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ETSI
World Class Standards

Indo-European dialogue on
ICT standards &
Emerging Technologies
(Growth, Profitability & Nation Building)
13-14th March 2014 • New Delhi, INDIA

IN THE FRAMEWORK OF
Project
SESEI
http://eustandards.in/

Machine to Machine Communication Network

Presented by Vipin Tyagi ,Director , Centre for development of Telematics

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Network Evolution

Changing Role of Networks

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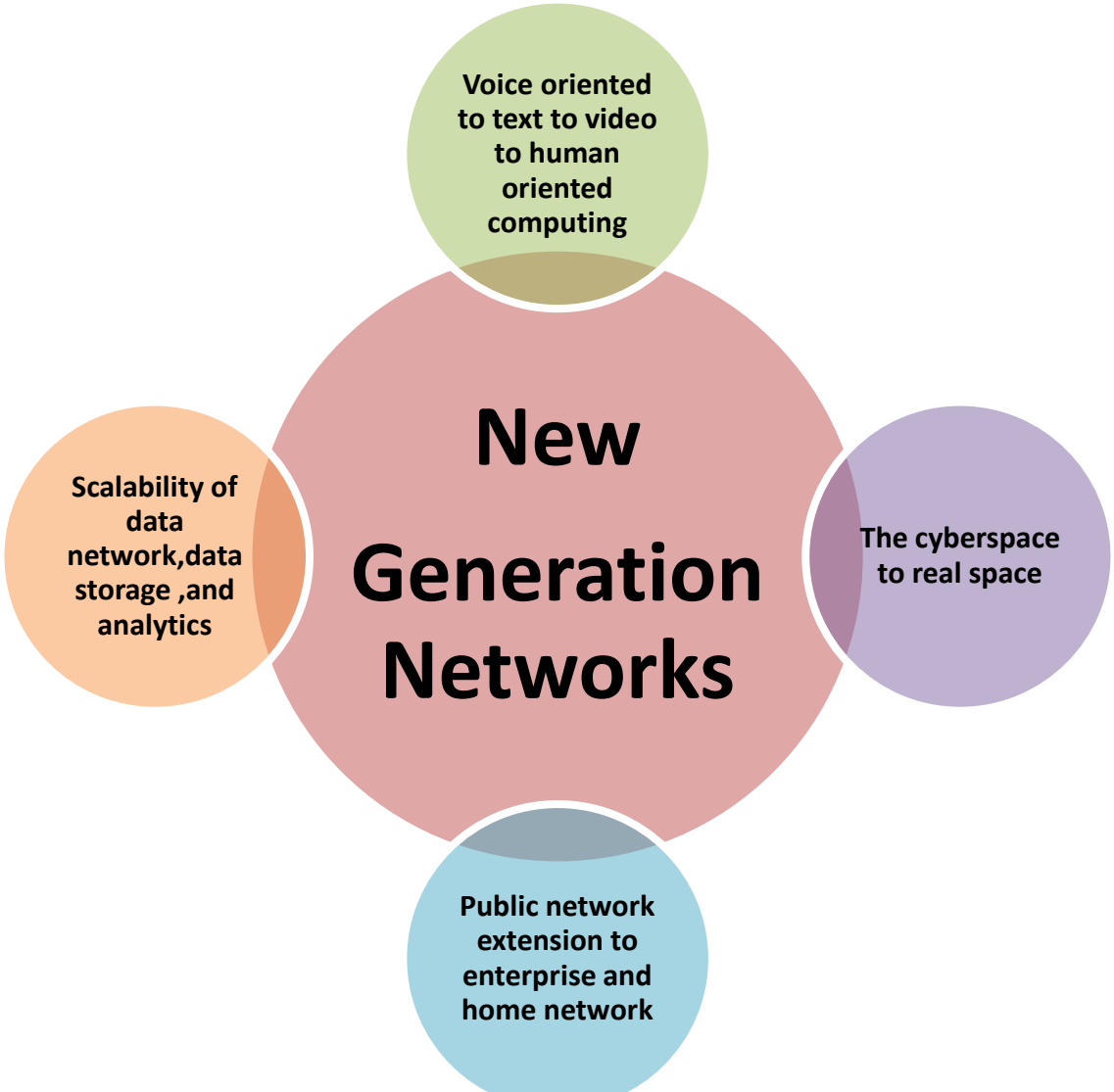
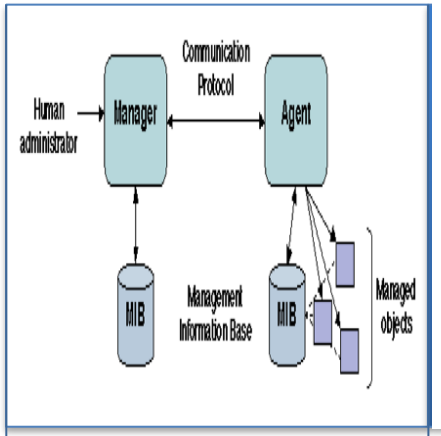
The Network evolution continues

