



Sustainability of R&E Networks: A Bangladesh Perspective

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Agenda

Introduction

Definition and Perception

Other RENs and Services

Opportunities for REN in Bangladesh

Few Suggestions

Introduction

Bangladesh Research and Education Network (BdREN)

Optical Fiber
Backbone

DC & DR

Intellectual
Infrastructure

Smart
Education

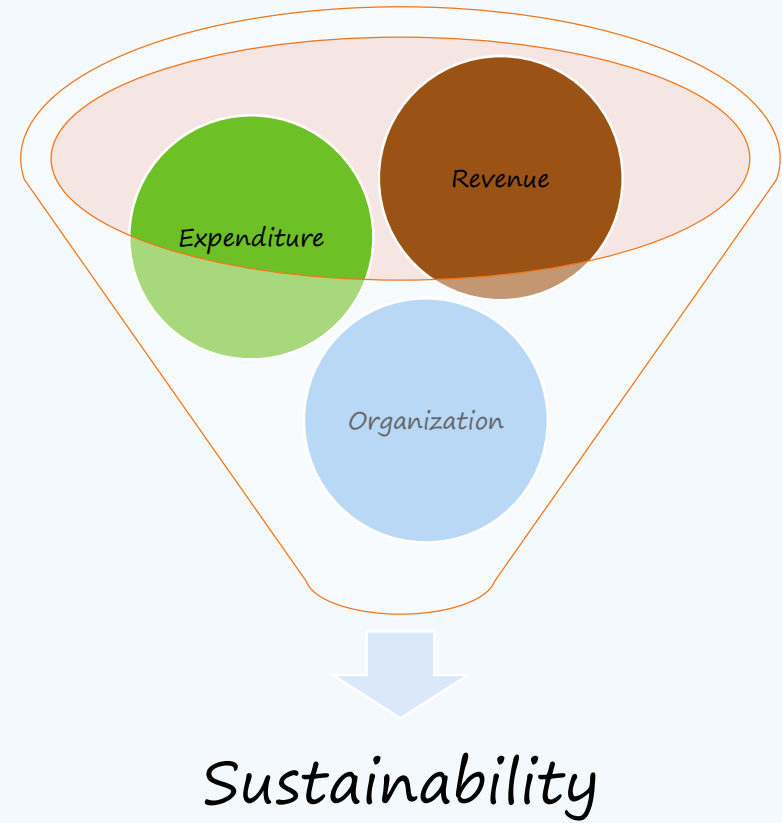
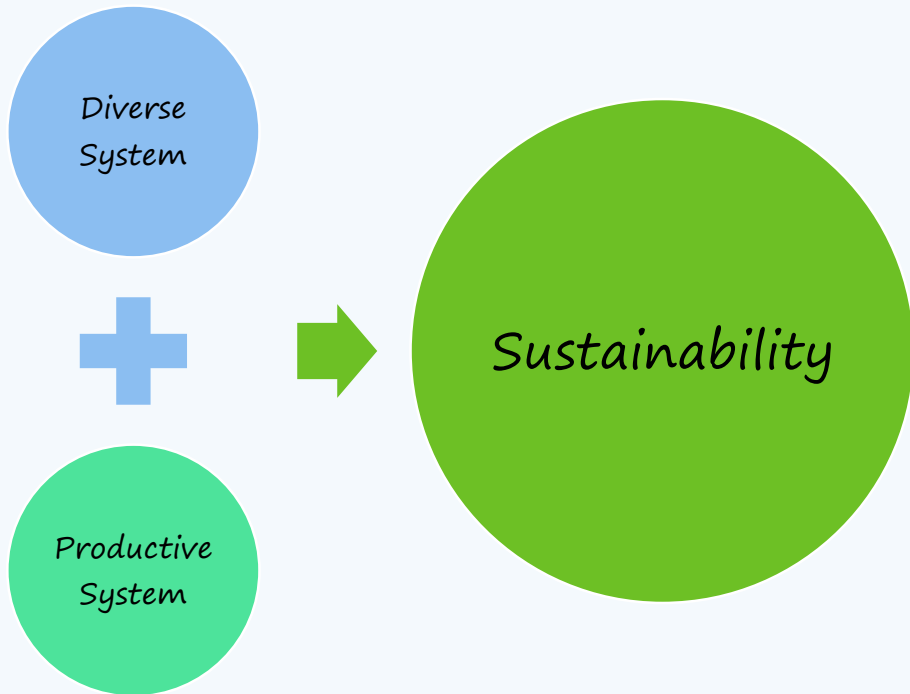
Connectivity
Service

Hosting, DNS,
Computing

Network Design
and Solutions

Smart Classroom,
Identity Federation

Definition & Perception



Challenges in REN Sustainability

User
Perception

National
Bandwidth
Policy

Ephemeral
Technology
Trend

REN
Understanding

More
Connectivity,
Less Price

Network Up-
gradation

Other RENs and Services

Higher Education Authority Network (HEAnet)

