

Ministry of Defence

Reducing operational planning cycle time using BPR

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Outline

Goal:

- To report on-going research into reducing operational planning cycle time using Business Process Re-engineering (BPR) & Cycle Time Reduction (CTR)

Overview:

- Introduction & motivation
- BPR & CTR
- RNLA's Decision Making Process (DMP)
- Applying CTR to DMP
- Conclusions & further research

Introduction

Netherlands Defence Academy (NLDA):

- Initial officer education:
 - All 4 Dutch military services
 - Military forming & academic education (Ba. Level)
- Research

My appointment:

- Professor, Operational ICT & Communications
- Management:
 - Team of 7.5 fte lecturers
- Education:
 - Bachelors-level course for signals & CIS officer cadets
- Research:
 - 5 projects, 4 PhD candidates
 - This paper: “Beyond SA: closing OODA loop” project

Motivation (1)

Traditional military planning processes:

- Achieve synergy by centralization

- Maximise benefits from:

Problem decomposition

De-confliction

Specialization

Alberts & Hayes, 2007

- Based on rational decision making

Raiffa, 1968

- Not agile enough to meet today's challenges:

Globalisation & coalitions

Asymmetric threats

Increasing pace of change

Information age

Alberts & Hayes, 2007

Motivation (2)

What is needed:

- Speed up planning to match OODA loop:
At least one order of magnitude
Experience shows feasible
- Enables *planned* response to situation:
Rather than reaction (i.e. enemy has initiative)
Speed-up increases agility & resilience

Approach:

- **Business Process Re-engineering (BPR):**
Cycle Time Reduction (CTR) offshoot
- Concurrent Engineering (CE)

BPR (1)

BPR:

- Analysis & design of workflows / processes within & between organization to improve performance

Davenport & Short, 1990 (adapted)

Business process:

- Collection of activities that takes inputs & creates outputs of value to customer
- Characteristics:

Hammer & Champy, 1993

Activities ordered in time & space
Embedded in organizational structure
Clearly defined inputs & outputs
Adds value for customer

Davenport, 1993

BPR (2)

Performance measures in BPR:

Harrington, 1991

- Efficiency
- Effectiveness
- Quality
- Cost
- Flow
- **Cycle time** i.e. time to transform inputs to outputs

BPR perspectives:

Valiris & Glykas, 1999

- Management accounting perspective:
Focus on improving performance measures
- Information systems perspective:
Focus on domain objects, relationships, & behaviour
- Organizational theoretical perspective:
Focus on people, accountabilities, & roles in domain

BPR (3)

Role of ICT:

Chan, 2000

- **Enabler:**
Accelerating process steps (most attention in literature)
- **Facilitator:**
Makes customer's work easier; ICT in product itself
- **Initiator:**
Acts as agent of change, e.g. enable new processes

Re-engineering process:

1. Establish business vision & objectives
2. Identify core business processes
3. Model & analyse business environment
4. Streamline business processes to match objectives
5. Continuous control & improvement of steps 1-4

