

STPA & Assumption-based Indicators Applied to Teams



A journey through the process

Arthur Kelderman @Sunbytes

Intro

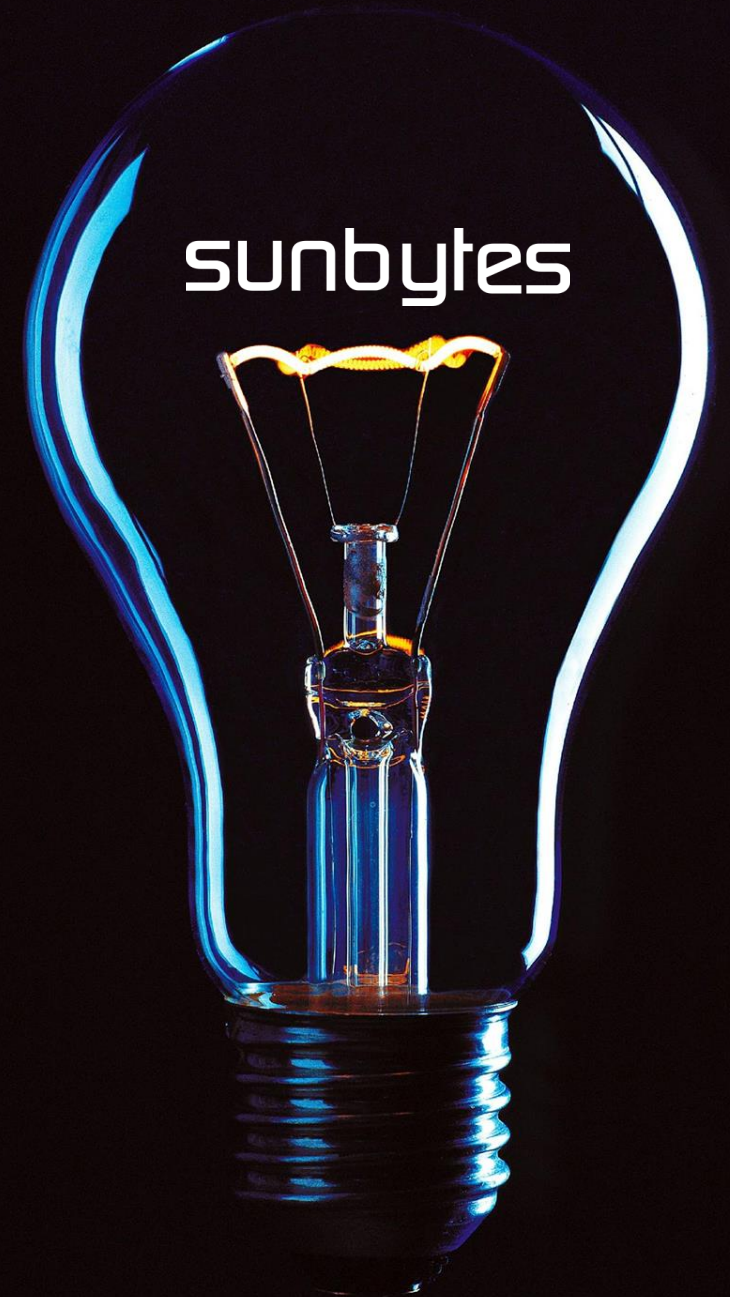
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- Arthur Kelderman, Ho Chi Minh City, Vietnam
- I work as Strategic advisor, and have worked in the Netherlands, Austria, China, Cambodia, United States, and Vietnam.
- Areas of interest: Strategy, strategic capability, putting people/organizations in control of their goals, Red teaming, and Strategic foresight.
- First came into contact with STAMP in 2012.

Context

- Team as a Service, dedicated teams, and dedicated assets.
- Execution premium process, Red teaming, Scenario planning, ...
- Create a reusable format to assemble and field teams that are in control, and have the ability to maintain mission capability as part of strategic alignment with customers.



