

# Data Engineering for the Web-based Integration of Homeland Security Applications

***Dr. Andreas Tolk***

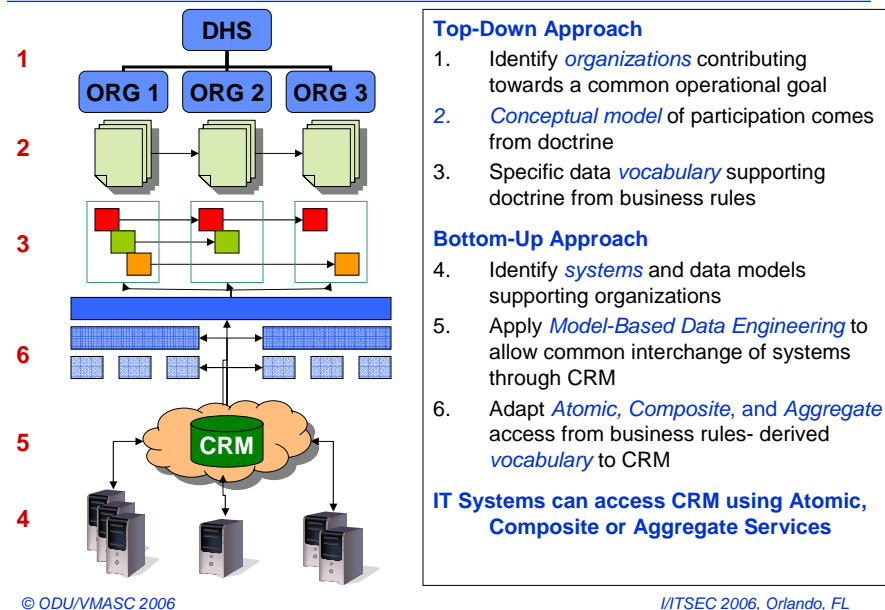
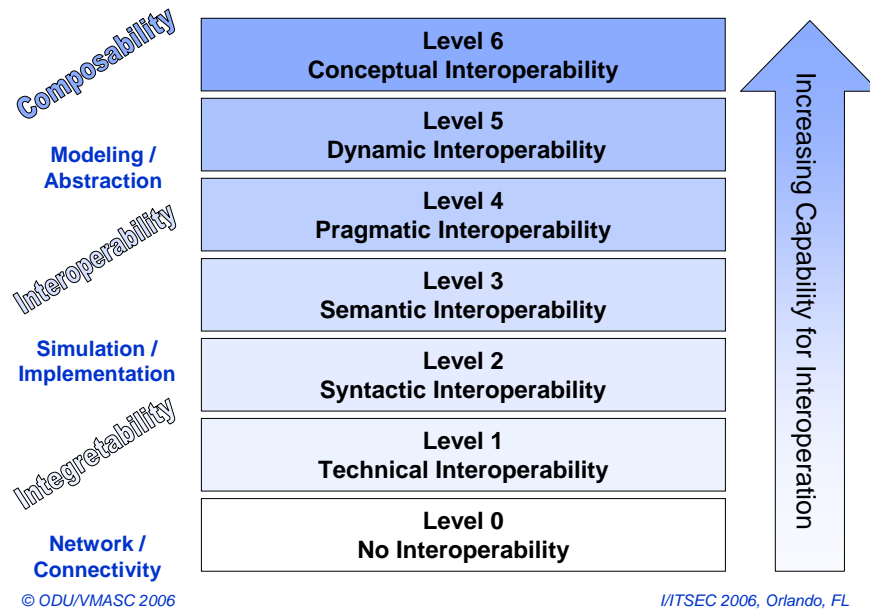
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Old Dominion University



## Challenge of Homeland Security

- Different supporting nations
  - Different supporting organizations (in the US 22)
    - Existing information technology
    - Supporting established business and organization rules
    - Organization and/or system specific data models (or XML tag sets)
- Objective
  - Aligned multi-organization processes
  - Federation of heterogeneous IT solutions
  - Minimal changes to systems



