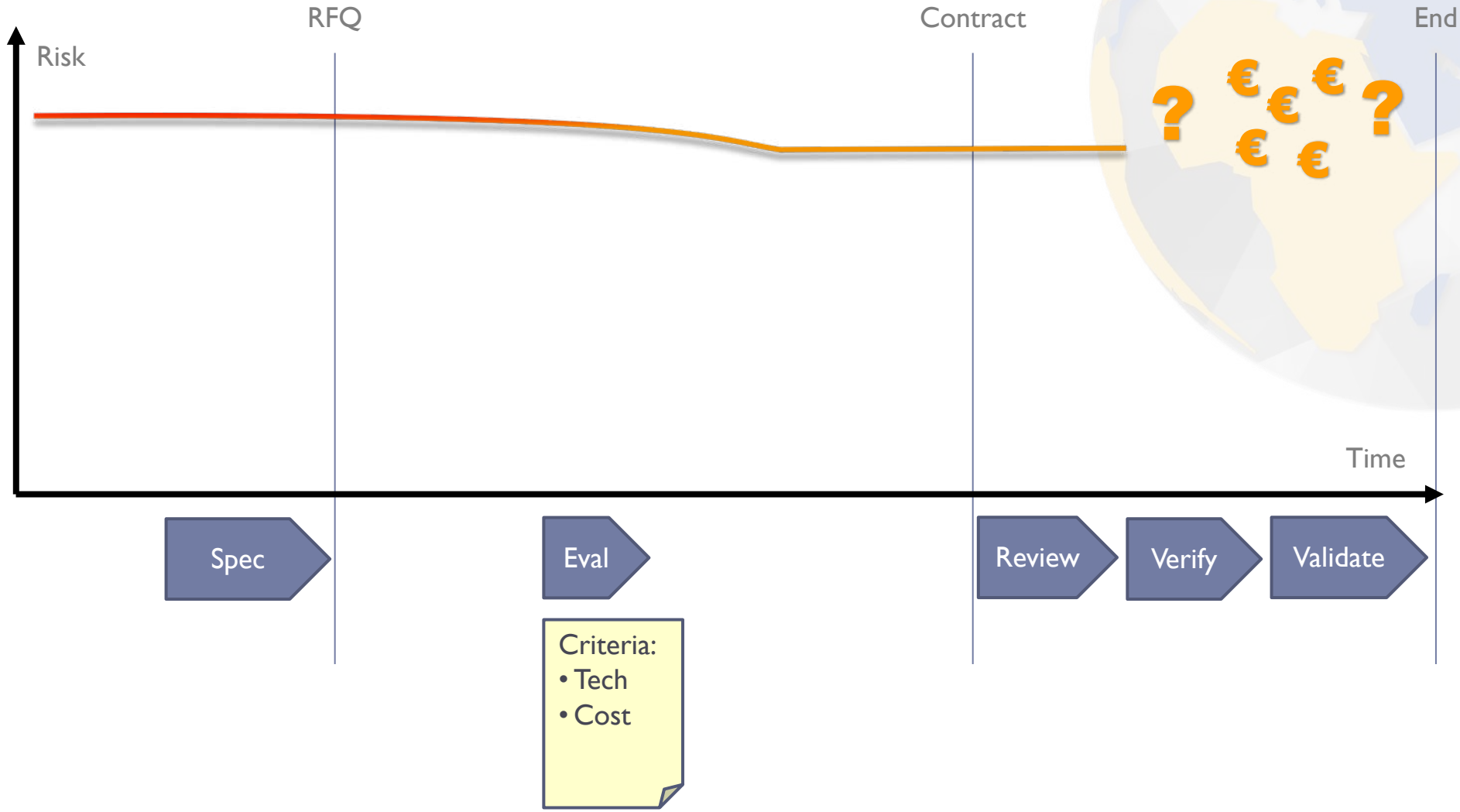
What could go wrong? - Rocks in the Acquisition archipelago

- Rocks: Poor communication (Poor Quality!)
  - External communication Customer - Supplier
  - Internal on Customer's side, internal on Supplier's side
  - Between Commercial and Technical on each side
- Evasive manoeuvre:
  - Good data quality
  - Clear rules for expected response to RFQ
  - Clarification sessions

