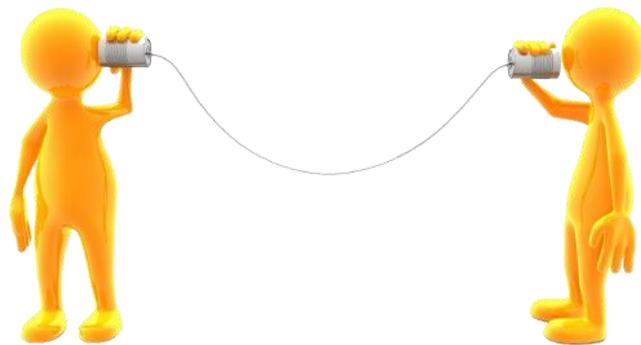


# Optimising the Communication System at CIC Using Open Source CMS

## PROJECT REPORT



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## **CERTIFICATE**

This is to certify that Manju Kumari Meena, Himani Swarup and Sangeeta Yadav (students of III Year, B.Tech./ B.S. Innovation with Mathematics & IT) have worked on the project entitled, “Optimising the Communication System at CIC Using Open Source CMS” under my guidance. The duration of the project was from 12<sup>th</sup> August 2013 to 17<sup>th</sup> January 2014.

Place: New Delhi

Date: 17 January, 2014

**Mentor**

Dr. Govind Singh

Assistant Professor  
Cluster Innovation Centre  
University of Delhi

## **Acknowledgement**

We would like to express our gratitude to all the people who have helped us during different phases of this project. We are thankful to all of them for their time and support.

We would like to offer our sincere thanks to our project Mentor, Dr. Govind Singh whose guidance and supervision enabled us to look for different techniques and apply innovative ideas. We are also thankful to Dr. Prem Kumari Srivastava for her time and valuable inputs from time to time. We would also like to thank Prof. M.M. Chaturvedi Sir, Biswal Sir, Shobha ma'am and Abhijeet Sir for their articulate and meaningful inputs.

Last, but never the least, we would like to thank all the students and faculty of CIC for participating in the project survey and providing us with their useful inputs.

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## **Objectives**

- To identify the shortcomings in the existing communication system at CIC and carry out a need assessment for its improvement and optimisation
- To explore open source content management systems (CMSs) and identify and install suitable CMSs which can help strengthen communication and collaboration at CIC
- To design and execute the CMS based communication system and ensure its successful implementation

## **Introduction**

A section of the digital market which has significantly benefited from the proliferation of free and open source software is that of Content Management System (CMS). A plethora of CMSs exists in the market today which can be used as is or can be customized to meet the needs of organization, educational institutions as well as industry at large. So basically the aim of this project is to improve the existing communication system within CIC via using open source content management system.

The project will study the diversity and types of existing CMSs and compare them with respect to their usefulness for CIC. A team of students have done survey on existing communication system in CIC and try to find out the opinion of members of CIC whether they are satisfied with the existing communication system or not and ways to improve the communication system. So based on these suggestions, identified the suitable CMS(s) based on that a networking site has been designed for the benefits of the students at CIC.

The ultimate objective will not only be to deploy and install these CMSs but also ensure their usage through creative engagement tactics.

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# Chapter 1

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## Survey and Analyses

In order to meet the first objective, the following steps were taken to carry out a survey involving the faculty, office staff and students at CIC:

1. Prepare questionnaire

Questions were prepared in this way so that the problems that students face during communicating with others can be analyzed properly. Most of the questions were objective type and only few questions were subjective.

2. Online survey have been done

After preparing questionnaire, a Google Form was created and the survey form was sent by mail to the target audience.

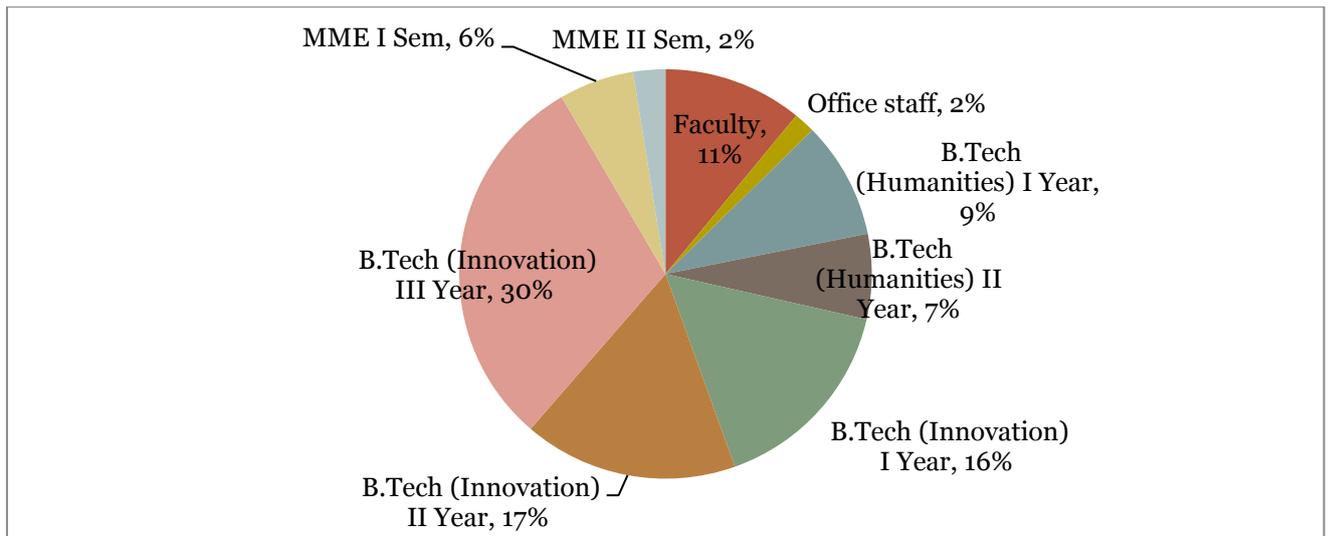
3. The target audience comprised each and every member of CIC including faculty, staff members and students from all the three courses (B.Tech in Innovation with Mathematics & IT, B.Tech in Humanities and Master in Mathematics Education).

4. A time to time analyses of the responses was carried out followed by a complete analysis of the all the responses.

## Survey Outcomes/ Responses/ Observations Findings

S.No	Type of stakeholders	Population of the stakeholder
1	Faculty	34
2	Office Staff	5
3	B.Tech (Humanities) I Year	40
4	B.Tech (Humanities) II Year	40
5	B.Tech (Innovation) I Year	40
6	B.Tech (Innovation) II Year	38
7	B.Tech (Innovation) III Year	42
8	MME I Sem	15
9	MME II Sem	15
	Total	271

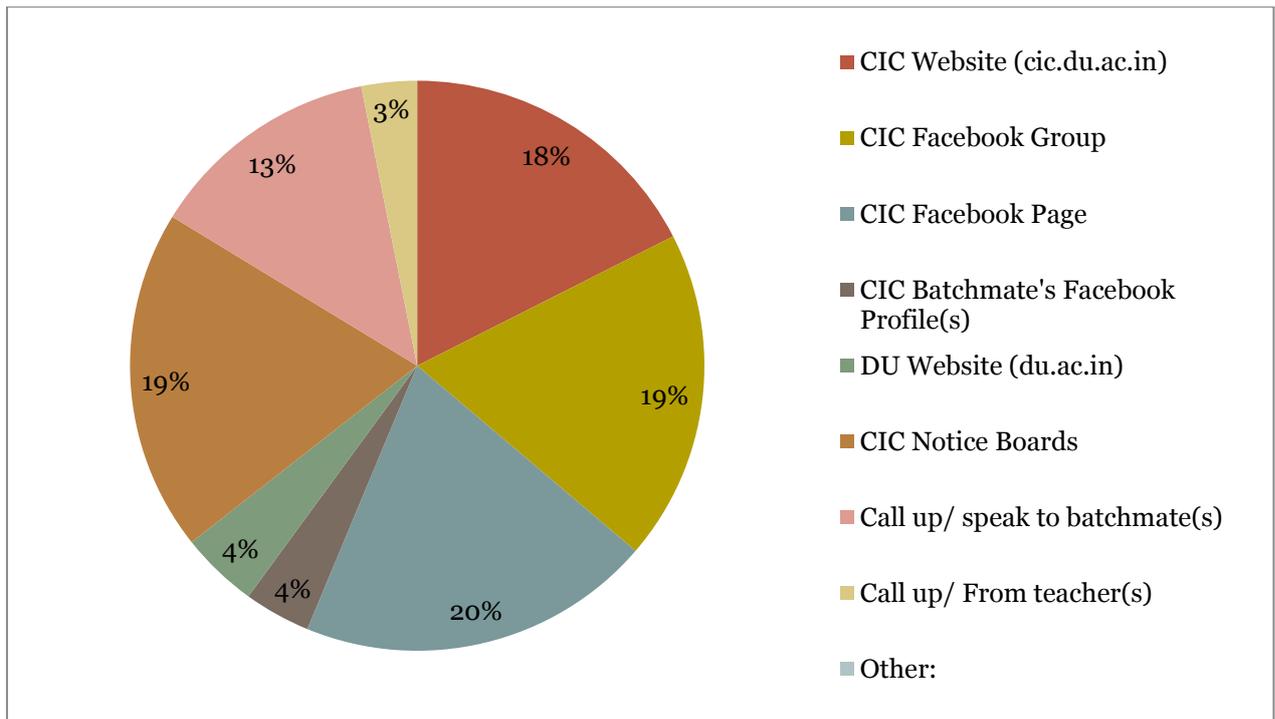
In this survey, views of 271 people from CIC are being taken into account. Initiating from a questionnaire send to all the people given, response analysis is being done. Details and outcomes of the whole survey are elaborated therefore.



