EAB

Who Should Read

CIO

Directors of Infrastructure

Enterprise Applications Groups

Equipping IT for Integration at Scale

Focusing IT Resources on Improving Institution-Wide Integration Maturity through Service Prioritization and Tool Standardization

Study in Brief

This report profiles the organizational strategies and staff incentives that progressive institutions are deploying to improve technical coherence between "best-of-breed" solutions and to scale IT capacity for the increasing number of integration projects faced by higher education IT organizations.

10 Ways to Use This Research

- Building an institutional integration strategy
- Reorganizing IT staff to meet new service needs
- Establishing integration competency centers
- Large-scale IT project or implementation (ERP, SIS, LMS migration, upgrade)
- Establishing project management offices and team structures
- Defining integration as a campus service
- Evaluating the integration tool marketplace, including iPaaS and other cloud tools
- Introducing new tools to the IT organization
- Establishing an integration competency center
- Building consensus for standardization among centralized and decentralized developers

Integration Needs Soaring, Opportunity Cost Growing

How Can Campus IT Deliver Integration Value, Today and in the Future?

Mutually reinforcing trends are rapidly increasing both the amount and diversity of technology on university and college campuses. While each technology has independent campus value, the growing importance of cross-campus strategic initiatives demands better integration between discrete, siloed technology investments.

Growing Digital Demand Overwhelming IT with Integration Projects

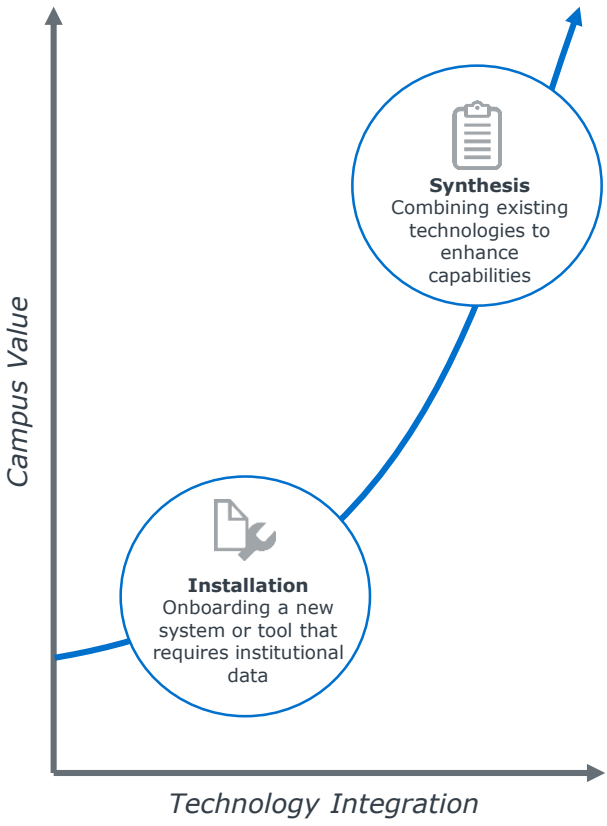
Growing Demand: Exponential growth in technology adoption partnered with the rapid increase in frontline technology purchasing in higher education has dramatically increased the need for integrations between discrete campus systems.

Stagnant Resources: For most IT organizations, this uptick in demand is not supplemented with increased resources, and the majority of CIOs already face a vast backlog of IT projects.

New Approach Needed: Faced with these realities, many are realizing that current approaches to integration exacerbate problems, leaving IT exposed to the many risks of end users working around established services.

> "The number of new integrations we've built has **doubled every single year for four years**. We did 80 this year. Trying to scale what we're doing is **just not sustainable**."
>
> Director of Enterprise Infrastructure
> *Large Public Research University*

Typical Campuses Integrate to Install, But Fail to Capture the Strategic Value Offered By Technology Synthesis



For most technology solutions on campus, the original value proposition of the tool is tied to a specific work domain – for example, the efficacy of a new CRM is judged by its ability to support advancement's fundraising goals. But in today's data-driven economy, siloed digital investments don't deliver for the broader campus.

