Defence Research and Development Canada
Recherche et développement pour la défense Canada

Decision Support for Tactical Planning and Execution Management

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Micheline Bélanger

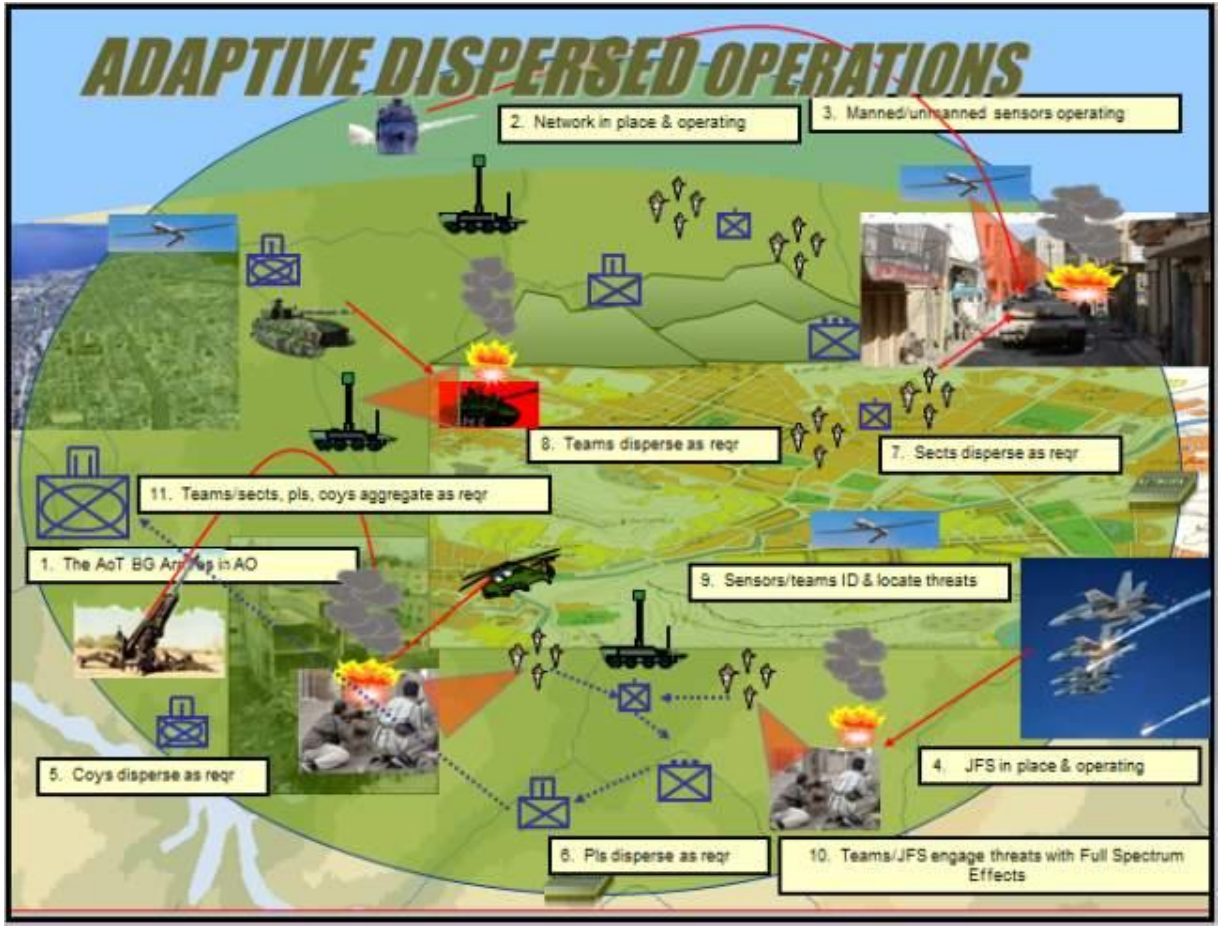
DRDC | RDDC

Canada

Outline

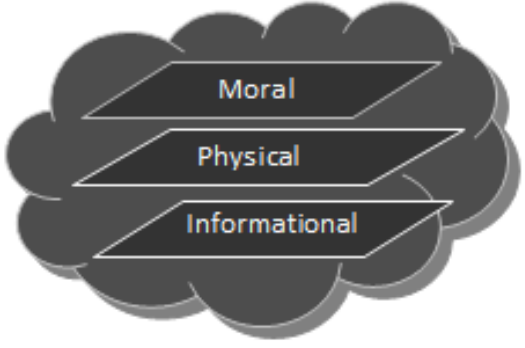
- ADO Context
- Decision Aids Concepts
- Future Work

Adaptive Dispersed Operations



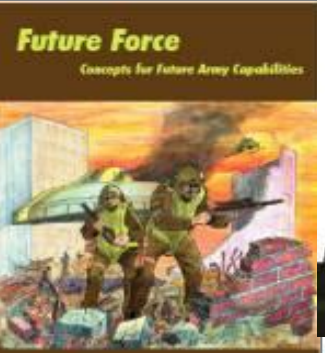
Dispersion in Relation to:

