

**Recommendations of the ad-hoc XML Working Group  
To the CIO Council's EIEIT Committee  
May 18, 2000**

Extensible Markup Language (XML) is being widely implemented and holds great potential to enhance interoperability among information technology systems and speed implementation of e-Government services. One alternative would be simply to sit back and watch it wash over us. However, we believe the CIO Council can add value through leadership in pursuit of the goals and objectives described below.

The potential scope for application of XML is very broad. In fact, with XML at the peak of the "hype curve," the casual observer (or even the technically savvy) may get the impression that XML is the answer – no matter what the question was! Given limited resources, the Council must focus on the **highest-payoff opportunities for application of XML technologies, which we believe are the following:**

**XML offers a non-proprietary and inexpensive way to achieve a high degree of interoperability among heterogeneous systems; XML is especially well adapted to a networked environment where there is a requirement to work with a rapidly changing set of partner and customer systems with unknown and diverse architectures.**

**XML offers a non-proprietary and inexpensive way to promote reuse of data by providing a way to locate it (semantic search), and by providing a standard way to transform and move it between applications.**

Given the many responsibilities of the EIEIT, we recommend that **an XML Working Group be established to coordinate and support a program of activities in the areas described below, and to make sure that specific initiatives add up to a coherent program for exploiting XML technology.** However, we propose that this group be "sunsetting" on September 30, 2002 for 3 reasons: (1) because information technology in general and XML in particular are changing so fast that the need for such a group should be re-evaluated often; (2) because we believe that the group should be action-oriented and having a relatively short lease will provide motivation to achieve early results; and (3) since the role of the group is to catalyze and support action in several areas where there are already standing committees – notably Architecture and Standards within the EIEIT, and the Council's E-Commerce Committee – we do not want the group to focus on defining its "turf."

We have tried to strike a balance in developing our recommendations for the work of the proposed group. We wanted to be specific enough to make it clear to the Committee why we are recommending the following areas for action and what some of the deliverables might be. We were also mindful of the need to generate visible results within the budget and planning cycle of the Council. On the other hand, we wanted to leave room for the proposed Working Group to develop its own agenda, incorporating a progressively better understanding of what is feasible, what has already been done or is under way, and what has the highest payoff. These

considerations led us to recommend 4 broad areas for action, with a menu of specific action opportunities in each area that we are reasonably certain meet the criteria of feasibility and value.

If the EIEITC accepts our recommendation to charter an XML Working Group, the group should work closely with GSA's E-Commerce Program Office and with NIST. We are equally interested in tapping the practical wisdom of program agencies who deal with citizen-customers every day and which have identified XML as a strategic technology. We therefore recommend that the Committee consider asking Marion Royal of the GSA/ECPMO and Owen Ambur of DOI/FWS (and FIRM) to co-chair the Working Group. GSA and NIST are already working together on XML-related projects and NIST expects to participate actively in the proposed group.

### **Recommended Areas for Action**

**1. Develop XML Best practices and Recommended Standards** – There is strong consensus in the ad-hoc group that the Federal Government should make every effort to identify and use existing (commercial or public) standards and institutions. One of the common observations about XML, however, is that the multiplicity of “standards” and data-definition proposals (DTD's schemata, etc.) threatens the goal of interoperability and causes confusion. Thus, the focus of the Council's efforts should be to assist Federal agencies by sorting through the proliferation of XML dialects and proposals to identify a subset that can be recommended for general Federal use. The objective might be called a “profile” of data structure definitions.

The group also recognized that there may be some areas where data structures are indeed unique to the Federal Government, and where new work is needed to develop data definitions. (One possible example is the set of data relating to strategic and performance planning – a “GPRA DTD”.)

The group believes that all this activity constitutes a subset of information architecture (the data-related “cells”); therefore, another way to characterize this area of endeavor is as a program to develop a Federal data architecture that can fit into the overall Federal ITA Framework efforts. This implies the need for a very close working relationship with the Architecture Subcommittee.

Finally, there is a need to develop “collateral” best-practices material aimed at providing agencies with the documentation artifacts they need to integrate an XML strategy into their overall IRM and agency business strategies. Examples include: 1) information on skill sets needed for agency technical staff; and 2) suggestions on procurement language for specifying software functionality required to support XML.

