

SMART CITY

BUILDING TOMORROW'S CITIES

INDUSTRY



SECURITY



RETAIL



SOCIETY



HEALTHCARE



HOME



ENERGY



MOBILITY





OUTLINE

WHAT'S A SMART CITY?

WHY SMART CITIES
MATTER?

WHO'S MAKING SMART
CITIES HAPPEN?

THE ROLE ANALYTICS
PLAY

CASE STUDIES

SEOUL, KOREA

CHICAGO, USA

WHAT IS A SMART CITY?

Smart cities use *data and technology* to generate efficiencies, improve sustainability, create economic development, and enhance quality of life factors for people living and working in the city



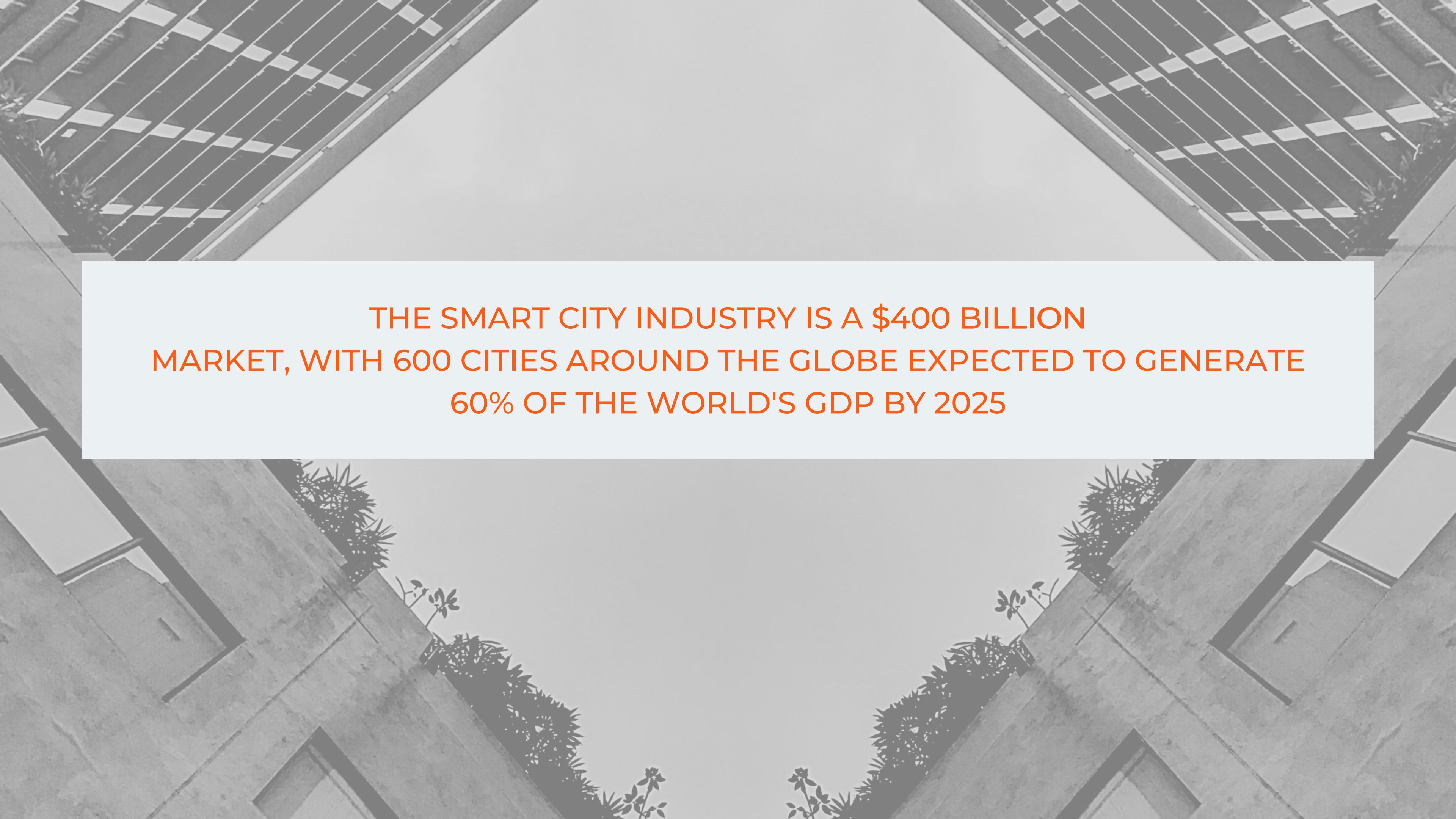


WHY IT MATTERS?