- ***Time***
- ***Space***
- ***Purpose***



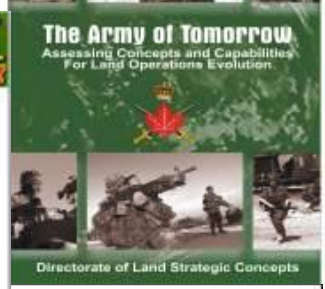
Toward Land Operations 2021

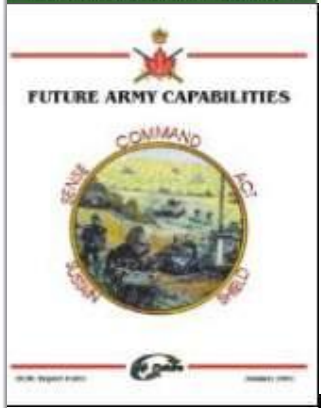
Land Operations 2021
Adaptive Dispersed Operations

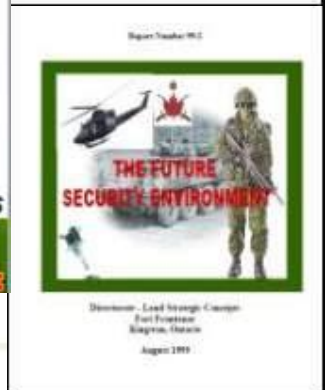

Future Force
Concepts for Future Army Capabilities

One Army, One Team, One Vision
DLCD
ARMY
Operating Concept
Adaptive Dispersed Operations
Functional Concepts
The AoT Soldier
Network Enabled
Integrated Effects
Agility
Sustainment
Command
JIMP
Fusion & KM
Omni-Dimensional Shield
The Network
Human Dimension
Joint Fire Support
Focussed Logistics
Full Spectrum Engagement
Distributed Autonomous Systems
The AoT Battle Group
Enabling Concepts
Adaptive, Networked, and Integrated Forces alternatively Dispersing and Aggregating throughout the Multi-Dimensional Battlespace in order to Find, Fix, and Strike Full Spectrum Threats to Security and Stability
Manoeuvre Warfare Theory
positional, psychological, temporal
Effects Based Thinking
Synergistic application of effects
Une Armée, une équipe, une vision
DCDFT
ARMÉE

"Towards Adaptive Dispersed Operations"


The Army of Tomorrow
Assessing Concepts and Capabilities For Land Operations Evolution
Directorate of Land Strategic Concepts


FUTURE ARMY CAPABILITIES


THE FUTURE SECURITY ENVIRONMENT

Planning Problems

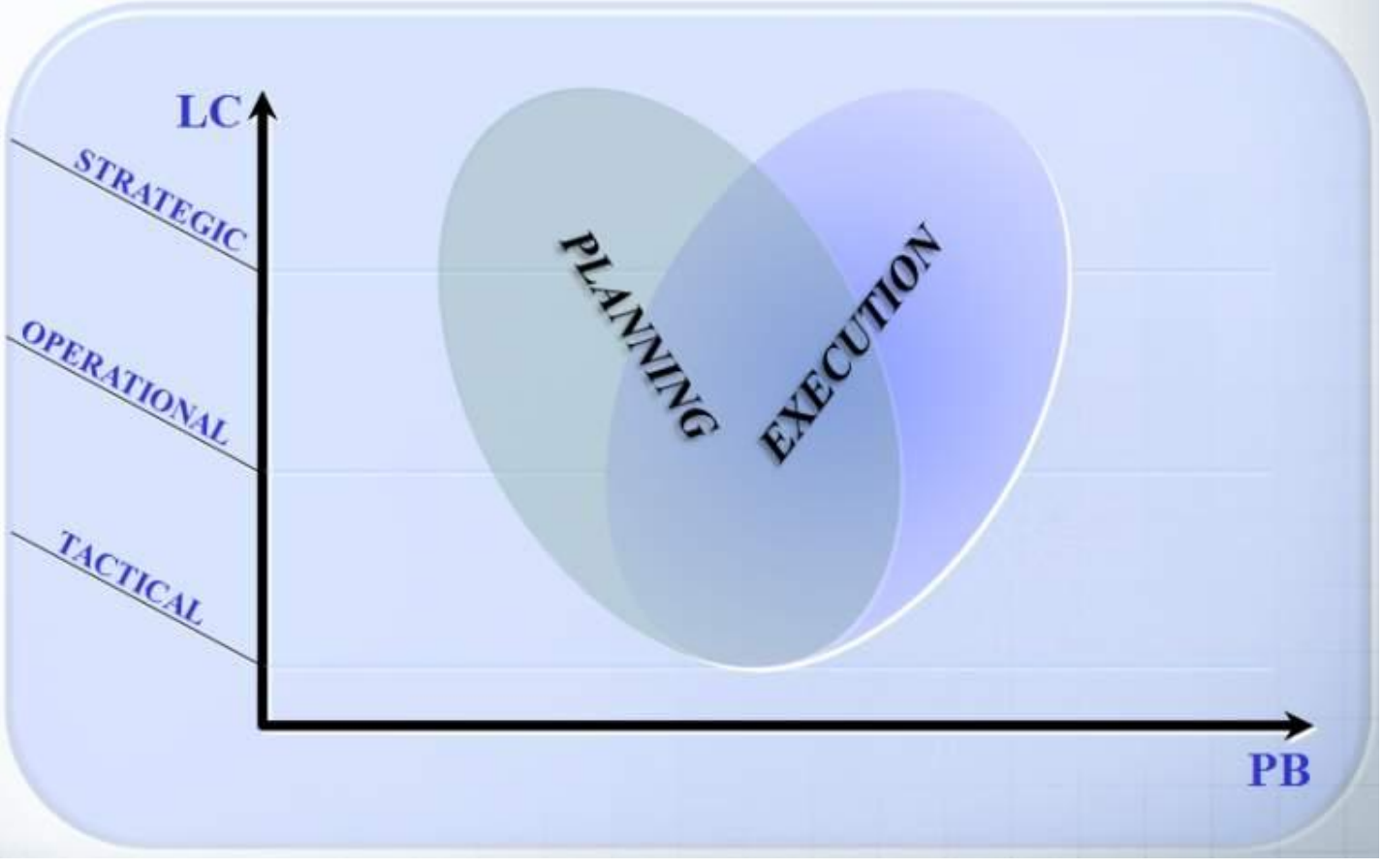
Context of Operations:

