afme/
Finance for Europe

MUREX™

Adopting Agile Work Practices at Scale in European Capital Markets

September 2020

/ Association for Financial Markets in Europe
www.afme.eu

Disclaimer

AFME's *Adapting Agile Work Practices at Scale in European Capital Markets* (the "Report") is intended for general information only, and is not intended to be and should not be relied upon as being legal, financial, investment, tax, regulatory business or other professional advice. AFME doesn't represent or warrant that the Report is accurate, suitable or complete and none of AFME, or its respective employees shall have any liability arising from, or relating to, the use of this Report or its contents.

Your receipt of this document is subject to paragraphs 3, 4, 5, 9, 10, 11 and 13 of the Terms of Use which are applicable to AFME's website (available at http://www.afme.eu/en/about-us/terms-conditions) and, for the purposes of such Terms of Use, this document shall be considered a "Material" (regardless of whether you have received or accessed it via AFME's website or otherwise).

September 2020

Contents

Executive Summary

Agile is a methodology used by organisations across different industry sectors to increase the speed, flexibility, and quality of IT software and product delivery. Today, the work practices of the Agile methodology are increasingly being adopted by organisations at scale across their entire organisation and driving new ways of working and working cultures.

Agile work practices are making the capital markets industry more flexible, innovate, effective and secure. They are enabling banks to achieve better outcomes for their clients by reducing costs, driving competitiveness and being more adaptive to change.

This AFME Technology and Operations Committee paper explores the adoption of Agile work practices at scale within the capital markets industry. The key findings are:

- **Many banks have existing and mature Agile capabilities within their IT and business functions.** This has led to several key benefits for IT software development, such as greater business agility and innovation; increased collaboration; improved overall cost management; increased effectiveness; enhanced client experience and service offerings; and effective risk mitigation.
- **There is an increased appetite from banks to embrace Agile work practices at scale.** While Agile adoption has mainly focused on software development by banks' internal IT functions, there is an increasing appetite—and willingness—to use Agile work practices at scale across the bank (e.g., implementing hybrid business and technology teams that are focused on increasing collaboration, innovation, and having shared accountability and goals). Agile work practices at scale are an enabler for the digital transformation of banks, by embedding a client- and outcome-driven approach, and increasing collaboration with partners, clients, and other industry participants.
- **There are several challenges banks face in adopting Agile work practices at scale.** These challenges are both internal to banks (e.g., having the right skills and tools), and industry wide (e.g., adapting existing processes and compliance requirements to a new way of working). In response, banks are continuing to assess and refine how they are adopting Agile work practices to address these challenges.
- **Increased adoption of Agile work practices at scale ultimately requires some levels of cultural change within banks and more awareness of the benefits across the capital markets industry.** This paper puts forward five messages to support the continued adoption of Agile work practices at scale. The messages emphasise that both banks and regulators need to build experience in Agile work practices and that culture change is an important enabler for success. Leadership across the capital markets industry needs to drive the cultural change and embrace the collaboration, accountability, and innovation that Agile work practices can bring.

AFME and its members look forward to discussing the recommendations with all industry participants and continuing to support the transition to Agile work practices at scale within capital markets. The adoption of Agile work practices at scale will act as an enabler of the wider digital agenda for the capital markets industry and EU.

"Agile work practices are making the capital markets industry more flexible, innovative, effective and secure"

Adopting Agile Work Practices at Scale in European Capital Markets

Introduction

In our September 2018 paper, *Technology and Innovation in Europe's Capital Markets,* AFME identified the adoption of Agile work practices as one of eight principles for shaping the "Investment Bank of the Future"[1].

Agile work practices have their origin in Agile principals, which emerged from the IT software development community based on *The Agile Manifesto*[2]. Today, organisations across all industry sectors are increasingly adopting these Agile work practices (e.g., speed to market, collaboration, outcomes-driven, continuous improvement) at scale (i.e., throughout the entire organisation).

For investment banks ("banks"), Agile work practices are being adopted to:

- Simplify and increase the efficiency of technology and operations processes
- Reduce the time, cost, and risk exposure for IT change
- Increase collaboration and organisational flexibility between teams and functions

Ultimately, adopting Agile work practices at scale requires a change in a bank's organisational design and culture to increase collaboration and become client- and outcomes-driven. This can enable banks to accelerate their digital transformation and remain competitive and responsive to future circumstances and disruptions.

This change in work practices for banks is vital based on the pace of technology change, increasing industry competition, and changing expectations of clients and the workforce. New technologies such as cloud and AI require new ways of working and skills for their potential to be realised (e.g., cloud can free up resources for other value-add activities or roles).

Agile work practices will also be an important enabler of the EU 2020 digital agenda[3], which aims to support innovative business models, increase the uptake of new technologies, and foster the security and resilience of the financial system in Europe. Changing existing ways of working will be required to adapt to a more digital future and for these opportunities to be realised, as new busines models, skills and technologies are adopted. The COVID-19 pandemic has also highlighted how disruption requires banks to be increasingly flexible to change (e.g., deploying remote working tools quickly across the workforce) and able to quantify the impact of disruption on productivity.

Since publication of our 2018 paper, banks are now increasingly adopting Agile work practices. However, adoption at scale is still at an early stage for the industry and several challenges exist that need to be addressed. Banks must continue to ensure that increased adoption of Agile work practices at scale does not pose unforeseen risks to the secure, reliable, and efficient operation of financial markets.

