GEOSPATIAL TECHNOLOGY - EDUCATIONAL PERPECTIVE

R. Vidhya, Institute of Remote Sensing , Anna University
03/12/25 for Geospatial World 2025

THE GREAT TRIGNOMETRICAL SURVEY OF INDIA

to carry out a survey across the Indian subcontinent with scientific precision
begun in 1802 by the British infantry officer William Lambton

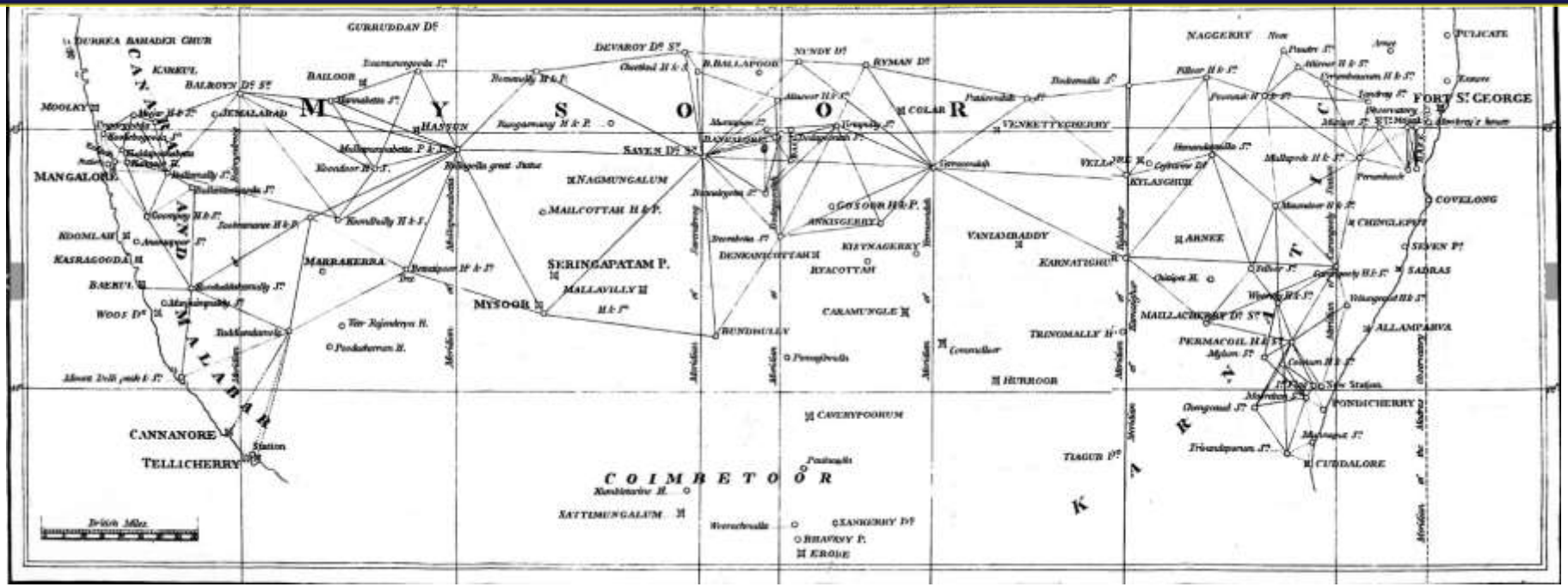
one of the first accurate measurements of a section of an arc of longitude, and for measurements of the geodesic anomaly, which led to the development of the theories of isostasy.

The Great Trigonometrical Survey of India started on

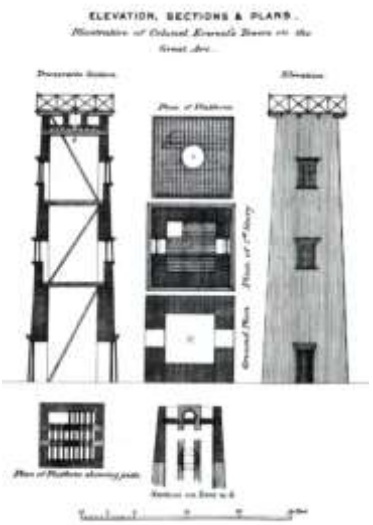
10 April 1802 with the measurement of a baseline near Madras
12.2 km baseline in plains with St. Thomas Mount at the north end and Perumbauk hill at the southern end.

It all began
223 year ago

THE GREAT TRIGNOMETRICAL SURVEY OF INDIA



The first triangulations across the Peninsula



COL. Everest's Towers

Survey party

Survey Towers

THE FIRST SURVEY SCHOOL OUTSIDE OF EUROPE

Survey School - 1794
the oldest engineering school established outside Europe in Madras

to produce trained personnel in surveying for British India, now premier **College of Engineering (CEG), Guindy**.

CORS – RCG-AU

SOI - BM - CEG

COLLEGE OF ENGINEERING , ANNA UNIVERSITY

8 FACULTY
34 DEPARTMENTS
35 UG PROGRAMS
50+ CoE s
90+ PG PROGRAMS
200+ Ph D s

	global	national
QS -	456	10
Times HE	1 (inrterdisciplinary)	1 (state Univ.)
NIRF		2 (state Public Univ)

MAJOR MILESTONES OF INSTITUTE OF REMOTE SENINSG

1982	1983	1985	1992	2004	2015	2025
PG IN REMOTE SENISNG	M.TECH IN REMOTE SENSING	FORMATION OF IRS	B. E GEOINFROMTICS	INTAKE 40	INTAKE 60	INTAKE 60
PG - 20			UG – 30 PG - 20	UG – 40 PG - 20	UG – 60 PG - 18	UG – 70 PG - 18

