

# AI for Zero Hunger

Tackling the issue of hunger in the world with data

# How can AI help create a world free of hunger?

AI can provide a significant boost towards combating global hunger. Its presence in improving agriculture, food, storage and distribution processes and the way to intelligently deal with weather can create a crucial advantage, beneficial to all.

More than 2 billion<sup>1</sup> people are insecure about their food. In order to tackle that issue, Capgemini aims at leveraging digitization and data to optimize processes in regards to food and weather.

#AI4FOOD

#AI4ZEROHUNGER

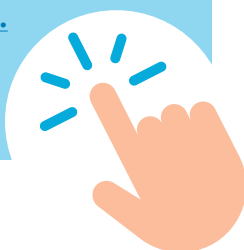
## About SDGs

The SDGs are an all-encompassing framework of the United Nations to achieve a more inclusive and prosperous world. While the SDGs cover several dimensions such as environment and health, four of them are more or less relevant for the fight against hunger.

[You can learn more about the SDGs here.](#)

75%

of the SDGs targets could be positively impacted by AI.<sup>2</sup>



# National AI Strategies embrace the issue of food

Engaging in the journey for a better planet, countries around the world have begun embracing AI's potential in order to improve and make the fight against hunger more resilient.

## Japan – AI to enhance the fishing industry

Japan Aquaculture fisheries are using AI to optimize feed requirements of fish by analyzing environmental factors such as water temperature, salt concentration, meteorological conditions, tides, wind direction, wind speed and carbon dioxide levels. AI is being leveraged for efficient fish stock management by providing real-time state of the fry and the correct amount of feed.<sup>3</sup>

## India – Creating a taskforce for soil fertility

The Indian government has placed task forces<sup>4</sup> that monitor Soil Health and works towards restoration of soil fertility. Crop Health monitoring provides real time action advisories to farmers. Schemes are being introduced to increase efficiency through farm mechanization. Recently a bill was passed that increases price realization for producers.<sup>5</sup>



## Mexico – Creating an Agri Startup

Mexico created KYSO in Mexico city<sup>6</sup> with a focus on utilizing AI for improving farm practices. The technology enables farmers to automate irrigation in response to weather conditions by using metadata analysis of the pH levels of soils, humidity, and temperature.

## Africa (Kenya) - Use of AI to improve Food Security in Africa

Alliance for a Green Revolution in Africa (AGRA) and Atlas AI have collaborated to make use of AI and Satellite Imagery to measure and predict crop yields. The union intends to use Atlas AI's AI tools with AGRA's local data sets to help improve food security across 11 Sub-Saharan African nations. Results from predictive analytics will support decision makers in the wake of changing weather conditions, diseases and pests.<sup>7</sup>

# 14%

of the food produced for human consumption is lost each year between the stages where it is grown to when it reaches the wholesale market.<sup>8</sup>



*"A staggering number of people around the world suffer from food insecurity. AI can be the solution to this problem, and also ensure that the citizens of the world not just receive food, but also nutritious food and work towards ending hunger and malnutrition."*

- Cinzia Giulietti

Principal, Digital Consulting Capgemini Italy

## Our Approach

Building on Artificial Intelligence and Capgemini's PublicGoesAI Playgrounds, the following potential dimensions of the quest for Zero Hunger and Food can be explored:



### **For those who produce food**

such as farmers, AI can help to identify weather patterns and to optimize the use of land, leading to a sustainable agriculture.



### **For those who distribute food**

the intelligent use of data brings insights on how to best feed the population with the available resources, also minimizing waste and foreseeing food shortages.



### **For those who consume food**

AI can build on conversational AI to enhance a better interaction with those in hunger.

Beyond developing solutions, Capgemini also builds on a **strong partner ecosystem** to tackle the problem of hunger, whether in the academic dimension with university partners or in the institutional dimension with key international decision-makers of the fight for zero hunger.

## Solutions delivered include:

Centralized data platforms, providing a key to evaluate and optimize diets for low-, middle-, and high-income countries.