- Highly complex environments
- Time-constrained and uncertain environments
- Highly dynamic (high-tempo) operational situations
- Multi-Level
- Multi-Player
- Multi-Objectives
- Multi-Dimensional

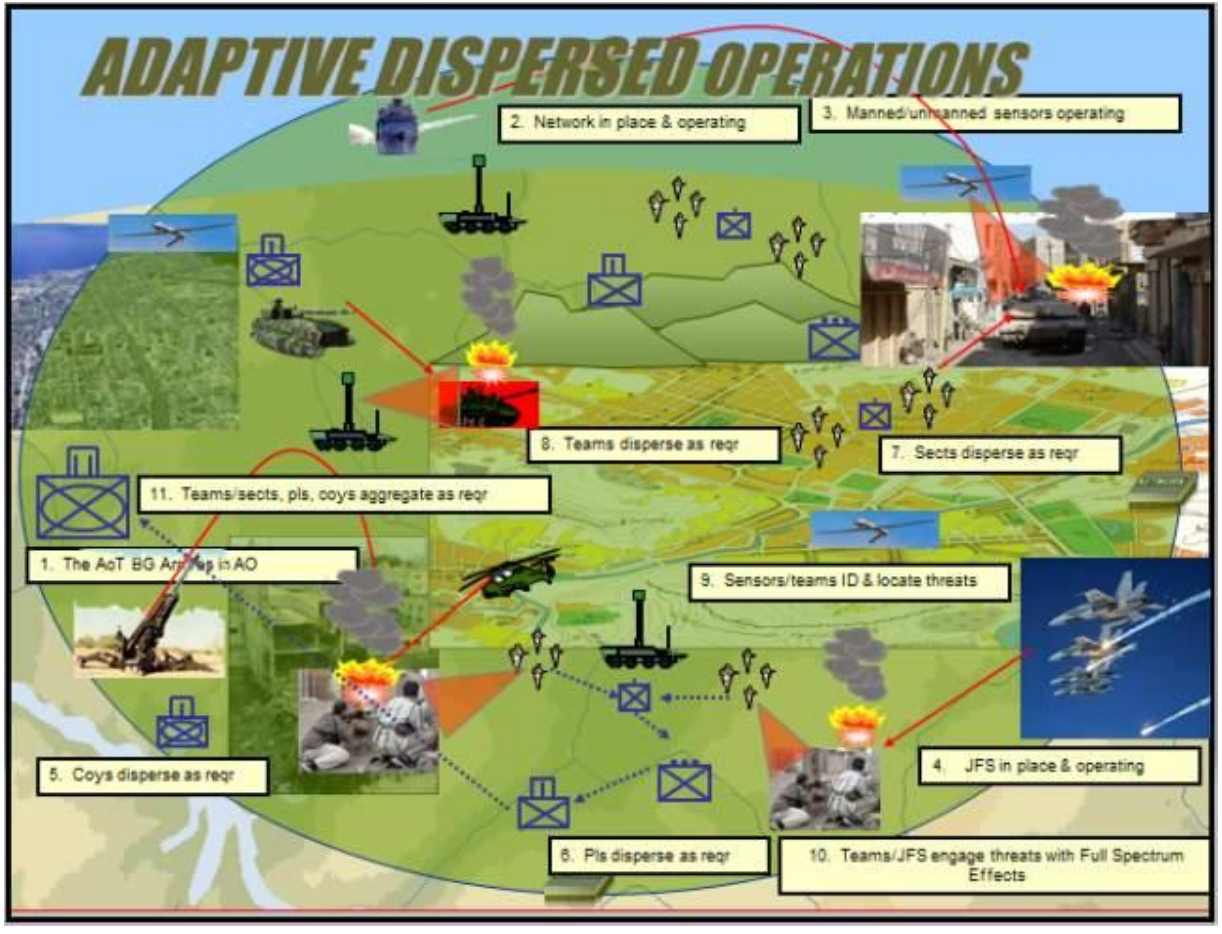
Planning Approach for:

- Highly adaptable tactical forces
- Dispersed: Time, Space, Purpose
- Create & exploit opportunities
- Increase the tempo of ops
- Overwhelm enemy's understanding of the battle space

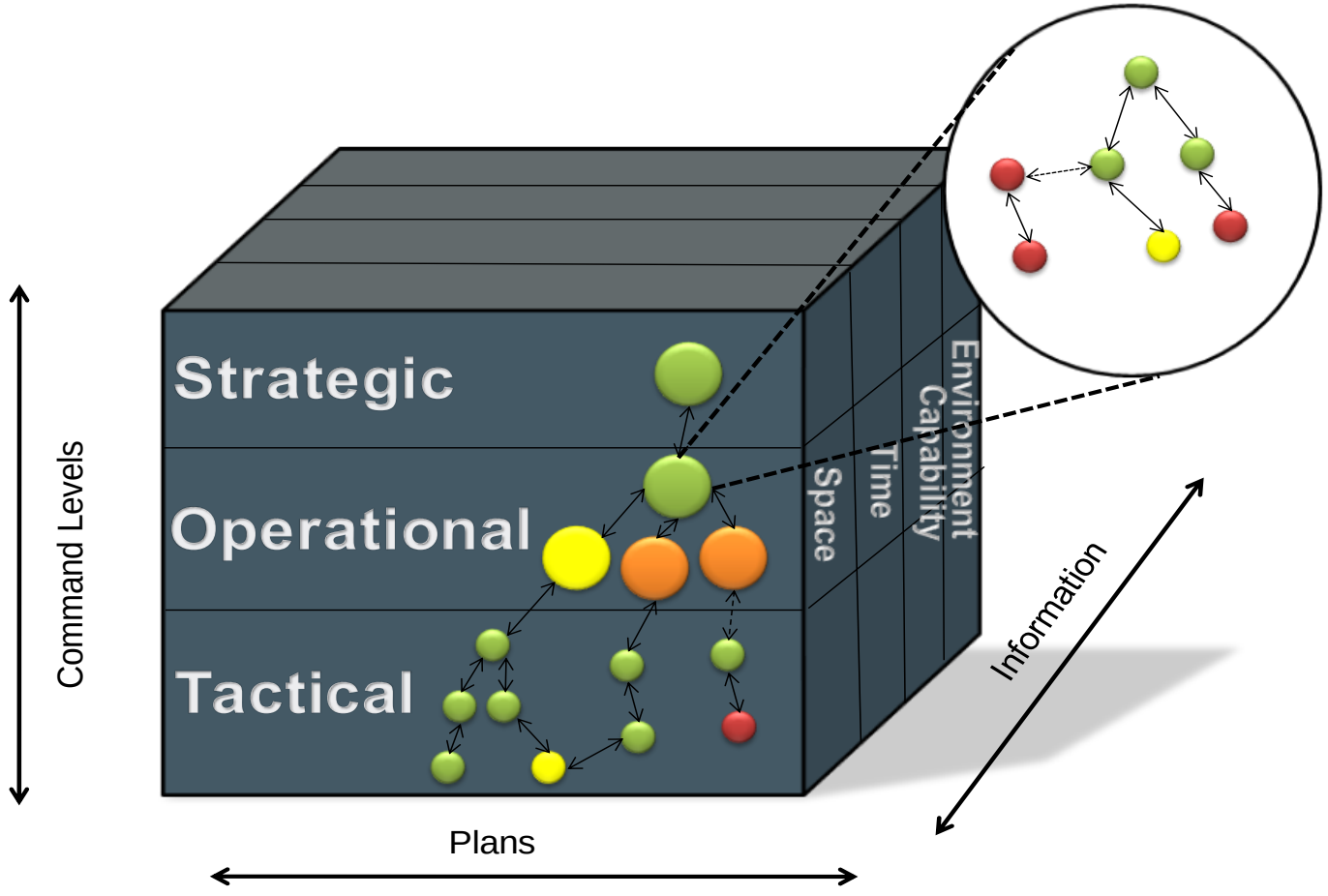
Problem domains across levels of command



