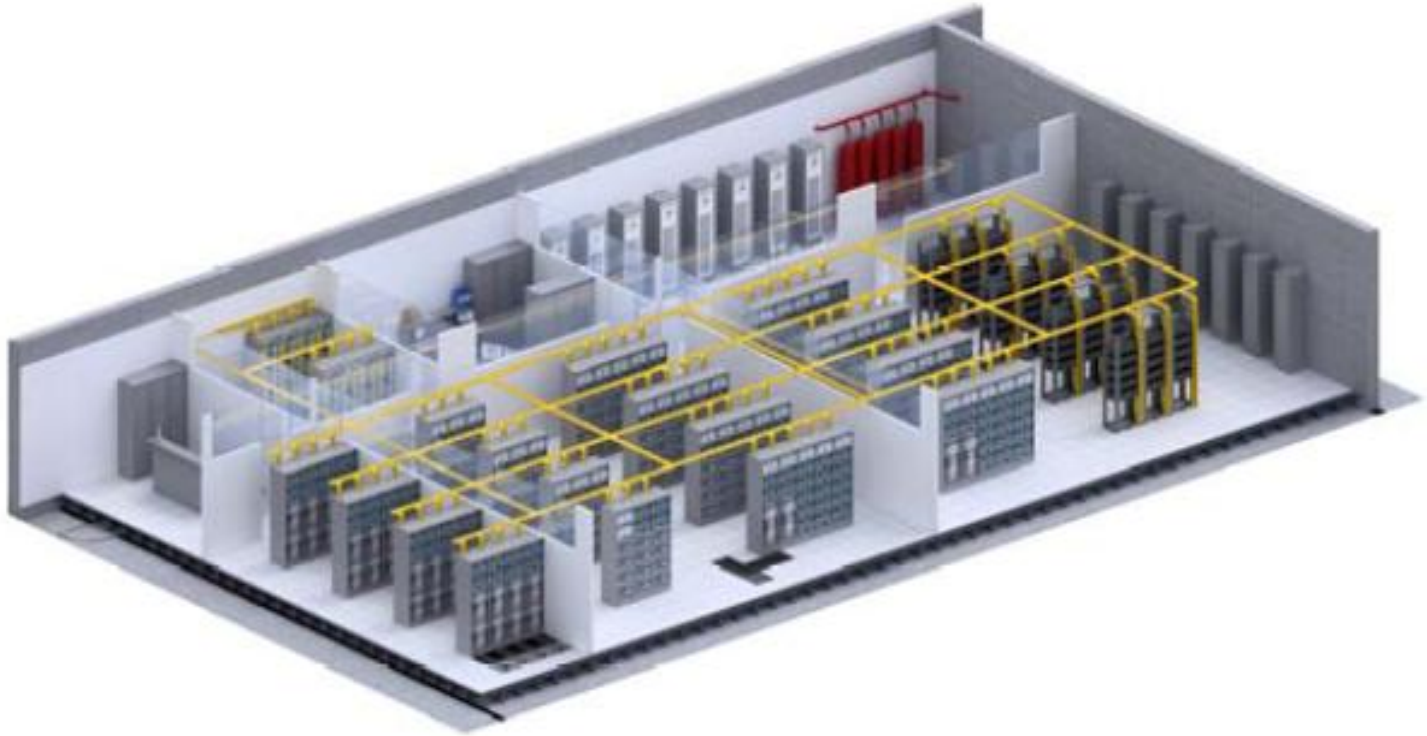
Leveraging EIL's Strength in Optimizing Data Centers

4th International Conference : Data Centre

1st November 2017

Data Center

A **Data Center** is a building or premise that houses the **central data processing equipment** (i.e. servers and infrastructure required for operation) of one or several companies or organizations.