Mission capability

Mission

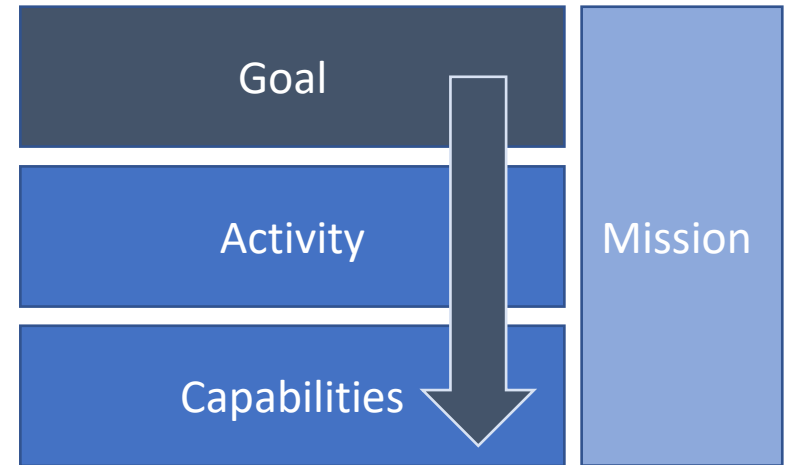
The mission provides the function and purpose of an entity.

- The mission determines which activities and capabilities have to be developed.

Goal (vision on organizational level)

A specific (set) deliverable(s) that has to be achieved within a specific period of time or has to be maintained over a specific period of time.

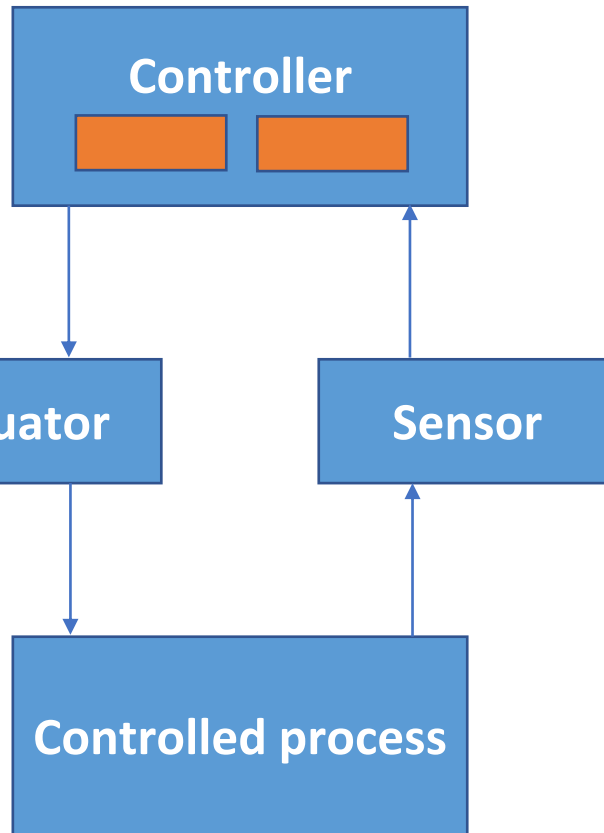
- The goal determines at which capacity the activities and supporting capabilities should operate.



Mission capability; The ability and readiness to execute on the stated mission at required capacity level; losing MC is defined as a loss event that has to be prevented.

