



niolabs

digital fabric for smart cities

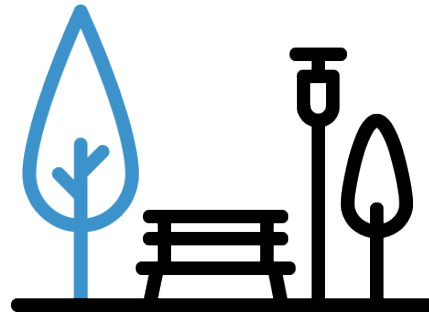
Smart cities normalize *Environment* through *Infrastructure*.

We Create and Control
Infrastructure



Shelter
Safety
Opportunity
Information

We Experience (and Endure)
Environment



Physical
Social
Economic
Political

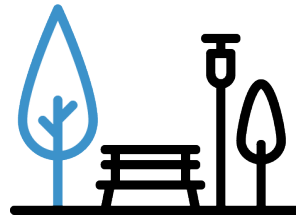
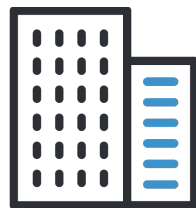
We Provide Value To
People Who Want to Feel



Safe
Comfortable
Productive
Stable

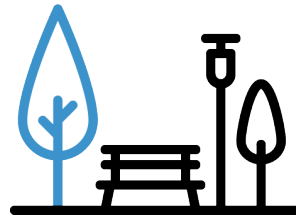
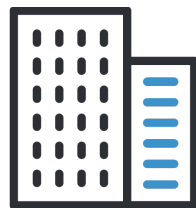
Smart cities benefit from:

- Increased operational efficiency
- Improved productivity
- Increased profitability
- Happier, more engaged constituents



Smart cities normalize *Environment* through *Infrastructure* by:

- Sensorizing infrastructure and collecting real-time data
- Sourcing, ingesting, and analyzing environmental data
- Soliciting and analyzing feedback
- Continually adapting infrastructure based on intelligent analysis

