INTRODUCTION

Bank of America is one of the world's largest financial institutions, serving individuals, small and middle-market businesses and large corporations with a full range of banking, investing, asset management and other financial and risk management products and services. The company is among the world's leading wealth management companies and is a global leader in corporate and investment banking and trading.

It may be hard to imagine that an organization as large as Bank of America would be a good candidate for an Agile Transformation. With over 200,000 employees, the bank represents a big ship to turn around. However, there was a recognition from the technology leadership within the bank that change was needed. A new CIO joined Bank of America in 2010 and he was a vocal champion of agile approaches. In fact, the CIO had introduced and sponsored a new technology platform built on Python that enabled agile development and related processes like automated builds and testing.

The Derivatives & FX Back Office Technology Group in Bank of America included approximately 70 people in Chicago, 25 in New York, and 40 in Hyderabad India. There were also teams in Toronto and Dublin. The developers were organized into component teams that were split across the locations. This was partly due to production support commitments. Testing was completed by a separate organization which was located in Hyderabad India.

In fall of 2012, the leadership team for the Derivatives & FX Back Office Technology Group began to explore the use of Agile and Scrum for their teams. The main drivers for agile were a desire to improve delivery of technology projects, reduce key-person risks, and improve time to respond to change. After a period of experimentation, the leadership team led the organization through a dramatic transformation with 100% commitment to the Scrum framework and principles.

INDUSTRY
Financial Services

PROFILE
Bank of America is a multinational banking and financial services corporation headquartered in Charlotte, North Carolina. As of 2013, Bank of America is the twenty-first largest company in the United States by total revenue. In 2010, Forbes listed Bank of America as the third biggest company in the world.

Bank of America provides its products and services through operating 5,100 banking centers, 16,300 ATMs, call centers, and online and mobile banking platforms. Its Consumer Real Estate Services segment offers consumer real estate products comprising fixed and adjustable-rate first-lien mortgage loans for home purchase and refinancing needs, home equity lines of credit, and home equity loans.

FOUNDED
1904 (as Bank of Italy)

WEBSITE
http://www.bankofamerica.com/

THE CHALLENGE

For the Derivatives & FX Back Office Technology Group at Bank of America, there was no burning platform to be solved by agile. The leadership team knew there were better ways of organizing the teams and getting work done, and they knew that other areas within Bank of America were exploring agile. They sought outside expertise that others within the Bank had used and brought in Certified Scrum Trainer Craig Larman to provide training on Scrum, Agile and Lean.

The leaders discussed and agreed on the following three goals for their agile transformation:

- Improve on the effective delivery of large scale technology initiatives
- Improve the time to deliver solutions
- Reduce key person risks

In support of these goals, the leadership team and agile coaches came up with the following approach which was aligned with the Agile Principles:

- Deliver production software early and often
- Connect the development teams directly to the business stakeholders and subject matter experts who understood the business needs and eliminate handoffs and knowledge scatter
- Move from legacy systems to the new common technology platform
- Create true feature teams and eliminate component teams
- Implement automated regression testing to provide feedback faster and increase speed of development

THE APPROACH

In November 2012, the leadership team and a handful of team members attended a Certified Scrum Master (CSM) training course. The Lean concepts and agile principles resonated with the team and they were excited to do more. When they returned to the organization, they began to talk about the benefits of Agile and Scrum. Through town halls and other meetings, they began to encourage the teams to run experiments. Though not everyone in the organization was trained at this time, most teams began to try using Lean concepts and the Scrum framework for their current work.

In February of 2013, this core leadership team decided to transition more fully to Agile. They planned for additional Scrum training for everyone. They also interviewed and hired coaches in Chicago, New York and Hyderabad.

In April of 2013, a series of training activities were conducted in Chicago. There was a 2-day CSM course followed by a 2-week mini-sprint which was a combination of onsite coaching from a Certified Scrum

Trainer and normal working activities for 3 teams. During this period of intense learning, the Scrum Framework was emphasized as well as a number of topics including Specification by Example, Kanban, Automated Testing, other eXtreme Programming (XP) practices. Craig Larman taught his Large Scaled Scrum (LeSS) scaling framework that supported multiple feature teams to pull from the same backlog.

Training was also provided in New York and Hyderabad. Certified Scrum Product Owner training was offered and several of the newly identified Product Owners took it.

ADDRESSING THE HUMAN ELEMENT

Bank of America went further than most organizations to engage people and address the cultural and human side of the transformation to Agile. In addition to the frequent town hall and all-hands meetings, the leadership team continually engaged team members in making decisions that affected them.

