Cisco Systems: A New Approach to Creating Smart+Connected Communities

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Cisco Green Offerings

- Connected Communities
- Connected Public Services
- Connected HealthCare
- Connected Education
- Connected Government
- Connected Real Estate
- Connected Workplace
- Connected Utility Smart Grid
Smart Community
Lakeside (Chicago, IL)
Services need to be mapped to a development project’s natural lifecycle.

**Project Management**

**PHASE 1**
- Business Discovery
- Service Strategy and Concepts
- Operating Model Strategy
- Qualitative and Quantitative Business Case
- Design Reference & Target Architecture

**PHASE 2**
- Citywide Passive and Network infrastructure HLDs
- In-Building Passive and Network Infrastructure HLDs
- Updated Financial Model
- Tender Document Review and Input
- Ongoing Design Coordination

**PHASE 3**
- Systems Integration
- LLD and Implementation (Cisco Components)
- Knowledge Transfer
- Test and Launch
- Operate and Optimize

**INITIAL FEASIBILITY**
**CONCEPT DESIGN**
**SCHEMATIC DESIGN**
**DETAILED DESIGN**
**CONSTRUCTION**
**LAUNCH & OPERATE**
Clarify drivers, from which ICT operating principles follow

**Key business drivers**

- **Development**
  - Create a “connected” destination that promotes economic and social responsibility, where quality of life is paramount.

- **Target Segments**
  - A lifestyle-centered destination for retail, commercial, education, and residential uses.

- **Property Value and Returns**
  - Increase property value (through sale or rental premiums) by offering a differentiated, one of a kind destination that caters to the needs of the target segment.

- **Branding**
  - Augment the brand recognition of 5401 North and value for CPRT.

**Operational principles**

- Healthy Living
- Connectivity
- Community

- Building-CRE
- Education
- Energy
- Healthcare
- Transportation
- Retail
- Residential
- Public safety
- Office
- Municipal
services aligned to operational principles are matched to each type of building

**Essential services**
- Provide basic functionality for next generation buildings and address inefficiencies in construction and property management
  - Energy Management - Building
  - Intelligent Infrastructure Management Service (IIMS)
  - Intelligent Maintenance Management Service (IMMS)
  - Smart Card
  - Web and Mobile Portal

**Transversal services**
- Common to all types of buildings and tenants
  - Triple Play
  - Information operations center (IOC), which enables
    - Automatic Accident Detection
    - Green Aware
    - Integrated Safety and Security
    - Energy Demand Management
    - Grid Monitoring and Control
  - Citizen and Authority Interaction
  - Emergency Notification
  - IP Interoperability and Collaboration System (IPICS)
  - License Plate Recognition
  - Network Energy Management
  - Security Video Analytics
  - Smart Grid - Specific User

**OFFICE LEASE + SMART WORK CENTER**
- Co-Location
- Desktop Collaboration
- Office Resource Management
- Personal Virtual Office (PVO)
- Telepresence - Managed
- Unified Communication
- Office-in-a-box
  - Disaster Recovery
  - Managed IT / Remote Desktop Support
  - Network Security
  - Storage
- Additional services
  - Extended Telephony
  - Visitor Management
  - Digital Signage - for Information and Advertising
  - Virtual Attendant
  - Virtual Desktop

**RESIDENTIAL**
- Smart Home System
  - Home Automation
  - Home Energy Management
  - Home Intercom
  - Home Mobile Access
- Additional services
  - Home Entertainment
  - Home Personalization
  - Home Security
  - Virtual Learning
  - Virtual Visit
    (Telepresence)

**PUBLIC AREAS**
- Citizen Wi-Fi Hot Spots
- Web and Mobile Portal - City Portal
- Smart Car Parking
- Digital Signage
- Location Based Services
- Smart Kiosk
- PDA Employee - Street

**DUKE MEDICAL**
- Inter-Hospital Collaboration / Health services exchange
- Connected Imaging
- Connected Mobile Clinics
- Digital Media Health Education and Awareness
- Healthpresence