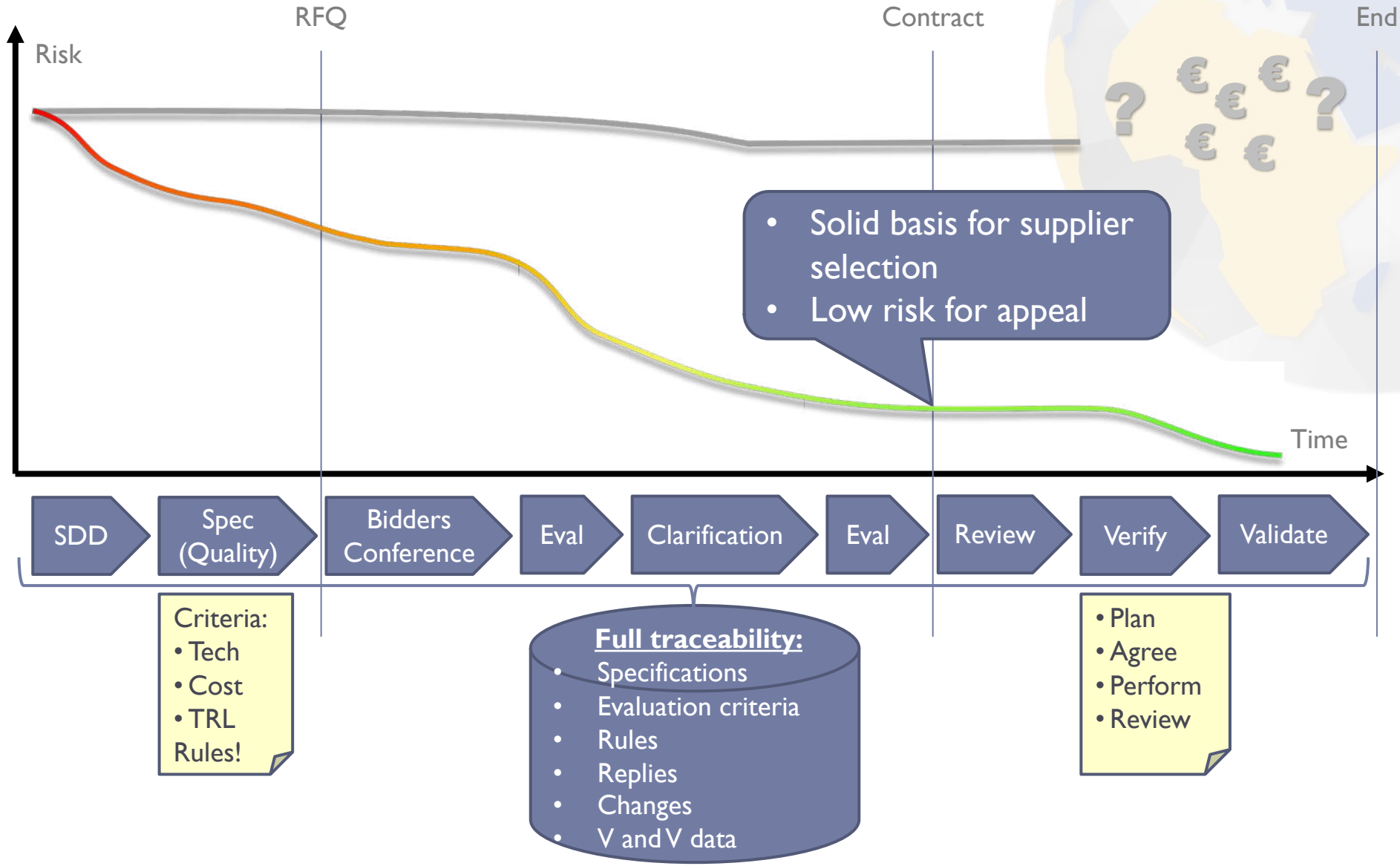
- Rock: Evaluation challenge - *"Cheapest and best liar wins!"*
- Evasive manoeuvre:
  - Plan your evaluation
  - Request the needed information for evaluation in our RFQ
  - Clarification sessions

- Rock: Legal issues, Appeal
- Evasive manoeuvre:
  - Transparency
  - Traceability
  - Good management of data

Acquisition, strategy 1: Hope for the best



Acquisition, strategy 2: Navigate between the rocks



Acquisition is associated with laws and regulations

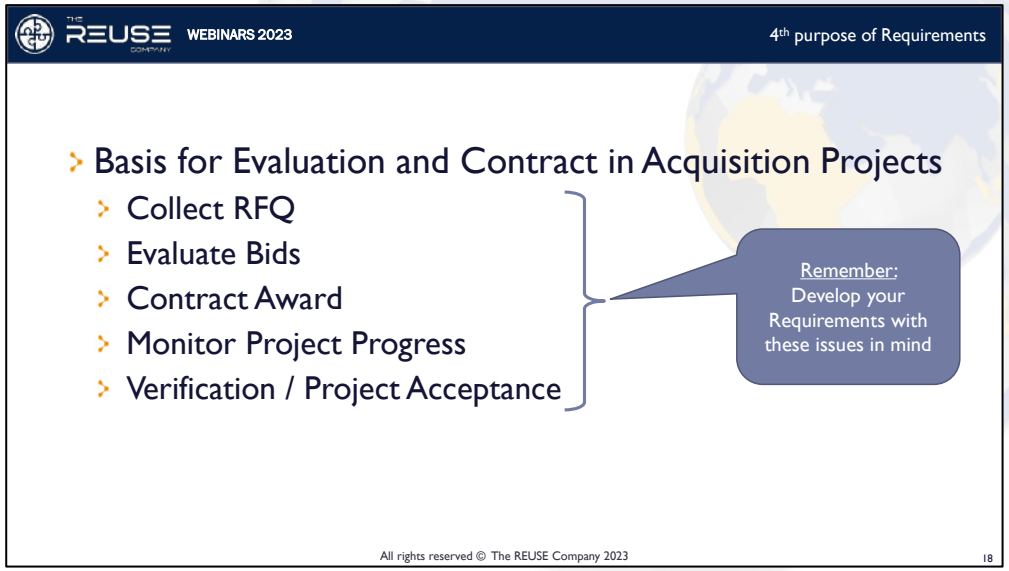
- Applicable law depends on
  - Acquiring organisation – private company or government agency?
  - What is to be acquired and what strategy to use:
    - Open competition?
    - Addressed to a few specific suppliers?
    - Addressed to one single supplier?
    - Security classification?
    - Development? Mid Life Update? COTS? MOTS?
- Regardless of the above:
  - Not only technical aspects: Commercial and legal aspects need to be considered

Evaluation

Remember the 4th purpose of Requirements

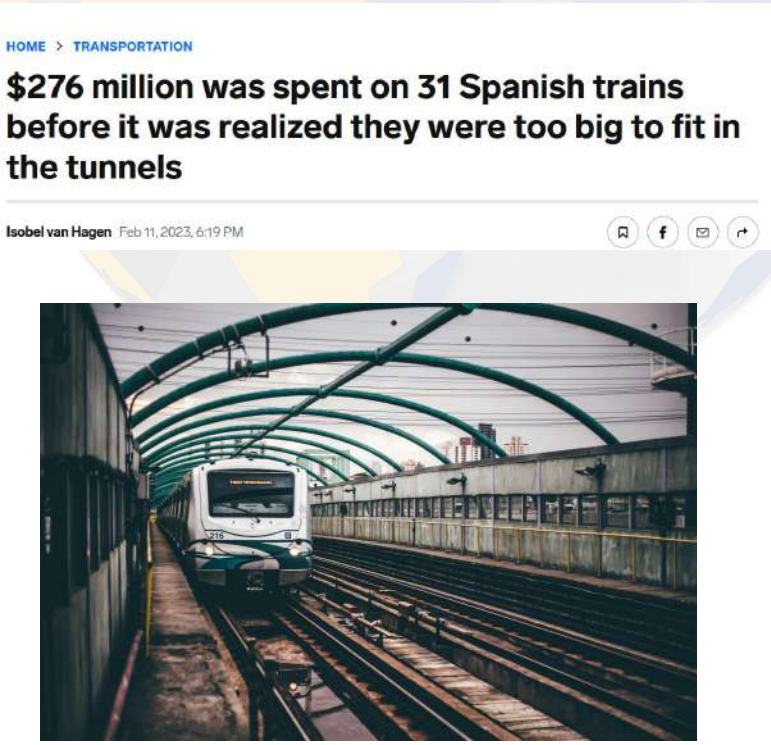
- This generates data!
  - Attributes to clarify RFQ response expectations
  - Attributes for response *(from each Bidder!)*
  - Modules/Attributes for Bid Evaluation
  - Modules/Attributes to monitor Project Progress (Requirements Break-down, Design review progress,…)
  - Modules/Attributes to handle Verification and Validation
  - Attributes for Freeze indication in various Requirements Life Cycle Steps

  - Changes will happen: History for all above



Attributes in RFQ, example

- Classification
  - Requirement? Information? Question?
- Requirements significance:
  - Shall
  - Should (1), Should (2), Should (3)
- Expected verification
  - Expected Verification method
  - Other Verification attributes
  - ”no verification needed”
- Other
  - “State Actual Performance”
  - “State Technology Readiness Level (TRL)” *)
  - Applicability?
  - Include in Option?
  - ….
- Note: Different sets of attributes for different types of specifications (SSS, SOW, …)

