NATO
OTAN
SCIENCE AND TECHNOLOGY ORGANIZATION
COLLABORATION SUPPORT OFFICE
S&T organization
CSO

STEP 4 – Where impact comes into the picture

Taking FATE* on the road

*FATE – Futures Assessed alongside socio-Technical Evolutions

NATO SAS-RTC-176

The FATE Method

A problem – scope it as a Socio-Technical System (STS)

- Step 1 – Socio-Technical System (STS)

- Step 2 – Future scenario

  Adapt a scenario into *TEMPLES*[#] if required

- Step 3 – Interactions between future scenario + STS

 3.1 How do you see the STS evolving?

  3.2 How do you see the STS in the described future scenarios?

  Output: personal, group insights, drivers and resisters (D and R) for scenarios from baseline STS in relation to *TEMPLES* derived from future Scenarios

- Step 4 – Assess the impact on defence and security e.g., wrt capabilities

  Output: Impact mitigation options for client/customer from at least two scenarios

The *FATE* Method
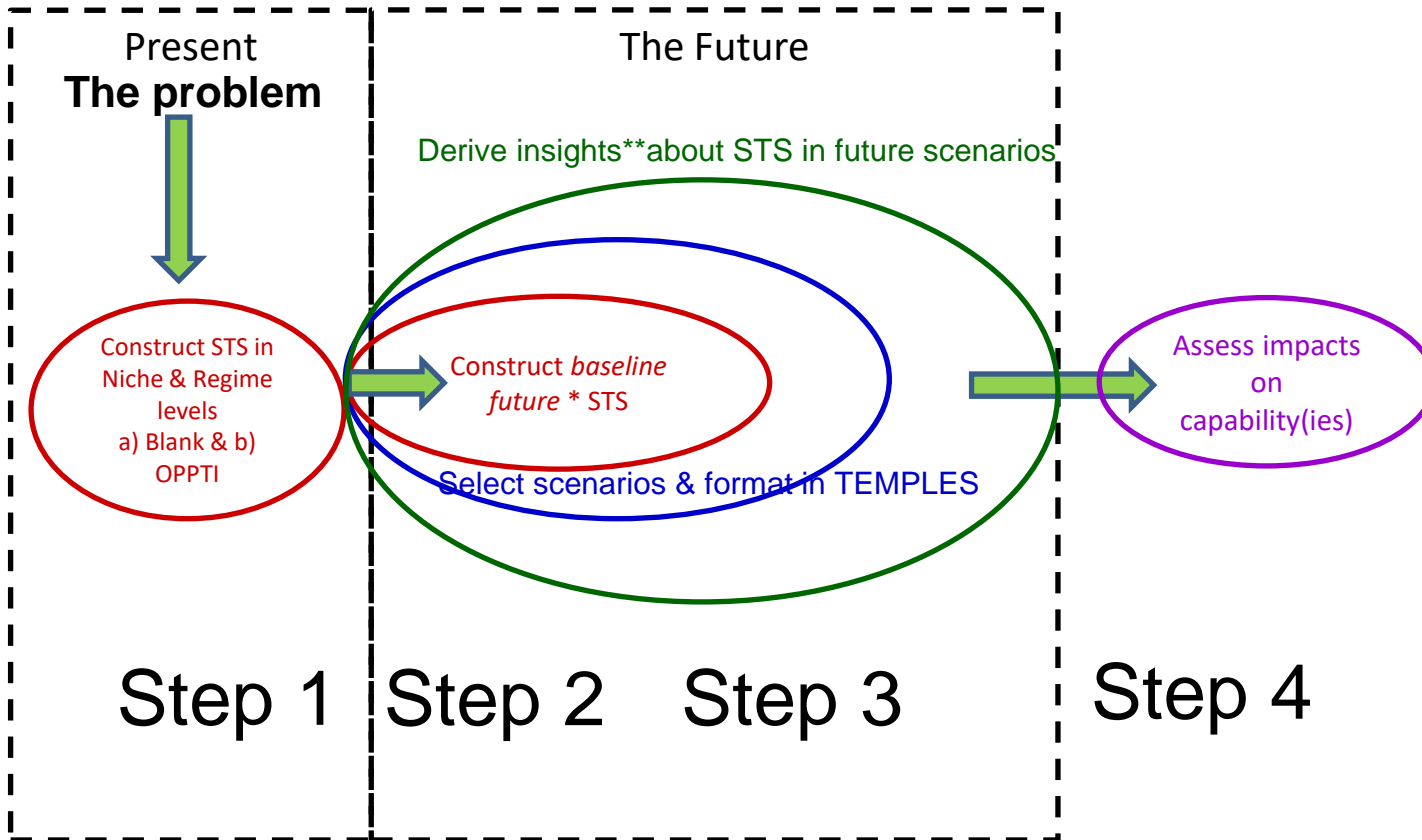
* *Baseline future* is an idealised *extrapolation* of what is emerging today, **Insights from analysis, changes in STS, drivers and resistors of change in future scenarios and/or STS