70%

The UN predicts that by 2050, almost 70% of the world's population will live in urban areas.

And that every week, another 1.3 million people around the globe move into a city



THE SMART CITY INDUSTRY IS A \$400 BILLION MARKET, WITH 600 CITIES AROUND THE GLOBE EXPECTED TO GENERATE 60% OF THE WORLD'S GDP BY 2025

WHO IS MAKING SMART CITIES HAPPEN?

01

Federal, State, and city
governments

02

Public and private
companies such as Intel,
Cisco Systems, IBM,
Verizon, Silver Spring
Networks, Build.io, and
GE Lighting.

03

Private
and public partnerships
are becoming a smart
way for cities to adopt
new technology

ANALYTICS IN SMART CITIES

■ SECURITY + POLICING

Through predictive analytics, using historical and geographical data.

■ CITY PLANNING

Data and modeling make it possible to map the infrastructure outcomes of any use of space with a high degree of accuracy

■ TRANSPORT

Predicting when peak times will be for upcoming events, improving reliability, decreasing delays and increasing efficiency.

■ SUSTAINABILITY

Monitoring and having effective controls in place to quickly make changes in order to keep output at a certain level

ANALYTICS IN SMART CITIES

■ WEB PROVISION

Attracting more high-tech industries allowing bandwidth to be higher in certain areas will allow communication efficiencies

■ EFFECTIVE SPENDING

Targeting where the public money would have the most impact and incorporate this in its budgetary planning, the city can be improved while minimizing unnecessary waste

■ FUTURE PROOFING

Basic amenities like water and electricity can be upgraded using predictive analysis, in up-and-comig neighborhoods, allowing growth to continue without the interruption for sudden influx of businesses or residents and having services to catch up.



