EXTRAORDINARY AND PRAGMATIC: TARGETED INFORMATION MANAGEMENT IN HIGHER EDUCATION

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ABSTRACT

Higher education institutions are a birthplace for innovation and creativity through teaching, learning and research. Building and implementing pragmatic administrative processes can augment innovation and capabilities by enabling effective and efficient resource allocation and decision-making.

This article highlights technology selection, process and information management considerations through case studies that were rapidly implemented at the University of Alberta at various levels - operational, compliance, and strategic - to rapidly respond to environmental factors that would reshape the work environment and expectations, both short-term and long-term.

INTRODUCTION

Access to reliable information assets - records, information, data, and processes - is critical for effective decision-making. This applies at all levels in an organization, from strategic goals to maintaining and improving business operations. Disruptions from an external environment, financial constraints, and changes to workplace location can be exploited to introduce new or enhanced business processes, strategy, and technology that introduce workplace efficiencies relating to information management. Material improvements to information access and use, sharing and preservation can take place with little to no financial "budget-line" investments, instead leveraging existing subject matter expertise and applying an information management lens to it.

A large Canadian university had to respond quickly and methodically to two simultaneous, extraordinary change factors: a global pandemic, and a significant multi-year reduction to its operating budget and government funding model. The University of Alberta had to increase its capacity to deliver more student and research services and shift its operational and service delivery model from an on-campus to entirely remote environment, while reducing administrative costs in doing so. Employees would have to do things differently, leveraging new tools, processes and technologies to meet operational objectives.

In this article, three case studies highlight the different responses taken to change or enhance organizational information management practice in response to environmental factors. The development of immediate, incremental and pragmatic solutions to achieve business outcomes is described, along with challenges faced in implementation and user adoption. Context is also provided around how a change initiative could, or rather *had to* come to fruition out of necessity.

PROVINCIAL POST-SECONDARY LANDSCAPE

THE INSTITUTION

In the Province of Alberta, there are 26 publicly funded post-secondary institutions. These institutions receive government funding to offset operating costs and offer most of Alberta's post-secondary programs[1]. The University of Alberta in Edmonton, Canada is the largest institution in this category.

The University of Alberta in Edmonton, Alberta has a student and employment community of over 50,000 people; and five physical campuses, four located throughout Edmonton city

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[1] Publicly funded post-secondary institutions, Government of Alberta
https://www.alberta.ca/publicly-funded-post-secondary-institutions.aspx retrieved October 10, 2020.

limits with one additional campus located in the municipality of Camrose. It offers a diverse range of graduate and undergraduate degree programs; between it and the University of Calgary, these two institutions account for most of the province's university research capabilities.

The University of Alberta is one of Canada's top teaching and research universities. It holds an international reputation for excellence across the humanities, sciences, creative arts, business, engineering and health sciences[2]. *Times Higher Education*, a London (UK)-based magazine and provider of higher education data for research-led institutions worldwide, publishes annually its World University Rankings, and the University of Alberta placed sixth overall in Canada (131st worldwide) on performance indicators in four key areas: teaching, research, knowledge transfer and international outlook[3].Current State, Challenges and Constraints

Provincial Budget

In March 2020, the University of Alberta was tasked with reducing overall operating expenses by more than $120 million CAD (approximately 11%) over a three-year period (2020-2023). In order to achieve both in-flight and planned budget cuts, significant financial changes had to take place, including closing buildings, increasing instructional and non-instructional fees, and raising tuition.

Additionally, a larger restructuring effort was put into place, to improve efficiencies and reduce administrative costs, including the potential reduction or elimination of 1,000 staff positions[4]. This budget reduction was on top of a previous in-flight budget reduction that took place in October 2019 of 6.9% (approximately $44 million CAD) for all university campuses and units.

Worldwide Pandemic

The World Health Organization (WHO) was informed on December 31, 2019 of cases of pneumonia of unknown cause in Wuhan City, China. A new strain of coronavirus, subsequently named "COVID-19 virus" was identified as the cause; this strain had not yet been previously identified in humans.