One of the biggest decisions was how to form feature teams from the existing component and specialty teams. Leveraging their coaches, the leadership conducted an innovative experiment in Chicago to describe the features teams they needed, and then allow the development team members to choose which team they wanted to work on.

The actual re-calibration event occurred in May of 2013, with 65 people participating. The Agile coaches facilitated the session and managers were noticeably absent. In this "re-calibration" session, the team members reviewed the requirements for 7 different end-to-end feature teams and then chose which team they wanted to work on. There were three timeboxed iterations where team members organized around the proposed team requirements. At the end of each timebox, the coaches would review the proposed feature teams and identify gaps. After three rounds, everyone had their choice and seven feature teams were staffed.

Immediately following the re-calibration meeting, each team member selected a "line coach" to support them. The line coaches replaced the more traditional first line manager. The job description for these line coaches described them as mentors. Each team member picked the line coach they thought would best support them in their growth and career goals.

Another decision that was made by the teams was how to fit up their agile spaces for maximum collaboration. Each feature team nominated a team member to be part of a community that designed the new space and picked out furniture. The new spaces were agile pods that were approximately 20' X 36' and included rolling desks and whiteboard painted walls. There was one agile pod for each feature team of about 7 team members. Each feature team was able to configure their space in whatever way they thought would be most effective.

SIX MONTHS OF CHAOS

From the start, Scrum Trainer Larman emphasized that things would get worse before they got better. He set an expectation that for 6-12 months, things would be chaotic and it might appear that productivity had

declined. His assurance that this was normal helped to manage against expectations that implementing Scrum would be some sort of magic bullet that would improve things overnight.

> *"Anthony has been a great coach and mentor who helped me learn a lot about Agile and Scrum and how it can be successfully implemented at the Bank. He is absolutely great with one on one situational coaching and supported me in my role as Scrum Master to implement the new change at the bank. He has a great sense of humor to connect with different teams and is liked by everyone in the department. "*
>
> **ASHOK KODURI**
> Scrum Master and Vice President Application QA,
> Bank of America Merrill Lynch

The reality was that there was some chaos, particularly when it came to the business involvement in projects. Some of the Product Owners who stepped up for the role were trained while others were not. There was additional work on the part of the Product Owner to make sure that the team was working on the most important work and that they had access to the right subject matter experts.

The external agile coaching support helped. There were 2 agile coaches supporting 7 teams in Chicago, a coach supporting 5 teams in New Jersey, and another coach supporting 4 teams in Hyderabad. Agile coaches focused on supporting the Scrum Masters, the Feature Teams, and the Product Owners. The agile coaches helped with LeSS implementation including having multiple feature teams from the various locations pull from the same backlog.

The Scrum Masters and agile coaches also met in a daily standup to review the organizational level impediments backlog and to address those in priority order. The organizational impediment backlog was posted on a large whiteboard in a common space so that everyone could see what was being worked on.

The agile coaches also organized a Scrum Master Community of Practice. This was a weekly meeting focused on learning and sharing good practices across the Scrum Masters and feature teams. Training topics were prioritized and coaches and Scrum Masters volunteered to facilitate the sessions. The sessions also served to provide a consistent level of support across feature teams and identify organization-wide concerns so that they could be addressed before they became problematic.
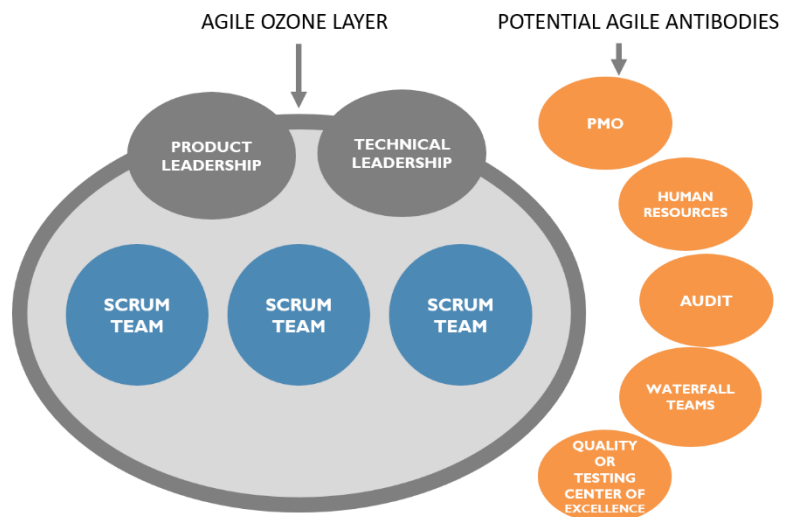
THE OZONE LAYER

A key success factor for the Bank of America transformation was strong leadership. The leadership team supported the agile transformation in the following ways.

