



# Clean Cities, Clean Future

HOW DIGITAL TWINS ENERGIZE  
THE RACE TO ZERO IN CITIES

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What are

# Urban Digital Twins?

Urban digital twins are digital representations of the physical built environment in our cities, including transport networks, buildings, and infrastructure, connected to the data in and around them.



Gamechanging  
tech delivering  
unprecedented  
value



Urban digital twins:

REDUCE OPERATING COSTS BY **35%**

BOOST PRODUCTIVITY BY **20%**

CUT EMISSIONS BY **50-100%**

500 major world  
cities will rely on  
Digital Twins for  
daily operations  
by 2026

Source:

Forbes

Urban Digital Twins are forecast to save  
**\$280 billion** in city planning,  
development, and operating costs


Source: **ABI**research®

The global Digital Twin market will grow from  
**\$3 billion** last year to  
**\$48.2 billion** by 2026

Source:



THE  
INCONVENIENT  
TRUTH: buildings in  
cities are the  
world's largest  
polluters



BUILDINGS PRODUCE

**50-70%**

OF TOTAL EMISSIONS IN CITIES

**30%**

OF TOTAL EMISSIONS  
GLOBALLY

**75%+**

OF BUILDINGS NEED  
RETROFITTING FOR NET ZERO



THE  
INCONVENIENT  
TRUTH: buildings  
in cities are the  
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polluters

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ONLY 100,000 **(1.7%)**  
OF ALL BUILDINGS IN AMERICA  
ARE GREEN

AND ONLY **0.008%** OF  
ALL COMMERCIAL BUILDINGS IN  
AMERICA ARE NET ZERO



American cities  
can “LEED” by  
example

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# How do buildings achieve net zero emissions?

STEP 1 — SMART BUILDING/ENERGY  
MANAGEMENT TECH

STEP 2 — ONSITE RENEWABLE ENERGY

STEP 3 — BUY CARBON  
REWARDS/CREDITS TO OFFSET

STEP 4 — CONTINUOUS MONITORING

# New market drivers



Decarbonization of commercial buildings key to government's "Build Back Better" drive

INFRASTRUCTURE  
BILL SPEARHEADS  
RACE TO ZERO WITH  
INVESTMENT OF

\$3.5  
trillion

AMERICA'S GREEN  
BUILDING RETROFIT  
MARKET WORTH

\$200+  
billion

# Problem: Green Building retrofits can be costly, risky, and time consuming



GREEN BUILDING CONSULTANT FEES ARE EXPENSIVE.  
WHOLE-BUILDING GREEN RETROFITS COST  
ANYWHERE BETWEEN

**\$2-\$7 per square foot,**

DEPENDING ON THE BUILDING'S AGE, EXISTING  
DESIGN, AND PURPOSE.



# Problem: Green Building retrofits can be costly, risky, and time consuming

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PAYBACK PERIODS RANGE WIDELY FROM

2-15 years,

AVERAGING 4-7 years.



Problem: Green Building retrofits can be costly, risky, and time consuming

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**50%** OF COMMERCIAL BUILDING OWNERS REQUIRE  
PROJECTS TO HAVE A PAYBACK PERIOD OF  
**3 years or less,** TRANSLATING TO AN INTERNAL  
RATE OF RETURN **greater than 30%.**

# Problem: Green Building retrofits can be costly, risky, and time consuming



COMMERCIAL BUILDING OWNERS TODAY INVEST  
**less than 1%** OF ANNUAL OPERATING  
REVENUES IN LEED REBUILDING RETROFITS.

