Modern Digital Experience Architectures

Agile ecosystems for omnichannel experiences

This document explores some of the key developments in the delivery of digital experiences. It also explores the factors to be considered when designing a robust architecture that not only serves the needs of today, but is ready for the future.

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The Case for Digital Experience Architectures

The arrival of smart phones, tablets and social media has made the digital landscape forever interactive. The formerly passive consumer has become an active participant, circulating information, influencing buying decisions and even building or demolishing brands. Digital disruptions have presented businesses with opportunities (and challenges) in creating fast and relevant customer experiences while retaining a secure online business. This white paper explores some of the key developments in the delivery of digital experiences. It also explores the factors to be considered when designing a robust architecture that not only serves the needs of today but is also ready for the future.

Business Was Usual

Over the last decade, businesses have moved from simply having an online presence to delivering personalized experiences to their visitors. With the emergence of what the International Data Corporation (IDC) calls the third platform (International Data Corporation, 2014), built on mobility, cloud, social interactions and information, consumers are connecting with businesses from a wide variety of channels and devices. Gartner refers to the convergence and mutual reinforcement of these interdependent trends as the “Nexus of Forces” (Gartner, 2014).

Companies have traditionally developed channel specific strategies. But converting a consumer from a browser to a buyer no longer happens on a single channel. It happens across a multi-touchpoint journey. Consumers now expect a consistent experience in-store, in-app and on the web. To facilitate this omnichannel journey, adapt quickly and deliver new capabilities, modern enterprises need to rethink the digital experience architectures that support them.

Why Digital Experience Architectures Matter

Companies are no longer digitizing operations just to reduce time to market. Providing seamless omnichannel experiences for consumers has become pivotal, and so has the ability to learn from and react quickly to business and consumer insights. This necessitates an architecture for cross channel experience delivery and a culture of business agility (Schadler, 2014).
Customer centricity: Delivering relevant content, commerce and service at every step of a customer’s omnichannel journey is key to delivering on this new reality of customer-centric businesses. The information and transactional capabilities delivered across this journey need to convince consumers to use these touchpoints in their next omnichannel journey. At the same time this information needs to be able to guide businesses towards building better products and services.

Business Agility: As users interact with applications through the web, cloud and mobile, their expectations of usability and performance have risen. Businesses need to be agile and flexible to respond to these expectations using a continuous delivery model with continuous integrations and continuous deployments (Fitzgerald & Stol, 2014). This needs a collaborative approach that spans the entire value chain, from business requirements to deployment and an architecture that aids business analysis, application development and operations.

Adaptability and Extensibility: Modern enterprises need to deliver outcomes within the broader ecosystem of customers, partners and service providers. But unlike the tightly coupled integrations of the decade past, modern ecosystems are built on adaptive exchanges from multiple providers, with the expectation that those providers change frequently. The disruptive nature of today’s digital experience landscape demands solutions that can be easily and quickly integrated with existing infrastructures and best of breed third party solutions.

Rise of the Digital Enterprise
Enterprise architectures have evolved over the past three decades – from the local integrations of the 80s, to the global harmonization of the internet era and more recently, the attempt of service oriented architecture (SOA) to reconcile global standardization with dynamic adaptation using predefined Web services (BTA Online, 2012). Today, enterprises deal with rapidly changing business and technological environments and cannot afford delayed responses to these changes.

The need for speed and elasticity has led to adoption of cloud services, and a discernible shift from virtual machines towards container based deployments. The constantly growing need for best in class capabilities has spawned the move away from tightly coupled, monolithic systems towards exposable microservices that offer modular scalability and reusability. REST has replaced SOAP as the standard for exposing web services and with the rise of the third platform, platform neutrality and omnichannel delivery have become the norm.