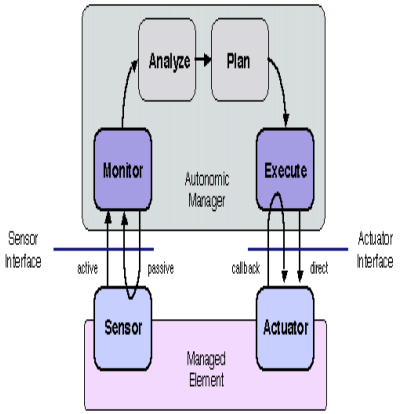


Future Network Characteristics



Smart Management

Software oriented

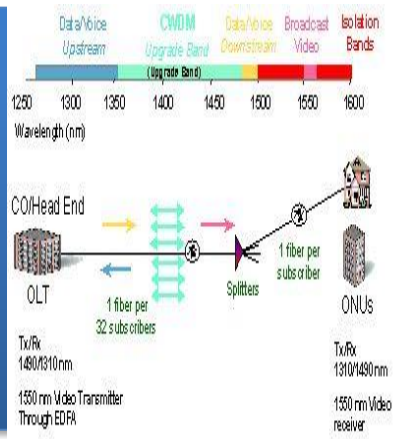


Sensors & Actuators

Remote application

Video based

Decision/ image algorithms



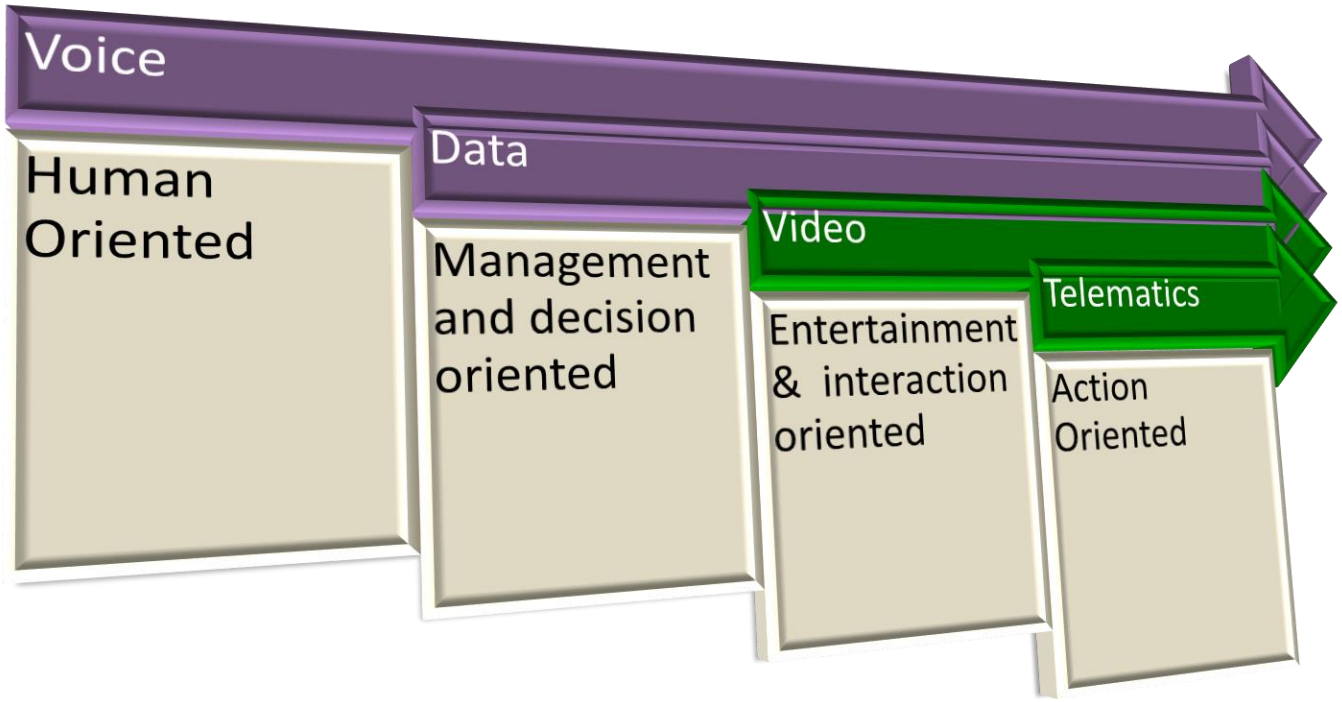
Optical Networks in Access and aggregation

Example : G-PON

Ever Growing Bandwidth Demand

1G → 10G → 40G → 100 G

M2M will have increasingly higher level of implication



Voice oriented to text to video to human oriented computing

- Camera are having cognitive ability and analysis
- Microphone is for voice recognition
- Televisions and displays are getting better then real
- All most all buttons are having a processors in new generation machines

The cyberspace to real space

- Machine to Machine communication
- Augmented Reality
- Actuators/Sensors
- Smart Grid
- Automotive Telematics

Third dimesion –the drone Big,Mini ,micro

How much a thermostat and smoke detector startup company is worth?