Increasingly, stakeholders want to pull together data from disparate systems to support institutional decision making, build new tools and applications for students, faculty and staff, and construct a seamless digital experience for campus. But developing these services relies on advancing data management and integration maturity across campus—a goal often at odds with the funding, governance, and even IT organizational structures of the institution.

As ongoing technology value is increasingly derived from connecting existing tools and data together for synthesis, CIOs must transform the culture of their organization, pivoting integration from a cost-center activity to a value-driving investment opportunity.

Source: EAB interviews and analysis.

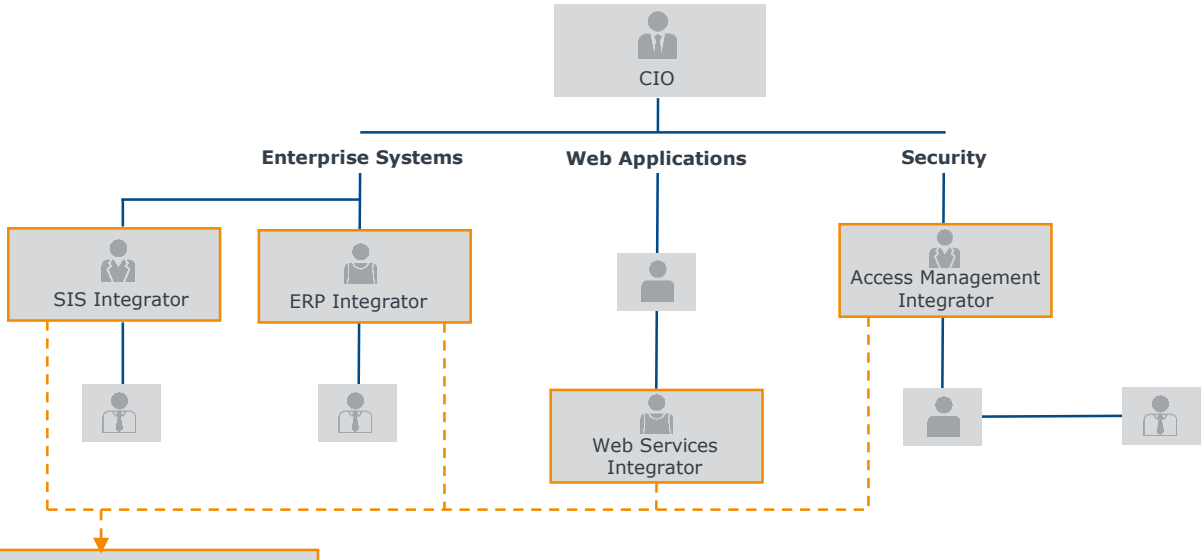
Optimizing to the Scale of One

"Byproduct" Integrations Speed Project Completion, Overlook Institutional Value

Due to limited resources, integration is a means to an end for most IT organizations; whether onboarding a new system or application, engineering a new system interface, or developing dashboards for campus leadership, integration is often the byproduct of other campus needs. This practice is myopic and unsustainable. Lacking enterprise awareness in the process of integrating, IT is building an inflexible technology ecosystem that underserves campus leaders, and makes tomorrow's projects even more complicated than today's.

Distributed Developers Identify with Siloed Projects, Not Enterprise Architecture

Fragmented Integration Efforts Limit Campus-Wide Integration Capacity—Today and Tomorrow



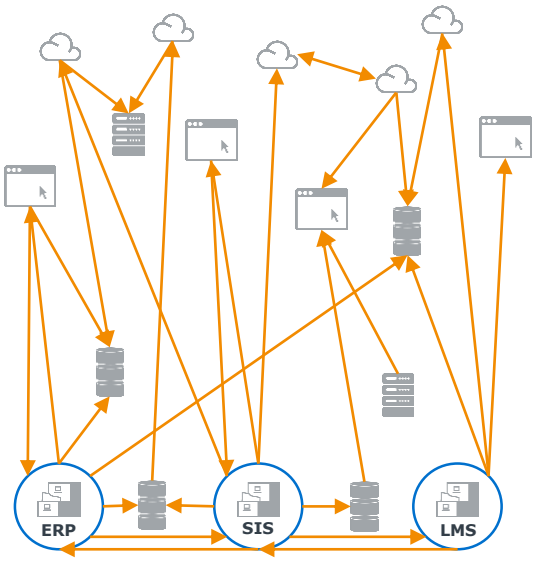
Developers Operating Independently Optimize for the Project at Hand

