Tech Mahindra: Driving exponential GROWTH
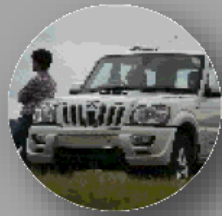
Industry circles (left to right, top to bottom):

- AEROSPACE
- AFTERMARKET
- AGRI - BUSINESS
- AUTOMOTIVE
- COMPONENTS
- CONSULTING SERVICES
- FINANCIAL SERVICES
- INDUSTRIAL EQUIPMENT
- INFORMATION TECHNOLOGY
- LEISURE & HOSPITALITY
- LOGISTICS
- REAL ESTATE & INFRASTRUCTURE
- DEFENCE
- ENERGY
- FARM EQUIPMENT
- RETAIL
- STEEL PROCESSING
- TWO WHEELERS

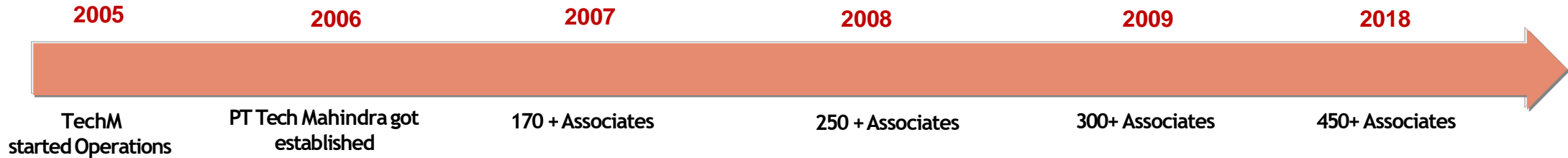|	
AUTOMOTIVE	**Market leader** in India, with 37% market share*
IT	**Top 5 IT service provider** from India
FARM	**World's largest tractor company** by units sold; Market leader in India for >30 years with 40% share*
FINANCE	**Largest rural NBFC** in India
HOLIDAYS	India's **No.1 Vacation Ownership company**
PRE-OWNED CARS	India's **largest multi-brand, pre-owned car company**

* Mar 2015

Revenue: $18.9 Billion | 18 industries | Market Capitalization: $27.6 billion

Our Journey in Indonesia

Tech Mahindra

2005	2006	2007	2008	2009	2018
TechM started Operations	PT Tech Mahindra got established	170 + Associates	250 + Associates	300+ Associates	450+ Associates

- Over 11+ years in Indonesia

- Business Spread
  - Telecom: 70%
  - Energy & Retail: 20%
  - Financial Services : 10%

- Services
  - Managed Services and IT Outsourcing
  - Application Development
  - Maintenance & Support
  - Infrastructure Support
  - SI
  - BI
  - Consultancy
  - SAP Support

# The "Smart" features of Industry 4.0 platform

Digital End-to-End Engineering
Data and information available at all stages of a product lifecycle

Services
Production
Production engineering
Production planning
Product design and development

