

2006 CCRTS
June 2006, San Diego

Leveraging on C2IEDM for Enhancing Systems Interoperability

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DSTA



Scope of Presentation

- Overview
- The Exploration
- Lessons Learnt
- Conclusions

Overview



Deployment of Personnel and Resources as at 7 Jan 2005 (0830hrs)

Total Personnel: 1098

Sources: MFA, MINDEF, SCDF, SPF, MOH



Chennai (Total: 5 personnel)
MFA: 5

Dhaka (Total:3 personnel)
MFA: 3

Phuket (Total: 186 personnel)
MINDEF: 45
SCDF: 80
MFA: 13
Inter-Ministry (led by SPF): 48
SAF/SCDF resources: 2xSP, 2xlorries
• Airlifts of medical and relief supplies

Colombo (Total: 3 personnel)
MFA: 3
•Airlift of medical and relief supplies
•2nd airlift of medical and relief supplies underway

Indonesia (901 personnel)
MINDEF: 847
SCDF: 27
MFA: 3
MOH: 24
SAF resources: 6xCH47, 2xSP, 2xLST, 2xSCDF lorries
•Airlifts of medical and relief supplies
•Deployment of 210x10ltr bags of potable water

Maldives
•Airlifts of 600x10ltr bags of potable water
•Shipment of water desalination plant

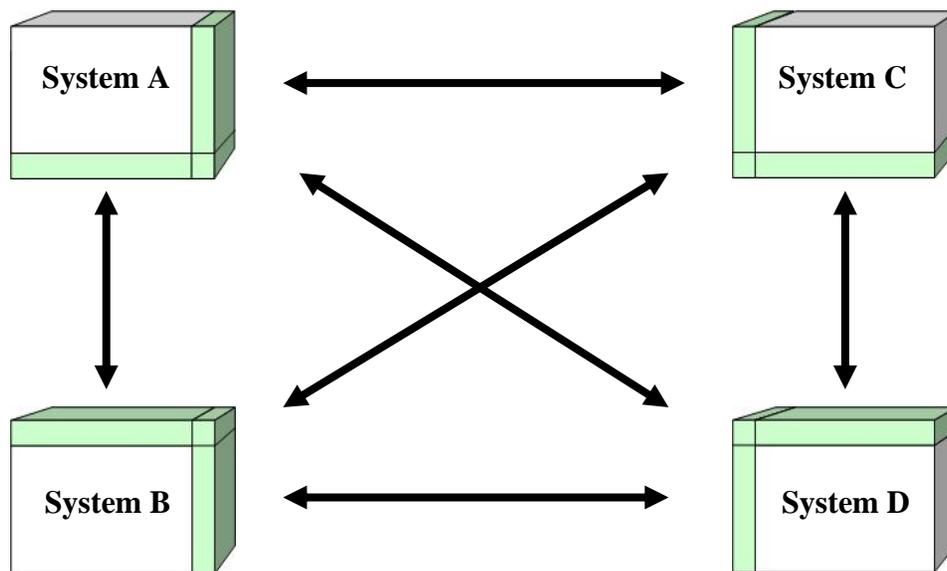


Exploration Objectives

- Explore on a system architecture for:
 - Enabling rapid pooling of resources from different agencies together
 - Maintaining full visibility of status of the resources deployed
- Competency build-up on C2IEDM

Current Situation

- Information residing in different systems



No of interfaces = $N * (N - 1)$



Current Situation

- Common language?

