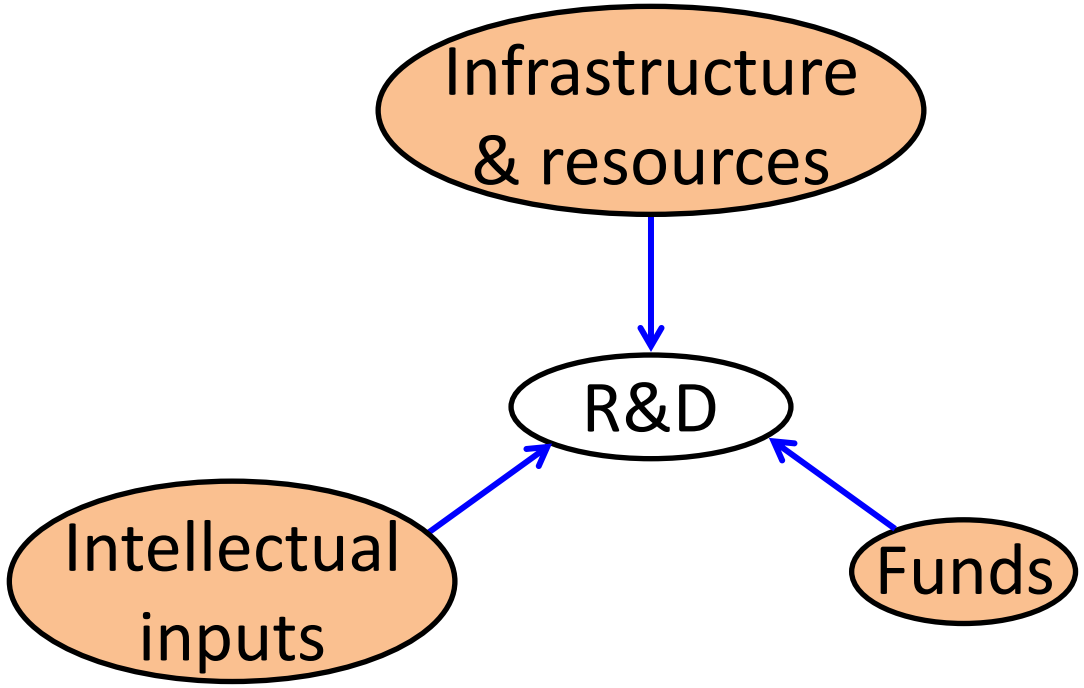
Estd. 1958

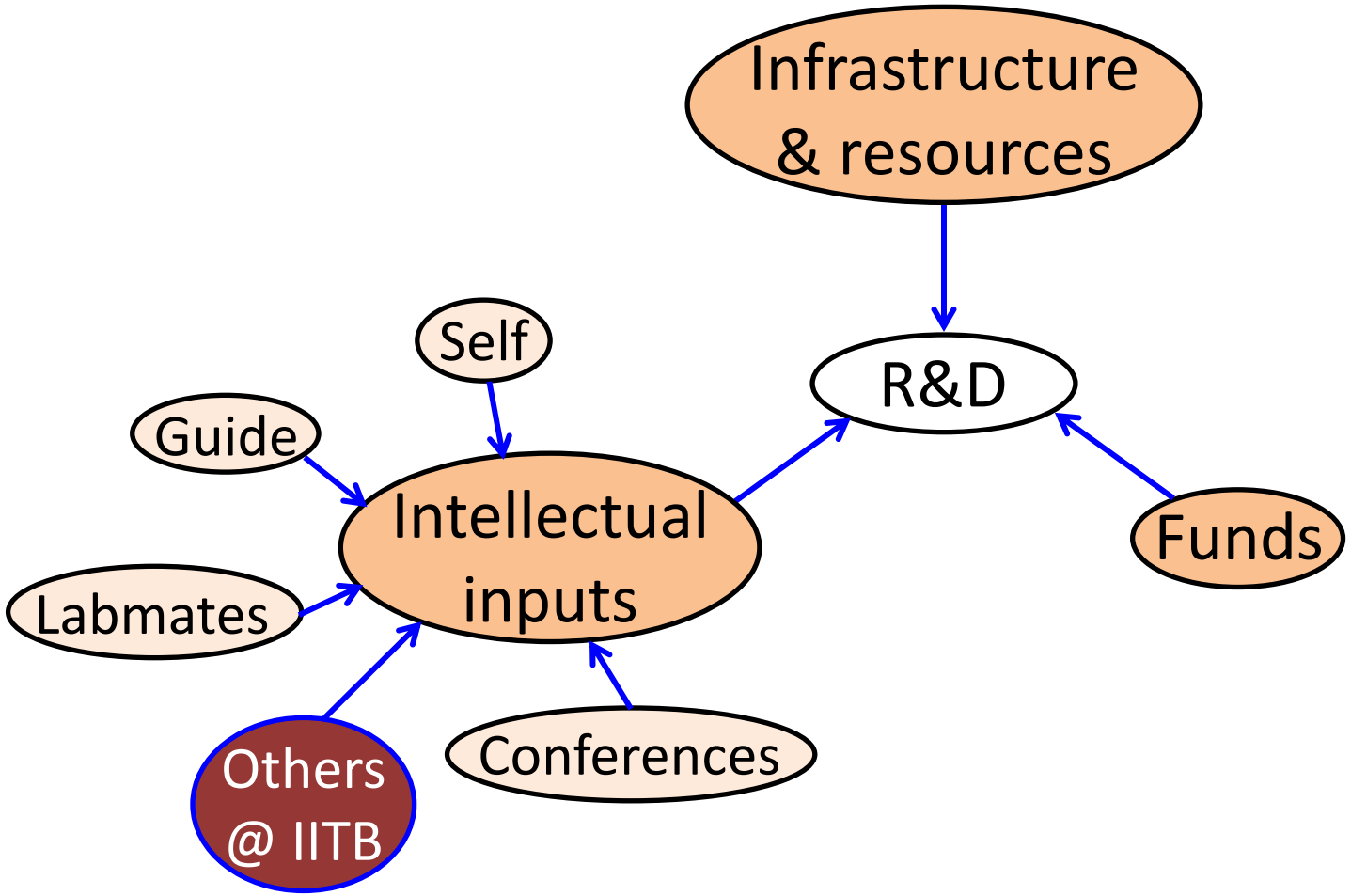
Central Facilities @ IIT Bombay

Inputs and support systems for R&D



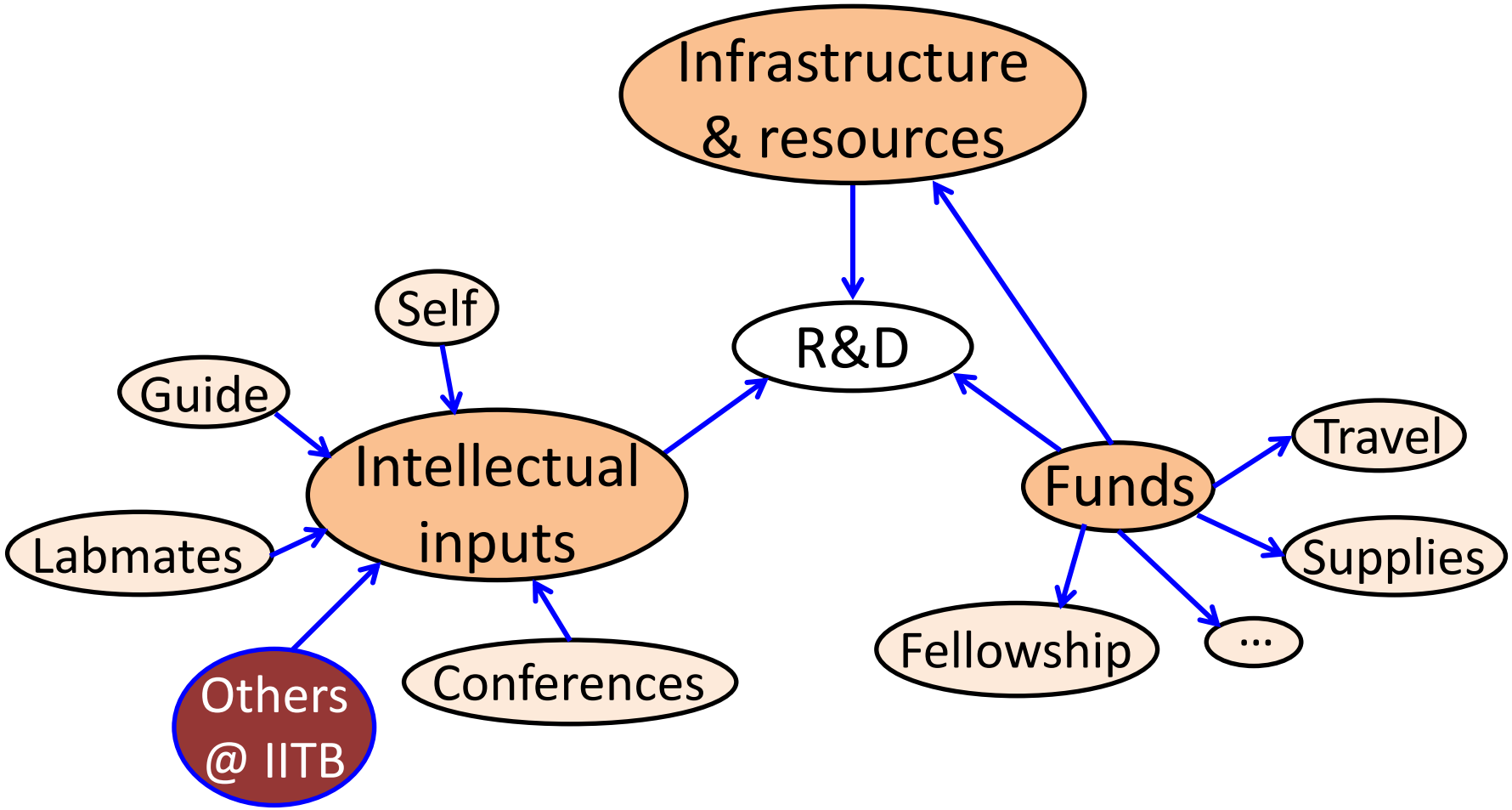
Size of the oval does not reflect the extent of contribution / importance

Inputs and support systems for R&D



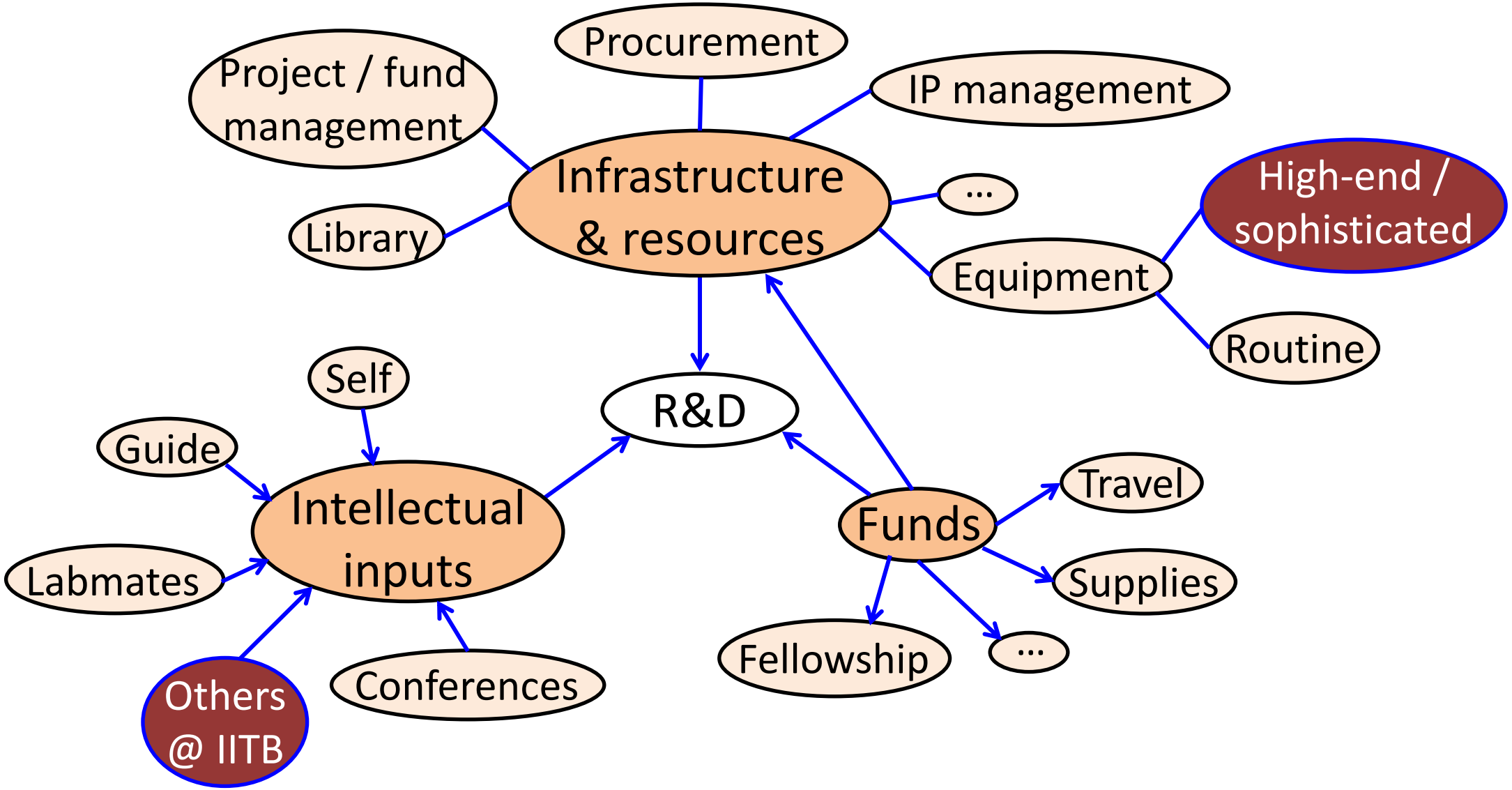
Size of the oval does not reflect the extent of contribution / importance

Inputs and support systems for R&D



Size of the oval does not reflect the extent of contribution / importance

Inputs and support systems for R&D



Size of the oval does not reflect the extent of contribution / importance
Few ovals are not applicable for paper-pen type of research

Research infrastructure @ IIT Bombay

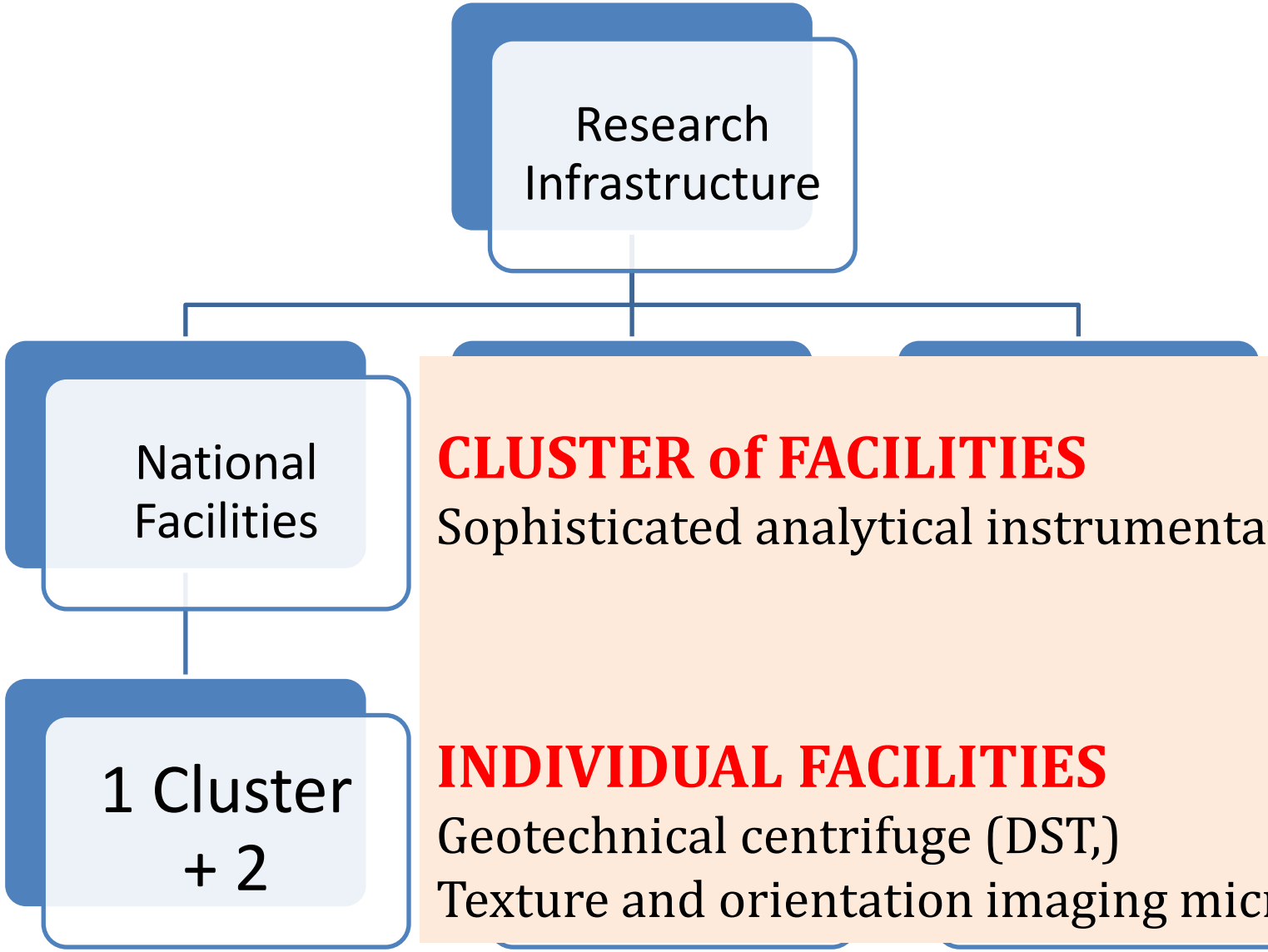
Geotechnical Centrifuge

Electron Paramagnetic Resonance

CATEGORY

- Research Infrastructure
  - National Facilities: 1 Cluster + 2
  - Central Facilities: 36 + 12…
  - Department Facilities: 110+

Research infrastructure @ IIT Bombay



CATEGORY

CLUSTER of FACILITIES

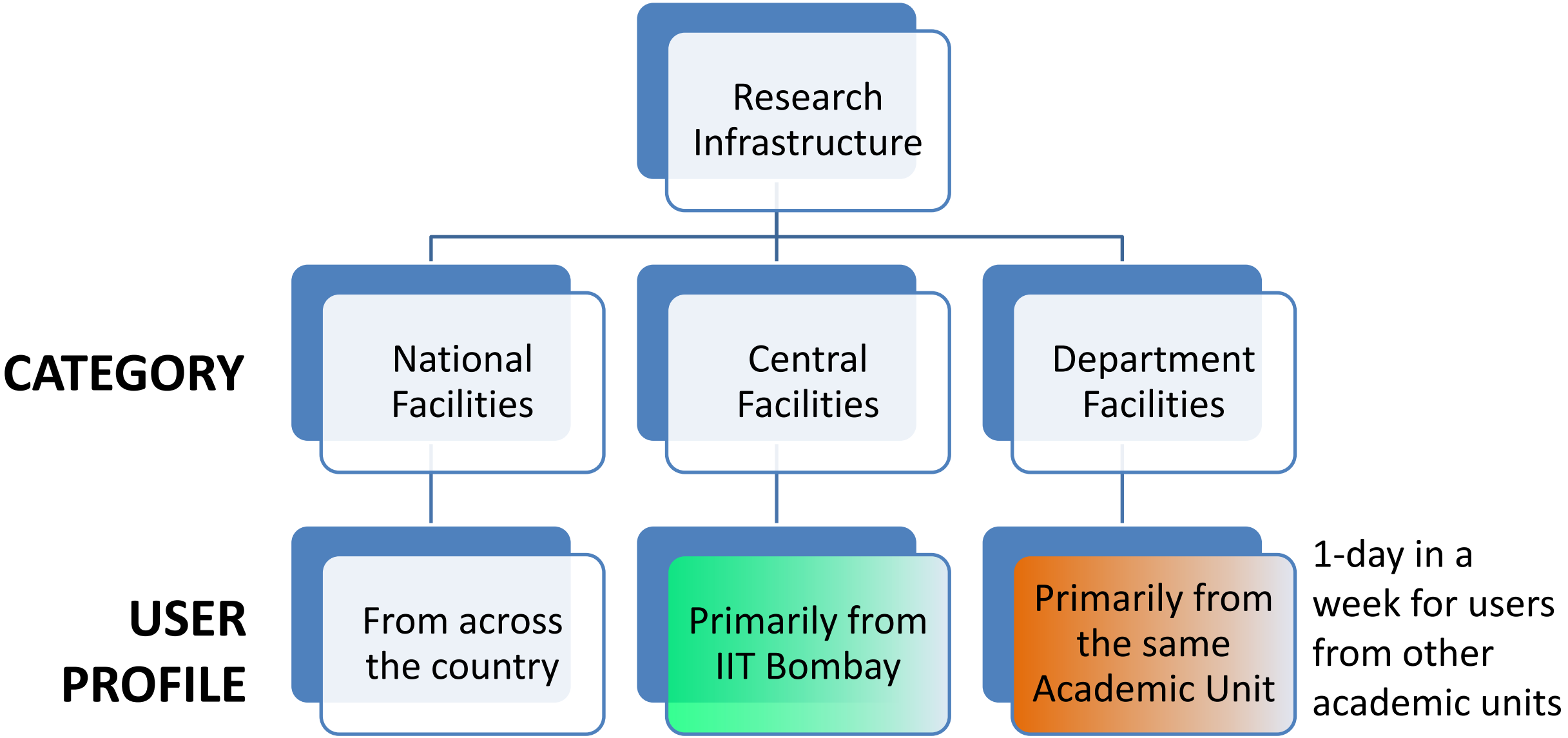
Sophisticated analytical instrumentation facility (DST)

INDIVIDUAL FACILITIES

Geotechnical centrifuge (DST,)

Texture and orientation imaging microscopy (DAE)

Research infrastructure @ IIT Bombay



Research infrastructure @ IIT Bombay

	National Facilities	Central Facilities	Department Facilities
Capex	Govt. of India agencies (targeted)	IIT Bombay (MHRD)	IIT Bombay (MHRD) + Competitive grants
Opex	Govt. of India + Users + IIT Bombay (MHRD)	IIT Bombay (MHRD) + External users	IIT Bombay (MHRD) + Competitive grants

Central facilities @ IIT Bombay

Sophisticated and high-value equipment - indispensable research infrastructure

External funding - hard to get (high capex)

MHRD funds to Institute - earmark a fraction

Demand exceeds supply - users from at least three academic units as a criterion

Central facilities @ IIT Bombay

Several high-end equipment set up as central facilities

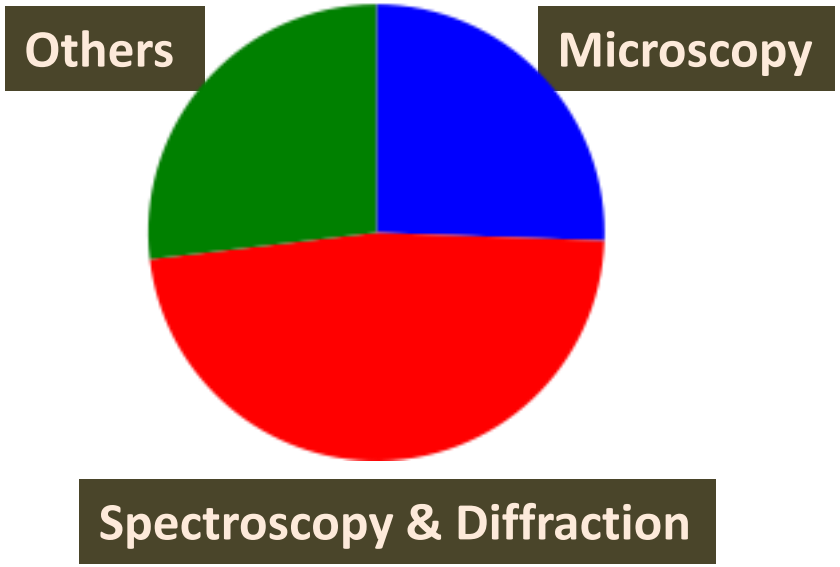
Category 1: Microscopy (13 facilities)

Category 2: Spectroscopy and diffraction (12 facilities)

Category 3: Others (11 facilities)

Capital expenditure:
Rs. 118 crores (last 5 years)

Operational expenditure:
Rs. 2.6 crores (2014-15)

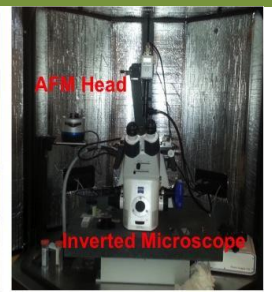


Microscopy facilities

Name of the facility (location)

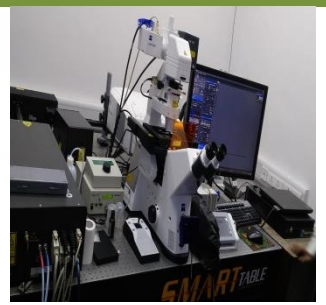
1. Bio-atomic force microscope (BSBE)
2. Conductive atomic force microscope (Elect Eng)
3. Confocal laser scanning microscope (BSBE + CRNTS)
4. Cryo high resolution transmission electron microscope (Chem Eng)
5. Cryo transmission electron microscope (CRNTS)
6. Environmental scanning electron microscope (CRNTS)
7. Field emission gun based scanning electron microscope (Chem Eng)
8. **Field emission gun based transmission electron microscope (CRNTS) [SAIF]**
9. Four dimensional x-ray microscopy (CRNTS)
10. Scanning probe microscopy facility (MEMS)
11. Scanning probe microscopy facility (Physics)
12. Spinning disc confocal microscope (BSBE)
13. Transmission electron microscope – sample preparation facility (MEMS)

Microscopy facilities



Bio-atomic force microscope

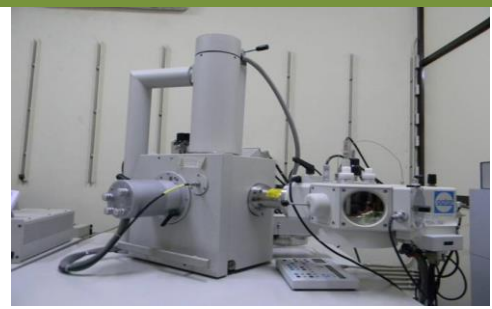
cAFM



Confocal laser scanning microscope

Cryo HRTEM

Cryo TEM



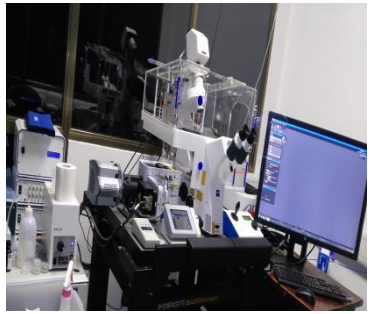
ESEM

Cryo FEG-SEM

4D x-ray microscopy

SPM (MEMS)

SPM (Phys)



Spinning disc confocal microscope

TEM sample prep

Spectroscopy and diffraction facilities

Name of the facility (location)

1. 2D gas chromatograph with rapid scanning time of flight mass spectrometer (CESE)
2. 500 MHz Nuclear magnetic resonance spectroscopy (Chemistry)
3. 750 MHz Nuclear magnetic resonance spectroscopy (CRNTS)
4. Argon-argon geochronology facility (Earth Sci)
5. Central surface analytical facility (Axis Supra) (Physics)
6. Central surface analytical facility (MEMS)
7. Dielectric broadband spectrometer (MEMS)
8. High resolution mass spectrometer (Chemistry)
9. High resolution X-ray diffractometer (Physics)
10. Matrix assisted laser desorption / ionization – time of flight (BSBE)
11. Protein crystallography (CRNTS)
12. X-ray diffractometer (Energy Sci Eng)

Spectroscopy and diffraction facilities

2D GC-GC-ToF-MS

Ar-Ar geo-chronology

Central surface analytical facility (ESCA)

Dielectric broadband spectrometer

HR XRD

500 MHz NMR

750 MHz NMR

HR MS

MALDI ToF/ToF

Protein crystallography

XRD (DESE)

Others

Other than microscopy, spectroscopy and diffraction

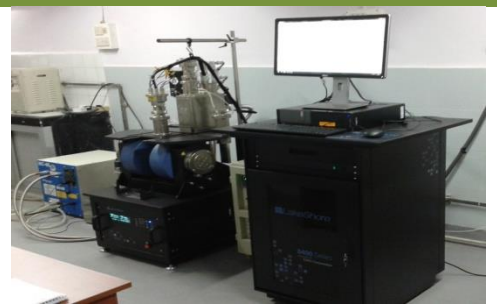
Name of the facility (location)

1. Fluorescence activated cell sorting /flow cytometer (CRNTS)
2. Hall measurement system (Physics)
3. Image based spray diagnostic facility (Aero Eng)
4. Micro system analyzer (laser doppler vibrometer) (Mech Eng)
5. Microcompounder and mini injection moulding (Chem Eng)
6. Nanoindentor (MEMS)
7. Physical property measurement system (PPMS-VSM) (Physics)
8. Physical property measurement system (SQUID-VSM) (Physics)
9. Surface plasmon resonance (BSBE)
10. Liquid helium plant (Physics)
11. Liquid helium plant & nitrogen plant (Mech Eng)

Others

Other than microscopy, spectroscopy and diffraction

FACS



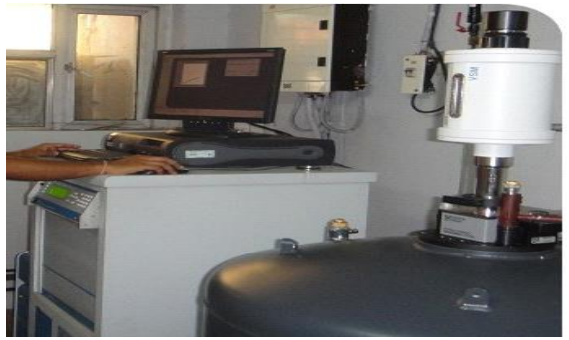
Hall measurement system

Image based spray diagnostic facility

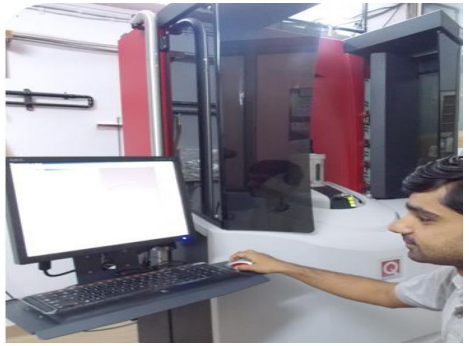
Micro system analyzer
Laser doppler vibrometer

Microcompounder and mini injection moulding

Nanoindentor



PPMS (VSM)



SQUID (VSM)

SPR

Liquid Helium Plant (Physics)

Liquid Helium Plant &
Nitrogen Plant (Mech Eng)

Information about research infrastructure

Indian Institute of Technology Bombay

Industrial Research and Consultancy Centre

DRONA-IRCC Internal Online System

LDAP (GPO) login id

Enter Password

Login Reset

Home | People | Projects | Faculty Related | Students | Project Staff Related | IPR | Facilities | IRCC Home

- Central Facilities
- Institute Facility
- Department Facility
- RIFC

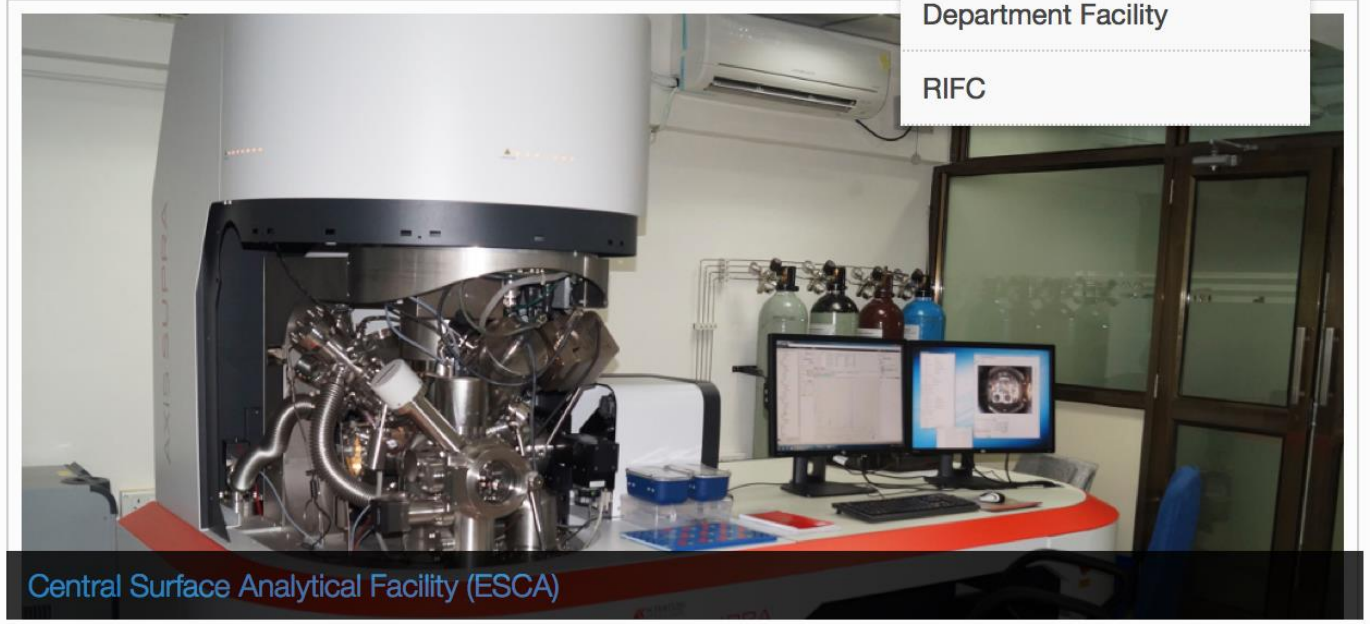
NEW LINKS

- Details of Unidentified Money Received at IRCC
- Drona old website
- "Subscription- project staff notice" To subscribe project staff notice: http://rnd.ircc.iitb.ac.in/mailman/listinfo/project_staff If you don't subscribe then you will not receive any mails from IRCC.

OTHER LINKS

- Search
- Internship
- Research Activities and Events

Welcome to Drona



Central Surface Analytical Facility (ESCA)

Industrial Research & Consultancy Centre

Information about each facility

GC-GC-TOF-MS Facility

- About the Facility
  - FAQs
  - Working Principle
  - Technical Specifications
  - Special Features
  - Applications
  - Publications using data from this facility
  - Minutes of User Committee meetings
  - Central Facility Workshop Presentation
- Submission of Samples
  - Instructions for sample preparation/submission

Facility Management Committee (FMC)

Prof. Suparna Mukherji (Convener) w.e.f. 31.12.2015	Centre for Environmental Science and Engineering
Prof. Prasenjit Ghosh	Chemistry
Prof. Sanjay Mahajani	Chemical Engineering
Prof. Suryendu Datta	
Dr. S. Vijayalakshmi	
Head CRNTS	

Location
Contact details

Co	
Name	
Location (Address)	
Phone Number	
Contact Person	
	gcgctofms@iitb.ac.in

Technical Staff

Accessibility of Central Facilities

- Register online as a user
  - Separate portals for IITB and external users
- Instructions for sample preparation
  - Allowed and disallowed types of samples
- Special precautions to be taken – dos and don’ts
  - Instructions to users
  - When and where to submit samples, etc.
- Reports of job status
  - Completed, pending, rejected, feedback awaited, etc.

Access to external users

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
INDUSTRIAL RESEARCH & CONSULTANCY CENTRE

Search

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- Archives of News & Events
- IRCC Webmail
- Internal Users
- IIT Bombay Homepage
- Other Links
- Old IRCC website

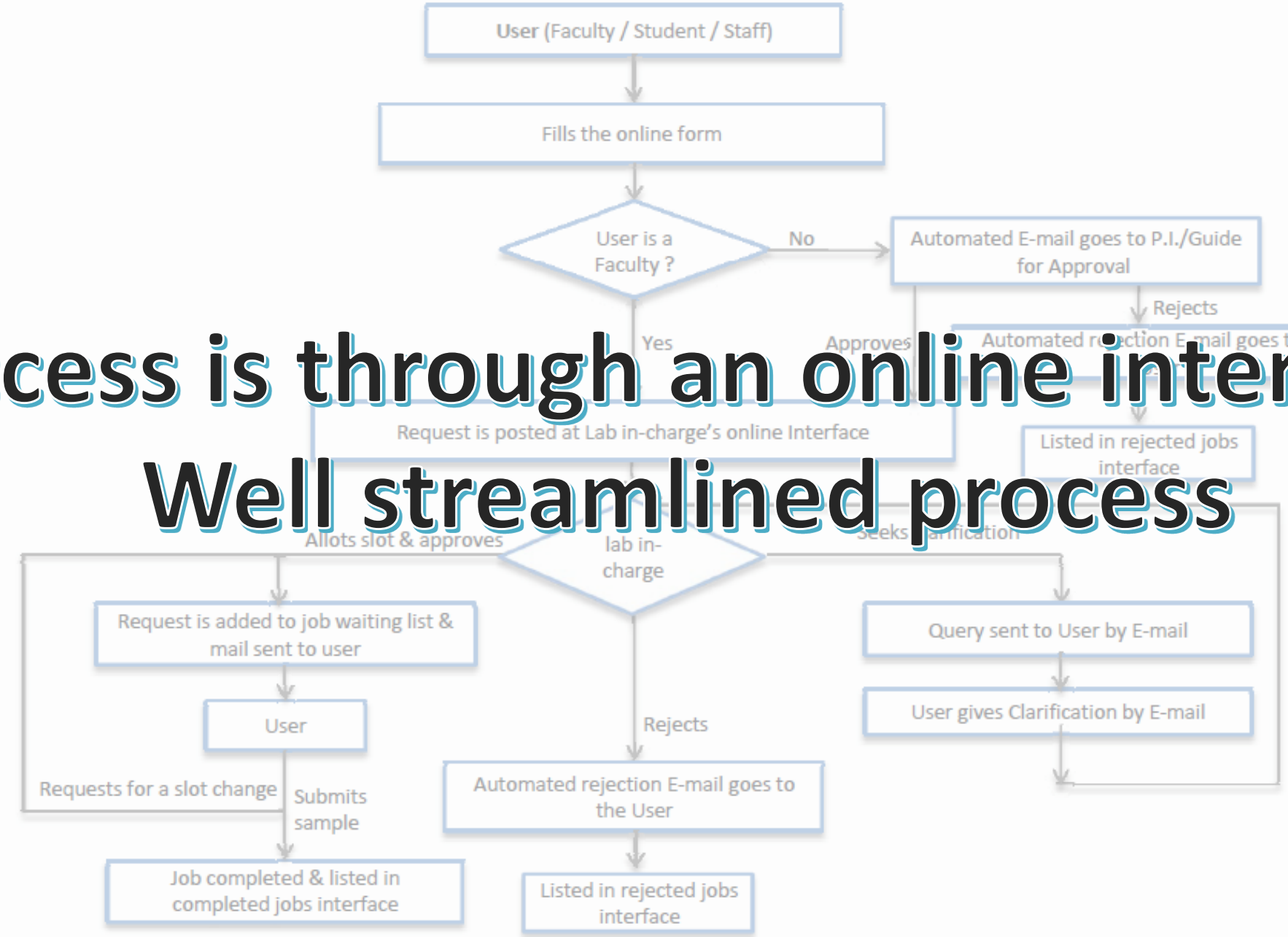
http://www.ircc.iitb.ac.in

2016 13:14:19

Registration to use Central Facility

- IIT Bombay Users
- External Users
  1. **Broadband Dielectric Spectrometer(BDS) Facility @ Metallurgical Engineering and Material Science Department**
     - Information for using Broadband Dielectric Spectrometer (BDS) Facility
     - Registration Form
  2. **CRYO FEG SEM Facility @ Chemical Engineering Department**
     - Information for using CRYO FEG SEM Facility
     - Registration Form
  3. **Central Surface Analytical Facility (ESCA)**
     - Information for using Central Surface Analytical Facility (ESCA)
     - Registration Form
  4. **FACS Facility**

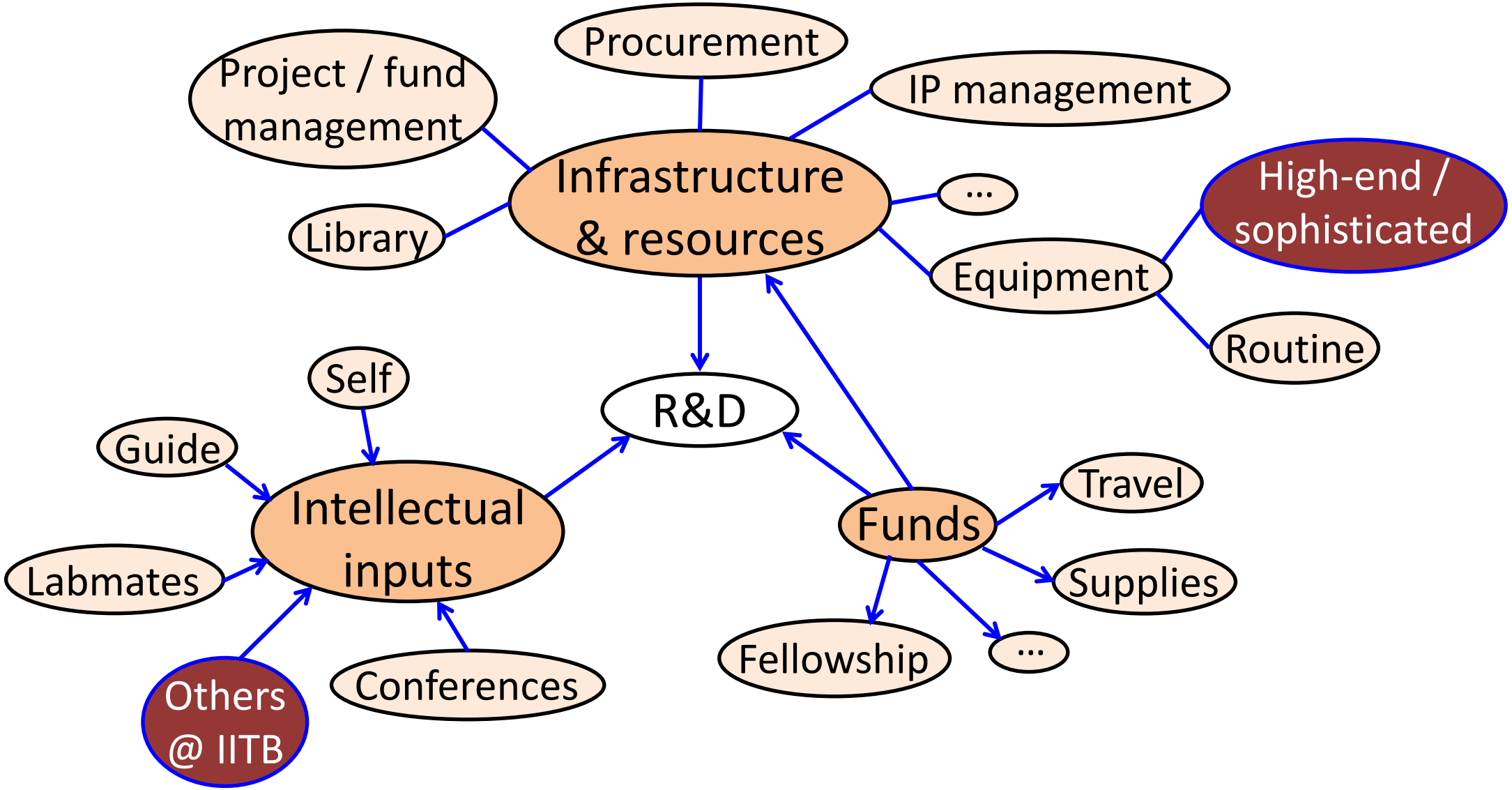
Central facilities usage: process flow



Access is through an online interface

Well streamlined process

Inputs and support systems for R&D



Size of the oval does not reflect the extent of contribution / importance
Few ovals are not applicable for paper-pen type of research

Role of FMC

Working principle

Technical specifications

Special features

Organize workshops

User training programs

Role of FMC

What this facility can do – applications

Sample preparation – tips and tricks

Data analysis and interpretation

Limitations

Thank You

Complaints, queries, etc.
facility@ircc.iitb.ac.in