The Fastest and Easiest Way to Create and Manage Event Layouts

Special

EventMapStudio: A tool to build events with Sustainability included

Olivier Fischer, Phd

2023 REBUILD CONFERENCE

Learning objectives

- List the **many aspects of event sustainability**
- **Software can embody/include sustainability principles at many levels**:
  - Information design
  - User Interface
  - Intelligent wizards
- **Software integrating sustainability** vs **stand-alone sustainability checklists**.
- **Software can modify a user's behavior**. In this case make an event designer design more sustainable events

About EventMapStudio

- Olivier Fischer
  - PhD in Artificial Intelligence
  - 4 patents
  - UX & Rapid Prototyping at P&G
  - Co-founder of PlanetFeedback
- Our technology
  - In development & use for the last 3 years
  - Between 200 and 300 users.
  - 200,000+ attendees festival (Largest one-day event in Orlando, FL)

Events as temporary cities

- Chicago Population: 2.7MM
- Lollapalooza Attendees: 400k
- Out-of-Towners: 80%
- $155 million in economic activity
- 132.3 tons of recycled or composted material
- 8 (power hungry) stages

Sustainability dimensions

- Energy use
- Solid Waste/Water Management
- Transportation
- Wellness/Social impact
- Food

Sustainability in the Arts

- “Audience travel accounts for the largest portion of the carbon footprint of any event or venue”
- “Encourage:
    - Public transport use
    - Walking and cycling
    - Higher car occupancy”
- “Website: ….”a good opportunity for you to share local public transport links,”

Source: Julie’s Bicycle Practical Guide: audience Travel

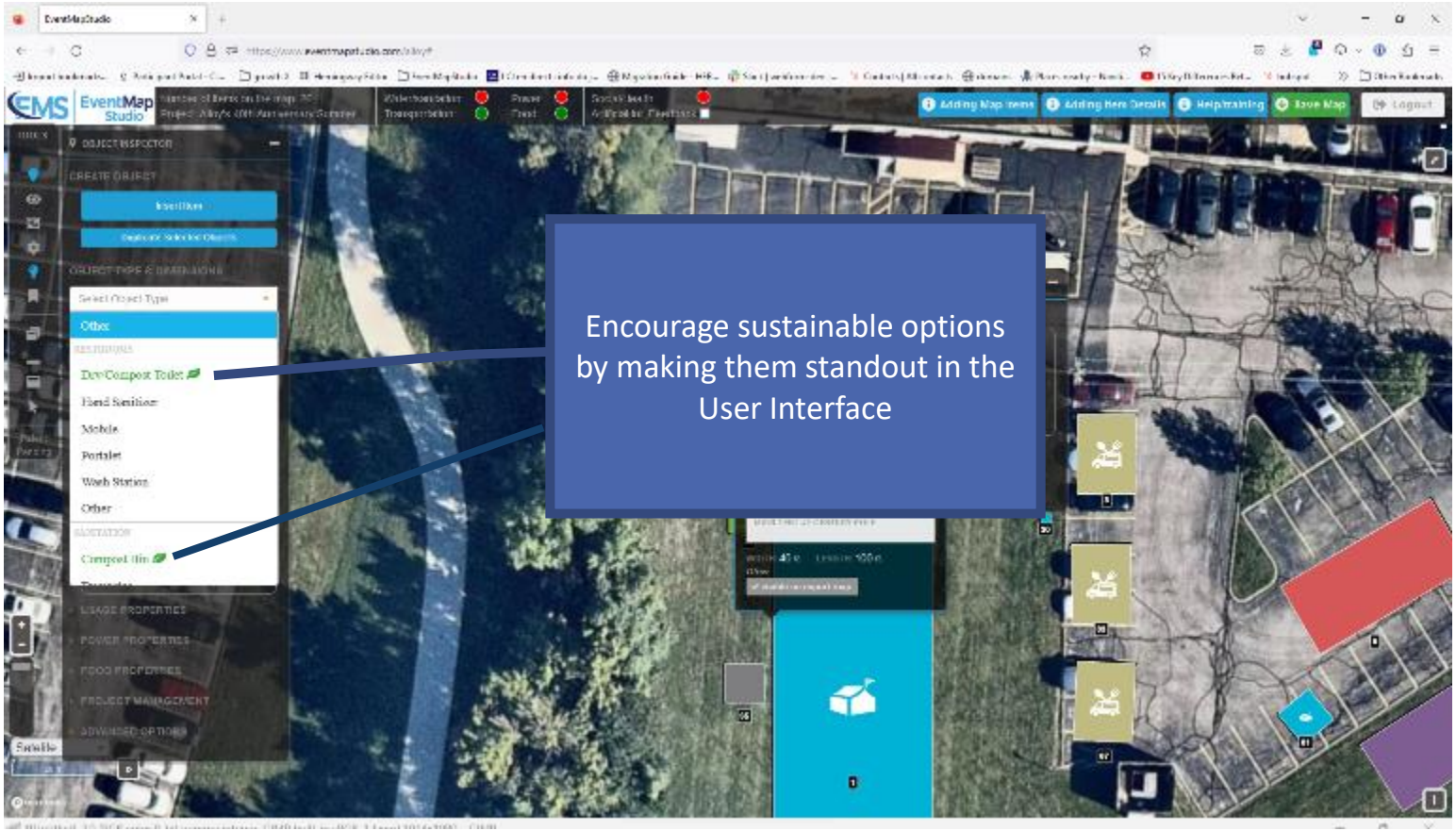
Embedding sustainability at many levels of software:

- User Interface,
- information design, and
- intelligent software/wizards

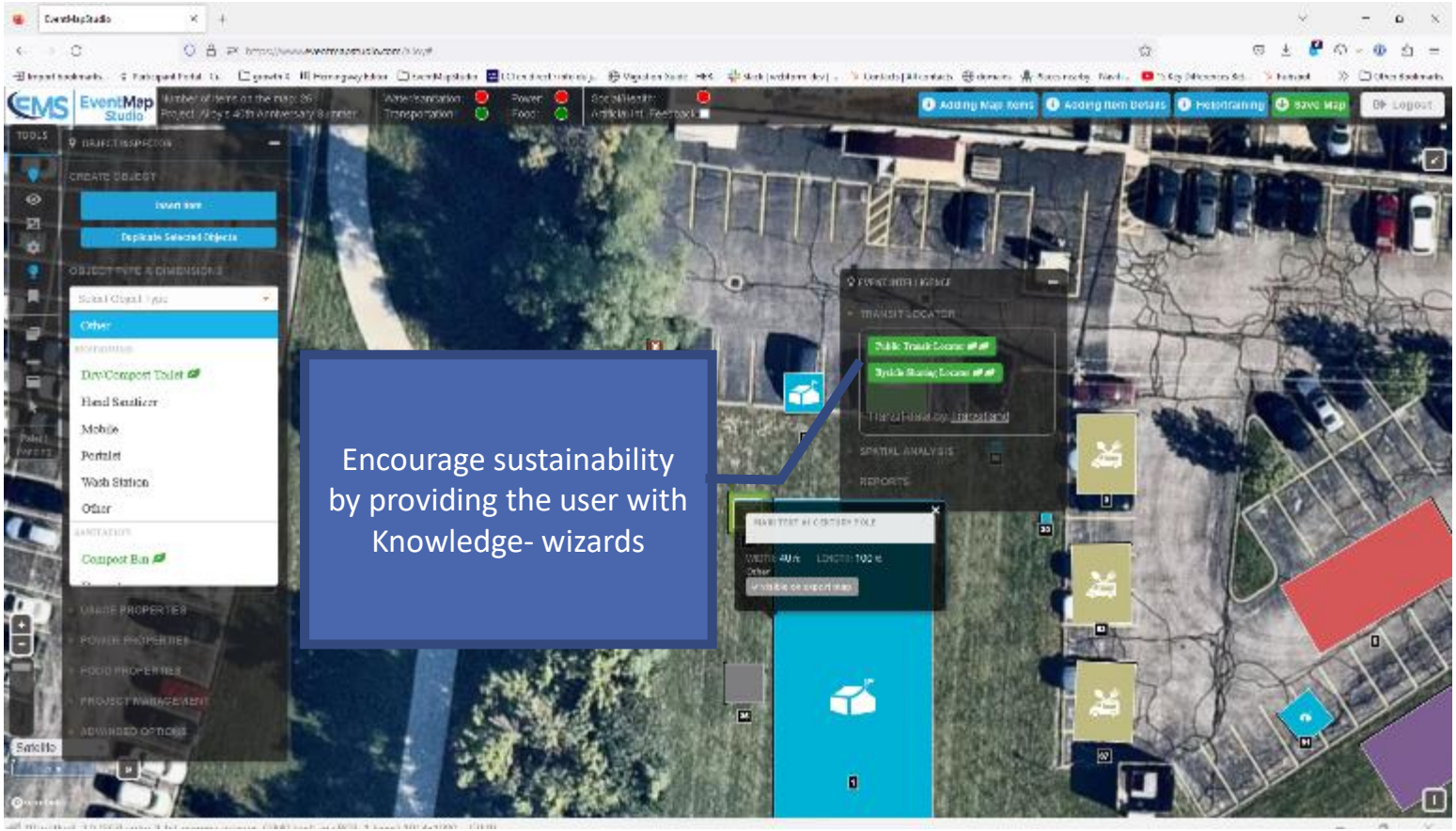
EventMapStudio:GoogleMap + Visio

Information design for sustainability

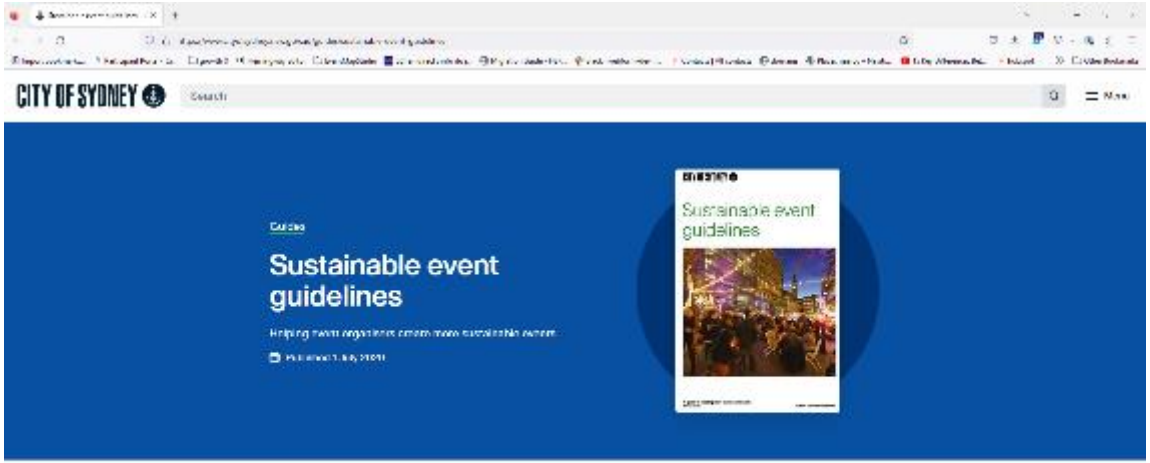
UI design for sustainability



Software intelligence for sustainability



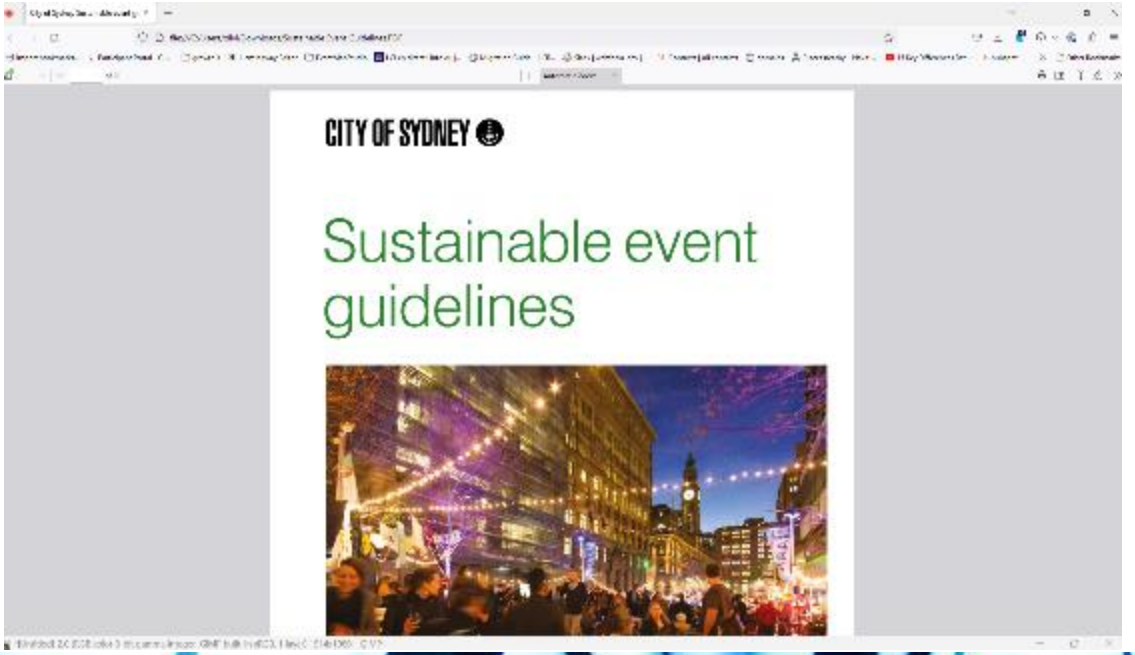
Automating sustainability checklists



Takeaways

- The sustainable event guidelines are designed to help event organisers apply environmental sustainability practices during the design, management and running of events in the City of Sydney area.
- Optimise planning in accordance to making real changes to reduce emissions and waste. Limit waste generation and minimise impacts on the environment. These guidelines help identify how to include sustainability in the critical path of your overall event plan.
- Start by.

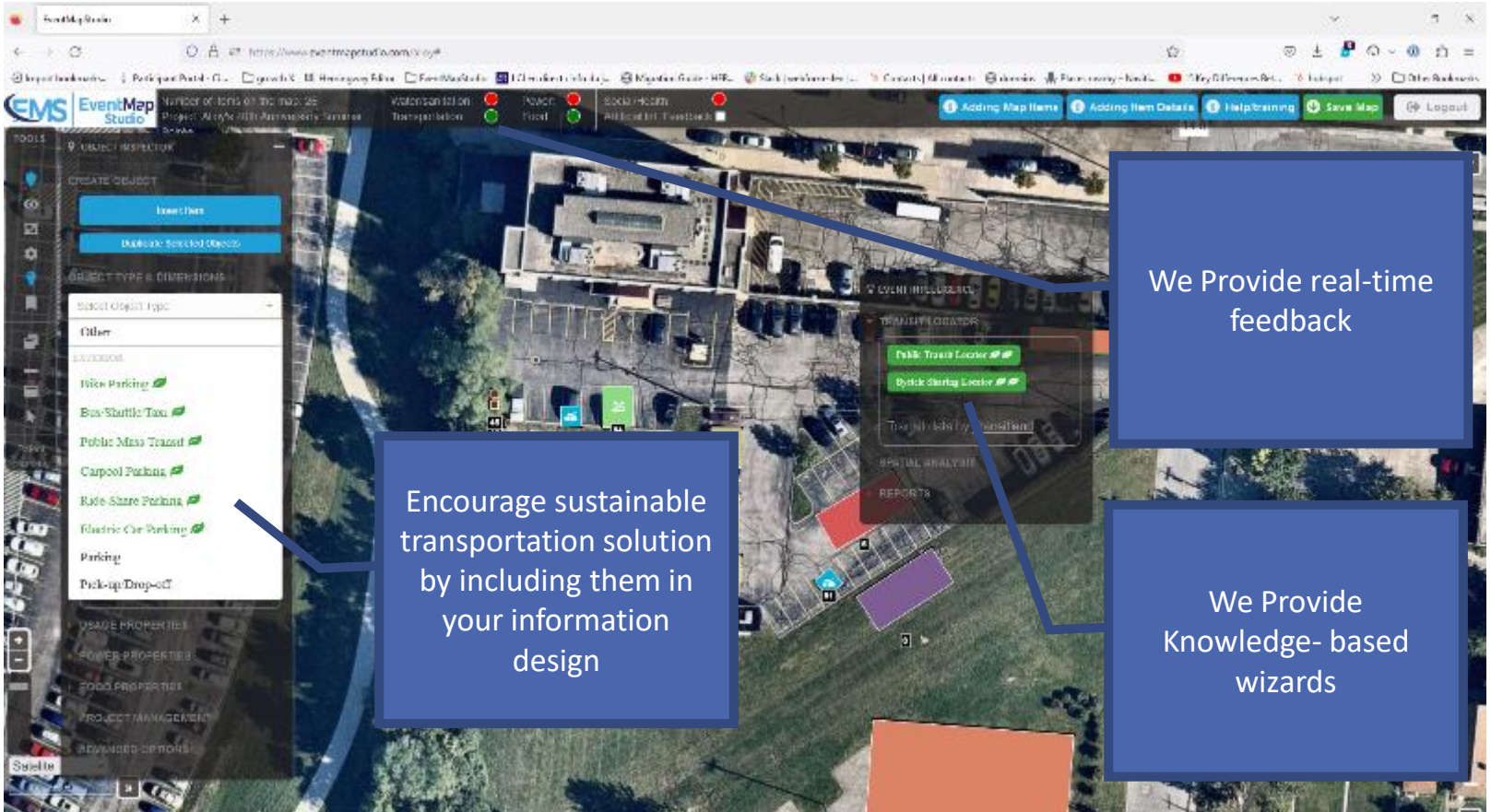
Automating sustainability checklists



Automating sustainability checklists

9. Transport	
☐	Provide event attendees with information about how to walk, cycle or catch public transport to the event
☐	Preference smaller and more efficient hire vehicles
☐	Avoid shipping equipment to the venue that can be acquired locally

Automating sustainability checklists



Software can modify a user's behavior

"EventMapStudio helped immensely to plan our community airshow event!

*We had a record number of attendees attend by **bicycle** and **waste clean up** was a breeze for volunteers as it was very organized.*

Keep up the good work!"

Chilliwack Flight Fest
http://www.chilliwackairshow.ca/

Summary

- **Aspects of event sustainability**
- **Software can embody/include sustainability principles at many levels**:
  - User Interface,
  - information design, and
  - intelligent wizards
- **Software integrating sustainability** vs **stand-alone sustainability checklists**.
- **Software can modify a user's behavior**.

Thank you

Olivier Fischer

EventMapStudio

(513) 706-5163

Olivier@EventMapStudio.com

greencharge

STARTUPCINCY

Presented by Josie Dalton, University of Cincinnati

With support from Alloy Development Co, Cintrifuse, Flywheel Social Enterprise Hub, Green Umbrella, & MadTree Brewing

greencharge
STARTUPCINCY

Advancing the **environmental sustainability and resilience** of the Greater Cincinnati region by supporting the launch and growth of sustainability-focused **startup ventures**

greencharge
STARTUPCINCY

Quick Facts

6
Founding Members

>60
Innovators Supported

2021
Established

1
Collective Goal

greencharge

STARTUPCINCY

Alloy DEVELOPMENT CO.

cintrifūse

flywheel SOCIAL ENTERPRISE HUB

Green Umbrella REGIONAL SUSTAINABILITY ALLIANCE

MADTREE BREWING COMPANY

University of CINCINNATI

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Founding Members

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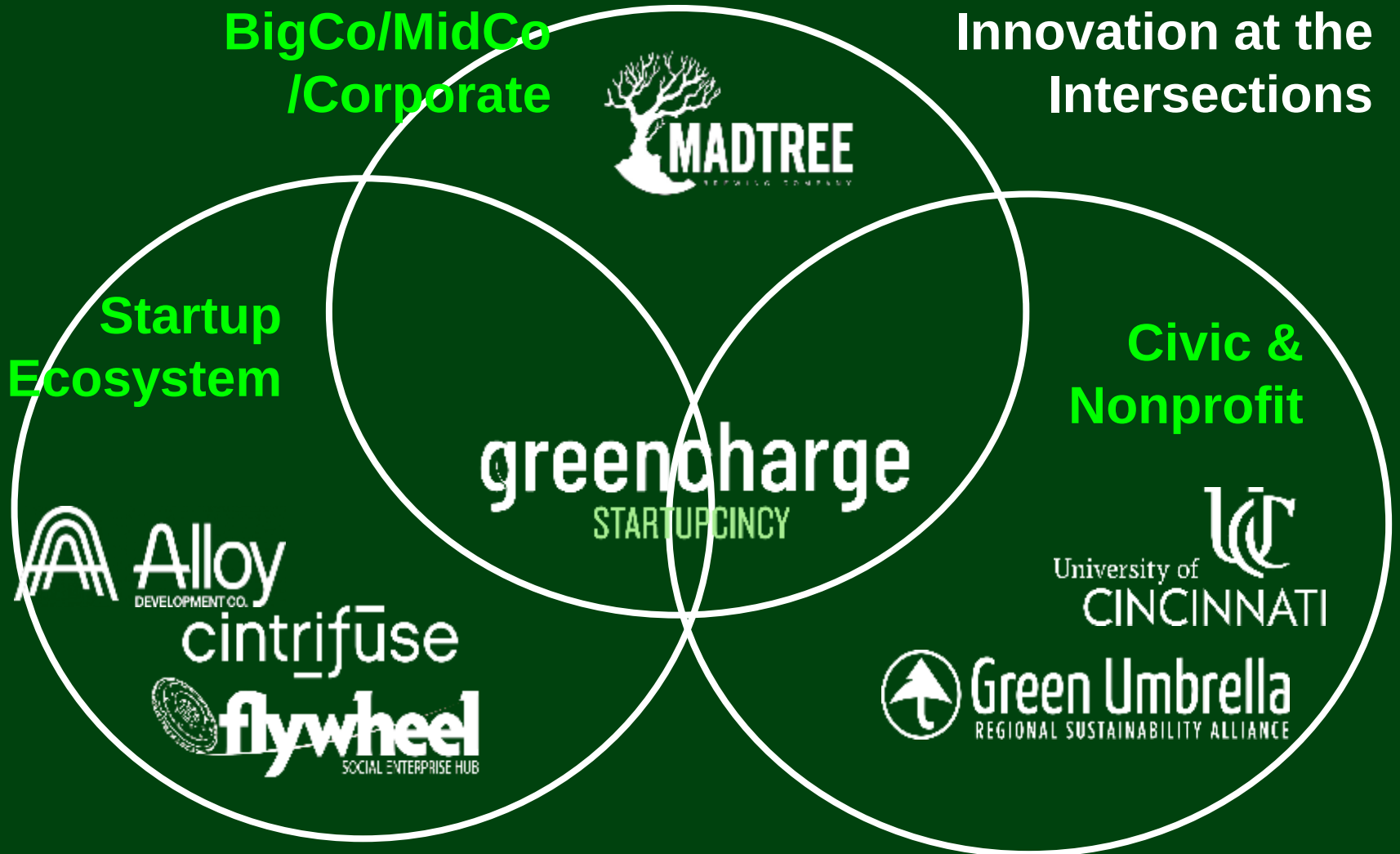
BigCo/MidCo
/Corporate
Innovation at the
Intersections
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Startup
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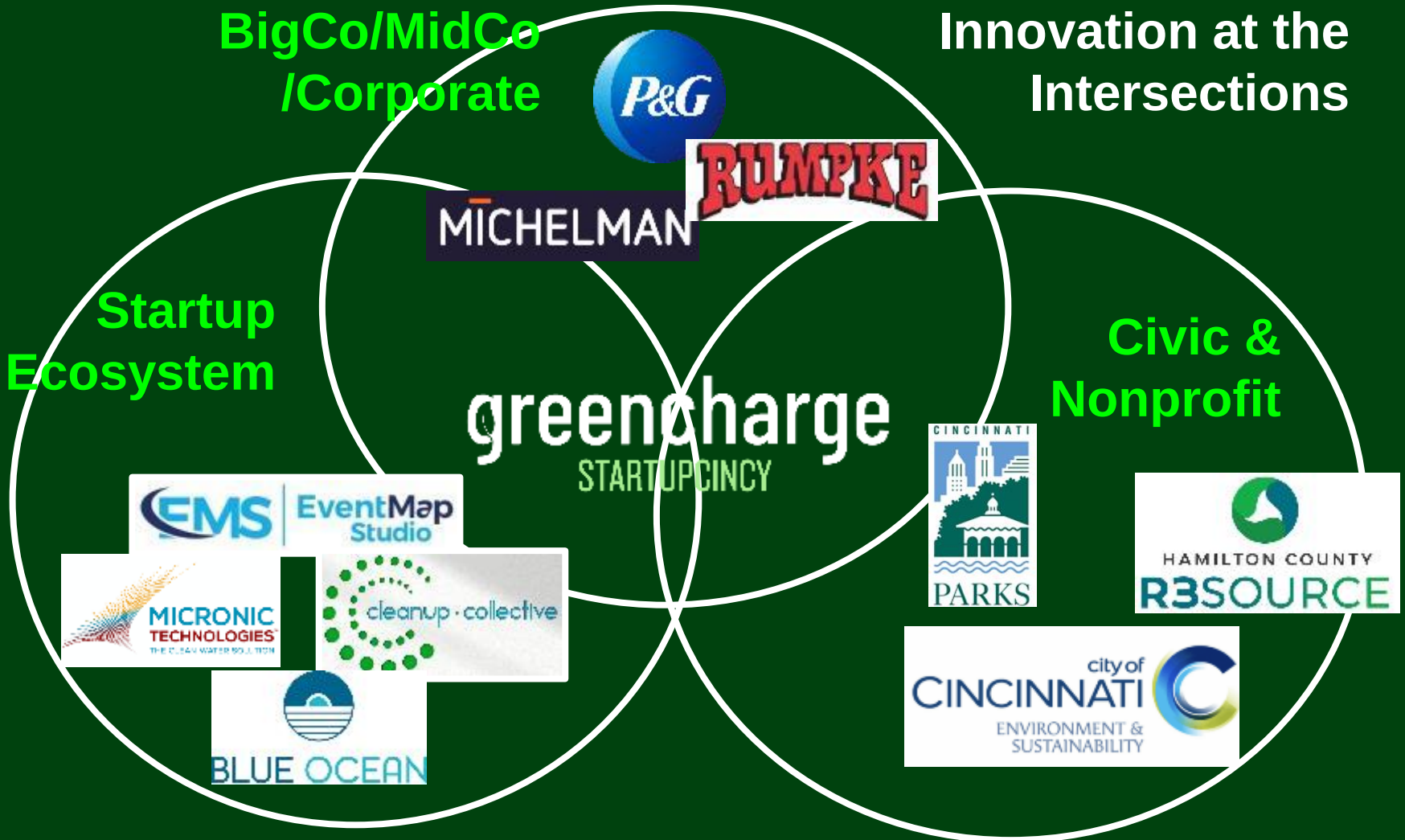
BigCo/MidCo
/Corporate
Innovation at the
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RUMPKE
MICHELMAN
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Civic &
Nonprofit
EMS
EventMap
Studio
MICRONIC
TECHNOLOGIES
cleanup · collective
BLUE OCEAN
CINCINNATI
PARKS
HAMILTON COUNTY
R3SOURCE
city of
CINCINNATI
ENVIRONMENT &
SUSTAINABILITY

WHAT WE DO

CITY-WIDE HACKATHONS

WHAT WE DO

SUSTAINABLECINCY ACCELERATOR

WHAT WE DO

THE GREEN ROOM

WHAT WE DO

SUSTAINABLE INVENTION IMMERSION WEEK

Who We Support

greencharge
STARTUPCINCY

B the KEEPER

lastmile food rescue CINCINNATI

EMS | EventMap Studio

UPLIFT-5P

MICRONIC TECHNOLOGIES
THE CLEAN WATER SOLUTION

cleanup · collective

Cincinnati Recycling & Reuse Hub

CARBON HARVEST

BLUE OCEAN

intersect AGRICULTURE

subterra™

greencharge
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Get Connected !

startupcincy.com/greencharge

CONNECT WITH STARTUPS
DISCOVER NEW SOLUTIONS
GET SUPPORT FOR **YOUR** VENTURE
LET'S COLLABORATE AND WIN !

daltonji@ucmail.uc.edu **aseppi@alloydev.org**

Scan to register !!!

←

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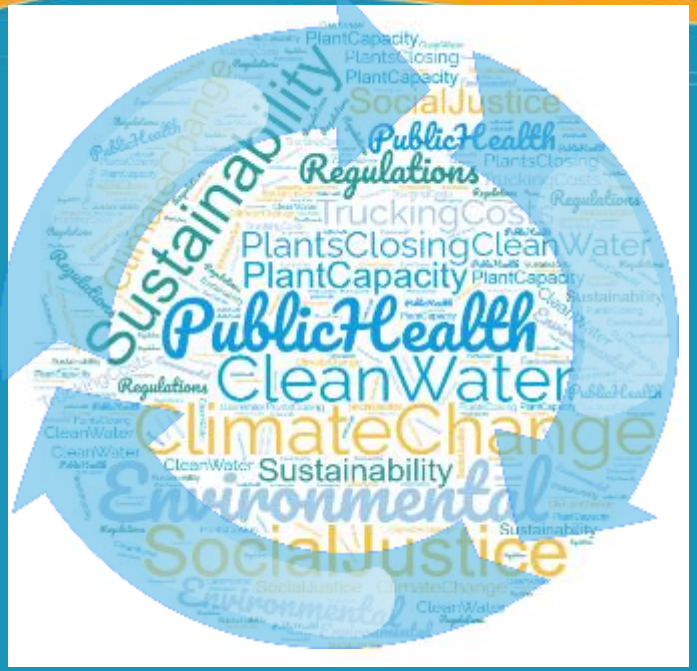
MICRONIC TECHNOLOGIES™
THE CLEAN WATER SOLUTION



WE CLEAN WASTEWATER
WE CONCENTRATE WASTE

Transforming Industrial Wastewater Into High Value Resources

NATHALIE IONESCO, PhD., PROGRAM MANAGER
KAREN SORBER, CEO AND CO-FOUNDER

SOLUTION: TORNADIC ONE-PASS™

Tornado-induced Evaporation

- No filters
- No membranes
- No chemicals

First to Market Application of Tornadic Technology!

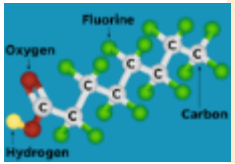
>99%

>95%

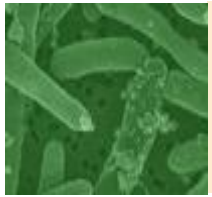
Dissolved solids

Suspended solids

Pharma



PFAS



Fecal bacteria

Nutrients

WHERE WE FIT

Low Total Dissolved Solids (TDS)	Micronic Focus: Ultra-High TDS
Reverse Osmosis Filtration Chemical Treatment Biological Treatment	Micronic Tornadic One-Pass™ Commercial Evaporators

COMPETITOR CHARACTERISTICS

	Commercial Evaporators
Temperature	**High**
Pressure	**High**
Evaporative Surface Area to Volume Ratio	**Low** Large laminar surface
Flow Characteristics	**Laminar** Low mixing causes scaling
Chemical Usage	✓
Cost	$$

MICRONIC CHARACTERISTICS

	Tornadic One-Pass™
Temperature	**Low**
Pressure	**Low**
Evaporative Surface Area to Volume Ratio	**High** Micron size droplets
Flow Characteristics	**Turbulent** High mixing inhibits scaling
Chemical Usage	
Cost	

VALUE PROPOSITION SUMMARY

	Commercial Evaporators	Tornadic One-Pass™
Temperature	**High**	**Low**
Pressure	**High**	**Low**
Surface Area to Volume Ratio	**Low** Large laminar surface	**High** Micron size droplets
Flow Characteristics	**Laminar** Low mixing causes scaling	**Turbulent** High mixing inhibits scaling
Chemical Usage	✓	✗
Cost	$ $	$