**RETAIL**
- Footfall Tracking
- Location Based Services
- Personalized Advertising

**SCHOOLS**
- Desktop Collaboration - Collaborative Learning Environment

**WAKE TECH**
- Desktop Collaboration - Collaborative Learning Environment
- Digital Signage - for Education
- Rich Video Learning Environment
- Telepresence - Education

**YMCA**
- Digital Community Center
- Digital Signage

**TRANSPORTATION**
- Transit Digital Displays
- Dynamic Traffic Management
- Green Corridor
- Reversible Lanes
- Car Data Collector

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Day-1 services in **BOLD**
The infrastructure network will help support the implementation of foundational and services technologies.

Foundation Technologies

- **FTTx**
  - Multiple Fibers per Plot
  - Separate Designs for MDUs and SDUs
  - Bldg Fiber under ISP

- **Voice**
  - Dial Tone to Sub
  - SP grade VoIP
  - Call Control for On-Net & Off-Net Calls

- **IPTV**
  - Live TV Streaming
  - Video on Demand
  - 5401 North Controlled Content

- **Traffic Peering**
  - Multiple Internet Links
  - PSTN Peering for Off-Net Calls
  - IPTV Peering for Content

- **WiMESH**
  - Citywide WiMESH
  - Tenant / Public Use
  - Municipality / S&S Use

- **Data Center**
  - Highly Available and Reliable area
  - Host Servers of all Apps and Services

- **ONM**
  - NOC Tools & Processes
  - Collaboration with DCOC, 5401 NorthOC, SOC
  - Contact / Call Center

Services Technologies

- **Triple Play**
  - 5401 North BACKBONE
  - Passive Fiber b/w POPs
  - Core and Dist Routers
  - IP / MPLS Technology
  - High Availability
  - Traffic Segregation
  - High Bandwidth and Scalability

- **IOC**
  - Distributed IP Cameras
  - Distributed Control
  - Centralized Monitoring

- **BAS**
  - Infra Provides IP Links to BAS Controllers
  - Traffic Sharing SP Network
  - Traffic segregation a must

- **City Portal**
  - E-Government Website
  - Hosted in DC
  - DC provides Load Sharing and Security

- **Digital Signage**
  - Distributed DS Screens
  - Centralized Management and Content Distribution

- **Unified Comm**
  - Provides for Biz Voice Services
  - Foundation Tech for Office in a Box

- **Tele-Presence**
  - High Quality Video Conf
  - Extranet VPN, high BW & QoS are key requirements

- **Virtual Attendant**
  - Distributed VA Consoles
  - Linked closely with IOC Call Center

**Office in a Box**

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Based on industry standards, 2 Points of Presence are needed -- to provide redundancy and availability of services to the community at all times.
Totally Connected, Personally Controlled

**CHALLENGE**
Integrate technology to expand opportunities

- Provide new ways to educate
- Enhance access to healthcare
- Enable infrastructure and energy systems to reach maximum potential
- Power the neighborhood utility services
- Connect the southeast lakefront community to advanced information technologies
Totally Connected, Personally Controlled

Lakeside can build the most advanced and integrated information and communication technology network in the world

- Providing a robust and integrated digital platform that improves safety, expanded services and quality of life
- Positioning Lakeside as a hub for new and innovative research, healthcare and education
- Promoting an open and entrepreneurial environment to create new business opportunities, local and global.
- Expanding the network to provide access and opportunity beyond Lakeside.
- Enabling a seamless personal experience: Any service, anywhere from any device.
Smart Buildings
Innovative Intelligent Networks
Smart+Connected Real Estate

- Regulatory Compliance
  - Monitor, Manage, Reduce
  - Demand Response
- Early Warning and Notification
  - Real Time Communications
  - Improved Response Time

**Energy Savings** ~28%

- Staff Mobility
- Centralized Operations
- Extended Lifecycle
- Critical Systems Monitoring
- Infrastructure Convergence