- **Embraced Servant Leadership** – The leadership team embraced servant leadership principles and focused on supporting the needs of the team.
- **Took on value worker roles** – In addition to taking on the mentoring role of line coach, the former managers also joined teams as developers or became Scrum Masters.
- **Empowered teams** – The leadership team empowered the teams and encouraged them to self-organize, then got out of their way.
- **Walked the walk** – The leadership team took the training first, and embraced continuous learning. They hit the books to internalize Lean, Agile and Scrum.

- Made a good faith attempt – The team demonstrated a full commitment to Agile and Scrum. The leadership team also protected the teams. They had learned from other Bank of America units that it was important to protect the teams from bureaucracy and other potential agile antibodies. The leadership teams for other Bank of America units called formed what they called the "Blocker Team" or "the Ozone Layer". The point of this Ozone Layer was to protect the teams from the agile antibodies in the organization that would distract or disrupt them.

AGILE OZONE LAYER · POTENTIAL AGILE ANTIBODIES

PRODUCT LEADERSHIP · TECHNICAL LEADERSHIP · SCRUM TEAM · SCRUM TEAM · SCRUM TEAM

PMO · HUMAN RESOURCES · AUDIT · WATERFALL TEAMS · QUALITY OR TESTING CENTER OF EXCELLENCE

ONGOING EDUCATION

As the feature teams began using the Scrum Framework in earnest, there was a big focus on learning. Each team set aside time in their sprints for learning activities. Teams frequently used pairing as a way to share domain knowledge and improve coding skills.

The agile coaches and Scrum Masters also encouraged learning. They implemented a lending library of 40 books related to agile software development, team productivity, and Scrum. They also provided workshops and training courses and frequent brownbag lunches. The coaches also organized a video training series at lunchtime, where the "Clean Code" videos from Bob Martin were shown.

Learning and experimentation were also the focus of the Testing Community of Practice which focused on automated testing, a critical success factor for agile teams. Some teams experimented with Lettuce and FitNesse while others developed homegrown test frameworks.

INNOVATIVE PRACTICES

There were a number of innovative ideas that were introduced or tried at this time. Some of these were new experiments and others had been tried at other organizations. The previously mentioned self-forming teams exercise was an experiment that had been used before with another Bank of America team. Letting team members pick their own "coach" was also something that had been done before. Similarly, the formation of the blocker team or ozone layer was innovative but had been used by other teams at Bank of America.

This leadership team for Derivatives & FX Back Office Technology strove to delegate as much decision making as possible to the teams. This was based on research by Daniel Pink that showed that autonomy, purpose and mastery drove intrinsic motivation. In addition to picking their teams, and designing their

space, teams were allowed to select the XP technical practices they adopted, and collaborative practices for elicitation like Specification by Example (SBE), Story Mapping, and Impact Mapping.

Some ideas that were new to this Bank of America unit included conducting team 360° performance reviews. The leadership team recognized that the existing year-end performance review process would not be effective. The idea that the manager would rate the individual of a self-organizing team seemed out of alignment. But the leadership team couldn't ignore the corporate requirement to conduct a year-end review.

The process that was developed was for the agile coaches to facilitate a face to face team performance review. There were 17 dimensions that applied to team members, and team members were asked to rate each other in advance on a scale of 1 to 4. Then a 1-hour session was facilitated for everyone to get feedback on those 17 questions. The process was relatively quick and resulted in a set of actual scores for each team member. These peer reviews were provided to the line coach for each individual, along with input from the Product Owner on team and individual performance.

THE RESULTS

As anticipated, the big bang approach to transforming component teams into feature teams at the same time led to some chaos. Following the re-calibration in May 2013, teams started in their new configurations in June 2013. Some teams never broke stride while others initially struggled for lack of engaged and skillful Scrum Masters.

Over time, some teams were consolidated and there was some shuffling of team members to get the right balance of skills on each team. This was led by the leadership team but discussed with the affected teams and team members. There was also a winnowing process where the seven initial Scrum Master trainees were reduced to two and these individuals joined feature teams as developers.

Overall, turnover among the teams was very low – less than 5%. And within six months, the feature teams had all hit their stride and were delivering software every 2 weeks.

