Hype Cycle for XML Technologies, 2003

Since 1998, XML has grown from a little-known standard to become the foundation of the Web computing infrastructure. Foundational and domain-specific XML standards are key to this evolution.

Management Summary

XML emerged from the World Wide Web Consortium (W3C) in 1998 accompanied by a "family of standards." Through 2003, there has been an avalanche of vertically focused standards developed for most domains, ranging from familiar fields — finance, automotive, manufacturing, aerospace, healthcare — to more-esoteric ones, such as theology, cooking and cave survey data. Beginning in late-1999, specifications (all written in XML) emerged to define, invoke, share and protect services in a Web-based computing infrastructure. The XML Hype Cycle covers the evolution of foundational W3C specifications, the foundational Web computing standards and the key vertical standards, all expressed in XML Context Inspired Component Architecture (CICA). CICA is a standard that may revolutionize XML vertical standards by proposing a new way for vertical standards to be expressed and shared. Open Application Group Integration Specification (OAGIS), an XML-defined modeling language similar in approach to CICA, is being used for specifications in the automotive, human resources and other vertical industries.
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1.0 The Hype Cycle

Visibility

Technology Trigger | Peak of Inflated Expectations | Trough of Disillusionment | Slope of Enlightenment | Plateau of Productivity

Key: Time to Plateau
- Less than two years
- Two to five years
- Five to 10 years
- More than 10 years

2.0 On the Rise

2.1 Context Inspired Component Architecture

Definition: CICA was developed by the American National Standards Institute (ANSI) Accredited Standards Committee and approved in October 2002 (see "ASC X12 Proposes CICA for XML Specification Definition," T-18-8060, and "Can Language Help Build XML-Defined Standards?" COM-16-1430). Its purpose is to provide a framework to generate XML-defined messages so that recipient
applications can process them predictably and reliably without prior knowledge of, or agreement on, the specific messages. It will use public repositories of XML vocabularies.

*Time to Plateau/Adoption Speed:* Beyond 10 years.

*Justification for Hype Cycle Position/Adoption Speed:* CICA uses a grammar-based approach to generating XML data messages. The common approach is for industry consortia to develop data models that describe their industry’s specifications. The CICA approach will take time for most people to understand, but the expense, slow pace and rigidity of the monolithic XML model approach will motivate industries to look for new methods.

*Business Impact Areas:* Management of XML data models, data exchange among enterprises without established agreements, generating on-demand XML transactions.

*Analysis by Rita Knox*

### 2.2 Tax XML

*Definition:* Tax XML, under the auspices of the Organization for the Advancement of Information Standards (OASIS), provides standard definitions, formats and schemas that governments and businesses can use when creating, sending, receiving, maintaining, storing and retrieving data in documents relevant to the life cycle of a tax case.

*Time to Plateau/Adoption Speed:* Five to 10 years.

*Justification for Hype Cycle Position/Adoption Speed:* A considerable amount of time is needed before national and regional government bodies and affiliate vendors adopt and agree on Tax XML processes and schemas.

*Business Impact Areas:* Extended tax and financial supply chains, government applications.

*Selected Vendors:* IBM, Oracle and SAP.

*Analysis by Charles Abrams*

### 2.3 ISO 15022 XML

*Definition:* ISO 15022 XML is a standard under construction by the International Organization for Standardization (ISO) with the Society for Worldwide Interbank Financial Telecommunication (SWIFT) as the sole registration authority for securities messaging covering pre-trade, trade and settlement activities. Also referred to as "15022 second edition."

*Time to Plateau/Adoption Speed:* Five to 10 years.

*Justification for Hype Cycle Position/Adoption Speed:* This standard is in development, and is scheduled to be available no later than April 2004. Adoption should be relatively quick since the standard is based on already accepted standards: 15022, which is mandated for SWIFT messaging, and Financial Information Exchange Protocol, which is used for front-office messaging related to equities trading. Also, SWIFT has announced plans to use this standard and ultimately drop support of the pre-XML-compliant version of 15022 it is using, although the date that this will happen has not been determined. The time between adoption and realization of the full value of this effort will take several years, however, due to the scope of this initiative and the need for consensus achievement across multiple standards setting bodies that this standard bridges.
Business Impact Areas: Enables straight-through-processing through standardization of front-office and back-office messaging.

