ICG-2 Working Group C

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CSSTEAP

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Centre for Space Science and Technology Education in Asia and the Pacific

- Background
- Present status of Satcom course
- Plan for Short course in GNSS and LBS applications

GENESIS OF CSSTEAP

UNISPACE 82

That the UN programme on Space applications focus its attention, inter-alia on the development of indigenous capability at the local level.

UN GA 1990

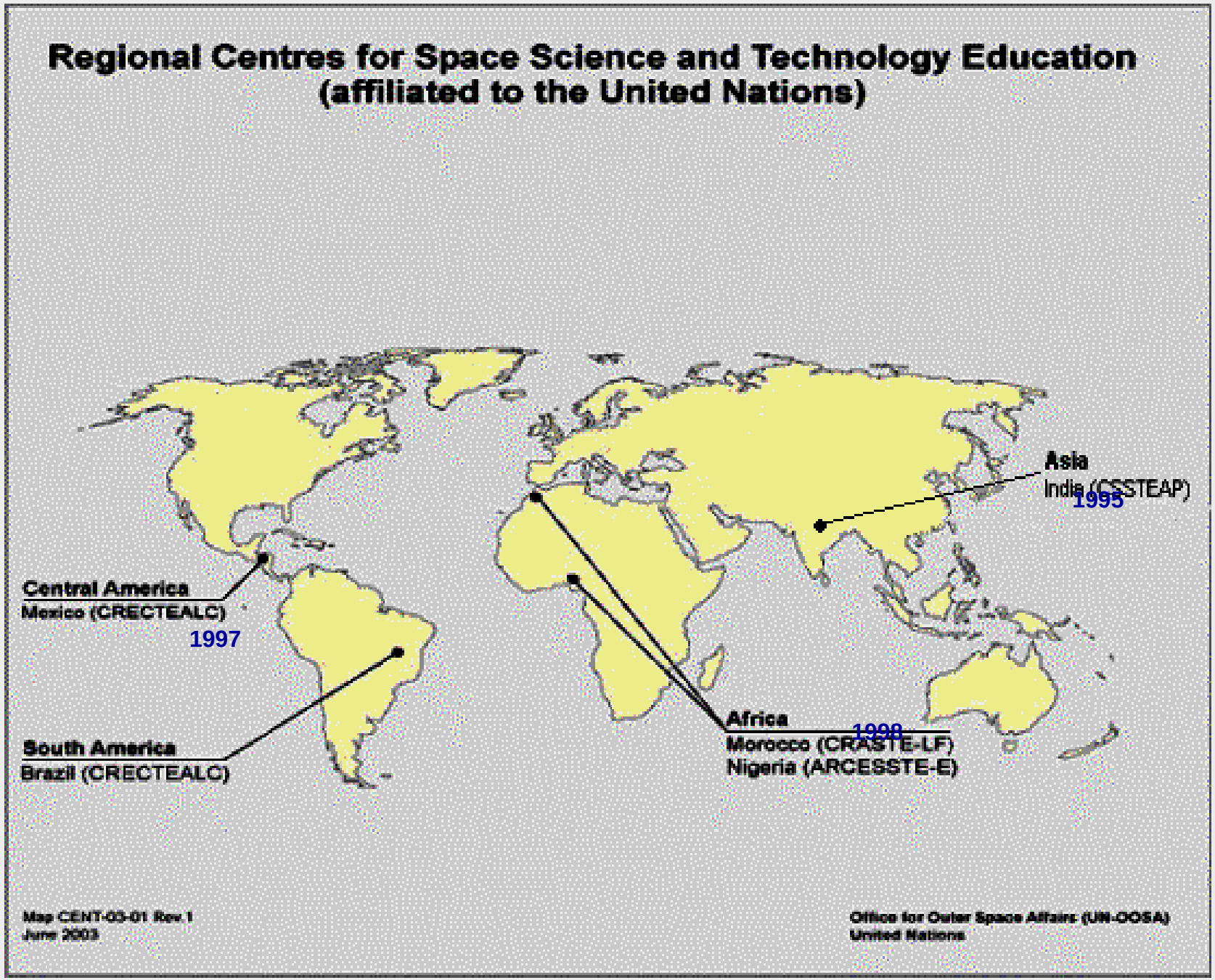
Resolution – "Establish Regional Centres for Space Science & Technology Education in existing National/Regional educational institutions in the developing countries"

