Software Developers Conference

March 4, 2003 Kansas City, MO

Final Agenda

8:00 a.m.- 8:30 a.m.	**Continental Breakfast**
8:30 a.m. - 8:50 a.m.	**Welcome and Opening Remarks**
8:50 a.m. - 9:20 a.m.	**Consistent Data Strategy**
9:20 a.m. - 9:50 a.m.	**Web Services Strategy**
9:50 a.m. - 10:20 a.m.	**Open Dialogue on Data Strategy**
10:20 a.m. - 10:30 a.m.	**Break**
10:30 a.m. - 11:00 a.m.	**XML Framework**
11:00 a.m. - 11:15 a.m.	**Update: National Council of Higher Education Loan Programs (NCHELP)**
11:15 a.m. - 11:30 a.m.	**Update: Postsecondary Electronic Standards Council (PESC)**
11:30 a.m. - 12:00 p.m.	**Master Promissory Note Discussion**
12:00 p.m. - 12:30 p.m.	**2003-04 Processing Year: Questions and Answers**
12:30 p.m. - 1:00 p.m.	**Schedule Update, Wrap-up & Questions/Answers**

Welcome and Today's Agenda

Jerry Schubert, Acting
Chief Information Officer

Welcome and Today's Agenda

- **Consistent Data Strategy**
- **Web Services Strategy**
- **Open Dialogue on Data Strategy**
- **XML Framework**
- **Update: National Council of Higher Education Loan Programs (NCHELP)**
- **Update: Postsecondary Electronic Standards Council (PESC)**
- **Master Promissory Note**
- **2003-04 Processing Year Questions & Answers**
- **Schedule Update, Questions & Answers, Wrap-up**

Schedule Update Questions & Answers Wrap-up

- Schedule Update
- Q&A with panel of experts
- List of 'to-do' items
- Topics you wish to discuss at the next Software Developers Conference
- FSA/CIO's Software Developers Conference, August 14-15, 2003

Thank You

Jerry Schubert

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Consistent Data Strategy

Agenda

Overview of Data Strategy

XML Framework

Access Methods

Data Standards

Data Quality

Data Architecture

Data Ownership

Agenda

Overview of Data Strategy

FSA Consistent Data Framework

Define an enterprise-wide data strategy that addresses the business flow of data across the enterprise, architecture, primary ownership, standards, management, access methods, and quality.

FSA Consistent Data Framework

Access Methods	Internal Data Exchange *(Internal Data Strategy)*	External Data Exchange *(FSA Gateway Strategy)* - SAIG - Web Services		Portals / Websites *(Portal Strategy)* - Schools - Students - Financial Partners
	Data Access Services - EAI - Web Services *(Web Services Strategy)*			
Data Standards	Data Standards - XML - Custom Flat File - EDI			
Data Quality	Data Correction Services - First time data corrections	Reconciliation Services - Repeatable data consistency checks (Person demo. data) - Data reconciliation scripts	Audit Services - Cross-system financials checks (Aggregated account balance to detailed trans.)	Analytics - Data Mining - Statistical Analysis
Data Architecture	Security - Authentication - Encryption - Authorization - Access - Privacy	Integrated Data Dictionaries	Backup, Restore, and Archiving	XML Vision *(XML Strategy)*
		Common Identifiers - Common Student ID - Routing ID	Records / Document Management	Core Components / Sector Libraries / Schemas
		Database / Data Warehouse Strategy *(Data Mart / Warehouse Strategy)*		Registry / Repository
Data Ownership	Data Owner	Data Owner	Data Owner	Data Owner

* Representative examples
** Technical Architecture Strategies - In Progress

Last Updated: 01/31/03

FSA Consistent Data Framework

Identify the strategy focus areas necessary to develop a cohesive enterprise-wide Data strategy.

FSA Consistent Data Framework

Access Methods	Internal Data Exchange *(Internal Data Strategy)*	External Data Exchange *(FSA Gateway Strategy)* - SAIG - Web Services		Portals / Websites *(Portal Strategy)* - Schools - Students - Financial Partners
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* Representative examples
** Technical Architecture Strategies - In Progress

Last Updated: 01/31/03

FSA Consistent Data Framework

Collaborate with all internal and external stakeholders to identify business needs and requirements with respect to the data provided to FSA by others, provided by FSA to others, and managed by FSA.

FSA Consistent Data Framework

	Column 1	Column 2	Column 3	Column 4
Access Methods	Internal Data Exchange *(Internal Data Strategy)*	External Data Exchange *(FSA Gateway Strategy)* - SAIG - Web Services	Portals / Websites *(Portal Strategy)* - Schools - Students - Financial Partners	
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* Representative examples
** Technical Architecture Strategies - In Progress

Last Updated: 01/31/03

Agenda

Overview of Data Strategy

XML Framework

XML Framework

XML Vision
(XML Strategy)

Core Components /
Sector Libraries /
Schemas

Registry /
Repository

Agenda

Overview of Data Strategy

XML Framework

Access Methods

Access Methods

Internal Data Exchange	External Data Exchange	Portals / Websites
(Internal Data Strategy)	*(FSA Gateway Strategy)*	*(Portal Strategy)*
	- SAIG	- Schools
	- Web Services	- Students
		- Financial Partners

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Overview of Data Strategy

XML Framework

Access Methods

Data Standards

Data Standards

Data Access Services
- EAI
- Web Services
(Web Services Strategy)

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Overview of Data Strategy

XML Framework

Access Methods

Data Standards

Data Quality

Data Quality

Data Correction Services	Reconciliation Services	Audit Services	Analytics
- First time data corrections	- Repeatable data consistency checks (Person demo. data) - Data reconciliation scripts	- Cross-system financials checks (Aggregated account balance to detailed trans.)	- Data Mining - Statistical Analysis

Agenda

- Overview of Data Strategy

- XML Framework

- Access Methods

- Data Standards

- Data Quality

- **Data Architecture**

Data Architecture

Security	Integrated Data Dictionaries	Backup, Restore, and Archiving
- Authentication - Encryption - Authorization - Access - Privacy	Common Identifiers - Common Student ID - Routing ID	
	Database / Data Warehouse Strategy *(Data Mart / Warehouse Strategy)*	Records / Document Management

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Overview of Data Strategy

XML Framework

Access Methods

Data Standards

Data Quality

Data Architecture

Data Ownership

Data Ownership

| Data Owner | Data Owner | Data Owner | Data Owner |

Questions

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Web Services Strategy

Agenda

What are Web Services?

