EXPERIENCES IN MANAGING LARGE SCALE INDUSTRY-ACADEMIA COLLABORATION

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1. Abstract

India produces a large number of Engineers every year, many of who have the potential to help India rise on the Global Innovation Index. Creating opportunities for them, as well as addressing the gap between their skills and industry readiness is a huge challenge facing the country.

There is a growing need for platforms which can help the bright and the innovative minds to stand out from the rest, and traverse on a different curve. Unisys provides an opportunity in the form of “Cloud 20/20”, one of the largest online project contests in India. The contest allows students to showcase ideas in breakthrough technologies, as well satisfies their innovation itch. We also provide mentorship and coaching during the competition. Over the last six editions, the Contest has touched tens of thousands of students, many of whom had an opportunity to convert their ideas to projects. The Contest has transformed the lives of many students by enabling them create a mark for themselves as innovators. One of the students has even filed a patent on his idea. The contest is making a difference in providing the right launching pad for deserving careers.

Managing a Contest of this magnitude this needs innovative practices in Project Management. We would like to share our experience in managing the Contest, and the various learnings and improvisations we had to make to project management techniques to handle the scale, subjectivity and surprises that are associated with such efforts. It is interesting to know how we managed the Brand, Content, Competition as well as the Event. We had to strike a good balance in bringing students closer to industry, foster original ideas and innovation, as well as manage the effort professionally in a way where the event embodied the very ideals of Engineering – exploration, discovery and application.

Keywords

Cloud 20/20, Innovation, Academia-Industry connect
2. Introduction

India produces a large number of Engineering Graduates every year. According to a report from the National Knowledge Commission, the intake in Engineering colleges was as high as 5, 00,000 students per year in 2008 compared to less than 1,000 enrolments in PhD courses [5]. The key challenges facing the well-educated youth are industry readiness and employability. In spite of investments made in Education, India ranks 76th in the latest Global Innovation Index, and even further down in the creative-output sub category [4]. Based on economic cycles, even creation of jobs get affected during some years. Some of the needs currently are – to provide opportunities and challenging career paths to some of the brightest minds in the student community, as well as encourage innovation.

In this section, we focus on 3 aspects

- **The Vision** – what was the Vision Unisys had in terms of addressing this need?
  - Cloud 20/20 – the object of interest of this paper
- **The Platform** – what was the platform that was created by Unisys for this reason?
- **The Context** – what content was chosen to drive the platform towards the Vision?

With the objective of transforming lives of students by providing immense opportunities in technology evolution, we are encouraged by the extent to how this contest has evolved. This paper provides insights into the vision, process and how this has met the objectives.

**The Vision**

Five years ago, we had a vision. A vision to reach out to the country’s top engineering colleges to recognize emerging technical talent. A vision to encourage students to dive deep into the emerging world of cloud computing and generate ideas that will transform the future.

And thus Cloud 20/20 was born. We were overwhelmed by the response that the very first Cloud 20/20 event received, from the academic community as well as the industry. The platform we had created laid a strong foundation to the objectives carried by the contest:
- Reinforce Unisys as a provider of mission-critical technology products/solutions to Global enterprises
- By showcasing our technical leadership, position Unisys as:
  o An employer of choice for freshers & laterals
  o A partner of choice to associates in the Industry
- Encourage thought leadership and innovation in the community, and in the disruptive technology trends – foster Industry/Academia partnership
- Create an environment where new product ideas could be nurtured and incubated

Thus, we want to actively collaborate with the academia, create opportunities to students to participate in industry projects, as well as encourage them to innovate in terms of new ideas.

The Platform
Unisys has always been deeply committed to furthering innovation and identifying, rewarding, and nurturing young talent. Our history of collaborating with the academic community goes back to 1946, when the founders of the modern company developed the Electronic Numerical Integrator and Computer (ENIAC), the world’s first large-scale, general-purpose digital computer in collaboration with the University of Pennsylvania.

Unisys India continues this tradition of collaboration with Unisys Technology Forum India (UTFI). Through this initiative, we bring the technology industry closer to students, empowering research-oriented minds across the country to play a more active role in shaping tomorrow’s technologies. A well-equipped digital library, technical webinars, laboratories to turn promising concepts into reality – UTFI offers all this and more to students who are
keen to apply their knowledge to futuristic technologies.

