flooid
a GLORY company

Technology white paper:

Beyond Composable Commerce

Introduction

Two decades of rapid technological breakthroughs have created an environment of innovation and disruption. As Marc Andreesen said, we are now living in an age where "software is eating the world"[1]. Consumerization has changed irrevocably; customers now expect quick, efficient, private, secure, fun, entertaining and social interactions with every shop. This has driven a constant evolution of software capabilities. One example is Netflix. Netflix did not aspire to make DVD rentals more efficient. It stretched beyond to revolutionize home entertainment. Netflix went through several evolution cycles to support co-founder Reed Hasting's vision, and is now the most elaborate, robust, elastic and self-healing streaming and web platform, with multiple points of presence in the world. The lesson is to think beyond today, and instead imagine what a future built around the consumer could and should look like.

Retail

The retail industry can learn from the Netflix story. Retailers who want to offer the right consumer experience need to constantly evolve their technology to support their vision. They need partners who can offer the most relevant and feature-rich capabilities for specific industry segments. They need solution providers that can ensure superior consumer experiences via the composition of core system capabilities interspersed with a combination of vendor building blocks. And they need to think in terms of composable commerce; the concept of combining platform capability, feature function and consumer voice to deliver greater value. One real world example is Flooid's solution suite which embraces forward thinking, evolutionary technology extending beyond a composable platform to encompass the end user experience, the technological capabilities giving life to the end point engagements, and the after-the-fact application of analysis and perspective to drive continual business performance.

1 Why software is eating the world, Marc Andreessen, Aug 2011 https://a16z.com/2011/08/20/why-software-is-eating-the-world/

The challenge

Retail goes beyond the trappings of a physical store. Consumers want to discover, buy, and reserve products online through multiple touchpoints including their home PCs, mobile devices, and physical and digital touchpoints delivered by businesses they interact with each day. Customers expect a swift, smart and smooth experience, consistent across channels, where product discovery is easy, entertaining, and engaging. They expect recognition and rewards for their loyalty, regardless of how they shop. They want delivery and pickup choice, supported by appropriate inventory.

These fast, frictionless experiences can only be enabled by 'orchestrating' services, or capabilities in various domains. Continuous improvement is also important; over time, customers expect that these capabilities will constantly evolve to become faster and smoother processes that perform better. To differentiate, retailers turn to micro-front-end (MFE) architecture to decouple services and increase flexibility. The shift to microservice based development allows for the creation of feature rich, composable applications. The emphasis on components and their composability, within the microservice framework, yield net benefits such as versatile designs, clean and manageable codebase(s), and the ability to autonomously and incrementally deploy features. These benefits, by extension, cascade down to the retail customer and aim to fulfill their evolving expectations.

Some examples of ever-increasing consumer expectations:

- Response time
- Device compatibility
- Allocated information (prior visits, preferences, frequently ordered items)
- Other contextual information (e.g., location, time, weather)
- Purposeful advice (e.g., it's time to buy a new toothbrush).

