Expt on Parallel Planning
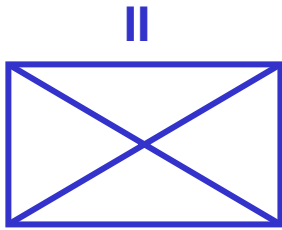
LTC Mervyn Cheah
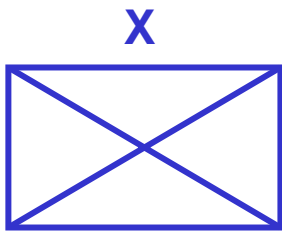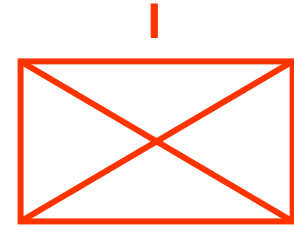
Gwenda Fong

Hierarchical Planning
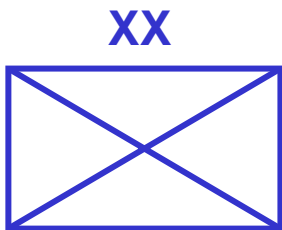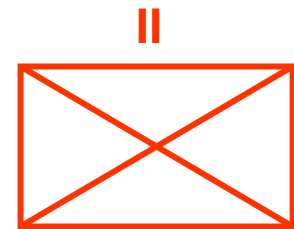
- Does anybody know why we have it?

II   Against   ➝   **I**

X   Against   ➝   **II**

XX   Against   ➝   **X**

Hierarchical Planning

- Does anybody know why we have it?
  - Value is pretty questionable

Hierarchical Planning

- Does anybody know why we have it?
  - Value is pretty questionable

- Does anybody know the value of hierarchical planning?

XX

A Division Arrow

3 Brigade Arrows

9 Battalion Arrows

Hierarchical Planning

- Does anybody know why we have it?
  - Value is pretty questionable

- Does anybody know the value of hierarchical planning?
  - Value is pretty questionable