Step 4: Overview

1. Identify the insights (changes, drivers and resistors) from Step 1, 2 and 3 that have most potential for impact with the stakeholder

2. Consider each insight for each scenario:
   a. Impact it will have on stakeholder concerns (good or bad)
   b. Responses the stakeholder could do

3. Use *impact metrics* to provide assessment for each item

4. Use the last table to build the visualisation of results. The aim is to split out possible future developments by how disruptive they would be in each scenario.

5. Described in simplified linear form here, variations covered at the end

Process Overview

Scenario	Insights (& relevant influencing factors)	Impact on defence and security	Possible Responses	Measures of Impact (multiple measures)

Scenario → Insights → Impact on defence and security → Possible Responses

Scoring Overview

| Scenario | Insights | Impact on defence and security | Possible Responses |

Four ways to score			
Time to respond	**Game-changingness**	**Regret**	**(Likelihood)**
How long would it take to put in place a response to the insight.	Does this insight change the way the character of operations – 'the game'?	What is the level of Regret of this occurring.	What are the chances of this happening

Note: there are good reasons for not using risk

Summarise

Scenario	Insights (& relevant influencing factors)	Impact on defence and security	Possible Responses	Time to respond	Game-changingness	Regret	(Likelihood)

Measurements

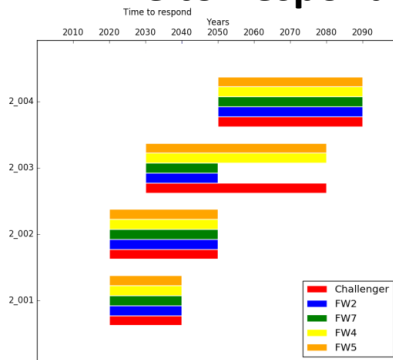*Time to respond* = earliest and latest it could occur

$$Disruption\ Calculus = \frac{Game\ changing}{Ability\ to\ respond}$$

Regret = Using emotion to aid assessment
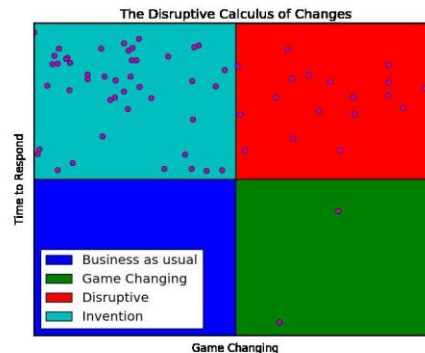
Regret

