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SMART INTEGRATION, AN ESSENTIAL BUILDING BLOCK FOR DIGITAL PLATFORMS

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I. INTRODUCTION: THE SHIFT TOWARDS PLATFORMIZATION

Digital platforms are disrupting all facets of business, including customer engagement, risk management, workforce operations, and other enterprise functions. This disruption in business operations is leading to an increasing number of enterprises to adopt platforms to accelerate their digital transformation journey and remain competitive.

Zinnov analysis of 100 top global enterprises across industry verticals reveals that almost 85% of them have already invested in building digital platforms

Digital platforms cater to an entire range of enterprise needs, from insights platforms that deliver deep insights to organizations to technology infrastructure platforms on which other platforms are built, to service platforms that allow for various enterprise services to be delivered.

Platforms are evolving to be more open, intelligent, and connected. 'SIMPLE' – Swift, Integratable, Modular, Pooled, Low-Touch, and Experiential are the defining characteristics of modern platforms (Figure 1). Successful platforms have some degree of these characteristics embedded in them.

S WIFT	High speed use case development and deployment
I NTEGRATABLE	Easy to integrate with external platforms and applications
M ODULAR	Independently functioning and microservices-led architecture
P OOLED	Ecosystem partnerships for use case acceleration
L OW-TOUCH	Automated workflows around deployment, usage, and management
E XPERIENTIAL	Best in class user experience across all form factors

Figure 1: Characteristics of Successful Digital Platforms

These characteristics are defined in further detail below:

- **Swift:** Easy and fast to build applications on top of them
- **Integratable:** Easy to integrate with other enterprise applications and technology systems
- **Modular:** Built with microservices architecture where each part of the platform can function independently
- **Pooled:** Designed to evolve through ecosystem contributions
- **Low-Touch:** Deployment and functioning are largely automated through next-generation techniques
- **Experiential:** User experience is prioritized; designed from a 'customer-in' perspective

The digital transformation that companies have undergone over the past few years has resulted in numerous applications being used across various functions and teams within the organization. A bank, for instance, could be running and measuring marketing activities in one system, handling customer enquiries in another, and collating and recording detailed customer account information in yet another system. Further, its customers too would be using various channels such as its website or CRM system to interact with it.

Zinnov analysis of 300 global companies reveals that major enterprises are leveraging applications and platforms from 40+ ISVs (Independent Software Vendors) on average

Using a variety of applications results in silos of information, hampering employee collaboration and productivity, customer experience, and potentially impacting business growth. By employing applications and platforms that are tightly-knit and can communicate with each other, enterprises can push for better efficiency and unlock new avenues of growth. Leading software vendors have realized this, and hence, 'Integratable' or the ability to readily integrate with other digital platforms and applications has emerged as one of the most important characteristics of platforms. Slack, one of the top collaboration and productivity applications, comes with over 800 in-built integrations, and this number has been increasing regularly.

The need for integration is further underscored by the vast amounts of data being generated across different systems, thanks to the proliferation of the Application Programming Interface (API) economy and the vast number of Internet of Things (IOT) devices in use. This data is available in multiple structured and unstructured formats. And for companies to derive actionable insights from this data, it is critical to leverage this in conjunction with various internal and external data sources, which can be achieved with platforms that have the ability to integrate multiple systems.

Integration refers to building of software assets that allow for communication between technology systems within an enterprise as well as in the external ecosystem to facilitate unified and seamless business operations. It also synchronizes data originating from different sources in different formats. In this whitepaper, we explore the increasing role of integration in today's platform-led economy, the various categories of integration, and the degree of adoption of these different types of integration across enterprises. We will also deep dive into the factors leading to the increased demand for integration and the challenges that enterprises face in their integration journey. Finally, we cover the best practices to be deployed for successful platform integration initiatives.