Evolution

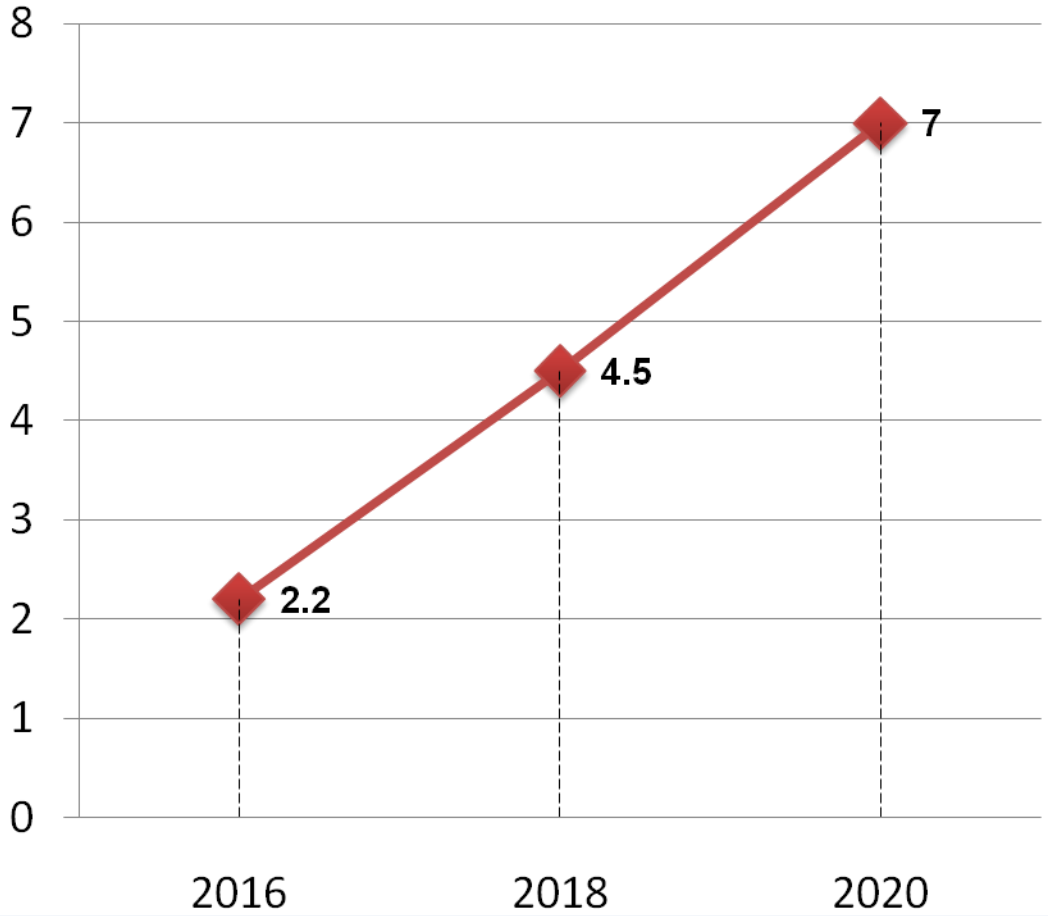
1960 — Room Sized Machines

1980 — Micro Computers

1990 — Birth of Modern Data Centre

2000 — Development of Tier Levels

Investments in Data Center



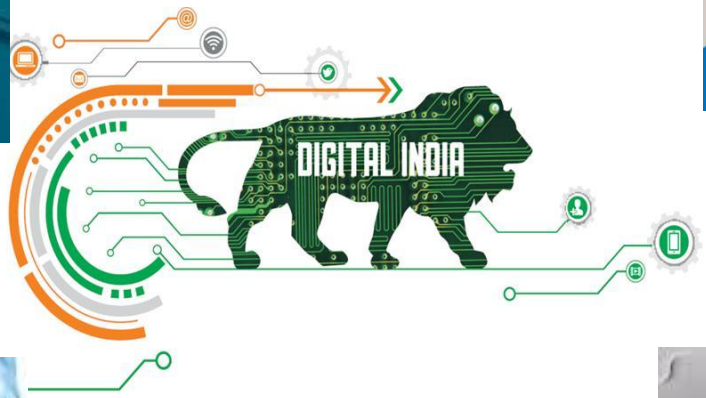
According to Gartner, 4.9 Billion connected device exist today

