

ARIZONA JUDICIAL BRANCH ENTERPRISE ARCHITECTURE STANDARDS

Purpose

The primary purpose of Information Technology (IT) is to enhance and support business and administrative requirements and processes within the courts. Enterprise Architecture (EA) provides a comprehensive framework of business principles, practices, and technical standards that direct the design, construction, deployment, and management of information technology for the courts. EA functions as a “building code” that facilitates the application of IT to business initiatives and objectives leading to change in an orderly, efficient, and cost-effective manner by describing a direction for current and future activities, supported by underlying principles, standards, and best practices.

Adopting an IT architecture, although intuitively a positive organizational direction, is often difficult. Standards are many times perceived as being set at the expense of freedom. However, today’s fast-paced technology demands and small funding amounts make architecture a strategic necessity. A mature IT enterprise must have the discipline to adopt and follow a consistent set of strategies, reference models, and exchange capabilities.

- Per Gartner, the strategic goal of enterprise architecture is to position the [entity] to leverage technology in support of the business strategy and make technology the proactive enabler of an agile, responsive enterprise that can react in real time to changes in the marketplace, and take advantage of new business opportunities.
- Enterprise architecture will provide standardization and elimination of redundancy and complexity across the Arizona Judicial Branch.
- The cross-jurisdictional nature of criminal justice activities supports adopting common architectures to facilitate integration.
- The Judicial Branch should avoid being what Gartner Group describes as a “typical unarchitected e-government” where “multiple sets of customer channels, interfaces and systems are independently developed ... and require duplicative infrastructure and forced disparate access experiences for constituents.”
- There is a lower cost to buy and support a limited set of products and standards; the judiciary can leverage both volume discount buying and maintain a less complex environment.
- Non-standard products and applications create a challenge to support and yield security concerns.

Scope

The table below contains the adopted Enterprise Architecture for the Arizona Judicial Branch. The standards, protocols and products listed are prescribed for core, leveraged (enterprise) activities and applications among the courts statewide. Where there are unique, local undertakings that cannot be leveraged, a court is free to go beyond the standards set here. When sharable modules related to core applications are developed, the standards must be followed.

The “Distributed Component (Bolt-on) Module” (available at <http://www.azcourts.gov/cot/EnterpriseArchitectureStandards.aspx>) documents the approaches to development of local, leveraged, and core standardized (enterprise) modules. To be sharable, supported in the statewide framework or part of core standardized (enterprise) applications, modules must be developed to the Enterprise Architecture Standards of the Arizona Judicial Branch.

Definitions/Implications

Definitions	Implications
Baseline – Listing of products and services typically in use today within the court system.	Provides context to aid reader in understanding the layer or scope being specified by the row in the table.
Retirement – Obsolete product or technology being targeted for de-installation.	No new use allowed without exception being granted by COT. Necessitates specific strategy in next IT Strategic Plan for removal/replacement within plan period.
Containment – Use of product or technology limited to maintenance and current commitments only.	No additional use allowed without exception being granted by COT, except enhancement or expansion of a current implementation. The next stop on the lifecycle is retirement; therefore, further investment is unwise and serves to make removal/replacement more difficult and expensive.
Mainstream – The current standard for any new systems or migrations from legacy systems.	The primary option when adopting a new technology or selecting a new product. Any other choice requires that an exception be granted by COT.
Scope of Standard – Elaborates on the degree or range of application of the mainstream item.	Distinctions may be made by function, court size, or jurisdiction, for example.
Watchlist – Emerging technologies products or releases being considered for adoption but not yet formally adopted.	Included for court reference, these items may be dropped or moved to mainstream in the next revision of the table as more becomes known about them. Courts should proceed cautiously in this area, using a pilot approach to implementation.
Comments – Any related information not fitting within the other columns.	
Exception – A formal agreement to enable the court to pursue a non-mainstream direction or install a non-standard product.	Requires use of the exception request document available at http://www.azcourts.gov/cot/EnterpriseArchitectureStandards.aspx and submittal to TAC for recommendation to COT for a formal motion. Exceptions are granted only to the court requesting the exception – further development or use outside that court requires a further exception.

Updates

A bi-annual review of these standards by the Technical Advisory Council is recommended. Local or state automation projects requiring exceptions can initiate a review of selected items at any time.