Hierarchical Planning

- Does anybody know why we have it?
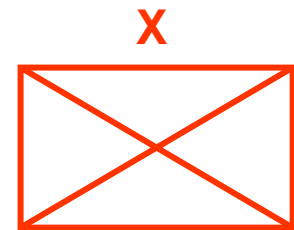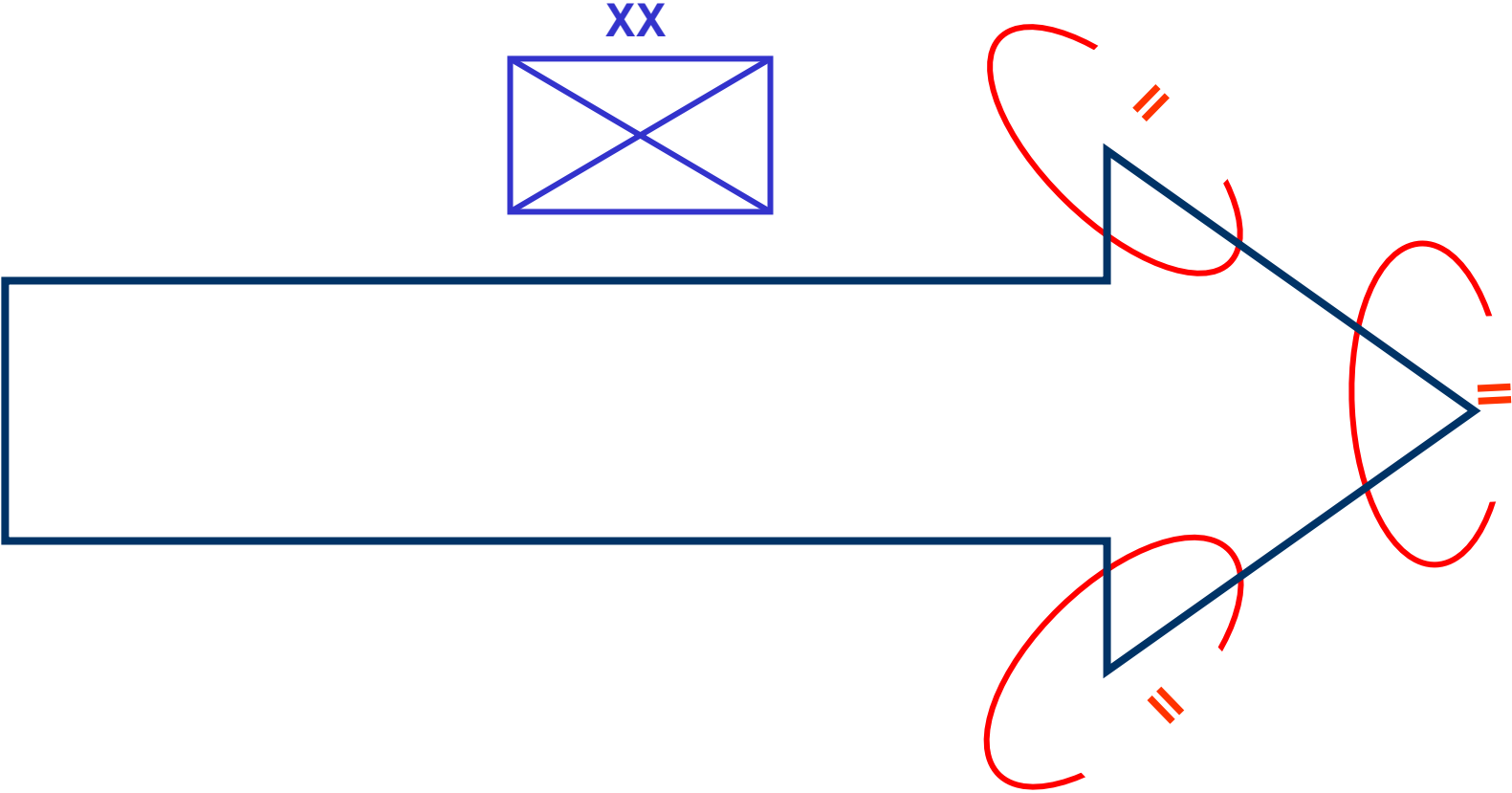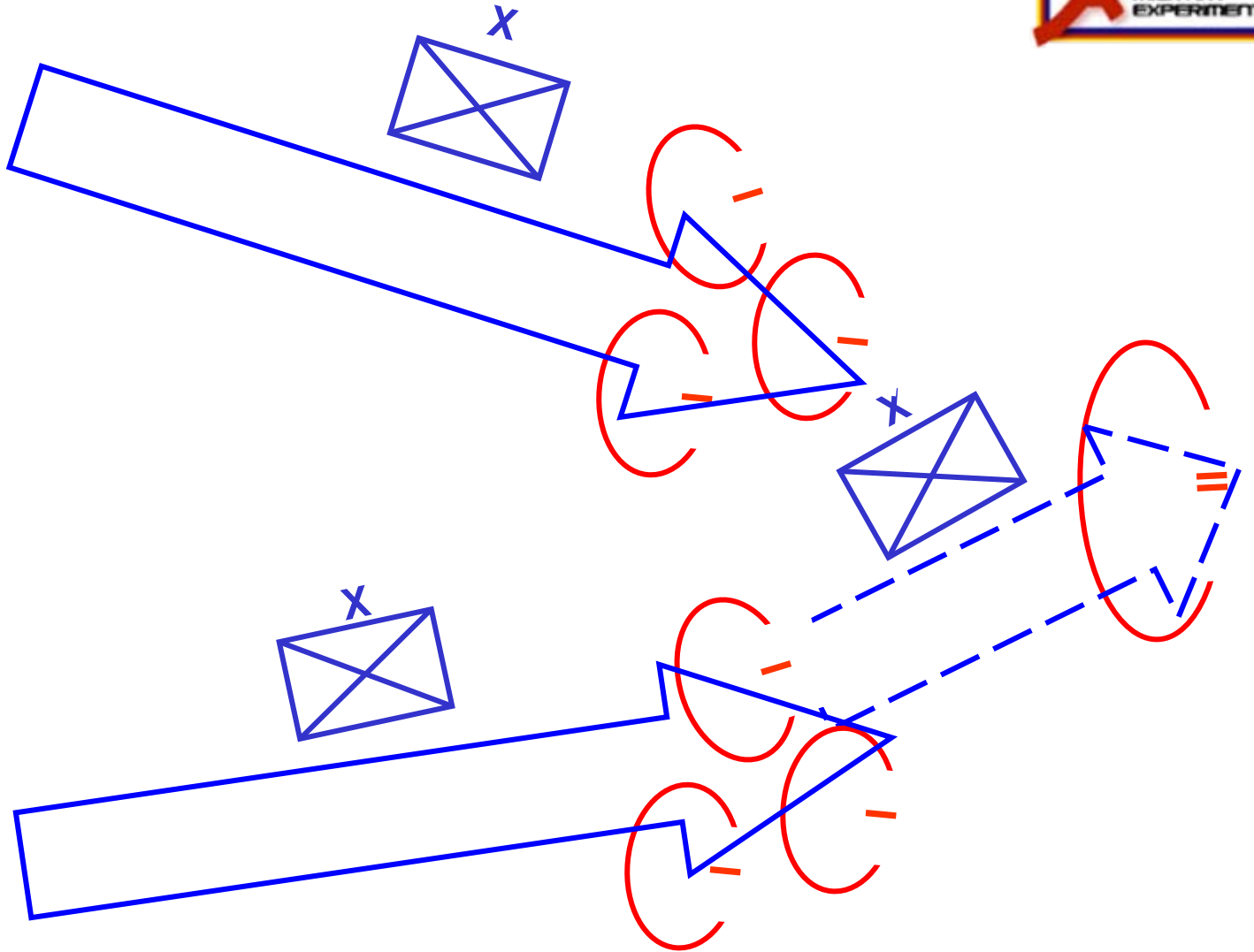 - Value is pretty questionable

