

Offices Under the President Technology Strategic Plan

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MISSION

BOT plans, develops, and maintains enterprise technology services according to its guiding principles: lifecycle management, cloud-smart, shared-first, sustainability, transparency, continuity, Countywide standardization, and reuse before buy, and buy before build.

- **Lifecycle management:** the administration of an IT system from provisioning, through operations, to retirement
- **Cloud-smart:** this term is adopted from the Federal Cloud Computing Strategy and means the strategic use of cloud data storage to reduce the need for onsite maintenance and equipment upgrades
- **Shared first:** this expression is adopted from the federal government's IT strategy and means that BOT will look to share platforms and software across the enterprise rather than have each department or office utilize multiple vendors for the same type of product
- **Sustainability:** ability to ongoing support and maintaining for applications, platforms, etc.
- **Transparency:** using public-facing technology to provide insight into Cook County operations and initiatives
- **Continuity:** stability of IT services during emergencies that threaten outages and equipment or software failure
- **Standardization:** the process of developing and promoting standards-based and compatible technologies and processes for County government IT
- **Reuse before buy:** this is a common principle of IT architecture that means that existing solutions will be considered before considering new alternatives, which provides for faster and cheaper implementation of IT solutions
- **Buy before build:** this is a common principle of IT architecture that means that IT solutions are bought and not built in-house, which provides for lower maintenance costs, better performance, and less need for staff with technical expertise

BOT PROGRAM AREAS

APPLICATION MANAGEMENT AND MODERNIZATION

- **Applications and Development** — Provides consulting, development, enhancement, maintenance, and support of applications. Resolves application incidents and delivers new solutions.
- **Enterprise Resource Planning (ERP)** — Handles enterprise systems in areas including Financials, Budget, Supply Chain, Purchasing, Inventory, Human Resources, Benefits, Payroll and Performance Management.
- **Geographic Information Systems (GIS)** — Provides maintenance of and access to the County's enterprise geographic information system. Engages in geospatial data management, analysis and modeling, training, and application development.
- **Program Management Office** — Provides technology program and project management services. Engages in business analysis, requirements development, risk management scope and proposal development and proposal development.

INFRASTRUCTURE MANAGEMENT AND MODERNIZATION

- **On-site Desktop Support** — Provides on-site troubleshooting of, and support for, technological equipment for various departments under the County Board President and other elected officials.
- **Mainframe Print Operations** — Oversees the County's large-scale print jobs created from the mainframe, including Assessor documents, accounts payable checks, Board of Review documents, jury summons, and revenue letters.
- **Server Engineer Team and Data Center Operations** — Oversees operations of IT systems architecture; provides advanced troubleshooting of, and support for, application servers; manages data center infrastructure.
- **Systems Management and Service Desk** — Provides advanced troubleshooting of, and support for, technological equipment; packages software for deployment and implements deployment; engages in consultation and project work.
- **Telecommunications and Network Support** — Oversees administration and management of the County's voice and data telecommunication services.
- **Enterprise Architecture** - Works closely with stakeholders, including management and subject matter experts (SME), with the understanding of our strategy, information, processes, and IT assets and uses this knowledge to ensure IT and business alignment including modernization.
- **IT Asset Management** – Works on effectively managing all IT assets from procurement through end of lifecycle disposal to ensure optimal return on investment and optimize spending and support lifecycle management and strategic decision-making within our IT environment.

RESIDENT TECHNOLOGY ENGAGEMENT

- **Data Analytics** — Provides data guidance, support, and best practices to aid the County in providing efficient services to residents. Maintains the Cook County Data Portal.
- **Overcoming The Digital Divide** – Currently implementing expansion of CSFN fiber network with the State of Illinois match grant. Future expansions are being planned with additional ARPA funding.

CYBERSECURITY

- **Information Security Office** — Protects the confidentiality, integrity, and availability of all Cook County information by leveraging cybersecurity capabilities across the enterprise and informing system stakeholders on cyber risk.

ADMINISTRATION

- **BOT Administration** — Establishes IT strategy and leads collaboration with elected offices. Manages accounting, oversees contract negotiations, and manages countywide IT contracts. Administration handles budget and hiring.
- **Legislative and Legal Affairs** — Manages the Bureau's legislative agenda. Monitors local, state, and national legislation related to technology. Manages contracts and vendors. Provides legal counsel.

