



# AGILE ARCHITECTURE FOR A DYNAMIC RETAIL LANDSCAPE

A whitepaper by RetailReply

# CONTENT

- 1 ABSTRACT**
- 2 INTRODUCTION**
- 3 BENEFITS OF AGILE ARCHITECTURE FOR RETAIL**
- 4 KEY AGILE ARCHITECTURE PRACTICES FOR RETAIL**
- 5 CASE STUDIES**
- 6 CHALLENGES & CONSIDERATIONS**
- 7 RECOMMENDATIONS & BEST PRACTICES**
- 8 CONCLUSION**

## ABOUT RETAIL REPLY

Retail Reply helps brands accelerate their response to the opportunities of digital transformation and customer experience, both in-store and online, in the retail, fashion, telco and hospitality sectors. Retail Reply supports clients' digital transformation across Digital Strategy, Planning, and Delivery. Our expertise includes IT architecture, digital product delivery, customer contact centre transformation, point-of-sale implementation, loyalty & promotion-engine development and execution, online and mobile customer experience, omnichannel implementation via microservices architecture, and capability-led planning.

## GET IN TOUCH WITH US

Richard Gillings (Partner)  
[r.gillings@reply.com](mailto:r.gillings@reply.com)

# ABSTRACT

The retail industry is undergoing a period of unprecedented change, driven by evolving customer expectations, the rise of e-commerce, and a dynamic technological landscape. The past few years alone has demonstrated the need for all of us to be able to respond to various social and socio-political challenges on a national and even global scale faster than ever before.

Traditional, monolithic architectures and their supporting practices struggle to keep pace with this agility. This whitepaper explores how Agile Architecture practices empower retailers to excel in this environment.



# INTRODUCTION

**The Retail industry has always been a challenging sector, with many businesses having to be more and more mindful of their profit margins however it is no secret that recent times have particularly difficult due to various socio-economic factors. The impact of recent socio-political events has led to an unprecedented rise in all round costs and has required a fundamental shift in the way that changes need to be managed and made to align with changing regulations while still being able to return a profit.**

Alongside all this many retailers are starting to realise that their current technology set ups are making it increasingly difficult to keep pace with consumer demands and expectations and external challenges from newer, less traditional retailers looking to increase their own market share. These legacy systems coupled with the people, processes and Architecture practices currently in place to support them make it difficult for traditional retailers to be able to be dynamic and adopt more agile, product-based ways of thinking and working. However, Retail Reply have been using their extensive experience of working within the industry to bridge the gap between these monolithic, legacy systems and processes while helping retail organisations to adopt more product-based thinking and methodology. Front and centre of these transitions has been the training and advice on how Agile Architecture practices could be adopted.

**At its heart Agile delivery is all about creating an ongoing pipeline of change (technical and business) to enable organisations to respond more dynamically to changing situations, which for a volatile market like the current Retail market is ideal. However, Architecture functions within organisations often get accused of slowing things down and acting like the “fun police” when the rest of the business is apparently “just trying to get things done”.**

Depending on the organisation, this may or may not be true however this paper aims to provide an oversight on how Architecture functions can be more responsive to these requests and how good Architectural thinking is a vital part of Agile delivery while still making sure that the relevant Architecture Practices and artefacts are applied when needed.

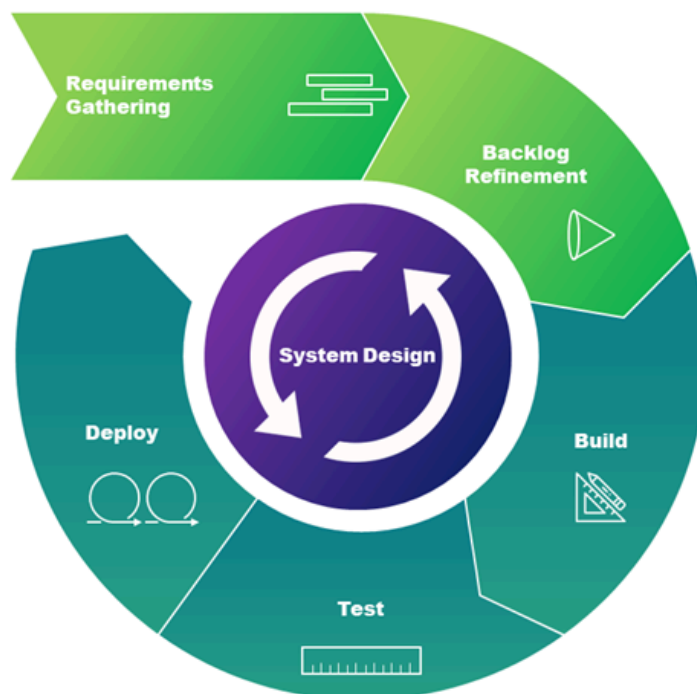


Fig. 1 The Agile Architecture cycle

# BENEFITS OF AGILE ARCHITECTURE FOR RETAIL

Agile Architecture practices can provide a number of benefits to businesses within the retail sector:

- **Faster time to market for new features and functionality:** In an industry where external pressures are inflicting their own changes on Retail business; it is essential that technical Retail systems can be updated frequently and incrementally to meet demand. An Agile Architectural approach enables this by breaking up delivery in to smaller, more manageable chunks rather than the bigger, less frequent releases traditionally accompanied by traditional Architecture.
- **Improved customer experience through rapid iteration:** Customers' expectations of the systems they use are greater than ever and they have multiple channels to present their opinions – either good or bad. An Agile Architectural approach enables an organisation to react to this feedback rapidly in a structured way whilst ensuring that there is strong technical alignment on the changes required.
- **Enhanced integration between online and offline channels (Omnichannel):** “Omnichannel” is a word that is used a lot to describe an organisation’s desire to make their products available via as many channels as possible but without a good Architectural foundation, it can be difficult to ensure that all of these channels work together harmoniously. Agile Architecture offers the ability to not only create that foundation but also deliver changes to the relevant channels and pivot across the channels if the business agrees to reprioritise one channel over another (e.g. a seasonal increase in physical in-store changes over online sales).
- **Improved system maintainability and greater visibility of technical debts:** Agile Architecture by its nature forces the Architect and the delivery team to break the solution down in to smaller, more manageable pieces. This improves the way in which the wider visibility of the components of the system, therefore improving the way each component can be supported. This also increases the visibility of technical debts across the system, therefore ensuring that any technical debts conceded are called out and signed off if needed so that they can be addressed at a later date as part of the ongoing support and maintenance of the system.

# KEY AGILE ARCHITECTURE PRACTICES FOR RETAIL

- **Customer-Centric Design:** Arguably more than any other industry, the Customer is King within the retail sector. The customer should always be at the centre of good system design and Agile Architecture practices enable more directly responsive changes and a better opportunity to engage with both internal and external users to ensure that what is being designed aligns more closely with their expectations and needs.
- **Modular Architecture:** Designing a system architecture as a set of connected but separate modules and components offers more flexibility and greater clarity when it comes to ongoing support and maintenance while not having to redeploy the whole tech stack to deliver the relevant changes.
- **API-driven Integration:** Alongside the more modular approach to the systems themselves, employing a more API driven based architecture framework is key to ensuring that the components required can communicate effectively with each other while still ensuring that customer and business expectations are met with regards to performance and other metrics.
- **Continuous Delivery:** A continuous, regular and repeatable deployment cycle is critical for ensuring that deployed changes are made effectively and in line with customer and business demands. At the centre of this cycle, the architecture developed should be in line with a cycle of automated testing and regular deployments so that the benefit can be realised as quickly as possible. Channels for incorporating feedback from internal and external users should also be embedded to ensure that the system design can be reviewed and updated if required dependent on the feedback required and any issues that may come to light.

- **DevOps Collaboration:** Unfortunately, as good as the design and development of a system is, no design is perfect and there will always be issues. Although not necessarily addressed by the technical architecture itself, the architectural design should help and encourage greater collaboration between all the teams involved including the developers, hosting and infrastructure support, and the ongoing support team particularly when triaging and resolving issues. If there is an issue, users do not care where the issue is and who is to blame for it and with the channels available, they can make their feelings known very quickly and very publicly. Arguably this is particularly relevant for retail customers as a loss in user confidence due to system issues can lead to a rapid fall in revenue. Ensuring that the architectural design is understood by all the relevant teams so that issues can be triaged as quickly and effectively as possible is vital in minimising the impact of these issues.





# CASE STUDIES

The examples below are summaries of where Retail Reply have worked with clients to embed Agile Architecture practices within pieces of work

**Shelf Edge Ticketing:** After an in-depth review, it was agreed that a new API driven, Ticket Management and Production system should be brought in to be able to cope with increasingly dynamic demands on ticketing due to changes in regulations and market conditions. It was therefore agreed that the semi-Agile / Iterative structure to the development of the system should be followed which also included the Architectural design. The solution was developed as a combination of a SaaS (Software as a Service) platform, improved integration design where possible and integration with various legacy systems to ensure that the data required to produce the tickets came through at a time that would align with the appropriate schedule for printing and displaying the tickets. This was achieved by establishing a target architecture for the system and then building out the wider design iteratively. Although not included in the MVP (Minimal Viable Product), the Architecture also considered the possibility of outputting the tickets to digital displays rather than traditional physically printed tickets.

**Aligning Trade (B2B) and Non-Trade (B2C) customer facing portals:** As part of a drive to improve operational efficiency across the website, a client wanted to align the functionality across the trade and non-trade access portals for their main customer facing website. After a review of the options available, it was agreed that the best approach would be to re-architect the site, and the underlying tech stack, in a more modular, less monolithic way that would enable trade and non-trade users to access equivalent functionality by using the same technical components but in a more contextual way. This new modular set up was not a full microservice based architecture but followed more of a hybrid “Modular Monolith” based structure which the team felt gave the flexibility required whilst not substantially increasing support overhead by decomposing the components too far.