Web Services - The Technologies

Web Services Compliments Overall Data Strategy

How does this help Business?

Conclusion

Web Services

A Web Service" is a self-describing, self-containing modular application. The Web Service is descriptive logic that is packaged so that it can be located and invoked programmatically over the Internet using a set of low overhead, open standard network and application protocols (i.e. SOAP, UUDI, XML, etc.)
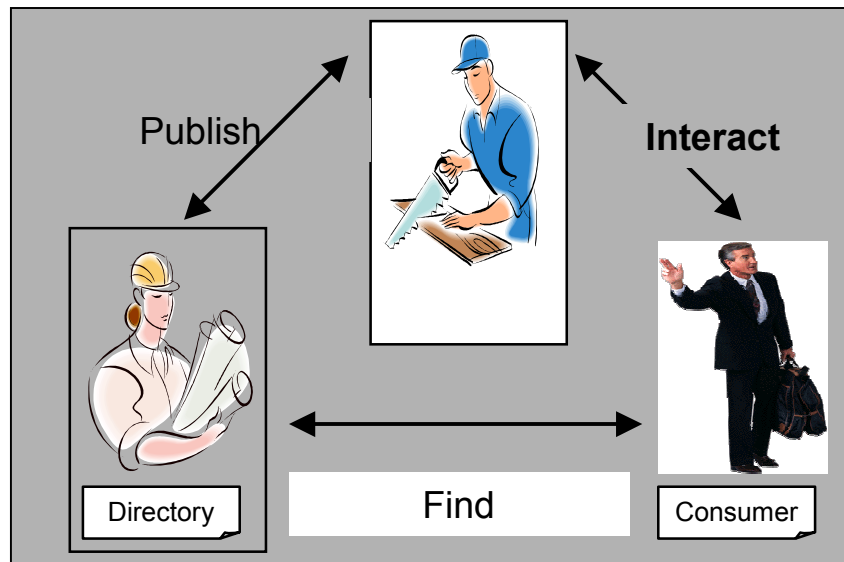
Publish

Interact

Note: The current focus is on the **Interact** component of Web Service using SOAP technology.

Directory

Find

Consumer

Publish & Find	UDDI, WS-Inspection
Interact	SOAP, SwA, ebXML Messaging Service
Define	XML, WSDL, XSD, XSLT
Connect	IP, DNS, URL, HTTP, HTTPS

Web Services Examples

MapQuest offers a Web Services system that allows for flexible integration of the MapQuest search engine on various Web sites.

- Borders provides Web visitors with detailed maps and driving directions for all locations that makes finding the nearest Borders store quick and easy.

- Cendant (parent company to Century21, ERA and Coldwell Banker) taps into powerful mapping engines helping clients locate homes and the nearest realtor office.

- Travelocity.com offers a hotel-booking tool, which enables travelers to search for hotels near a specific location with as much or as little information as is available using the MapQuest search engine.

Web Services Examples

CBS MarketWatch offers a Web Service integration tool through BigCharts.com that allows for flexible use of its Stock Tickers and Market Charts on various Web sites.

- MarketWatch powers the Motley Fool news alerts as part of **www.fool.com**

- Citibank offers CBS MarketWatch news and portfolio tracker on the Citi.com site

- AG Edwards has integrated MarketWatch news and price alerts into the AGe-Connect site.

- CSFBdirect customers are able to access CBS MarketWatch real-time and symbol-specific news, as well as a suite of proprietary market columns via the CSFBdirect portal.

Key Web Services Benefits

- Provide a straightforward, low entry cost mechanism for system-to-system interaction between companies

- Based on a set of industry standard protocols and technologies available on all platforms

- Support the reuse and extension of existing components/applications

- Enables just-in-time integration - allowing disparate business services to be federated into a composite, value-added business function without intervention from a programmer

- Technically enables communication between diverse technologies – within an organization - and externally to trading partners, customers and suppliers

- Web services are *additive*, not necessarily *replacement*, technology

Agenda

What are Web Services?

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Core Web Standards

Web Services technologies are driven by standards supported by all vendors to maximize interoperability.

Core Stack
Discovery: UDDI
Description: WSDL
Packaging: HTTP GET/POST, SOAP
Transport: HTTP, HTTPS, SMTP, FTP, Message Queuing…
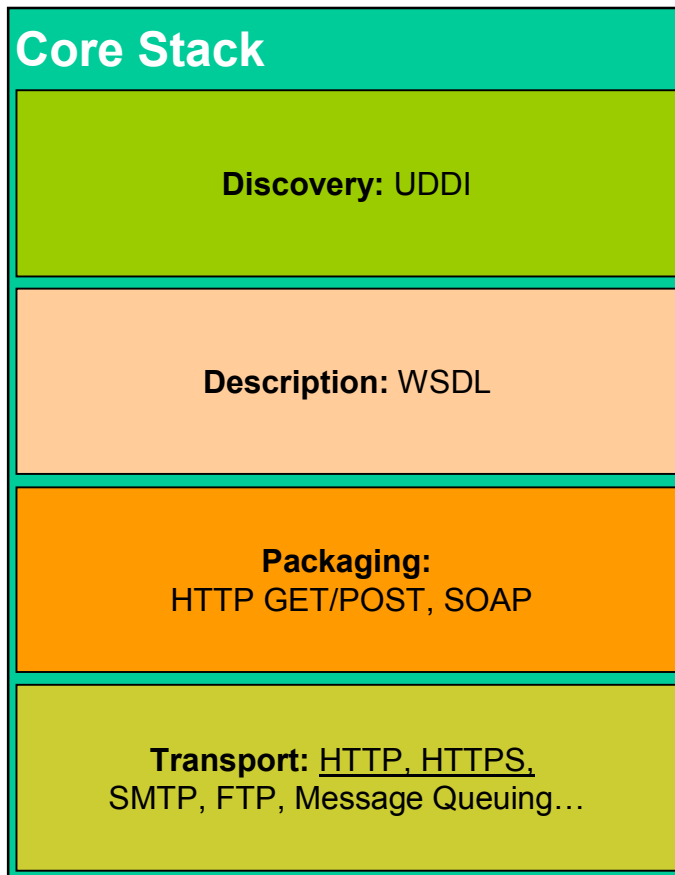
The core standards are already defined:

Discovery

- Web Services are registered in central registries (UDDI) and can be discovered there

Description

- Web Service provider describes its services with all details via a standard XML document called WSDL

Messaging

- Use of XML as the basis for document centric messaging protocol. SOAP is establishing itself as the foremost message protocol for Web Services

Transport

- Defines the protocols used to transport messages. HTTP is the de facto standard network protocol for Internet-available Web Services

Web Services Technologies

Web Services are a developing capability that build on both existing and new technologies /standards. Rarely is a web service mentioned without discussion of XML. Other protocols such as SOAP are viewed as the most likely standard for wrapping XML - but the technologies are still evolving.