Google gains entry to home and prized team with $3.2 billion Nest deal

Security for M2M Networks

Actions Orientation has larger security Implication

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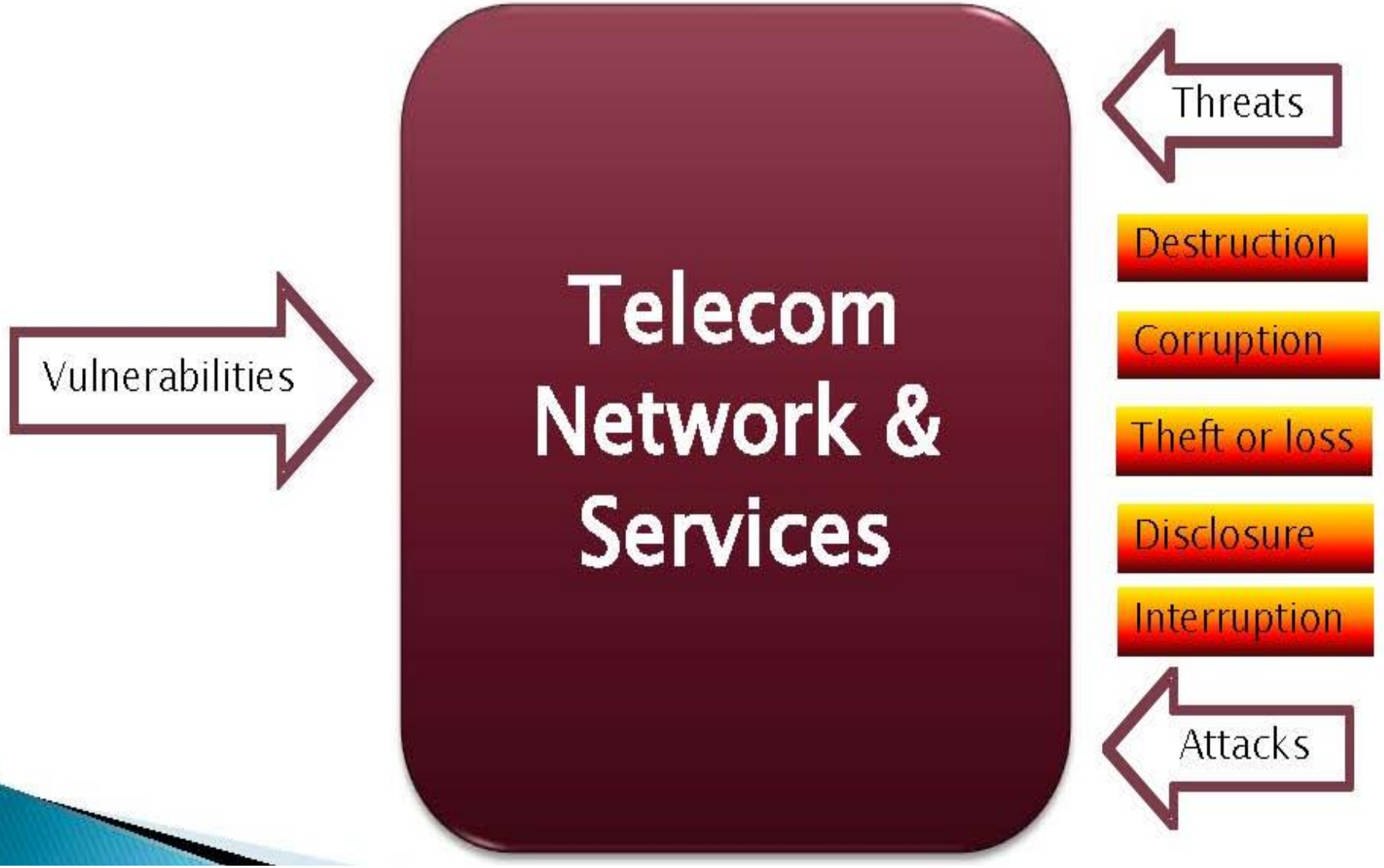
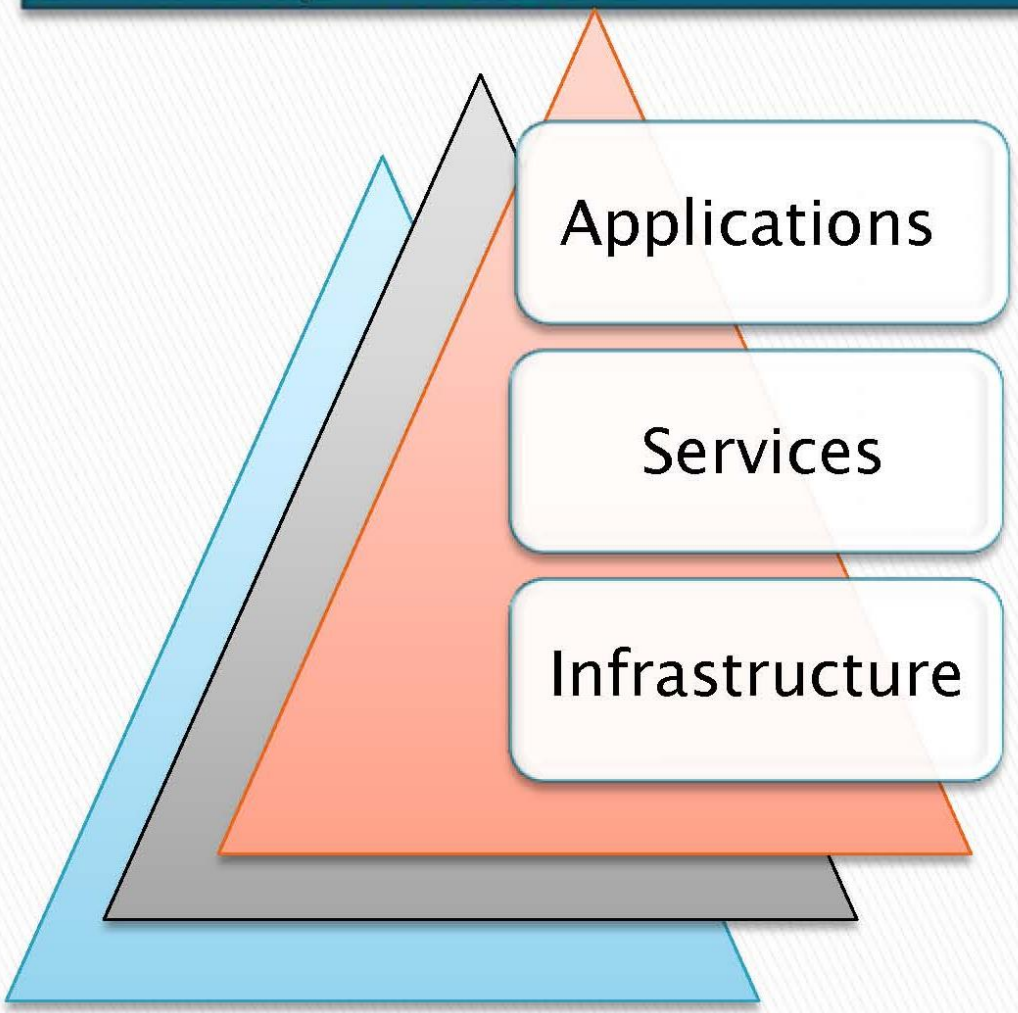
M2M-It is difficult to find who is who without a systematic regulation ?

Major Security Threats



What Security measures to take?