"Fast and cheap" mentality predominates to address growing backlog of projects

Integration staff working with siloed systems leverage different tools and protocols to build integration feeds

Focus on siloed data structures and systems limits viability of data for institution-wide decision making

Resulting "Architecture By Accident" Cripples IT Innovation with Tack on Systems, Shadow Storage, and Brittle Interdependencies



Typical Integration Map

Higher risk of failure across increasing number of hand-coded integrations

Growing maintenance costs as the data and integration footprint expands

Decreased agility as disparate systems become more intricately dependent

Source: EAB interviews and analysis.

Prioritizing Integration as an IT Service

Managing Integration as a Key IT Product Increases Capacity, Multiplies Returns

To realize the potential of technology investments now and in the future, IT leaders must recognize the temporal value of integration, and prioritize developing campus integration maturity accordingly.

Even in the absence of new resources, focusing current staff on integration work as an IT priority can increase staff capacity. Fostering a culture where integration is a key value driver and enterprise-wide concern realizes efficiency through work consolidation innovations and shared best practices.

For those able to invest, adopting next generation integration tooling enables campus to leverage contemporary, low-code environments to speed time-to-integration, effectively manage a growing portfolio of integrations, and enhance campus agility in an ever-changing IT ecosystem.

As Integration Takes on New Importance…

Have you Prioritized Integration on Your Campus?

Is integration defined as service provided to internal IT projects and external campus partners?

Does our skill development emphasize integration as a competency over specific systems expertise?

Are our developers using the same standardized tools and processes across our integration work portfolio?

… CIOs Must Respond with Organizational, Tool, and Process Management Changes

Dedicated Staff for Integration Work

Aggregating integration skills allows IT professionals to focus on developing service maturity

- **Service ownership** Enterprise integrators' primary focus is progress against strategy
- **Cross-functional skills** Matrixed staff from diverse system domains support enterprise solution building

Standardized Tooling Adoption

Incorporating standardized, next-generation tooling advances maturity and drives up integration efficiency

- **Shared practices, protocols** Comprehensive, campus-wide platforms promote and support shared methodologies
- **Automated management** Contemporary platforms facilitate managed monitoring of diverse integrations

Source: EAB interviews and analysis.

Looking for Frontier Practice

How are CIOs scaling integration services in a way that adds value to campus?"

Members asked the Forum to find promising, replicable approaches to effectively scale integration services to meet growing demand. From more than 100 interviews with CIOs, four scalable strategies emerged.

This study is based on understanding gained from diverse higher education IT leaders. We are grateful to interviewees for sharing institutional insights and benchmarking practice. We have abstracted the institutional insights to make them more generalizable for colleges and universities with different missions and budgets, but the Forum's work is as ever grounded in the proven innovations of progressive practitioners.

Featured Institutions—With Sincere Appreciation

University of Manitoba

Mario Lebar
CIO

Michael Khodosko
Enterprise Architect

Vassar

Michael Cato
CIO

Beth Hayes
Deputy CIO

Selected Research Participants

Brigham Young University
Kelly Flanagan
CIO and Vice President for IT Services

University of Chicago
Mike Fary
Senior Consultant, IT Strategy

University of Connecticut
Michael Mundrane
CIO and VP for IT

Eastern Mennonite University
Ben Beachy
Director of Information Systems

Florida International University
Chris Mootoo
Director of Technology Services

Indiana University
Bradley Wheeler
Vice President for IT and CIO

University of New Hampshire
Bill Hall
CIO

Northwestern University
Sean Reynolds
CIO

Syracuse University
Kathy Kinney
Director, Enterprise Process Support

Oregon State University
Lois Brooks
CIO

University of Washington
Rob McDade
Senior Technology Manager

Jim Phelps
Director of Enterprise Architecture

What the Best Are Doing

Improving campus integration maturity requires careful cultivation of IT skills while meeting growing campus demand. To maximize campus value from integration work, the best are empowering developers to focus on long-term flexibility during technology implementation projects, while encouraging widespread adoption of next-generation tools to achieve scale through automation and standardization in integration workflows.

Prioritizing Integration Services within the IT Organization

Triumvirate Project Ownership

Elevating Technical Experts in Project Ownership to Drive Integration Best Practice

Technical architects are elevated to project co-ownership alongside project managers and business leaders, equalizing the emphasis across cost, speed, and technical sustainability during the solution build process. Recognizing technical ownership incentivizes teams to consider (and elevate) technological and architectural priorities over otherwise cheaper, faster solutions.

Integration Competency Center

Professionalizing Integration Development to Capture Economies of Scale

A handful of institutions are consolidating developers from different organizational support groups into a single team to devote 100% of their time to comprehensive integration development, focusing on "complete" integrations and capturing economies of scale. IT groups are seeing significant ROI from standardized processes, rearchitecting efforts, and integration lifecycle oversight.

Evaluating and Adopting Next-Generation Integration Tooling

Developer-Led iPaaS Evaluation Project

Evangelizing Next-Generation Tool Adoption from within the Developer Community

CIOs or Enterprise Technology Directors appoint a talented and engaged staff member to dedicate time to integration tool and architecture research due diligence in advance of major systems upgrades or implementations. Evaluation considers institution-specific benefits and risks, and recommendation uptake improves with developer champion.

Consensus-Driven Tool Adoption

Collaborating Across Developer Groups to Increase Standardized Tool Uptake

Recognizing that mandated tools often face resistance among various IT developer staff, CIOs at some institutions are bringing in distributed and siloed developers to test prospective standard tools against collaborative business solutions. Bottom-up consensus through decision ownership drives widespread tool adoption, increasing standardization and maximizing ROI from platform tool investment.

Triumvirate Project Ownership

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Practice in Brief

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Implementation Steps

- CIO mandates triumvirate project ownership structures for significant IT projects. At Manitoba, this covered projects that take 10+ days of IT effort, cost >$20,000, or have an impact on the institution's core network.
- Three co-equal leads are assigned to incoming "triumvirate" projects, each with componentized ownership and incentives: the business user owns the benefits and value signoff, the solution architect owns the technical solution and architecture, and the project manager owns the process, including budgeting and planning.
- During project planning and analysis, co-leads present their cases. Solutions architects present technical solutions based on short-term and long-term costs, architectural viability, and scalability across the institution. Cost, speed, and performance tradeoffs are clearly communicated to co-owners to inform collaborative decision making around product or build choices. Business owners have the ability to veto or abandon projects where available funds will result in suboptimal or underperforming solutions as defined by architects.
- Solutions architects oversee analysts and developers working on solution builds and installations according to project-defined scope and institutional interoperability standards.

Benefits to Institution

- Increased project focus on technical architecture and interoperability
- Short-term and long-term technical costs accounted for in solution building

> If we're doing a project and we've allocated $100k, but the architect says it's going to cost $120k to meet the needs, this allows us to put on the brakes. Normally, you'd have the project manager barreling ahead with what's available, but we don't want to waste the $100k if the business purpose isn't going to be delivered."

CIO
Medical Doctoral University

Integration Competency Center

Professionalizing Integration Development to Capture Economies of Scale

Practice in Brief

A handful of institutions are consolidating developers from different organizational support groups into a single team to devote 100% of their time to comprehensive integration development, focusing on "complete" integrations and capturing economies of scale. IT groups are seeing significant ROI from standardized processes, rearchitecting efforts, and integration lifecycle oversight.

Implementation Steps

- CIO pulls integration developers from system support roles (focusing on web application development, SOAP and REST APIs, ETL, and identity and access management skills), consolidating fragmented expertise from across the enterprise into a single team. "Teams" can be physical and organizationally redesigned, or more flexible "working groups" that pull in staff from different domains.
- Team responsibilities are defined to cover two-directional integration (recapturing new data from third party system), platform and process standardization, identity management federation, and campus data exposure patterns.
- Integration teams partner with project managers, frontline units, and distributed IT to provide blueprints for incoming integration projects, and to provide implementation support as required.
- In the absence of new projects, integration teams devote time to existing architecture management, focusing on efforts to rationalize complex connections and implement loose coupling to overloaded systems of record.