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Architecture Layers	Baseline (currently in use)	Retirement (targeted for de- investment)	Containment (limited to maintenance & current commitments)	Mainstream FUTURE (for new systems or legacy migration)	Scope of Standard	Watchlist: Emerging Technologies (to be evaluated for future inclusion)	Comments
Applications & Tools							
User Interface Delivery Method for Public Access	Browser-based	Netscape		Browser-based (Version Support) Responsive Web Design	For Microsoft Internet Explorer, Firefox, Google Chrome, Safari, Mobile Device Browsers	Mobile Device Browsers	
User Interface Delivery Method for Business Applications	Browser-based, Windows forms	Character based	Silverlight	Browser-based (asp or asp.net), Windows forms, Silverlight		WinRT Apps, Native Mobile Apps, HTML5	
Electronic Document Management	Hyland OnBase, LaserFiche, SIRE	LaserFiche, Hyland OnBase 9-211 SP2	Hyland OnBase 11 SP2	Hyland OnBase 9-212 SP3		Hyland OnBase 11.3 11.3.X	
Document Imaging	Kofax; OnBase Scanning Module	Kofax Card (SCSI connection)	Kofax Ascent Capture	OnBase Scanning Module Production Document Imaging			
Report Writer for Ad Hoc Reporting	Crystal Enterprise, Crystal 5-11, SSRS	Crystal <10, MS SQL Server Reporting Services 2000	Crystal ≤10, MS SQL Server Reporting Services 2005	Crystal >10, MS SQL Server Reporting Services 2008		MS SQL Server Reporting Services 2012	
Report Writer for Business Application Reports	Varies: Crystal, native application report writers, “hard coded” reports, SSRS	Crystal <10	Crystal ≤10; MS SQL Server Reporting Services 2005	Crystal >10, MS SQL Server Reporting Services 2008		MS SQL Server Reporting Services 2012	
Data, Research, and Analysis Tools	SPSS SAS			SPSS, SAS, MS Analysis Services (SSAS)			

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Development Languages	.ASP, .NET Traditional 3GL, MUMPS, JAM, RPG, VB6, FoxPro	COBOL, JAM, RPG, MUMPS, FoxPro	Java (on a business case need basis), ASP (Classic), .NET Framework V1.1 ≤ V2.X, <u>Silverlight</u>	AJAX (streaming .asp), .NET Framework 2.X , 3.X; and 4.X, <u>Silverlight</u> , <u>Windows Workflow Foundation</u> , VB.NET, ASP.NET, C#.NET (on a business case need basis)	XAML WPF WCF <u>MVC</u>	Windows Workflow Foundation	
Development Environment	Visual Interdev, Visual Studio, PowerBuilder, Panther, MS- Access	Panther, Visual Studio ≤2003 2005, Visual Studio 6, Visual Interdev	Visual Studio 2005 , <u>2008</u> PowerBuilder, MS- Access	Visual Studio 2008 <u>2010</u> and 2010 <u>2012</u>			
Source Control	PVCS, Visual Source Safe, CCC Harvest (Phx.), Aldon (JOLTS), SCCS (DW), Team Foundation Server	Aldon		Must use source control	All developed systems		Will consider a process to meet these requirements, and not a specified tool.
Analysis Tools	HOW, Visio, BPEL, Erwin, BPWin, Rational	HOW		UML, BPEL, <u>BPMN</u>		BPMN	Switching from products to standards.
Code Generation	PowerBuilder, Visible Developer, Alachisoft TierDeveloper						

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Office/Personal Productivity Tools							
Word Processing	Word Perfect, Word	Word Perfect, Word << 2003	Word 2003 2007	<u>Office 365</u> , Word 2007 -2013 Word 2010		OpenDOC technology	
Spreadsheet	Quattro Pro, Excel	Excel << 2003, Quattro Pro	Excel 2003 2007	<u>Office 365</u> , Excel 2007 -2013 Excel 2010			
Presentation	CorelDraw, PowerPoint	PowerPoint << 2003, CorelDraw	PowerPoint 2003 2007	<u>Office 365</u> , PowerPoint 2007 2012 PowerPoint 2010			
Local Standalone Database,	MS-Access	MS-Access << 2003	MS-Access 2003 2007	<u>Office 365</u> , MS-Access 2008 2013 MS-Access 2010	Non-Production use only		
E-mail Client Product	Outlook, GroupWise, Lotus Notes	Outlook << 2003, Lotus Notes, GroupWise (unsupported versions)	Outlook 2007 3 , Lotus Notes, GroupWise (supported versions)	<u>Office 365</u> , Outlook 2007 2013 Outlook 2010			
Instant Messaging	Yahoo Messenger, MS- Messenger, AIM, Trillian, <u>Cisco</u> <u>Presence</u> , Sametime		<u>MS-Live</u> <u>Communication</u> <u>Server</u>	<u>MS-Live</u> <u>Communication</u> <u>Server</u> Lync 2013			