- Web services:
  - are based on Internet standards
  - are platform agnostic
  - are widely available
  - have complete vendor support
  - are a key enabler of SOAs (Service Oriented Architectures)

Service Description
WSDL

Discovery & Publication
UDDI

Data Exchange Protocols
SOAP

Data Representation
XML

Network and Transport Protocols
TCP/IP, HTTP, HTTPS, FTP, SMTP

Core Web service standards
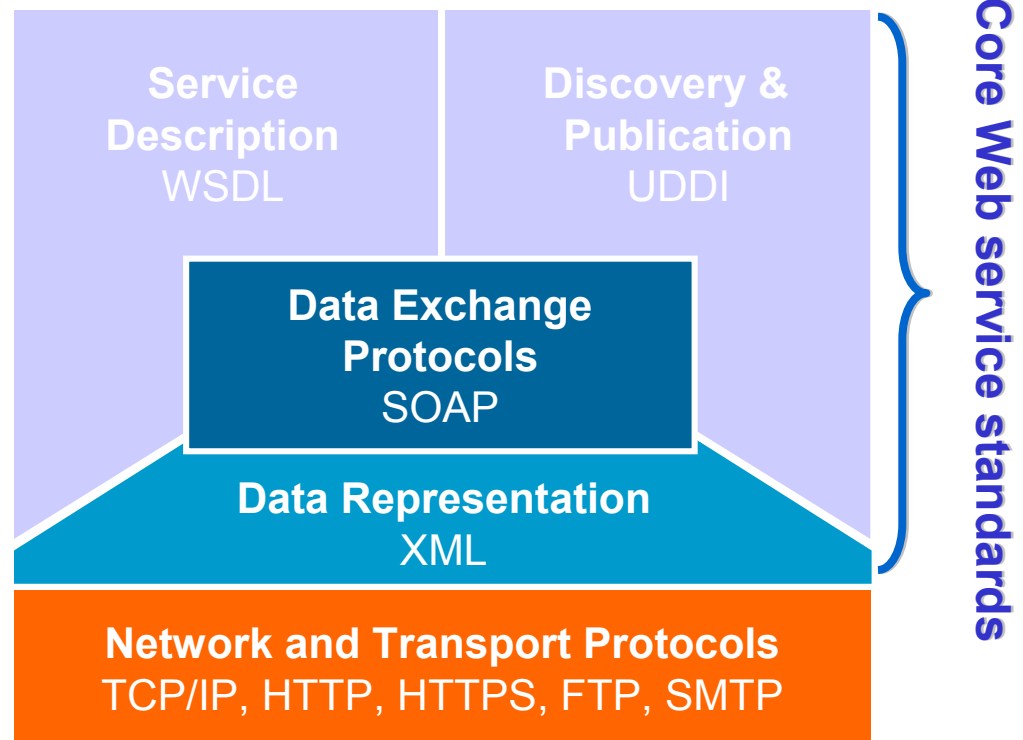
Web Services - The Technologies in Detail

XML (Extensible Markup Language) - Platform independent, language-neutral data representation format

SOAP (Simple Object Access Protocol) - Lightweight, extensible protocol for information exchange across different systems and protocols. Part of the SOAP specification defines a set of rules for how to use XML to represent data. Other parts of the SOAP specification define an extensible message format, conventions for representing remote procedure calls (RPCs) using SOAP message format, and bindings to the HTTP protocol.

WSDL (Web Service Description Language) - An XML-based contract language that defines a standard mechanism for documenting what messages a Web Service accepts and generates (i.e. interfaces).

UDDI (Universal Description, Discovery, and Integration) - Specifies a mechanism for Web Service providers to advertise the existence of their Web Services and for Web Service consumers to locate Web Services of interest. UDDI Registries offer data, metadata, bindings, pointers, and documents for finding and invoking Web Services that includes client and server APIs for publishing to, editing, and querying registry entries.

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What are Web Services?

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Web Services - How do they compliment FSA Strategies?

- Build/Leverage in place XML Schemas

- Ease Data Integration concerns

- Assist in the movement from batch process to web based "real-time" information exchange

- Provide means for accessing FSA internal systems as well as joint development of standards and access with external parties

- Further FSA's ability to match customer expectations - parallel convenience/accessibility of commercial industry

- As Messaging Maturity and Capability increases Web Services are a clear next step

Agenda

What are Web Services?

Web Services - The Technologies

Web Services Compliments Overall Data Strategy

Considerations for Web Services

Conclusion

Possible Business Functions that could be enabled by Web Services

1. Expected Family Contribution (EFC) Calculator

2. Loan Balance Lookup

3. Update Address

4. Get Current Student Address

5. Pay off Calculator

6. Scholarship Search

7. School Search

8. Estimated Cost Calculator (future cost of education)

9. Repayment Calculator

10. R2T4 (Return to Title IV)

Considerations for Web Services

Web Services allow the sharing of information between parties via distinct business functions.

- What business functions could FSA provide to the community?

- What business functions are you currently using with other clients?

- Do you have any lessons learned from pilots or implementations?

- What are the best practices that you have discovered along the way?

