How uOttawa is Using Enterprise Architecture to Plan its ERP Replacement: *Collaboration in Practice*

CANHEIT – June 2021

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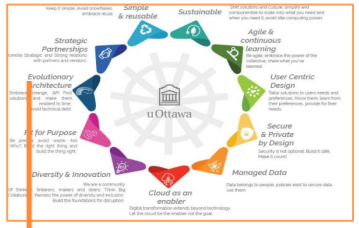
Our EA Journey: 2019-2021

Transformation 2030

More Sustainable	More Impactful
More Agile	More Connected

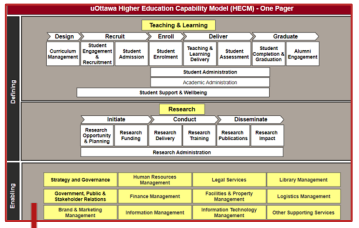
Governance & Collaboration

UIGC, ARB, AWG



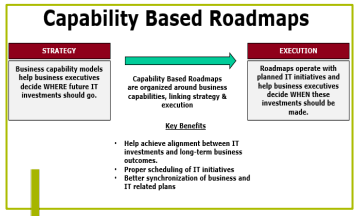
EA Principles

Guiding, Architecture, Decisions



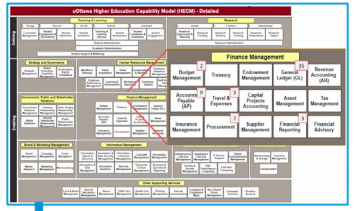
Business Capability Model

Common language, Shared vision, Decision making



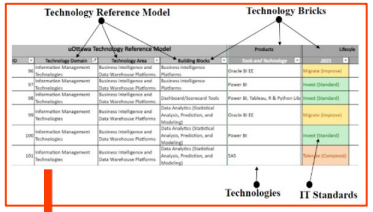
Capability based planning

Linking strategy to execution



Putting theory into practice

Using EA to drive ERP



Technology reference model

Pathway to standards

> The only impossible journey is the one you never begin.
> *Anthony Robbins*

Governance & Collaboration: UIGC, ARB, AWG

One's **destination is never a place**, but a new way of seeing things.
Henry Miller

UIGC and Sub-Committees Business / IT Executives

Campus-wide alignment, Transparency, Collaboration, Maximize institutional value from technology investments and practices

Administrative Committee

University Information Governance Council (UIGC)

Academic Information Committee

Research Information Committee

Administrative Information Committee

ARB: University Community: Business Owners, IT Managers, Architects, etc.

Alignment with overall University strategy, IT strategy, enterprise architecture principles, policies and standards

AWG: Domain Architects
Business, Application & Integration, Infrastructure, Data & Information, Security, Solutions

Enterprise architecture reference model & standards, Architecture guidance & reviews

Architecture Review Board (ARB)

Architecture Working Group (AWG)

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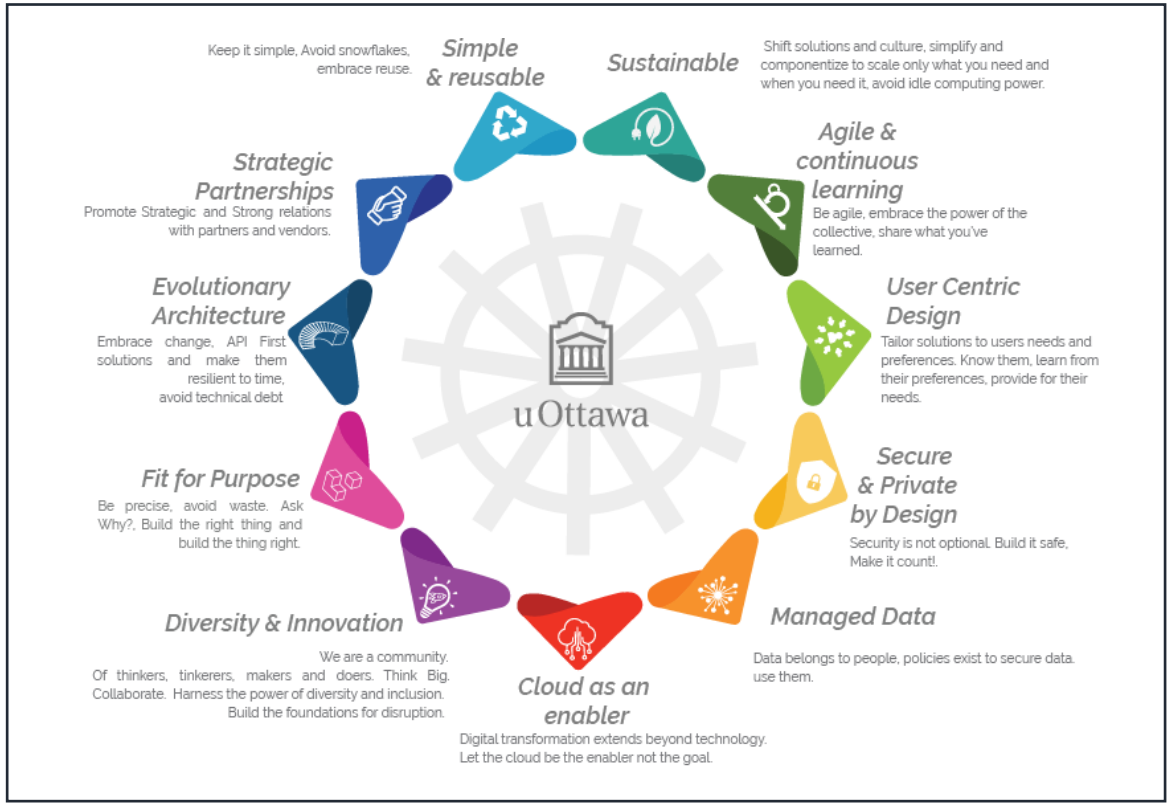
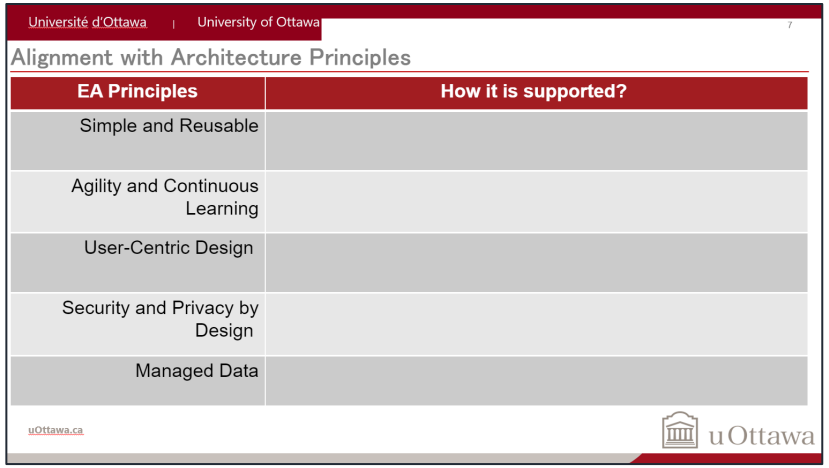
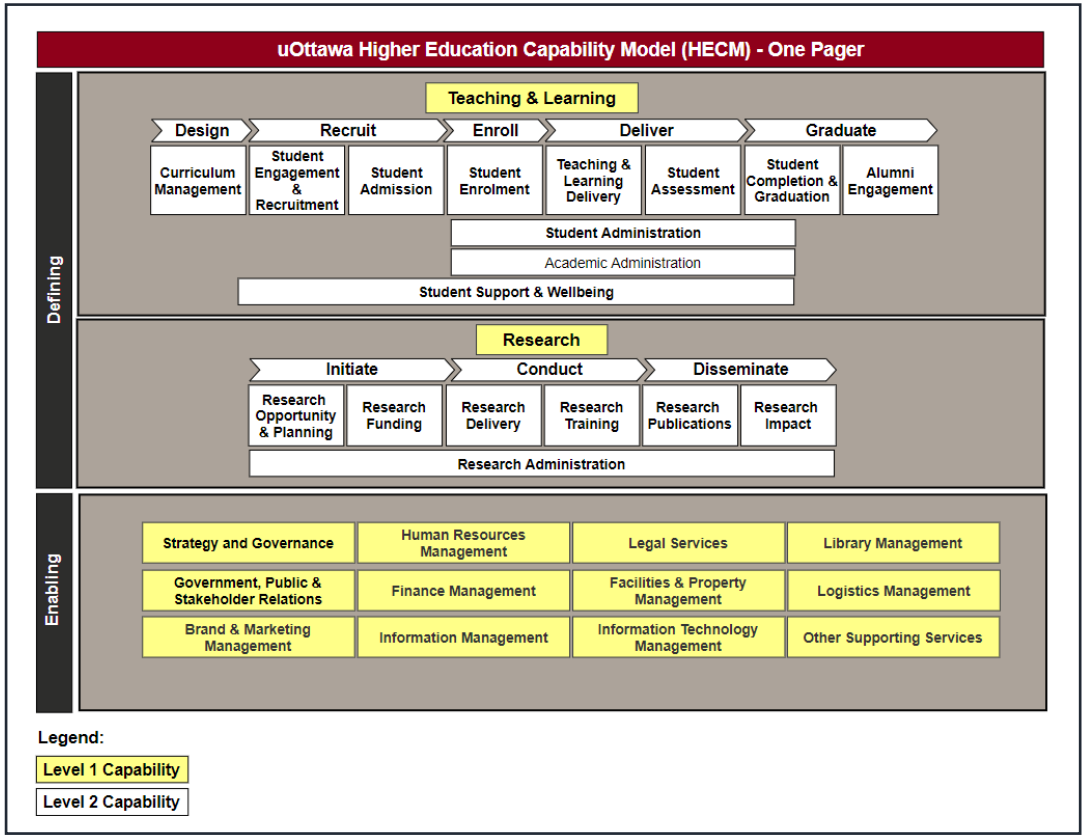
EA Principles: Guiding Architecture Decisions



