Indiana Technology Roadmap

The Technology Roadmap Committee is a group of IT professionals across the states that are tasked with creating consistent technology standards, or enterprise architecture, across all executive branch agencies.

2014

Definitions

Legacy	Existing, in-use technology that the State would like to stop using and replace and old systems that have been retired.
Current	Existing standards.
Future	Recommendations/expectations out 5 years.

Customer Service

Legacy	Perimeter Technology VU-ACD/100 Version 3.0 Standard Edition Software
Current	Cisco Unified Contact Center Express 9.0
Future	• Establish a hardware refresh methodology to ensure that all team members have the necessary tools to support the hardware being deployed in the environment. • Add additional wall mounted monitors enabling the team remembers to easily see the phone system statistics and other information that may need to be disseminated. • Develop a multiple tier support structure and modify the job descriptions of team members accordingly. • Develop a training schedules to educate the team members on the various products we support ensuring each team member is properly prepared to assist the customer. • Add a Technical Writer to the team to develop and implement a repository for all documentation the team utilizes in supporting the customer base.

Networks

Wireless – 802.11 Based

Legacy	Non-IOT sponsored connectivity solutions such as retail-based wireless devices or those devices not designed and deployed by IOT staff that do not support minimum security standards such as AES encryption or RADIUS Authentication.
Current	Completely IOT Supported (IOT Service Offering). The IOT local wireless service offering affords users wireless access on IGC campus and remote sites via a centrally-managed and secure wireless solution. All non-IOT wireless has been removed. If a non-IOT wireless is connected to the network, IOT aggressively seeks it out and removes it. Customers using a PC with specific wireless and security capabilities can take advantage of this Active Directory integrated secure wireless solution. The costs of the indoor access point, wireless controller, its management console, redundant authentication servers, support, site surveys and other services related to installation of new service, and maintenance of the centrally-located and managed equipment are included in the Seat fee paid by each agency for PC or laptop support. No additional costs are incurred by the agency customers. The service does not include outdoor wireless solutions or solution specific hardware. Contractor and guest access is also provided securely via each access point.
Future	• Support for Voice, Video and Data over the same infrastructure. • Location services for asset tracking.

Networks

Wireless - Cellular

Legacy	IOT supported Blackberry devices and aircards. Users connected through enterprise Blackberry Servers and utilized VPN to connect with aircards.
Current	IOT supports cellular Apple iOS, air cards, MiFi, and select BYOD mobile devices. Users connect to Microsoft Exchange server via ActiveSync through the Mobile Iron MDM.
Future	IOT will stay current with higher speed next generation cellular based data networks Selected Android OS devices will be evaluated for future use and support

Networks

Wired

Legacy

- Non-IP-based LAN Protocols – IPX, SNA, DLSW.
- Non-IP-based Routing Protocols – IPX-EIGRP, IPX-NLSP, RIP.
- Non-Ethernet-based transport for LAN traffic – No token Ring or Coaxial for Mainframe LUs in the user community.
- Non-IOT sponsored connectivity solutions; hubs or retail-based wireless, routing or switching devices.
- Non-Manageable switching devices with new manageable devices that met IOT minimum specifications.
- Internet Service Provider Dialup solutions.

Current

A single vendor, Cisco Systems, Inc., standard is established for data network hardware, including switches, routers, wireless access points and firewalls.

- Standard hardware configuration designs will be utilized to minimize deployment times and provide high performance, scalable, secure networking solutions.
- All non-IP based network traffic is removed.
- All non-Ethernet transport solutions have been removed from the network.
- Internet service is provided by 2 vendors through 3 egress points at different locations.
- Connectivity between key core locations has been upgraded to 10 GB.
- Many locations make use of VPN over broadband connections as the primary or backup circuit to increase bandwidth at a lower cost over serial connections.
- Many locations share a single high bandwidth connection back to the State core for all agencies housed in a single location.
- Power over Ethernet and gigabit to the desktop are now included in the service offering.
- IOT provides network connectivity at the access layer as a service. Agencies do not pay for network hardware as a capital expense. The hardware is included with the service.