Questions

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XML Framework

XML Vision
(XML Strategy)

Core Components /
Sector Libraries /
Schemas

Registry /
Repository

XML Framework

FSA Enterprise Strategic Assessment and Vision

Technical Reference and Usage Guidelines

Core Components (FSA)

Registry and Repository

Communications Strategy

Common Record - ISIR

ISIR Performance Test and SAIG Capacity Plan

Questions

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NCHELP Update

Common Record for FFELP & Alternative Loans

Meteor

The High Performance Channel

The Common Record for FFELP & Alternative Loans

Convergence and Collaboration

The Common Record for FFELP & Alternative Loans

- *CommonLine Converging and Aligning with the Common Record*
  - *COD standards with the flexibility of FFELP*
  - *Supports all functionality available in CommonLine Release 5*

The Common Record for FFELP & Alternative Loans

- *Designed to meet the needs of*
  - *Schools*
  - *SIS Vendors*

The Common Record for FFELP & Alternative Loans

Progress Report

- *November 11, 2002*
  - *Detailed presentation of proposal to schools, SIS vendors and service providers*

The Common Record for FFELP & Alternative Loans

Progress Report

- *Collaboration continues to move us forward!*
  - *Schools, The College Board, Datatel, SCT Corp., and Sigma Systems have all indicated their support of the ESC proposal*

The Common Record for FFELP & Alternative Loans

Progress Report

- *Documentation development has begun!*
  - *First draft for public review – April 2003*
  - *Final documentation due – July 2003*

Reengineering Proposal

- ***Streamlining the Application and Disbursement Processes***
  - *All records sent in a single file*
  - *Pre and Post guaranty changes can now be sent together*
  - *Routing is at the record level*

Reengineering Proposal

- *Streamlining the Application and Disbursement Processes*

- *Moving from Transaction Based to End Result Based Changes*

- *Support of Real Time Functionality in an XML Based Record*

Proposed Implementation Schedule

- *4/1/2003 – First draft of documentation*
- *7/1/2003 – Final documentation completed*
- *12/1/2003 – Testing begins*
- *4/1/2004 – Implementation begins*

Meteor

Meteorize your information!

What is Meteor

- *Meteor is a collaborative effort within the student aid industry to simplify and consolidate access to student financial aid information. Sponsored by over forty industry participants, and coordinated by the National Council of Higher Education Loan Programs, Meteor software provides open, non-proprietary, real time access to all available aid information for a student, and consolidates it for display to students and Financial Aid Professionals.*

Meteor's Foundation Principles

- *Open Source*

- *Open Collaboration*

- *Freely Available*

- *Controlled Participation Network*

How does Meteor Work?

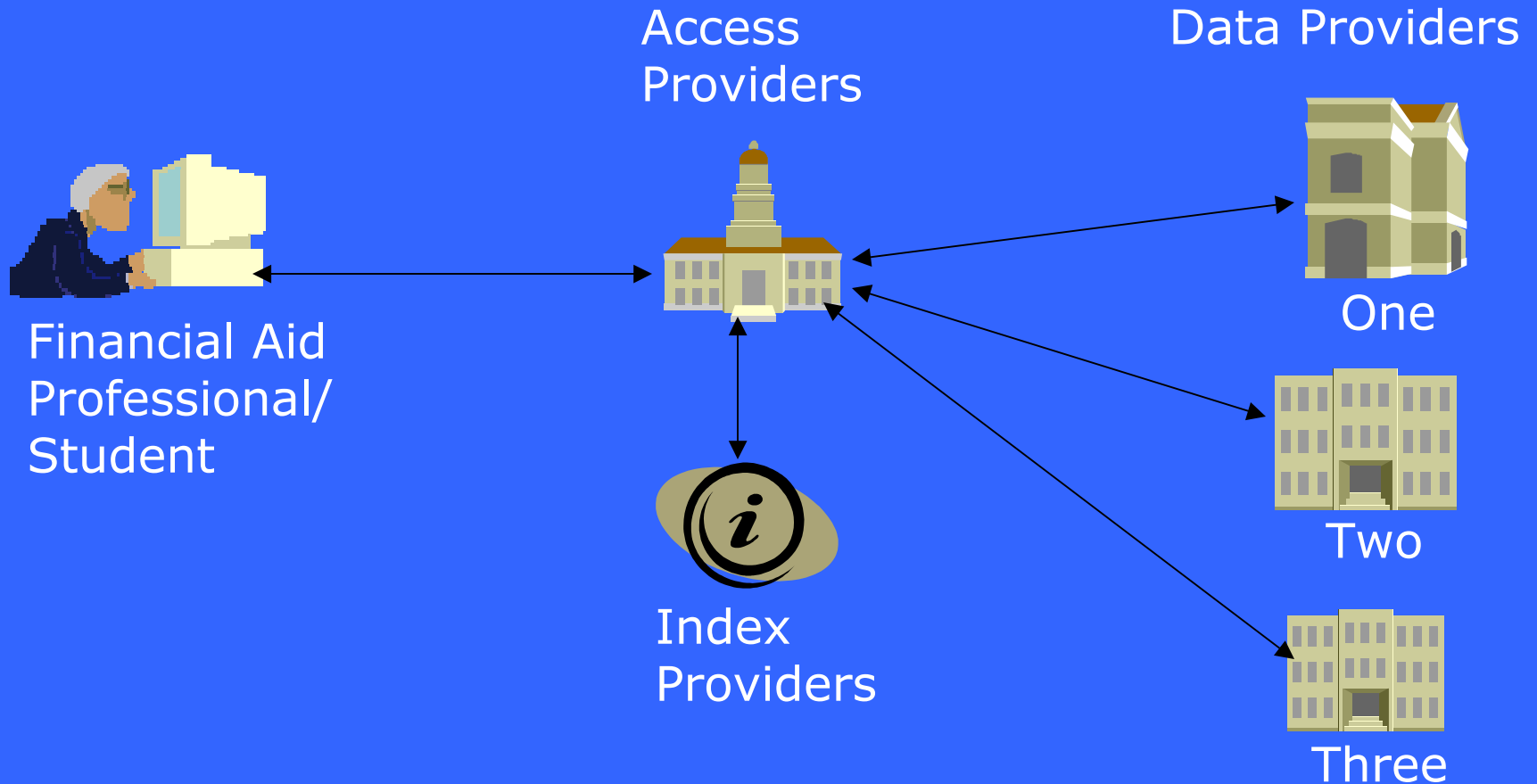*Meteor uses the concepts of Access Providers and Data Providers.*