**Once a high-Level Design for the updated platform was agreed, an MVP approach was adopted to implement this structure for order amendment functions within the site with a view to rolling the structure out to other areas at a later date if agreed to be effective.**

# CHALLENGES & CONSIDERATIONS

The table below gives an idea of some of the main challenges faced by teams looking to adopt a more Agile approach to Architectural design and the ways they can be mitigated:

## CHALLENGES

## MITIGATION STRATEGIES

Lack of a fixed end design before development makes budgeting difficult

“Going Agile” isn’t just something that an organisation can just do overnight. At the very least there needs to be a discussion between the agile teams and the senior leadership teams responsible for things like budgeting to make sure that the budgeting structure can support this method of delivery. The Delivery team should also have an awareness of budgetary limitations so that they do not get too carried away with the system they are developing.

Lack of a fixed end design before development may not surface all of the issues that may come up

Even in more traditional, waterfall-based development structures, no design ever fully exposes all of the issues that may arise during development. Agile development cycles enable an ongoing cycle of development, testing and feedback to drive out issues as they arise and as part of this cycle, the architecture and design can be updated accordingly. If something comes up often enough, this may result in a set of Emergent Design Principles being developed which could then be considered for folding back into the organisations Architectural Guardrails.

## AGILE ARCHITECTURE FOR A DYNAMIC RETAIL LANDSCAPE

Ongoing delivery requires senior management to trust in the development team to make the right decisions at the right times

In order to enable a team to run at pace, a development team cannot refer every design decision that needs to be made to senior leadership. A level of trust needs to be established between the Architect working with the development team and the senior leadership team based on established design principles and standards. If there are issues or decisions that need to be highlighted (e.g. if the team believe that the best option available will incur technical debt) a mechanism for constructively presenting the decision and the background to it should also be established.

The design and architecture of the build could start to drift away from other areas of development happening in other areas of the business leading to a more complicated tech landscape

This again comes back to establishing a good set of architectural principles and standards that the development team are not only aware of but understand and are comfortable with applying to their own designs Demos and regular alignment sessions of the design work are also encouraged to ensure that the developing designs meets the expectations of the organisation.

The wider business may not be used to such frequent system changes if they are used to more traditional, less frequent system changes

Architecture is about more than just the technical design, and it is strongly recommended that technical architecture is accompanied by some degree of business architecture and developed in collaboration with a change manager who can help with discussing the changes with business resources outside of the development team to ensure that they can be accommodated or understand if they can't be for some reason.

Existing technical resources may be resistant to the changes if they are more used to more traditional ways of working

Many organisations have longstanding, incumbent technical resources that are incredibly valuable in terms of understanding how legacy systems operate, may be reluctant to changing the way systems are developed for various reasons The people within these roles should not be ignored and any changes to the architecture and the way the architecture is developed cannot be made without an appreciation of the current set up. Therefore it is strongly recommended to work with these people, and their applicable teams to understand their points of view and any issues including those that feel may require less agile and more upfront design and consideration work.

# RECOMMENDATIONS & BEST PRACTICES

If you and your organisation are ready to start developing Architectures in a more agile way, here are a few recommendations and steps:

- As an architect, do not ignore your training or prior experience. TOGAF and BCS training is still valid however the way in which you use these skills and practices may be different compared to more traditional ways of working which you may be used to
- Do not assume that by saying that a team must “go agile” that it will happen automatically and overnight. Ensure that there is a shared understanding of what “going agile” means and particularly with regards to the architecture team, make sure that they are comfortable with the way that the various Architectural Artefacts will be produced as the design is developed.
- Ensure that there is a good set of principles, standards and general guardrails to ensure that the specific Architectures are developed in line with the standards and expectations of the architecture team and wider business. Also ensure that there is a feedback mechanism to enable the established guardrails to be updated when they need to be.
- Although the Architecture deliverables themselves may stay the same, as an architect working in an agile environment, it is your responsibility to ensure that you are at the very least aware of developments in changes to technologies relevant to the area you are working in so they can be applied to the solutions being developed if required and the benefits and challenges of doing so can be managed accordingly.

# CONCLUSION

**Architecture is always a key part of any development and particularly within a fast-paced Agile development cycle, ensuring that the technical design and architecture is well defined is critical. The dynamic and fast-moving nature of the Retail and the ongoing challenges the industry faces lends itself to agile development practices by its very nature therefore it makes sense to ensure that your architecture practice follows suit accordingly.**

**At Retail Replay we specialise developing Architectures within Agile, and often challenging, Product Based working environments so if you require help and support in getting started, please do get in touch.**



[www.retail.reply.com](http://www.retail.reply.com)