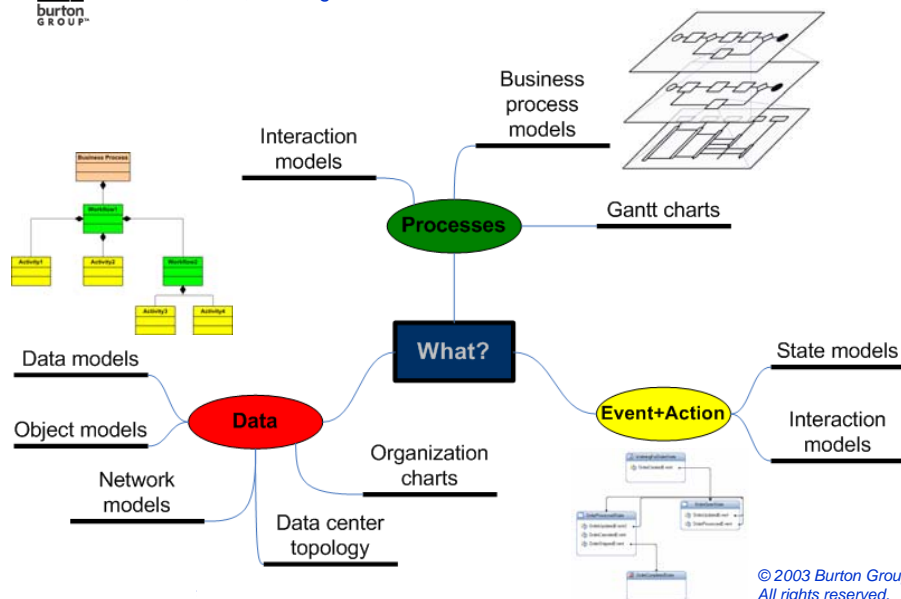
## Summary of necessary steps

- Model the supported processes of organizations
- Align the processes to down
  - How needs to work with whom
  - When is collaboration needed
- Evaluate supporting system functionality
  - Which systems – and which system components and/or services – support the processes
- Data Engineering
  - What data is needed, where do they come from?
  - Who owns the data, how can we access it?
  - What is the format, what is the logical meaning?
  - Data Mediation as a result of the work?

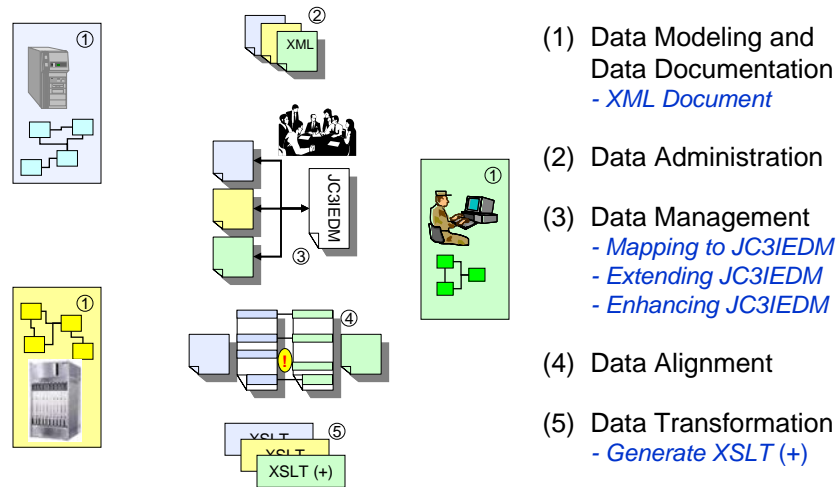


**Peter O'Kelly (Burton Group):**

*Data Modeling is Underrated: A Bright Future Ahead in the Grand Schema Things,*  
Nov 30, 2006, Onotlog-Forum