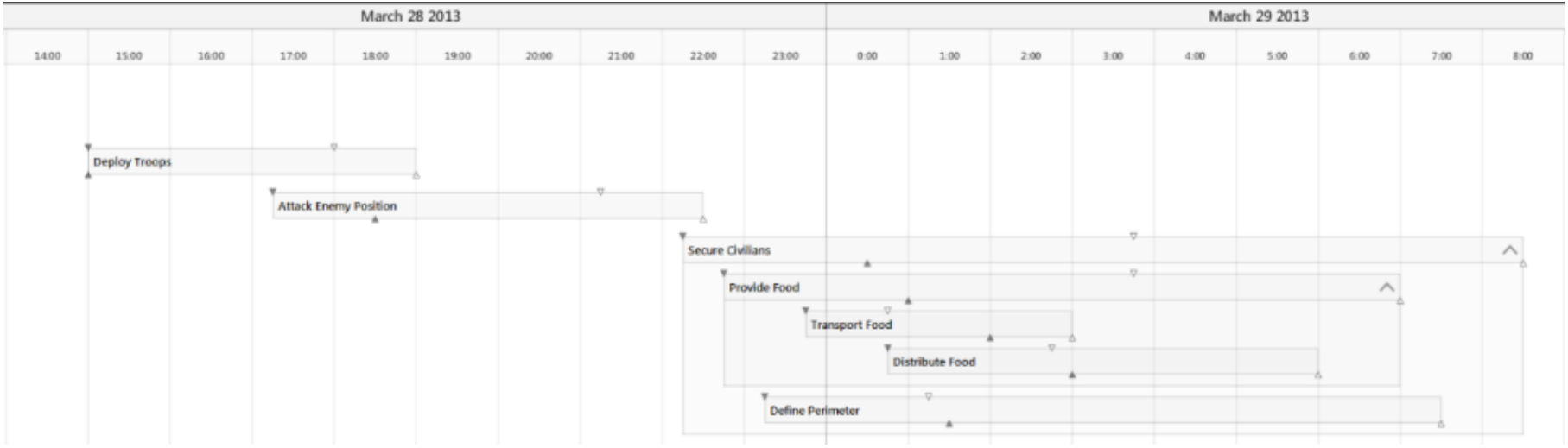
Decentralized context



Information Dimensions for Planning and Monitoring



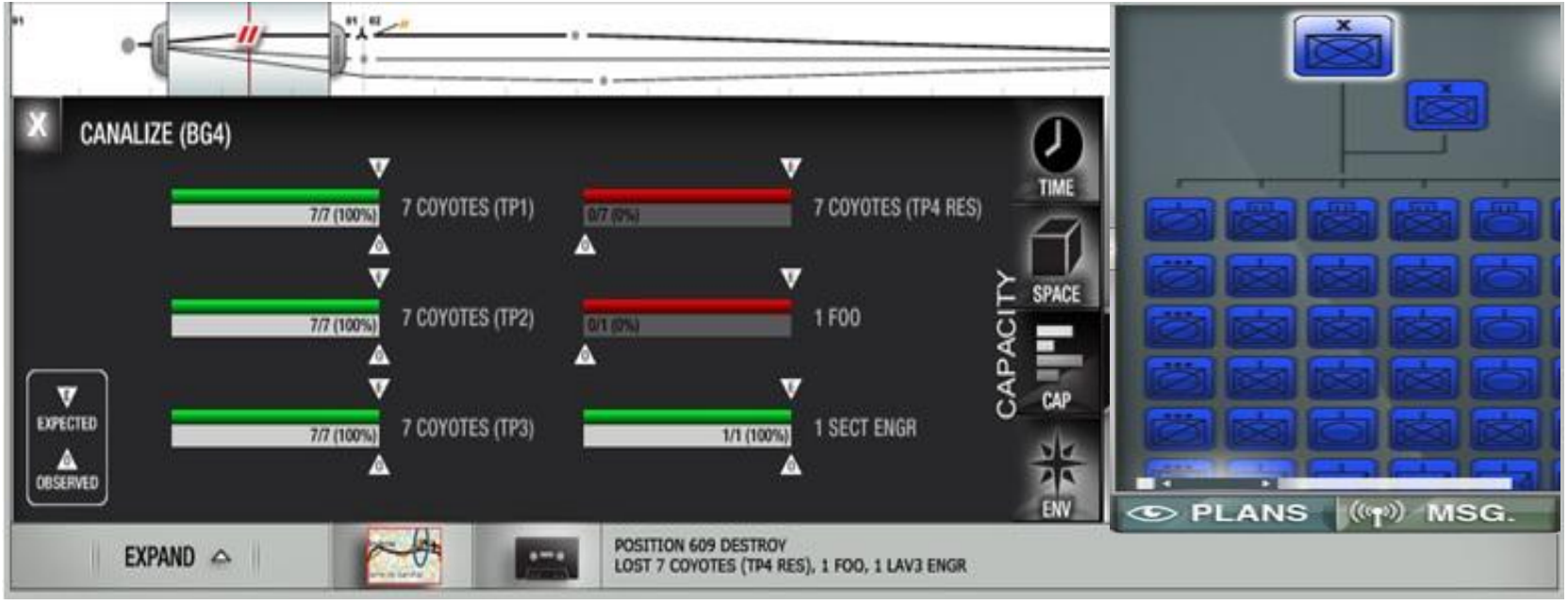
Time


March 28 2013
March 29 2013
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
Deploy Troops
Attack Enemy Position
Secure Civilians
Provide Food
Transport Food
Distribute Food
Define Perimeter

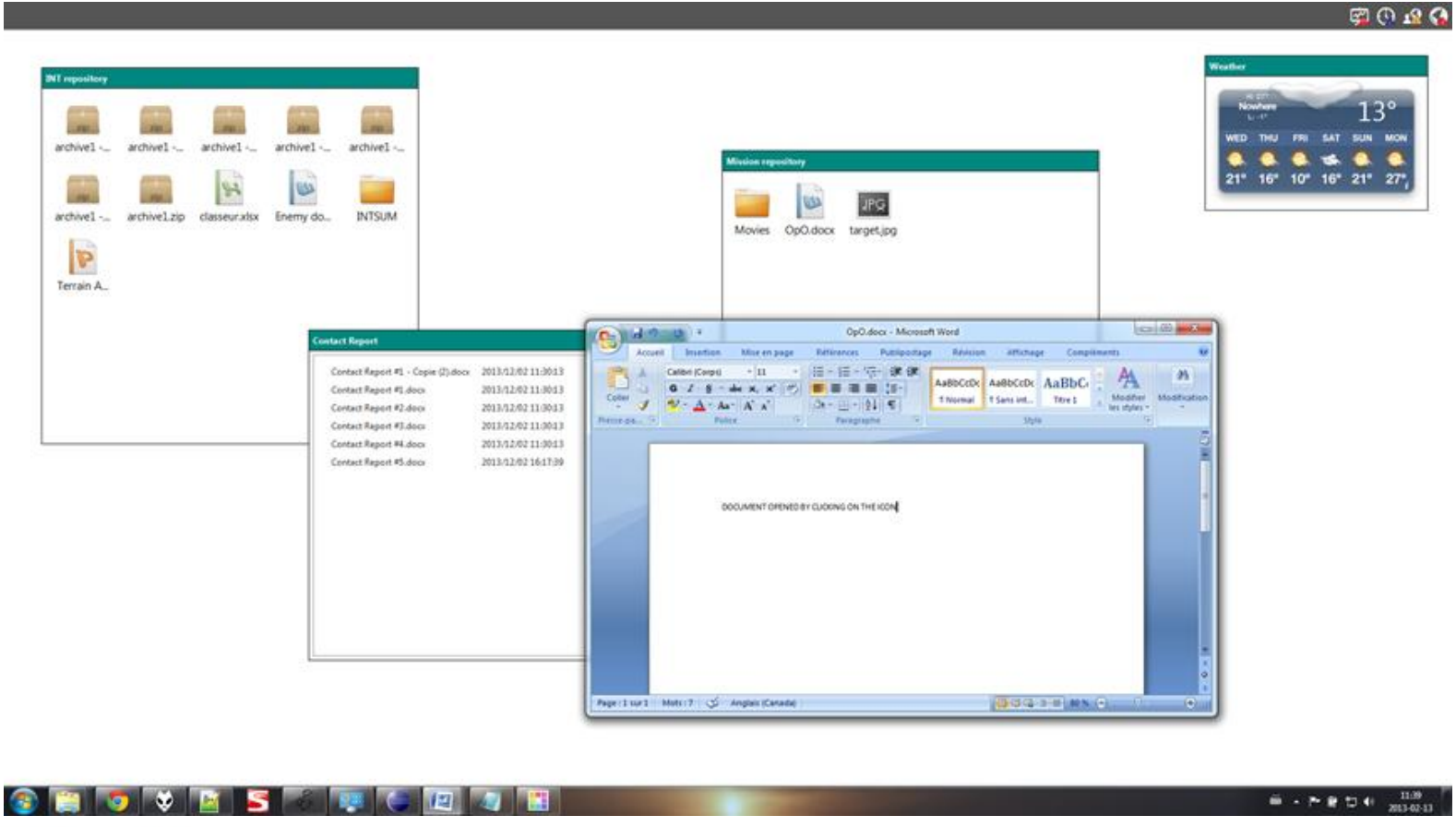
Space

Dashboard
Temporal
Spatial
Capability
Environment
List
To Do
CBT
NORTH AMERICA
Resource Test 1
North Atlantic Ocean
Add
Delete
Save
Filter

Capability


CANALIZE (BG4)
7 COYOTES (TP1)
7/7 (100%)
7 COYOTES (TP4 RES)
0/7 (0%)
7 COYOTES (TP2)
7/7 (100%)
1 FOO
0/1 (0%)
7 COYOTES (TP3)
7/7 (100%)
1 SECT ENGR
1/1 (100%)
EXPECTED
OBSERVED
CAPACITY
TIME
SPACE
CAP
ENV
EXPAND
POSITION 609 DESTROY
LOST 7 COYOTES (TP4 RES), 1 FOO, 1 LAV3 ENGR
PLANS
MSG.