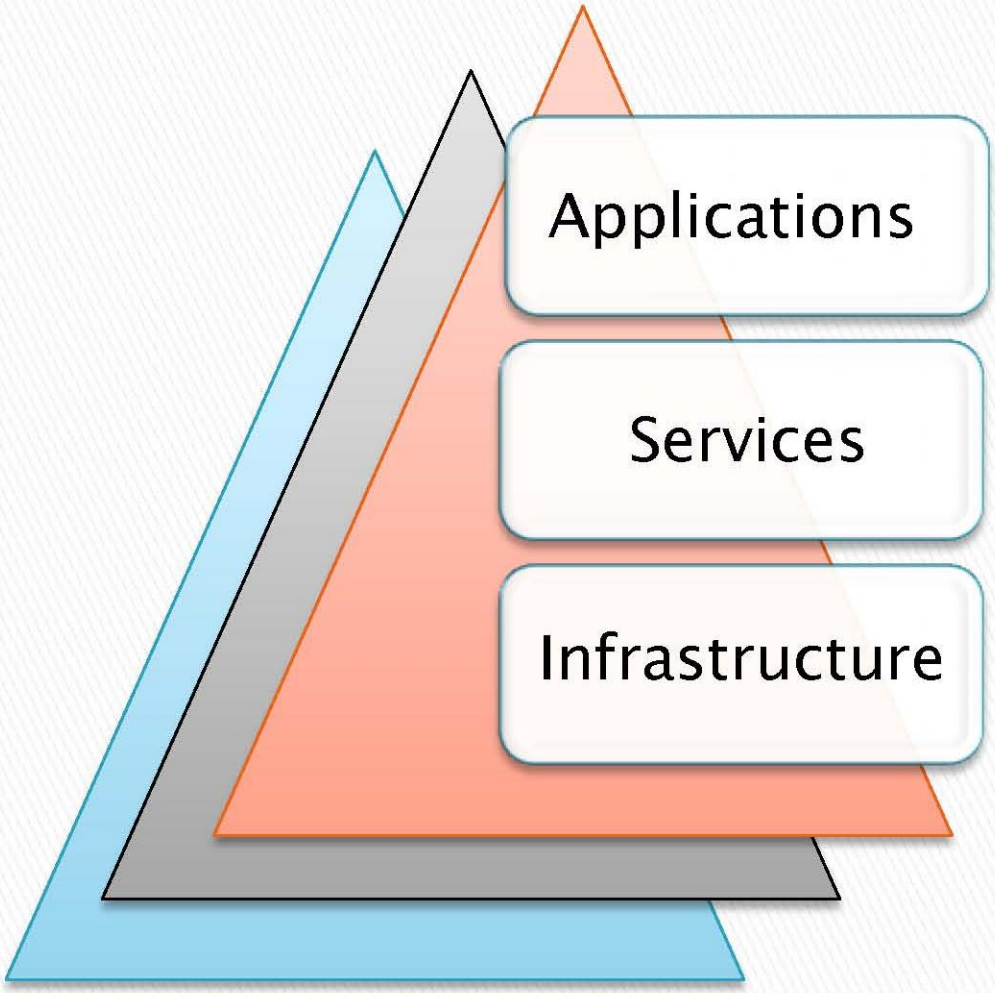
8 Dimensions to protect against all major security threats



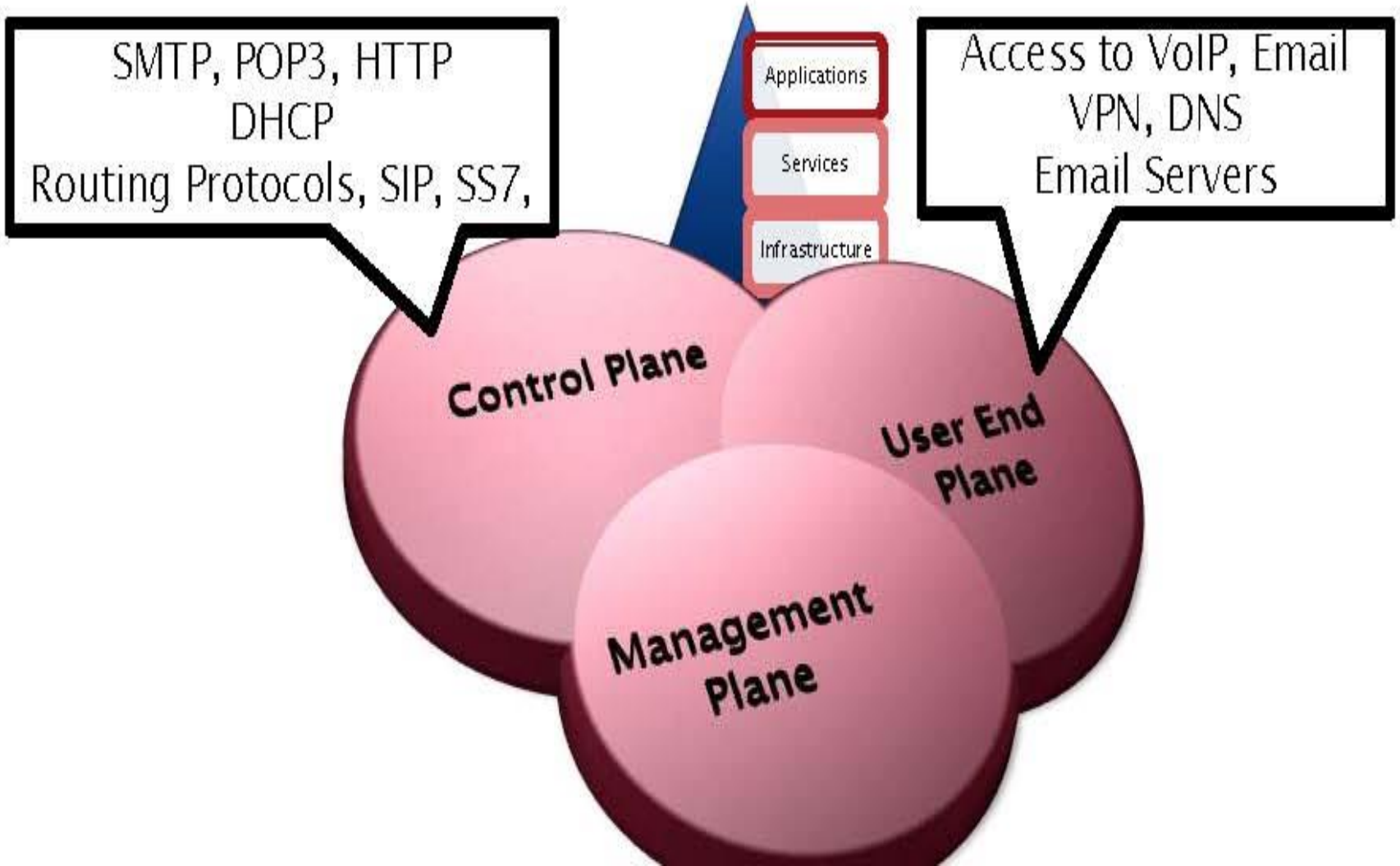
1. Access Control
2. Authentication
3. Non-repudiation
4. Data Confidentiality
5. Communication security
6. Data Integrity
7. Availability
8. Privacy

