THE UNIVERSITY OF SYDNEY

**School of Information Technologies**
Faculty of Engineering & IT

## ASSIGNMENT/PROJECT COVERSHEET - INDIVIDUAL ASSESSMENT

**Unit of Study:** INFO5992 (Understanding IT Innovations)

**Assignment name:** Individual Innovation Report (Crowdsourcing)

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# INFO5992 Individual Report

## Crowdsourcing

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# Executive Summary

This Report provides an insight into the various core concepts of crowdsourcing, the literature review (Brabham), innovation concepts and an in-depth analysis of two real world examples of Innocentive and Topcoder and the demonstration of how they apply the various innovation concepts to crowdsource solutions to various problems. This report will also highlight the similarities, differences, advantages, drawbacks of these platforms and recommendations for managing the crowdsourcing process.

# Introduction

Crowdsourcing is the process of using the intellectual power of individuals across the globe to solve various problems or challenges. It is an economic way of providing faster and more reliable solutions to organizations which can help increase overall efficiency and productivity. By partnering with the crowd through various campaigns, organizations can access a wider pool of talent which can accelerate and improve the innovation and problem-solving processes. In a crowdsourcing campaign, the organization posts various problems and individuals compete to provide the most innovative solutions. To handle the administrative end of the campaigns like transfer of intellectual property, awards/recognition, crowdsourcing platforms are used. Real world examples like Innocentive and Topcoder are such platforms that will be discussed in detail in this report.

# Literature Review

In Wired Magazine (2006), Jeff Howe first used the term 'Crowdsourcing', in the article, "The Rise of Crowdsourcing" to demonstrate the usage of the power of the crowd to solve various tasks. In the book, "Crowdsourcing" (MIT Press, 2013), Daren Brabham mentions that since early 2000's organizations began to realize the importance of collective crowd intelligence to solve complex problems to serve business goals. Organizations utilize the creative power of the crowd in their everyday operations because it is economic, fast and increases process efficiency. Therefore, Brabham defines crowdsourcing as, "A deliberate blend of bottom-up, open, creative process with top-down organizational goals". Bingham also says that crowdsourcing provides a platform for communication and collaboration among individuals across the globe to bring new products or services to the market (Wired Magazine, 2013).

Brabham clarifies that crowdsourcing is not the same as open-source, commons-based peer production or market research & brand engagement. In crowdsourcing, the end solution is owned either by the crowd or the organization based on the terms of the agreement and is not open-source. Also, the governance over the solutions rests with the organizations and the crowd. With the example of Wikipedia which is a commons-based peer production, the solution is governed only by the crowd

which keeps improving it to make it better. Finally, people expressing their opinions or casting votes do not contribute to crowdsourcing.

## Using Crowdsourcing for Driving Innovation

Science Daily (2017) says that from small companies to large, crowdsourcing has changed the way the world does business. Brabham also says that crowdsourcing is a very effective problem-solving platform as it enables organizations to obtain solutions by opening the problem to a huge community of solvers through the Internet. The individuals who successfully solve the problems are usually awarded with some form of financial reward or recognition in exchange for their creative and innovative ideas.

Brabham identifies four main types of crowdsourcing based on the kinds of problems being solved. They are knowledge discovery & management, broadcast search, peer-vetted creative production and distributed human intelligence tasking. The following table (Table 1) summarizes each of the four types with examples:

| Type | Description | Example |
|---|---|---|
| Knowledge discovery and management | Crowd collects and organizes information in a common location and format | Peer to Patent |
| Broadcast search | Organization broadcasts a problem for the crowd to solve | Innocentive |
| Peer-vetted creative production | Crowd creates and selects innovative ideas | Threadless |
| Distributed human intelligence tasking | Crowd analyses massive amounts of information for the organization | Amazon Mechanical Turk |

Table 1 (Brabham, 2013)

Research showed that the crowd was not only motivated by monetary rewards, but also by the following factors (Brabham, 2013):

- Development of creative skills
- Expansion of professional networks
- Challenging oneself to solving a tough problem
- Making a valuable contribution to a large project
- Building a portfolio for future employment, and lots more

In the next section, we will see two real world examples of companies that use crowdsourcing as their business model.