This paper has been developed by the AFME Technology and Operations Committee to provide:

- The concept of Agile work practices
- Agile work practices at scale in capital markets
- Key messages for the adoption of Agile work practices at scale in capital markets

We would like to thank AFME Premium Associate Member Murex for its input to this paper.

1 https://www.afme.eu/portals/0/globalassets/downloads/publications/afme-pwc-tech-and-innovation-in-europes-capital-markets.pdf

2 https://agilemanifesto.org/

3 https://ec.europa.eu/digital-single-market/en/content/european-digital-strategy

1. The concept of Agile work practices

"Agile work practices" are where the characteristics and benefits of "Agile" principles for IT software and product delivery are applied across entire teams, functions, or an organisation. The tools, benefits, and practices of Agile are embedded in an organisation's business as usual and change activities, ways of working, and, ultimately, its structure and culture.

The following section summaries how Agile work practices have been derived from the principles of Agile and example methodologies that have been developed. This section also outlines the characteristics and benefits of Agile work practices and examples of how they have been implemented across multiple industry sectors.

The principles of Agile

Agile emerged in the 1990s IT software community as traditional approaches to the IT development lifecycle[4] (such as the "Waterfall" approach[5]) were becoming ill-equipped to meet changing demands (e.g., client expectations for quicker and higher quality IT software products and updates).

Agile vs. Waterfall approaches for IT software development

In a Waterfall approach, each phase of a project (e.g., requirements, design, build, test) is completed one after the other, in a linear sequence; each phase cannot begin until the previous one is fully completed. This means that the outcome of a project (e.g., a new IT application) is typically delivered in "full" only at the end of the project.

In an Agile approach, all phases of the project or initiative take place over repeated shorter cycles ("sprints"), which last just a few weeks. After just one sprint cycle, a "Minimum Viable Product" (MVP)[6] can be available for use (e.g., the basic functionality of a new IT application). Once a sprint is complete, the feedback on the result and process is then used to inform the next sprint. This means that a project can be delivered incrementally in bite-sized pieces.

These changes in demand and expectations for IT software led a group of individuals from technology companies to publish *The Agile Manifesto* in 2001[7]. *The Agile Manifesto* is a set of four values and 12 principles which underpin how to develop and release IT software in iterative cycles. This Agile approach meant that development could be incremental, adaptive, and based on continuous feedback and improvement.

The development of Agile methodologies

The principles of *The Agile Manifesto* led to the development of several Agile methodologies (i.e., a set of processes, tools, and terminology for delivering Agile change). Each methodology is aligned to the overarching principles of *The Agile Manifesto*. Widely used Agile methodologies for IT software development include Scrum[8], Extreme Programming[9], and Kanban[10].

4 Software Development Life Cycle (SDLC): refers to a methodology with clearly defined processes for creating software. See further detail in Appendix.

5 Waterfall methodology: Waterfall methodology is a sequential linear project management approach. See further detail in Appendix.

6 Minimum Viable Product (MVP): is a version of a product with just enough features to satisfy early customers and provide feedback for future product development. See appendix for more details.

7 https://agilemanifesto.org/

8 Scrum is an iterative and incremental framework for managing complex work. See further detail in Appendix.

9 Extreme Programming is a software development methodology which advocates for frequent "releases" in short development cycles, which is intended to improve productivity and introduce checkpoints at which new customer requirements can be adopted. See appendix for more details.

10 Kaban is an approach to managing projects and tasks by balancing demands with capacity, and by streamlining processes to increase efficiency. See appendix for more details.

These globally recognised Agile methodologies are now widely applied in various ways in financial services and other industry sectors, as an enabler for their digital transformation, for example to:

- Develop IT software and products
- Support business as usual operations and processes
- Deliver non-IT change projects

An important adaptation of Agile has been the "DevOps" methodology, which is where an organisation merges its IT and Operations teams to cover both change (e.g., projects) and run (e.g., operations) activities in a single function.

DevOps as an Agile methodology

DevOps is a common Agile methodology that has been adopted widely by organisations in the last five years, including financial services. In DevOps, an organisation merges change (e.g., projects) and run (e.g., operations) teams to reduce the traditional silos that exist at an organisational level. Combining both teams is a way of increasing information sharing and developing transferable skills; reducing duplication of activities to increase efficiency; and building shared objectives and accountability for both change and run activities.

In 2007 the European Commission released its own project development methodology for EU public sector change that is based on the principles of *The Agile Manifesto*. Called the "Open Project Management Methodology" (PM)[11], it is an approach to managing projects based on a specific set of principles and practices that promote adaptive planning, evolutionary development, early incremental delivery and continuous improvement.

Each Agile methodology has specific characteristics and types of activities or projects where it is most applicable; however, all the methodologies are broadly aligned with the principles of *The Agile Manifesto*. A summary of the common characteristics of Agile are provided in Table 1 below.

