

# Building financial security for low-income communities

An AI-powered recommendation engine capitalizes on data to help financial coaches share inclusive and equitable fintech products most relevant to customers' goals



[View](#) [Applying machine learning to improve recommendations](#)

Financial insecurity is a daunting reality that people with low income must navigate. Systemic barriers to financial inclusion are a



× Close

Hello! How can we help you?

particularly for Black and Brown women. Change Machine, tech organization, tackles these issues head-on.

Its mission is to build financial security for low-income communities through people-powered technology. Change Machine does its work through a software-as-a-service (SaaS) platform that can transform how people achieve financial goals. Used by financial coaches at social service organizations and public agencies, the platform includes a social collaboration tool for practitioners, an education portal on various financial coaching topics and a case management app on the Salesforce AppExchange. Coaches use the platform as they consult with customers.

The platform contains a range of fintech products and services that Change Machine vets to be inclusive, safe and effective. The platform is people-powered, meaning that it reflects the insights and experience of financial coaches and customers. It also includes a feature that uses AI analysis of customer data to recommend relevant products.

It wasn't always this way. At the beginning of 2020, Change Machine developed a set of standards to evaluate fintech products for affordability, inclusivity and safety. One of the goals was to ensure how each product aimed to build financial security. The first iteration of the recommendation engine, called Marketplace Relief, was launched to mitigate financial insecurity amidst the unfolding economic recession resulting from the COVID-19 pandemic. Criteria were created to filter relevant, vetted products and services to meet specific customer needs. If the needs were to boost savings and improve credit, for instance, the recommendation engine would recommend savings and credit products as well as financial coaching services.

Although the system worked well, the approach was limited. "Our original recommendation engine was designed by a small group of coaches from just one organization and at a particular point in time," says David Bautista, Director of Product Development at Change Machine. "To broaden the scope of its knowledge and the products it can recommend, we wanted the recommendation engine to be able to update itself in a more dynamic way."

The recommendation rules raised another concern. "The coaches identified products based on their expertise and experience working with customers, but we didn't fully leverage the data we also capitalize on: customer data stored in our systems, such as which services are most commonly used and what additional thresholds are needed based on specific financial situations," says Robert Zarate-Morales, Assistant Director of Product Development. "Using the data could provide better insights into customer needs and preferences."

The recommendation engine also didn't consider whether customers accepted or rejected the recommended products and services — an indication of the impact of the recommendations.

Hello! How can we help you?



## Higher Usage

Ongoing usage of fintech products increased from 60% to **98%**

## Shorter Development Cycle

The project team took just **6 weeks** of agile sprints to develop machine learning classification models

---

“The coaches identified rules based on their expertise and experience working with customers, but we didn’t know how to also capitalize on customer data.”

**Robert Zarate-Morales**  
Assistant Director of Product Development

Hello! How can we help you?

# Applying machine learning to improve recommendations


It was clear that the recommendation engine could be improved using AI data analytics. For development assistance, in March 2021 Change Machine engaged the [IBM® Data Science and AI Elite](#) team. IBM worked under the [IBM Data and AI for Social Impact](#) program, an apprenticeship collaboration in which IBM helps nonprofits use data science and AI to further their mission.

The project began with IBM and Change Machine personnel sharing knowledge and devising requirements. The goal was to rationalize organizational data into a coherent whole and develop machine learning classification models that would customize the recommendations. The models would be self-learning and based on Trusted AI, meaning that the reasoning behind the recommendations would be explainable.

Scalability would let the engine handle the expected growth in partners and users. Plus, operational dashboards would display live data for insights into operations.

To develop the data and AI models, the IBM team chose [IBM Cloud Pak® for Data as a Service](#), which would link all data in a centralized data function. Developers used the [IBM Watson® Studio](#) solution with its [AutoAI](#) feature to ease development. The API-based [IBM Cognos® Dashboard Embedded](#) solution would power scalable dashboards. All tools reside within the IBM Cloud Pak delivered from [IBM Cloud®](#).