Initiatives presented to the ARB must show alignment with architecture principles



Business Capability Model: Common Language, Shared Vision, Strategic Decision Making



Business Capabilities

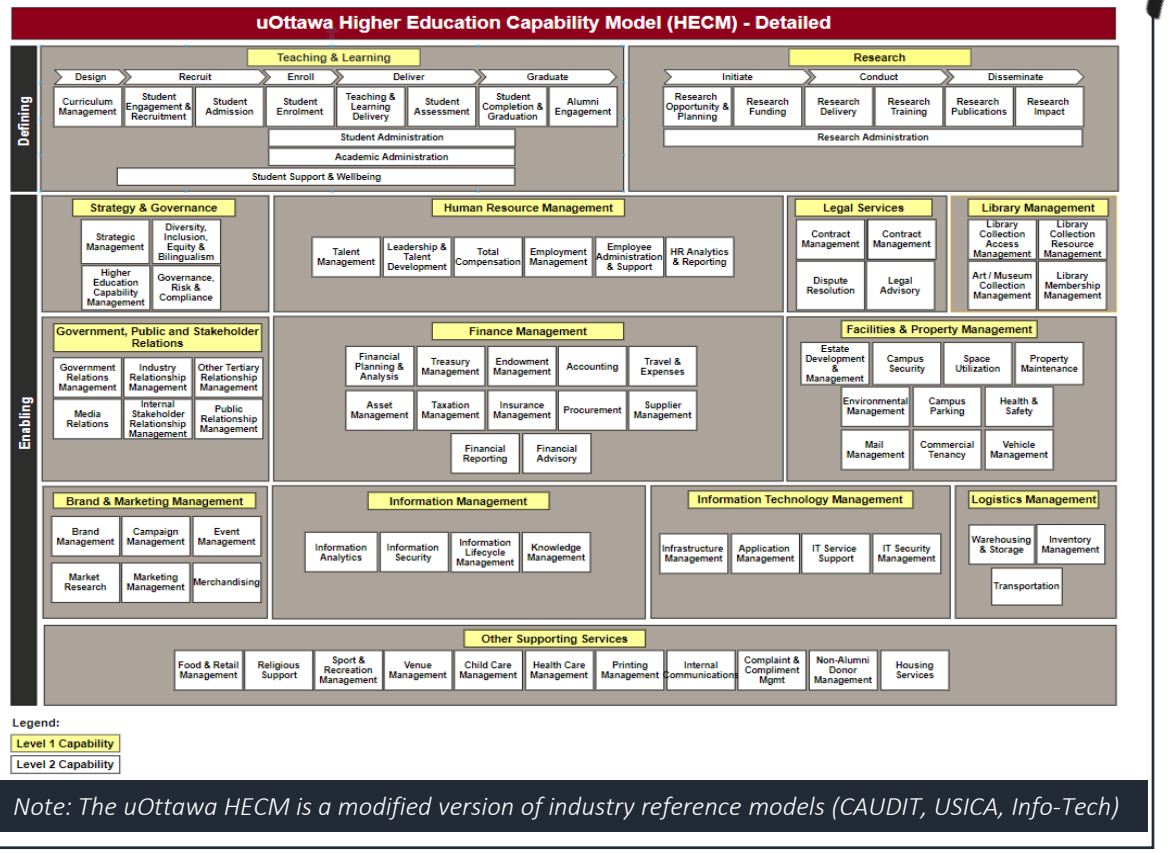
- High-level view of **WHAT** an institution does from a business perspective.
- Relatively stable, unique and long term.
- Structured in a hierarchical manner, but organizationally neutral.
- Establishes a common language and contributes to a shared vision across an organization (↑ strategic dialog between IT & Faculties/Services)
- Delivered through a combination of PEOPLE, PROCESS and TECHNOLOGY, the **HOW**

A Business Capability Model is:

- A visual structured vision of an organizations set of business capabilities
- Essential for a successful Enterprise Architecture practice – better **value** and **business outcomes** by ensuring execution is linked to strategic goals and objectives.

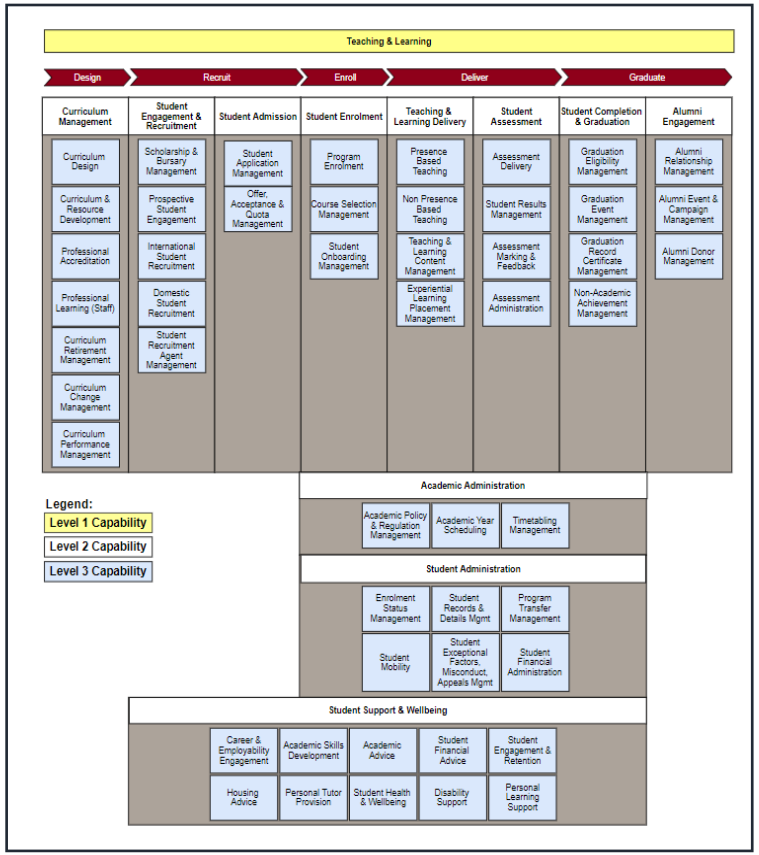
At uOttawa, Business Capabilities are referred to as Higher Education Capabilities to reflect the educational nature of the institution.

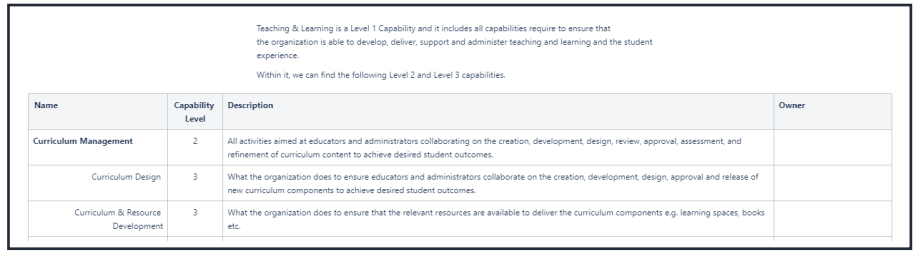
uOttawa's Higher Education Capability Model (HECM)



Note: The uOttawa HECM is a modified version of industry reference models (CAUDIT, USICA, Info-Tech)

Drill down to lower-level capabilities





Teaching & Learning is a Level 1 Capability and it includes all capabilities require to ensure that the organization is able to develop, deliver, support and administer teaching and learning and the student experience.

Within it, we can find the following Level 2 and Level 3 capabilities.

Name	Capability Level	Description	Owner
Curriculum Management	2	All activities aimed at educators and administrators collaborating on the creation, development, design, review, approval, assessment, and refinement of curriculum content to achieve desired student outcomes.	
Curriculum Design	3	What the organization does to ensure educators and administrators collaborate on the creation, development, design, approval and release of new curriculum components to achieve desired student outcomes.	
Curriculum & Resource Development	3	What the organization does to ensure that the relevant resources are available to deliver the curriculum components e.g. learning spaces, books etc.	

View capability definitions

Business Capabilities: TAD & ARB Gate 1 Presentation

Technical Architecture Document (TAD)

Business Context

Provide a brief summary of the business problem the application will solve.

Application Life Cycle Management

Business Capabilities

Enumerate which capabilities this solution addresses

Refer to the file: Higher Ed Capability Model

If you need help with the HECM contact Stephanie Pereira <spereira@uottawa.ca>

Application Life Cycle Management

System design can cross many different groups within an organization to ensure requirements are gathered and met for all stakeholders. This section clarifies who performs various roles and responsibilities and provides a list of points of contact for the team and stakeholders.

Business Capabilities

HECM Model

- Teaching & Learning / Teaching & Learning Delivery
  - **Non Presence Based Teaching (HE076)**
    - What the organization does to provide teaching activities via online and digital channels that enable learning for students not physically located with the teaching content provider.
  - **Teaching & Learning Content Management (HE077)**
    - What the organization does to provide resources in a wide range of formats to support learning and teaching in the organization. This includes physical and digital resources such as the VLE and lecture capture, access to specialized space, library and other physical and digital services.