On March 11, 2020, the rapid increase in the number of cases outside China led the WHO to announce that the outbreak could be characterized as a pandemic. By then more than

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[2] About the University of Alberta. https://www.ualberta.ca/about/index.html retrieved September 28, 2020.
[3] World University Rankings 2021. Times Higher Education. https://www.timeshighereducation.com/world-university-rankings/2021/world-ranking retrieved October 13, 2020.
[4] The University Budget. April 1, 2020. https://www.ualberta.ca/vice-president-finance/resource-planning/the-university-budget/index.html retrieved September 19, 2020.

118,000 cases had been reported in 114 countries, and over 4200 deaths had already been recorded[5].

On March 13, 2020 the University of Alberta suspended all in-person classes and exams, eight days after the province had confirmed its first presumptive case of COVID-19, and only 2 days after the WHO declared the outbreak of COVID-19 a global pandemic[6]. The Government of Alberta cancelled all in-person classes, remote learning began March 14, 2020, and by March 22, all possible research and operations were also moved to remote work, with restrictions and full closure applied to nearly all administrative and office-based functions.

The University's Response

A perfect storm of financial, operational and environmental health factors came together at the same time to severely impact the University's day to day administration and service delivery. In addition to producing an operational plan in response to the budget, the full institutional Crisis Management Team was activated to handle and coordinate pandemic-related activities.

Several factors immediately came into play:

- Loss of expertise and knowledge through forthcoming staff layoffs and attrition;
- Fundamental change in location and way of conducting operational activities; and
- Tremendous upcoming changes to both administrative structure and service delivery at the University as part of the budget response and restructuring.

The global pandemic and provincial budget had to be simultaneously addressed by the institution. These issues could not be deferred or ignored; they had to be acted upon presently across the institution and at individual operating unit levels. The budget and pandemic also took on a highly personal effect, where individual employees would directly experience the fallout from both environmental conditions: job losses or reclassifications; changes to reporting structures; and working remotely with less or different resources available to continue to provide similar levels of service.

INSTITUTIONAL OBLIGATIONS

The 2019 Harvard Business Review article *6 Reasons why Higher Education Needs to be Disrupted* stated:

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[5] Coronavirus disease (COVID-19) pandemic.
https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov retrieved September 2, 2020.
[6] About COVID-19. University of Alberta. https://www.ualberta.ca/covid-19/about/index.html retrieved October 10, 2020.

"the reality in today's digital-first world is that we need to teach every generation how to learn, unlearn, and relearn - quickly - so they can transform the future of work, rather than be transformed by it"[7].

This statement rings true in this circumstance and applies to both students adapting to online learning and a virtual community; and staff working remotely and accessing and creating information and records virtually. University students and staff had to react and adapt to the given circumstances quickly and repeatedly, with little time, or tolerance for indecisiveness.

BUSINESS AS USUAL

Immediately following the suspension of in-person teaching, learning and administration, the institution still had to carry on with administering programs and services and delivering instruction to students, remotely instead of on campus. Employees of the University were required to work remotely. This meant challenges and changes would take place to existing business processes as well as expectations:

- University administration had to be fiscally responsible in enabling these services; and
- Students also had to adapt to the new, virtual instructional model to obtain credits.

ADDRESSING INFORMATION RISK

From an administrative perspective, the same information management challenges remained:

- Responding to increasingly complex information access requests;
- Preventing and minimizing the frequency and severity of privacy and security breaches;
- Assigning and mitigating information risk within areas of responsibility;
- Implementing meaningful information management improvements quickly; and
- Identifying and reducing duplicate or overlapping efforts in managing records.

The University also had continuing obligations to create and capture records; to be able to respond to information access requests; and namely, to continue to provide services within and across broad portfolios including human resources management, fundraising and alumni engagement, procurement, facility operations and management, governance, faculties, research, and others.

It was up to the institution to find ways to continue to deliver services, to meet expectations and service requirements, relying heavily on individual units that made up the University to adjust and adapt first, while still finding ways to maintain services and operations.

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[7] 6 Reasons why Higher Education Needs to be Disrupted. Harvard Business Review. November 19, 2019. https://hbr.org/2019/11/6-reasons-why-higher-education-needs-to-be-disrupted retrieved October 3, 2020.

BUSINESS TRANSFORMATION

Creativity and innovation would be key elements to address, out of necessity, the new challenges to service delivery, communications, sharing of information, and making decisions. Conflating organizational transformation requirements with pandemic response mechanisms meant the timeline for change, adoption and implementation would be accelerated.

