Navigating the Storm:

Unveiling the Power of Digital Resilience in SaaS

CONTENTS

1. INTRODUCTION

In the wake of recent global events, the landscape of business and technology is undergoing a seismic shift. The world, propelled by economic turbulence, is hurtling into a future marked by remote and digital interactions. In this dynamic environment, characterized by unprecedented challenges and opportunities, organizations are compelled to reassess their strategies, trim budgets, and streamline their operations for greater efficiency.

The exigencies of the times have led teams to reevaluate their software ecosystems critically. The imperative to tighten budgets, paired with the necessity of adapting to a remote and digital paradigm, has become the driving force behind a substantial transformation in organizational priorities. Faced with faltering growth, businesses are compelled to condense their software stacks, seeking solutions that not only weather the storms of economic uncertainty but also empower them to thrive in the face of adversity.

This white paper delves into the heart of these challenges, providing a comprehensive exploration of the evolving software landscape and presenting a paradigm for organizations to navigate these uncharted waters successfully. By understanding the multifaceted impact of economic fluctuations, the demands of a remote workforce, and the imperative for streamlined operations, businesses can strategically position themselves for sustained growth.

Through a lens sharpened by the demands of the present, this white paper not only identifies the challenges but also illuminates the opportunities for innovation and progress. It becomes evident that in times of transformation, the right software solutions can serve as catalysts for resilience and growth. As organizations grapple with the imperative to do more with less, this white paper serves as a guiding beacon, offering insights into the strategic selection and implementation of software solutions that not only weather the storms of change but enable businesses to thrive in the midst of uncertainty.

Fig 1.1: Macro view: the impact of a changing world

Digital Resilience: A Strategic Imperative

Digital resilience encapsulates an organization's ability to withstand and adapt to external economic and technological shocks. In a world that is increasingly defined by uncertainty, companies with a high level of digital resilience stand out as trailblazers in navigating the complex terrain of change. McKinsey and Company's extensive research[1] has brought this to the forefront, revealing a remarkable trend – digitally resilient companies have outperformed their non-resilient counterparts by nearly 165% over the past 15 years. This underscores the critical role that digital resilience plays in determining the trajectory of organizational success in an era where adaptability is not just an advantage but a necessity.

> “After yet another year of unexpected turbulence, one word was on leaders’ lips: resilience.”
> McKinsey and Company

[1] https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/resilience-for-sustainable-inclusive-growth

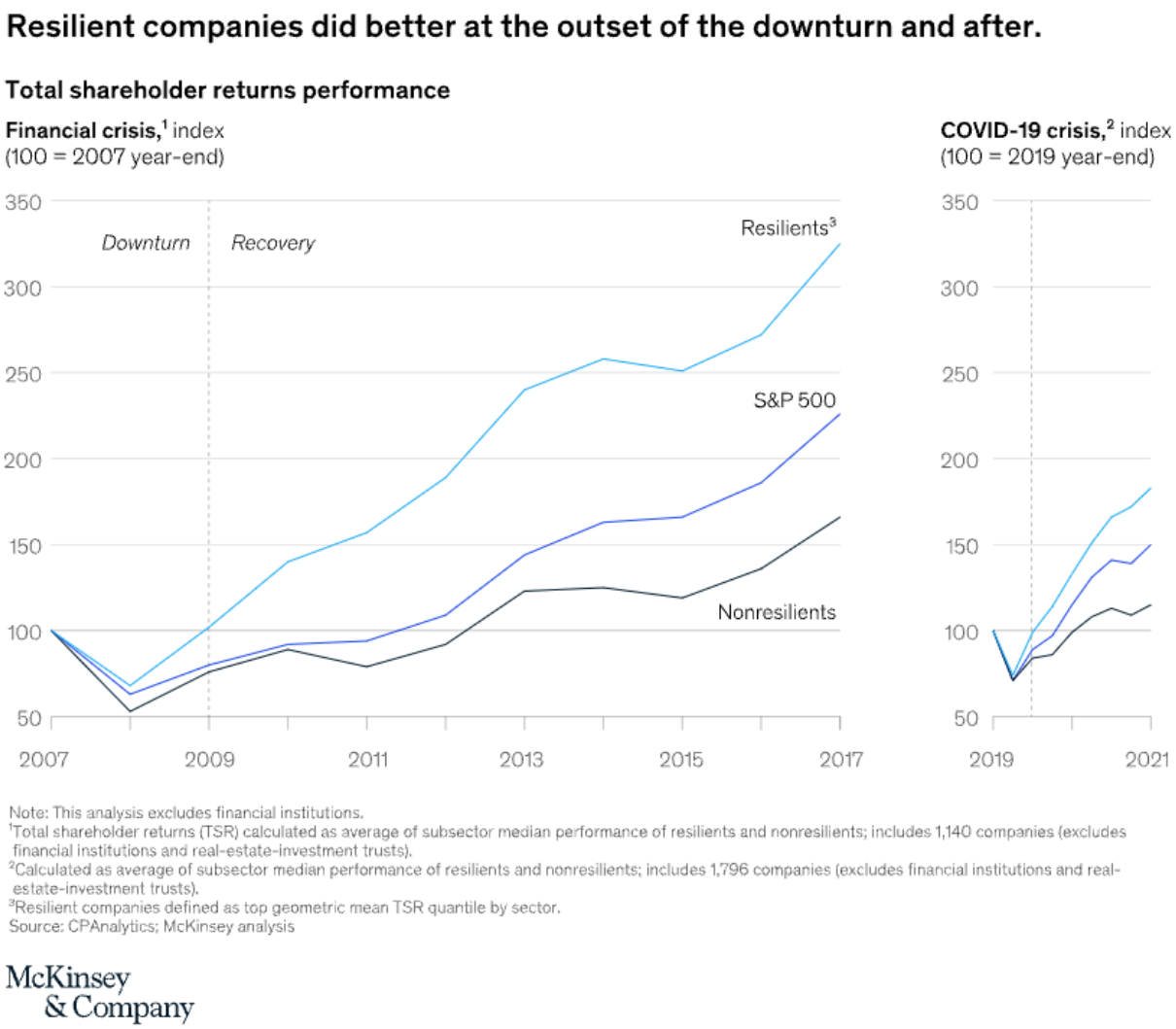

Fig 1.2: McKinsey and Company: Total Shareholder Returns

The Tech Stack Nexus: ERP and CRM Applications

Amidst the myriad components of a company's technology arsenal, customer-edge technology (Customer Relationship Management (CRM), Sales, Service, Commerce, Martech, Adtech) and back-office technology (Enterprise Resource Planning (ERP), Accounting and Finance) applications emerge as the linchpin. These two powerhouses not only represent the lion’s share of technology investment, they drive operational efficiency and play a pivotal role in shaping digital resilience. Extracting maximum value from ERP and CRM applications is not just a matter of efficiency; it is the key to sustaining growth and weathering the storms of economic uncertainty. As businesses grapple with the imperative to do more with less, the strategic optimization of these fundamental elements of the tech stack becomes imperative.