II. DECODING DIFFERENT TYPES OF INTEGRATION

The ability to integrate various digital platforms and enterprise systems enable seamless workflows and unlock possibilities through analysis of data residing in different applications. Successful platforms do not just enable internal collaboration, but also allow companies to work with the external ecosystem.

Integration is broadly categorized into the following four categories (Figure 2).

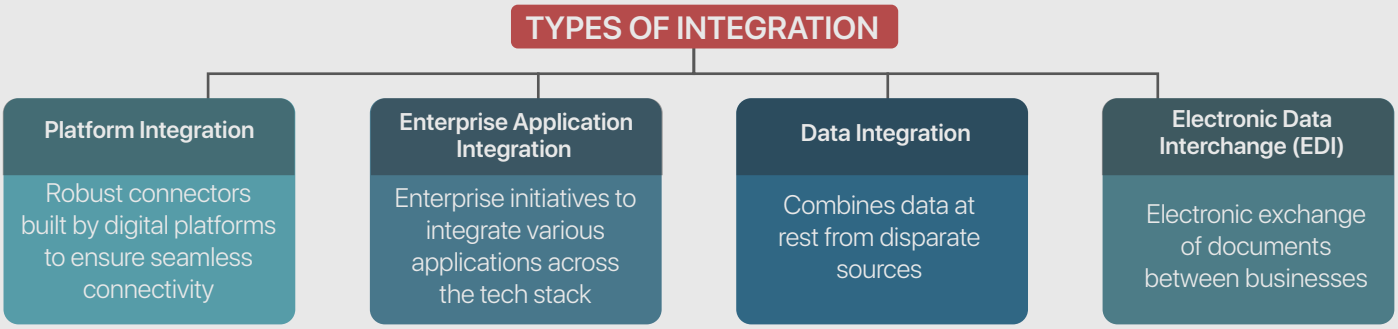

Figure 2: 4 Key Categories of Integration

Platform Integration

Enterprise Software companies have traditionally been building connectors and adapters used to link different applications. In recent times however, with the acceleration of the digital transformation of enterprise functions, focus on tapping data across different operational groups in the company, and increased collaboration, these connectors are not only essential, but have become critical. Connectors allow enterprises to integrate applications rapidly with little to no development effort. They can also be customized and scaled based on user requirements.

But software companies have varying maturity in their platform integration programs. To better understand the companies' platform integration focus, we analyzed seven major horizontal software segments based on the initiatives of leading platforms in each segment (Figure 3). Salesforce, the leading CRM platform globally, has over 1700 connectors and middleware solutions available for its platform that allow it to integrate with a whole range of different platforms and applications.

ENTERPRISE SOFTWARE CATEGORIES	PLATFORM INTEGRATION FOCUS	ILLUSTRATIVE CASE STUDIES
CRM/Sales & Marketing		Portfolio consists of 1700+ Salesforce CRM connectors and certified middleware solutions
Finance & Accounting		Integrates with 650+ third-party applications such as Fathom, Shopify, and Greenback
ERP		Allows integration with other Microsoft solutions and third-party applications such as BI applications and other ERP systems
Communication & Collaboration		Provides 800+ integrations with various applications like Zoom and Dropbox
Supply Chain Management		Pre-built templates and standardized connectors for its platform that cut implementation effort and time by up to 90%
Human Capital Management		Offers real-time integration with other SAP applications as well as with third-party applications
Governance & Risk Compliance		ServiceNow GRC integrates with 100+ third party applications

High Medium Low

Figure 3: Platform Integration Focus across Horizontal Software Segments

CRM/ Sales & Marketing and Finance & Accounting are the top software segments witnessing the maximum investments around platform integration.

Enterprise Application Integration

Often, pre-built connectors provided by the software companies are not available to fulfil the entire gamut of integration requirements of enterprises. This has led several companies to drive internal initiatives to integrate different applications based on their needs.

Enterprise Application Integration involves real-time exchange of information via integration assets that link different applications at a functional level. Based on analysis of application integration initiatives of enterprises across verticals, some applications that are commonly integrated across enterprises include CRM and ERP systems, and MES and ERP applications (Figure 4).

