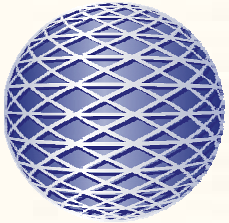


9th International Command and Control Research and Technology Symposium Coalition Transformation

Augmented Synchronised Planning Spaces

Peter Evdokiou, Bruce Thomas, and Rudi Vernik

CRC for Enterprise Distributed Systems Technology

Defence Science and Technology Organisation

University of South Australia

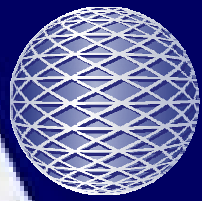
People

- University of South Australia
  - 3 Academic Staff
  - 7 Students
- Australian DSTO (Defence Science and Technology Organisation)
  - 7 Research Scientists
- DSTC (Collaborative Research Centre)
  - 3 Support Staff
  - 1 Research Scientist
- Boeing Queensland
  - Senior Engineer

Drivers for C2 Development

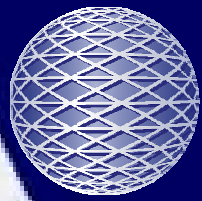
- Increase participation in the situation awareness and creative process of C2
- Add rigour and quality to the generation of plans, and dissemination of information
- Reduce the time spent on repetitive and duplicated work
- Increase the flexibility of C2 structures and mix
- Increase robustness of the transmission of the commander's intent and products of the HQ to external units
- Reduce the time, costs and stress of the establishment and maintenance of the deployed HQ

What is AuSPlanS?



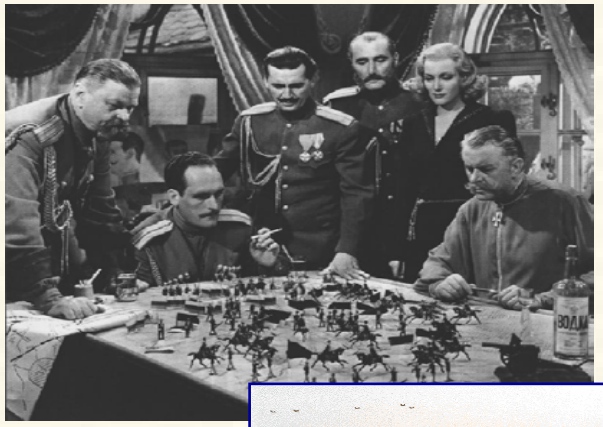
- A Defence domain project.
- Application and extension of LiveSpaces
- Distributed synchronised planning in organisations
- Rapid augmentation and enablement of physical workspaces
- Using emerging ubiquitous and HCI technologies.