- *A Meteor Access Provider allows inquirers to obtain information through its web site by hosting a copy of the Meteor software, which generates the request to the Data Providers for the borrower's information. Access providers can be Schools, Guarantors, Lenders, Servicers, or Secondary Markets.*
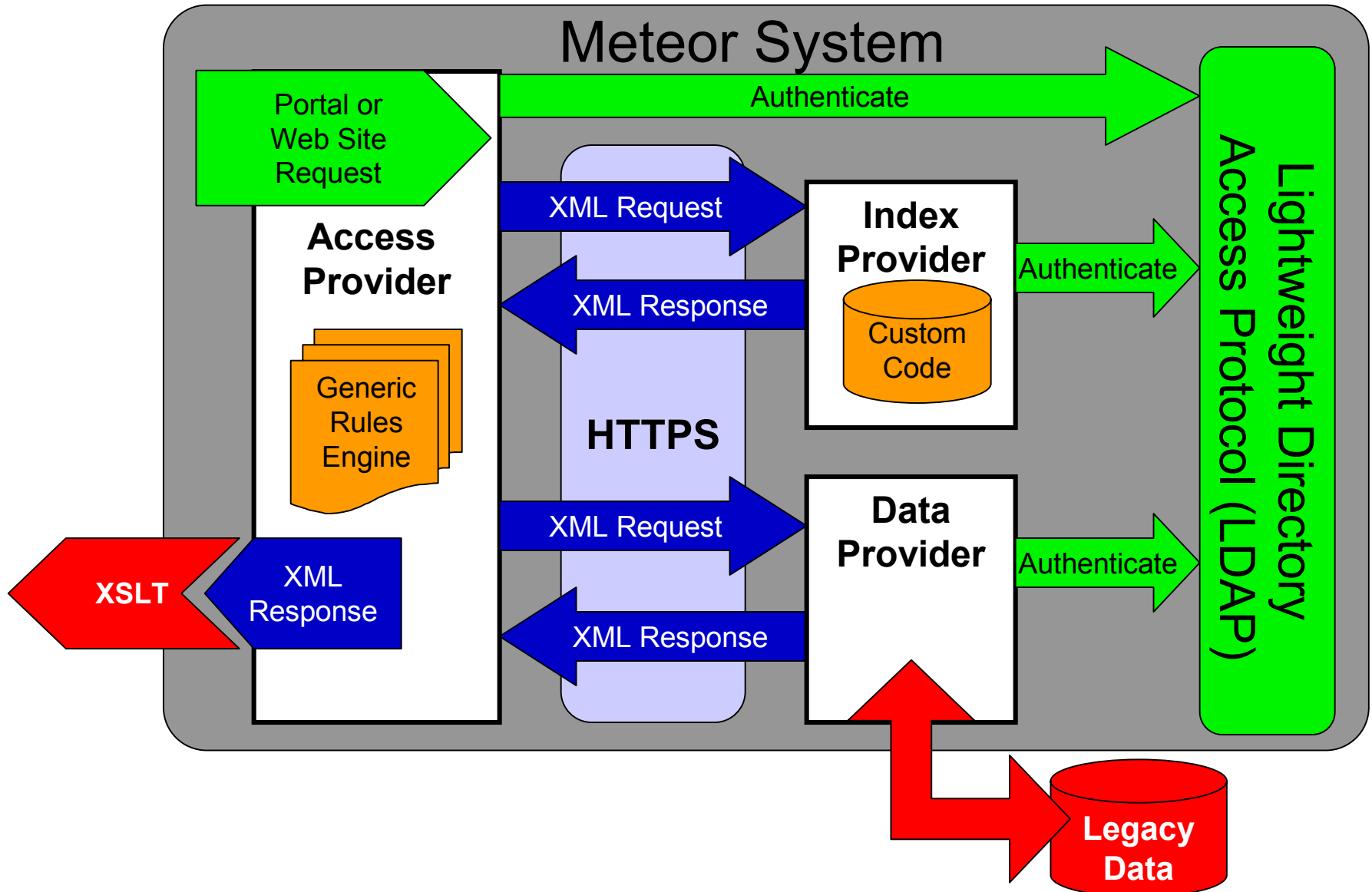
How does Meteor Work?

- *A Meteor Data Provider **hosts a copy of the Meteor software that enables them to respond to the Access Provider's request for information, supplying data from their system. Data Providers are typically Lenders, Servicers, Guarantors, and Secondary Markets. In the future, the Dept. of ED, State Grant authorities, Schools, and others could become Data Providers.***

Simplified Meteor Process

Access Providers

Data Providers

Financial Aid Professional/ Student

Index Providers

One

Two

Three

Meteor Architecture

Meteor System

Portal or Web Site Request

Authenticate

Access Provider

Generic Rules Engine

XML Request

XML Response

XSLT

XML Response

HTTPS

Index Provider

Custom Code

Authenticate

Data Provider

XML Request

XML Response

Authenticate

Legacy Data

Lightweight Directory Access Protocol (LDAP)

Standards and Their Implementation

	FSA	METEOR
Announced (Feb 2000)	UML	X
	XML	X
	JAVA	X
Expected	SOAP	X
	UDDI	Planned
	SAML	X

Authentication

- *No central authentication process*
- *Utilizes transitive trust model*
- *Each Access Provider uses their existing authentication model (single sign-on)*
- *Level of trust assigned at registration*

Production Statistics

After six months of being in production…

- – *Loan guarantee volume currently in production: 60.3%*

- – *Organizations currently testing will bring us to 63.7%*

- – *Organizations currently in development will bring us to 69.7%*

The High Performance Channel

Open source transmission standards

The High Performance Channel

- *Collection of Software Components*
- *Provides*
  - *Secure*
  - *Efficient*
  - *Open Methodology*
- *Supports Real-Time Processing*

The High Performance Channel

- *Transmits Data over HTTPS*
  - *Simple Object Access Protocol (SOAP)*
  - *Server-side and Client-side Software Components*
- *Real-Time Internet Based Processing*
- *Available Under the GPL*

