Command Post Anywhere Experiment
Exploiting TeamSight for Ops Concepts

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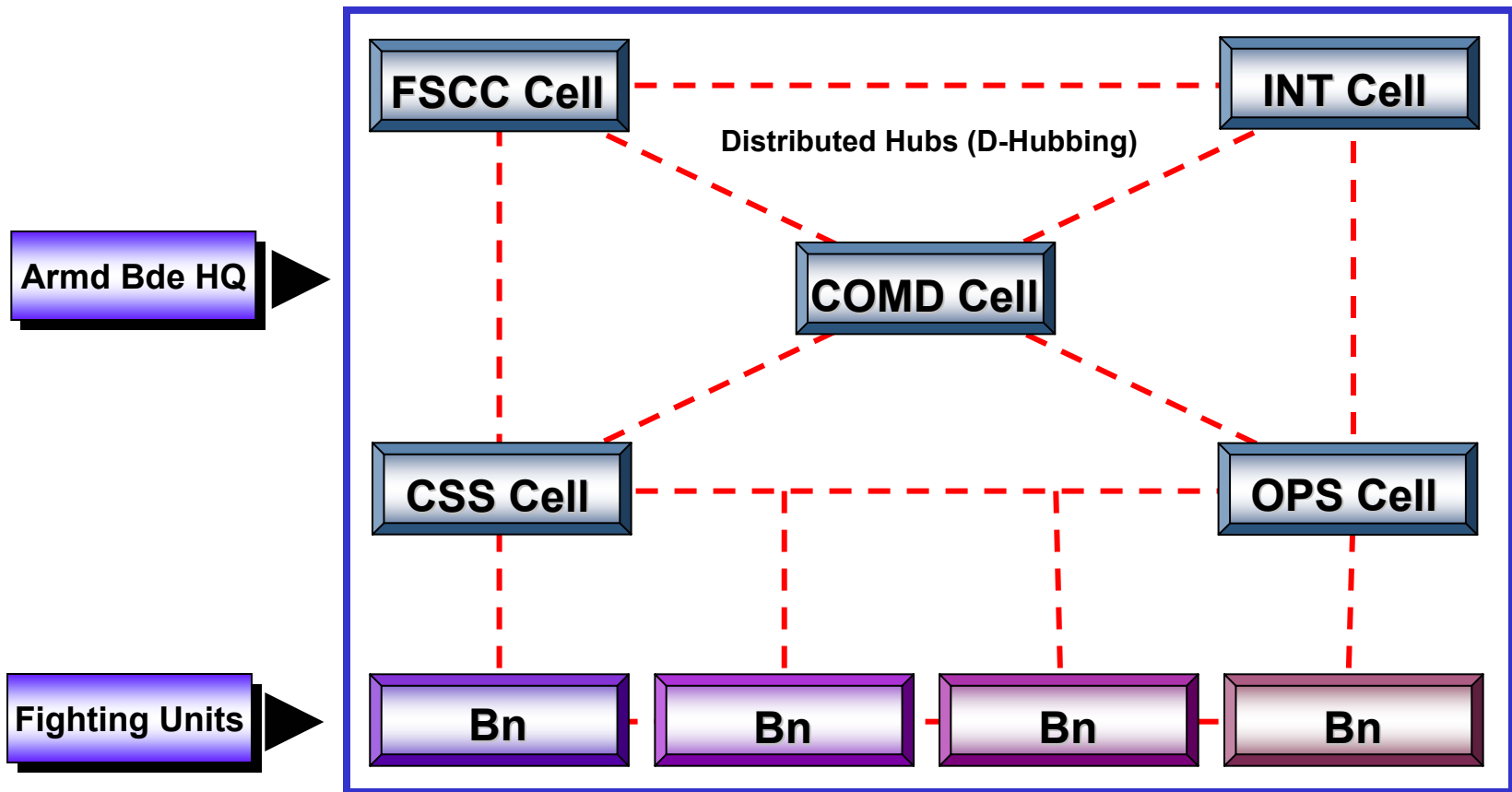
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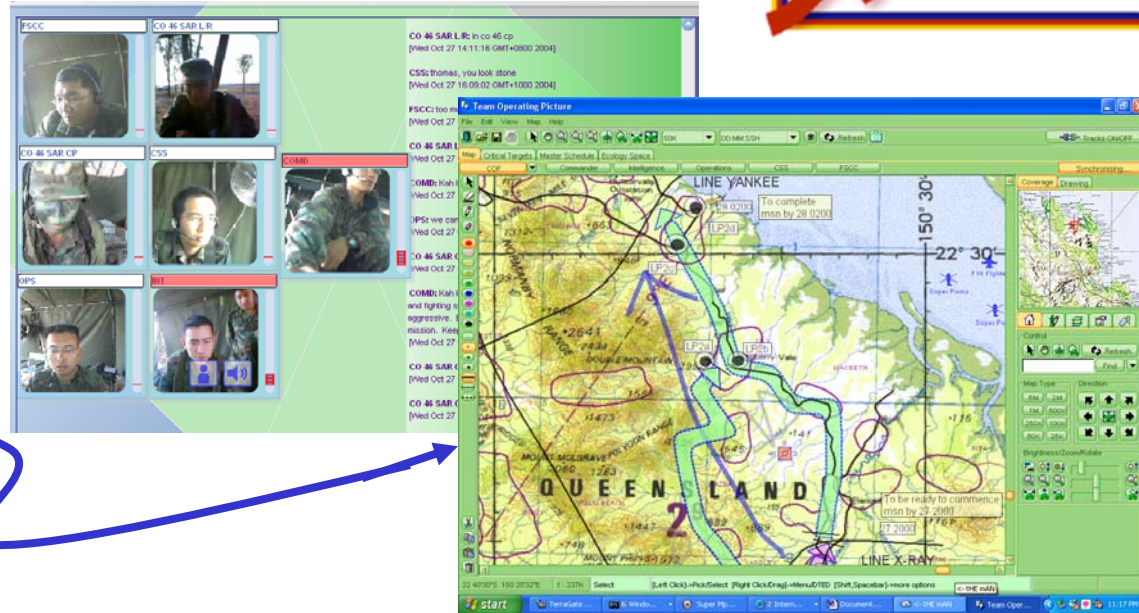
Challenging Old Ways