Fig 1.3: Key value in tech estate

Shifting Sands in the Boardroom

Gone are the days of speculative adoption of new software solutions without careful scrutiny. The power dynamics in the boardroom are experiencing a seismic shift, transitioning from Chief Revenue Officers (CRO) to Chief Financial Officers (CFO). This shift underscores a more discerning approach to technology investments, emphasizing not just growth but fiscal responsibility. The C-suite's focus on value realization and cost optimization has never been more acute, requiring a strategic approach to software adoption that aligns with the organization's overarching financial goals.

SaaS Overspend: The Hidden Challenge

In the realm of SaaS expenditure, a concerning revelation has come to light: an estimated 32% constitutes overspend[2], presenting a myriad of challenges with far-reaching consequences. Poor cash flow is an immediate fallout, hindering financial liquidity and limiting investment in critical areas. Unchecked cost growth becomes a persistent concern, diverting resources from core functions to manage the repercussions of imprudent spending. Compliance risks loom large as the proliferation of disparate applications accessing sensitive data introduces complexities in regulatory adherence. Operational disruptions arise from the influx of uncoordinated solutions, leading to

[2] info.flexera.com/ITAM-REPORT-State-of-IT-Asset-Management

integration challenges and decreased efficiency. The regulatory fallout poses legal and reputational risks as organizations grapple with the consequences of inadequately managing their software expenditure. In essence, the repercussions of overspending extend beyond mere financial strain, infiltrating operational, regulatory, and reputational spheres, necessitating vigilant navigation for sustained success in an era where financial prudence is paramount.

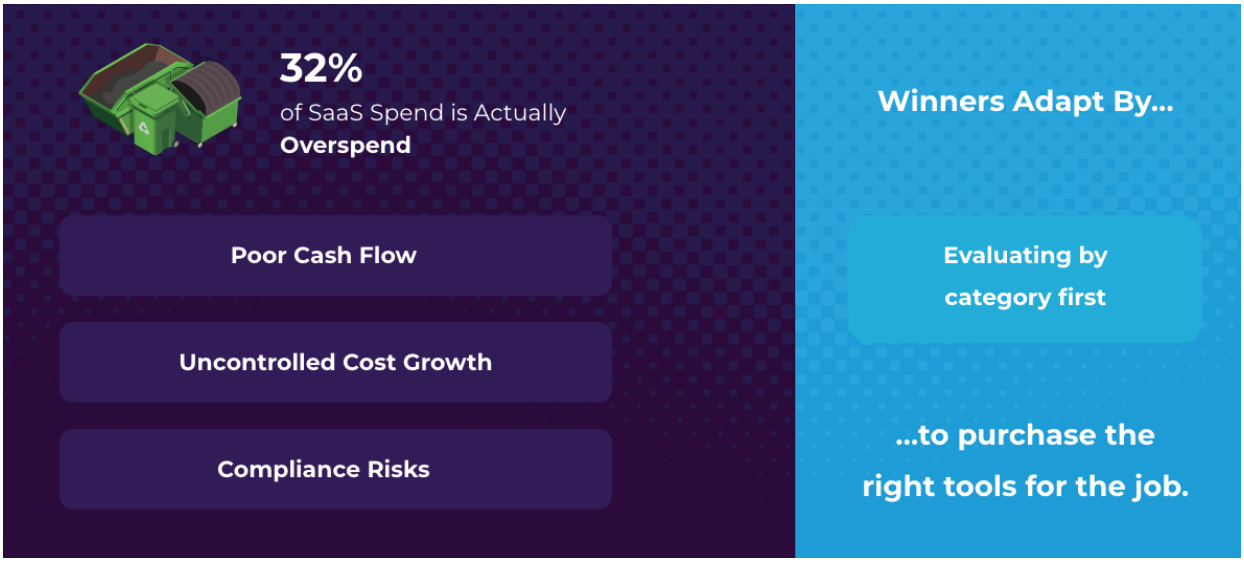

Fig 1.4: Avoiding SaaS overspend

2. A FRAMEWORK FOR SOLUTION EVALUATION

The Three Pillars of Integration: Buy, Build, Invent

In the realm of integration solutions, the iPaaS landscape unfolds along the three pillars of "Buy, Build, Invent." Companies are presented with the choice of leveraging Extensible Products, embarking on iPaaS Implementations, or resorting to Custom Development to weave their digital tapestry.