All these technological advances have spawned new sociopolitical trends over the last decade, such as the individual need for freedom of expression and democratization of business and IT. With the convergence of mobile, cloud, data and social, the interests of customers, businesses, and employees are taken into account more than ever before. In short, technological and sociopolitical trends have influenced the way next generation IT strategies are built.
Deliver Today, Ready Tomorrow

Digital experiences are managed using a variety of solutions - from web content management systems to digital experience platforms. While most have the native capabilities to handle content and imagery well on individual pages, it is the ability to deliver and manage personalised, omnichannel experiences that becomes a differentiator. This section explains key architectural considerations for delivering holistic digital experiences. They include separation of concerns, integrations and management of deployments.

Separation of Concerns

Separating content from presentation and authoring from delivery are key to reusability, agility and cross-channel consistency.

Content & Presentation: Efficient reuse of content across a website and more importantly, across channels and devices, can bring significant savings in authoring, developing and maintaining omnichannel customer journeys. But this needs a strict separation of content and content management from its usage and presentation. Storing content in a generic, structured format can speed up development of new digital outlets (website, mobile site, apps etc.) and allow authors to effectively use metadata to deliver a far more contextually relevant and personalized visitor experience.

Authoring & Delivery: In dynamic digital estates that have multiple internal and external contributors, fine grained, modular security is paramount. A digital experience architecture that decouples content authoring from its delivery can efficiently expose the right content and functionality to the right people or applications through a standard set of APIs, allowing them (with the appropriate permissions) to create, import, export, search, manage, structure, manipulate and publish content at the appropriate levels. Decoupling content authoring from content delivery also allows IT teams to scale the content store or the delivery mechanism independently of each other.

Flexible integrations

As content creators, ecommerce and marketing teams strive for closer collaboration, they need platforms that offer all or a combination of these capabilities. Forrester predicts that “Platforms that don’t expose integration points lose momentum in 2015 (Forrester, 2014).” Platform vendors looking to build a suite of internal features face stiff competition from vendors who already provide best of breed solutions for those capabilities.

Today, web content management solutions play a key role in this new integration landscape and to succeed WCM vendors need to support a diverse range of integration levels, in particular the integration of content, data and front-end functionality.

Content Integrations: Content typically resides in multiple locations within the IT landscape. This can be due to organizational silos, legacy technology or the different nature of content, such as structured content, product data, documents, multimedia assets etc. Modern web content management systems must be able to span across repositories to provide digital experience teams with one ubiquitous view on the organizations content. They should also enable enrichment of content with metadata for harmonized delivery across digital properties and leverage technologies for targeting and personalization. By supporting a standard API, open standards like CMIS and JCR or providing service APIs by which content from other systems can be consumed.

Data Integrations: To deliver contextually relevant content, businesses need to be able to aggregate, make sense of and use data to enrich the various individual components of a website. Integrating with Big Data solutions like Hadoop and processing frameworks like Apache Spark helps collect and analyze data on and around consumers from various internal and external sources like CRM, marketing automation, Social Media etc. But for such integrations, modern digital experience architectures should allow data to be efficiently consumed or exposed. This also helps in performing relevant service lookups or passing information to search queries and external databases. With the proliferation of web properties and SaaS solutions, consumers often find it hard to have a unified cross-channel search experience
and businesses struggle to share information amongst their various systems. Integrating with search engines like Elasticsearch, Apache SOLR or Google Search and custom connectors or iPaaS (Integration Platform as a Service) services can help address these challenges.

Front-End Integrations: As dynamic experiences, Single Page Applications (SPA) and PHP front end integrations gain popularity, modern digital experience platforms need to be able to mash-up content and applications in real-time. Server based page-generation technologies like PHP may offer versatility but need round trips for every change on a page which can dramatically increase loads. Back-end integrations don’t make the cut when you need the ability to initiate contextual, real-time integrations based on visitor situations. For dynamic front end integrations, both data and content need to be efficiently exposed. Modern MVC frameworks like AngularJS or Ember.js can then be used by client side applications to dynamically mash up web pages. The ideal Digital experience platform should redistribute content regardless of channel and ease the dilemma of choice between native, web based or hybrid applications. As Near Field Communication (NFC) and iBeacon technologies allow companies to push contextual, location aware information straight onto customers’ mobile devices, the significance of front-end integrations and easily distributable content becomes clear.

