Researchers develop crowdsourcing software to convene rapid, on-demand 'flash organizations'

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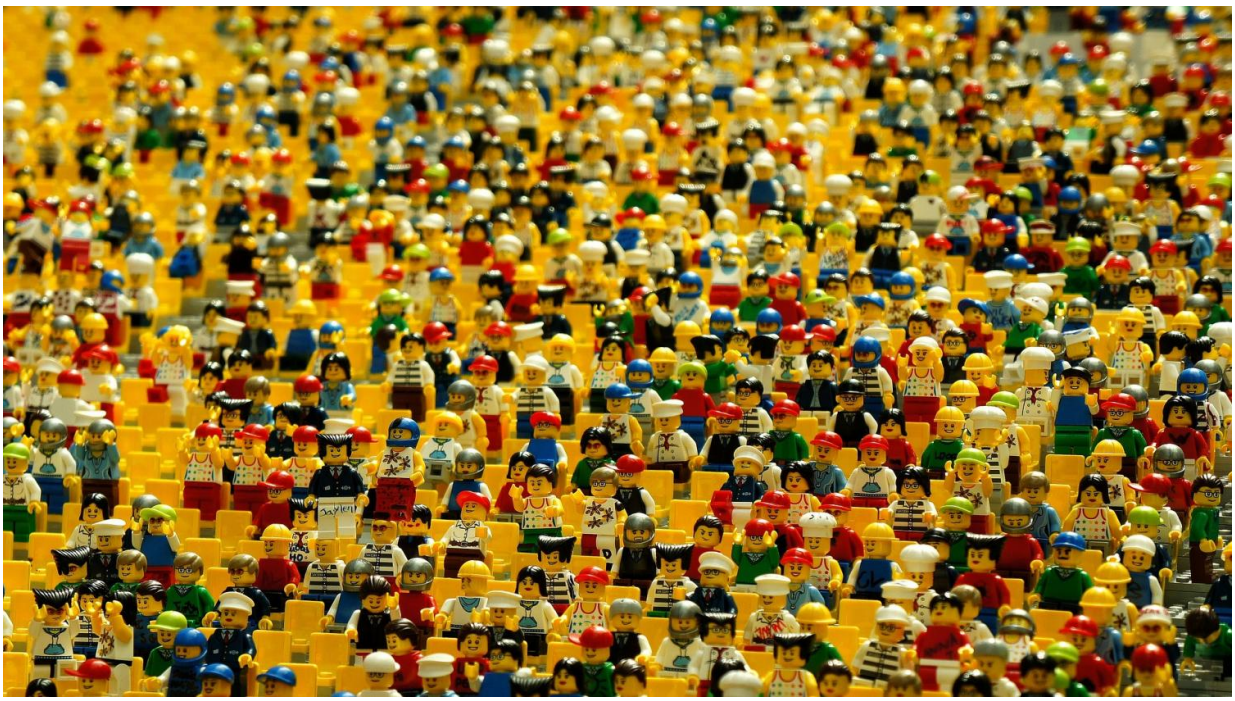

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Crowdsourcing has become a popular way of making use of large groups of people to accomplish straightforward tasks—online reviews on Yelp, Wikipedia entries and Stanford University's own Folding@Home, to name a few. A significant downside is that, because these projects

usually rely on an inexpert workforce, they need to be built from basic and highly specific tasks that any person can carry out.

Those limitations make traditional crowdsourcing impractical for the kinds of complex tasks many organizations need to accomplish - a challenge that researchers at Stanford tried to overcome with a new, more structured approach to crowdsourcing complex tasks, called flash organizations.

"Traditional crowdsourcing can't be applied to the most important goals that we, as humanity, want to pursue because these goals are open-ended and complex," said Michael Bernstein, assistant professor of computer science at Stanford. "They simply cannot be predefined and cannot be broken down into thousands of independent parts. They require adaptation, re-planning and change that's incompatible with traditional crowdsourcing."

A virtual hierarchy

Flash organizations combine the most adaptable parts of both traditional crowdsourcing and traditional offline organizations. Like traditional crowdsourcing, the workforce in flash organizations is completely virtual and assembled on-demand from massive online labor markets. But, like a brick-and-mortar business, it is composed of experts assembled in an organizational hierarchy.

"These organizations are no longer anchored in rigid, Industrial Revolution-era labor models but instead fluidly assemble and adjust, pulling from a globally networked labor force," said Melissa Valentine, assistant professor of management science at Stanford. "This is a system that empowers anyone with an internet connection to form an entire organization from a paid crowdsourcing marketplace and then lead that organization in pursuit of intricate goals."

The researchers tested their flash organization model on three projects: the creation of an app that helps emergency medical technicians send information about patients while on the way to a hospital, the development of a web application for planning online workshops, and the design and manufacture of a storytelling card game. Their research, published as part of the Association for Computing Machinery CHI 2017 conference, details how the flash organizations successfully completed all three projects. The paper won a Best Paper award at the conference, a designation given to the top research presented at the meeting each year.

Redesigning organizations

While retaining the advantages of fast online hiring, flash organizations are more dynamic than previous forms of crowdsourcing. Traditional crowdsourcing's relatively unskilled, independent contributors require uniform workflows and goals defined concretely from the very beginning. In contrast, flash organizations are made up of a workforce of experts in a centralized organizational hierarchy, which defines a specific path to facilitate collaboration, communication and decision-making. This allows them to change their tasks and goals over time, based on the needs of the project as it proceeds.

Realizing that flash organizations wouldn't have the advantage of history that in-office hierarchies have, the researchers mimicked the structure of film crews and emergency response teams. They made sure organization leaders defined workers' roles by specific expertise, like asking for a director or firefighter, as opposed to seeking anyone willing to complete simple and unskilled tasks, like someone who would review a product purchased from an online shopping portal. With these defined functions, the temporary work forces could hit the ground running based on knowledge of their roles rather than knowledge of each other.

"I think flash organizations have the potential to make organizations more fluid, whereas, traditionally, the boundaries both within the team and the organization were pretty static," said Daniela Retelny, former graduate student fellow in management science and engineering and co-author of the paper.

To support the flash organization model, the researchers used a web platform they've been working on called Foundry. This platform was previously designed to manage "flash teams" (see video below), crowdsourced workforces comprised of experts who weren't part of an organizational hierarchy. For the flash organizations, Foundry helped with the creation of the organization, hiring, task-tracking and communication within the group. Foundry also included a special tool that allowed members to request a new role or task as needed.

Other online tools available for discussing and implementing changes, such as multi-author cloud documents, are reactive but uncoordinated. Foundry's process for making changes centers around the organizational chart and is used for all reconfigurations, including altering the timelines of tasks, redefining roles and hiring new workers.

Future for flash organizations

The researchers said flash organizations aren't ideal for every kind of work and could still encounter problems common to online collaborations, such as language barriers and time zone differences. But the researchers hope that, by making it possible to complete complex, open-ended virtual projects, their model will empower online workers and entrepreneurs.

"By allowing anyone with an idea to go to an online marketplace, recruit all sorts of different experts on-demand and bring their idea to life in a very short period of time, we're making innovation - and even potentially

entrepreneurship - much more feasible," Retelny said.

Many people have already requested Foundry with some suggesting that, in addition to supporting flash organizations, it could be used to supplement traditional office work and telecommuting. It isn't publicly available yet but the positive response has encouraged the researchers to continue developing this platform.

Provided by Stanford University

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