U of A For Tomorrow

In 2019, the Government of Alberta announced it would decrease available funding provided to all higher education institutions in the province. In response to this forecasted budget reduction, the University of Alberta created *U of A for Tomorrow*, a five-year institutional plan to address short and long-term fiscal restraints relating to continued research, teaching and community engagement efforts by the institution.

The *U of A for Tomorrow* plan had two major, short-term initiatives for 2020 focused on academic restructuring and service excellence (administrative) transformation:

- Implementing process improvements and in-flight corrections to operating models;
- Development and approval of a new operating model that would enable institutional savings of over $120 million dollars in the near term.

Longer-term goals of the plan included increased self-sufficiency (less reliance on government funding), and an increase in global reputational rankings[8]. This was a time where new capabilities would have to be built; new expectations would have to be set; and priorities would have to be drawn on what services had to continue and in what capacity.

COVID-19

In March 2020 the COVID-19 pandemic was announced, and the University of Alberta had to respond and shift from a connected physical campus to a digital remote work and study environment. This meant a change in expectation for conducting and performing work activities - many activities that were already anticipated in the U of A for Tomorrow proposal. The pandemic accelerated and enabled many of the University of Alberta's change efforts out of necessity.

DO MORE WITH LESS, OR DO DIFFERENTLY

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[8] University of Alberta for Tomorrow Vision, Principles and Goals. University of Alberta https://www.ualberta.ca/uofa-tomorrow/goals/index.html retrieved October 1, 2020.

The University of Alberta is an enormous, billion-dollar higher education operation. Higher education is also an industry that encourages innovation. The University could not ignore the budget, nor the global pandemic. Now was a time in which changes needed to be implemented, and fast. An institutional strategy to reform both administrative and academic structures was being developed at the highest level, and individual units would have to anticipate, react and respond to that mandate.

Unit-based adjustments are often small in nature, involving processes or personnel, and on the surface may not register individually as part of institutional business transformation. When counted together, or aggregated as part of a larger strategy, similar changes become much more noticeable and can demonstrate evidence of change, conformance, and *the ability to demonstrate* compliance.

CASE STUDY 1: DEMONSTRATING COMPLIANCE CAPABILITIES

In terms of risks to information, department leaders did not have a clear understanding of risks to information within their area of responsibility, or how these risks came about or were measured. Additionally, the institutional mandate on what records management requirements were necessary to protect or preserve information assets was not easily applied across such a federated operating and information infrastructure at the University of Alberta.

The University needed to build a top-down approach to information management, an approach that could be measured and quantified from the bottom up. The proposed solution was an Integrated Information Strategy (Information Strategy) and Information Maturity Framework built off the principles of the institutional Records Management Policy[9].

INTEGRATED INFORMATION STRATEGY

In an environment of financial austerity and business transformation, the University Records Office had to find a way to do more, with less. This involved looking at information as a business asset, or an organizational resource. How could this asset be leveraged to allow stakeholders (the Unit) to be able to effectively access, trust and protect its information?

Instead of focusing on creating more standalone or idealistic records management procedures, the University Records Office took a pragmatic approach to identify and assess information management capabilities in Administrative Units at the University of Alberta.

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[9] Records Management Policy. University of Alberta. March 14, 2014. https://policiesonline.ualberta.ca/PoliciesProcedures/Pages/DispPol.aspx?PID=122&s=https://policiesonline.ualberta.ca/PoliciesProcedures/Pages/Information-Management-and-Information-Technology.aspx retrieved August 22, 2020.

The Integrated Information Strategy (Information Strategy) incorporated and addressed intersectional information management issues that allowed University Units to identify, accept and mitigate the risks in managing University information. The Information Strategy created a partnership among multiple information management disciplines with shared accountability. The solution was simple, scalable and repeatable, and included consistent messaging.

INFORMATION MATURITY FRAMEWORK

The four points below comprise the University of Alberta Information Maturity Framework, produced by the University Records Office[10]:

- Access to available information and records;
- Effective management and organization of University information and records;
- Preservation of information and records; and
- Mitigation or elimination of information risk.