The High Performance Channel & Meteor

- *Meteor Utilizes the HPC Software for B2B Messaging*
  - *Meteor – Data Aggregation*
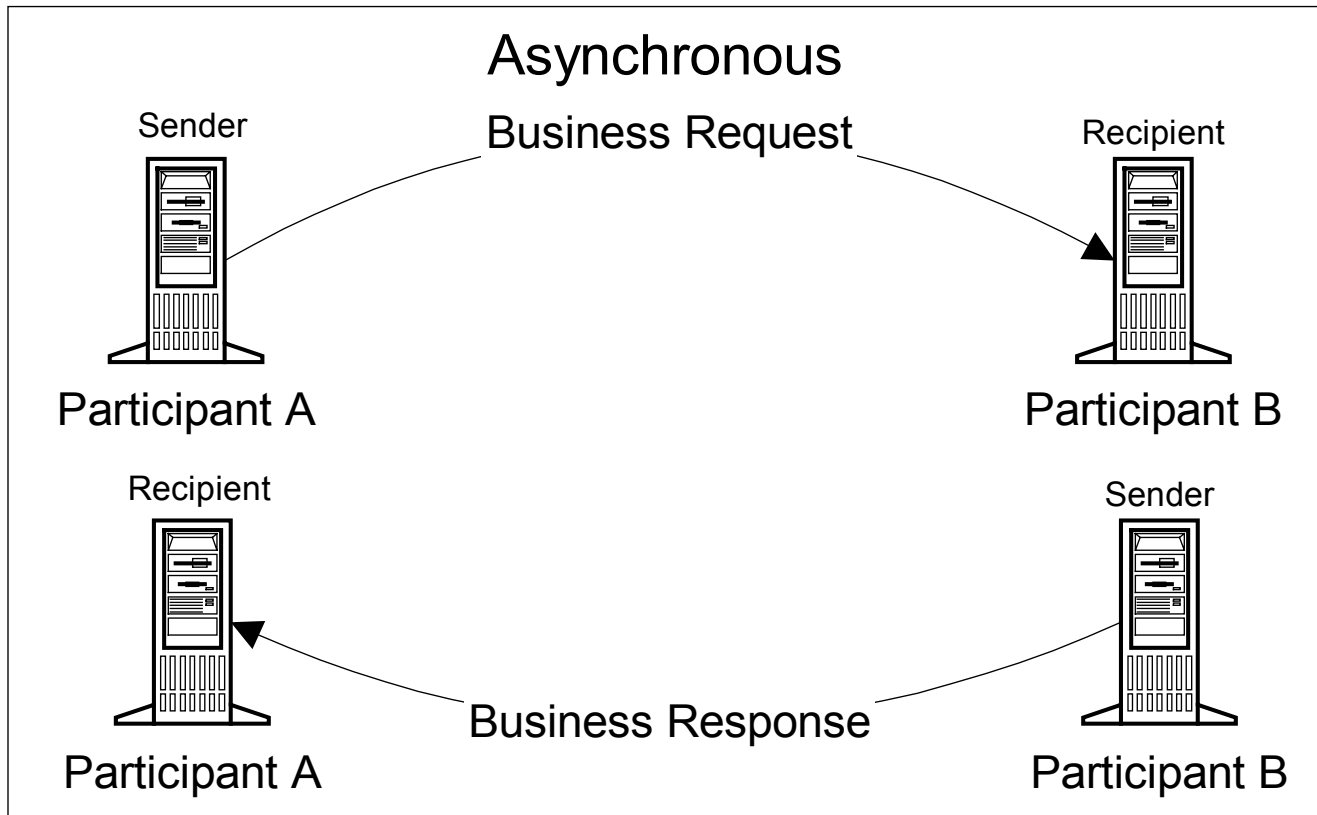 - *HPC – Data Exchange*

Data Exchange Model

- *Fast and Secure Connection*
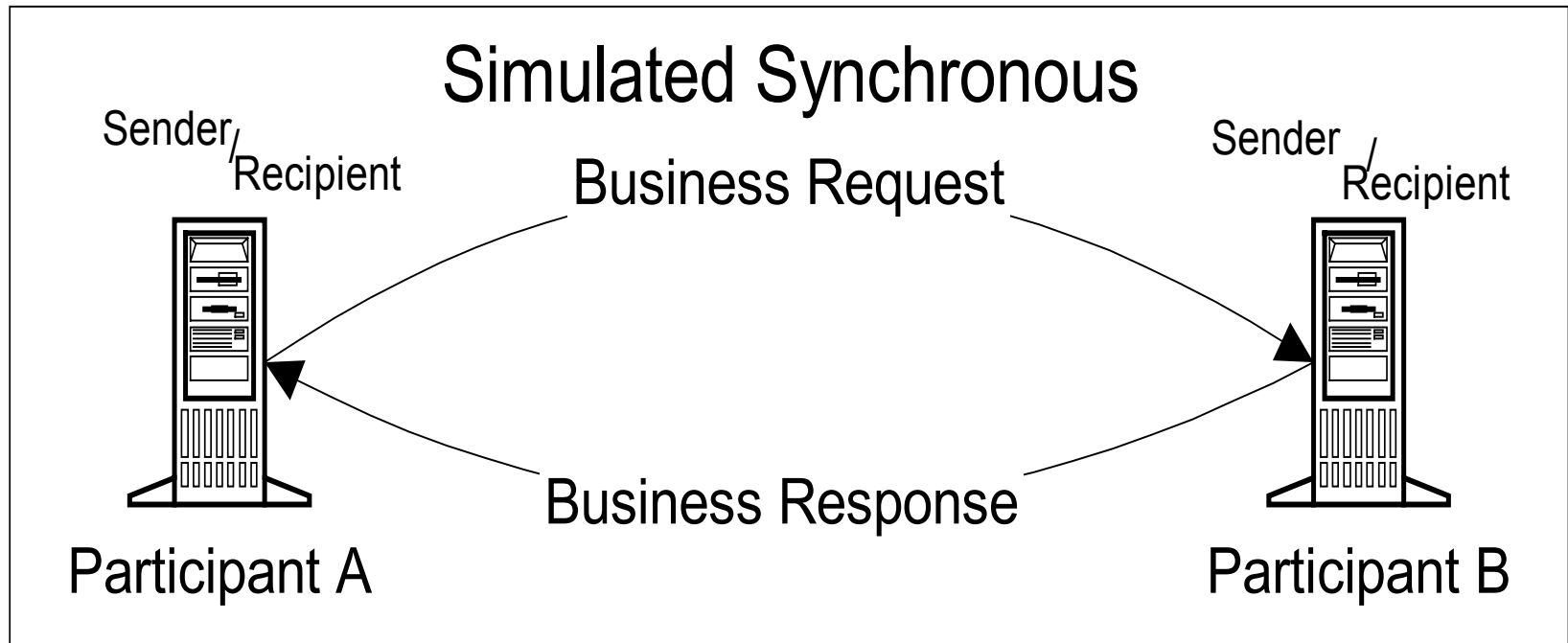- *Designed to be Automated*