Table 1: **Common characteristics of Agile methodologies**

Characteristic	Description	Benefits compared to Waterfall
Speed to market	Delivery of Minimum Viable Products (MVPs) in short timeframes.	• Change is delivered with a higher level of speed and frequency.
Effectiveness of project delivery	Development in iterative cycles ("sprints") of fixed periods of two to four weeks on average (a "timebox").	• Project costs and requirements can be managed with more predictability within each cycle. • Incremental development provides more certainty and control over the required outcome.
Collaborative and transparent teams	Self-organising and multidisciplinary project teams are formed from across an organisation.	• Stakeholders have increased responsibility for a project outcome. • Feedback is provided in near real-time so that it can be actioned in the next cycle and decisions can be made quickly.
Continuous improvement	Continuous planning, testing, and integration of project outcomes in near real-time; the concept of "fail fast" to identify defects.	• Defects can be identified and fixed early rather than waiting for the full project to be completed. • New value-add requirements can be identified and incorporated as a project takes place.
Adaptable and responsive	The Agile methodology offers easy adaptation to changing requirements.	• Requirements can be changed early and frequently as a project is progressed.

11 https://ec.europa.eu/isa2/solutions/open-pm2_en

Whilst the characteristics and benefits of the Agile methodologies summarised in Table 1 can provide significant value to organisations, Agile on its own may not be suitable for all types of activities. For example, a large-scale and complex technology transformation requiring delivery over multiple years (e.g., a core banking platform replacement), might be best served by a combination of Agile and Waterfall approaches. This is because change activities of this nature may involve risks that require more significant upfront planning, the definition of long-term requirements, and precise phasing for implementation and testing.

From Agile to "Agile work practices" at scale

Many organisations have sought to apply the principles of Agile at scale across entire teams, functions, or the organisation. The adoption of Agile work practices at scale can give an organisation the benefits of Agile across all functions and aspects of its business, operations, and IT.

Agile work practices at scale first emerged in the technology sector as an extension of Agile being used for IT software development. Several specific Agile at scale methodologies have now emerged and remain at an early stage in their maturity, such as the Scaled Agile Framework (SAFe)[12], Large-Scale Scrum (LeSS)[13], Disciplined Agile Delivery (DAD)[14], and Nexus[15]. The methodologies support the orchestration and alignment of Agile teams to match the firms' strategy and desired business outcomes. Organisations look to these and other methodologies to develop their own approach.

The common characteristics of Agile work practices at scale is provided in Table 2 below.

Table 2: **Common characteristics of Agile at scale work practices**

Characteristic	Description	Business outcomes
Organisational flexibility	Organisations retain a top-level governance structure, but replace the remaining hierarchy with a flexible and scalable network of teams.	• Self-organising and autonomous teams that can allocate resources to activities more flexibly. • Increased flexibility, allowing for a balance between individual accountability and collective coordination. • The handover of tasks and interdependencies between teams is reduced.
Innovative	Rapid cycles of "thinking and doing" (e.g., process redesign, lean operations) to make the organisation more effective, adaptable to change and, in turn, more innovative.	• Innovating change and reducing costs to be more effective is central to all areas and activities of an organisation.
Outcomes-driven	People and teams are accountable for creating value in their organisation, fostering engagement and purpose.	• Increased focus on shared outcomes rather than rules, processes, and hierarchy. • Increased cohesion and purpose across the organisation.
Client-centric	Meeting client or internal user needs is placed at the centre of the vision for the organisation.	• Client or user feedback integrated directly into how the organisation operates and its goals. • Client feedback is proactively sought and used to enhance products and services.

12 The Scaled Agile Framework (SAFe) is a set of organization and workflow patterns intended to guide enterprises in scaling agile practices. See more detail in appendix.

13 The Large-scale Scrum (LeSS) is a product development framework that extends Scrum with scaling rules and guidelines. See more detail in the Appendix.

14 Disciplined Agile Delivery (DAD) is a people-first, learning-oriented hybrid agile approach to IT solution delivery. See more detail in the Appendix.

15 Nexus is an Agile framework that is used in a scaled agile project. See more detail in the Appendix.

The digital transformation of many industry sectors has accelerated the adoption of Agile work practices at scale. The growing use of IT products and services to meet business outcomes has led to this wide application and highlighted the importance of Agile.

Whilst not exhaustive of all industry sectors that have embraced Agile work practices at scale, a number of use cases in non-financial services sectors are provided in Table 3 below.

Table 3: **Use cases of Agile work practices at scale and business outcomes.**

Industry Sector	Use case summary	Business outcomes
Technology	In 2017, a global software company[16] adopted Agile work practices at scale which resulted in new products being released more quickly in a "beta" phase (i.e., a pre-release to a select group of users for testing).	• Increased client engagement. • Early identification of defects and client preferences. • More rapid trial and error in development.
Telecommunications	In 2008, a multinational telecommunication company[17] adopted agile work practices at scale to replace a long-standing internally developed waterfall-based delivery approach.	• Embraced a "fail fast" company culture. • Shorter project delivery cycles (e.g., 90 days). • Increased focus on delivering business value.
Aerospace	In 2018, a large U.S. aerospace company[18] embedded Agile work practice principles across different parts of the organisation to improve product design and testing, and its leadership team.	• Increased focus on product innovation. • Improved transparency and control of delivery costs.
Public Sector	In 2012, a U.K. public sector body[19] adopted Agile work practices at scale across different parts of the organisation to improve satisfaction of public sector products and services with its customers.	• Increased customer satisfaction by using product roadmaps. • Improved cost management by learning when to stop a project (e.g., failing fast). • Using data to measure success.