Selected Vendors: SWIFT; standard is not yet released, so there’s no tool support.

Analysis by Mary Knox

2.4 XML Query Language

Definition: XML Query Language (XQuery), under development by W3C, is a programming language for creating, accessing and transforming XML data. It combines features from XPath, Document Object Model, Structured Query Language and Extensible Stylesheet Language (XSL)Transformations.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: XQuery is not a finalized standard.

Business Impact Areas: Application development.

Analysis by Alexander Linden

2.5 XML Appliances

Definition: XML Appliances are hardware/firmware devices (typically at the network level) that perform XML processing — conversion, validation, transformation, security and application integration — to accelerate XML-based processes.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: These devices are fairly new but rapidly gaining interest and use because of the rapid growth of XML applications and expansion of XML data. We are hearing of major applications where the data representation is XML, and it has been determined that no software solution can handle the quantity of XML data and its processing in the allotted time. We expect these cases to grow quickly in the next few years, pushing the adoption of this technology as the only viable solution.

Business Impact Areas: High speed, secure processing of high-volume XML message traffic and large XML data sets.


Analysis by Rita E. Knox

2.6 Web Ontology Language

Definition: Web Ontology Language (OWL) is a W3C-recommended standard to specify ontologies (see Semantic Web in "Hype Cycle for Advanced Analytics, 2003," R-20-0113).

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Only a few prototypes have been demonstrated that solve real-world problems.

Business Impact Areas: Content management, electronic product catalogs, data integration, semantic interoperability.
Analysis by Charles Abrams, Alexander Linden

2.7 XML for Analysis

Definition: XML for Analysis (XML/A) is used primarily as a communication protocol between various business intelligence (BI) layers, such as a front end, an analytical middle tier and the database server. XML/A could become the communication language between different BI environments, crossing multiple domains, vendors and technologies, thus enabling BI networks (see "Business Intelligence Networks: The Future of BI," SPA-18-0823).

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Although several BI technology vendors have presented XML/A as an emerging standard, XML/A is not yet broadly accepted and has had minimal impact on actual products.

Business Impact Areas: As enterprises continue to deploy multiple tools for delivering BI, interoperability between these tools will increase in importance. XML/A provides a potential mechanism for overcoming challenges with integrating BI tools from multiple vendors.


Analysis by Ted Friedman

2.8 Predictive Model Markup Language

Definition: Predictive Model Markup Language (PMML) is an XML-based language that enables the definition and sharing of data-mining models between applications.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: PMML will slowly be integrated into application suites.

Business Impact Areas: Potential to bring data mining into applications in areas such as customer relationship management (CRM), supply chain management (SCM) and catalog management.

Selected Vendors: IBM, SAS, Microsoft, KXEN.

Analysis by Alexander Linden

2.9 XML Rights Management Language

Definition: XML Rights Management Language (XRML) framework includes mechanisms for consumer digital rights management business models.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Important to Web services, likely key element of Web services-Security extension, Web services-Authorization. Variant under consideration by MPEG-4 consortium.

Business Impact Areas: Web-services-based mechanism for consumer content distribution, content access control.

Selected Vendors: Microsoft, ContentGuard.
Analysis by Ray Wagner

2.10 XML Topic Map

Definition: XML Topic Map, under development by topicmaps.org, is used for describing knowledge structures. It is designed to represent objects and define a way of navigating through a network of objects.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: A promising XML-based, knowledge-engineering technology that may hit the knowledge engineering bottleneck and be too time-intensive for enterprises to sustain over the long term.

Business Impact Areas: Intranet, portal internal content and knowledge management applications. Can aid personal knowledge management or company knowledge management in providing "personalized indices" for information with customized links to underlying resources. Can decrease time searching for information, increase personal efficiency.

Analysis by Debra Logan

2.11 Extensible Stylesheet Language

Definition: XSL was approved as a W3C Recommendation in October 2001 (see "Extensible Stylesheet Language — Worth the Wait," SPA-14-8558). It is a language for transforming XML documents (for example, for changing the structure and order of elements and attributes) and for specifying formatting semantics. Both are required to present the content of XML documents through various devices, such as PCs, cell phones, printers or Braille devices. XSL Transformation (XSLT), approved in November 1999, is the subset of XSL that specifies the rules to transform one XML data stream into another.