Combined, the integrated strategy and framework brought together experts from privacy, information security, records, and archives, to collaboratively address the inconsistent application of records management practices across the institution. For instance, it can be difficult to answer a records management question around personal information if not considering privacy; or difficult to answer a system-related privacy issue without also engaging both information security and information technology.

IMPLEMENTATION

As part of the Integrated Information Strategy, an objective picture of information risk within departments needed to be painted across at individual unit, portfolio, and institutional levels. To do so, the University Records Office created an engagement and assessment framework (the Information Maturity framework) that identified and compared Unit-based current information management practices to both Integrated Strategy and Records Management Policy expectations and requirements.

The Information Maturity framework contained three sequential phases that were implemented in every engagement between a Unit and the University Records Office: pre-engagement, support and assessment, and post-engagement. In each phase there were unique activities that contribute to and enable the overall implementation, while also demonstrating progress or progression through an initiative.

The pre-engagement phase of the Information Maturity Framework was critical to a successful implementation of the Integrated Information Strategy. This is where Unit

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[10] Information Management Maturity Framework. University Records Office, University of Alberta https://www.ualberta.ca/university-records-office/resources-and-references.html retrieved October 13, 2020.

leadership was consulted and engaged to "open the door" for a records management capability assessment. This involved identifying who in the unit should be involved, and for how long, and what kind of work effort would be required to complete the assessment. We also document and approve a charter for engagement, outlining scope, schedule and anticipated outcomes.

In the support and assessment phase, this is where the University Records Office really gets involved with the business unit, to build and enhance information management capabilities. Some tactics included delivering a capability assessment workshop; acquiring and reviewing process documentation; and identifying gaps and working to close deficits.

In the closure and post-engagement phase, evidence was gathered, and guidance was provided to the Unit through training. The completed reporting scorecard, along with an assessment report was provided to each group, with suggestions for next steps. The Unit was also provided with a scorecard representing the Unit's capability to comply with the Records Management Policy using the Framework as an assessment tool. The scorecard and assessment templates were the same for any unit; the complexity of information within is unit-specific.

By following a playbook or common engagement approach, it allowed the strategy to be measured across different groups for the same criteria, and also allowed for a relatively similar effort to be placed on determining records management capabilities.

OBSERVATIONS

The information strategy applied across the institution, and the framework could be adapted for implementation in any circumstance, organizational structure, for any level of complexity of managing information. Implementing the integrated information strategy validated that unit information and records could be 'good enough' to enable compliance with rules, implementation of technology, trustworthy sharing of information, and a variety of other business requirements that involve information and records.

The duration of time spent with a unit often had an inverse relationship with records management effectiveness. The longer time spent engaging a unit, the more likely they were to procrastinate, or not address key issues. Some groups were so keen to come up with their information management rules, that they were able to do so in one-hour working sessions. This speaks to the point of 'failing fast' and achieving quick wins that demonstrated success and built reputation while establishing unit-based accountability for information risk.

The strategy and framework addressed information management pain points that were commonly experienced by multiple units (e.g., access, protection, security, duplication) and produced technology-agnostic, process-based rules to alleviate those pain points. In most

cases, bringing a Unit together to achieve a common understanding of basic records management practices was enough to create consistency and predictability in creating Unit information. Units were able to answer, for themselves, common questions such as:

- Where are our Unit's official records?
- How do we name and organize our committee meeting minutes?
- What information do we provide in response to an information request?
- Who can provide me with access to the Google Shared Drive?
- Is the Unit in another faculty doing this the same way we are?

As records management capabilities continue to grow, the University is already exploring what to do next to bring about efficiencies and effectiveness in managing information and records. The ability now exists to compare results across units and observe how effective and pragmatic records management lends itself to technology implementation as a next step or enhancement.

CASE STUDY 2: AI-ENHANCED IM CAPABILITIES

McKinsey & Company, an international management consulting firm stated in a 2018 Executive Briefing that businesses *need* technology improvements to provide value for businesses, contribute to economic growth, and make once unimaginable progress on some of our most difficult societal challenges. The article goes on to suggest that workflows and workspaces also need to adapt, to create an opportunity where people work more closely with machines[11]. Instead of viewing automation as a replacement for people, automation needs to be a tool or resource that workers can leverage to increase their productivity and capabilities in the workplace.