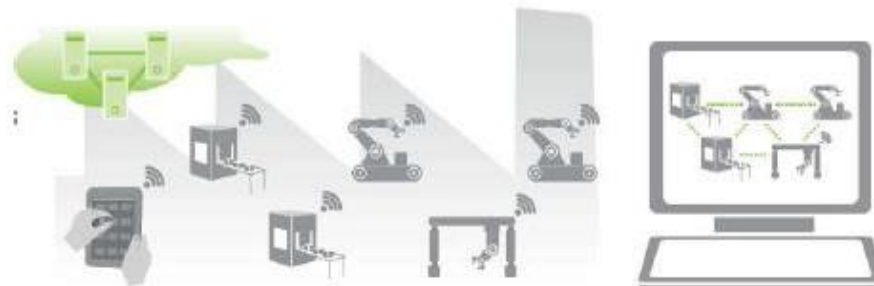**End-to-End data flow**

Smart Supply Network
Collaboration network, sophisticated marketplace offerings, Fully connected supply chains and logistic
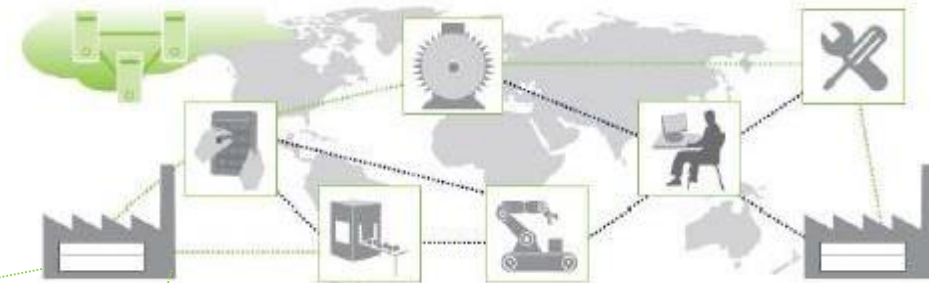
Horizontal Integration

Smart Factories
Decentralized production control, Data-Driven operational excellence

Smart - beyond connectivity & interoperability is the **distribution of intelligence** between industrial objects, networks and information systems, together with **making sense out of that complexity**

Smart Features from "Final report of the Industrie 4.0 Working Group",

Table of Contents

Section 1
Smart City Solutions

SMART ADVANCE METERING INFRASTRUCTURE (AMI)

SMART AMI SOLUTION

- Real time monitoring on faults, leakage, abnormal consumption
- Preventive maintenance scheduling
- MD (Max Demand) trending
- Rest of Life Predictions
- Seamless integration of Sensors, cloud analytics providing reporting and actionable analytics
- Alerts on Power Losses (basis PF); Power Supply condition (basis Frequency)

BUSINESS BENEFITS

- Optimize energy consumption by selective phase Switching
- Possibility of providing prepaid metering
- Ease of operation for the O&M team
- Reduced manpower due to system automation
- Preventive Costly Breakdown

SMART STREET LIGHTING

SMART LIGHTING SOLUTION

❑ Dashboard showing the location of lights on the map
❑ Status of the lights (On/Off) by color indication (Alternate Lights)
❑ Control of light operation
❑ Configuration page
❑ Configuring the Luminosity level (for LED lights)
❑ Naming of the light point

BUSINESS BENEFITS

❑ Energy Savings of up to 20% - 30%
❑ Light lamps life increased to 200% - 300%
❑ Reduction in replacement, hardware and installation
❑ Optimizing the electricity usage in the Campus
❑ Ensuring the uptime of the lights in the city
❑ Easy and speedy rectification of faulty light points
❑ Real time inventory management & prediction

