



Constraints, Contradictions & Consequences.

Three ways to improve your architectures.

Martin Sykes

Director of Alignment, Analysis and Architecture

**BCS Enterprise Architecture
Specialist Group**
2nd Annual Conference

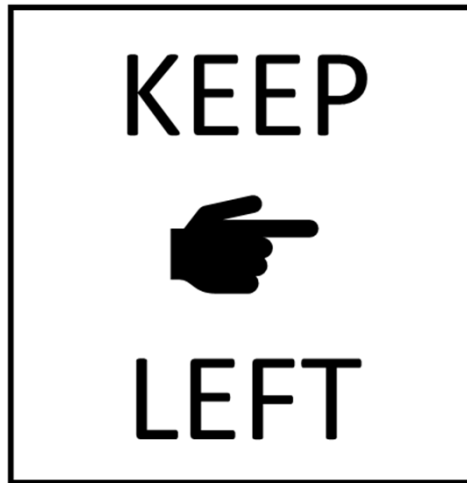
Tuesday 26 June 2018
London, UK

#BCS
#BCSEASG
#EASG2018AC

www.bcs.org



CONSTRAINTS



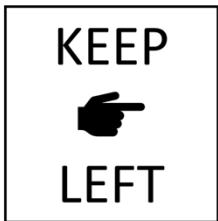
CONTRADICTIONS



CONSEQUENCES



CONSTRAINTS



CONTRADICTIONS

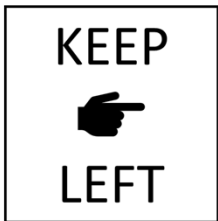


CONSEQUENCES

Solution
options



CONSTRAINTS



CONTRADICTIONS

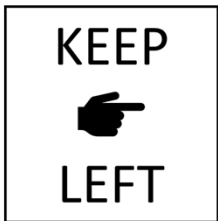


CONSEQUENCES

Solution
options



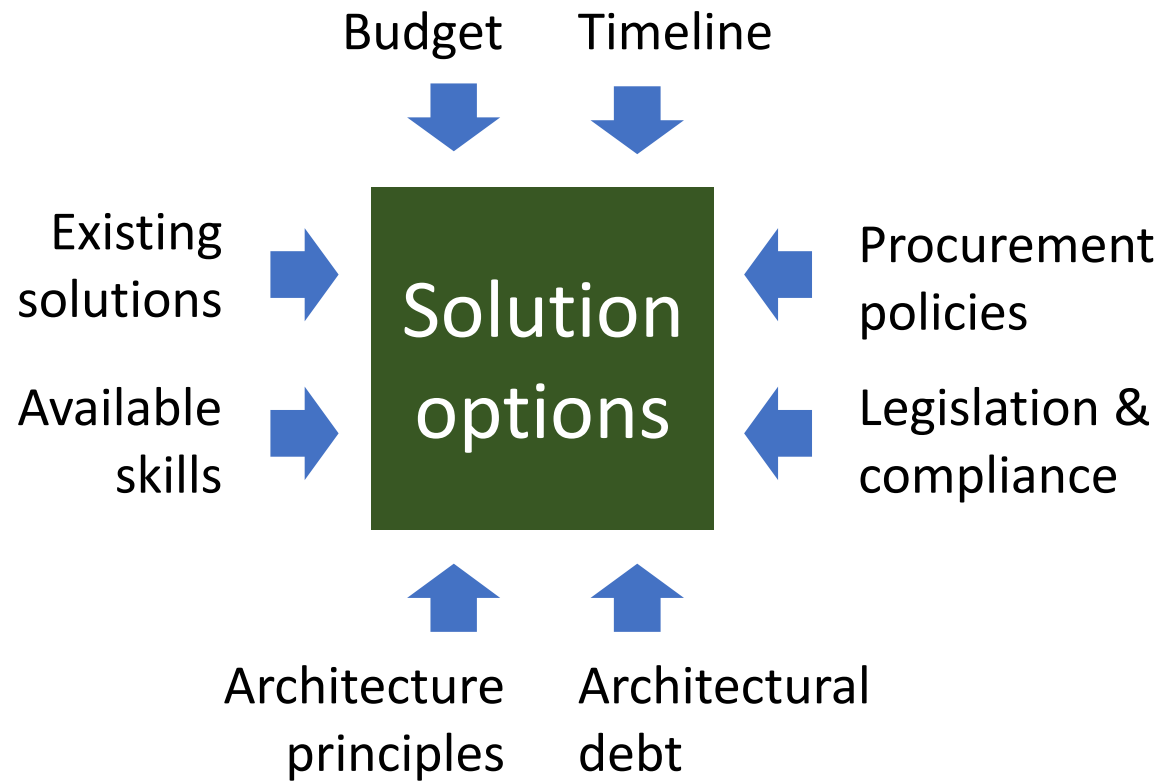
CONSTRAINTS



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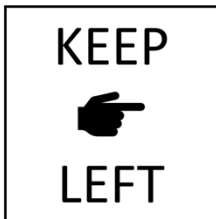


CONSEQUENCES





CONSTRAINTS



CONTRADICTIONS



CONSEQUENCES



Dr. Eliyahu Goldratt

1984

The Goal

Theory of Constraints

https://en.wikipedia.org/wiki/Theory_of_constraints