Transmission Cycle Example

- *Two Distinct Exchanges*
  - *Business Request*
  - *Business Response*

Transmission Cycle Example

Transmission Cycle Example

Simulated Synchronous

Sender / Recipient

Business Request

Sender / Recipient

Business Response

Participant A

Participant B

Summary

- *Based on Open Technical Standards*
- *Compliant with ED Technical Standards*
- *Deployable on Many Hardware Platforms*

Contact Information

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Update & Overview
Postsecondary Electronic Standards Council

Michael Sessa

Executive Director

POSTSECONDARY
Electronic Standards Council

Agenda

- ⮑ **Overview of PESC**

- ⮑ **Industry Relationships**

- ⮑ **Current Activities**

- ⮑ **Additional Info & Resources**

Overview of PESC

➲ Mission

Established in 1997 and located in Washington, D.C., PESC is a non-profit association of colleges and universities; professional and commercial organizations; data, software and service providers; and state and federal government agencies.

PESC's mission is to guide the higher education community in leveraging the value of electronic standards for data exchange with the overall goal of improving service, controlling costs, and attaining interoperability.

PESC supports and promotes the use and adoption of existing electronic standards set through official standards-setting bodies, as well as open industry collaborations, and sets new industry standards where there are no national or international bodies to do so.

➲ Board of Directors

Michael Berberet	NCS Pearson
Steve Biklen	NASLA
Jerry Bracken	AACRAO
Judith Flink	University of Illinois @ Chicago
Mark Jones	National Student Clearinghouse
Jackie Kessler	SCT
Dallas Martin	NASFAA
Keith Riccitelli	Sallie Mae
Michael Sessa	PESC

Overview of PESC

➲ Members

AACRAO, American Education Services, Campus Management Corporation, Citibank, COHEAO, CollegeBoard, Datatel Inc., Educaid, ELM Resources, George Washington University, Miami-Dade Community College, Miami University, NASFAA, NASLA, National Student Clearinghouse, NCS Pearson, Northern Illinois University, Oracle, Purdue University, Sallie Mae, SAP, SCT Corporation, SLSA, Temple University, University of Illinois at Chicago, University of Miami at Coral Gables, University of Minnesota, University of Northern Iowa, University of Texas at Austin, University of Wisconsin at Madison, USA Funds, US Department of Education, Virginia Polytechnic Institute

➲ Affiliates

ACT Inc, ACE, EdFund, EFC, EDUCAUSE, infiNET Solutions, Lumina Foundation, NACUBO, NCHELP, RDA Corporation, SIF

➥Annual Schedule

Board Meetings	Monthly
Membership Meetings	Twice per year
XML Forum for Education	Quarterly
	(fall meeting held in conjunction with AACRAO's Technology Conference)
Annual Conference	May
	(held in conjunction with EFC's annual Technology Conference)

Industry Relationships

- US Department of Education
  - Office of Federal Student Aid

- AACRAO's SPEEDE Committee

- NCHELP's ESC Committee

- ANSI X12

- EFC

- Web Services Workgroup
- Single Institutional ID Workgroup
- XML Postsecondary Transcript
- Common Record

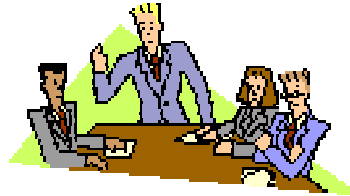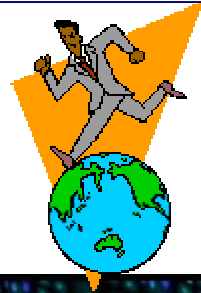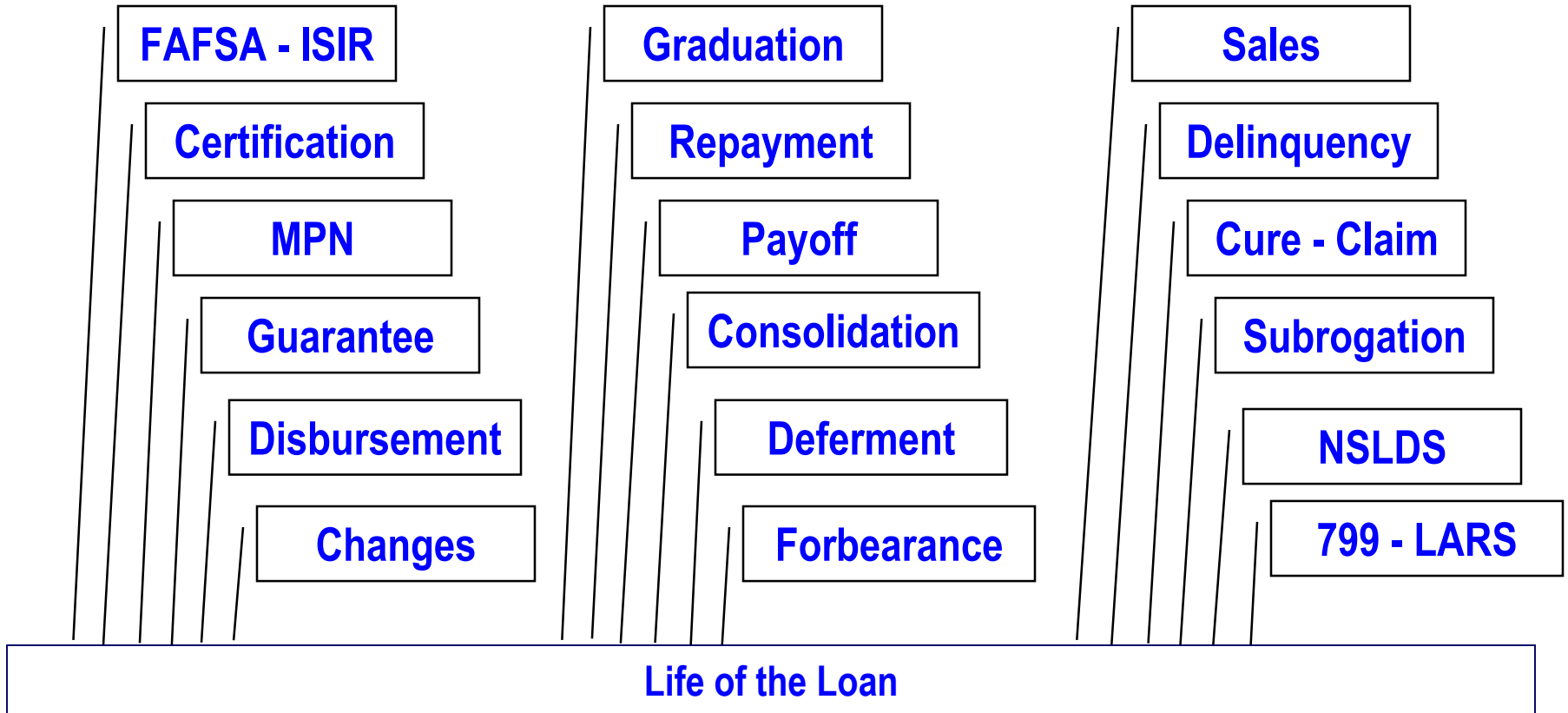# Current Activities