Valiris & Glykas, 1999

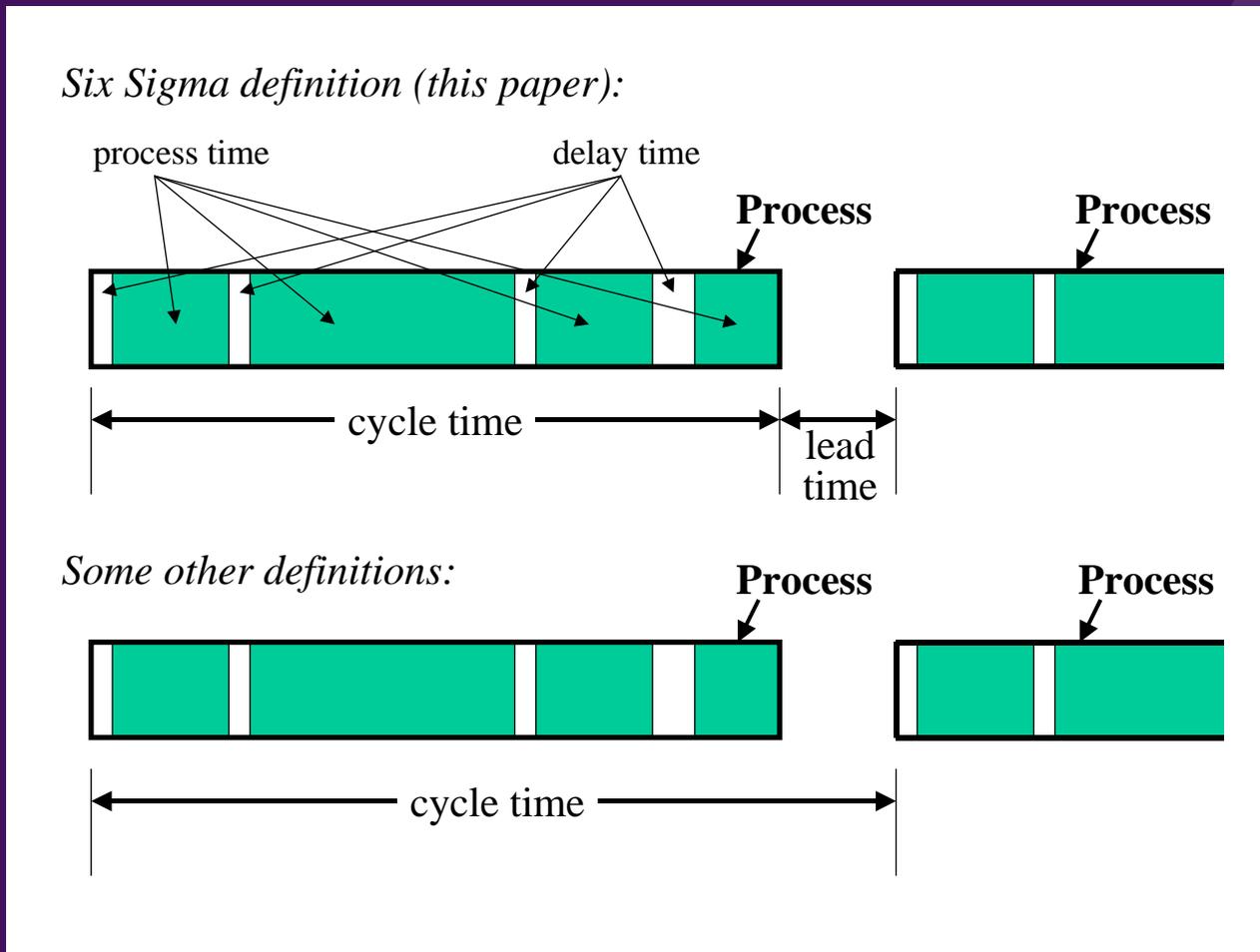
CTR (1)

Cycle Time Reduction (CTR):

- Offshoot of BPR literature
- Aim:
 - To reduce cycle time to improve performance
 - Not just “blinding speed”
- Key concepts:
 - Cycle time, process time, delay time, lead time
 - Cyclical thinking approach
 - Concurrency

CTR (2)

Cycle time, process time, delay time, & lead time:



CTR (3)

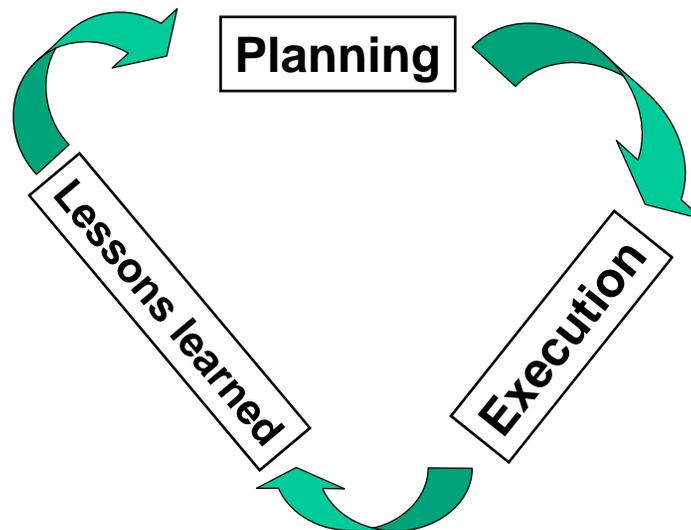
Cyclical thinking approach:

Wetherbe, 1995

Linear:

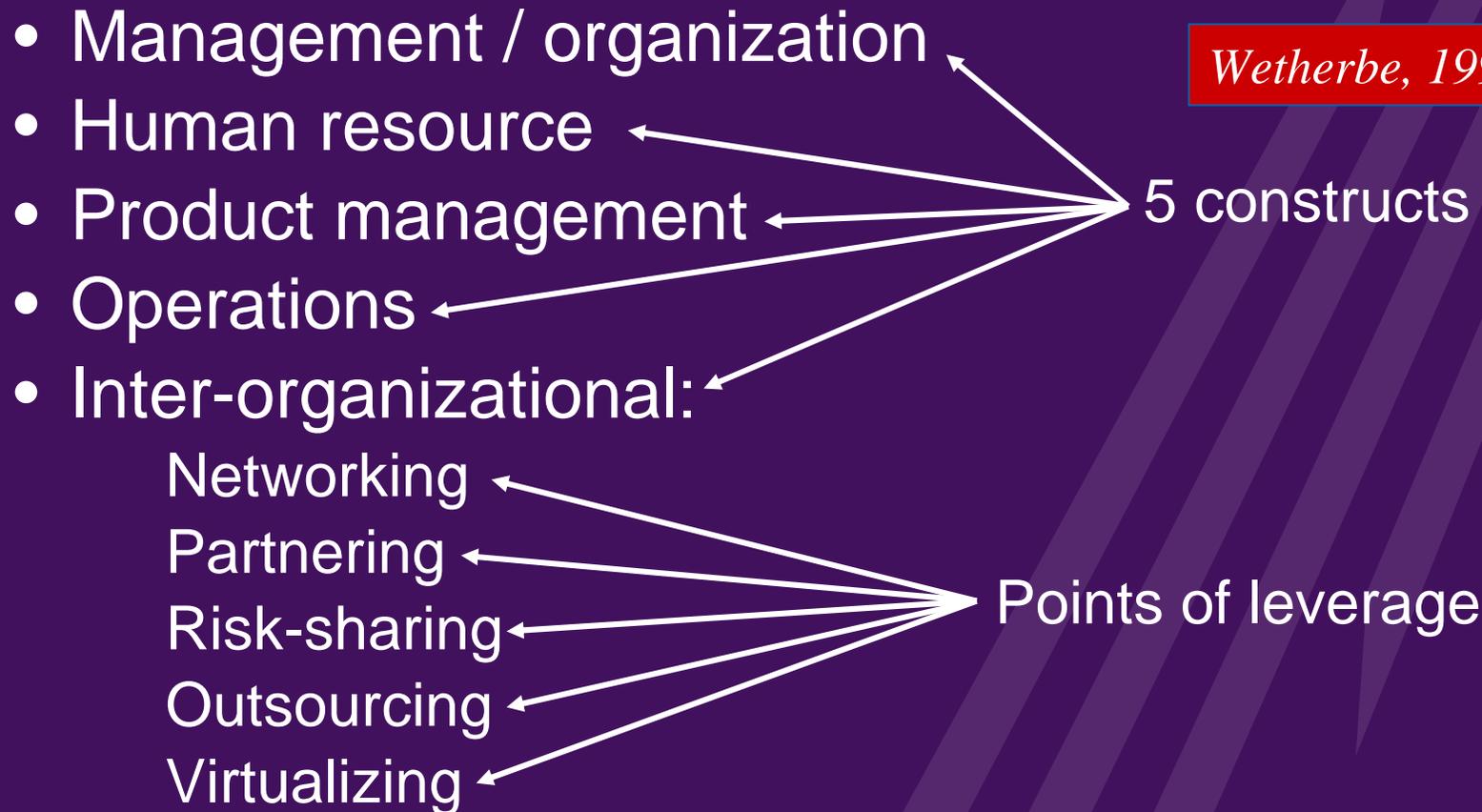


Cyclic:



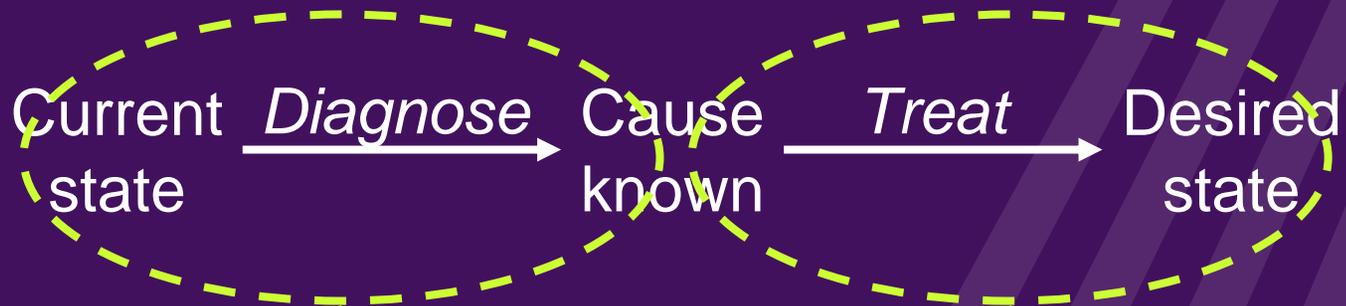
CTR (4)

CTR constructs & points of leverage:



CTR (5)

Improvement process using constructs & points of leverage:



*Constructs & points of leverage
can be used as checklist*

*No taxonomy of treatments
in literature*

CTR (6)

Ways of reducing cycle time:

- Incremental: ←———— *ICT as enabler / facilitator*

Speed-up:

- Assigning process to faster resources

Time compression:

- Removing activities with no added value

Simplification:

- Replacing set of activities by simpler set

Overlapping:

- Parallel: partial overlap
- Concurrent: wholly overlap

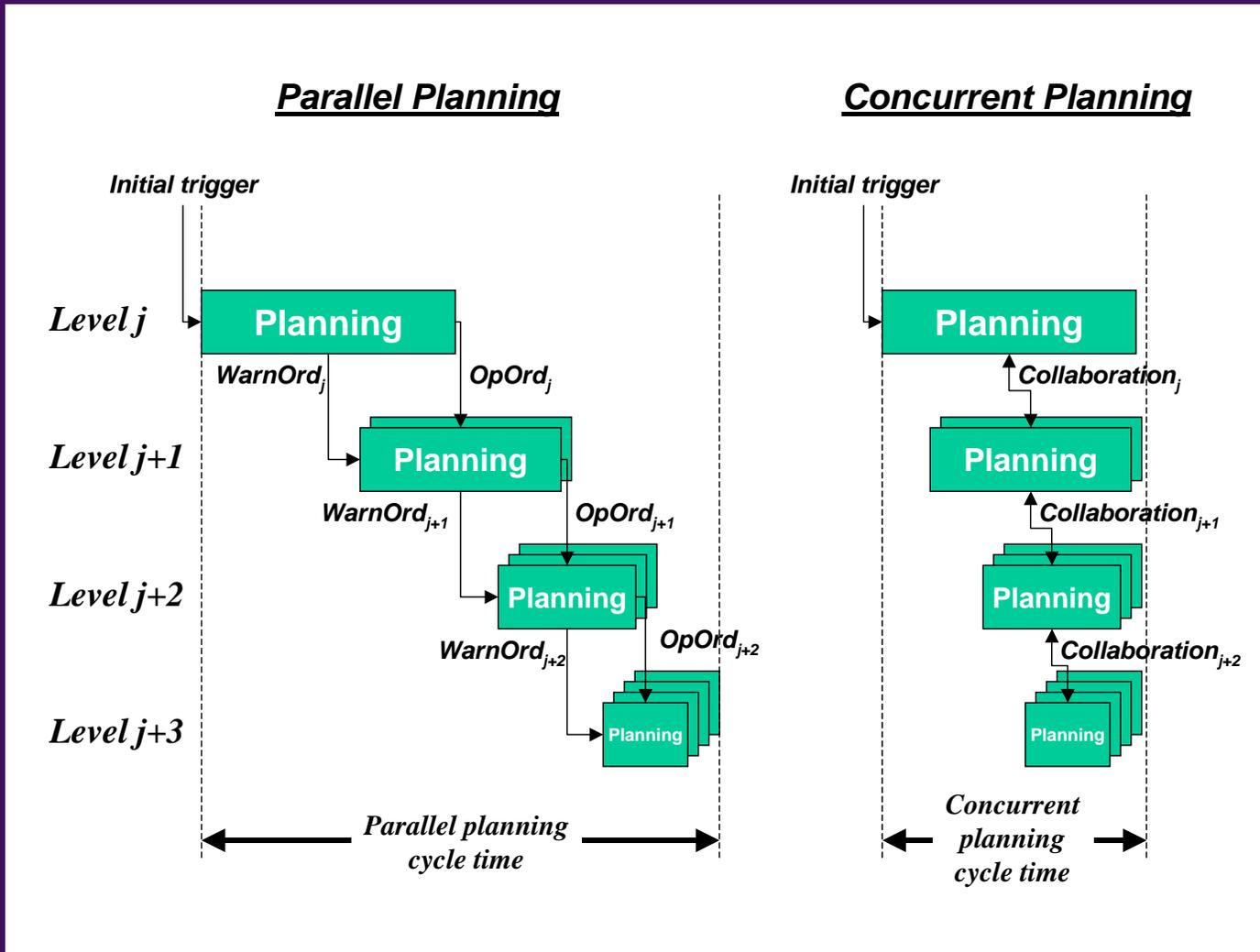
- Radical: ←———— *ICT as initiator*

Eliminating process

Migrating process to another organizational entity

Changing business model