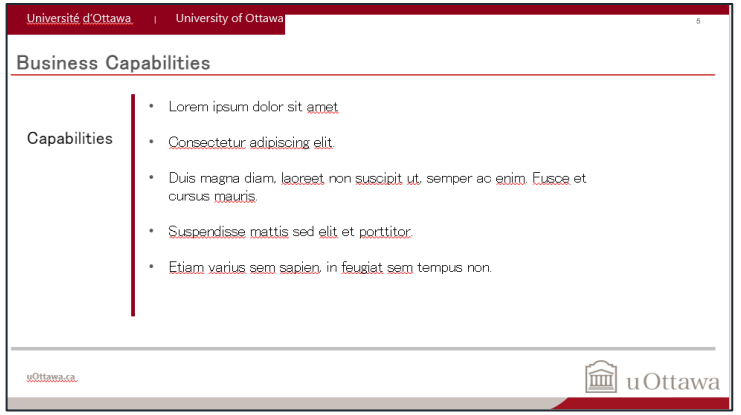
Business Ownership

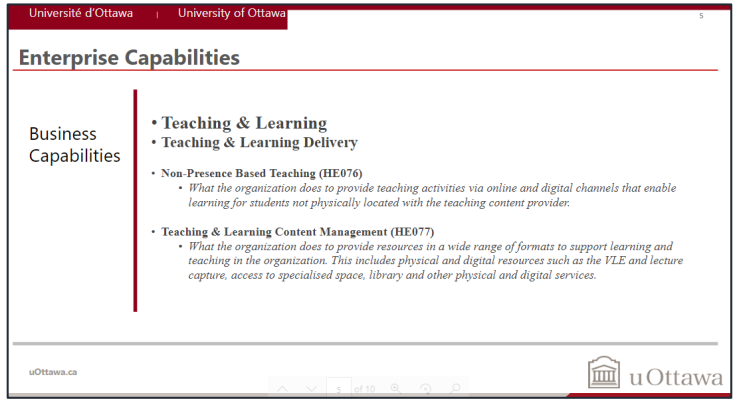
	Description

The HECM is used to identify which business capabilities will be impacted by an IT project.

Identified business capabilities are added to the TAD and ARB Gate 1 Presentations

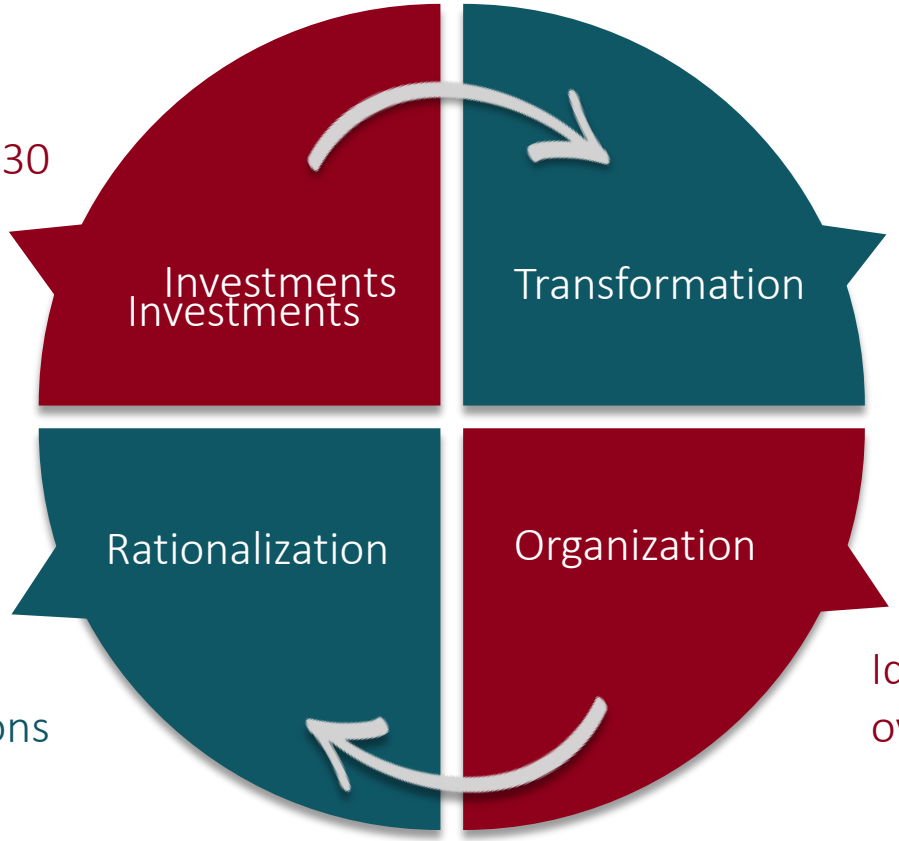
ARB Gate 1 Presentation





Business Capability Model: Key Usage Scenarios

Strategic Alignment: T2030 Objectives / IT Spend

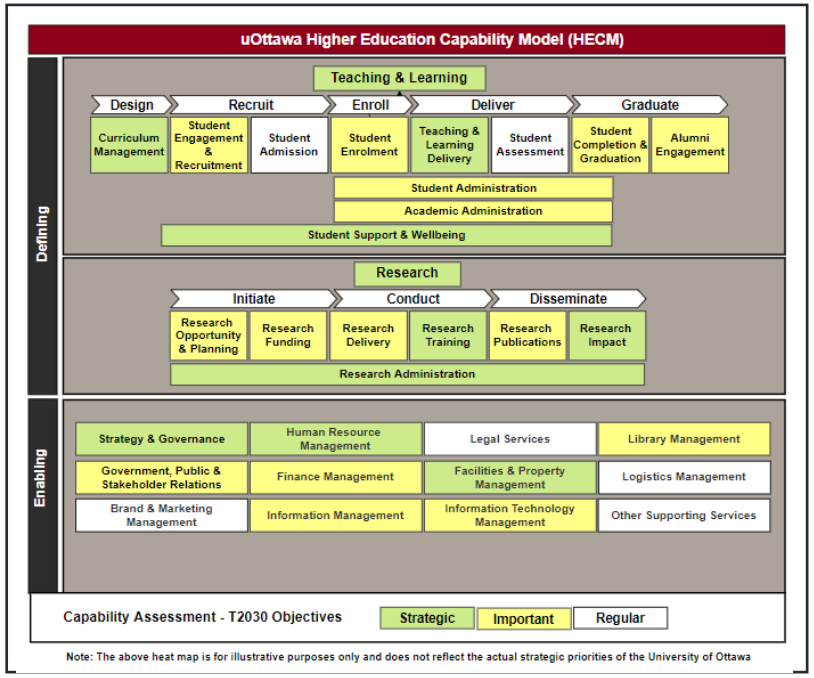


- Capability based planning
- Scoping and Framing of Initiatives
- Business Process Reviews

- Eliminate redundant or legacy applications
- Reuse existing applications

Identify areas of business unit overlap, conflict or harmony

Capability Based Planning

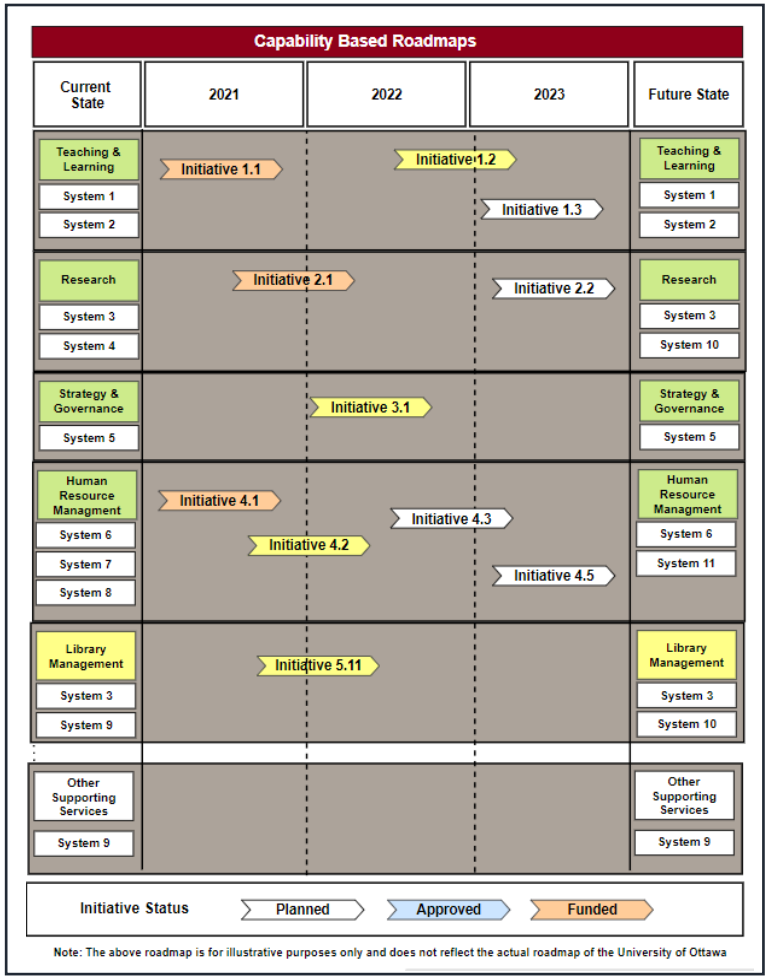


CAPABILITY BASED ROADMAPS

Organized around business capabilities, linking strategy & execution

KEY BENEFITS

Alignment between IT investments and long-term business outcomes,
Proper scheduling of IT initiatives,
Better synchronization of business and IT related plans



STRATEGY

BUSINESS CAPABILITY MODELS
Help business executives decide WHERE future IT investments should go.