<https://www.youtube.com/watch?v=wTZcDXIAB2U>

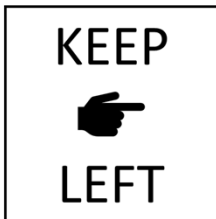
<https://www.tocinstitute.org/theory-of-constraints.html>

<https://www.amazon.co.uk/Theory-Constraints-Eliyahu-M-Goldratt/dp/0884271668>

<https://www.amazon.co.uk/Phoenix-Project-DevOps-Helping-Business-ebook/dp/B00AZRBLHO>



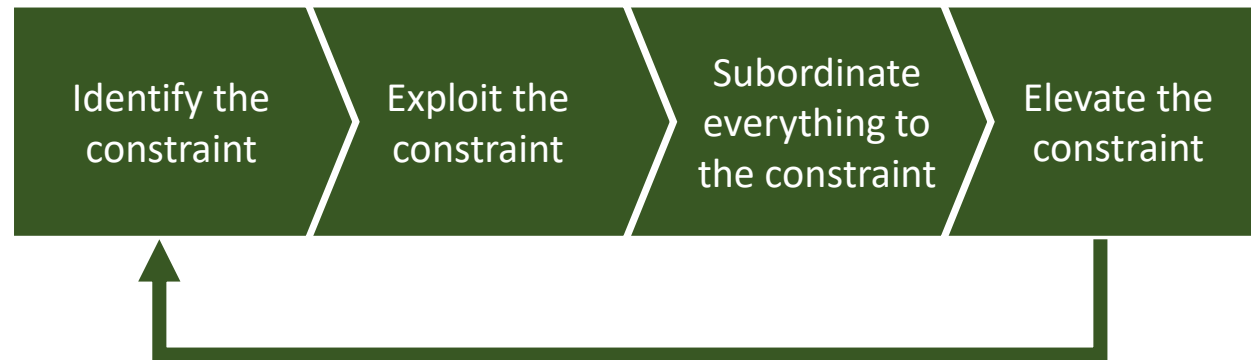
CONSTRAINTS



CONTRADICTIONS



CONSEQUENCES



Examine the architecture ‘floorplan’ as a flow. Identify the constraining element, lead-time and options for buffers to maximise throughput with minimum resources.



CONSTRAINTS

KEEP



LEFT

CONTRADICTIONS



CONSEQUENCES

I need to integrate data from all across the company for the BI dashboards.

Access to data is only available with explicit permission from the data owner.

It's just a proof of concept so we should build it simply in case it doesn't work.

We need to be able to scale quickly if the market demand grows.



