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EXECUTIVE SUMMARY

Interoperability Standards for K-12 Education

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Historically, the case for interoperability – the seamless sharing of data, content and services among systems or applications – has not been compelling in the K-12 education marketplace. As long as programs were restricted to individual computers or small local area networks, the costs to developers of agreeing on and implementing comprehensive, industry-wide standards were rarely justified by the benefits.

This primer explores technical challenges and opportunities faced by education technology leaders as we work together for a compatible, affordable IT future.

software, and the networked computing infrastructure of an educational enterprise. The primer explores the two main content interoperability designed to facilitate the development of interoperable digital content and reduce the effort to integrate or replace content in production learning environments: the IMS Global Learning Consortium's Common Cartridge and the SCORM Content Aggregation Model.

Today, however, the usability of isolated K-12 data, content, and learning applications is rapidly diminishing. The growing popularity of cloud computing, online learning, data warehousing, sophisticated analytics, accountability reporting, and performance management tools all increase the need for interoperability.

There are many different, overlapping categories of interoperability, each with its own challenges and evolving standards. In the full-text primer we focus on five specific areas:

Content Interoperability Standards

21st century educational environments depend on a high level of interaction among sources of academic content, application

Data Connectivity

The main objective of data connectivity standards is to support the transfer of data from a variety of platforms (including student information systems, data warehouses, etc.) using a standard set of commands in an efficient and cost effective way. The primer explores the most common connectivity standards in the market today for accessing the most popular database platforms, including: ODBC; JDBC; ADO.NET; OLE DB; and XMLA.

Data Integration

Integrating data across the enterprise has become critical for increasing productivity, improving business efficiencies, and reducing costs. Data integration begins with data connectivity but goes beyond it to include data translation, standard data



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output format, and other transformation services to make the data usable by each individual application. The two standards for data integration explored in more depth in the primer are: School Interoperability Framework (SIF); Enterprise Service Bus (ESB).

Identity Management Standards

Identity management involves the business processes and supporting infrastructure needed for the creation, maintenance, and use of digital identities. Standards and standards-based identity management tools explored in the primer include: the Security Assertion Markup Language (SAML); Shibboleth; Open ID; and LDAP.

Portal Interoperability

In the era of cloud computing, portals – ranging from public gateways such as Sharepoint, Google, and Yahoo to various

education-specific portals – have become increasingly important and commonplace. Pluggable user interface components known as portlets help make such portals flexible and dynamic. In recent years several standards have been introduced to address the challenges of portal interoperability. These standards, described in more detail in the primer, include: JSR 168 and 286 as well as WSRP.

Looking Ahead

With the rising importance of cloud computing, online learning, portals, modularity, data warehousing and performance management, interoperability standards have become more crucial than ever before. As elaborated in the primer, it is essential for K-12 technology leaders to learn how to maximize the benefits of existing enterprise systems while adding new solutions that are cost-effective and scalable. None of this is possible without interoperability.

THE COMPLETE PRIMER CONTAINS

- **Information about each of the standards listed in this executive summary.**
- **Examples of interoperability challenges and solutions in a K-12 district setting.**
- **Advice on selecting third-party data connectivity solutions, understanding the components of a data integration solution, determining when to adopt a new standard, and more.**

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