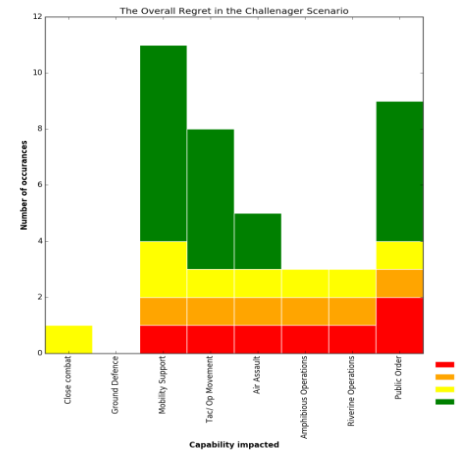Provides a more *emotive*, and thus often a better assessment.
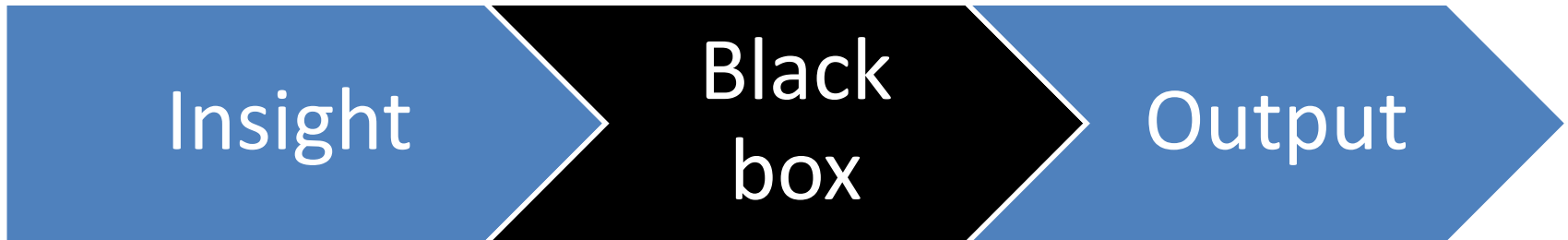
Time to Respond

Disruption Calculus

Regret

Explanation vs Magical Leaps

- Magic leaps

Insight → Black box → Output
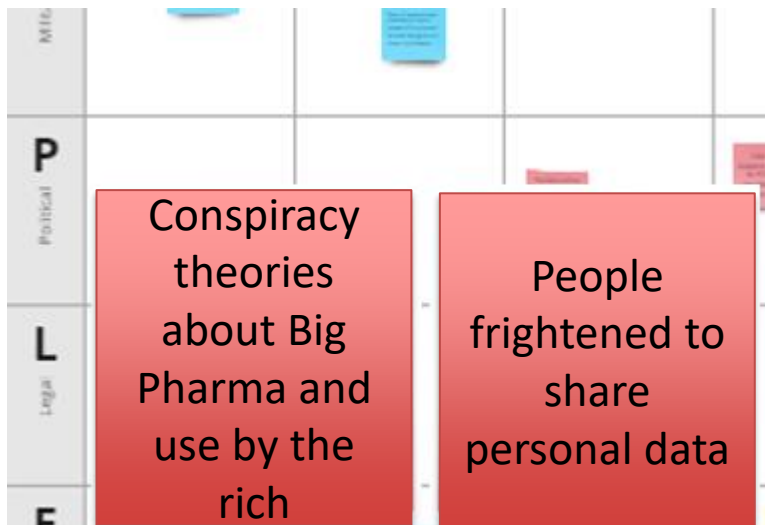
- Explanation

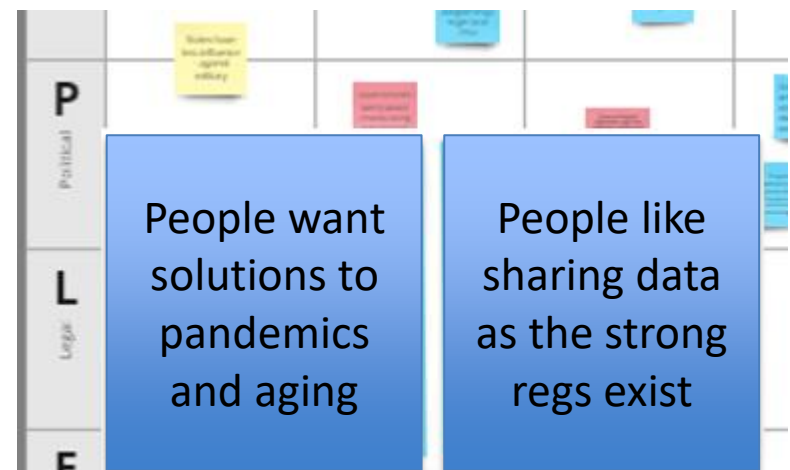Insight → Explanation FATE: Step 1, 2, 3, 4 → Output