"The digital transformation of many industry sectors has accelerated the adoption of Agile work practices at scale"

16 https://www.forbes.com/sites/stevedenning/2019/06/02/how-amazon-became-agile/#f0bf3f431aa1

17 https://business.bt.com/content/dam/bt/business/PDFs/Campaigns/BT_agile_working_Ebook.pdf

18 https://medium.com/@cliffberg/spacexs-use-of-agile-methods-c63042178a33

19 https://www.gov.uk/service-manual/agile-delivery

Developing a culture for Agile work practices at scale

The adoption of Agile work practices at scale is less about IT software development and change projects and more about a new organisational design and ways of working to remain competitive and responsive to a rapidly changing environment. Agile work practices at scale are an enabler of digital transformation by embedding a culture that is more collaborative and outcome- and client-driven. The adoption of Agile work practices at scale, therefore, requires some level of change to an organisation's existing culture. This is because the characteristics of Agile at scale are often different to how an organisation has functioned. Therefore, it is important that the adoption of Agile work practices at scale is driven by senior leadership and throughout all areas of an organisation.

Common cultural traits of organisations that have adopted Agile work practices at scale include:

- **Collaboration:** Organisations change how they have been traditionally structured to focus on outcomes (e.g., what is the outcome I need from a change) rather than inputs (e.g., how will I deliver this change). As a result, an organisation's leadership is focused on supporting cross-functional teams to succeed (i.e., silos are removed by forming teams horizontally rather than vertically) by reducing hierarchy.

- **Continuous development**: Rather than a strict division of people and tasks, individuals in the workforce can take many different roles, placing an increased emphasis on the importance of learning new skills. This contributes to enhancing the flexibility and availability of resources (i.e., staff liquidity[20]).

- **Team autonomy**: Multiple teams can work together to achieve common goals. The organisation is more accommodating as to how individuals in the workforce manage their time (e.g., embracing flexible working).

- **Accountability**: Accountability for the outcomes of an organisation is placed on cross-functional teams working together, rather than dependencies on specific teams. The workforce is more accountable for the success or failure of a specific organisational objective, supported by appropriate tools and metrics.

- **Client-driven**: The organisation is less focused on strict processes dictating how work should be accomplished, but on trying different approaches to innovate and deliver improved client-outcomes.

"The adoption of Agile work practices at scale requires some level of change to an organisation's existing culture"

20 Staff Liquidity: Time taken to respond, deploy or redeploy resources. See further detail in Appendix.

2. Agile work practices at scale in capital markets

Agile methodologies and work practices have been widely adopted by banks in capital markets to increase the speed, flexibility, and quality of IT software and infrastructure delivery. However, whilst the use of Agile is well embedded across the industry, mainly in IT functions, the adoption of Agile work practices at scale, across multiple functions and teams, remains at an early stage.

The following sections provide use cases of how Agile work practices have been adopted at scale by AFME's Technology and Operations Committee member firms in capital markets. This section also outlines the opportunities and challenges for adopting Agile work practices at scale in capital markets.

Why banks are increasing their adoption of Agile work practices at scale

In developing this paper, we asked AFME Technology and Operations Committee member firms to highlight the specific benefits of adopting Agile work practices at scale. In summary, Agile work practices are enabling increased speed to market, greater organisational flexibility and change effectiveness, collaboration, and improved risk management. These benefits are important to ensure banks remain competitive and responsive to future change and disruption.

Further detail on the specific benefits identified for Agile work practices at scale in capital markets are provided in Table 4 below.

"The adoption of Agile work practices at scale, across multiple functions and teams, remains at an early stage"

Table 4: **Benefits of Agile adoption at scale in capital markets**

Benefit	Description	Examples in capital markets
Speed to market	• Develop a Minimum Viable Product or implement a change early for immediate testing and feedback.	• New product features and requirements are quickly integrated into an application that is used across the firm.
Effectiveness of project delivery	• Deliver change into the production environment more frequently. • Increase automation of activities through tooling. • Re-evaluate priorities and resources more frequently which can reduce costs.	• An application for client-onboarding is regularly updated and released with new requirements to streamline KYC processes.
Collaborative and transparent teams	• Increase connectivity between individuals in the same team to better understand mutual dependencies and constraints.	• A hybrid team is created to remove traditional organisational silos (i.e., technology, operations, controls, front office).
Continuous improvements in quality	• Identify, test, integrate product improvements as a continuous process to enhance product quality. • Embrace a culture of "fail fast" to identify defects early.	• Changes from initial testing are integrated early in the development of a new trade reporting application.
Adaptable and responsive	• Develop new tools (e.g., collaboration, productivity, pipeline management) and skills that enable increased speed and flexibility.	• Agile coaches and collaboration tools (e.g., velocity[21]) are deployed to increase effectiveness of project outcomes.
Organisational flexibility	• Flatter hierarchy and reduced organisational layers. • Increased ability to react and respond to changing circumstances or requirements.	• Resources are allocated across a project portfolio with a higher degree of control and flexibility (e.g., in weeks versus years).
Innovative	• Increased use of automation and measurement tools to make the organisation more innovative.	• A cloud-based technology solution is used to enable multiple Agile teams to quantify and automate delivery of projects.
Outcomes-driven	• Stakeholders actively provide regular feedback from the start of a project, which results in more collaboration and shared objectives.	• Regular sessions are held with clients and end-users to ensure early feedback and adequation with requirements is embedded in the approach.
Customer-centric	• Clients or end-users are regularly engaged during the delivery of a product so that it meets their goals.	• Short feedback loops with a front office team provide continuous insights on requirements, dependencies, technology, skills, and resources for an IT project.
Risk mitigation	• Improved control and mitigation of change and operational risks (e.g., costs, scheduling, implementation).	• Increased visibility and mitigation of risks for the development of a complex regulatory reporting application, which requires data from many different systems.

