

Technology Assessment in Operations (TAO)

Assessing the Impact of
Future Technologies

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for the Tech Trends Team

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Conference



Why do Technology Trends Forecasting?

Saving Lives

Saving Money

Having the Edge

NATO Technology Trends Effort

Draw on collective knowledge in Nations

Make a product with advice from STO

Feed the Defence Planning Process

Education & Workshop Materials (e.g. DTAG)

Gain Shared Awareness of Incoming Disruptions

How to Incorporate Input from 29 Nations

Everyone's Needs and Views

Reach a Balance – Different levels of progress and priorities in different nations

Focus on Priorities

Reach Homogeneity

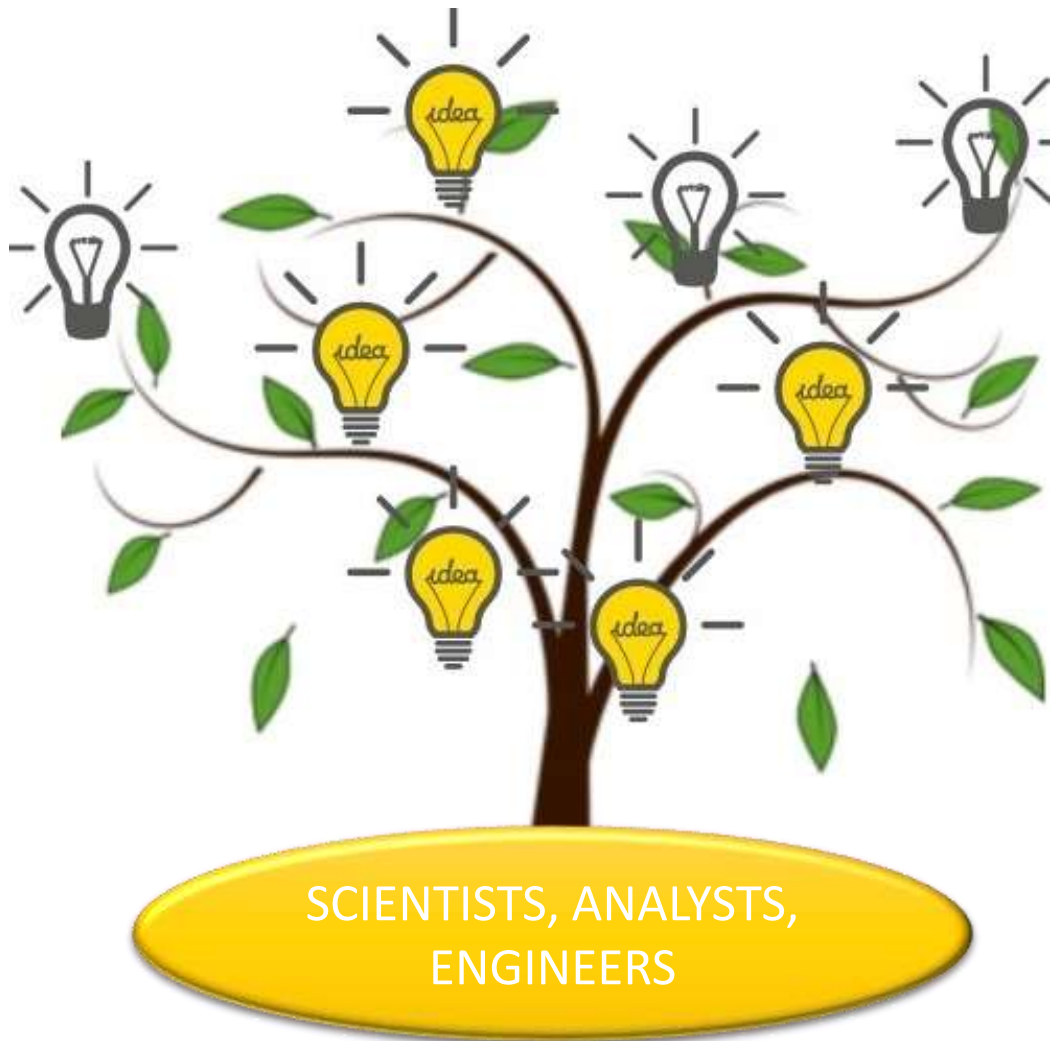
Engage the Right Stakeholders

Workshop 1

Workshop 2

Report

Workshop 1: Identify the Trend Areas



1

PLANTING THE TREE

2

NURTURING THE TREE

3

CROSS-FERTILIZATION

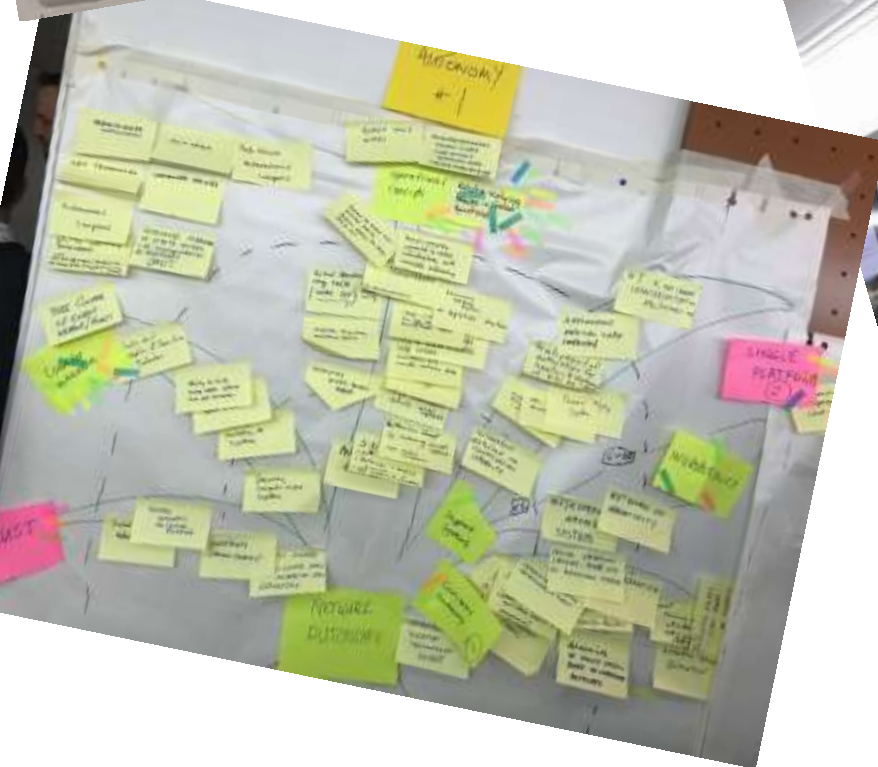
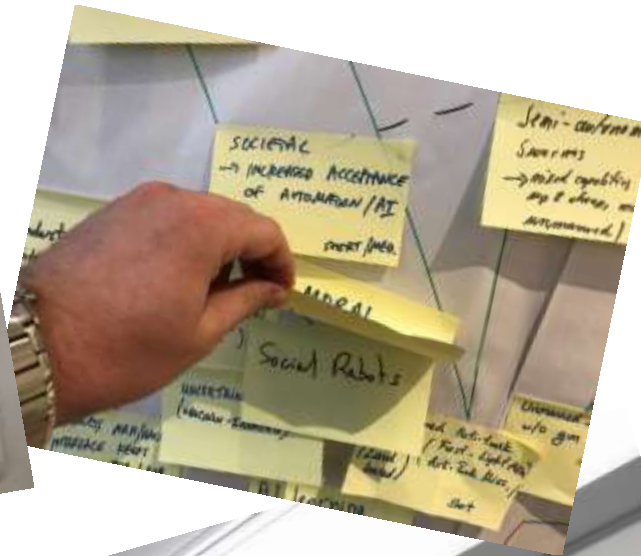
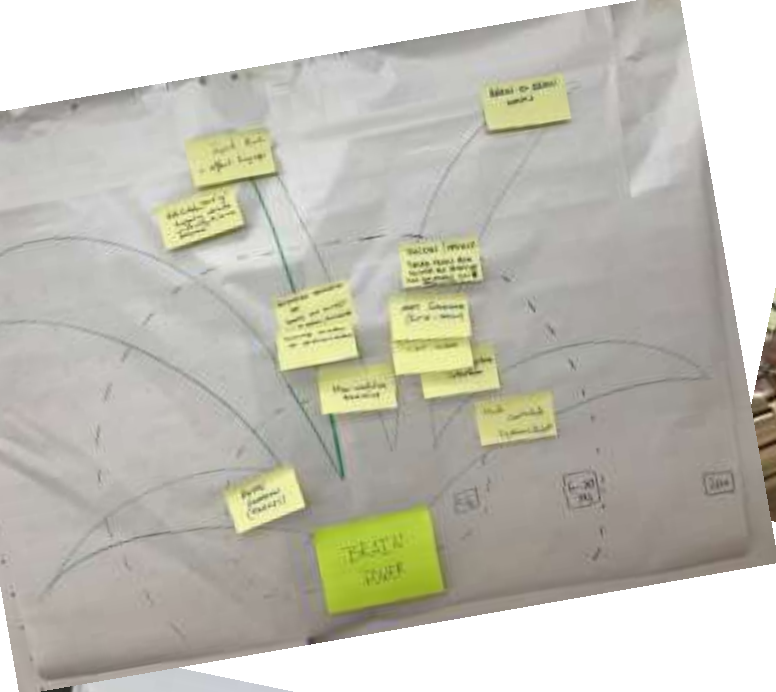
4