A recent survey revealed that across Banking, nearly 55% of banking executives opine that enterprise application integration is a key element for digitalization. Integration investments in the banking space are focused on open banking-related initiatives that are targeted towards providing an integrated ecosystem of digital products and delivering seamless experience for customers.[1]

In the Manufacturing sector, enterprise application integration efforts are aligned with the modernization of factory operations. It is enabling real-time visibility of production operations and supply chains, predicting production pain points, and operationalizing solutions in real-time. This has led to the integration of MES and ERP systems that manufacturing organizations have in place.

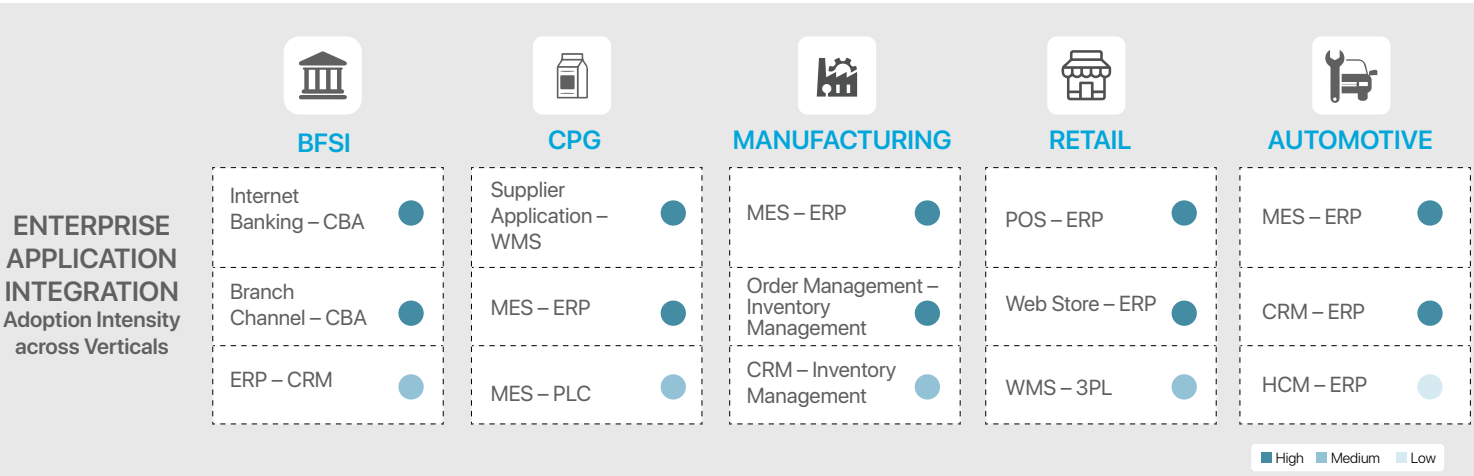

Figure 4: Vertical-wise Integration Intensity in Enterprise Application Integration

Large enterprises in different verticals are deeply focused on integrating applications aligned to their strategy of breaking down organizational and information silos, and driving transformational impact. Unilever has created a center of excellence (CoE) for enterprise business integration within its IT organization and set up a decentralized team to develop application integration assets.

Data Integration (DI)

Data Integration is the process of combining data from disparate sources so that users can access all the information in a simplified manner and have a unified view of the data. This includes ensuring data quality, eliminating redundancy, and standardization of data.

A leading UAE-based telecommunications services provider, worked with Bristlecone to implement SAP PI for the integration of business data between different applications like SRM, MDM, and SPM. This data was consolidated and enriched into Master Data Management (MDM) application and the repository was then made available for use for various applications.