SMART PARKING & TRANSPORTATION MANAGEMENT

SMART PARKING SOLUTION

- ❑ Identification of Authorized vehicles / Elimination of Manual Intervention
- ❑ Enhanced security / Monitoring of Parking bay using live camera feeds
- ❑ Eliminate wait time for authorized users
- ❑ Message / Email notification guiding the way towards the Parking
- ❑ Current hourly occupancy vs. historic average
- ❑ "Hot Spots" where occupancy is the highest
- ❑ Real time status of Parking slots
- ❑ Road Safety
- ❑ Vehicle & Transit Licensing
- ❑ Traffic Management reducing congestion
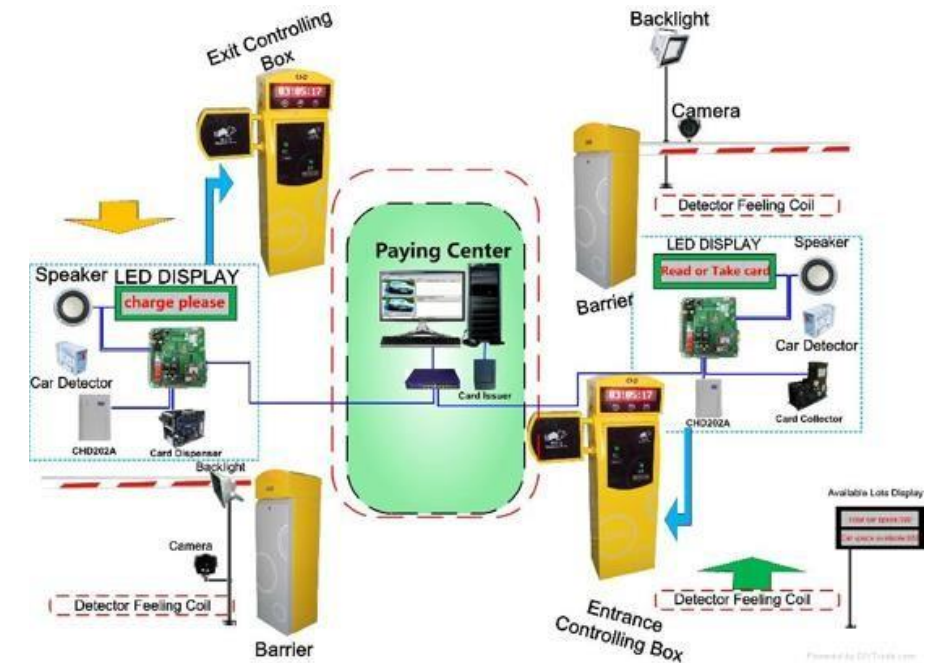
SMART BUILDING ENERGY MANAGEMENT

BUILDING ENERGY MANAGEMENT SOLUTION

❑ Real time monitoring of Diesel Generator (DG) Status
❑ Monitoring of fuel tank and its usage
❑ Temperature of the DG Room
❑ Real Time alerts on the level of Water Tanks

BUSINESS BENEFITS

❑ Reduction in carbon emission by 50% - 60% for indoor lights
❑ Optimize cost and reduced OPEX
❑ Real time alerts to prevent fuel pilferage
❑ Increased Productivity
❑ Preventive maintenance & increased asset life

Temp sensor and DIC

Fuel Level Sensor

Meters for Grid readings

Section 1
Smart City Overview

Smart City - Experience so far...

Lucknow

- Design & Implementation of Surveillance network comprising of IP CCTVs, ANPR, Video Analytics, Mobile Surveillance system, Command & Control Centre & Data Centre
- 280 High resolution cameras installed at 70 strategic locations. 40 of these are with ANPR technology
- Command & Control centre implanted with a capacity of 6 operators & 2 supervisors on 24X7 basis with provision for scalability till 20 operators

Delhi

- Developed Enterprise Management System consisting 70 applications for various MCD Departments, Citizen Services Bureaus and Citizens. The applications are integrated with existing legacy Applications, Payment Gateway, SMS Gateway and Biometric data
- Provide Single Window services" to citizens on any time, any where basis
- Increase the efficiency and productivity of organization and "better monitoring and transparency"
- Develop a "single and integrated view of MCD information system" across all departments and offices in the MCD
- Provide "timely & reliable management information" relating to municipal administration for effective decision making
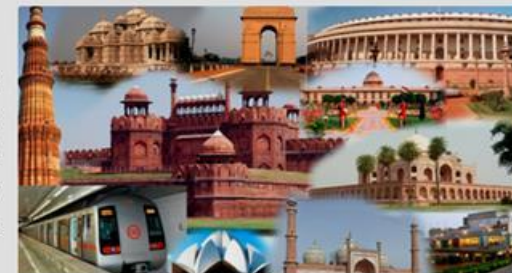
Mumbai

- Citizen centric governance for Smart Cities –
  - Mobile App & Web Portal development
- Provide Single touch point to citizens for multiple services of Smart Governance
- Multiple channels supported – Mobile App/ Web App/ IVR/ SMS/ Email/ USSD
- Unified approach to G2C/ G2G/ G2B services
- Provide Single window for managing SLA
- 33000 man-days saving due to ease of access of information
- Improves Citizen Communication
- Improved Emergency Alert and Response
- 6.5 lakhs Employees Covered

