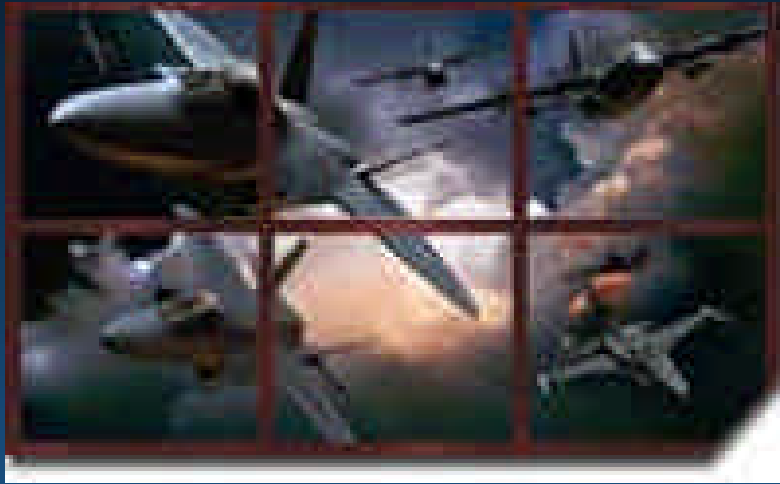


***Lockheed Martin Aeronautics  
Company's CMI Implementation  
Update***

***Glenn Hayhurst***

***4/03/2003***

# About Lockheed Martin Aeronautics Company



- Lockheed Martin Aeronautics Company builds the finest military aircraft in the world.
- Our long list of dependable and highly regarded aircraft includes, the F-16; the C-130J; the first operational stealth fighter, the F-117; and the next-generation fighter, the F-22.

The company has been awarded the contract to build the multiservice, multimission Joint Strike Fighter of the future.

- Lockheed Martin Aeronautics Company has more than 20,000 employees with preeminent expertise in advanced aircraft design and production, modification and support, stealth technology, and systems integration.
- Lockheed Martin Aeronautics Company plant locations include [Marietta, Georgia](#); [Palmdale, California](#); [Pinellas Park, Florida](#); [Meridian, Mississippi](#); [Johnstown, Pennsylvania](#); [Clarksburg, West Virginia](#); and [Fort Worth, Texas](#), our headquarters.

# *JSF Program*



- **The Joint Strike Fighter program is the principal focus of the U.S. Department of Defense's initiative to define cost-effective, next-generation strike aircraft weapon systems for the U.S. Air Force, Navy, Marines, and U.S. allies.**



# The 'Other' JSF Differences



- In addition to the technical challenges in the aircraft itself, there are a number of differences between JSF and previous programs which challenge the design environment.
  - ***Collaborative Environment vs. Interface Control Drawings***
    - Past shared programs were split along defined planes, with specific drawings to define the interface
    - JSF is divided by systems and will require more complex collaboration
  - ***Foreign Partners and ITAR vs. U.S. Design Partners***
    - International Traffic in Arms Regulation brings special challenges to a collaborative environment
  - ***Near Real Time vs. Weekly or even Over Night Updates***
  - ***Global vs. North American***

# The JSF Tool Set



- **PDM – Metaphase, Distributed Access**
  - *Partner sites have work group servers and replicated file data*
- **CAD – CATIA, V4/V5 Hybrid**
  - *The program will use both V4 and V5 for an extended time*
- **Interface – CMI, with customizations**
- **Visualization – VizView, VizMockup**
- **Other tools**