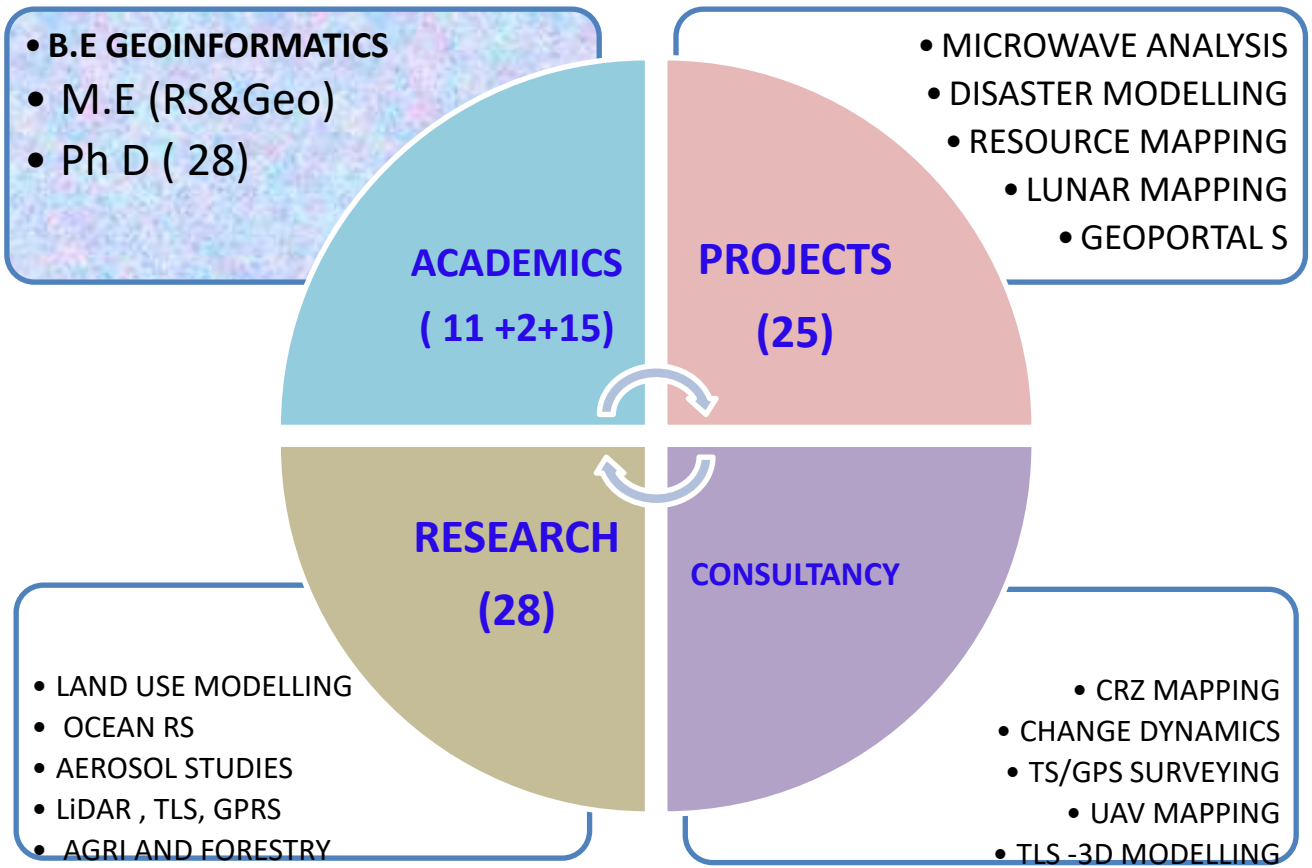
UG - B.E (GEOINFORMATICS)

PG - **M.TECH (REMOTE SENISNG)**
M.E (GEOMATICS)
M.E (REMOTE SENSING & GEOMATICS)

UNIQUE AND FIRST OF ITS KIND FULL TIME 4 YEAR ENGINEERING PROGRAM IN GEOSPATIAL TECHNOLOGY

STRUCTURE AND FUNCTIONS - IRS

UNIVERSITY CENTRE



STATE REMOTE SENSING CENTRE

B. E (GEOINFORMATICS) PROGRAM

UNIQUE & FIRST PROGRAM IN GEOSPATIAL TECHNOLOGY

GTZ FUNDED & GERMAN TRAINED

INTERDISCPLINARY NATURE

UN – GGIM ACADEMIC PARTNER

GLOBAL AND NATIONAL IMPORTANCE

PROGRAM COMPOSITION

GEODESY

- SURVEY,GNSS, TLS
- MAPPING, PHOTOGRAMMETRY, UAV

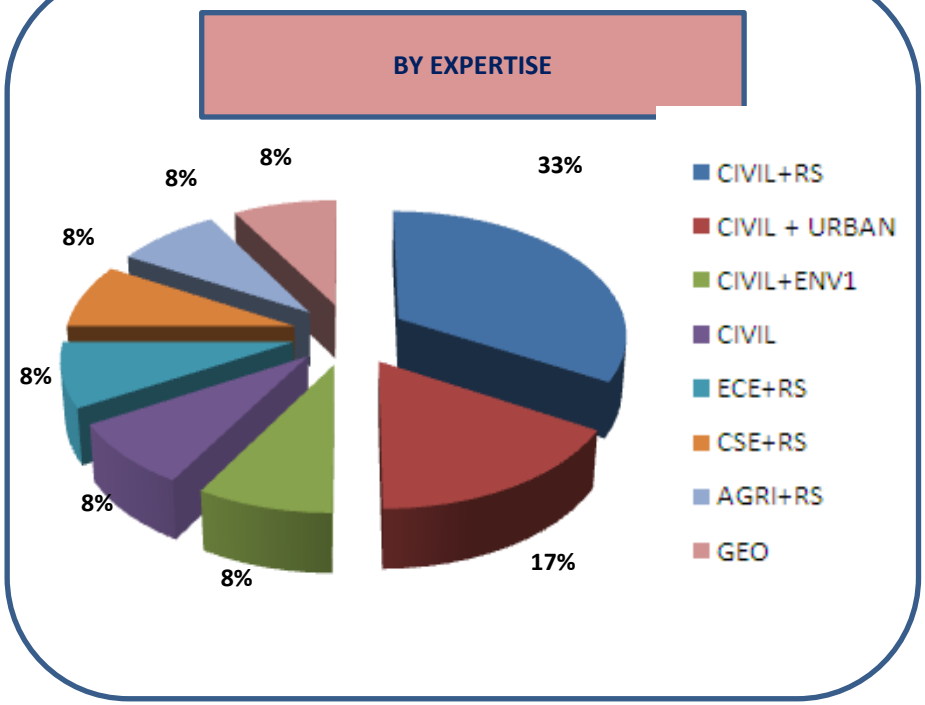
INFORMATICS

- DIP, HYPERSPECTRAL, MICROWAVE RS
- DSS, R, PYHTON, GEOSERVER, MATLAB

GEOSPATIAL

- REMOTE SENSING, MODELLING
- GIS ANALYSIS, SURFACE MODELLING

FACULTY COMPOSITION



MEDICAL COLLEGE MODEL

GEOINFORMATICS PROGRAM SALIENCE

UNIQUE & FIRST PROGRAM IN GEOSPATIAL TECHNOLOGY

GTZ FUNDED & GERMAN TRAINED

INTERDISCPLINARY NATURE

UN – GGIM ACADEMIC PARTNER

GLOBAL AND NATIONAL IMPORTANCE

PROGRAM COMPOSITION

GEODESY

- SURVEY,GNSS, TLS
- MAPPING, PHOTOGRAMMETRY, UAV

INFORMATICS

- DIP, HYPERSPECTRAL, MICROWAVE RS
- DSS, R, PYHTON, GEOSERVER, MATLAB

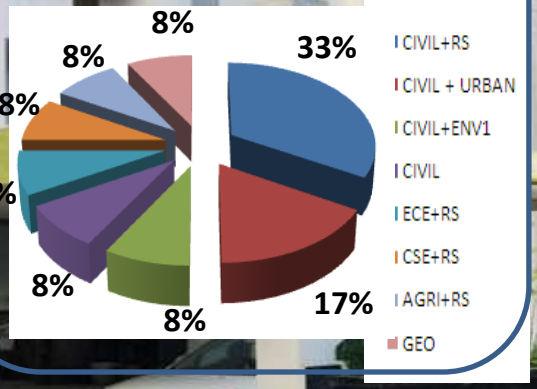
GEOSPATIAL

- REMOTE SENSING, MODELLING
- GIS ANALYSIS, SURFACE MODELLING

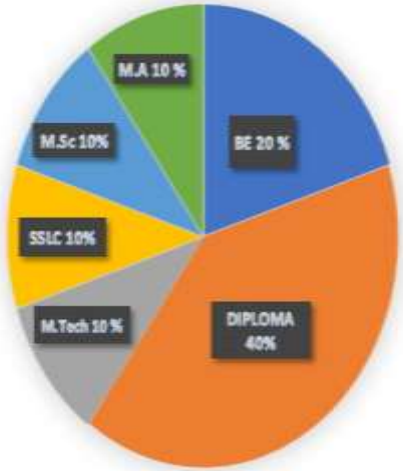
30% +30% + 40%

FACULTY COMPOSITION

BY EXPERTISE



TECHNICAL SUPPORTING STAFF



CRITERION 5(5.1) FACULTY AND SUPPORTING STAFF INFORMATION

OVERSEAS PROFESSORS

Dr. Zaffar Sadiq Mohammed-Ghouse

Honorary Professor
Infrastructure Engineering
University of Melbourne

Spatial data infrastructure and data quality, groundwater management, water resources and rural administration, asset management, field data capture, public health management, disaster management.

Dr. Magesh Chandramouli

Associate Professor
Computer Graphics Technology,
Purdue University

3D modeling, animation, and virtual reality

Dr. S. Sowmya

Associate Professor
Engineering Design Technology,
Utah Valley University

Remote Sensing, Geospatial Technology

INSTITUTE OF REMOTE SENSING, ANNA UNIVERSITY

1 Minute Briefing

1794 — **Survey School**

1982 — **B.E. GeoInformatics German Govt. (GTZ)**

1993 — **CRZ Authorization**

1999 — **TN –GIS Repository**

2003 — **CSTAR**

2005 — **Geospatial Leadership Award**

2014 — **Trimble Technology Lab**

2024 — **Best Curriculum Award**

2025

INSTITUTE CREDENTIALS

FACULTY

12 (6+1+4+1) & 3 (OP)

GENDER EQUITY

50% MALE 50% FEMALE

LAB SUPPORT

DEGREE – 3 DIPLOMA – 4

PROJECTS

WORTH > 35 CRORES

CONSULTANCIES

WORTH MORE THAN 120 CRORES

TRAINING PROGRAMS

130+ 68 (AY)

PUBLICATIONS

WoS: 124; Scopus: 144
240+ CONFERENCE; student: 18

BOOKS & CHAPTERS

2

CITATIONS

535

Ph D & M.S

COMPLETED 65 , ONGOING -28

PATENTS

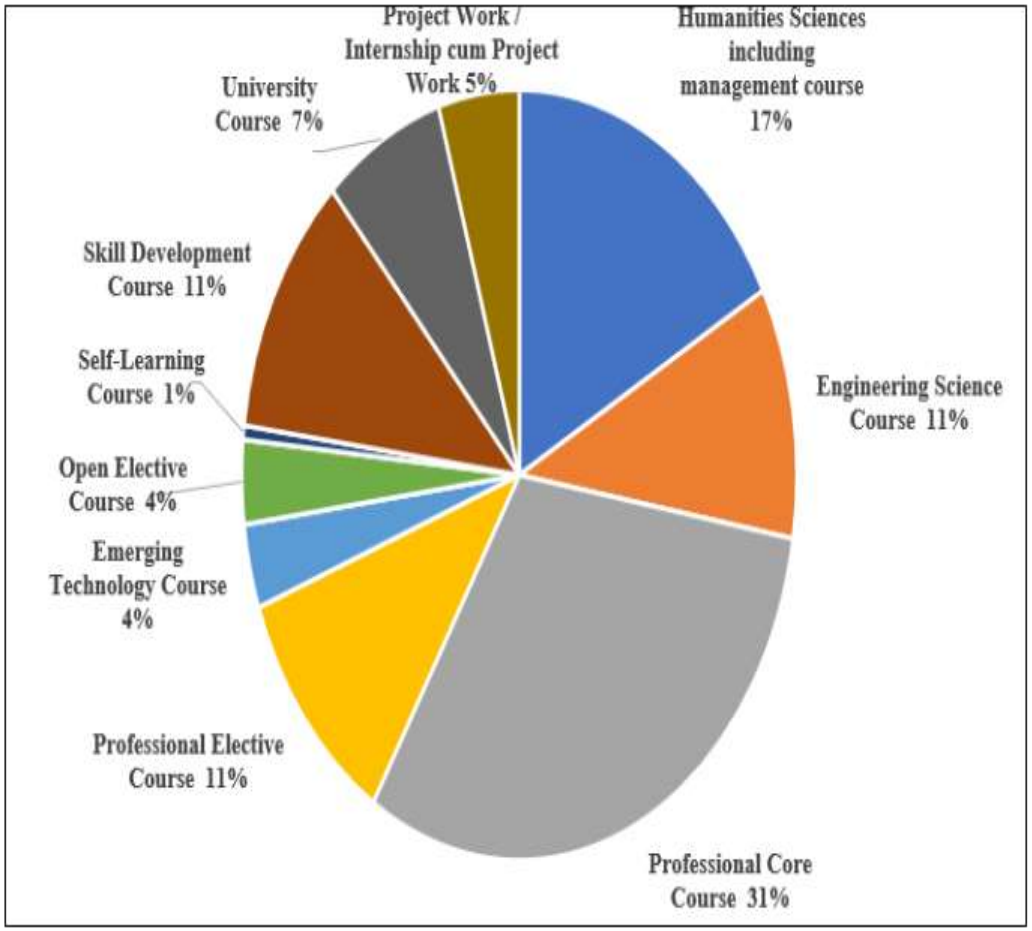
5 GRANTED 3 PUBLISHED

NO OF LABS

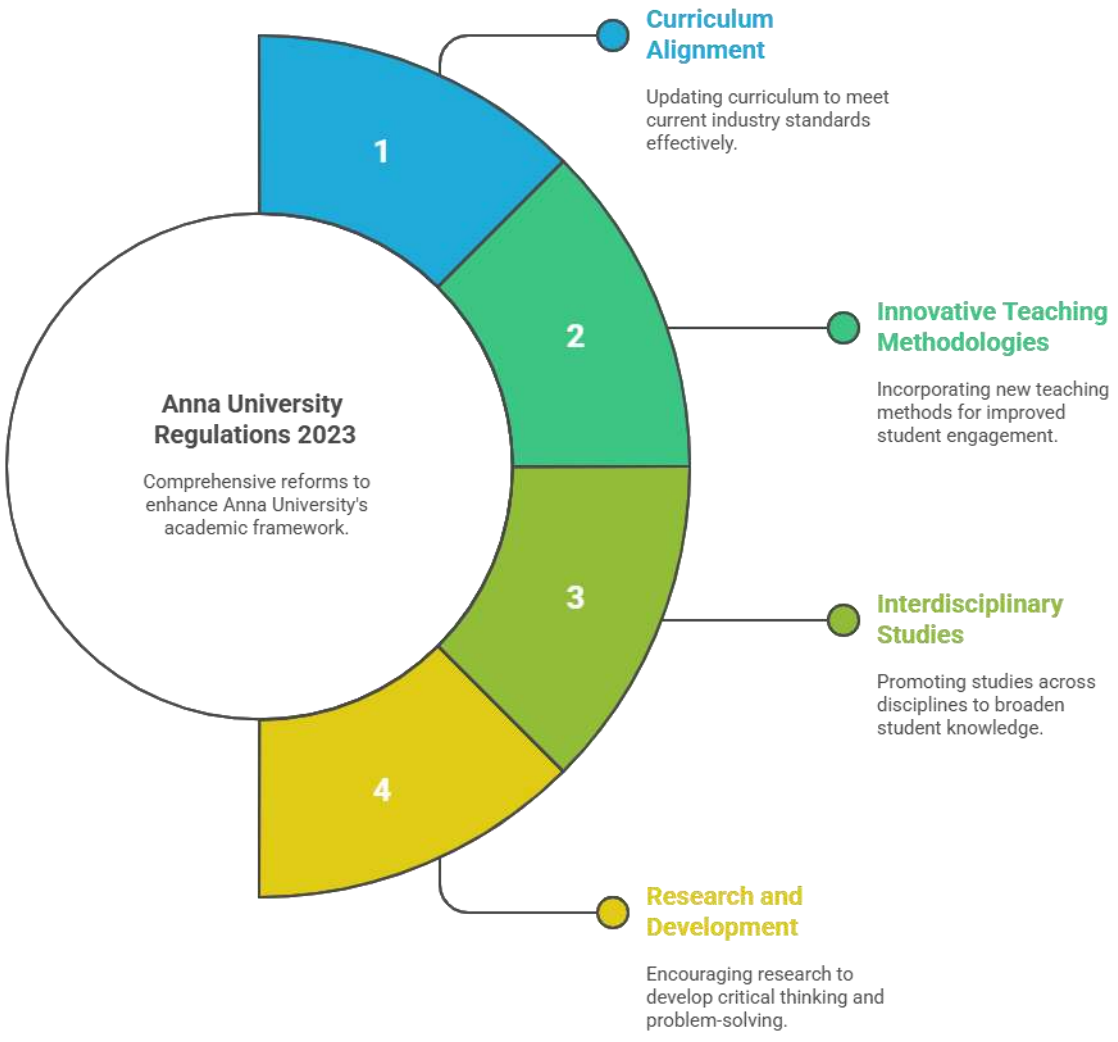
12

CONTINUOUS NEED BASED CURRICULUM DEVELOPMENT

R2023-curriculum content (% of Total number of credits of the program



REGULATION 2023 - HIGH LIGHTS



REGULATION 2023 - HIGH LIGHTS

Course Types

REGULATION 2023 - HIGH LIGHTS

Degree Options

Minor Degree Award

Successful completion reflected on degree. Credits counted towards CGPA.

Minor Degree

Gain expertise outside major, requires 18 credits. Eligibility similar to Honours degree.

Elective Courses

Additional electives from Honours vertical. Honours awarded if final CGPA is high.

Honours Degree

Enables advanced study in major, requires 18 credits. Options include capstone project or electives.

Capstone Project

Multidisciplinary team project focusing on real-time problem solving. Runs across multiple semesters.

REGULATION 2023 - HIGH LIGHTS

Honours and Minor Degree Options

Regular Degree

Standard engineering curriculum

Additional Credits

18 extra credits from V semester

Honours or Minor

Choose advanced study or expertise

Capstone or Electives

Honours: Design project or courses

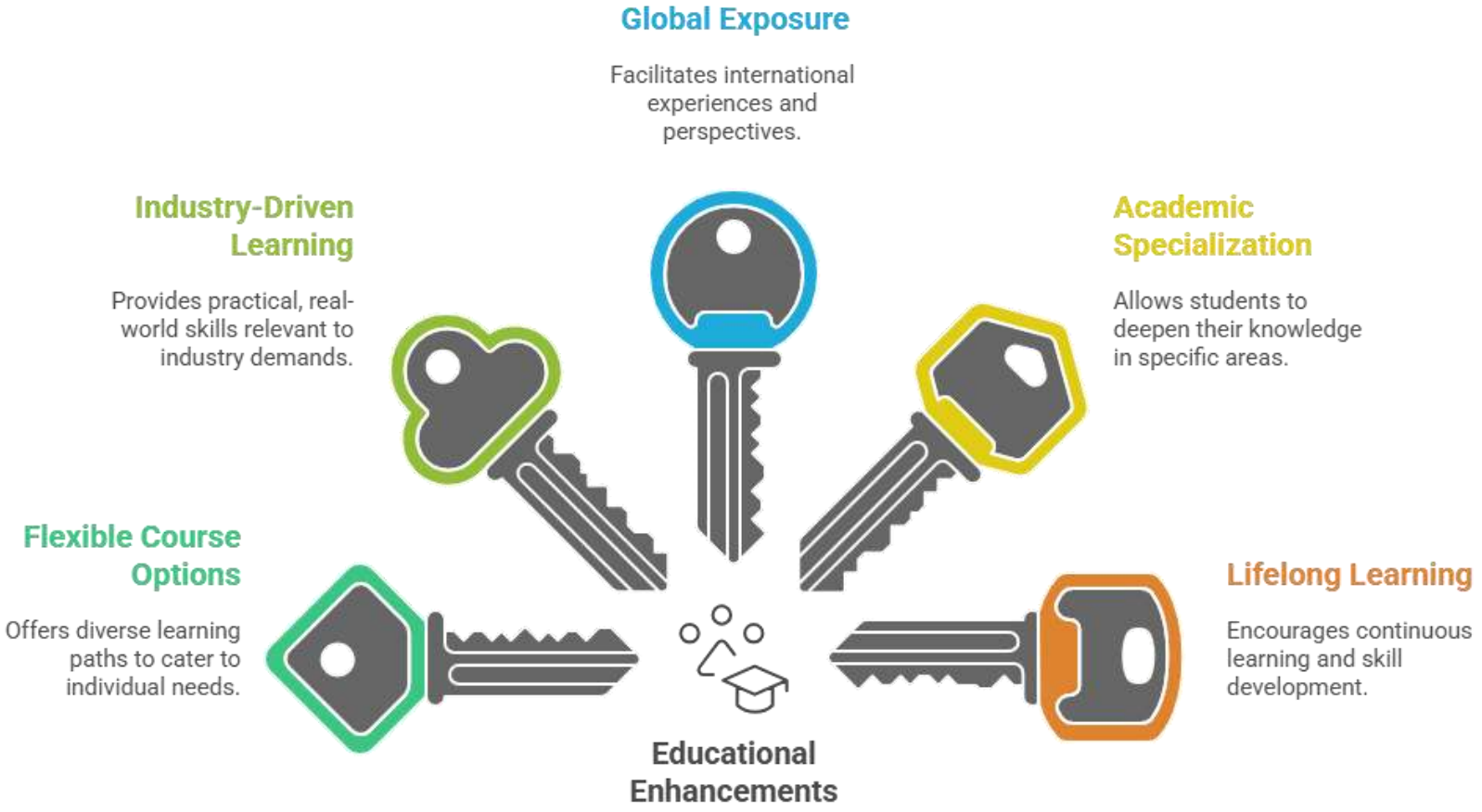
Minor Courses

Minor: Selected from another department

Enhanced Degree

Honours or Minor specialization

Summary of Key Enhancements



REGULATION 2023 - HIGH LIGHTS

Earn While you Learn - Paid Internships

Verticals Flexibility in learning process

Skill Development Courses – Industry Projects

Minor degree Supplementary Skills

Capstone projects

Innovations in Teaching Learning Process in 2023 curriculum

01 02 03 04 05 06

Work Integrated Projects - Engagement in National Level Projects – State Remote Sensing Centre

MULTI PEDEGOGY FOR ACADEMIC DISBURSAL

Alumni Interaction with IRS

Group Paper Presentation by Students to improve Pos & PSOs

Village Information System

Village Information System

LABORATORIES AND TECHNICAL MANPOWER

Survey lab

Electronic survey lab

GIS, MATLAB and DIP lab

Student project lab

Digital photogrammetry lab

Remote sensing lab

DISTINGUISHED ALUMNI

Dr. Latha Malar
Remote Sensing Scientist,
NASA JPL, USA

Srinath Sridhar
Assistant Professor
Computer Science
Brown University

Dr. Suresh Vannan
Project Manager
NASA Jet Propulsion Laboratory

Dr. Magesh Chandramouli
Professor of Computer Graphics
Technology, Purdue University

Dr. Sowmya Selvarajan
Associate Professor
Surveying & Mapping,
Utah Valley University

Dr. Eswar Rajasekaran
Assitant Professor, IIT
Bombay

Dr.Aparajithan Sampath
Chief Systems Engineer
USGS EROS Data Center

Aishwarya Chandrasekaran
Lecturer, Utah State University

Johnny T.S
Assistant Professor
Dire Dawa University,Ethiopia

Prof.Balaji Devaraju
Associate Professor, IIT Kanpur

Hari Prasath Palani
Research Scientist,
The Roux Institute,
Portland USA
Founder & CEO, UNAR Labs

Prof. Ramiya A.M.
Associate Professor,
IIST TRIVANDRUM

Prof. Dr. Usha Natesan,
Director, NITTTR,
Advisor Committee AICTE

Dr. Shruthi Srinivasan
Geospatial Analyst, Texas Forest Service
Visiting Faculty,
Texas A&M University

Arulraj
Group Head,
NRSC, ISRO

ACADEMIC &RESEARCH

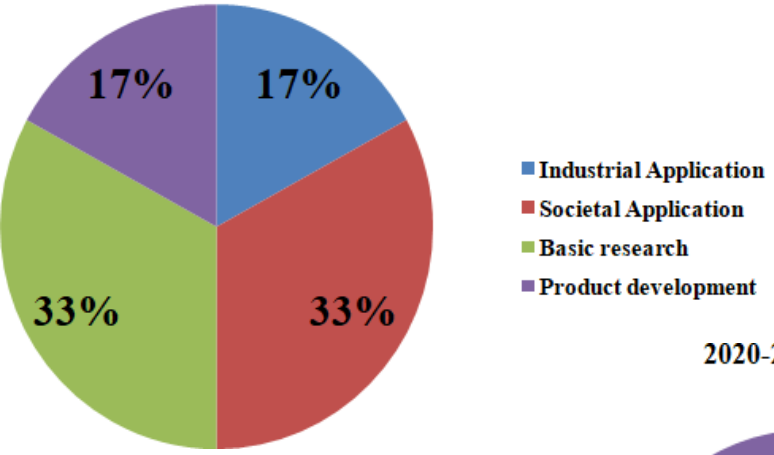
SOCIETY AND ADMINISTRATION

INDUSTRY AND START UP

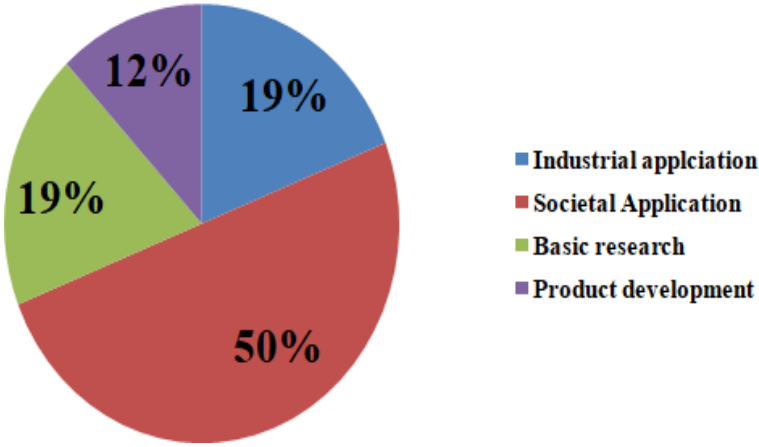
STUDENT PROJECT WORKS

1. Industrial Applicatio
2. Societal Application
3. Basic Research
Product Develop

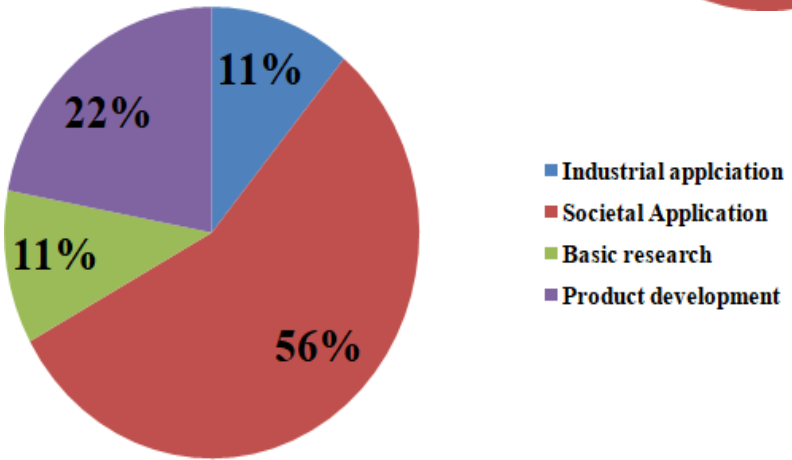
2019-2023 batch-Project II



2020-2024 batch-Project I



2020-2024 batch-Project II



NOTABLE RECOGNITIONS

STATE REMOTE SENSING APPLICATION CENTRE

UNIVERSITY INTEGRATED REMOTE SENSING SERVICES

PART OF PREMIER STATE FUNDED UNIVERSITY

FIRST PG (1982) AND UG (1992) PROGRAMS IN REMOTE SENSING AND GEOINFORMATICS

CENTRE FOR SURVEY TRAINING AND RESEARCH

STATE GIS REPOSITARY

PREFERRED TECHNICAL PARTNER FOR THE STATE – RS

AUTHORISED INSTITUTE FOR CRZ MAPPING

REGIONAL GEODESY CENTRE UNDER NCG NETWORK

RECEIPIENT OF AWARDS IN GEOSPATIAL TECHNOLGY

MEMBER OF UN-GGIM ACADEMIC NETWORK

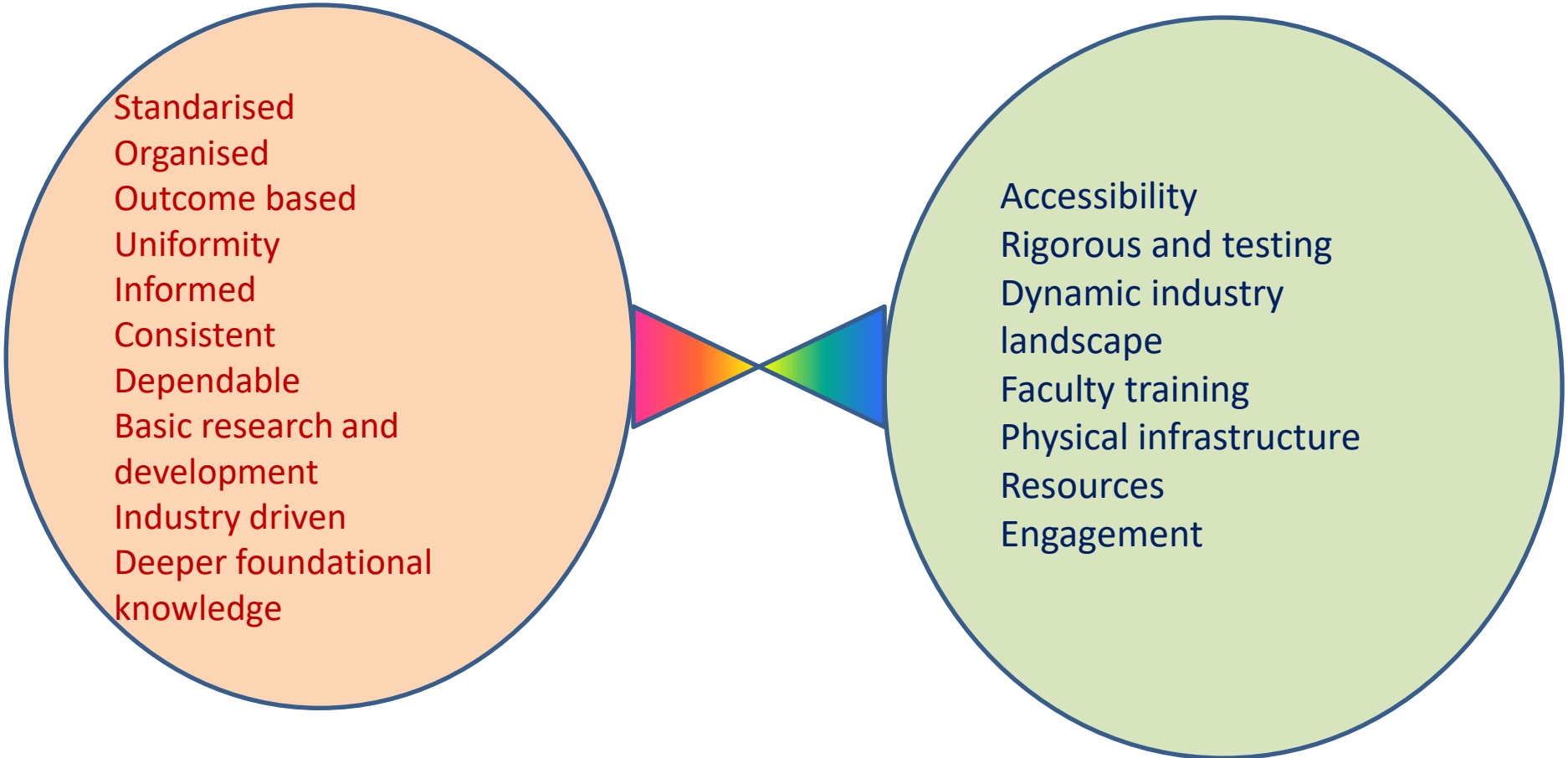
Research areas

- Optical, microwave and thermal remote sensing analysis
- urban heat island and urban green ing
- microwave and thermal remote sensing for vegetation studies, agriculture
- Ocean and costal studies with microwave and thermal remote sensing
- GEOPORTAL DEVELOPMENT AND MOBILE MAPPING
- URBAN FLOOD , MITIGATION , DISASTER EARLY WARNING SYSTEMS
- COASTAL DYNAMICS, SHORELINE ANALYSIS, SEAWATER INTRUSION
- Land suitability analysis for solar, wind energy parks, rooftop set up, etc.
- UAV AND LiDAR BASED 3D MODELLING, ASSET DOCUMENTATION AND INFRA HEALTH ANALYSIS
- LOCATION BASED SERVICES , GNSS APPLICATIONS
- GEO-ENABLED SECUIRITY AND SURVEILANCE SOLTUIONS
- PLANETARY REMOTE SENSING; HYPERSPECTRAL REMOTE SENSING

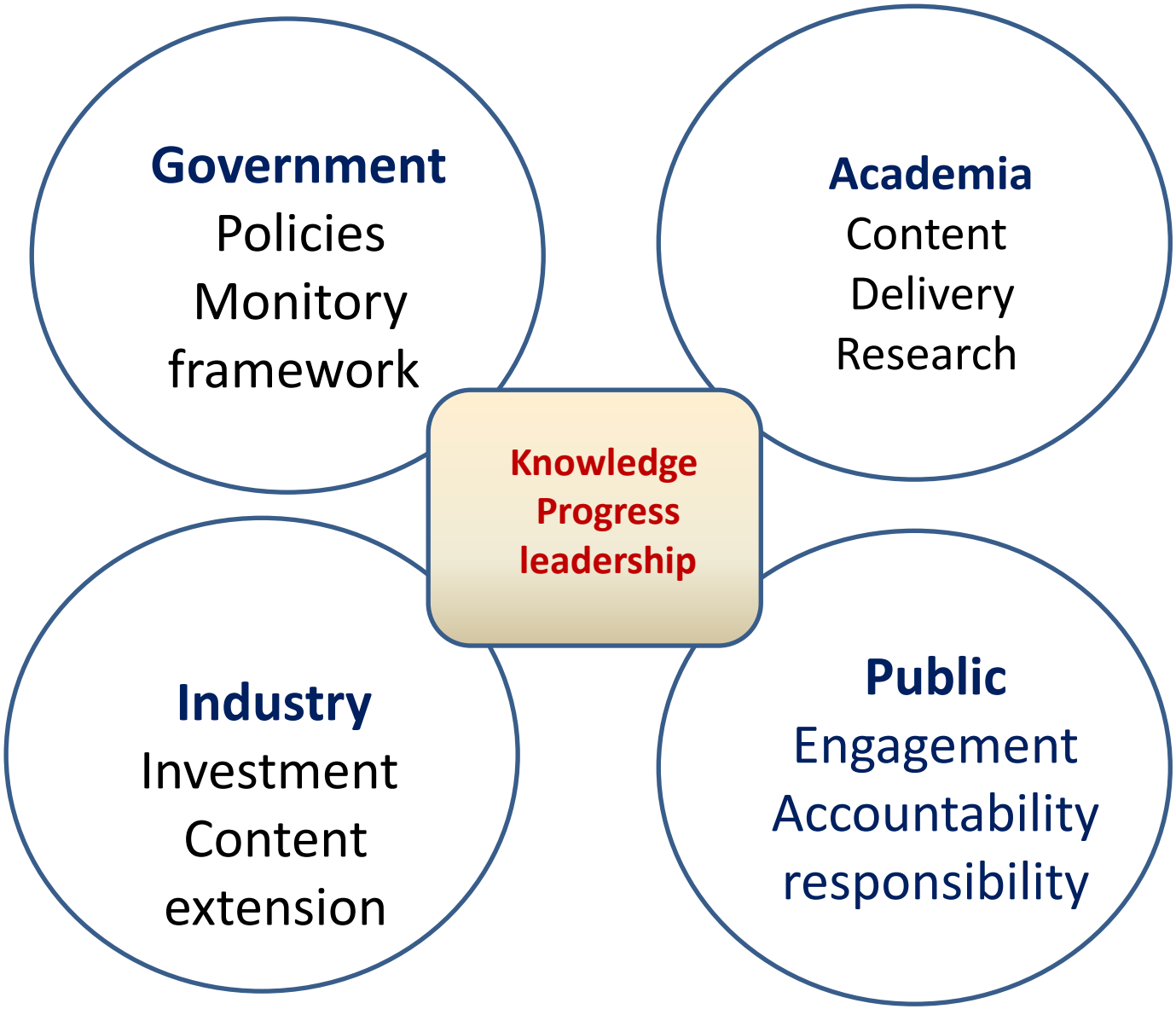
CURRICULUM BASED KNOWLEDGE SHARING

Broad **frame work** for concerned goal in a particular **domain** with specific **learning outcomes** with defined subject **content**
Has intended and strategic pedagody with effective and informed **evaluation methods**