EXECUTION

CAPABILITY BASED ROADMAPS
Operate with planned IT initiatives and help business executives decide WHEN these investments should be made

Planning the Work

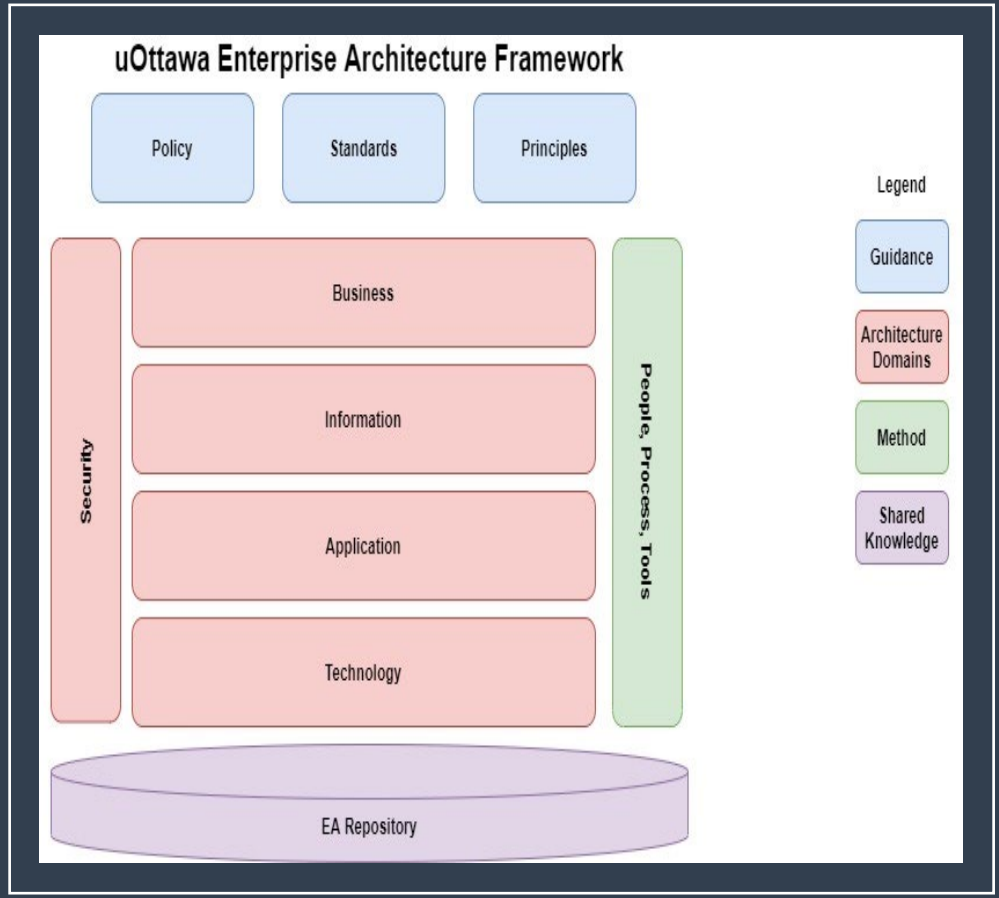
GOVERNANCE : Increased architecture perspectives

An Enterprise Architecture Framework has the following traits:

- A common language
- An architecture description, or taxonomy, that describes the relationship between architecture elements.
- Methods, tools and guidance to do architecture
- Governance and communication

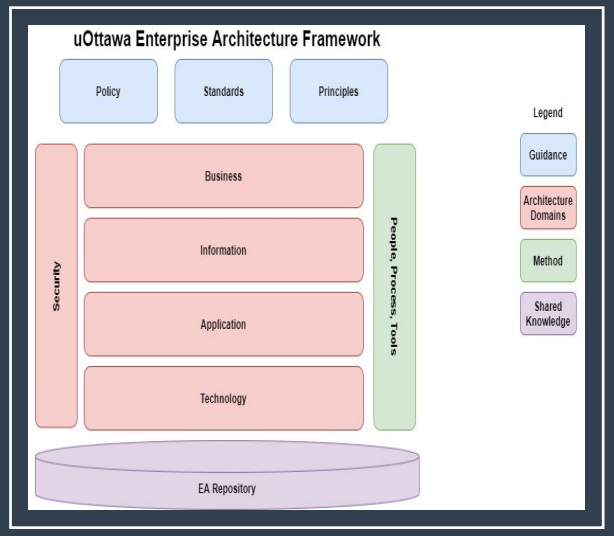
The key principles of the framework are to be **lightweight, relevant, predictable,** and **easy to maintain**.

Enterprise Architecture Framework - Architecture - Confluence (atlassian.net)



The Architecture Method for Doing the Work

GOVERNANCE : Increased architecture perspectives



Reuse the artifacts, activities, and knowledge that already exist in well managed projects.

Communicate the **Current State** and the **Roadmap** to realize the **Future State**

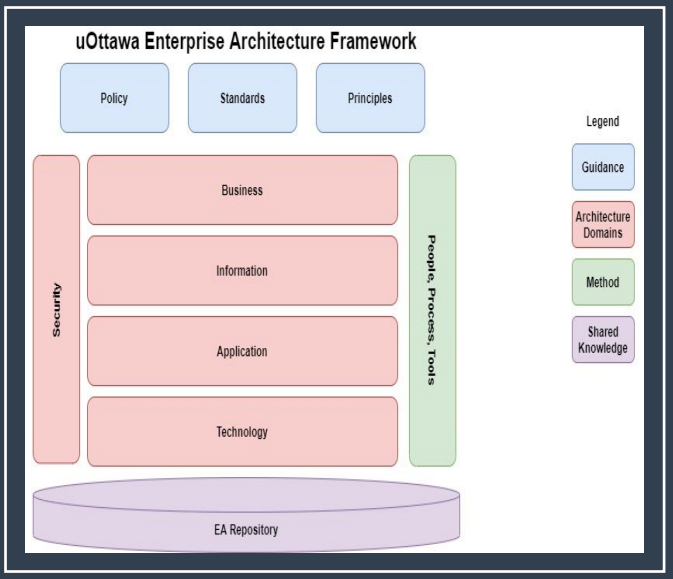
uOttawa Enterprise Architecture Framework

Architecture Development Process

Phases	1. Architecture Vision	2. Current (20%)	3. Future (80%)	4. Roadmap	5. Governance	6. Investment
Inputs	Strategy Goals Standards Policies Principles	Problem Statement Organization Map RACI	As-is Architecture To-be Vision	Validated To-be Architecture	Organizational Roles Governance KPIs Culture Organizational Model RACI Costing	Product Roadmap Project Estimates
Tasks	1. Validate Architecture Scope 2. Define To-be Business Architecture and Value Streams 3. Perform Architecture Capability Maturity Assessment 4. Architecture Development Plan	1. Baseline As-is 2. EA Repository Setup 3. Stakeholder Validation	1. Select Reference Models 2. Draft To-be Architecture 3. Capability Gap Analysis 4. Change Impact Analysis 5. Stakeholder Validation	1. Priortize Gaps 2. Define Capability Roadmap 3. Complete Skills Gap Analysis 4. Define Implementation Plan 5. Stakeholder Validation	1. Review Existing Governance Decisions 2. Define KPIs, measurements, and communication plan 3. Confirm funding source 4.Integrate into existing Governance processes 5. Stakeholder Validation	1. As-is Costs and Risks 2. Benchmark To-be 3. Identify sourcing options 4. Identify To-be Costs and Risks 5. Perform Cost-benefit Analysis 6. Provide ROI Estimates
Artifacts	Operating Model Business Strategy Map Outcomes Map Business Model Business Capability Model EA Practice Maturity Model	Consolidated Reference Model Technology Bricks Stakeholder Map Systems View Operations View	User Journey Map Updated Artifacts from Phase 2	Priortize Gaps Roadmap Skills Gap Analysis Implementation Plan Stakeholder Validation	ARB Governance Decision	As-is Costs and Risks Benchmark To-be To-be Costs and Risks Cost-benefit Analysis ROI Estimates
Deliverables (Outputs)	**Architecture Vision** **Architecture Development Plan**	**As-is Architecture**	**To-be Architecture**	**Architecture Roadmap** **Readiness Assessment**	**Change Management Plan**	**Solution Options Analysis**
Exit Criteria	Approach is accepted by stakeholders and executive sponsor and a dedicated architect is assigned	Completed As-is Architecture and vision for To-be Architecture	Stakeholder Validation of the To-be Architecture	Architecture Roadmap and an Implementation Plan have been created to deliver the To-be Architecture	The Architecture Governance and Change Management Plan are validated and accepted by the executive sponsor	A review of the solution has been validated by stakeholders and ready for final review to executive sponsor and stakeholders to justify investment acceptance

Communicating Investment Guidance

STANDARDS : Publish IT Standards



The EA team will maintain the artifacts; however, the lifecycle and usage of a selected technologies must be maintained by the implicated domain architect.

Technology Reference Model

A product and vendor agnostic **list of technology domains, technology areas, and technology building blocks** that is used to classify current and potential technology investments and uOttawa applications. This is the most abstract view to classify uOttawa technology investments.

Technology Bricks

An architecture activity used to **identify the lifecycle and recommended usage of the technology building blocks** that are represented by the list of technology groupings within the Technology Reference Model. Technology Bricks are used to help support the architecture activity of Application Rationalization and can serve as a Technology Roadmap.

Technologies

A list of vendor, open source, or 3rd party technologies that are associated to a technology brick. The information can be used as the uOttawa Current State Technology Architecture.

IT Standards

The list of technologies belonging to a Technology Brick that have the **INVEST lifecycle state and endorsed by ARB** and provide Faculties, Services and IT teams investment guidance.