# History



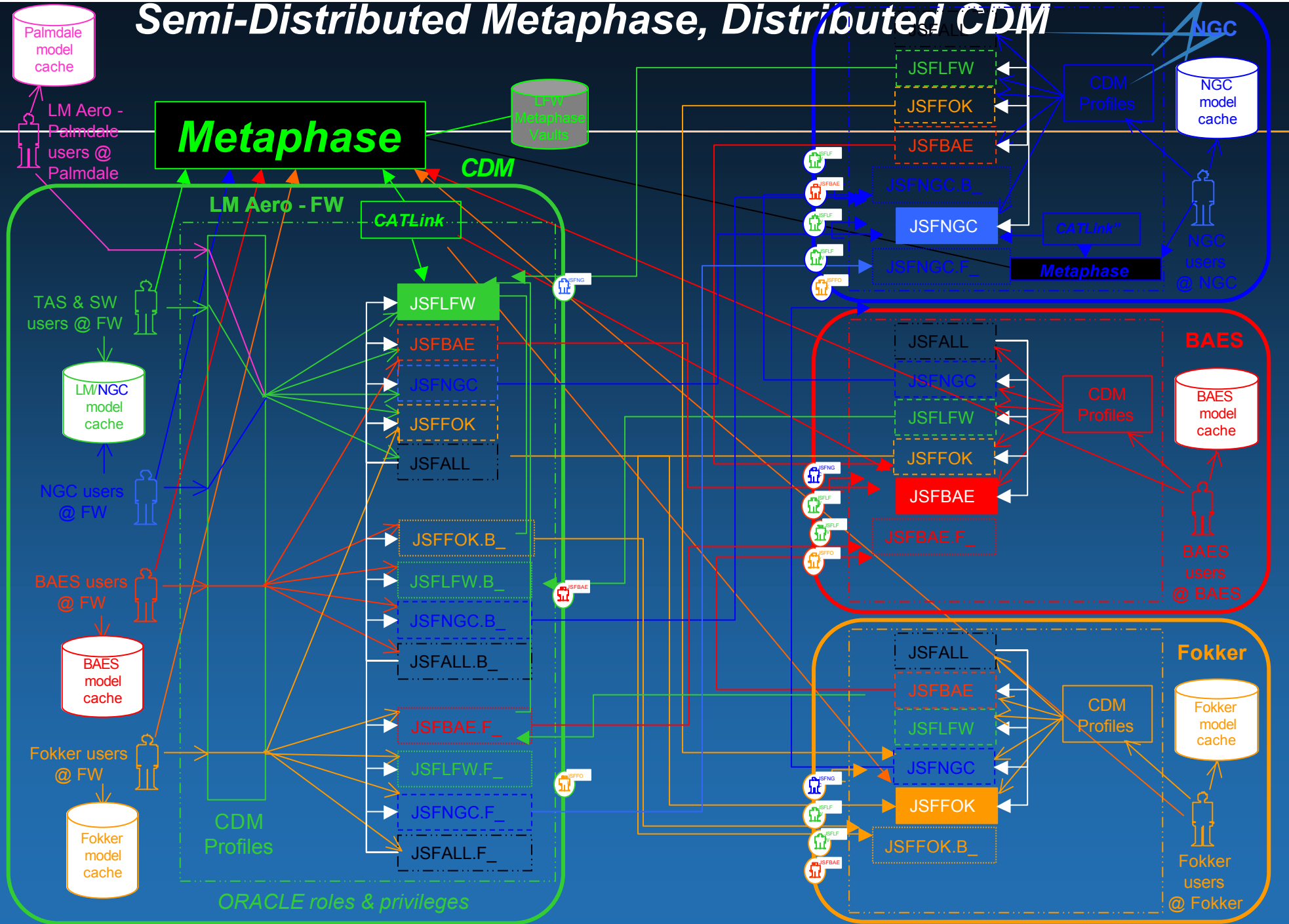
- 5 years ago, an architecture was devised that included Metaphase, the CATIA Data Manager, and CATIA V4
  - *This successful integration between Metaphase and CDM was developed ‘in-house’ for us by CSC (Now EIS).*
- The JSF Program structure now featured a partnership with Northrop Grumman and British Aerospace.
  - *A distributed solution had to be developed*
    - Metaphase could be set up distributed
    - CDM required more work





- **But with one site foreign, those models not explicitly authorized for foreign access by the State Department had to be filtered from view**
- **A new requirement was added to allow partners' users to visit each others sites**
  - *The following slide is a partial view of this architecture with two foreign partners and with the visitors environments shown only at LM*

