

# Case Studies in IoT for Smart Cities

## Building Smarter, Safer, and Thriving Communities

**Justin Bean**

Director of Smart City Solutions Marketing,  
*Hitachi Insight Group*



# What is a Smart City?

## Safe



## Thriving

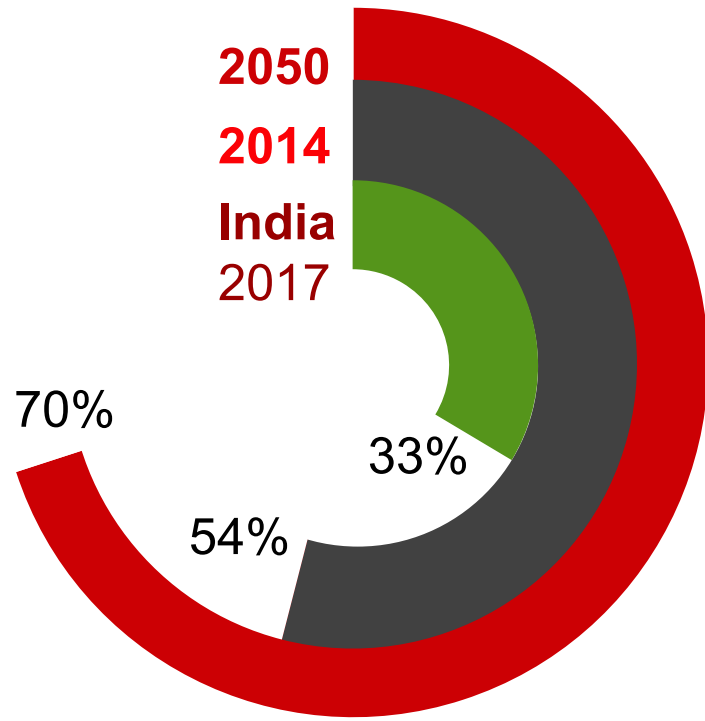


## Convenient



# Cities Are Facing **Growing Pressures**

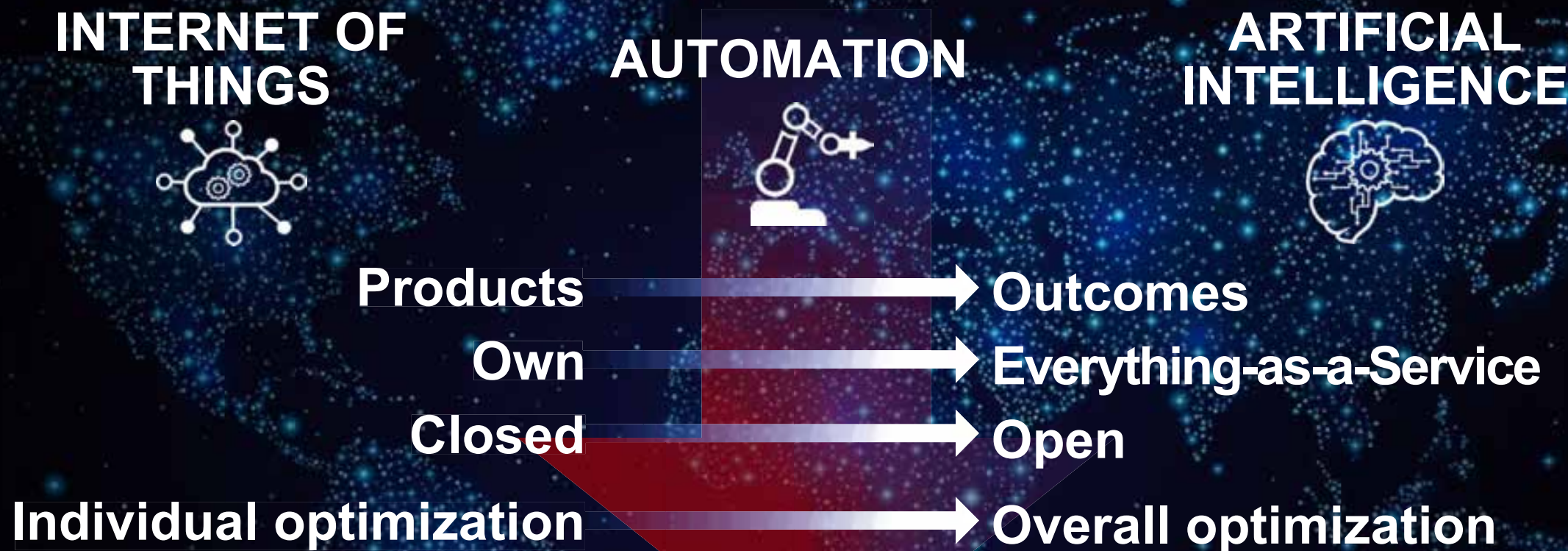
Percentage of  
Population Living in  
Cities



