

NEW TOOLS AND TECHNOLOGIES THAT CAN HELP MORTGAGE AND LENDING SERVICES 2021



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OVERVIEW

Financial institutions especially loan servicing and MBS funds are monitoring and dealing with effects of COVID-19 pandemic. While their primary goal is to use their expertise to understand challenges to society and economies to help themselves and their customers, they are also looking to improve their internal processes to rapidly assist with surge in refinance and loan services.

Traditional approach of financial services industry, including loan servicing and MBS funds, continued to be "*if it ain't broke, don't fix it*" which is mostly working but makes it extremely difficult to cope with the agility required by the industry in turmoil in the current market. Add to that the competition created by extremely efficient fintech startups in the industry.

Digital technologies have emerged to deliver tangible cost benefits and increase loan processing throughput during these difficult times. In this document, we list the emerging software models that has transformed the way new capabilities are built to meet increasing market demands with agility, speed and compliance.

Over the last 10 years, software industry has gone through several transformative changes that resulted in new models that businesses need to adopt quickly and reduce friction. We can broadly categorize those into two groups – 1. How software is developed and 2. How business applications are sold and consumed. We will focus on group one and particularly DevOps, cloud computing "platforms", low code and SaaS models. These methodologies and techniques when used correctly can deliver substantial costs savings (some of our clients have seen their development costs reduce by 15%) and increased customer satisfaction with rapid delivery of innovation and features.

SOFTWARE DEVELOPMENT

Custom software development is the key to providing agility and unique capabilities to the business. Last decade marked a tectonic shift in software development paradigms. With rise of the need for faster development cycles, and to promote hardware independence, both top 2 development platforms have been deprecated (abandoned) and urged to migrate to new agile platforms. Dotnet framework and Java are deprecated. While Microsoft provided an easier (to some extent) to a platform independent dotnet core (f.k.a Mono) and actively encouraging customers to test their code on Linux and recommending use of web technologies like Electron, NodeJS and React for newer projects.

Ref: [By Jack Wallen: Could Microsoft be en-route to dumping Windows in favor of Linux?](#)

After Oracle acquired Sun systems, both MySQL and Java lost their most favored platforms status, soon after IBM removed Java from their recommended language, and Google's migration of Android away from Java, it is now considered deprecated. Not even Oracle lists it as the preferred platform anymore. High cost of the Java development due to strict (archaic) project needs from 90s and verbose coding requirements make Java a very expensive development.

Favorite development platforms today as they stand

1. NodeJS: Typescript
 - a. React
 - b. Electron
 - c. AngularJS
2. Dotnet core: C#
3. Python

Just to clarify above list NodeJS is the backend for most JavaScript and TypeScript platforms and supports many newer technologies, remains as the most popular software development platform today. Dotnet core is only popular due to the portability of the millions of dot net developers to Microsoft's newer platform.