- Does anybody know the value of hierarchical planning?
  - Value is pretty questionable

- Does anybody know if Orders are useful?

Div Planning

Receive orders

Issue orders

Bde Planning

Receive warning orders

Preliminary Planning

Receive orders

Issue orders

Bn Planning

Receive warning orders

Prepare for battle

Receive warning orders

Preliminary Planning

Receive orders

Issue orders

Transition to Execution Phase

The Promise of Parallel Planning

- **Parallel Planning:** *Parallel planning is two or more echelons planning for the same operation nearly simultaneously. It is facilitated by* **continuous information sharing** *by the higher headquarters with subordinate units concerning future operations. Parallel planning requires* **significant interaction** *between echelons. With parallel planning, subordinate units do not wait for their higher headquarters to publish an operations order to begin their own planning and orders development process.*

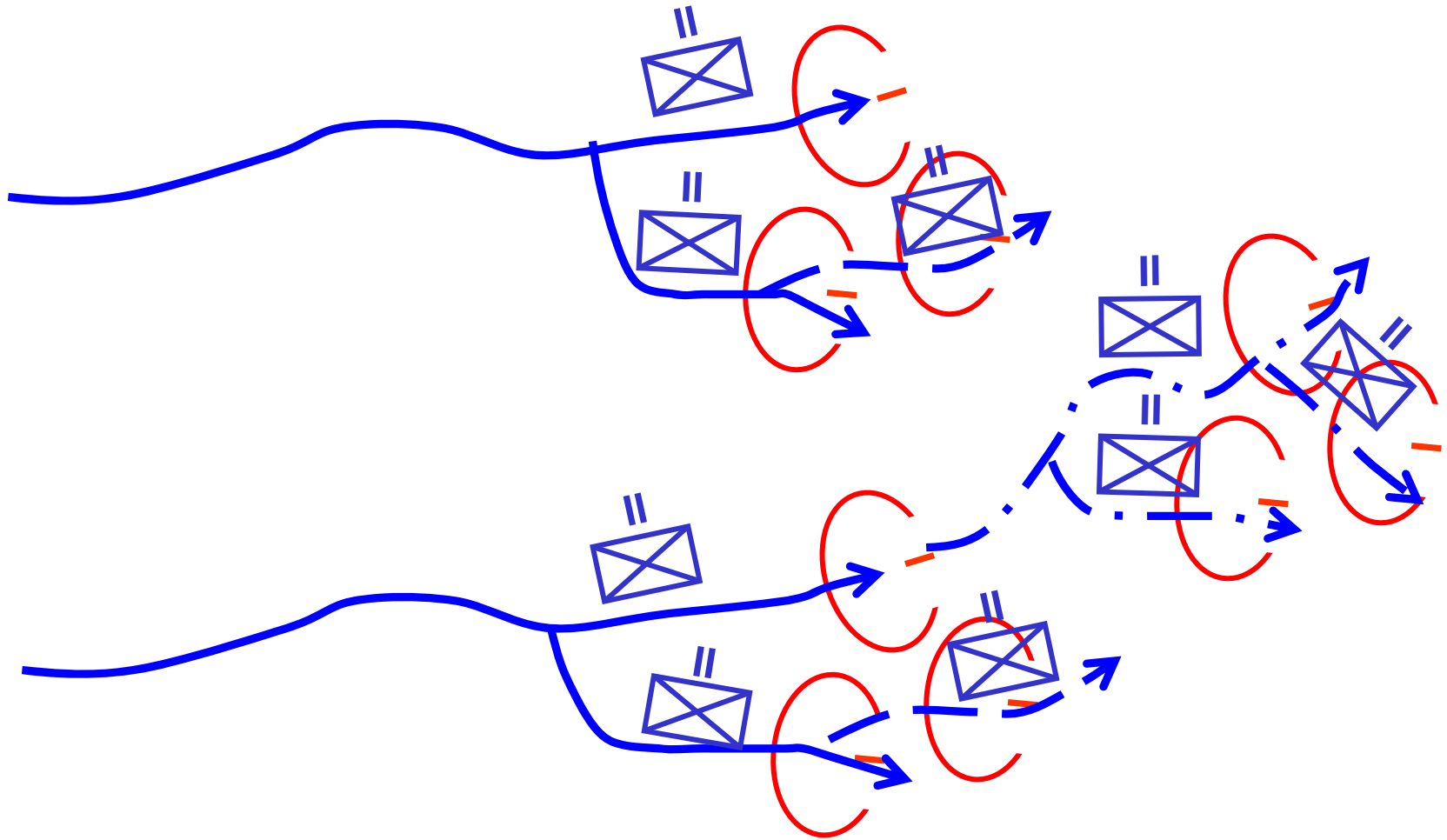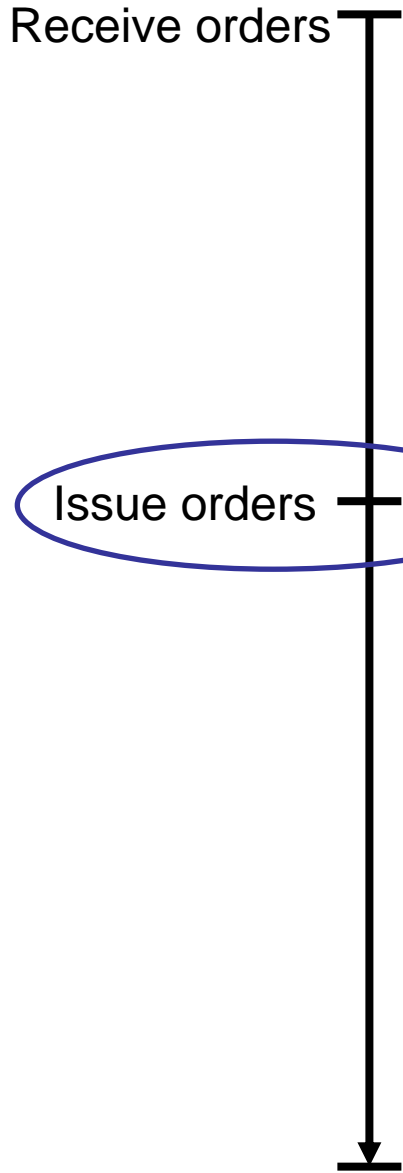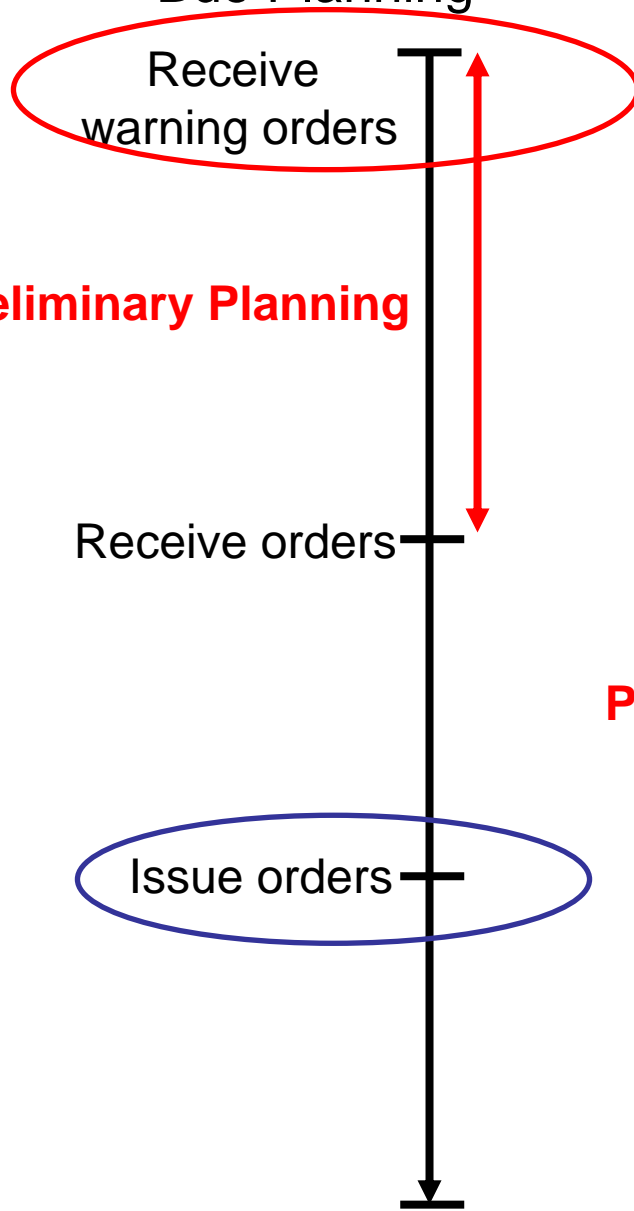**- US Army Planning and Orders Production (FM 5-0)**