What to Protect? – 3 Layers

Build on one another



Domains of Network activities in 3 Planes



4 Tier Architecture

Sensor Network

Tier1

Sensor/Machine control Gateway

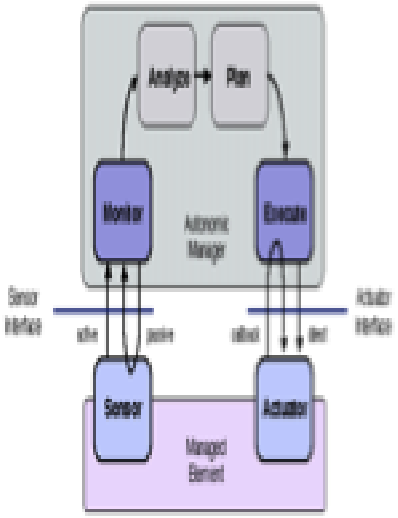
Tier2

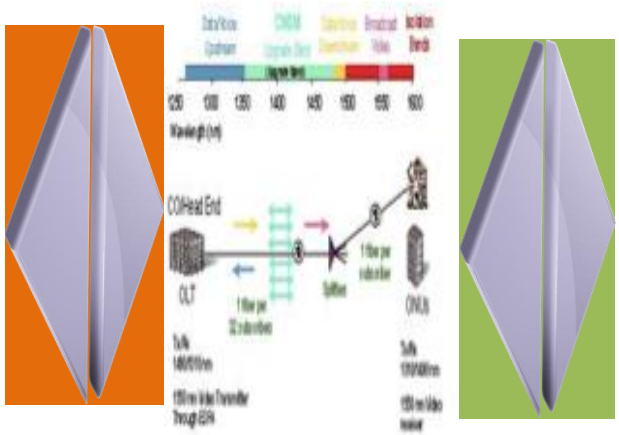
IPV6 Network control Gateway

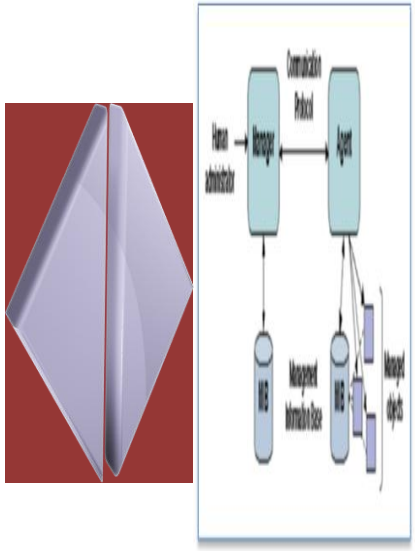
Tier3

Application control Gateway

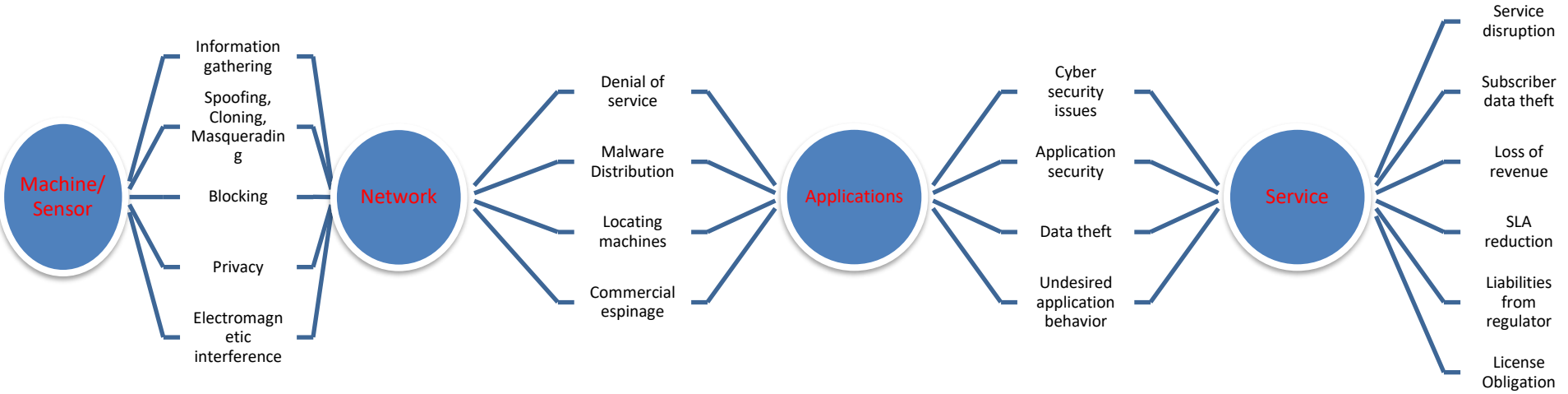
Tier4 service control Gateway







Security issues



Loss of confidentiality	Disruption of Network	Application Disruption	Loss of revenue
Loss of data integrity	Loss of confidentiality	Disruption of Network	Service Disruption
Loss of data availability	Loss of data integrity	Loss of confidentiality	Business Liability
Unintended Action	Loss of data availability	Loss of data integrity	Legal Obligations
	Uncontrolled Actions	Loss of data availability	Privacy law
		Uncontrolled application Behavior	Lawful interception
			Public accountability