Benefits to Institution

- Central visibility into all integration efforts across the institution
- Increased standardization and best-practice adoption
- c. 50% decrease in software onboarding timelines
- Increased ability to rationalize integration architecture

> "Integration was a second or third priority for people. Primarily they were an application developer, for example, and they only focused on integration secondarily. Making integration somebody's job changes the game – the progress that comes with focusing that attention is huge."
>
> Executive Director, Enterprise Applications
> *Public Research University*

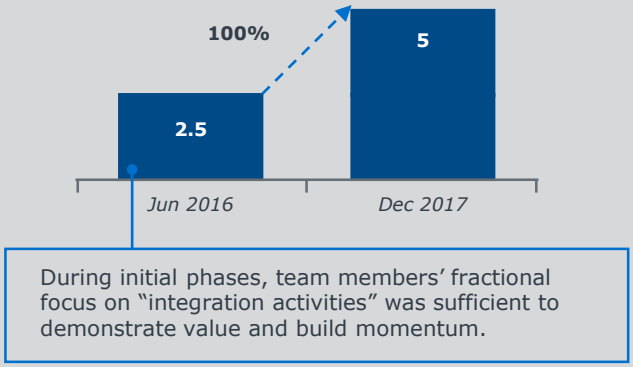
Spotlight Practice

Kappa University[1]

At Kappa University, consolidating developers from across the IT organization into a single Integration Competency Center led to an "Institution First" Mandate for integration builds, as well as a host of speed and performance improvements through data feed rationalization, process standardization, and improved data management.

Staffing the Integration Team at Kappa: Start Small, Focus on Skills

Kappa's Integration Competency Center Started Small, Fractional—Doubled Over 18 Months



During initial phases, team members' fractional focus on "integration activities" was sufficient to demonstrate value and build momentum.

Desired Experience Focused on Real Time Data Integration Skills

- Staff have web application development background
- Familiar with calling SOAP and REST APIs
- Experience with ETL and replicating data
- DBAs often poor fit due to discomfort with real-time

Kick-Starting an Integration Competency Center with Existing Capacity

Finding the Right People

While likely candidates will always be found already doing integrations in central IT, creative sourcing can yield extra capacity:

- **Central IT organizations** should leverage progressive IT thinkers in identity and access management, web applications, and enterprise services groups
- **Distributed IT organizations** likely house numerous developers with the desired integration experience
- **Resource-constrained** institutions can look to involve computer science students and avid developers for R&D

Rightsizing the Format

Not every institution can afford an immediate organizational reshuffle, but consolidating resources along a spectrum will deliver gains:

- **Virtual convening** allows organizations with fractional integration team staff to begin making progress on a shared enterprise-focused mandate
- **Regular "brown bag" events** enable focus groups to meet from integration groups across the institution

Codifying Shared Knowledge

Realizing the potential of shared focus requires standards and processes for aggregating insights and scaling best practices:

- **Online integration repositories** such as GitHub provide spaces for developers to record integrations for collaborative working
- **Initialed documents** allow developers to find colleagues who completed work to facilitate discussion, with the added benefit of promoting better integration and documentation hygiene through broadcasting responsibility

1) Pseudonym.

Spotlight Practice

Kappa University[1]

Setting the Vision: Suggested Integration Team Mandate Prioritizes Institution-Wide Needs

To maximize the efficiency of newly aligned staff, CIOs should set the team's objectives with specific focus on data and integration work that moves the institution towards campus-wide standardization and economies of scale. Guidance for integration teams or service owners should include:

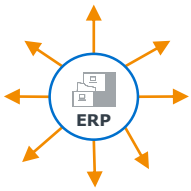
- Ensure that data comes back in a clean, maintained, and regimented way for data analytics
- Standardize platform, programming, versions, and naming conventions around shared best practices to take decision-making out of developers' hands
- Partner with Identity Management to guarantee identities are kept consistent across systems
- Work with Data Implementation team to identify which new data points must be uncovered