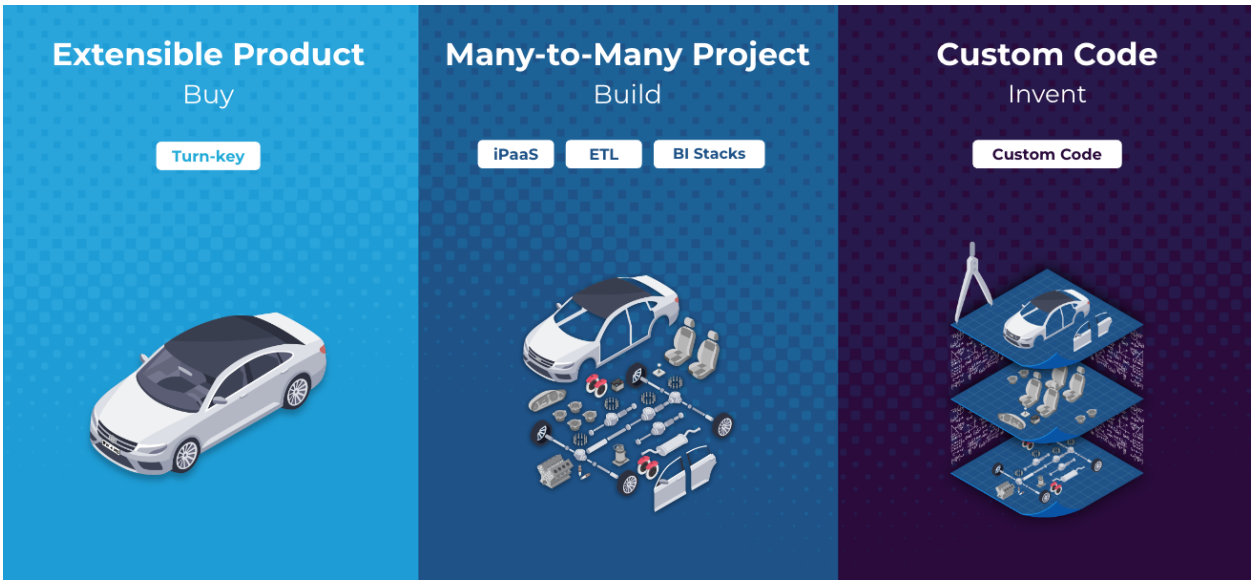

Fig 2.1: Category evaluation

2.1 Extensible Products

Extensible Products stand as the first pillar, offering comprehensive solutions with at least 90 percent feature coverage for a customer's use case. These solutions are designed to be highly adaptable and are often the preferred first option to evaluate in any market. By providing a pre-built foundation for integration with robust feature sets, Extensible Products streamline the integration process, reducing development overhead and accelerating time-to-value. This category aligns with the overarching goal of organizations to optimize their software stacks efficiently. Careful consideration of the features and advantages of these solutions is needed in order to effectively map them to an organization’s problem set. With close alignment, Extensible Products tend to be the clearest path to value in any reasonable or predictable timeframe. Lacking this alignment, companies should continue evaluating the remaining pillars.

2.2 iPaaS Implementations

The second pillar, iPaaS Implementations, assumes prominence in scenarios where multi-point integrations or deep customization are imperative and cannot be achieved through pre-built solutions. iPaaS Implementations can offer a flexible approach to integration, allowing organizations to tailor solutions to their specific needs. This category becomes advantageous when businesses encounter intricate integration requirements that surpass the capabilities of Extensible Products. Through low-code or no-code features, iPaaS implementations empower organizations to design integrations that align seamlessly with their unique workflows, ensuring a bespoke fit.

The cost of this flexibility, however, should be noted. While iPaas Implementations provide a customized approach to integration, the very flexibility which empowers organizations comes with inherent challenges. The complexity of deep customization can lead to longer development cycles, potentially delaying time-to-market for crucial business functionalities. Furthermore, the reliance on low-code or no-code features may inadvertently introduce a level of technical debt, making future modifications and enhancements more intricate. Additionally, as organizations delve into deeper customization, there is the risk of inadvertently deviating from best practices, potentially compromising the stability and maintainability of the integrated system. Therefore, while iPaas Implementations offer adaptability, organizations must carefully weigh the advantages against the potential drawbacks, ensuring that the pursuit of customization aligns seamlessly with broader organizational objectives and timelines.

2.3 Custom Development

The third pillar, Custom Development, represents the least preferred avenue for integration solutions. Custom code, while providing the ultimate flexibility, carries substantial disadvantages. Dependence on development resources after completion poses a significant challenge, introducing potential bottlenecks in maintaining and evolving integrations. The inherent complexity of custom code also renders solutions more prone to brittleness and operational fragility. In the context of digital resilience and cost-effectiveness, custom development is often avoided in favor of more efficient alternatives.

3. DECISION MAKING CRITERIA

The business outcomes for adopting new integration technology typically include:

- Growing revenues
- Improving cashflow
- Reducing costs
- Enhancing compliance
- Improving forecasting
- Facilitating mergers and acquisitions (M&A)

Using the “Three Pillars of Integration” framework outlined earlier to enhance product selection, organizations face a multivariate opportunity. This white paper sets out to establish a product-agnostic methodology for optimising this selection process. Organizations looking to build digital resilience in the mission critical nexus between their customer-edge and back-office domains need to consider:

- Business value drivers, notably enhancing Return on Investment (ROI)
- Technical criteria
- Compliance criteria

Each of these considerations is outlined below.

3.1 Business value drivers, notably enhancing Return on Investment (ROI) through the levers of:

- Accelerating innovation
- Increasing Time to Value (TTV)
- Reducing Total Cost of Ownership (TCO)
- Operational cost reduction
- Enhanced employee productivity
- Enhanced customer experience
- Creating new actionable insights from data held within different system boundaries
- Unlocking value from mergers and acquisitions

3.2 Technical criteria, including:

- Matching requirements to Out-of-the-Box (OOTB) feature sets vs custom development effort
- Architecture
- Extensibility
- Orchestration location

- Integration method
- Solution type: Turn Key, Point-to-Point (P2P), Extract-Transform-Load (ETL), or Integration-Platform-as-a-Service (iPaaS)

3.3 Compliance criteria, including:

- Meeting existing regulations
- Adapting quickly to new regulatory requirements

Below we propose a set of tools for examining this multivariate opportunity using the criteria above. These tools have been honed from Breadwinner's experience during a decade of providing technology solutions which integrate Salesforce with ERP (NetSuite), accounting platforms (Xero and Quickbooks) and Payments providers (Stripe, Square and Braintree). However, this experience is shared entirely independent of potential product selection and can be applied to an evaluation of any product offering.

4. BUSINESS VALUE DRIVERS

4.1 Accelerating innovation

Common business challenge: The need to create sustainable competitive advantage through unique, customer-centric business processes

Gartner's traditional Pace Layering Model[3] provides a clear overview of the intertwined functions of different layers of an organization's application landscape:

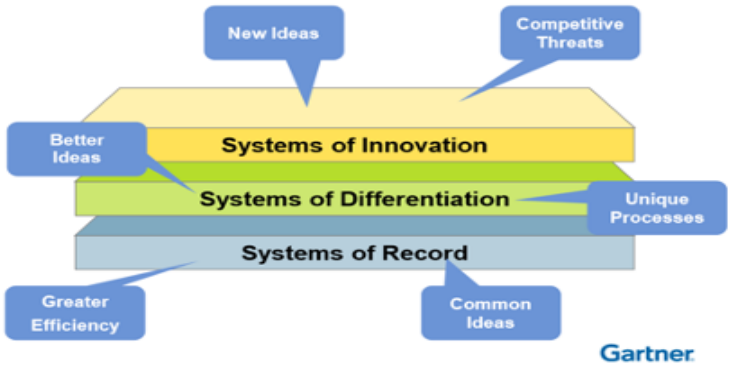

Fig 4.1: Gartner Pace Layering Model

Modern application landscapes are typified by leading customer-edge technologies at the System of Innovation (SOI) level, such as Salesforce. Whilst the slower moving Systems of Record (SOR) are typified by technologies such as SAP and Oracle NetSuite.