- Fixed physical structures vs Information structure

- Physical co-location

- Command brief

- Sequential planning

Command Post Anywhere

- Information structure that is *mobile*, *stable*, *continuous*, *self-synchronising*, *self-healing*, *survivable*

- Motivation is to enhance Bde HQ's **span of command & control**

TeamSight

Projection Screens Display at COMD Cell in a Distributed CP set-up

- GIS-based collaborative tool with separate workspaces for each staff officer; Supplemented with video-conferencing, text chat, & e-mails

- Advantages:
  - Easy access to info thus reducing need for explicit dissemination
  - Individual workspace while maintaining Team Operating Picture
  - Visualize battlespace +/- 2 echelons as well as that of peers

Demo clip

How can we exploit the Power of IKC2 to enable a Future Armoured Bde TOC to Enhance its Survivability while generating Superior Operating Tempo for the Land Battle?

What kind of eXpt is this?

Three Types*

1. ## Discovery Experiment
   - Designed to observe & catalogue the application of new technology, processes & organization to military scenarios.
   - "Hypotheses generation" experiments, guided by innovation propositions.

2. ## Hypothesis Testing Experiment
   Classic type as conducted by scientists to falsify hypothesis. Conduct of these experiments require specific hypotheses to be formulated and tested.

3. ## Demonstration Experiment
   To demonstrate known truths, akin to experiments conducted at schools where chemistry or physics experiments demonstrates to students the truth of the theories.

from CCRP Publication: Code of Best Practices for Experimentation

eXpt Objectives

To investigate the following hypotheses:

1) D-hubbing augmented with Team-Sight will have the same sense-making ability as a Centralized CP

2) D-hubbing augmented with Team-Sight will provide continuous situation awareness thereby increasing the operational tempo of the Brigade

3) D-hubbing will enhance Brigade CP survivability

Conduct of eXpt

- Preparation for experiment

- Bde CP Operations
  - Condition 1: Centralised CP setup (Run 1)
  - Condition 2: D-Hub CP Concept (Runs 2-6, each with varying levels of connectivity)

- Measures:
  - Situation Awareness Assessment
  - Analysis of Communication Patterns
  - Contextual Inquiry

eXpt Conditions

- Within D-hub setup, ability to command and control with:

  – Full Network Performance (Video, Voice, Collaborative C2)

  – Degraded Network Performance (Less Video and Voice)