Mapping

1. Unsafe controller behavior



3. Control path

Mapping
→

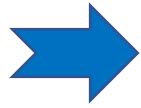
2. Cause of inadequate feedback/information

4. Other factors related to the controlled process

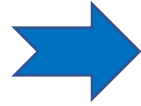
- **Controller;** team management
- **Actuator;** positions focused on execution
- **Controlled process;** aligned processes
- **Sensor;** Indicators (leading and lagging) that are connected to execution, management and other stakeholders

Steps taken

1. Strategy blueprint including mission



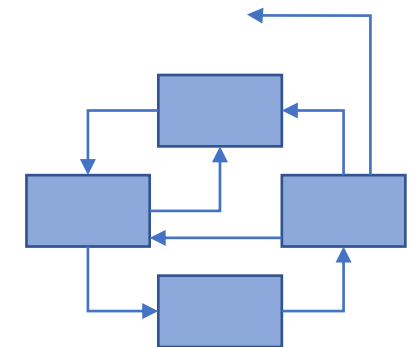
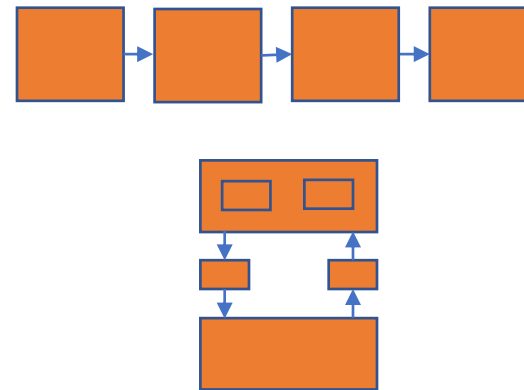
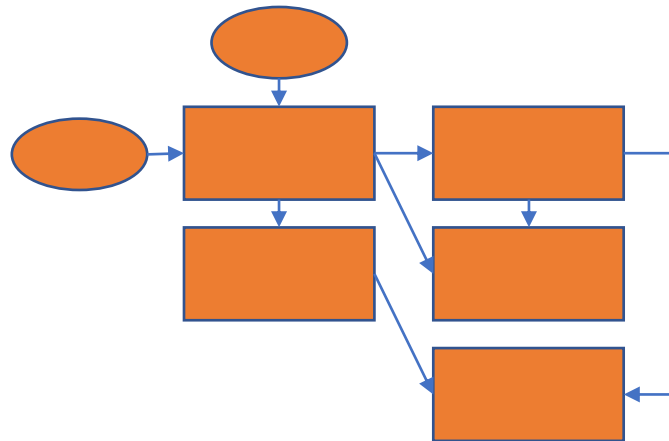
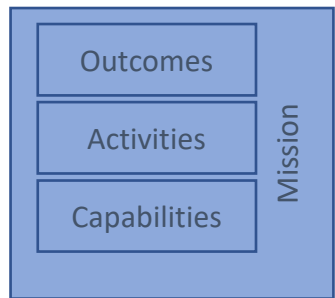
2. Defining assumptions and signposts



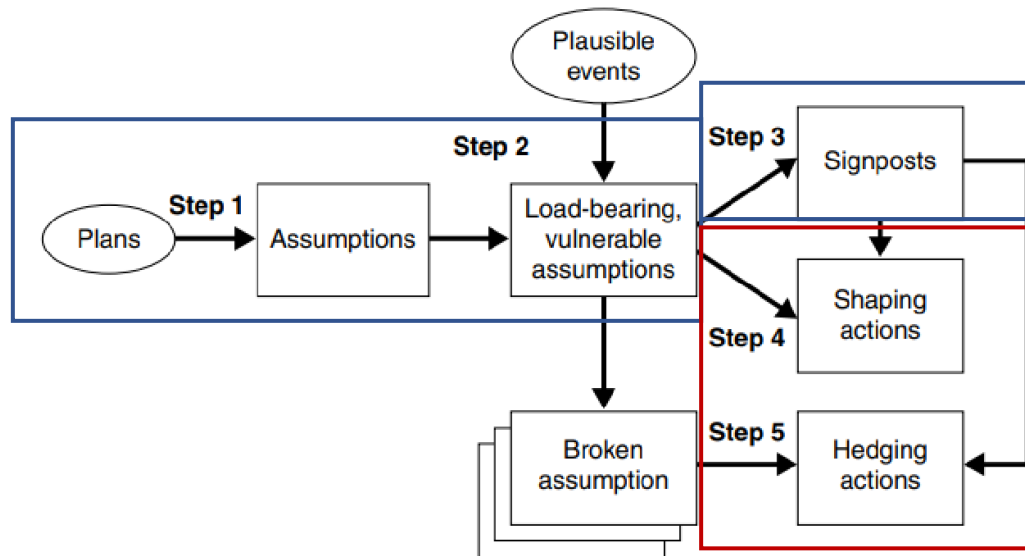
3. Running defined loss events through STPA framework