The successful adoption of new technologies (e.g., cloud, AI, DLT) was also seen by members as being underpinned by an organisation embracing Agile work practices. This is because these new technologies have usually been developed by the bank or a third-party provider using Agile methodologies, and therefore require similar skills and work practices for their adoption. In addition, the ability to refine new technology features over time often requires banks to integrate new skills, collaborate across teams and functions, and review legacy platforms or processes that need to be modernised.

21 Velocity is an Agile tool for revising the estimate of how long a project will take to complete after each iteration of development. See more detail in the Appendix.

How banks are adopting Agile work practices at scale in capital markets

Two uses cases on how Agile work practices have been adopted by AFME member firms at scale follow.

Use case 1: Global U.S.-based investment bank	
Objective	Implement an Agile initiative across the bank to converge Technology and Operations team work practices to increase efficiency and speed of product delivery.
Approach	The initiative offered a standard "Agile Operating Model for Operations" and coaching support to assist adoption. Support was offered in the following areas: • Adopt Agile methodologies with Operations (such as Scrum). • Develop cross-functional teams with staff from Technology and Operations teams to maximise effectiveness. • Introduce tools such as velocity, burndown[22], customer journey maps[23], design thinking[24] to inform continuous improvement. • Measure business value by connecting customer user experience with process quality and efficiency.
Benefits	The initiative resulted in new skills being developed by the workforce, faster delivery times, improved effectiveness, and greater creativity: • Providing Technology and Operations teams with new skills has enabled new ways of working. • Reviewing issues frequently with the wider team has resulted in faster delivery times. • Creating cross-functional teams resulted in improved collaboration, greater convergence of work practices and increased understanding of common goals and dependencies, resulting. in turn, in improved effectiveness. • Introduction of new tools to inform continuous improvement has resulted in more creative solutions.

Use case 2: Global European-based investment bank	
Objective	• Become a more responsive business by reducing time to market while increasing the overall quality of the client offering. • Increase innovation thinking and stay competitive in a fast-paced industry.
Approach	Implement a new digital business structure in four phases based around hybrid business and technology teams across the organisation: • Phase 1: Create cross-functional business and technology teams where every team has a product manager. • Phase 2: Operate every team on a digital book of work with business strategy linked objectives and results. • Phase 3: Train and coach teams to be more effective in reducing time to market, defining Objectives and Key Results (OKRs), lean and innovation thinking. • Phase 4: provide specialised training and coaching to drive sustainable change of practices to reduce time to market and increase innovation.
Benefits	• Approximately 400 hybrid teams created, consisting of about 3,000 members of staff. • Reduced time to market, all work linked to business strategy via OKRs, resulting in a nimbler organisation. • Increased innovation thinking practices and ability to deal with uncertainty and change. • Reduced costs when a shift of direction is needed.

22 Burndown is a chart that is a graphical representation of the amount of work left to complete versus time. See more detail in the Appendix.

23 Customer journey map is a sequence of possible events that a customer goes through from the first interaction until the completion of the transaction with an organisation. See more detail in the Appendix.

24 Design thinking is a non-linear approach to problem solving, which is focuses on observing people's behaviors. Based on these observations, designers come up with ideas which are quickly turned into prototypes. See more detail in the Appendix.

The challenges of adopting Agile work practices at scale for capital markets

We also asked AFME Technology and Operations Committee member firms to highlight the main challenges their banks faced in adopting Agile work practices at scale. Whilst implementing specific Agile methodologies is often more straightforward when contained to a specific function (e.g., IT), or activity (e.g., software development), the adoption of Agile work practices at scale requires a more pronounced change in organisational structure and culture, and the investment and time required.

The challenges of adopting Agile work practices at scale in capital markets are summarised in Table 5 below.