Using state-of-the-art models and insights straight from the scientific world, we can balance factors like affordability, nutritional contents, healthy diet criteria and sustainability—directives that we as global citizens need to consider solving world hunger once and for all. Both at a policy level and at a consumer level.

# 37.5%

augmentation of the per acre crop output was achieved through AI & GIS technologies in irrigation, also achieving a reduced water user of by<sup>9</sup>

# 20%

# 99.53%

is the accuracy achieved using AI for disease plant detection.<sup>10</sup>

# 75%

accuracy rate Untrained AI Systems still have in distinguishing between weeds and crops, which is significantly higher than the average human.<sup>11</sup>



Reducing  
hunger with  
Data



Helping farmers  
optimize field  
use



Optimizing  
food supply  
to schools

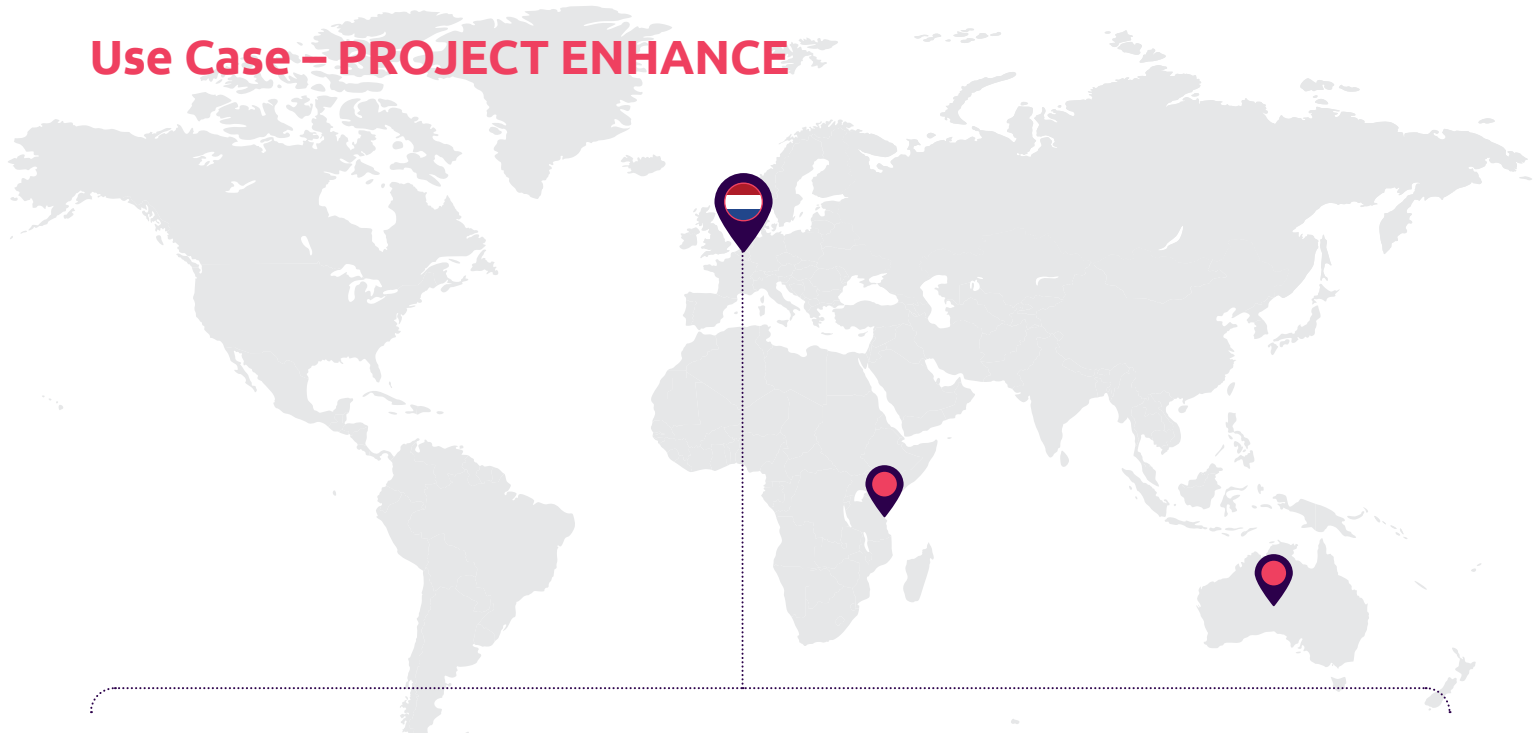


Use  
cases

## Perform AI

Activate data.  
Augment intelligence.  
Amplify outcomes.