UN EVALUATION MISSION- 1994

The Centre for Asia and the pacific and the subsequent statement on the selection of India as Host country for the Centre

CENTRE-1995

CENTRE ESTABLISHED AT DEHRADUN, INDIA


Regional Centres for Space Science and Technology Education
(affiliated to the United Nations)
Asia
India (CSSTEAP)
1995
Central America
Mexico (CRECTEALC)
1997
South America
Brazil (CRECTEALC)
Africa
1998
Morocco (CRASTE-LF)
Nigeria (ARCESSTE-E)
Map CENT-03-01 Rev.1
June 2003
Office for Outer Space Affairs (UN-OOSA)
United Nations

GOVERNING BOARD

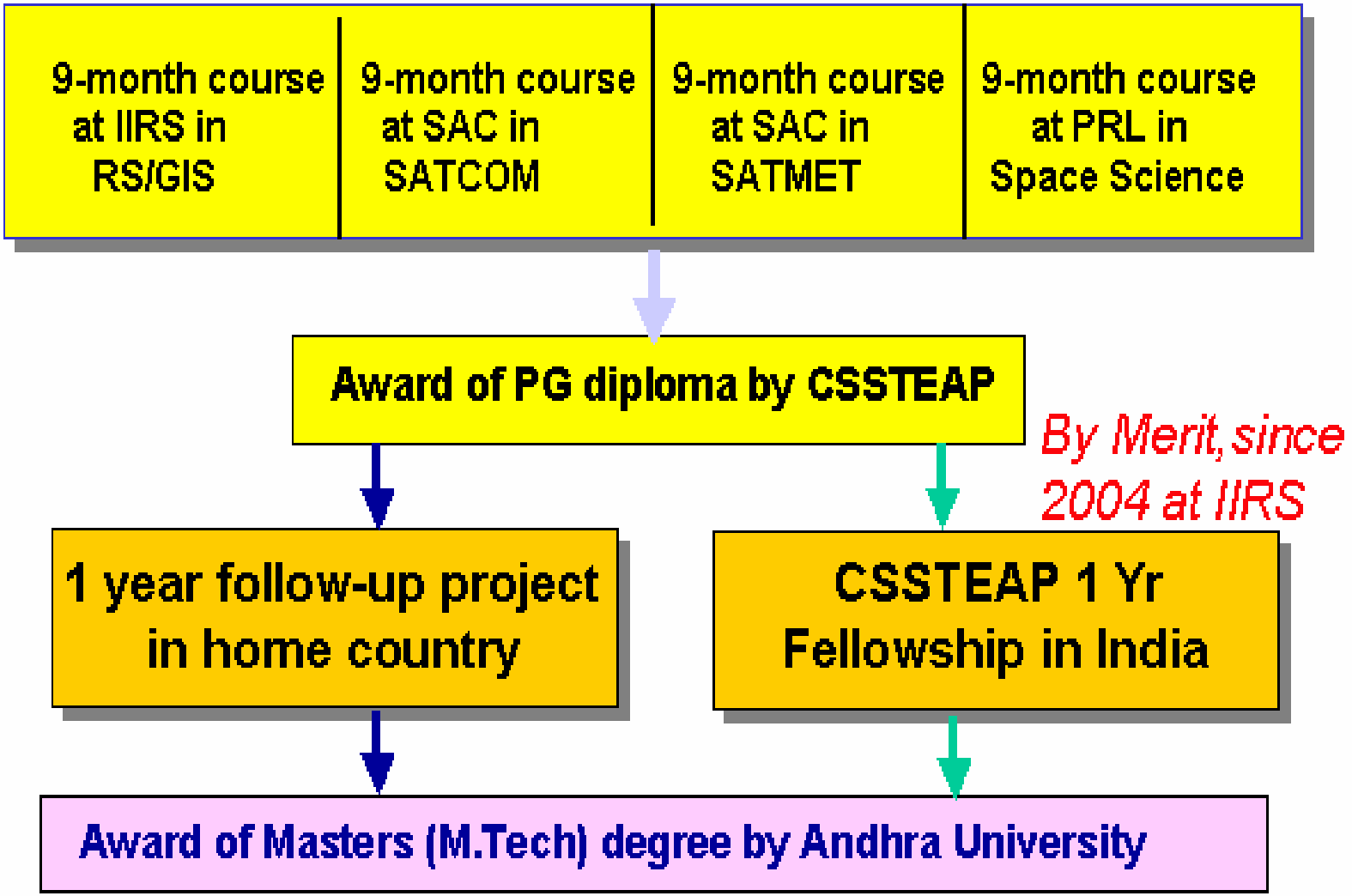
- **Governing Board is the principal policy making organ.**
- **At present, 15 countries in the region are represented in the Governing Board & two observers.**
- **The Executive functions are exercised by the Director of the centre.**
- **Meets once a year &Chaired by chairman, GB.**