Table 5: **Challenges of Agile adoption at scale in capital markets**

Challenge	Description	Examples in capital markets
Speed to market	• Developing a MVP in weeks (rather than months or years) requires new skills and a shift in mindset, which requires time to embed.	• A team of IT developers and Human Resources staff were unable to develop a MVP for a new recruitment platform in two weeks.
Effectiveness of project delivery	• Existing change controls require extensive and comprehensive documentation (e.g., audit logs, risk assessments, requirements traceability) which can reduce the speed of Agile iterations.	• An Agile project required increased risk and compliance documentation, compared to a traditional project, because of the increased frequency of releases.
Collaborative and transparent teams	• Resistance from internal stakeholders towards Agile is met where it is poorly communicated, sponsored, or at odds with the existing organisational structure and culture.	• The roll out of an Agile transformation programme was communicated separately to different business units, rather than centrally, which reinforced existing hierarchy and team silos.
Continuous improvements in quality	• The Agile concept of "failing fast" is not consistent with a highly regulated and risk-adverse industry.	• Stakeholders were reluctant to engage in an Agile project as they believe "failing fast" will lead the overall project to fail.
Adaptable and responsive	• There are multiple Agile methodologies, tools and approaches that can make selection complicated and slow down adoption.	• Several months of hiring Agile coaches, implementing tools (such as velocity, burndown, backlog management, scrum boards) and training were needed before any use of Agile could be made in a specific function.
Organisational flexibility	• Significant time and investment are required for Agile work practices to be adopted by multiple areas of the bank before the benefits of scale can be realised (e.g., IT, business, risk, compliance, and audit).	• An Agile initiative to merge Technology and Operations teams was unable to work, because each initially had different systems for similar activities.
Innovative	• Agile work practices often require the development of new tools (e.g., automation, measuring outputs), which can be impacted by a lack of skills or investment, or needing to meet specific compliance requirements.	• A solution for supporting Agile teams could not be quickly implemented because it was provided by a third party and additional due-diligence and compliance requirements were required.
Outcomes-driven	• A lack of senior leadership and time from stakeholders to input and develop Agile work practices limits its effectiveness.	• An Agile project to develop additional functionality for a front-office trade reporting application was delayed as front office staff did not have the time to contribute sufficiently to the sprints.
Customer-centric	• Clients lack the skills or appetite for supporting Agile work practices, which reduces the ability for the bank to realise many of the benefits (e.g., increased collaboration).	• An Agile project to develop additional functionality for a KYC application was slow to complete as not all clients are responsive in the short sprint cycles.

Integrating controls in Agile work practices

Agile work practices at scale can provide greater control and mitigation of change risks (e.g., effectiveness, project costs, defects, scheduling, and implementation). This is because controls teams and requirements can be integrated throughout delivery that is more continuous, automated, and incremental. This can result in systems or processes that are more adaptable to the changing risk and control landscape for a bank and its clients, and any required assurances or issues can be addressed in near-real time.

For example, COBIT (Control Objectives for Information and Related Technology)[25], is a globally recognised framework used by many industry sectors, including financial services, for managing IT governance and management. In 2019, a governance framework was introduced for managing IT risk within an Agile environment (A-GEIT)[26]. Frameworks and tools such as these can allow banks to satisfy control requirements such as traceability (i.e., change approvals), throughout each Agile sprint and retain auditability.

From DevOps to DevSecOps for IT security risks and controls

DevSecOps is an emerging Agile methodology that integrates control requirements for IT security ("Sec") into DevOps. In DevSecOps, an organisation merges change (e.g., projects), run (e.g., operations) and security teams to further reduce traditional organisational silos. Combining these three functions is a way of integrating security requirements and controls throughout all aspects of change and run activities and to improve risk management.

Agile work practices can meet control objectives progressively in a risk-based and proportionate manner, and banks continue to evolve their existing frameworks. As Agile is a different way of how change activity is performed (e.g., from few to many production systems releases, including intraday), changes to how compliance requirements are satisfied are also required (i.e., documenting and auditing change). This will ensure that existing control regimes and required documentation remain at the right level and frequency.

Agile work practices in the context of COVID-19

Banks have faced several challenges due to the COVID-19 pandemic, such as needing to quickly enable a remote workforce that is connected, secure and productive. From discussions with AFME Technology and Operations Committee member firms in developing this paper, the use of Agile work practices was noted as being valuable to banks in their response.

For example, the rapid increase of staff working remotely increased demand for remote collaboration tools (e.g., video conferencing) to connect the workforce. While remote working tools were already widely adopted and used by many banks, Agile work practices in some instances helped to accelerate their implementation, and the ability to develop, in rapid cycles, any enhancements to meet specific needs.

COVID-19 also resulted in many bank clients and partners needing to work remotely. Because Agile work practices help to increase the interaction and collaboration between stakeholders, this helped some firms to continue delivering change with the active involvement of clients and partners during COVID-19. The routine and structure of Agile work practices are well adapted to digital channels and remote working. This is particularly the case for large organisations where cross-functional teams are generally cross-locations.

The lessons learned from the COVID-19 pandemic are likely to act as a catalyst for the further adoption of Agile work practices at scale (e.g., new tools for automation and performance management, upskilling the workforce, fostering a culture that enables banks to become more dynamic to changing circumstances).

25 https://www.isaca.org/resources/cobit

26 https://ec.europa.eu/info/consultations/finance-2020-digital-finance-strategy_en

3. Key messages for the adoption of Agile work practices at scale in capital markets

The adoption of Agile work practices at scale within banks is at an early stage and is expected to continue to increase. Based on this paper, we have identified five key messages to increase industry awareness and to support further adoption of Agile work practices at scale.

1. **The principles and benefits of Agile work practices are well-established.** The adoption of Agile work practices is based on established and mature Agile methodologies that are globally recognised and used by multiple industry sectors for delivering change and business as usual activities**.** Banks are maturing their knowledge and use of Agile work practices as adoption at scale continues to increase.

2. **Agile work practices can enhance risk mitigation for change activities.** Agile work practices at scale may provide greater control and mitigation of change risks (e.g., effectiveness, project costs, defects, scheduling, implementation). This is because delivery is more continuous, automated, and incremental. This can result in systems or processes that are more adaptable to the changing risk landscape for a bank and its clients. Whilst banks must comply with compliance requirements for managing change (e.g., for documenting and auditing change), Agile work practices can meet these control objectives progressively in a risk-based and proportionate manner.