Cases in Point: Scaling for the Institution Frees Time, Speeds Development, and Improves Technology ROI at Kappa

1

Flat File Ninja: Rationalizing Existing Legacy ETL Feeds into a Single Extract

Working together across systems and extracts, the integration team were able to analyze the disparate integrations feeds from the ERP and consolidate them into one single extract. The loose coupling saves IT staff time and funds, and frees up resources for innovation:



Before

330 individual feeds
High maintenance effort
High ERP system stress

After

1 single data pull
Low maintenance effort
All logic consolidated

"We were able to consolidate all those flat file integrations into one. **That was like adding time to the clock.**"

Executive Director, Enterprise Applications
Public Research University

2

Three Integration Team Wins Onboarding "Handshake" Career Services Tool

Onboarding new tools for the institution according to the Integration Team mandate reduced time to deployment, improved analytical efforts at the institution, and enabled technology investments to enhance the institutional mission:

Faster Software Onboarding

50% reduction in onboarding time

Increased Analytical Capability

Efforts to "get data back" from Handshake provided IT with valuable information about:

- Interviews
- Job offers
- Job placements

Differentiating Value for Students

Real-time updates to Handshake give students a competitive edge over those at institutions with manual updates once per term

1) Pseudonym.

Developer-Led iPaaS Evaluation Project

Evangelizing Next-Generation Tool Adoption from within the Developer Community

Practice in Brief

CIOs or Enterprise Technology Directors appoint a talented and engaged staff member to dedicate time to integration tool and architecture research due diligence in advance of major systems upgrades or implementations. Evaluation considers institution-specific benefits and risks, and recommendation uptake improves with developer champion.

Implementation Steps

- The CIO or authorized deputy nominates a talented, leadership-oriented developer to undertake an integration tool research project. A staff-respected individual with research and development interests and a progressive mentality is most likely to lead a successful project.
- Project questions and deliverables are defined in advance, for example: What are the costs and benefits of iPaaS for our institution? Should we be looking for an on premise or cloud-based platform for integration? What kind of tooling will see greatest adoption and impact within our organization, based on our current skills portfolio?
- Research lead spends dedicated time researching tool and architecture solutions, including literature reviews, pricing consultations, vendor trials, and collaboration/input gathering from fellow developers. Fractional commitment of 25% FTE time spend across a 4-6 month period facilitates in-depth research.
- Developer presents research and strategy adoption business case to CIO and IT leadership team to evaluate results and determine next steps according to evidence-based recommendations.
- Researcher-developer leads onboarding and adoption of recommendations, educating fellow developers on tool adoption requirements, selection processes and training availability.

Benefits to Institution

- Head-start on large-scale integration projects
- Improved uptake of solution recommendations
- Institution-aware tool evaluation rubrics and assessments

> “What I hear from a lot of my peers is that by the time they realize the complexity of their core systems upgrades or replacements it’s too late to change course or introduce new tools – giving a great developer a good head start means you can hit the ground running.”
>
> Michael Cato, CIO
> *Vassar College*

WANT TO KNOW MORE?
Access the Practice Implementation Intensive at
eab.com/itf/iPaaSproject

Spotlight Practice

Vassar College

At Vassar College, the CIO tasked a senior programmer/analyst with evaluating the iPaaS marketplace 18 months ahead of their upcoming ERP migration. Allowing the analyst to research the tools in depth ensured a good-fit solution with flexible contract terms and a simple user interface, and his gravitas within the organization promoted adoption, enabling them to scale the solution ahead of their campus-wide project.

Respected Staff with Research Acumen Drive Effective Projects, Improve Adoption

Organizational Standing

- Experience with current integration tools and processes
- Respected among the campus developer community
- Recognized asset of the central IT organization

iPaaS Researcher

Innovator Potential

- Self-monitoring persistence for assigned projects
- Comfortable with product and risk explorations
- Inquisitive, detail-oriented, and future-focused

Evaluate Early to Build Competency For Tomorrow's Projects

Factoring in Research Timelines and Low-Risk Training Projects Amplifies Investment Successes