“The engagement with IBM taught us how to leverage our data in new ways and how to build a framework for creating and managing machine learning models.”

**David Bautista**

Director of Product Development  
Change Machine


## Fast development using IBM's agile methodology

Development proceeded quickly using the IBM Data Science and AI Elite engagement methodology of three agile sprints over six weeks:

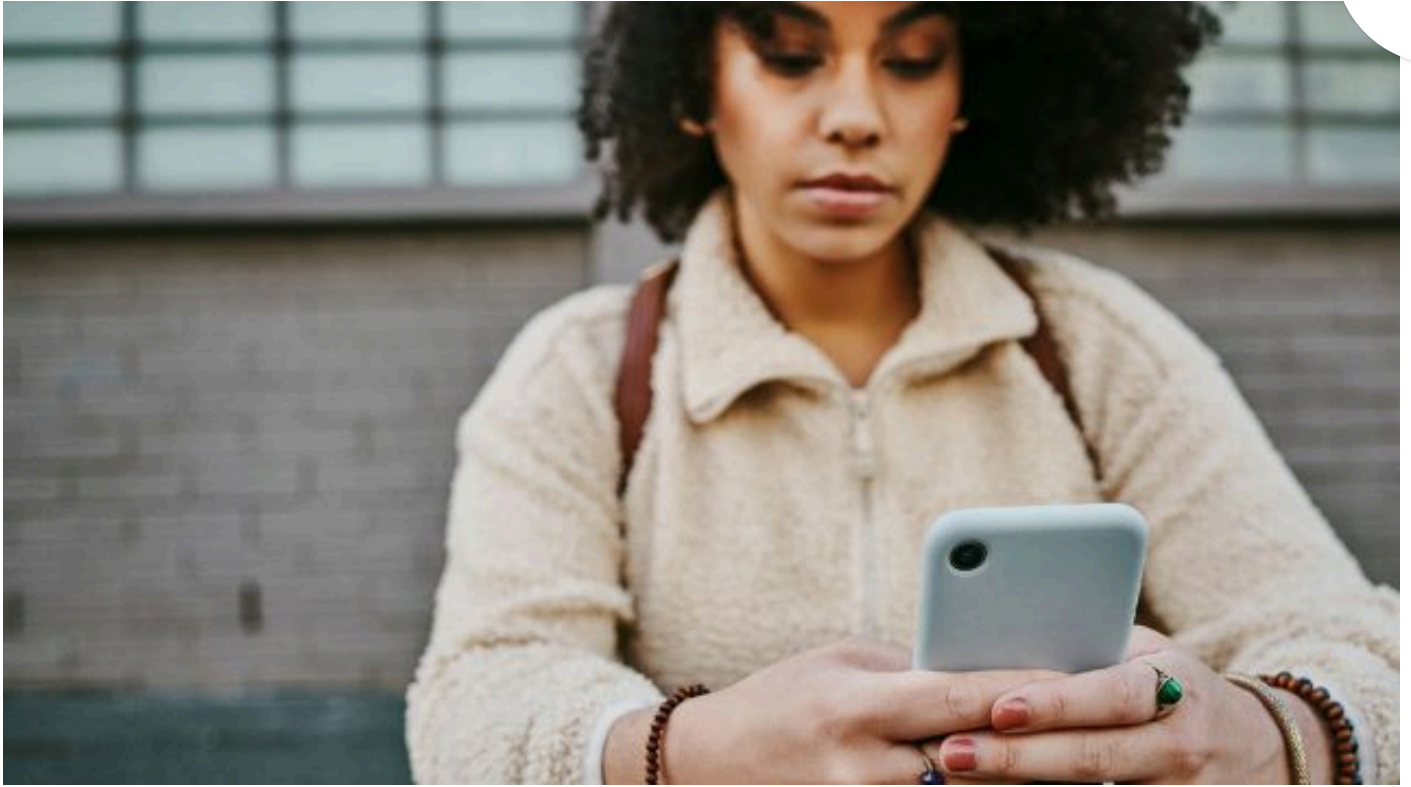
- In the first two-week sprint, developers worked with Change Machine to understand the data connected to all its sources.
- The second sprint focused on developing baseline machine learning models to see if the data could actually make predictions.
- The third sprint successfully finalized the models, enriching them with new features and deploying them into production.