➲**XML Postsecondary Transcript**

– **Summer 2002:** version 0.01 released for public comment

– **Winter 2003:** version 1.0 submitted to ANSI ASC X12

– **Spring 2003:** presented at AACRAO's annual conference

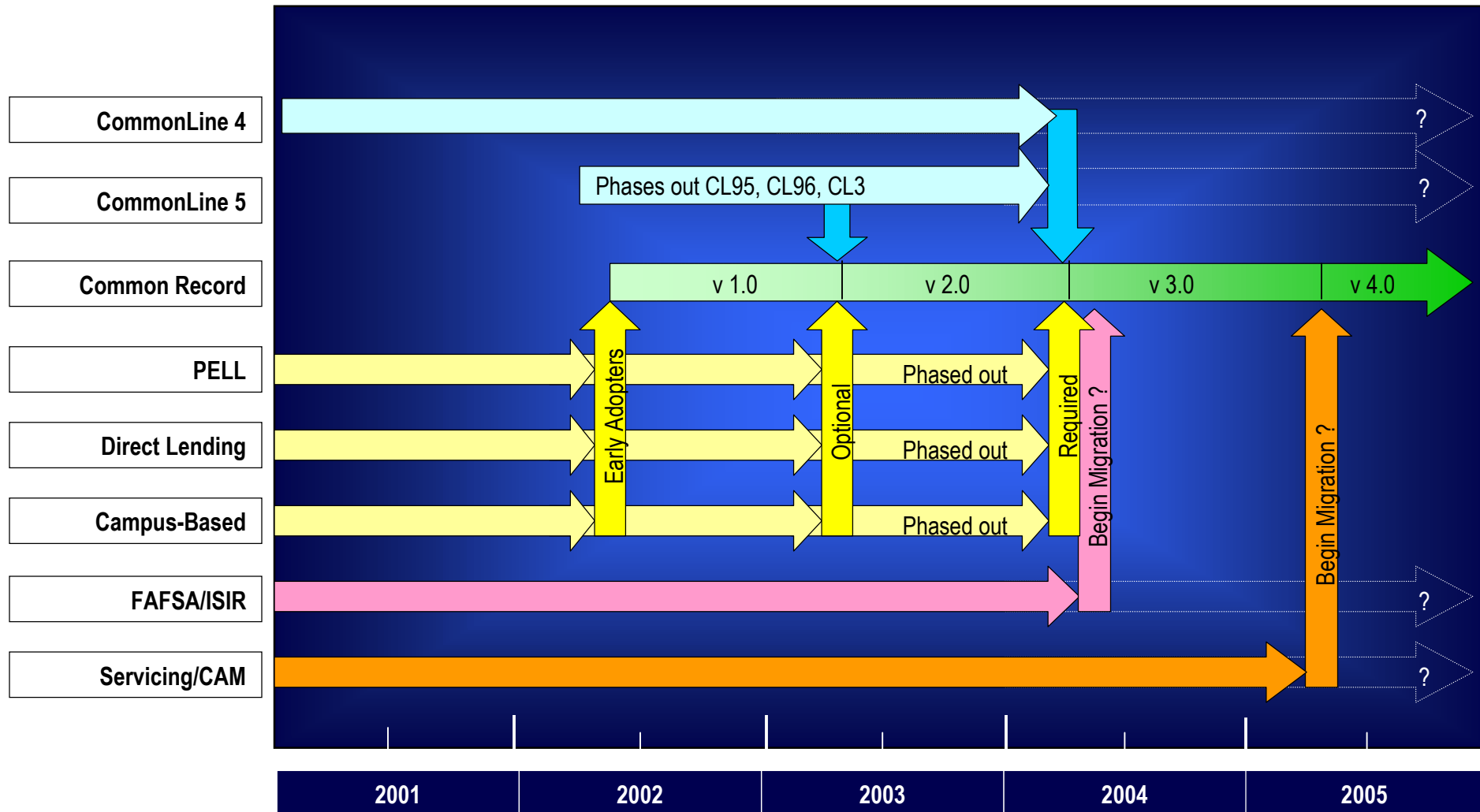– **Fall 2003:** presented at EDUCAUSE's annual conference

Current Activities

➪ Common Record

- 2002: launched by FSA for Pell, Direct Lending, and Campus-Based*

- 2003: FFELP and Alternative Loan schemas developed

- 2004: FFELP and Alternative Loan service providers implement expanded Common Record

Common Record

FAFSA - ISIR

Certification

MPN

Guarantee

Disbursement

Changes

Graduation

Repayment

Payoff

Consolidation

Deferment

Forbearance

Sales

Delinquency

Cure - Claim

Subrogation

NSLDS

799 - LARS

Life of the Loan

Additional Info

- **www.StandardsCouncil.org**

- *The Standard*

- **PESC Annual Conference May 7-8, 2003**

Update & Overview

Michael Sessa

Executive Director

PESC

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POSTSECONDARY
Electronic Standards Council