Connectivity

Brokerage

Hosting, Identity & Access, Multimedia

DNS, EduStorage,
DC

Large File Transfer,
VLE Hosting

Security & Support

Auditing and Scanning

NOC, Client Portal, ICT for
Researchers

Other RENs and Services (Cont'd)

Special REN Services

Large File
Transfer

Hot Standby

VLE Hosting

EduGate

Desktop
Video
Conferencing

Live
Streaming

Media
Hosting

Up to 500
GB

Website
Failover

Virtual
Learning
Environment

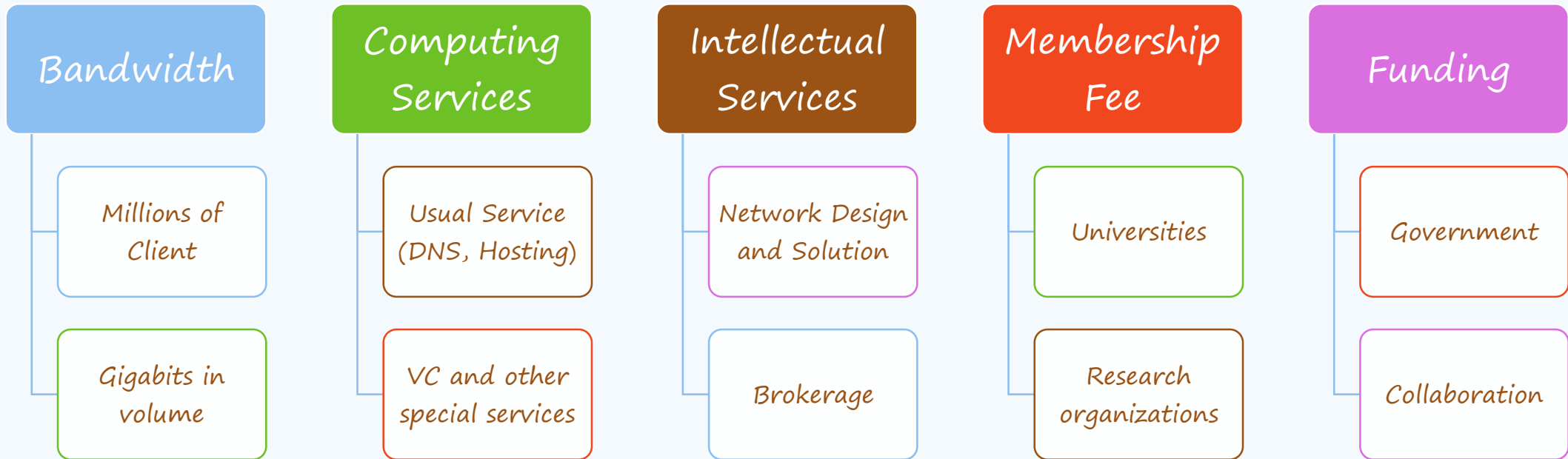
Reducing
Multiple user
name and
password

Low-latency,
HD VC

Portal based
Streaming
service

Hosting,
transcode
and later
podcast

RENs Revenue Sources



REN in Bangladesh

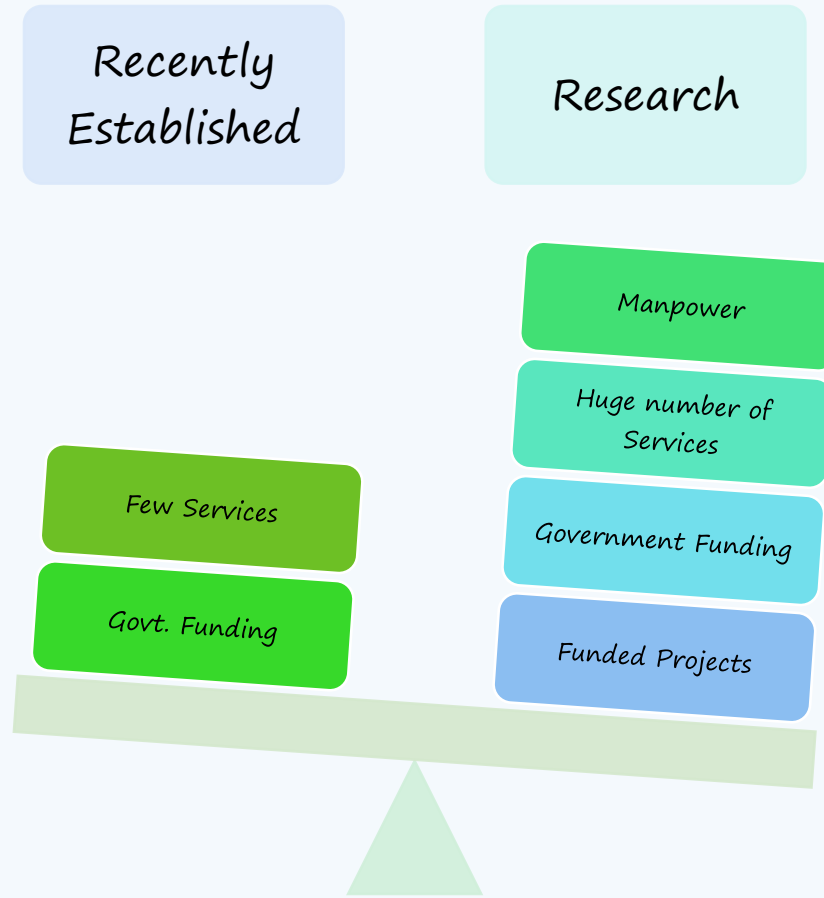
BARNET

1996 (Approx)