[3] https://www.gartner.com/en/documents/1890915

Example Tech	Pace Layer	Purpose
	System of innovation	**Where new ideas are born:** • Dynamic business processes
	System of differentiation	**Where business is run:** • Derive competitive advantage • Configurable and customisable
	System of record	**Backbone of business:** • Slower object mode changes • Stable and defined processes

Fig 4.2: Gartner Pace Layering Model Applied

Integrating the SOI and SOR layers unlocks innovation capabilities in two ways:

1. By overlaying data from both the SOI and SOR layers to create **net-new actionable insights** from the aggregation of customer-edge and back-office data at an operational level.

Use Case Example	Data Sources	Example Solution Options
Report on aged debts by salesperson (ie Invoice Payment History by Customer Account Ownership)	• Sales CRM • General Ledger invoice history	1. Data replication of ERP data on customer-edge platform 2. iPaaS integrating ERP, CRM, Data Lake and BI stack
Real time inventory availability by Customer location	• Sales CRM • CPQ • ERP inventory	1. Unified CRM + CPQ with real time ERP inventory feed 2. Loosely coupled Event Driven Architecture (EDA) with event bus and subscriber clients

2. By overlaying **best-of-breed AI** propensity models over combined data sources to provide **a future view of customer activity**.

Use Case Example	Data Sources	Example Solution Options
View customer propensity to churn from Account attributes combined with payment history	• Sales CRM • General Ledger	1. Data replication of ERP data on customer-edge platform with native AI models 2. Data Lake with proprietary AI models, multi-point integrations and iPaaS

Organizations should consider these innovation capability tradeoffs along the following axes. While no one solution is appropriate for all organizations these are the common tradeoff vectors in innovation capabilities when binding the customer-edge to the back-office (with example solution categories positioned for illustrative purposes):

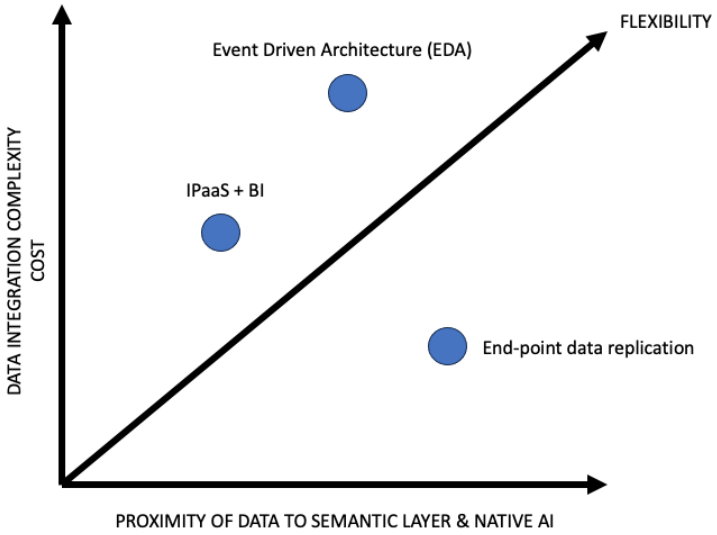

Fig 4.3: Innovation Trade Offs

What Does Innovation Mean to You?

"When business success is dependent on the quality of constantly-evolving customer and employee expectations, being innovative means creating experiences that deliver unmet—or even unarticulated—expectations. Innovation can meet customer needs as they exist now, but also create new marketplace opportunities that never existed before. Innovative experiences have the potential to change mindsets forever, creating new baseline expectations for every experience your customers have moving forward." [4]

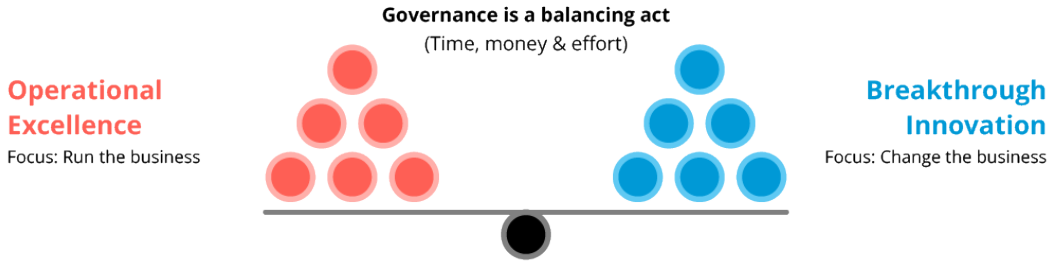

Fig 4.4: Governance Trade Offs

[4] Bluewolf, The State of Salesforce Annual Report 2017

4.2 Speed Up Time to Value (TTV)

Common business challenge: The need to obtain rapid Return on Investment (ROI) for expenditure on new technology

The biggest drivers of TTV enhancement are traditionally:

- **OOTB requirement coverage:** The extent to which integration technology Out-of-the-Box (OOTB) functionality overlaps with requirements;[5]

- **Custom requirements:** The extent to which custom development is required on a given integration technology to meet requirements. TTV is heavily impacted by **both** the scale/complexity of those requirements **and** typically by the resource scarcity of niche integration development skills (in-house and outsourced);

- **Sequencing:** Whether the development effort of the endpoints (customer-edge platform and back-office tech) and the development of the integration technology can be undertaken in series or in parallel;

- **Data consolidation:** Whether combined data (eg CRM + ERP) is replicated in one of the endpoints or combined on a third platform (eg Data Lake or BI stack) using an additional intermediation platform;

- **Historical and transactional data:** The ease with which both historical data and new transactional data can be combined within a single domain; and

- **Operationalizing the change:** The speed at which system changes can be operationalized to drive up employee productivity or increase customer satisfaction.