**Fig. 1 Pie chart showing number of responses from each category of stakeholder (in %)**

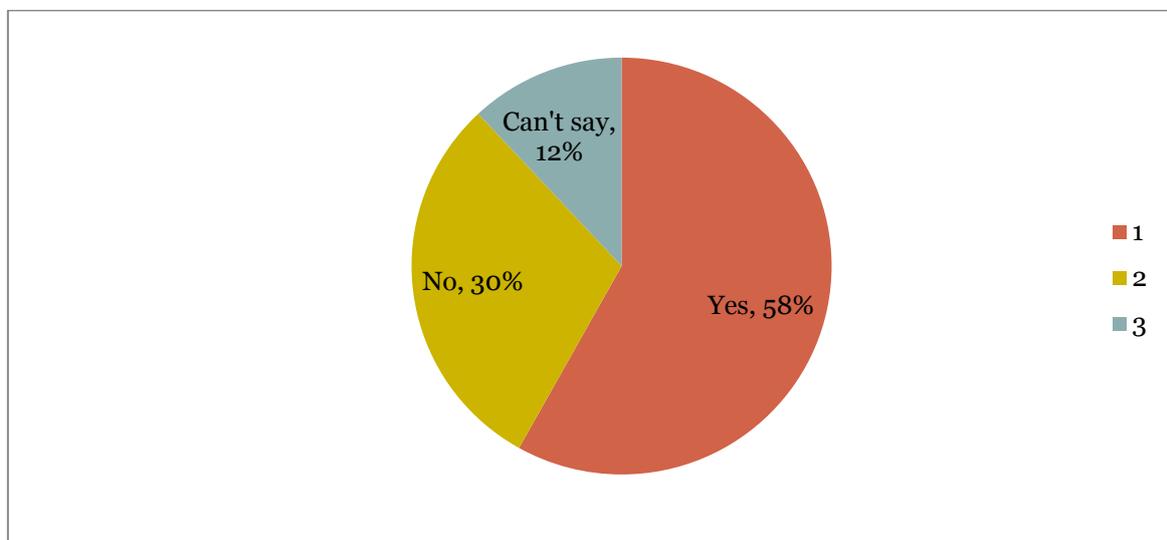
**44% of the stakeholders visit the following platforms to update them about ongoing in CIC**

- CIC Website
- CIC Facebook Group
- CIC Facebook Page
- CIC Batch mate's Facebook Profile(s)
- DU Website
- CIC Notice Boards
- Call up/ speak to batch mate(s)
- Call up/ From teacher(s)
- Other



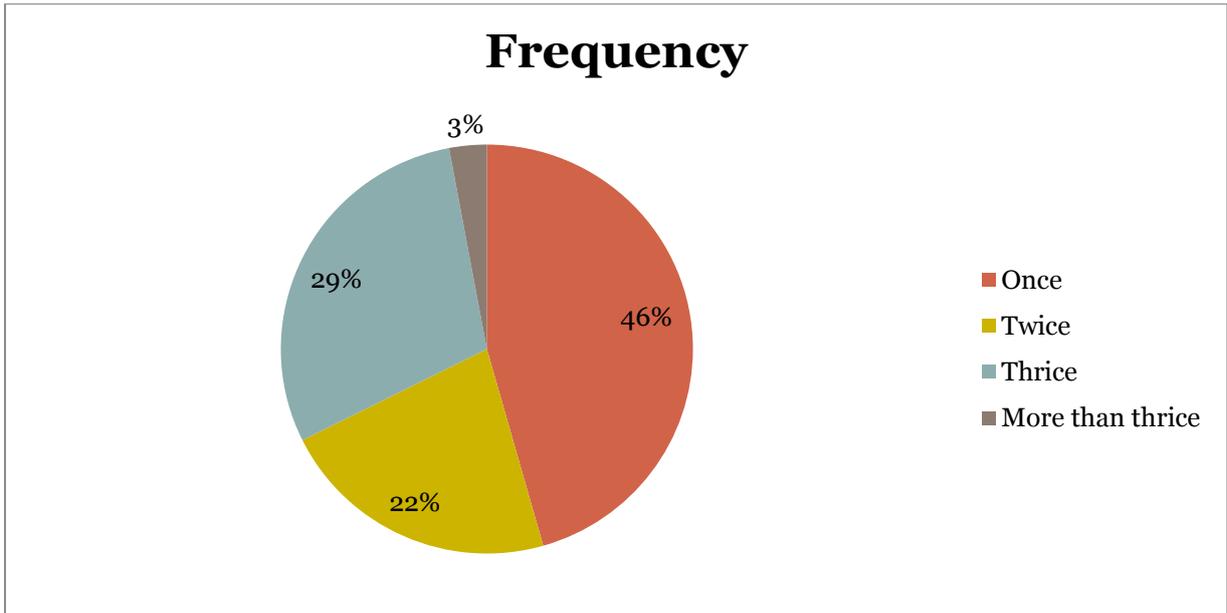
**Fig. 2 Pie chart showing the users visiting particular platform for updates (by %)**

According to Fig.2, 20% of the stakeholders visit the platform "CIC Facebook page". Hence Facebook page is the most visited IT place for updates about CIC



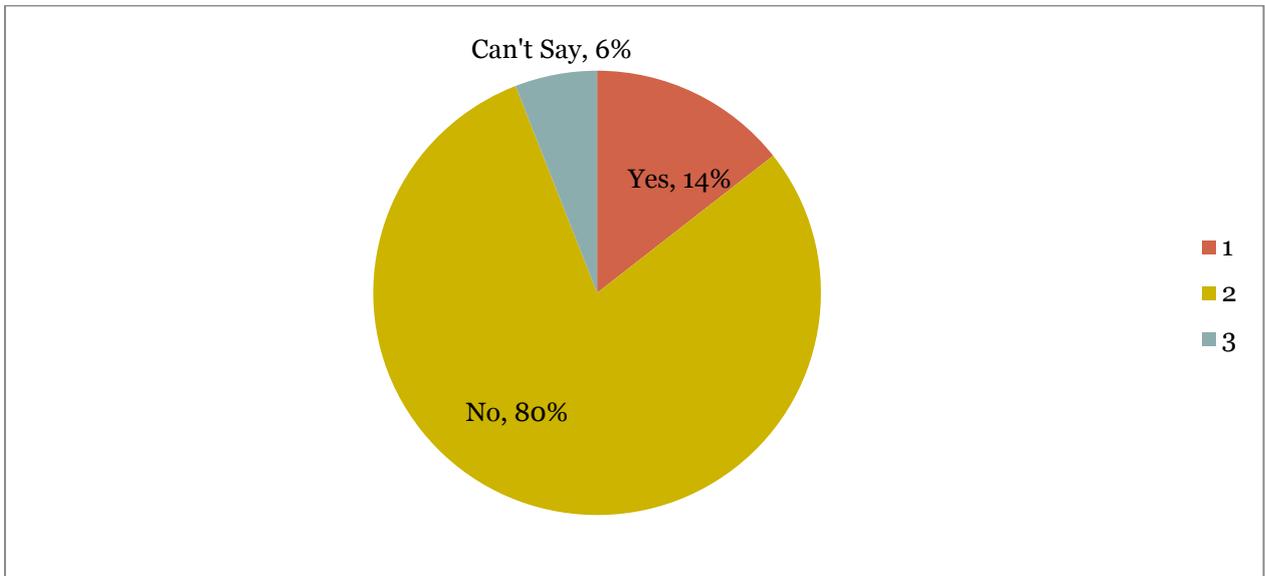
**Fig. 3 Pie chart showing stakeholders view on adequacy of information given by existing system**

Fig 2 shows that only 58% stakeholders feel the information provided by above given platforms to be adequate. When the stakeholders were asked "How many times they access their email in day", 46% replied it to be more than thrice. It shows the need of frequently accessing email to get all the updates.