M2M application benefits are path breaking

Imagination is more important then knowledge

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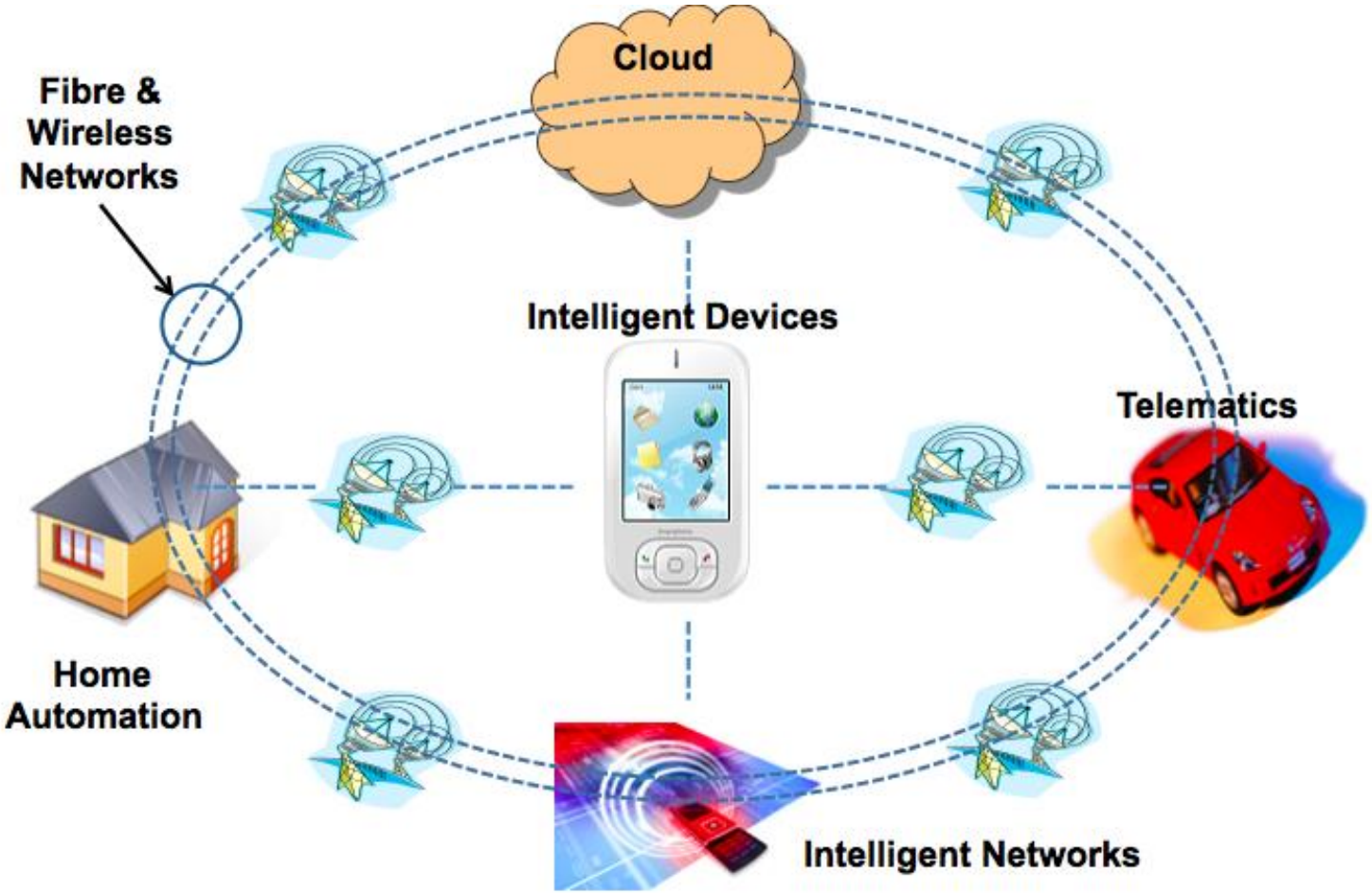
Classification of applications/Services

- Enterprise application –within the network limit of enterprise and no connection with other networks
- Public Utility- The application owned , controlled and operated by an entity that is non telecom public utility services
- The Licensed service provider's application/services – providing services in license service area
- Defense/Security/Law enforcement agencies applications over dedicated /specialized /public/ networks
- Government Agency's public good applications/Network for various government ministries funded by central or state Government .

M2M Real Time Always connected



The applications are numerous

Smart Meters

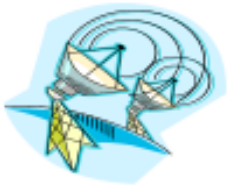
Advanced Metering Infrastructure

Home Area Network

In Home Display

Demand Management

Energy Use
Security
Public Safety



Software in the Cloud

Remote car control

Cars talking to each other

Cars talking to your Home

In Vehicle displays

Demand Management

Intelligent Transport Infrastructure
Traffic Congestion
Public Safety
Third Party Providers

Shared Intelligent Networks Providing Resilience

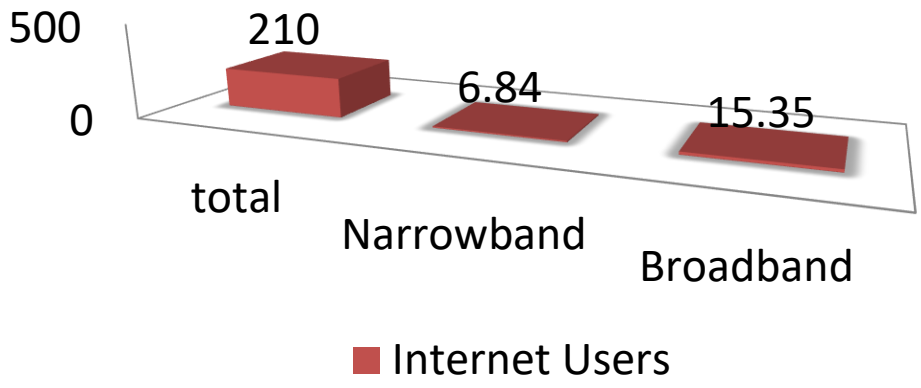
Legislation & Regulation

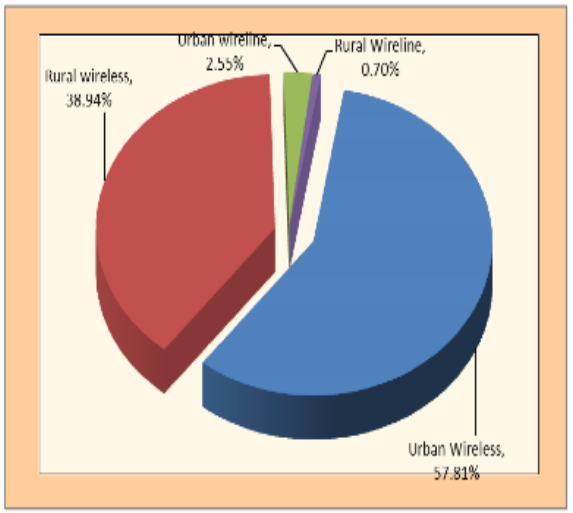
Big Data

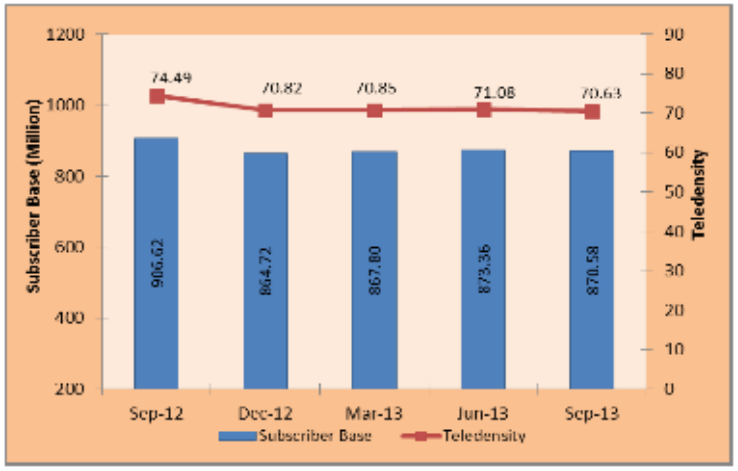
Innovation and not imitation -New Way forward