4. Securing mission capability into team organization (hedging & shaping)



Assumptions & mitigation



Source of image:

Assumption-Based Planning,

A Tool for Reducing Avoidable Surprises,
James A. Dewar RAND

Mitigation Level	Mitigation Description	Mitigation Effectiveness Score (MES)
Eliminated	The casual factor can be eliminated through design or by a specific combination of the below mitigations (proactive).	ELIM
Reduction Through Design	The occurrence of the causal factor can be reduced or controlled through system design (proactive).	3
Detected with Response	The causal factor can be detected and requires a response to mitigate (reactive).	2
Training and Procedures	The causal factor can be mitigated through additional training and procedures (reactive).	1
None	No possible mitigation exists, or mitigation is never applied.	0

Table 4-2: Mitigation Effectiveness Levels

Source of image:

A System-Theoretic Approach to Risk Analysis By Dro J. Gregorian Sam M. Yoo, Leveson's "strength of potential controls".

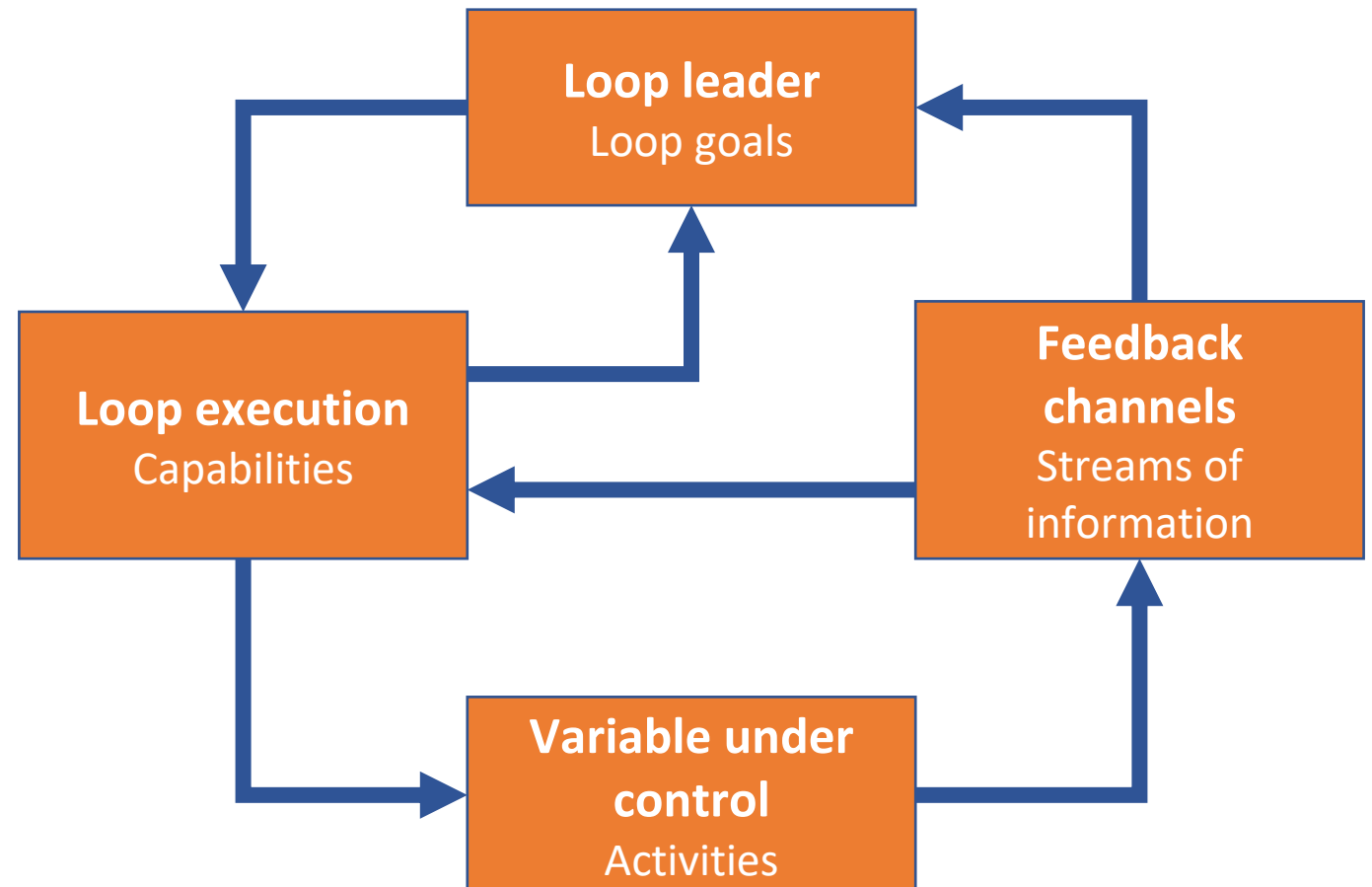
Standard loop

Control

- Goal condition, Model condition, Influence, Observability

Mission capability

- Mission capability designed into the loop
- Assumption-based leading indicators
- Improved processes and capabilities, configurable set of control measures



After action assessment



- **Detail;** STPA opens up a whole new level of detail that some love and some found it overwhelming.
 - Created categories and summaries to discuss high level issues, drill down to detail when needed.
