

Capability Assessment

What on earth is that?

Risk Management

Risk management systems are a combination of functions that must be performed successfully to fulfill the purpose of protecting what human beings value.

Design Science

Risk management capability is not a natural phenomenon, but an artificial one.

Research into it falls under the realm of design science.

We should therefore research how a system should work instead of focusing on observing its current state.

Importance of knowing Capabilities

The concepts of risk and capability are entwined, because the need for capacity is directly related to the level of risk posed to a system.

The capability of a risk management system is a deciding factor in its design and development.

2. GOAL

What is the main actor's goal?

The goal is closely related to the purpose, but is more concrete and measurable. The goal describes the expectations and requirements made of the leading actor in the specific scenario.

It can be found by viewing homepages, publications or reports of the main actor, or by speaking with experts within the main actor.

3. FUNCTION

What tasks should be performed, to fulfill the purpose of the system in a satisfactory manner?

Set design criteria.

Design Criteria is a set of tasks that must be performed to fulfill the purpose.

4. FORM

How is the system performing those tasks at present time?

Find and state existing design alternatives, without making value judgement.

5. EVALUATE

How well do the design alternatives solve the problem?

Compare existing design alternatives to design criteria.

6. IMPROVEMENT

What improvement to the system would yield alternatives compatible with the criteria?

Find what is needed for design alternatives to meet the design criteria.

THANK YOU!

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There are many areas within risk management:

- Risk Analysis
- Risk Assessment
- Cost-Benefit Analysis
- Capability Assessment



EX
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THAN

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- **Risk Analysis**
- **Risk Assessment**
- **Cost Benefit Analysis**
- **Capability Assessment**



Capability?



Importance of knowing Capabilities

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Risk Defined

There is no general consensus on the definition of risk.
The designated definition of this discussion is called the risk triplet:

- What can go wrong?
- How likely is it?
- What are the consequences?

Capability Defined

Capability is an ill-defined concept even though most people are quick to assign a certain meaning to it.
So what constitutes a capacity?

Research shows that capability is rarely defined in scientific papers, despite being the main subject.

Capability defined

Capability is a multifaceted concept that is often used to describe the ability of a system to perform a task or to achieve a goal. It is a key factor in determining the success of a system and is often used to describe the ability of a system to adapt to changing conditions.

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Capability defined

Capability is a conditioned concept.
Therefore one asks not about capability in general but about the capability to perform a certain task.

A capability definition for the measurement of the ability to perform a certain task.

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A capability definition has three elements;

- an established task
- measures of how well that task is executed
- an account of factors that influence that execution.

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Design Science

Risk management capability is not a natural phenomenon, but an artificial one.

Research into it falls under the realm of design science.

We should therefore research how a system **should** work instead of focusing on observing its current state.

Design Science

Natural Science: **discovery** and **justification**

Design Science: **build** and **evaluation**

Designed entities are created to serve human purposes and fulfill certain goals and their value is therefore judged on how well it achieves those goals.

A framework for a capability assessment should therefore present a measure of how well a certain system serves its purpose and achieves its goals through the powers of its capabilities.

Proposed Risk Management Capability Assessment Method

Limitations to Capability Assessment

Capability assessment is defined as a structured and analytical process whereby the various dimensions of capability are measured and evaluated in a broader context.

WHY?

Instead of looking at the whole system at once - we look at specific scenarios and sub-scenarios in order to determine capabilities.

14.3 worked with 6 scenarios.

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WHY?

Instead of looking at the whole system at once - we look at specific scenarios and sub-scenarios in order to determine capabilities.

14.3 worked with 6 scenarios.

START

Determine and describe an existing system facing a certain risk.

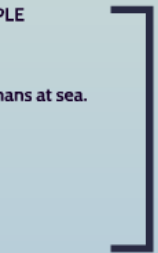
What is being assessed?

1. PURPOSE

What is the purpose of this system?

Determined by law, legislation, risk management policy or other official documents.

PLE
hans at sea.



EXAMPLE

Threats to humans at sea.

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What is the purpose of this system?

Determined by law, legislation, risk management policy or other official documents.

EXAMPLE

purpose is found in Icelandic regulation number 71/2011 on management of search and rescue activities for seafarers and aircrafts in the Icelandic SAR region as well as international laws, such as the International Convention on Maritime Search and rescue.

Rescue people in distress at sea in shortest possible time

2. GOAL

What is the main actor's goal?

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EXAMPLE

Dispatch rescue crews within
distress signal. Reaching the
swiftly and safely if natural c
and rescuing all sufferers on

EXAMPLE

Dispatch rescue crews within 20 minutes of distress signal. Reaching the site of emergency swiftly and safely if natural conditions allow and rescuing all sufferers on board helicopters.

3. FUNCTION

What tasks should be performed, to fulfill the purpose of the system in a satisfactory manner?

Set design criteria.

Design Criteria is a set of tasks that must be performed to fulfill the purpose.

EXAMPLE

Criteria:
Minimum realistic response time
Availability
Appropriate equipment available
Minimum response time is determined by flight
Altitude and distance, as well as availability of crew
Appropriate equipment.
Availability: Crews should be ready to
Respond 24/7, 365, within 20 minutes.
Appropriate equipment: 2 helicopters and an
Unmanned Aerial Vehicle (UAV).
Available technology would allow for coverage
of 100 nautical miles around the country.

EXAMPLE

Design criteria:

- Minimum realistic response time
- Crew availability
- Appropriate equipment available

Minimum response time is determined by flight velocity and distance, as well as availability of crew and appropriate equipment.

Crew availability: Crews should be ready to dispatch 24/7, 365, within 20 minutes.

Appropriate equipment: 2 helicopters and an aircraft.

Best available technology would allow for coverage of 259 nautical miles around the country.

4. FORM

How is the system performing those tasks at present time?

Find and state existing design alternatives, without making value judgement.

EXA

Existing design alter
· 2 helicopters + airc
· 2 helicopters, 54%
· At least 1 helicopte
Crews are ready to o
a year, within 20 mi

EXAMPLE

Existing design alternatives:

- **2 helicopters + aircraft, 25% chance**
- **2 helicopters, 54% chance**
- **At least 1 helicopter, 96% chance**

Crews are ready to dispatch 24/7, 365 days a year, within 20 minutes.

5. EVALUATE

How well do the design alternatives solve the problem?

Compare existing design alternatives to design criteria.

alternatives
e.

EXAMPLE

**Design criteria and design alternatives
are compatible 25% of the time.**

6. IMPROVEMENT

What improvement to the system would yield alternatives compatible with the criteria?

Find what is needed for design alternatives to meet the design criteria.

EXAM

Having 3 helicopter
aircraft availability
design criteria and
compatible 74% of

EXAMPLE

Having 3 helicopters and increased aircraft availability would have design criteria and design alternatives compatible 74% of the time.

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