[1] Finextra Research, https://www.finextra.com/blogposting/17276/why-api-integration-will-allow-the-digital-banking-ecosystem-to-thrive-in-2019

CRM – Customer Relationship Management, ERP – Enterprise Resource Planning, MES – Manufacturing Execution System, CBA – Core Banking Application, WMS – Warehouse Management System, PLC – Programmable Logic Controller, POS – Point of Sales, 3PL – Third Party Logistics, HCM – Human Capital Management, SRM – Supplier Relationship Management, SPM (Sales Performance Management

Electronic Data Interchange (EDI)

EDI involves the exchange of business documents in an electronic form between two companies. EDI integration results in increased efficiency from automated transactions and validates content to confirm that the transaction contains all the information required for proper processing. Specific use cases of EDI integration include EDI Billing and Inventory Enquiry.

The graphic below provides a view of the proliferation of EDI across verticals and the top use cases being adopted across each of those verticals.

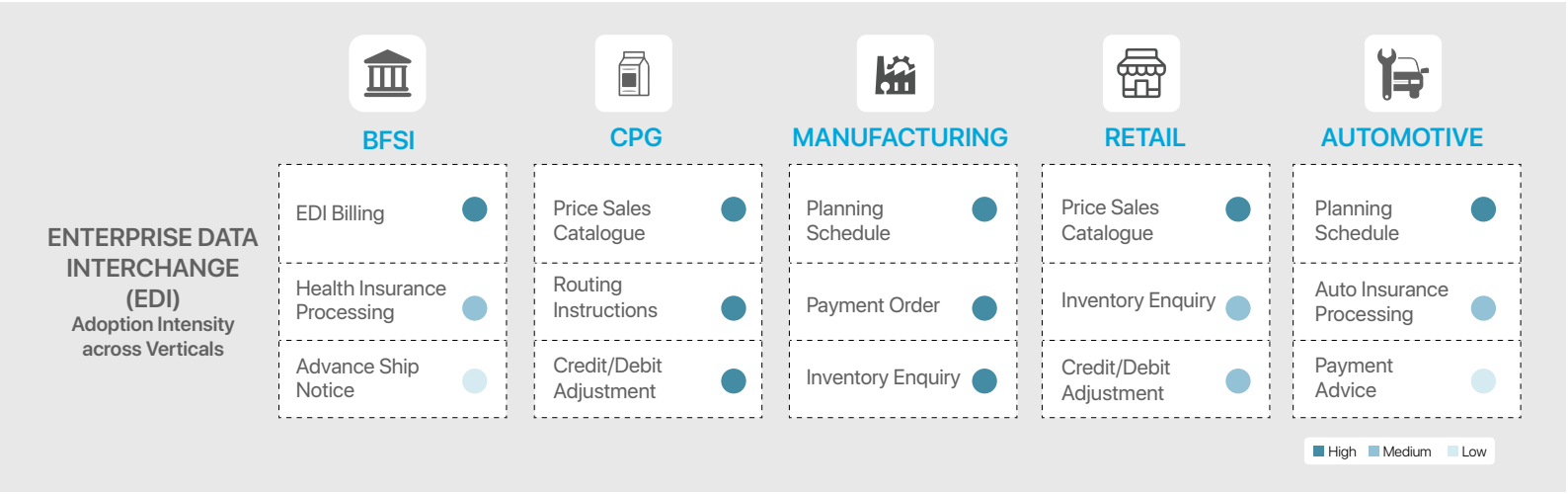

Figure 5: Vertical-wise Integration Intensity in EDI (Enterprise Data Interchange)

EDI finds numerous applications in the Retail, CPG, and Manufacturing verticals, where it helps streamline certain processes like fulfillment, taking orders, and verifying deliveries. This has resulted in enhanced operational efficiencies and a positive impact on the bottom line.

A US-based logistics platform company was facing challenges in shipper onboarding and was unable to efficiently respond to shippers due to an outsourced EDI team, with no control over timelines or technology. To find a solution to this problem, they worked with Bristlecone which helped them set up an offshore factory to deliver services around areas such as EDI, integration testing, map development, managed support, and implementation services. This resulted in 20% efficiency gains for the fast-growing freight platform company.