18-Month Adoption Timeline at Vassar College

SUMMER 2015 – IPAAS EXPLORATION

WINTER 2015 – PROOF OF CONCEPT INTEGRATIONS

WINTER 2016 – WORKDAY INTEGRATION BEGINS

SUMMER 2017 – WORKDAY INTEGRATION ENDS

Clearly Defined Project Purpose and Timeline Sets Stage for Success

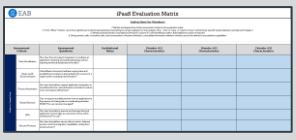
- Define the project scope and desired deliverables in advance
- Put research in the context of industry trends and campus-level decisions
- Begin research in advance of core systems updates or implementations
- Aggregate information from multiple sources: vendors, consultants, literature

Vassar's Frontloaded Evaluation Paid Dividends During ERP Migration

25%
Of one developer's time spent over **4-6 months** to conduct iPaaS evaluation

98%
Time saved during proof-of-concept integrations for bookstore system change

50%
Reduction in consultant costs during large-scale ERP migration project



To access a downloadable template for evaluating the capabilities and fit of different vendors' iPaaS platforms, visit: **eab.com/itf/iPaaSproject**

Consensus-Driven Tool Adoption

Collaborating Across Developer Groups to Increase Standardized Tool Uptake

Practice in Brief

Recognizing that mandated tools often face resistance among various IT developer staff, CIOs at some institutions are bringing in distributed and siloed developers to test prospective standard tools against collaborative business solutions. Bottom-up consensus through decision ownership drives widespread tool adoption, increasing standardization and maximizing ROI from platform tool investment.

Implementation Steps

- CIO or other IT leadership figure selects short-list of leading integration vendor solutions to bring demonstrations to campus (perhaps as a result of Developer-Led Tool Evaluation).
- Month-long sandbox environment established for institutional trials of different tools, using real business data and applications.
- IT leadership mandates engagement from senior developers, who are scheduled to come in for testing using business use case scenarios for directed experimentation.
- Groups of developers from infrastructure and application teams are brought in together to build new business solutions, with repeat trials against the same problems to track quickening speed-to-solution. Cross-domain business problems should be selected to facilitate collaboration among developers with experience across disparate systems.
- During group sandboxing efforts, senior developers are required to come to a consensus for adoption based on the collaborations and test cases from both domains.

Benefits to Institution

- Increased adoption of standardized tools
- Increased collaboration between IT silos
- Reduced resistance among independent developers

> We'd tried to bring in standard tools before, but our developer groups liked building solutions their own ways – they just didn't want it, and it wasn't used. By bringing everyone into the testing phase, we drummed up excitement, so the staff were actually eager to bring something on board, and we've seen a 100% uptake across groups!"
>
> Assistant VC, Enterprise Applications
> *Public Research University*

DISCUSSION GUIDE

Equipping IT for Integration at Scale

Using this Report to Speed Consensus for Change

Many Forum members use our research as an occasion to convene IT and campus leaders. Together, they review best-practice lessons from innovative higher education institutions and deliberate about the need to revisit policies, implement new processes, or reallocate staff and budget dollars on their own campuses.

Forum reports now feature self-evaluation diagnostics and discussion guides that IT leaders can use as a backbone for focused working sessions. We recommend that members distribute this report to the relevant stakeholders as pre-reading to establish a common vocabulary and fact base. Then, spend approximately 60 minutes going through the diagnostics and discussion questions to decide whether policy course-corrections or resource re-allocations make sense. Forum staff would be delighted to facilitate such discussions by providing coaching in advance, supporting on a private webconference, or participating live on your campus.

Creating a One-Hour IT Team Working Session

Step 1: Send report to IT leadership or architecture task force and committees for pre-reading

Step 2: Convene group to discuss diagnostic questions and assess need for adopting profiled practices

Step 3: Contact IT Forum for implementation support:

- Unmetered consultation with Forum researchers
- Networking contact with profiled institutions
- Model policy and process templates

Triumvirate Project Ownership

To discourage sub-optimal technical architecture decisions during technology solution projects, some colleges and university are elevating the standing of technical architects in the project management process. Practitioners believe that establishing project co-ownership between business users, solutions architects, and project managers tempers cost or timeline demands with thoughtful consideration of technical and architectural tradeoffs.