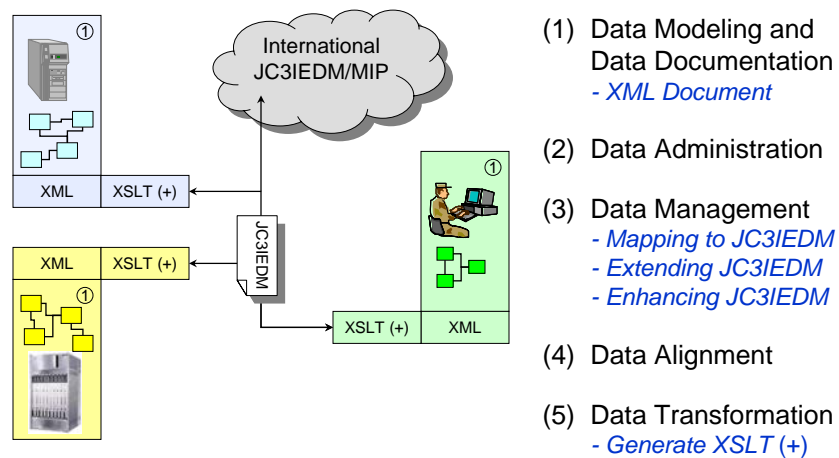
## XML Data Mediation Services based on the JC#IEDM



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## Bringing in all together – XML Data Mediation Services based on the C2IEDM



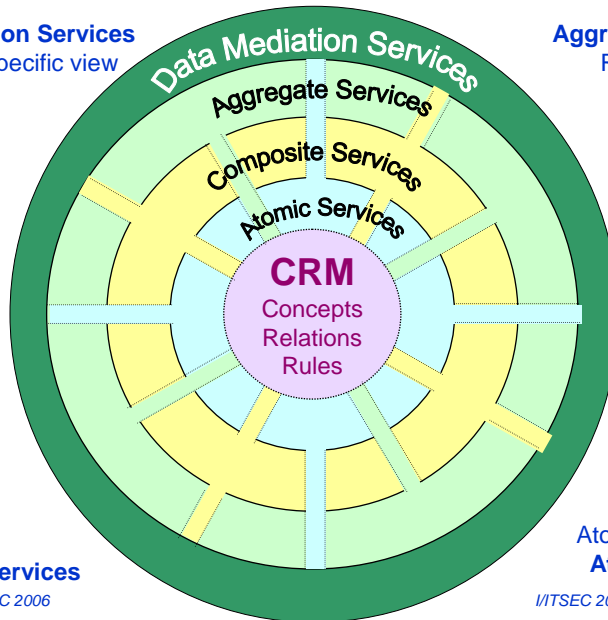
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**Data Mediation Services**  
Application specific view

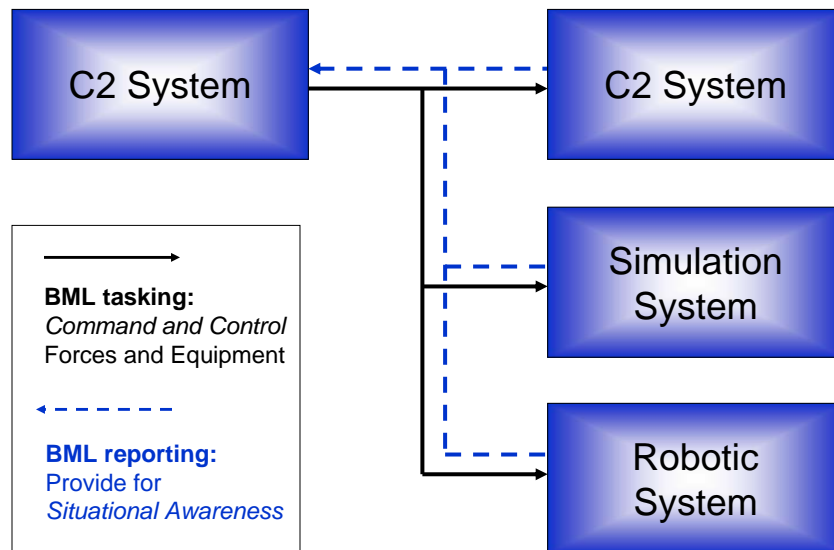
**Aggregate Services**  
Real aggregates  
of information