Next, the models were integrated into the Salesforce app that financial coaches use with customers. The IBM team also supported the Change Machine team in developing management dashboards. And as part of the apprenticeship collaboration, IBM transferred knowledge to the Change Machine team on data strategy and AI tools they will continue to use in the future.

“The engagement with IBM taught us how to leverage our data in new ways and how to build a framework for creating and managing machine learning models,” says Bautista. “The project also served as a springboard for our involvement in advanced cloud solutions and helped us deploy a real-world application of AI, something we previously considered to be years away at best.”



Hello! How can we help you?



“Our partnership with IBM enables us to think about data more strategically.”

**David Bautista**

Director of Product Development  
Change Machine

## Quality recommendations help overcome financial barriers

AI analysis of Change Machine’s data now powers the recommendation engine in Salesforce. The solution is so innovative that it was nominated for VentureBeat’s AI Innovation Award in the AI for Good category.

With the former recommendation engine, customers actively used just 60% of fintech products recommended by their coaches. With the new version, the figure has risen to 98% — indicating that the recommendations are more relevant.

Hello! How can we help you?



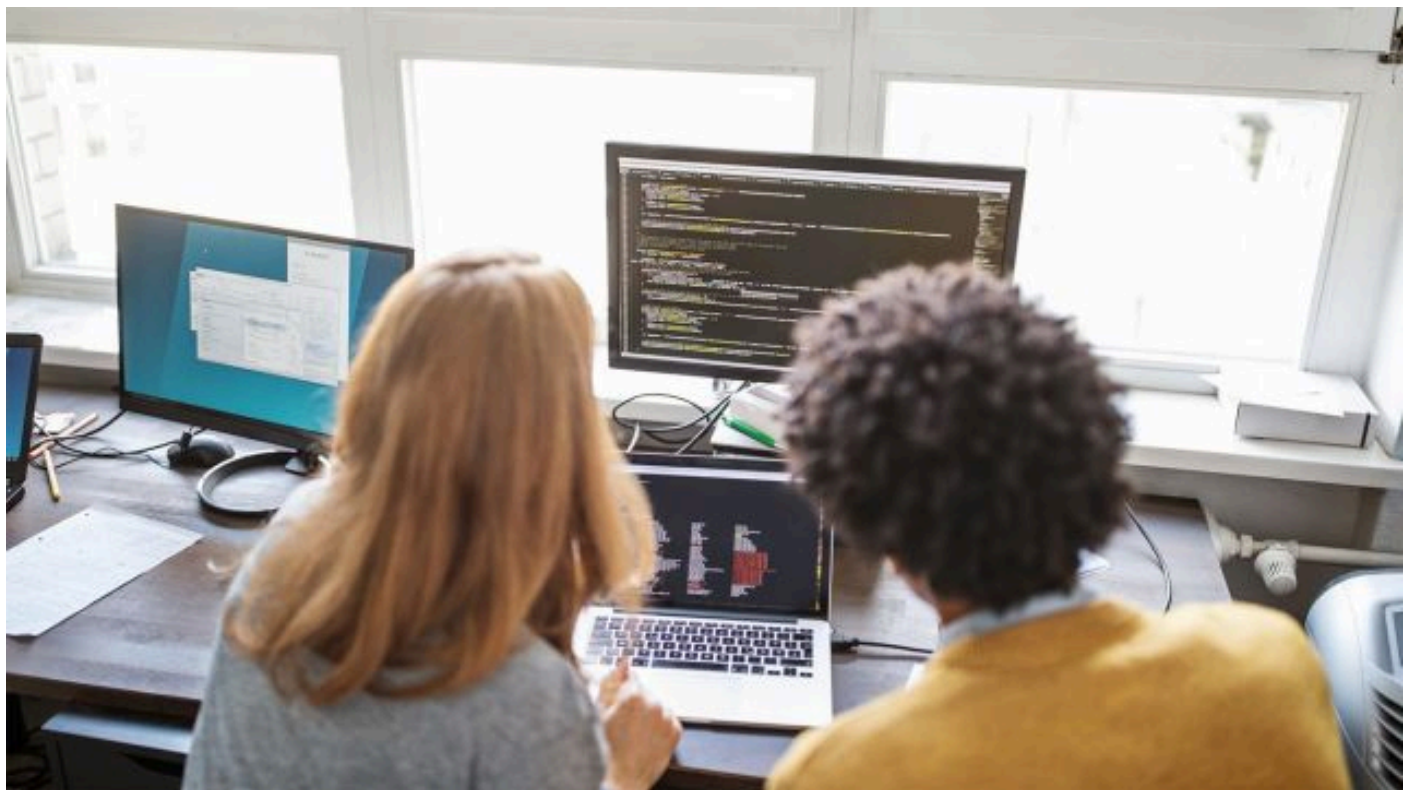
“Higher-quality recommendations advance our mission of helping people overcome financial barriers,” says Bautista. “Not only do they increase product uptake, but they help ensure access to the products people need the most. And they help cement the relationships between our partners and those they coach.”