CONSTRAINTS



CONTRADICTIONS



CONSEQUENCES



Genrikh Altshuller
1946

TRIZ

Theory of Inventive Problem Solving

<https://www.aitriz.org/>
https://www.triz.co.uk/files/U48432_40_inventive_principles_with_examples.pdf
https://www.triz.co.uk/files/oxfordtriz_contradictions_matrix.pdf
http://www.triz40.com/TRIZ_GB.php



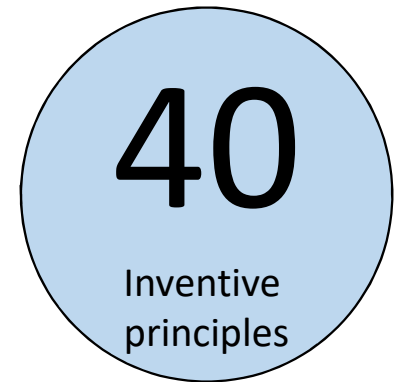
CONSTRAINTS



CONTRADICTIONS



CONSEQUENCES





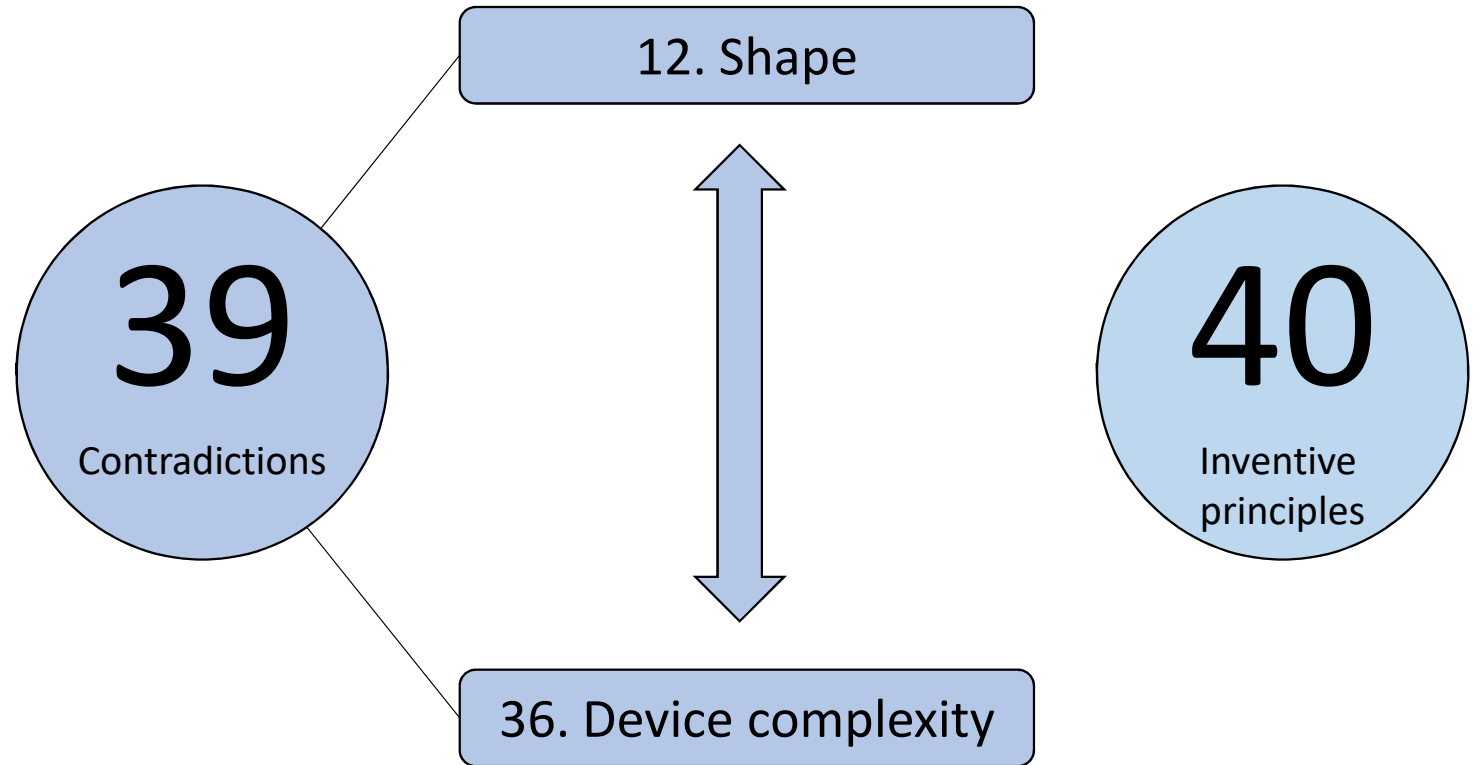
CONSTRAINTS



CONTRADICTIONS

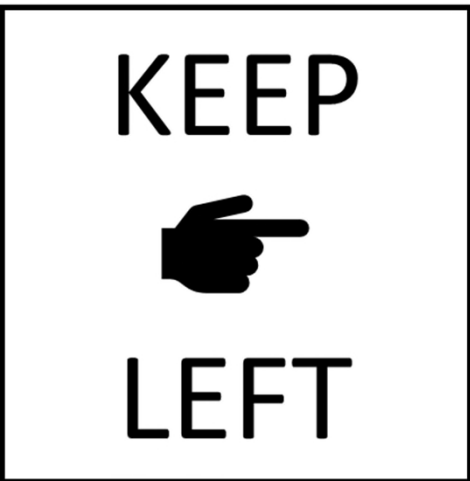


CONSEQUENCES





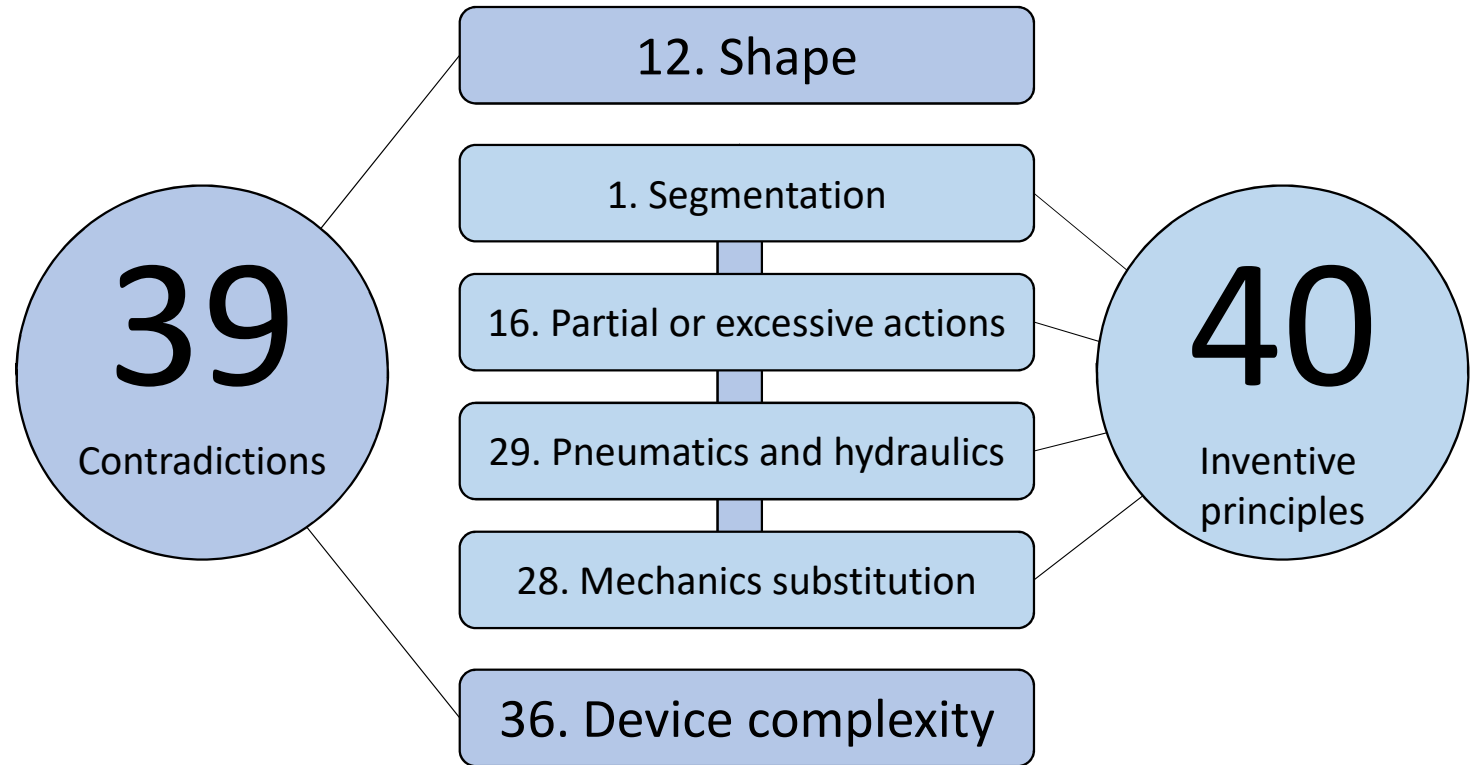
CONSTRAINTS



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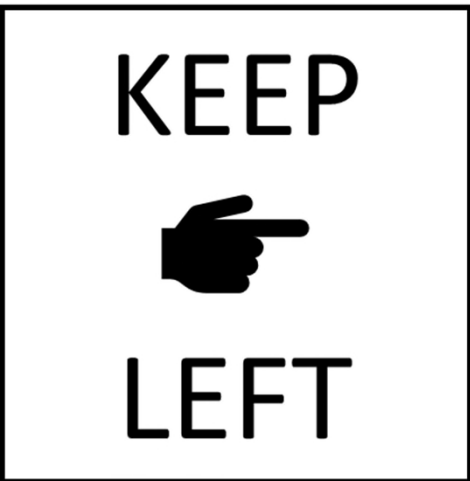