In this example, automation opportunities focused on user driven change, designing what was wanted and needed by an operational unit to satisfy external and internal demands for information and customer service.

Robotic Process Automation (RPA) is the technology that enables the configuration of computer software, or "robots" to emulate human interactions with and within technology systems to execute business processes[12]. RPA robots interpret and trigger responses and communications between systems to perform repetitive tasks quickly, frequently, and accurately.

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[11] AI, automation, and the future of work: Ten things to solve for. McKinsey Executive Briefing by James Manyika and Kevin Sneader. June 1, 2018. https://www.mckinsey.com/featured-insights/future-of-work/ai-automation-and-the-future-of-work-ten-things-to-solve-for retrieved September 19, 2020.

[12] Robotic Process Automation (RPA). UiPath. https://www.uipath.com/rpa/robotic-process-automation retrieved September 10, 2020.

Within Advancement Services at the University of Alberta, the Office of Recording Secretary (ORS) - the unit responsible for donation and gift processing, endowment fund establishment and reporting - was a high-volume transaction processing unit with stable processes, operating procedures, and clear lines of accountability.

CHALLENGES AND CONSTRAINTS

Primary objectives of this RPA implementation were to enhance and bring additional efficiencies to already-established processes and procedures for intake, storage, and management of charitable donations and related records within ORS; and to enable cross-platform, automated capture and retention management of records and information spanning creation, use, and preservation.

ORS needed to maintain, or potentially increase throughput of processing donation related records and information, such as balance sheets, tax receipts and journal entries. The opportunity for enhancement was there:

- Many transactions within the unit still had some paper-based component to them, whether it be signing or approving documents, issuing and filing receipts, and performing transaction audits or reconciliations;
- Batch processing was repetitive in nature and volume-dependent; processing was limited to the capacity of staff available to handle and process the batches during normal operating hours.

Another challenge was up-front versus over-time costs for technology or staffing. Could a department justify a budget line-item for technology investment in a time of fiscal constraint? This was a case where solution implementation could be quick, and noticeable, and the financial cost was significantly less than the salary equivalent for additional staff.

Multiple brainstorming sessions were held with Unit stakeholders, along with representatives from Information Services & Technology, the University Records Office, and Advancement Records. At the beginning, it was unclear what was wanted from an automation perspective, but through successive brainstorming sessions and conversations, several key requirements were identified:

- Create an entirely electronic tax receipting process for charitable donations, and replace the current paper-based process. This would leverage technology integration between systems (including the use of Application Programming Interfaces (API) to enable automatic filing and retention management of final records. Numerous other charities were already issuing electronic tax receipts for online donations, this was becoming an operational expectation as well as an expectation from donors;|
- Enable more efficient processing of final records for access and preservation in the Unit EDRMS (Electronic Documents and Records Management System) quickly and efficiently, when individual documents could take up to 10 minutes each to manually prepare and upload to the EDRMS (receive the file, rename the file, upload to EDRMS, add departmental metadata, perform quality assurance, link EDRMS file to Unit Customer Relationship Management database);

- Establish a common understanding of what records would be available and for how long (how long to retain departmental records, and what department would be responsible).

Following the brainstorming sessions, the Unit was able to clearly articulate where the bottlenecks or challenges were present in operational processes, and that became the focus for potential automation opportunities.

The initiative was quick to get to technology design, building off the records management fundamentals already confirmed using the Information Maturity Framework. ORS was able to describe its information management processes, including naming conventions, filing structures, and metadata, access considerations, and final/official records and repositories.

OPPORTUNITY

In this scenario, could an up-front investment in technology automation for predictable business transactions serve to free staff time and increase responsiveness? This initiative was a culmination of several institutional tools and resources, as well as a shift in philosophy by the Unit. Now was the time to consider ways to improve business processes, in light of budget cuts and a global pandemic that fundamentally changed the way information and records were being handled.

Jumping to automation is not easy, however. There had to be subject matter expertise available to represent current processes, to suggest and test new solutions, and to manage the change. This was a unique situation that took advantage of that expertise on the sides of the Unit, Information Services & Technology, and from an information management perspective.