PRUNING THE TREE

Workshop 1: Results

TREND AREAS

1. Application of AI
2. Assured Connectivity
3. Autonomous Systems and Countermeasures
4. Computing Superiority
5. *Culture*
6. *Environment*
7. *Ethics*
8. New Weapons
9. Human Capability Enhancement
10. Manufacturing and Materials
11. Sensors
12. Space
13. Energy





Workshop 2: Assess Techs in Operations

Creativity – 30 circles exercise

Interactive Demonstration – Superpower games

Ability Cards – 9 per Trend Area – 90 in Total

2 Different Scenarios – Escalation of Force

Voting – Delphi Method to Prompt Discussion

Workshop 2: Force Generation of Abilities

01. Application of Artificial Intelligence

AI in Cyber Warfare AI-powered malware can infiltrate networks and steal sensitive data. It can also be used to launch large-scale cyberattacks.	AI in Intelligence Gathering AI can analyze vast amounts of data to identify patterns and predict future events. It can also be used to identify potential threats.	AI in Cyber Defense AI can detect and respond to cyber threats in real-time. It can also be used to identify and block malicious activity.
AI in Military Operations AI can be used to analyze battlefield data and provide real-time intelligence. It can also be used to identify and track enemy forces.	AI in Logistics AI can optimize supply chain operations and reduce costs. It can also be used to identify and track potential supply chain disruptions.	AI in Cyber Security AI can detect and respond to cyber threats in real-time. It can also be used to identify and block malicious activity.

02. Assured Connectivity

Secure Communications Ensuring that data is transmitted securely and is not intercepted by unauthorized parties.	Resilient Networks Ensuring that networks are able to withstand and recover from disruptions.	Secure Data Storage Ensuring that data is stored securely and is not accessed by unauthorized parties.
Secure Data Transfer Ensuring that data is transferred securely and is not intercepted by unauthorized parties.	Secure Data Processing Ensuring that data is processed securely and is not accessed by unauthorized parties.	Secure Data Archiving Ensuring that data is archived securely and is not accessed by unauthorized parties.

03. Autonomous Systems & Counter Measures

Autonomous Systems Systems that can operate independently and make decisions on their own.	Counter Measures Measures that can be used to detect and respond to autonomous systems.	Autonomous Counter Measures Counter measures that can be used to detect and respond to autonomous systems.
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04. Computing Superiority

Quantum Computing A type of computing that uses quantum bits (qubits) instead of bits.	Artificial Intelligence A type of computing that simulates human intelligence.	Cloud Computing A type of computing that uses remote servers to store and process data.
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05. Energy

Renewable Energy Energy that is derived from natural resources that are replenished over time.	Energy Storage The process of storing energy for later use.	Energy Conversion The process of converting energy from one form to another.
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06. New Weapons

Directed Energy Weapons Weapons that use focused energy to destroy or damage a target.	High Power Lasers Lasers that can be used to destroy or damage a target.	High Power Microwaves Microwaves that can be used to destroy or damage a target.
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07. Human Capabilities

Human Augmentation The use of technology to enhance human capabilities.	Brain-Computer Interfaces Interfaces that connect the brain to a computer.	Neuroprosthetics Prosthetics that are controlled by the brain.
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06.F Non-Lethal Anti-Personnel Effects

Deter or distract individuals or groups in a specific area at distance by inducing unpleasant physical sensations ranging from slightly uncomfortable to unbearable.

Keywords: Non-lethal, directed energy

06. New Weapons

07.I Genetic Targeting

Design pathogens/antidotes to target individuals with certain genetic characteristics while not affecting individuals with other genetics and to change the genetic combinations present in affected individuals.