Sources: United Nations, 2014, IDC, 2016<sup>1</sup>



# The Evolution of Digital Technologies



**Driving quality of life and economic growth**

# The Opportunity for Governments to Improve Effectiveness and Efficiency

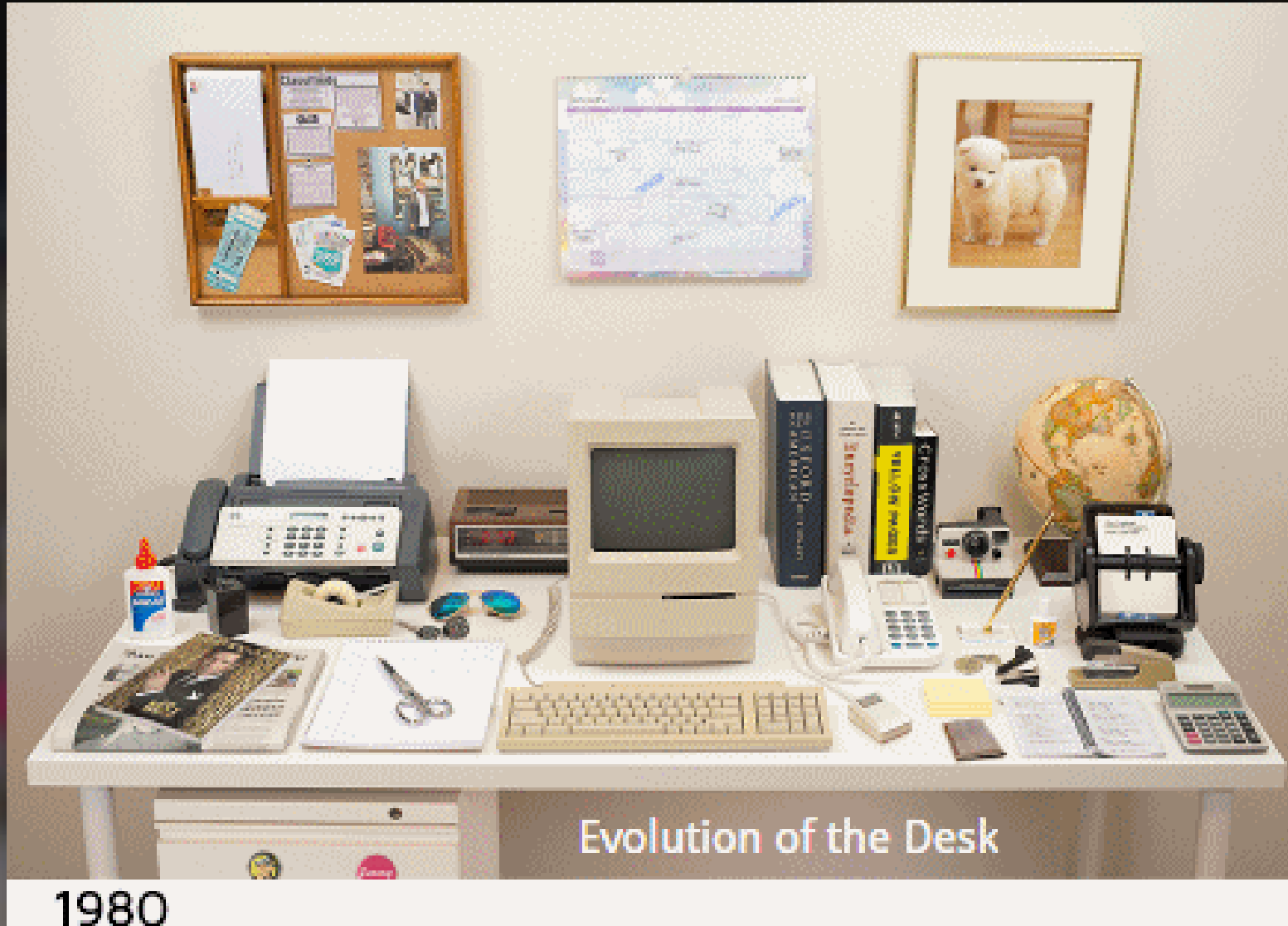
Governments can save

**\$3.5 Trillion**

Per Year  
Globally

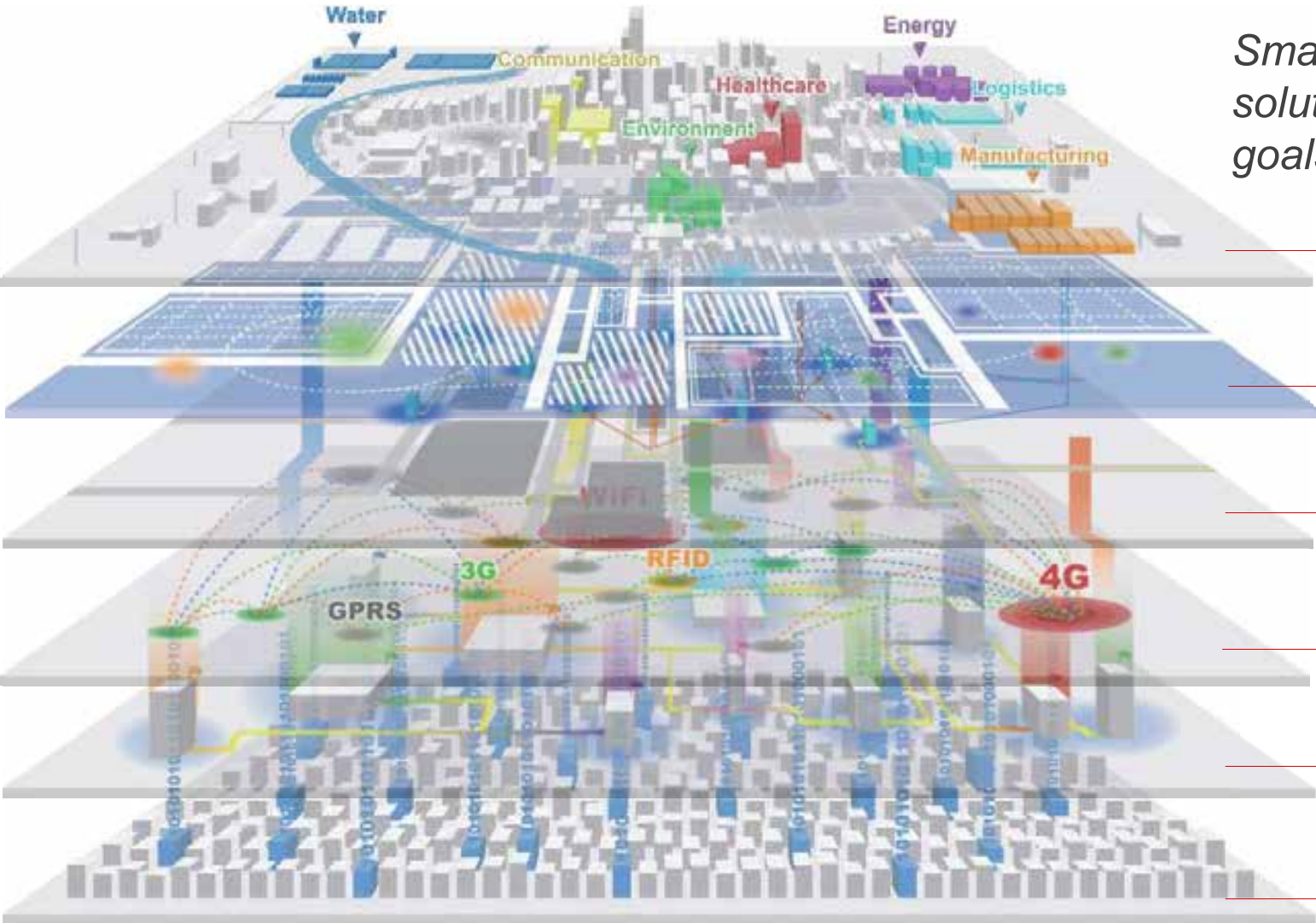
# Technological Disruption Can Be an Economic Opportunity

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# Cities Are Complex Platforms for Managing Human Life and Society



*Smart Cities are organisms that integrate solutions and infrastructure to meet local goals.*

Citizens, Business, Organizations

Urban Planning

Government Operations And Services

Digital Networks And Services

Sensors, IT Infrastructure And Operations

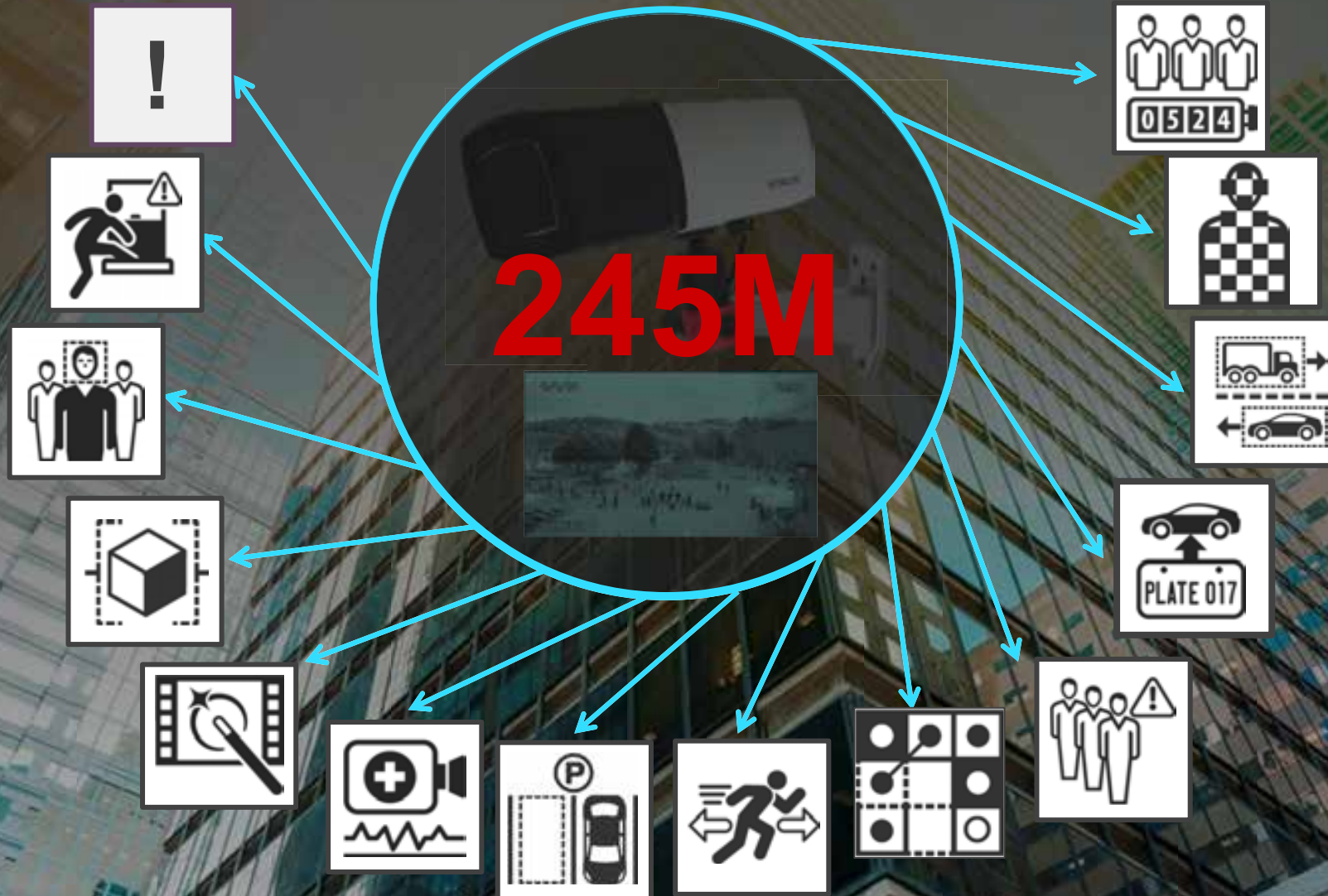
Physical Infrastructure



**Cities produce  
massive  
amounts of  
data**



# Video is Now IoT Data





# Hitachi Video Analytics: City, Operational, and Business Insights

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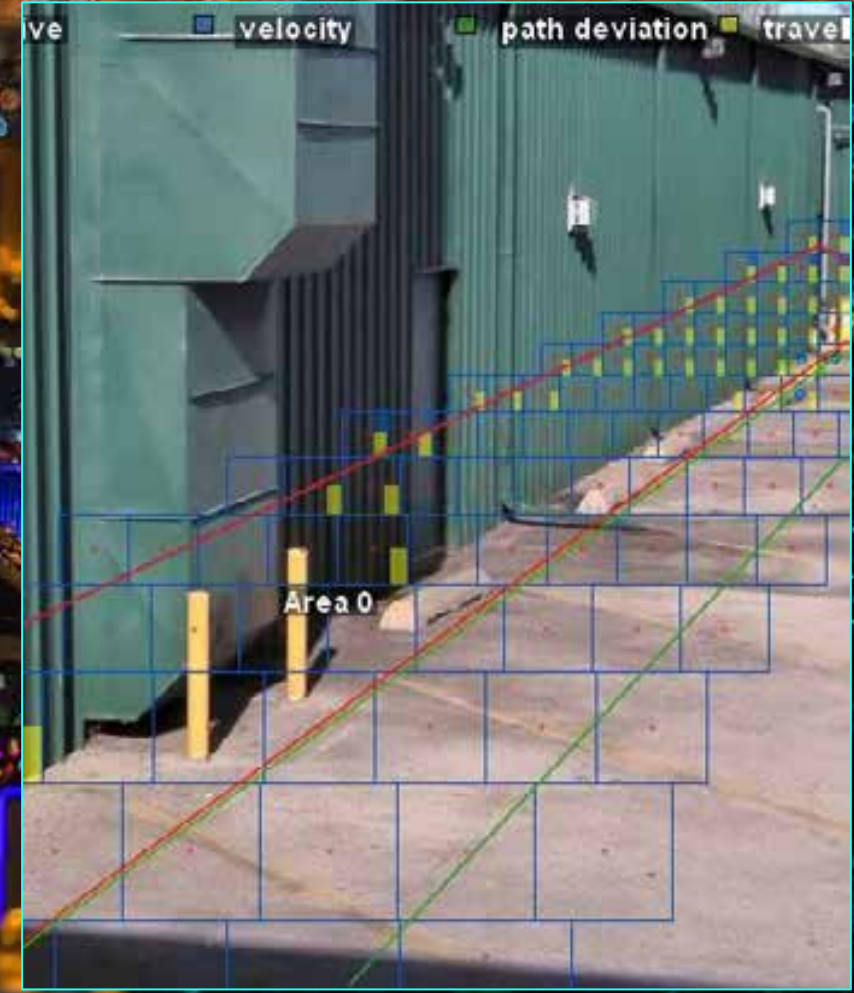
## Traffic Analysis



## City Intelligence



## Security





# Cities Need a Single View of Data



# Smart Cities Will Not Be Built By Governments Alone

Cities are more than city hall, and smart cities will be built by a variety of organizations that manage publicly-accessible space, including:

- Airports
- Traffic and Transportation agencies
- Campuses (education, corporate, healthcare, etc.)
- Retail malls and districts
- Public safety and police
- City governments and planners

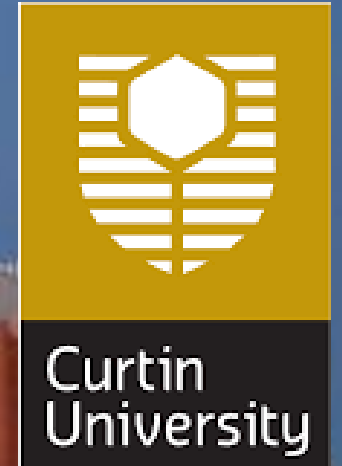




# Smart Campus: Curtin University

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- 60,000 students, 4,000 staff smart campus
- **Goal:** Better student experience, increased efficiency and safety
- **Hitachi Smart City Platform** collects, integrates, and analyzes data



## Outcomes:

- Campus and facility utilization analysis for operations
- Activity analysis to understand and enhance student experience
- Environmental health and sustainability on campus
- Public safety and prevent testing fraud

*"The smart campus is all about looking at what we do at Curtin, and doing it better."*

Paul Nicholls, Director,  
Strategic Projects (R&D),  
Curtin University

# Smart Transportation: New York Waterway

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Hitachi enabled smart ferries, real-time interagency information sharing for fast emergency response

Sept. 11, 2001  
9/11 WTC

Aug. 14, 2003  
Northeast Blackout

- **Largest private commuter ferry company in U.S.**

- Fleet of 35 vessels serving New York and New Jersey
- 35,000 passenger trips per day

*"This [Hitachi Visualization] solution enhances our security .... It also gives us the flexibility to stay on board and see what is going on in real time on our vessels."*

**Jonathan Figueroa, Director of Facilities, NYWW**

Jan. 15, 2009  
US Airways Fl.1549

Oct. 28, 2012 Hurricane  
Sandy



# Smart Co-Creation & Data Marketplace: Copenhagen, DK

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- **Goal:** Carbon neutral by 2020, innovative economy
- **Hitachi Data Exchange:** marketplace for private and public data

## Outcomes:

- Businesses can now search, buy and sell data easily
- New data is available for innovation and research
- New monetization opportunities for many organizations

*The new Big Data platform is expected to provide citizens and businesses access to information, which among other things, can create new technological solutions...*

*Innovative solutions can also help foster growth and create jobs in Copenhagen”*

**Data Suppliers**

**CITY DATA  
EXCHANGE**

**Data Consumers**

**- Frank Jensen, Lord  
Mayor of Copenhagen**



# Smart Airports Digital Transformation

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**Problem:** A group of airports needed to modernize security for upcoming Commonwealth games because legacy infrastructure was limited and insufficient

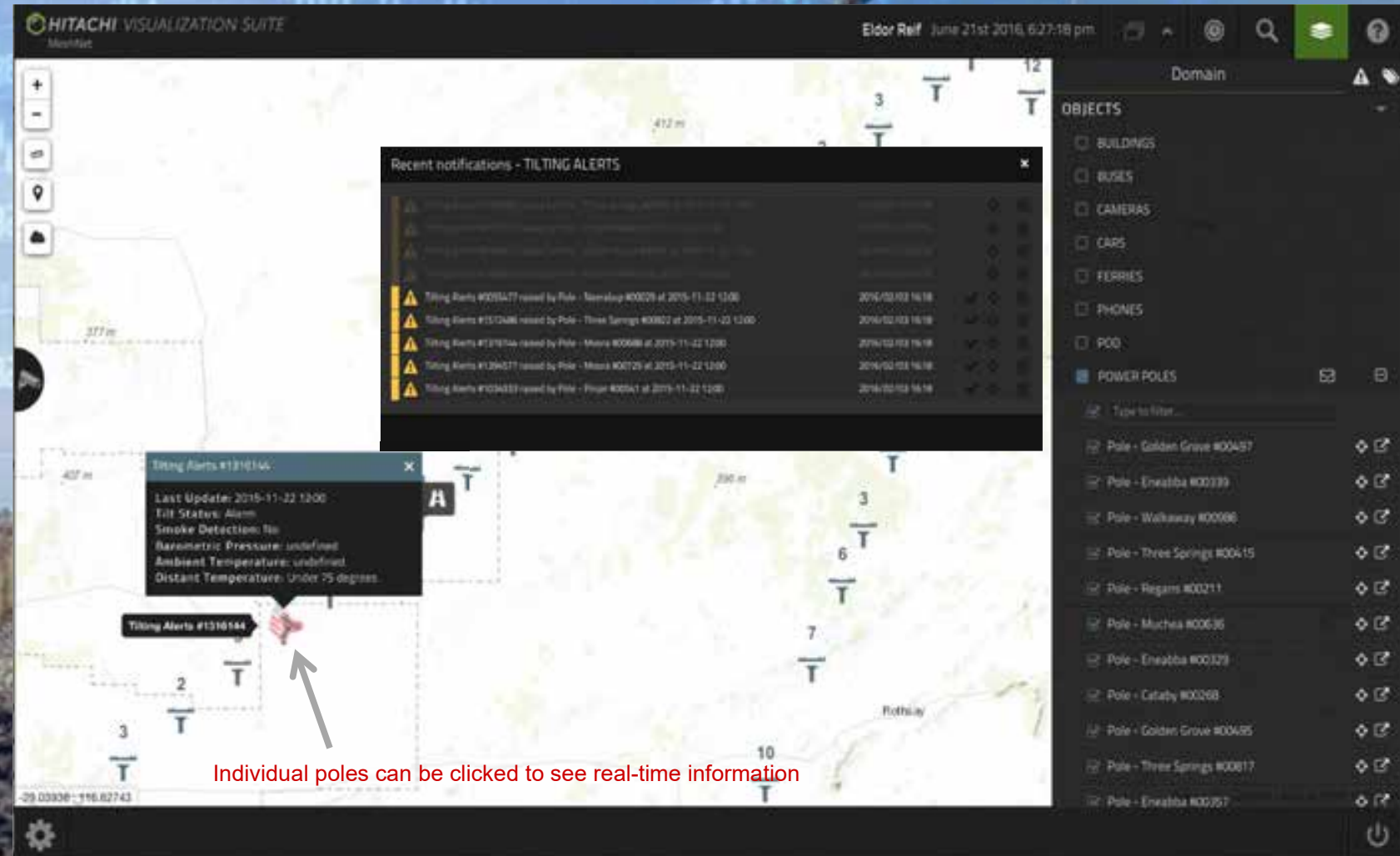
**Solution:** A fully integrated, high performance Hitachi Video Management Platform and Hitachi Visualization Software

