

The Need for Web Services APIs

Enterprise Architecture

Presentations and discussions at the JA-SIG meetings in the US and UK suggest an urgent need for Web Services APIs that can be used to integrate current systems.¹ The critical focus is the integration of ERP (Enterprise Resource Planning), learning management (virtual learning environment), and library systems.² As these systems transition to component-based architectures, similar integration will be required between business functions within each these three “supra-systems.” The emerging view is to integrate these systems or components using SOAP messaging and the supporting WSDL and UDDI services.

Documentation from all major software suppliers to higher education shares this Web services-based architecture vision, though details are typically not yet available. The U.S. Department of Education has internally implemented this architecture and plans to extend its use to the entire higher education community by January 2004.

Message-based Integration

The key to future enterprise information technology integration will be commonality of message exchanges. This integration, in turn, will yield a combination of improved service and reduced cost. Software developers are already making choices for new applications. Software suppliers are being asked to support interoperability.³ All of the major software suppliers have agreed to Web services; many hesitate to commit to any specific message content standard without some assurance of widespread adoption.

Industry and higher education standards provide a basis for standardizing message content. The IMS Enterprise specification provides content specification for interchanges between the learning management systems, and ERP and library systems. The NISO circulation standard provides similar content specifications including roles. The PESC transcript standard and the U.S. Department of Education’s Common Record also provide message content specifications. The recently adopted HR-XML higher education specifications for enrollment and background investigation and the SIF standards for exchange of information with K-12 schools also define content. HR-XML is especially important since these APIs are already supported or planned for major ERP systems. Payment processing and electronic bill presentment and payment can use the IFX standard.

¹ This brief was prepared as comments on the announcement of the Web Services API project as described in the HEKATE Year End Note published December 12, 2002. The project description is to be further refined by the project steering committee.

² JA-SIG Board member Bernard Gleason has written and presented on Web Services. UK’s Centre for Educational Technology Interoperability Standards is developing a Web-services-based enterprise architecture for higher education.

³ The recent CETIS IMS Interoperability testing is an example. If interoperability can be achieved, this will sharply increased the use of learning object and sharply reduced unit costs of learning.

Because of the many organizations that are contributing to the technology and standards, a Web Service API project should select messaging infrastructure standards, reconcile overlapping message content standards, coordinate review and recommendations, document the resulting Web Services APIs, and provide training and support for implementation.

The HEKATE Role

The HEKATE Web Services API project could potentially serve this purpose—achieving content standards for integration by defining Web Services APIs. HEKATE has representation from both colleges and universities and information technology firms and organizations. According to early documents, HEKATE is focusing on Web Services, which is common to those technologies being implemented at colleges and universities. HEKATE broadly includes representatives of administrative, learning, and library systems.

There are several possible ways to develop the APIs. One would include these steps:

1. Document the comparisons of content standards that cover common data elements. For example, name and address is specified by the Department of Education's Common Record, NCHELP's CommonLine, PESC's electronic transcript, HR-XML, and IFX.
2. Suggest the adoption of a standard (e.g. HR-XML because of native support by the two major ERP suppliers), or recommend a composite or improved standard for the Web Services API.
3. Coordinate review of the recommendation with colleges and universities by requesting comments through HEKATE, JA-SIG, PESC, and EDUCAUSE listserv.
4. Coordinate with the federal government via the Office of Management and Budget's eGovernment Office and the effected federal departments or agencies.
5. Seek formal review from the vendors either by a listserv or HEKATE sponsored meetings.
6. Through the Web Services API project team, make a final recommendation (which the HEKATE Board may want to review).
7. In conjunction with other organizations, such as CETIS, sponsor interoperability testing.

8. Assist the implementing organizations by interpreting the recommendation.

There are several principles that should be followed:

1. Reconcile with industry standards rather than develop a Web Services API unique to higher education. This implies active liaison with industry standards setting organizations.
2. Emphasize what should be rather than what is now used to support legacy systems.
3. In conjunction with other organizations, support sufficient implementation to ensure the standard is accepted in practice as well as principle.