Seoul, Korea

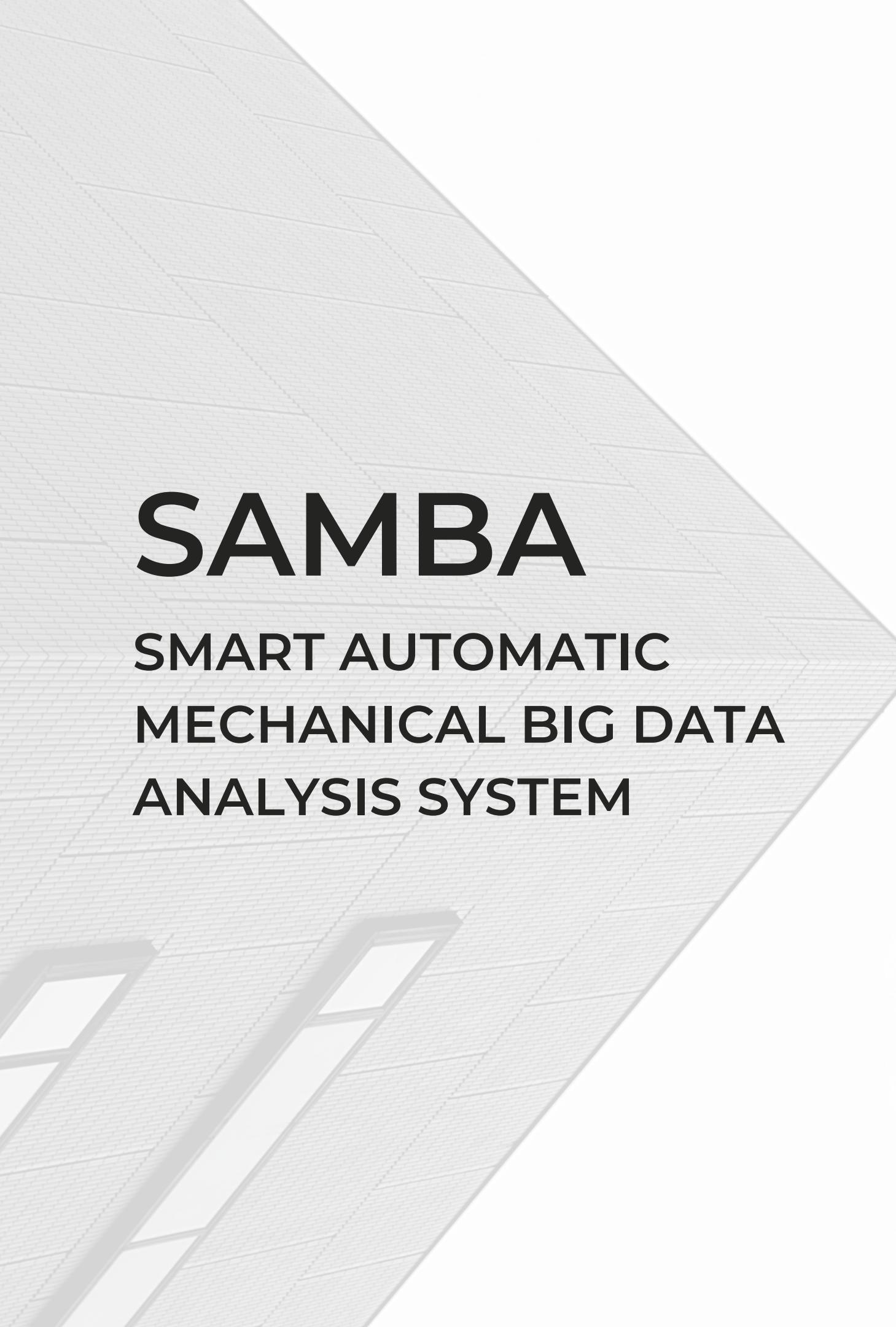
SAMBA Case Study

URBAN METRO SYSTEM

SEOUL HAS THE LONGEST METRO SYSTEM IN THE WORLD AND THE 2ND LARGEST BY PASSENGER RIDERSHIP, TRANSPORTING 2.6 BILLION PEOPLE A YEAR



Each day, 7.3 million passengers, over two-thirds of the city population, rely on Seoul Metropolitan Subway's 23 subway, rapid transit, light rail and commuter rail lines to travel in and around the metropolis



SAMBA

SMART AUTOMATIC MECHANICAL BIG DATA ANALYSIS SYSTEM

01

The high-tech urban metro system features ubiquitous connectivity, driverless trains and even customer service robots

02

In 2017, the Seoul Metropolitan Government (SMG) announced that safety would overtake punctuality by transitioning to a predictive system to prevent problems before they happen

03

SMG deployed SAMBA, which consists of four parts – IoT sensors, network, database server and analysis server – monitors assets and predicts failures using big data and machine learning