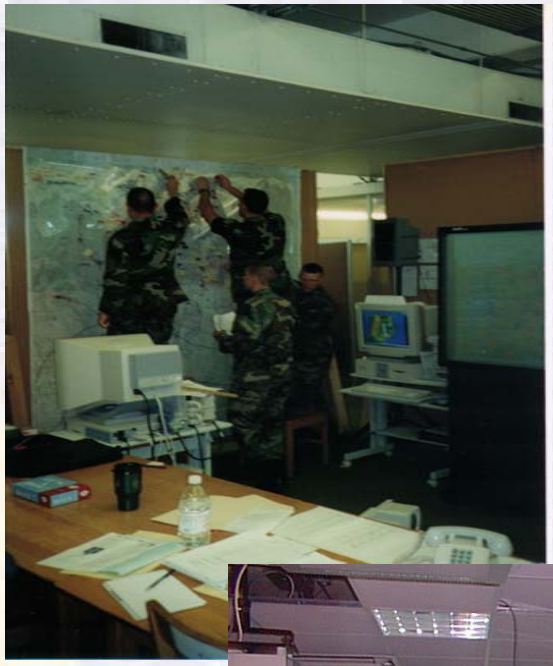
AUSPLANS Approach



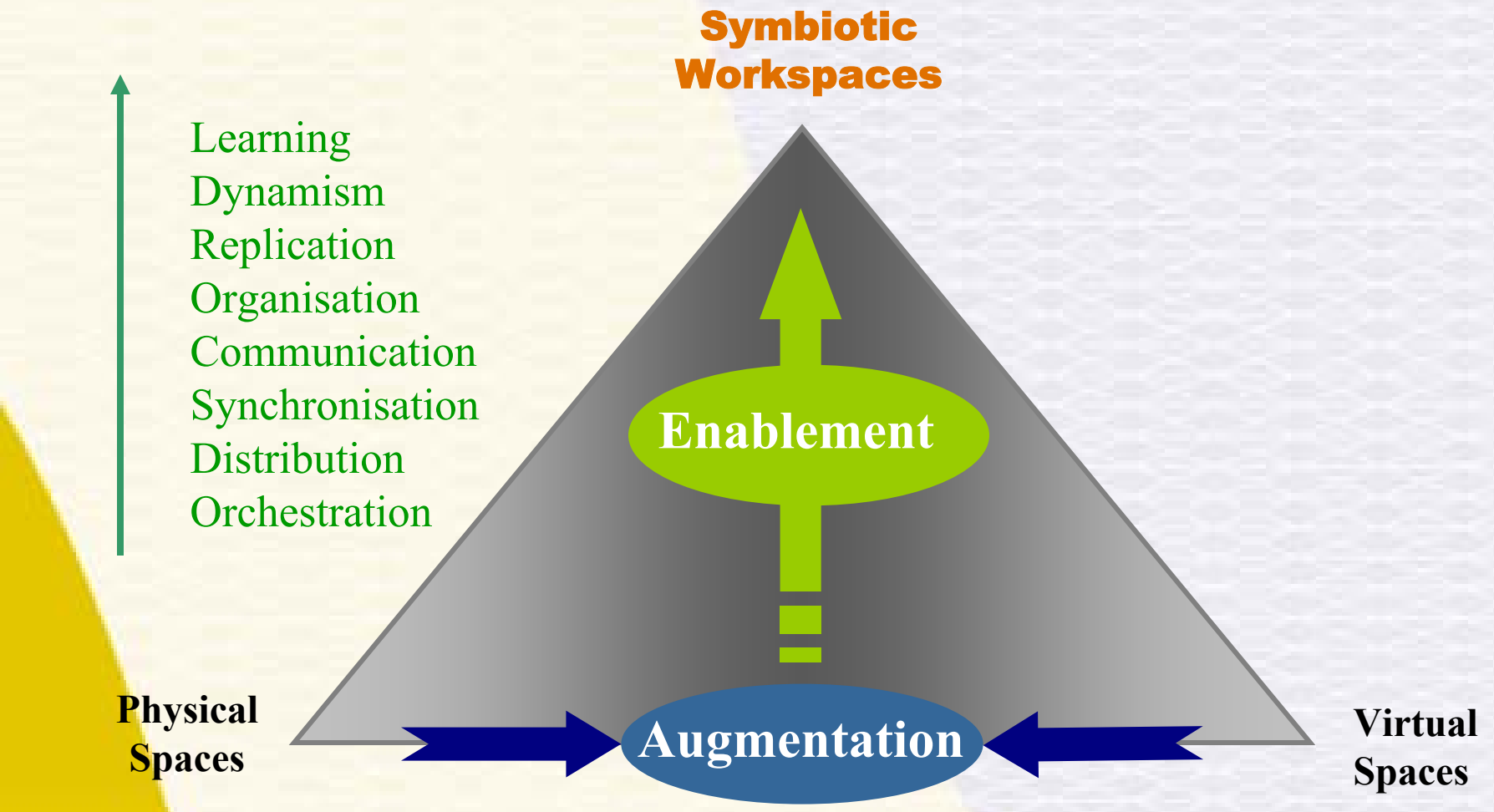
- Understand key issues and problems to be addressed
- Use and extend LiveSpaces concepts and technologies
- Include key existing defence related software components
- Develop a research platform
- Take an incremental approach
- Orchestrated Evaluation Sessions