DPR Korea, India, Indonesia, Kazakhstan, Kyrghyzstan, Malaysia, Mongolia, Myanmar, Nauru, Nepal, Philippines, Republic of Korea, Sri Lanka, Thailand, Uzbekistan, United Nations, The Netherlands

ADVISORY COMMITTEE

- **Technical arm of GB**
- **Composed of National & International subject experts**
- **Meets once a year and chaired by UN-OOSA**
- **Reviews all technical aspects**
  - ***curriculum***
  - ***technical facilities***
  - ***performance***
  - ***students affairs***
- **Reports to GB**

EDUCATIONAL PROGRAMMES



The Centre has so far conducted **TWENTY SIX** PG courses

11 courses in RS & GIS

5 courses in SATCOM

5 courses in SATMET

5 courses in SPACE SCIENCE

- The Centre conducted 18 short courses/Workshops in the last 10 yr

These programmes have benefited 734 participants from 30 countries of AP region (444 from PG courses & 290 from short courses)

This includes 26 participants from 16 countries from outside AP region in different courses)

Year	RS & GIS	SATCOM	SATMET	SPACE SC.
1996 - 97	25 Students 14 Countries			
1997 - 98	23 Students 14 Countries	13 Students 09 Countries		
1998 - 99	21 Students 11 Countries		17 Students 10 Countries	10 Students 07 Countries
1999 - 00	17 Students 11 Countries	18 Students 08 Countries		
2000 - 01	19 Students 13 Countries		21 Students 13 Countries	09 Students 05 Countries
2001 - 02	20 Students 13 Countries	14 Students 08 Countries		
2002 - 03	23 Students 13 Countries		19 Students 13 Countries	11 Students 03 Countries
2003 - 04	21 Students 16 Countries	15 Students 07 Countries		
2004 - 05	20 Students 11 Countries		15 Students 10 Countries	09 Students 05 Countries
2005 - 06	19 Students 13 Countries	12 Students 06 Countries		
2006 - 07	22 Students 14 Countries		18 Students 11 Countries	13 Students 07 Countries

Afghanistan
Azerbaijan
Bangladesh
Bhutan
Cambodia
China
DPR Korea
Fiji
India
Indonesia
Iran
Japan
Korea
Kazakhstan
Kyrgyzstan
Lao PDR
Malaysia
Maldives
Mongolia
Myanmar
Nepal
Pakistan
Papua N.G.
Philippines
Sri Lanka
Thailand
Tajikistan
Taiwan
Uzbekistan
Vietnam