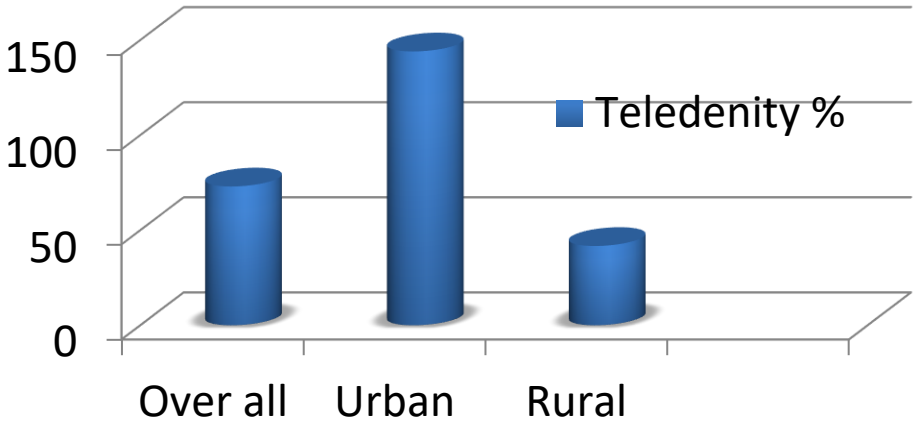
- Visualise Brick&Mortar to online shift
- Analyse regional preferences
- Look at the new value proposition
- Aggregation and distribution opportunity
- Indian Solution to Indian problems

Rural India is catching on Internet









Smart Villages – Optimization of farming inputs

- Through measurement , observation advise and correction in real time interactive
  - Fertilizers
  - Pesticide
  - Water
  - Tilling
  - Seed
  - Farm protection

Payment
Advance
Insurance/Assurance
Subsidy transparency
Loan transparency

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Conclusion

- M2M will unlock the true potential of Networking and ICT through innovation and imagination
- M2M will generate new business challenges of security , control and transparency
- Regulation ,policy and standardization challenges are being addressed by various entities
- New Technology development is required for Indian/Developing countries Requirements

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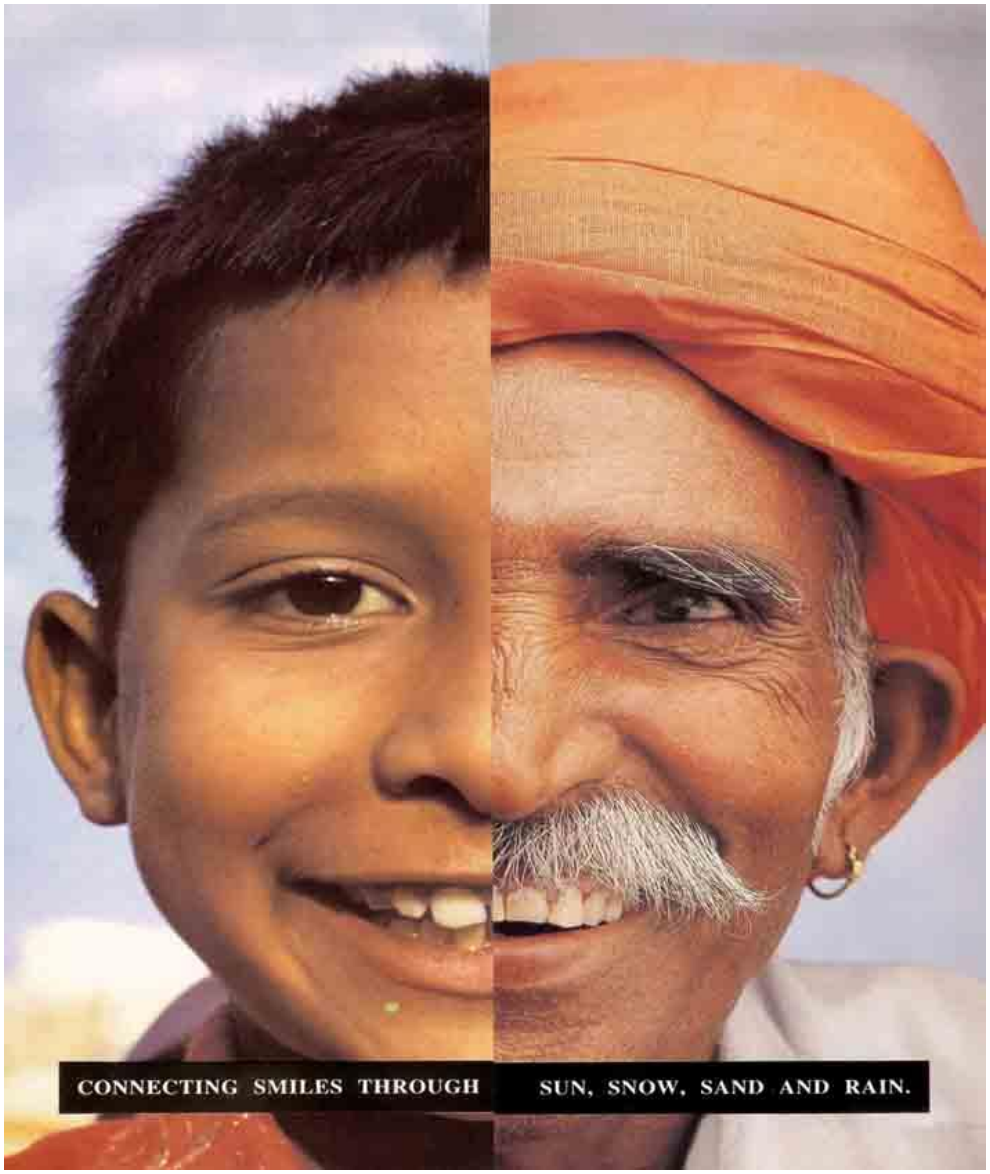
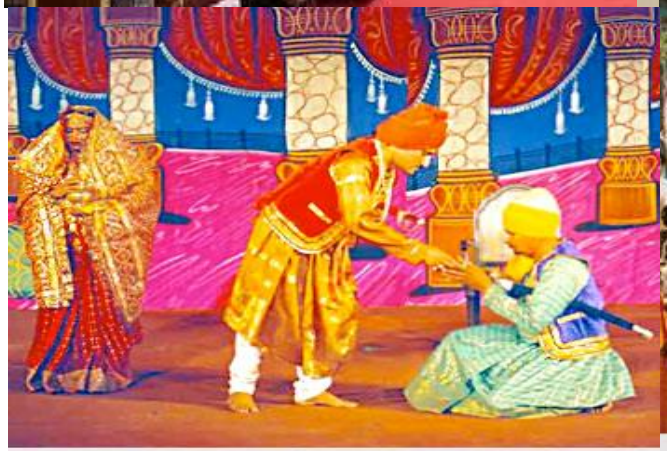