Technology Reference Model (TRM)

	A	B	C
1	Technology Domain	Technology Area	Building Blocks
2	⊟ Application Technology	⊞ Application Platform	
3		⊞ Application Testing Software	
4		⊞ Development Tools	
5		⊞ Integration Software	
6		⊞ Software Engines	
7		⊞ User Interface	
8	⊟ Collaboration and Electronic Workplace	⊞ Collaboration Software	
9		⊞ Productivity Software	
10	⊟ Information Management Technologies	⊞ Business Intelligence & Data Warehouse Platforms	
11		⊞ Data Integration	
12		⊞ Data Management	
13	⊟ Network and Communications	⊞ Network Infrastructure	
14		⊞ Network Management	
15		⊞ Networking Services	
16		⊞ Physical Network	
17	⊟ Platforms and Storage	⊞ Compute	
18		⊞ End User Devices	
19		⊞ Platform	
20		⊟ Storage	Backup (Archive) Backup (Business Continuity) Data Clusters Direct Attached Storage (DAS) Network Attached Storage (NAS) Storage Area Network (SAN)
21			
22			
23			
24			
25			
26	⊟ Security	⊞ Data Security	
27		⊞ Identity and Access Management	

8 Technology Domains

27 Technology Areas

150 Building Blocks

STANDARDS : Publish IT Standards

A Building Block is a vendor and product agnostic architecture element that is commonly combined with other Building Blocks to describe how a business problem or opportunity will be addressed in respect of uOttawa policies, requirements and supported patterns.

All reference and solution architectures can be decomposed into their enabling Building Blocks.

A Building Block may be represented by one or many technology products.

Sample

STANDARDS : Publish IT Standards

Technology Reference Model

Technology Bricks

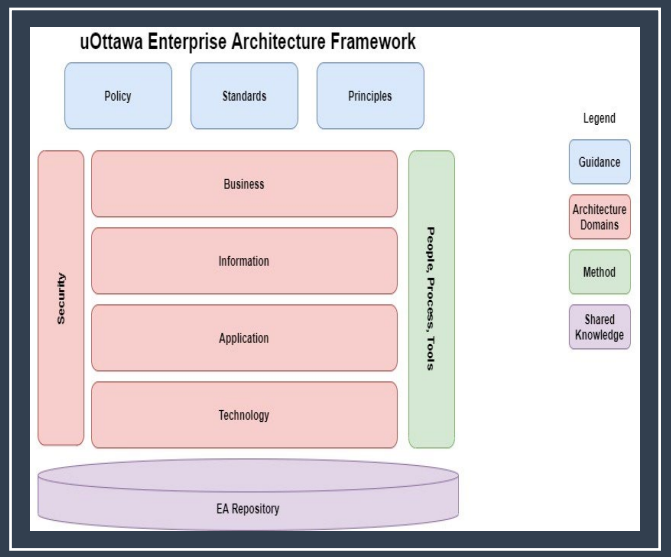
uOttawa Technology Reference Model				Products	Lifecyle
ID	Technology Domain	Technology Area	Building Blocks	*Tools and Technology*	*2021*
96	Information Management Technologies	Business Intelligence and Data Warehouse Platforms	Business Intelligence Platforms	Oracle BI EE	Migrate (Improve)
97	Information Management Technologies	Business Intelligence and Data Warehouse Platforms	Business Intelligence Platforms	Power BI	Invest (Standard)
98	Information Management Technologies	Business Intelligence and Data Warehouse Platforms	Dashboard/Scorecard Tools	Power BI, Tableau, R & Python Libı	Invest (Standard)
99	Information Management Technologies	Business Intelligence and Data Warehouse Platforms	Data Analytics (Statistical Analysis, Prediction, and Modeling)	Oracle BI EE	Migrate (Improve)
100	Information Management Technologies	Business Intelligence and Data Warehouse Platforms	Data Analytics (Statistical Analysis, Prediction, and Modeling)	Power BI	Invest (Standard)
101	Information Management Technologies	Business Intelligence and Data Warehouse Platforms	Data Analytics (Statistical Analysis, Prediction, and Modeling)	SAS	Tolerate (Contained)

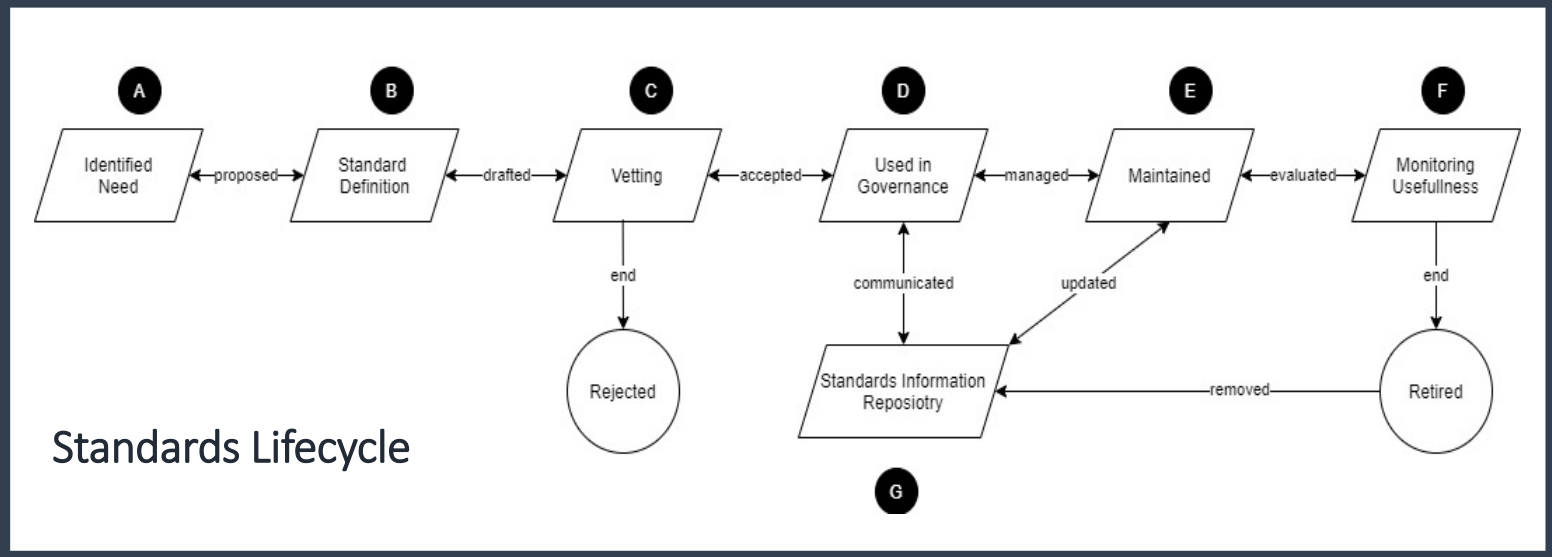
Technology

IT Standards

Maintaining IT Standards

STANDARDS : Publish IT Standards





Each ARB will seek endorsement of a set of IT Standards

A proposed IT Standard must be socialized across IT before being presented at ARB

Current focus is only on IT Standards; however, the framework can expand in scope.

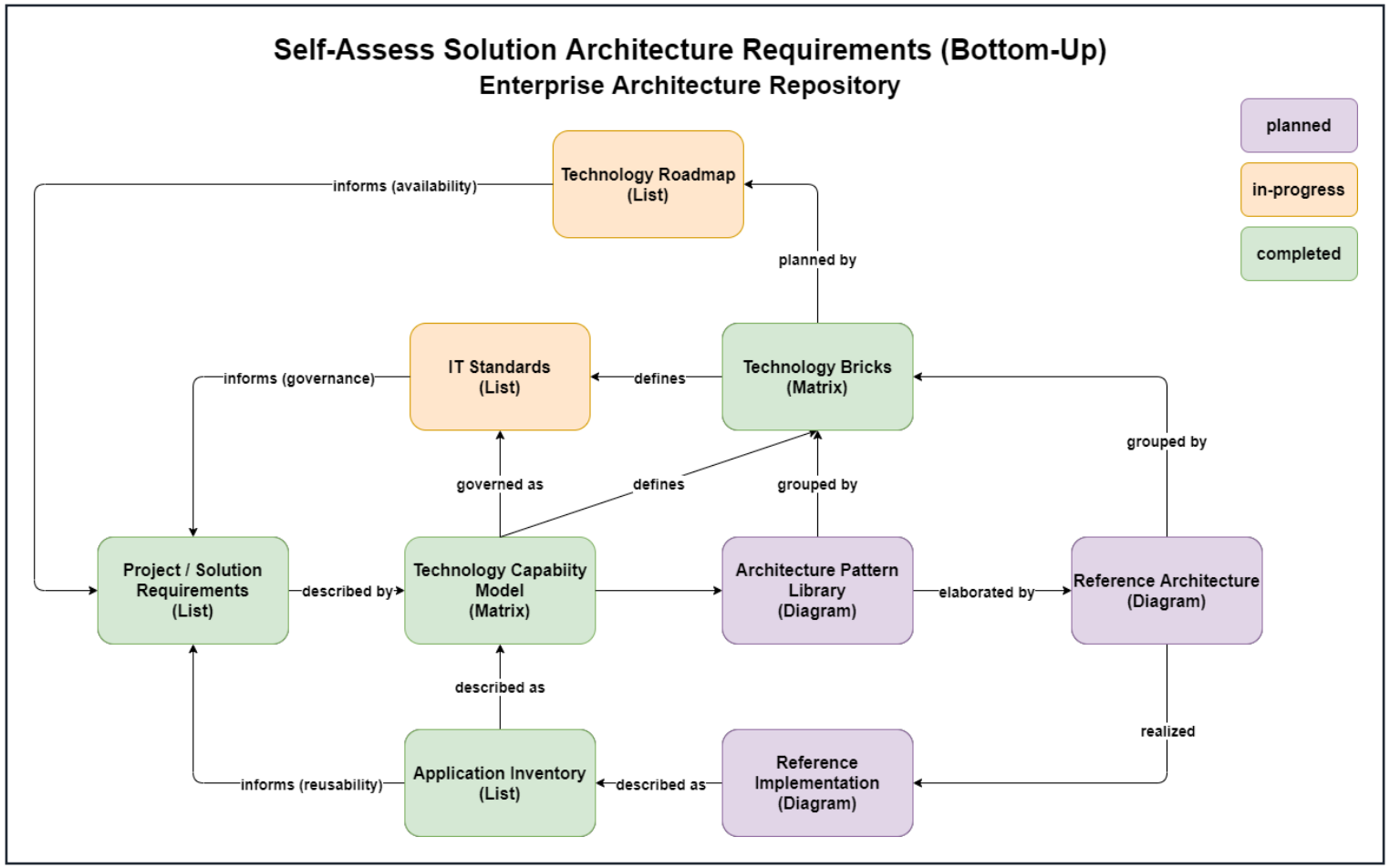
The EA team will maintain the IT Standards supported by the AWG.