## Use Case – PROJECT ENHANCE



### PROJECT ENHANCE: REDUCING HUNGER WITH DATA

Organization: Various countries

Capgemini is collaborating with the World Food Programme of the United Nations, alongside Johns Hopkins University and the Zero Hunger Lab of Tilburg University. In this one-of-a-kind collaboration, we each bring our unique strengths to the table: scientific research, cutting-edge technology, and a worldwide food relief system

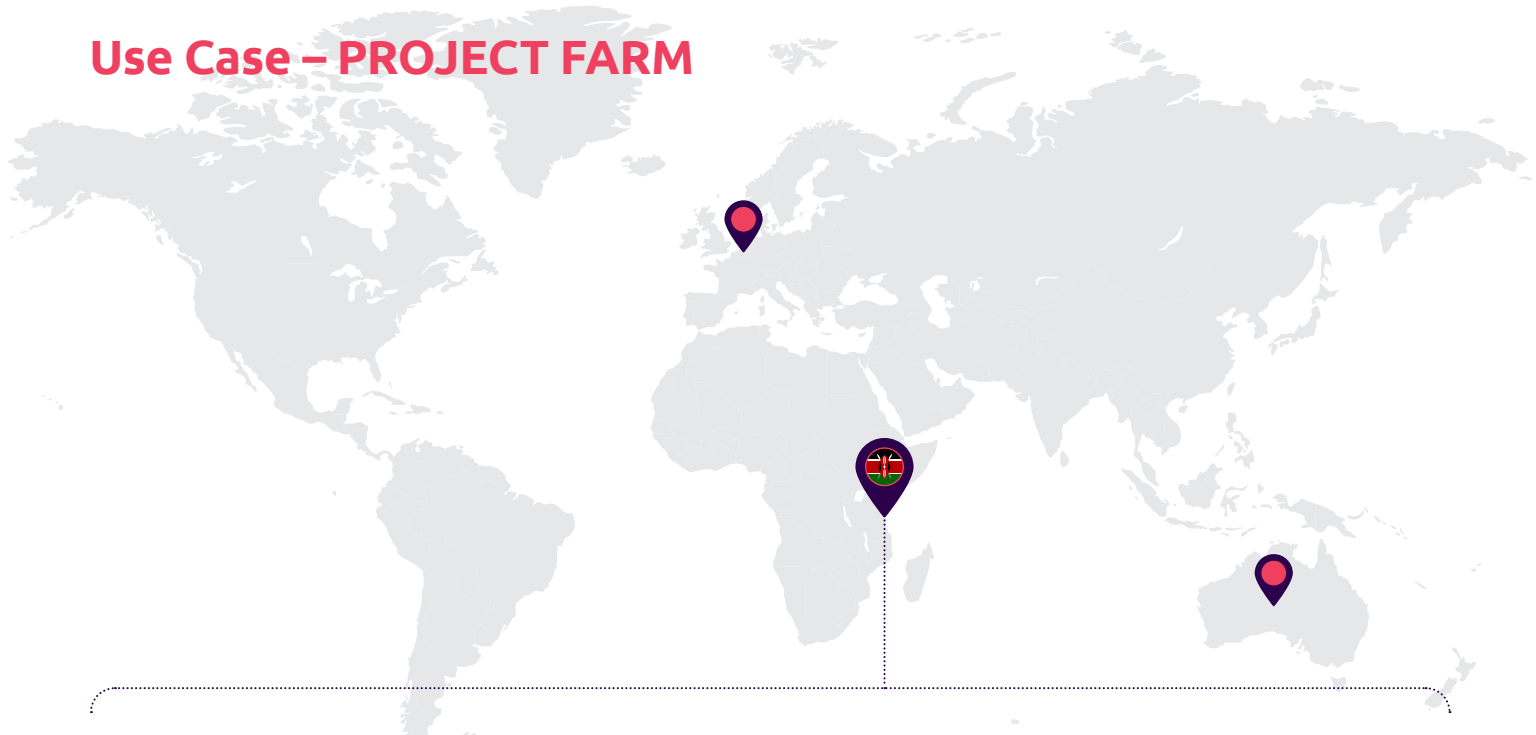
#### Challenges

- Every year 2 billion people doubt their ability to get food.
- 1/3 of food produced is lost or wasted
- 60% of bio diversity loss is related to food systems
- Food production is responsible for 1/4 of greenhouse emissions
- Intel on the availability and nutritional values are crucial
- This creates a need for the re-invention of these web of food systems to ensure livelihoods.

#### Solutions

- In cooperation with the World Food Programme of the UN, the John Hopkins University and the Tilburg University, a centralized data platform was introduced for analysis on nutrition, cost factors and sustainability.
- AI enabled to evaluate and optimize diets for different contexts, therefore helping governments bring food to citizens in need.

## Use Case – PROJECT FARM



### PROJECT FARM: FIELD USE OPTIMIZATION FOR FARMERS

Local Farmers in East Africa

#### Challenges

- Global Demand for Food will increase by 60% in 2050.
- As the majority of food comes from small-scale farmers, the support to them will be essential to achieve agricultural efficiency and sustainability.

#### Solutions

- Project FARM builds on a platform and AI to help farmers to optimize the crop production.
- The interactive map provides key indicators to farmers, among others the farm yield, farm size and the distance from home to the farm.
- Soil imagery helps to classify soils and predict quality losses.

## Use Case – PROJECT ZERO HUNGER



### PROJECT ZERO HUNGER: A CLOUD BASED PLATFORM TO OPTIMIZE FOOD SUPPLY

Organization: Schools in Australia

Capgemini Australia developed a cloud-based platform that uses AI and ML to optimize food supply, ensuring an efficient distribution across schools. Need for food can be monitored in real-time, helping to optimise and forecast food distribution