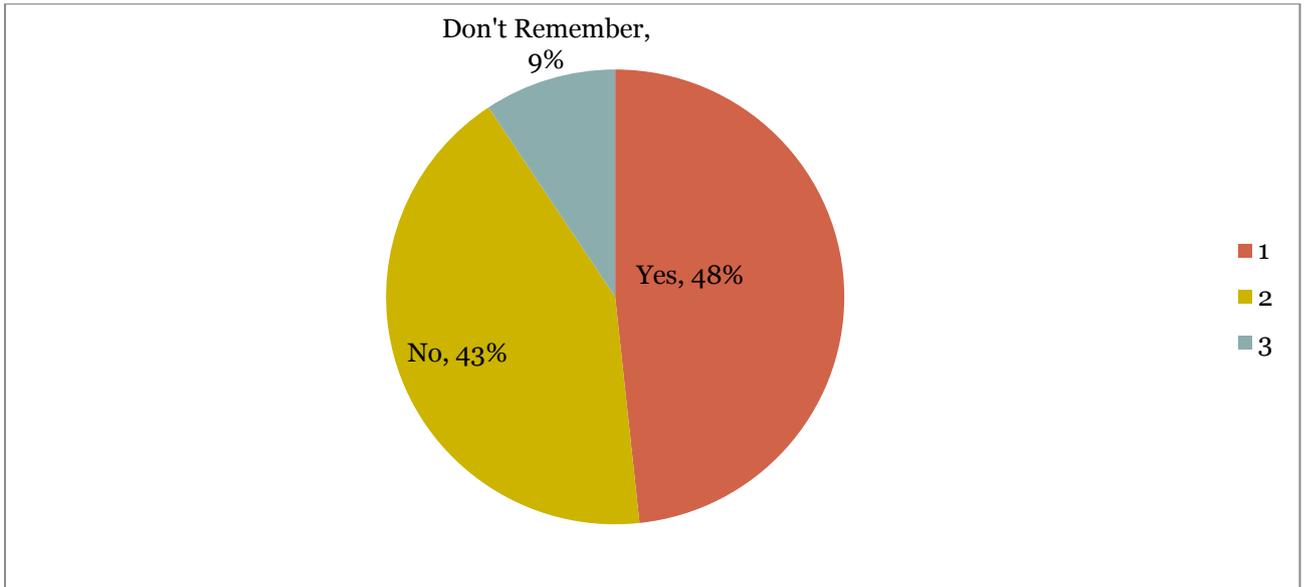
**Fig. 4 Frequency of email access in a day**

80% stakeholders do not feel overloaded with the large number of emails being received from different activities at CIC.



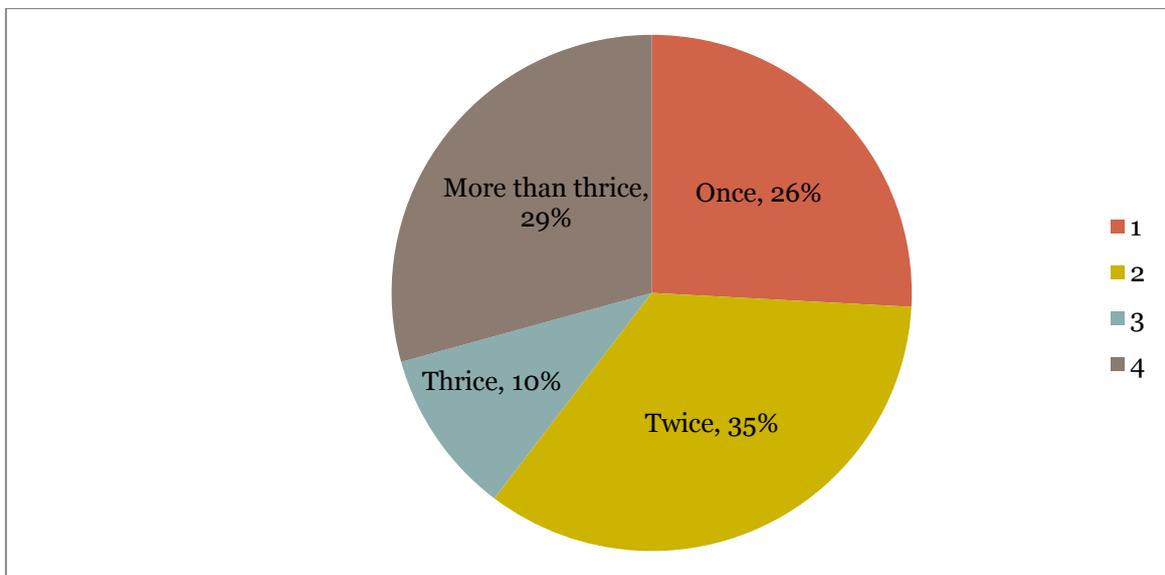
**Fig. 5 Pie chart showing number of stakeholders feeling overloaded by emails**

Survey shows 48% stakeholders have missed participating in any Event/ Activity/ Seminar at CIC, DU due to lack of timely intimation/ information.



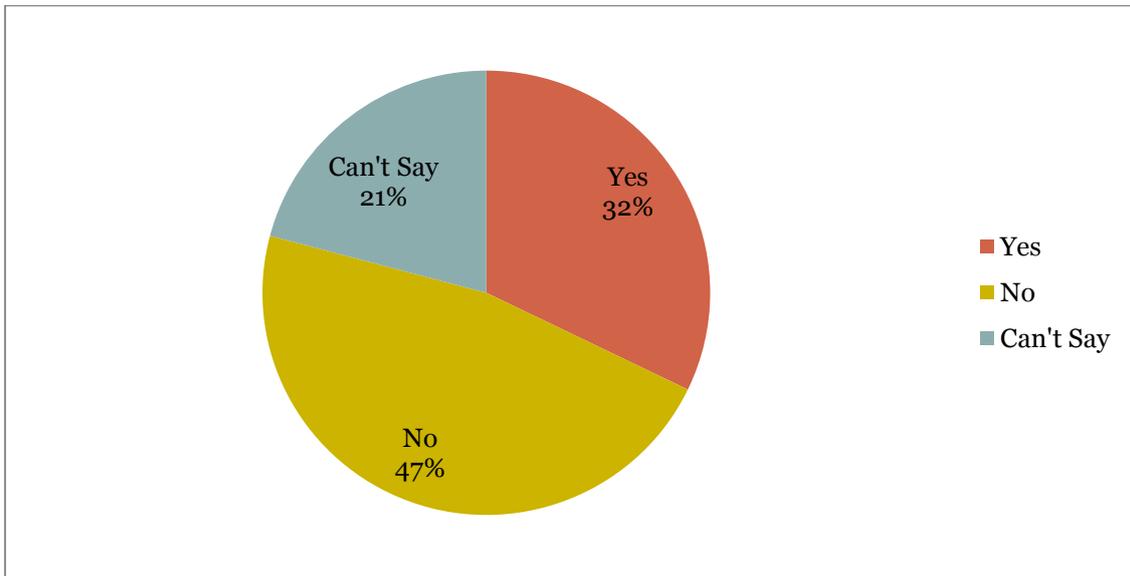
**Fig. 6 Pie chart showing number of stakeholders missed some activity due to lack of intimation at time**

The chart given below shows the frequency of event missing due to lack of information. 35% stakeholders have missed an event twice.



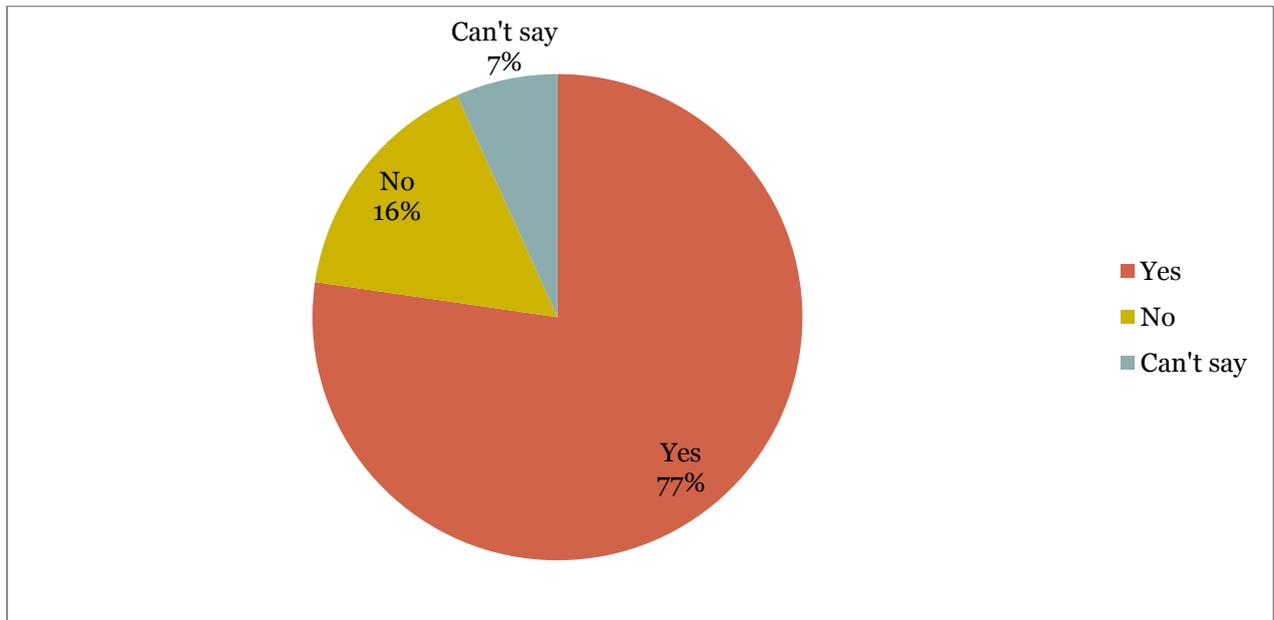
**Fig. 7 Pie chart showing the frequency of email access (in %)**

**Observation 6:** When we asked "Have you ever faced difficulty in inviting/ reaching out to fellow students while organizing an event/ meeting", more than 50% of stakeholders said Yes or Can't Say.



**Fig. 8** Pie chart showing frequency of event missing due to lack of information

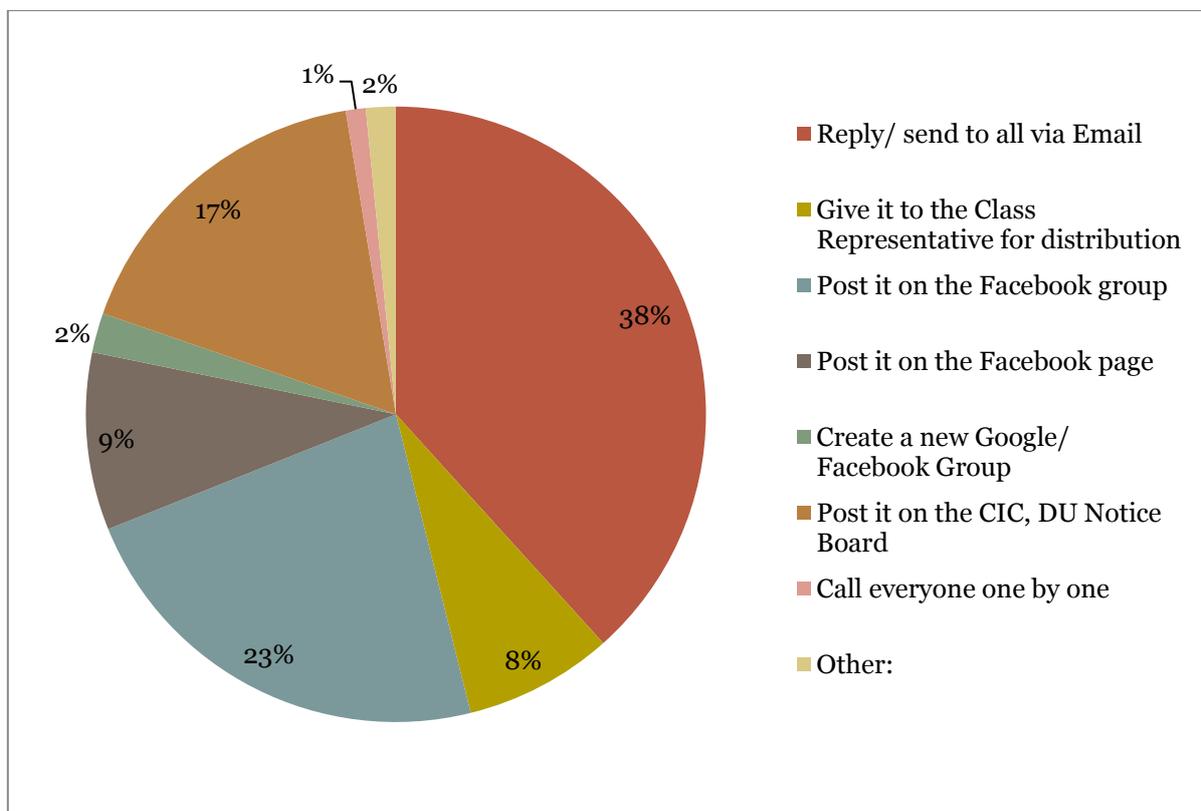
**Observation 7:** 77% stakeholders think there is a lack of coherence, coordination and communication among different courses (B.Tech. Humanities, B. Tech. Innovation and MME) running at CIC.



**Fig. 9** Pie chart showing % of stakeholder who feel there is a lack of coherence between courses

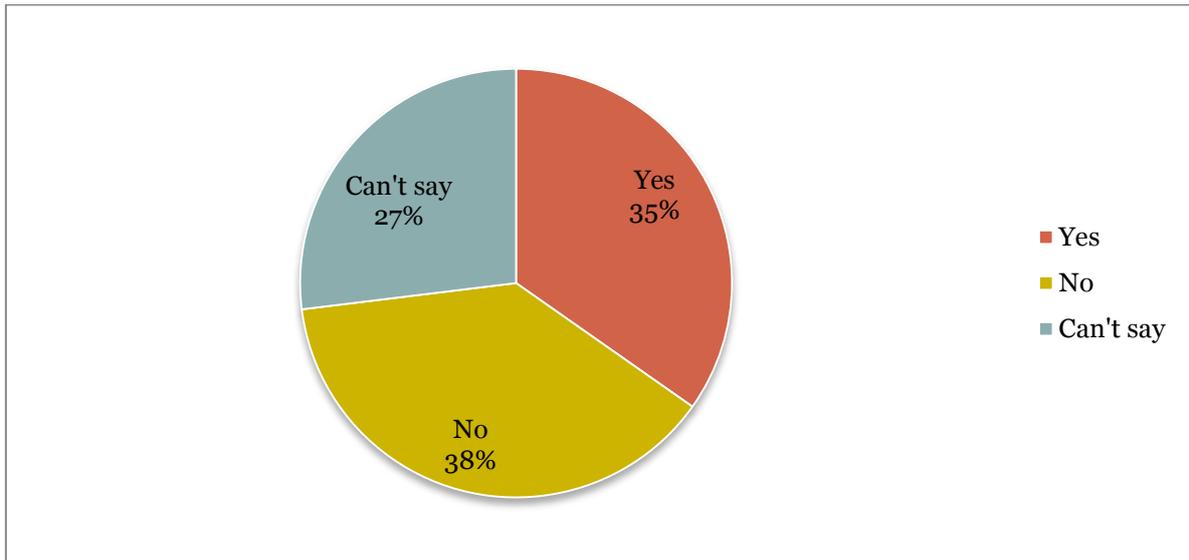
**Observation 8:** Following are the steps taken by various stakeholders to disseminate information (a presentation, document, event info, Fellowship/ Funding info, Class information etc.) to fellow students at CIC?

- Reply/ send to all via Email
- Give it to the Class Representative for distribution
- Post it on the Facebook group
- Post it on the Facebook page
- Create a new Google/ Facebook Group
- Post it on the CIC, DU Notice Board
- Call everyone one by one
- Other



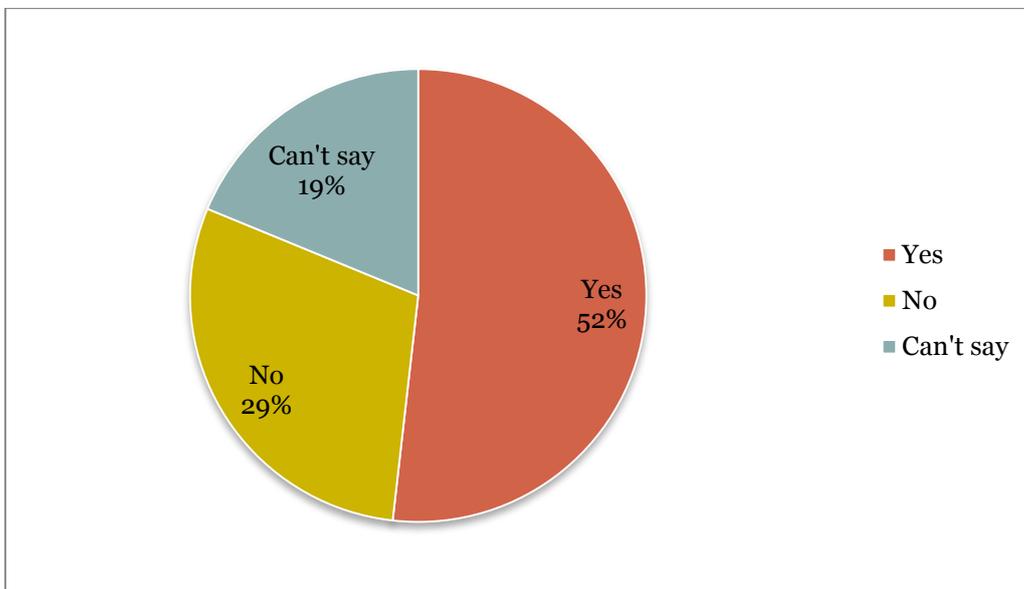
**Fig. 10** Pie chart showing the different ways of dissemination of information by number

**Observation 9:** Only 35% stakeholders are satisfied with the existing communication system at CIC.



**Fig. 11** Pie chart showing % of population satisfied with existing communication system

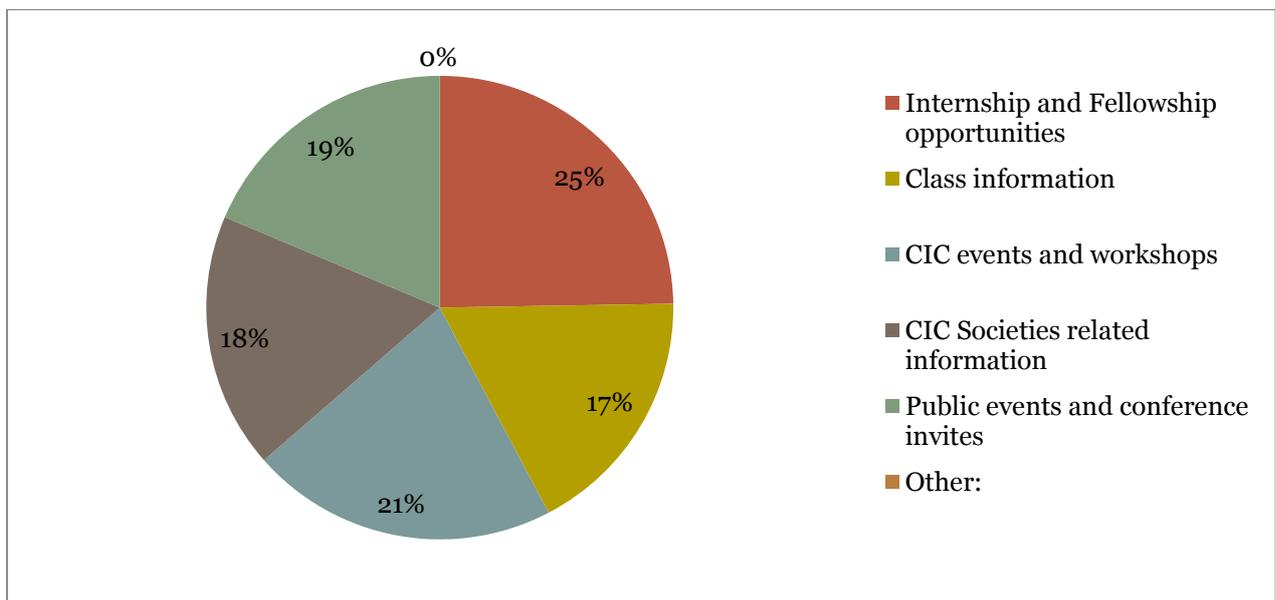
**Observation 10:** 52% stakeholders feel there is a need to segregate in-house information (class info, image galleries, placement opportunities etc.) from public information at CIC.



**Fig. 12** Pie chart showing the population which feels a need of information segregation

**Observation 11:** When asked "What information would you like to receive from CIC on a regular basis?" Among the following type of information different users want different information according to the percentage shown in the chart given below.

- Internship and Fellowship opportunities
- Class information
- CIC events and workshops
- CIC Societies related information
- Public events and conference invites
- Other:



**Fig. 13** Pie chart showing % of stakeholders wanting a particular type of information about CIC

## Observations/ Results

There are approximately 40% people have responded to this form and analysis of each question has been done separately and gets the following results:

1. 20 % of the stakeholders visit CIC Facebook page (20%), Facebook group(19%) and then CIC notice boards (18%) to update themselves about what is happening at CIC, they can visit CIC website also but DU site have been visited very rarely .
2. About 58% of the people find that the information and updates provided on the first five platforms(CIC Website, CIC Facebook Group, CIC Facebook Page, CIC Batch mate's Facebook Profile(s), DU Website) adequate and 30% people find this information inadequate
3. 46% of the people access their email once in a day and 29% people access thrice and 22% people access twice in a day. Very few people access more than thrice in a day.
4. 80% of the people don't feel overloaded with the large number of emails being received from different activities at CIC but only 14% of the people feel overloaded by this.
5. 48% of the stakeholders feel that they have missed participating in any Event/ Activity/ Workshop/ Seminar at CIC, DU due to lack of timely intimation/ information and out of these 48% there are 35% people who have missed it twice, 26% of the people once, and 29% of the people missed these events more than thrice but approximately 44% of the people manage to attend these activities.
6. 47% of the people faced no difficulty in inviting/reaching out to fellow students while organizing an Event/ Meeting but there are approximately 32% of the people who faced difficulty in doing so.
7. About 77% of the people feel that there is a lack of coherence, coordination and communication among different courses (B.Tech. Humanities, B.Tech. Innovation and MME) running at CIC, DU and there are very few people (about 16%) who thinks that there is no coordination problem between the students of different courses.
8. Most of the information (a presentation, document, Event info, Fellowship/ Funding info, Class information etc.)is disseminate to fellow students at CIC via email (about 38 % of the total used to do this) otherwise they used to prefer face book group and then CIC or DU website.
9. Most of the people feel that the existing communication system is not good in CIC but on the other hand there are people who feel that it is good and some of the people don't know about this whether it is good or not.
10. There is majority of people who feel that there is a need to segregate in-house information (class info, image galleries, placement opportunities etc.) from public information at CIC and 29 % people feel the that there is no need to segregate.
11. Majority of the people (approx.. 25%)wants to receive information related to internship and fellowship opportunities from CIC on a regular basis , 21% are interested in information related to CIC events and workshops,19% interested in public events and conference invites and 18% wants to know about information related to societies.

## Suggestions from Stakeholders

The survey also had provision for accepting suggestions from the stakeholders on improving the existing communication system at CIC. These are some of the drawbacks in the existing tools (website and Facebook) and suggestions for the improved tools:

1. We should have a CIC notification page also and there is no search box in the web sites
2. CIC should set up a Google Web Apps account.it will provide students with custom email Accounts (E.g. chaitanya@CIC.du.ac.in) easy to remember
3. There should be a virtual notice board (something of that sort) should be there.
4. About the formation of clubs, teachers and students could collaborate and collectively know about a club before it's official launch
5. There must be a specification on the website whether it is an in-house event or not and Email is something that everyone has. In-house information can be disseminated over email, via an Email ID called, for example, updates@CIC.du.ac.in, or quickinfo@CIC.du.ac.in
6. Make an official portal for in house info accessible to only CIC students and Students, Faculty and Staff login must be provided, wherein all internal details could be accessed
7. Website should have different tabs for each information
8. There should be more open environment for others about what actual innovation is going inside CIC. Like robosoc can upload videos of group activities on CIC website or a separate YouTube channel specifically for CIC should be created and videos should be posted on it to diminish the confusion about job opportunity and placements in CIC and to illustrate them actually students are involved in forward innovation and not just preparing for begging for placements at all. Log-In IDs to be provided to every student from which they can access above information
9. Internal examination results, Monthly attendance, Semester examination results etc. should be posted in official CIC website as well
10. The coordinator of each information should send a small write up before and after the event to the website Development coordinator for regular updates
11. CIC app we should have our own intranet which will make it easier to communicate various things
12. We can have a Moodle, where every teacher and student can have his/her own profile. All students can post their assignments and other professional information
13. Dropdown box should be there where I can select to which batch information to be sent (the dropdown box may contains all groups to send information to all students of CIC or 1<sup>st</sup> year B.Tech innovation to send information to them only, similarly for others also)
14. We can probably create a forum listing all our individual activities, projects etc. in form of student profiles, notice boards, e activities, e discussions, events which should be public but administered by students in CIC only so that it becomes a learning experience well.

## **Content Management System**

A content management system is a system that allows users to add, edit, update and delete their website content quickly and easily through the use of an administration section on their website and a database (usually MySQL, MSSQL or Access.) Content management systems use server side scripting languages such as PHP, ASP or ASP.net.

The CMS itself has two sections.

- First section is Backend, the protected area for creating and managing the content. It is called the
- The second section is Frontend of the website, the public area that is visible to visitors and/or registered users on the regular site

The database is used to store information that the user enters via the administration section, and data is retrieved from it each time a user accesses the content managed website.

A content management system is suitable for all types and sizes of businesses, and it can be used to drive all types of content, including text, documents, sound, video and much more.

### **Advantages of a Content Management System**

- Content can be changed on the website as frequently as is needed, without having to use a website designer or know HTML code.
- Changes can be made immediately due to a much shorter change process
- Can be cheaper than a static website in the longer term
- Easier to budget for ongoing costs than a static website

One of the earliest CMS systems established is blogs; they generate page views from user-entered content the same way all other CMS does.

New technologies are being implemented on an almost weekly basis which is allowing web designers and web agencies to create and install content management systems quickly and therefore with less of a cost implication to their clients

## How CMS does works?

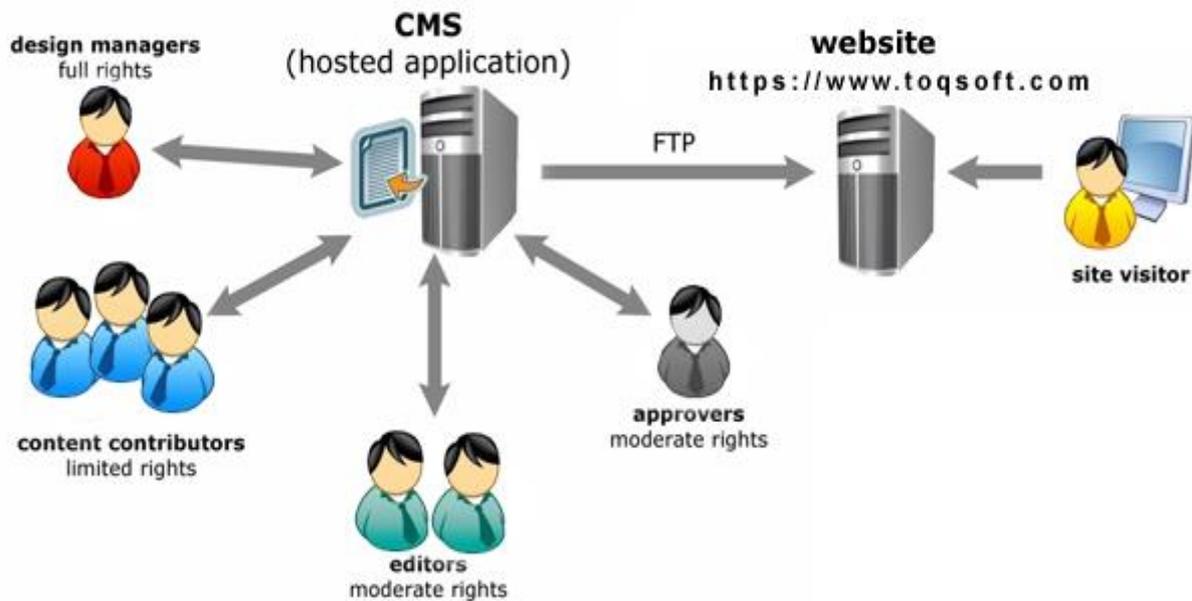


Fig 14 Working of a CMS

Content management system is a web application that runs on the server. It communicates with a database using server scripting languages such as SQL and PHP (which differ depending on the CMS platform), and the server your CMS runs on must support these languages.

Developers set up page templates for the content, so pages are generated from these templates with the desired content. The user interface is friendly such that it does not require thorough knowledge about web languages to update a site.

How does this benefit the workflow of website management? People who wish to contribute or update the site no longer need to go through a webmaster, so this ensures that the newest information can be updated on time.

### Genres of Content Management System

These days there are thousands of CMS available and it becomes difficult to choose the right CMS for the requirements. Content Management Systems like Drupal, Joomla, and WordPress are the pillars of PHP programming language.

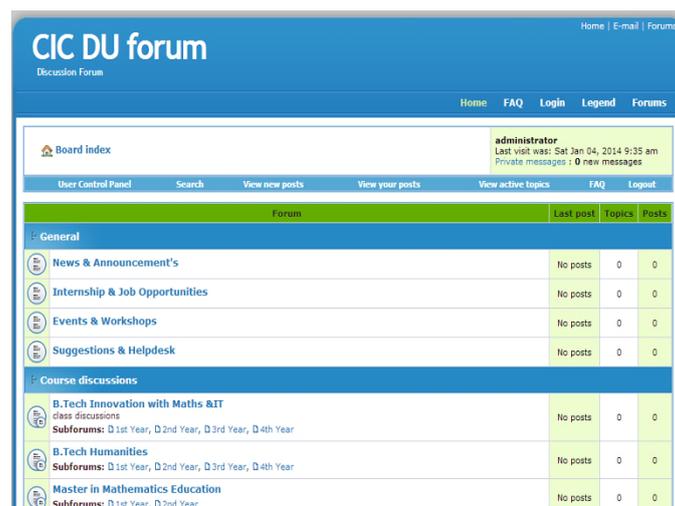


**Fig. 15 Types of CMS**

## CMSs used for the project

### PHPBB3

phpBB is an Internet forum package written in the PHP scripting language. The name "phpBB" is an abbreviation of *PHP Bulletin Board*. Available under the GNU General Public License, phpBB is free and open source software.<sup>[2]</sup>



**Fig. 16 A phpBB Forum**

Features of phpBB include support for multiple database engines (PostgreSQL, SQLite, MySQL, Oracle Database, Microsoft SQL Server), flat message structure (as opposed to

threaded), hierarchical subforums, topic split/merge/lock, user groups, multiple attachments per post, full-text search, plugins and various notification options (e-mail, Jabber instant messaging, ATOM feeds)

## WordPress

WordPress is a free and open source blogging tool and a content management system (CMS) based on PHP and MySQL, which runs on a web hosting service. Features include a plug-in architecture and a template system. WordPress is used by more than 18.9% of the top 10 million websites as of August 2013. WordPress is the most popular blogging system in use on the Web, at more than 60 million websites

WordPress' workflow is much more natural & custom post types can have their own buttons in the menu even. It lacks a proper events calendar and WordPress' search functionality is abysmal.

The blog factor is a great strength that helped to establish WordPress as a CMS.

