Geographic Information Systems
‘Moving Into the Mainstream’
A System Integrator’s Perspective

Mike Thomas, Vice President
Lockheed Martin
Management & Data Systems
Imagery & Geospatial Solutions
July 10, 2001
GIS, Past and Present

5-8 Years Ago
- GIS a niche technology but experiencing rapid growth
- Focused on technical analyst
- Spatial analysis just beginning to be a decision aid

Today
- Breadth of geographic analysis exhibiting explosive growth
- GIS has become the software for ‘everyman’
- Enormous installed base
- Integrating with other ‘corporate applications’
- Key ingredient in decision-making

GIS has matured from niche to enterprise technology
Market Assessment

• Commercial
  – Focused on profit and market share
  – Security, interoperability, and performance shortfalls not life-threatening
  – Exquisite technology less important
  – Time to market faster
  – More risk tolerant

• Defense
  – Focused on guaranteeing information edge
  – Security, interoperability, and performance shortfalls are life-threatening
  – Exquisite technology more important
  – Time to market slower (safety-oriented)
  – Less risk tolerant
Lockheed Martin’s Entry to the Market Place

5-8 Years Ago
- LMC
  - IGS domain expertise
decentralized supporting:
    - Command & Control
    - Satellite Systems
    - Launch Systems
    - Large, Custom Systems
      and Software Developments (we even built some GIS-like systems!)

Today
- LM IGS centralized and focused on integrated enterprise solutions supporting the IGC
  - Fully supportive of GIS as a key element of the ‘Corporate Application Suite’
  - Overwhelming reliance on integrating SCOTS (not custom) technologies

LM has become a driving force in the GIS market
Our Customers and Our Interests

- LM – Who are we and why are we here at the ESRI UC?
  - Our customers
  - Our business
    - Solutions creation
    - Systems integration
  - Our background
  - Our interests

35 LM personnel at ESRI User Conference
Role of System Integrators

- **Engineer and assemble** the right-sized and right-priced solution for the customer

- **Determine and deliver** the system interoperability, security, performance requirements

- **Incubate or develop** complimentary exquisite technologies responsive to customer needs

- **Communicate** (defense) user community needs and influence the path of SCOTS (defense-related ESRI sales over 20% and growing)

Mission statement: *Provide systems engineering and information technology solutions that contribute to the safety and security of our nation, and the well being of its citizens.*
Application of engineering processes significantly reduces risks.
Our Goal

Guaranteeing Information Dominance

Exquisite Technology

Mission/Domain Integration

Industry Driven Integration

SCOTS

‘Value add’ of Integration

Commercially available to all

Engineering acumen combined with domain expertise supports our goal of *Guaranteeing Information Dominance*
Enterprise applications must accommodate a wide-range of users - novice (managers) to expert (analyst)

Lots of it, need tools to create, locate, sift, assess, analyze, publish …

Supports reasoning

Knowledge

Information

Data

Meta-data

Meta-data provides key to access data
Abstract Data Types

**Pixels** - Imagery, video (visual, infrared, radar, multi-spectral)

**Features** - Vector data (point, lines, polygons), surfaces, to also include non-spatial data such as text

**Coverages** - Data symbolized or assembled for a specific purpose, user-specific content (raster maps, reproduction separates)

**Enterprise Data** - Management data (administration data, customer requirements, work plans/schedule, user information)

**Meta-data** - Data about content/services (footprints, service catalogue, pointers, etc.)

Our highest level data ‘view’ creates least common denominators –classified in simple, understandable terms to support our architectural solutions
Integration of Abstract Data Types

Ubiquitous access across federated domains enabling global sharing of content

- **Business Enterprise**
  - Enterprise
  - Pixels
  - Coverages
  - Features

- **Meta-data**
  - Provides access to data types
  - Stored and communicated according to standard-based commercially available e-business components

- **Services**

- **IGC & Related DoD/Intel Communities**
  - Meta-data
  - Pixels
  - Coverages
  - Features

- **Legacy Data and Services**

Other Information Types
Technology Direction & Influence on IGC

Expect:

- Growth of source data
- Enhanced capabilities to discover data - GIS 'crawlers'
- Seamless interaction of data types - overlays of information on reference base in real or near-real time
- Near-real time publishing of information
- Near-real time delivery of data to portable computing devices

Expect: “data-to-knowledge” transformation to be faster

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Process Features

- 3D Set Up
- Modeling in Workflow
- Automatic, Off Line Change Detection
- Reporting both Probability and Test/Reference Image North Up
- Workflow Leads to CD Service

The blue border means the image can be clicked and a larger “overview” image is displayed on another web page.
Issues and (therefore) Opportunities

Explore methods to resolve:

- Standards - commercial vs. government vs. governing bodies
- Data explosion - expanding consistency, accuracy, and credibility issues
- Overlapping and complimentary roles of RDBMS and Geodatabases
- Bandwidth expansion - compression and transmission
- Commercial market supporting new and evolving remote sensing technologies
- Degree of automation possible in GIS realm

Opportunities to bridge to the future
Past, Present, and Future

15 yrs ago
Past, Present, and Future

15 yrs ago

10 - 15 yrs ago
Past, Present, and Future

15 yrs ago

10 - 15 yrs ago

10 yrs ago to present

What does the future hold beyond visualization?
Challenge for the Future

Challenge for Community – Support Joint Vision 2010 and Enable ‘Guaranteeing the Information Edge’
Thank you and have a good conference......