

Montgomery County Government Enterprise Architecture

Department of Technology and Enterprise Business Solutions (TEBS)
Montgomery County Government, MD



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Executive Summary

Overview

The Department of Technology and Enterprise Business Solutions (TEBS) Enterprise Architecture (EA) program contains the following four components:

- Business Architecture – Business strategy, processes, domains, and governance
- Technical Architecture – IT infrastructure and standards
- Application Architecture – Application architecture and standards
- Performance Architecture - Business and EA metrics

Objective

The object of the Enterprise Architecture is to communicate:

- the results of County business decisions (related to IT)
- the County IT Architecture and infrastructure
- how the County manages its data
- how the County builds or acquires applications and solutions

The EA communicates how the organization has invested in its IT infrastructure (including hardware, software, processes and people). The County continues to make significant investments in IT and must communicate to many parties how future investments align or impact the architecture and infrastructure.

TEBS Strategic Priorities

The EA takes as input the TEBS Strategic Priorities and evolves to implement those priorities. The Strategic Priorities are:

- Improve Service to the public through Digital Transformation
- Identify an IT Governance Framework
- Address Core Business Systems that are Outdated and Costly to Maintain
- Align the IT Project Portfolio to Encompass Equity Solutions.

Highlights of Key TEBS Investments and Strategic Initiatives

TEBS Investments and Strategic Initiatives	
Improve Service to the public through digital transformation	<ul style="list-style-type: none">• TEBS Innovation Teams• Low Code/No Code Solutions• UX, CX, Agile, Human Centered Design Strategies
Identify an IT governance framework	<ul style="list-style-type: none">• TEBS Policy Program• TEBS Service Catalog• TEBS led Business Continuity Innovation Project• TEBS Change Management Program• TEBS Project Management Office• TEBS facilitated Technical Operations Management Group (TOMG)• TEBS Project Intake Process
Address core business systems that are outdated and costly to maintain	<ul style="list-style-type: none">• SaaS first Deployment Option followed by Cloud Services providers like Azure, Amazon, etc.• Improved immutable backup services along with improved hosting capabilities• Modernization of the Network by extension to world class data center and service providers along with near internet hosting capabilities• Modernization of the County's Telecommunication services by moving to a Cloud implementation• Legacy systems retirements
Align the IT project portfolio to encompass equity solutions	<ul style="list-style-type: none">• Leverage enhanced TEBS Networking Capabilities for the MoCoNet initiative• Deliver internet capable devices and digital literacy training & support to qualified residents through the Montgomery Connects digital equity program

- Seek opportunities to leverage federal and state funding to expand the scope and reach of digital equity initiatives

1.0 Introduction

[Montgomery County](#) takes advantage of proven technologies in areas of data, voice and radio networking, datacenter operations and monitoring, cloud application development and hosting, Software as a Service (SaaS) solution usage and support, hardware, and software systems deployment, and application development. This document, prepared by the Department of Technology and Enterprise Business Solutions (TEBS), is Montgomery County's Enterprise Architecture.

The County has three essential organizational resources: People, Process, and Technology. People are the County's greatest resource; Strategy and Process binds them together into a coherent workforce; Technology is the enablement tool.

1.1 Purpose

The purpose of this document is to codify key information about the County's Enterprise Architecture. Specifically, it identifies the technical building blocks and governance structures that are supported in the Enterprise.

1.2 Document Format

The Montgomery County Enterprise Architecture consists of four separate sub-architectures: Business, Technical, Application, and Performance.

The County has assembled information detailing its technologies and its direction. To avoid releasing potentially sensitive information, the County follows a strict release process that involves review at multiple levels (see Section 10-617(g) of the Maryland Public Information Act).

The owner of the Enterprise Architecture document is Gail M. Roper,

gail.roper@montgomerycountymd.gov , who serves as the CIO Department of Technology and Business Solutions (TEBS) and Mike Tarquinio (michael.tarquinio@montgomerycountymd.gov), who serves as the Department of Technology and Enterprise Business Solutions (TEBS) Enterprise Architect. The Department is located at 101 Monroe Street, 13th Floor, Rockville, Maryland 20850.

1.3 Enterprise Architecture Document Change Management

The Montgomery County Government Enterprise Architecture document is published by the TEBS Enterprise Architect in collaboration with other technical and business owners within the TEBS organization. The Enterprise Architect is responsible for working with TEBS Content Experts and department representatives (through the County's Technical Operations Management Group (TOMG)) to document the Enterprise Architecture. The document adheres to stringent change management controls and follows a defined change management process.

Change requests can be initiated via TEBS content experts, TOMG members, or the TEBS Enterprise Architect. Contact the TEBS Enterprise Architect Mike Tarquinio (michael.tarquinio@montgomerycountymd.gov) for further details.

1.4 References

- Montgomery County Office of Management and Budget – Interim Administrative Procedure 6-1, October 18, 2022; *Use of County-Provided Technology*.
- Montgomery County Office of Management and Budget – Administrative Procedure 6-6, October 20, 2003; *Information Technology Policies and Procedures*.
- Montgomery County Office of Management and Budget – Administrative Procedure 6-7, March 3, 2019; *Information Security*.
- Montgomery County Department of Technology Services, May 3, 2022; *Enterprise Architecture Configuration Change Management Plan*
- Montgomery County Government; *About County Government*; <http://www.montgomerycountymd.gov/resident/about.html>; page accessed 6/14/2022
- Montgomery County Government; *The Charter and County Code*; <http://www.montgomerycountymd.gov/mcg/countycode.html>; page accessed 6/14/2022
- Montgomery County Government; *Montgomery County Organization Chart*; <http://www.montgomerycountymd.gov/government/orgchart.html>; page accessed 6/14/2022

2.0 Business Architecture

Approved by the voters in 1968 and implemented in 1970, the Montgomery County Charter provides for a Council/Executive form of government.

The County is composed of the Executive and Legislative branches. The Judicial system consists of the County's Circuit Court, the state District Court, the Court of Special Appeals and Court of Appeals.

The Executive Branch implements and enforces Montgomery County's laws and provides executive direction to the government. Its chief executive officer is the County Executive. There are over 30 executive branch departments and offices that help to deliver services to county residents.

The Legislative Branch consists of the County Council and six related agencies. The Charter defines the Council's powers in three major areas: legislation, land use, and budget.

The Judicial System is responsible for the resolution of all matters involving civil and criminal law in the County. The Circuit Court for Montgomery County is the trial Court of general jurisdiction that has full common law equity powers in all civil and criminal cases, along with additional powers and jurisdiction conferred by the Constitution. It is the only Court in the County having the authority to conduct jury trials. Its jurisdiction is very broad, and it handles major civil cases and more serious criminal cases.

Additionally, there is the District Court of Maryland, the Court of Special Appeals, and the Court of Appeals.

Montgomery County Public Schools operate under the authority of the Board of Education, which is an eight-member body - seven elected by county voters and one student representative, elected by county students.

The Superintendent of Schools, appointed by the Board, provides daily administration of the schools. The school's overall operating and capital budgets are determined by the County Executive and County Council. However, the line-item distribution of the funds within the school system is set by the Superintendent and the Board of Education.

Montgomery College - the County's two-year college - operates under the authority of its Board of Trustees. The College's overall budget is determined by the County Executive and the County Council and is managed by the trustees.

There are four other agencies whose budgets are determined by the County government but have certain autonomy over their operations. These four agencies are:

- The Maryland-National Capital Park and Planning Commission (M-NCPPC) is a bi-county agency which manages public parkland and provides land use planning, with administration shared with Prince George's County.
- The Washington Suburban Sanitary Commission (WSSC) is also a bi-county agency which provides water and sewer service to Montgomery and Prince George's Counties.
- The Housing Opportunities Commission (HOC) is the County's public housing authority.
- The Montgomery County Revenue Authority is a public corporation for self-supporting enterprises of benefit to the County.