Hierarchical Planning

- Does anybody know why we have it?
  - Value is pretty questionable

- Does anybody know the value of hierarchical planning?
  - Value is pretty questionable
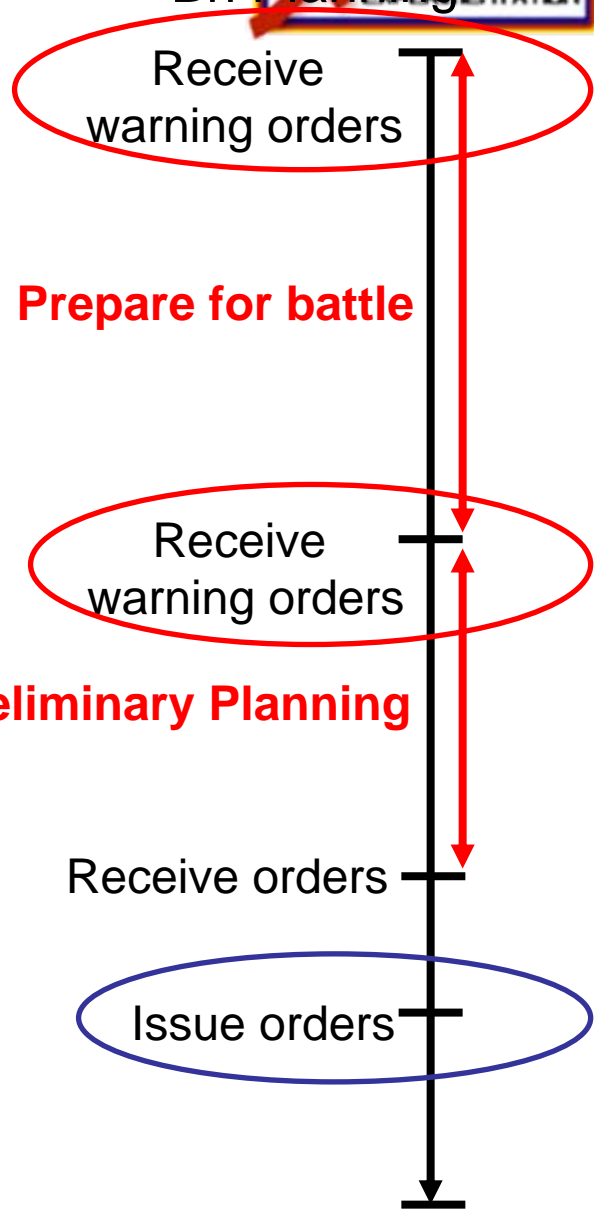
- Does anybody know if Orders are useful?
  - A mindset to change