Composition  
of Information  
**Composite Services**  
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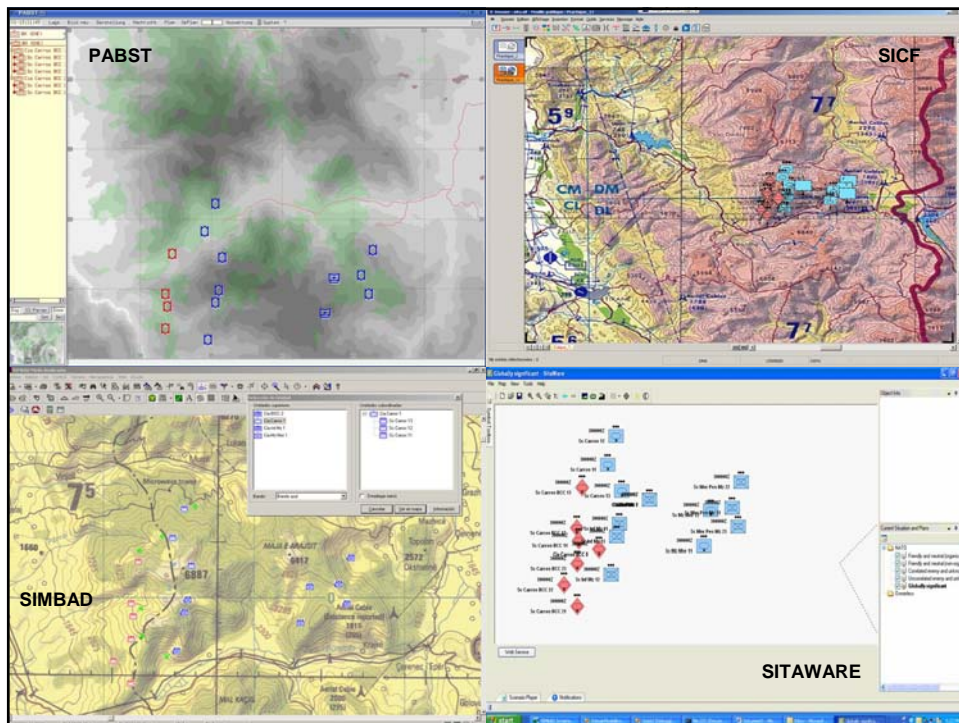
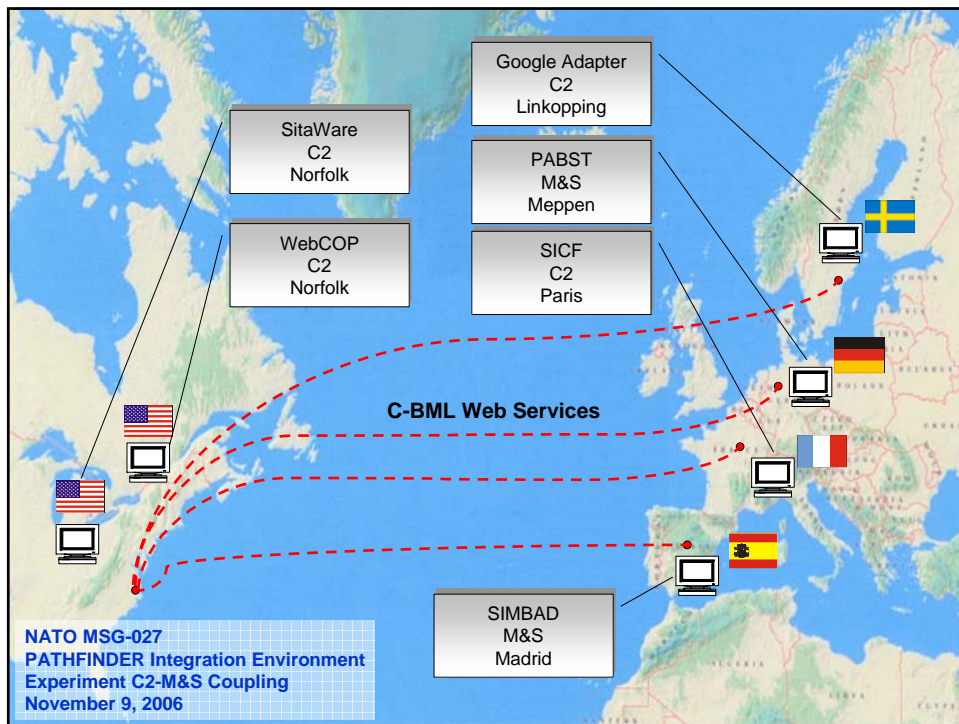
Atomic Information  
**Atomic Services**