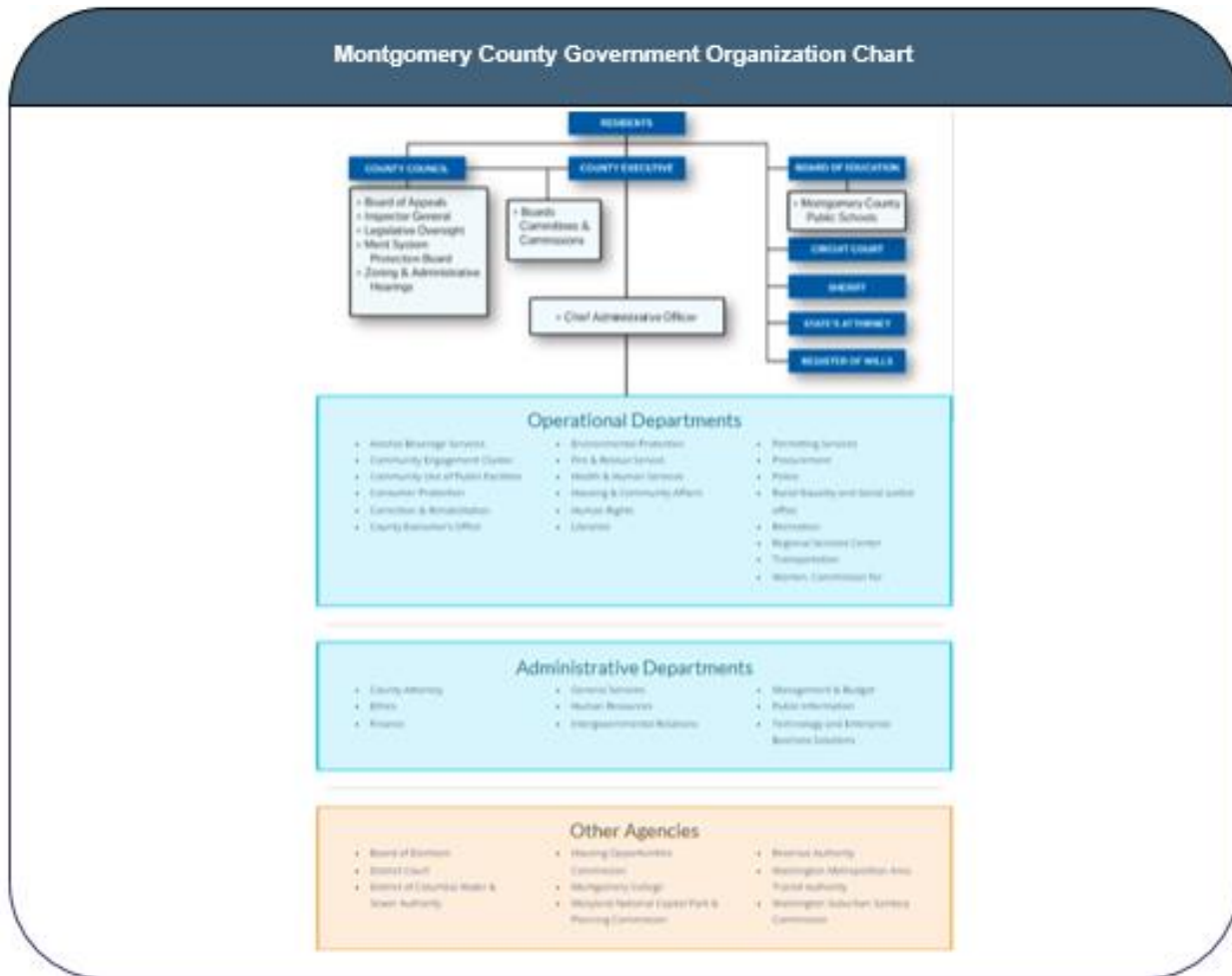
In addition, the County budget includes appropriations to participate in debt service and operating costs of the Washington Metropolitan Transit Authority (WMATA) which is overseen by the Washington Suburban Transit Commission (WSTC).

* Above information copied from the County Internet Web Site at the following [link](#) [5]

2.1 County Charter

The County Code, Zoning Ordinance and COMCOR (Executive Regulations) are available at all Montgomery County libraries. COMCOR is ONLY available at the Rockville Library. They are also located on the County web site at <https://www.montgomerycountymd.gov/mcg/countycode.html> [6]

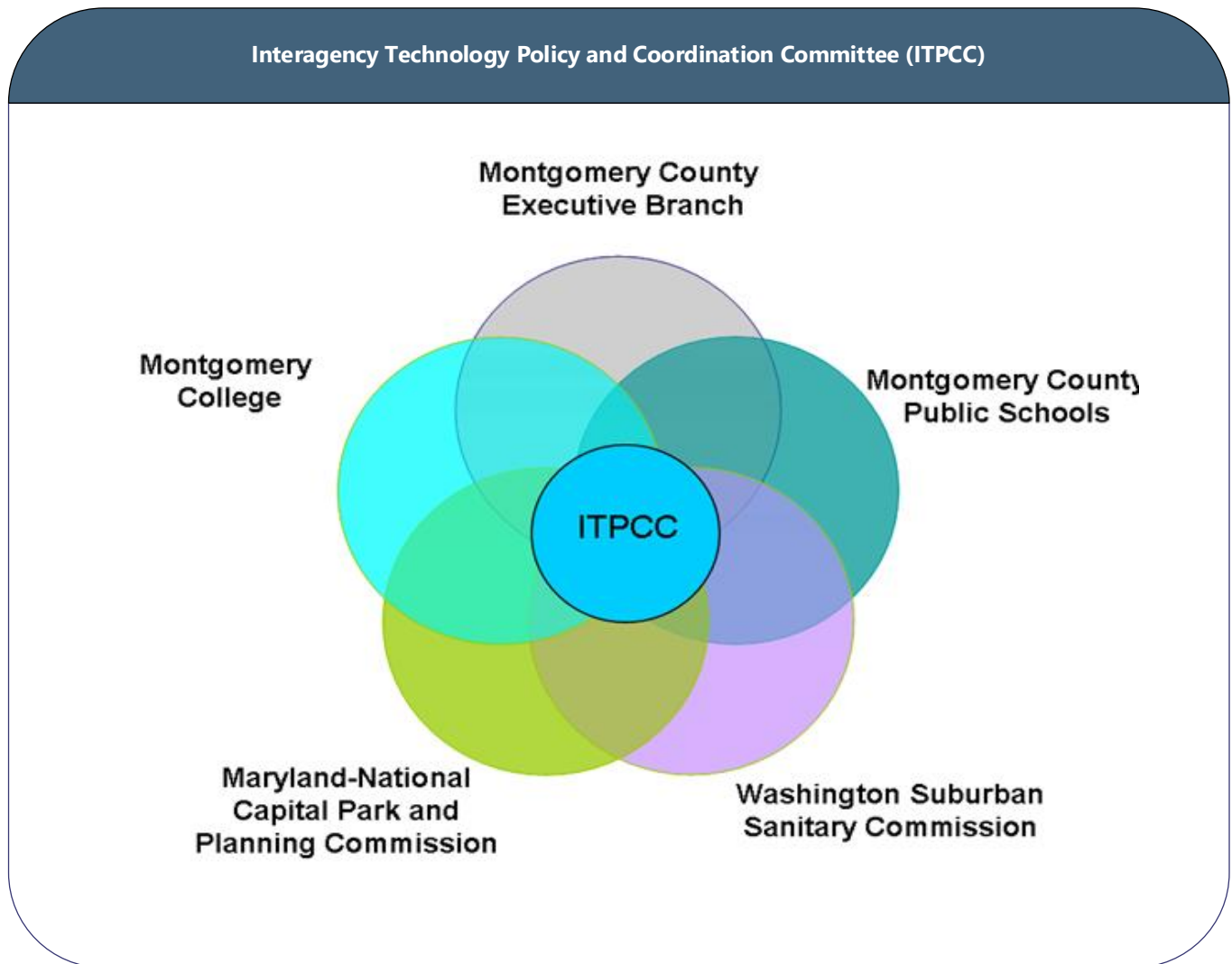
2.2 County Organization Chart



Information about the current County Organization chart can be found on the County Internet Web Site at the following site <https://www.montgomerycountymd.gov/government/orgchart.html> [7]

2.3 Information Technology Governance

2.3.1 Interagency Technology Policy and Coordination Committee (ITPCC)



The Interagency Technology Policy and Coordination Committee (ITPCC) was chartered by the Montgomery County Council on July 26, 1994, in Council Resolution No. 12-1758. The mission of ITPCC is to: promote IT strategic planning and coordination among the agencies of Montgomery County Government that include Montgomery County Public Schools (MCPS), Montgomery College (MC), Montgomery County Government (MCG), Maryland National Parks and Planning Commission (M-NCPPC), Washington Suburban Sanitary Commission (WSSC), and the Housing Opportunities Commission (HOC);

provide a forum for coordinated implementation of technology policy and guidelines; facilitate Interagency communication including evaluation and sharing of new technologies, and advise policy makers on strategic uses of technology.

This is accomplished within a structure consisting of the ITPCC Principals, the CIO Staff Subcommittee, Project Teams, Special Interest Groups (SIGs), and Special Subcommittees. The principals are the agency heads for the ITPCC agencies noted above. The ITPCC establishes policy, reviews work products, and establishes priorities. The ITPCC provides status reports to the Management and Fiscal Planning Committee (MFP) periodically. The CIO Staff Subcommittee reports to the ITPCC and is composed of representatives from each member agency who hold the title or role of a Chief Administrative Officer (CAO). The Staff Subcommittee meets periodically and proposes the yearly work plan, approves, or defines the scope and tasks to be completed by the project work teams, allocates resources to complete project tasks, reviews and approves project work products, and makes recommendations to the ITPCC based on the results of the work accomplished by the teams. Project Work Teams are designated by the CIOs to perform the tasks required by the ITPCC work plan, or other special project assignments as required. Special Interest Groups (SIGs) are typically the offspring of the project work teams that have completed a project. SIGs meet to continue information sharing and dialog on issues of common interagency interest and benefit.

Note: As of November 2022, the CIO is in discussions with key stakeholders regarding the ITPCC Group. Updates will be provided in a future version of this document.

2.3.2 Montgomery County Technology Governance

TEBS provides Enterprise Information Technology Services to Montgomery County. The County Code, Chapter 2, Division 11D outlines the functions and duties of TEBS.

As defined in the county code, the purpose of TEBS is to:

- promote the appropriate use of automated information systems and telecommunications technology by the County government;
- plan, develop, and ensure the proper operation of the County government's telecommunications capabilities, with special emphasis on the long-term issues of connectivity and compatibility;
- ensure that the County government provides automated information services;
- review decentralized process support systems for consistency with overall policy and compatibility with other governmental systems; and
- promote the sharing of data and information technology systems among the departments and agencies, subject to the state public records act.

As defined in the county code, the duties of TEBS are to:

- operate the County's central computer system and provide technical support necessary to:
 - generate and maintain the software of all systems;
 - assess requirements for computer hardware and software; and
 - supervise network control activities;
- administer each cable communications or other telecommunications franchise granted by the County Council and any other telecommunications agreement involving or regulated by the County;
- operate and manage all telecommunications facilities owned or controlled by the County, including the County fiber-optic data network, telephone system, Internet service, cable television transmissions, and public safety communications;
- make County policy recommendations;
- establish standards for automated information systems and telecommunications;
- plan and oversee the installation and support of departmental and enterprise automated information systems, including public safety communications systems, local- and wide-area networks, enterprise servers, and the desktop computer replacement program, under written policies approved by the CAO;

- maintain a geographic database of all installed telecommunications facilities in the County for which the County has any legal authority to require data, or is able to obtain voluntarily or through a third-party;
- approve, deny, or modify all requests for telecommunications and information processing facilities before acquisition; and
- advise the County Council on the acquisition of telecommunications and information processing systems, although the Council has the final authority to acquire facilities and systems for its own use.