# Semi-Distributed Metaphase, Distributed CDM







- **Clearly something had to change and Management's over all direction was to SIMPLIFY, SIMPLIFY, SIMPLIFY**
  - *A number of options were devised*
    - Metaphase only
    - CDM ->VPM, using VPM replication
    - Centralized databases
    - others

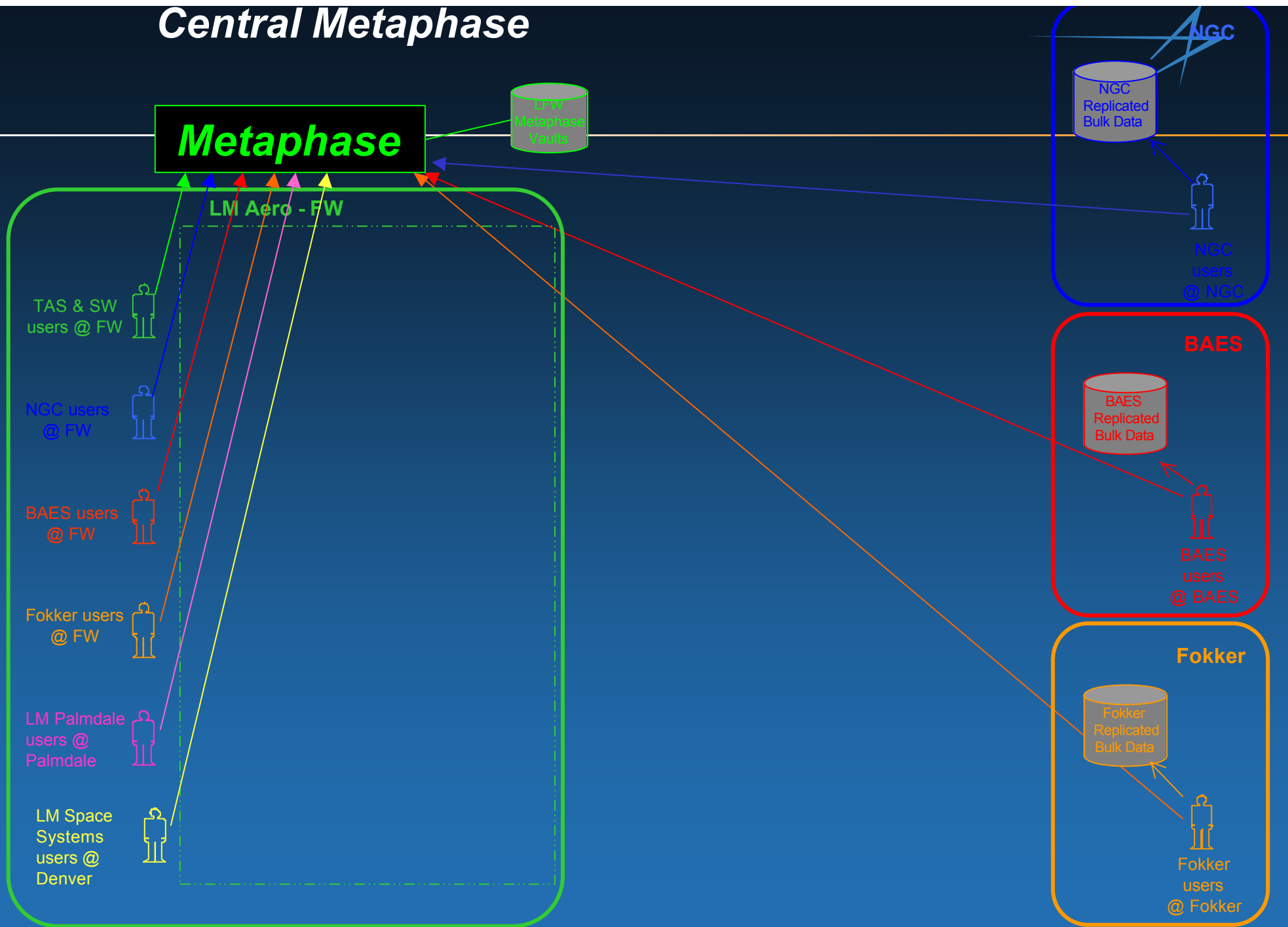