Present courses

At present two courses are being conducted

- Nine months PG course on

  Satellite communications

  at SAC, Ahmedabad, India
- Six weeks training course on

  Applications of Space Technology for Disaster Management support with emphasis on Flood risk management

  at Dehradun, India

SATCOM Courses conducted till now

1. **Nine-month Post Graduate Diploma Courses**
   - **Satcom - 1 (January - September 1997)**
   - **Satcom - 2 (July 1999 – March 2000)**
   - **Satcom - 3 (August 2001 – April 2002)**
   - **Satcom - 4 (August 2003 – April 2004)**
   - **Satcom - 5 (August 2005 – April 2006)**
2. **Workshops / short courses**
   - **Distance education and training via satellite (1997)**
   - **Application of Satellite Communication for development (2000)**
   - **Digital Signal Processing (2001)**
   - **Application of space science and technology for social scientists (2001)**

No. of Participants in previous courses

SATCOM-1 (1997)	-	13
SATCOM-2 (1999-00)	-	18
SATCOM-3 (2001-02)	-	14
SATCOM-4 (2003-04)	-	15
SATCOM-5 (2005-06)	-	12

Total	-	72

from 13 countries

	Diploma (deg)
Bangladesh	7
India	12(6)
Indonesia	5
Iran	3 (2)
Korea DPR	6
Korea Rep.	1 (1)
Kyrgyz Rep.	3
Mongolia	11(1)
Nepal	14(2)
Philippines	1
Sri Lanka	4 (2)
Uzbekistan	4 (1)
Vietnam	1

SATCOM-6

20 participants from 10 countries

Azerbaijan	1
Bangladesh	1
Bhutan	1 (Sponsored by UN-ESCAP)
India	2
Indonesia	1 (Sponsored By MOFGOI)
Kyrgyz Republic	3 (1 sponsored by UN-ESCAP)
Mongolia	5
Myanmar	1
Nepal	4 (1 Sponsored by UN-ESCAP)
Uzbekistan	1

SATCOM-6

3 Semester Course in 9 months

- Theory
- Practical
- Tutorial
- Educational Tours
- Seminars
- Pilot Project
- Examination

Satellite Navigation in Satcom PG Course

- Contents
  - Introduction to Satellite Navigation System
  - GPS and GLONASS
  - GPS user segment and applications
  - Wide Area Augmentation System
  - Time Synchronization Technique
- 15 hours of lecture

Plan for Short Course

- Satellite Navigation and its applications in location based services
- Duration : 6 weeks in Mid. 2008
- Need
  - No. of Navigation Satellites will exceed 100 in next five years
  - Worldwide investment in GNSS is very high
  - Location based service is expected to be useful to Govt., Enterprise, common people, security etc.
  - Trained manpower needed in manufacturing, sales, service and value addition

Proposed content

- Introduction to satellite based navigation
- Coordinate system and orbits
- Principles of ranging and range rate
- Principle of position fixing and time synchronisation, Introduction to CDMA techniques, Technique of Pseudorange and Carrier Phase measurements
- Principle of GPS, GLONASS and Galileo and Regional navigations satellites

Proposed content

- Position Accuracy (Sources of errors, Differential GPS – RTK positioning, Wide area Differential GPS, Applications in Land Survey and aircraft navigation)
- Receivers (Architecture, Types, manufacturers)
- Navigation services (basic services and value added services)
- Location Based Services (Integration of position and time with other information, Existing LBS services, Advantage of GNSS LBS over Cellular LBS, Designing a location based service, Revenue model)

Course format, venue & schedule

- Course Format
  - Classroom lecture
  - Practical
  - Laboratory visits
  - Evaluation
- Location & Time
  - SAC Ahmedabad, India
  - Six weeks in June-July 2008

Participants

- Maximum number 20
- Preferred from Asia and the Pacific countries
- Self Financing (International Funding Agencies will be requested to fund some candidates)

Faculty

From

- Academic Institutions
- Experts from Space Agencies
- Industry

WHO SHOULD ATTEND

The course is targeted to middle level managers of

- Receiver Manufacturers
- Location Based Service Providers
- Academics for regional capacity building

WHAT THEY WILL LEARN

The participants will be exposed to, relevant technologies, so as to get an in depth understanding of how these can be used in an operational scenario.

Request to ICG-2 WG-C members

- Comment on course content
- Suggest Faculty
- Suggest Funding Agency for participants travel etc.
- Suggest names of participating agencies / institutions