The Context

The computing industry has seen several changes in its basic computing models since commercial computing began in the 1940’s: first batch, then timesharing, followed by personal, client-server, and finally, the Web. We now stand on the verge of another great transition: to ubiquitous, utility-based computing, or "cloud" computing.

But with the promise of cloud comes a host of problems and challenges. A basic premise of IT security is the physical control of core IT systems. How does the security model need to change if those systems are not on-premises, perhaps not even in-country? Regulations often assume that systems and data are located within a company's buildings. What is the impact if that is no longer true? IT applications are usually developed to an expected audience size. How must applications change to meet the potential global scope that cloud computing enables? Alternately, how must the cloud change to allow enterprise applications to be run unchanged?

These are just a few of the many questions inherent in cloud computing and do not have easy answers. They require analysis, insight and innovation. Unisys is committed to tackling the key issues in cloud computing and seeks the input of any individual who is as intrigued by the possibilities and complexities of cloud as we are.

Thus, Unisys Cloud 20/20 was created to provide a platform for students to showcase their technical abilities in the rapidly evolving cloud computing industry.
3. The Event and the Process – An Overview

Cloud 20/20 has been designed to give post graduate and research students, who are excited by the possibilities and complexities of cloud computing, the platform to showcase their innovative technical ideas and take them to the next level. The contest is aimed at catalyzing innovation in the areas of data-center transformation, cloud computing, application development and cloud security.

Cloud 20/20 is hosted in five stages:

- **Registration:** We receive registrations from engineering colleges across the country, where in addition to participating in Cloud 20/20, students get access to a host of material on technology, and opportunity to attend live webinar sessions on how technology can be applied to find solutions for the industry.
- **Submission of Abstracts:** Students select a topic of their choice, and submit a short one page abstract on the problem statement they are planning to address.
- **Submission of the Project:** Those students who have been shortlisted based on their abstracts have to submit a live project on the cloud.
- **Interview:** Once the projects are submitted, a panel of judges from Unisys shortlist the projects based on originality, technical content and relevance to the topic. Students of these shortlisted projects are then interviewed, which gives the students an opportunity to demonstrate their project to the judges. Top five teams are then selected for the final presentation.
- **Final Presentation and Grand Finale:** Top five teams are invited to the Unisys campus in Bangalore at an all-expense paid trip. The teams (and student guides) demonstrate the project to the panel of judges which include Senior Technical and Management executives from Unisys’ US offices. The top three winners are awarded prizes, and given an opportunity to join Unisys either as interns or full time employees. The program culminates into a Grand Finale.

Over the years, we have received exponentially increasing number of registrations, which got converted into a few hundred abstracts, and the final number of projects that often hovered around 100. The registrations came from over 500 colleges including premier engineering colleges such as Indian Institute of Technology (IIT), Birla Institute of Technology (BITS) as well as recognized regional institutions. The students included B.E., B.Tech, M.Tech and Ph.D students. The diagram below throws light on the statistics of Cloud 20/20.
Figure 1: Registrations, Abstracts and Projects over the years
4. Project Management of the core content

Key Challenges
In this section, we mainly deal with the challenges associated with the management of core content of the event. We have consciously not gone into the details of logistical challenges of running the event – which could form an interesting report on its own.

- Soliciting Abstracts
  Garnering abstracts from the academia all over India was a daunting process. Considering the usual rigor involved in getting students convert an idea/abstract into a project, there were many ideas that de-selected themselves by not making it to the next round. But still, the ideas were taken through close mentoring, where the ideas needed to be groomed into viable/presentable projects. The Project Mentors played a key role here. Key challenges included:
  - Screening the ideas for originality of thought
  - Screening the ideas for plagiarism
  - Screening to check if the ideas are really implementable

- Evaluation of Projects
  When we evaluated a large number of projects, the key challenges were:
  - Presence of large number of evaluators from multiple groups
  - Subjectivity during evaluation
  - Consistency of measurement from multiple guides
  - Deciding on the parameters for evaluation
  - Deciding on the right weightage among the parameters

- Evaluation of finalists
  The final set of papers represented work that has been well reviewed and has made it through all the stages. So it became critical to identify the deserving idea that makes it to the final presentation. When we selected the Final Entries, the challenges were:
Subjectivity involved in deciding the utility of the idea
- Novelty of the idea; freshness of thought
- Change or impact of the idea
- Quality of presentation (selling)

**Key Methodologies / Approach**

In this section, we enlist the approach we took in the evaluation of ideas, projects and last but not the least, the finalists. Here too, we have not gone into the details behind the process, but have articulated the framework we put in place.