Focus: Collaborative Workspaces in Defence

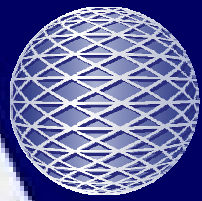




Symbiotic Workspace Concepts



LiveSpaces



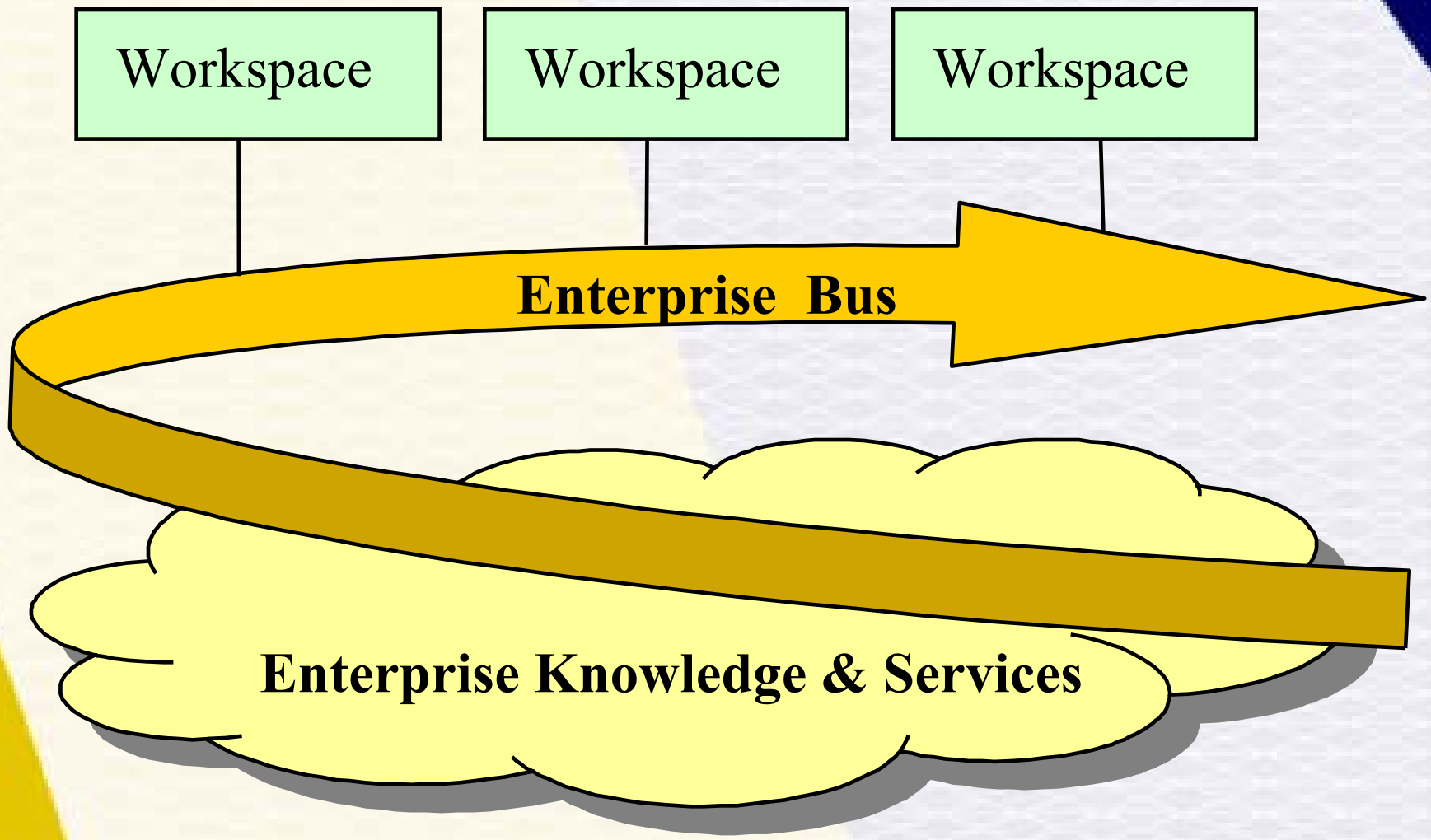
"Enterprise Enabled Ubiquitous Workspaces"