New Concept: TIM

New Concept: TCM

Div Planning

Bde Planning

Bn Planning

Receive orders

Receive orders

Receive warning orders

Parallel and Collaborative Planning

Receive warning orders

Issue orders

Issue orders

Insights

Receive orders

Issue orders

Transition to Execution Phase

An advantage of parallelism

- The goal is alignment of **command intent**

Pigeau & McCann - Redefining Command and Control (2000)
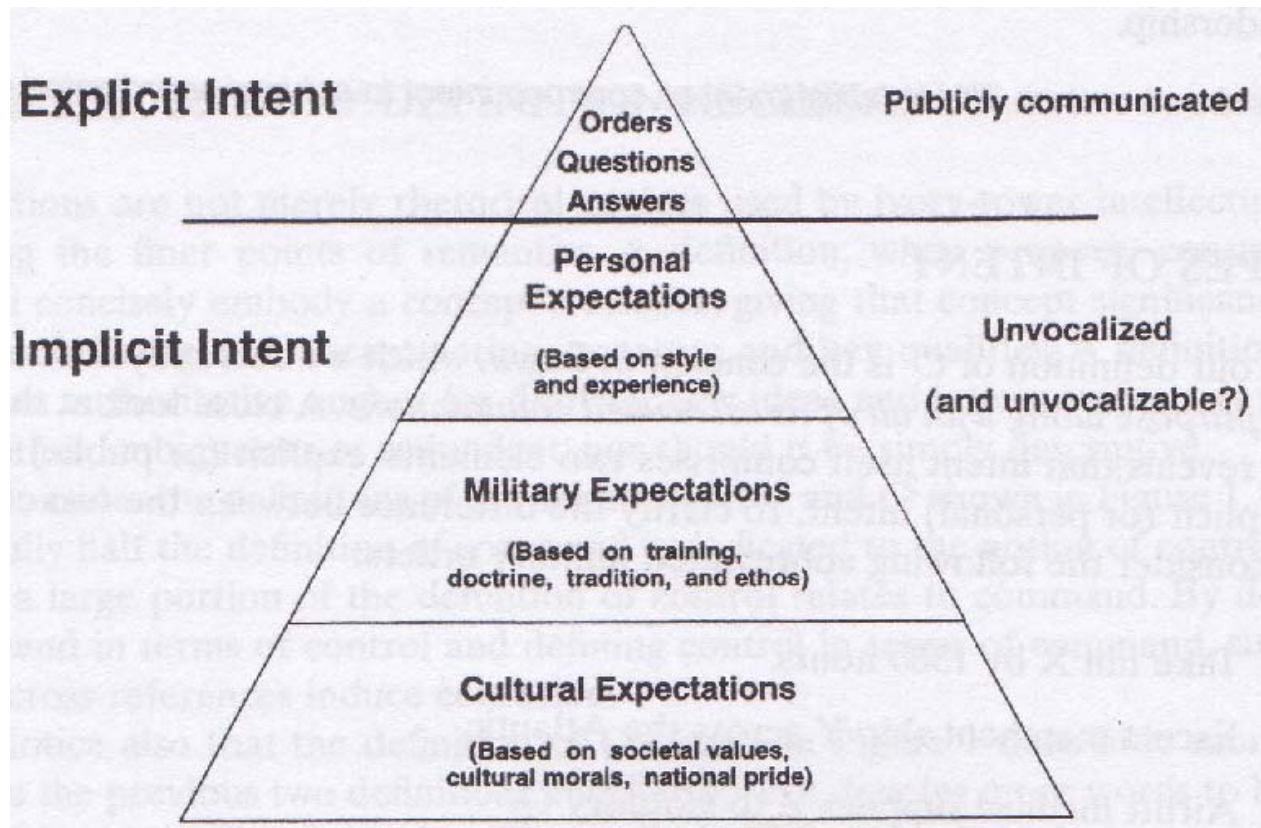
Mechanisms for sharing intent
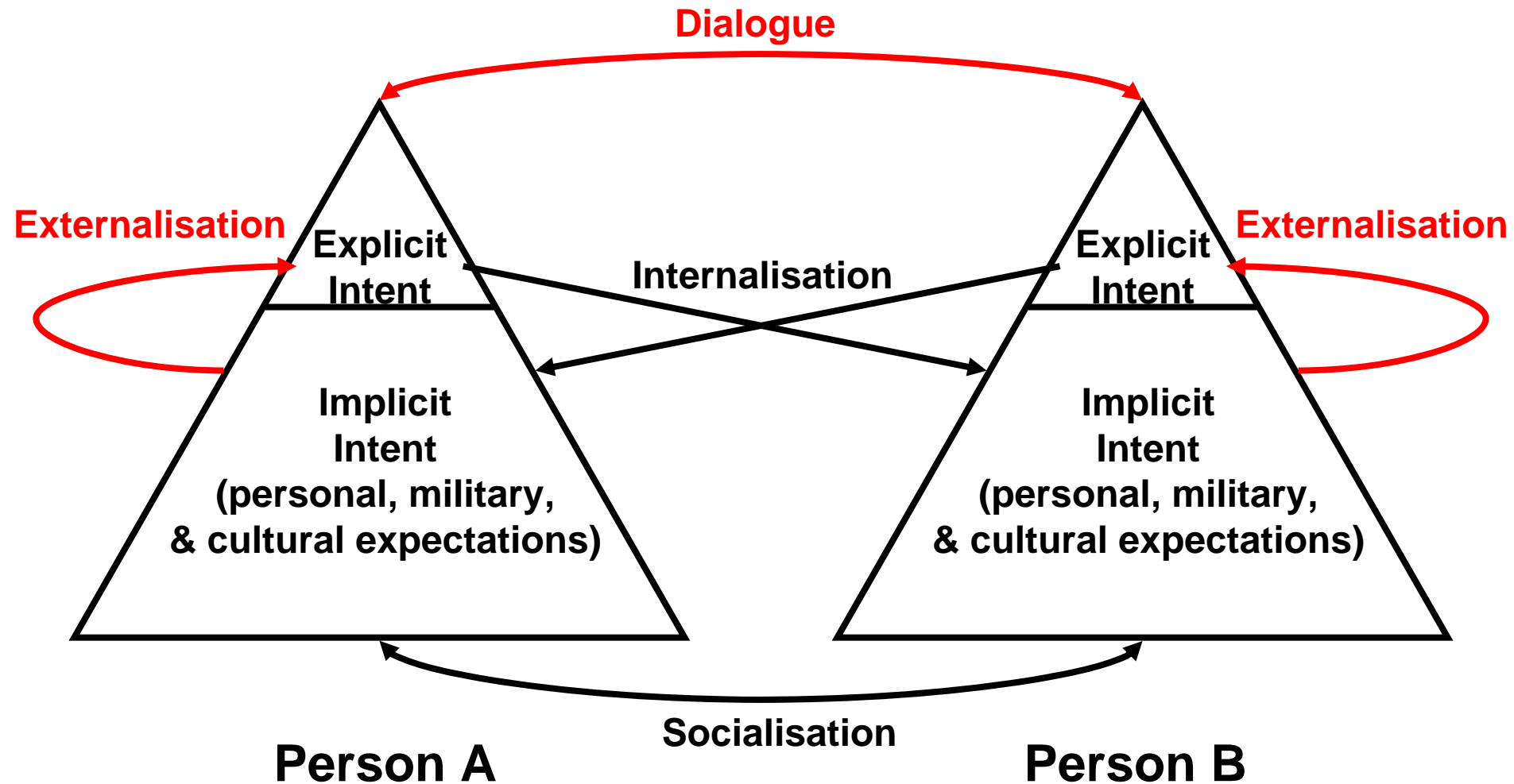
Expt details

