



**Quality Management Systems Manual**  
**Computer Centre**  
**Indian Institute of Technology - Madras**

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**Contents and Issue Status of Manual**

<b>Details of contents</b>	<b>Section Number</b>	<b>Issue Number</b>	<b>Revision Number</b>	<b>Issue Date</b>	<b>Pages</b>
Quality Systems Manual		3	4	27.09.2016	All

**Approved and Issued by:** CHAIRMAN, COMPUTER CENTRE

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**AMENDMENT RECORD**

S. No	Page No	Clause No	Date of Amendment	Amendment made	Reasons	Signature of Approving Authority
1	All		27.09.2016	New manual	Moving to new ISO standards (ISO 9001:2015)	
2	4	4.1	10.01.2017	Quality Policy	New Quality Policy of IIT Madras	
3	32 & 36	Process Charts	10.01.2017	Measurable parameters	Internal audit suggestion	
4	4	4.1	08.02.2017	Quality Policy	Corrections made by Top Management based on Stage-I Audit	
5	30	Process chart	10.04.2017	Modification done to process chart for computer networks.	Surveillance audit suggestion	
6	10	6.2.1	11.06.2018	Measurement parameters for HPCE and Computer Network (Academic Zone)	Surveillance audit suggestion	

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7	11	6.2.1	11.06.2018	SSL analysis has been included in the quality objective of E-services	New quality objective	
8	29	Process Chart	11.06.2018	Measurement parameter CPU utilization changed from 60% to 70% in PC01	Surveillance audit suggestion	
9	33	Process Chart	11.06.2018	Process chart PC05 removed	As directed by Professor in charge of Workflow	
10	36	Process Chart	11.06.2018	SSL analysis of E-services web servers has been included	As directed by Staff in charge of E-services	
11	12	6.2.1	26.02.2020	Measurement parameters for E services.	As directed by Staff in charge of E-services	
12	28	Appendix V	26.02.2020	New risk included in table.	Risk table updated.	

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**LIST OF CONTROL COPY HOLDERS**

<b>Control Copy Number</b>	<b>Holder Designation</b>
1	Chairman, Computer Centre
2	Computer Centre Office
3	Management Representative - ISO
4	Computer Centre Web Site <a href="https://cc.iitm.ac.in">https://cc.iitm.ac.in</a>



#### **4.1 Understanding the Organization and its Context**

### **QUALITY POLICY OF IIT MADRAS**

#### **QUALITY POLICY:**

To achieve global standards of excellence in all our activities namely Teaching, Research, Consultancy, Outreach and Continuing Education in compliance with statutes and regulations of the institute.

To exceed expectations of all our stakeholders in the above activities through continuous evaluation, innovation and improvement in our core and support functions by effective risk management.

#### **STRATEGIC DIRECTION:**

- To be known as the best educational and research institute in the country and excel globally in all the areas IIT Madras is engaged in
- To continuously recruit outstanding faculty and offer several new courses every year including industry oriented online courses
- To establish two or three research centres of excellence each year, built around focus themes for which IIT Madras should be known globally for the National and Societal impact as well as the new knowledge that they create
- To commercialize research innovations
- To make significant contributions to the technology needs of the nation
- To develop IIT Madras campus into a model University campus in terms of sustainability, usage of energy and water and recycling of materials
- To provide a framework for the staff members wherein five or six advancement steps are possible during a career



The computer centre (CC) was started in the year 1973 with the commissioning of the IBM Mainframe system to cater the computing needs of students, faculty and staff of the Institute. Since then computer systems have been upgraded to provide faster and reliable computational services for its stakeholders. Over a period of time, computer centre has evolved and has been organized into the following Verticals (Processes).

1. Computer Network
2. High Performance Computing Environment
3. Workflow
4. E-services
5. Data Centre to provide infrastructure for Hardware.

In addition to the above verticals, the computer centre has a Helpdesk (Ph. 5999), where the customers can lodge complaints and problems.

Chairman, System Staff and Project Staff take care of the smooth operation and maintenance of the above services.

CC has determined all internal and external issues that are relevant to its purpose and its strategic directions that could affect its ability to achieve the intended resource of QMS

The risks and opportunities identified in each process have been addressed in **APPENDIX V**.

### **Strategic direction of the Computer Centre:**

**Strive to produce better than the best services to delight the stakeholders**

### **4.2 Understanding Requirements and Expectations of Interested Parties**

Faculty, staff, students, retired staff, conference visitors, summer interns and project staff of the institute are our customers.



### **4.3 Determining the Scope of the Quality Management System**

CC has determined the boundaries and applicability of its QMS to establish its scope. While determining the scope, CC has considered the external and internal issues referred to 4.1 and the requirements of its customers 4.2 and all its services. The scope for CC for this international standard ISO 9001:2015 are applicable to all the five verticals and its activities.

The following clauses are not applicable to computer centre.

**7.1.5.2** Measurement and Traceability and

**8.3** Design and Development

### **4.4 Quality Management System and its Processes**

**4.4.1** CC has determined the process needed for its QMS and has determined the inputs required and the outputs expected this process. (Please refer to process flowcharts). CC has determined the criteria and methods needed to ensure effective operation and control of the operations. The resources needed for these processes are ensured and proper responsibility assigned. The risk and opportunities have been determined with the requirements of 4.1 and all processes have been evaluated to implement any change needed.

All the processes have their own quality procedures and there are listed in the documented Information (**APPENDIX II**). The staff in charge of each vertical maintains these quality procedures. The purchase process of the computer centre also has a procedure maintained by the Store Keeper. Each process has a process chart describing the measurable parameters and the risks involved.

**4.4.2** To the extent necessary, CC has maintained the documented information to support the operation of its processes to have confidence that processes are being carried out as planned.



## **5. Leadership**

### **5.1 Leadership and Commitment**

CC leadership commits with respect to the QMS by,

1. Taking accountability for the effectiveness of the QMS
2. Ensures that the quality policy and objectives establish are compatible with context and strategic direction of the Centre
3. CC leadership promotes the use of process approach and risk based thinking
4. Ensures resources are made available
5. CC leadership has communicated the importance of effective QMS to ensure that CC achieves the intended results
6. CC leadership promotes continual improvement of the centre services to all its stakeholders.

#### **5.1.2 Customer Focus**

Faculty, Students and Staff of all Departments and Sections like Administration, Academic, Finance and Accounts, Stores and Purchase, Security, Industrial Consultancy and Sponsored Research (IC & SR) and Admissions Office are the Customers of the computer centre. All the support services of the computer centre are towards facilitating and satisfying the customers.

The Computer Centre is committed to provide the support services for smooth and efficient running, as stated in the Quality Policy. The computer centre continuously monitors and reviews the quality procedures in order to meet its quality objectives. The commitment to enhance quality of support services is seen from the quality policy of the Institute.

Customer requirements are addressed in various meetings like HODs' meeting, Staff meetings and CC Committee meetings. Quality objectives and review on resources in the computer centre are discussed and decided in these meetings. In addition to Quality Policy, the Management has a strong commitment in the activities of the computer centre, its upgrades and infrastructure. Management reviews the activities of computer centre in the Heads of Department's (HOD) meeting.





## **5.2 Policy**

### **5.2.1 Establishing the Quality Policy**

The quality policy of the computer centre is in alignment with the IITM Quality Policy. (Please refer to page 4)

The Quality Policy of the computer centre:

- 1. To provide high quality services to all our Customers.**
- 2. Continuous improvement in the quality of work of all the verticals.**
- 3. Support the institute to accomplish its goals and objectives.**

**Strategic direction of the Computer Centre:**

**Strive to produce better than the best services to delight the stakeholders**

### **5.2.2 Communicating the Policy**

The Quality Policy of the Institute has been displayed at prominent locations in the computer centre. It is communicated and applied within the CC and will be made available to interested parties as appropriate.

## **5.3 Organizational Roles, Responsibilities and Authorities**

Computer Centre has ensured that the responsibility and authority for relevant roles are assigned, communicated and understood within the Centre

The Organization Chart has been established to provide the interrelation and reporting structure of personnel within the organization. The Chairman has been appointed by the Director to oversee and manage the overall effectiveness and compliance of the QSM.

The Chairman has the following responsibilities and authority: **(APPENDIX III)**



## **Planning & Administration of the Computer Centre**

### **Goal setting for the Computer Centre**

### **Interaction with Customers and Stakeholders**

## **6 Planning**

### **6.1 Actions to Address Risks and Opportunities**

**6.1.1** When planning our QSM, Computer Centre has taken into consideration potential issues referred to 4.1 and has determined the risks and opportunities that need to be addressed. **(Appendix V)**

**6.1.2** CC has planned to address the risk and opportunities identified in 4.1 and implement the action into our QSM processes.

Actions taken to address risks and opportunities are proportional to the potential impact on the conformity of products and services and these are available in the minutes of the monthly staff meetings.

### **6.2 Quality Objectives and planning to achieve them**

#### **6.2.1 Quality Objectives:**

The quality objectives of the five verticals are specified below.

#### **1. Computer Network:**

To continuously improve the Computer Networking and Internet facilities in the Campus and achieve excellence in customer service.

To introduce Virtual Local Area Network (VLAN)'s for faster and better services in all areas of the Campus. Monitoring of Network switches every six months and upgrade them if need be, based on technology development.



To provide Virtual Private Network (VPN) for customers residing outside the Campus to access the institute servers and avail other computing services.

Support service response for network complaints in Academic zone to be 2 days or shorter, Hostel and Residential zone to be 3 days or shorter.

## **2. High Performance Computing Environment (HPCE):**

To ensure high performance server is available 100% of time for customers.  
Achieve more than 70% Central Processing Utilization.

Response time for HPCE problems shall be less than 2 days.

## **3. Work Flow:**

Automation of processes in the Institute administration, accounts, academic, stores and purchase, security and IC and SR.

The turnaround time of support shall be 3 days. Request by customer for new a process will be reviewed and reported within a maximum of 5 days.

Training is provided upon request. All the applicable flow diagrams, manual and training materials are readily available for the users within the software and through the website <http://web.iitm.ac.in/workflow/>.

## **4. Data Centre:**

Zero downtime for air conditioners, UPS and diesel generators.

Review and carry out preventive maintenance as per schedule.

Plan the power capacity and air-conditioning an annual basis, based on the projected demand.

Building management system will monitor the UPS readings, A/C temperatures, access control of data centre doors and CCTV cameras



## **5. E-Services:**

To provide all customers Email, authentications like Lightweight Directory Access Protocol (LDAP) and Active Directory Service (ADS), Virtual Desktop Interface (VDI), Antivirus and Web services. Support service response shall be 2 day.

Secured Socket Layer (SSL) rating analysis of the configuration of any SSL web server on the public Internet.

All e-services web servers are analysed every first Wednesday of the month.

Report of each webserver is updated in <https://ccredmine.iitm.ac.in/>.

**6.2.2 Quality Performance Objectives** are measurable targets for improving operational performance to ensure process conformity and customer satisfaction. Computer Centre retains documented information on the status of our quality objectives. If shortfalls are identified, management may revise objectives, issue corrective action requests, or take other appropriate actions to address the issue.

## **6.3 Planning of Changes**

In so far as the need for the changes to QMS, CC evaluates the purpose of the changes and its consequences keeping the integrity of the QMS. The availability of the resources, the allocation or reallocation of responsibilities are all taken into account in arriving at a final decision as to whether the change should be effected or not.

## **7 Support**

### **7.1.1 General**

CC has determined and provided the resources needed the establishing, implementing, maintaining the QMS. CC has considered the capabilities and concerns in so far as existing internal resources and takes into account what needs to be obtained from external providers.

### **7.1.2 People**

Computer centre identifies personnel training needs, provides required training, and evaluates the effectiveness of the training provided. Personnel assigned to perform specific tasks, operations and processes are qualified on the basis of appropriate education, experience or training.

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Employees are made aware of the relevance and importance of their activities and how they contribute to the achievement of quality objectives. Records of qualifications of the personnel and training are maintained.

### **7.1.3 Infrastructure**

The computer centre has a very good infrastructure to carry out its services to the customers. It is equipped with a High Performance Computer to cater the Customers' various Computational works. It has a very High Internet Bandwidth with National Knowledge Network (NKN) and private communications companies. The Institute Backbone Network has the highest available bandwidth of 10Gigabit. All the department buildings are provided with dual backbone connection for fault tolerance.

The Data Centre has facilities like surveillance cameras, fire safety, UPS and diesel generators to ensure 24/7 power supply and air-conditioning. It has a High Performance Computing Room to host all the servers, network room, network operation centre (NOC) to monitor the campus network, a conference room, staging and testing Room, UPS Room, electrical room, and GAS cylinder Room. The operation of these facilities is done through the Building Management System (BMS).

Computer Centre has a modern Data Centre hosting all the Computer, Network, Intranet/Internet Servers and Helpdesk service (Tel 5999). The systems staff have separate rooms with the provision of computers, network and telephones. Seminar and store rooms are in the first floor of the centre.

### **7.1.4 Environment for the Operation of Processes**

CC has determined, provided and maintains the environment necessary for the operation of its processes to achieve conformity of all its services. It has taken into account all relevant social psychological needs of its staff and the physical conditions needed.

### **7.1.5 Monitoring and Measuring Resources**

CC has determined and provided the resources needed to verify the conformity of services. It ensures that resources provided are suitable for specific monitoring purposes.



### **7.1.6 Organizational Knowledge (APPENDIX II)**

The Staff in the Computer Centre are well versed and trained in their respective fields of activities like Networking, System Administration, Programming and Data Processing. The staffs of computer centre are selected based on their qualification and experience to ensure basic level of competency. Knowledge gained from experience, lessons learned from failures and successful projects are shared among the staff. Project staff and technicians are employed periodically to assist the staff of the computer centre. Any further needs and the required training are identified and provided.

### **7.2 Competence**

All the Staff members are competent enough in doing their duties and work. System Staff and Project Staff are recruited based on their competence and capability. When Computer Centre augments its resources in the form of new Hardware or Software necessary personnel are sent for specific Training.

In addition, Chairman CC maintains performance assessment records of individuals in the department. Based on the assessment, training needs are identified. Training is imparted based on the need identified and the effectiveness is evaluated by re-assessment of the individual's performance after completion of the training.

The System Staff are grouped into five categories by the Chairman, namely HPCE, Computer Network, E-services, Data Centre and Workflow. Training for Staff to be imparted is identified based on these Group activities by the Chairman. The staff members of Computer Centre are also sent for training conducted by the Human Resource Development (HRD) Section of IIT Madras.

### **7.3 Awareness**

CC has ensured the persons working under its control are aware of the quality policy, quality objectives, their contribution to the QSM and the implications of not conforming with the QSM requirements.

### **7.4 Communication**

Computer centre has determined internal and external communication relevant to QSM, including the subject of the communication, when communication occurs and ways of effective communication.



## **7.5 Documented Information**

### **7.5.1 General**

Computer Centre maintains a documented QSM (APPENDIX II) as a means to ensure that products and services conform to specified requirements. The QSM consists of the following three levels of documented information:

**Level 1 Quality System Manual (QSM):**

**Level II: Quality Procedures:**

**Level III: Quality System Forms (QSF):**

### **7.5.2 Creating and Updating**

While creating and updating documented information CC ensures appropriate identification and description, format and reviews for suitability and adequacy.

### **7.5.3 Control of Documented Information**

1. Documented information required by our QSM (APPENDIX II) is controlled to ensure it is available and suitable for use wherever and whenever it is needed.

The information is adequately protected and CC addresses the following activities as applicable

2. Distribution, access, retrieval and use
3. Storage and preservation
4. Control of changes
5. Retention and disposition.

## **8 Operations**

### **8.1 Operation planning and control**

Determination of stakeholders' requirement is done in the Staff/CC committee meetings. Monthly staff meetings and E-mails sent to computer centre. Generally, customer needs are high processing speed, access to commercial and open source software, fast Internet bandwidth,



video conferencing and virus alert. Determination of processing speed, internet bandwidth and antivirus software go by the latest technology available in the computer field.

The computer centre has a very good infrastructure to carry out its services to the users. It is equipped with a high performance computer to cater the customers' various computational works. It has a very high internet bandwidth with the National Knowledge Network (NKN) and private communications companies. The Institute Backbone Network has the highest available bandwidth of 10 Gigabit. All the department buildings are provided with dual backbone connection for fault tolerance.

## **8.2 Requirements of Products and services**

### **8.2.1 Customer Communication**

Customers are communicated through e mail and telephone.

Computer centre provides a facility in Email service called [announce@list.iitm.ac.in](mailto:announce@list.iitm.ac.in) and [students@smail.iitm.ac.in](mailto:students@smail.iitm.ac.in) important circulars and notices are to customers sent to the Email [announce@list.iitm.ac.in](mailto:announce@list.iitm.ac.in) and [students@smail.iitm.ac.in](mailto:students@smail.iitm.ac.in). Customer Communications are through Email and telephone. Information dissemination is also effected through the computer centre website, [www.cc.iitm.ac.in](http://www.cc.iitm.ac.in).

### **8.2.2 Determining the requirements for products and service**

**Determination of Customers' requirement is done in the CC Staff/Committee meetings.**

Monthly staff meetings and E-mails sent to computer centre. Generally, customer needs are high processing speed, access to commercial and open source software, Fast Internet Bandwidth, Video conferencing and Virus alert. Determination of processing speed, internet bandwidth and Antivirus software go by the latest technology available in the computer field.

### **8.2.3 Review of requirements for products and services**

CC ensures it has the ability to meet requirements of its services offered to the customers. It conducts the review before committing to offer its services and this includes

1. Requirements specified by the customers
2. Requirement not stated by the customers but necessary for its intended use
3. Statutory and regulatory requirements, contract requirements changes wherever applicable.





### **8.2.3.2**

CC retains documented information on the results of review for any requirements for its services.

### **8.2.4 Changes to requirements for products and services**

CC ensures relevant documented information's are amended and relevant persons are made aware of the changed requirements.

## **8.4 Control of externally provided processes, products and services**

### **8.4.1 General:**

CC ensures all externally provided processes and services conform to the requirement as per the International Standard.

The Computer Centre gets equipment, stationery and consumables for day-to-day office work through Central Stores by periodic indenting. All these are purchased in accordance with the purchase procedures of the Institute. The Computer Centre also purchases service from outside agencies for its smooth and effective running without break and failure. The following are the purchased services: Annual Maintenance Contract (AMC) for High Performance Servers Computer Network switches, Antivirus Security Suite, Maintenance of Generators, Air Conditioners and BMS.

For the hardware maintenance of the Servers, Network switches and Antivirus Software, AMC is given to the firms by taking into account their technical capability. Maintenance of air conditioning units is done by authorised service agents selected based on their experience in the field and commercial conditions.

All the customer requirements regarding workflow one discussed in Project Review Board (PRB). After confirming and finalizing the requirements, the same as passed on to the vendor for developed processes. PRB monitors all the services provided by external service providers. Workflow team in CC closely liaison with them for tighter control. Feedback system to report bugs exists within workflow. Workflow PRB includes representation from corresponding vendor of all the relevant information is available to service providers. We tested before delivering the same to the customer. Workflow team has taken responsibility of answering any query on the final delivery and support.

LPC (Local Purchase Committee) is constituted by the Chairman to go through this purchase/outsourced processes.

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#### **8.4.2 Type and extent of control:**

First level verification of the receipt of the item as per purchase order is done by the store keeper. Functional performance of computer systems and other equipment is done by the System Staff and is recorded in the Installation report contained in the Invoices the performance of the service providers is reviewed periodically before renewing the contract. The performance is reviewed based on the quality of service and response to service calls.

#### **8.4.3 Information for external providers:**

Purchase orders are placed on the approved service providers by central stores and purchase section based on the recommendations of the Computer centre indicating the approved source and conditions of purchase.

### **8.5 Production and service provision**

#### **8.5.1 Control of production and service provision**

CC provides its services under controlled conditions. The control conditions include

1. Availability of documented information, that defines services to be offered and the results to be achieved.
2. Availability and use of suitable monitoring and measuring resources.
3. Use of suitable infrastructure and environment for the operation of its processes.
4. Appointment of competent persons, validation and periodic revalidation to achieve planned results of the processes.
5. Actions to prevent errors
6. Implementation of release, delivery, post-delivery activities.

#### **8.5.2 Identification and Traceability**

While issuing user ids for the customers, files are electronically maintained in the respective servers to trace the user ids and identify them. This can be done by simple system administration commands. User id forms applied by the users are maintained by respective



System Administrators, DCA, Faculty Advisor and the Users duly sign the forms. They are easily identified and traced. A Computer at the NOC (Network Operation Centre) identifies the Network equipment placed at various locations of the Institute. Additionally documentation (soft and hard copies) providing information of the physical locations of this equipment is available with the system staff for identifying and tracing of the components. The computers of the customers placed in the Data Centre are identified by placing stickers prominently on the front of the computers (APPENDIX IV).

### **8.5.3 Property belonging customers or External providers**

CC exercise cares in securing and maintaining the property belonging to customers or external providers while it is under its control (APPENDIX IV).

### **8.5.4 Preservation**

CC preserves the output during its operation and service provision to the extent necessary to ensure conformity to the requirements.

### **8.5.5 Post-delivery activities**

CC meets any requirements for post-delivery activities associated with its services. CC considers the following

1. Customer requirements
2. Customer feedback
3. Nature, use and its intended life time of its services
4. Potential undesired consequences associated with its services.
5. Statutory and regulatory requirements.

### **8.5.6 Control of changes**

CC reviews and controls changes for its service provision, to the extent necessary to ensure continuing, conformity with requirements. CC retains documented information regarding the changes.

## **8.6 Release of product and services**

CC has implemented planned arrangements to verify service requirements have been met. The release of products and services to the customers will not proceed until planned arrangements are satisfactorily completed and released by authorised personnel. The information regarding the completion of services is maintained at the helpdesk. Workflow team releases workflow procedures developed by service provider and taken responsibility of managing the services.



## **8.7 Control of Non-conforming outputs**

### **8.7.1 CC deals with non-conforming products in the following ways**

1. Correction
2. To inform the customers
3. Obtain authorisation for acceptance under concession.
4. Segregation.

**8.7.2** Documented information regarding non-conformity, actions taken, any concession obtained is maintained (APPENDIX II).

## **9. Performance Evaluation**

### **9.1 Monitoring, measurement, analysis and evaluation**

#### **9.1.1 General**

CC determines what needs to be monitored and measured and appropriate methods are used for analysis to ensure valid results

#### **9.1.2 Customer Satisfaction**

Customer satisfaction will be monitored and measured in the following manner:

1. Computer Centre Systems Staff Meeting held every month.
2. Online feedback received from Customers twice a year.
3. Monthly HOD's meetings conducted by the Director.

#### **9.1.3 Analysis and evaluation**

Determination of Customers' requirement is done in the CC Staff/Committee meetings.

Monthly Staff meetings and E-mails sent to computer centre. Generally, customer needs are High Processing Speed, access to commercial and open source software, Fast Internet bandwidth, video conferencing and virus alert. Determination of processing speed, internet bandwidth and antivirus software go by the latest technology available in the computer field. In our monthly meetings, the risks and opportunities are being addressed as and when they arise.



## **9.2 Internal Audit**

**9.2.1** Internal audits are conducted at specified intervals organised by MR (Refer QMS-IITM).

**9.2.2** CC takes appropriate correction and corrective actions without undue delay and retains the documented information.

## **9.3 Management Review**

### **9.3.1 General**

Top management reviews the QMS at planned intervals to ensure its continuing suitability, adequacy, effectiveness and alignment with the strategic direction of IITM.

### **9.3.2 Management review inputs**

The management review is carried out taking into consideration

1. Status of actions from previous management reviews
2. Changes in external and internal issues relevant to QMS
3. Performance and effectiveness of QMS
4. Customer satisfaction and feedback
5. The extent to which quality objectives are met
6. Non conformity and corrective actions
7. Audit results
8. Performance of external providers
9. Adequacy of resources
10. Effectiveness of actions to address risk and opportunities (6.1).
11. Opportunities for improvements.

### **9.3.3 Management review outputs**

The outputs of the management review related to opportunities for improvement, any need for changes to the QMS and resource needs are communicated to CC Chairman through the MR. CC retains the management review output for its actions and retains the documented information.



## **10 Improvements**

### **10.1 General**

CC determines and selects opportunities for improvement and plans necessary actions to improve its services to enhance customer satisfaction. The planning is targeted to correct, prevent or reduce undesired effects.

### **10.2 Non-conformity and corrective action**

**10.2.1** If any non-conformity occurs, the CC reacts promptly to the non-conformity to take action to control and correct it. The action plan is targeted to eliminate the cause of non-conformity, implemented and reviewed for the effectiveness. Risks and opportunities determined are updated.

For repeated non-conformances including the customer complaints, the root cause of the problem is identified and action to be taken is determined. Action is then initiated and the performance is monitored after initiating the corrective action. The records of corrective action taken are maintained and reviewed for effectiveness.

**10.2.2** CC retains the documented information as evidence for nature of non-conformity, actions taken and results.

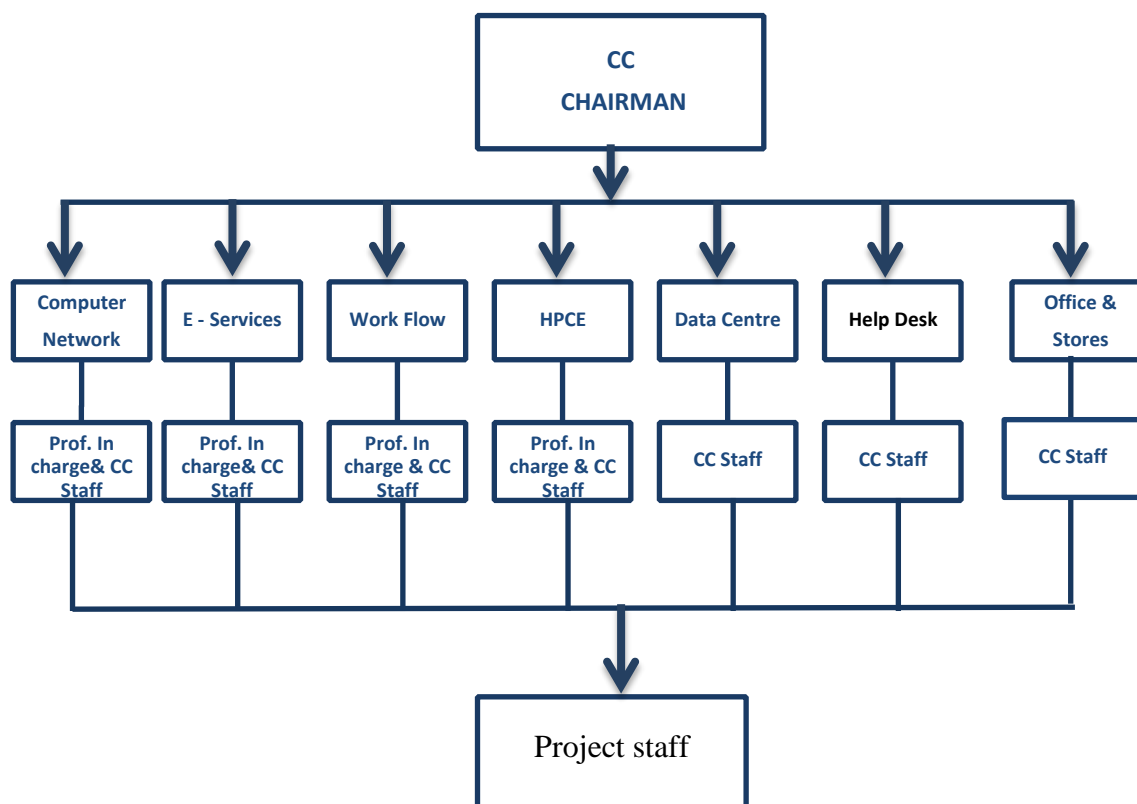
### **10.3 Continual Improvement**

Continuous improvement is done in the areas of up-gradation of the hardware, software and service to ensure latest technology is available to our customers of all verticals. Improvements are also done to continuously strive towards achievement of quality objectives.



APPENDIX I

ORGANISATIONAL CHART FOR COMPUTER CENTRE





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**APPENDIX II**

**DOCUMENTED INFORMATION**

Sl. No	Name of Record	Responsibility	Medium	Storage Location	Retention Period	ID. No
1.	User ID Forms HPCE/Email	System Staff	Soft Copy	CC website www.cc.iitm.ac.in	Till User leaves Inst.	CC1/CC2
2.	Systems Staff Minutes	Chairman	Soft Copy	CC website	3 Years	CCM1
3.	HOD Meeting	Chairman	Hard Copy	CC Office	3 Years	CCM2
4.	AMC Service Reports	Store Keeper	Hard Copy	CC Office		Unique Numbers
5.	Purchase Orders	Store Keeper	Hard Copy	CC Office	3 Years	Unique numbers
6.	Staff Training	Chairman	Hard Copy	CC Office		CCT1
7.	Feed Back	Systems Staff	Soft Copy	CC website		
8.	Quality Procedures	Systems Staff	Soft Copy	Staff in charge Computer		
9	NC record	System Staff	Hard copy			

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APPENDIX III

DUTIES AND RESPONSIBILITIES

1. Chairman	2. Technical Staff (HPCE )	3. Technical Staff (NETWORK)	4. Technical Staff (WORKFLOW )	5. Technical Staff (e-SERVICES)	6. Technical Staff (DATA CENTRE)	7. Office & Stores
Planning & Administration  Goal setting for Computer Centre  Interaction with Customers	System Administration  File /License Management  System Security  Training to users	Monitoring Campus Network  Planning & Implementation  Upgrading Internet Bandwidth	Automation of process for sections- Accounts, Academic, IC & SR, Stores & Purchase, Security and Security.  Training to users	LDAP/ADS  VDI  Websites  Email  Antivirus	Monitoring Air conditioners, Generators & UPS Batteries  Monitoring BMS  Schedule Preventive Maintenance	File keeping & maintenance and Announcement  Purchase orders and AMC files



**APPENDIX IV**

**LIST OF CUSTOMER COMPUTERS IN DATA CENTRE**

<b>SI.NO</b>	<b>SERVER</b>
1	GATE
2	JEE
3	CHEMISTRY
4	HOSPITAL
5	LIBRARY
6	ACADEMIC
7	PLACEMENT
8	CPC
9	HOSTEL MANAGEMENT
10	OEC

<b>SI.NO</b>	<b>SERVER</b>
11	NPTEL
12	TNET
13	BIOTECH
14	ED
15	CENTRAL LIBRARY
16	APPLIED MECHANICS
17	CHEMICAL ENGINEERING
18	COMPUTER SCIENCE & ENGINEERING
19	MDS
20	MECHANICAL



APPENDIX V

Risk and Mitigation

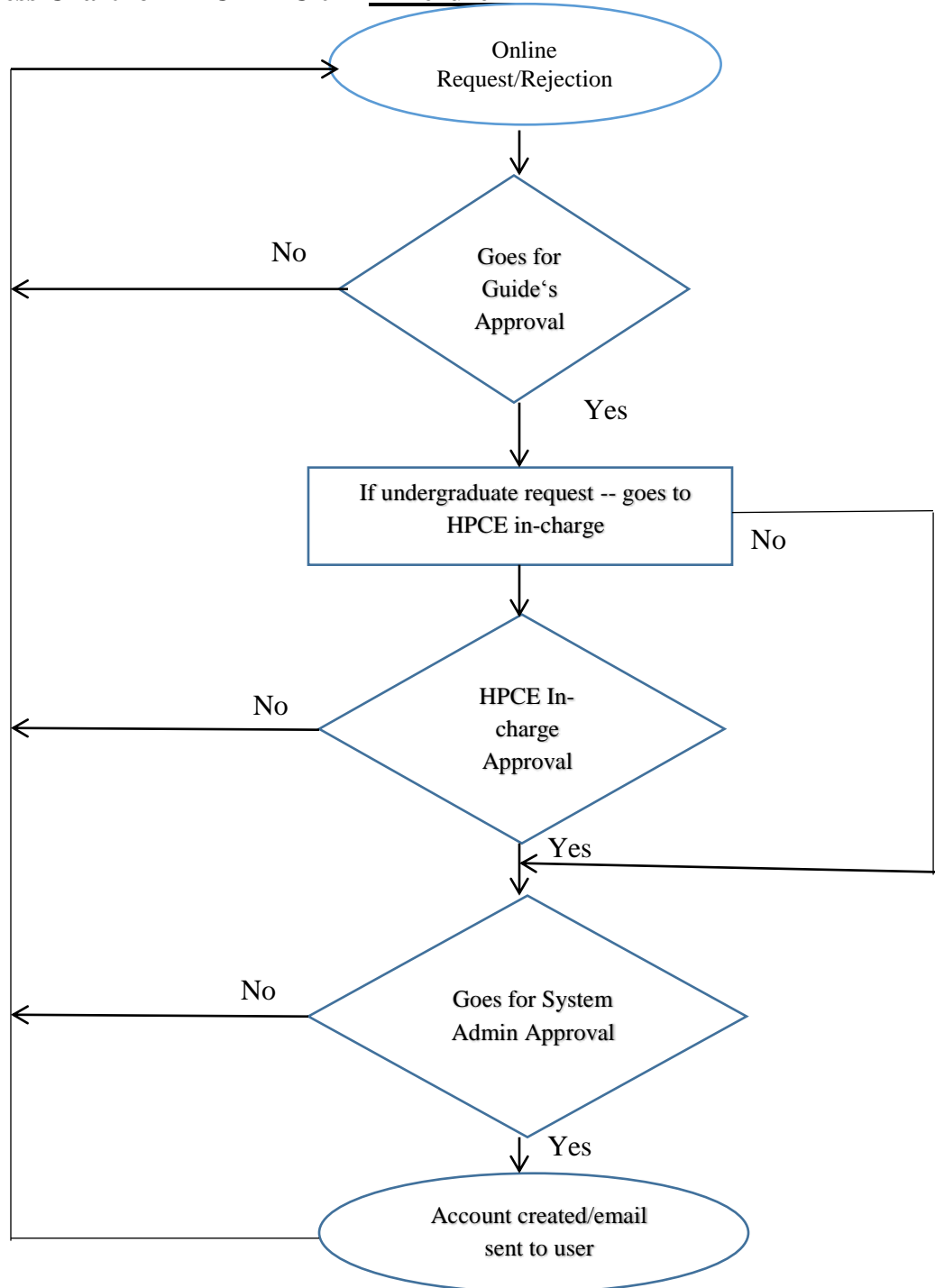
Verticals	External Issues	Internal Issues	Risk Level	Action or Mitigation plan	Risk after Mitigation
HPCE	1. Hacking	2. Power failure 3. Hardware failure.	1. Low 2. Low 3. Medium	1. No external access 2. Minimize the power Consumption 3. Log call and wait for spares.	1. Low 2. Low-UPS, DG used 3. Low
E-Services	Hacking	1. Power Shutdown 2. System crash 3. Hacking 4. Virus	1.Low 2.Medium 3.Medium 4.High	1. Redundant power source using. 2. Backup and spares replacement. 3. WAF(Web Application Firewall) 4. Antivirus software	1. Low 2.Low 3.Low 4.Low



<b>Verticals</b>	<b>External Issues</b>	<b>Internal Issues</b>	<b>Risk Level</b>	<b>Action or Mitigation plan</b>	<b>Risk after Mitigation</b>
<b>Network</b>	1. Internet Service Provider (ISP) link down.  2. Power failure.	3. Network switches failure.  4. Severing of network cable.	1. High 2. High 3. High 4. High	1. Keep redundancy ISP link. 2. Make power backup. 3. Keep sufficient switches in stack. 4. Make redundancy network cable connectivity.	1. Low 2. Low 3. Low 4. Low
<b>Workflow</b>	1. Power Failure  2. Hardware Failure	3. Disaster Recovery  4. Virus	1. Power Failure – Low  2. Hardware Failure – Low  3. Disaster Recovery – High  4. Virus - Medium	1. Power Failure – Taken care by Data centre. 2. Hardware – AMC periodically renewed and hardware upgraded. 3. Disaster Recovery – Backups taken in another machine in ICSR 4. Virus – Antivirus installed and monitored.	1. Power Failure - Low  2. Hardware Failure - Low  3. Disaster Recovery - Medium  4. Virus - Low
<b>Data Centre</b>	1. TNEB Power Failure	2. Auto-mode of DG failure. 3. Cooling unit failure.	1. High 2. Medium 3. High	1. start the DGs automatically 2. DGs will be started manually. 3. Redundant source used.	1. Low 2. Low 3. Low

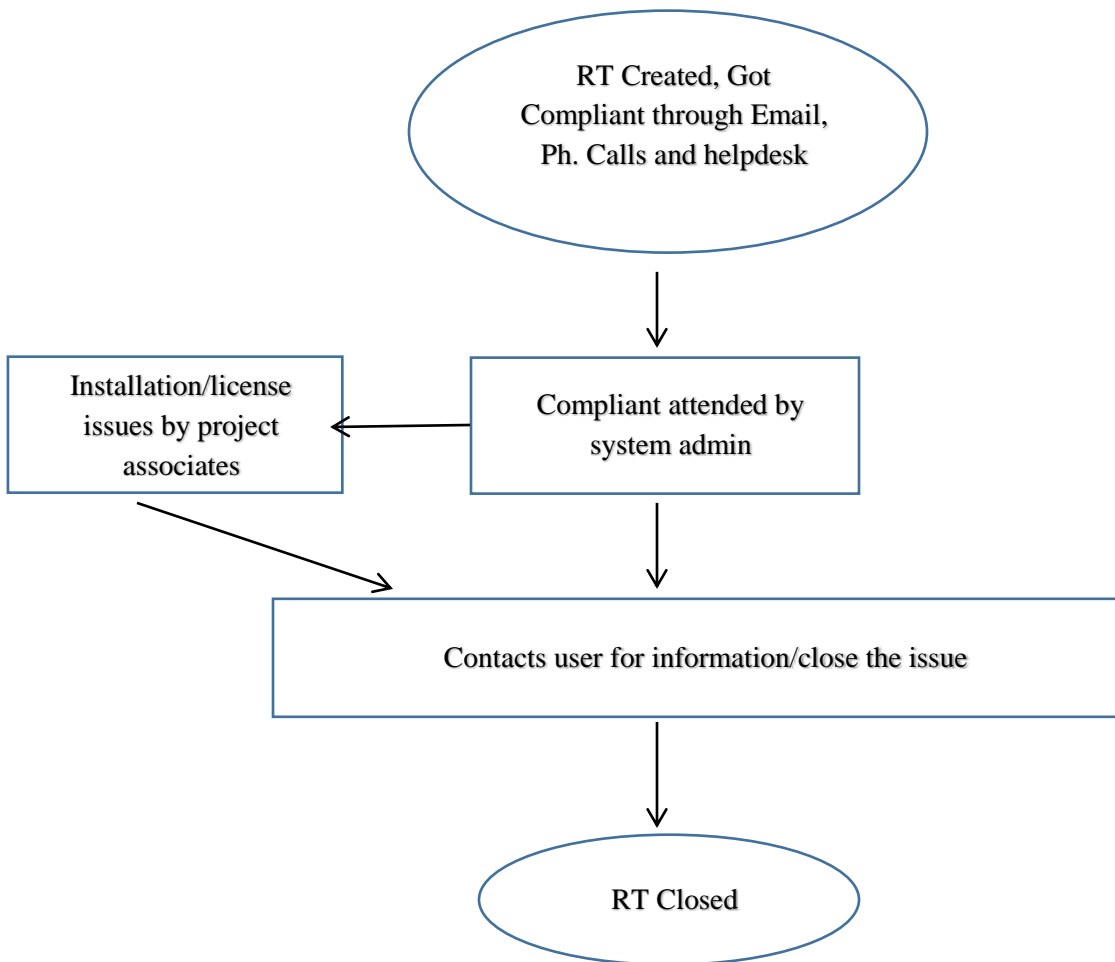


Process Chart for HPCE- PC 01 Annexure - 1





Annexure -2



**Measurement Parameter:**

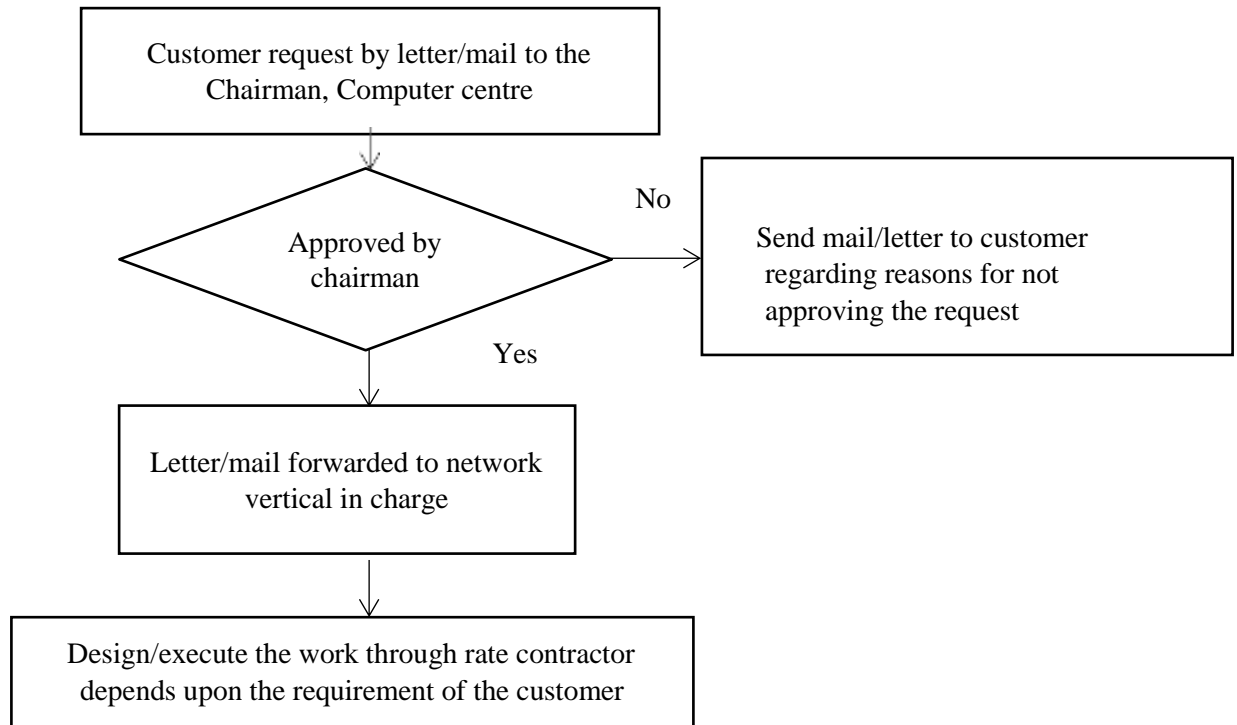
Response time for the request and problem.  
CPU utilization above 70%.



**Process Chart for Network Administration - PC 02 - Annexure 1**

SI. No	Activity	Responsibility Systems staff	Duration	Form
1	Customer Complaints	1		Helpdesk
2	Attending to the Fault	2	1 Day	
3	Customer problems (Processing initiation)	3	2 days	Softcopy

**Annexure - 2**



**Measurement Parameter:**

Number of complaints received and attended to.

Response time to attend to the fault.

Approved and Issued By:

Issue No: 3

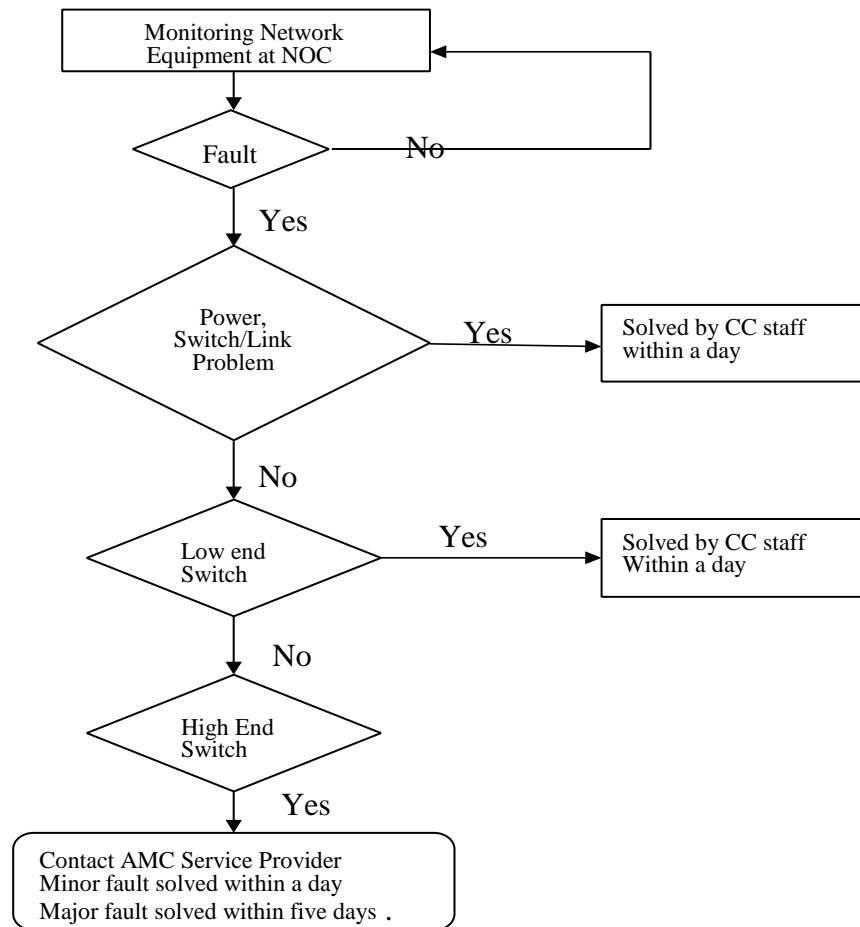
Revision No: 1

Date of Issue: 10.01.2017.

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**Process Chart for Campus Network Administration - PC 03**



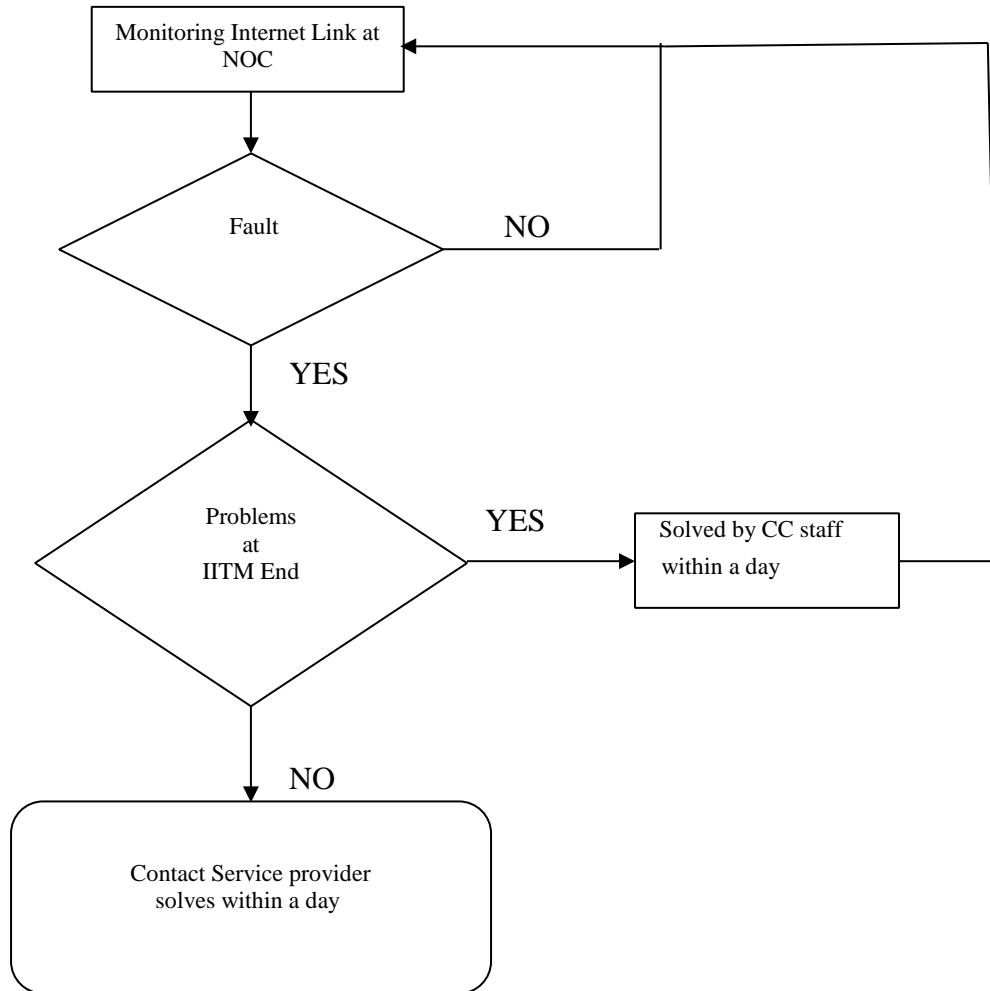
**Measurement Parameter:**

Number of complaints received and attended to.  
Response time to attend to the fault.





**Process Chart for Internet Connectivity - PC 04**



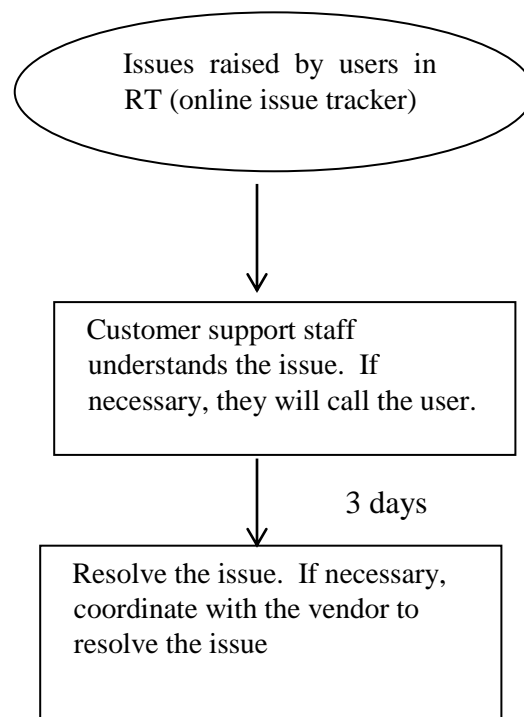
**Measurement Parameter:**

Number of complaints received and attended to.  
Inbound and outbound network traffic.  
Response time to attend to the fault.



**Process Chart Work Flow Automation – PC 05**

**Process Chart Workflow Automation – Support**



**Measurement Parameter:**

Number of complaints received and attended to.  
Response time for the review and the support for the customer.



**Process Chart for E-Services – PC 06**

SI. No	Activity	Responsibility		Duration	Forms
		User	System Staff		
1	Request from Customer for VPN, Website, ADS, LDAP, Antivirus & Conference Support	1			Helpdesk
2	Review of requirement with Customer		2	2 Day	
3	Technical Support		3	Until Customer needs are met	

**Measurement Parameter:**

Number of complaints received and attended to.  
 Response time for the review and the support for the customer.



**Process Chart for E-Services – PC 07**

SI. No	Activity	Responsibility Systems staff	Duration	Form
1	Academic/Recruitment send E-Mail accounts for Customers			CC2-E-Mail
2	Customer problems	<div style="border: 1px solid black; width: 30px; height: 30px; text-align: center; margin: 0 auto;">1</div> <div style="text-align: center; margin: 0 auto;">↓</div>	Daily	Helpdesk
3	Completion of Problems	<div style="border: 1px solid black; width: 30px; height: 30px; text-align: center; margin: 0 auto;">2</div>	2 day	
4	Analysis of Webservers of Eservices through SSL		Every first Wednesday of the month	<a href="https://ccredmine.iitm.ac.in">https://ccredmine.iitm.ac.in</a>

**Measurement Parameter:**

Number of complaints received and attended to.  
Response time to attend to calls.  
Email size of all customers.