# The Decision



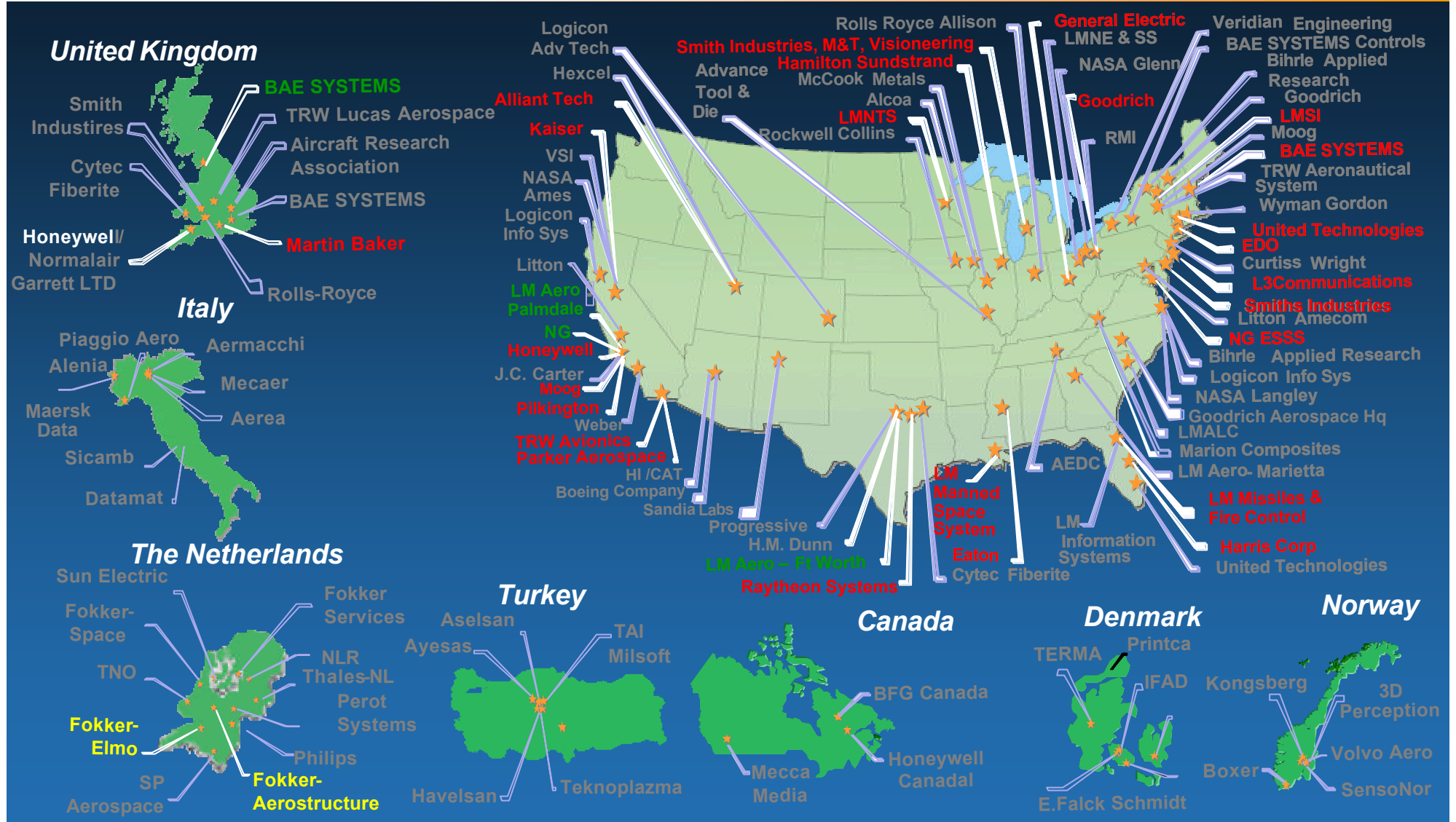
- Vendors were invited in for 1 to 2 weeks each to debate the options involving their products
- The pros and cons of each option were ordered, numbered and graded
- In the end, the simplest of all options came out ranked best
- This option was to use only one data manager; Metaphase and CMI