CTR (7)



DMP (1)

Profusion of planning processes:

- Every nation & service has its own
- NATO has: OPP, EBAO, civ-mil ... (more?)

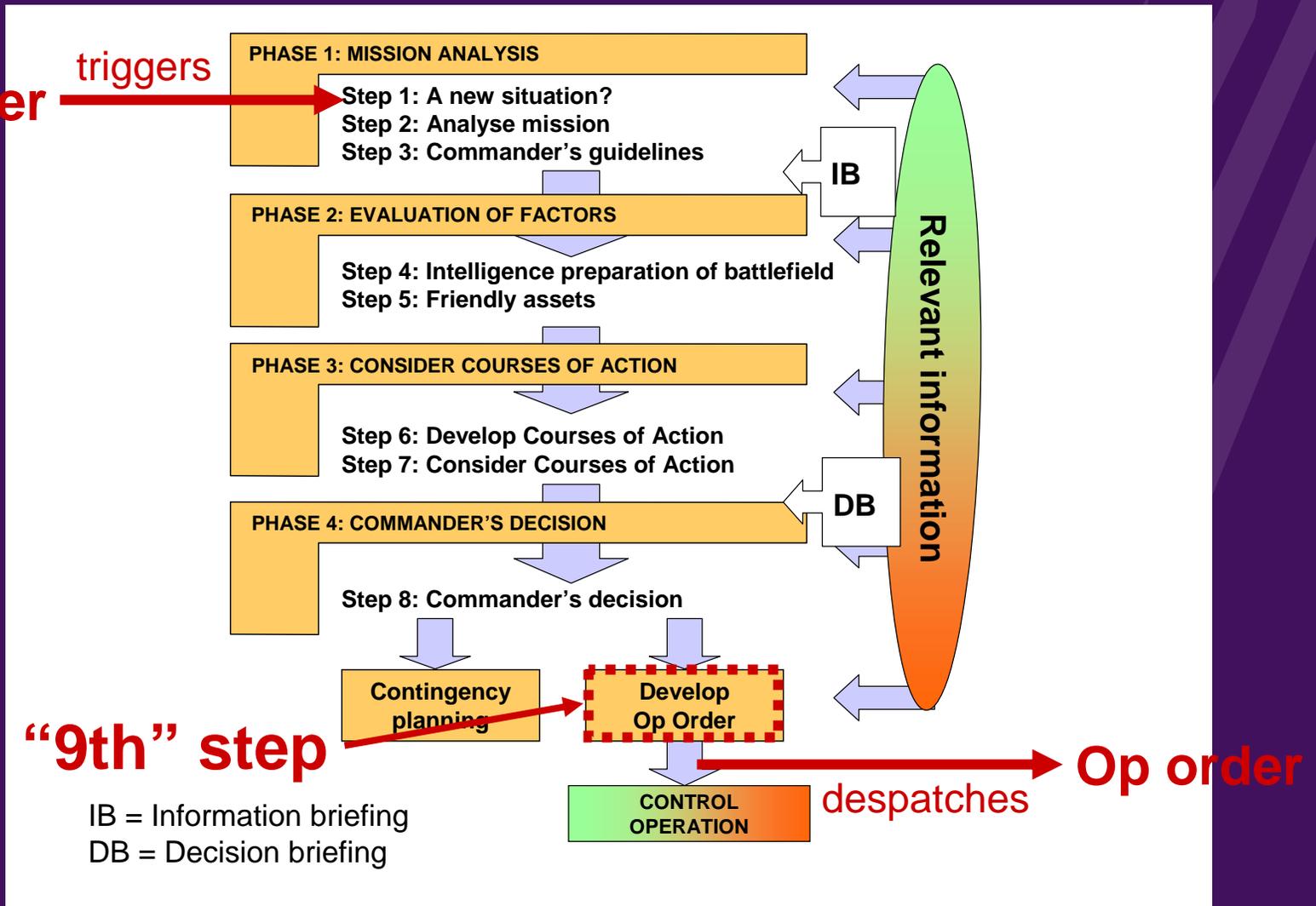
Anyone know of comparative survey?

