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## Adopting the Enterprise Perspective

How public sector organizations can effectively achieve Enterprise Integration

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## A Look Inside....

# Forecast: Increasing Cloud Coverage

In a time of increasing cloud adoption and data proliferation, agencies and departments of all shapes, sizes and complexities are noticing that while cloud may alleviate former issues, new integration-oriented ones rise as a result.

Public sector organizations, government departments, and agencies adopt cloud solutions to achieve two key business objectives: (1) deliver services effectively to achieve its mission, and (2) do so in an efficient manner that yields cost savings.

The required cloud integration activities to achieve this mission of cloud adoption account for a progressively higher amount of resources required to build a true digital ecosystem. This is not surprising, as the share of "custom build" applications have decreased, losing ground to Commercial off the Shelf (COTS) and Software as a Service and Platform as a Service (SaaS/PaaS) over time. Although this shift to COTS products provides pre-packaged service delivery, it increases the need for a dedicated Enterprise Integration Platform (EIP) to enable interoperability across these architectures.

The complexity of achieving these integration requirements across a variety of interface types falls on the EIP, as integration projects usually emerge as an offshoot of large cloud implementation projects. A classic side effect of such efforts is that each major application in an organization develops its own "integration platform" appendage, countering the two business objectives which led to cloud adoption in the first place.

Adopting an enterprise integration strategy tailored to public sector organizations may alleviate these integration woes in an increasingly, "as-a-service" world. The following trends are growing across public sector stakeholders, which underscore the importance of this integration platform adoption:[1]

1. *Digital Ecosystems* - Involves digitally connecting with businesses, universities, transport and other societal stakeholders to engage with its digital citizens, allowing governments to establish a holistic view of the customer to public service delivery (e.g., using unique digital identities).

2. *Future of Work* - The rapid adoption of cloud has dramatically increased the mixed environments of on-prem, private clouds and true cloud environments in which employees of all clearance environments must be empowered to digitally collaborate.

3. *Future of Regulation* - Increasing policy focused on reducing integration costs without sacrificing security posture imposes pressure on refining legacy integration pathways and architectures.

4. *Increased Transparency* - Increasing demand for government-public datasets (e.g. COVID, funding, emergency response, etc.) across a multitude of source systems and platforms requires data quality, responsiveness and agility to achieve respective mission requirements.

# The Need for Enterprise Integration Strategy

Given departments' and agencies' push to modernize by increasing integration and lowering cost without sacrificing security, the need for scalable architecture and integration strategy with Enterprise Integration Platform (EIP) is key to unlocking the value of its investments in cloud, Artificial Intelligence (AI), Machine Learning (ML), Robotic Process Automation (RPA) and other key tools and capabilities.

Integration platforms are like data warehouses in the sense that their value is realized by handling all transactions from the entire enterprise and managing it centrally. If you start fragmenting them, you are defeating the very purpose of having them. Individual projects often are focused on their immediate goals and do not have the enterprise-wide vision needed.

Enterprise integration strategy consists of recognizing that integration is a shared service, a platform by itself that helps all the other applications and relative datasets talk to each other. This is essential to the typical goals of centralized management, faster partner onboarding, and a lower Total Cost of Ownership (TCO).

This comes with its own challenges. Decision makers often ask questions such as, "What are you integrating?", "What business problems are you trying to solve?", and "How do you assess which systems, applications, and third-party data services are in-scope?" Answering these questions is not easy, but the idea here is not to catalog every integration at the outset. It is about building a platform that will integrate your digital ecosystem - both current and future. You can make this future-proof by aligning the capabilities to the requirements of your overarching enterprise integration strategy. Some best practices that we have seen successfully implemented in industry include:

- **Real-Time Updates:** Based on demand, resources can be supplied and released to scale rapidly.

- **Increased Productivity:** Cloud systems automatically control and optimize resources, and they can monitor, control, and report usage, which provides transparency for both the provider and the consumer.

- **Workflow Automation:** Access is available over the network and through various client platforms (e.g., mobile phones, tablets, laptops, and workstations).

- **Resource-pooling:** The provider's computing resources are pooled to serve multiple consumers, with resources reassigned according to demand.

