





Response to FHFA Request for Information

A1. How do primary and secondary mortgage market participants define fintech in the housing finance sector? What key factors should be considered?

 Even within the primary and secondary mortgage markets, participants too often generalize the term fintech, applying it to any technology that supports or facilitates the production, servicing, management, and reporting of mortgage assets and activity. By generalizing the term, participants risk missing the insight and acuity that result from seeing key component sectors, such as mortgage tech, proptech, and regtech.

Mortgage industry participants usually mean some form of software, by reference to fintech, including AI, or analytics software with which data are transmitted, stored, or used to facilitate loan manufacturing in the primary, secondary, or servicing markets.

A2. How could FHFA facilitate adoption of “responsible innovation”?


 In addition to the ongoing improvement in inclusiveness which AI can help provide, FHFA can facilitate responsible innovation through the formation of a technology regulatory body within the FHFA that is accessible to industry participants, defined as lenders and fintech companies. This body would have the ability to assess and facilitate delivery of new fintech ideas throughout all aspects of the mortgage life cycle.

Used to its full potential, artificial intelligence offers an ongoing answer to ensuring that responsible innovation results in equitable service to all market participants.

Access can be improved to minority and low-income borrowers, as well as to duty-to-serve markets, through the ability of AI to include dynamic and disparate data for more informed assessments. By accessing more layers, types, and levels of data, while conforming and validating that data, AI can serve as a more inclusive tool for interpreting master data and big-data analytics.

Equitable access can be achieved while continuing to provide effective risk management to lenders, effective corporate governance to GSEs, and to FHFA in its dual role as conservator and regulator.

A3. What factors currently inhibit the adoption of fintech and innovation in the primary and secondary housing finance sector? Are there specific challenges related to privacy laws, industry standards, or current practices?

 Innovation and adoption within the housing finance sector often ride the profitability waves that accompany the cyclical nature of the industry. In 2Q2022, the cost to originate a loan reached an all-time high of \$10,937 per loan; while production revenues continued to

decline and averaged \$10,855 per loan and in an approximate 5 bps loss for every loan originated. Comparatively, in 2020, the average profit per loan was \$4,202, and in 2021, it was common to have \$2,339 in profit on each loan.

In the good times, lenders can take a chance on innovations. They have staff and budget to implement new technology. When income, volume, and profitability drop drastically, many in the industry are left struggling to survive with a significantly reduced staff and little, if any, profits. This can sap the resources and desire to test unproven technology.

In addition, complexity of loan level decisions, regulations that seem onerous on small and midsize originators, control of backbone technologies by large players with significant market share, and high integration costs leave many well-wishing innovators going in a complex maze with no end when it comes to innovation.

B1. What kind of fintech activities have the greatest potential to positively impact the housing finance sector? Describe several situations in which a product or service has been or could be used, the factors considered in determining importance, and associated impacts.



Technological innovations can positively impact the speed, efficiency, cost structure, and equitable nature of the housing finance sector. Specifically, artificial intelligence, data normalization, and workflow automation are likely to have the greatest impact.

Artificial Intelligence, according to Fawn Fitter and Steven Hunt with SAP, can “help avoid harmful human bias,... be taught to filter out irrelevancies in the decision-making process,... and guide us based on what it calculates is objectively best rather than simply what we’ve done in the past.” In addition, AI can streamline workflows, reduce human error, and create time savings that allow the human staff to focus on higher priority activities.

As an example of using AI, data normalization, and workflow automation in concert, when one lender implemented the MORI system from TRAINED, they were able to reduce 17 hours of manual data entry and validation work to less than 10 minutes. This time and cost savings means more productive workers who rate higher job satisfaction and allows the business to scale up without having to hire additional staff and scale down without having to implement reductions in force and disrupt the financial lives and the mental health of staff members.

Using clean validated data and APIs, TRAINED can approve and update homeowners’ insurance policies during underwriting and after closing. This reduces errors and alleviates pain points, as well as reduces time, aggravation, and cost for borrowers, servicers, and insurers.

Through use of automation of extracting purchase advice data, TRAINED can drive workflow automation with that data to ensure proper execution of transfer of serving, MERS transfer, and insurance.

Next steps are building an industry system of record that allows for normalized data transfer through the entire mortgage manufacturing process in primary, secondary and servicing markets.

B2. What are the typical time requirements of each process within the mortgage lifecycle? What are the “critical path” activities that drive the mortgage timeline and borrower expense? How could fintech be applied to improve efficiency, reduce costs, reduce time requirements, or facilitate equitable outcomes for borrowers?



Loans currently travel a non-linear path from initial inquiry, application, disclosure, document collection, processing, underwriting, closing and post-closing. Typical time requirements in initial inquiry, disclosure, document collection, and processing rely heavily on borrower response times. Underwriting takes between 24 to 72 hours in a normalized market. Closing is 72 hours. Post-closing is dependent on manufacturing quality. Times can vary dramatically from lender to lender and for different loan types. Bond loans are typically longer and more complex, while owner-occupied single-family-agency loans typically take the least amount of time.