# Central Metaphase



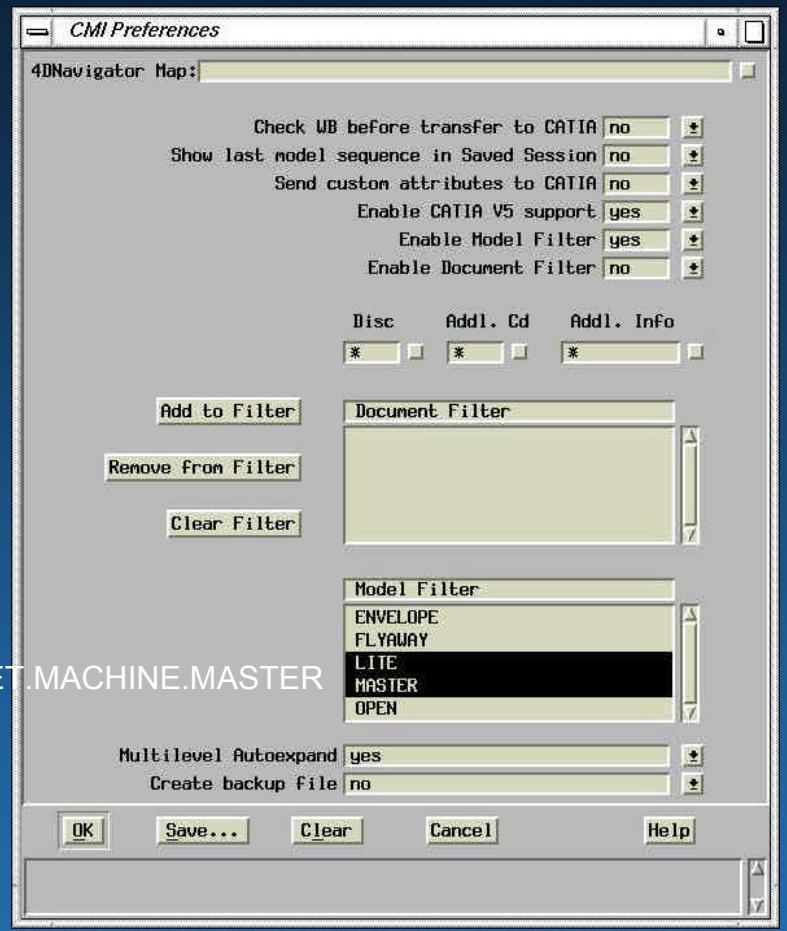
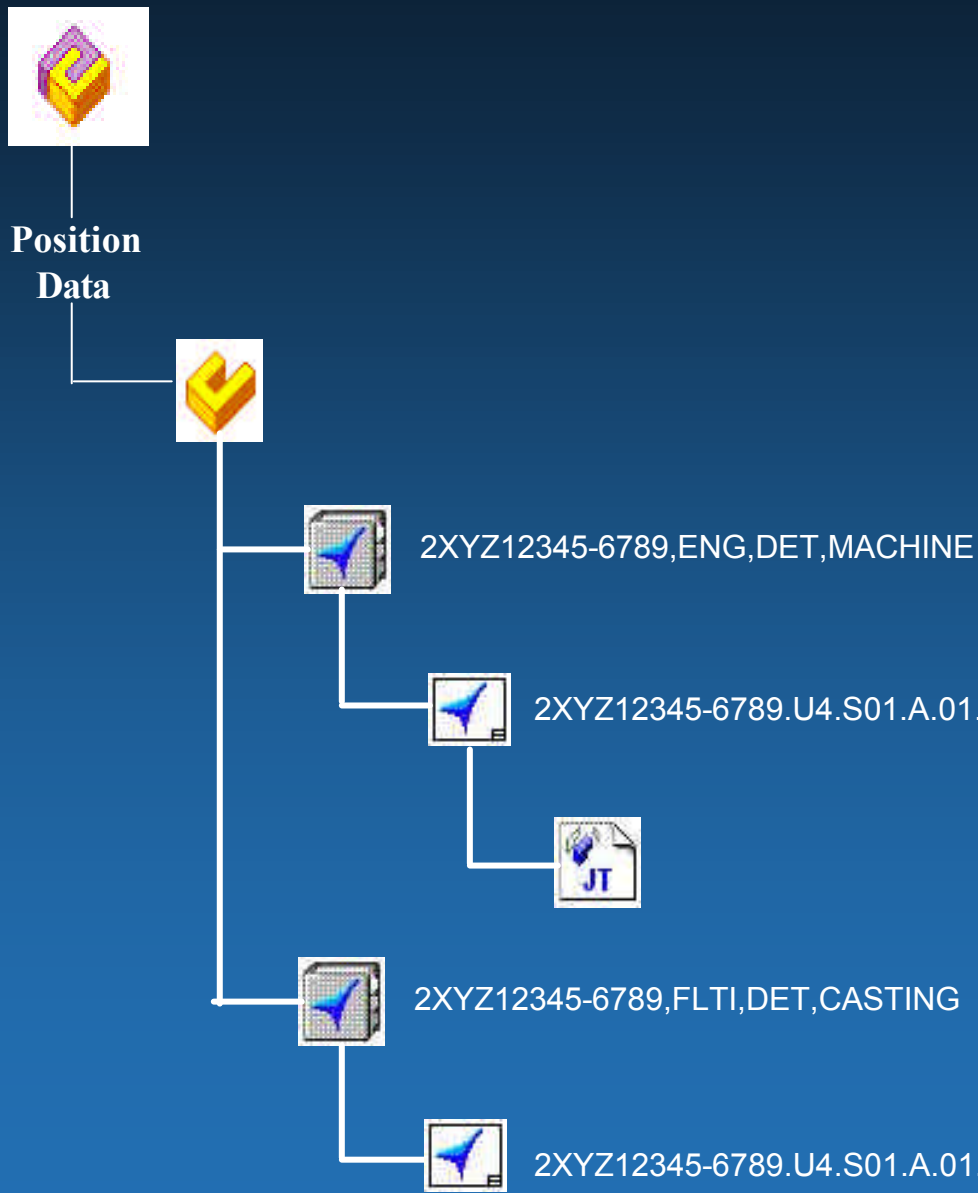
# Scope of Deployment and Use of Metaphase