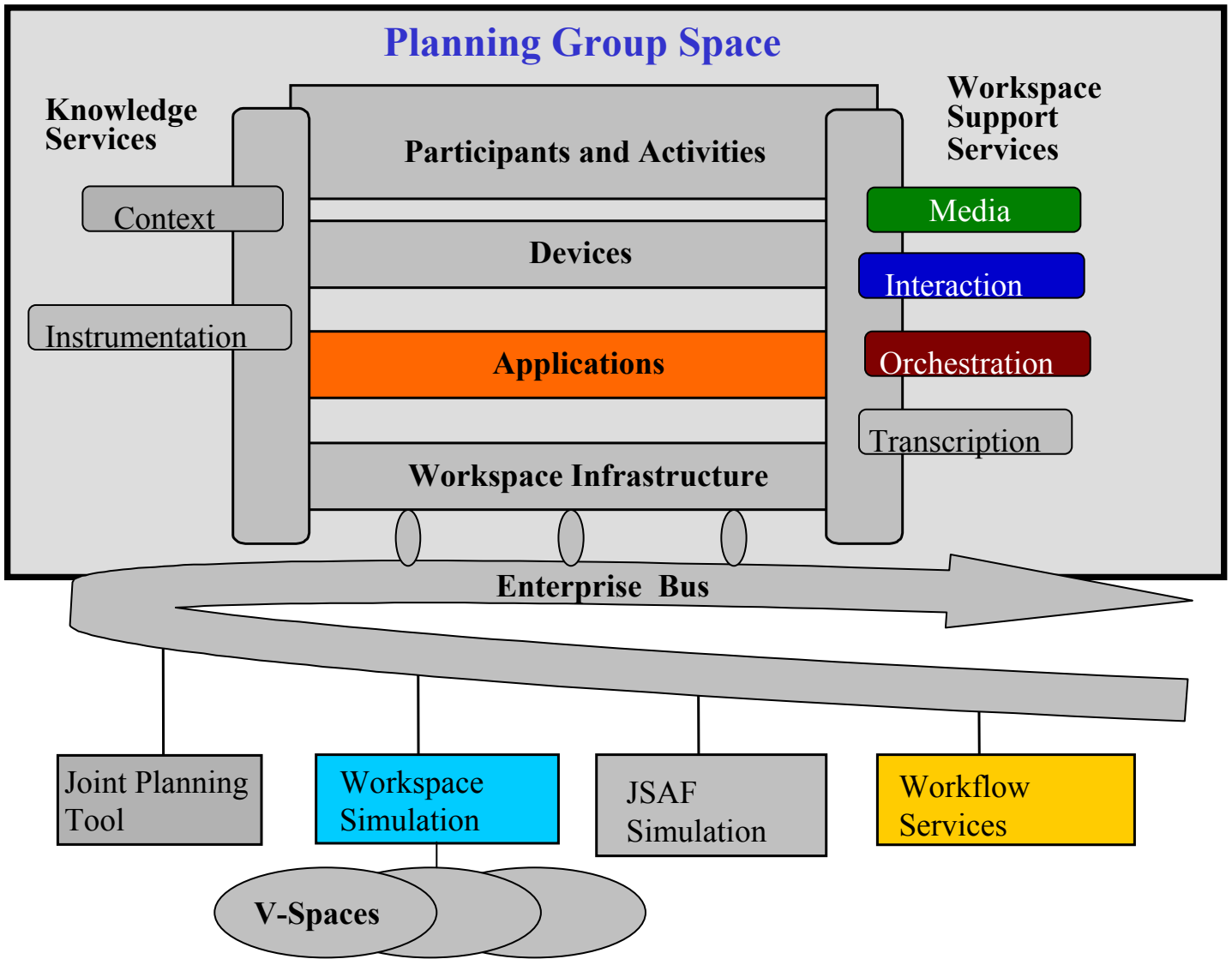
- **Live! – reflects the fact that the environment is dynamic (or alive) in that it changes depending on its context of use**
- **Space! – reflects the notion of through-wall environments that allow participation from individuals in other locations (or spaces)**

Characteristics of LiveSpaces

- Deployable and replicable
- Rapid set up and adaptation
- Ubiquitous interaction between people, technologies, and information
- Automated support for procedural and cognitive activities
- Synchronisation of spaces
- Enterprise enabled

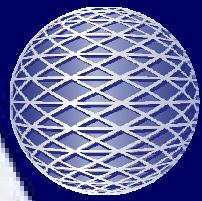
Distributive LiveSpaces




Planning Group Space
Knowledge Services
Participants and Activities
Workspace Support Services
Context
Devices
Media
Interaction
Instrumentation
Applications
Orchestration
Transcription
Workspace Infrastructure
Enterprise Bus
Joint Planning Tool
Workspace Simulation
JSAF Simulation
Workflow Services
V-Spaces