  – Loss of certain Network Performance (No links to some Cells)

Centralised CP Set-up (Run1)

SAF CENTRE FOR MILITARY EXPERIMENTATION

COMD Cell

INT Cell

30 m

Wired LAN (100mbps)

30 m

30 m

Wired LAN (100mbps)

FSCC/CSS Cells

OPS Cell

D-hub CP Set-up (Runs2-6)

Sector Antenna

Omni Antenna

Parabolic Antenna

Parabolic Antenna

AU

LAN Hub

AU

SU

SU

OFDM 802.16A

Up to 6 MB Bandwidth

Wired/ Wireless LAN

10 km

~2 km

COMD Cell

Yagi AP Antenna

INT Cell

OPS Cell

Wireless LAN 802.11G

FSCCORD

CSS

Findings - Communication Activity

Legend:
- Dissemination of Info
- Clarification
- Building Shared Understanding
- Exchange of Ideas
- Team Monitoring + Self-correction
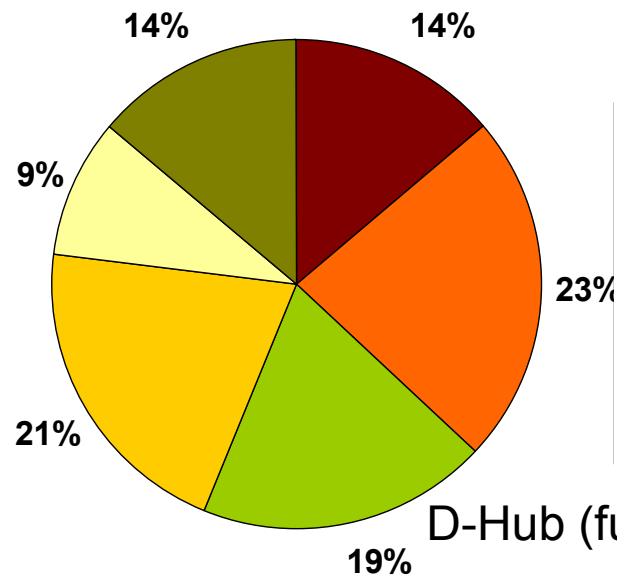- Others
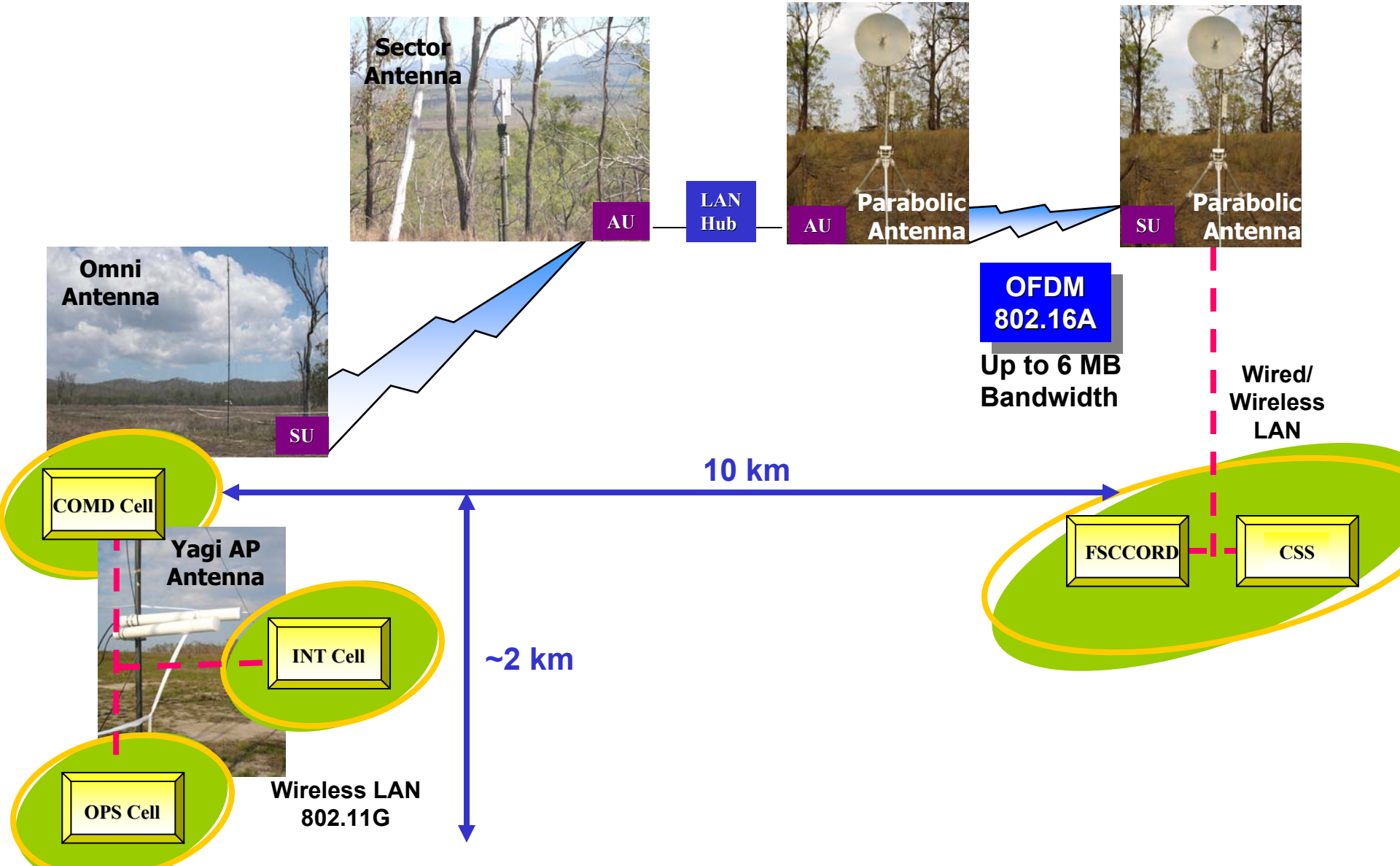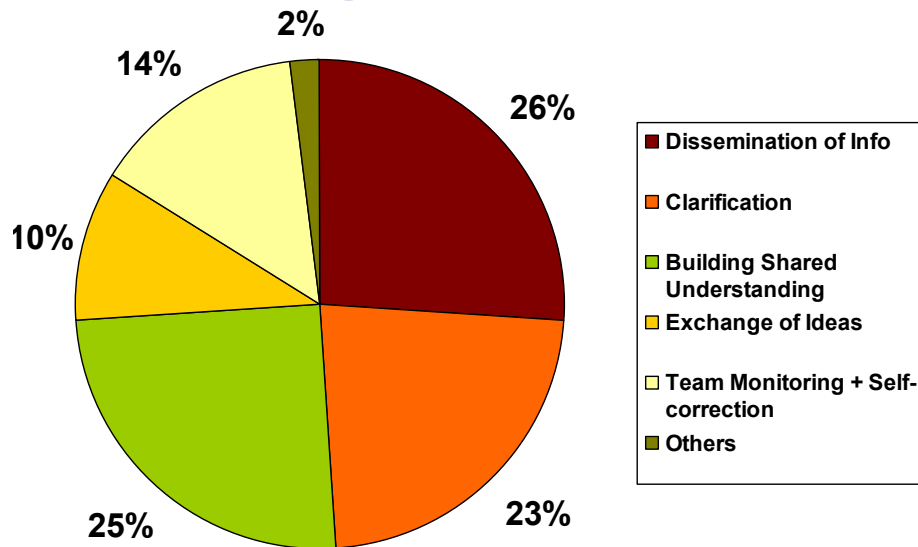
Centralised CP