Singapore

- Enabled 70 govt. agencies to discover, share & analyze 360+ layers of Geospatial data provided by 34 Govt. depts.
- Saved US$9 million in application development costs and US$2.5 million in annual maintenance costs, by deploying SOA to take advantage of reusable data
- Enabled Agencies to make changes to applications 30% faster than before due to GeoSpace' s robust SOA framework
- Ensured Up-to-date geospatial information is always available for agency staff to analyze, by updating it daily rather than quarterly

Tech Mahindra's Vision of Smart City
The Connected Components

Smart City

Connected Governance

Connected Social Benefits

Connected Communities

Connected Tourism

Citizen Services Connected

Connected Facilities Entertainment

Food & Restaurants

Sports

Movies, Theatre and Music &

Lifestyle & Arts

Culture &

Shopping

Connected Communications

Telecommunication Broadcasting Internet

New Energy

Connected Utilities

Electricity Ga

Water & Sanitation

Connected Buildings Hotels

Connected Home/Buildings

Office Building

Malls

Connected Public Safety

Connected Education

Schools

Universities

Research

Connected Learning

Connected HealthCare

Hospitals

Doctors

Health Centres

Connected Environment

Pollution Management

Sustainability Management

Ecological Balance

Connected Transportation

Connected Roads

Connected Traffic

Connected Railways

Connected Parking

Connected Ports

Connected Shipping &

Connected Aviation

DIGITAL TECHNOLOGY FOUNDATION

| Networks | Mobility | Analytics | Cloud | Social | Security | Sensors |

Section 1
Public Sector – Case Studies

Accounting Corporate and Regulatory Authority (AMS, Tech Refresh & BPCS)

Client Overview

The Accounting and Corporate Regulatory Authority (ACRA) is the **national regulator of business entities and public accountants in Singapore**. The **mission** of ACRA is to provide a responsive and trusted regulatory environment for businesses and public accountants.

Solutions and Technology Stack

❑ Annual Maintenance and Support, Infrastructure Upgrade, testing and migration of Data and Documents) and BPCS (Business Process Consultancy Services)

❑ Fusion Middleware (Business Process Management for work flows & Content Management

❑ Oracle Weblogic Server 11g, BPM 10.3g, UCM 11g, Crystal Report Server 2008, Oracle DB 11g (with RAC, Diagnostic , Tuning pack), VERITAS NetBackup, iPlanet Web Server NimSoft, CA Workload Management)

❑ IMS services for environment setup to host the application developed by TechM in GDC (Government Data Center)
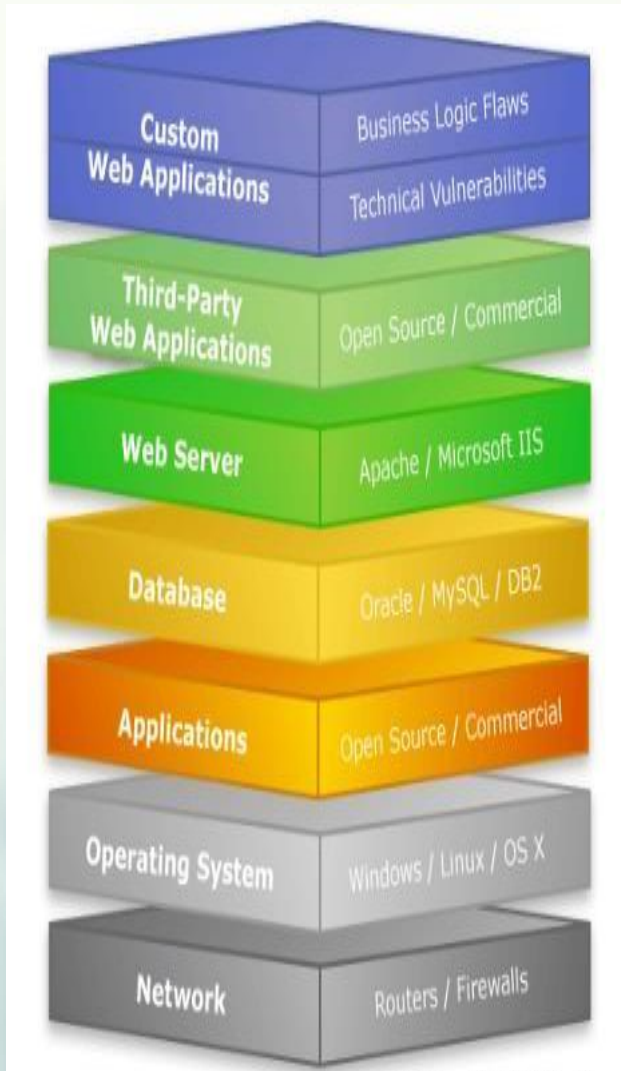
SLA (Singapore Land Authority)