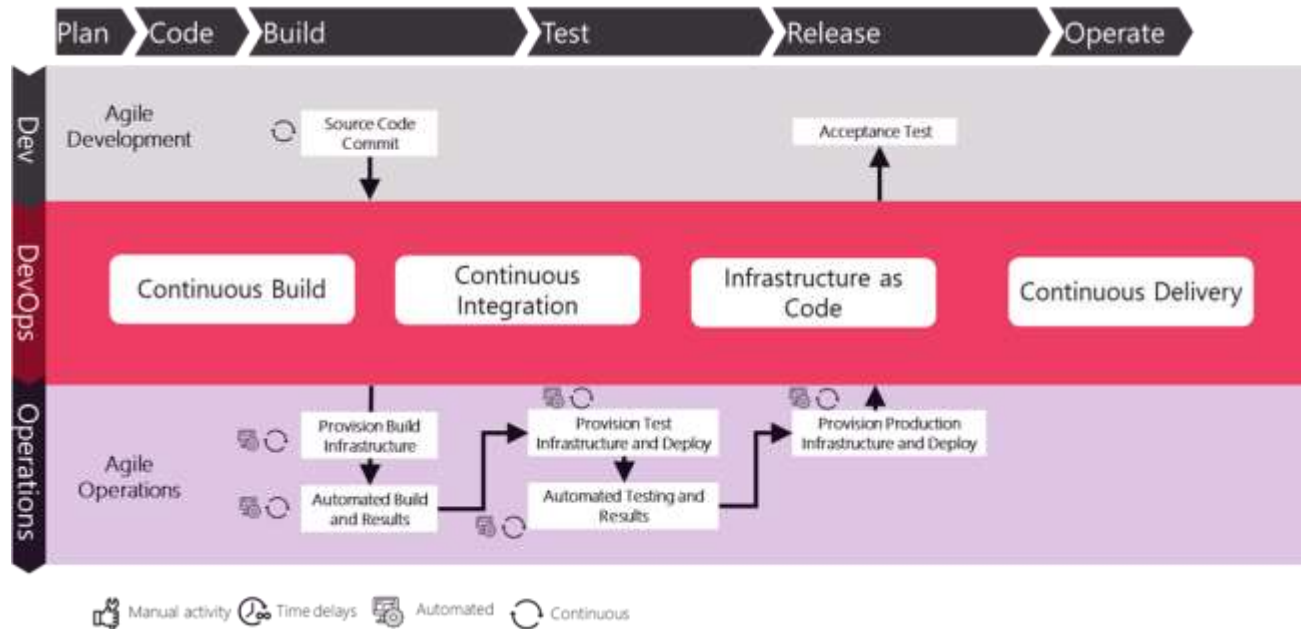
These newer technologies allow software development to be more agile, less opinionated and enables technologies like DevOps which significantly reduce concept to production in exceptionally low cycle times and changes to functionality incrementally without the need for elaborate planning. This translates to reduction in development cost and provides agility to the business in times when it needs.

Python is very popular with analytics heavy requirements and its terse programming construct provides faster development. Availability of good Python developers has been the inhibitor for its adoption in most markets.

DEVOPS

A well implemented DevOps program should remove barriers of information between business users and developers there by improving efficiency in providing business solutions and agility to the business. Platforms like Jenkins, if properly implemented can streamline communications and provide risk-free transfer of a concept (or work) from development to production with the need for the overhead of planning. Changes can be prototyped, tested, and can quickly be promoted to production with a sequence of automated test and approval cycles. Microsoft has done an excellent job with **Azure DevOps** and provides a turnkey platform. We at Invati has created an implementation blueprint to roll out a complete process in under a week.

DevOps also enables secure deployment of infrastructure in the cloud and reduce friction between Infrastructure, AppDev and IT Security teams by streamlining deployment, resource management, security, and change review processes. The transparency this brings in-turn reduces the *cost of compliance* as well.



LOW CODE PLATFORMS

Another transformation of paradigm shifts in software development is the evolution of Low Code Application Platforms (LCPA) which shifts development of business tools from professional software developers to citizen developers.

Low code platforms and citizen development concept has been in the rise over the decade. Business users are the best people to innovate processes. These users are generally intimidated by the lack of programming skills required to develop any business software. Low code platforms fill this gap and promotes citizen development. Developers can create components that citizen developers who does not know any programming can quickly put together a software that can help them improve the process and be more efficient.

1. Salesforce
2. Microsoft PowerApps & Office 365
3. ServiceNow

Other mature platforms include

4. Appian
5. Mendix
6. OutSystems



Most mortgage related companies already have subscribed into one of these platforms in some capacity, but do not know how to realize their potential for them to help with business problems in the need for agility.

Some use cases:

1. Quick forbearance request
2. Quick survey about potential assistance requirements
3. Quick refinance application – you can use the information you already have.
4. High volume AI/ML assisted underwriting workflows

While on the surface, it looks like building a simple survey form, you can build a highly sophisticated AI/ML assisted process in a matter of days and significantly reduce your need for hiring more people quickly if not resulting in losing business.

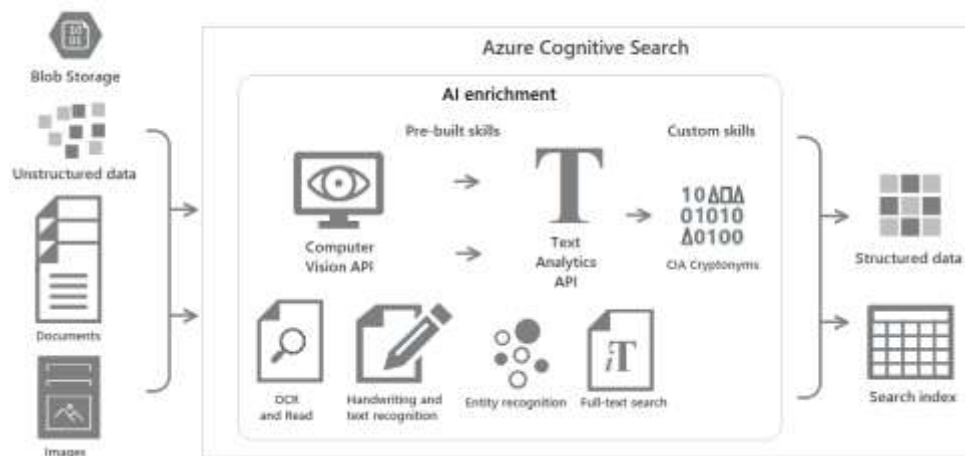
Here are links to Gartner analysis of low code platforms

1. Magic Quadrant (Sep 2020): <https://www.gartner.com/doc/reprints?id=1-24BC74AA&ct=201005&st=sb>
2. Peer Insights: <https://www.gartner.com/reviews/market/enterprise-low-code-application-platform>

AI, ML, NLP, RPA & CHATBOTS

Not long-ago implementing AI/ML used to be a herculean task limited to larger companies only. Today thanks to the hard work of several open source pioneers and cloud providers, even smaller companies can confidently deploy AI/ML for several applications to gain scale and technical advantage over the industry.

A simple use case of the AI/ML and NLP is the document classification. For originators and servicers alike, the herculean task of reviewing loan documents in archaic 19th century deed format can now easily handled by NLP systems on any cloud. All major cloud providers including AWS, Azure and GCP provide OCR and NLP capabilities which can be quickly configured to start classifying documents and verify required information needed for processing the loan or buying pools of loans. While these technologies are nowhere close to replacing the underwriter or an analyst, they can assist by up to 80% of the effort thereby reducing cycle times. A smart way to implement these is take a simple use case that add value and building on top of it incrementally.



Another use case of NLP is voice assistant and transcriber, which can answer an incoming call and answer most of the loan or application related questions. It can transcribe the conversation and transfer to an agent for questions it cannot answer. Inline transcription significantly reduce conflicts

and preparing actions/tasks for the agent to perform, derived from the conversation helps the company in several ways.

RPA

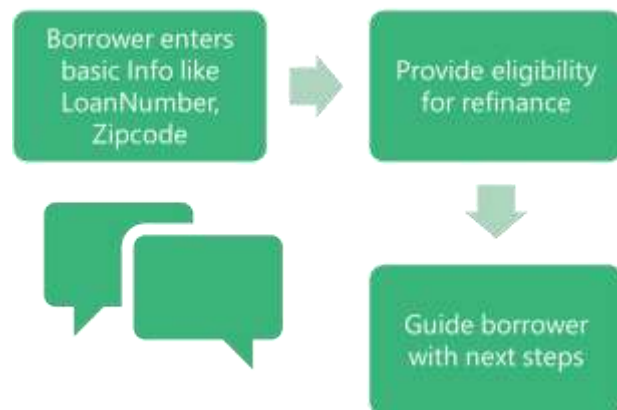
Robotic process automation is mimic human interaction by an automation engine on third party applications that does not provide native integrations. We have seen the most common application as moving files between the two locations or triggering OCR on files on incoming FTP sites. These are NOT the right use cases for RPA, and due to higher error rate, reduced reliability leads to frustrating users, which should be carefully avoided for the success of adoption of any technology.

There are so many legacy third-party systems in use in mortgage industry – some cannot provide, and others do not, or cost of integration is way too expensive or too complicated. An RPA can simply mimic end user actions - like excel macros, and get the job done. This frees up user to let him do the work that matters, and rudimentary work will be offloaded to the RPA bot.

CHATBOTS

Chatbots have got smarter over time and provides a lot of functionality these days. With the generational shift, next gen workforce and homebuyers alike are more comfortable providing information in a chat window than filling out an online form. Here are few use cases we have implemented chatbots recently.

Underwriter assistance from within MS Teams improved efficiency and compliance. Key benefit was reducing fatigue looking a complicated screen, of “everything about the loan” screen and trying to find specific pieces of information. We have provided a chatbot that can fetch required specific bits of information the analyst/underwriter need. With the combination of chat commands and NLP, Chatbot was live in few days and turnaround time for each additional feature business was requesting is under a day. The way to think of a chatbot is as a fluid software where no design is needed, which eliminates up to 90% of development cost.



Loan Inquiry for borrowers is a quick chatbot helping borrowers with basic questions and let them update information in a fluid format.

Loan applications are being filled on a chatbot with an interactive format. If the borrower is an existing customer, it will be detected and asks the user to validate in a subtle format so the amount of information borrower must provide will be reduced. The final filled application will sent to “esign” as a link in the chat or text completing the process. This removes user friction and increase the number of applications.

CORE PRODUCTIVITY TOOLS

Core productivity tools like Microsoft office has undergone a significant shift unlocking user efficiency.

Power Automate, as the name suggests is an automation tool that’s part of the Office365. This tool enables automation and integration of any tool to any tool including third party applications. Simple ready to use templates help automations quickly by business users without any help from IT. One use case is document approval workflows. A user can initiate an approval workflow from within the document and target the approval request via a link in outlook or by teams. This eliminate the need for moving documents over email. Documents in this context can be a PDF, Word, PowerPoint, Excel document or a record in Excel, a record in SQL table, a Form, or a Chat message in Teams. Imagine the efficiency gains and agility the company will realize with fluid and transparent processes that can be possible when approvals and reviews are naturally conversational.

You are already paying for the Office Suite and mere training of users will unlock lot of efficiency and agility in your company.

Tools readily available at your disposal

1. MS Word – Coauthoring
2. Excel – coauthoring, Power query, Excel Scripting
3. Power Automate
4. Teams – Bots, Project Oakdale Apps

It is interesting to note that smaller to mid-size companies can significantly benefit from software plans like Microsoft Office 365 E5 would be far more economical, if you can utilize the automation, virtual assistant, and compliance capabilities. The challenge generally rises from trying to migrate to such platforms using traditional approaches instead of rethinking from the ground up.

AI augmented work is another area productivity tools are taking a leap at. PowerPoint comes with AI designer that makes you presentations look good and consistent using machine learning. Word uses AI and ML assisted transcription of meetings to create discussion points and Editor, the AI assisted language analysis tool that will help you write better content.

Scriptlab is another lesser known feature of Office365 productivity tools that allows integration with external applications straight from office 365 applications, and program to handle commands, workflows, and data integrations. Similar features are available in competing GSuite as well.

ANALYTICS

When discussing analytics tools, we generally think of one of the three below.

1. Tableau
2. PowerBI
3. Excel Query

While these are the most popular analytics tools, lesser known alternatives like CubeJS fits into the low code platforms that can address embedded reporting needs of business applications.