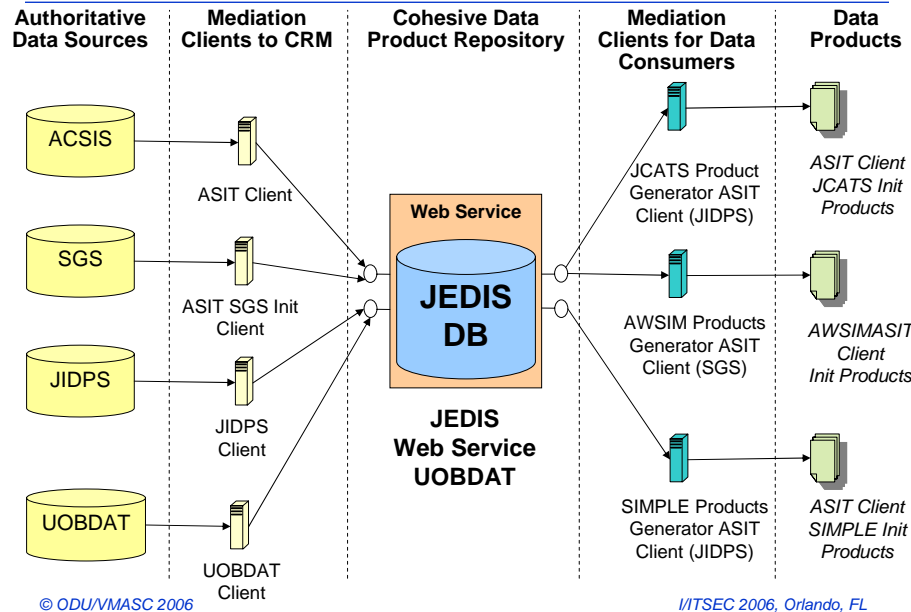
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## Summary

- Data Engineering is recognized in various domains
- Data Engineering results in direct support of Data Mediation Services needed for
  - Semantic Web Applications
  - Global Information Grid
  - Net-centric operations/Net-enabled Capabilities
- Successful applications in NATO
  - MSG-027 Pathfinder Integration Environment
  - MSG-048 Coalition Battle Management Language
- Successful applications in SISO
  - Coalition Battle Management Language (C-BML)
  - Military Scenario Definition Language (MSDL)
- Successful applications in JCOM
  - Joint Event Data Initialization Services (JEDIS)  
currently more than 600 services implemented by our industry partners Gestalt LLP

## Questions?

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