Client Overview

- The Singapore Land Authority (SLA) is a statutory board under the Ministry of Law in Singapore. Their main focus is on land resource optimisation. This is a critical role in Singapore, where land is used for a wide range of activities.
- SLA is responsible for the management of State land and buildings, land sales, leases, acquisitions and allocation. *Mission* - "Limited Land • Unlimited Space"

Solution and Key Highlights

- ❏ Development → New GeoApps built on GeoSpace application
- ❏ Maintenance and Support →GeoSpace (Clearinghouse for SG-SPACE) and INLIS (Integrated Land Information System)
- ❏ Engaged in development/maintenance of several marquee projects such as CGS, GDMS, Wireless@SG, LandNet, INLIS and GeoSpace
- ❏ Active implementers of GIS technology and mobility solutions
- ❏ Winner of most prestigious GIS awards across the globe

Technology Stack

- ❏ ESRI ArcGIS Suite 9.3 , Java J2EE
- ❏ Oracle WebCenter 11g, Oracle DB and SOA 11g
- ❏ Google Search Appliance
- ❏ Safe FME Suite 11, Adobe FLEX , VMWare
- ❏ Dot Net, ADABAS, Natural Programs, VC++ DayCMS

Land Transport Authority

Client Overview

The Land Transport Authority (LTA) is a statutory board under the Ministry of Transport, that spearheads land transport developments in Singapore. LTA plans the long-term transport needs of Singapore, taking care of those who drive as well as those who take public transport. The ultimate goal - a smooth and seamless journey for all.

Solution and Technology

❑ SAP project - Support & Maintenance → 40 applications
❑ Eight years and continuing with huge SAP implementation
❑ Core business [Engineering ,Innovation & InfoComm Technology ,Policy & Planning, Rail ,Road Projects ,Road Operations & Community Partnership ,Safety & Contracts ,Vehicle & Transit Licensing ,Transportation & Ticketing Technology
❑ Corporate Planning and Research ,Internal business [HR & Finance]
❑ Corporate communication

Technology
❑ **Key Technologies and Skills involved**
❑ J2EE, .NET, SAP, SharePoint, Documententum / FileNet, Oracle BPM, DayCMS, GIS
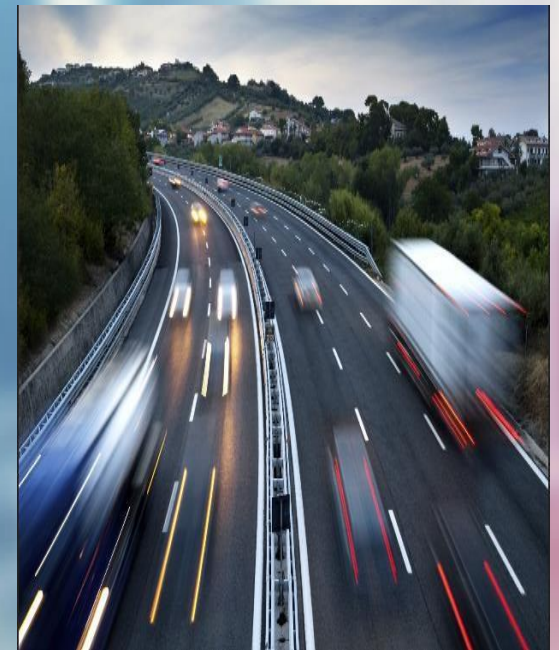
Municipal Corporation of Delhi