Participants

- 128 SAF officers - SCSC students
- Divided into 2 expt groups
- Each group formed Div HQ & 2 Bde + naval task group
- Few with experience with planning at this level
- What is the bearing of this group of participants?
  - Less entrenched; possibly more open to new ideas
  - Role-playing => some artificiality

Scenario

- Joint manoeuvre and strike scenario
- Div tasked to recapture GOLDLAND (fictitious) from enemy forces and restore territorial integrity of GOLDLAND
- Div given 3 Bdes under her command (only 2 staffed)
- Develop plans based on HHQ orders

system: TeamSight
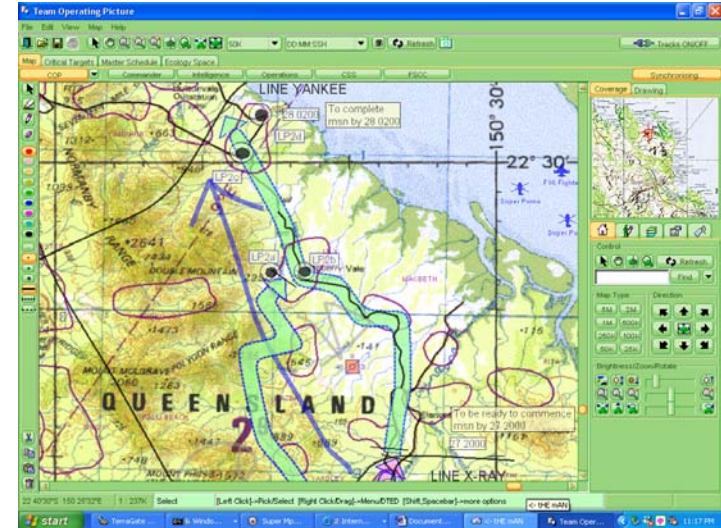
- PowerMap
- PowerMind
- PowerVC
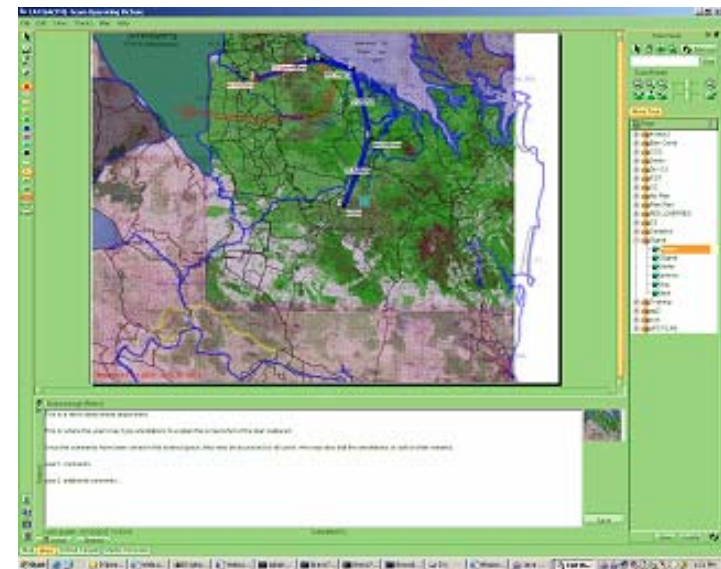
Hypotheses