CONSEQUENCES





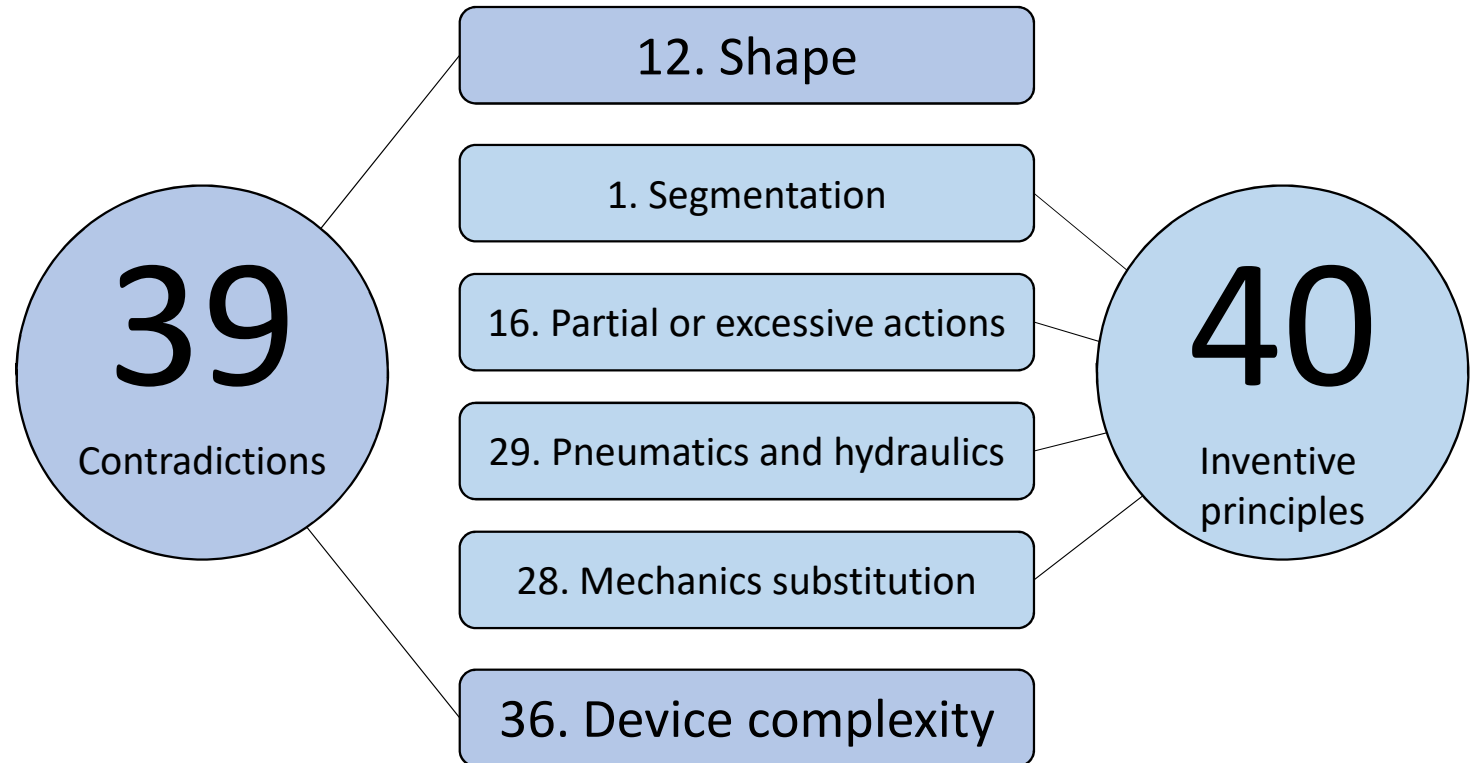
CONSTRAINTS



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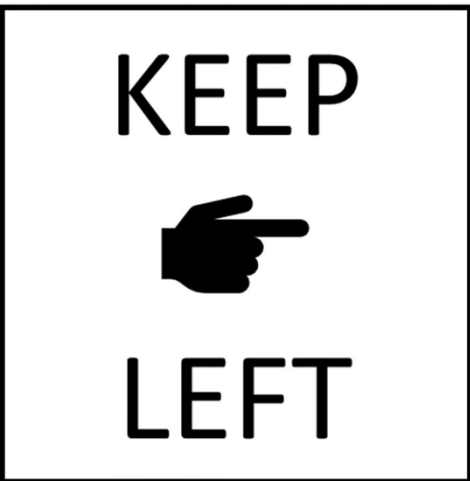