The Path to Becoming an IT Standard - Architecture - Confluence (atlassian.net)

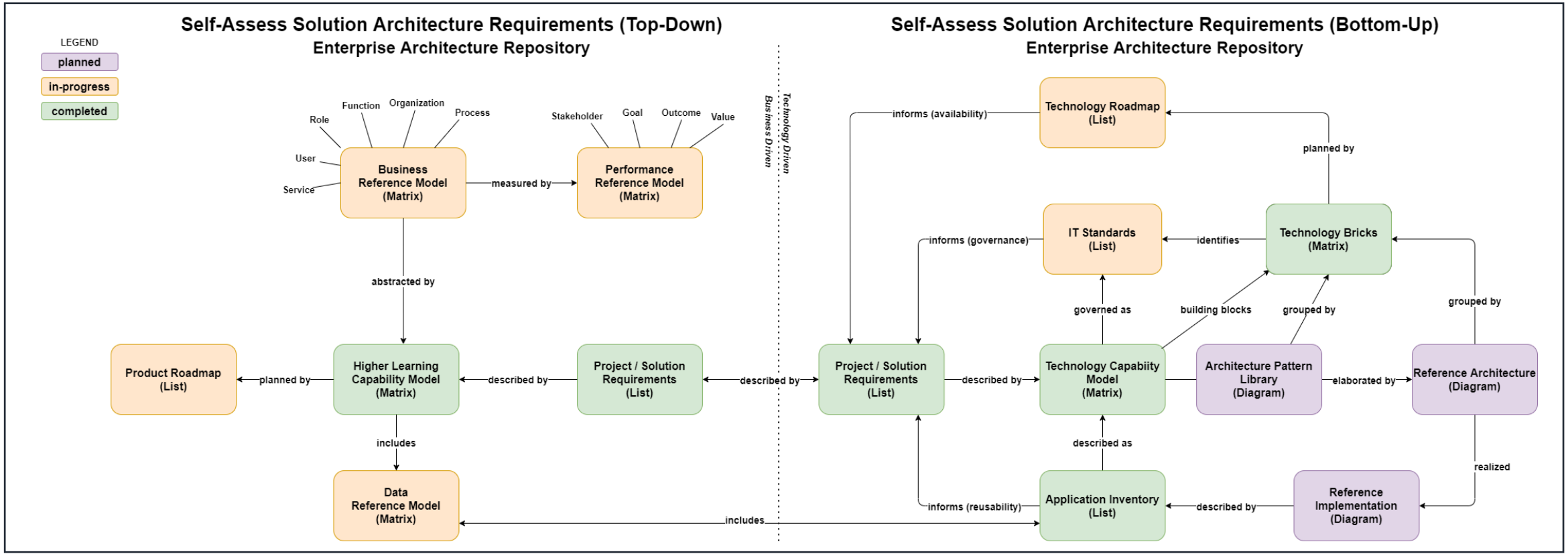
Enabling Proactive Architecture Assessments

The short-term objective is to transition from primarily being a bottom-up assessment to performing **equally** a top-down and bottom-up assessment.

Architecture Patterns and Reference Architectures are the next major area of focus for the AWG.



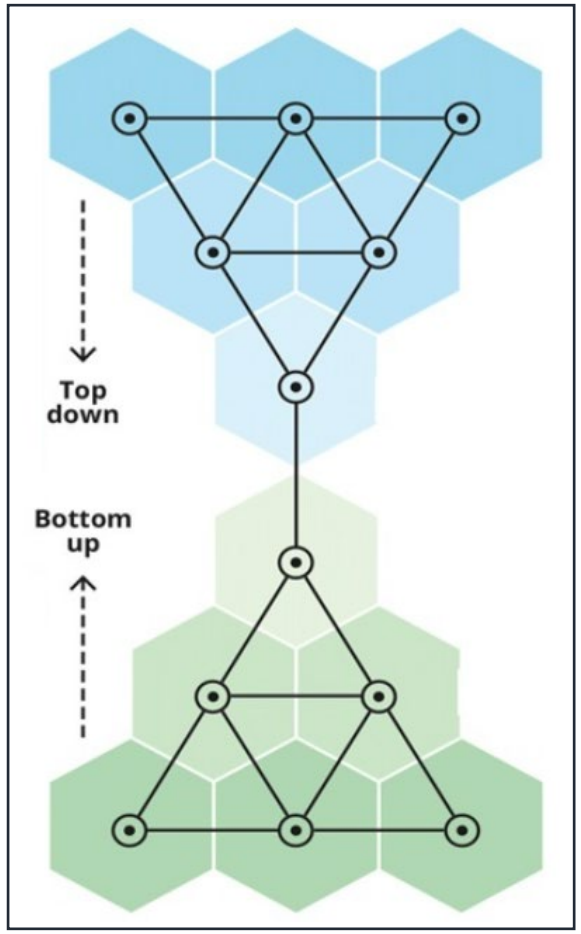
Future Vision



Enable teams to do both a **Top-Down** and a **Bottom-Up** Architecture Self-Assessment

Standardize the approach with an industry metamodel and EA tool

In Practice: Simplified TLSS Current State Architecture



1. What are the **primary business services** that TLSS provides?
2. Who are the **users** of your primary business services?
3. How do the user **access** or interact with the service?
4. What **information** topics are represented by the business services?
5. What are the **policies, regulations, or goals** that influence the service?
6. Who are the **people** that do the work?

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4. Do agreements exist related to the **usage of the technology**?
3. Where are the technologies **located**?
2. What **technologies** make up the application?
1. What is the name of the **application(s)** that deliver your services?

The Target State Architecture is the change between the Current State and new objectives.

About the Modernization Program

The University was consulting stakeholders on its new strategic plan, Transformation 2030, the University also decided to hold parallel discussions on its administrative processes.

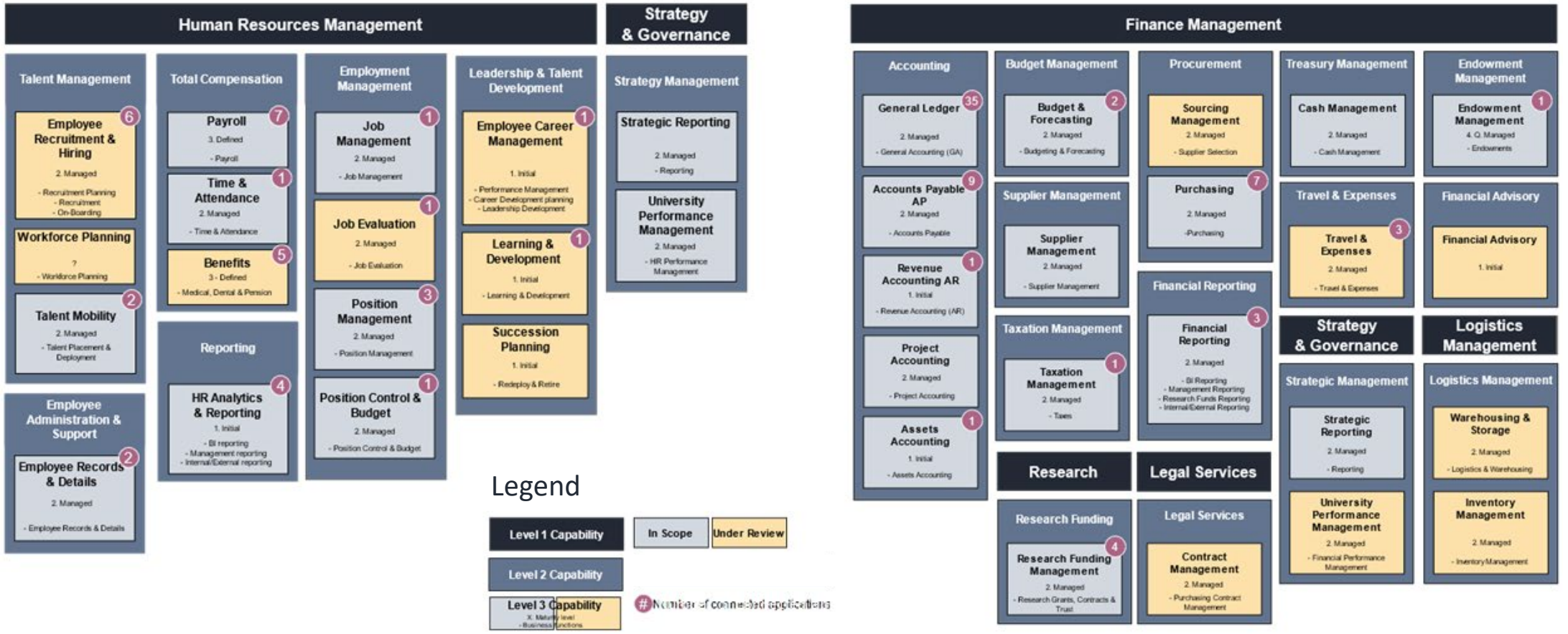
This review revealed that Financial and Human Resources tools, systems and processes no longer meet the needs of both faculty and service users.

