Fundação de Amparo à Pesquisa no Estado de São Paulo

TIDIA TESTBED PROJECT
Call for participation

TIDIA: Tecnologia da Informação no Desenvolvimento da Internet Avançada

IT in the Development of the Advanced Internet

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Fapesp TIDIA Committee:
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TIDIA program: General Characteristics

Generate Human resources in quantity and quality

Generate knowledge, competence, expertise

Promote small business

Attract large industries for partnerships

Promote multidisciplinary research

The INTERNET as subject of research

God put me on Earth
to accomplish a
certain number of things.
Right now I am so far behind,
I will never die.

TIDIA PROJECTS: CHARACTERISTICS

Cooperative Projects

Incentive Industry Partnership

Define R&D foci with inputs from
Research Community + Industry + Government

Welcome new groups willing to learn

Measurable deliverables

Scalability – fast growth

Three Projects (initially):

1- Advanced Communications (TESTBED)

2- APPLICATIONS of the future Internet (E-learning)

3- Virtual INCUBATOR of Internet content

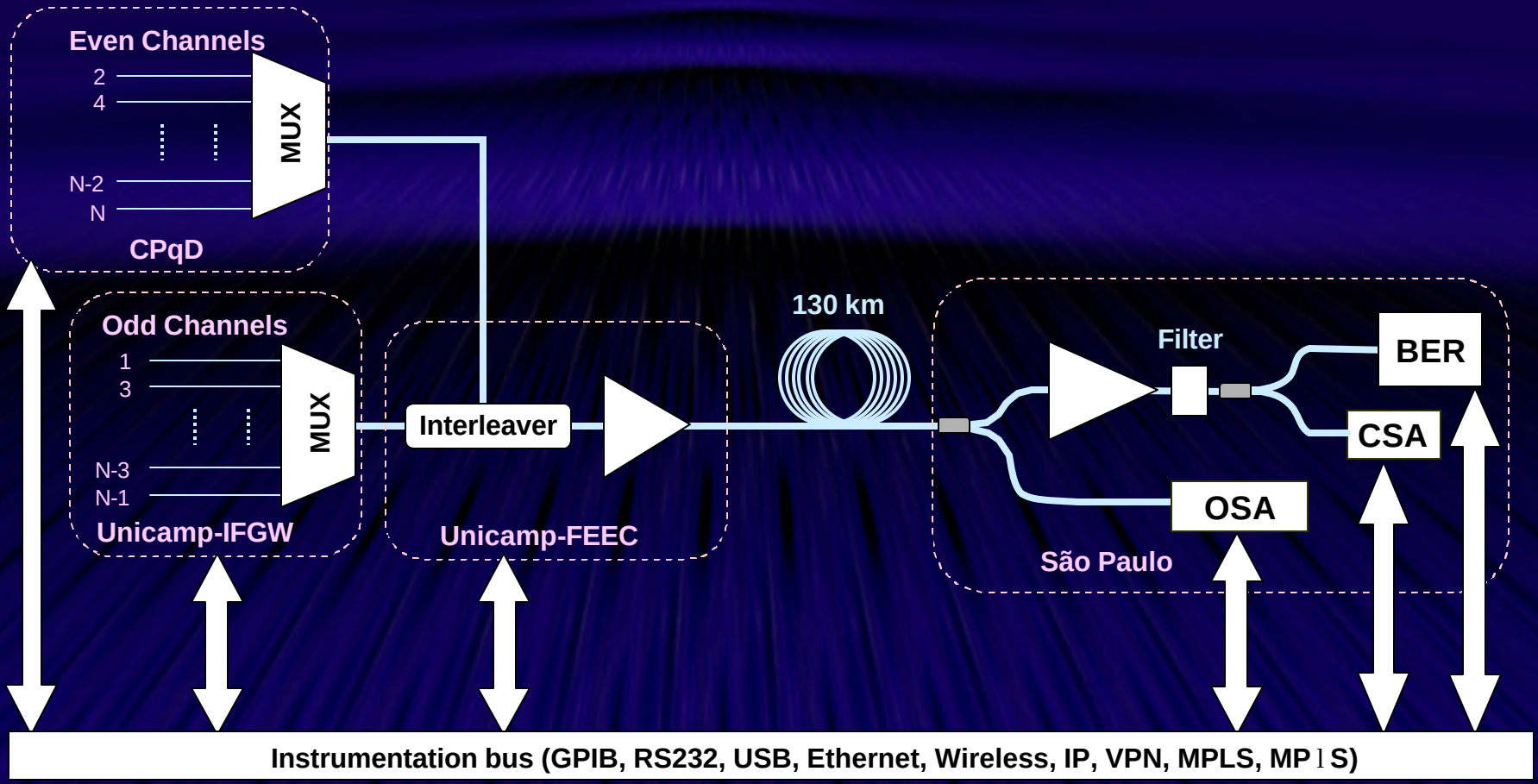
TIDIA program- Project 1: TESTBED

- R&D on Enabling Technogies for the Advanced Internet
- Dark fiber everywhere
  Multiple logical networks on same fiber (DWDM)
- Dark optical cable in selected links
  Multiple, simultaneous physical networks on same cable but different fibers
- Large Research Facility for field test
- “Unlimited” capacity Infrastructure for advanced Internet applications (Projects 2 and 3 of TIDIA Program)