CONSEQUENCES





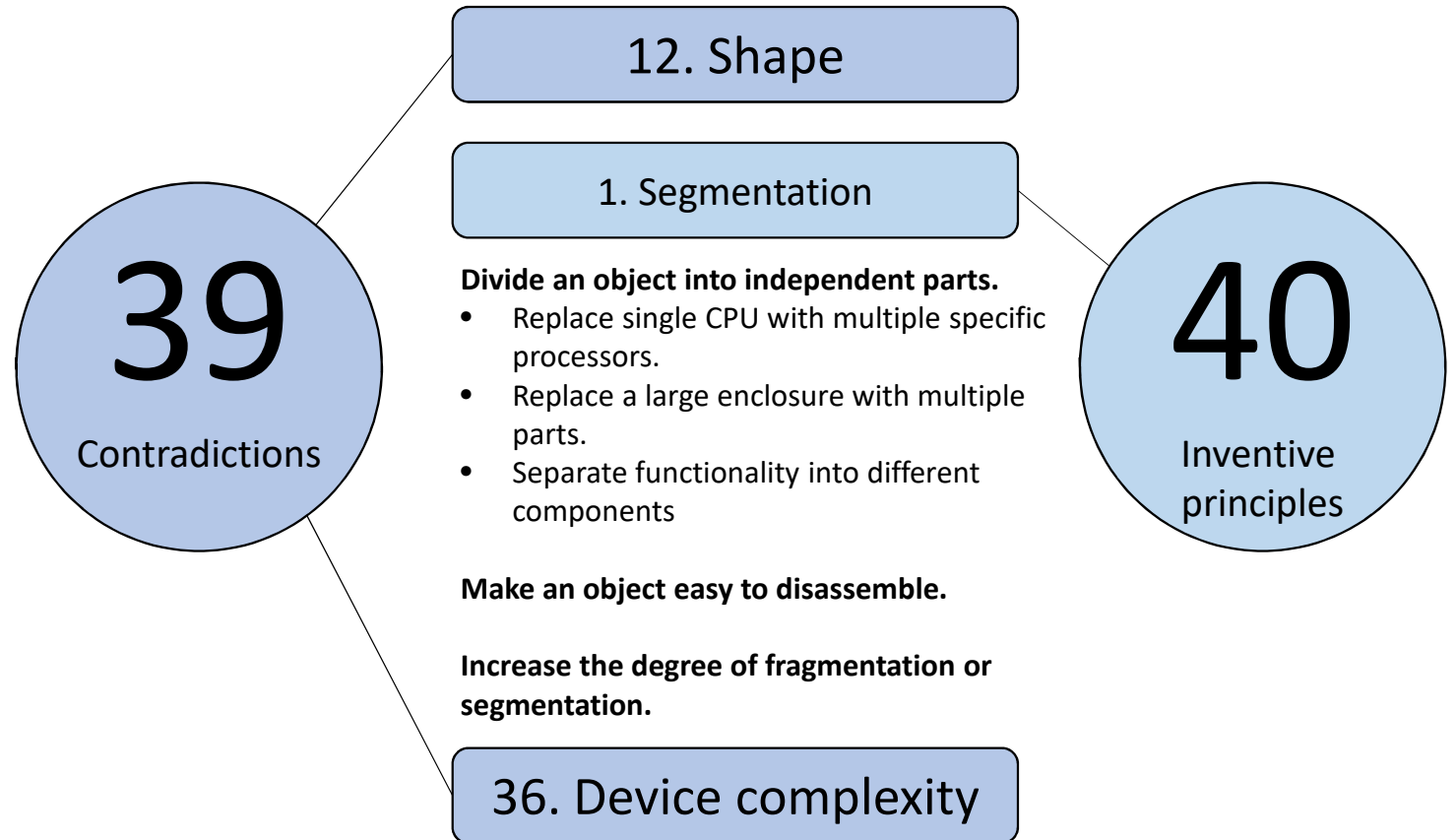
CONSTRAINTS



CONTRADICTIONS



CONSEQUENCES





CONSTRAINTS



CONTRADICTIONS

You can avoid
reality, but you
cannot avoid the
consequences of
avoiding reality.

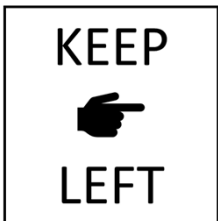
Ayn Rand



CONSEQUENCES



CONSTRAINTS



CONTRADICTIONS

Failure Mode & Effect Analysis

FMEA (1949)

Entity / component	Potential cause	System effect	Mitigation
Service API gateway	Unable to validate caller ID	External client fails to post a result	Buffer messages until authentication service recovers.
