Open Standards for Middleware

and up the stack too!

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Chairman and CEO
OMG’s Mission Since 1989

- Develop an architecture, using appropriate technology, for modeling & distributed application integration, guaranteeing:
  - reusability of components
  - interoperability & portability
  - basis in commercially available software
- Specifications *freely available*
- Members include both users and vendors
  - Implementations by vendor community required
- Member-controlled not-for-profit
Some OMG Members...

Accenture  Hitachi  NEC  Siemens
Adaptive   IBM     NIST  Soluta.net
Alstom     IHI Heavy Ind. Northrop Grumman THALES
Boeing     JARA     OASIS Toshiba
CA         Johns Hopkins OIS  Toyo U.
CSC        U.       Oracle UMTP
EADS       Kennedy Carter PRISM Unisys
Ericsson   Lockheed Martin Progress VHA
Fujitsu    Micro Focus Raytheon Visumpoint
Harris     Microsoft RTI  W3C
Hewlett    MITRE    SAP  Zeligsoft
Packard    Mitsubishi
OMG’s Proven Process

- OMG’s standardization process is proven in practice
  - 20 years old, about 800 standards processes
  - Approximately 100 process underway now
  - International in scope, fair, neutral, open
  - Leads to *implemented, proven* standards
  - Extremely rapid (18 months)
  - Backed up with relationships with about 50 other groups (including formal ISO liaison)
OMG’s Best-Known Successes

- **Data Distribution Service**
  - DDS™ is the widespread standard for real-time publish subscribe

- **Common Object Request Broker Architecture**
  - CORBA® is the language- and platform-neutral RMI standard

- **Unified Modeling Language**
  - UML™ is the world’s standardized modeling language

- **Common Warehouse Metamodel**
  - CWM™ is the standard for exchanging warehouse data

- **XML Metadata Interchange**
  - XMI™ is the standard for exchanging UML models
OMG’s history has been to address the “technology stack” from the bottom up:

- Object orientation
- Distributed middleware
- Modeling
- Vertical market models
- Business management: process & rules
25 Vertical Market Areas

- Aerospace and Defense (middleware, modeling)
- Manufacturing (product description)
- Healthcare (services for integration)
- Telecommunications (service delivery)
- Life Sciences (genomic & chemical data)
- Government (archives, skills management, architecture)
- Robotics (localization, service delivery)
- Industrial/Utility Management (SCADA, etc.)
- Financial services (banking, insurance, trading)
Utility Involvement

- Data Acquisition from Industrial Systems
  - Proposed by ABB Automation, Alstom ESCA, Langdale
  - Real-time delivery of industrial control (e.g., SCADA) data
  - Complemented with a Historical Data Acquisition specification delivered later
  - Generic API defined in ISO-standard IDL

- Utility Management System Data Access Facility
  - Proposed by Alstom ESCA, Langdale
  - Data management for real or simulated utility systems (water, electric, etc.)
  - Generic API defined in ISO-standard IDL

- Broad support in current frameworks (ABB, Alstom, Areva, IBM, Langdale, Siemens, SISCO)
The age of hand-crafted middleware is long over; it’s very hard to recreate best practices
- Reliability, performance, scalability, quality, consistency, maintainability, etc.

Though web services are popular for low-bandwidth, lossy Internet channels, in the high-performance, safety-critical, real-time systems arena, DDS reigns

CORBA and DDS share a common interface definition language
- Applicable to any programming or modeling language
- Widely supported in modeling and software development tools
- CORBA generally focused on point-to-point; DDS on publish-and-subscribe

Millions of running systems
Data Distribution Service

- Specifically targets real-time challenge
  - Timing, reliability, quality of service control
- Code portability, application interoperability
  - API bindings for C, C++, Java
  - Interoperable protocol (also IEC 61158)
- Rapid adoption
  - Mandated by most of Aerospace and Defense industry
  - Rapid pick-up by Air Traffic Control, Transportation, Intelligence, others
  - 9 vendor implementations
- Deployed in thousands of mission-critical applications
  - Including industrial automation
To Get More Information

- OMG General Information
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