3. **Banks and regulators need to build and share experiences of Agile work practices**. Banks and regulators should continue to proactively build experience in Agile work practices to support adoption across the industry at scale. For banks, this might mean adopting Agile work practices in specific areas as an enabler to their digital transformation, by testing, shaping different approaches and finding more effective ways of working. For regulators, understanding of Agile work practices will become more important as industry adoption increases, and there may be benefits in managing regulatory expectations in an Agile mindset, alongside adopting new ways of working in their own organisations.

4. **Culture and leadership play an important role in enabling Agile work practices at scale.** As banks seek the benefits of Agile work practices at scale, they must consider how their culture also needs to change. Agile work practices at scale are an enabler for the digital transformation of banks by embedding a client- and outcome-driven approach, and increasing collaboration with partners, clients, and other industry participants. It is not just about a different way to develop IT software. Senior leadership within banks should embrace and sponsor the benefits Agile work practices can bring. The adoption at scale requires commitment, investment, communication and collaboration across the organisation and with clients and partners.

5. **The adoption of Agile work practices at scale will act as an enabler of the wider EU digital agenda.** The adoption of Agile work practices at scale will help to enable European capital markets to remain competitive, and embrace new technologies and innovation, which underpin the European policy objectives for a "New Digital Finance Strategy for Europe[27]". The EU Digital Finance Strategy will require increased collaboration and innovation between the public and private sector to further this important objective.

"The adoption of Agile work practices at scale within banks is at an early stage and is expected to continue to increase"

27 https://ec.europa.eu/info/consultations/finance-2020-digital-finance-strategy_en

Contributors

We are grateful to our Technology and Operations Committee member firms and the individuals who contributed their time and input for producing this report. We wish to thank Premium Associate Member Murex.

AFME Technology and Operations

AFME's Technology and Operations Division brings together senior technology and operations leaders to influence and respond to current pan-European market drivers and policy. Find out more at www.afme.eu/Divisions-and-committees/Technology-Operations.

Adopting Agile Work Practices at Scale in European Capital Markets was led by the AFME Technology and Operations Committee as an initiative within the broader Technology and Operations Division.

Murex

For more than 30 years, Murex has been providing enterprise-wide, cross-asset financial technology solutions to capital markets players. Its cross-function platform, MX.3, supports trading, treasury, risk and post-trade operations, enabling clients to better meet regulatory requirements, manage enterprise-wide risk, and control IT costs. With more than 55,000 daily users more than 60 countries, Murex has clients across the financial services industry, from banking and asset management to energy and commodities. Murex is an independent company with over 2,300 employees across 17 locations. Murex is committed to providing cutting-edge technology, superior customer service, and unique product innovation. MX.3 is specifically designed and engineered to solve the multi-faceted challenges of a transforming financial industry. To find out more, visit www.murex.com.

Annex: Glossary of key terms

Key Term	Meaning
Burndown	Burndown is a chart that is a graphical representation of the amount of work left to complete versus time. The outstanding work (or backlog) is often on the vertical axis, with time along the horizontal. Burndown charts can be a useful tool for predicting when all of the work will be completed.
Customer journey map	Sequence of possible events that a customer goes through from the first interaction until the completion of the transaction with an organisation.
Disciplined agile delivery (DAD)	Disciplined Agile Delivery (DAD) is a people-first, learning-oriented hybrid agile approach to IT solution delivery. The framework recommends three phases: Inception, Construction, and Transition. DAD provides flexibility in suggesting different process guidelines for four categories of lifecycles: agile/basic, lean/advanced, continuous delivery, and exploratory.
Design thinking	Non-linear approach to problem solving, which focuses on observing people's behaviors. Based on these observations, designers come up with ideas that are quickly turned into prototypes.
Extreme Programming	Extreme programming (XP) is a software development methodology which is intended to improve software quality and responsiveness to changing customer requirements. As a type of agile software development, it advocates frequent "releases" in short development cycles, which is intended to improve productivity and introduce checkpoints at which new customer requirements can be adopted.
Kanban	Kanban methodology aims to manage work by balancing demands with available capacity, and by improving the handling of system-level bottlenecks. Work items are visualized to give participants a view of progress and process, from start to finish—usually via a Kanban board. Work is pulled as capacity permits, rather than work being pushed into the process when requested.
Large-scale Scrum (LeSS)	The Large-scale Scrum (LeSS) is a product development framework that extends Scrum with scaling rules and guidelines without losing the original purposes of Scrum. LeSS defines 10 principles for applying the value, elements, and overall purpose of scrum across an enterprise: 1. Take an economic view. 2. Apply systems thinking. 3. Assume variability, preserve options. 4. Build incrementally with fast, integrated learning cycles. 5. Base milestones on objective evaluation of working systems. 6. Visualize and limit work-in-progress, reduce batch sizes, and manage queue lengths. 7. Apply cadence (timing), synchronize with cross-domain planning. 8. Unlock the intrinsic motivation of knowledge workers. 9. Decentralize decision-making. 10. Organize around value.
Lean	Lean methodology is a practice that seeks to create efficient process flows by eliminating non-value adding activities, ensuring value adding activities run smoothly and quickly.
Minimum Viable Product	A Minimum Viable Product (MVP) is a version of a product with just enough features to satisfy early customers and provide feedback for future product development. Gathering insights from an MVP is often less expensive than developing a product with more features, which increases costs and risk if the product fails, for example, due to incorrect assumptions.
Nexus	Nexus is a framework which implements scrum at scale across multiple teams to deliver a single integrated product. It can be applied to 3–9 scrum teams which are working in a common development environment and are focused on producing a combined increment every sprint with minimal dependencies.