2.3.3 Chief Information Officer Responsibilities

As defined in the county code, the Director of TEBS serves as the County's Chief Information Officer (CIO). The CIO, under the supervision of the CAO, must:

- serves as chair of the Information Technology Policy Advisory Committee (ITPCC) CIO subcommittee on a rotating basis with other ITPCC member CIOs;
- review and approve any proposed procurement of information technology for the County government to ensure that the proposed procurement is consistent with approved information technology policies and standards, unless the Director of Procurement appeals the CIO's decision to the CAO to resolve;
- plan, direct, and manage each major information technology project of the County government, under written policies approved by the CAO;
- submit a plan to the County Council by February of each year for the County's use of any information technology resources that a person was required to provide under a cable or other telecommunications franchise granted by the Council under Chapters 8A or 49;
- administer each cable television or other telecommunications franchise granted by the Council strictly according to law, the approved franchise agreement, and any franchise administration policies established by the Council by resolution;
- provide technical assistance to the ITPCC or any successor organization such as the Montgomery County Public Schools, Montgomery College, the Washington Suburban Sanitary Commission, and the Maryland-National Capital Park and Planning Commission, to promote efficiency and, to the extent practical, consistent standards and interoperability of information technology among the County government and these agencies; and
- perform the duties described in Section 2-58E to coordinate all telecommunications transmission facilities in the County.

2.3.4 Information Technology Policy Advisory Committee (IPAC)

Montgomery County implemented an Information Technology Governance structure and processes based on recognized business best practices to plan, manage, and build support for Information Technology (IT) projects, programs and policies. The committee is designed to facilitate the cooperation and communication among various County departments and to establish an institution to promulgate and adopt IT operating standards, policies, and architecture decisions.

The IT Governance initiative includes two levels of input and review. First, the Technical Operations Management Group (TOMG) is comprised of technical representatives from each County department. Second, the IT Policy Advisory Committee (IPAC) is comprised of 12 department heads representing a cross section of County departments. The Chief Information Officer (CIO) chairs both groups.

2.3.5 Technical Operational Management Group (TOMG)

The TOMG, which consists of Departmental IT managers and liaisons as well as TEBS IT leaders, provides a collaborative forum to support the development of Enterprise Policies required to guide the deployment of information technology solutions and products. TOMG identifies opportunities for improving service delivery throughout Montgomery County Government (MCG). TOMG recommendations are made to the Chief Information Officer (CIO), the Chair of Information Technology Policy Advisory Committee (IPAC). The Chief Administrative Officer has final decision authority on IPAC recommendations.

To fulfill the County's mission, the TOMG considers the following:

- The County Executive's Mission Statement
- Customer needs and expectation, internal and external
- Work activities across lines-of-business (LOB) / departments
- The capabilities and limitations of emerging and maturing technologies



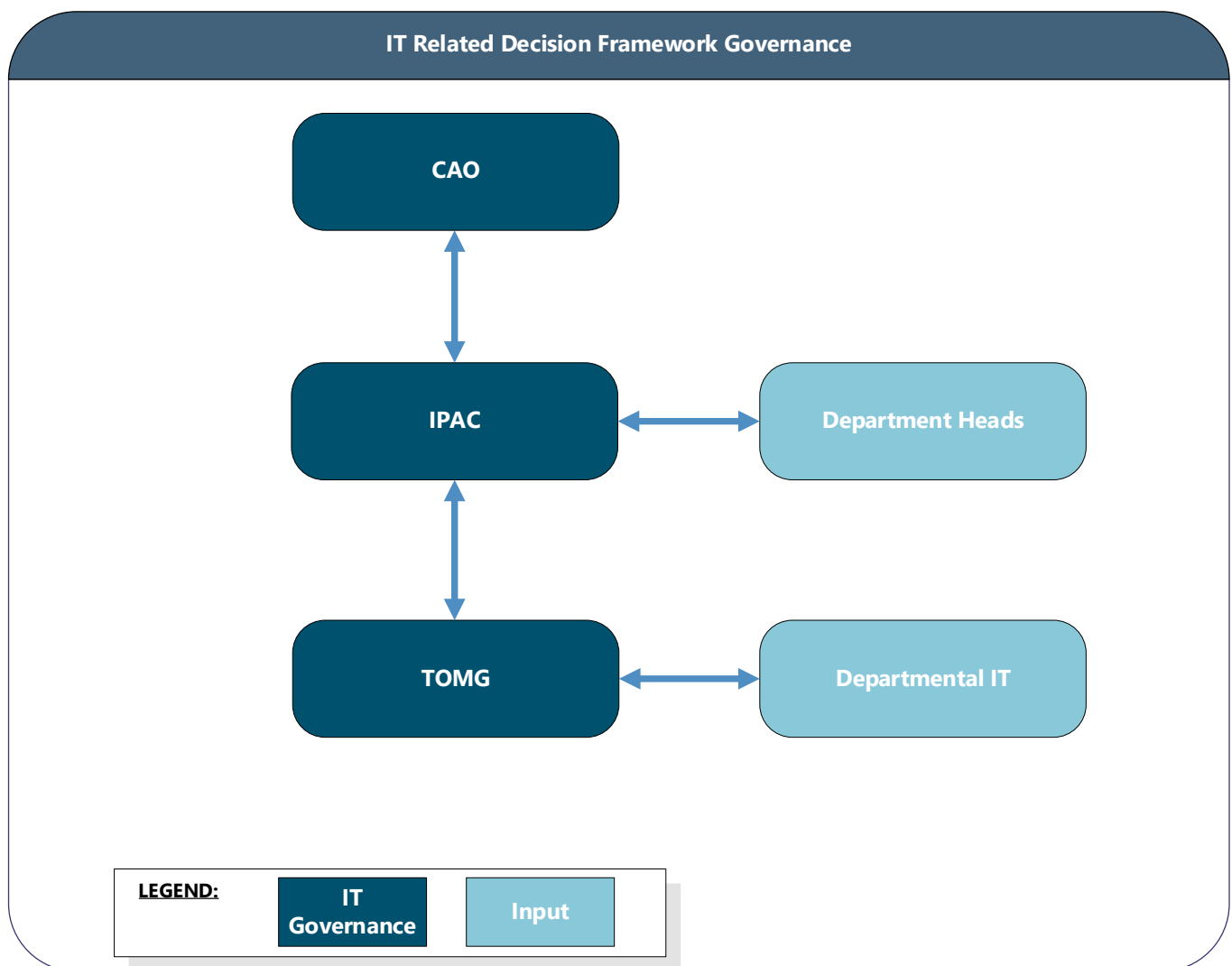
Responsibilities

In fulfilling its purpose, the TOMG will:

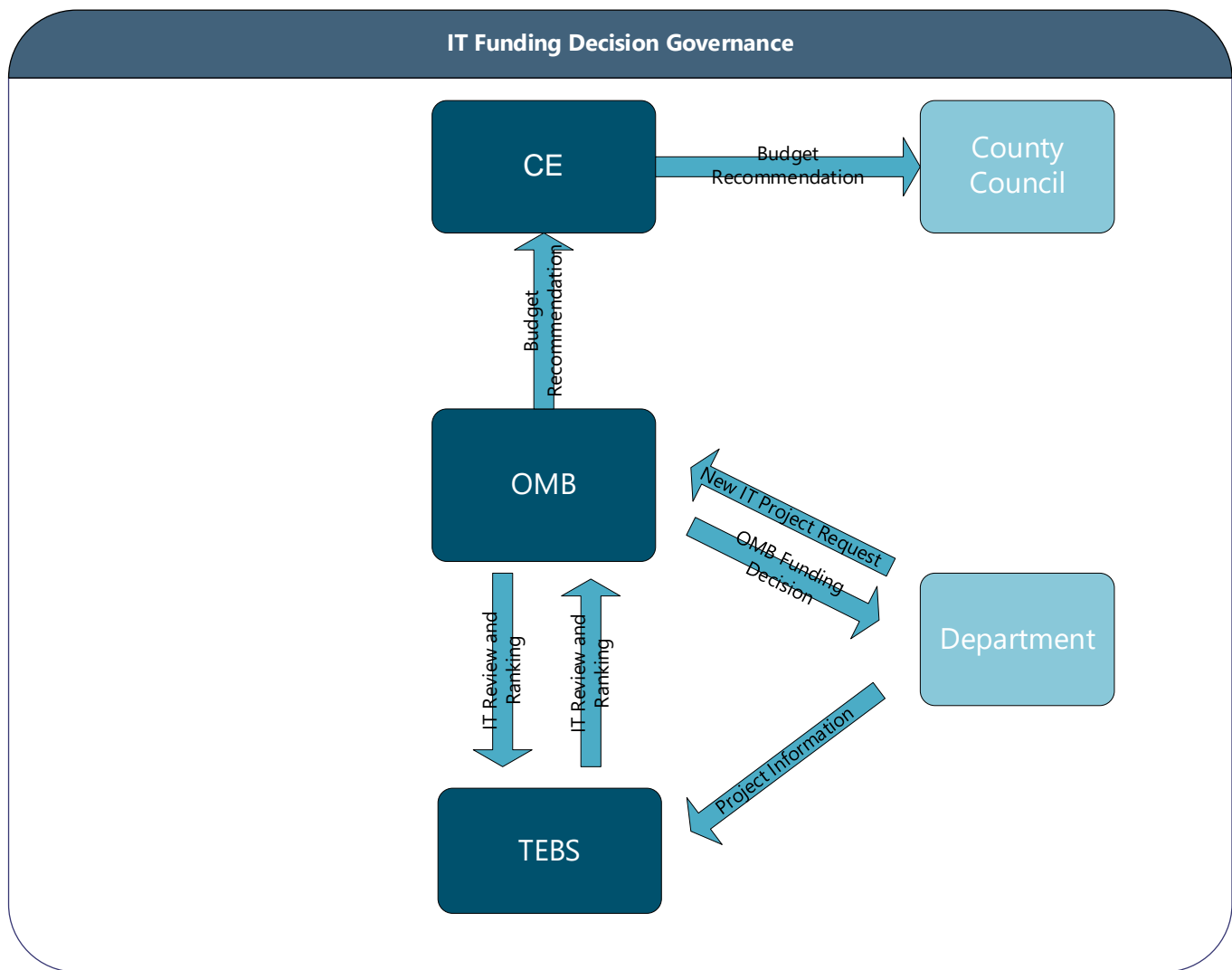
- Establish fundamental operating principles and business practices for, communications, transactions and the use of technology;
- Identify innovations and best practices to compare the effectiveness of MCG activities with government and private sector best practices;
- Strive to maximize the use of technology in MCG Departments, Offices and business lines to benefit customers and other key stakeholders;
- Endeavor to assure that all electronic content is secure, available and accurate;