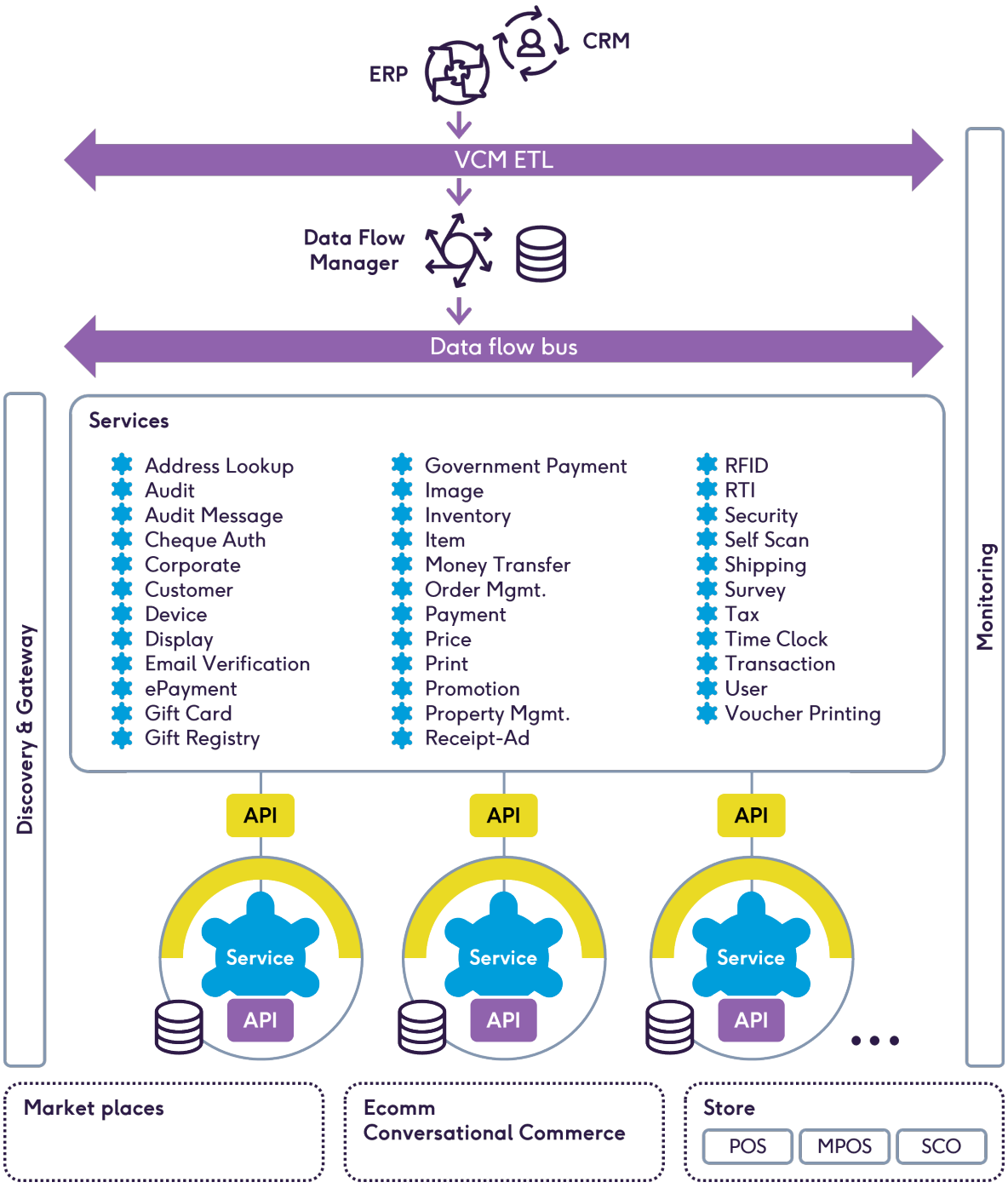
Retailers must fulfill these promises to remain competitive in a fierce marketplace. They must be agile to a point that potentially all capabilities could be deployed and updated every day, with all physical and digital channels always available, even if a store loses Internet connectivity.

For a retailer with 10,000 stores, 500,000 products, 100s of millions of customers, this is a challenging proposition:

- How to assemble the best services?
- How to ensure data is consistent across all channels?
- How to ensure all channels are up and running smoothly?
- How to track every single customer activity to provide them the best support?
- How to iterate, try, and add new experiences without impacting the whole ecosystem?
- How to control and lower cost of operations?

The solution

Flooid developed a mature, comprehensive, robust retail platform comprised of best-in-class services and endpoints. Modern enterprise architectures simply integrate and interoperate with the platform. They then achieve composability through extension of these services and endpoints.



There are numerous core services available. Each implements a specific domain[2] based on a modern accepted microservices pattern[3] with powerful extensions. Their main characteristics are:

- Purpose built: do one thing and do it well
- Ownership: each service owns its data
- Transparent: actions across multiple microservices are managed in a distributed fashion, with each endpoint being intelligent enough to recognize ebbs and flows
- Consistent: every piece of data resolves to a predictable state
- Available: each service provides information about its state
- Extensible: each service can be extended with new behaviors to accommodate varying environments and contexts
- Discoverable: services can be identified, accessed and impacted by endpoints
- Compatible: backwards and forwards harmony between versions is ensured
- Scalable and elastic: each service has been designed to scale diagonally to support volume, automatically decreasing consumed resources to optimize infrastructure cost

Additional capabilities drive extra value:

- Monitoring and estate management: within a single framework, services and endpoints provide a feedback loop enabling active oversight and optimized performance
- Orchestration: Flooid offers an orchestrator that enables light endpoints to defer heavy lifting operations to the back end
- Synchronicity and Continuity: which offers infinite possibilities for deploying additional capabilities and enabling resilience in physical endpoints and locations

2 Using the term 'domain' in reference to Eric Evans' description in his book Domain-Driven Design (DDD). A domain refers to a business domain that must be matched by a software system. https://en.wikipedia.org/wiki/Domain-driven_design

3 Adhering to Martin Fowler's description of microservices in relationship to DDD. https://martinfowler.com/tags/domain%20driven%20design.html

The value proposition

Today's ever-shifting retail landscape is aligned around the customer. Consumers need the ability to safely, securely, and most importantly, reliably transact. Whether from home, or a store, or half-way across the world, the consumer should be able to select their product of choice and receive the unanimously gratifying confirmation receipt.