Different integration types are being leveraged by companies across verticals to drive seamless connectivity across applications, data sources, and tech platforms. The analysis of the application integration adoption across enterprises and verticals, further emphasizes the need for software companies to offer platforms and applications that are integration-ready and offer support for ingestion of data from different sources.

III. EMERGING TRENDS IN INTEGRATION

Given the focus of software companies and enterprises on investing in developing integration assets, the space is fast evolving. The segment is being impacted by the shift in the business landscape across various industries, the transformation across the enterprise technology landscape, and adoption of modern digital technologies. Here are a few trends that are emerging in this space (Figure 6):

Rise of Hybrid Integration

As more and more enterprises are embarking on their digital transformation journeys and migrating workloads to Cloud, there is an ever-increasing need to connect existing on-premises legacy systems with Cloud applications. Hence, there is a growing need for this 'hybrid integration' which has resulted in development of specialized platforms. These integration platforms help connect legacy systems with Cloud applications, providing customized integration workflows, thus extending the lifecycle of legacy technology investments. As per a recent survey, 65% of the organizations are expected to implement hybrid integration platforms (HIP) by 2022. [2]

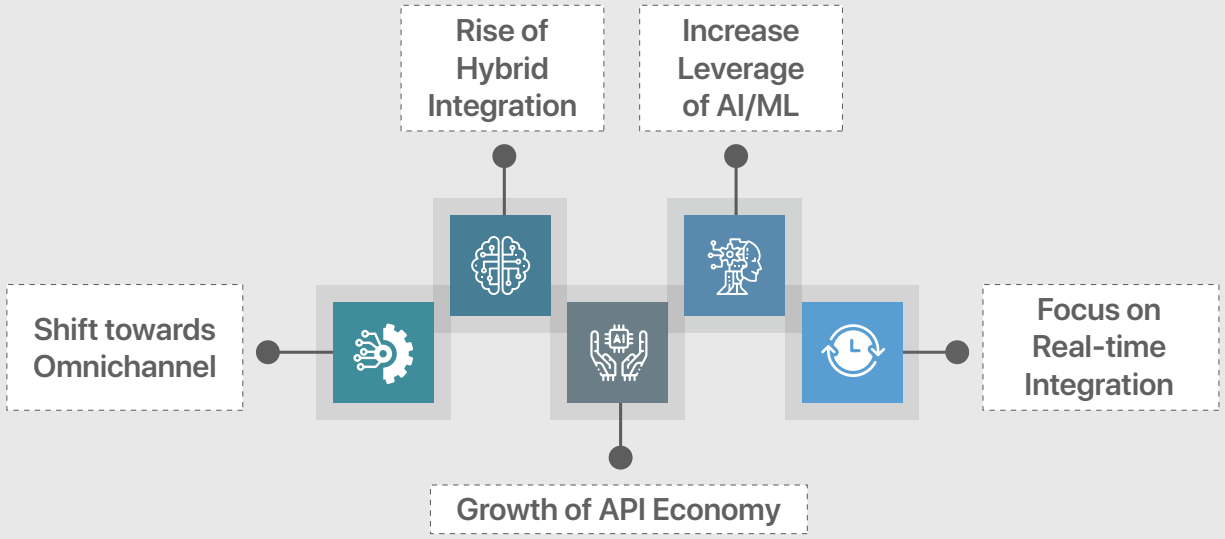

Figure 6: Key Emerging Trends in Integration

Increased Leverage of AI/ML

Artificial intelligence (AI)/ Machine Learning (ML) technologies will be increasingly leveraged to make integrations simpler and smarter. These help developers map information coming from various endpoints into a logical pattern. For instance, as part of the vendor management function in a company, information of different suppliers flowing in different formats can be accurately mapped in integration platforms using AI. Further, companies are now investing in 'adaptive integration' that enables the integration built to become smarter over time by continuously learning from the transactions taking place using the integration connector.