Firewall failure	Physical damage	Reduction to one firewall limits throughput	Reduce maximum concurrent users



CONSEQUENCES



CONSTRAINTS



CONTRADICTIONS



Shigeo Shingo
1960s

Poka-Yoka

Kaizen and the Art of Creative Thinking

Mistake-proofing your solutions

<https://en.wikipedia.org/wiki/Poka-yoke>
<https://www.amazon.co.uk/Kaizen-Art-Creative-Thinking-Scientific/dp/1897363591>

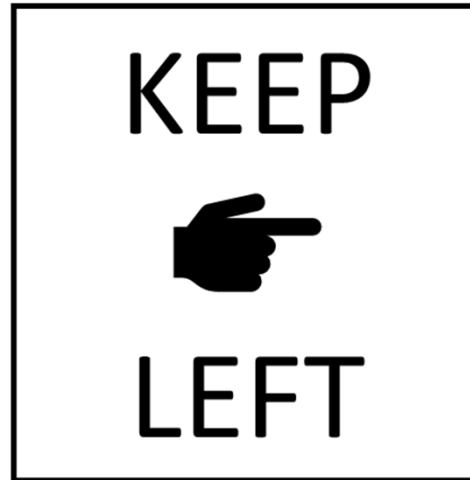


CONSEQUENCES



CONSTRAINTS

Identify the constraints and optimise for them



CONTRADICTIONS

Actively seek contradictions and the innovative patterns



CONSEQUENCES

Find potential failures and mistake-proof for your users