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Collaboration	Exchange + Outlook, MS- Office, Office Live, Webex, Google Apps			SharePoint Services, SharePoint Server ≥2007-and-2010, Live Communication Server, Webex, Google Apps, GoToMeeting			
Social Media Tools				Per Business Policy			
Desktop Virtualization				VMware View, Citrix Xen	Thin Client Installation		
Distance Learning	Centra			Centra, Granicus, Accord LMS		TraCor LMS	
Data Architecture							
DBMS	Informix, DB2/UDB, SQL Server, MySQL, Clipper, FoxPro	SQL Server ≤2005, FoxPro, Clipper	SQL Server 2005 2008	SQL Server 2008 R2 2012, MSDE/SQLServer Express, MySQL	Court core business applications (on a business case need basis)	SQL Server Denali	Black box DBMS not incl.
Data Warehouse DBMS	Informix XPS		Informix XPS, SQL Server 2008	SQL Server 2008 R2 2012		SQL Server Denali, Smart Data Layer	Selecting future direction.
DBMS Modeling Tools	PowerDesigner, Erwin, Visio			UML 2.0 compliant Power Designer, ER Studio, Erwin, Visio	UML 2.0 compliant		Tools must be capable of creating alter scripts to update database schemas.

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Data Exchange Model	JXDD 3.0.0.1, Fixed format, XML homegrown, Electronic Court Filing		Fixed format, XML homegrown	GJXDM V3.0.3, NIEM, ECF 4.X	Between autonomous systems		In conjunction with the Arizona Criminal Justice Commission's Arizona Data Dictionary. XML standard at http://it.ojp.gov/ jxdd
Scanning Format	Tagged Image File Format (TIF), Portable Document Format (PDF)			Tagged Image File Format (TIF), Portable Document Format (PDF)		Searchable PDF	
Audio File Format	Proprietary formats, .WAV			Uncompressed .WAV format	For interchange with other courts and archive		Industry- standard output must be playable by non-proprietary readers.
Video File Format/ Protocol	Proprietary formats, AVI			SIP, H.323 protocol <u>H.264 (720p HD, 15 fps)</u>	Transmission <u>over</u> <u>AJIN</u>	SIP	Max 384 kbps/ concurrent session = transmitted over <u>AJIN.</u>
Email Protocol	SMTP, MIME			SMTP and MIME	Storage		

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Data Transmission Encryption	Triple Data Encryption Standard (Triple DES)			Triple Data Encryption Standard (Triple DES), DPS FIPS 140	Per ACJA 1-503, the encryption key shall be maintained by AJIN mgt for all public records	AES (advanced encryption standard)	For data encryption over public networks
Stored Data Encryption				Back up data on mobile devices to court servers before encrypting	Per ACJA 1-503, the encryption key shall be maintained by AJIN mgt for all public records	Credant and GuardianEdge (being tested in Maricopa Superior Court)	Subject to pilot test results
E-mail Encryption				S/MIME Third Party Product TBD	Transport only; not s Storage	<u>Sophos (if on new std. image)</u>	
Networks and Platforms							
Network Protocol	Transmission Control Protocol/Internet Protocol (TCP/IP), SNA	SNA		TCP/IP, IPsec 4 (IPv4)		IPsec 4 (IPv6)	
Wireless Network Access	WEP, WTLS, PEAP, WPA2	WEP		PEAP, WPA2			
Network Operating System	MS-Windows, Novell NetWare	Novell (unsupported) Windows (unsupported)	MS-Windows Server 2003	MS-Windows Server 2008 R2, <u>2012</u>	For gaining access to any enterprise system	Windows Server next release	
Client Operating System	Windows 2000, XP, Vista, and 7	≤ Windows 2000XP	Windows 7, XP, Vista	Microsoft Windows 7, 8.1	Current supported version only – previous versions are contained or retired	Windows 8 (AOC target)	AOC apps not certified to run on Windows 7