**Operational Efficiency** ~17%

- Reduced TCO
- Enhanced Tenant Services
- Stakeholder Value
- Employee Attraction / Retention
- Green – Reduced Industrial Waste

**Safety and Security** ~21%

**Financial Incentives**

- Monitor, Manage, Reduce
- Demand Response

**Experience / Services**
The “Building Information Network”

Information Services

- High-Speed Internet
- Wireless
- Mobility – Remote Access
- Unified Comms
- Audio and Video Conferencing
- Telepresence
- Interactive media
- Digital signage

Building Services

- Lighting
- Elevators
- RFID - Tracking
- HVAC – Sensors
- Fire
- Video Surveillance
- Access
- BAS – Energy
Connected Anytime Anywhere Any System
Smart Work Center
Smart+Connected Communities:
Cisco Smart Work Centers: Foster Urban Regeneration, Social Inclusion, and Reduced Carbon Footprint
Smart Work Center offers a flexible and user-centric work space with enhanced communication technologies designed to reduce carbon footprint.
At a Smart Work Center location, the local authority, enterprises, small- and medium-sized businesses, and entrepreneurs can rent dedicated space or use available space in the flexible workplace.
Smart Work Center – Booking

- **Cisco’s Smart Work Center Reservation System**
  - Real Time Traffic Information
  - Office availability
  - Conference rooms
  - Telepresence

- **Cisco’s Physical Access Control System**
  - Personalization
  - IP Telephony and Internet access activated
Smart Work Center – Arrival Lobby

**Hallway Digital Sign:**
- Welcome message
- Office maps and directions
- Building energy consumption
- General information's

**Office Digital Sign:**
- Personal profile
- Reports on past visits
- Benchmarks against other employee energy consumption
- Suggestions on how to improve power usage
Smart Work Center – **Office**

Cisco’s IP Phone:
- BMS functions
- Technical support

Cisco’s Unified Communications and Wireless Features:
- WebEx
- Presence
- Voicemail
- Messaging
Smart Work Center – Check Out

Office Facilities Features:
- TelePresence
- International Calls
- Printing & other services

Unified Billing
- Credit Card
- Invoice
Smart Work Center - Benefits

**Workers and businesses**
- Offers economies of scale through sharing centralized facility and technology services
- Professional infrastructure and business support
- Contributes to work-life balance by reducing commute time

**Local Authority**
- Reduces workspace overhead, real estate costs, and building operation costs
- Creates spaces for people to meet in person or virtually, for business or social activities
- Reduces traffic congestion

**Community**
- Provides a vision and infrastructure for tomorrow’s resilient community
- New patterns of work, enhancing economic output, social cohesion, and community attractiveness
- Creates competitive, innovative, sustainable work-life environment
Presence-based Smart Services

- On-demand resource enablement
- E.g. With integration to the calendaring tool, activation of lights, lifts, and, HVAC during extended hours or weekends
- Increased Energy Savings
- Provides scope to add new presence based services in future.
Example - Smart Workplace

- Wireless Access Point
- IP Phone
- Live Concierge Conference
- IP Based Security
- Digital Signage
- HVAC Automation
- Energy Control
- Wireless Access Point
- IP Phone
- Live Concierge Conference
- IP Based Security
- Digital Signage
- HVAC Automation
- Energy Control
Industry Changing Technology - PoE

• Part of the DC Micro Grid
• No Vampire power loss
EnergyWise: Managing Energy Consumption of Networked Devices

**Business Objectives:**
- Reduce grid load and peak surcharges
- Smooth and time shift power usage
- Control Laptops, PCs, APs, Phones

**Solution:**
- EnergyWise deployed on existing Cisco Catalyst Switches + PC Agent

**Business Value:**
- 51 tons GhG/$20,558 savings = 15 mid-sized cars off road for a year
- 371 tons GhG/$74,230 savings from Phase 1 power-down = 111 cars

1000 Phones, 100 APs
700 laptops, 300 PCs
Dashboards – Sustainability - Awareness
Changing Behavior Drives Savings
Smart Services at your finger tips