The University then launched the Administrative Services Modernization Program, under the leadership of the Vice-President, Finance and Administration.

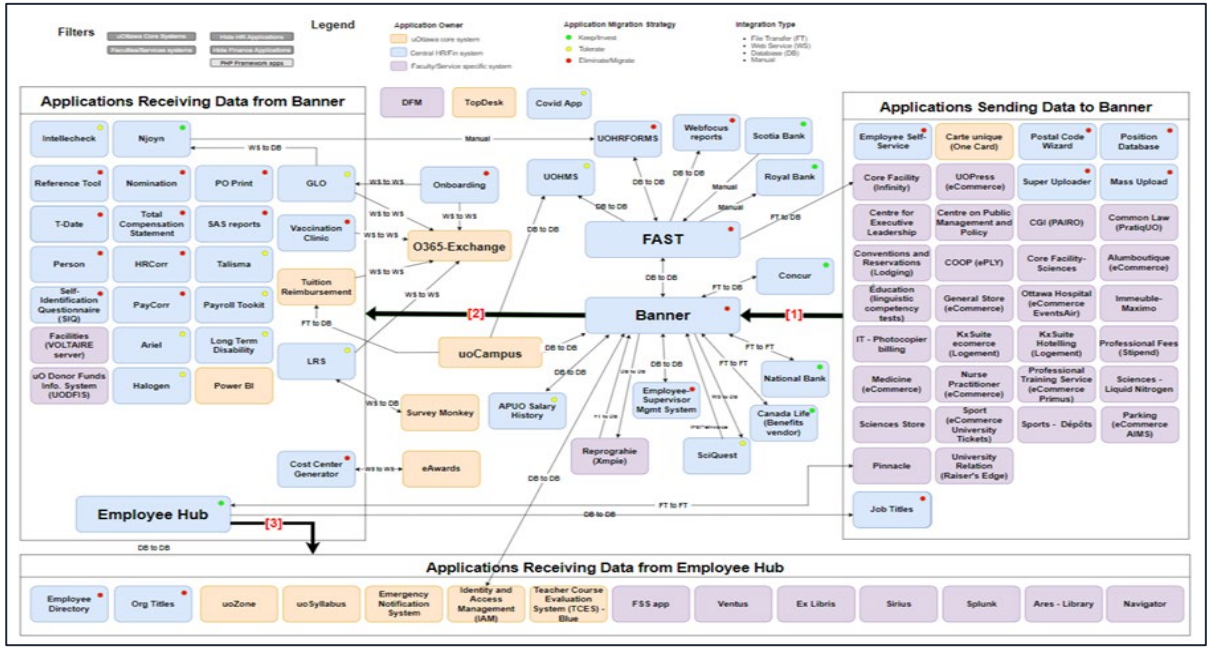
The Objectives of the Program

Transformation 2030	More Agile	More Connected	More Sustainable	More Impactful
Program Objectives	Service Excellence	HR, Finance and Performance Information for Decision-Making	Proper Resources Management	Efficiency & Effectiveness
Program Benefits	Reduced admin efforts; Intuitive systems/ processes; Improved access to data	Improved data usefulness; Improved data quality	Standardized processes and policy application; Efficient internal controls	Shorter requests resolution time/ faster transactions; Reduced redundant/ low-value touchpoints & systems

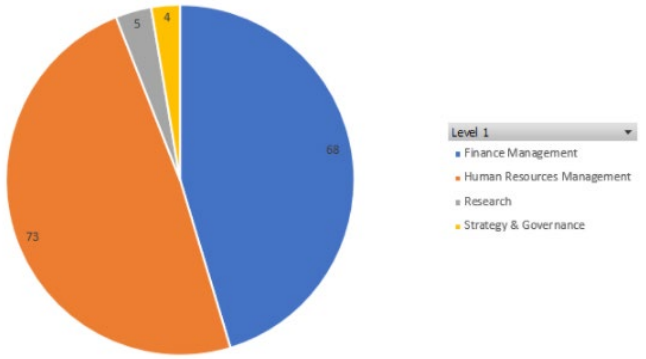
Assessing our current state and defining our scope