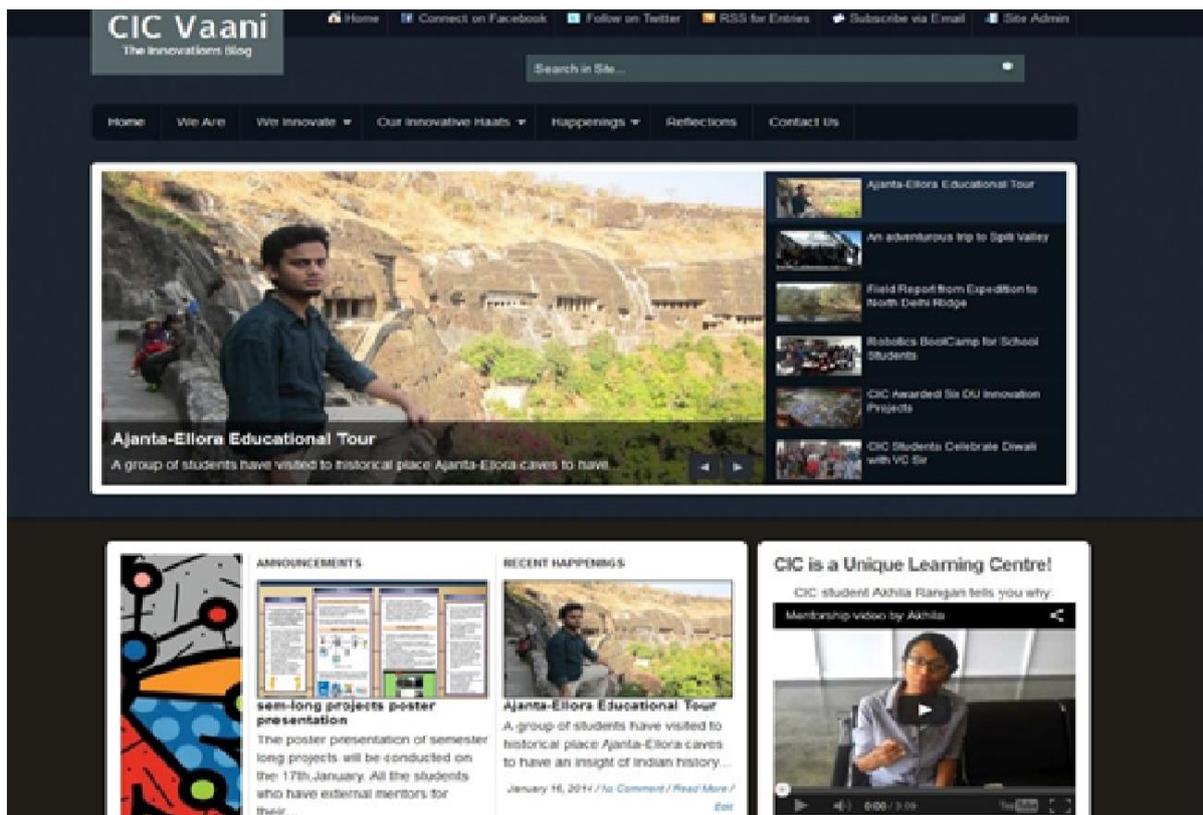


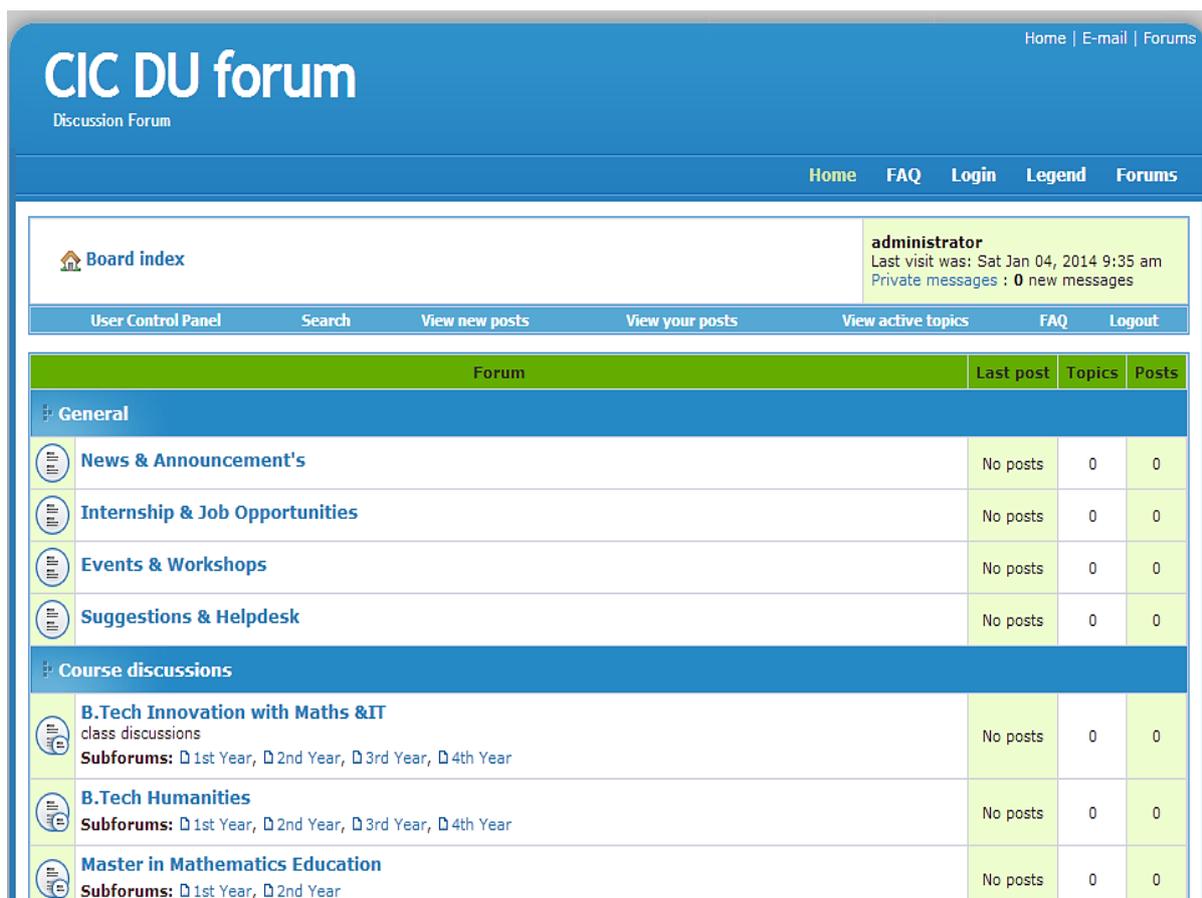
Fig. 17 A blog designed using WordPress

## **The project flows in following sequence to meet the desired outcome:**

- A ‘need assessment’ survey was first carried out with very encouraging participation from both the faculty and the students to identify the shortcomings in the existing communication system at CIC
- Descriptive statistical analysis was carried out to identify the needs of the stakeholders
- The survey analysis highlighted the need for streamlining the existing communication at CIC through a two channel approach :
  1. An external channel –to showcase work done at CIC to the outside world
  2. An internal channel –to improve the existing communication e.g. idea discussion, course planning, workshop announcement etc. within CIC and away from the eyes of the rest of the world
- The first step was choosing a domain name (for example www.mydomain.com) and web hosting for the web based CMS to develop these two channels on a common platform. So cicdu.com was the domain and a shared web hosting was used.
- Two CMSs were identified to streamline the existing internal and external communication at CIC. So phpBB and WordPress were chosen. First these CMSs were downloaded then unpacked the zip files and finally uploaded through FTP to the webhosting.
- Using these CMSs, two networking tools have been developed:
  1. A CIC DU Forum
  2. A CIC Blog (CIC Vaani)
- The external channel has been conceived to be blog of CIC, DU which will be available at cicdu.com all the content of CIC blog will be generated at CIC and will be available for everyone to browse and view
- The internal channel has been conceived to be the forum of CIC, DU which will be available at cicdu.com/forum all the content of CIC Forum will be generated at CIC and will be available for only the members of CIC to browse and view. Only the registered users at CIC can access the forum.

## Forum

An online forum or discussion board is like a message board for people for sharing their thoughts, ideas, knowledge, experiences, opinion, and so on. From a technical point of view, these are web applications managing user generated contents



**Fig. 18 CIC DU Forum**

An Internet forum, or message board, is an online discussion site where people can hold conversations in the form of posted messages. They differ from chat rooms in that messages are often longer than one line of text, and are at least temporarily archived. Also, depending on the access level of a user or the forum set-up, a posted message might need to be approved by a moderator before it becomes visible.

Forums save information posted on a particular topic for other people to see at any time, this creates a discussion environment. Everything that gets posted gets read again and again.

## CIC, DU forum design/description

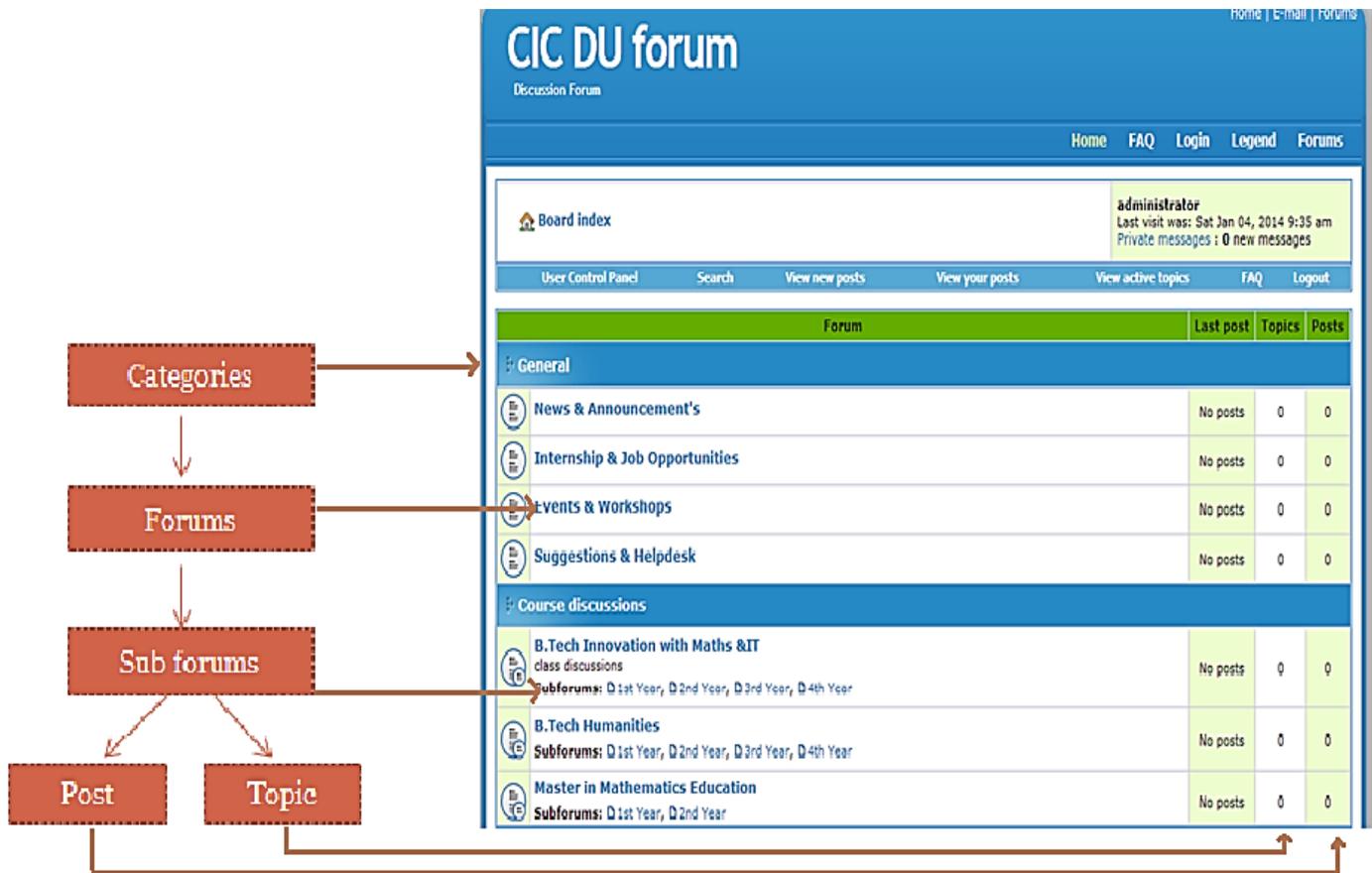


Fig. 19 Tree like structure of CIC Forum

Forum is designed using phpbb3. It has three kinds of users: user, moderators, and administrators.

The site is currently organized under six major forum categories, which can be expanded as content grows.