Each of drivers listed above is explored in more detail below.

[5] Further detailed in Section 5.1 Technical Criteria

OOTB vs Custom

Typically this TTV driver can be optimised by either or both of:

- Having a clear set of business functional requirements and outcomes prior to product selection, and/or
- Working with a vendor to formally establish business value drivers for the proposed technology

For many organizations, integration development is a one-time activity. This tends to put strain on in-house technical resources or require reliance on external, third parties with niche (ie low cadence and higher cost) skill sets.

Organizations looking to speed up TTV can, therefore, look to:

- Vendors with high OOTB coverage of their core requirements; and/or
- Vendors whose product does not require a net-new set of skills for implementation and development

Sequencing

Most integrations require the endpoints (eg customer-edge platform and back-office platform) to be stabilized or fully completed before integration work can commence. Typically, integration interfaces, even using "quick start templates", can only be commenced after all development work on both systems is complete. This bottlenecks TTV as all development effort must be completed in series.

Organizations looking to speed up TTV can, therefore, look to vendors with polymorphic architectures. This means that any changes to the data structure of the master system are replicated in on demand in the target system. This means that integration work can be undertaken in parallel with system development work, radically shifting the needle on TTV.

Data consolidation

Customer-edge and back-office data can be consolidated to allow for aggregated insights at either of the end points (eg CRM or ERP) or on a third platform (eg Data Lake, Business Intelligence (BI) stack).

Typically, data consolidation in one of the endpoints creates faster TTV because of the reduced system complexity. Consolidating data in an endpoint does not require:

- An additional intermediation platform, and
- An additional Data Lake, and

- An additional BI platform

The value of the consolidation of data on a third platform is typically a function of the number of data sources. Where only two data sources (eg CRM and ERP) are required, TTV is enhanced by data consolidation on one of the end points. Where multiple data sources need to be aggregated TTV can be enhanced by data consolidation on a third platform.

Use Case Example	Data Sources	Example Solution Options
Report on marketing campaign to cash or payment lag per salesperson	• CRM • General Ledger payment history	Point-to-point integration, orchestrated from one of the endpoints, with data consolidated and aggregated in one of the end points
Analyse Integrated Business Planning scenario models	• CRM • ERP • General Ledger • Data Lake	Many-to-many integration, orchestrated by an intermediation platform consolidating data from numerous systems

Historical and transactional data:

When evaluating TTV drivers organizations should consider their requirements relating to the needs of consolidating historical vs new transactional data.

Integration technologies which rely on third-platform interfaces or Event Driven Architectures typically trigger data exchanges or process orchestrations based on Data Change Capture (CDC) on the master system. This usually requires a two separate programmes of work to consolidate historical data and net-new transactional data:

- Creation of the interfaces or event bus (including publishers and subscriber technologies), and
- A data migration programme to lift historical data into the target system

Technologies which replicate data and data structure to the target system are inherently capable of managing both historical and new transactional data without requiring two separate programmes of work.

Operationalizing the change:

Any integration technology solution requires analysis of the People, Process and Tech (PPT) overhead. The costs of managing change and operationalizing new processes is frequently overlooked. This cost drivers for this include:

- **System level:** the greater the number of intermediation platforms, data consolidation platforms etc the greater the number of specialist skilled resources required to implement, develop, manage, govern and support the change.

- **User level:** the closer the new processes and technology are to the existing user experience the lower the training requirements, the support costs and the governance overhead. Users who are able to interact with new data via their existing, familiar pane of glass require less costly change processes.

4.2 Reducing Total Cost of Ownership (TCO)

Common business challenge: the need to avoid hidden costs of ownership

The primary drivers for integration technology TCO are set out below with considerations for managing TCO:

Costs	Considerations
Implementation & configuration	Products or solutions which include OOTB configuration within the commercial offering
Development & maintenance (n - house or 3rd party SI)	Declarative vs programmatic development paradigm Market availability of skills (common vs niche or specialist)
Governance	Reduction in number of platforms as each will have separate governance overhead
Upgrade	Seamless and automated as core feature of service vs manual
Support	Level and quality assessments
Training	Maintain users and tech teams inside a pane of glass and system with which they are already familiar vs new user interfaces and new system adoption
Licensing	Ensure license distribution is based on the needs of users to achieve business outcomes
Data storage	Ensure fine tuned control over data residency based at Object level syncing, Record level syncing, time based criteria and/or the ability to manage data syncing on demand
Error handling	Surfacing errors to users in real time via a UI vs manually or programmatically interrogating log files
Compliance	Native maintenance of separation of concerns vs custom development to manage risks to compliance