Critical path activities relate to income and employment verification, asset verification, and the appraisal process. Time requirements for each of these vary by loan type and borrower circumstances. A W2 borrower with one job and all their funds in a checking or savings account who elects to use data-based verifications takes significantly less time than a borrower who is self-employed or who has multiple jobs and uses gifts or grants for their down-payment. Appraisal type combined with property type and location varies the time needed to complete asset assessment.

Providing innovation in these areas, from idea to proof of concept to initial adoption, falls in the one- to two-year range. Bringing an idea that had good initial adoption to scale and deployment to large sectors of the market takes three to five years. Industry adoption at scale is a five- to seven-year process.

Fintechs can impact speed, efficiency, cost, and more. The FHFA can help focus industry innovation on areas that specifically impact the cost to originate a loan and drive the cost for borrowers. Driving equity is imperative.

The FHFA can drive this by focusing on diverse suppliers in the fintech space, working to find founders who are minorities, or companies that have diverse DEI programs. At TRAINED, we have a team of high-functioning autistic individuals. TRAINED is using their unique abilities to be near perfectionists, and to complete repetitive tasks without distraction, to drive nearly 100% accurate data labeling in an on-site, onshore, secure environment.

Protecting PII and providing a valuable service, we also provide sustained full-employment for differently abled individuals, who have often been relegated to minimum-wage, low-level employment, and are often reliant on government assistance.

B3. What are the typical drivers of repetitive requests to borrowers or revelation of underwriting information by the lender in the mortgage process, and what opportunities exist to automate processes?



Mortgage lending is complex. Borrowers often do not understand the document requests up-front or the need for the items requested. For example, borrowers will often bring in

pages one through three of a four-page bank statement because page four says “intentionally left blank.” They don’t understand our need to see it. Longer cycle times also often require updated paystubs. Using data throughout the process rather than paper verifications can reduce the need for repetitive requests to the borrower. In addition, using AI to screen a document can provide immediate feedback to the borrower on whether the document meets lending standards can help avoid delays from the very beginning, and at every subsequent stage.

B4. What are the existing data challenges that most prevent data-driven decision-making in the mortgage lifecycle?



The key obstacle to data-driven decision-making is the lack of normalized data coming in from many diverse sources throughout the mortgage cycle. Data arrives in the loan origination system from a variety of places. The data is not always clean. Often, it does not agree in detail with valid data from other sources. It is not always in the right spot and cannot easily be shared with other systems. Artificial Intelligence cannot make proper predictions when data fields do not line up.

A capacity for conforming relevant and valid data will greatly speed and facilitate decision-making.

B5. What are the existing regulatory and policy barriers to adopting and implementing fintech within the mortgage lifecycle?



The absence of an ongoing forum or body for collaboration with regulators and policy makers creates a barrier to gaining the benefits of fintech within the mortgage lifecycle. The lack of a means for normalizing data throughout the mortgage process represents the greatest technical challenge. Together, issues such as these create an excessive cost of entry, both for borrowers and lenders.

C1. What new fintech tools and techniques are emerging that could further equitable access to mortgage credit and sustainable homeownership? Which offer the most promise? What risks do the new technologies present?



Operational efficiencies that simplify tasks in processing and underwriting give companies an ability to offer buyers who may have lower priced homes a chance to compete. Companies will often increase margins to turn a profit on loans with lower loan amounts. Roughly \$11,000 to manufacture a loan creates an incentive to ignore these buyers as they often result in originating the loan at a loss.

Artificial Intelligence offers one of the greatest potential savings in the cost of providing mortgage credit, and for ensuring sustainable homeownership. By adding to lenders’ ability to conform and normalize data, access, and make usable the data from dynamic and disparate sources, and organize big data into predictive observations, lending can become more inclusive by becoming more intelligent.

Although the banking industry has CRA requirements, those requirements do not apply to independent mortgage banks. Origination commissions are weighted on loan amounts, therefore creating incentives to market and attract conventional loans. Tracking only happens once an application is initiated, but loan officers may not try to attract minority loans. Reducing the cost of loan origination reduces this unseen barrier to entry.

C2. What emerging techniques are available to facilitate or evaluate fintech compliance with fair lending laws? What documentation, archiving, and explainability requirements are needed to monitor compliance and to facilitate understanding of algorithmic decision-making?



For lenders, many use their existing compliance management systems to evaluate a fintech's compliance with fair lending laws. Additional work is necessary to ensure that compliance management systems appropriately address the risks associated with fintechs and fair lending, especially algorithmic decision-making.

It should be noted there are some fintechs specifically working on fair lending, equitable housing, and closing the racial wealth homeownership gap. Home Lending Pal is one such example.

Continual awareness of developments in the fintech field is required to facilitate understanding of algorithmic decision-making. This is another reason for establishing a forum for ongoing dialog with regulators and policy makers.