**What is a Digital Ecosystem?**
A dynamic, interconnected network that facilitates exchanges between providers and consumers of data. Ecosystem integration allows departments and agencies to leverage new and legacy technologies – and build automated processes around them – to continually grow to meet the evolving mission.

**What is Enterprise Integration?**
Enterprise integration means the architecture that focuses on system interconnection, electronic data interchange, product data exchange, and distributed computing environments. The delivery of a comprehensive Enterprise Integration Strategy requires the following services:

**[1] Integration Assessment, Strategy & Architecture**
Developing an API-led approach through assessing, providing use cases and defining the overall strategy of the organization.

**[2] Application, Data & Process Integration**
The application, data and process integration strategies complement and enable each other to create a coherent and complete framework, supported by on-premise and cloud infrastructures, with adequate security considerations. Here are some of the key aspects of each integration strategy component.

**[3] API Integration Services and Enablement**
Enables the transformation of existing back-end services to APIs designed to simplify customer service and reduce time-to-value while helping organizations migrate from expensive COTS appliances to cloud-friendly products and/or open source technologies.

# The Business Case for Enterprise Integration

Building an EIP is an investment and like all investments it raises the question: "Who should invest and why?" In most organizations, the CIO owns the IT organization; however, most applications that the IT organization manages have business owners who guide the funding, functions and upgrade plans. This creates an interesting dynamic where the IT organization must justify their business case for re-platforming integrations that apparently work well in production. It also provides a unique opportunity for synergy as the IT organization has complete visibility over the entire technology landscape. Some key insights[2] support the business case are:

### REDUCE, REUSE, RE-INVEST
Poorly defined integration is costly to manage and modify – the savings for an API happen not when it is created, but when it is reused. Every additional API or interface costs time and money to maintain. It is not uncommon for project teams to duplicate APIs as they work on their respective projects, thereby creating a several point-to-point interfaces using a fancy (meaning costly) integration platform. And some cloud-based platforms charge by the API. Add to this the human cost of monitoring and managing this ever-growing list of APIs.

### CLOUDY WITH A CHANCE OF DOWNFALLS
Cloud is a fact of life and here to stay – a heterogenous environment with applications spread across multi cloud and on-prem environments can be an integration challenge if addressed piecemeal. An interface in such an environment must navigate firewall rules, IPsec tunnels, DNS entries etc. and things can easily escalate to unmanageable proportions if each one must be provisioned separately. An EIP simplifies this by acting as a hub – firewalls talk to the EIP only and only on predefined ports, so the network boundaries are cleaner and safer.

### INTEGRATION UNLOCKS THE POWER OF BIG DATA
Big data is an integration problem – analytics work great if you collect the data in one place, sorted and tagged. The challenge is to collect this structure and unstructured data from the different sources, data formats, clean, validate and cross-reference for analytics to use. An EIP makes this a lot easier.

### WITH GREAT INTEGRATION COMES GREAT RESPONSIBILITY
This is not just limited to access controls and encryption; a common platform is a useful tool for managing audit trails and setting monitors. It can also be the place where data redaction and obfuscation filters can be implemented if needed.

### INTEGRATE TO YOUR ADVANTAGE
The EIP also serves as the API library to adds new services over time. This ready-to-use library of APIs improves business agility, makes it easier to build new applications and improves overarching security posture for PII and PHI datasets by embedding industry leading cyber countermeasures into the fabric of the EIP and APIs it manages. It opens channels for better customer experience and 360-degree customer views.

# 5 Steps to Implement Enterprise Integration

## Step 1: Learn

One of the most important steps organizations can take in developing an enterprise integration strategy is to find out as much about their organization's business and IT operations as possible. This includes researching the possible pitfalls that must be managed from acquisition to adoption.

Various implications should be considered when deriving the enterprise integration strategy, such as: [3]

**IT security** — How are the services and COTS products secured? Who is responsible for implementing and managing IT security measures?

**IT skills** — Are the right skillsets in place to plan, implement, and run cloud solutions that won't put the organization at risk?

**IT support** — Who is responsible for providing support? Can the internal IT helpdesk and operations support this solution?

**Privacy** — Who is managing access to the solution and its data repositories? What regulations and compliance needs must we consider?