# Innocentive

Innocentive is a Massachusetts based company that provides a crowdsourcing platform for corporations, governments and non-profits to solve complex problems by connecting them with their extensive solvers network consisting of more than 380,000 people across 200 countries. Innocentive uses a **Challenge Driven Innovation Methodology** and purpose-built technology to facilitate the flow of ideas and promote economic problem-solving.

### Detailed Explanation

When organizations have a complex problem that needs solving, they approach Innocentive which looks at the problem and uses their in-house experts to break down those problems into specific tasks and structures them in the form of 'Challenges' for the network to solve. Individuals then compete to provide the most innovative solution. Once the problem is solved, a financial reward is processed and/or transfer of intellectual property (IP) takes place. The system also has a provision to post challenges in the internal network (inside the company) first, and if the solution is not obtained, to post it to the community. The following image (Image 1) shows the working of Innocentive:

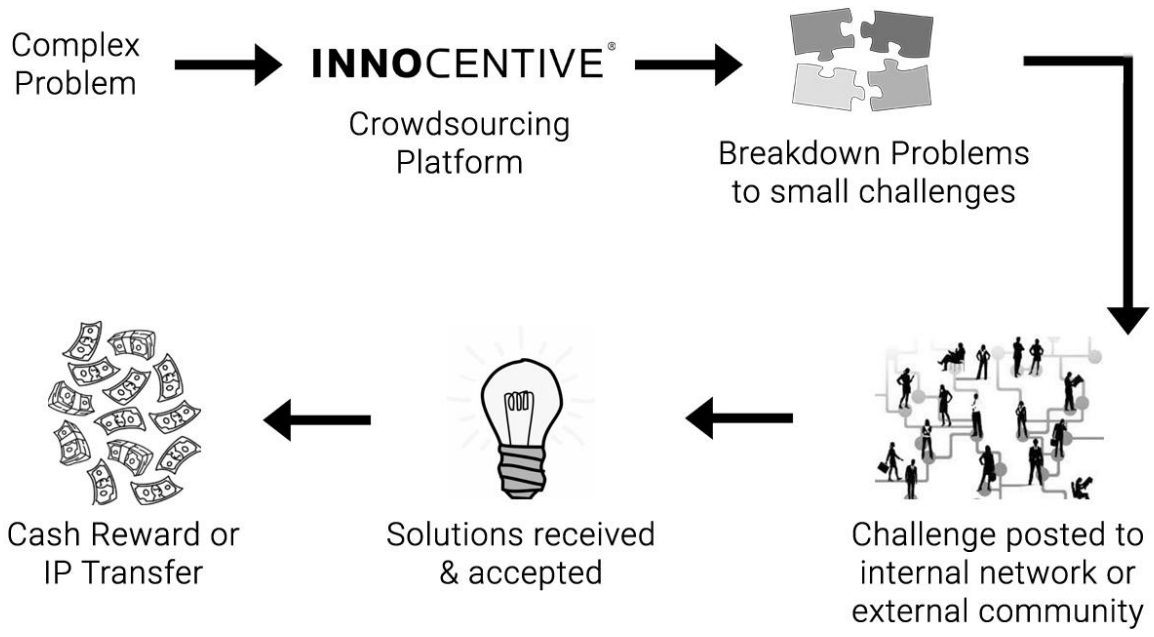


Image created by Valency Colaco for INFO5992 (Image 1)

### Application of Innovation Concepts

Innocentive uses the **Broadcast Search** type of crowdsourcing (see Image 2) as it broadcasts a problem for its global community to solve. It acts as an intermediary between the crowd and organizations to facilitate the problem-solving process, processing rewards and assistance with transfer of IP.


Image created by Valency Colaco for INFO5992 (Image 2)

## Topcoder

Topcoder is a Connecticut based company that provides a platform for software/application development through crowdsourcing. Topcoder has a network of 1,000,000 design and technology experts to provide solutions like Rapid Prototyping, Optimization of Algorithms & Analytics and Application Development.

### Detailed Explanation

The CEO of Topcoder, Jack Hughes envisioned the company as a "two-sided approach" to software development. The first side was the organization that needed software developed which worked with TopCoder to specify small programming challenges. The second side was the community members who would compete to create solutions for money and skill rankings. Pete Bourdon, the CFO of Topcoder explained that the company excelled at 5 tasks, breaking down large problems into small challenges, processing client requirements, determining contest prizes, using an unbiased way to pick contest winners and fixing software bugs. The following image (Image 3) shows the working of Topcoder:

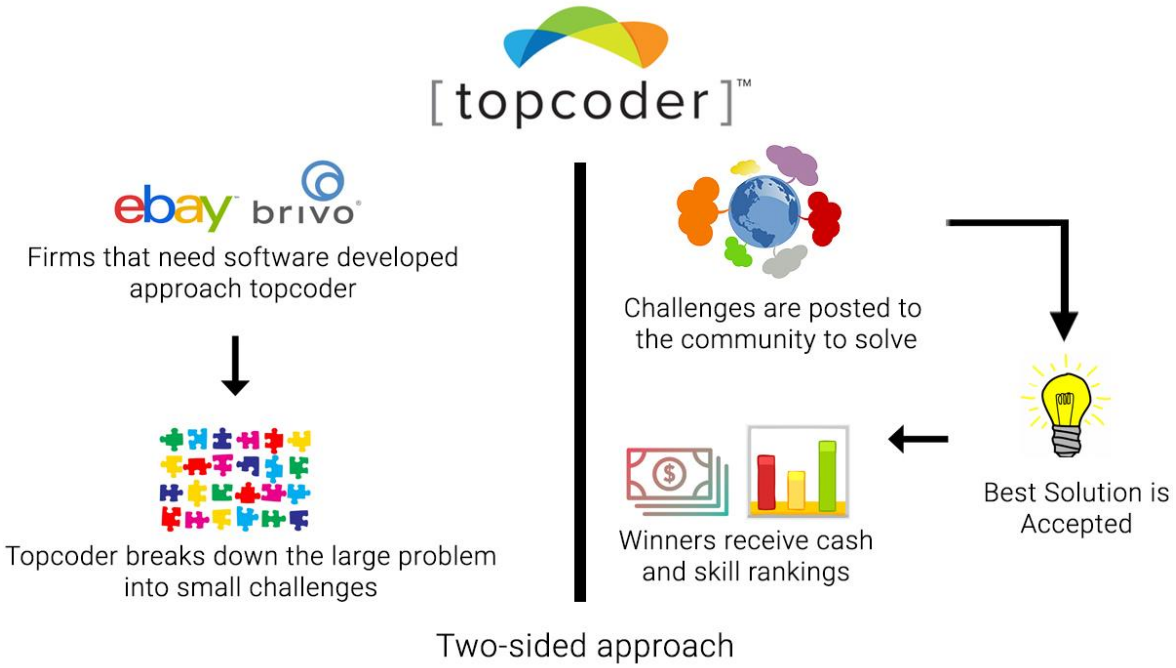


Image created by Valency Colaco for INFO5992 (Image 3)

### Application of Innovation Concepts

Topcoder uses a **Broadcast Search** Type of crowdsourcing (see image 4) as it broadcasts various programming challenges and engages its community to solve them. Topcoder acts as a **platform host** (see image 5) that designs challenges and enforces the rules between clients and the community members.


Image created by Valency Colaco for INFO5992 (Image 4)