Client Overview

The Municipal Corporation of Delhi (MCD) is amongst the largest municipal bodies in the world providing civic services to more than estimated population of 13.78 million citizens in the capital city.

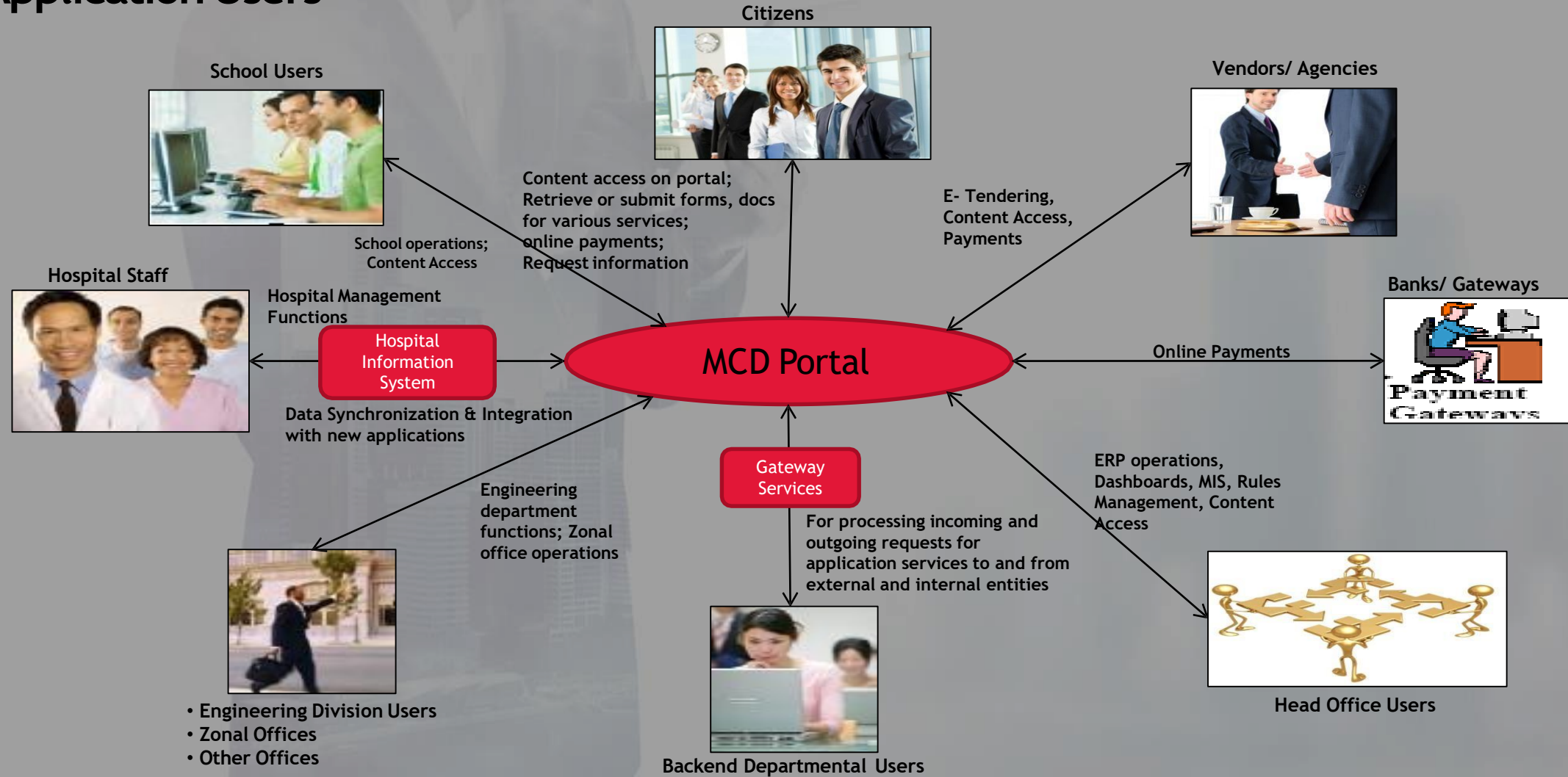South Delhi Municipal Corporation

Mission

MCD intends to enrich citizens' life by providing them development opportunities and maintaining & developing civic infrastructure, through services like: Urban Planning, Public Heath Services, Civil Construction Works, Maintenance of Buildings & Roads

Technology

- ❏ Turnkey project which includes
- ❏ Web Based Portal
- ❏ Application Development & Integration
- ❏ Content Management
- ❏ Document Management
- ❏ Application Support and Maintenance
- ❏ Capacity Building & Change Management
- ❏ Data Centre Setup and Management
- ❏ Helpdesk & Training

Application Users

Citizens

School Users

Vendors/ Agencies

Content access on portal;
Retrieve or submit forms, docs
for various services;
online payments;
Request information

E- Tendering,
Content Access,
Payments

School operations;
Content Access

Hospital Staff

Banks/ Gateways

Hospital Management
Functions

**Hospital
Information
System**

MCD Portal

Online Payments

Data Synchronization & Integration
with new applications

**Gateway
Services**

ERP operations,
Dashboards, MIS, Rules
Management, Content
Access

Engineering
department
functions; Zonal
office operations

For processing incoming and
outgoing requests for
application services to and from