POLICY ROADMAP

The Cook County Policy Roadmap: Five-year Strategic Plan for the Offices Under the President has been developed by the Office of the President of the Cook County Board of Commissioners. The Policy Roadmap and additional

information about Cook County's overall strategy are available on the website at
<https://www.cookcountyil.gov/service/policy-roadmap>

The Bureau of Technology (BOT) aligns its strategy with the Cook County Policy Roadmap. Technology can be leveraged to implement almost every facet of the Policy Roadmap; however, BOT's work is primarily centered in the "Smart Communities" and "Open Communities" domains. BOT will be focusing its work in 2022 in the following areas:

MODERNIZATION

Smart Communities, Objectives 1 and 2

Choosing innovative software and hardware that provide sound returns on investment is a cornerstone of the County's modernization efforts. While the pandemic hastened the move to paperless business processes, OUP has been on this trajectory for years. Digitization and automated processes are more efficient, error-free, and eco-friendly than the traditional office model. We have been able to reduce our physical footprint for storage, increase information access, and provide better security for County data as a result.

APPLICATIONS

Smart Communities, Objectives 1 and 2, Open Communities, Objectives 1, 3, and 4

Creating applications, or software, is time consuming and requires expensive expertise. Software applications require continuous maintenance to remain operational, such as security patches and bug fixes. Maintaining software so that it stays up to date with current technology uses a large percentage of a developer's time: software and applications require more maintenance over time, much as physical structures do. For OUP to be as efficient and economically responsible as possible, BOT has adopted a model where its preference is to, whenever possible, purchase applications "off the shelf" to provide standard solutions for countywide use instead of building something from scratch or contracting to have custom solutions built by vendors. BOT carefully vets potential procurements to ensure they meet standards for quality, data protection, and cybersecurity. Once a vendor has been approved, BOT can then customize this software to meet a department's specific needs. This enables BOT to operate a lean organization while still providing robust services. The same case management system, for instance, could be set up to serve one department and then reconfigured to serve another department, while the same IT staff/team provides support.

OUP currently maintains some mainframe and mid-range applications with the intent to move all County data off these platforms and retire them within the next couple of years. The programming skills required to maintain these aging applications are in short supply, creating vulnerabilities as these programmers retire. The programming languages used by these applications, such as COBOL, have not been part of standard university computer science curricula for decades. BOT manages the data transfer from the mainframe to more modern platforms. Currently, elected offices own most of the data housed on the mainframe. The Integrated Property Tax System (IPTS) is one such example. IPTS will unite the County property tax offices with a single system to improve interconnectivity and move data storage off the mainframe.

INFRASTRUCTURE

Smart Communities, Objectives 1 and 2

Information technology infrastructure includes hardware such as computers, servers, switches, and routers, as well as the facilities that house them. We support data centers on and off-premises, including some disaster recovery servers in off-premises data centers. Service continuity across multiple sites for mission-critical applications is becoming an essential standard in data center strategies, impacting not only application design, but also network topologies, IT architectures and physical site location.

Infrastructure modernization efforts are long-term, expensive investments, but they are mission critical. BOT has adopted a Cloud-smart strategy, meaning that we consider remotely hosted Cloud solutions first when developing a new procurement plan for a particular system. As part of our modernization efforts, we are also migrating our legacy phone system to VOIP. For systems that will remain on premise for the foreseeable future, BOT is focused on modernizing and consolidating the hosting environment to improve performance and efficiency. To enable this goal, BOT has published an RFP for IT infrastructure consolidation to consolidate and migrate to either Co-location data centers or Cloud.

DIGITAL EQUITY

Smart Communities, Objectives 1 and 2

OUP is continuously looking to expanding access to County services for residents. The pandemic has further exposed vulnerabilities for residents in communities with inadequate broadband infrastructure. In 2020 OUP received a State of Illinois grant to improve and expand broadband fiber in the Southlands. This work will continue into 2022 and other projects will likely be added as the County receives federal funds through the American Recovery Plan Act and the Infrastructure Investment and Jobs Act. BOT will continue to look for new ways to leverage competencies in project management to expand high-speed internet capabilities throughout suburban Cook County.

Additionally, BOT is responsible for several ongoing resident-facing modernization efforts. Administrative Hearings has begun its long-anticipated Citation Management project which will unite various previously siloed Departments such as the Forest Preserve, Administrative Hearings, Sheriff's Office, and Revenue to improve processing of Cook County ordinance violation fines and fees. For the first time, residents will be able to pay fines and fees online, providing better customer service and improved compliance. The Department of Revenue has also expanded online functionality, offering taxpayers the opportunity to file documentation and pay most taxes and fees online.