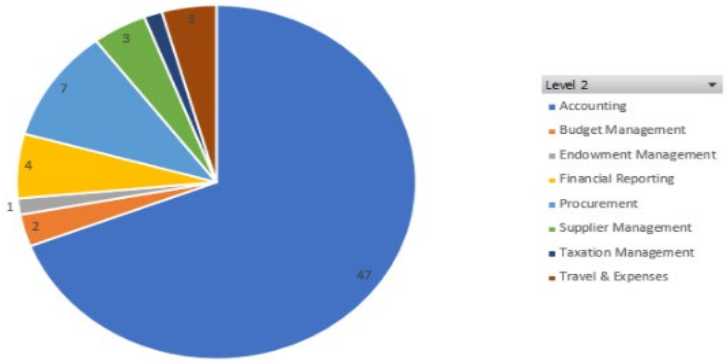
Understanding our ecosystem



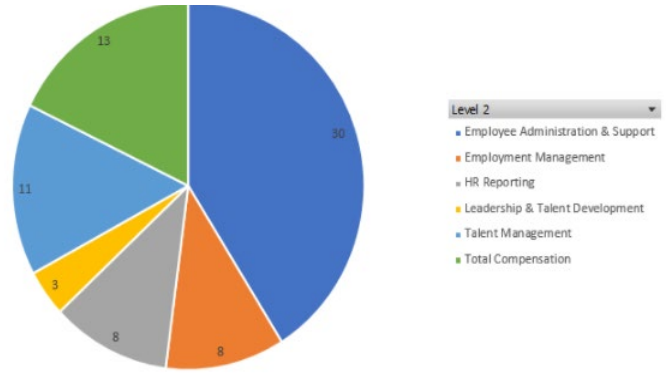
Applications per level 1 capability



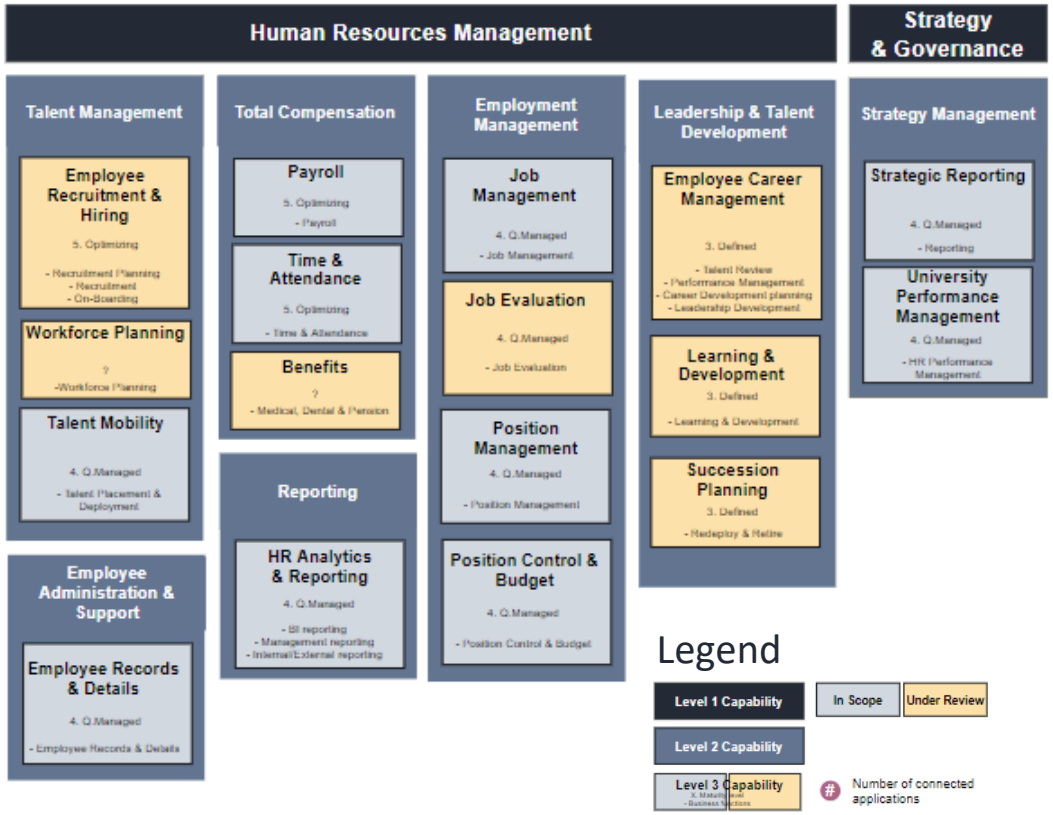
Finance Management

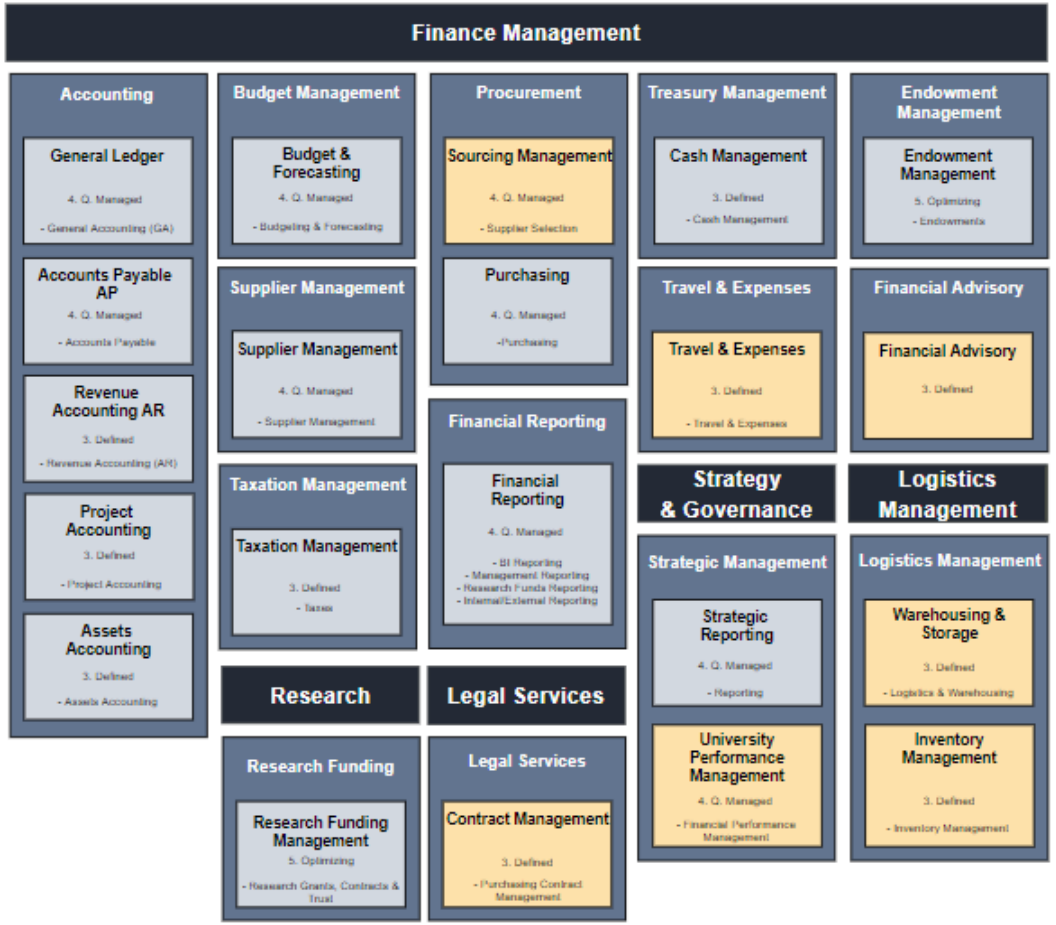


Human Resources Management



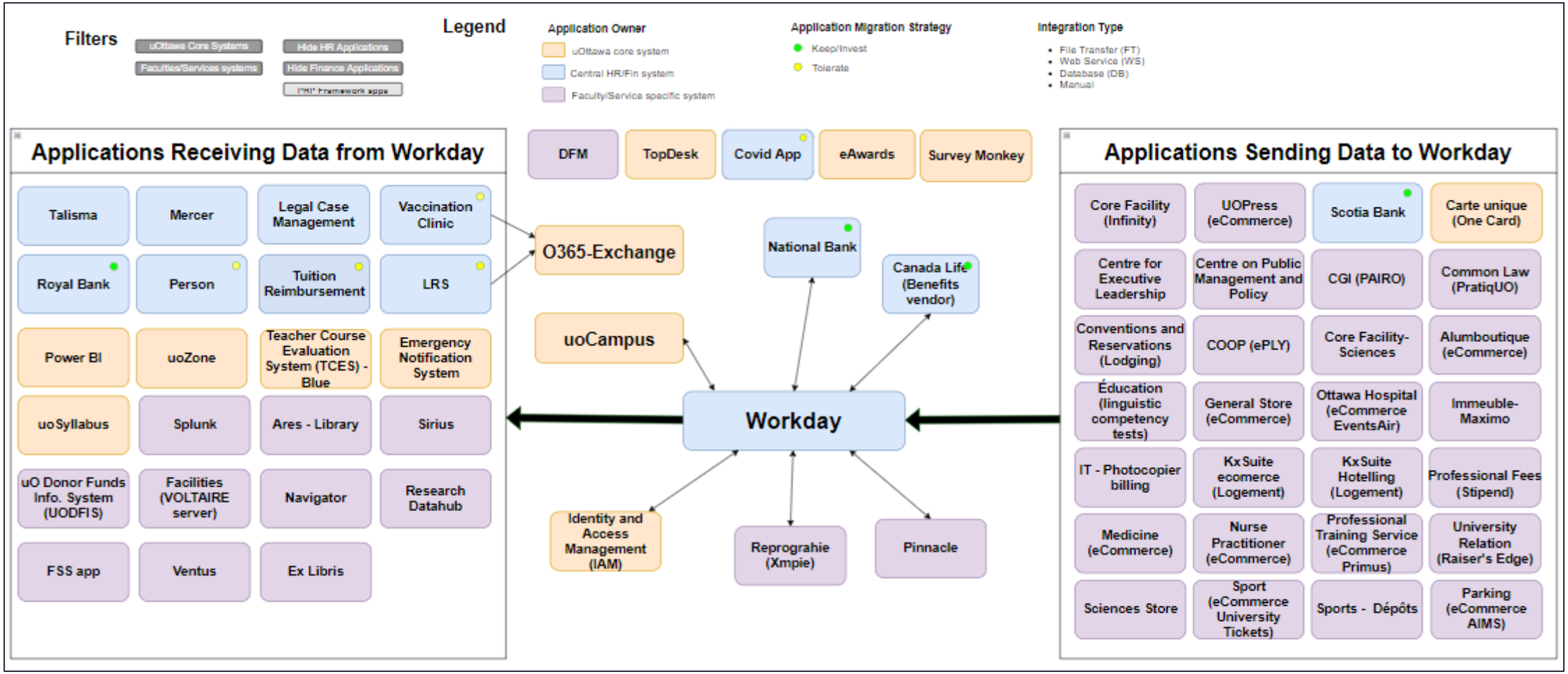
Our desired future state





* Under review

Our desired future ecosystem



How do we get there?

Business Capability - Level 1	Business Capability - Level 2	Business Capabilty - Level 3	2021-2022			2022-2023		
			Spring / Summer	Fall	Winter	Spring / Summer	Fall	Winter
Finance Management	Accounting	Accounts Payable - AP						
		Capital Project Accounting						
		Fixed Assets Accounting (FA)						
		General Ledger						
		Revenue Accounting - AR						
		Strategic Reporting						
	Budget Management	Budget & Forecasting						
	Endowment Management	Endowment Management						
	Financial Reporting	Financial Reporting						
	Procurement	Purchasing						
	Supplier Management	Supplier Management						
	Taxation Management	Taxation Management						
	Travel & Expenses	Travel & Expenses						
Human Resource Management	Employee Administration & Support	Employee Communication						
		Employee Enquiry						
		Employee Records & Details						
	Employment Management	Job Evaluation						
		Job Management						
		Position Control & Budget						
		Position Management						
Human Resource Management	HR Analytics & Reporting	HR Analytics & Reporting						
	Leadership & Talent Development	Employee Career Management						
	Talent Management	Employee Recruitment & Hiring						
		Talent Mobility						
	Total Compensation	Payroll						
		Time & Attendance						
Research	Research Funding	Research Funds Management						

Business Capability - Level 1	Business Capability - Level 2	Business Capabilty - Level 3	Application (applications may appear multiple times)	2021-2022			2022-2023			2023-2024		
				Spring / Summer	Fall	Winter	Spring / Summer	Fall	Winter	Spring / Summer	Fall	Winter
Human Resource Management	Employee Administration & Support	Employee Communication	Employee Self Service									
			GLO									
			Nomination									
			Onboarding									
			Reference Tool									
			Total Compensation Statement									
			Workday									
			Tuition Reimbursement									
		Employee Enquiry	APUO Salary History									
			Employee Directory									
			Employee Self Service									
			ESMS									
			HRCorr									
			PayCorr									
			Talisma									
			Workday									
			Total Compensation Statement									
		Employee Records & Details	APUO Salary History									
			Banner									
			Employee Directory									
			Employee Hub									
			Employee Self Service									
			ESMS									
			HRCorr									
			PayCorr									
			Postal Code Wizard									
			SIQ									
			T-Date									
			Workday									
			UOHRFORMS									
		Occupational Health & Wellness	Covid Application									
			Long Term Disability									
			Vaccination Clinic									
	Employment Management	Job Evaluation	Position Database									
			Workday									
		Job Management	APUO Salary History									
			Workday									
			Job Titles									
		Position Control & Budget	Banner									
			Workday									
			Employee Self Service									
		Position Management	APUO Salary History									
			Position Database									
			Workday									
			Reference Tool									

Legend:

- Invest
- Tolerate
- Migrate/Eliminate

* Under review

How we are leveraging the Capability Model

Current state analysis

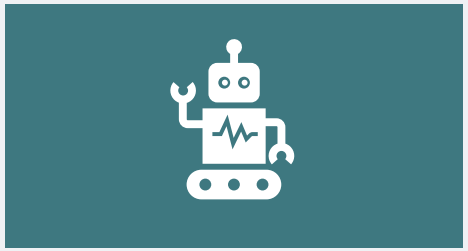
Desired future state definition

Discovery sessions with Systems Integrator

Program team structure

Applications analysis & strategy definition

ERP implementation roadmap



Integration strategy definition

IT Standards for IAM, Integration Software, Email, Business Intelligence, etc.

Questions? Contact Us.

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Thank you!