A10 is located at Map
Grid Reference
12345678

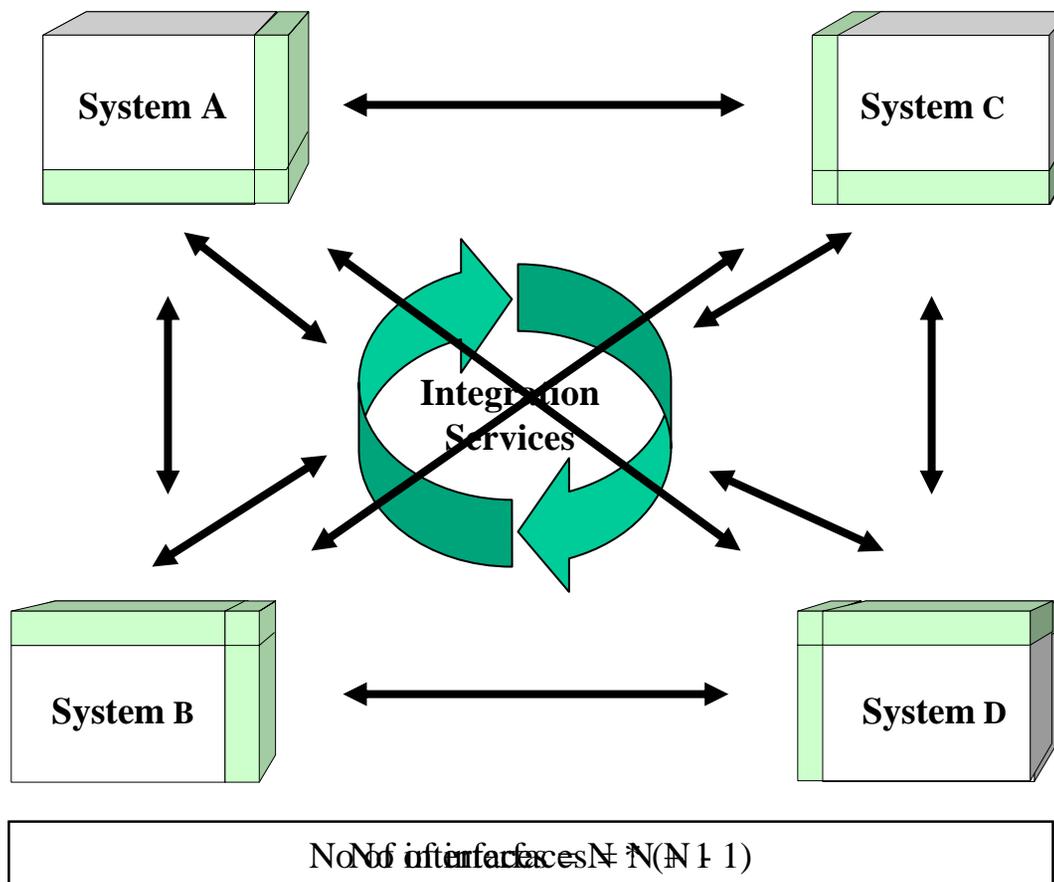


Map Grid Reference? Are
you referring to Lat/Long?



Common Interface

- Common Interface for better interoperability





The Exploration

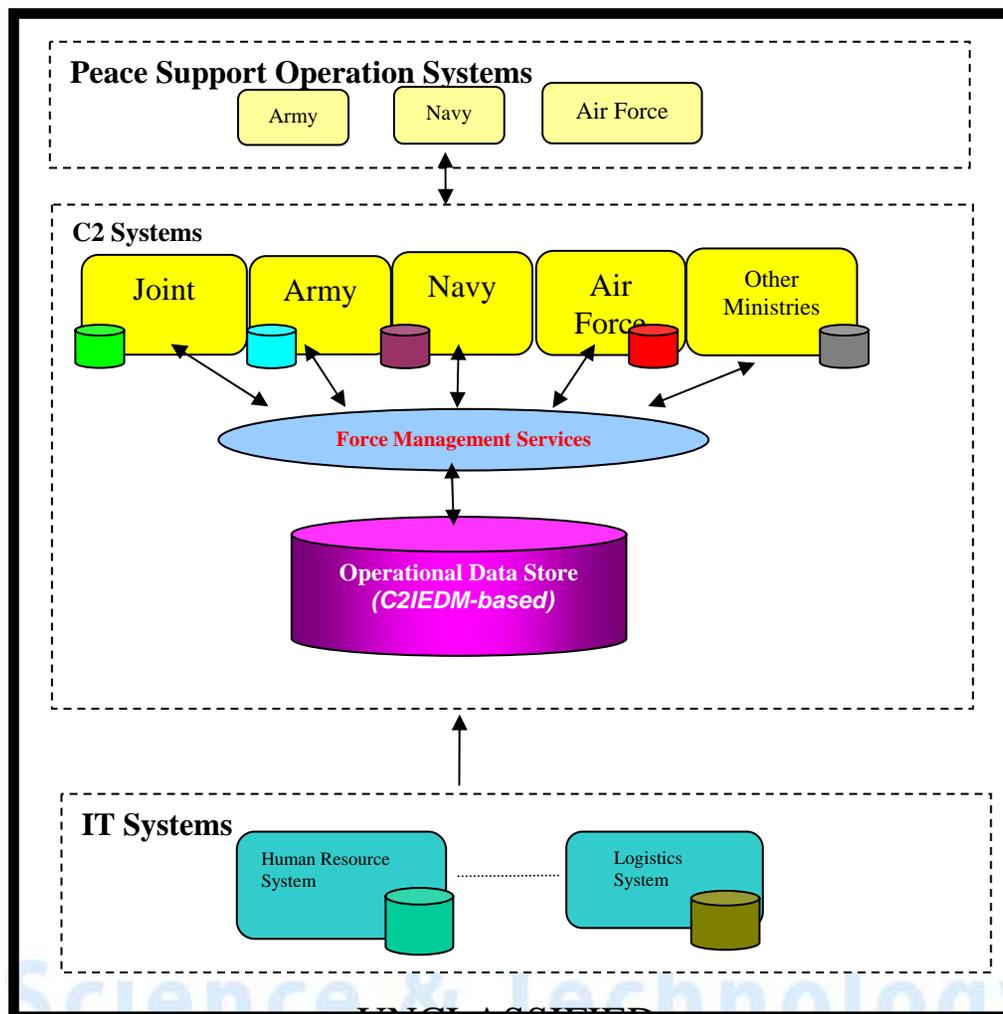
- Start small using HR and two C2 systems as a POC
- Force Management System for creation of organisation structure and monitoring of task forces
- Adopted US concept of Default Operational Organisation¹ for rapid creation of operational force structure
- Use C2IEDM as the operational data store
- Use XML web services for building common interface