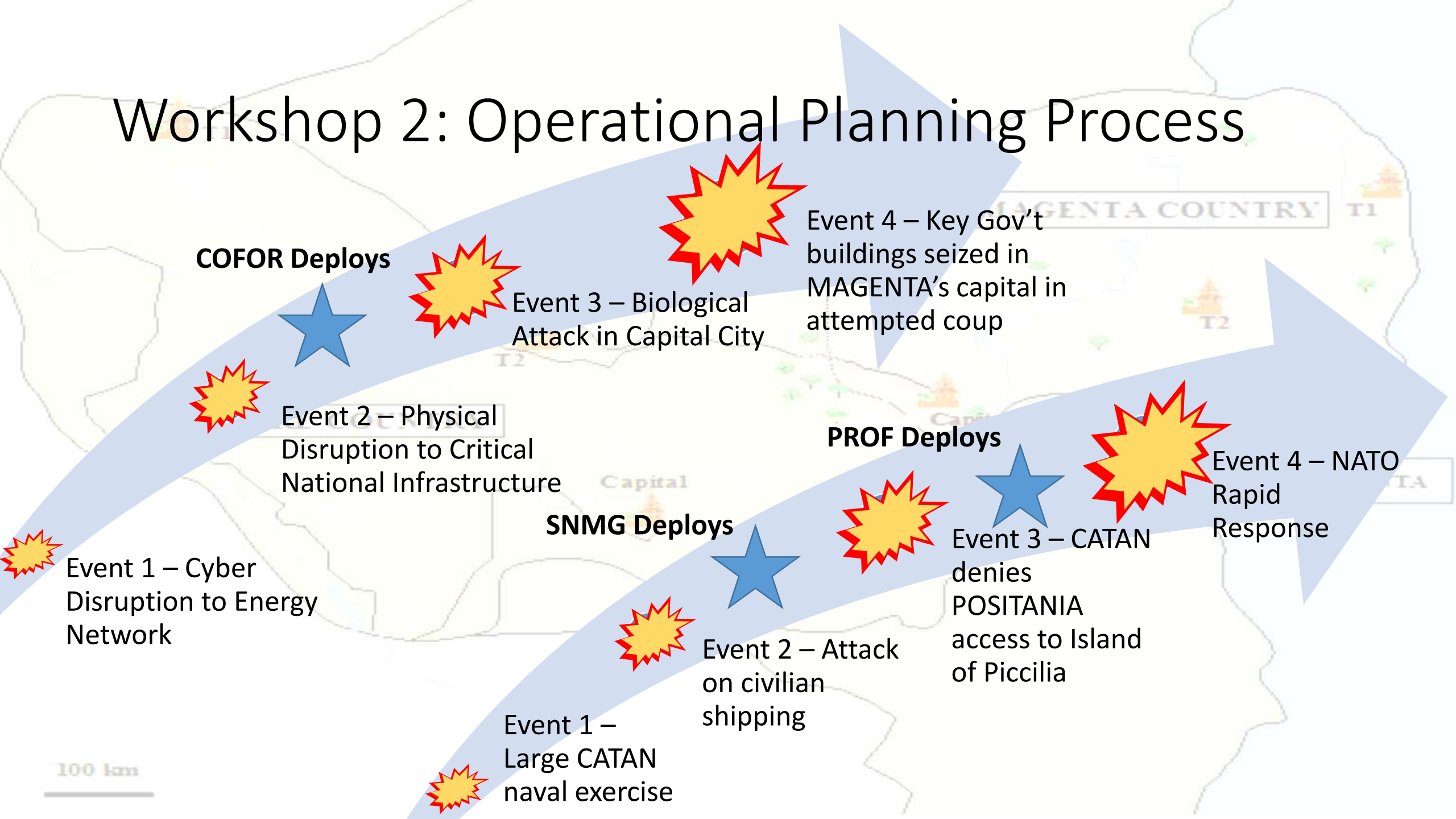
Keywords: Genetic selection, race, genocide

07. Human Capability Enhancement

10. Space

Space Exploration The exploration of outer space.	Space Colonization The establishment of permanent human settlements in space.	Space Resource Utilization The use of resources found in space.
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Workshop 2: Operational Planning Process



Workshop 2: Challenge Discussions & Voting

Each Event followed by Challenge Discussion

- Red Presented their Course of Action
- Blue Presented their Course of Action

Then Voting on how useful abilities were to achieve success

Then Discussion of why behind Voting results

Challenges, Lessons and Impact

Getting the right attendees, esp. military

Timing – leaving time for ideas to unfold

Cost Effectiveness – but not Free

Input from military into design

Building of a community

No single tech wins per se