AUSPLANS Orchestrated Evaluation Session

Orchestrated Evaluation Session

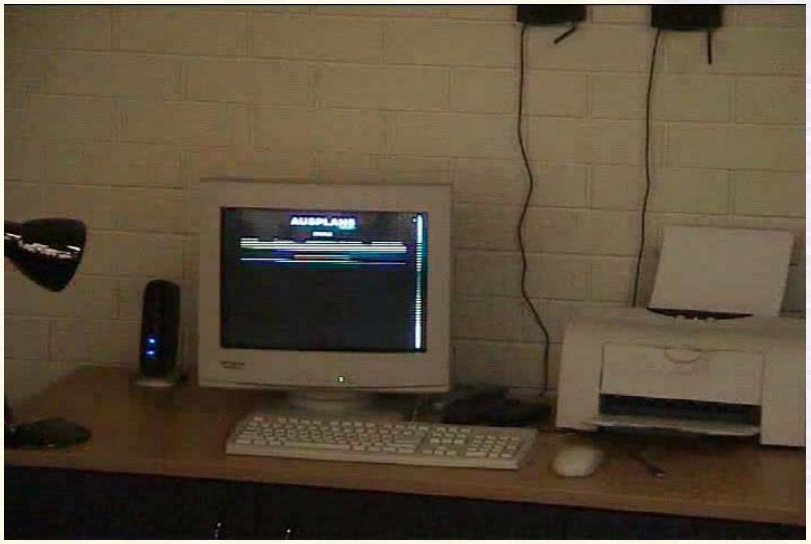


- Prototype meta-application
  - supports orchestrated evaluation of ubiquitous workspace technologies
  - in context of a defence domain specific scenario
- Demonstrates the technologies
  - scenario driven
  - free play
- Provides method of recording results/feedback

AUSPLANS Orchestrated Evaluation Session 1

- The main aims of the exercise were as follows:
  - Provide a brief on a new meta application to support orchestrated evaluation of ubiquitous workspace technologies in the context of a defence domain specific scenario.
  - Evaluate new ubiquitous workspace technologies to support augmented synchronised planning spaces.