Moderate inter-rater agreement
(Kendall's coefficient of concordance, W = 0.450)

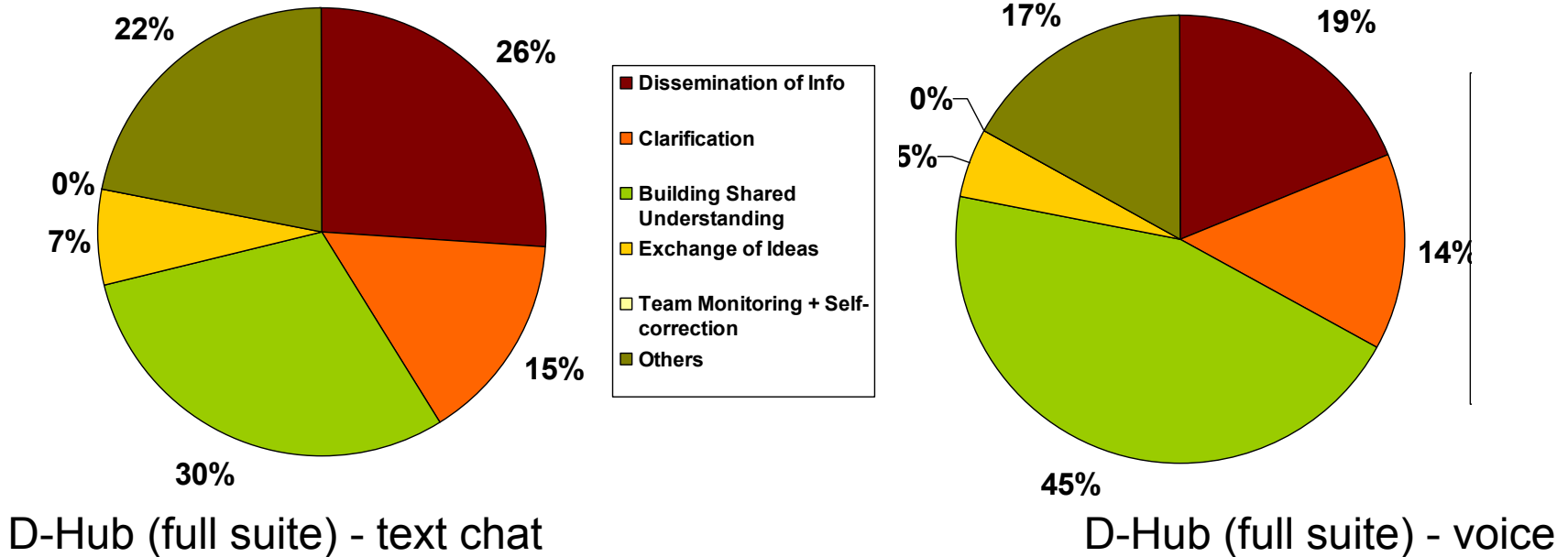**D-Hub (full suite)**

Test Variable	p-value
Dissemination of Info	0.109
Building Shared Understanding	0.102
Exchange of Ideas	0.109

Wilcoxon Signed Rank Test

- Greater % of communication for exchange of ideas, less for info dissemination and building of shared understanding as compared to centralized CP

- TeamSight provides platform for information dissemination and building of shared understanding

Findings - Communication Activity

Legend:
- Dissemination of Info
- Clarification
- Building Shared Understanding
- Exchange of Ideas
- Team Monitoring + Self-correction
- Others

D-Hub (full suite) - text chat

Text chat percentages: 26%, 15%, 30%, 7%, 0%, 22%

D-Hub (full suite) - voice
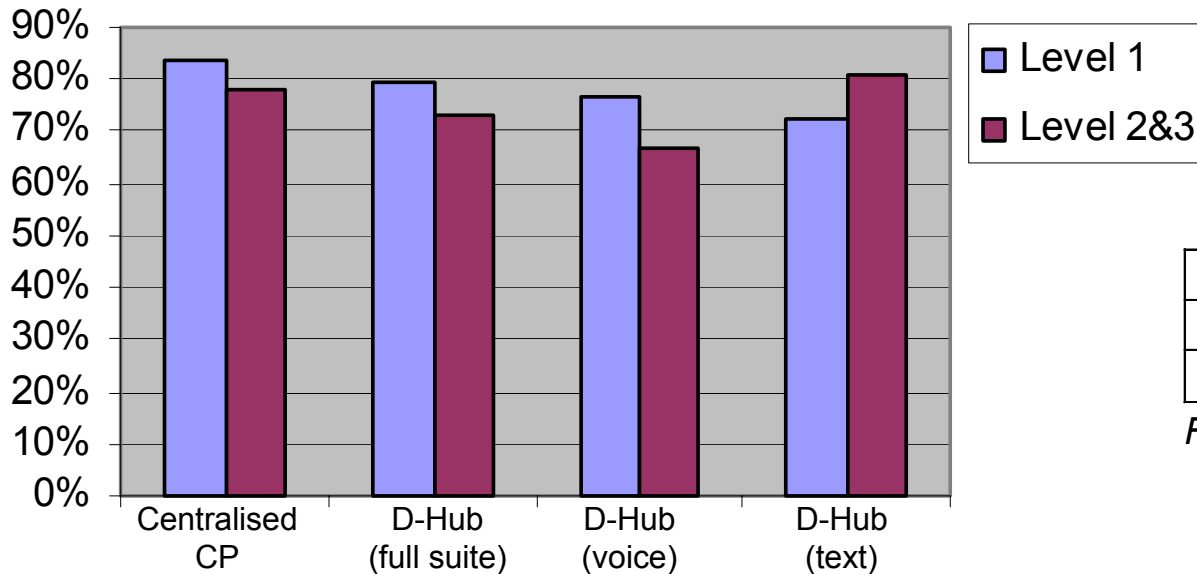
Voice percentages: 19%, 14%, 45%, 5%, 0%, 17%