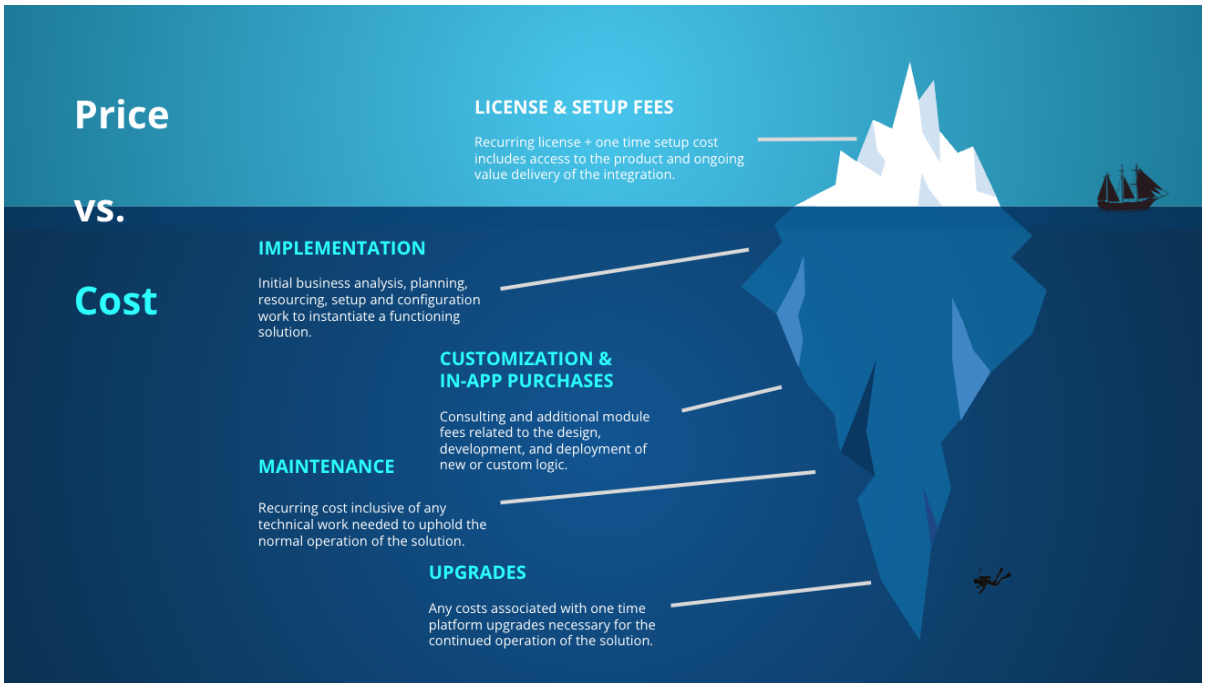

Fig 4.5: Hidden Costs

4.4 Operational cost reduction

Common business challenge: The need to drive cost out and improve efficiency

The core driver for operational cost reduction is the ability to empower users to have maximum impact on business outcomes with the least friction.

The largest gains are frequently made by organizations who are able to drive up customer experience and employee productivity simultaneously. Organizations that harness the appropriate technologies are frequently typified by empowering employees to manage their customers' most frequently moving data at the customer-edge rather than in the back-office (where compliance risks, innate System of Record sluggishness and higher licensing costs typically reside).

4.5 Enhanced customer experience

Common business challenge: the drive to become customer-centric

Customer experience is typically a function of an organization's responsiveness to customer needs. The closer the customer data and processes are to those needs, the higher the propensity for those needs to be met.

Empowering core customer facing business domains (eg Sales, Service, Marketing and Commerce) with mission critical customer data (eg Orders Management, Inventory, Invoices, Payment History, Subscriptions etc.) is table stakes in the modern world of customer-centricity. The ability to deliver this combination of customer-edge and back-office data to the right teams, at the right time is a function of an organisation's integration capability.

The modern imperative to make drive customer experience (in B2C, B2B and B2B2C contexts) is a strategic imperative in almost every industry.

"The last best experience anyone has anywhere becomes the minimum expectation for the experience they want everywhere." Paul Papas, SVP, IBM Consulting

4.6 Enhanced employee productivity

Common business challenge: the need to drive up productivity from a constrained resource base

The business impact of optimization in this domain include:

- Reduction of swivel chairing
- Decrease in context switching
- Lower staff training costs
- Higher Employee Experience (EX) scores

These types of outcome are typically achieved by unifying data and processes inside the customer-edge tech stack where employees are able to manage customer-edge processes with the highest proximity to the customer.

By providing the right data to the right teams in the right pane of glass, and by automating business processes, organizations can leverage integration technology to unlock the value of their most costly and valuable assets: their people.

Integration technologies built with core OOTB functionality designed to improve workflow can provide quick, easy and cost-effective ways of unlocking this value.

4.7 New actionable insights

Common business challenge: the need to take action on insights and to avoid commercial blind spots caused by siloed data

Organizations commonly look to integration technology to create new, actionable business insights from combining data previously held within different system boundaries. Net-new business value is harnessed from the ability to combine data that was previously siloed or held in systems with wildly different data structures.

A common example is the need to report on a Customer's payment history by Account or Opportunity Owner. This requires CRM ownership data to be overlayed on top of General Ledger or accounting data. Accounting systems are not typically context aware of the ownership of Opportunities or Accounts. Being able to combine data in this manner unlocks mission critical capabilities in this use case. More examples appear in the table below.

Five factors tend to drive this data to be combined on the customer-edge:

1. **System of Innovation.** The customer-edge tends to be the natural System of Innovation where dynamic business processes, experimentation and pilot applications reside. This contrasts with the System of Record Pace Layer where higher compliance requirements (eg accounting regulations) reside alongside slower object model changes and stable, defined processes.

2. **Semantic Layer** The availability of simple business reporting and visualization tooling (ie a declarative semantic layer). Leading customer-edge technologies typically contain the capability to visualize data without programming (eg Reports and Dashboards with a simple, declarative user interface (UI)). This makes them the lowest cost location to combine data to harness new business insights and intelligence.

3. **Customer Proximity.** As discussed above, the principle of customer proximity ensures that responsiveness to customer needs is a function of being able to combine data on the pane of glass where teams who work with customers do their work (Sales, Service, Marketing, Commerce).

4. **Sharing and Visibility Architecture:** Access to the relevant Customer data tends to be controlled by the sharing visibility architecture of the customer-edge technology. Harnessing this power enables customer facing teams to make decisions with the right data, in the right place, at the right time.

5. **Compliance.** The higher compliance requirements around back-office data, eg accounting, finance or inventory management, mean that data manipulation in the back-office poses greater risk. Combining data in the customer-edge allows the separation of domain concerns to be maintained with lower risk and higher impact on business outcomes.

The following table highlights common use case examples derived from two-way integration of customer-edge context with ERP/General Ledger data, reported via a CRM:

Example Use Case
Marketing campaign to cash
Payment lag per salesperson
Invoice history by Account Owner
Customer propensity to default or churn based on payment history

4.8 Unlocking value from mergers and acquisitions

Common business challenge: The need to quickly integrate acquired businesses, reduce administrative overhead, reduce acquisition costs and maximize the ROI of acquisitions.

Organizations acquiring new businesses are frequently faced with the challenge of combining new, disparate CRMs (Sales, Service, Marketing and Commerce) data with a unified accounting platform.

Organizations often look for a capability that enables them to quickly integrate an acquired company's data with the acquiring company's accounting and General Ledger platform. Ensuring that the integration layer is able to orchestrate in this manner without a risk of data contention is a vital prerequisite to ensuring value from such investments.

Subsidiary segmentation on the accounting platform, rather than the development of new integration interfaces for each acquired business allows for:

- Rapid, low cost deployment
- Separation of data without risk

Integration tooling that inherently respects segmentation on the General Ledger rather than relying on interfaces to be custom developed in middleware allows for high cadence implementation of M&A solutions.