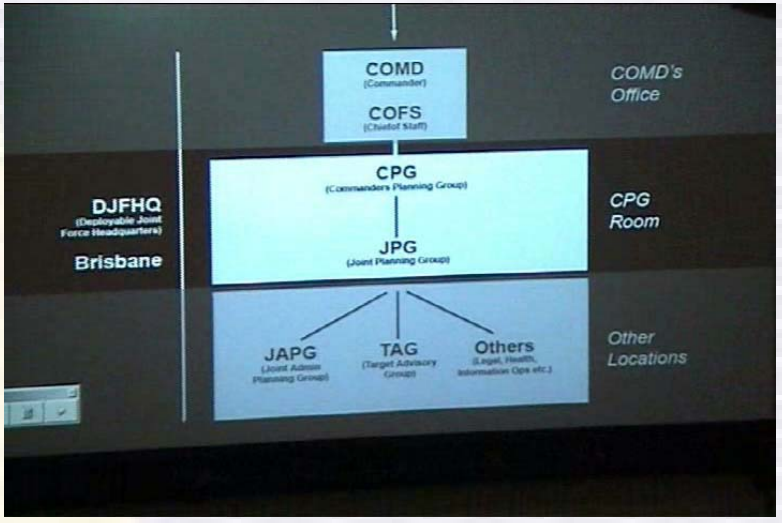
Infrastructure



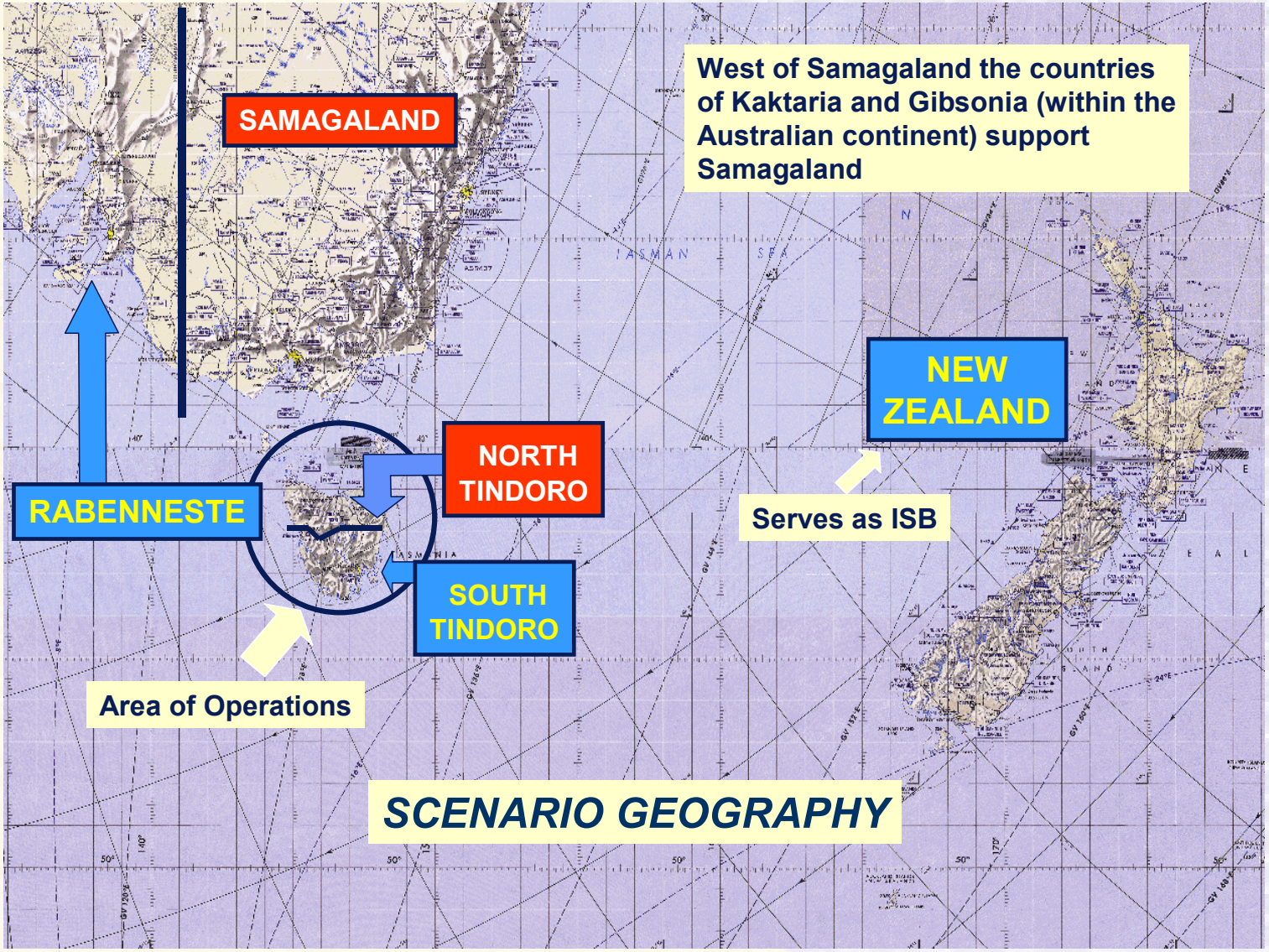
Scenario

CDF - Canberra

AUSPLANS
TECH-EX 1
COMD's Office
Commander's Planning Group Room
DSTC
DEFENCE


COMD
(Commander)
COFS
(Chief of Staff)
COMD's Office
CPG
(Commanders Planning Group)
JPG
(Joint Planning Group)
CPG Room
DJFHQ
(Deployable Joint Force Headquarters)
Brisbane
JAPG
TAG
(Target Advisory Group)
Others
Other Locations

Driving Scenario: Tasman Scenario Set



Scenario Components

- Disaster Relief
  - Tech Ex 1
- Evacuation
  - Tech Ex 2
- Peace Enforcement
  - Tech Ex 2