external and internal entities

• Engineering Division Users
• Zonal Offices
• Other Offices

Backend Departmental Users

Head Office Users

Delhi Crime and Criminal Tracking & Network System

Client Overview

The Ministry of Home Affairs has conceptualized the Crime & Criminals Tracking Network and Systems (CCTNS) project as a Mission Mode Project under the National e- Governance Plan (NeGP).

Solution Coverage

- CAS (Core Application Software) Implementation, Customization, Integration with Legacy Systems & Maintenance
- Design, Supply, Installation, Commissioning, Operations & Maintenance of IT Infrastructure, DC/ DRC set up, Network connectivity (LAN Setup at Client Site)
- Setting up Helpdesk Services
- Development of Training centers & Capacity building
- Data Migration & Digitization
- Technology: Java/J2EE based technologies, MySQL, Jasper, Solaris, Windows
- Execution methodology: Water Fall, Agile methodology
- Type of project: System Integrator

Target

- CCTNS will enable end-to-end Crime and Criminal tracking.
- Enable online registration of Complaints, FIR Registration, Investigation and Prosecution.
- Enables connectivity at:
  - 182 Police Stations
  - 276 Highers Offices, Units including 16 Training centres
- CCTNS will enable sharing of data between states through central database maintained at NCRB.

Client Overview

- AOT operates Suvarnabhumi Airport (Bangkok) which was a Greenfield Airport and commenced operations in Sep 2007 with a capacity of 45 Million Passengers per annum .