"Anthony is an energetic coach who leverages in-depth knowledge and an excellent personality to help teams grow and become more efficient. Anthony didn't just focus on the theoretical practices of Agile. He built relationships, learned the product, and understood the personalities in order to optimize the way he coached teams. I would highly recommend Anthony for any organization during any phase of their Agile growth cycle. "

MARK PRYSMIKI
Vice President, Global Markets Technology Project Manager & Scrum Master
Bank of America Merrill Lynch

The key benefits of agile transformation for this organization included the following:

- **Higher Productivity and Throughput** – There were several keys to higher throughput at Bank of America. First, individuals were full time dedicated to one team. They were not multi-tasking and

context switching which can create a drag of as much as 50% on teams which are not dedicated. Teams were co-located in one physical room which allowed them to converse openly with each other yet protected them from outside distractions. Studies have shown that co-location doubles productivity. Silos and specialty teams like testing were eliminated along with the handoffs that they necessitate. So wait times and knowledge scatter were eliminated as testing and code reviews were completed by the feature teams, and backlog items were "done" and released to production at the end of every 2-week sprint. Finally, the feature teams have a built in process for continuous improvement so they are able to examine their results, and continue to eliminate waste and increase productivity every sprint.

- **Responding to Change** – Teams worked on 2-week sprints and were able to respond to changes in business priorities quickly and easily. There was also little waste or rework, and teams were protected from constantly shifting priorities.

- **Eliminated Key Person Risks** – Through pair programming, shared assignment of tasks, and intentional knowledge transfer, the team was able to eliminate the risk of just one person understanding a legacy system or owning a section of the code. Entire teams became knowledgeable about legacy systems and were able to support them.

Additional benefits that Bank of America gained from the Agile Transformation included the following:

- **Increased Delivery Predictability** – As feature teams delivered, their velocity stabilized. They also become more adept at estimating their backlog items. As a result, it became straightforward to predict when all the backlog items in a release would be complete, or how much functionality could be delivered by a specific date.

- **Business and Technology Collaboration** - Each team had one Product Owner who prioritized the backlog of work, engaged in sprint planning, and attended sprint reviews. The Product Owners drove the development directly by making sure the team was working on the highest priority items. This improved collaboration led to better and more creative technology solutions, and reduced waste from delivering the wrong solutions.

- **Environment of Trust** - The close interactions between the Product Owners and subject matter experts greatly increased the level of trust. The Product Owners trusted that the teams had the expertise and would deliver. And the feature teams trusted that the priorities set by the Product Owners were correct.

- **More Innovation and Speed through Increased Business Knowledge** – By connecting business-side Product Owners and subject matter experts directly with the feature teams, the teams were able to grow their knowledge and understanding of the business context. This led to more innovative solutions and faster results.

Keys to Success at Bank of America Merrill Lynch:

There were many keys to success at Bank of America Merrill Lynch. These are probably the most significant contributions:

1. **The Leadership Team Led by Example** - Rather than telling the teams to learn about agile and adopt it, the leadership team took the training first and sought a deep personal understanding. Most of the leaders took the training multiple times and immersed themselves in reading about agile, Scrum and Lean to really internalize the principles. They became servant leaders and enabled the teams by providing an environment for the teams to succeed.

> *"Our team learned from Anthony how to become better at Scrum, and therefore happier and more productive, and I recommend him highly."*
>
> MICHAEL DAIN
> VP of Experience Design
> Bank of America Merrill Lynch

2. **Bringing in Outside Expertise** – The leadership team brought in a Certified Scrum Trainer and experienced agile coaches for each location. They didn't skimp or try to save money on training or coaching.

3. **Manage Expectations for Agile** – The leadership team set expectations that the transformation would take time, and that things might actually get worse before they got better. They were not idealistic about what adopting agile or Scrum would do for the organization or how quickly they would see results.

4. **Effective Product Owners** – The leadership team worked with the business to identify empowered Product Owners (generally Managing Directors) who had budget responsibility and could truly set priorities. They provided Scrum training for these Product Owners and connected them directly to the teams with no handoffs.

5. **Slack and Experimentation** – The leadership provided slack in the system to allow time for learning, for experimentation and failure. Teams were encouraged to spend 20% of their time on technology improvements and learning.

6. **Addressing the people side of Agile** – The leadership team made culture change a priority from the beginning. The leadership team moved to servant leadership, supported team self-organization and decision-making, and helped to protect the teams from outside disturbances. They created the environment for teams to do their best work.

7. **Establishing Dedicated and Co-Located Feature Teams** – The component and specialty teams were eliminated and feature teams were formed in their place. Each feature team had all the skills to complete working software each sprint. The team members were dedicated, and each team was co-located in one physical room.

8. **Focus on Automated Testing** – From the start, the leadership emphasized automated testing and encouraged teams to build the automated tests within each sprint, as part of the definition of done for each backlog item. Teams used Specification by Example to collaborate with the business and create test cases which replaced static requirements documents.