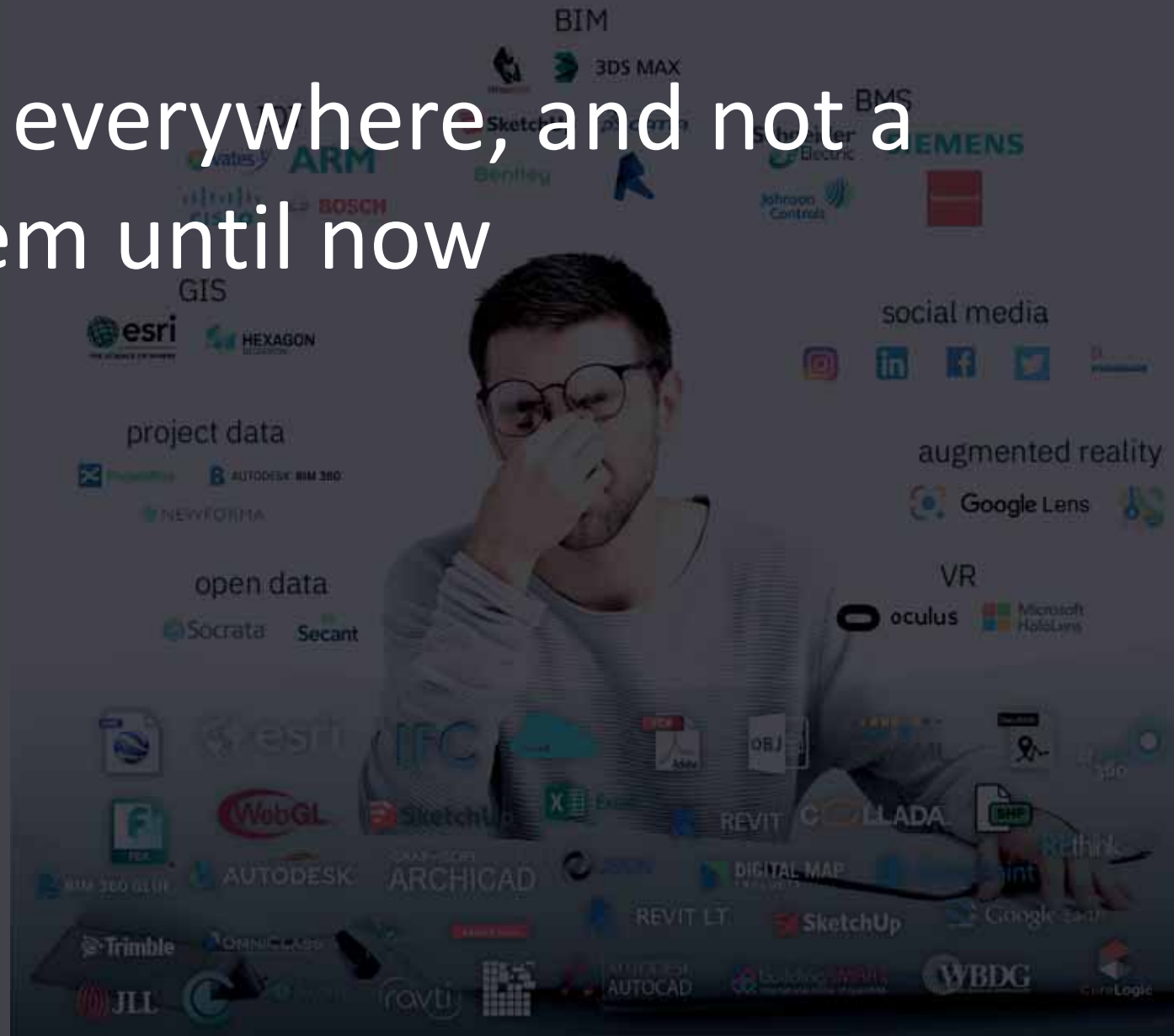
TO ACHIEVE PARIS AGREEMENT TARGETS, THAT WILL  
NEED TO **increase 3x to 3%.**