**Finance** — Who is responsible for financing the solution? How will operating capital be allocated this year and next?

**Data ownership** — Who retains ownership of data stored in a cloud environment?
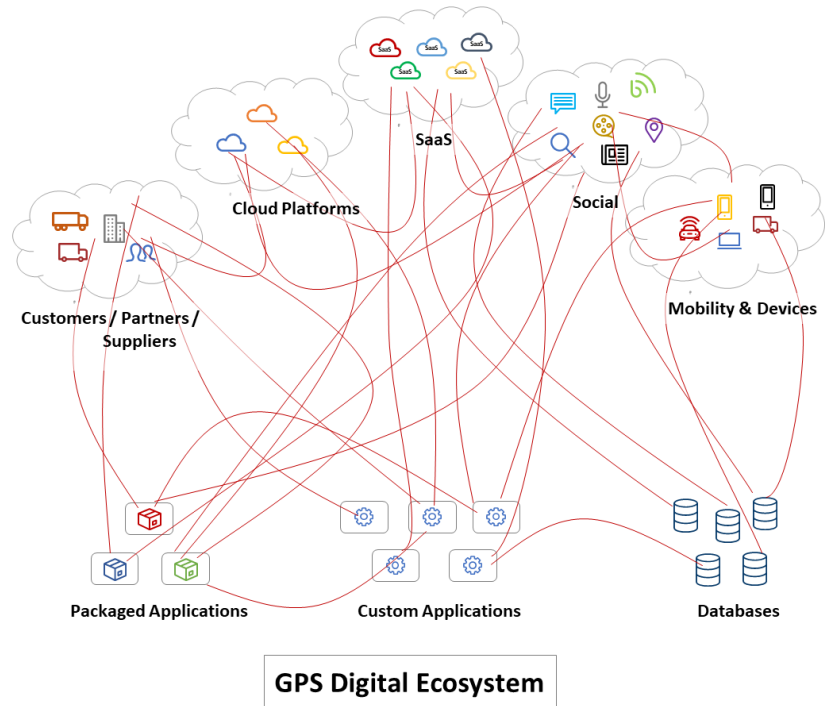
**Contract management** — What are the terms and conditions of the contract? Are they competitive?

**Vendor management** — How will services provided by the vendor be managed?

**Service level management** — How will service performance be tracked, monitored, and reported?

Knowledge Management also plays a critical role in mitigating risks and controlling the proliferation of cloud service usage by an organization's own staff, which gives rise to the so-called shadow IT. [3]

By clearly communicating that individual enterprise integration solutions can

have fundamentally different management requirements and considerations, organizations can help taper the rise of shadow IT and start implementing informal controls and governance functions. Moreover, including the organization's broader business groups (e.g. such as legal and compliance) will help to mitigate applicable risks as accountability is shared across multiple business areas.

This first step does not seek to halt or impede an organization's progress toward EIP adoption. Many organizations want to 'do enterprise integration right' but the reality is that few organizations get it right the first time, so this learning step should complement a company's journey to integration while helping to make sure it doesn't go too far down the wrong path. [3]



**GPS Digital Ecosystem**

# Step 2: Plan

The second step is to initiate planning exercises to identify where the organization is going and the best way to get there. Our experience tells us successful EIP adoption is primarily founded on two things: mature IT fundamentals and solutions that are just the right fit for purpose. [3]

The EIP strategy typically considers an organization's current IT landscape and assets, maps the desired future state and identifies gaps. These gaps are translated into actionable goals for the integration platform

and functions the platform *can* take on will inform the next steps. As noted earlier, not all workloads are suitable for cloud environments and, similarly, not all cloud capabilities may provide the same level of strategic alignment with an organization's vision. Completing a readiness assessment identifies the gaps the organization may have in its integration capabilities and defines a roadmap to remediate those risks should an integration strategy not be implemented. [3]

# Step 3: Formalize

With an enterprise integration vision and strategy in place, the third step is to formalize its adoption through the development of policies and an operating model. Effective policy development enables organizations to drive value from their investments. [3]

From experience, we recommend taking a proactive approach to policy development. This requires an organization to apply its knowledge of both current and future integration requirements in order to manage its exposure to risk. Building such a policy typically involves providing guidance in the following areas: [3]

**Contract management** — What terms, conditions, and clauses must the organization be aware of and actively manage?

**Financial management** — What are the financial requirements for payments, budgeting, and accounting?

**Vendor management** — What is the organization's role in managing the delivery of integration services?

**Information management** — How must data be managed in the EIP?

**IT security management** — How must data and information be secured in the EIP?

**Governance** — How will decisions specific to EIP solutions be made? Who holds accountability? How can governance be made flexible enough to manage risk while supporting innovation and cost reduction?