C3. Are there effective ways to identify and reduce the risk of discrimination, whether during development, validation, revision, and/or use fintech models and algorithms? Please provide examples if available.



Despite the good intentions of many industry participants, the gap in access to affordable housing has yet to be resolved. We have a duty to serve all borrowers, especially low-income and minority homebuyers.

FHFA's involvement through a fintech accelerator, incubator, or other direct involvement could prove invaluable to establishing and maintaining equitable access. In addition, the FHFA should have a board of key industry stakeholders involved in the fintech process to create advisory services and reduce discrimination.

The capacity for fintech solutions involving AI to contribute decisively to greater equity includes its ability to include a wider range of data fields in decision support, while at the same time conforming and validating those data. For example, neighborhood property value trends and rates of home reinvestment could potentially yield better decisions on loan eligibility, if included in application algorithms.

D1. What risks do fintech and fintech firms present to the economy and the financial sector? To the housing finance sector? To FHFA-regulated entities? To counterparties of FHFA-regulated entities and other third parties? To mortgage borrowers and consumers?



The distributed retail divisions of lenders help local banks and IMBs keep their footprints relevant and accessible, providing trusted access to mortgage products and providing local market knowledge and in-person support for all members of the community. Fintechs, particularly larger ones, pose the risk of disrupting CRA compliance when they fail to apply those requirements.

Lowering origination manufacturing costs should be the primary driver to enable better access to homeownership for low to moderate income and minority borrowers. This development will also reduce the boom-and-bust cycle of the mortgage industry, with its resultant impact not only on employment and overhead, but also on hiring and laying off staff.

Fintech can be expected to move much faster than FHFA can respond if a reactive model is followed. Therefore, encouragement should be to simplify existing models and to prevent the disruption of the current system.

D2. What risk management practices do industry participants use to address the risks posed by fintech and innovation in housing finance?



Counterparty risk is a significant risk faced by every industry participant. Every firm has a vendor management system. These systems include reviewing the risk imposed by fintechs and their ability to meet or exceed existing regulatory requirements.

A regular forum among fintech, regulators, and policymakers would provide the framework for staying ahead of risks as technologies emerge.

D3. What particular risks to consumer privacy have been associated with fintech? What practices are being used to manage these risks?



There is an overall risk to privacy as the world relies more on digital technologies. A forum that puts fintech in ongoing dialogue with regulators may help provide a roadmap. Loan origination calls for evaluating data from the most intimate depths of financial privacy, and so protecting these data becomes a key responsibility for the industry.

Current practices for managing these risks include, and are not limited to, the following:

- Vulnerability scanning, particularly in cloud-native components, is continual.
- Response time to vulnerabilities for remediation is minimized.
- Security champions programs impress responsibility in early phases of tech development.
- Developer-friendly security tools and documented best practices make security feasible.
- Security tool logs and software bills of materials create audit trails for effective management.
- Key performance indicators for security create healthy competition in development teams.

Smaller fintech firms provide more focused attention to security measures than larger entities, and distributed risk is a means of limiting vulnerability. Breaches are common with the likes of Equifax and others. Regular evaluations of policies and procedures as well as risk assessments should be commonplace for regulation of fintech.

E1. What are the most promising areas for applying technology to regulatory and compliance functions? Please describe opportunities for “regtech” to simplify or improve compliance with FHFA, Enterprise or FHLBank requirements.



Artificial intelligence and the normalization of data offer the best path forward. If URLA are subjective to the individual underwriters and not normalized, it is impossible to run proper analytics and evaluate systemic risks.

A systematic reduction of onerous guidelines, making it easier to normalize data with an automated feedback system, will dramatically increase operational efficiency, and at the same time facilitate regulation and compliance. Strange overlays that are applied to every borrower allow the URLA to be manipulated to the easiest path forward and yet they obscure the view of any meaningful analytics. Eliminating these overlays to conform and normalize data will allow for real-time assessment of risk, as well as consistent regulation. Changes can be made intelligently to the current policies, using precise metrics on predictive analytics of loan performance.

F1. What forms of stakeholder engagement are most effective in facilitating open, timely, and continuous discussion on the challenges and opportunities present by the application of fintech to housing finance?



The formation of a technology counsel in conjunction with regulatory bodies, industry trade groups, and other key stakeholders will provide easier transition to digital technologies while evaluating the benefits and risks associated with each new technology or ideology of problems being solved.

F2. What are some topics for a housing finance-focused “tech sprint” and how could FHFA encourage participation?



It seems prudent to focus a “tech sprint” around CRA, automating underwriting conditions, and other items that impact manufacturing costs. To encourage participation, the FHFA should provide a clear roadmap and objectives along with parameters.

FHFA could encourage partnerships or have lenders offer to help facilitate technology adoption in the primary, secondary and servicing markets for the leaders in the tech sprint. In addition, risk mitigation can be devised for innovators, as they bring their product to market and develop use cases and proof of concept. One such way would be to reward winners with a GSE pilot program.