BdREN

2009~

A Perceptive Comparison



Opportunities for REN Services in Bangladesh

Academic Institutions							Research Organization
Universities		Medical Colleges			Colleges		Public and Private
Public	Private	Public	Semi Public	Private	Government	Private	BRRI, BARI
40	95	30	06	60	275	1974	?

Bandwidth Usage Scenario

Bandwidth Requirement (A simple Perceptive analysis)

Higher Education

Research Organizations

3.5 Million Student

512 kbps

Satellite Images,
Agricultural data ...

1792 G

If ¼ Active user 448G

? (much bandwidth
required)

Data Center Services Usage Scenario

Higher Education

Research Organization

Hosting (2240 Universities and Colleges)

Virtual Private Server

Co-location Service

EduStorage

Computing

2240X5G = 11.2TB for hosting only

?

?

?

?

Computing Services Usage Scenario

Higher Education & Research Organization

Big data analytics

High Performance Computing

Dataset and
Computing

Some Projects on
Road Traffic
Analysis

Medical Information
base

Genome Sequencing

Plagiarism checking
in Bangla

Experiments require
huge volume of data

Project Incitation
Phase

Imaginary Phase

Some Universities
are seeking this
service

Anybody can take
the challenge

Expression
Recognition

Application Services Usage Scenario

Higher Education

Research
Organization

Result
Processing

Information
Systems

Undergraduate
Admission
Application

Licensed Tools

License based
Simulation
Software

Existing Very few
Universities

Existing Very few
Universities

First step to
achieve combined
examination system

VLSI, Network
Simulators

Time sharing and
distribution
management

Virtual Classroom Usage Scenario

*Collaborative
Research*

*Expert knowledge
sharing*

Remote Courses

Lab Seminar, Discussion

Online Seminar

*Recently Established
Universities may suffer
from resource constraints*

Joint Research Program

*Alumni working in other
universities (home/abroad)
may lecture*

*Divisional/earlier established
universities may conduct
remote courses*

Intellectual Services Usage Scenario

Campus Network

Capacity Building

Design

Maintenance

Brokerage Service

Training

Design job exists in all public universities (19)

It is required for many universities

May not be possible now!!!!

Network Edge Operators

An Interesting Service Request

Genetic Engineering Department, DU

Workshop to be held in December

Training on Tools

Required RAM is 64 G and 192 G

A wide landscape of scopes

A good number of Services

A country of 200 Million People

Any sample size is good for sustainable operation

However, BdREN is facing challenges for sustainability

Why so?

A healthy backbone

Enough power backup at the intermediate nodes

Network availability is somehow OK and getting better

A JOKE to share

Resource Constraints in the Universities

Campus Network

Mostly Purchase Hardware

Little neglected (lowest Investment, Highest Service Expected)

No Dedicated Authority

ICT Cell Proposed

Suggestions for Campus Network

Budget head must be included in the university budget

Operation

Maintenance

Up-gradation

Capacity building

Recruitment

*A strong policy to
accomplish emergency
purchase*

Suggestions for Learning through VC facility

Conducting Course

A policy to support remote courses

A financial model

Thesis Defense

Policy to support remote presentation

Financial model is already there

Lab Seminar

No Policy required. Collaboration is important

Financial model for VC support

Meetings

No policy required

Financial model for VC support

Suggestions for Software and Services

More Focus on Software Services

A survey to be conducted to identify the requirements

If possible involve the universities for the development of customized requirements

Increase man power in BdREN

Suggestion for Collecting Survey Data

Crowd Sourcing

An application to assist educational roaming may be launched

The application will be a communication media with the end users

Regular Meeting with Research Groups

Prepare Survey Questions for need identification

Try to identify common needs

Web Portal

online application to collect suggestion/opinion

A place where client/end user may talk

Adjustment of Internet Budget at UGC

University Internet Budget

Government Assistance

Redundant communication,
additional delay

? Deficit

UGC may provide the bandwidth
and membership charge

Paid by Govt.

Research Reward

Impact Factor Journal Publication

Journals may be selected by BdREN/UGC

USD 1000 for each publication

100 research article = 100000 USD < 1 Crore

Easy to collect publication information, Contribute on overall Ranking

Arrange University wide Idea Competition

Will be able to pick idea for services

*A low cost but effective for new
application*

Friction in Thinking

Topic after 20 years

Searching lost physical substance in the Internet

Communication Protocol between nano cells inside human body for cancer identification

What could be for BdREN

Advertisement Banner

Own Browser/Agreement with other giants

Conclusion

Sensitization & Awareness

More Focus on Services

Policies for different physical establishment

More Manpower for in-house development