
Decision Framework Case Report

ISO 25010: Product Quality - Light

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1 Problem Statement

Problem Domain

Security.

Problem Statement

ISO 25010: Product Quality - Light.

2 Stakeholder Analysis

Sikkerhetsansvarlig

60

Produkteier

40

3 Value Identification

Confidentiality To which degree the solution ensures that data are accessible only to those authorized to have access.

Integrity To which degree the solution prevents unauthorized access to, or modification of, computer programs or data.

Non-repudiation To which degree actions or events can be proven to have taken place so that the events or actions cannot be repudiated later.

Authenticity To which degree the identity of a subject or resource can be proved to be the one claimed (To which degree the identity of the user or resource can be verified when required)

Accountability To which degree the actions of an entity (user) can be traced uniquely to the entity (user).

Name	Unit	Direction	Min	Max
Confidentiality	Enum	HIGH	0.00	10.00
Integrity	Enum	HIGH	0.00	10.00
Non-repudiation	Enum	HIGH	0.00	10.00
Authenticity	Enum	HIGH	0.00	10.00
Accountability	Enum	HIGH	0.00	10.00

Table 1: Selected Values

4 Value Extraction

4.1 By Stakeholder Sikkerhetsansvarlig

Value	Weight	Past	Tolerable	Goal	Wish
Confidentiality	20.00	null	4.00	7.00	9.00
Integrity	20.00	null	4.00	7.00	9.00
Non-repudiation	20.00	null	4.00	7.00	9.00
Authenticity	20.00	null	4.00	7.00	9.00
Accountability	20.00	null	4.00	7.00	9.00

Table 2: Quantified by Sikkerhetsansvarlig

4.2 By Stakeholder Produkteier

Value	Weight	Past	Tolerable	Goal	Wish
Confidentiality	20.00	null	4.00	7.00	9.00
Integrity	20.00	null	4.00	7.00	9.00
Non-repudiation	20.00	null	4.00	7.00	9.00
Authenticity	20.00	null	4.00	7.00	9.00
Accountability	20.00	null	4.00	7.00	9.00

Table 3: Quantified by Produkteier

5 Solution Identification

5.1 Identified Solutions

AS-IS

Current solution

TO-BE

Future desired solution

5.2 Selected Evaluators

b002@significant.no

Sikkerhetsarkitekt

min@n3st.art

min

tolerable@n3st.art

tolerable

max@n3st.art

max

6 Solution Evaluation

6.1 Evaluated by Sikkerhetsarkitekt

Values	Solutions				
	AS-IS	TO-BE	min	tolerable	max
Confidentiality	9.00	7.00	0.00	4.00	10.00
Integrity	7.00	9.00	0.00	4.00	10.00
Non-repudiation	5.00	10.00	0.00	4.00	10.00
Authenticity	9.00	8.00	0.00	4.00	10.00
Accountability	8.00	10.00	0.00	4.00	10.00
Total Score	38.00	44.00	0.00	20.00	50.00

Table 4: Evaluated by Sikkerhetsarkitekt

7 Value Solution Matrix

7.1 Based on Sikkerhetsarkitekt's evaluation

Values	Solutions				
	AS-IS	TO-BE	min	tolerable	max
Confidentiality	18.00	14.00	0.00	8.00	20.00
Integrity	14.00	18.00	0.00	8.00	20.00
Non-repudiation	10.00	20.00	0.00	8.00	20.00
Authenticity	18.00	16.00	0.00	8.00	20.00
Accountability	16.00	20.00	0.00	8.00	20.00
Total Score	76.00	88.00	0.00	40.00	100.00

Table 5: VSM based on Sikkerhetsarkitekt's evaluation

A Decision Framework

A Framework for making sound decisions. A decision is essentially a mathematical equation that you can compute. Inputs of the decision equation are, a set of values and a set of solutions.

The difficulty and the main work remains in clarifying the input parameters. The better you are able to capture and quantify the inputs, the better result you get, as the garbage in, garbage out (GIGO) principles dictates.

The rest of the appendix describes each part of the DF in details.

A.1 Problem Statement

DF dictates that you need to understand why you HAVE to make a decision in the first place.

Problem statement The problem or the need, can be very broad. The narrower the problem you have, the simpler and higher quality your decision will be. Thus a concise problem statement is crucial.

Problem domain Over time, you learn to group similar decisions together, and thus are able to reuse some aspects of the decision. You might even be able to do automatic decision making, if you are able to narrow the problem well.

A.2 Stakeholders analysis

The need can not exists on its own. It comes from **SOMEWHERE**. So, the question you need to ask yourself is - how has the problem?

Stakeholder Its the Stakeholders how has the problem or the need. Stakeholders, could be a person, a company, a country, or even the law. Its the stakeholders that makes the need concrete, and when the need is made concrete, than we can search for solutions (options).

Weight Some stakeholder is more important. Here you prioritize among stakeholders.

A.3 Values Identification

Values are the specific needs (requirements) that the stakeholders have. Each stakeholders might have a set of needs they want to satisfy. Lets call these needs values. Stakeholders want their values satisfied relevant to the problem at hand. This activity of the Decision Framework involves capturing all important/relevant values that the Stakeholders might have, as precise as possible. The values must be captured in a quantifiable and comparable form. Because, then the solution can be tested against the values, to see how well a solution satisfies.

Name A unique name for the relevant value with respect to the problem at hand across all stakeholders

Scale Of Measure Describe how is the value measured.

Unit What unit of measurement will be used.

Direction What direction is considered useful/beneficial

Min Minimum amount/score

Max Maximum amount/score

A.4 Values extraction

The goal of this activity is to capture / quantify stakeholders values. DF dictates that Past, Tolerable, Goal and Wish state, which all can be placed between the Min and Max state, must be placed. And each stakeholder have to decide for them selves. As well as prioritize among values by the means for weight. By doing so, the quantified values, can be used to test the solution against stakeholders desired satisfaction of a solution for each values [gilb2005competitive].

Weight Weighting determines the prioritization of values in order of highest importance (from 0 to 1) with respect to the stakeholder

Past Relevant only for recurring problem.

Tolerable Minimum acceptable threshold.

Goal Goal threshold.

Wish Wish threshold.

A.5 Solutions identification

DF dictates that only at this activity you start the search for solutions. So, this activity is about identifying all possible solutions, that might satisfy some or all stakeholders values.

Name A unique name for the identified solution

Description Description of the identified solution

Further more DF dictates that you have to identified a scoring function for each identified values. So, an evaluator know how to evaluate each identified solution.

You also, have to select one or more evaluator to perform an objective evaluation for each identified solutions.

Name A unique name for the selected evaluator

Description Description of the evaluators

Other properties An evaluator might have multiple properties, such as the price the evaluator might charge to do the evaluation, or level of strictness/expertise reflected via correctness, appropriateness and preciseness.

A.6 Solution evaluation

DF dictates that evaluation have to be performed at this activity. This is probably the most difficult and labour intensive activity of all activities in DF.

Score The end result of solution fitness with respect to value.

Rationale Explanation for why an evaluator have given the given score for the solution with respect to value.

A.7 Value Solution Matrix

DF dictates that this activity can be automated, since this is just a calculation. You might encounter a minor difficulty in visualizing the calculated result.

Color coding Color coding indicating solution fitness with respect to stakeholders thresholds.

Solution Score Total Solution score across all values.