Time to Plateau/Adoption Speed: Five to 10 years.

Justification for Hype Cycle Position/Adoption Speed: The XSL formatting pieces, referred to as XSL Formatting Objects (XSL-FO), are not widely known, and are used infrequently. In early 2003, most of the rendering products are free downloads or beta versions. Demand for richer rendering must grow before rendering engines become commonplace.

Business Impact Areas: Enable rich presentation control for delivery of XML data streams to multiple devices.

Selected Vendors: RenderX, Altova, IBM AlphaWorks and Apache XML Project.

Analysis by Rita Knox

3.0 At the Peak

3.1 XML Access Control Markup Language

Definition: XML Access Control Markup Language (XACML) is a framework for expressing access-control rules and parameters. It's designed specifically for resource access and has no rights management functionality.

Time to Plateau/Adoption Speed: Two to five years.
Hype Cycle for XML Technologies, 2003

Justification for Hype Cycle Position/Adoption Speed: XACML is important for enterprise management and security platforms. As of 1Q03, it was in its 1.0 specification. XACML is in possible contention as a presentation standard with XRML and variants, which may have similar functionality.

Business Impact Areas: Mechanism for standardized presentation of access control information across systems.

Analysis by Ray Wagner

3.2 XML Key Management Specification

Definition: XML Key Management Specification (XKMS) is a specification for XML/Web-services-based management of encryption keys and digital certificates.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Important for Web services, which require extensive key management for complex deployments. As of 1Q03, it is in the "last-call" process toward specification acceptance as a standard.

Business Impact Areas: Web-services-based mechanism for management of digital identity certificates, and distributing and registering public keys.


Analysis by Ray Wagner

3.3 Web Services Security


Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: WS-Security has received strong support from major Web services vendors. Final extensions are due in 2H03, with a presentation standard likely in early 2004. First implementations in major products are likely by 2H04. Some Web services security vendors have announced compatibility with proposed and ongoing specifications.


Selected Vendors: Microsoft, IBM, BEA Systems, Vordel and Westbridge Technologies.

Analysis by Ray Wagner

3.4 XML Rendering

Definition: XML only describes content components and defines no presentation. One advantage is to output the same content stream to multiple delivery channels: the Web, paper, audio, personal digital assistants (PDAs) and, eventually, Braille. Although XSL and XSLT are formal methods for specifying
output transforms from XML, there are other proprietary methods as well. These will be used as stand-ins while the formal methods mature.

_Time to Plateau/Adoption Speed:_ Five to 10 years.

_Justification for Hype Cycle Position/Adoption Speed:_ "Easier" renderings, like those to the Web, will mature in the next two to five years. More-difficult presentation methods, such as consistently transforming XML to rich print output, voice and Braille, will take longer to reach maturity. The user interaction rules (for example, of voice transactions) are also maturing in tandem and will determine the ultimate time to maturity of the rendering capability.

_Business Impact Areas:_ Multichannel publishing, reuse of common content, reduced publishing costs, improved consistency and quality of content, and increased automation.

_Selected Vendors:_ Arbortext, Altova, Apache XML Project, Corel, RenderX and IBM AlphaWorks.

_Analysis by Rita Knox_

### 3.5 Association for Cooperative Operations Research and Development

_Definition:_ The Association for Cooperative Operations Research and Development (ACORD) is a vertical XML standard for the property, casualty and life insurance industries.

_Time to Plateau/Adoption Speed:_ Five to 10 years.

_Justification for Hype Cycle Position/Adoption Speed:_ ACORD standards have been strengthening and gaining momentum but are still incomplete and ACORD needs to focus its development.

_Business Impact Areas:_ Very high potential, given that insurers and vendors back these standards.

_Analysis by Kimberly Harris_

### 3.6 Security Assertion Markup Language

_Definition:_ Security Assertion Markup Language (SAML) is a standard format specification for security assertions related to identity and authentication. It supports reduced sign-on across domains and enterprises and enables participants within a community of trust to vouch for the authentication of participants.

_Time to Plateau/Adoption Speed:_ Two to five years.