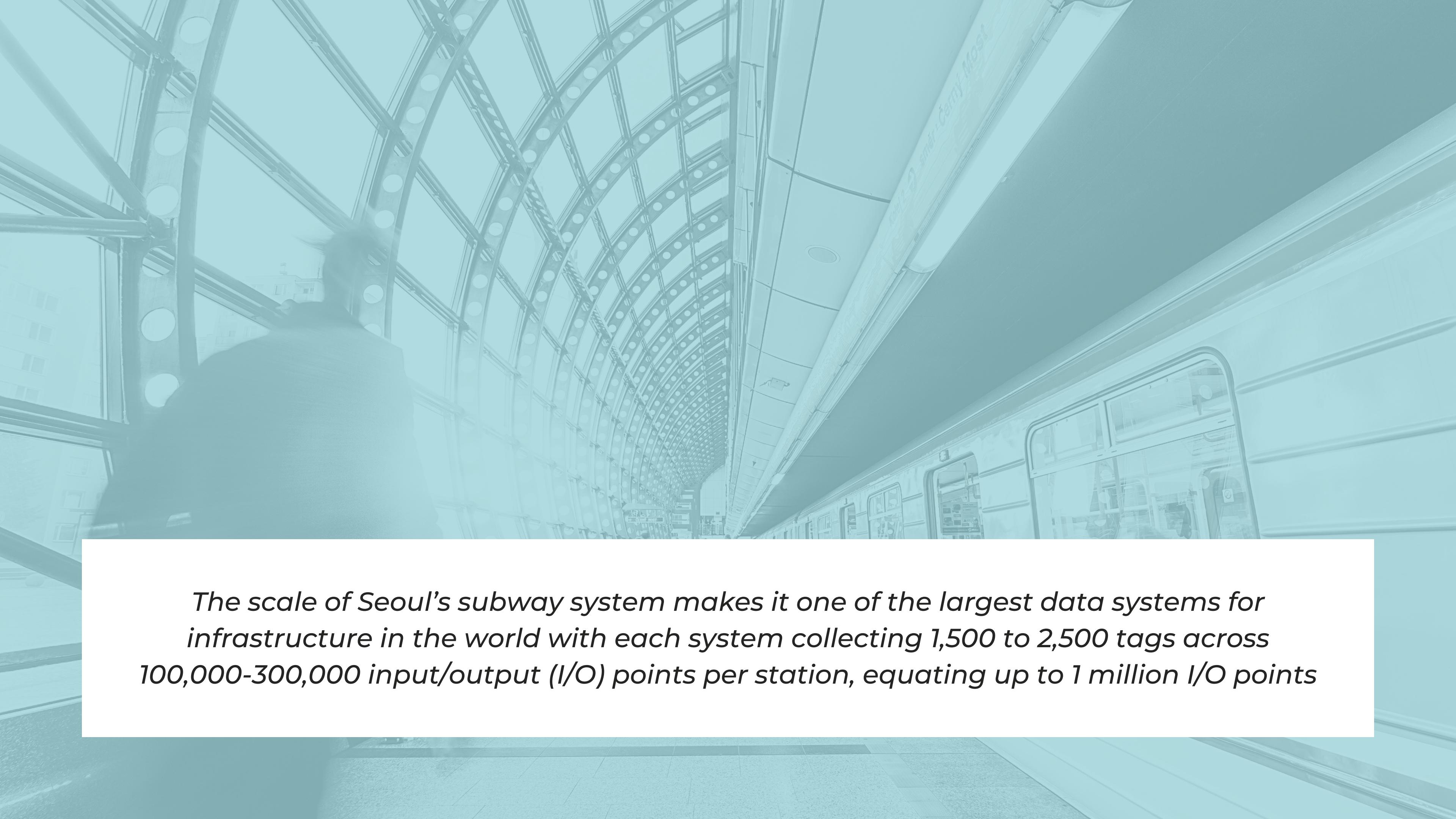


SAMBA HAS RESULTED IN...

34%

Reduction in
Mean Time To Repair

Far fewer manual inspections and a *30-40% reduction in project engineering costs*, all contributing to a safer, more efficient service for passengers

A photograph of a subway station platform. In the foreground, a subway train is stopped at the platform. The platform floor is made of light-colored tiles. Above the platform, there is a large, ornate ceiling with a grid of circular lights and structural beams. A sign on the ceiling reads "Kolej 2 smar. Černý Most".

The scale of Seoul's subway system makes it one of the largest data systems for infrastructure in the world with each system collecting 1,500 to 2,500 tags across 100,000-300,000 input/output (I/O) points per station, equating up to 1 million I/O points



Chicago, USA

The Array of Things Case Study

THE ARRAY OF THINGS

AoT



An experimental urban measurement project comprising a network of interactive, modular devices, or "nodes," that are installed around Chicago to collect real-time data on the city's environment, infrastructure, and activity, essentially serving as a "fitness tracker" for the city



THE ARRAY OF THINGS

AoT

01

AoT nodes measure temperature, barometric pressure, light, vibration, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone, and ambient noise levels

02

The nodes can analyze images and sound several times a minute to count the number of pedestrians and the number of vehicles, reporting these numbers and then deleting the images

Potential Applications for AoT

SENSORS

Monitoring air quality, sound and vibration, and temperature used to suggest the healthiest and unhealthiest walking times and routes through the city, or to study the relationship between diseases and the urban environment

REAL-TIME DETECTION OF URBAN FLOODING

To improve city services and infrastructure to prevent property damage and illness

PEDESTRIAN MOVEMENT

Observing which areas of the city are heavily populated by pedestrians at different times of day to suggest safe and efficient routes for walking late at night or for timing traffic lights during peak traffic hours

MEASUREMENTS OF MICRO-CLIMATE

In different areas of the city, so that residents can get up-to-date, high-resolution "block-by-block" weather and climate information

THANK YOU