Future

- Migrate from Serial to Ethernet based connectivity/services when/where available at State-based agency/county offices for increased speed for the next phase of Voice/Video/Data on the LAN.
- Port based access restrictions on wired infrastructure to match wireless environment.
- IP only based Communications - Voice, Video and Data on the same cable plant and network infrastructure.
- Energy Management to improve Green practices across entire State Infrastructure.

Telecommunication/Unified Communications

Legacy	Centrex Systems:	2 Nortel DMS100, 43 Miscellaneous CO's
	PBX Systems:	Nortel Meridian/1000M, Tadiran Coral III, ROLM 9751, Mitel SX-200.
	KTS Systems:	Nortel Norstar/BCM, Toshiba DK, NEC/TIE/Nitsuko, Comdial, Avaya, Inter-Tel, Macro-Tel, Tadiran, Atlas, Panasonic and Vodavi.
Current	PBXs / KPSs	Nortel and other miscellaneous legacy systems
	IP Voice	Cisco Call Manager, Interactive Intelligence
	Call Center	Cisco Contact Center UCCe and UCCx, Interactive Intelligence
	Desktop Sharing	WebEx
Future	A single common platform for Voice as a service, and a single common platform for Call Centers.	

Servers

Legacy	
Current	The State of Indiana has selected VMware virtualization as the preferred primary configuration for new application workloads. For hypervisor hosts, the State of Indiana has selected Cisco UCS as the hardware platform. For non-virtualized workloads, the State of Indiana has selected HP as the standard for rack mount server hardware using Proliant DL380 and DL580 configurations. Both solutions standardize on Intel processor architecture. At this time, the State of Indiana does not authorize the use of AMD processors in server platforms.
Future	VMware. Cisco and HP continue to innovate their server lineup and IOT will update the standard server configurations accordingly.

Mainframes

Legacy

Current

- All communications to and from the mainframe is using the TCP/IP protocol.
- VTAM APPN technology utilizing Enterprise Extender.
- Currently DB2Connect is running in this environment.
- New LPARS have been created to process other government or educations work load for processing.
- Mainframe Disaster Recovery data is replicated down to the DR site every 15 minutes for virtual tape and storage is sync up 7am and 7pm daily. DR testing is scheduled each year for applications testing.
- FTP jobs are currently moving to SFTP to move away from embedded passwords.
- Our Enterprise TN3270 product is BlueZone.
- All physical tape processing has been moved to Virtual Tape System.

Future

- Additional applications for the z/VM and z/Linux environment.
- Continue to find and consolidate or eliminate redundant software on the mainframe for cost savings.
- Create other LPARS for customers.
- Implement other security protocol to ensure data safety.

Database

Legacy

SQL 2000, SQL 2005, SQL 2008, SQL 2008 R2, SQL 2012, SQL 2014, DB2, IDMS, IMS, Oracle 9i,Oracle 10g, Oracle 11g

Current

Usually 1 release or update behind

Operating System	DBMS Choices	Third Party/Add-ons
Linux	DB/2	Golden-Gate
UNIX	Oracle	Cloud Control
Windows Server	SQL Server	Delphix
zOS (Mainframe)	MySQL	RAC
		FailSafe
		Dataguard

- High availability, shared database environments which include Oracle RAC and Microsoft SQL Clustering to allow flexibility, scalability and cost reduction.
- DR for critical and necessary database.
- Promote data encryption and other security measures for at-risk data using new database technology.
- Provide security reporting to agency customers.
- Provide automated and monitored backup environment to meet onsite recoverability and offsite DR needs.

Future

- Stay current with database software releases. Apply and test service packs and security patches to meet state security guidelines and agency needs.
- Continue to promote data encryption and other security measures for at-risk data using new database technology.
- Continue to automate and grow backup environments to meet onsite recoverability and offsite DR needs.

Data Management

Legacy	
Current	The Indiana Office of Technology has established EMC hardware as the standard for storage systems. IOT is charged with managing and maintaining a centralized storage infrastructure. IOT is currently investing in all flash storage arrays to support high IO requirements at low latency response times for some workloads.
Future	The storage of State of Indiana owned data and information will be managed utilizing technology with built-in growth capabilities. Server and storage farms will be provided for agencies to acquire growth as business needs dictate.