_Justification for Hype Cycle Position/Adoption Speed:_ The SAML specification was approved in 2H02. Several identity management vendors have announced compatibility. Pilots and first deployments are in the initial stages. SAML is driven by cross-domain, identity-management needs and Web services deployments.

_Business Impact Areas:_ SAML allows participants in communities of trust to limit the number of participant identities managed, while still providing services to participants from other member enterprises. It provides identity and authentication tokens for securing Web services.

_Selected Vendors:_ IBM, Oblix, Netegrity, Entrust and RSA Security.

_Analysis by Ray Wagner_
4.0 Sliding Into the Trough

4.1 Extensible Stylesheet Language Transformation

Definition: XSLT, approved by the W3C in November 1999, is the subset of XSL that specifies rules to change the structure and order of elements and attributes that transform one XML data stream into another.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Mainstream applications of XSLT have been to transform XML into HTML for Web presentation. An increasing number of applications are for infrastructure processing (for example, application integration). The growth of Web services and XSL-rendering services will trigger a host of new applications that will cause user disillusionment, but eventual product stability.

Business Impact Areas: Reusability of XML data streams.

Selected Vendors: Embedded in products from many vendors (for example, BEA Systems, IBM, Microsoft).

Analysis by Rita Knox

4.2 Extensible Business Reporting Language

Definition: Extensible Business Reporting Language (XBRL) is an XML-defined standard for exchanging, analyzing and reporting financial information (see "Implications of the FDIC's Call Report Initiative," QA-15-9439, and "The Impact of BAM on Financial Services Users," SPA-15-2703). As such, it involves the accounting industry, investors, public and private companies, and government regulatory agencies.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Regulators are adopting XBRL and may dictate that enterprises use it for reporting purposes. A strong international membership is involved in its development. XBRL-aware products are developed in-house (for example, by financial firms). Despite interest, XBRL has not had broad adoption by accounting firms, and generally available software has not been developed.

Business Impact Areas: Improve interoperability, enable data verification and integration with back-end systems. Fulfilling multiple public and reporting needs through a single source/posting of financial data. Automate sourcing and review of financial data for activities such as loan acceptances and risk reviews.

Selected Vendors: EDGAR Online, Fujitsu, Microsoft, Software AG and many financial institutions (Fidelity Investments, JP Morgan and Dresdner Kleinwort Benson).

Analysis by Mary Knox and Rita Knox

4.3 Universal Business Language

Definition: Universal Business Language (UBL), an OASIS specification, supplements ebXML by developing a standard library of XML business documents, such as purchase orders and invoices, and incorporating the features of other XML business libraries.

Time to Plateau/Adoption Speed: Two to five years.
Justification for Hype Cycle Position/Adoption Speed: Unlike ebXML, UBL is primarily vendor-driven and will not require long periods of negotiations by organizations such as the Electronic Data Interchange for Administration, Commerce and Transportation (EDIFACT) and the Center for Facilitation of Procedures and Practices for Administration, Commerce and Transport (CEFACT). Hence, UBL faces a shorter time through the Hype Cycle to the Plateau of Productivity.

Business Impact Areas: Collaborative commerce, SCM, enterprise resource planning.

Selected Vendors: Sun Microsystems, Commerce One, SAP and Oracle.

Analysis by Charles Abrams

4.4 Mortgage Industry Standards Maintenance Organization


Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Strong membership, including trade associations, vendors, banks and mortgage services. Incorporated into vendor tools and various vendor-supplied services,

Business Impact Areas: Automation of paper-intensive mortgage process, with the aim of more-efficient mortgage application/approval/servicing processes.

Selected Vendors: Dynatek, a la mode, Advantage Credit International, DocuTech, Dorado and VMP Services.

Analysis by Mary Knox

4.5 ebXML

Definition: ebXML is a family of commercial standards, including ebXML Collaboration Protocol Profile and Agreement (CPPA), ebXML Implement, ebXML Messaging and ebXML Registry. EbXML, under the auspices of OASIS, is designed to provide for common formats and processes for conducting collaborative commerce.

Time to Plateau/Adoption Speed: Five to 10 years.

Justification for Hype Cycle Position/Adoption Speed: Enterprises and vendors need substantial amounts of time to test and reconcile commercial ebXML-related concepts and specifications. In addition, the highly politicized nature of this standard does not allow for quick resolution.