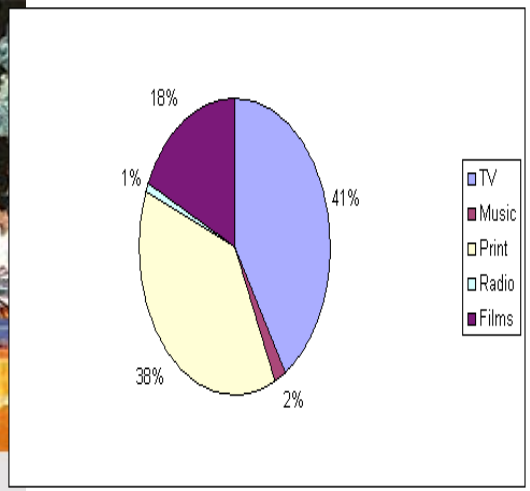
Thank You

India has long history of folk entertainment

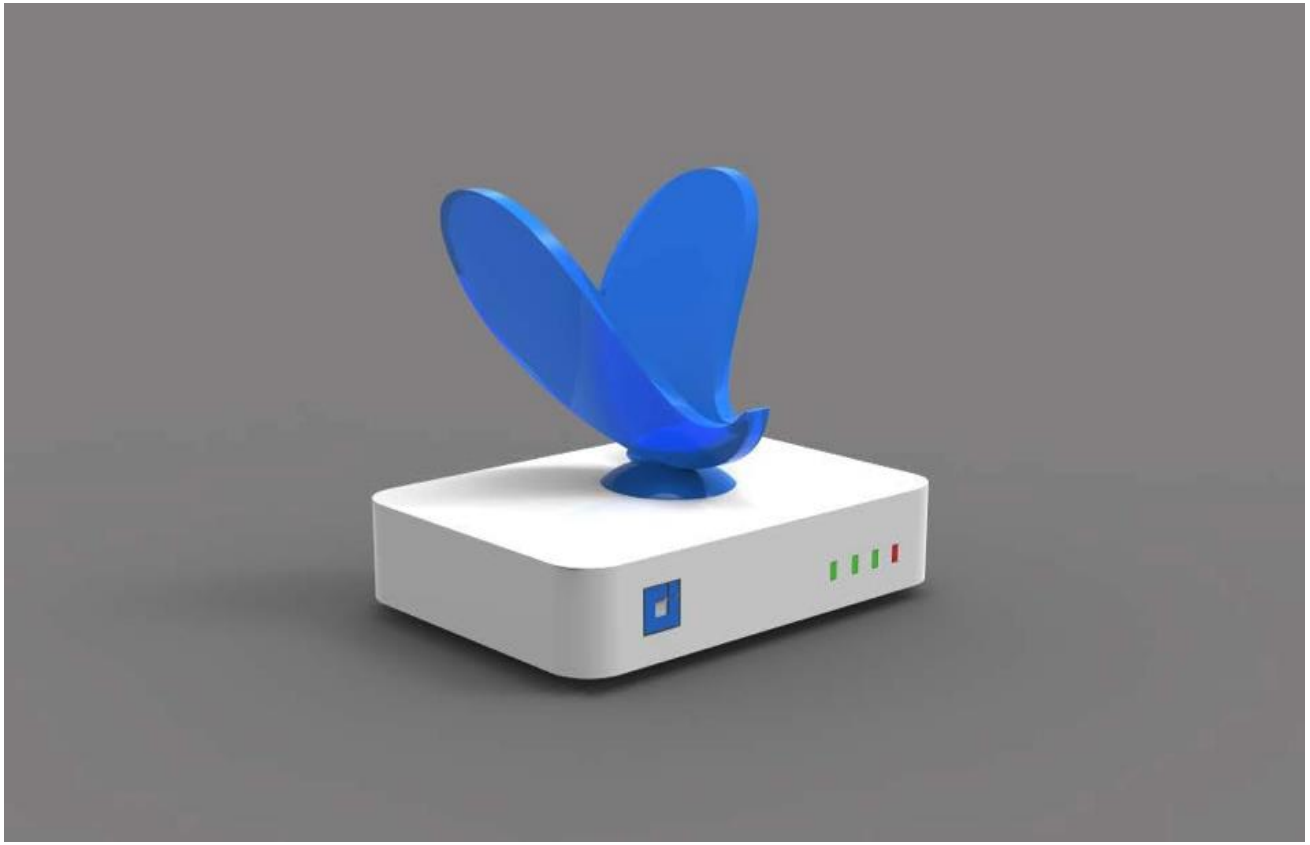


Swang

Performing Bharud



The Next thing from CDOT -Titli Damak



FTTD fiber to the desk
Small,
beautiful ,
affordable

- Fiber connected
- 2Ports of 1 Gbps
- Mobile-stand and charger
- Telephone
- Videophone

This can become gateway for your Super broadband connectivity

Music Distribution solution in rural village over fiber

Sangeet Damak ONT from C-DOT Wi-Fi POP+2xTelephones +Cable TV+4x100Mbps + 1x1Gbps+FM Trnasmitter+ disaster paging + Music player+internet radio++2xUSB Port+Remote+ feed to stereo+printersharing