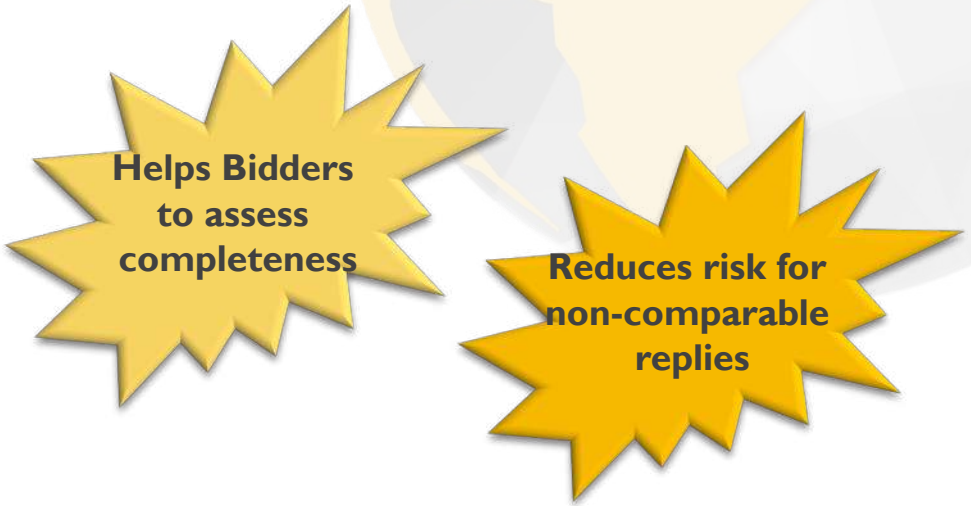


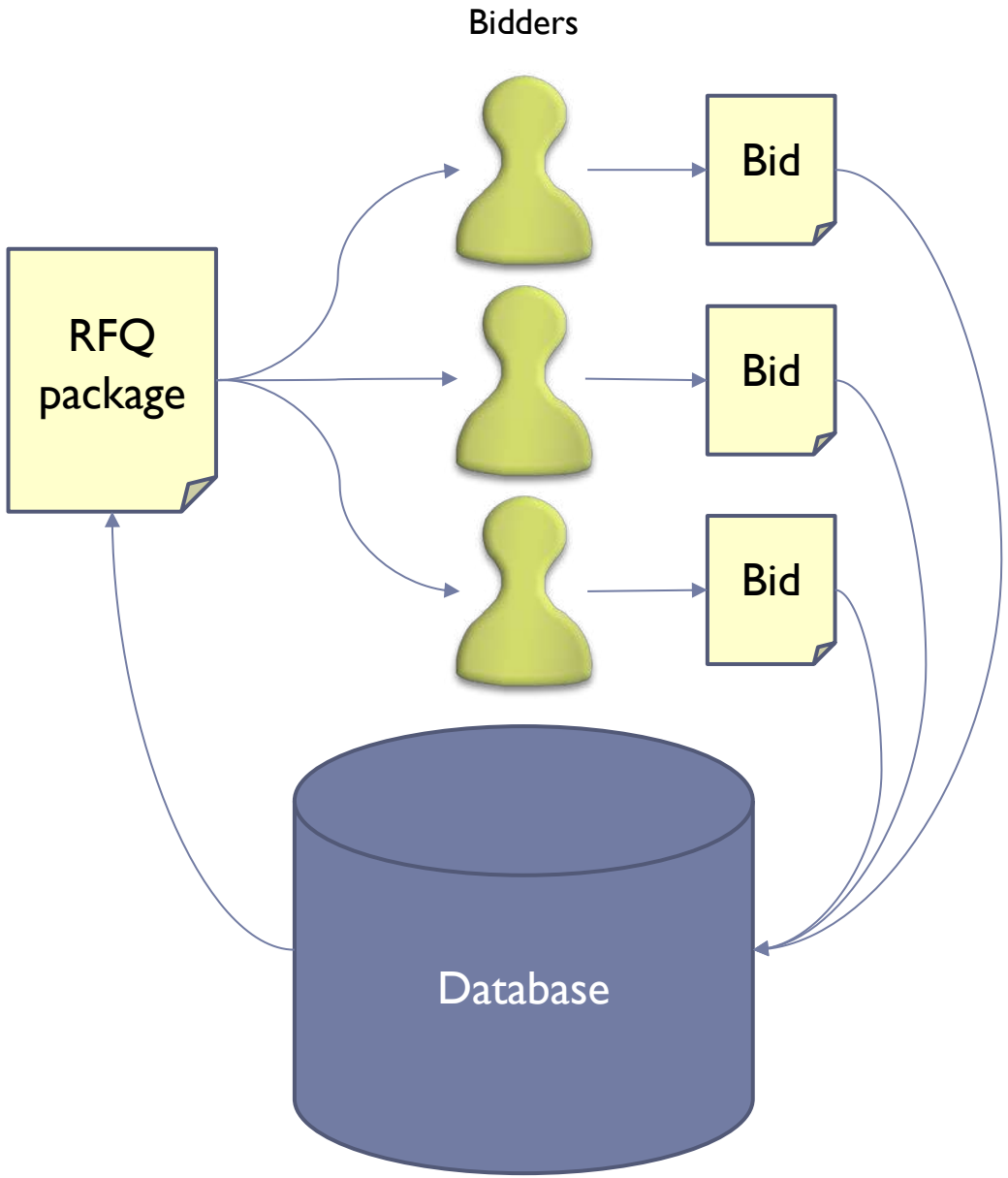
*) http://en.wikipedia.org/wiki/Technology_readiness_level