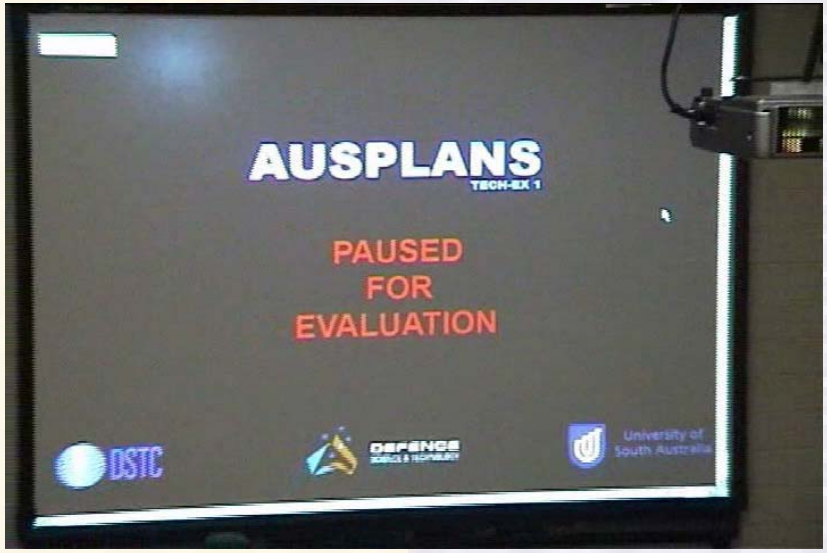
Session 1- 2 main sections

- Section 1 – Commander's Video Conference.
- Section 2 – Commanders Planning Group Mission Analysis

Each section

- An introduction to the technologies
- An automatic demonstration was conducted to show the use of the technologies in context.
- Stakeholders have an interactive evaluation of the technologies.

Evaluation


AUSPLANS
TECH-EX 1
PAUSED
FOR
EVALUATION
DSTC
DEFENCE
University of
South Australia

University of
South Australia
DSTC

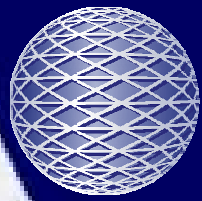
The First Orchestrated Evaluation

- The Orchestrated Evaluation was a success.
- There was a full day on the 26th of Feb.
  - The morning session of operating the meta-application of the evaluation.
  - The afternoon consisted of workshopping future directions.

Roadmap

- (Feb 04 : UniSA) –
  - proof of concept demonstrations
- (Oct 04 : DSTO Adelaide) –
  - integration of advanced planning and situation awareness technologies
- (Oct 05 : DJFHQ Brisbane)
  - multiple synchronised spaces
  - transitioning
  - Vital Development exercise

Summary and Conclusions

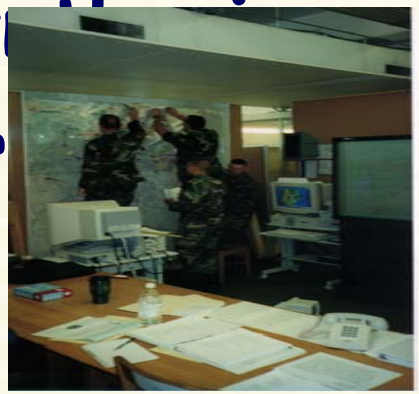


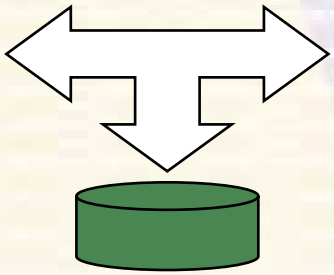
- AuSPlanS
  - defence domain project
  - coordinated by the DSTC SA
  - DSTC, DSTO, UniSA, and Boeing
- Focuses
  - application and extension of LiveSpaces
  - distributed synchronised planning
  - in areas such as disaster relief, evacuations, and peace enforcement.

Questions?