Business Impact Areas: E-commerce, collaborative commerce, SCM and CRM.

Selected Vendors: Sun Microsystems, Microsoft, IBM, SAP and Commerce One.

Analysis by Charles Abrams

4.6 XML Database Management Systems

Definition: Database management systems (DBMSs) are optimized to store XML in XML DBMSs. These products differ from common relational DBMS products in the manner in which data is stored (in native or
near-native XML format) and in the access mechanisms used to query and update them — usually XPath and, increasingly, XQuery (see "When XML and Databases Collide," TU-14-0694).

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: XML DBMS products have largely failed to gain traction and have rapidly dropped from the peak of hype. Vendors of these products have failed (for example, NeoCore and XML Global) or been acquired (eXcelon and XYZFind). XML DBMSs will increasingly be embedded in other infrastructure components, such as application integration suites (see "XML-Grounded DBMSs: Short-Term Fad or Viable Market?” M-15-6059).

Business Impact Areas: As XML is increasingly used as the dialect of choice for application integration, XML database technology can provide critical functionality for persisting messages and metadata underpinning the enterprise nervous system.


Analysis by Ted Friedman

4.7 Interactive Financial Exchange

Definition: Interactive Financial Exchange (IFX) is a standard for the communication of personal and corporate financial information, including statements, bill presentment and payment, consumer and business payments, business banking (including balance and transaction reporting) and automated teller machine (ATM) transactions. IFX has a new working group on Web services.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: IFX development and adoption has been slow, and it has suffered from confusing market positioning. The primary competing standard is Open Financial Exchange (OFX), but IFX is recognized as having more-robust messaging capabilities.


Analysis by Mary Knox

5.0 Climbing the Slope

5.1 Universal Description, Discovery and Integration

Definition: Universal Description, Discovery and Integration (UDDI) provides a directory service for enterprises to publish, search for and use Web services from their own and other enterprises.

Time to Plateau/Adoption Speed: Less than two years.

Justification for Hype Cycle Position/Adoption Speed: Enterprises are starting to understand that internal UDDI use will lead the way.

Business Impact Areas: Location of internal and external services improves time-to-market for new applications.
5.2 Resource Description Framework

Definition: Resource Description Framework (RDF) is a W3C Recommendation for describing formal metadata that provides interoperability between applications that exchange information on the Web. The primary use of RDF is to enable automated processing of Web resources.

Time to Plateau/Adoption Speed: Two to five years.

Justification for Hype Cycle Position/Adoption Speed: Effective deployment of RDF depends on the construction and use of related metadata dictionaries and directories. The construction will take a substantial amount of time to develop. In addition, RDF is a family of specifications that requires additional development at the W3C.

Business Impact Areas: Search engines, other resource discovery tools, intelligent software agents, content ratings, managing intellectual property rights and expressing the privacy preferences of a user, as well as the privacy policies of a Web site.

Selected Vendors: Sun Microsystems, Microsoft and IBM.

Analysis by Charles Abrams and Alexander Linden

5.3 Web Services Description Language

Definition: Web Services Description Language (WSDL) is a formal XML vocabulary and grammar that lets enterprises describe, discover and use Web services.

Time to Plateau/Adoption Speed: Less than two years.

Justification for Hype Cycle Position/Adoption Speed: Most tools include automatic WSDL generation as a function of service development.

Business Impact Areas: Improved flexibility and dynamic access and employment of services allow for more-resilient integration.

Analysis by Whit Andrews

5.4 Simple Object Access Protocol

Definition: SOAP lets one application invoke a remote procedure call (RPC) on another application or pass an object to a remote location using an XML message and the Internet.

Time to Plateau/Adoption Speed: Less than two years.

Justification for Hype Cycle Position/Adoption Speed: Most enterprises have pilots or production versions of SOAP.

Business Impact Areas: Data analytics.

Analysis by Whit Andrews
6.0 Entering the Plateau

6.1 XML

*Definition:* XML, approved by the W3C in 1998, is a language designed to identify document elements and attributes in a text stream for application processing in multiple domains. Because it is plain text, users as well as computers can understand the purpose of the data if descriptive labels are used (see "The XML Family of Standards: Four Years Later," TU-14-3810). It forms the foundation of other W3C standards (for example, XPointer, XLink and XSL), Web Services standards (SOAP, UDDI, WSDL) and XML-defined specifications (for example, XBRL, Tax XML and OFX).