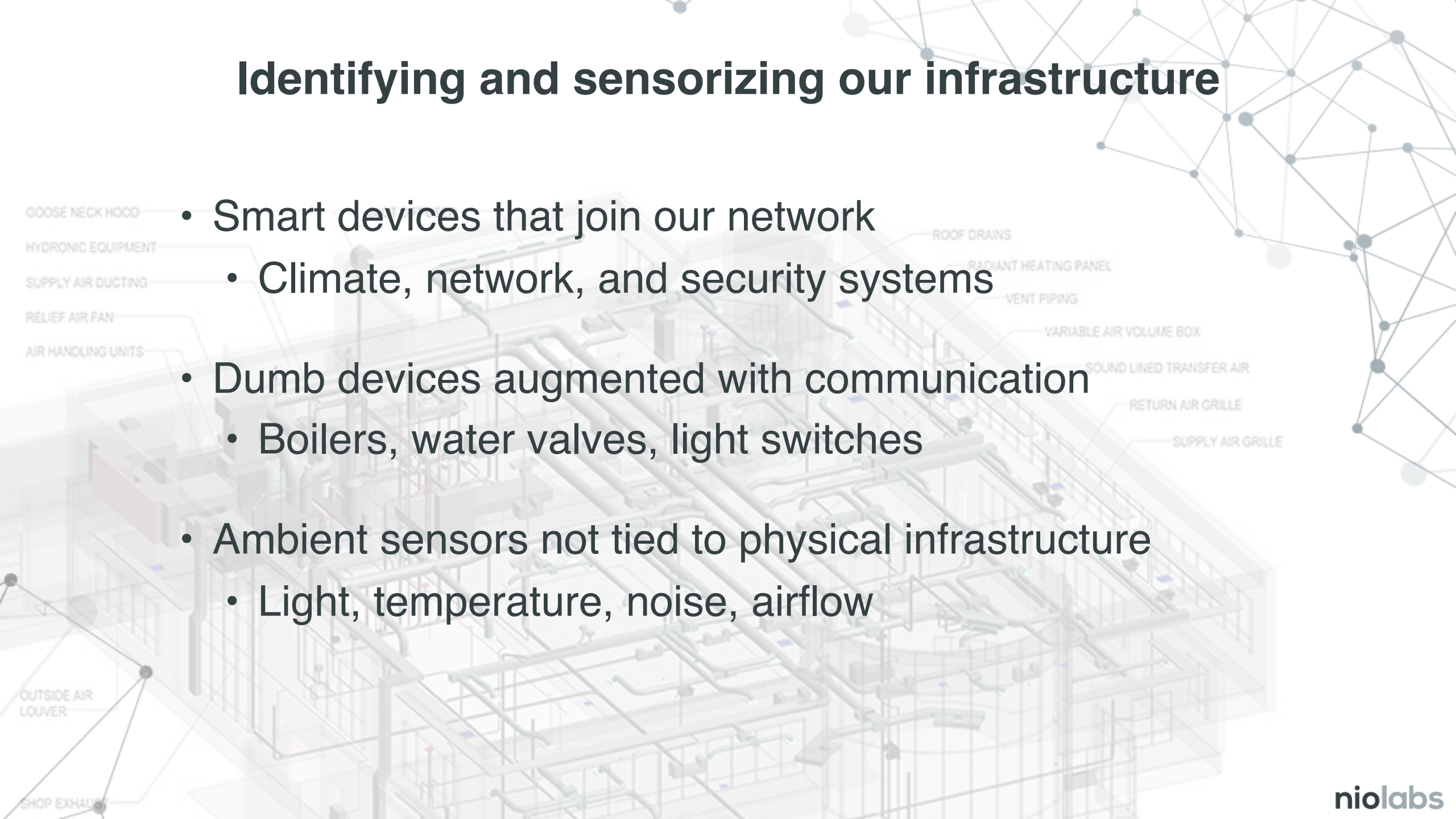


An abstract network diagram with various sized nodes (dots) connected by thin lines, forming a complex web. The nodes are in shades of grey and blue, and the lines are thin and light grey. The background is white.

how do we start?

Identifying and sensorizing our infrastructure

- Smart devices that join our network
 - Climate, network, and security systems
- Dumb devices augmented with communication
 - Boilers, water valves, light switches
- Ambient sensors not tied to physical infrastructure
 - Light, temperature, noise, airflow



infrastructure data



Sourcing and ingesting environmental data

- Environmental sensors
 - Wind, temp, humidity, air quality
- External data sources
 - Weather APIs, public transportation, news and events
- Machine Learning / AI
 - Integrate established climate and weather models

environmental data

physical

weather
water
wind

social

culture
sentiment
behavior

economic

immediate
local
regional

political

policy
incentives
engagement

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Soliciting and analyzing feedback

- Tenant feedback
 - Email surveys, elevator touchpads, mobile app
- User interactions with systems
 - Are user-driven actions overriding our optimized settings?
- Operating costs
 - Are optimizations reducing utility and maintenance costs?