DATA PRIVACY, SECURITY, AND ACCESSIBILITY

Smart Communities, Objective 1

BOT is working to implement additional data privacy features to ensure that our employees and residents do not fall prey to data breaches or incidents. BOT's budget in the coming year plans to add data privacy positions to continue maturing data governance. By building out the data privacy team, BOT can help prevent costly data breaches and reduce the possibility of data exposure in the event of a cyber-attack. BOT will develop a framework of trust between IT and departmental executives that focuses on the varying requirements for data protection based on data categorization. Cook County data includes personally identifiable information, HIPAA-protected records, credit card information, and sensitive criminal justice information. All these data types have different data protection and data governance requirements, necessitating dedicated data privacy staff.

Disaster recovery and business continuity are among the initiatives BOT is coordinating enterprise-wide. BOT is in the process of finalizing an RFP for cloud storage and/or colocation solutions to ensure continuous operation of County services in the event of a disaster. Unifying operations and data through a cloud-hosted and consolidated platform will ensure that County employees can keep operations and essential services running from remote locations if travel to the office is impossible or unsafe. Government services cannot be shuttered due to snow days, and cloud-hosting critical data allows secure access by employees working from any location.

STAFF DEVELOPMENT

Open Communities, Objective 2

BOT's staff development efforts began several years ago and are continuing at an aggressive pace. The primary objective is to replace legacy positions with those focused on modern day needs – e.g., application management and development, cybersecurity, infrastructure development and stabilization.

Years of inaction on the staffing before President Preckwinkle's Administration took office created an environment characterized by outdated job descriptions and titles and inadequate recruitment efforts. The absence of IT professionals with the requisite skills to implement and manage newer technologies set the County's modernization efforts back years. As a result, there was an urgent need on the part of the new BOT management to accelerate and continue hiring efforts at an unprecedented pace.

More recently, there has been considerable progress made retaining and increasing staff for project management, ERP operations, application support, telecommunications and network management, and GIS-related functions. And there are concerted efforts underway to make more progress in the areas of cybersecurity and IT architecture, which are among the many IT sectors experiencing a highly competitive job market.

To accomplish BOT's staffing objectives existing job descriptions have been updated and new ones created. In addition, the organization has adopted a more assertive approach to recruitment that includes promoting the benefits of working for the County to prospective hires, as well as addressing salaries offered to candidates; all while strictly adhering to the County's employment plan and hiring rules.

Included among the positions that BOT created and filled are:

- Database Administrator (DBA)
- Application Developer
- Application Support Analyst
- .Net Developer
- Chief Information Security Officer (CISO)
- Information Security Analyst
- Information Security Specialist
- Senior Information Specialist
- Manager of Information Security Risk & Compliance
- Server Engineer
- Storage Engineer
- Systems Management Engineer
- Service Oriented Architect (SOA)
- Field Technician
- Geographic Information System (GIS) Developer

While these positions have significantly improved BOT operations and the services that it provides OUP and those of separately elected officials, there nevertheless is additional staff development needed to keep pace with the ever-changing world of IT.

BOT has developed an ambitious and detailed plan to further strengthen its staff capabilities, most notably in the areas of disaster recovery and business continuity, IT architecture, change management, digital equity, applications, specialized application design, data analytics, SharePoint development and management, and contract management.

Included among the new positions that BOT is in the process of creating are:

- Disaster Recovery Program Analyst
- Disaster Recovery Specialist
- Disaster Recovery Program Lead
- Business Continuity Management Program Lead
- Solution Architect
- Technology and Infrastructure Architect
- Security Architect
- Business Architect
- Data and Information Architect
- Change Management Analyst
- Change Management Analyst
- Senior Change Management Analyst
- Manager Organizational Change Management
- Director of Digital Equity
- UI/UX Designer
- DevOps Manager
- Senior Application Developer
- Senior Application Support Analyst
- Quality Assurance Lead
- Quality Assurance Analyst
- ERP Senior Technical Analyst (Supply Chain)
- ERP Senior Technical Analyst (Finance)
- ERP Senior Technical Analyst (Human Capital Management)
- Data Manager
- Data Analyst
- Data Specialist

RECRUITMENT

Open Communities, Objective 2

Relatively low unemployment rates within the IT industry have created an extremely competitive job market that has challenged BOT and other public-sector jurisdictions to attract and retain qualified staff. The most striking example of this competitive market can be found in the cyber security area, where the unemployment rate has reached as low as zero. Although competition for non-cyber jobs is less intense, the IT job market in general can be characterized as one of the most competitive.