- Identify key issues bearing upon the advantageous deployment, availability and use of Technology;
- Identify and standardize departmental level policies needed to ensure the security, availability and use of technology;
- Recommend policies and strategies as appropriate to ensure business needs are met;
- Consult with key user-communities and encourage these communities to communicate their technology needs;
- Recommend changes to the county Enterprise Architect; and
- Provide coordination and communication among the various Departmental groups currently working on technology projects in MCG.

2.3.6 IT Related Decision Framework



2.3.7 Annual IT Funding Review Process



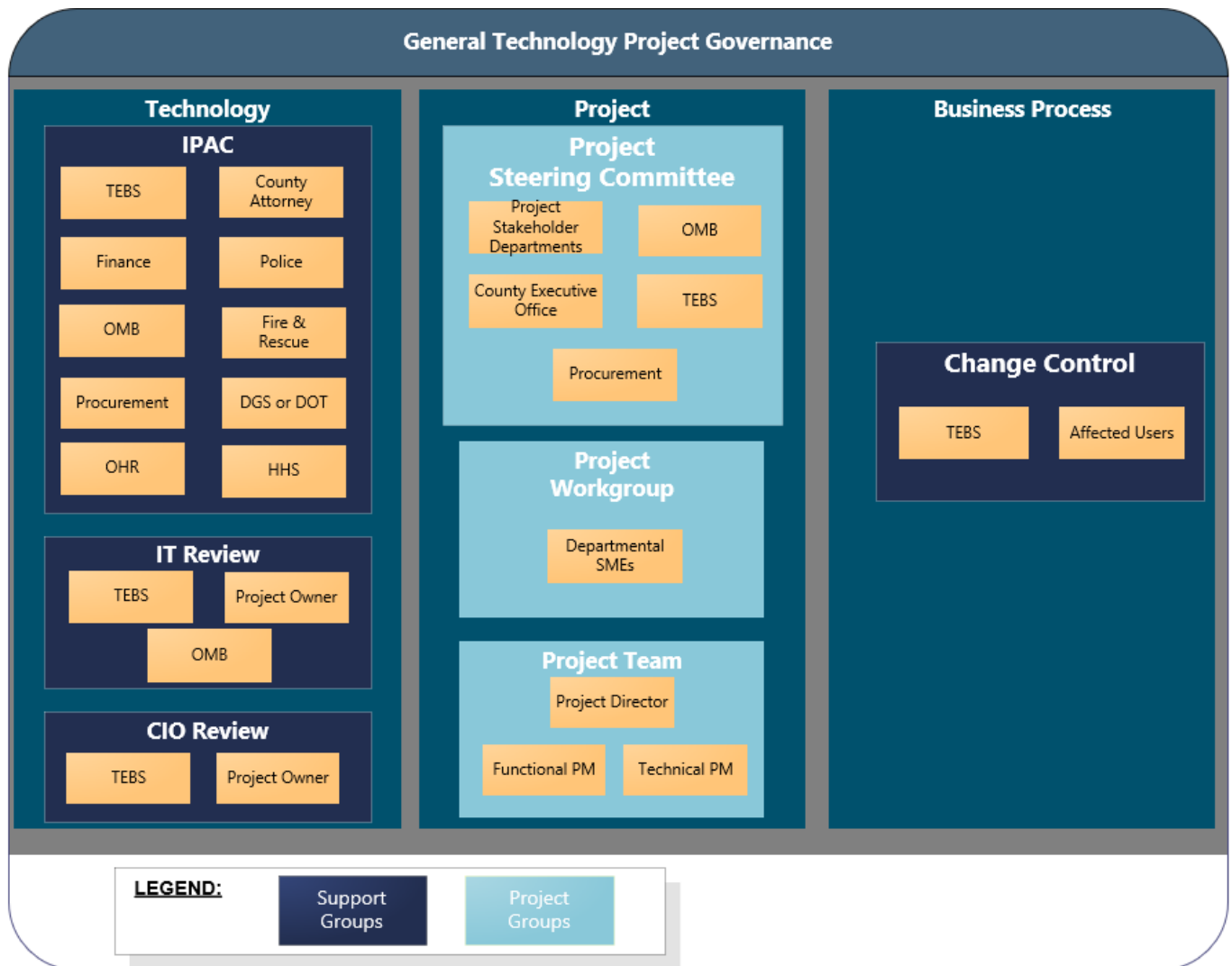
The Office of Management and Budget (OMB) has developed the annual IT Funding Review Process in collaboration with TEBS. This process builds enterprise accountability in the planning and budget of future technology initiatives.

During the annual budget development cycle for the next fiscal year, it is important to establish how a proposed investment in technology will support the overall enterprise business strategy. Before additional funding is allocated, alternatives must be searched for and evaluated to determine if there can be savings realized in re-use of technology or the combination of single department requests to form a more efficient enterprise request.

The IT Funding Review Process has been established to ensure that new technology requests have supporting business cases clearly defined, cost / benefit analysis has been performed, possible "hidden"

sources of project costs have been identified and an enterprise value assessment has been performed. All of this happens prior to the decision to commit funding to a project for a future fiscal year.

2.4 Technology Project Governance



Note: As of November 2022, the CIO is in the process of revisiting the project governance model through an enhanced TEBS PMO organization.

2.5 TEBS Strategic Priorities

TEBS Strategic Priorities



Improve Service to the public through digital transformation by (1) Increasing online services, seeking real-time processing and increasing service-centric opportunities; (2) Standardizing technical structures and enhancing customer service; and (3) Optimizing the IT operating model to match enterprise digital ambitions.



Identify an IT governance framework by reducing IT costs through expanded shared services and our ability to enhance productivity through automation and (2) Actively engaging in collaborative strategies via the IT Policy and Coordination Committee (ITPCC).



Address core business systems that are outdated and costly to maintain. Address systems that are overly complex, are targets for emerging cyber threats, or have advanced platforms of SaaS services that better meet the County's needs.



Align the IT project portfolio to encompass equity solutions by (1) Developing a FiberNet strategic plan including equity and economic development and (2) Developing a strategy for FiberNet Digital Equity Methodology.

2.6 TEBS Innovation Teams

At the direction of the CIO, a TEBS Innovation Team can be created to form a cross discipline team to work on a select business problem or strategic innovation. These teams are formed at the direction of the CIO and work on a specific topic or problem for a limited length of time.