- **Evaluation of ideas**

  - Considering the scale of ideas that flow in, the ideas are evaluated by a team, sharing the load.
  - A set of parameters based on clarity, novelty, completeness, etc. were used to filter the large number of ideas.
  - At this stage, many ideas might get filtered because of not meeting the basic parameters.

- **Evaluation of Projects**

  We leveraged on the Subject Matter Experts across the organization to evaluate the project demos. Considering the spread of Subject Matter Experts across groups, we needed to consider various factors while evaluating the projects. The challenges in doing so are highlighted in the challenges section. This section talks about how we dealt with the challenges and what steps we took to make the evaluation more consistent and less subjective.
We kept improvising the parameters we used for evaluating the projects, and a representative set of parameters is shown below. Along with the parameters and weightage, we also evolved the scale associated with each parameter. A sample representation is shown alongside, without exposing the actual values (which are important for keeping the confidentiality of the evaluation during the competition).

<table>
<thead>
<tr>
<th>Implemented</th>
<th>Complex</th>
<th>Simple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score High</td>
<td>Score Lower</td>
<td>Score Lowest</td>
</tr>
<tr>
<td>Not-Implemented</td>
<td>Score Lower</td>
<td>Score Lowest</td>
</tr>
</tbody>
</table>

**Evaluation of finalists**
- This is a stage where we brought in Industry Specialists and Business Leaders to assist in the evaluation.
- Industry specialists added their evaluation in addition to the criteria mentioned in the challenges section.
5. **Success Factors**

While handling a project of this magnitude, there are various factors that influence the success of the project. We look into some of the factors that we used as levers to influence the outcome of the project. Some of them needed innovative thinking, spanning beyond standard project management processes. Specifically, we look at the following factors:

- **Vision**
  - A compelling vision can draw hearts and hands towards the cause.
  - The vision we had in place, where we could make a difference to lives of deserving students, recognize them, provide opportunities as well as contribute to the larger cause of innovation index of India made for a compelling vision. During various stages of contribution we reiterated the larger goal.

- **Alignment**
  - If we turn the vision into a shared vision, the shared vision helps reduce deviation of purpose at individual level.
  - As different virtual teams in the organization worked on different stages of the project, it was critical to always keep the shared vision in mind, so that the short term goals of the phase did not introduce deviations.

- **Decentralization**
  - Decentralization helps compartmentalize different stages of the project, and help each stage to innovate on achieving the outcome of the stage.
  - In organizing an event like this, it was essential for various teams or various parts of the organizations to come together and contribute. The kind of functions which led the efforts changed during various stages. For example, the HR function led the connect stage where as the Engineering Function led the evaluation stage and the Facilities Functions led at the event stage. Each of the teams knew how to innovate in their phases and contribute to overall efficiency.

- **Teamwork**
  - It is a challenge to achieve teamwork when different organizations come together with common cause but different sense of returns
o Different teams which helped actually belonged to different business units, all of whom did not have the same scale of returns from the event. We used cross functional teams effectively.

• Focus
  o It is important to keep focus on Factors Critical to success.
  o During the various decision making points, as well as evaluating the success of various actions, we had clarity on success factors. Some of the key factors were -
    ▪ The event should result in good quality ideas
    ▪ The event should establish Unisys’ brand as an innovative technology company among the youth
    ▪ The event should serve as a launch pad for deserving students. The event should result in a few stellar careers.
    ▪ The organization should have a strong layer of engineering leadership, which is good at working closely with the fresh hires, as well as mentor them effectively.

• Outcome
  o The real results – examples of transformed careers can help strengthen vision and commitment.
  o We shared success stories of students whose careers were transformed – students who became part of the Unisys family, students who worked on opportunities involving research, students who filed patents, etc.