CISCO Predicts 50 Billion Connected device by 2020

Investments in Data Centers in India are expected to reach $ 7 Billion

Source: Allied Research Report 2016

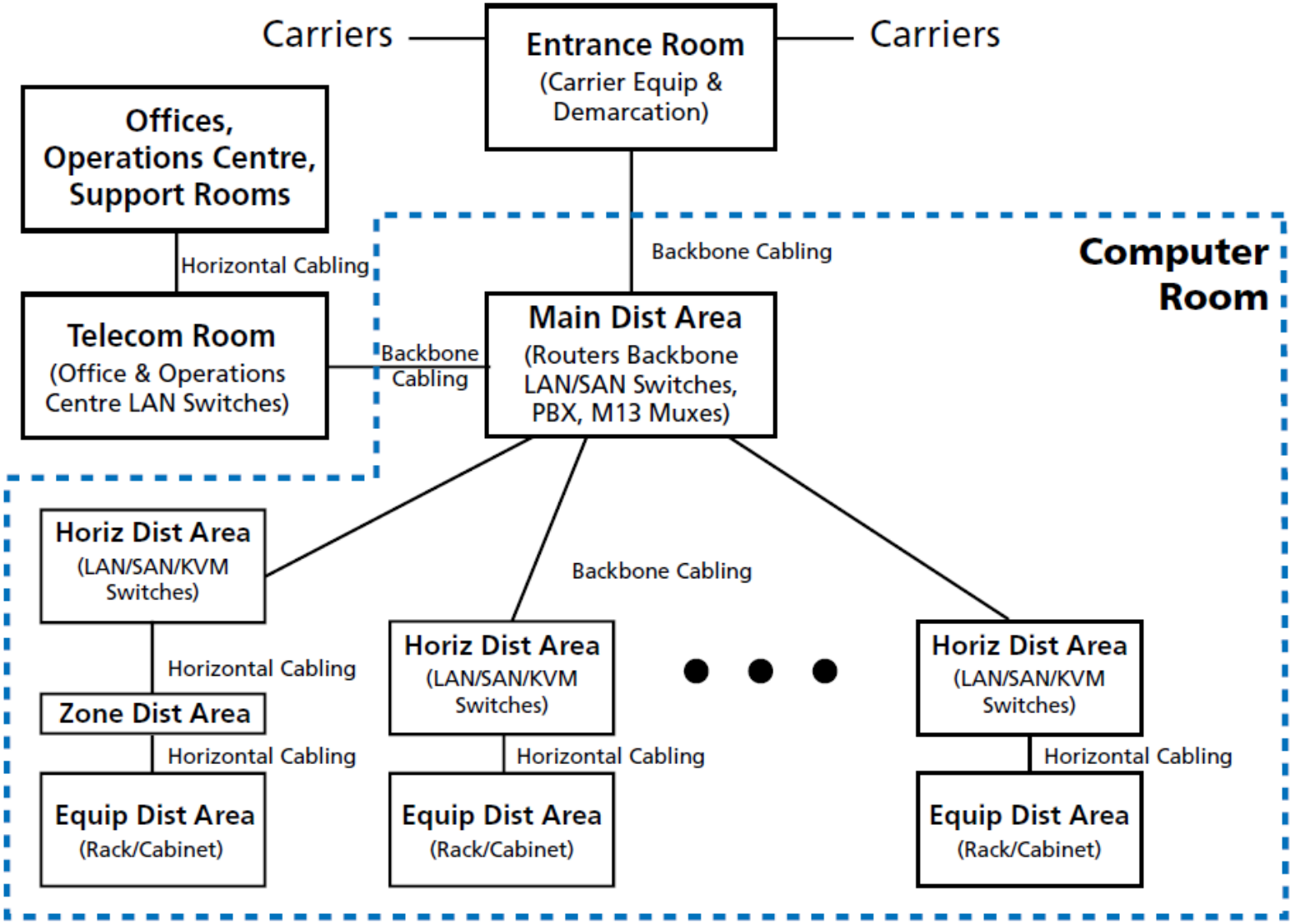
Sector Driving the Demand of Data Center