5. TECHNICAL CRITERIA

5.1 Matching requirements (OOTB vs custom development)

Common technical challenge: the need for IT to deliver the widest overlap between business requirements at the lowest cost by leveraging pre-built, OOTB capability.

Modern technology stacks offer high levels of Out-of-the-Box (OOTB) capability. However, each organization has its own unique business requirements (both Functional Requirements (FR) and Non-Functional Requirements (NFR)). It is this uniqueness that creates, supports and maintains competitive advantage and market position.

The common trade off in any software purchase resides in the balance between the ability to quickly, cheaply and effectively deploy platform OOTB capabilities vs the need to customize technology to meet unique FRs and NFRs.

When considering integration technology purchases (like any software purchase) successful organizations are able to evaluate both the technical and business case for the overlap between requirements and OOTB functionality.

In the intersection between customer-edge technology and back-office ERP, value enhancing integration technologies are able to achieve a high degree of OOTB overlap with business needs. Examples often include features such as the ability to automatically manage:

- Multiple currencies
- Product and prices book synchronization
- The ability to replicate essential ERP documents (eg Invoice pdf's) onto the customer-edge
- The ability to support multiple instances / orgs of the customer-edge tech stack in tandem with a unified back-office system
- The ability to manage disparities between data structures (eg Person Accounts and Companies)
- The ability to harness subsidiary segmentation

Where these types of Functional Requirements (FRs) can be met without the need to develop custom interfaces, IT is typically able to deliver value faster to the Business.

This approach also applies to Non-Functional Requirements (NFRs) in the same manner as FRs. So, for example, successful organizations are often able to leverage the existing:

- Security Infrastructure Models
- Visibility and Sharing Architecture
- Identity and Access Management
- Models of Least Privilege Access

via existing Platform investments rather than develop new solutions to standard NFR requirements via development effort on a new intermediation platform.

The following diagram highlights the trade-offs. Successful organizations are typified by their ability to deeply understand the business value of both FR and NFR requirements and then map them to the lowest cost, highest deployment cadence solutions that most closely match those requirements.

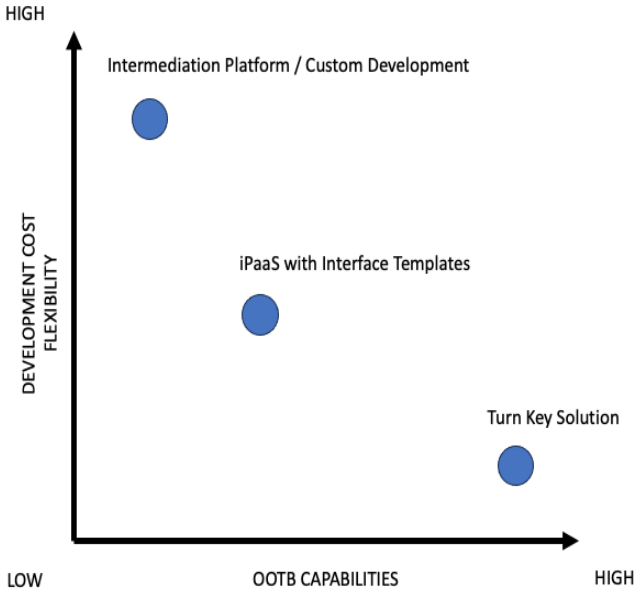

Fig 5.1: OOTB vs Custom Trade Offs

5.2 Architecture

Common technical challenge: selecting the architectural pattern that drives both short and long term business outcomes.

The single biggest interlock between business value creation and architectural principles rests on the decision of whether or not to introduce an additional intermediation platform between systems to manage and orchestrate integrations. We use the phrase “middleware” to broadly encapsulate a range of technical options including: iPaaS, ETL and full API Lifecycle Management platforms.

Leading Middleware Advantages

This category of solution has inherent benefits where one of two conditions are required:

1. When complex orchestrations of a single process, or set of processes, require orchestration across three or more systems; and/or

2. In the specialist case when API reusability will drive value in an enterprise through API lifecycle management and the internal distribution of composite API’s through an enterprise API marketplace.

Leading Middleware Disadvantage

This category of solution typically requires stability in all end points before work is started on developing the interfaces in a middleware platform. This means that integration programmes or projects need to proceed, by necessity, in series. The data structure (to both entity and attribute level) require completion (or high degrees of stabilization) before work can be commenced on the middleware interfaces. The development of those middleware interfaces tends to be done by scarce, high cost resources who are deployed on a one-time basis. This makes rework costly and brittle.

Solution Optimization

Orchestrating an integration polymorphically, from one of the end points, typically means that these integration projects can be delivered in parallel because the integration configuration can be undertaken at the same time as development effort on either or both endpoints, without creating costly technical debt.

Key Principles

Successful organizations demonstrate a high degree of sensitivity to three architectural principles:

1. System complexity – the benefits of adding an additional intermediation platform to an organizations system landscape are outlined above. The trade offs, however, are the necessity to manage, govern, develop and maintain an additional platform with the associated costs of specialist teams and the need to develop integrations in parallel rather than in series.

2. Separation of domains – ensuring a clear distinction of the data and process orchestration within the bounds of a business domain. Where an intermediation platform is used that separation must be managed by the custom built interfaces rather than by leveraging the inherent capabilities of the end points. For example, each interface between a CRM system and an accounting General Ledger must be custom designed to respect financial reporting standards when middleware is used to orchestrate an integration.

3. Brittleness – where multiple systems are integrated using a middleware solution any change to one of the systems must be replicated in the interface. This embeds architectural brittleness into the landscape. A polymorphic orchestration, by contrast, allows any change in the master system to be automatically available to the target system.

5.3 Extensibility

> **Common technical challenge: t**he need to absorb future requirements within the capability of the selected technical solutions.

System extensibility needs to be considered along two distinct axes:

1. Across systems: the ability to extend business capabilities across new systems, platforms or technologies. For example, the extension of a single process across new platforms such as a future requirement to add third party “Know Your Customer (KYC)” processes to a customer onboarding process); and/or

2. Across departments: The ability to extend capability out to more teams or business domains who already reside on an existing system or platform. For example, adding Customer Service teams to provide after-sales care to a Sales process.