Development and Deployment

Modern business need to be able to deliver fast, relevant experiences and a secure online business. As businesses become increasingly dynamic, they can no longer afford harmful disconnects between planning, development and implementations especially when they need to innovate and expand capabilities on the fly. This calls for a collaborative approach towards development and deployment that spans the entire value chain.

Development: Modern architectures need to be able to aid business analysis, application development and IT operations. DevOps agility needs to evolve into BizDevOps and facilitate a continuous delivery model that allows continuous integration, continuous testing and continuous deployment of capabilities for an optimized delivery pipeline. Java and .NET may be popular today but with the rising popularity of languages like Scala, Clojure, Groovy, Swift, Go and Node.js and the proliferation of devices, channels and platforms, developers need to be ever ready for the next wave of technologies. So decoupling content, data and functionality within the enterprise architecture helps avoid big bang digital transformations.

Deployments: The modern digital experience platform is an ecosystem of capabilities that may be deployed on-premise, in cloud or in a hybrid environment. But whether a company hosts on premise, or on a controlled infrastructure stack like Amazon IaaS, or manages assets on a hosted platform (PaaS) service, a modern digital experience architecture should allow its components to scale and integrate at the appropriate levels without compromising on availability, performance and security.

Having a modular, decoupled architecture goes a long way in addressing these needs. Individual components of the architecture can then scale up or out depending on loads instead of scaling the entire eco system in one go. Modular architectures also facilitate replication, clustering and smart caching at the appropriate levels to maximize availability and performance. So when a campaign goes viral or a website experiences spikes in visitor traffic, companies are able to respond with automated or manual scaling of the right components in cloud or on premise.

Container technologies like Docker and CoreOS can, whether on premise or in cloud, help IT teams deploy new software within seconds, further decreasing the overall time to market while also allowing teams to experiment without the additional paperwork. There is a discernible move towards lightweight containers for greater flexibility.
The Future of Digital Experiences

As digital experience delivery blurs the lines between business, marketing and technology, enterprises are becoming more agile to accommodate their customers’ needs. The nexus of mobility, cloud, social interactions and big data have brought us to the next stage of the evolution of the digital enterprise (see figure).

With the ‘internet of things’ already being touted as the next wave of innovations, modern digital experience architectures need to be ready to accommodate technologies that allow things to become actors in transactions (Howard, 2014).

Conclusion

• Savvy consumers are reshaping when, how and why they engage with a brand.
• In order to stay relevant and agile, there needs to be greater collaboration and continuous synergies between business, development and operations.
• At the same time digital experience architectures need to separate content authoring from IT development and be appropriately decoupled for workflow efficiencies, multi-level scalability and fine grained security.
• Given the disruptive nature of the digital landscape it is becoming increasingly important to integrate capabilities and interconnect systems. Making data digestible and functionality accessible is key to achieving legacy compliant or future proof digital estates.

Before the web

Focus
Build relationships that drive business or lower cost

Outcomes
Optimize relationships

Entities
People

Disruptions
Emerging technologies

Technologies
ERP

Before the Nexus of Forces

Focus
Extend relationships into new market or geographies

Outcomes
Extend relationships

Entities
People, Business

Disruptions
Internet and digital technologies

Technologies
CRM

After the Nexus of Forces

Focus
Exploit the nexus to drive greater efficiency

Outcomes
Optimize interactions

Entities
People, Business

Disruptions
Automation of business operations

Technologies
EDL, BI, portals

Figure 3 - The Digital Business Development Path (Source: Gartner December 2014)
About Hippo

Hippo is on a mission to make the digital experience more personable for every visitor. We’re redefining the CMS space by engineering the world’s most advanced content performance platform, designed to help businesses understand their visitors – whether they are known or anonymous – and deliver the content they value in any context and on any device. Together with its global network of Certified Partners, Hippo serves a rapidly growing number of enterprise clients around the world including Condé Nast, Bell Aliant, Autodesk, Couchbase, the Dutch Foreign Office, Mailchimp, Randstad, Veikkaus, the University of Maryland, NHS, 1&1 Internet, Bugaboo and Weleda.

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References: