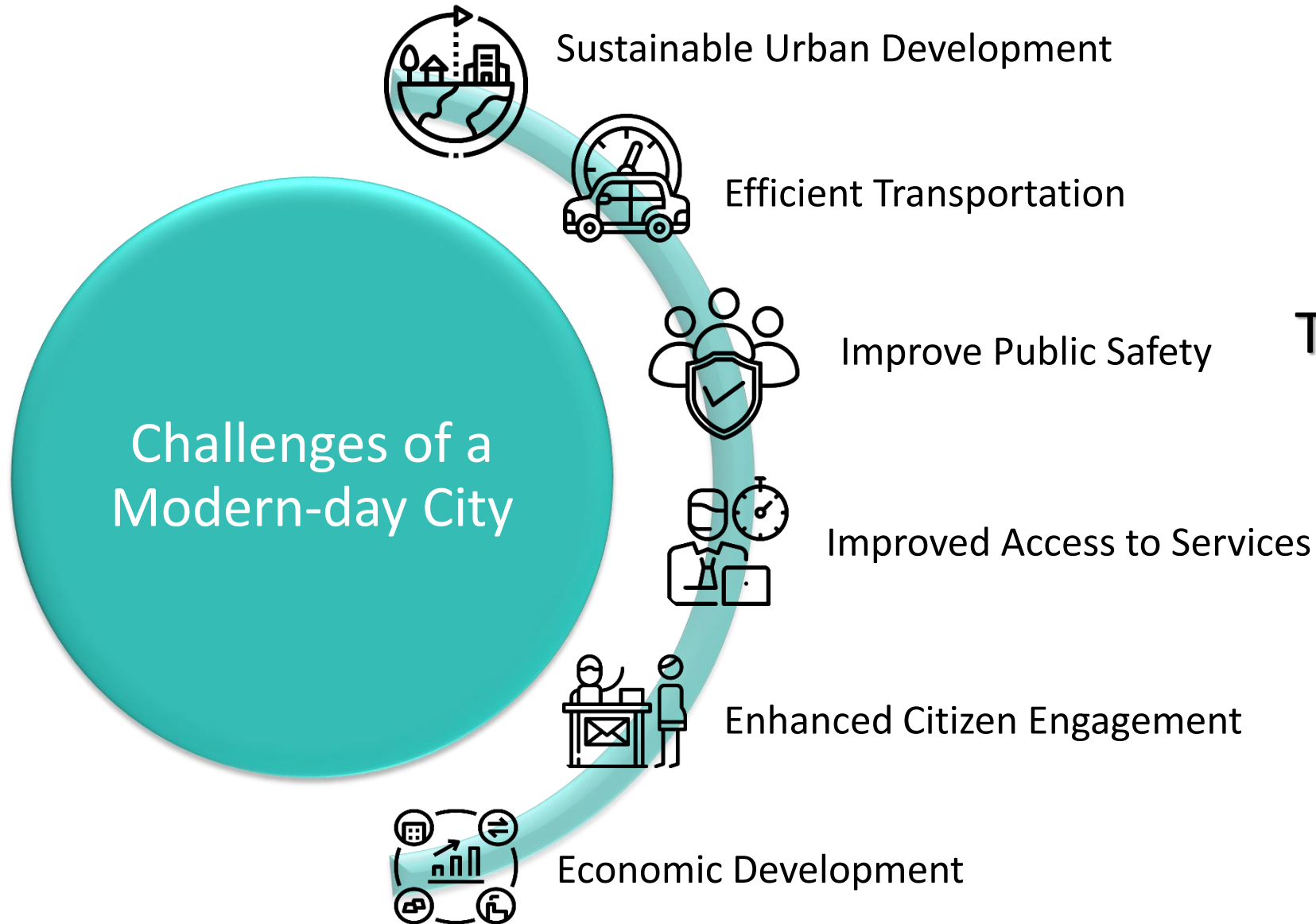


The background of the slide is a collage of four images: a blue sky with white clouds on the left, a solid green rectangle in the center, a close-up of green grass on the right, and blue water with ripples on the far right.

The Power of Data-driven Decision Making

**Shirook Ali (Shirook@ecosinfo.ca)
CEO and Founder, Ecosystem Informatics Inc**

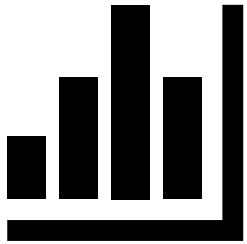
2.5 Billion More People will be Living in Cities by 2050, Projected UN Report



The case for a city to be
“Smart & Connected”
is evident!

Smart Cities – Data-driven Actions

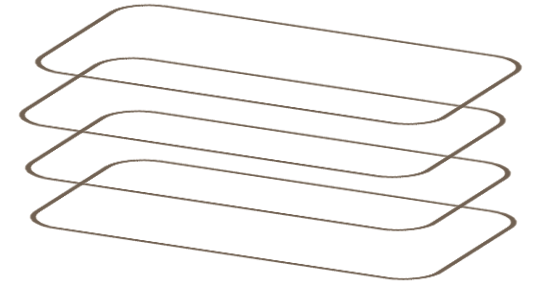
Cities rely heavily on data to function effectively!
To be smart, it can not be a 1-step isolated process



Gather data & Use
data



Integrating several sources of data



Layering multiple data to make
optimal use of all the data
available



ESI and Shirook – Introduction



- Founded in 2019 to address a critical need for improved environmental monitoring in local communities.
- Today, ESI's focus has expanded to include governments, industries, researchers, and advocacy groups around the world, who all share a common goal of creating a more sustainable future.
- ESI uses innovative technology and advanced data analytics to provide these organizations with the insights and tools they need to make more informed decisions to absorb environmental impact and attest carbon footprint.

- **Shirook Ali, CEO and Founder of Ecosystem Informatics Inc.**

Robust background in technology and innovation, holding numerous patents and peer-reviewed publications.



City of Hamilton Data-driven Smart Planning



- Concerns over air quality – especially with the presence of heavy steel industry in the area
- Measure levels of Ozone (O3), Carbon Monoxide (CO), nitrogen dioxide (NO2) and Sulfur Dioxide (SO2)
- Identify hotspots within the study area
- **Outcome:** City took action to reroute trucks to reduce pollution levels. ESI is now working with the city to investigate the rerouting impacts.



HAMILTON TRUCK ROUTES ARE CHANGING.

The City of Hamilton is implementing a new set of truck routes, including the restriction of trucks over 4-axles in the downtown core and other parts of the lower city to improve safety for all road users and provide direct routes for trucks.



HAMILTON'S TRUCK ROUTE MASTER PLAN



hamilton.ca/truckroute





Thank you

For any further details, please reach:
shirook@ecosinfo.ca



www.ecosinfo.ca

How it Works – Its as Simple as 1, 2, 3

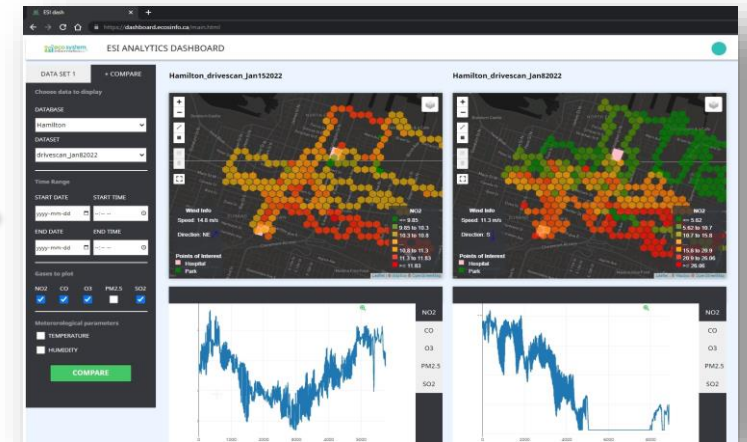
1- Low profile hardware deployed on site



2- Data calibrated in the cloud



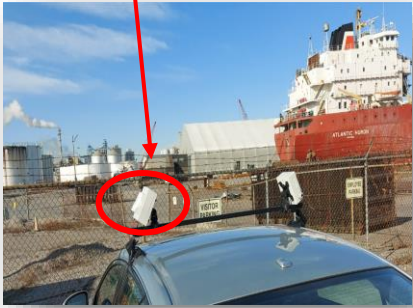
3- Insights at your fingertips



Informed decision making!

System Offering – Hardware Samplers

Mounted on small vehicles,
Mobile sampling



Mounted on pole,
Point sampling



Mounted on city vehicles,
Mobile sampling



ESI's hardware samplers are designed to be modular offering the best air quality sampling in the smallest footprint. One unit can support up to 5 pollutant sensors plus up to 3 meteorological sensors

The device can be operated in several different configurations:

- Indoor/Outdoor
- Stationary/Mobile

Utilizing your existing assets and infrastructure. No need for specialized settings!

Sampled Measurements

Pollutants

- Sulphur Dioxide (SO₂)
- Nitrogen Dioxide (NO₂)
- Carbon Monoxide (CO)
- Ozone (O₃)
- Hydrogen Sulphide (H₂S)
- Methane (CH₄)
- Odour (VOCs)
- Air Quality Index (AQI)
- Carbon Dioxide (CO₂)
- Particulate Matter (PM 2.5, 10)

Meteorological factors:

- Temperature
- Relative Humidity
- Atmospheric Pressure
- Wind Direction
- Wind Speed

Technical Specifications

Data	Real-time and historical
Analytics	Access via ESI dashboard
Ingress protection	IP65
Operating Temp. Range	-20C to +60C
Weight	2 Lb
Communication Protocol	Wi-Fi, Cellular
Impact resistance	IKo8
Size	2.2" x 6" x 6"

System Offering – Software



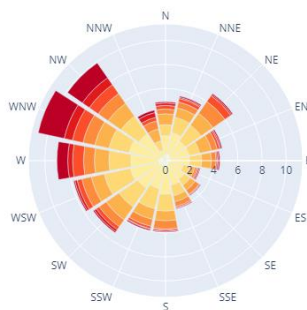
ESI's software brings together cloud-based processing, powerful visuals and user interactivity to get deeper into the data.

The magic happens in the cloud where our AI algorithms process data transmitted in real-time from our hardware and the output is visualized and summarized effectively on a web-based dashboard.

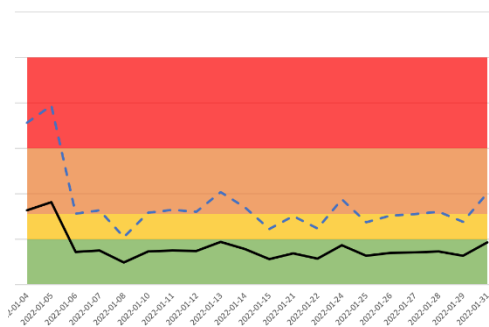
ESI's system easily integrates into your current platform to create actions such as alerts when levels are high

Multiple layers of data and insights to help you make informed decisions

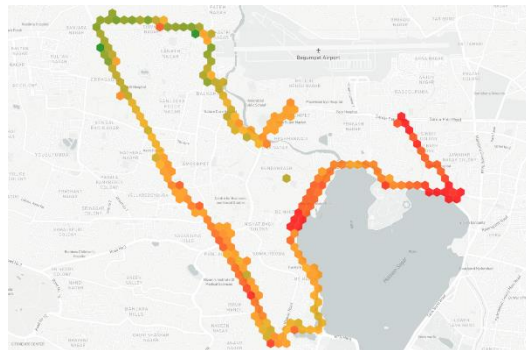
Powerful, User-friendly Dashboard



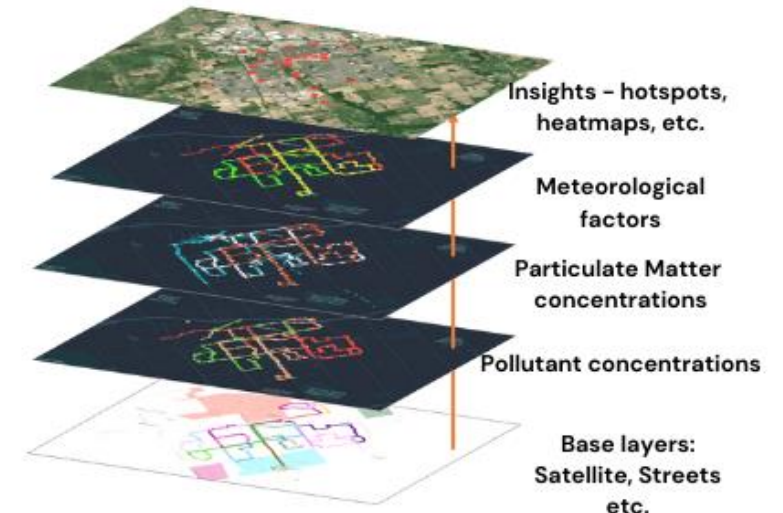
Wind rose



Time series



Distribution map



Integrated, Specialized visuals

ESI Offering – Scenario Planning & Modelling



Example: Dispersion at a specific neighborhood

- ESI has capabilities to build and model current and future scenarios to solve complex problems designed for your city.
- Additionally, ESI has expertise in Air Quality specify modelling tools like:
 - EPA MOVES – Moving Vehicle Emissions Simulator
 - CAL3HQC, AERMOD – Air Pollution and Odour Dispersion Modelling
- Some applications for scenario planning include:
 - Infrastructure Planning – Example: Environment impact of lane additions to roadways
 - Transportation Planning – Example: Environment impact of public bus fleet electrification