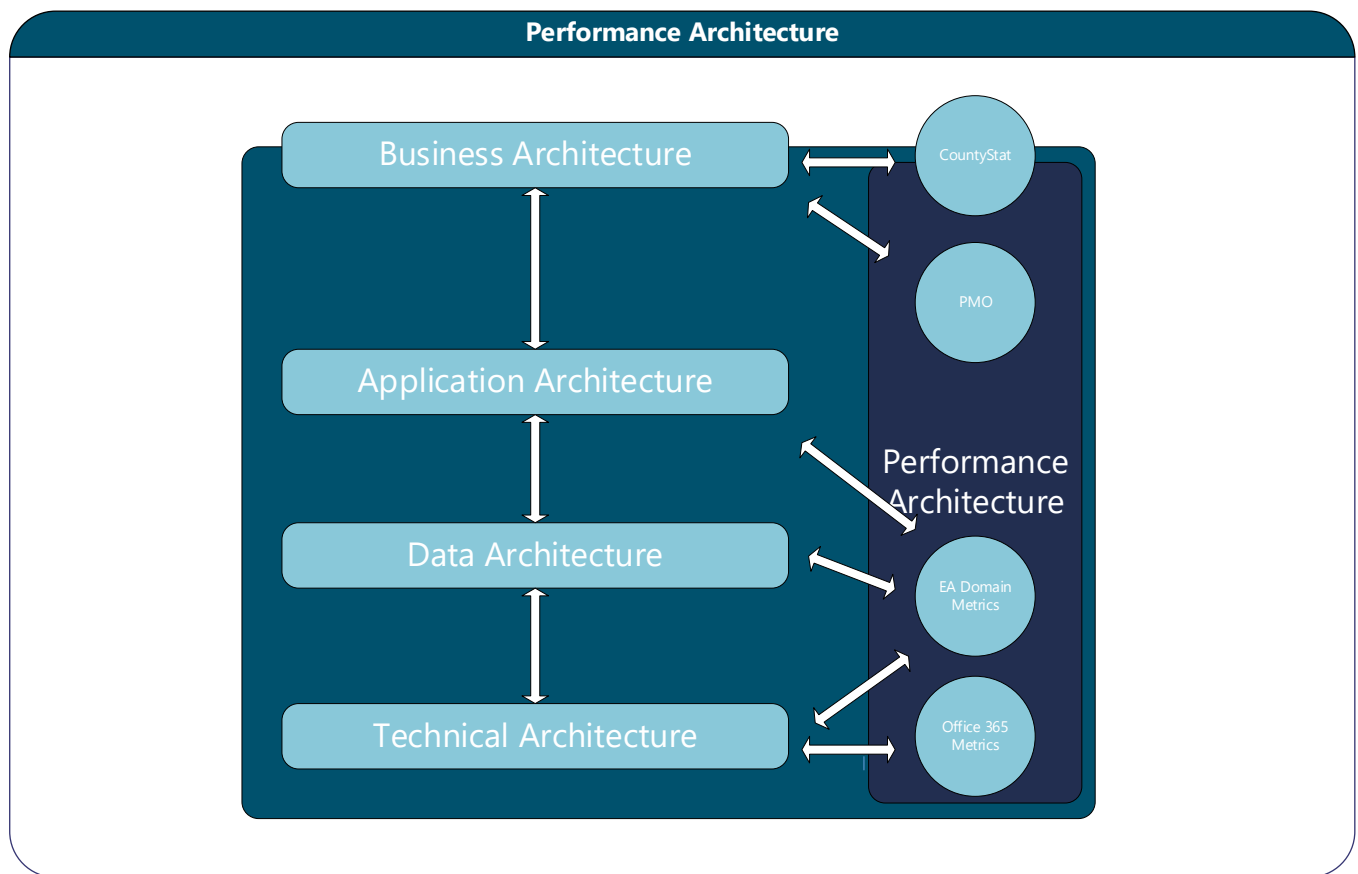
2.7 TEBS Policy Program

TEBS maintains a policy program that is led by the departmental Policy Analyst. The program maintains a repository of County IT Policies that are under configuration management and are reviewed at least once a year with the individual policy stakeholders.

The Policy Analyst position is maintained within the TEBS organization. This is a vital position, that is responsible for examining the efficacy of existing policies and laying out the groundwork for new policies within TEBS.

3.0 Performance Architecture

3.1 Overview



3.2 CountyStat

The main business process for tracking and improving operational efficiency is through the County's [CountyStat program](#). The program is the performance management and data analytics team for Montgomery County (MD) Government. Established in 2007 under the Office of County Executive and shifted to the Office of Management and Budget in 2020, CountyStat uses an outcome-focused performance framework to strategically monitor, assess, and improve the effectiveness and efficiency of County services. Employing analytics skills and tools, CountyStat leverages administrative and public data to help County departments solve problems and develop targeted action plans and strategies to deliver results for our residents.

Besides having an oversight role, CountyStat works as internal consultants ranging from one-off analyses to long-term strategic initiatives, ensuring that the organization thoughtfully uses data to make smarter decisions and achieve better outcomes. CountyStat also serves as a forum to convene stakeholders to promote collaboration across organizational boundaries and address cross-cutting multi-departmental efforts that share a common goal.

4.0 Application Architecture

The County supports several Application Architecture domains. These domains provide a design pattern that is supported by TEBS. The supported development options are listed in Section 4.1 - Application Development Options.

In addition to development options, the County has several COTS and Cloud Software Acquisition Options that allow users to procure vendor software solutions. These options provide approved vehicles for a department to acquire Software licenses. The domains are listed in Section 4.2 – COTS and Cloud Software Acquisition and Deployment Options.

4.1 Application Development Options

<u>SeamlessDocs</u>	Cloud vendor solution for document workflow, electronic signatures, form building and workflow
SurveyMonkey Office 365 Forms	Cloud vendor solution supporting surveys
SharePoint Workflow (Low Code Application Platform)	Using Office 365 Sharepoint to create workflow solutions
Wufoo and Sharepoint (Low Code Application Platform)	Using the TEBS Web and Mobile Application Team's design template to transfer files and form information into a Office 365 SharePoint site
Power Automate (Low Code Application Platform)	Using Office 365 Power Automate to create customer workflows tying Office 365 and 3 rd party solutions

Montgomery County Enterprise Service Bus (ESB)	Using the County's ESB for intelligent File Transfers and Integrations
Reporting <ul style="list-style-type: none"> • Oracle OBIEE (ERP) • Microsoft PowerBI 	Reporting solutions for different domains
Custom web application development <ul style="list-style-type: none"> • .Net • HTML 5 	Creating custom web applications. Can be both Single Sign On for County Users or Internet facing
Montgomery County ERP <ul style="list-style-type: none"> • RICE development for Oracle EBS and PeopleSoft 	RICE Development solutions for Oracle's EBS and PeopleSoft
Mobile Applications <ul style="list-style-type: none"> • Mobile version web pages (responsive design) • Vendor developed solutions • County developed applications 	Mobile Application development for Phones and Tablets. Published policy identifying options and optimal solutions
Information Technology Service Management (ITSM) <ul style="list-style-type: none"> • An industry leading ITSM product 	The County uses an industry leading ITSM platform for its ITSM program. Current modules include Incident, Change Management, and CMDB
GIS <ul style="list-style-type: none"> • ESRI 	The County uses Environmental Systems Research Institute's (ESRI) GIS data models and software.

4.2 COTS and Cloud Software Acquisition And Deployment Options

TEBS Supplied Office 365 License Enhancements	County's Microsoft Contract includes additional features via enhanced licenses. Examples are MS Project Management and Visio.
TEBS Supplied Project Management Software	Cloud Project Management Software that TEBS is providing access to like Microsoft Project.
TEBS Supplied Tools	Packaged Software that TEBS is providing the Enterprise via endpoint management team standard image such as Office 365 and VPN clients
IT Commodities	Packaged Software can be purchased through IT Commodities. TEBS endpoint management team can create an installation package for deployment.
Office 365 Add Ins	Can be purchased through the Microsoft Store. Requires request and approval from TEBS to make available in the store.
Mobile Applications	Can be purchases through the vendor stores. Requires review and approval from TEBS to include in TEBS supported MAM and MDM profiles.
Request for Proposal (RFP)	A department can secure funding and issue an RFP. TEBS is available to help with RFP creation and review. There are architecture and security clauses that need to be included in each RFP

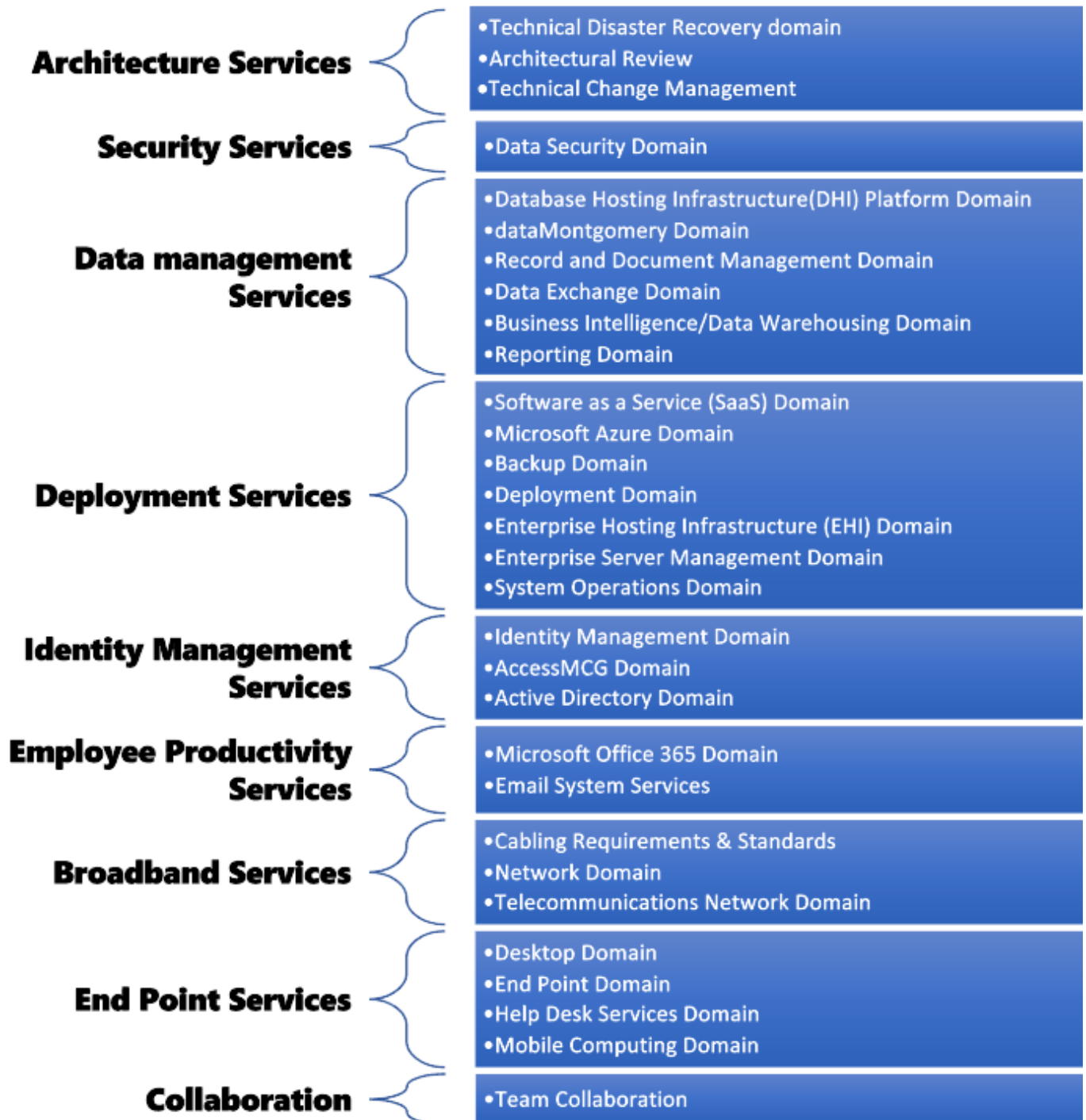
5.0 Technical Architecture Overview

The Enterprise Architecture presents well-defined, strategic standards adopted for the development and delivery of the County's information systems. It provides a cohesive blueprint to optimally design, purchase, develop, deploy, and manage information systems for the County.