Environment



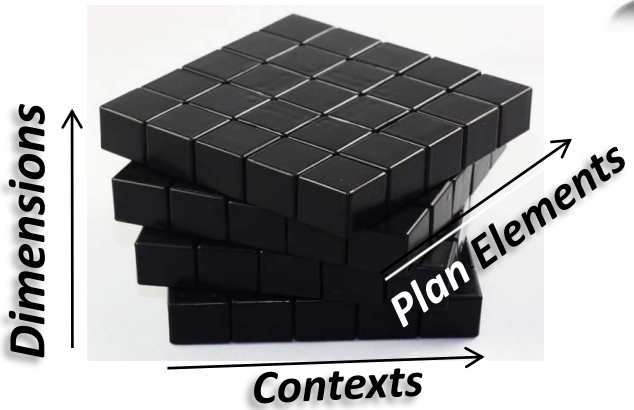
Multiple-Representation Framework

TPEM Elements

- Tasks
- Resources
- Plans
- Events
- .
- .
- .

Contexts

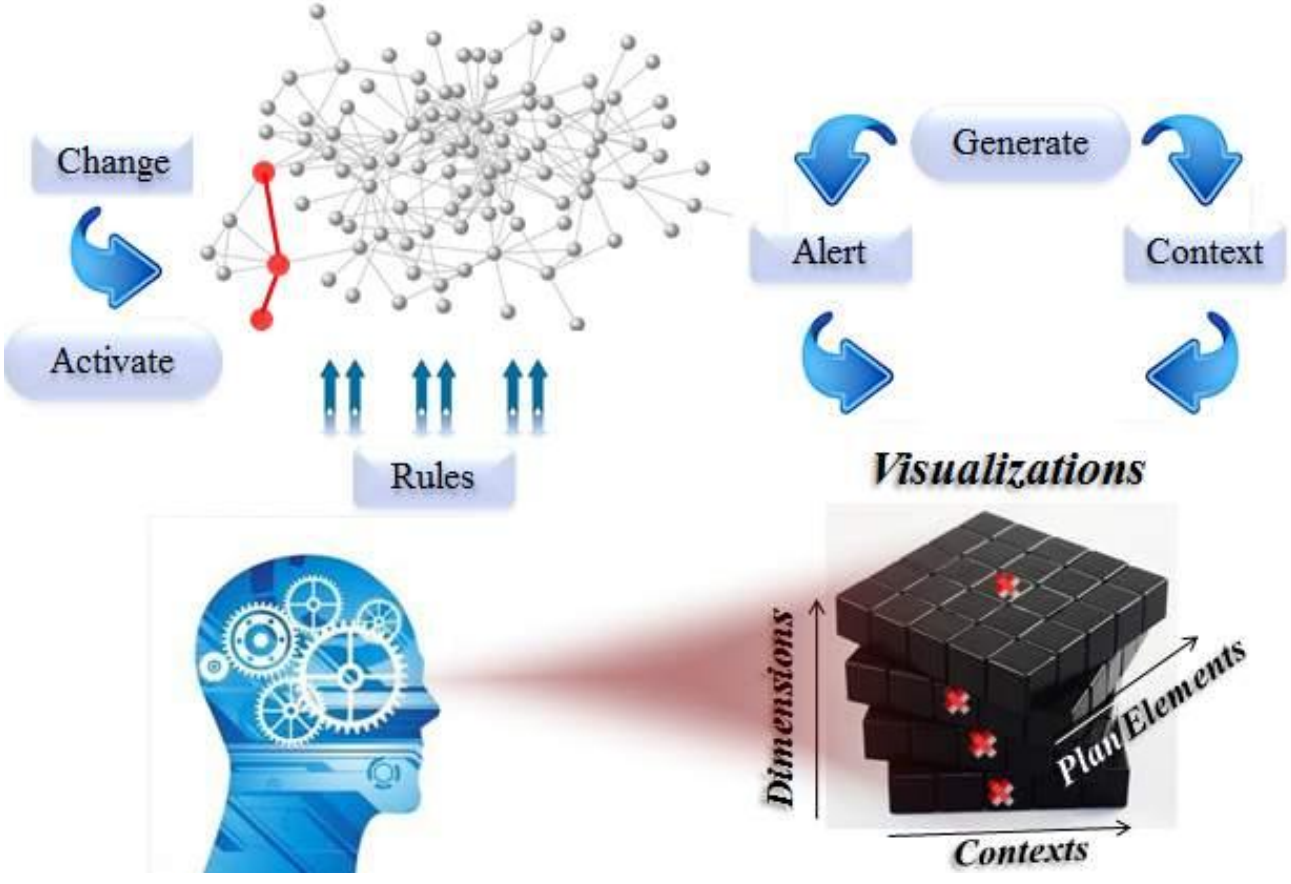
Visualizations



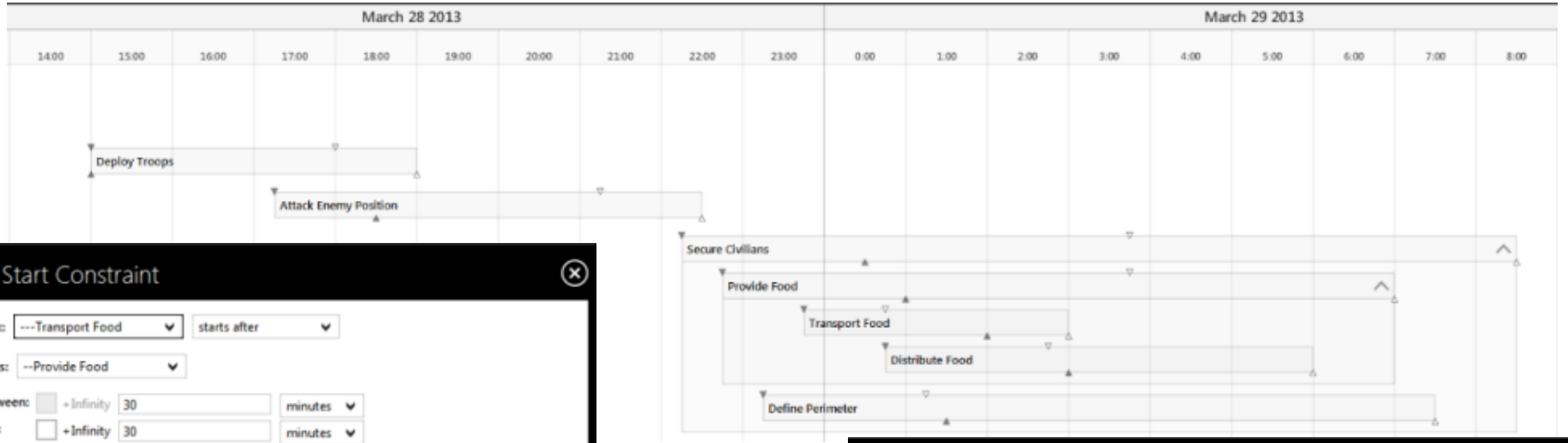
Concept

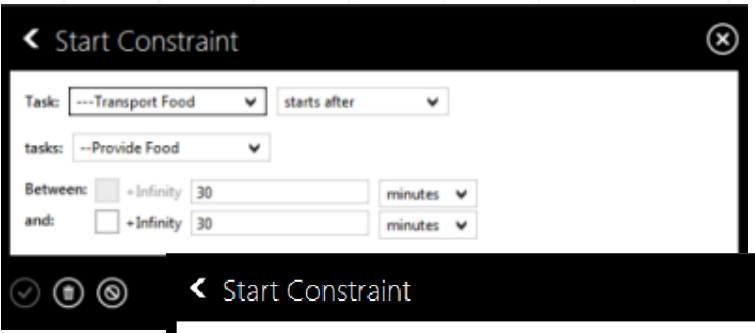
- Each plan element has a default context to be visualized along each dimension (normal conditions)

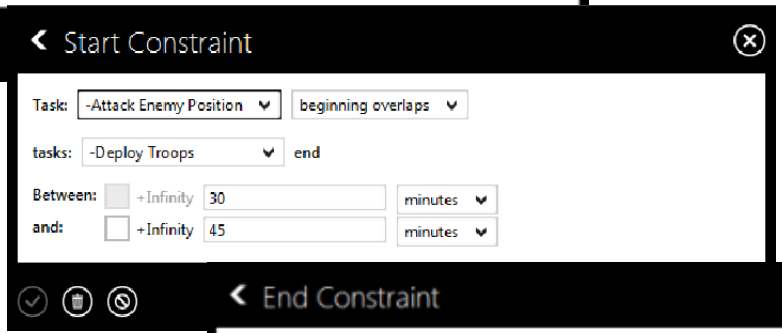
Impact Analysis and Alert Mechanisms

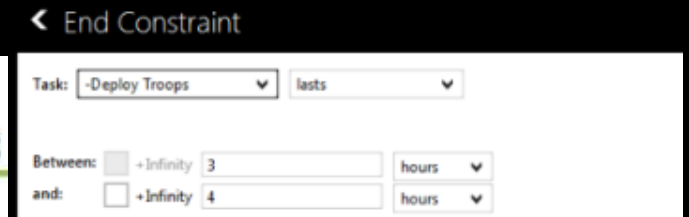


Robust Scheduling









Time Constraints

- 'Deploy Troops' must last between 3 hours and 4 hours.
- 'Deploy Troops' must start 0 seconds after the beginning of 'Freedom St-Henri'.
- 'Attack Enemy Position' must last 4 hours.
- 'Attack Enemy Position' must start 45 minutes before and 30 minutes before the end of 'Deploy T
- 'Distribute Food' must start 0 seconds after the end of 'Transport Food'.
- 'Transport Food' must last 1 hours.
- 'Secure Civilians' must last between 3 hours and 4 hours.

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Conclusion

- Flexible representation of the information depending on the context
- Representation dimensions:
  - Time
  - Space
  - Capability
  - Environment
- Robust planning
  - Time
  - Space
  - Capability
- Alerting mechanism to keep the user aware of different existing linkages between different P&E elements

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SCIENCE, TECHNOLOGIE ET SAVOIR
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