¹Default Operational Representations of Military Organisations, Dr Sam Chambelain, Information Science & Technology Directorate, US Army Research Laboratory, Feb 2000.



The Exploration

- System Architecture





Front-end

Operational ORBAT -

File Edit Navigate Search Project Run Export Window Help

Operational ORBAT

Template: 1235IB

- 1235IB
 - 1235IB/TACHQ
 - 2345SIR
 - 456SIR
 - 567SIR
 - 789SIR
 - HQ1235IB
 - NO APPT#

Operation: OFE 2005

- TF
 - 1235IB
 - 789SQN/CREW1

Organisation Details

Unit: 789SQN/CREW1

Unit Info

Name	789SQN/CREW1
Unit Type	PDSCOMPOSITECREW
Service Code	Air
Arm Type	Aviation
Arm Specialisa...	Helicopter
Size	Not known

Parent Info

Name	TF
Category Code	Command and control
Subordinate Status	Has full command of

REDCON

- Overall
 - Logistic
 - Personnel
 - Commander
- Time
 - Actual
 - Reported

LOCSTAT

- Easting
- Northing
- Time
 - Actual

Personnel Personnel under 789SQN/CREW1 : 4 (0,4)

Name	Rank	NRIC	Vocation
TAN TOH TENG	MAJ	S1...	PILOT(HELI)
TAN SAY PING VINCENT	MAJ	S7...	PILOT(HELI)
ONG POH WEE	15G	S7...	AIRCREW SPEC(...)
KOH CHUN SIONG	SSG	S7...	FLT ENGR

