Avoiding Data Turbulence: 8 Keys to Successful XML Data Integration

Valuable lessons on how leading organizations successfully integrate data and systems through XML

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About this Report

**XML Data Integration** is a critical function for modern information-driven enterprises.

Through the tips in this report, executives, managers and IT professionals will gain key insights into how information-driven enterprises successfully use XML to automate and integrate data and systems while enabling effective and efficient business operations.

**NorthPage Research** produces independent publications and online guides to help strategic information technology decision makers
Avoiding Data Turbulence: 8 Keys to Successful XML Data Integration

➤ Treat XML Data Integration as a Business Function
➤ Establish XML Governance Processes
➤ Implement XML Change Management Procedures
➤ Add and Enforce XML Implementation Structure
➤ XML-enable Advanced Systems Architectures and IT Applications
➤ Implement an XML Development Methodology
➤ Use XML to Rapidly Integrate New Sources of Data
➤ Stay Current with Industry-Specific XML Specifications
Treat XML Data Integration as a Business Function

XML is an enabling standard that companies leverage to define and implement open, integrated business functions. XML’s expression-oriented nature offers tremendous value to an organization’s information architecture but does not and should not belong solely to the organization’s IT function.

XML data integration, which allows for the clear definition and expression of business entities and terminologies, is linked closely to key management initiatives. As a powerful, expression-oriented business medium, an organization’s XML data integration capabilities and deployments represent important business assets and warrant thoughtful, strategic business oversight.

As business reliance on XML data integration grows, so does the value of viewing an organization’s XML capabilities as important business functions. Committed XML planning, resources and governance allow XML-enabled operations to better implement best practices and quality control mechanisms increasing and optimizing application integration value for internal and external constituents.

HOW

- Treat the XML enablement of enterprise functions and applications first as a strategic business function and second as an IT function.

- Implement a corporate XML strategy to guide the management of XML-enabled projects and other XML-focused investments.

• Treat XML Integration as an organization-wide function, much like the Human Resources function. Critical to business success, XML enablement is much “larger” than IT.

• Realize that while XML integration is critical for operations, XML data integration is critical to deriving business value.

• Treat XML Integration as an organizational asset and invest in XML-specific:
  o Competence
  o Capability
  o Governance
  o Measurement
  o Improvement

• Evaluate current and prospective uses of XML for:
  o New product and market entry processes, including support of strategic relationships and channel development
  o Information analysis and integration
  o Competitive differentiation
Establish XML Governance Processes

To maintain and properly evolve the organization’s XML capabilities, establish robust XML governance processes.

XML’s greatest strength lies in its flexibility. However, this same flexibility can make it difficult to objectively assess the quality of designs and the implementation of XML-based systems. XML governance is essential to ensuring successful data integration and exchange across the enterprise.

Many organizations lack the governance and management structure to optimize the use of XML causing processes, systems and functions to underperform. Left unguided and unmeasured, XML implementations underperform and degenerate.

Applying modern governance approaches to XML deployments is a best practice that achieves measurable and material benefits.

HOW

For organizations to realize the most significant potential benefits from using XML, enterprise-wide XML management and oversight investments must be made.

1 - XML Governance Elements

Core XML governance elements include:

- Architectural guidelines
- Best practices
- Data quality assurance
- Extension standards
- Schemas and Document Type Definitions (DTDs)
- Tools
2 - XML & Data Governance Elements

XML governance also extends into and must include the following essential data governance elements:

- Change Management
- Data conflict resolution
- Enterprise Communication
- Data Dictionary
- Evangelism
- Mapping

3 - XML Governance Actions

As part of your XML Governance approach, take the following actions:

- Distribute accountability
- Set reasonable interoperability objectives
- Measure progress
- Reduce developers’ costs, schedules and risks
- Provide common representation
- Provide an XML registry
- Develop, promote and enforce a namespace approach
Implement XML Change Management Procedures

Reliable interoperability between disparate systems is critical for successful XML deployments. Ongoing requirements for change at XML application endpoints create distinct risks of breakage. Proactive change management procedures reduce these risks while strengthening the distributed XML application framework and the constituent ecosystem.

Properly executed, XML change management procedures ensure timely and accurate communications with your internal and external partners and provide the basis for reuse and leverage. As a result, applications can be developed and enhanced more quickly, less expensively and with significantly lower levels of risk.

HOW

Establish a reliable and cost-effective change management strategy.

1 – Change Management Tools & Methodology

Use software development tools and methodologies to successfully manage changes in XML deployments. When your organization is the central XML publishing authority, the following software development components should be viewed as critical for optimal orchestration of change management processes that affect internal and external constituents.

- Versioning
- QA and Testing
- Rollout
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- Documentation
- Training and Processes
- Notification and Support

When your organization is or will be the consumer of centralized XML specifications, it is important to develop and use similar application-specific change management tools and processes to properly implement any mandated changes from the producers.

Whether an XML producer or consumer, ensure that XML integration data quality is a consistent part of your organization’s XML deployments. XML data quality enforces data integrity from the external systems and sources that send critical information via XML.

2 - XML Registry

At the heart of a distributed XML deployment, and one of the key components of change management, is the centralized XML registry. Develop and maintain a registry that:

- Enables developers to easily share data definitions and valid values
- Removes the need to “reinvent” existing data structures
- Promotes reuse of data definitions and data values
- Allows metadata to be easily found

3 - XML Constituents

Develop notification and change management processes that include the following key XML development constituents:

- Data Modelers
- Managers
- Programmers
- Project Managers
- Systems Analysts
Add and Enforce XML Implementation Structure

XML offers tremendous opportunities for data interoperability; however, significant challenges to harnessing its full potential continue to exist. As such, a structured approach to developing, deploying, maintaining and evolving XML implementations remains critical to success.

