

# Crowdsourcing Solution Successful case study

## Case Study 1: NASA ISSS FIT

Designing and implementing an iPad application to recognize and record meals for the astronauts on the International Space Station.

### **THE CHALLENGE**

Tracking the food astronauts eat while aboard the International Space Station (ISS) is essential for NASA to combat the health risks of long-term spaceflight.

When the ISS first took flight astronauts were given an Excel spreadsheet to track food intake, but NASA quickly realized that they needed a better solution. Typing in zero gravity is difficult and time consuming, and many meals went unrecorded. In response, NASA wanted to design and build a fast, accurate, and simple iPad application to drive adoption with the brave men and women on the ISS.

### **THE SOLUTION**

With Topcoder, NASA went from application idea to a production-ready, astronaut-approved iPad app in just eight months. Topcoder broke the project down into small units of work spanning everything from UX design to testing the final application code, attracting hyper-specialized members from the Topcoder Community to solve the challenges that come with building an app for use in space. Not only did the application need to support facial recognition and voice command in the always-noisy, low-lit ISS, but it also had to recognize and record food and beverage packaging from countries with different barcodes than the United States (or with no bar codes at all).

After passing with stars (pun intended) through multiple rounds of human testing here on earth, the ISS FIT (Food Intake Tracker) app developed by Topcoder was loaded onto a rocket in late 2016. The world's first crowdsourced iPad application now passes over our heads 15.54 times per day, ensuring that every morsel consumed by astronauts is recorded for analysis.

In 2017, the app won NASA's coveted JSC Director's Innovation Group Achievement Award.

### **Reference:**

<https://www.topcoder.com/case-studies/nasa-iss-fit/>

## Case Study 2: METI

Designing and implementing winning web applications to help Japanese business owners find information fast.

### **THE CHALLENGE**

The Ministry of Economy, Trade and Industry — also known as METI — works on developing Japan's economy and strengthening the public sector. METI created a database with thousands of business case studies to help Japanese business owners navigate important decisions and obstacles. But instead of becoming a major asset for Japan's economy — the database went virtually unused.

The culprit? Many of the case studies existed in hard-to-search PDFs, meaning users often gave up in frustration. To further complicate matters, the database allowed for individual content creation and management, and the variety of formats caused even more friction.

## THE SOLUTION

METI wanted a more consistent, intuitive, and modern digital experience for its users. So TC3, Topcoder's premier consultancy partner in Japan, approached them with the idea of design-first exploration and rapid prototyping through Topcoder. TC3 launched the design work on the Topcoder platform — with the goal of creating a responsive website interface that was easy-to-use and intuitive—especially for older and elderly users.

In less than two weeks, Topcoder's designers submitted over a dozen unique interface concepts. Guided by TC3, METI provided feedback and iterated on their favorite designs. From there, METI used Topcoder to create a REST API and a fully functional prototype. In just three weeks, all of the design and development work was done.

### Reference:

<https://www.topcoder.com/case-studies/meti/>

### General Information:

As the novel coronavirus impacts over 140 people in India, the government is now reaching out to experts and the public to seek ideas on how to tackle the spread of the pandemic. Besides asking for ideas from startups and the technology ecosystem, the government is planning a crowdsourcing campaign to solve the situation.

An ET report said that the government has begun crowdsourcing ideas and solutions from experts, companies, academia and citizens. For this, an "S&T core team" has been set up in the office of the principal scientific advisor to look at these ideas and collaborate with labs and industry to take those solutions faster to the public.

### Reference:

<https://inc42.com/buzz/india-turns-to-crowdsourcing-for-solutions-to-coronavirus-pandemic/>

## Case Study 3: THE FUTURISTIC SOLUTIONS THE INTERNET IS CROWDSOURCING TO CURE CORONAVIRUS

### THE CHALLENGE

A Facebook group called Open Source COVID19 Medical Supplies, which consists of over 13,000 members, is trying to find solutions to the pandemic by creating open-source ventilators, as well as medicine and supply guides. The group was created on March 10 by MegaBots founder Gui Cavalcanti with an open source content management system (OSCMS) and released the first version of its open-source medical supply guide on March 18. The group's significant growth has spread worldwide, with a strong focus on Ireland and Portugal. Some leaders in the group are beginning to focus more on the Middle East.

"This group is being formed to evaluate, design, validate, and source the fabrication of open source emergency medical supplies around the world, given a variety of local supply conditions," the group's description says.

"It is a global movement. As we continue to grow, we're still recruiting people who are willing to take charge and willing to lead within their own communities," Ja'dan Johnson, a community moderator for the group and the OSCMS media coordinator, told Newsweek.

The medical supplies guide provides links to 25 different supplies and devices the group is crowdsourcing, including oxygen masks, personal protective equipment like face shields, and devices such as oxygen concentrators. The guide also describes available resources, why it's needed and possible issues that are being faced, as well as answering questions such as "Are 3-D printed parts sterile?" and providing a glossary.

Originally founded to create an open-source ventilator, a necessary medical tool for treating COVID-19, the group expanded to include ways to create other open-source devices and supplies, like N95 respirators, air-purifying respirators, surgical face masks and hand sanitizer.

Cavalcanti told Newsweek he originally started the group to try to create open-source ventilators but switched to making the group more general after contacting a medical practitioner who told him that the shortage went far beyond ventilators. By the time the group was at 700 people, he decided to focus on general supplies after learning about Seattle nurses trying to craft their own face protectors from duct tape and plastic from binders.

## **THE SOLUTIONS**

"They just trying to get the literal apocalyptic backstop in place so that people have somewhere to go to find plans, make them for their local hospital systems when their hospital systems need them, and provide any measure of protection at all," he said. "And ideally be able to hand the paper factory the plans for the actual N-95 FDA-approved thing and hand the garage maker who has a 3D printer and wants to help a plan that's not acutely dangerous, isn't the perfect thing but is better than duct tape, binder plastic."