The Framework may be defined as a collection of interrelated component architectures or domains. The public oriented domains are offered as shared Enterprise Services to Departments, Groups, and Agencies.

5.1 Enterprise Shared Service Categories

The domains can be grouped into a series of categories. The categories and the domains that make up each category are:



5.2.1 Architecture Services

Overview

The Architecture Services initiative seeks to improve the customer experience by bringing Enterprise Standards and services to customers. They can benefit from off the shelf designs, solutions, and processes.

Vision

TEBS is investing in the Architectural Services area in all three domains:

- Technical Disaster Recovery
- Architectural Review
- Technical Change Management

TEBS is investing in Technical Disaster Recovery by assembling and engaging a Business Continuity Innovation Team, including organizational departmental partners, to prepare for and initiate a County wide Business Impact and Risk analysis (BIA). The team is currently gathering data and taking inventory of our software and systems, hardware and infrastructure, business processes, business units and departments, site locations, and points of contact.

Concurrent with the BIA work TEBS is investing in core hosting, backup and network technology that will improve resiliency and provide a foundation for the BIA work.

The County continues to support Architectural Review via the TEBS Enterprise Architecture Group which participates in the annual IT Review process as well as working with departments to create and review IT related RFPs and Contracts. The TEBS Enterprise Architecture Group participates in these processes and ensures that enterprise standards are considered and followed.

Finally, TEBS is investing in its Technical Change Management program through Change Control Board processes as well as using an industry leading ITSM platform. TEBS is investing in an ITSM program and helping expand Technical Change Management to the Enterprise.

EA Technical Domains

- Technical Disaster Recovery
- Architectural Review
- Technical Change Management

Limiting Issues

- Limited resources
- Need for business involvement with the BIA

Architecture Services	
Technical Disaster Recovery Domain	<p>The Enterprise delivered services DR capabilities are being improved with an investment in Fibernet and the extension of the network to Equinix. The current County data center(s) will be extended via a logical layer 2 network to a hosting environment at Equinix. The addition of the deployment domain moving to a hyperconverged architecture and backups moving to an immutable architecture will improve the County's resilience and recoverability. Finally, the County's Azure presence will be expanded to include solution hosting.</p> <p>Business Continuity is also being improved through a TEBS led Innovation Project that will work with the departments to improve their COOP and DR processes and the ties to the improved Enterprise Infrastructure.</p>
Architectural Review	The TEBS Enterprise Architect group helps in RFP and contract development and reviews to ensure projects align with the Enterprise Architecture standards. They also help in the PMO intake review process helping to direct requests to the proper resources in TEBS.
Technical Change Management	The OneFaceForward Solutions Architect chairs the TEBS CCB and supports expansion of Technical Change Management processes to other Information System Owners.

5.2.2 Change Management Services

Overview

The organizational Change Management team in TEBS (the Office of Change Management) seeks to increase visibility of Change Management initiatives and maximize change readiness and adoption in support of CIO sponsored strategic goals through **Strategic Communications & Engagement and Organizational Development (Training and Business Process)** work efforts.

Vision

TEBS is continuing to expand its Organization Change Management program with additional investments in the following areas:

- Training - Continuously evaluating organizational training needs and providing training solutions for technology products provided to the organization by TEBS (i.e., Microsoft, Oracle, SeamlessDocs, Trumba, etc., providing increased access to training, and improving TEBS professional development
- Business Process – Providing business process analysis, business process reengineering and business readiness evaluations on enterprise initiatives and for intradepartmental process improvements
- Strategic Communications – Improved standardization; identifying and implementing innovative enterprise communication solutions and strategies
- Engagement – Change champion engagement and transformation

EA Technical Domains

- Potentially all of them

Limiting Issues

- Resource constraints

Change Management Services

Change Management Domain

The Change Management Domain increases visibility of OC initiatives and maximize change readiness and adoption in support of CIO sponsored strategic goals through **Strategic Communications & Engagement and Organizational Development (Training and Business Process)** work efforts.

Focus areas moving forward are:

- Training - Increased access to Microsoft and Oracle training and improving TEBS professional development
- Business Process – Work in TEBS work intake and Business Continuity
- Strategic Communications – Improved standardization
- Engagement – Change champion engagement and transformation

5.2.3 Information Security Services

Overview

The Information Security Services initiative seeks to improve the customer experience by creating and maintaining Enterprise Security Standards to protect all County data and services.

Vision

The County continues to invest heavily in its Security program with expanded investments in many areas. Specifically, the County's Chief Information Security Officer has defined a 17-point plan to improve key areas in the County security profile. These areas include improvements that range from improved technical controls in services to improved business processes and data governance.

EA Technical Domains

- Data Security Domain

Limiting Issues

- Resource constraints
- Constantly changing threats

Information Security Services

Data Security Domain

Security is an essential part of every component in the County's IT Architecture framework with multiple domains and groups having responsibilities. The Security Domain includes not only technology but process and procedures and is present through all aspects of system acquisition and development.

5.2.4 Data Management Services

Overview

The Data Management Services initiative seeks to improve the customer experience by developing and bringing to the departments Enterprise Data Management Services.

Vision

The County is expanding its investment in Data Management in the following areas:

- Adding a Cloud component to its database hosting domain
- Continuing to expand its dataMontgomery program with additional data sets
- Moving Record and Document Management to the cloud
- Expanding its Data Exchange program to have a Cloud Exchange Component
- Expanding on its Reporting capabilities by expanding the use of PowerBI.

EA Technical Domains

- Database Hosting Infrastructure Domain
- dataMontgomery Domain
- Record and Document Management Domain
- Data Exchange Domain
- Business Intelligence/Data Warehousing Domain
- Reporting Domain

Limiting Issues

- Resources constraints

Data Management Services	
Database Hosting Infrastructure Domain	The County database standard supports both Oracle and Microsoft SQL Servers hosted on Enterprise Database Servers. Additionally, the County is adding support for PaaS database services via its Microsoft Azure contract.
dataMontgomery Domain	The dataMontgomery Domain is the County Enterprise Strategy for publishing data to the public. It provides a central repository and standard set of tools where the public can go to retrieve published County Data Sets
Record and Document Management Domain	The Records Management Domain is implemented using the County Office 365 SharePoint Service and its Records Management capabilities. Our DGS partner leverages their County Wide Printer contract to maintain a Kofax Scanning solution in the Records Center along with Smart Copier Scanning solutions in the departments.
Data Exchange Domain	<p>The Data Exchange Domain is supported through two types of Bus Exchanges. They are an Open-Source Pentaho Kettle solution and Office 365 Power Automate Flow.</p> <p>The exchanges support:</p> <ul style="list-style-type: none"> • Point to Point and Point to Multipoint interfaces • various event triggers as well as schedule options • a workflow capability • support data transforms • supports encryption and certificate-based exchanges

	<ul style="list-style-type: none"> • supports automatic monitoring and result logging. • Supports sending different types of notifications to data exchange owners • support a restart capability if an exchange is not successful
Business Intelligence/Data Warehousing	The BI/Data Warehousing domain is supported through the Oracle OBIEE/ODI suite.
Reporting Domain	The County has two Enterprise Reporting packages with one being Microsoft's PowerBI and the other Oracle's OBIEE. The County uses PowerBI to meet its diverse non-ERP Enterprise Reporting requirements. The County uses OBIEE for its Oracle based ERP suite of products and for its ERP domain data warehouse.

5.2.5 Deployment Services

Overview

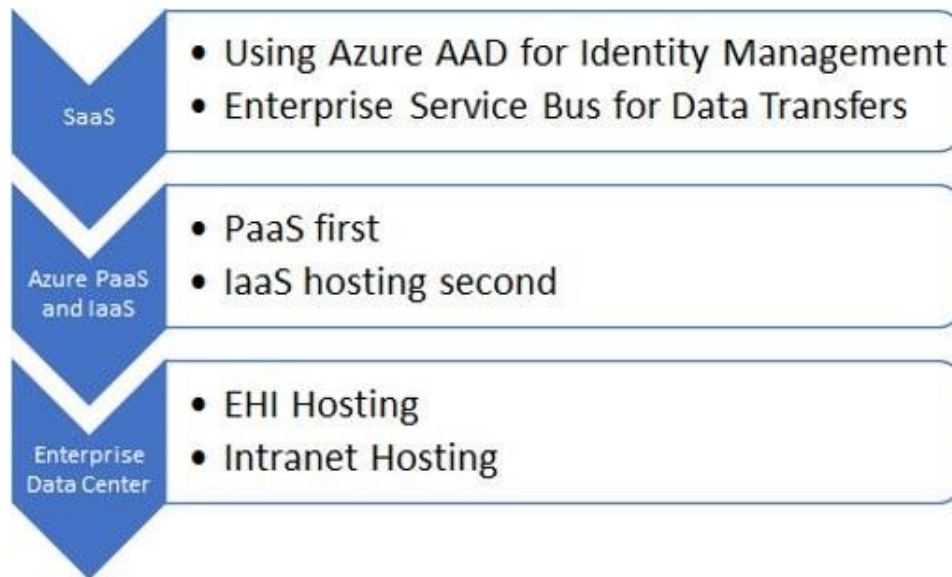
The Deployment Services category is the strategy for how new solutions are deployed in Montgomery County. Specifically, this is addressing where and how new solutions are going to be hosted.