# Software, software, everywhere, and not a platform to sync them until now

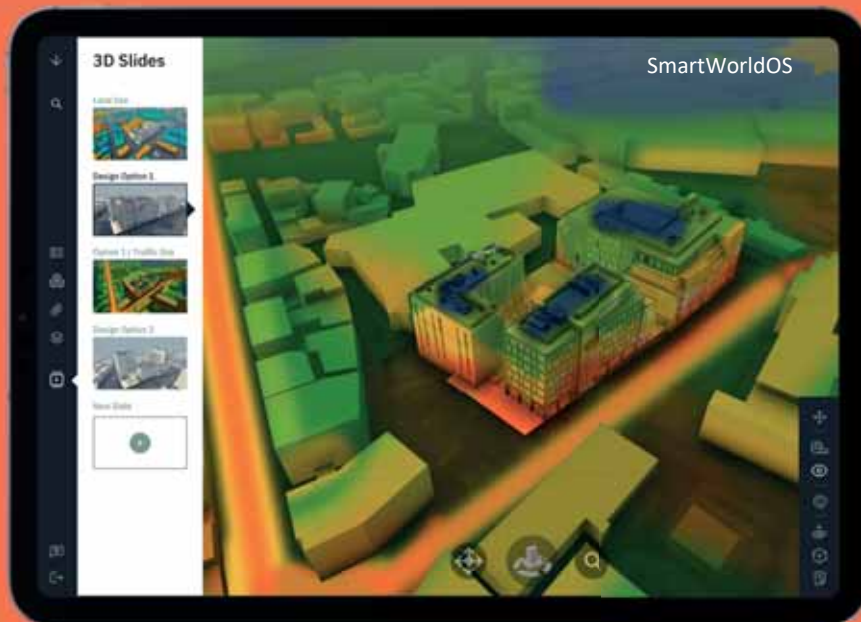
Green building retrofit consulting is expensive, labour intensive and risky.

1,000s of single purpose energy management tools have flooded the market, promoting proprietary standards and confusing building owners.

Result: owners hesitate to commit to substantial capital outlay and financial uncertainty.



Too many pieces of software and no common platform, until SmartWorldOS™ !



A 3D digital model of a city street scene, showing various buildings in different colors (yellow, orange, green, blue) and a grey road. The text 'Urban Digital Twins are the right answer:' is overlaid in white, with a small orange horizontal line below it.

# Urban Digital Twins are the right answer:

- AGGREGATE, SIMULATE AND MANAGE COMPLEX SOLUTIONS
- PREDICT ENERGY CONSUMPTION AND FINANCIAL OUTCOMES AT SCALE, DRIVING DOWN CAPITAL RISK.
- DEPLOY MULTIPLE AND PARALLEL STRATEGIES TO 'GO GREEN' EG BMS, EMS, SOLAR, GEOTHERMAL, ELECTRIC HEAT PUMPS, HIGH-PERFORMANCE GLAZING



# SmartWorldOS™ — Cityzenith's Urban Digital Twin Platform

PURPOSE-BUILT FOR THE PEOPLE WHO  
DESIGN, BUILD, AND RUN LARGE  
PROJECTS IN CITIES:

- Property owners
- Facilities managers
- Infrastructure operators
- Energy firms
- Architects, Engineers and Planners
- Governments



# SmartWorldOS™ — Cityzenith's Urban Digital Twin Platform

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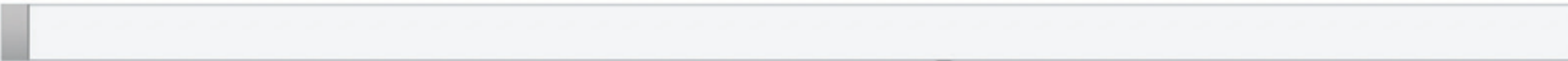
Leverage the power of SmartWorldOS™ to develop projects more efficiently, sustainably, and for less money than other tools allow.

SmartWorldOS™ consolidates data from multitudes of stakeholders in a single interactive user-friendly 3D platform.



# SmartWorldOS

<https://www.youtube.com/watch?v=CpVaiH414il>



0:02.83





SmartWorldOS is your passport to a new universe of unlimited data, analytics, and software tools

WE'VE CREATED DIGITAL TWINS FOR:

- Airports
- Sea ports
- Infrastructure
- Mixed-use commercial
- Master developments
- University campuses
- Real estate portfolios
- Utilities
- Districts
- Cities

# SmartWorldOS is your passport to a new universe of unlimited data, analytics, and software tools

## SmartWorldOS USPs:

- Most advanced
- Most flexible and scalable
- TwinAPP community
- Backed by major industry partners