Baseline for analysis:

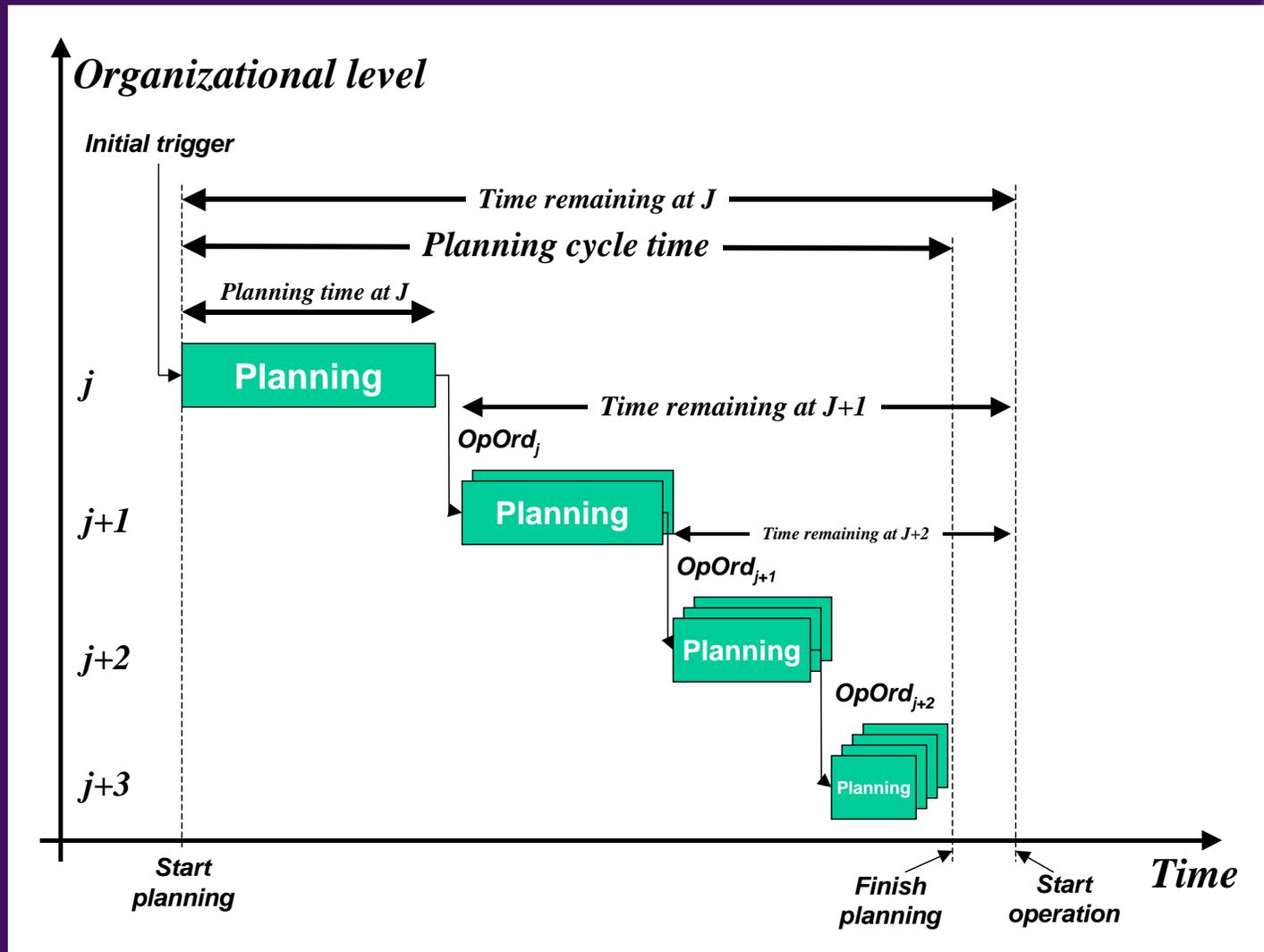
- RNLA's Decision Making Process (DMP):
 - In current operational use
 - Well documented (Dutch & **English**)
 - NATO-derived
- Three elements:
 - Leadership = influencing others
 - Decision making = **generating plans**
 - Control = executing those plans