- **Language/models;** at the introduction presentation we got feedback that language was too formal/theoretical and not everybody could catch the meaning.
 - To combat this we had language simplified without losing the meaning (simpler wording and more descriptive).
- **Competency level; 1) Junior:** able to work with artifacts based on instruction, **2) Medior:** able to independently work with artifacts and solve problems (back to base-line operation), **Senior:** able to independently go through an exercise and create and improve artifacts.

After action assessment



- **Dedicated manager;** maintaining and improving is now embedded in dedicated manager, and competencies needed to use the system effectively have been secured in organizational competency catalog.
- **Loss scenarios;** go to pace for reference and source for lots of improvement ideas by all levels – these are used on all levels to create understanding.
- **Friction;** acceptance of the system showed friction on project management level (the more senior the harder the acceptance).
- **Adjustment;** about 6 months into the project some of the assumptions about the context/environment changed, which led to an update and refinement.

What has not been seen, is unlikely to be seen in time; create memories of the future to create insight and foresight.



Inspired by **Arie de Geus**,
Royal Dutch Shell (Scenarios/Planning)



Further conversation...

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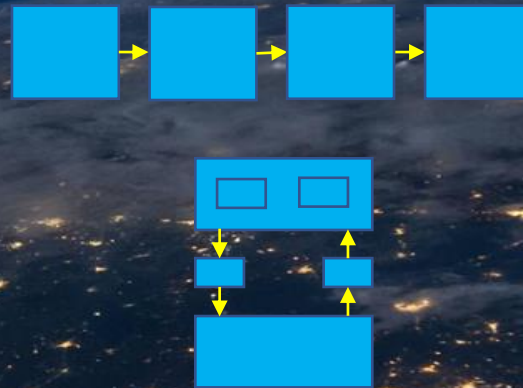
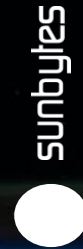
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