WORLD  
ECONOMIC  
FORUM

digital twin<sup>™</sup>  
CONSORTIUM

2030  
DISTRICTS<sup>®</sup>



# Clean Cities, Clean Future

OUR CAMPAIGN PLEDGE



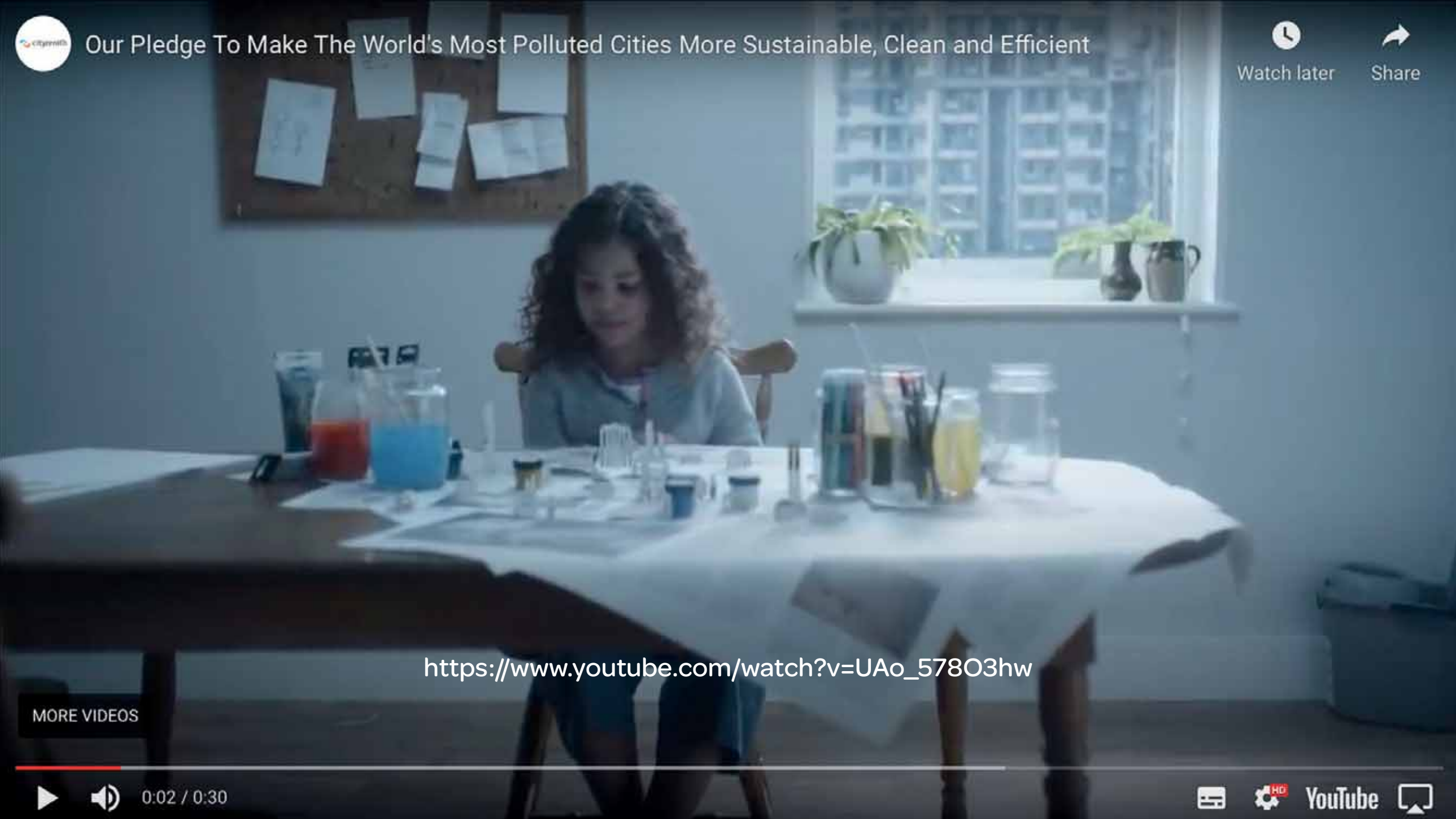
Cityzenith is sponsoring the implementation of urban digital twins in 10-15 major cities to help their commercial building owners dramatically reduce carbon emissions.