Data Centers conceived by EIL

DATA CENTERS & OFFICE BUILDING
AT MANESAR AND BENGALURU FOR UIDAI

Data Center showing Key Functional Area



Design Standards

ANSI/TIA942-A 2014

ANSI/BICSI 002 - 2014

UPTIMC Institutes TIER Std.

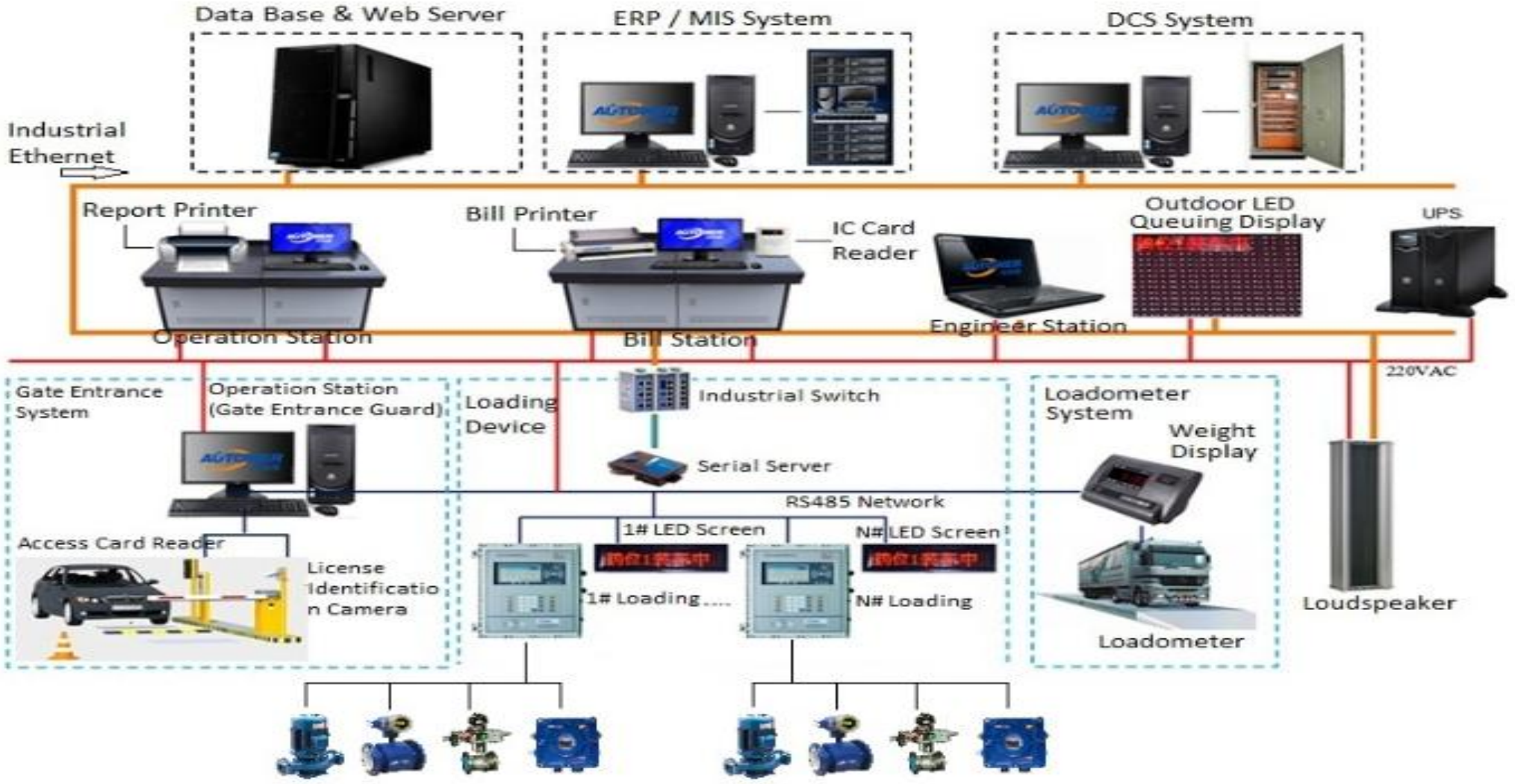
Data Center Tiers

Tier 1	• Basic data center • No redundancy
Tier 2	• Redundant components • Single distribution path with redundant components
Tier 3	• Concurrently maintainable • Multiple distribution paths with only one active
Tier 4	• Fault Tolerant • Multiple active distribution paths

Classification of Data Center – Tire Topology

Tier Requirements	Tier – I (Basic)	Tier – II (Redundant Components)	Tier – III (Concurrently Maintainable)	Tier – IV (Fault Tolerant)
Distribution Path Power & Cooling	1	1	1 Active + 1 Alternate	2 Active
Redundancy Active Components	N	N+1	N+1	2(N+1)
Raised Floors	12”	18”	30-36”	30-36”
Ups / Generators	Optional	Yes	Yes	Dual
Concurrently Maintainable	No	No	Yes	Yes
Fault Tolerant	No	No	No	Yes
Availability	99.71%	99.749%	99.982%	99.995%
Relative Investment Cost	100%	150%	200%	250%
Implementation Time	3 Months	3-6 Months	15-20 Months	15-20 Months

EIL's Expertise in Automation



Typical Loading Control System Solution

Limitations for Designing Data Center

- Budget
- Geographical Location
- Insurance & Building Code
- Power
- Cooling
- Connectivity
- Site
- Space
- Height

Project influencing factors – The Backdrop

- Changing Economic Scenario
- Globalisation & Connectivity – No longer an Island
- Economies of Scale & increasing sizes of Projects
- Increasing Complexity & Integration of Projects
- Need for Maximisation of Project Asset Value
- Soaring Client Project Delivery Expectations