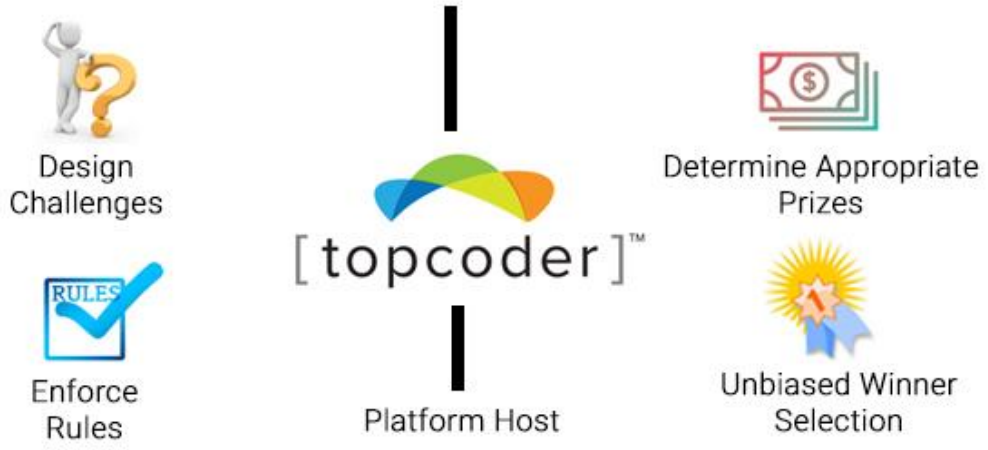


Image created by Valency Colaco for INFO5992 (Image 5)

# Critical Comparison

Both Innocentive and Topcoder are crowdsourcing platforms that harness the power of the crowd to solve challenges which provides an economic way of bringing products & services faster to the market. After the challenge completion, the IP can either be transferred to the company or issued at a license. The following table (Table 2) highlights the similarities and key differences between these platforms:

| Parameter | Innocentive | Topcoder |
|---|---|---|
| | | |
| Primary Purpose | General Purpose R&D Problems | Software Development |
| Provision for Collaboration amongst experts | No | No |
| Methodology | Challenge Driven Innovation | Challenge Driven Innovation |
| Facilitates Open Innovation | Yes | Yes |
| IP Management Services | Yes, Agreement-Based | Yes, Agreement-Based |
| Rewards | Cash Prizes | Cash Prizes, Skill Rankings |
| Community Size | 380,000+ | 1,000,000 |

Table 2

From the above table, we can see that both the platforms do not provide any **provision for collaboration** between experts that would normally not work together. There is a famous saying that, "Two heads are better than one". By adding a provision to collaborate, these platforms would have the capability to generate more significant innovations.

## Advantages

- Better & Faster Ideas: The individuals involved in the crowdsourcing process sometimes provide insights into the potential problems and propose solutions which can improve the product and increase process efficiency.

- Superior Quality, Cost, Speed and Flexibility: The solutions delivered by TopCoder and Innocentive were very cost effective as compared to IT Consulting Firms. Also, the end product had comparatively lesser bugs even in very complex projects.

- Better IP Management & Security: Innocentive and TopCoder take utmost care to ensure that the IP is protected and transferred properly. The proposed solutions are not visible to anyone in the solver community. Also, legal agreements are signed to protect confidential information.

## Drawbacks

- Lack of Collaboration: Both the platforms do not have a provision for collaboration among experts across different disciplines which is a key requirement for transformational innovation.

- Integration Challenges: Even though the solutions were developed and given, the company staff still needed to integrate the solution in their client's existing systems, check for security issues and modify the code to fit the project requirements.

## Recommendations

- Enable collaboration for improved innovation: Collaboration would allow different people to work together and use their combined creative intelligence to come up with better solutions.

- Limit the number of applicants per challenge: Since the platforms have such a large network of solvers, provisions must be made to limit the number of solvers per challenge to ensure better resource allocation.

- Make challenges available to the right set of solvers: The current system makes all challenges available to all users. By using a system in which specific challenges are targeted towards specific solvers (For example, geological challenges would only be targeted towards geological expert solvers), the overall productivity can be enhanced.

## Future Outlook

Brabham says that as ubiquitous computing becomes a part of our lives, crowdsourcing platforms will become easy to use and integrated into our daily processes. The focus will shift from the technology aspect to business services. In the future, all government applications will take inputs from people by using crowdsourcing platforms to make them transparent and improve productivity. Crowdsourcing can also play a vital role in the fields of health, security and language translation to name a few.

# Conclusion

Crowdsourcing provides an economic way of developing products and services faster by using the power of individuals across the globe. Both Innocentive and Topcoder are excellent platforms to crowdsource high quality solutions but they lack a very important aspect, i.e., Collaboration. Collaboration uses the power of multiple minds working together to come up with better solutions. By adding this feature to the existing platform, it can have even more potential for better innovation. Finally, with the rapid development of ICT, crowdsourcing applications will soon become a part of our day to day lives.

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