# Our Pledge To Make The World's Most Polluted Cities More Sustainable, Clean and Efficient

Watch later Share



[https://www.youtube.com/watch?v=UAo\\_578O3hw](https://www.youtube.com/watch?v=UAo_578O3hw)

MORE VIDEOS



0:02 / 0:30



YouTube



# Over 1000 International Media mentions

SINCE WE LAUNCHED THE  
CLEAN CITIES – CLEAN FUTURE  
CAMPAIGN

HEADLINE COVERAGE WITH MAJOR MEDIA INCLUDES:



**Forbes**

INFORMED INFRASTRUCTURE



**Inc.**



# Clean Cities, Clean Future

## PILOT PROGRAM



THE FIRST THREE CITIES TO  
JOIN THE PROGRAM:

- NEW YORK CITY
- PHOENIX
- PITTSBURGH



Each pilot is designed to be completed within 9 months and includes participation 5-10 local building owners, city government agencies, universities, and architects & planners.



NYC  
2030  
DISTRICT

# Clean Cities, Clean Future

PILOT PROGRAM: NEW YORK  
CITY BROOKLYN NAVY YARD

AFG

cityzenith

BDFS

buildee®



ON SITE  
UTILITY SERVICES CAPITAL  
ZERO DEBT - ZERO CAPEX - JUST SAVINGS

CU  
NY THE CITY  
UNIVERSITY  
OF  
NEW YORK



# Clean Cities, Clean Future

PILOT PROGRAM:  
DOWNTOWN PHOENIX, INC.



CIC

776-1912

# Clean Cities, Clean Future

PILOT PROGRAM: GREEN BUILDING,  
ALLIANCE, PITTSBURGH



PITTSBURGH  
2030  
DISTRICT



# Pilot Program Goals



Build a Digital Twin of the entire city 2030  
District and Baseline Asset Models (BAM) of  
5-10 individual buildings

Demonstrate real-time monitoring of building  
functions and operations

Visualize building and infrastructure-related  
data, data analysis, system interrelationships,  
and performance reporting

# Pilot Program Goals



Analyze energy management protocols, renewable energy strategies, and operational cost models for building retrofits

Provide industry professionals with accurate, reliable information necessary for policy and decision-making, and planning

Measure operational, financial, and productivity savings in participating properties, including potential earnings from carbon credits.

# Cityzenith's role and responsibilities



- COLLECT ALL REQUIRED DISTRICT/BUILDING-RELATED DATA PUBLICLY AVAILABLE
- BUILD AND TEST THE DIGITAL TWIN PROTOTYPE
- DEMONSTRATE FULL CAPABILITIES OF THE DIGITAL TWIN
- OFFER TRAINING
- SUGGEST VARIOUS COMMERCIALIZATION SCHEMES AND BUSINESS MODELS
- REVIEW POSSIBLE CONTRACTUAL ARRANGEMENTS

# Partner's role and responsibilities



- OBTAIN LETTERS OF COMMITMENT FROM THE VOLUNTARY PROJECT PARTICIPANTS
- ASSIST PARTICIPATING DISTRICT PARTNERS IN SELECTION OF INDIVIDUAL BUILDINGS
- COLLECT THE SPECIFIED BUILDING DATA NECESSARY TO CREATE THE DIGITAL TWIN
- ASSIST WITH ANY OTHER COORDINATION NECESSARY TO COMPLETE THE DIGITAL TWIN

# Our Vision for the Future

**10** CITIES AND 50 BUILDINGS  
CARBON-FREE BY 2022

**100** CITIES AND 1000  
BUILDINGS BY 2024

**300** CITIES AND 10,000  
BUILDINGS BY 2026



A portrait of Michael Jansen, a man with short brown hair and glasses, wearing a dark blue blazer over a light blue button-down shirt. He is smiling and has his hands in his pockets. The background behind him is a large orange circle.

# Get involved

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WE ARE BUILDING THE  
SMARTWORLD COMMUNITY.

PLEASE JOIN US AND BRING  
**SmartWorldOS** TO YOUR CITY!

CONTACT:

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