1. During IT project implementations, with whom does final authorization reside for decisions in the following categories?

	No Owner	Project Manager	Business Owner	Technical Architect	Other (Who?)
Delivery timeline	◯	◯	◯	◯	_____
Budget allotment	◯	◯	◯	◯	_____
Architectural validity	◯	◯	◯	◯	_____
Tooling used	◯	◯	◯	◯	_____
Documentation requirements	◯	◯	◯	◯	_____

If any single individual has ownership of 3 or more variables, consider reallocating authorization rights.

2. How much emphasis do the following priorities receive when we evaluate campus IT projects?

	Too Much Emphasis	Appropriate Emphasis	Insufficient Emphasis
Low upfront cost	◯	◯	◯
Low total cost	◯	◯	◯
Fast speed to delivery	◯	◯	◯
Technology interoperability	◯	◯	◯
IT supportability	◯	◯	◯

For overemphasized objectives, consider options to limit the authorities of involved stakeholders.

For underemphasized objectives, consider new assessments, evaluation rubrics, and authorization rights.

Integration Competency Center

As institutions recognize the need to cultivate their integration maturity, some are aggregating distributed integration staff into dedicated teams with a 100% focus on integration work. Staff consolidation and service ownership brings benefits in through standardization, best practice sharing, and economies of scale across all types of integration work.

Found in Forum Research

Typical Practice **Frontier Practice**

1. Who is responsible for implementing integration work on our campus?

External consultants and partners

Distributed developers and application owners

Central groups with particular system emphasis

Dedicated group working across all systems

2. How are we cultivating IT expertise in integration best practices and implementation?

Side-of-desk job for involved IT staff

Informal collaboration between interested parties from different IT domains

Dedicated integration team incentivized to advance maturity

3. Which of the following competencies have we mastered in our integration design and implementation processes?

	Absent	Developing	Mature
ETL	○	○	○
SOAP / REST APIs	○	○	○
Service Oriented Architecture	○	○	○
Identity and Access Management / Single Sign On	○	○	○
Master Data Management	○	○	○

For competencies that are not yet mature, consider staff development or augmentation options and tooling changes to build campus integration capacity.

Developer-Led Tool Evaluation

Recognizing that getting ahead of large-scale integration projects is paramount to implementing best-fit architecture in line with current industry standards, progressive CIOs are charging their best developers with finding the institutional path forward into next-generation integration platforms. Tasking an in-house developer with evaluation ensures an institution-aware analysis of benefits and risk, with ancillary benefits in better adoption of recommendations among fellow developers.

Found in Forum Research

Typical Practice **Frontier Practice**

1. When does our institution evaluate and enhance our capacity for integration work?

Integration capacity not evaluated

Only when faced with new requirements during projects

Consistently, independent of projects, anticipating need

2. Who in our institution is responsible for IT architecture and integration tool strategy recommendations?

No strategy ownership

CIO

Functional IT leaders

Empowered frontline staff member

3. How are IT staff encouraged to maintain up-to-date awareness of integration and architecture best practices?

No explicit incentives exist – reliant on developer interest

Informal practice sharing among campus developers

Formal discovery and internal education processes empower developers

Consensus-Driven Tool Adoption

Understanding that standardized tooling is most effective at scale, some CIOs are involving integration developers from different areas of the institution during the tool selection process to drive uptake of new tooling. Group-based sandboxing environments expose developers to tools early and evangelize the benefits directly to future users.

Found in Forum Research

Typical Practice **Frontier Practice**

1. How standardized are tools among our integration developers?

No standardization: tools and processes are bespoke

Standards are defined, but not practiced

Standardized tools and processes used across campus IT

2. Who participates in evaluating tools or solutions for the IT organization?

IT leadership

Select IT staff members through committee processes

All affected staff members

3. How are evaluations arranged within the IT department?

Demonstration given to those available during evaluation

Developers opt-in to testing environments and product trials

Leadership mandates engagement and schedules workshops

4. How do we test the function of new IT tools during evaluation?

Based on analysis of vendor demonstrations

Based on staff engagement in vendor-led scenarios

Based on institution-specific use case experimentation

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