Shift towards Omnichannel

Enterprises are now leveraging multiple touchpoints to interact with customers and offer products and services. This has fueled the need to offer a unified experience which has led to investments towards the integration of multiple channels. This omnichannel approach also enables enterprises to closely monitor and analyze the journey of their customers and ensures higher customer retention. Businesses that adopt omnichannel strategies achieve 91% greater year-over-year customer retention rates compared to businesses that do not.[3]

[2]Gartner, https://www.gartner.com/smarterwithgartner/use-a-hybrid-integration-approach-to-empower-digital-transformation/
[3]V12 Software Report, https://v12data.com/blog/25-amazing-omnichannel-statistics-every-marketer-should-know/

Growth of API Economy

APIs play an important role in an enterprise's digital transformation initiatives, enabling quick integration of SaaS applications with existing infrastructure components. More and more businesses are exposing APIs to integrate with their platforms and develop solutions. A recent survey revealed that on an average, 83% of enterprises consider API integration a critical part of their business strategy. [4]

Focus on Real-time Integration

As enterprises focus on increased operational efficiency and quick decision-making, real-time business intelligence and hence integration is becoming a pre-requisite for digital platforms that companies use. Also, with the increased adoption of IOT across various verticals like Manufacturing, Retail, and Automotive, the importance of real-time integration cannot be emphasized enough.

A leading supplier of analog and mixed-signal semiconductors lacked master data integration between Workday and SAP HRS, resulting in the two applications operating in silos. Bristlecone developed an integration solution between the two systems using SAP Process Integration, enabling real-time connectivity between Workday Cloud and SAP HRS.

It is crucial that the outlined trends are considered as part of the roadmap as enterprises set out to build their integration strategies. However, the integration journey is not an easy one as several companies have discovered.

[4]State of API Integration Report 2020, https://www.globenewswire.com/news-release/2020/04/14/2015763/0/en/2020-Study-83-find-API-Integration-Critical-to-Business-Strategy.html

IV. CHALLENGES FACED IN THE INTEGRATION JOURNEY

In cases where platform integration connectors are not available, enterprises need to build custom integration assets. However, these integration assets are not as robust and scalable as the pre-built connectors from software providers, and lead to poor user experience with limitations on how data from these applications or platforms can be leveraged and building of seamless workflows. Enterprise Software companies are hence deeply focused on offering platforms that can integrate with other platforms. The journey of developing connectors that enable platform integration is not easy and companies face several challenges that hamper their efforts in this direction (Figure 7).

Figure 7: Major Integration-related Challenges faced by Enterprises

Lack of Ownership and Accountability

Ownership of integration projects rests with different groups within different software companies, spanning product, technology, go-to-market, professional services, and alliances. Also, these initiatives involve multiple stakeholders with interests that may not always align, and hence the accountability is difficult to assign.

Limited Understanding of Tech Architectures

It is required that engineers working on developing connectors have deep knowledge of the technical architectures of the two platforms that are being integrated, which is challenging to ensure. Further, platforms may have heterogeneous environments with inconsistent operational models and policies which further act as deterrents in most cases, especially when cross-platform knowledge is limited.

Ineffective Cross-Platform Collaboration

In cases where there is a need to successfully build and maintain integration connectors between two platforms from different software providers, experts from the two companies need to work together. This ensures that information is openly shared and the model is extremely collaborative to identify any issues that might crop up with connectors. However, this cross-platform collaboration is missing in most cases and companies are also very guarded in sharing information and critical product knowledge due to concerns around intellectual property infringement.

Low Flexibility & Scalability

A number of integrations struggle to scale with increasing number of end points, growing size of data sets, and may not possess all the characteristics that robust connectors incorporate such as bi-directional integration flows between the platforms. Also, integration connectors need to adapt with changes and updates across the core platforms and accommodate the different use cases that users are likely to leverage these for.