Flooid gives retailers, irrespective of size, the ability to scale with consumer demands. It delivers the capacity to unify the commerce stream and consolidate all roles including front/back office, inventory/estate management, data integrity and synchronicity, allowing the retailers to tailor experiences to specific business needs. This level of customization allows retailers to delegate most of the "run-the-engine" activities to the system, and focus solely on selling products and growing their business by delivering exceptional shopper experiences.

Agility, reliability and quality are achievable differentiators through integration with Flooid. Products such as DFM (Data Flow Manager) provide resilient data-transfer vehicles for software interconnection. These vehicles, once connected, ensure real-time updates. In the event a price changes, for example, those changes must ripple to all connected endpoints including till, terminal, and pricing software. For endpoints which may not have real-time capability, DFM can actively cache pricing updates, and communicate when an update is ready. DFM scales to fit even the largest retailers, upwards of 100k endpoints.

Resilience

Resilience, in today's interconnected society, is another must-have requirement:

- What happens if the storefront loses Internet connectivity?
- How does one address lag between system communications?
- Where is data cached in the interim?
- Will my customer's transactions resolve properly?

These questions become more complicated when considering scenarios comprised of scaled storefronts which see close to half a million transactions a minute such as estates with 20,000 stores and 25 lanes per store. To address these scenarios, Flooid leverages a variety of solutions to establish resiliency through data, services and platform architecture.

One configuration can be as simple as a mini-clone of a full-service system, which can relate to an individual storefront or multiple locations. An extended approach includes full core commerce services, data redundancy as well as connectivity to third-party services, which delivers self-sustenance, ultimately eliminating the need for maintenance. In other words, if an issue does arise, operations fall back onto the store network edge to ensure continuity.

Agility

Robust and feature-rich Point of Sale (POS) and Mobile Point of Sale (Mobile POS) solutions also depend on a flexible service-based platform which can be customized to add or remove functionality as needed. Benefits are achieved through cloud-based micro-front end (MFE) architecture. This delivers choice; a customer can purchase an individual component from Flooid and later decide to add new functionality to support their growing eCommerce business through a web-application. The only pre-requisite would be to develop a simple application which leverages Flooid's JavaScript libraries. Essentially, the only thing changing for the retailer is the controlling service- the web application. The POS does not require an upgrade and the system does not require an overhaul. These types of quick implementations are achieved through the agile MFE capability.

Conclusion

Digitization is not a preference anymore — it is an imperative. Consumer loyalty and shopping decisions are driven by the presence and availability of digital capabilities, even extending to their digital wallets.

Flooid has designed an elegant, powerful platform to deliver real composability. It has continually metamorphosed the platform and extended its portfolio to offer the most complete array of experiences suited to the variety of roles in the retail domain. Driven by the objective and benefits of modularity, Flooid has heavily invested in the evolutionary aspects required to make the platform truly composable. This includes the leverage of third-party services and application of agile principles, the removal of operational bottlenecks and legacy assets, the creation of appropriate architecture, and the offer of extension and enhancement capabilities.

A true growth-enabler

Flexibility, security and reliability are key aspects of the Flooid product portfolio. Commitment to agility and the MFE infrastructure removes churn and additional overhead managerial tasks, to allow retailers to focus on growth.

Flooid is committed to innovation and optimization, enabling retailers to capitalize on the digital revolution. With a cloud-first philosophy, a full range of consistent, engaging robust experiences and composability front of mind, retailers can streamline operations to succeed today, and embark on a rewarding journey enriched by collaboration and extensibility.

Today's economy is increasingly dynamic, and consumer expectations require retailers to be agile. The necessity for market relevance and competitive differentiation is paramount. Flooid's aspiration is that its clients benefit from the sustainable and efficient nature of the platform to support constant change. Flooid's accumulated experience coupled with the breadth and depth of its solution portfolio, enable it to provide thought leadership to retailers, while the platform catalyzes retailer's ability to innovate, achieve profitability and attain business objectives.

Flooid works with some of the world's leading retailers. If you would like to learn more about Flooid's capabilities, please contact us.

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