



Embedding Information Quality in the Lockheed Martin Enterprise Architecture Framework: An IPMAP Approach

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Agenda



- ***About Lockheed Martin***
- ***Strategic Focus for IT***
- ***Lockheed Martin Enterprise Architecture Framework***
- ***Information Quality and Enterprise Architecture***
- ***Information Product Maps in the Context of Enterprise Architecture***
- ***Early Lessons and Next Steps***



The Men and Women of Lockheed Martin

- 140,000 Employees
- 70,000 Scientists and Engineers
 - 25,000 IT Professionals
- Operations in 1,000 Facilities, 500 Cities, 46 States and 63 Countries

Partners to Help Customers Meet Their Defining Moments

Corporate Overview 3

This slide features a dark blue background with a collage of images showing Lockheed Martin employees in various work settings, including control rooms and office environments. A large, stylized Lockheed Martin star logo is positioned in the upper right corner.



Our Core Markets

Defense & Intelligence

Civil Government

IT

Homeland Security

IT: Common Denominator

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This slide features a dark blue background with three overlapping circular graphics. The top circle is green and labeled 'Defense & Intelligence'. The bottom-left circle shows a person at a control console and is labeled 'Civil Government'. The bottom-right circle shows a computer screen with a security alert and is labeled 'Homeland Security'. A central blue circle contains the letters 'IT'. A red banner at the bottom reads 'IT: Common Denominator'. The Lockheed Martin star logo is in the upper right corner.

Redefining What Is Possible

Hypersonics

Biometrics

Return of Crew Space Exploration

Persistent Surveillance

Information Fusion

Unmanned and Autonomous Systems

A Passion for Invention

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IT Strategy

Industry Leading Security

Knowledge Worker Productivity

World Class Infrastructure

Innovation

Enterprise Architecture & Business Process Optimization

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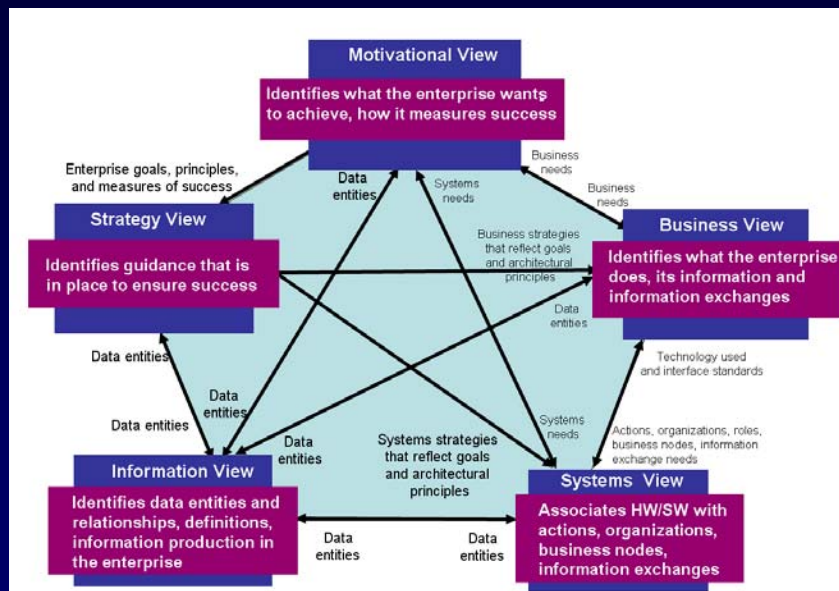
Lockheed Martin EA Framework



- **The LM Enterprise Architecture Framework establishes a common set of EA practices for the corporation**
- **The common practice of EA facilitates alignment of people, processes, and technology, enables business agility, and acts as a catalyst to derive maximum value from IT investments**
- **These practices are also used to facilitate reduction of unnecessarily redundant efforts, and create and reuse architectures and their descriptions across the corporation**

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LM EA Framework



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Information View Artifacts







Logical Data Model (OV-7)	Represents objects about which the enterprise records information. Is a fully attributed, keyed, normalized entity relationship model.
Information Production Map	Illustrates how data and information are produced in the enterprise.
Information Exchange Matrix (OV-3)	Decomposes each needline from the Business Node Connection Model into its constituent information exchanges.
Systems Data Exchange Matrix (SV-6)	Specifies characteristics of data exchanged between systems (the automated information exchanges from the Business Information Exchange Matrix.)
Integrated Dictionary (AV-2)	Central source for all definitions and metadata of terms used in the architecture description, represents the underlying architecture database.

Combines Several Standard DoDAF Products with IPMAP

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Relationship between IPMAP Objects and LM EA Objects







IPMap Object	Symbol	LM EA Equivalent
Data Source/Data Vendor/Point of Origin Block		Business node
Processing Block		System action or human action
Data Storage Block		A System
Quality/Evaluation/Check Block		System Action or human action

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Relationship between IPMAP Objects and LM EA Objects (Cont.)

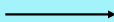


IPMap Object	Symbol	LEAF Equivalent
Data Sink/ Consumer/ Point of Destination Block		Business node
Decision Block		A special type of Processing Block
Information System Boundary		Sending and Receiving Business or System Node
Organizational Boundary		Sending and Receiving Business node

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Relationship between IPMAP Objects and LM EA Objects (Cont.)



IPMap Object	Symbol	LEAF Equivalent
Arrows		Information exchanges
Data Quality Attributes		Attributes in Information Exchange Matrices

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IPMAP in LM EA Context



- **EA Framework**
 - *Integrated the IPMAP methods and descriptions into the LM EA Framework*
 - *Developed a set of criteria for selecting data elements for IPMAP analysis*
- **Practical application**
 - *Targeting the IPMAP approach as a “bottom-up” entry point into our LEAF methodology*
 - *identify a problematic data element*
 - *identify the business processes that create, maintain and use the data element*
 - *identify the organizations that perform those processes, and the software applications used to automate the processes*
 - *illuminate a “micro-view” of the enterprise with “laser focus” on specific problematic data elements*
 - *By completing EA models for those aspects of the enterprise, and integrating with those models created from more of a “top-down” perspective, we ensure that the solutions were compatible with the rest of the enterprise*
 - *Integrated the IPMAP descriptions into our integrated architecture framework*

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Selection Criteria for Targeted Data Elements



- **Critical to the Organization**
- **Recognized Pain Point**
- **Dollar Impact at or Above Minimum Threshold**
- **Illustrative Power re IP Mapping**
- **Illustrative re EA Products**
- **Practical to Model**
- **Practical to Implement**
- **Owner Identified**
- **Commitment by Collector/ Creator, Custodian, Consumer**

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Early Lessons and Next Steps



- **Early Lessons**
 - *Widely accepted with enthusiasm as a concept*
 - *Getting commitment to act is a challenge*
- **Next Steps**
 - *Establish the adoption of our EA methodology*
 - *Work with practitioners to transition problematic data elements into EA via the IPMAP approach*

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Acknowledgements



- *We gratefully acknowledge the support and contributions made by the following individuals:*
 - *Kathie Sowell, for her support in integrating the IPMAP concept into our LEAF Architecture Description Language*
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