OUTCOMES

A coordinated work effort between multiple stakeholders (Information Technology Business Transformation, Advancement Records, the University Records Office, and the Office of the Recording Secretary (ORS)) achieved the following outcomes:

- Explore additional functionality was realized when the Office of Advancement and Central Information Technology came together to explore the possibility of creating additional technology functionality to address an information management (and resource) challenge;
- Automate key processes described as part of this initiative, though some of the end results were achieved in a manner not expected at the time of project initiation. In their product development and build cycle, they were able to identify additional system capabilities that could be leveraged from within to meet the unique needs of the Unit;
- Determine its capability and risk tolerance for investing in automation. This spoke to their understanding of processes and technologies, as well as their appetite for additional technology change. ORS was able to decide whether to pursue more technology projects, and whether their current or projected workload (and budget)

would allow them to pursue additional improvement or continuous improvement opportunities involving technology and records.

CASE STUDY 3: PROCESS AND TECHNOLOGY EFFICIENCIES

Many business processes were disrupted when the University of Alberta mandated a remote work environment in March 2020 in response to the COVID-19 pandemic. Units themselves had to adapt quickly to survive in an entirely remote digital work environment, significantly different from the in-person, location-based work environment that was previously the norm:

- Congregation and in-person collaboration was halted;
- Printing forms or other materials virtually eliminated;
- Interoffice mail was no longer an option for sharing information and documents.

Units needed to implement and establish new expectations and technology solutions that would get them through the "current situation", and have some staying power to make things better both short and long term.

This is not to say that there were no electronic transactions or approvals in place before the pandemic shutdown; rather it was a piecemeal, unit-based approach towards acceptance and implementation of signatures technology and processes for performing electronic transactions. In many cases, electronic forms did exist but instead of existing as digital workflows, they were simply electronic copies of paper-based forms (that would still often require printing at one or more stages).

Approvals and workflows at the University were largely disconnected and paper-based: many internal forms required printing, physical completion and signing, and routing to intended recipients. This was a slow process in an in-person working environment that was tolerated by many groups, in spite of technology advancements and increased client expectations to leverage electronic transactions and workflows.

When the working environment was forced to become a remote work environment, fortunately, both parties to an approval - the originator or signatory as well as the receiver - were stakeholders sharing a common goal. As such, each side had something to gain by enabling, understanding and supporting electronic approvals.

The pandemic unlocked an opportunity for improvement when it came to electronic transactions - all business units were impacted, though the urgency impacted equitably, in that conducting approvals and transactions electronically became a requirement, not just a desired state. The risks and urgency for changing processes still remained focused within Units.

UNIT NECESSITY

As an example, the Office of Advancement realized quickly that there would be many benefits to using electronic approvals signatures compared to the existing paper-based processes, including:

- Cost savings, for less printing technology and materials;
- Time savings, with the ability to route approvals electronically to recipients;
- Ability to continue business operations in a remote working environment.

Electronic signatures were not entirely new to Advancement, though they were never officially endorsed - a common theme amongst other University administrative departments as well. There were instances where individuals were already using electronic signatures technology to approve or sign documents, and signatures were being generated using a variety of technology tools. These "one-off" or personalized solutions were identified and analyzed for appropriateness, usability, and authenticity: were the transactions valid, complete and acceptable? In many cases, yes - and this would be the building block for developing an internal procedure.

The Office of Advancement was able to establish its own unit-based operational governance model for electronic approvals and signatures. A standard operating practice was published, including the following scope:

- How electronic approvals would be performed (e.g.- applying scanned images of signatures for embedding in electronic forms or documents, or typing names in acknowledgement boxes, or where available, using existing electronic signatures technology);
- What unit transactions would the electronic approval process apply to;
- What unit transactions would still have to be conducted using physical signatures; and
- Who within the Unit would support and be responsible for implementation.

As an accountability measure, the Unit also consulted with the University Records Office for guidance around institutional and legislative requirements or constraints for using electronic signatures. It was agreed that the internal operating practice aligned with known requirements and measures put in place met the minimum requirements for implementing electronic signatures, and for maintaining the records and information associated with those approvals.

A quick, focused standardization of process and expectation within the Unit enabled a rapid implementation of electronic approvals. This approach met most, if not all operational requirements and was a welcome change and improvement for many individuals.