Minor modifications to file storage strategy, like using DataLake storage in Azure as FTP drop location can provide several benefits of big data analytics on raw file data. Company can immensely benefit from big data analytics tools without the need for preprocessing these files or importing into structured databases. Mortgage industry have to handle large datasets everyday but most of this data is never harnessed due to handling of these files in a traditional way.

Datalake solves this problem in a simple and economic way while providing transparency to data and provides cost savings over traditional data storage.

CLOUD TECHNOLOGIES

There used to be times when the debates used to be buy or build. These days it is try and build where you try out various component and tools available to build the application that will solve business problems. SaaS applications providing more integrations and cloud PaaS services proving more features, the gap is closing enabling developers to quickly assemble these pieces like a puzzle block to quickly deliver the required business solution.

Most important tools to support business agility are the platform tools for the mortgage industry to look at during a solution design are list here.

1. Azure Sql Database
2. Azure Datalake storage
3. Azure Datalake analytics
4. Azure Data factory
5. Azure Serverless
6. Azure functions
7. Azure Logic App
8. Microsoft LUIS
9. Azure Bot Framework
10. Azure ML
11. Azure cognitive Services
12. Azure Form Recognizer
13. Windows Virtual Desktop
14. Azure Marketplace
15. Microsoft App Source
16. AWS Data Exchange
17. AWS Lake Formation
18. AWS Glue
19. Amazon AppFlow
20. Amazon WorkDocs
21. Amazon AppStream
22. Amazon Workspaces
23. Amazon Pinpoint
24. Amazon Sagemaker and ML tools
25. Amazon Lambda & Serverless

OFFSHORE TEAM AUGMENTATION

Offshoring some of the mundane tasks where manual review is legally required, can help companies be more efficient. While the gap of cost factor is closing quickly, offshoring to time augmented areas will significantly help speed up processes. India, China, Philippines, and some eastern European countries like Ukraine and Romania would help add preprocessing capabilities.

Under one scenario and underwriter can be helped by reviewing all of the applications and even contacting applicants (borrowers) for any missing information will augment the underwriter and enable him to quickly process the loan, reducing the total time taken to a quarter.

Another scenario is mortgage securitization process where large number of loans in loan tapes should be carefully reviewed, graded, and pooled for purchase. Having the tape reviewed, and requesting missing information from custodians, and servicers before the analyst starts his day would shorten the process by more than a third. While the reduction in direct cost of reviewing per loan is questionable, the reduction in overall processing time enables the funds to deploy more cycles of securitization per month freeing up capital quickly and redeploying them to effectively doubling returns.

Augmenting team with offshore personnel would not be effective without first deploying tools and technologies that provide effective workflow handoffs between two geographically and culturally distinct regions.

CONCLUSION

Above list is not conclusive and there could be several new tools in the market soon. It is easy to experiment with tools and see which one works. It takes less cost and effort to try them out and apply to solve business problems and then assess outcomes than debating for a careful assessment for their suitability. The new model is about speed and agility and platforms generally take care of the reliability and compliance. With the market in turmoil and extreme speed and agility is required, the tooling helps you meet business needs.

ABOUT AUTHOR:

Bhuvan Pasham has over 25 years of experience helping businesses unlock efficiency. He built technology teams at some of the largest Private Equity and asset management firms that have seen rapid growth, including Blackstone, KKR, TPG Capital, etc. Bhuvan has been instrumental in driving technology adoption in PE industry for over 16 years. Bhuvan is the co-founder of Invati and has been advising alternative investment firms on digital transformation, technology adoption, etc.

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About Invati

Invati provides best in class, platform agnostic IT solutions for Private Equity and Alternative Investments firms. Invati is founded by senior technology professionals with a combined experience of over 50 years in AI and Automations with extensive experience working in the Alternative Investments Industry.

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