*Time to Plateau/Adoption Speed:* Less than two years.

*Justification for Hype Cycle Position/Adoption Speed:* Many applications at many levels of the IT "stack" and in many vertical industries have used XML for at least five years.

*Business Impact Areas:* Improve interoperability, enable cross-industry interchange.

*Selected Vendors:* Just about everybody.

*Analysis by Rita Knox*

7.0 Conclusion

Although many XML standards will mature through 2008, some versions of XML will receive no further development. However, there will be an endless flow of new XML standards in different domains. New standards will emerge to support the Web-based computing infrastructure of well-behaved and predictable computing processes among loosely coupled computing resources. A less tightly coupled standards development process, such as the Context Inspired Component Architecture will gain popularity as the requirement for ad hoc XML messaging grows more critical.
Appendix A: Hype Cycle Definitions

**Technology Trigger:** A breakthrough, public demonstration, product launch or other event generates significant press and industry interest.

**Peak of Inflated Expectations:** During this phase of overenthusiasm and unrealistic projections, a flurry of well-publicized activity by technology leaders results in some successes, but more failures, as the technology is pushed to its limits. The only enterprises making money are conference organizers and magazine publishers.

**Trough of Disillusionment:** Because the technology does not live up to its overinflated expectations, it rapidly becomes unfashionable. Media interest wanes, except for a few cautionary tales.

**Slope of Enlightenment:** Focused experimentation and solid hard work by an increasingly diverse range of organizations lead to a true understanding of the technology’s applicability, risks and benefits. Commercial, off-the-shelf methodologies and tools ease the development process.

**Plateau of Productivity:** The real-world benefits of the technology are demonstrated and accepted. Tools and methodologies are increasingly stable as they enter their second and third generations. The final height of the plateau varies according to whether the technology is broadly applicable or benefits only a niche market. Approximately 30 percent of the technology’s target audience has or is adopting the technology as it enters the Plateau.

**Time to Plateau/Adoption Speed:** The time required for the technology to reach the Plateau of Productivity.
### Appendix B: Acronym Key

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACORD</td>
<td>Association for Cooperative Operations Research and Development</td>
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<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>ATM</td>
<td>automated teller machine</td>
</tr>
<tr>
<td>BI</td>
<td>business intelligence</td>
</tr>
<tr>
<td>CEFACLCT</td>
<td>Center for Facilitation of Procedures and Practices for Administration, Commerce and Transport</td>
</tr>
<tr>
<td>CICA</td>
<td>Context Inspired Component Architecture</td>
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<tr>
<td>CPPA</td>
<td>Collaboration Protocol Profile and Agreement</td>
</tr>
<tr>
<td>CRM</td>
<td>customer relationship management</td>
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<tr>
<td>DBMS</td>
<td>database management system</td>
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<tr>
<td>EDIFACT</td>
<td>Electronic Data Interchange for Administration, Commerce and Transportation</td>
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<td>FIX</td>
<td>Financial Information eXchange</td>
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<td>IFX</td>
<td>Interactive Financial Exchange</td>
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<td>ISO</td>
<td>International Organization for Standardization</td>
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<td>MISMO</td>
<td>Mortgage Industry Standards Maintenance Organization</td>
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<td>OAGIS</td>
<td>Open Application Group Integration Specification</td>
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<td>OASIS</td>
<td>Organization for the Advancement of Information Standards</td>
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<td>OWL</td>
<td>Web Ontology Language</td>
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<td>PDA</td>
<td>personal digital assistant</td>
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<td>PMML</td>
<td>Predictive Model Markup Language</td>
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<td>RDF</td>
<td>Resource Description Framework</td>
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<td>RPC</td>
<td>remote procedure call</td>
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<td>SAML</td>
<td>Security Assertion Markup Language</td>
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<td>SCM</td>
<td>supply chain management</td>
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<td>SOAP</td>
<td>Simple Object Access Protocol</td>
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<td>SWIFT</td>
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