Regulatory & Security Concerns

Security is one of the biggest challenges faced by enterprises while integrating different applications. Since integration involves moving data between applications and people, it is susceptible to cyberattacks and security risks. Also, with increasing regulations around data privacy, compliance to regulatory frameworks is something that some platform integration initiatives are likely to struggle with.

It is common for integration-related programs of various software providers to achieve limited success due to one or a combination of these challenges. However, with knowledge and mitigation plans of these beforehand, companies can avoid these pitfalls.

V. PLAYBOOK: THE INTEGRATION FACTORY APPROACH

A well-crafted strategy and operational model are vital for the success of any integration-related program that software companies or enterprises may run. The approach also needs to ensure that the challenges highlighted in the previous section are mitigated. Bristlecone, with its experience of helping several companies build integration assets, has designed a playbook that can be adopted for success. The playbook, termed the 'Integration Factory' approach, consists of a 3-step process – Ideation, Build, and Sustenance (Figure 8).

Ideation

The first stage involves an in-depth understanding of the business process environment for which the integration needs to be built. The functional touch points of the platforms being integrated need to be mapped in an exhaustive manner and the technical architecture and environment need to be studied. Enterprises need to have clarity on the objectives to be achieved and a comprehensive business case in place prior to getting started with the next phase of the integration program.

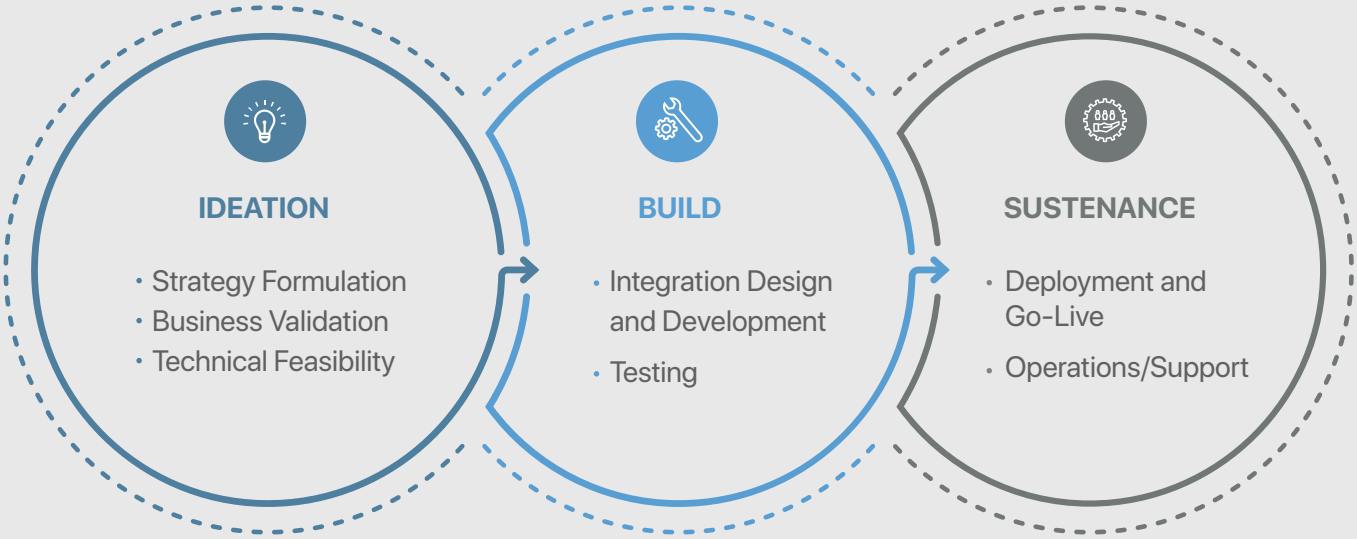

Figure 8: Tenets of a Successful Integration Strategy

Build

The design phase comprises of a detailed analysis of the applications and use cases. The functional and technical design documents are prepared, encompassing customized integrations, if needed. The engineers will now build the integration based on the finalized architecture for the integration connector. Integration testing and user acceptance testing should be conducted during the build phase as well to ensure that a robust connector is created.