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Server Operating Systems	Microsoft Windows, UNIX, OS/400, DEC VMS	OS/400, DEC VMS, <u>Microsoft Windows ≤2003</u>	Microsoft Windows <u>Server2003</u>	Microsoft Windows <u>Server 2012</u> , 2008 R2, UNIX, Linux	Enterprise applications	Windows Server next version	
<u>Server Virtualization</u>				<u>VMware Vcenter ESX</u>			
Mobile Operating Systems	BlackBerry O/S, Apple IOS, Android, <u>Windows</u>	<u>BlackBerry O/S</u>	<u>BlackBerry O/S</u>	<u>I winner, others go away, per KH</u>		Apple IOS, Android, Windows	
Software as a Service							
TBD				<u>Requires discussion</u>			
Shared Services							
Component Service Layer	DCOM, ASP, SOAP, MS-Windows Communication Foundation (WCF)		Web Services (current-previous version), DCOM, ASP (classic)	Web Services (next current version), SOAP / REST Objects, Remoting, MS-Windows Communication Foundation (WCF)		<u>Web Services (next version)</u>	
Directory Services	Active Directory, Novell eDirectory (NDS), LDAP			Active Directory LDAP	Within Branch Outside Branch		
Electronic Signatures	/s/ with internal two-factor authentication; signature pad; biometrics			MS Office Digital Signature, Adobe Digital ID	Self certification within court network	PKI, signature pad, biometrics, eSeal	Requires court policy changes accompanying e-filing.

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Login Authentication	UserID/Password, Biometrics			UserID/Password, Biometrics		Smart Devices	
Remote Access through Internet (by employees or trusted partners)	VPN with IPsec, VPN with proprietary encryption, 3DES			VPN with IPsec, 3DES			
Message Transport Middleware							
Message Transport	MQ	MQ ≤V5.2	MQ V5.3/V6.0	MQ V7.0, MQ SSL			
Data Transformation ETL	MQSI, Data Junction, Cloverleaf, BizTalk	Data Junction, MQSI ≤V2.1, DTS	Cloverleaf, WMB V6.0, BizTalk	WMB V7.0, BizTalk SSIS	At the state level; not required at the local level.		
Data Routing/Publish and Subscribe	MQSI; Cloverleaf, BizTalk	MQSI ≤V2.1	Cloverleaf, WMB V6.0, BizTalk	WMB V7.0; BizTalk	At the state level; not required at the local level.		
File Transfer, Scheduled Production	FTP, HTTP, MQ	FTP (intercourt and using public Internet), MQ ≤5.2	FTP (intra-court only), MQ V5.3/ V6.0	MQ V7.0, Web Services	Scheduled production transfers of data		Overall direction is toward MQ exclusively
File Transfer, Ad Hoc	FTP, HTTP, MQ	MQ ≤5.2	MQ V5.3/V6.0	MQ V7.0, FTP	One-time, unscheduled bulk transfers of data only		Transfer of sensitive data requires secure FTP
Jury Business Applications							
Jury Management	Jury+, Juror for Windows			Jury+ (see ACJA 1- 501)			

Exceptions

Exception Process Evaluation Principles (detailed in *Enterprise Architecture Standards Exception Request Document* at http://www.azcourts.gov/cot/EnterpriseArchitectureStandards.aspx/EAS_Exception.doc):

1. City/County investment has already been made (apart from the court) that reduces the cost to the court.
2. Overall cost (total cost of ownership) is reduced from that of implementing the statewide standard. This savings must be balanced against the potential impacts to the broader Branch initiatives. Specific areas to be considered are: financial leverage, integration, support, and training.
3. Overall risk is reduced from that of implementing the statewide standard.
4. The local IT function is/will be providing support.
5. The technology demonstrates long-term viability. This must include the consideration of the vendor's viability and future costs to evolve the technology solution.
6. Substantially greater productivity is enabled through adoption of a local standard.

In addition, the court requesting an exception agrees to bear any later costs at the local level necessary to integrate the exception component or system with a statewide standard component or core system.

Arizona Code of Judicial Administration 1-505 adopts this document. It references this document, as maintained and published on the Commission on Technology Web site, as the Arizona Judicial Branch Enterprise Architecture Standards.