• Quality
  o In the midst of diverse efforts, the focus on quality of outcome should be constant, conscious and continuous.
  o It is not realistic to conduct a competition and expect the students to be able to contribute and create concepts in cutting edge areas like cloud computing.
  o To bring the students to a certain level of preparation and awareness in terms of technologies, Unisys conducted a series of well-planned webinars which exposed the students to the technologies being considered as well as mentored them closely to provide them the tools required for effectively completing the project.
• **Recognition**
  - In this case, recognition serves not just as a motivational factor, but also to help create a big team picture.
  - The magnitude of contributions and recognitions helped create a sense of a big purpose that could be achieved only by all round contributions.

• **Value**
  - The overall value - both tangible and intangible should be measured and articulated. The value and commitment – both feed into each other's growth.
  - As outlined in one of the sections below, the multi-dimensional benefits from the event, in terms of Brand, Attracting Talent, Building Mentoring Capability, etc. were often articulated across the stakeholders.

• **Brand**
  - With each passing year, the phrase Cloud 20/20 started becoming well known in the student community. So we started using it like a brand in various collaterals and communications. We have also started to use projects by management interns to measure the brand value of Cloud 20/20.

• **Evolution**
  - After every edition, we evaluate the organization as well as outcome of the event to make specific changes in the format as well as focus to improve.
  - Over the years, we have moved from a paper contest to a project contest to improve the quality. We have also changed the kind of topics continuously over the years, to keep the content relevant. We have also innovated/improved on the way we evaluate the content.

• **Permanency / Continuity**
  - For a conference / event, year after year, acquiring a sense of permanency, can help build commitment as well as continuous improvement.
  - A successful industry-academia collaboration cannot always rest on the organization-student relationship. Considering that the students form a floating population, it became necessary to think of retaining the relationship and aspects of culture already created every year. For this, forming relationships with the faculty acted as a key enabler. The
engagement with the faculty helped create a continued culture of innovation and participation in each batch of participants. Enabling the faculty also helped offload some amount of mentoring and hand holding.
6. Benefits to Business

Cloud 20/20 has helped Unisys in multiple ways:

- Building a strong brand within the student community
- Hiring some of the key talent of fresh college graduates by being the employer of choice for fresh and lateral talent
- The grooming and evaluation stages of the pipeline help build mentoring skills within the organization, which include communication and delegation skills. This helps Unisys maximize the effectiveness of absorbing fresh hires into the organization.
- The entire cycle helps the organization master the process of evaluating ideas, guiding the right ideas through the entire cycles – from idea to fruition, as well as converting ideas to products.
- As the Cloud 20/20 model evolves, it helps the organization develop capability to explore and adapt new methods of collaborating with the community, including latest ones like crowdsourcing.
- The contest has generated the highest media coverage for Unisys India compared to any other initiative

Figure 8: Excerpts from Media Coverage
7. Conclusion

Unisys has a culture of innovation created by reliable, technically excellent, tenacious people – people helping businesses and governments protect their assets and apply information technology to achieve new levels of competitiveness and success.

Unisys is a company well known and respected among the senior technical community. It is important for the company to position itself to the current generation, as a brand recognized for cutting edge technology work. The event helped position Unisys as a strong brand to the academia.

The overwhelming participation of students from universities across India has spawned a Unisys Technology Forum online library where students can access webinars, whitepapers and other resources to build their knowledge and contribute to futuristic technologies.

The projects showcase a broad range of innovative and practical technical thinking around cloud computing, which, arguably, represents the most important shift in IT business models and technology within the last quarter-century.

The scores of students participating in the contest have gained significantly – some have filed patents on their innovation, some built their career with Unisys, while others – by virtue of their sheer experience in contributing to this contest – have been bitten by the innovation bug. In short, many lives have been transformed over the years through this contest.
8. References

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9. Author(s) Profile

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- Srivathsa has over 19 years of experience in areas like Linux, High Performance Computing, Storage and Systems Management. He is interested in various Business aspects of Open Source. Apart from Engineering Management, he enjoys mentoring and building careers. He works as a Senior Engineering Manager in Unisys at their Global Technology Centre in Bangalore. His past companies include Dell, Sun, DDEORG, etc. He did his MCA from Bharathidasan University and MS from BITS Pilani.