Transparency and inclusivity of all stake holders wit societal progress in focus



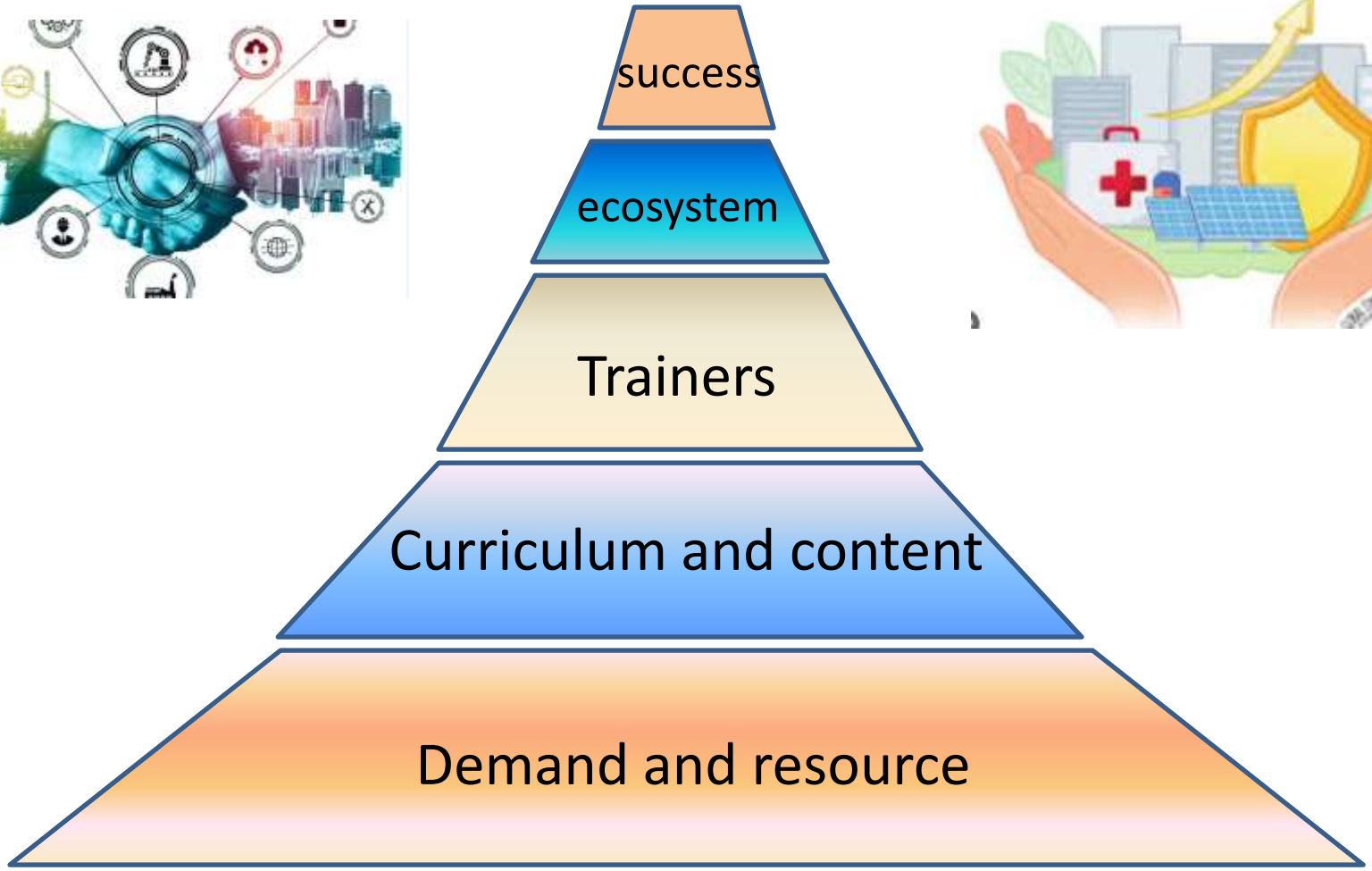
Technical knowhow and progress



KNOWLEDGE PYRAMID

growth

development

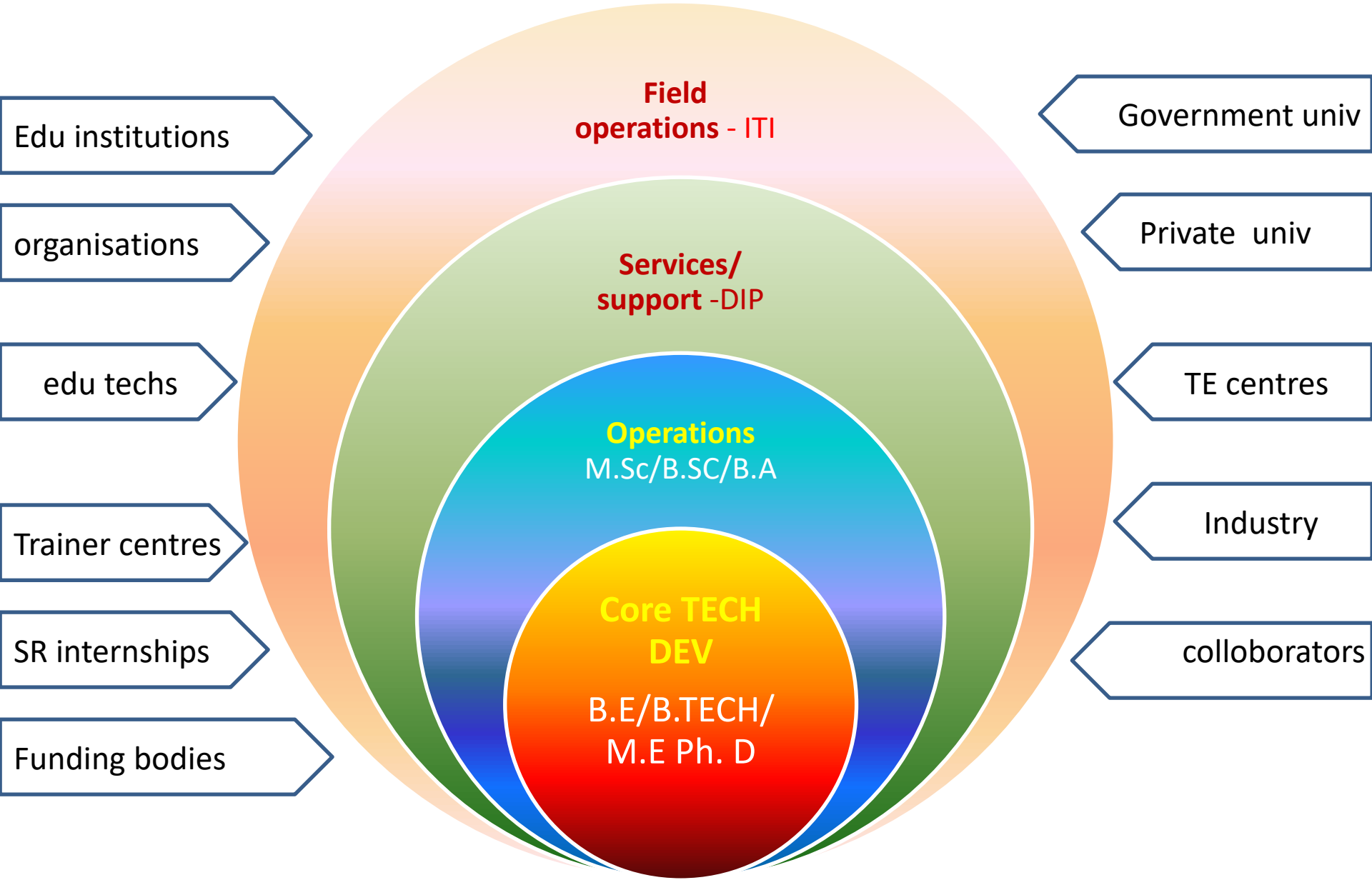


FORMS OF KNOWLEDGE TRANSFER

- IN CAMPUS PROGRAMS
- DISTANCE PROGRAMS
- TRANING SCHOOLS
- CERTIFCATE PROGRAMS
- LICENTIATE PROGRAMS
- SUMMER SCHOOLS
- SUMMER SCHOOLS
- FACULTY DEVELOPMENT PROGRAMS

- HANDS ON TRAINING
- HACKATHANS/ MAPATHANS
- INTERNSHIPS
- ON SITE TRAINING
- OUTREACH AND EXTENSION
- OUTREACH AND EXTENSION

Educational pathways



PLAN OF ACTION / FUTURE ROADMAP FOR EDUCATIONAL PATHWAY

- Curriculum based formal education frame work
- Interdisciplinary approach fo knowledge transfer
- Training of Trainers network programs
- Pyramidal Geospatial programs (school, ITI, Diploma, HE & STEM
- Geospatial verticals (Minors / honors/ kapstone projects)
- Standard framework for online education and certificate programs
- Embedded Industry oriented & skill development courses
- Technology enablement and training of trainers – industry
- Industry readiness focus and competency development ecosystem
- Socially responsible contributions by industries through hand holding
- Appropriate hybridization of content delivery

www.itnthub.tn.gov.in

https://www.annauniv.edu/IRS/#home


THANK YOU