Cultivating digital gro food security

Food Ladder and IBM empower communities with year-round access tc fresh, nutritious produce

usiness challenge Transformation Outc

Targeting food inequa

Food insecurity is one of the 21st century's bigge
hunger every day. Climate change, global conflic
infrastructure continue to threaten consistent ac
particularly in remote areas.

Food Ladder, an award-winning nonprofit organiz
global challenge for a while now. For 13 years, th
remote and disadvantaged communities through
educational initiatives. Food Ladder has made th

Hello! How can we help you?

compact, climate-controlled commercial hydrop
be installed anywhere.

The Food Ladder School System integrates innov
schools and offers thousands of educational resc
Through this initiative, teachers can engage stud
while producing fresh fruits and vegetables for th
greenhouse can supplement 85,000 meals.

After successfully setting up greenhouses across
India and Uganda, Food Ladder encountered a si
than 400 schools in need of the Food Ladder Sch
sustain the traditional approach of physically trav
up greenhouses and train teachers. At this junctu
potential to tap into technology and AI to scale, b
touch that defined their approach. So, they turne

Food Ladder + IBM: How Generative AI is Empowerin
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85,000

85,000 meals supplemented from one greenhouse

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Kelly McJannett
CEO & Co-founder
Food Ladder

Sowing seeds of auto

Food Ladder, in collaboration with IBM® Client Er
driven advancement. In approximately two and a half months, the IBM team developed AI-powered solutions built with the IBM watsonx.ai® AI studio and IBM watsonx Assistant™ to transform Food Ladder's operations and user experience.

The team implemented several critical innovations:

- They streamlined and automated the process for requesting Food Ladder services. Previously, teachers made after-hours phone calls, waited on the line and completed extensive paperwork. Now, they can submit requests at any time and complete the entire process in less than an hour.

- The team improved the onboarding process for schools in regional and remote areas. Upon receiving greenhouses from Food Ladder, teachers often had numerous questions and concerns. IBM Client Engineering developed a chat agent to guide teachers through this process, helping replace labor-intensive staff support with an efficient digital resource.

- To generate unit plans, lesson plans and remix lesson plans, the team extensively tested a few large language models (LLMs). They finally chose IBM Granite®, a series of open, performant and trusted foundation models created by IBM for enterprise applications. The Granite large language models offered superior consistency and adhered to source content and context, which are critical factors in developing educational material. These models hav
capabilities that help ensure educational materials
and reliable content, even when creating entirely ne
classroom activities. Teachers no longer need to spe
learning experiences aligned to curriculum outcomes.

Food Ladder had approached IBM with several use cases for automation. Kelly McJannett, CEO and Co-founder of Food Ladder, notes being surprised at how quickly the IBM team proposed a solution. Food Ladder was able implement the IBM watsonx® portfolio of products across all use cases, instead of leveraging multiple technologies. “For us, going into the AI-space, trying to go from 40 schools to potentially changing the way the world eats, this has massively simplified our path,” says McJannett.

> “Children learn much better when they are working with their hands. One of the outcomes is education, but one greenhouse supplements 85,000 meals, so it transforms communities from scarcity to abundance.”

Kelly McJannett
CEO & Co-founder
Food Ladder

Harvesting benefits of digital transformation

The implementation has transformed both internal operations and the teacher experience. Initially concerned that AI might diminish Food Ladder's personal touch, McJannett discovered the opposite effect.

"This transformation will make for an enriching experience on both sides—the teaching side and the internal staff side. The teachers can get their evenings back. They get to do what's really important to teaching, which is social support and understanding the needs of the individual child; not the mundane stuff like applying math lessons to the curriculum and the various bits of paperwork that go along with that. For our staff, it will give them back the capacity to do the more important work, which is to ideate, create and improve the offering and the platform. They can deliver better value to teachers, as opposed to just doing the automated process of making sure governance structures and such are in place," she notes.

The Granite foundation models have been particularly transformative for creating educational content. Teachers now have access to AI-generated materials that require minimal editing, eliminating hours of preparation time. The reasoning capabilities in the Granite models have resulted in consistent and reasoned changes to the lessons that effectively meet the remix criteria requested by teachers. Teachers can easily adjust teaching approaches, styles or difficulty levels while ensuring educational integrity remains intact.

Food Ladder is transitioning from an organization where everything is done by hand, to a fully automated system. Schools can use the Food Ladder School System to build, understand and harvest their own food systems and connect with other schools. Food Ladder currently operates in 40 schools across Australia and in several locations across India, Bhutan and Uganda. As of 2024, the organization has reached approximately 17,000 people and produced 132,480 meals annually. Through their collaboration with IBM, Food Ladder intends to scale drastically, implementing over 1,000 AI-powered smart food production hubs across the world and producing more than 25 million meals annually by 2030.

At this scale, communities will have year-round access
before. Working with food also helps children develop l
relationships with food and nutrition. Additionally, Food Ladder greenhouses grow

produce more efficiently than ground-based systems, helping reduce some of the longest, carbon-heavy supply chains in the world.

“It just brings us so much joy to deliver these incredible projects with this level of amplification and magnitude, which we can do on a much grander scale now. With IBM and our tech partners, we’ll revolutionize food security in just 6 years,” says McJannett.

> “Thanks to IBM for getting behind us and supercharging what we’re doing. Because when technology and social consciousness converge, the implications to change the world become very real.”

Kelly McJannett
CEO & Co-founder
Food Ladder

Food Ladder

About Food Ladder

Food Ladder (link resides outside of ibm.com) empowers children and communities to grow their own fresh produce, improving food security, health and economic opportunities through AI-enabled hydroponic greenhouses fully integrated into schools. Based in Australia, Food Ladder was founded by Kelly McJannett and Alex Shead, with the goal of addressing food insecurity holistically and providing education in underprivileged communities at scale.

Solution components

- IBM® watsonx.ai®
- IBM watsonx®
- IBM watsonx Assistant™
- IBM Client Engineering
- IBM Granite®

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