Sustenance

Post the build phase, the integration module should be deployed and tested for any bugs. Post-production support using standard operating procedures and support knowledge base needs to be set up.

BRISTLECONE CASE STUDY: OP & SAP-ECC INTEGRATION ADAPTER FOR GLOBAL SUPPLY CHAIN PLATFORM COMPANY

CHALLENGE & BUSINESS SITUATION

- Order Promising (OP), a mission-critical, customer-facing business process that should be executed in accordance with strategic business objectives
- Order Promising plays a crucial role in the supply chain, bridging the gap between planning and execution
- Most customers are using SAP ERP and require seamless integration between these two systems

SOLUTION PROVIDED

- Bristlecone provided complete lifecycle management of OP – SAP adapter:
  - Requirement gathering
  - Product development
  - Quality assurance
  - Customer support, presales, demo support, and infrastructure management
- Bristlecone follows Agile Development Methodology for all developments and owns overall Project Management & Governance

KEY OUTCOMES

- Minimized time-to-market for new releases and maintenance work
- Established competitive edge over similar products in market
- Quick resolution of customer issues
- High quality standards in new releases
- Extended technical support for demos and presales to new prospects

There are several benefits for enterprise software companies investing in integration, ranging from creation of a new revenue stream to enhanced customer experience. Integration allows users to derive exponential value from their platform investments, and hence, for software product and platform providers, it is an absolute must in order to stay competitive in the market.

Smart integration is one of the building blocks for market leading platforms, and top software providers have already set out on this path. However, this journey comes with its own set of challenges and companies need to be well prepared to be able to successfully execute on their integration programs taking steps to address the challenges. For instance, applying encryption at the message layer and transport layer can allay security concerns. Supported by Bristlecone, a number of top global ISVs have used the 'Integration Factory' as a framework for planning and running effective integration initiatives.

ABOUT BRISTLECONE

Bristlecone, founded in 1998, is headquartered in California, with presence in multiple geographies globally. Bristlecone helps business maximize the strategic value of their software investments leveraging engineering & enterprise supply chain software services. They specialize in the following areas:

- Product Engineering & Development
- Robotic Process Integration and Automation
- Smart Integration, Data Science and Analytics
- Cloud and Managed Services
- Digital Supply Chain
- Digital Sourcing & Procurement

For more information, contact info@bcone.com

ABOUT ZINNOV

Founded in 2002, Zinnov is a global management and strategy consulting firm, with presence in Santa Clara, Houston, Bangalore, Gurgaon, and Paris. With a team of experienced consultants, subject matter experts, and research professionals Zinnov assists Software companies, Global System Integrators, Enterprises, and Private Equity firms in developing actionable insights that help them create value – across dimensions of both revenue and optimization. Over the past 18 years, Zinnov has successfully consulted with over 250+ Fortune 500 companies by:

- Structuring and implementing Digital Transformation levers enabled by technologies like AI/ML, Cloud, IOT, and RPA
- Advising global PE firms in asset shortlisting and target evaluation, commercial due diligence, and value creation
- Helping global companies outline and drive their open innovation programs, design and operate accelerator programs, and enable collaboration with start-ups across specific use cases and predefined outcomes
- Enabling global companies to develop and optimize a global engineering footprint through center setups, and technology and functional accelerators to achieve higher R&D efficiencies, innovation, and productivity
- Growing revenue for companies' products and services in newer markets through account intelligence, market entry, and market expansion advisory.

Zinnov serves clients across software, semiconductor, storage, consumer electronics, automotive, telecom & Zinnov serves clients from across multiple industry verticals in the US, Europe, Japan, and India.

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