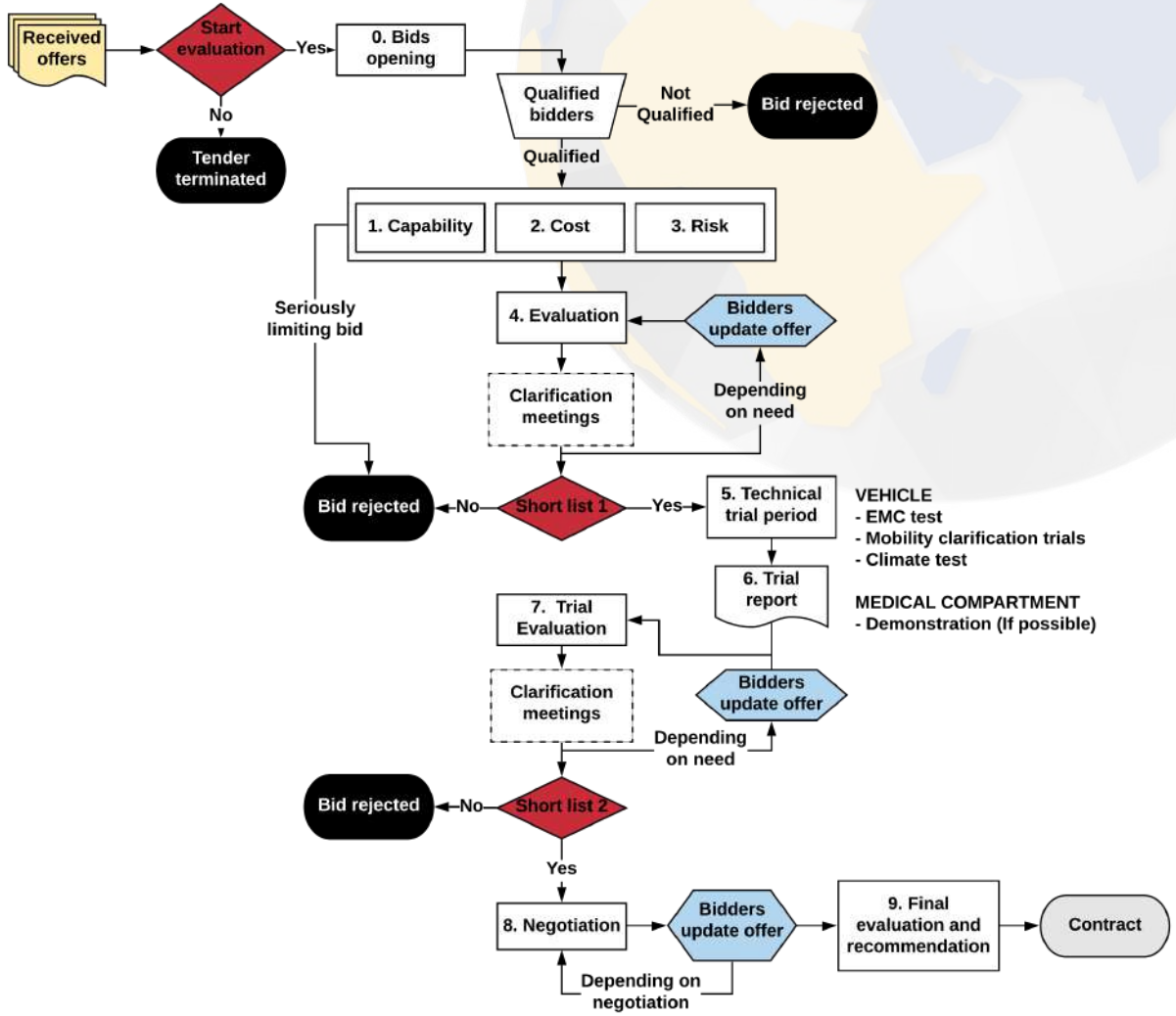
Source: www.businessinsider.com

Attributes for bidders, example

- Compliance
- Compliance Comments
- Verification method/status
- Actual performance
- Technology Readiness Level (TRL)
- Bidder's reply
- Separate pricing
- …
- Clarify rules!
  - *"if Compliant – no ifs and buts"*
  - *"if already verified, provide verification report"*
  - *"if Not Compliant, state reason and compliant level"*







Source: NDMA Motor Ambulance Project P2504

”Compliant” to all ”Shall”?

YES: You are in!

NO: You are out!

(Depending on applicable law)

Checked by simple filter on data received from each Bidder

What should be evaluated?

"It should go in 100 km/h or more"

State actual performande

Request more data in RFQ!

Bidder A: "Compliant"

€€€€

Actual performance is 100 km/h

Bidder B: "Compliant"

€€€

Actual performance is 150 km/h

What should be evaluated?

”It shall be able to climb trees”

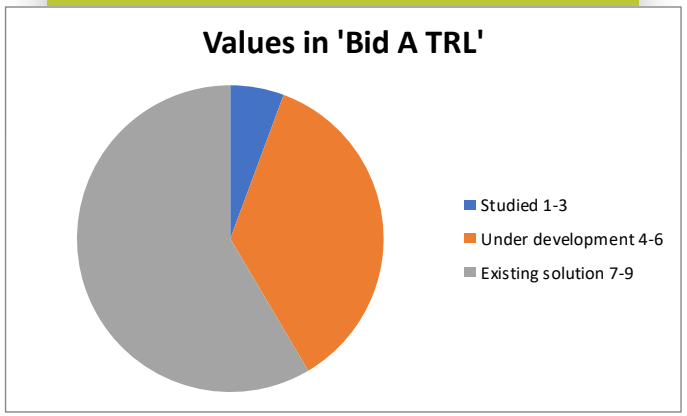
State Technology Readiness Level*)

Can you evaluate a ”Shall” requirement?

Yes! Based on e.g. risk! If you request the needed information

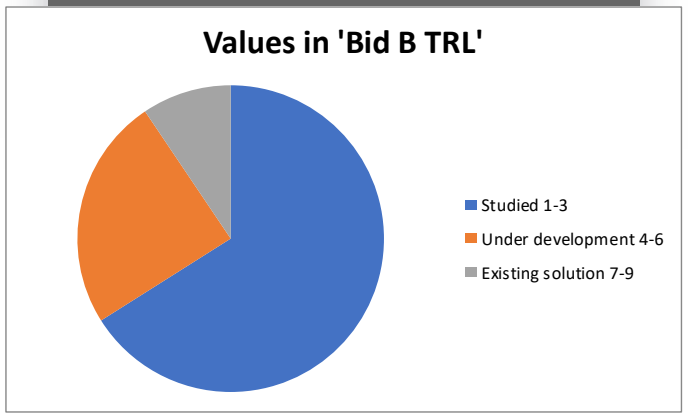
Bidder A:
”Compliant”
TRL 9.
Proven in battle and documented.

€€€€



Bidder B:
”Compliant”
TRL 1.
We have just initiated a study but we promise we will make it!