Potential near-term tasks/deliverables include:

- a. Identify a set of data elements and schemata in wide use in Federal organizations and select an existing formal definition for them that can be recommended as suitable for use by the Federal Government. In addition, identify one or more data structures that appear to represent justifiably unique information requirements of Federal agencies, and develop a formal schema to

describe it.

b. Investigate and make a recommendation on the feasibility/desirability of developing a “profile” of recommended DTDs/schemata for Federal agency use.

c. Develop and institutionalize a process of posting to one or more ISO/IEC 11179-compliant public registries and repositories those data elements and schemata that represent justifiably unique information requirements of Federal agencies.

d. Develop Document Type Definitions (DTDs) for Federal Standard and Optional Forms.

e. Develop an “XML White Paper” for CIO’s and Architects, containing a technology briefing, a description of Federal policies and initiatives, and a checklist of action items for agencies to develop and implement an XML strategy.

f. Work with the Architecture Subcommittee to explore the feasibility of developing a data architecture that is sufficiently general for Governmentwide application, but somewhat more detailed than the “framework” level. Such an architecture might be in the form of an XML-based data-structure methodology and a Federal data-structure profile comprising recommended schemata for data structures that are widely used in the Federal Government.

**2. Develop Partnerships with Key Industry and Public Groups Developing XML Standards and Specifications** – The group strongly recommends that the Federal Government cast itself as a user, rather than a maker, of standards in this area. However, as a major user, it is appropriate that we participate actively in the development of XML standards and schemata in the areas of concern to us, including e-commerce, records management, security, and forms. Work in this area should be closely associated with the work of the EIEIT’s Standards Subcommittee (and with NIST) and should be coordinated with the Council’s Outreach Committee.

Potential near-term tasks/deliverables include:

a. Arrange for the CIO Council join the W3C as a Member or Affiliate, and establish a process for aggregating Council requirements to the W3C and disseminating W3C information to the Council. Consider participation in relevant subcommittees, e.g., XForms.

b. Consider formal Council membership or participation in other key XML standards organizations or consortia, such as OASIS, RosettaNet, and ebXML.

c. Develop a mechanism for discussion, aggregation, and dissemination of Federal requirements to be channeled to standards groups and also made public for use by vendors and others.

**3. Develop Partnerships with Existing Federal “Vertical” Communities to Accelerate the Delivery of XML Benefits** – Existing interagency or cross-agency application initiatives are a high-priority target for XML work. Such initiatives will typically present interoperability challenges because they involve agency or public information systems that do not share a common architecture. At the same time, existing initiatives either are currently or will soon be delivering services, so the impact of XML benefits could show up soon. Finally, most of these initiatives were conceived because they address high-priority business issues in the Federal Government. The strategy we see for the Working Group in this area is to bring the “good news” of XML benefits to these project teams, and to accelerate their adoption of the technology by steering their efforts toward successful implementation practices.

Potential near-term tasks/deliverables include:

- a. Explore opportunities to use XML in projects sponsored by the following –
  - CFOs (financial accounting data)
  - OPM (personnel data)
  - NARA (E-records)
  - NPR (Federal Clearinghouse for Information and President’s E-Gov directives, especially the top 500 services/forms)
  - GSA (WebGov)
  - GSA (IT Accessibility)
  - I-TIPS Consortium (IT project planning and reporting)
  - Federal Commons project (grants).
  
- b. Work with I-TIPS Consortium to assess feasibility of implementing XML as the method for data transfer between agencies and OMB, and to develop a data structure model (schema) for I-TIPS data to lay the foundation for structured search and re-use of this data for GPRA-related applications and analysis.
  
- c. Work with NARA and FIRM to develop a prototype XML form/Document Type Definition that may be used by Federal agencies to provide metadata classifying logical collections of their records (records series) according to a standard set of indexing elements.

**4. “Results-Oriented” Education and Outreach** – The challenge is to change the behavior of CIOs, information architects, acquisition teams, project managers, in-house developers, and vendors so that XML best practices actually get implemented in working systems. Once we have determined the persons, decisions and processes we want to affect, we should develop a plan that can be effective in creating changed behavior. Traditional activities like symposia and easily accessible information resources (Web sites) have a role, but other practices should also be considered.

Potential near-term tasks/deliverables include:

- a. Compile and publish to the Web a summary of best practices for exploiting XML technology.
- b. Join with FIRM, NARA, NIST and others to co-sponsor a symposium on the potential of XML to facilitate forms automation and E-records management.
- c. Review FIPS and other Federal standards guidance to make it “XML-friendly” and particularly to facilitate the nonproprietary exchange of information.
- d. Work with the CIO Council’s Capital Planning and IT Management Committee to incorporate a requirement to address data architecture standards I-TIPS <<http://www.itips.gov/>>. Assess the desirability of identifying XML “Federal profiles” as recommended standards with which noncompliance must be expressly justified under OMB Circular A-11, Exhibit 300B, Part II, E.2.
- e. Investigate the feasibility of working with producers of application-development tools to incorporate the Federal XML “profile” into their software so that using them is “default” behavior.