Personnel Info

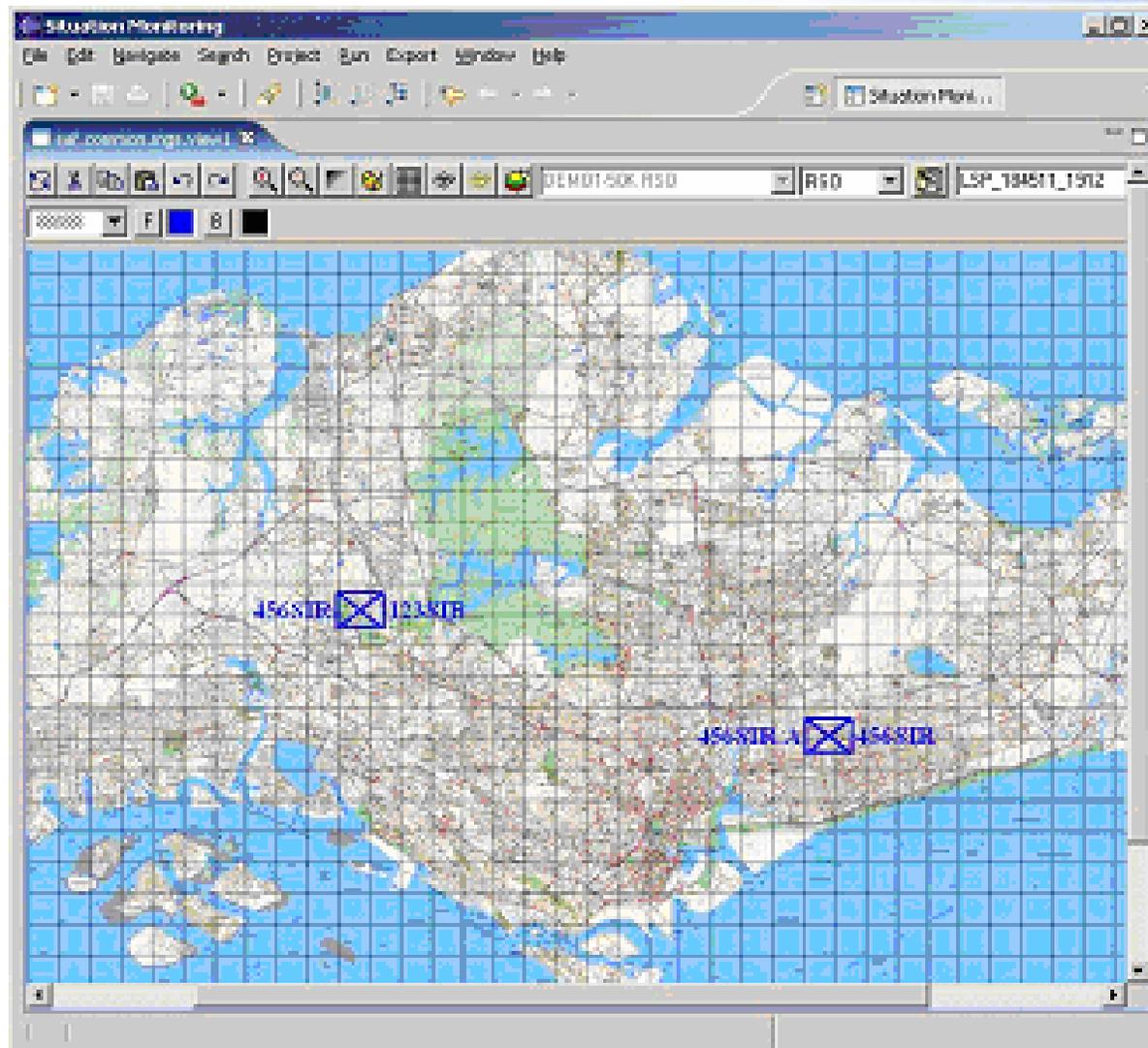
Name	TAN TOH TENG
Rank	MAJ
NRIC	S1234567D
Birth Date	03/10/1967
Gender	MALE
Blood Type	B+
Ethnic Group	CHINESE
Religion	CATHOLICISM

Assigned Appointm...