XML doesn’t have the same degree of evolved support and maturity as other types of foundational information technologies including:

- Relational databases
- Object oriented development
- Unified Modeling Language (UML)
- J2EE

By not properly structuring XML deployments, organizations end up paying more than necessary as:

- Data conversions become more expensive
- Multi-platform delivery plans require re-authoring and manual coding
- Late data and model changes increase risk
- Levels of data quality decline
- Data retrieval operations become prone to excessive numbers of false hits

Thoughtful initial investments in properly structuring XML deployments result in the creation of more reliable, scalable and productive business and technology integration platforms.
HOW

XML deployment owners must strive to maintain the simplest XML schema and data structures possible. This can be achieved by the continuous reassessment of the schema and the structures by their creators and a rigorous justification process requirement for every modification.

TAG “SPRAWL”

The most common XML structure-related problem is tag “sprawl” – the development and proliferation of unmanaged XML tags. To avoid the negative consequences of such counterproductive development, it is essential to provide the following items to all internal and external constituents:

- A common XML representation of the business and application objects
- An easily adhered to communication mechanism to surface and discuss XML issues
- A registry allowing developers to easily and quickly find and reuse tags

XML Data Quality

A key component of a structured XML deployment is XML-specific data quality functionality. Without implementing data quality at the XML level, the data in the XML message is validated by the schema but the quality of the data is ignored. Applying data quality at the XML level is strategic because it ensures the data is trusted and not just properly formatted. The incremental investment required to add this functionality pays continuous and substantial dividends for applications consuming XML data.
XML-enable Advanced Systems Architectures and IT Applications

The vast majority of enterprise applications are well-suited to benefit from XML enablement. High-value systems where native XML architecture and interfaces are implemented yield a range of strategic business and data integration benefits including:

- Lowered costs as fewer resources are required to develop, deploy and maintain XML-enabled systems
- Greater potential for widespread adoption
- Substantial economic benefit from information and application reuse

HOW

Strive to make native XML capabilities a key requirement for advanced systems architectures and IT applications. Examples of application types that consistently benefit from adding XML functionality include:

- Business Intelligence
- Data Warehouse systems
- Data-integration centric applications
- External Integrations
- Legacy Integrations
- Services Oriented applications
- Shared systems
- Transactional systems
- Web-based applications
For complex, data-intensive XML systems such as data warehouses, including XML data natively in applications is a key component of an effective solution architecture.

**SYSTEM FLEXIBILITY**

Implement XML-based data modeling of system interfaces to ensure system flexibility, simplify future interface changes and support new application and data exchange requirements. Key attributes of successful XML deployments include:

- The separation of representation from structure, allowing the use of common parsers, network protocols, tree managers, and APIs to access documents, style sheets and search and query functions.

- Separation of application parts enabling the use of multiple formatters, search engines, networks and protocols.

- The separate handling of semantics to enable document-level style and search controls.
Implement an XML Development Methodology

A well defined development methodology is critical to XML data integration success as it advances developers’ understanding, increases developer participation, and reduces deliverable timelines and risk.

HOW

Establish guidelines and a methodology to:

- Create, document and distribute XML development best practices
- Improve data model and tooling quality
- Evolve and improve the reliability and availability of XML implementations
- Invest in XML-centric developer, manager, and user interaction skills
- Look for opportunities to simplify XML development
- Define and enforce
- Coding standards
- Design principles
- Governance requirements
- Implementation guidelines
- Security considerations

Key XML Development Methodology Components

- Design data models that can accommodate all stakeholder data requirements
- Provide a common registry to allow developers’ access to standardized tags
• Understand and adjust approaches as needed recognizing that developers come from multiple communities with different but overlapping semantic legacies

• Account for the fact that XML is typically tied into other data application and integration initiatives
**Use XML to Rapidly Integrate New Sources of Data**

New sources of standardized data offer the potential for delivering significant business value to modern enterprises. XML simplifies and improves data exchange with internal and external systems while delivering consistent, accurate and actionable information within and across the enterprise.

**HOW**

Build a set of tools and methodologies to rapidly integrate new sources of data through XML integration

- Mandate XML-based integration for new data sources
- Adopt and integrate XML standards
- Leverage established XML architectural, data and deployment models
- Adopt best practices and proven business processes for rapid XML integration
- Engage proven XML solution providers
- Utilize efficient integration tools, templates and models
- Seek opportunities to reuse XML integration components
Stay Current with Industry-Specific XML Specifications

Staying current with industry-specific XML specifications offers organizations the ability to reliably connect, integrate and complete transactions with key trading and business partners. Successful XML data integration and consistent data exchanges rely on updated XML definitions and components.

HOW

Staying current with industry XML specifications requires:

- Following new XML specifications and monitoring updates to existing specifications related to your organization’s industry and your functional applications
- Looking to data integration solution providers for notification and updates of XML specification implementations through new templates and updated tools

Examples where staying current with XML specifications are business-critical include:

I - Applications and Technologies

- BI and Data Warehousing applications
- Business process outsourcing operations deployed through XML
- Internal data models based on XML and XSD
• SOA and ESB leveraged applications where XML is a key component of business modernization initiatives
• Software as a Service (SAAS) application interfaces utilizing XML

II – Industry Specifications
• FpML – Financial Products Markup Language
• SEPA and PSD Compliance for banks
• SWIFT MX for financial services
• UNIFI – ISO 20022 – ISO Standard for Financial Services Messaging
• XBRL financial reporting
• CDISC – Clinical Data Interchange Standards Consortium
• HL7-based information exchange for healthcare organizations
• ACORD XML – Insurance
• ebXML – Electronic Business XML
• NIEM – National Information Exchange Model – Government
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