Additionally, this exercise to identify and validate internal processes for electronic approvals proved useful when the University also began to explore the same challenges (and opportunities) at an institutional level.

INSTITUTIONAL INTEREST

Central Information Services & Technology (IST) was also aware and impacted by the need for electronic approvals to varying degrees across the institution. IST saw this operational shift as an opportunity for change, and brought together an electronic signatures technology selection pilot project. IST chose specific stakeholders to participate in the electronic signatures pilot. Participant groups were selected based on their familiarity with technology solutions; business need for electronic signatures; and variety of potential situations to apply the technology:

- Office of Advancement, as an operational unit with clear business needs to continue to approve and handle transactions, approvals and signatures involving donors and charitable donations in support of University programs.
- Central Human Resources, as an operational unit with a high number of transactions requiring signatures or approvals, especially relating to personnel, time coding and payroll operations, and hiring and managing approvals.
- Supply Management Services, as an operational unit with high-volume, financial transactions for purchasing equipment, supplies and services on behalf of the University.
- Central Information Services & Technology; the University Records Office; and the Information & Privacy Office as governance groups with information management requirements.

A diverse and technology savvy pilot group that had both common and unique business needs for an electronic approvals solution would be critical to initiative success. Departments needed to be able to make decisions and approvals electronically: especially within their own units, and often across multiple units. Information and processes had to be reliable and trusted. To achieve this, coordination and confirmation at policy, technology and operational levels had to be established and communicated. Common requirements of selecting and implementing an institutionally-endorsed electronic signatures technology included:

- Development of an information strategy for electronic signatures including cost-benefit analysis;
- Agreement on information risk and impacts of electronic signatures technology on business records within and across units, for using or not using electronic signatures technology;
- Development and implementation of an operational model governing technology procurement, administration, and evaluation.

Once the scope of the transactions was determined, IST coordinated the definition of 13 different use cases that could be categorized by risk or complexity of transaction:

Category	Example Use Cases within the Category
Lower Risk	Internal approvals or authorizations, such as vacation requests or timesheet approvals within one department or unit
Medium Risk	Single signature approvals, such as a donor's intention to make a pledge to the University, or the authorization to hire an employee; approvals spanning two units.
Higher Risk	Multiple signature and/or "one-over" approvals, such as performance appraisals; appointment letters; funding authorization for professional development; establishment of new funds or endowments on behalf of a donor to the University of Alberta; approvals spanning more than two units or levels of approvals; approvals requiring external signatures.

The use cases were cross-referenced across the participating pilot groups to identify specific transactions to test against two proposed electronic signature technologies. It was found that most use cases and transactions would be able to be tested in all pilot groups; some remaining transactions were unique to one pilot group based on business function.

By no means were the definitions and use cases set in stone; they were defined and created to represent known or likely operational situations requiring approvals with an urgent business need. These use cases were able to be assessed for ability to integrate with the technology, to see how the proposed signature technology solution(s) could achieve the expected outcomes of the use cases, instead of focusing on replicating existing processes step by step.

Implementing a standardized electronic signatures technology required bringing together operational requirements, information governance, subject matter expertise, and technology governance. Each brought a unique perspective to the table, dependent on the other perspectives in achieving what would be an institutional success.

SUMMARY

Each of the three case studies presented were ideas, in-the-moment solutions to environmental and financial challenges that were faced by operational units. Common elements to each case study included:

1. Leveraging a situation or to force change or improvement. Changes had to happen, and instead of asking why now, the question changed to why not now? To let an opportunity for improvement pass would be poor judgement and detrimental to future change possibilities;

2. Enabling change through incremental approaches. Smaller, successive changes and improvements increase a unit's knowledge of the situation and builds confidence in achieving success;

3. Leading from the business perspective, rather than the Information management perspective as effective business solutions have information management practices integrated into them, and often the same business solutions exist in different subject areas with common information management principles that aren't immediately recognized as such;

4. Recognizing that solutions are not perpetual. Continuous improvement should be a business objective, including considering whether the status quo is 'good enough'. Environment, technology, and expectations are always evolving, and units must be able to evolve and adapt when developing solutions for creating, managing and protecting information and records.

ABOUT THE AUTHOR

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