Data Centre: EIL's Perspective

- System Integrator:
  - Integrate
    - Building Automation System (BAS)
    - Energy Management System
    - Asset Management System
    - Network Connectivity Management
    - Capacity Management
    - Change Management
    - Environment Management System
    - Battery Management System

Make In India:

Modes of Project Implementation

- EPCM
- EPC / PMC
- OBE / LSTK
- BOO / BOOT

Comparison of Modes of Implementation

PARAMETER	EPCM	EPC	OBE/LSTK
Overall Cost	Low	High	Moderate
Schedule Commitment	Low	High	High
Owner's Risk	High	Low	Low
Contractor Risk	None	High	Moderate
Flexibility to Change	High	None	Low
Contractual Issues & Change Orders	Low	High	Low
Owners Management team Resources	High	Low	Low
Quality of Produce	High	High – Extreme vigil required	High

OBE Advantage

- **Transparent working arrangement between Owner and Contractor**
- **Owner gets the combined benefits of EPC and EPCM under the ambit of PSU procedures *for Optimal cost and Fixed time frame advantage***
- **Option of Converting the OBE Contract to LSTK available with Owner based on a pre agreed arrangement .**
- **Significant Cost advantage accrual out of minimization of Financial risks of the Contractor**

Advantage Engineers India Limited

- **EIL as a System Integrator**
- ***Single Point responsibility***
- ***All Files are Processed under PSU procedures ensuring 100% transparency***
- ***Standardization of Data for all Components***
- ***Paramount Safety and Security Ethics***
- ***Experience in handling Sophisticated Projects***

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Thank You

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