**Next steps** are to integrate video analytics, big data analytics, facial recognition, access control for future integration, monitoring vehicles and maximizing the retail space were keys to success



# Smart Utilities: Reducing Hazard and Costs

- Australian utility with 650,000 power poles needed a smart power pole management to stop incidences of poles falling and even starting fires
- Hitachi smart solutions connected to sensors on power poles to identify irregularities, such as tilting, smoke, arcing and temperature alerts





# Smart and Safe Stadiums

**Challenge:** Emerging threats to stadiums and venues, need to improve operations and customer experience while ensuring safety.

## TRANSFORMATION

- Drone detection, facial recognition and fan experience
- Millions of fans, visitors and city residents kept safe





# Safe City: Austin Police

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Austin PD has a data-driven, citizen-centric police philosophy to solve high crime rates in a hot spots like the entertainment district near the interstate.

**Problem:** Outdated systems and low situational awareness

**Solution:** Hitachi Smart City edge-to-core solutions collect, analyze and share information for crime hot spots to allow the city to monitor activity in real-time.

**Outcomes:** Improved situational awareness and video records of recent crimes, from video, gunshot detection, license plate recognition (LPR), radioactive isotope detection, computer aided dispatch, and 3<sup>rd</sup> party cameras – making Austin PD a truly data-driven operation.



*We've been able to reengineer our department into a data-driven and intel-based policing organization.*

**Troy Gay, Assistant Chief,  
Austin Police Department**



## Renewable Energy Management

- Working with Atria Power to optimize wind turbine farms
- Predictive maintenance to forecast wind power and increase yields
- Energy trading and optimization planned



## Leading Hotel Energy Optimization

- Monitoring of chillers and HVAC systems for international chain
- Monitoring live energy spend
- Recommending energy consumption and cost optimizations



## MoU with CII

- Confederation of Indian Industry
- Working with smart city industry leaders
- Form consortium to create smart city pilots and replicate throughout India



## Mass Transit System Navi Mumbai

- Working with Maharashtra govt
- Hitachi-led consortium to deliver turnkey project with international partners
- Will serve 11,250 passengers per hour over 110 km