€€€



*)Technology readiness level - Wikipedia

Final steps before Contract

- During parallel negotiations: Need to keep track of
  - Originally stated Requirements and RFQ responses
  - Needed changes for each Bidder that is a part of negotiations

Before Negotiation

ID	Bid 1		
Req_1	It should 100%	Not Compliant	We can manage only 90%

After Negotiation

ID	Bid 1		
Req_1	It shall 90%	Compliant	

Before Negotiation

ID	Bid 2	
Req_1	It should 100%	Compliant

After Negotiation

ID	Bid 2	
Req_1	It shall 100%	Compliant

Before Negotiation

ID	Bid 3		
Req_1	It should 100%	Not compliant	The feature is not supported

After Negotiation

ID	Bid 3
Req_1	DELETED

- Remember:
  - ”Should” is useful during Quotation and Evaluation – but never sign a Contract with ”Should”!

- Contracts are made of paper.
  The signed piece of paper rules.

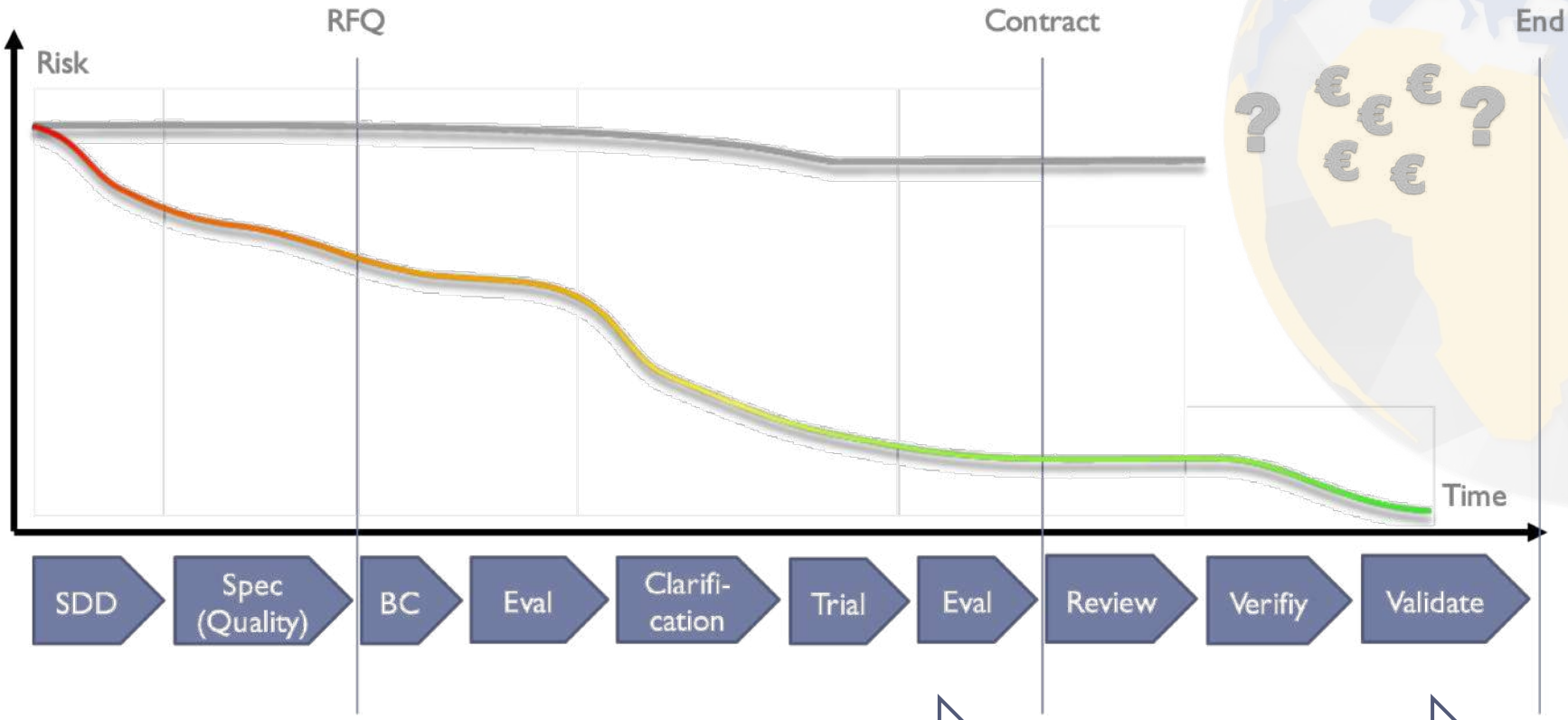
- Publish documents for Contract!

Quickest way to make a database invalid?

- Produce an editable document from a specification in your database …
  - …edit outside the database tool and sign it!
    Now what is the status of the data in the tool?
- …unless the document can be brought back into the database again!
  - Demonstration in a few minutes
- Why do we need a valid database?
  - Follow-up after contract

Follow-up after Contract

Life cycle approach



Acquisition: All the way to Contract Award?

