

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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Adopted by Administrative Order 2004-0018 Last revised: 02/14/14

| 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 | | |
| User Interface Delivery Method for Business Applications | Browser-based, Windows forms | Character based | Silverlight | Browser-based (asp or asp.net), Windows forms | | WinRT Apps, Native Mobile Apps, HTML5 | |
| Electronic Document Management | Hyland OnBase, LaserFiche, SIRE | LaserFiche, Hyland OnBase ≤11 SP2 | Hyland OnBase 12 SP32 | Hyland OnBase 13 SP2 | | Hyland OnBase 15.X | |
| Document Imaging | Kofax; OnBase Scanning Module | Kofax Card (SCSI connection) | Kofax Ascent Capture | OnBase 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 ≤V2.X, Silverlight | AJAX (streaming .asp), .NET Framework 3.X and 4.X, , Windows Workflow Foundation, VB.NET, ASP.NET, C#.NET (on a business case need basis) | XAML WPF WCF MVC | | |
| Development Environment | Visual Interdev, Visual Studio, PowerBuilder, Panther, MS- Access | Panther, Visual Studio ≤2005, Visual Studio 6, Visual Interdev | Visual Studio 2008 PowerBuilder, MS- Access | Visual Studio 2010 and 2012 | | Visual Studio 2013 | |
| 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 BPMN | | | |
| 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 2007 | Office 365, Word 2013 Word 2010 | | | |
| Spreadsheet | Quattro Pro, Excel | Excel ≤2003, Quattro Pro | Excel 2007 | Office 365, Excel 2013 Excel 2010 | | | |
| Presentation | CorelDraw, PowerPoint | PowerPoint ≤2003, CorelDraw | PowerPoint 2007 | Office 365, PowerPoint 2013 PowerPoint 2010 | | | |
| Local Standalone Database, | MS-Access | MS-Access ≤2003 | MS-Access 2007 | Office 365, MS-Access 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, Lotus Notes, GroupWise (supported versions) | Office 365, Outlook 2013 Outlook 2010 | | | |
| Instant Messaging | Yahoo Messenger, MS- Messenger, AIM, Trillian, Cisco Presence, Sametime | | MS-Live Communication Server | Lync 2013 | Jabber (@AOC) | | |
| Collaboration | Exchange + Outlook, MS- Office, Office Live, Webex, Google Apps | | | SharePoint Services, SharePoint Server >2007, Live Communication Server, WebEx, Google Apps, GoToMeeting | | | |

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|---------------------------|--|--|--|--|---|---|--|
| Social Media Tools | | | | Per Local Court 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 2008 | SQL Server 2012, MSDE/SQLServer Express, MySQL | Court core business applications (on a business case need basis) | | Black box DBMS not incl. |
| Data Warehouse DBMS | Informix XPS | | Informix XPS, SQL Server 2008 | SQL Server 2012 | | | |
| DBMS Modeling Tools | PowerDesigner, Erwin, Visio | | | 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 H.264 (720p HD, 15 fps) AVI, NTSC | Transmission over AJIN Storage | | Max 384 kbps/ concurrent session – |
| Email Protocol | SMTP, MIME | | | SMTP and MIME | | | |

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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 | | Subject to pilot test results |
| E-mail Encryption | | | | S/MIME Sophos (Server) | Transport only Storage | | Req's usage procedure |
| 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, 2012 | For gaining access to any enterprise system | Windows Server next release | |
| Client Operating System | Windows 2000, XP, Vista, and 7 | ≤ Windows XP | Windows 7, Vista | Microsoft Windows 8.1 | Current supported version only – previous versions are contained or retired | | AOC apps not certified to run on Windows 7 |
| Client Device Antivirus Software | McAfee, Sophos | | | McAfee, Sophos | | | |

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|------------------------------|--|--|--|--|---|---|----------|
| Server Operating Systems | Microsoft Windows, UNIX, OS/400, DEC VMS | OS/400, DEC VMS, Microsoft Windows ≤2003 | Microsoft Windows Server2003 | Microsoft Windows Server 2012, 2008 R2, UNIX, Linux | Enterprise applications | Windows Server next version | |
| Server Antivirus Software | McAfee, Kaspersky, Sophos | | | McAfee, Kaspersky, Sophos | | | |
| Server Virtualization | | | | VMware Vcenter ESX | | | |
| Mobile Operating Systems | BlackBerry O/S, Apple IOS, Android, Windows | BlackBerry O/S | | Windows | AOC-provided devices for access to statewide apps | | |
| Software as a Service | | | | | | | |
| Office Productivity | | | | Office 365 | | | |
| Shared Services | | | | | | | |
| Component Service Layer | DCOM, ASP, SOAP, MS-Windows Communication Foundation (WCF) | | Web Services (previous version), DCOM, ASP (classic) | Web Services (current version), SOAP / REST Objects, Remoting, MS-Windows Communication Foundation (WCF) | | Web Services (next version) | |
| Directory Services | Active Directory, Novell eDirectory (NDS), LDAP | | | Active Directory LDAP | Within Branch Outside Branch | | |

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|---|--|---|--|--|--|---|--|
| 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. |
| 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, 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 | 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 |

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|-----------------------------------|--------------------------------|--|--|--|-------------------------|---|----------|
| 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.