UNICAMP

TESTBED

Unicamp - CPqD – USP proposal



UNICAMP

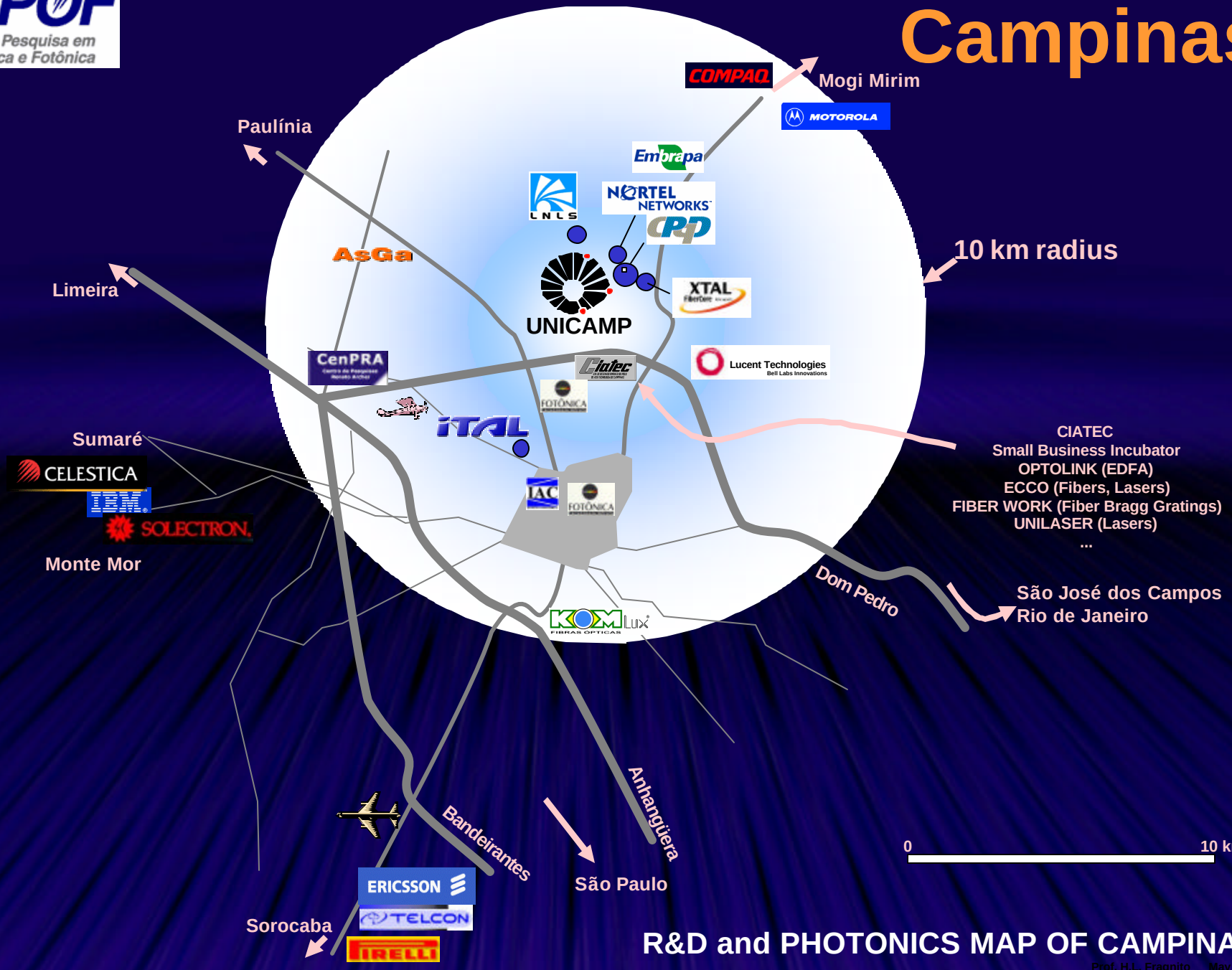
TESTBED

Unicamp - CPqD – USP proposal

- R&D on (not just “using”) DWDM technology
  - R&D on transmission technologies
    Nonlinearities, PMD, Raman, DWDM bands
  - R&D on Networking technologies
    IP over WDM, wireless access technologies, protocols
  - R&D on Hardware
    Transmitters, receivers, amplifiers, transponders, OXC, OADM, filters,….
- Most Equipment developed and produced in Brazil
- Train students in all aspects of DWDM technology

CePOF
Centro de Pesquisa em Óptica e Fotônica

Campinas



R&D and PHOTONICS MAP OF CAMPINAS

Prof. H.L. Fragnito May 2000

Campinas – São Paulo

130 km x 36 or 72 fibers
32 channels x 10 Gb/s

215 km x 33 fibers (route 2)

Simulate longer links (3000 km) by concatenating fibers (concatenated EDFAs)

Prepare for
80 x 10 Gb/s
80 x 40 Gb/s
Raman + S-band

Gb/s infrastructure for Academic Networks (ANSP, RNP, REMAVs,…)

Possible Extensions

Phase 0: Campinas
Unicamp - CPqD - LNLS - CenPRA...

Phase 1: Campinas-SP

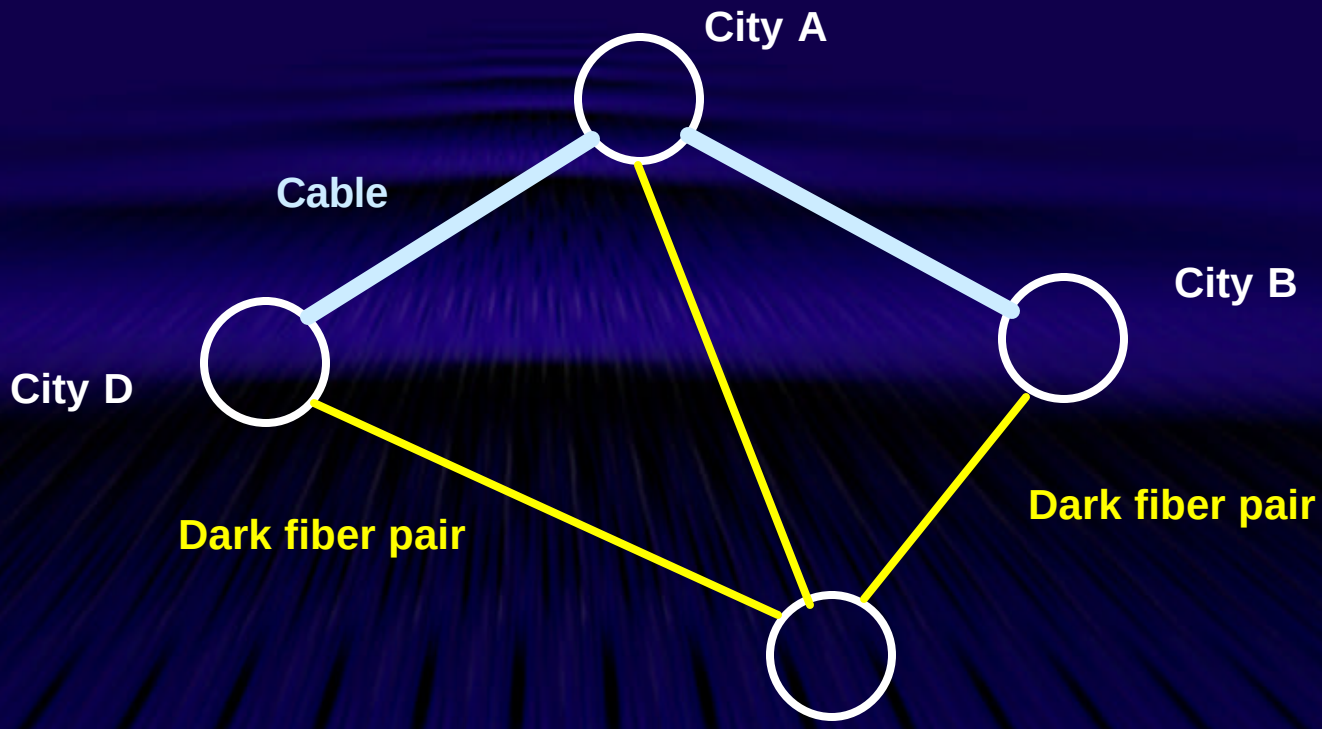
Phase 2: São Carlos-Campinas-Indaiatuba-SP-São J. dos Campos

Phase 3: All SP (ANSP)

Phase 4: SP - Other States (RNP)
Interconnect all REMAVs

A Network built by and for researchers

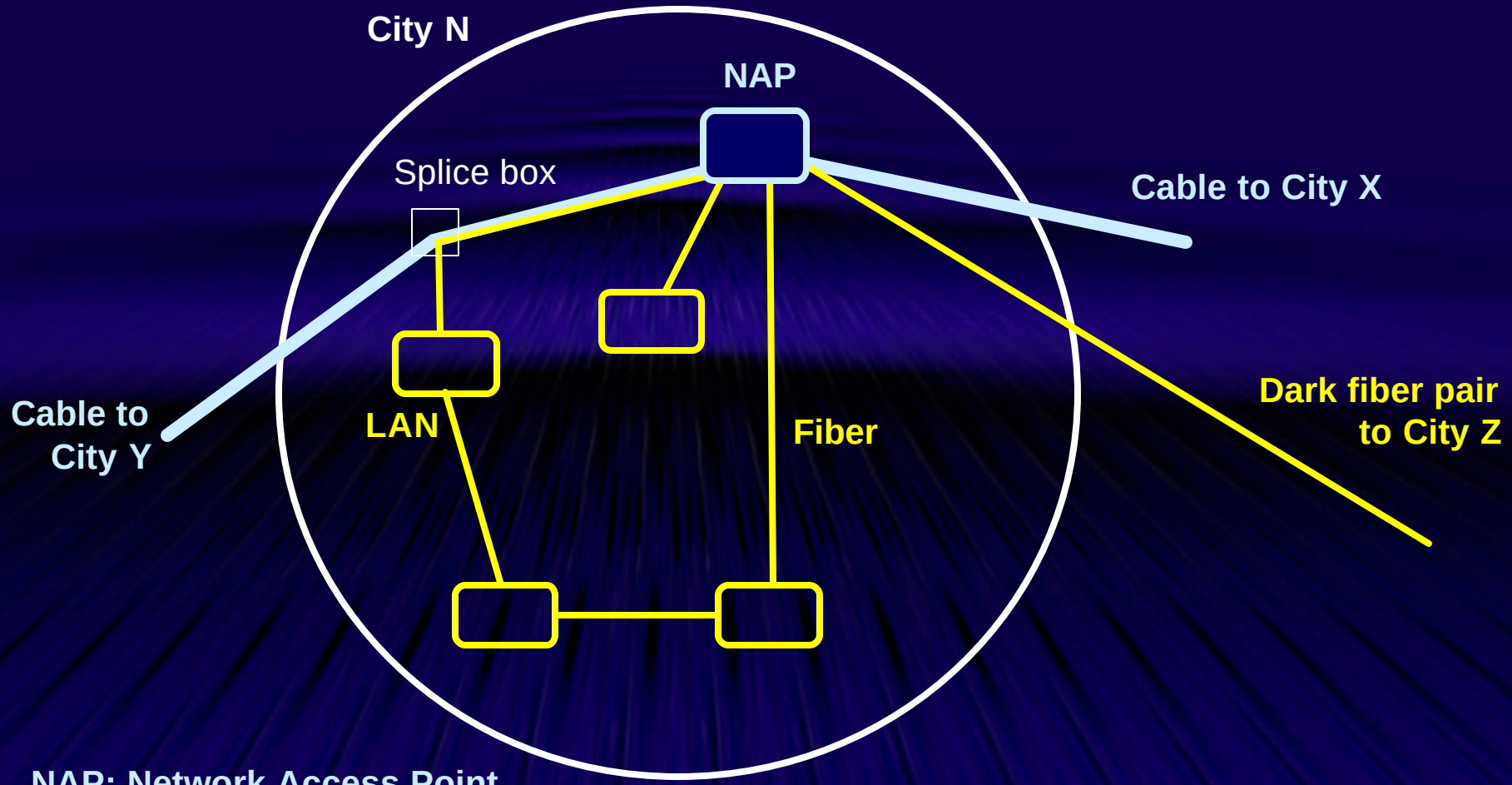
Testbed backbone



Cable:
R&D on transmission, Networking, and advanced applications

Dark fiber pair:
R&D on advanced applications