1) TCM augmented with TeamSight would allow Parallel Teams to compress the planning cycle thereby increasing the operational tempo

2) TCM would result in a greater amount of collaborative communication (idea exchange)

3) TCM compared with TIM will result in no loss in plan quality

4) TCM compared with TIM will result in greater level of shared mental models

Measures

- Background variables:
  - Rank, age, sex, vocation, yrs in service, yrs of experience with planning at Div/Bde level

- Confounding variables:
  - Realism of scenario (story, information, time given)
  - System failure
  - Participants

- Dependent variables:
  - Operational tempo (time)
  - Process (communication profile, workload, team performance, observations)
  - Output (plan quality)
  - Achieving Common Ground

Theoretical Model

Team Performance

Shared Mental Model

improves

increases

Quality of plans <SME> Team Subjective Rating (Participants + Observers)

Probes into Mental Model & understanding of Command Intent <Participants + SME>

Mental Capacity

enables

enables

increases

NASA-TLX <participants>

increases

Ideas Exchange

Time Resource

Active Info Sharing

allows for

creates

Questionnaires <Observers + Participants> Objective count <communication logs> Time Profile

TIM

TCM

Independent variable

increases

decreases

Facilitated by TeamSight

KBP Process <Participants + Observers>

Discussion of findings (1)

- Did TIM/TCM compress the planning cycle?
  - YES! Notwithstanding that support plans not fully developed
  - Savings in time due to:
    - Process
    - Technology
  - Whether this translates to enhanced operational tempo remains to be tested…
    - Test against a scenario where the units have to plan, execute, re-plan, execute…

Discussion of findings (2)

- Did TCM give rise to a greater amount of collaborative communication (idea exchange)?
  - TCM did not see a marked increase in idea exchange
  - Perhaps due to inexperience of experiment participants and/or small problem space
  - Nonetheless, some insights obtained:
    - Need for well established structure to drive collaboration
    - Need to renew mindset of LHQ staff to see themselves as primary stakeholders in HHQ plans
    - Technology could play a part in facilitating greater information sharing (PowerMind with alert features) and idea exchange (e.g. virtual presence, channels for staff to voice dissent… perhaps anonymously?)

Discussion of findings (3)

- Was there any loss in plan quality between TIM/TCM?

    - NO! As determined by subject matter experts; general approach and scheme of manoeuvre also largely the same

    - Caveat: perhaps more telling to rate a plan according to how thoroughly it is worked out - i.e. how robust is the plan in the face of contingencies?

    - Would be instructive to consider this in future experiments by testing out plans developed in two-sided execution play

Discussion of findings (4)

- Did TCM result in a greater level of shared mental models?
  - Results suggest that higher degree of common ground achieved following collective Mission Analysis in TCM vs TIM
  - Point of interest: some respondents who had different thematic emphasis in articulation of command intent had nonetheless listed supporting activities in line with Comd
    - What are the effects of a team with a common understanding of activities to be undertaken, but with variations in the understanding of command intent?

Expt Conclusions

- We set out to explore possibility of parallelism between 2 echelons of command

- Results show that both TIM and TCM modes work!

- Findings have also elucidated improvements to process and technology

- Next steps…
  - follow-on experiments to explore complementary use of TIM/TCM across span of command as well as across echelons of command
  - participants should ideally be operational command teams
  - expt to focus on planning as well as 2-sided execution play

Reflections

- **The TCM concept worked !!** **But... Is this really as far as we can go?**

- What are other potential advantages of TCM?

- Whose responsibility would it be to draw up and issue the Orders to Bn under TCM? Div or the Bde?

- Maybe we could collapse the Div and the Bde because the battle really concerns with the fighting force

- How would the Orders be structured then if we extend TCM to the Battalion? Or is there a need to have Orders to the Battalion?

- Maybe we can concentrate more on communicating intent verbally and by using the drawing and visualization tools?

Reflections

- **The TCM would not work!! If....**

- The Commander has a strong mindset and is not open to heed his sub-ordinate Commanders

- The Div prefers to conduct face-to-face conferences which would limit the ability of the rest of the staff to use their computers to interact, draw, push/pull information and chat during the staff brief.

- The Div prefers formal presentation of plans. More time would be required, similar to the current Battle Procedure.

End