Selecting and developing the right operating model will depend on an organization's IT maturity, structure, and skillsets, among other considerations. What works for one may not work for another, so it's important to conduct an assessment at the outset to make sure the right resources are put in the right place.

# Step 4: Adopt and manage

When organizations have finished preparing the groundwork, the next logical step in their journey to enterprise integration is to adopt and implement the tools they need to provision and manage their selected solutions. While early adopters have well-articulated visions for how they should manage their integration goals, many organizations are not at that level of maturity. We recommend adopting the various tools provided by enterprise integrators and CSPs since, given the rapid evolution of cloud services, the market for management tools is still immature.

In our experience, there are several fundamental capabilities and features that need to be evaluated when selecting a vendor. The following features need to be considered:

- Architecture (multi-tenant or not)
- Ease of Use and Skillset Dependency
- Addressing Complex Requirements (out of box vs in house)
- AI Capabilities
- Data Security
- High Volume Data Processing
- Licensing Costs
- Case Studies
- Product Roadmap



Figure 1. Magic Quadrant for Enterprise Integration Platform as a Service

Source: Gartner (August 2020)

# Step 5: Evolve

The last step in the journey is for organizations to take full advantage of the capabilities and the IT environments they've cultivated. The highly scalable and on-demand nature of integration services make them perfect candidates for experimentation and innovation. As one of the most significant barriers for innovation is fear of failure, the EIP provides avenues for employees to re-envision business processes and develop proof of concepts for little investment and with limited negative impact. [3]

Modern cloud-based solutions, such as platforms-as-a-service (PaaS), offer organizations the ability to rapidly transform their operations with limited procurement requirements and upfront investment. Using various IT capabilities, organizations can digitize their services, such as DevOps, and house them in a centralized system that takes advantage of scalable, available, and secure IT infrastructure.

Since vendors control when software updates are released, organizations will always have the most current version available. That means users will have leading functions and capabilities at their fingertips, enabling them to improve how they execute their work. Although this may require

focused organizational change management efforts to guide adoption as modern functionality creates opportunities for employees to rethink how they perform their work.

Finally, since integration solutions reduce IT operational requirements, organizations can redirect their IT staff to deliver more effective IT and operational services. This can be done by enabling their employees to acquire new IT skillsets, such as agile development and prototyping, and to take advantage of new capabilities, including resource pooling and application development.

# Conclusion

In today's environment of constant and accelerated technological evolution, it is difficult to comfortably stay on top of all the developments in the cloud ecosystem.

Evolving vendor landscapes, new solutions, products and services, constant innovation and disruption offer endless opportunities, and endless opportunities to get things wrong without a proper enterprise integration strategy, tools and techniques.

When done correctly, leveraging an EIP provides transformative opportunities for organizations. However, in order to do so, organizations need to possess the appropriate vision, ability to execute, and deliberate governance to manage.

Following a structured approach can enable an investment in an EIP to pay for itself, not only in terms of the money saved, but also in improving the agility of the IT ecosystem.

# Contacts

For more information about implementing an EIP for your organization, please contact:

**Oniel Cross**
**Principal, Deloitte**
**Consulting LLP**
**Cloud Engineering**
Cloud Integration Service
Leader
ocross@deloitte.com

**Samiran Ghosh**
**Senior Manager, Deloitte**
**Consulting LLP**
**Systems Engineering**
Integration Services
Development Leader
samighosh@deloitte.com

# Senior Contributors

**Akhter Khan**
**Manager, Deloitte**
**Consulting LLP**
**Cloud Engineering**
akhkhan@deloitte.com

**Muhammad Khan**
**Senior Consultant, Deloitte**
**Consulting LLP**
**Cloud Engineering**
muhakhan@deloitte.com

# Endnotes

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