#### Challenges

- 66 million primary school-age children attend classes hungry in the world
- Beyond health issues, hunger creates a loss of learning, absenteeism and food insecurity
- Data can be leveraged centrally to help change the situation

#### Solutions

- Yum-Yum is cloud based platform which leveraged AI and ML to optimize food supply, ensuring an efficient distribution across schools
- The platform addresses all roles – students, teachers, school staff and welfare officers can leverage it
- Need for food can be monitored in real-time, helping the food distribution to be optimized and forecasted.



## Thought Leadership Positions



Smart Reduction of  
Consumer Food Waste

**2018**

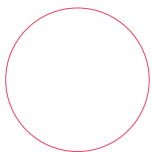


Bytes Against  
Hunger

**2018**

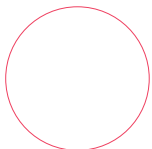
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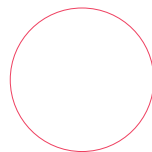
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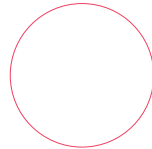
Global Offer Leader AI in PS

### Experts



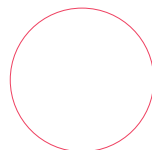
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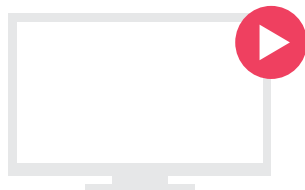
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## More Information

### Missed the event?

Catch up on all the  
individual session  
recordings!



### Additional links

[Our Perform AI Offer](#)  
[AI in the Public Sector](#)  
[Capgemini @ AI for Good Summit](#)

## References

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More information





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Capgemini is a global leader in consulting, digital transformation, technology, and engineering services. The Group is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. A responsible and multicultural company of 265,000 people in nearly 50 countries, Capgemini's purpose is to unleash human energy through technology for an inclusive and sustainable future. With Altran, the Group reported 2019 combined global revenues of €17 billion.

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