BOT has adjusted its approach to recruitment in three ways. First, it is working closely with the Bureau of Human Resources to raise the starting salaries for new hires. As part of this effort, a new IT salary schedule was developed that is more in line, albeit not as generous, with what exists in the private sector.

Second, BOT has made a greater effort to describe its history, current focus, and specific plans to prospective hires; information which candidates have responded well to when trying to make their employment decisions.

Finally, BOT is promoting the County's relatively generous benefits package to prospective hires in a more assertive manner. Outlining in detail the County's health insurance options, paid time off, deferred compensation program, and other benefits have shown signs of aiding BOT's promotional efforts. The County's recently implemented telecommuting policy is likely to further strengthen BOT's chances of attracting and retaining qualified staff.

IT CONTRACT AND VENDOR MANAGEMENT

Open Communities, Objective 2

As part of BOT's multi-year modernization efforts, the County has entered into, and will continue to enter into, a variety of complex IT contracts that require the help of subject matter experts, attorneys, skilled negotiators, and the resources of the Chief Procurement Office. BOT has placed greater emphasis on creating very clear and concise requests for proposals (RFP), utilizing internal and external subject matter experts throughout the procurement process, conducting thorough negotiations with vendors, and more carefully managing contracts and evaluating the performance of vendors.

In the coming year BOT will also work with the County Bureau of Finance, OUP, and separately elected offices to consider the different ways in which to measure the return on the County's IT investments (ROI).

In addition, BOT has focused heavily on identifying potential opportunities for inter-departmental collaboration when procuring goods and services, as well as implementing enterprise solutions whenever appropriate.

BOT will continue to use this comprehensive approach to contract and vendor management as it addresses an array of IT challenges and opportunities.

COMMUNICATION

Open Communities, Objective 4

The fast-paced and ever-changing world of IT has required public- and private-sector organizations to adapt to new technologies and re-engineer business processes at a rapid pace. The modernization effort that BOT has embarked on is unprecedented in the County's history and has required the County Board to make a substantial financial investment over several years. As part of this modernization effort, it is imperative that BOT provide policy makers with as comprehensive a picture as possible of its existing IT environment, challenges, plans, and opportunities.

To accomplish this objective, BOT is developing a communication plan that will further educate policy makers, as well as the staffs of bureaus and departments, on the County's current and future IT environment. Working closely with the Information Technology Committee of the County Board, this effort will include an expanded strategic plan, more detailed project updates, issue-specific tutorials (e.g., GIS applications and tools), targeted tours of BOT's operation, and ad hoc briefings.

FY2023 AND BEYOND

In the IT Infrastructure area, IT asset management streamlining efforts, IT infrastructure consolidation, digital equity, Enterprise Architecture team building/governance and establishing Cook County's own business continuity and disaster recovery teams are in the works. On the Applications side, two related areas poised to see an increase in the future are Enterprise Content Management (ECM) and Digitization Services. There are many offices that have important paper documents that need to be digitized, and Cook County has offices that need an ECM system to feed other applications for various operational needs.

With Cybersecurity, Cook County will continue to focus on recruiting and retaining motivated cybersecurity talent that is technically proficient, team-oriented, and service-minded, as well as leveraging contract resources to enhance capabilities where appropriate. The cybersecurity team also has plans to mature the Information Security Office organization to include resources dedicated to Information System Security Engineering, Supply Chain Risk Management and Data Privacy.

In the near term, the Information Security Office also plans to update the Information Security Framework to align with the recently released National Institute of Standards and Technology Special Publication 800-53 Rev. 5, Security and Privacy Controls for Information Systems and Organizations. The team will also work to operationalize the Information Security Framework incorporating all steps of the Risk Management Framework including Categorize, Select, Implement, Assess, Authorize and Monitor, and leverage cloud services within the Security Tool Stack to alleviate large capital investments and periodical life cycle management challenges and cost.

Once Cook County has retired its mainframe and mid-range applications, and finished its hosting and disaster recovery project, the focus will shift to making department-requested improvements for systems we already have in place, further strengthening our cybersecurity posture and evaluating cutting-edge technologies for eventual adoption, if they meet our criteria for interoperability, efficiency, safety and return on investment.