Metropolitan Area Networks

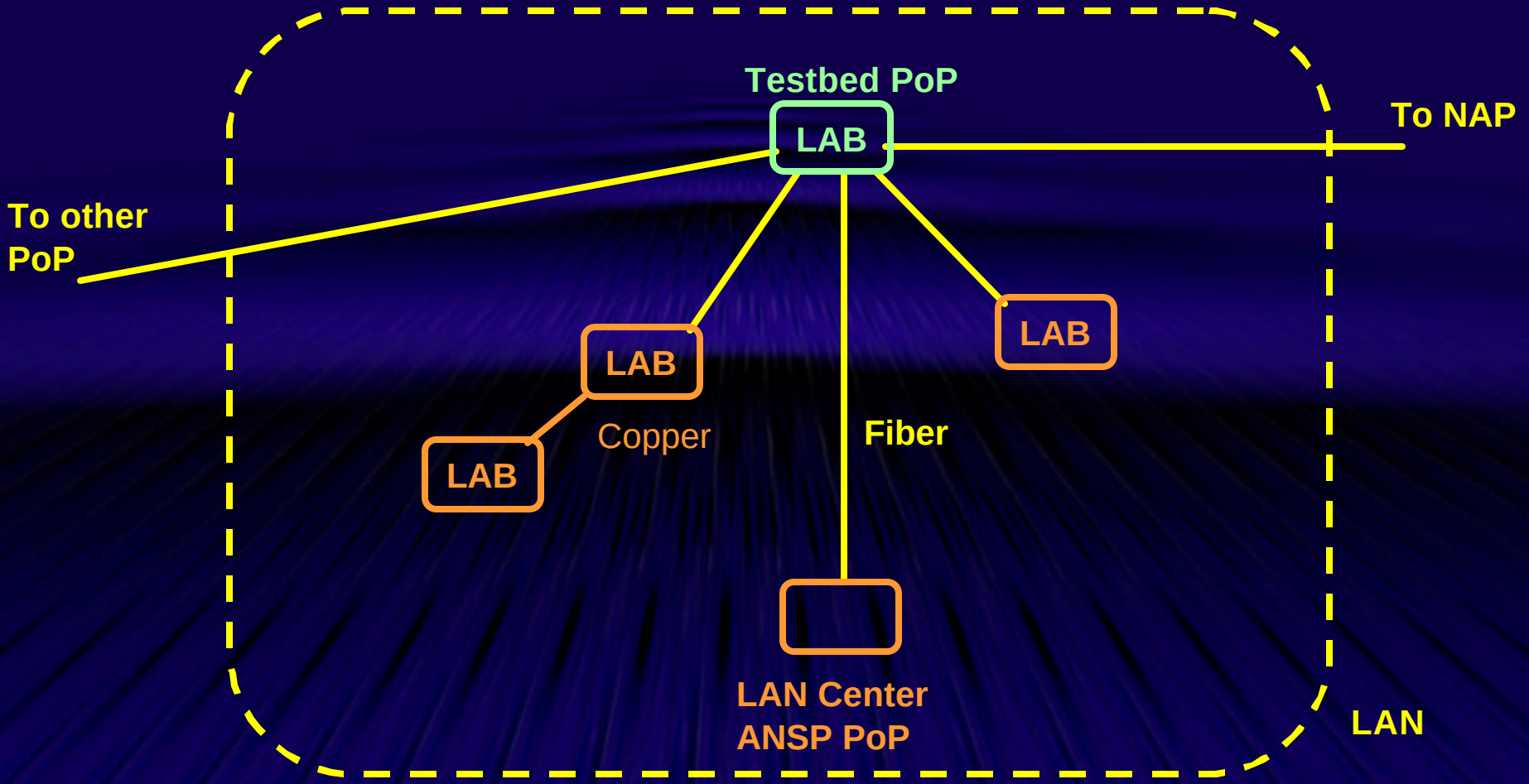


NAP: Network Access Point
Where cable and/or long distance fibers arrive

LAN: Local Area Network
Fiber connected to the NAP of City

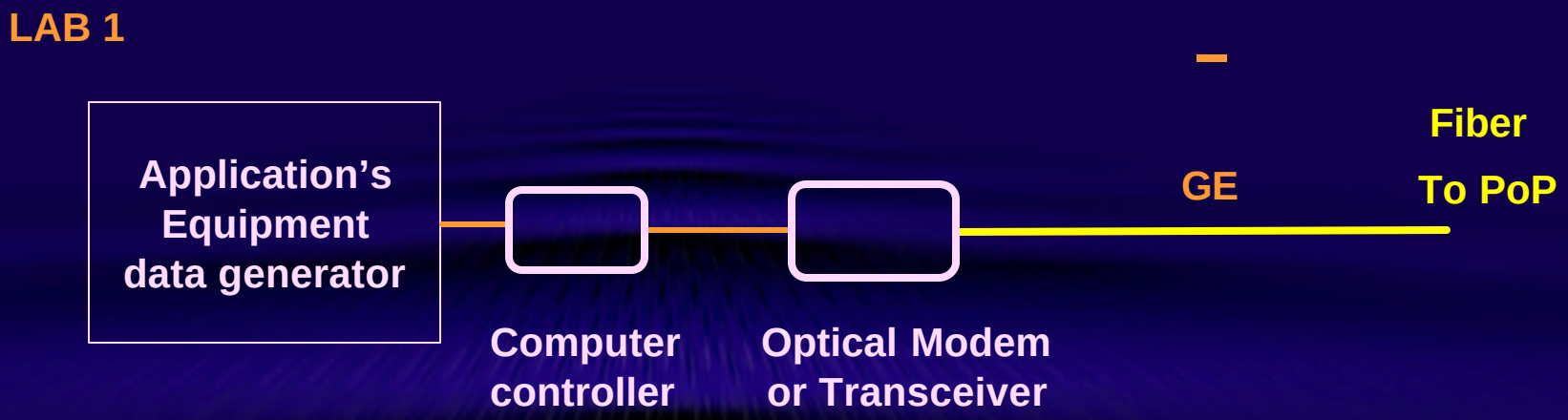
NAP and LANs are R&D institutions in the same city