Scoring insights from Step 3 (Biotech)

- Contradictory attitudes to data sharing in the two future scenarios (A world adrift & Tragedy and Mobilization).
- Opportunity of data sharing: Better biotech which leads to Star Trek style tricorder, highly useful in military
- Threat of data sharing: Military personnel targeted
- Status quo in World Adrift scenario is no data sharing and therefore no tricorder.
- Possible Response: Use public communications to lobby for data sharing and public communications

1 "A World Adrift"

Conspiracy theories about Big Pharma and use by the rich

People frightened to share personal data

2 "Tragedy and Mobilization"

People want solutions to pandemics and aging

People like sharing data as the strong regs exist

Question
How do we choose
what to focus on?
See the next lecture!

Develop the output from Step 3

Scenario	Insights (& relevant influencing factors)	Impact on defence and security	Possible Responses	Time to respond	Game-changingness	Regret	(Likelihood)

Develop the output from Step 3

Scenario	Insights (& relevant influencing factors)	Impact on defence and security	Possible Responses	Time to respond	Game-changingness	Regret	Likeli-hood
1	Conspiracy theories about Big Pharma and use by the rich	Forces health, but not hugely different from wider population	Tightening of world trade and competition rules and standards				
1	People frightened to share personal data	Recruitment of personnel more difficult	New incentives to join up				
2	People want solutions to pandemics and aging	Social unrest and Gov' action	new military tasks				
2	People like sharing data as the strong regs exist	Cleaner intelligence	Develop new Int capabilities				

Scoring insights from Step 3 (Biotech)

- Contradictory attitudes to data sharing in the two future worlds.
- Opportunity of data sharing: Better biotech which leads to Star Trek style tricorder, highly useful in military
- Threat of data sharing: Military personnel targeted
- Status quo in World Adrift scenario is no data sharing and therefore no tricorder.
- Possible Intervention: Use public communications to lobby for data sharing and public communications

1 "A World Adrift"

| Conspiracy theories about Big Pharma and use by the rich | People frightened to share personal data |

2 "Tragedy and Mobilisation"

| People want solutions to pandemics and aging | People like sharing data as the strong regs exist |

Score the Insights, using the metrics

Scenario	Insights (& relevant influencing factors)	Impact on defence and security	Possible Responses	Time to respond	Game-changingness	Regret	(Likelihood)
1	Conspiracy theories about Big Pharma and use by the rich	Forces health, but not hugely different from wider population	Tightening of world trade and competition rules and standards				
1	People frightened to share personal data	Recruitment of personnel more difficult	New incentives to join up				
2	People want solutions to pandemics and aging	Social unrest and Gov' action	new military tasks				
2	People like sharing data as the strong regs exist	Cleaner intelligence	Develop new Int capabilities				

Score the Insights, using the metrics

Scenario	Insights (& relevant influencing factors)	Impact on defence and security	Possible Responses	Time to respond	Game-changingness	Regret	(Likelihood)
1	Conspiracy theories about Big Pharma and use by the rich	Forces health, but not hugely different from wider population	Tightening of world trade and competition rules and standards	Can respond	Not GC	Some regret	Likely
1	People frightened to share personal data	Recruitment of personnel more difficult	New incentive to join up	Can respond	Not GC	No regret	Highly likely
2	People want solutions to pandemics and aging	Social unrest and Gov' action	new military tasks	Cannot respond in time	GC	Regret	Likely
2	People like sharing data as the strong regs exist	Cleaner intelligence	Develop new Int capabilities	Cannot respond in time	GC	Regret	Unlikely

Problem

How do we fill this in in a more systematic way?