Planning

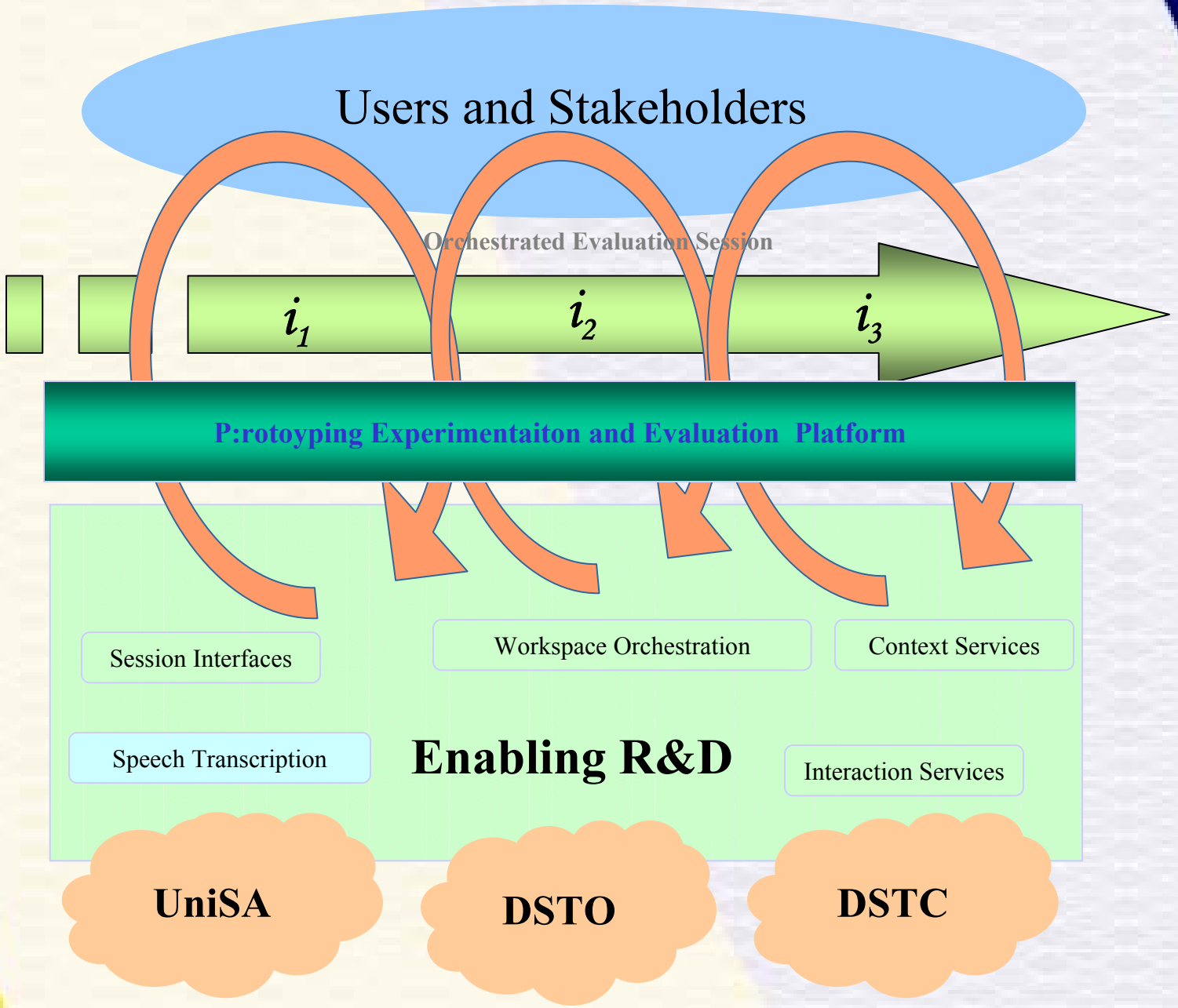
- Structured distributed group process
  - JMAP, JIPB, and JAPB
  - In real life the process is not often structured
- Outcome focussed
- Information aggregation and sy
- Cr





Science and Technology Areas

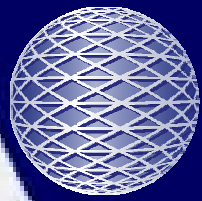
- Ubiquitous Computing
- Enterprise Systems Architectures and Infrastructure
- Human Interaction Technologies
- Wearable Computing
- New Media (virtual/augmented reality)
- Workspace Simulation
- Experimentation/Evaluation Approaches


Users and Stakeholders
Orchestrated Evaluation Session
i_1
i_2
i_3
P:rotoyping Experimentaiton and Evaluation Platform
Session Interfaces
Workspace Orchestration
Context Services
Speech Transcription
Enabling R&D
Interaction Services
UniSA
DSTO
DSTC

AuSPlanS Testbed - Software

- LiveSpaces infrastructure
- Pre-planning and information management
- Workspace simulation engine(s)
- Visualisation Services
- Awareness and Synchronisation
- Speech Transcription Services & applications
- Session Interfaces
- Workspace Orchestration Servicw
- Interaction Services
- Context services

Orchestrated Evaluation Session Infrastructure



- Workflow
  - Orchestrates the session
  - Breeze/ODSI/Elvin
- Interaction
  - Interaction between participants (and other systems) and devices in workspace
  - iROS
- Workspace Simulation
  - Provides virtual workspaces to interact and collaborate with
  - Brahms