Annex: Glossary of key terms

Scaled Agile Framework (SAFe)	The Scaled Agile Framework (SAFe) promotes alignment, collaboration, and delivery across large numbers of agile teams. SAFe is based upon 10 underlying concepts, which are derived from existing lean and agile principles, as well as observation: 1. Take an economic view. 2. Apply systems thinking. 3. Assume variability; preserve options. 4. Build incrementally with fast integrated learning cycles. 5. Base milestones on objective evaluation of working systems. 6. Visualize and limit work-in-progress, reduce batch sizes, and manage queue lengths. 7. Apply cadence (timing), synchronize with cross-domain planning. 8. Unlock the intrinsic motivation of knowledge workers. 9. Decentralize decision-making. 10. Organize around value.
Scrum	Scrum is a lightweight, iterative and incremental framework for managing complex work. The methodology challenges assumptions of the traditional, sequential approach to product development, and enables teams to self-organize by encouraging physical co-location or close online collaboration of all team members, as well as daily face-to-face communication among all team members and disciplines involved.
Software Development Life Cycle	The Software Development Life Cycle (SDLC) refers to a methodology with clearly defined processes for creating software. The SDLC methodology focuses on the following phases of software development: 1. Requirement analysis 2. Planning 3. Software design (such as architectural design) 4. Software development 5. Testing 6. Deployment
Staff Liquidity	Time taken to respond, deploy or redeploy resources. A low liquidity means it is difficult to allocate resources on projects, whereas a high liquidity means it is easy to ramp up and down resources on projects and do so quickly.
Velocity	Velocity is a measure of the amount of work a team can complete during a single sprint. Velocity is calculated at the end of the sprint by totalling the points for all fully completed user stories. Velocity provides a measure of distance a team travels to reach the objective.
Waterfall methodology	Waterfall methodology is a sequential linear project management approach. It consists of several discrete phases. No phase begins until the prior phase is complete, and each phase's completion is terminal. Before a team can advance to the next step, the previous stage must be completed, reviewed, and approved. The phases of the waterfall methodology include: 1. Requirements gathering and documentation: System and software requirements 2. System design: analysis resulting in models, schema, and business rules 3. Implementation and verification: creation and integration of software 4. Testing: systematic discovery and debugging of defects 5. Deployment: installation, migration, support, and maintenance of complete systems

Contacts

AFME

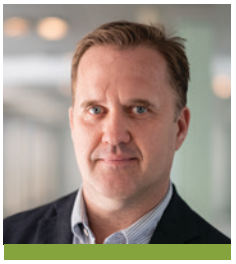
Andrew Harvey
aharvey@gfma.org
Managing Director, Technology and Operations
+44 (0)20 3828 2694

David Ostojitsch
david.ostojitsch@afme.eu
Director, Technology and Operations
+44 (0)20 3828 2761

Emmanuel Le Marois
emmanuel.lemarois@afme.eu
Associate Director, Technology and Operations
+44 (0) 20 3828 2674

Murex

Stella Clarke
stella.clarke@murex.com
Chief Marketing Officer
+35 (0)3 14 39 85 29



Arnaud de Chavagnac
arnaud.dechavagnac@murex.com
Head of Cloud, Technology and Services Marketing
+33 (0)6 32 87 88 64

Clementine Deniel
clementine.deniel@murex.com
Head of Marketing Communication
+33 (0)1 53 85 09 58

/ About AFME

The Association for Financial Markets in Europe (AFME) is the voice of all Europe's wholesale financial markets, providing expertise across a broad range of regulatory and capital markets issues.

We represent the leading global and European banks and other significant capital market players.

We advocate for deep and integrated European capital markets which serve the needs of companies and investors, supporting economic growth and benefiting society.

We aim to act as a bridge between market participants and policy makers across Europe, drawing on our strong and long-standing relationships, our technical knowledge and fact-based work.

Focus
on a wide range of market, business and prudential issues

Expertise
deep policy and technical skills

Strong relationships
with European and global policymakers

Breadth
broad global and European membership

Pan-European
organisation and perspective

Global reach
via the Global Financial Markets Association (GFMA)

afme/
Finance for Europe

London Office
39th Floor
25 Canada Square
London, E14 5LQ
United Kingdom
+44 (0)20 3828 2700

Brussels Office
Rue de la Loi, 82
1040 Brussels
Belgium
+32 (0)2 788 3971

Frankfurt Office
Neue Mainzer Straße 75
Bürohaus an der Alten Oper
60311 Frankfurt am Main
Germany
+49 69 153 258 963

Press enquiries
Patricia Gondim
Interim Head of Media Relations
patricia.gondim@afme.eu
+44 (0)20 3828 2747

Membership
Elena Travaglini
Head of Membership
elena.travaglini@afme.eu
+44 (0)20 3828 2733

Follow AFME on Twitter
@AFME_EU