These two types of extensibility require different approaches. Where future requirements are likely to require a single process to extend out to encompass new platforms capabilities middleware solutions are likely to provide the required extensibility. By contrast, where future requirements are likely to require business capabilities to be extended out to encompass new departments using existing platforms then process orchestration from within one of the end points tends to provide optimized extensibility.

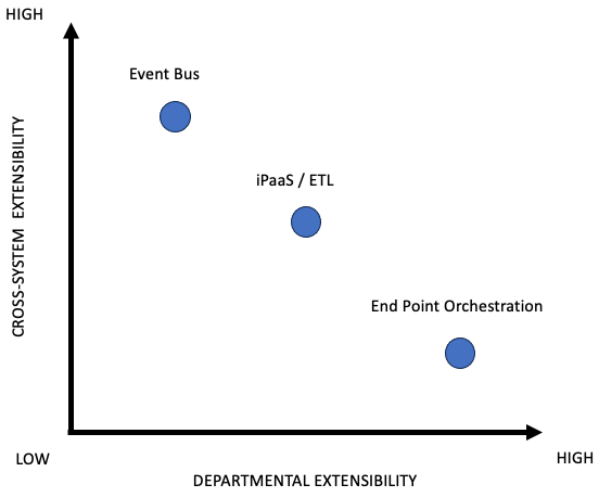

Fig 5.2: Extensibility Trade Offs

5.4 Integration method

Common technical challenge: the need to select the most appropriate integration method to deliver the required business outcomes

Successful organizations are able to align their integration method to their desired business outcomes. Methods include the following, stack ranked from least to most technically complex:

Manual: either swivel chair or manual exchanges of data via spreadsheets. This is typically effective for low volume, infrequent data exchanges that require high levels of human oversight. This pattern is susceptible to human error and typically lacks error handling or automated roll back features but requires little investment in additional technical infrastructure.

Link back: in this pattern a reference to the data in the master system is passed to the target system. Users are able to quickly access the relevant data in the master system from a link or reference in the target system. This pattern tends to optimize for use cases where swivel chairing is a necessity but the primary business objective is to reduce friction in the swivel chairing process itself.

Data visualisation: the ability to represent the data from the master system within the context of the target system (for example: an iframe within the target system allowing users to see data held in the master system). This tends to be most effective where processes do not need to be orchestrated across systems. However, for use cases where simple visibility of data is required by users of the target system is the only (and fixed) requirement this can be a cost effective method.

Data replication: using this method ensures that all of the required data from the master system is fully replicated in the target system. This enables two core capabilities:
a) the ability to fully orchestrate processes on either system through Change Data Capture (CDC) in either system. Using this method a process can be triggered in one system by a data update in another system; and/or
b) the ability to leverage the full semantic layer (Reports, Dashboards, visualisation tooling) of either system. Using this method data can be combined from two business domains to allow for granular, and sometimes new insights, derived from amalgamating two types of data.

Bi directional via single API: where system boundaries are delineated by differing metadata structures (eg XML vs JSON) a single API allowing for bi-directional transmogrification can unlock business capabilities by enabling frictionless data and process exchange between systems.

Data virtualization: this pattern enables users and processes within the target system to both view and manipulate data in the master system. It has the advantage that it does not require separate interfaces to be developed between the two systems and thereby removes the need to manage, govern, support, maintain and develop an additional platform. This also obviates the need for data storage in multiple systems because data is only persisted within one system boundary.

Event driven: loose coupling systems with an Event Driven Architecture (EDA) provides high levels of scalability as well as immutability in the data exchange. However, this method requires high levels of technical sophistication with both publisher and subscriber interfaces to an independent event bus.

Business Intelligence (BI) overlay: where business value is maximised by data from multiple systems being aggregated in a single semantic layer. This method provides high degrees of flexibility where composite data from more than two systems is required to drive business insights. However, this pattern typically requires investment in both an intermediation platform and the BI system.

API lifecycle management: where an organization's business needs require extremely high levels of reusability of API's – particularly the development of composite API's which can be shared within an enterprise to accelerate development of common, repeatable processes across different departments or geographies.

6. COMPLIANCE CRITERIA

6.1 Meeting existing and future regulations

Common compliance challenge: the need to ensure system landscapes respect, support and deliver on all current and future compliance use cases

The modern regulatory and compliance landscape is typified by two features:

1. Fixed, immutable regulations like accounting standards which must be met by organizations at all times; and

2. A trend towards higher levels of regulation driven by responses to data privacy concerns, differing levels of regional response (HIPAA, GDPR, CCPA etc.) and the need to provide higher levels of corporate transparency.

When considering integration technology to support business requirements that touch finance systems, the General Ledger, Systems of Record and financial transactions, successful organizations tend to minimize risk by adopting solutions which inherently respect these compliance sensitivities. Solutions which are architected, by design, to maximize sensitivity to regulatory and compliance needs tend to reduce both cost and risk. By contrast, custom design of interfaces, by nature of their business context agnosticism, tend to offer high degrees of flexibility but require governance oversight of each interface to ensure regulatory compliance of not only the system end points but also the behavior of the interface.

Furthermore, systems that innately respect the separation of domain concerns ensure that finance and accounting systems retain their regulatory primacy.

7. CONCLUSION

The journey toward digital resilience in the realm of SaaS is fraught with challenges and opportunities. As organizations stand at the crossroads of innovation and fiscal responsibility, the strategic optimization of customer-edge and back-office applications emerges as a beacon of resilience. The era of indiscriminate software adoption is fading, giving way to a more measured and strategic approach. This white paper aims to serve as a compass, guiding organizations through the intricacies of integration options, enabling them to make informed decisions that align with their unique requirements. As businesses strive for digital resilience and operational excellence, understanding the nuanced dynamics of integration solutions becomes a strategic imperative.

8. FURTHER INFORMATION

For further information or to contact the authors, please visit www.breadwinner.com

Breadwinner develops infinitely extensible, customisable, turn key solutions to integrate Salesforce with finance systems like ERP (NetSuite), Accounting (Xero, Quickbooks) and Payments (Stripe, Square, Braintree). Breadwinner products deliver high speed time to value by orchestrating the integration right from within Salesforce. Those solutions inherently respects the separation of domain concerns between the world's leading customer-edge Platform (Salesforce) and those finance systems.