Vision

The County is investing heavily in its Deployment Services area by having the County move to a SaaS first solution. We have had the following deployment options in our Architecture for some time:

1. SaaS
2. Azure
3. On Prem

We have adopted a SaaS first deployment strategy. The deployment options in preferred order are:



In the future the County will add more PaaS/IaaS vendors in addition to Microsoft's Azure.

EA Technical Domains

- Deployment Domain
- Microsoft Azure Domain
- Software as a Service (SaaS) Domain
- Backup Domain
- System Operations Domain
- Enterprise Server Management Domain
- Enterprise Hosting Infrastructure (EHI) Domain

Limiting Issues

All three deployment options have been available for some time. The main issue is around governance. There is a need to establish a review structure such that projects and groups do not follow the old patterns. With this new deployment model, we are changing people's thinking to consider a SaaS first model.

Solution



SaaS

- DTS Available for RFP and Contract Reviews
- Using County Azure Active Directory for Identity
- Using County ESB for Exchange



Azure PaaS or IaaS

- Traditional on prem Hosting solutions but in Microsoft Cloud
- Still need to maintain infrastructure
- Requires Solution Architecture



Data Center Hosting

- Solutions hosted on Servers and Databases in the County Data center
- Requires extra resource for DR
- Often needs to access data that now is in the Cloud

Deployment Services	
Software as a Service (SaaS) Domain	<p>The SaaS Domain makes use of the following IT Architecture Domains:</p> <ul style="list-style-type: none"> • Office 365 Azure Active Directory for Authentication, Security and Single Sign On (SSO) Services Domain • Data Exchange Domain for data transfers <p>SaaS applications should:</p> <ul style="list-style-type: none"> • use the County Azure Active Directory for Identity • use County Data Exchange Domain Service to transfer information between the SaaS service and the County. • Have TEBS review SaaS RFP/Contracts for any Enterprise concerns
Microsoft Azure Domain	<p>The Microsoft Azure Domain supports the following services in the County Architecture:</p> <ul style="list-style-type: none"> • Backup • Deployment • Database Hosting • Virtual Desktop Support • Web Portal <p>Moving to add an EHI like capability to the service to support Internet facing applications</p>
Backup Domain	<p>Traditional Tape backup services are offered by the Data Center Operations Team and is used for both Enterprise and Departmental Servers.</p>

	<p>Disk to Disk backup services is performed by the TEBS Server Team and are used for large Enterprise Servers.</p> <p>Moving from a 1st generation disk to disk backup implementation to using a Rubrik Enterprise solution to support immutable backups.</p>
Deployment Domain	<p>Rocky Linux and Windows Server VM Guests running on Dell hosting servers.</p> <p>Moving to a Nutanix hyperconverged implementation</p>
Enterprise Hosting Infrastructure (EHI) Domain	<p>Secure application hosting within an internal protection zone. Applications protected through AccessMCG Reverse Proxy Servers and require identity validation that is limited to the Internal MCG user population</p>
Enterprise Server Management Domain	<p>The TEBS Server team runs a Server Management Tool that has access to the Enterprise Servers that the TEBS Server Team manages. All physical and virtualized instances are modeled and monitored through the service.</p>
System Operations Domain	<p>Server hosting and co-location services for Dell Intel and various appliances from TEBS and other County Departments/Agencies. The County's main Network Hubs and voicemail system are in the Data Centers.</p> <p>Moving to extend the service to be a virtual data center spanning the current County physical data center and a near Internet cage space at Equinix. A virtual layer 2 network will span the two centers.</p>

5.2.6 Identity Management Services

Overview

The Identity Management Domain has been a part of the County's EA Technical Architecture for over 8 years. It supports the provisioning of the IT Systems of the County and is a central repository of people objects and the attributes that define them. It supports objects such as:

- Employees
- Retirees
- Contractors
- Volunteers

The system may receive people from systems of record like ERP for employee and retiree objects or from self-registration systems that require approval. Any person that is required to provision an internal County resource is a candidate for inclusion in the Identity Management System.

The Identity Management System can be set up to be the master provisioning source for a system. It can remove any authorizations or attributes that are not in the Identity Management System.

The Identity Management System is leveraged to automate functions around the County's Active Directory System:

- Automatically provision and deprovision users
- Automatically provision group memberships
- Policy Checks
- Email Account licensing.... (Specifically, assignment of G3 licenses)
- Reporting on the above for Departmental OU admins, Departmental Finance (G3 license account codes), Auditors, DTS.

Because the Active Directory system is synchronized with the County's Azure Active Directory in our Office 365 instance Identity Management changes flow through both County's Technical Directory Services. Identity Management is the System of Records for User Objects.

Vision

The County is currently federating our core on premise Identity Management and AccessMCG services to the Office 365 Azure Active Directory (AAD) support. This has begun our switching all SaaS applications to using the AAD services. This provides visibility for all SaaS application logins to the security team.

The County is currently looking to further leverage our Microsoft spend and moving the Open-Source components to a Microsoft cloud architecture solution.

EA Technical Domains

- AccessMCG Domain
- Active Directory Domain
- Identity Management Domain
- Azure Active Directory Domain

Limiting Issues

The success and reach of the Identity Management program complicates the move to a new Microsoft Cloud based Architecture. Staging of the move will require careful coordination among the numerous processes leveraging Identity Management in the County.

Identity Management Services	
Identity Management Domain	The Identity Management Domain supports the provisioning of the IT Systems of the County. It is a central repository of people objects and the attributes that define them. The County uses an open-source Identity Management Tool.
AccessMCG Domain	<p>The County supports both internal and extranet Single Sign On (SSO) Services through 2 versions of AccessMCG. The internal SSO serves access to applications covering the internal County Population. The Extranet SSO serves access to applications covering extranet County populations.</p> <p>Both the Extranet SSO and Internal SSO is supported through an Open Source Tool.</p>

Active Directory (AD) Domain	The County maintains a centralized Enterprise Directory service running on Microsoft's Active Directory (AD).
Azure Active Directory	The County maintains with its Commercial Azure and Office 365 tenants an Azure Active Directory instance. It is synchronized with the County's Enterprise Active Directory Service.

5.2.7 Employee Productivity Services

Overview

The Employee Productivity Services initiative seeks to improve the customer service by bringing a common set of Enterprise Productivity tools to County users.

Vision

The County invests heavily in its Office 365 platform and uses it to cover most of the Employee Productivity Services area. Moving forward the County is adding to its Teams platform an Avaya plugin component from the County's new Avaya cloud support. This will help expand employee collaboration options.

Additional investments are also being made via its low code/no code initiative in the Power Platform toolset. These are being used to expand employee capabilities in its use of the Office 365 services. Capabilities like workflows, forms, data exchanges, etc.

EA Technical Domains

- Office 365 Domain
- Email System Services Domain

Limiting Issues

- Resource constraints

Employee Productivity Services

Microsoft Office 365 Domain

The County is using Microsoft's Office 365 cloud service to support many of the County's Enterprise Technology Services. Key services that are being supported in Microsoft Office 365 are:

- Email
- Enterprise Spam Filtering
- Calendaring
- Collaboration
- OneDrive (personal File Services)
- SharePoint (Group/Department Collaboration)
- Teams (Collaboration)
- Office Productivity (Word, Excel, PowerPoint)
- SaaS Authentication
- End Point Services
- Records Management

Email System Services Domain

The County uses Microsoft's Office 365 (see Microsoft Office 365 Domain) for its enterprise email system. This system supports Enterprise-wide email functions for Montgomery County employees, contractors, and volunteers.

The County maintains a separate relay service to provide email capabilities for applications. It is used to route mail from Applications. It acts as a relay agent.

5.2.8 Broadband Services

Overview

The Broadband Services Initiative seeks to transform the County by creating a High Speed, Low latency connection directly to a Tier 1 Internet provider. By extending the County network to a Tier 1 provider the County will be able to take advantage of a wide range of SaaS, PaaS, and IaaS providers through an almost frictionless deployment process. County departments and agencies will be able to select Cloud providers and the technical portion of the procurement can be as simple as doing a virtual connection to the provider within the hosting center.

The County built and managed its own network called FiberNet. FiberNet is a County wide communication network connecting Montgomery County Agencies and State Agencies across 564 locations. Inside the County it connects over 265 County facilities. It provides the capacity to support Voice, public-safety, data, Internet access, wireless networking (including public Wifi) and video transmissions.

There are currently two generations of FiberNet in active service. The two generations of FiberNet are called FiberNet II and FiberNet III.

FiberNet II is a robust and resilient service provider class metro-Ethernet network composed of over 500 miles of optical fiber plant, ATM and Ethernet switches, routers using one and ten Gigabit Ethernet (GbE) links. These technologies are combined to deliver connectivity solutions that are efficient, bandwidth-rich, and economically justifiable.