Workstations

Legacy

- Windowx XP

Current

- HP is current vendor. IOT purchases and supports the desktop environment on a four year scheduled refresh.
- Remote Hardware KVM capabilities have been increased and upgraded with latest hardware offering from HP.
- Windows 7 operating system set as standard with increased security policies over and above Windows XP. Windows XP being phased out.
- USB use controlled and limited to authorized encrypted devices.
- USB use controlled and limited to authorized users in some cases.
- Admin Rights only authorized by Security Coordinators (and limited).
- Software distribution is automated and packaged with hardware refresh.
- User “My Documents” data redirected to network storage so little to no data is stored locally.

Future

- Increase baseline security policy for all desktops and laptops to include NIST requirements.
- Admin rights no longer given to portable devices (Laptops). Rights to be delegated only to perform needed tasks, eliminating the need to be an administrator, even when out in the field.
- Investigate use of Linux and/or Mac workstations for work roles dealing with highly secure or sensitive information.

Peripherals

Legacy

Current

- Peripherals are selected by agencies with strong guidance ultimate approval by IDOA\IOT.
- A Smart Printing initiative has been implemented on campus in order to help agencies properly scale the number of print devices per user to industry best practices.
- Print volumes have also been analyzed and certain print processes have been moved to a print farm where it makes sense instead of stand-alone devices.
- Device consolidation has occurred and a shift to larger, shared, leased multi-function devices has been encouraged

Future

- Smart Printing initiative will expand to include field and remote sites.
- New print device requests will have an additional vetting process if the requesting agency has already completed the Smart Printing Initiative.
- Managed print services will be implemented. Print assets will be owned and managed by provider and scaled to maximize cost effectiveness per page based on business needs. Print redirection will be automated and logs will be produced for review as necessary.

Project Management Office

Legacy	One to two full-time project managers assigned to high-risk projects that utilized project management best practices individually.
Current	Staff of six project managers working together under a Project Management Office (PMO) to develop and apply a formal Project Management Framework. The current PM Framework includes a common methodology based on project management best-practices that utilize the PMBOK framework to provide transparency and predictability for IOT projects as well as an objective approach to measuring health of large IT projects across all state agencies.
Future	Extend the PMO and the PM Framework to become a Center of Excellence for any high-risk IT project within the State. This includes training for all project leaders, standard project management approach and guidelines for IT vendors, extending the reach of the PMO into other State agencies and providing tools, processes and systems to govern and monitor high risk IT projects across the State.

Advanced Data Analytics

Legacy	
Current	SAP HANA, SAP Predictive Analysis, SAP Lumira, MongoDB, Hadoop
Future	It is uncertain where the market will be developing.

Applications

Automation

Legacy	Agencies purchased software based on their own needs and preferences. They did not seek advice from other agencies doing similar tasks, nor did they take advantage of combining purchases to create economies of scale. Software within each agency was kept in drawers, boxes etc. until needed with only limited personnel with the knowledge to install.
Current	All state applications are packaged and automated for deployment and configuration. All agencies use the same system builds to make this more efficient and predictable. Agencies also benefit from new application virtualization technology (e.g., VMWare, Thin- App) allowing them to run legacy or unsupported applications without affecting other applications or the base image. Agencies also are able to procure a standard set of defined applications to address the core business needs at an enterprise-wide based cost system.
Future	• Applications will be reviewed and updates packaged on a regular schedule with IOT and agency cooperation. • Poorly written applications that absolutely require users to be administrators to function will be remedied via Beyond Trust software to keep the restricted rights on workstations policy intact.

Applications

Data Warehouse

Legacy	Information and data storage was largely transaction based, allowing limited manipulation and analysis without specialized queries and program development.
Current	Access and management of data & information within and across agencies is implemented within a handful of agencies via a variety of data warehousing technologies.
Future	The State is looking to augment the agency data warehousing environments with massively parallel processing (MPP) technologies based upon Hadoop to serve as the staging / processing platform for gathering, processing, analyzing and disseminating large and historical State agency data sets.