DMP (2)

Op order

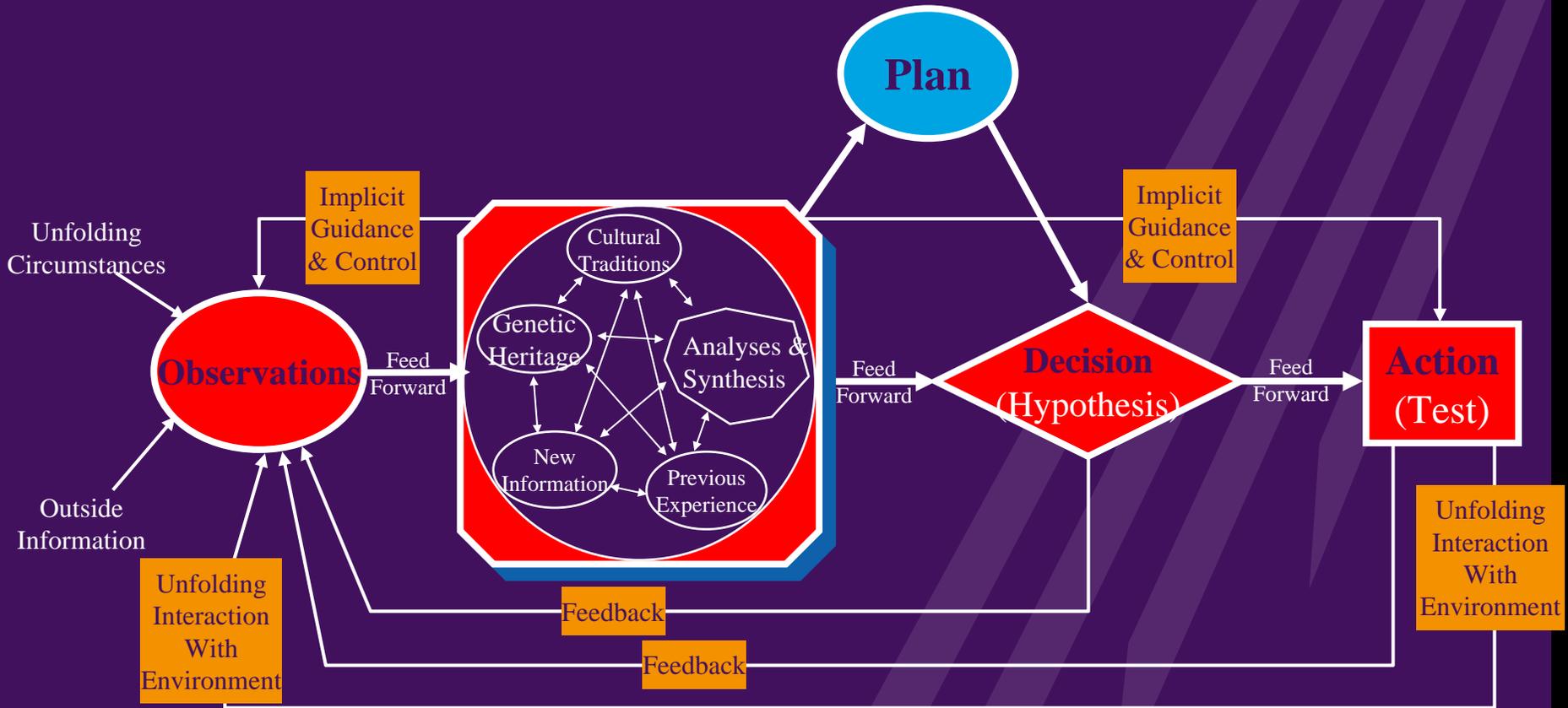


DMP (3)



Applying CTR to DMP (1)

Vision: To reduce planning cycle time to integrate planning into OODA loop



Applying CTR to DMP (2)

Streamlining (1 of 3):

- Incremental:

Already achieved:

- Using ICT in enabler role to reduce sub-processes
- Warning orders enable partial overlapping

Under discussion:

- Using simulation to automate “war-gaming” (Step 7)
- Using IP&S to automate COA construction (Step 6)
- Removing levels in organizational hierarchy

Applying CTR to DMP (3)

Streamlining (2 of 3):

- Radical:

Eliminate need to write Operation Order:

- Maintain Operation Order as data-structure:
= GIS overlays & associated data
- Distribute Operation Order in data form (eg XML):
 - » Eliminates “Step 9” using anytime generation
 - » Eliminates need to “parse” Operation Order

Deconfliction by peer-to-peer self-synchronisation

Remove key constraints:

- Hierarchical organization
- Planning as top-down linear decomposition & analytic DM
- Employ ICT in initiator role

Re-partition IPB (Step 4):

- Battlefield area evaluation (4.1) as part of Step 2

Remove organizational separation between C2/C4I & ISTAR

Applying CTR to DMP (4)

Streamlining (3 of 3):

- Applying 5 constructs & 46 points of leverage:

Already applied:

- *Operations*: automating, anticipatory scheduling, standardizing
- *Product management*: time-boxing

NEC covers additional points of leverage:

- *Management / organization*: transforming
- *Human resource*: empowering
- *Product management*: prototyping
- *Operations*: informing
- *Inter-organizational*: networking, partnering, risk-sharing

Points of leverage addressed earlier in this paper:

- *Management / organization*: front-ending, flattening
- *Operations*: challenging, eliminating, integrating, paralleling, simplifying

Treatments suggested by points of leverage:

- *Product management*: platforming, deriving, re-using
- *Inter-organizational*: outsourcing, virtualizing

Conclusions & further research (1)

Contributions:

- Applying BPR & CTR constructs to reducing cycle time in military operational planning:
Emphasis on radical measures
- Candidate taxonomy of CTR treatments

Limitations:

- Just one, pre-NEC planning process analysed
- No concept development & experimentation

Conclusions & further research (2)

Further research needed:

- Survey & compare multiple planning processes
- CDE into: *RTO SCI-187 paper & 2nd Masters*
 - Operation Order as data-structure
 - Tools for deconfliction by self-synchronisation
 - Prototyping planning system using Concurrent Engineering
 - Applying modelling, simulation, & gaming to Step 7
 - Applying intelligent planning & scheduling to Step 6
- Further study:
 - Radical reduction by removing key constraints
 - Repartitioning planning process
 - Removing organizational separation C2 & ISTAR
 - Explore maintaining repository of COA segments
 - Outsourcing & virtualizing C2 process

Any questions?