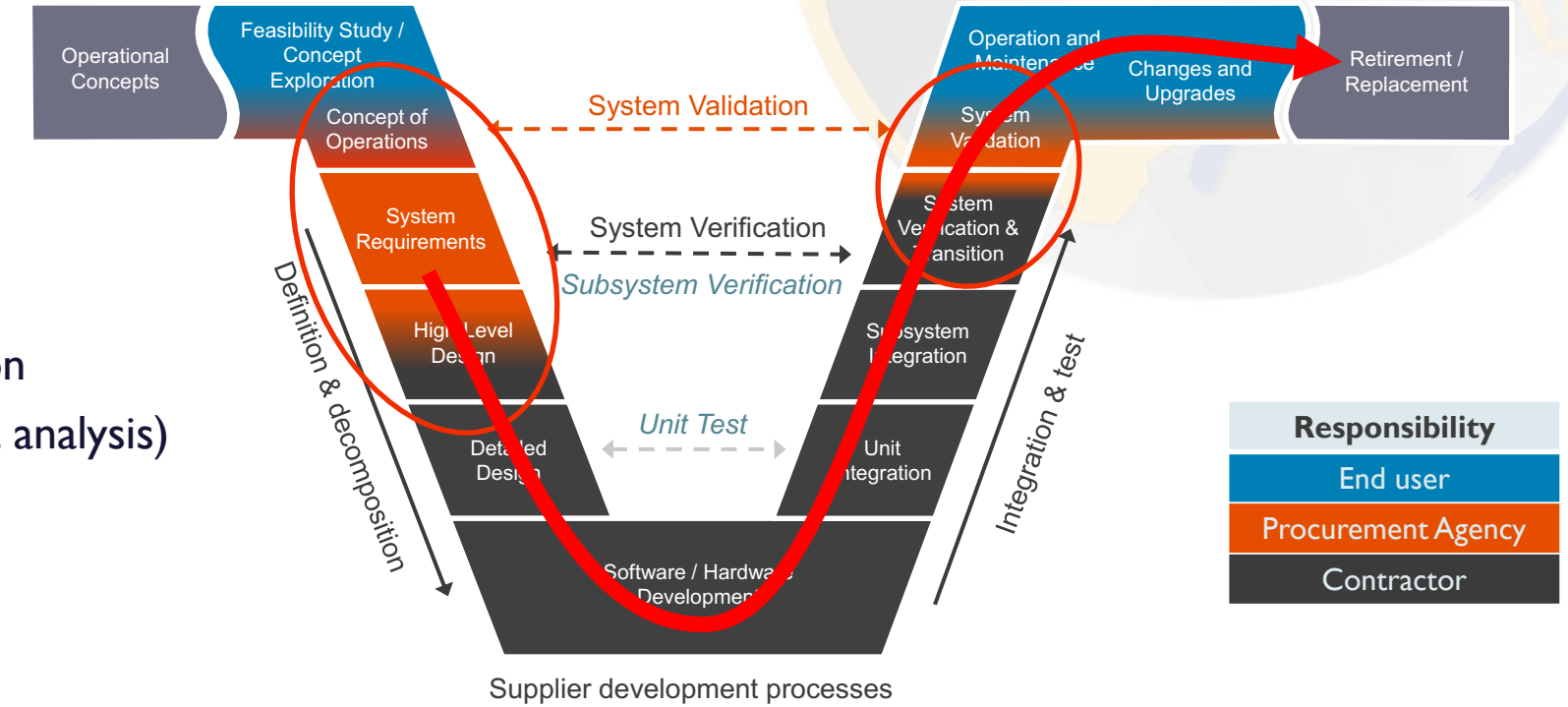
There is a life after Contract as well

Contract signed – Back in the V

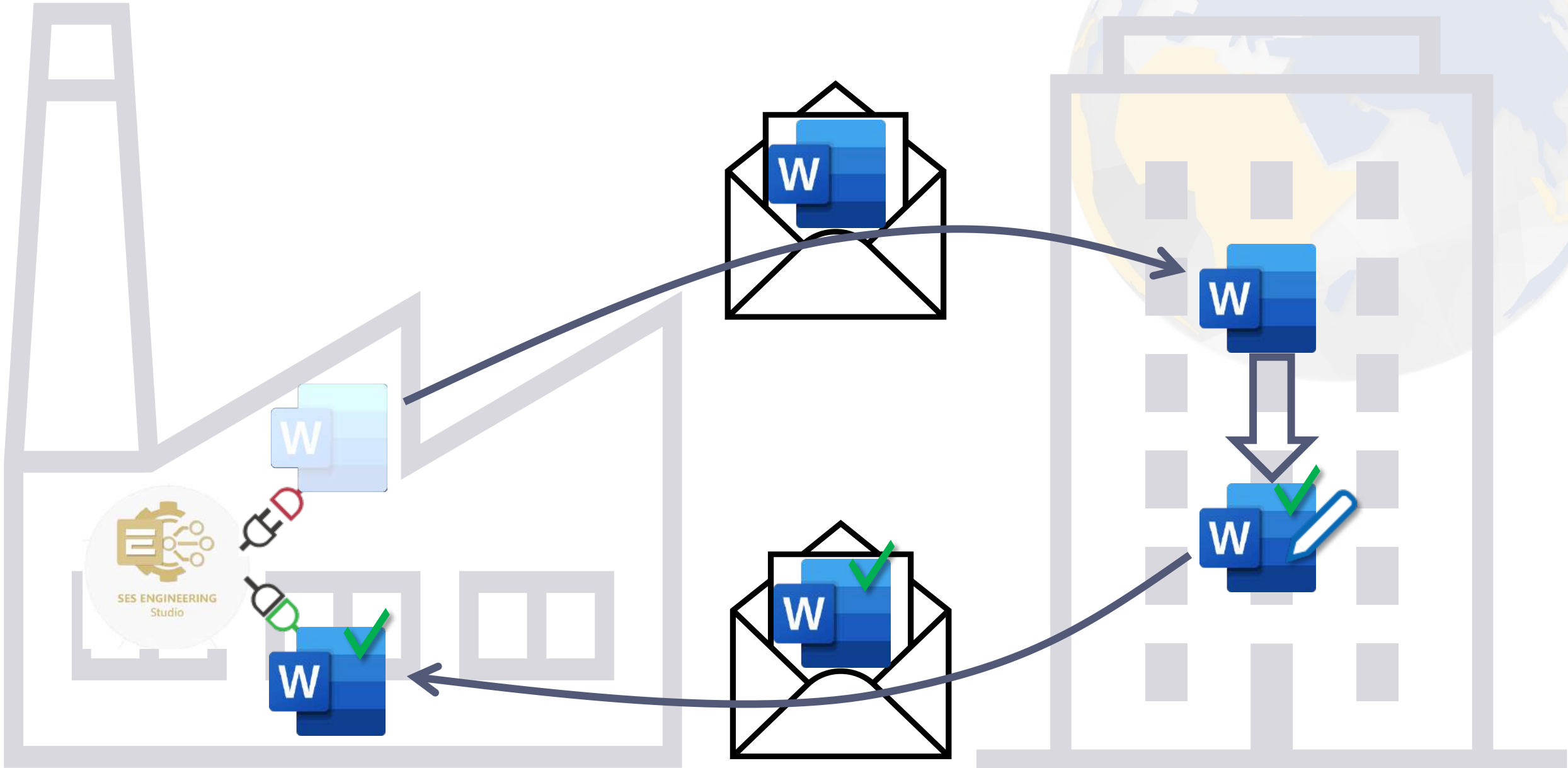
- Now we are back to the 15288 V-model!
- But with an external party

- Normal activities
  - Requirements break-down
  - Reviews
  - (System) Verification and Validation
  - Change Management (and impact analysis)

- Add Data Exchange to the above

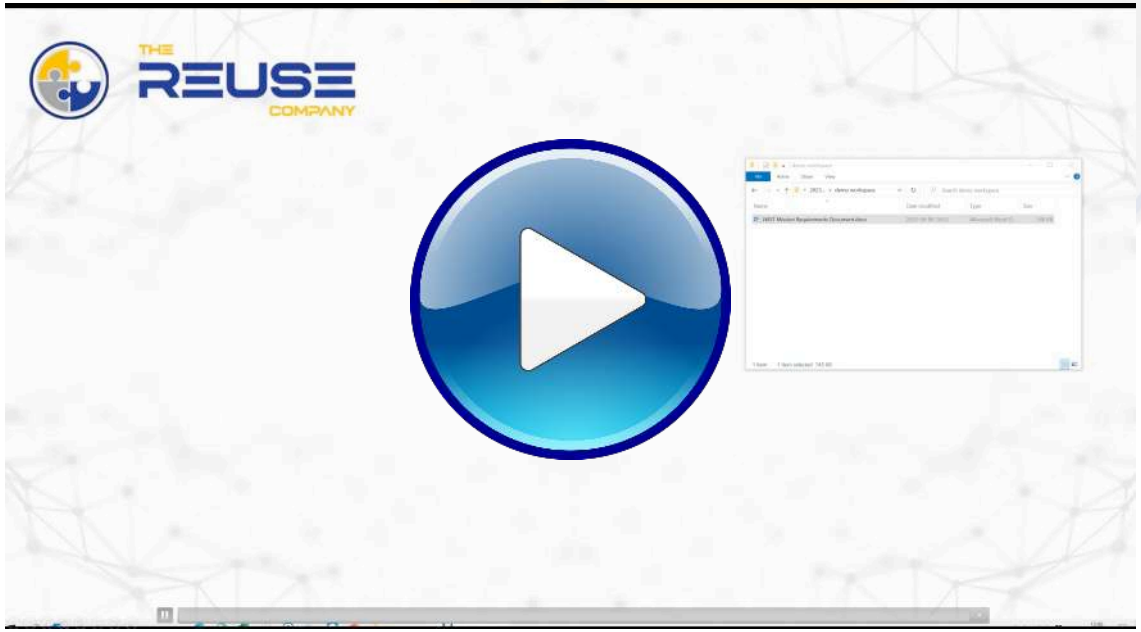


Demonstration



Steps:

1. Open Specification in MS Word
2. Connect to SES
3. View baselines in the MS Word document
4. Make changes and create a baseline
5. Prepare for Sharing
6. Send the file to an external party
7. Receive an updated copy of the file
8. Replace the original file
9. Open the Specification and connect to SES
10. Review changes made by external party
11. New baseline of the MS Word document




Q&A

Upcoming webinar: Carrying your requirements everywhere

Episode #7 in our series of webinars "Boosting MS Word with Requirements Management Capabilities"

When: 9th and 11th of May

Where: https://www.reusecompany.com/webinars/boosting-ms-word-with-requirements-management-capabilities

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