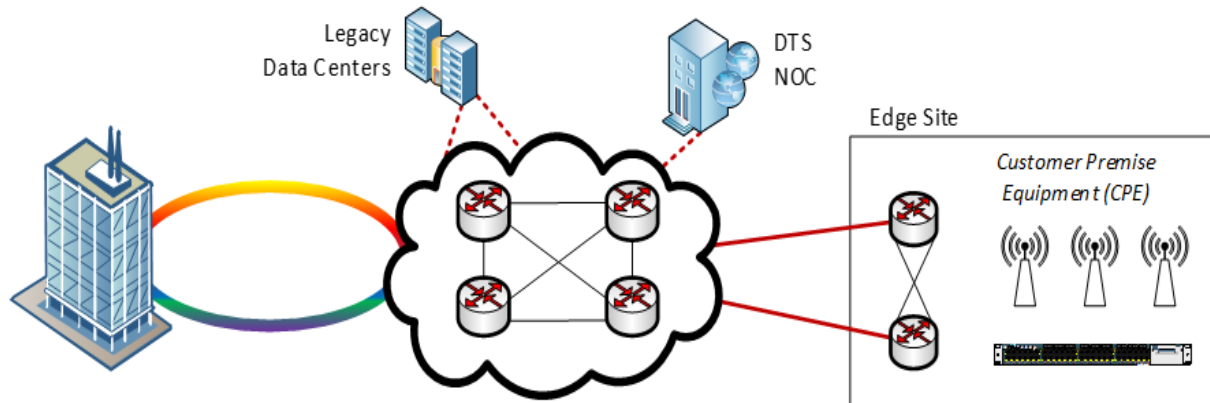
FiberNet III is in the deployment phase with goals to significantly increase bandwidth and services for agency needs. A major goal is to connect the County network to a Tier 1 Internet provider. By extending the County network out to a Tier 1 Internet provider it will enable the County to directly access a wider catalog of services. Directly connecting the County to top tier SaaS Service Providers like Microsoft, Amazon, Oracle, etc.

Vision

The County is expanding investment in this area by deploying its third generation of Fibernet. Fibernet III goals are to provide:

1. Higher capacity access
2. Flexible transport over MPLS and DWDM
3. Tier IV Data Center Connection and colocation services
4. Bigger and more resilient Internet services
 - Direct Connection to Cloud based services
 - Enhanced Quality of Services over Unified Communications
 - Enable Growth Opportunities

- Support New Customer Technologies and Emergency Demand



Tier IV Data Center Ashburn, VA	Leased Dark Fiber	FiberNet3 Core Network / County Fiber	Customer Premise Equipment (CPE)
<i>Growing demand for cloud services and internet access</i>		<i>Critical need for capacity expansion, equipment refresh, and technology updates</i>	<i>Edge upgrades occurring in parallel to meet site-specific needs</i>

This transformation will affect many areas of the County's Enterprise Architecture Domains and will offer far greater capacity and quality of service. This enhanced service will be transformational for how the County does business.

By extending the County network to Ashburn and having a direct connection to a Tier IV data center the county will be able to rapidly standup new Cloud Services. From the technology perspective it will be an almost frictionless process for standing up new SaaS services.

The added capabilities will allow the County to move its telephony services to the Cloud as well as revitalize its own on-premises data hosting facilities to be a near Internet facility. The Deployment Strategy for applications is to utilize SaaS where possible but where it is not will be housed in higher availability rack space in a Tier IV data center.

Applications that were limited before due to bandwidth constraints will be possible such as disk to disk backup to a Cloud vendor.

EA Technical Domains

- Cabling Requirements and Standards Domain
- Network Domain
- Telecommunications Network Domain

Limiting Issues

- Large installed base of on-premises application solutions with limited documentation requires careful transition

Broadband Services	
Cabling Requirements & Standards Domain	The County maintains a Cabling Requirements and Standards document that is used during the requirements process for new buildings. It inserts the TEBS Networking Domain into the DGS facilities processes.
Network Domain	The County built and managed its own network called FiberNet. There are currently two generations of FiberNet in active service. The 2 generations of FiberNet are called FiberNet II and FiberNet III. FiberNet II is currently used to support all County communications services including 311, e-mail, Internet, and local cable channel video. FiberNet III is in the deployment phase. FiberNet III's goal is to significantly increase bandwidth and services for agency needs. The first step toward FiberNet III is the introduction of dense wave division multiplexing (DWDM) into the infrastructure. DWDM enables FiberNet to provide high speed point-to-point links for specific applications like Public Safety Radio, Internet II and virtual data center operation.
Telecommunications Network Domain	<p>The Telecommunications Network Domain provides advanced voice services for most of the County Executive Branch Departments. The County currently has a mix of an older Avaya on prem solution, some CENTREX, and some Teams telephony.</p> <p>It is moving to an Avaya cloud solution utilizing a mix of Avaya phones and the Avaya Teams plugin.</p>

5.2.9 End Point Services

Overview

The Endpoint Services initiative seeks to improve the customer end point experience with enterprise technology products, services, and solutions. This is accomplished through a portfolio of inter-related strategic customer service, Information Technology Service Management, Endpoint Management and Business Relationship Management programs and services.

The Device Client Management program serves as the primary Tier 1 Enterprise Information Technology customer service and support provider for County employees and stakeholders. Program staff oversees the County's IT Help Desk and annual Personal Computer replacement program, which is currently funded at the 5-year policy level.

The IT Service Management team, as proposed, leads and drives the adoption of an industry leading ITSM platform and related policies and procedures across TEBS and the Enterprise.

The Endpoint Management team provides vulnerability / patch management, electronic software distribution, and mobile application / mobile device management services for an estimated total 20,000 corporate and personally owned devices, including nearly 10,000 corporate primary seat devices.

Vision

The County is investing heavily in the Endpoint area by moving to support a one client strategy. Clients are devices that will be accessing County Services. The client can be:

- Smartphones
- Tablets
- Traditional Desktops
- Laptops

The desire is to treat these equally with regards to support and not force the device to adhere to an outdated on-premises support model. No longer will devices be forced to have to connect to the on premises Active Directory and the County will be able to better support Employees who have transitioned to part-time or full-time telework. Employees will connect to the County's Azure Active Directory instance and be full participants in County Services. The new support models will be able to manage them and protect the County's data.

Management

All endpoint devices that connect to County Services will be managed through the Endpoint Management team. All endpoint devices will be connected to Office 365 Endpoint managed

services. They will either be connected to Intune, or they will be managed through SCCM with its gateway that can manage off premises devices.

EA Technical Domains

- Desktop Domain
- Endpoint Domain
- Help Desk Services Domain
- Mobile Computing Domain

Limiting Issues

- Installed base requires careful rollout of MAM and MDM services
- Users being remote during the pandemic has caused some issues rolling out Intune support to machines that are not on premise.

End Point Services	
Desktop Domain	<p>The DCM program covers the primary seat machine for the individual worker. DCM supports based on user requirements and support considerations non-traditional as well as traditional desktops. Supported desktops include various configurations of the traditional desktop as well as laptops, netbooks, and tablets.</p> <p>The current supported configurations are primarily Lenovo desktops and laptops with a mix of pads including Microsoft's surface and iPads.</p> <p>Recently added a Mac option to the offerings.</p> <p>Moving toward a laptop first strategy.</p>
End point Domain	<p>The County supports a one client management strategy. Clients are devices that will be accessing County Services and can be:</p> <ul style="list-style-type: none">• Traditional Desktops

	<ul style="list-style-type: none"> • Laptops • Tablets • Smartphones <p>All end point devices that connect to County Services will be managed through the End Point Management team. All End Point devices will be connected to Office 365 End Point managed services. They will either be connected to Intune or they will be managed through SCCM with its gateway that can manage off premise devices.</p> <p>Macs will be managed through an Apple centric tool.</p>
Help Desk Services Domain	<p>The IT Help Desk provides a single point-of-contact, centralized support to County employees and contractors using the County's IT Infrastructure. The help desk uses an industry leading ITSM platform for ITSM services like Incident, Change Management, and Inventory Services.</p>
Mobile Computing Domain	<p>The Mobile Computing Domain provides support for Mobile Client devices such as smart phones, netbooks, and tablets. It is an extension of the Desktop (DCM), Network, and Data Security domains.</p> <p>Mobile device support that is behind the firewall is for County owned devices that can meet County Security and management policies. This support means that they can access the internal County wireless network through the Wireless Access security protocol. The Mobile Device is considered a County Device that is owned by the County and is centrally managed in the inventory system, has a standard image, can be managed through a remote login service, and is using the Enterprise Virus Protection Services.</p> <p>Mobile device support that is outside the firewall can include County Owned devices purchased through the DCM contract as well as personal</p>

devices. These devices operate outside the internal County network. For these devices the County offers limited County Application support that includes Internet access for the County's Portal applications.

5.2.10 Collaboration Services

Overview

The Collaboration Services initiative seeks to improve the customer service by having all County users on Office 365 Teams. Every County user is given an Office 365 account and has Teams as part of the package. Departments have integrated Teams into their collaboration processes both within the department and outside their department. Additionally, with the next upgrade to the County's telephony services all users will be able to use the Avaya plugin within teams to add telephony services as part of their team's collaboration.

Vision

The County has moved to Office 365 Teams as its collaboration platform and is moving toward integrating the County's Telephony services via the Avaya Cloud product and its support for a Teams Plugin. Users will be able to dial and receive phones calls within the Teams product and can add telephony users to any Teams meeting or collaboration.

EA Technical Domains

- Teams Collaboration Domain

Limiting Issues

- Acceptance by users
- Avaya plugin has some limitations versus native Teams telephony support

Collaboration

Team Collaboration

The County uses Microsoft's Office 365 for its Team Collaboration Services. This system supports the following collaboration opportunities for a group, project team, and department:

- OneDrive (Personal File Services)
- SharePoint (Group/Department Collaboration)
- Teams (Conferencing)
- Teams (Telephony)
- Planner
- Office 365 Video