Applications

Data Interoperability

Legacy	Data & information sharing among agencies was depended on file transfers (cd, dvd, diskettes, external storage devices), data base interface tables, FTP and SFTP mechanisms, etc.
Current	A Statewide enterprise service bus (ESB), utilizing Microsoft BizTalk technologies and supporting both file (SFTP) and web service-oriented (REST and SOAP) connectivity methods, acts as a central data exchange mechanism and gateway for agency-to-agency and federal government-to-State communications. Exceptions to this standard will be made, if operationally necessary, for data exchange needs that exist with a given agency, or within a given agency application infrastructure.
Future	Upgrades to future releases of BizTalk and movement away from file (SFTP) to web services-oriented connectivity methods.

Applications

Documents & Information

Legacy	Agencies have used a variety of document managements systems, such as FileNET, file shares and web-based systems.
Current	The Indiana Office of Technology here by establishes Oracle Enterprise Content Management (ECM), formally (Oracle UCM) as the standard enterprise content management solution for the State Of Indiana. IOT will host a shared environment for all agencies to utilize for these purposes. Oracle WCC is a comprehensive suite of products that include: • Web Center Content (WCC): Content and Document Management • Oracle Document Capture (ODC): Capture and Imaging • Universal Records Management (URM): Electronic and Physical Records Management (Not currently implemented) ▪ Business Process Management (BPM): Workflow, and process management and automation. Microsoft SharePoint will continue to be utilized as a Content Management platform as determined by IOT on a case by case basis.
Future	

Applications

HR and Financials

Legacy	Agencies began using PeopleSoft HR in 1998. Full adoption of PeopleSoft occurred in 2009 with the completion of Encompass for financials.
Current	The Indiana Office of Technology hereby establishes PeopleSoft as the sole standard for all Human Resources and Financial Management systems and shall refer to all such implementations as “Government Management Information Systems (GMIS)”. State agencies developing new or significantly enhanced applications to address these functional areas will use GMIS. The PeopleSoft Human Resources modules include the Time and Labor module, this will be the standard for electronic time reporting. The Indiana Office of Technology must approve any deviations from this policy.
Future	

Applications

Business Intelligence

Legacy	Agencies have utilized a variety of solutions for BI.
Current	The Indiana Office of Technology has implemented Oracle OBIEE as a shared service option for agencies. OBIEE releases and maintenance are applied to keep the software within Oracle's active maintenance support and taking advantage of any performance/functional enhancements that are requested. Currently, OBIEE is available in both 10g and 11g release levels. As well, incorporated into OBIEE is a dynamic reporting product called Oracle BI Publisher that is also used by several agencies.
Future	The State is evaluating a number of next generation BI products that allow less professional IT involvement in the development and administration of BI dashboards, visualizations and reports.

Applications

Geographic Information Systems

Legacy	Applications were a mixture of agency-specific and enterprise applications. Consideration has been provided for applications that are necessary for state-wide management of key functions common across agencies.
Current	The Indiana Office of Technology hereby establishes Environmental Systems Research Institute, Inc. (ESRI) software as the sole standard for all Geographic Information Systems. State agencies developing new or significantly enhanced GIS applications will use ESRI software.
Future	Enterprise-wide applications will be governed by an enterprise change committee composed of representatives of participating agencies and by governance documents. In the future, applications will expand beyond desktops to include Internet and mobile applications.

Applications

Mobile

Legacy	Mobile devices were unable to render complex web content.
Current	All executive branch agencies and a few separately elected officials have a mobile website available. IOT has a development department capable of writing native mobile apps. We currently have an app for IN.gov in iOS and the Android version is almost complete. We have a process in place to assist agencies with their mobile development needs.
Future	As more departments realize the benefit of mobile apps, the use of tablets and smartphones will certainly grow. IOT will be able to handle the needs of our customers.

Applications

Web-Based

Legacy	Web-based and Internet applications are utilized and multiple platforms and tools are used to develop, test, maintain and deploy. Technical resources were not available to keep pace with application demands.
Current	Internal and external development processes are being utilized by agencies. A statewide initiative to redesign all state agency sites and implement the web content management solution (CMS) is complete. Static mobile websites with general agency information are complete. IOT has a new development department which can assist its customers with internal web apps making them more agile, and productive.
Future	Processes and resources will be identified to assist agencies with web and mobile application development for production client/citizen electronic services.