feedback

tenant

occupancy
behavior
engagement

systems

temperature
light
noise

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operations

utility costs
maintenance

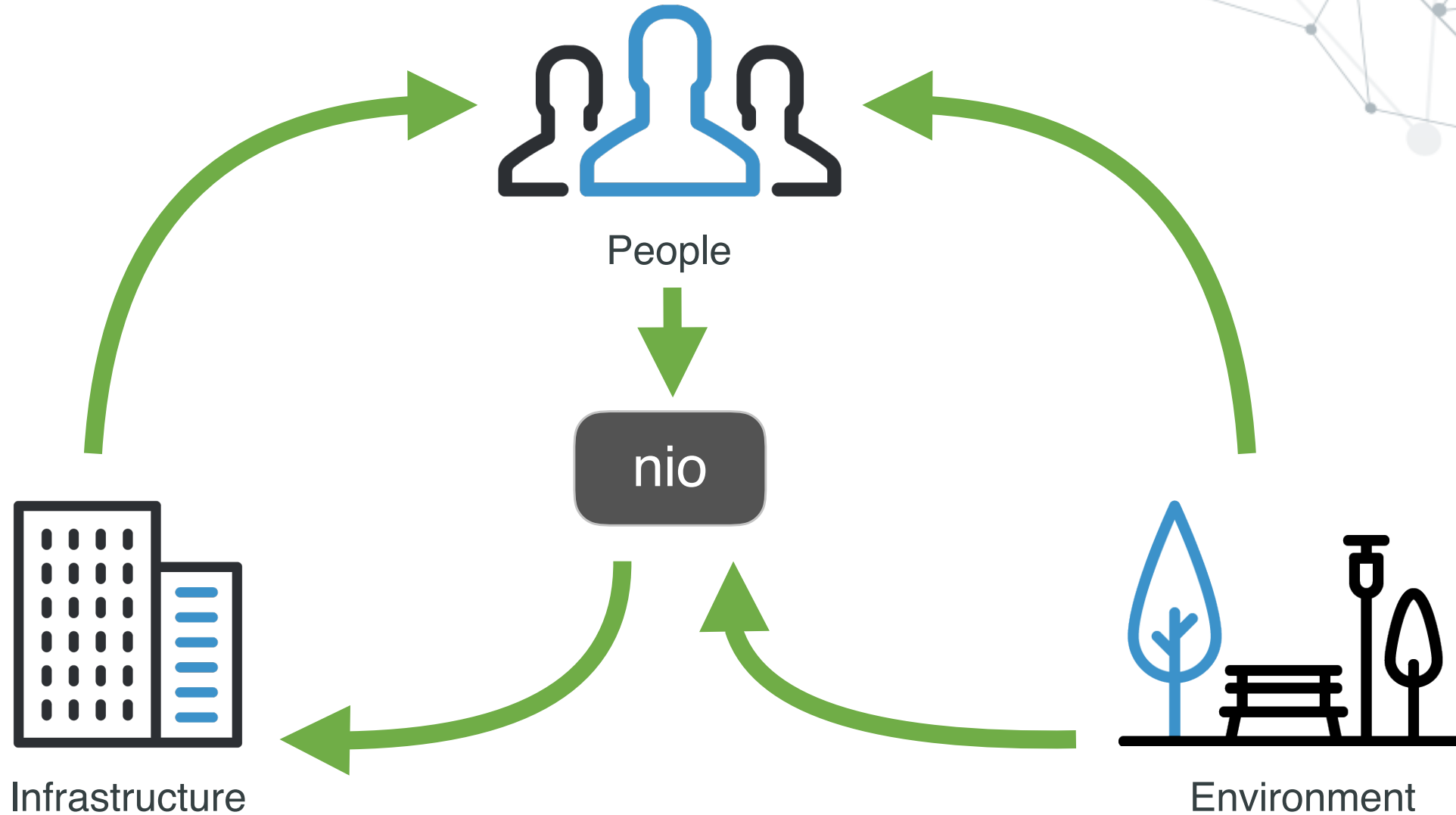
An abstract network diagram with various sized nodes (dots) connected by thin lines, forming a complex web. The nodes are in shades of grey and blue, and the lines are thin and light grey. The background is white.

what do we do with all that data?

nio creates real-time actionable intelligence



Continually adapt infrastructure based on intelligent analysis



A background graphic consisting of a network of interconnected nodes and lines, resembling a molecular or data network structure. The nodes are represented by small circles of varying shades of gray, and the lines are thin, light gray. The overall pattern is dense and organic, filling the left and top portions of the slide.

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thank you

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