Another benefit stems from the recommendation engine’s connection to dynamic data about customers and fintech offerings. As this body of data is updated, so are the engine’s recommendations.

The dashboards are proving valuable throughout the organization. They help Change Machine’s managers visualize dynamic operational data where “the numbers alone don’t tell the whole story,” says Zarate-Morales. Developers are building additional dashboards powered by a data mart under IBM Cloud Pak for Data.

Looking ahead, the IBM engagement will continue to drive innovation within Change Machine as its personnel apply what they’ve learned.

“For me, it was exciting to understand both the capabilities and the relative ease of using this technology,” explains Bautista. “Previously, data was something we would use reactively. If there were a question, we would ask, ‘Where’s the data?’ But today, we’re starting to proactively embed data in strategy decisions. Our partnership with IBM enables us to think about data more strategically.”



Hello! How can we help you?



# About Change Machine

Founded in 2005, [Change Machine](#) builds financial security for low-income communities through people-powered technology. Over 8,000 practitioners have used Change Machine's platform to amplify their impact, including putting USD 45 million in the pockets of their customers.

## Solution components

<a href="#">IBM Cloud®</a>	→	<a href="#">IBM Cloud Pak® for Data as a Service</a>	→
<a href="#">IBM® Cognos® Dashboard Embedded</a>	→	<a href="#">IBM Watson® Studio</a>	→

## Take the next step

**IBM teams up with organizations on AI incubator for social impact**  
[Blog](#) →

**Luxembourg researchers accelerate innovation with AI**  
[Case study](#) →

**Serving up tradition with an innovative spin**  
[Case study](#) →

## Footnotes

© Copyright IBM Corporation 2022. IBM Corporation, New Orchard Road, Armonk, NY 10504

Produced in the United States of America, August 2022.

IBM, the IBM logo, ibm.com, Cognos, IBM Cloud, IBM Cloud Pak, and IBM Watson are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at ["Copyright and trademark information"](#) at [www.ibm.com/legal/copytrade](http://www.ibm.com/legal/copytrade).

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in all countries.

The performance data and client examples cited are presented for illustrative purposes only. Actual performance results may vary depending on specific configurations and operating conditions. THE INFORMATION IN THIS DOCUMENT IS PROVIDED "AS IS" WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.

Hello! How can we help you?