# Hitachi: A Solution Partner for Innovation

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## TRANSPORTATION



AIRPORT SOLUTIONS



RAIL  
SYSTEMS



TRAFFIC  
MANAGEMENT



FLEET & LOGISTICS  
MANAGEMENT



AUTOMOTIVE  
SYSTEMS



SMART ACCESS  
CLOUD SYSTEMS

## SMART CITY



PUBLIC SAFETY &  
SMART CITY



CITY DATA  
EXCHANGE



SMART CITY  
ANALYTICS



WATER & SEWAGE  
SYSTEMS



TECHNOLOGY  
INFRASTRUCTURE



BUILDING  
SYSTEMS

## ENERGY



ENERGY SUPPLY  
MANAGEMENT



WIND  
TURBINES



RENEWABLE  
ENERGY



ENERGY DEMAND  
MANAGEMENT



BATTERY  
SYSTEMS



MICROGRIDS &  
GRID STABILITY

## INDUSTRIAL



MANUFACTURING  
OPTIMIZATION



SUPPORT  
CHAIN



CONSTRUCTION  
MACHINERY



COMPUTER  
INTEGRATED  
MANUFACTURING



PRODUCTION  
CONTROLS



CONSTRUCTION  
MANAGEMENT

## DATA-DRIVEN BUSINESS



MACHINE  
ANALYTICS



HUMAN  
ANALYTICS



BUSINESS  
ANALYTICS



DEVICE  
CONNECTIVITY



PREDICTIVE  
ANALYTICS



ENTERPRISE  
INTEGRATION

## HEALTHCARE



PARTICLE BEAM  
THERAPY



TESTING AND  
DIAGNOSTIC



CONNECTED HEALTH



BIOINFORMATICS



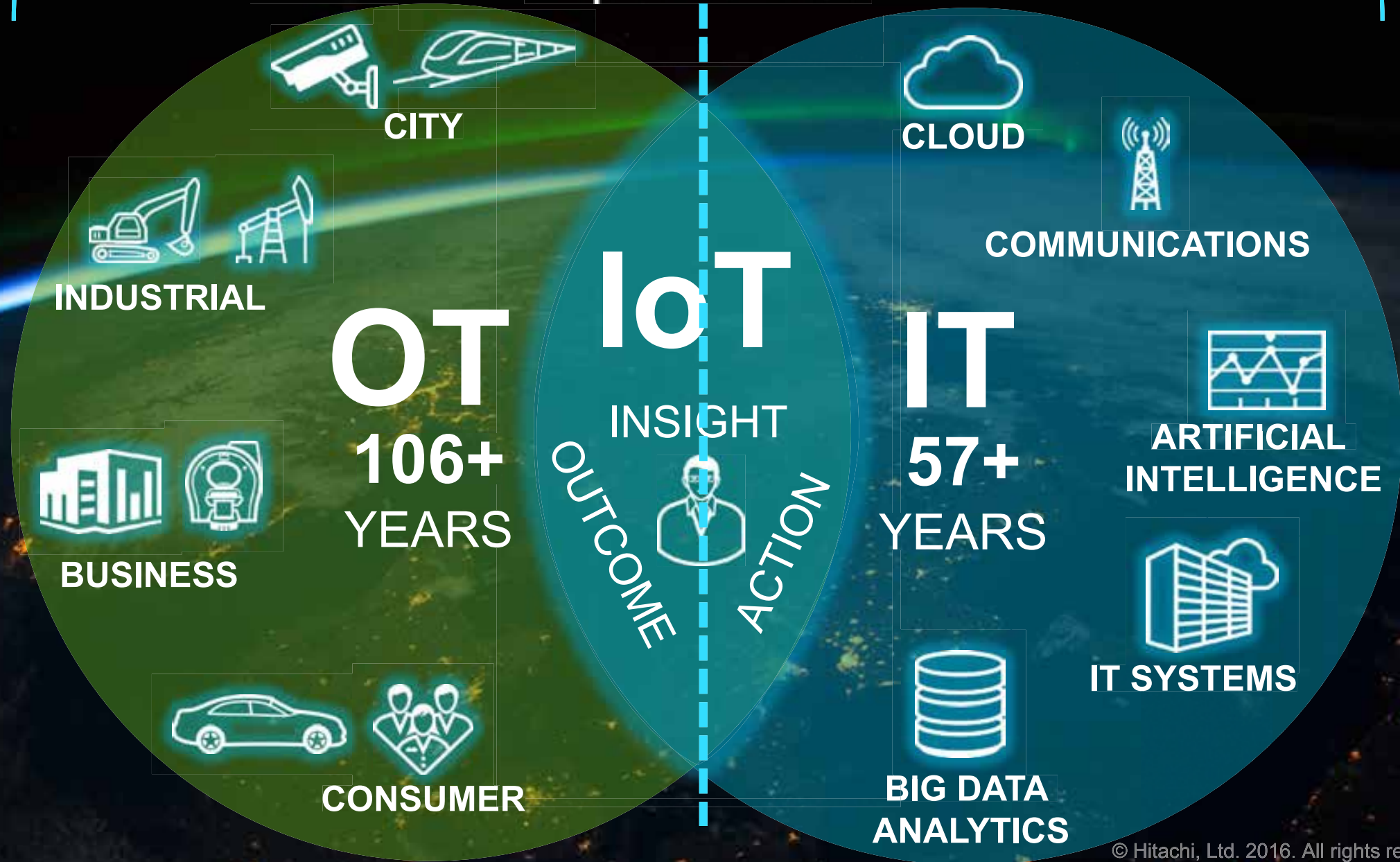
MEDICAL IMAGING  
AND DISTRIBUTION



PHARMACEUTICAL  
SOLUTIONS

# An IoT Powerhouse

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# Social Innovation Drives Hitachi

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## THE FUTURE IS OPEN TO SUGGESTIONS

Social Innovation starts with an idea: one simple thought that has the power to change the world. At Hitachi, we're bringing these possibilities to life with advanced information technologies and infrastructure solutions. But we're not doing it alone. Through unique co-creation platforms, we're bringing thinkers and doers together to accelerate Social Innovation—working smarter, faster and more creatively towards a better tomorrow.



# Thank You





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## Employee Provident Fund (EPFO)

- Digital transformation to improve user experience
- From manual to automated and mobile
- Users can access statements and status on the go