Project Overview

- TechM part was the largest SI to develop multiple applications for AOT

- Contract worth 55 Million USD in entirety TechM delivered 3 critical areas of the total solution valued at 10 Million USD

Business Need

- An Airport Information Management System (AIMS) with

  - A State of the art data operations

  - Data and system monitoring

  - Transparent and flexible airport billing system

- TechM Scope

  - Integration Infrastructure

  - Information Kiosks

  - Portal

Integration - Solution Overview
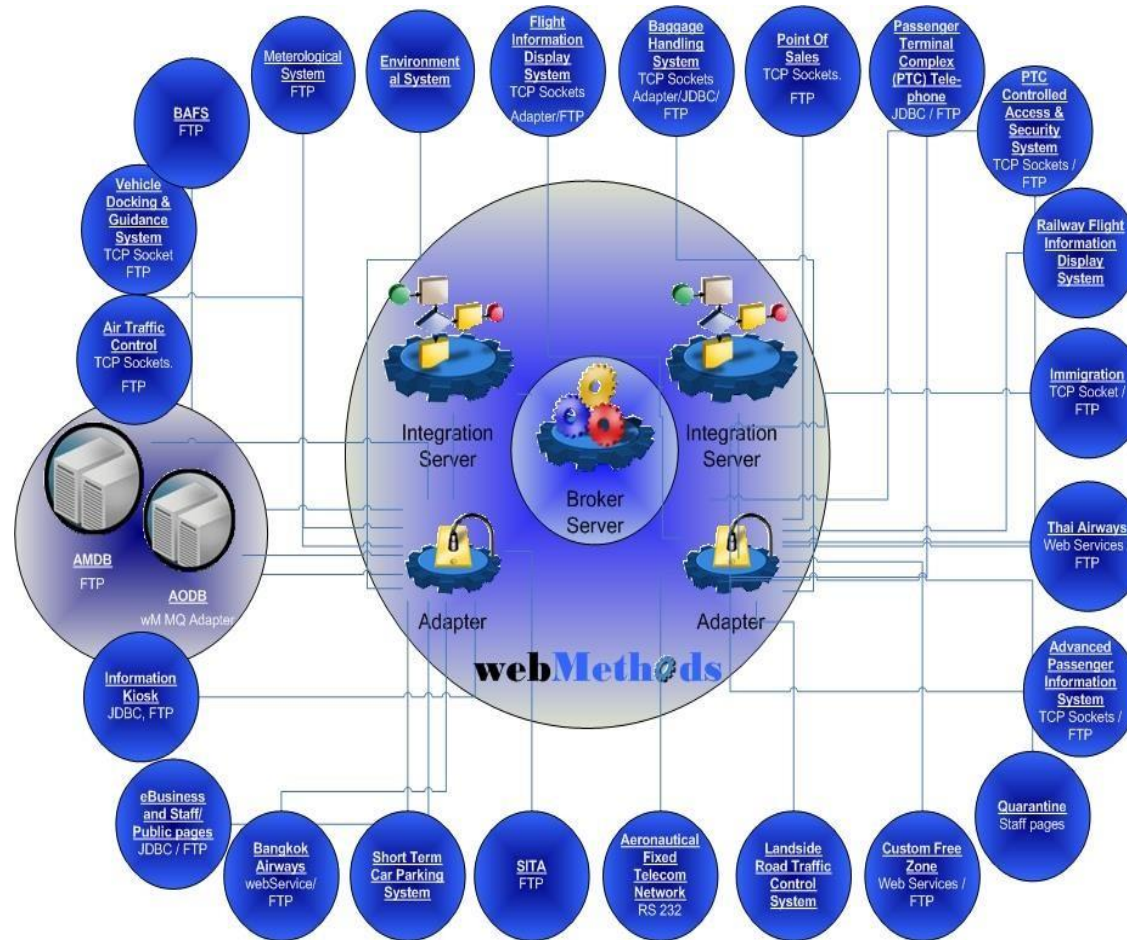
- **webMethods Integration Platform**
- **260+ interfaces** of various types
  - State of the art web services
  - Scheduled / dynamic FT
  - Direct database access
  - Applications running
    - TCP/IP
    - OPC standards.
- **Major Sub systems integrated**
  - Passenger Terminal Complex
  - Roadside Traffic Control
  - Aeronautical System
  - Airline Host Systems
  - Government and other systems

Thank you

Visit us at www.techmahindra.com

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