- Various communication tools for different purposes
- Dissemination of information via text chat
- Building of shared understanding via voice communications

Findings - Situation Awareness

Situation Awareness across various Set-Ups

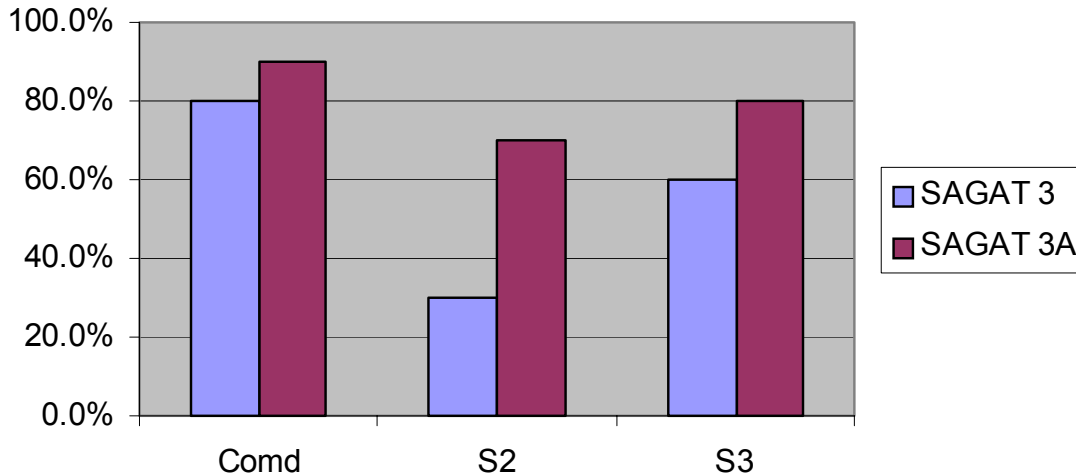| Test Variable	p-value
Level 1	0.591
Level 2&3	0.202

Friedman Test

- No significant difference in SA across all set-ups

  =>TeamSight successfully mitigated distributed set-up

- Level 2&3 > Level 1 SA in D-Hub (text) because text chat serves as a record

Findings - Situation Awareness

D-Hub (full suite)

- Increase in SA levels going from the 1st to the 2nd administration for each run, across all roles
- Staff officers would have a better understanding of the scenario as it unfolds and with discussion
- Effect more pronounced in runs with TeamSight

Discussion

- <u>Hypothesis 1</u>: Same level of sense-making

- No significant difference in communication patterns.
  - D-Hub: Reduced info dissemination & building of shared understanding; Increased exchange of ideas

- No significant difference in situation awareness levels

Discussion

- <u>Hypothesis 2</u>: Continuous SA leading to superior ops tempo

- No significant difference in situation awareness levels despite less frequent command briefs
  - Centralised CP: 80% of time spent working in own cell, 20% spent on P group meeting in Comd cell
  - D-Hub: Greater amount of concurrent activity
  - Commander able to oversee S2 and S3 action-reaction unobtrusively
  - Teamsight enables faster planning & re-planning – 1.5 hrs (without MCM, ADA, OPSCOORD) vs 4 hrs (doctrinal hrs for quick BP)

- Subsequent experiments need to look at quality of plans

Discussion

- <u>Hypothesis 3</u>: Enhanced survivability of Bde HQ

- Cells distributed across span of 10km

- Subsequent experiments need to measure EM signature

Conclusions

- Culmination of a series of smaller scale exercises that test CPA concept in a TeamSight environment

- Findings and observations indicate feasibility of such a set-up

- Paves the way for future experiments that seek to strengthen and extend the concept

Questions?