Name	PILOT@
Relationship	Has on assignment



Front-end



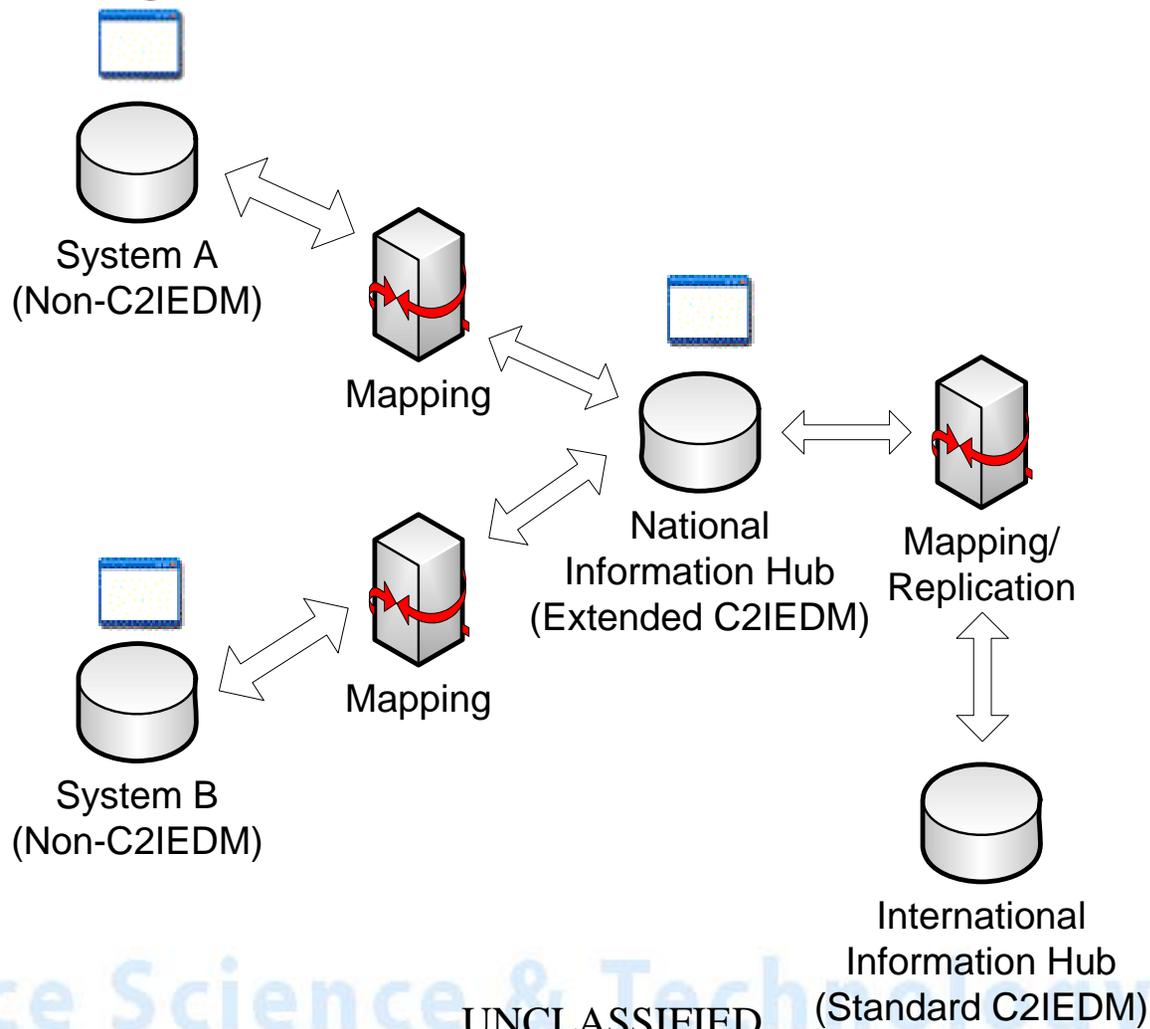


Lessons Learnt

- C2IEDM Extensions
 - Extensions to include appointments and person-course
 - Maintain existing category codes / attribute values. National system to reference to extended tables when values such as 'NKN' or 'NOS' are encountered
 - Maintain existing entity attributes and create additional entity that links to the existing entity via Foreign Key

Lessons Learnt

- Evolving C2IEDM MIP Blocks

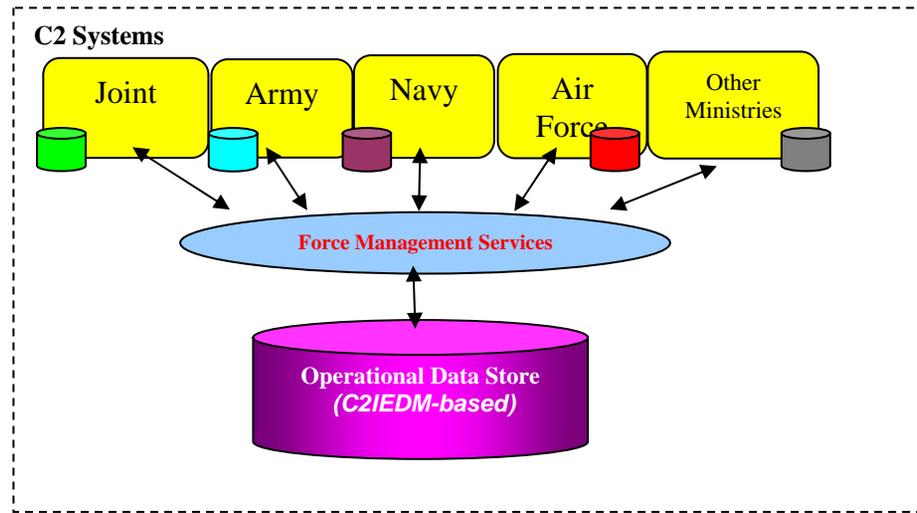




Lessons Learnt

- Mapping
 - Use C2IEDM for new systems, if possible
 - Design new systems' data model factoring the necessary mappings to C2IEDM

Lessons Learnt



- Using interface layer:
 - To isolate model complexity
 - To buffer impact to applications as MIP releases new versions of the models



Lessons Learnt

- Performance
 - Use synchronous services for retrieval of brief information while invoking asynchronous services for retrieving details
 - Create accelerated tables/views for frequently accessed information
 - Archival of old data, recycle of keys?



Conclusions

- Extensions to C2IEDM must be done with care. Consider the suggestions provided in this presentation to avoid interoperability issues
- Use interim layers to buffer the model's complexity and version changes to the model
- Design your data model with mapping to C2IEDM in mind
- Strategy for archival and key management needs to be derived

Q & A

Thank You