- General discussions
- Course discussions
- Ideas Xchange
- Project discussions
- Societies forums
- General chitchat

This service is available to staff, staff-like visitors, students and ease-friends.

You can post or view information related to CIC events, notices, News, internship offers and many more information related to all CICians in **general** category. You can post or view your class related updates (notices, marks, notes and any other discussion) in **course discussion** category. There is an **Idea XChange** board where discussion among faculty members, among students can be done separately along with this a faculty can't access student discussion board neither a student can access faculty discussion board ,if they want to discuss with each other this can be done in student-faculty discussion board. There is a separate category for discussion of **Sem-long projects** for different courses where you can post anything (your difficulties, your findings and anything else) related to your project. There is a separate category for **societies** in which you can post information related your society activities.

### Some benefits of forums:

1. Allowing you to get educational information on your site
2. Allowing you to increase traffic through repeat visitors
3. Allowing you to capture email address and details of posters
4. Allowing you to gain more creditability
5. Allowing you to build relationship with visitors
6. Users can be categorized in various groups
7. It is like virtual round table conference
8. Archival of discussions is available
9. 24\*7 accessible, as long as you have internet connection
10. Reserved people who usually don't speak up can say as much as they like while "loud"  
People are just another voice and can't interrupt
11. Unlike verbal conversation , online discussion is lasting and can be revisited
12. Participates don't have to contribute until they have thought about the issue and feel ready
13. Choice: a quick question or comment, or a long reflective account are equally possible
14. Limitless: you can never predict where the discussion will go ;the unexpected often results in increased incidental learning

### Benefit to students:

1. You can read comments fairly quickly and validate them to show students you are invested their ideas
2. You can refer to points made on the forums in class to enrich discussion & to acknowledge
3. You can save a thread of a discussion to use as a writing sample or model
4. Discussion forums gives quite students another outlet for sharing ideas
5. Students learn to value revision when they receive comments on their writing from their peers

## Blog

A blog is a collection of posts (short, informal) with the freshest information at the top. It is a place to express yourself to the world, a place to share your thoughts and your passions. A blog is a collection of commentary posted on the internet.

There are all different types of blogs including personal, corporate, political, podcasts, photographic, and more. Blog posts are typically displayed in reverse-chronological order with the latest posts at the top.

## CIC DU Blog description/design

The blog has the following menus and sub menus:

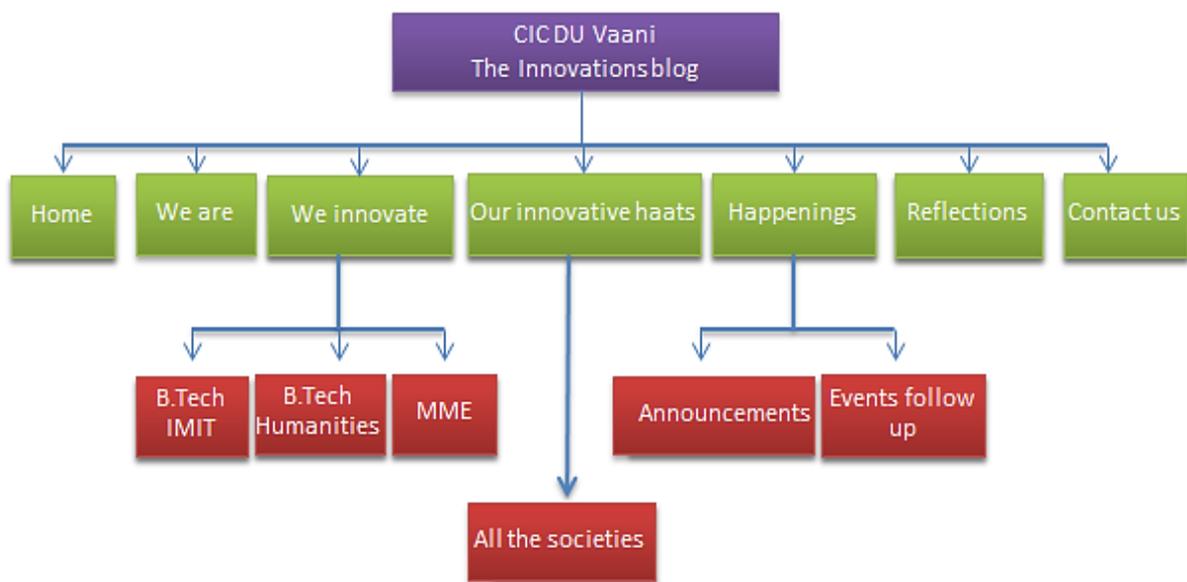
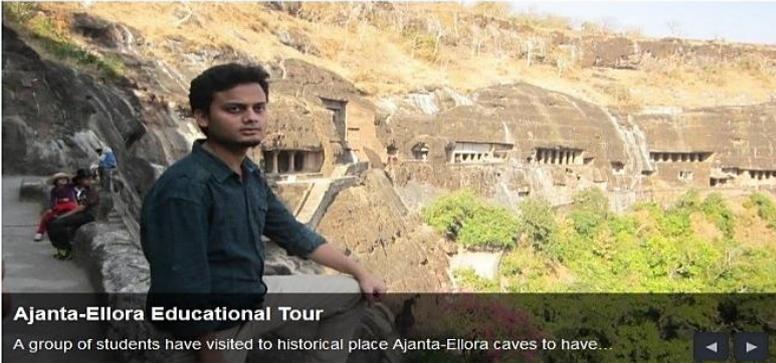


Fig 20 Menu layout of the CIC Blog

The Blog is categorized under several categories in order to segregate the information related to different fields i.e. it will also be a platform for CIC to engage the outside world in its different projects, activities and workshops.



**Ajanta-Ellora Educational Tour**  
A group of students have visited to historical place Ajanta-Ellora caves to have...

- Ajanta-Ellora Educational Tour
- An adventurous trip to Spiti Valley
- Field Report from Expedition to North Delhi Ridge
- Robotics BootCamp for School Students
- CIC Awarded Six DU Innovation Projects
- CIC Students Celebrate Diwali with VC Sir



**ANNOUNCEMENTS**



**Sem-long projects poster presentation**  
The poster presentation of semester long projects will be conducted on the 17th January. All the students who have external mentors for their...

January 15, 2014 / No Comment / Read More / Edit



**CIC Awarded Six DU Innovation Projects**  
The Cluster Innovation Centre has been awarded six Delhi University Innovation Projects for the year 2013-14. CIC-201 Digital reconstruction of lost art...

January 9, 2014 / No Comment / Read More / Edit

**RECENT HAPPENINGS**



**Ajanta-Ellora Educational Tour**  
A group of students have visited to historical place Ajanta-Ellora caves to have an insight of Indian history...



**An adventurous trip to Spiti Valley**  
Lahaul & Spiti is a scarcely populated district, located in northeastern part of the State. The district is entirely hilly and comprises...

January 16, 2014 / No Comment / Read More / Edit

**WE INNOVATE**

**MME Students at Antardhavni**



Students of Master of Mathematics Education from Cluster Innovation Centre, University of Delhi participated actively in the Cultural...

January 16, 2014 / No Comment / Read More / Edit

**Urban metabolism and ecological footprint analysis of Delhi city**



Urban growth of Delhi is consuming the natural resources of the city at an alarming rate. The water...

**INNOVATIVE HAATS**

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Fig 21 Snapshot of CIC DU Blog (CIC Vaani)

## Forum versus Social Networking Sites

- Popular social media like Facebook focuses only on people rather than content. But an internally and democratically controlled new media tools like Blog and Forum consider the needs of both the community as well as the content
- People of common interest usually join forums over facebook.com because Facebook is general you can talk anything here whether it has sense or not you can't complaint about the offensive content nor a moderator to control the content.
- In forums managing and updating content is done via. An administration control panel
- Professionals tend to prefer discussions and conversation on, say, Yahoo, than on private social networks. Most of the social networks do not have extensively active groups. Well, they *did* but over time they deteriorated. Some went down slowly, others more quickly
- Facebook etc. are your own space where you friends comments or likes your photos but it does not encourage people to involve in a long term discussion
- As new members join your forums as lots of information and discussion being exchanged this creates a sticky website, the traffic increases week by week. This allows you to follow up and email them in future with information about your product and service they won't consider it as spam because they know who you are.
- In forums and blogs everything is forever archived and it will hopefully eliminate the need for sending and receiving information again and again

# Conclusion

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- The survey results obtained by us verifies the claim that there is a need to improve the existing communication system at CIC
- The networking tools that have been developed in this project are designed considering the needs and suggestions of the stakeholders that they explore in the survey form
- The CMSs identified by us in this project (WordPress and phpBB3) can be successfully used to address the above-mentioned challenges
- Popular social media like Facebook focuses only on people rather than content. But an internally and democratically controlled new media tools like Blog and Forum consider the needs of both the community as well as the content
- We would therefore like to recommend that the CIC administration can successfully switch to these two channels for streamlining the communication at CIC
- We believe that CIC Vaani will be a platform for the students and faculty of CIC to share their work and successful ideas with the society at large

## References

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