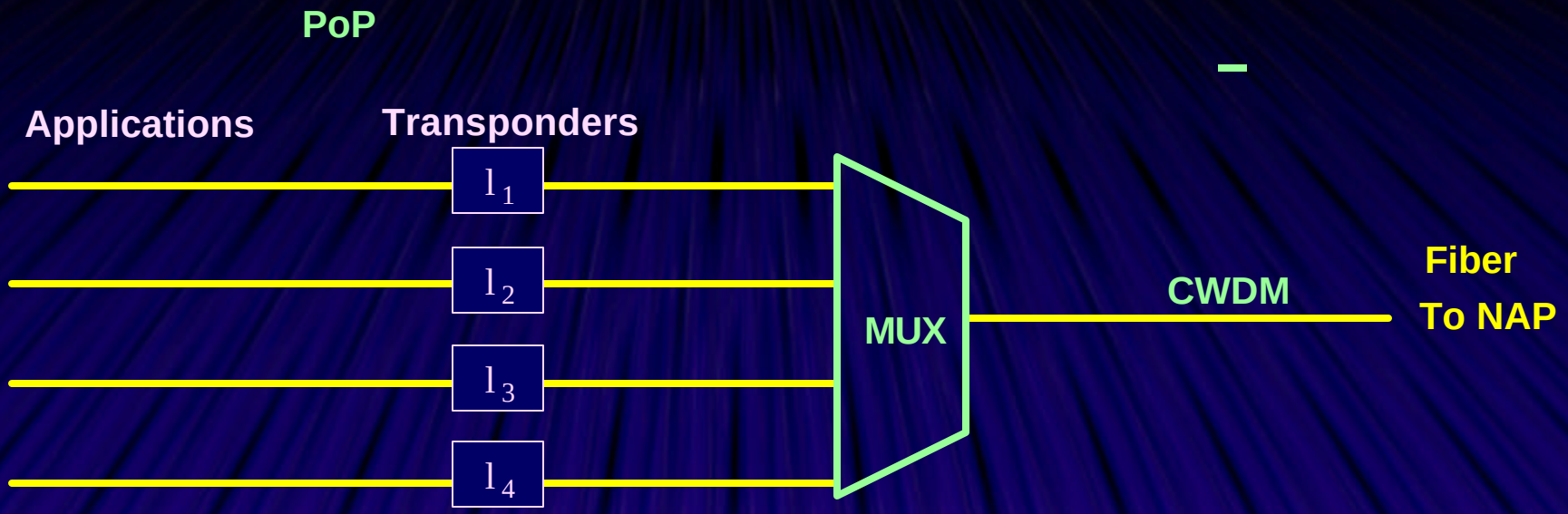
Local Area Network Capillarity



PoP: Point of Presence
(not necessarily the Computer Center of LAN)

Applications





WebLab

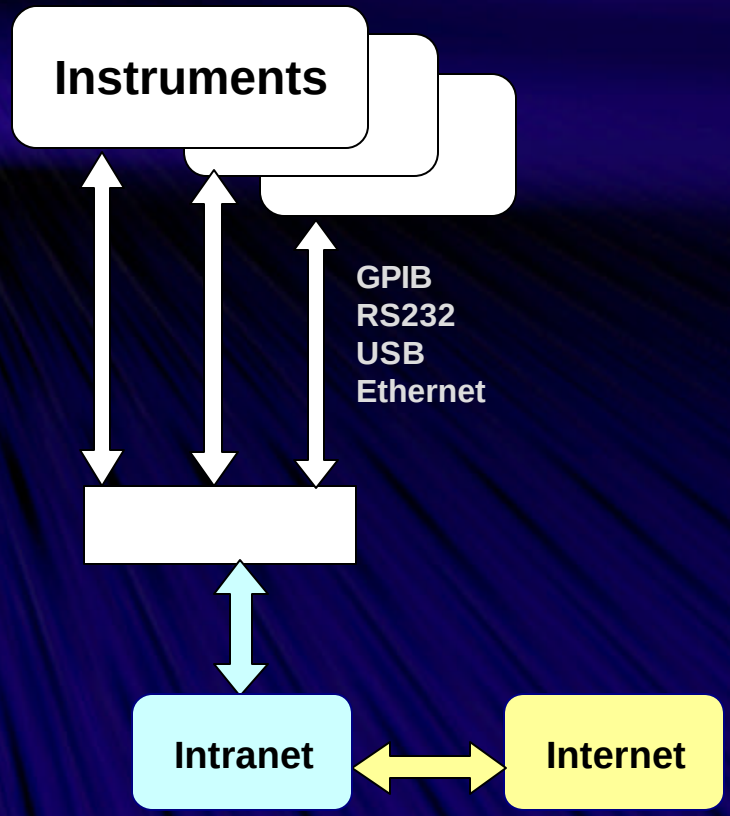
Ensino de Ciências Experimentais via Internet
Treinamento a distância

Experimentos em Laboratório real realizados via Internet (ou Intranet)

Ensino não presencial
Não é um laboratório virtual

Poderá revolucionar o modo de ensinar ciências experimentais

Treinamento técnico
Demo de instrumentos/produtos
...



Research lines

- DWDW transmission technology
  - Investigate the ultimate limits of information transmission capacity
  - Generate knowledge and expertise in DWDM transmission systems

Nonlinearities
Optical Amplification
Chromatic Dispersion
Polarization Mode Dispersion

- DWDM Networking technology
  - Investigate ways of efficient use and re-use of lambdas
  - Investigate efficient communication protocols for Internet traffic over WDM
  - Access Networking strategies and technologies (for efficient access to WDM networks)

QoS
OXC
RWA
OADM
GMPLS
IP traffic

- Advanced applications
  - Investigate innovative uses of the Internet
  - Applications that needs close collaboration between network engineers and application specialists

Web labs
Medical images
Web orchestra
….

Groups and Task Forces

- **Groups:**
  - **Points of presence**
  - **R&D subject area**
- **Task forces**
  - **Fiber deployment**
  - **Transmission**
  - **Networking**
  - **Protocols**

Organization

- Steering Committee
  - TIDIA + External Advisory Committee
- Board
  - Group and Task Forces Heads
  - PoP Directors
- Standing Committee
  - R&D Areas Coordination

Proposals for participation

- Executive summary
- Motivation, state of the art, relevance
- Expected benefits for the Testbed and the community
- Methods
- Milestones, progress indicators
- R&D team and partners
- Budget