Johnson said that as different people provide their expertise, they branch off into subgroups to develop the supplies and discuss actions they can take. Once a group has developed a necessary medical supply or piece of technology that can be beneficial, the group's administrators and moderators help provide a medical and engineer review.

"What we help to facilitate is a medical review process," Johnson said. "Look at it like this: If somebody designs a ventilator, what we do before pushing it out to the world is we have it go under a medical and engineer review, where we have experts who have volunteered their time to make sure that these devices would be able to operate and be able to be useful in the real world."

With so many people creating, the group wants to make sure the technology it's developing is helpful. "With open source, it's a very delicate balance between the desire to create and also to make sure that we're building useful and meaningful things that do not create harm as well," Johnson said.

The people coming together in the growing group provide a sense of hope that's necessary in combating the virus' spread.

"The greatest thing that society has available are its human resources," Johnson said. "Beyond the technology, just the fact that people are willing to step up at such an integral time to address the pressing issues within our society is, in a way, a huge magnitude itself, and so far jumped on with an open mindset approach and really just seeing 'How is it I can be useful?,' which is quite contrary to what happens a lot of times."

## **Reference:**

<https://www.newsweek.com/crowdsourcing-solutions-coronavirus-covid-19-facebook-1493075>

## **LA Compost: Reducing GHG emissions with a Better Waste System**

### **THE PROBLEM**

LDF Grantee [LA Compost](#) is bringing LA's food system closer to a closed circle with many co-benefits with overall reduced emissions. LA Compost has decentralized community compost hubs throughout Los Angeles that are managed and run by community members. The hubs are based at churches, community gardens, schools and other eager sites. Participants in the local hub can drop off food scraps on-site and turn the compost pile, furthering it along in its decomposition process. The finished product, the dark, rich powdery soil, then goes back on to the site where they are growing food and continues along the circle. The compost provides nutrients for the food to grow better, the food goes home with the community, and the scraps come right back to the garden.

### **THE PROCESS**

LA Compost brings overall expertise and support to composting systems and empowers and educates the communities on how to manage them so that they can keep the knowledge and enthusiasm in the community. They particularly want to demonstrate the power of composting to neighbourhoods where landfills are typically placed – these large-scale landfills make neighbourhoods odorous and have diesel fuel trucks constantly coming in and out further polluting the air. LA Compost is creating a system that reduces the scale of these landfills by removing the organic matter and empowering the community to create an alternative solution.

### **THE SOLUTION**

Landfills are not only a pest to our senses, this waste system is a heavy emitter. Composting reduces emission because it is a best practice for organic matter treatment, it substitutes synthetic fertilizers, and increases potential soil carbon sequestration. The organic matter in landfills emits high level of methane as it decomposes unmanaged. Composting, however, reduces both the odour and the methane. This compost has been broken down from nutritious food scraps and can then pass along these nutrients to the applied areas. The nutrients in compost are readily available for the plants, and the overall structure of the compost and soil together retains those nutrients better. In contrast, fossil fuel intensive fertilizers have given rise to a host of problems including environmentally degrading sourcing, and irresponsible usage which can lead to Nitrogen run-off. This run-off creates devastating algae blooms in our waterways and nitrogen deposition across our lands, leading to oversaturated soils and a plants inability to thrive. Even once the compost has been applied it continues to reduce emissions. Studies also show that one application of compost over agricultural lands increases carbon sequestration potential by 25-70%. Compost changes our waste systems so that we reduce methane, we avoid the use of fossil fuels and we sequester additional carbon.

LA Compost's capacity of food scrap diversion by the end of 2019 will be 630 tons. Total GHG reduction also includes the emission reduction from the avoided trucking, diversion from landfill methane emissions, as well as the expected replacement of synthetic fertilizer. Soil carbon sequestration includes many variables, and therefore has not been determined for the projects. All of this converted to carbon equivalent emissions, means that LA Compost is reducing 381 metric tons per year.

### **Reference:**

<https://www.leonardodicaprio.org/la-compost-reducing-ghg-emissions-with-a-better-waste-system/>

## **Los Angeles Food Policy Council**

The [Los Angeles Food Policy Council](https://www.leonardodicaprio.org/los-angeles-food-policy-council/) was founded in 2009 as project of the mayor's office and a coalition of community members and has been working on food issues central to the LA area since. LAFPC has created and supported an expansive network of organizations and individuals and is uniquely placed to listen to what is needed in Los Angeles and connect people and organizations working on similar goals.

As each city is unique, so is each food policy council, and in Los Angeles this means working on diverse issues but overall working towards food that is healthy, affordable, fair and sustainable for all. Some of the key topics that they work on are food security, equity and access, regenerative and urban agriculture and food waste. Thanks to their public campaign on food waste, #FreetheFood they diverted over 11k lbs of food scraps and freed it from landfills. Their work in urban agriculture led them to advocate for policy that expands land access through incentivizing land owners to lease land to urban farms and gardens.

LAFPC also creates resources for urban consumers and producers. For example, the [Food Recovery Guide](#) which is a resource for stakeholders interested in local efforts that are contributing the national goal of reducing food waste by 50% by 2030. In addition, the [urban ag farmer's toolkit](#) which describes our currently policies in LA and CA on how food can be produced and sold, and helps farmers navigate the regulatory hoops. Through these and similar efforts, LAFPC is strengthening the knowledge, communication and connections in the Los Angeles food system and progressing good food for all.

### **Reference:**

<https://www.leonardodicaprio.org/los-angeles-food-policy-council/>