We're not thinking about interdependencies.

Quite linear and finger in the air.

Can we improve?

See the next lecture!

Score the Insights, using the metrics

Practical Exercise:
Develop the output from Step 3

Scenario	Insights (& relevant influencing factors)	Impact on defence and security	Possible Responses	Time to respond	Game-changingness	Regret	(Likelihood)

Practical Exercise:
Develop the output from Step 3

Practical Exercise:
Score the Insights, using the metrics

Scenario	Insights (& relevant influencing factors)	Impact on defence and security	Possible Responses	Time to respond	Game-changingness	Regret	(Likelihood)

Practical Exercise:
Score the Insights, using the metrics

Impact assessment						
Scenario	SCENARIO 1: "A World Adrift"			SCENARIO 2: "Tragedy and Mobilization"		
Insights (& relevant influencing factors)						
Impact on defence and security						
Possible responses						
Time to respond						
Game-changingness						
Regret						
Likelihood						

Insights– audit trail of FATE steps

Step 1

Social Technical System	Current	Baseline
People (OPPPTI)	• Big Pharma corruption	• Big Pharma corruption

Step 2

Scenario	Social (TEMPLES)
1 – A World Adrift	• Social-credit style access to healthcare

Step 3

People (OPPPTI)/ Social
Conspiracy theories about Big Pharma and use by the rich

Step 4

Impact on defence and security	Possible Responses	Time to respond	Game-changingness	Regret	(Likelihood)
Forces health, but not hugely different from wider population	Tightening of world trade and competition rules and standards	Can respond	Not GC	Some regret	Likely

References

1. Adlakha-Hutcheon, G. et al (2021) Futures Assessed alongside socio-Technical Evolutions (FATE), DOI: 10.14339/STO-TR-SAS-123, ISBN 978-92-837-2322-6.

2. Adlakha-Hutcheon, G., Bown, K., Lindberg, A. Nielsen, T. G. Romer, S. Maltby, J.F.J. (2020) The Use of FATE for Illuminating Disruptions, Proceedings of The 14th Annual NATO Operations Research and Analysis Conference, 2020.

3. Defence Intelligence: Probability Yardstick https://www.gov.uk/government/news/defence-intelligence-communicating-probability

We boil down the essential findings for each scenario. Table below for illustration.

Insight about future	Applicable Scenarios & Likelihood	Warning Time	Impact on defence	Policy intervention	Impact on defence with intervention	Regret at not taking action	Policy Implications
Aliens could invade	ALL – Remote Chance	None	Massive	None really	None	None	Do nothing
Asteroid could hit us	ALL – Remote Chance	None	Massive	Build asteroid defence	Greater chance of saving Earth	Huge	Consider intervention, but it is a remote chance
Bird Flu pandemic with 10% fatality rate	Scenario 1: Probable Scenario 2: Highly likely	Minimal warning	Logistics strain. Humanitarian support. Demand for use at home	Train soldiers to do basic nursing Investigate and stock appropriate PPE.	Military more able to support home security and not a casualty themselves	High, especially if societal breakdown	Do the intevention
LLM 'Oracles' replace websites	ALL – Highly likely	Incremental	Defence potentially left lagging and slow due to processes	Defence must pro-actively engage Deep culture shift needed	Mitigated, but industry will always be ahead	Highly uncertain	High likelihood and high likelihood means investigation needed

Insights– audit trail of Tricorder

Step 1

Social Technical System	Current	Baseline
People (OPPPTI)	• Big Pharma corruption	• Big Pharma corruption

Step 2

Scenario	Social (TEMPLES)
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Step 3

People (OPPPTI)/ Social
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Step 4

Impact on defence and security	Possible Responses	Time to respond	Game-changingness	Regret	(Likelihood)
Forces health, but not hugely different from wider population	Tightening of world trade and competition rules and standards	Can respond	Not GC	Some regret	Likely