- **Current Customizations**
  - *Create Model>Document>Part*
  - *CATIA-Workbench Model and Document Filter*
  - *CATIA-Workbench integration to VisMockup for Sessions*
- **Available Customizations**
  - *Multiple Position Assembly Relation*
  - *CATIA-Workbench auto selection of proper file type in V4 and V5 mode*
- **Near Term Customizations**
  - *Uses Parts and quantity synchronization in MP from CATIA Model*
  - *Others*

# CMI Customizations



# Current Challenges



- **Trans Atlantic cmiserv**
  - *Geographic impact was greater than expected*
  - *There are no “off hours” for data exchange*
- **VisView Integration**
  - *Robustness of VisData management*
- **CATIA V5 data management**
  - *Chasing V5 maturity*
  - *API Shell Game*

# Complete Surprises



- **CATIA Centricity**
  - *Model management in Metaphase had an inverse reaction*
  - *Save As feature is prominent*
- **Kilobyte to Megabyte expectation**
  - *The Black CATIA-Workbench*





- **Hybrid CATIA Environment**
  - *Transparent V4 and V5 functionalities*
  - *PDM actions from within CATIA*
- **Teamcenter Enterprise / CATIA V5**
  - *Propose a Generic application dependent link for CATProduct Management*
  - *Allows specific externalization as requirements develop*



***The End***

***Mike Ballard  
Glenn Hayhurst  
Don West  
Kim Duong  
Paul Palaniappan  
George Russell***

***Thank you!  
Questions?***