COST COMPARED TO TRUCKING

TORNADIC ONE-PASS™

1500 GPD Unit
2.2 Year Payback

>500K GPY
Water Reused

PURCHASE OPTION

TORNADIC ONE-PASS™

50% REDUCED CAPEX

50% REDUCED OPEX

YEARS OF DISRUPTIVE INNOVATION

2011

MicroDesal™ Ariel 1

Concept Feasibility

2014

MicroDesal™ Ariel 2

Concept Testing

2018

MicroEvap™ ME1

Pod Dev./ Engineering

2019

MicroEvap™ ME1A

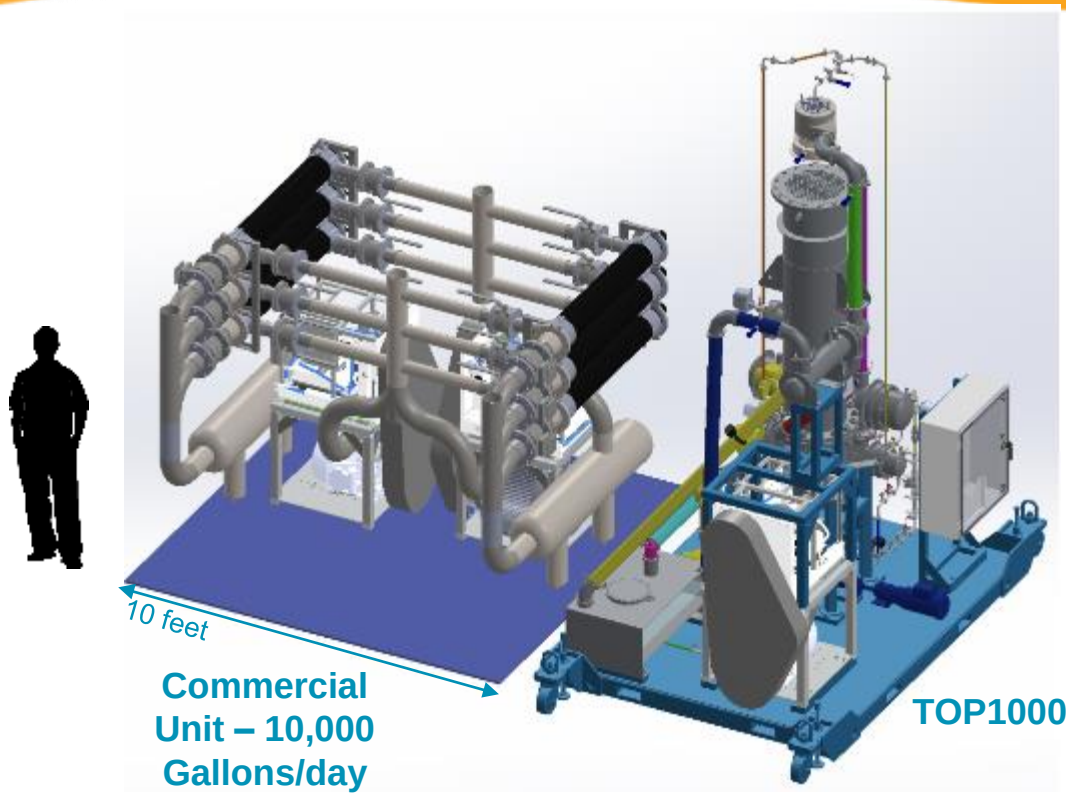
Wastewater Recycling toward ZLD

2022

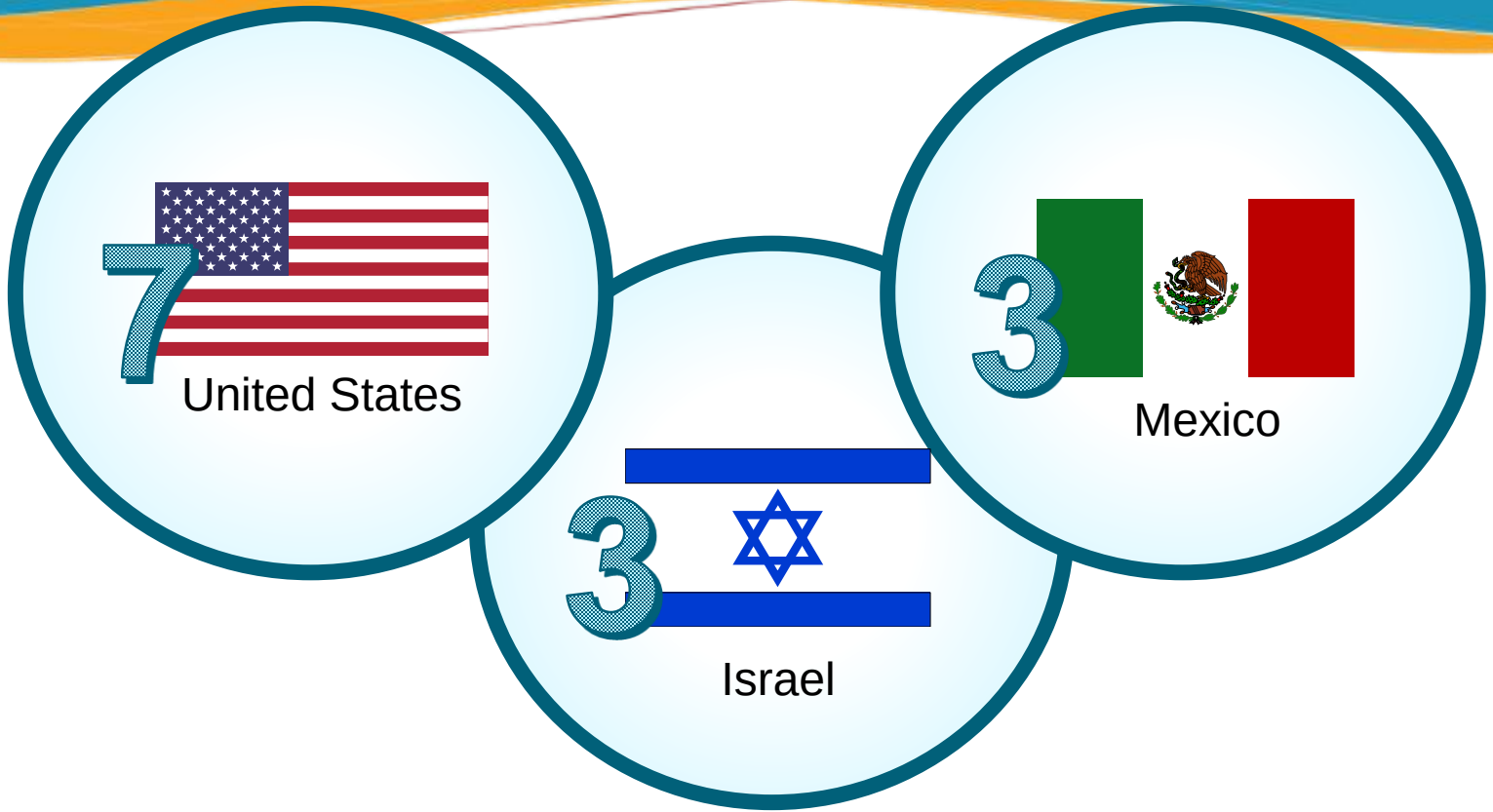
Tornadic One Pass™

Engineering Development

COMPACT, MODULAR, AND SCALABLE



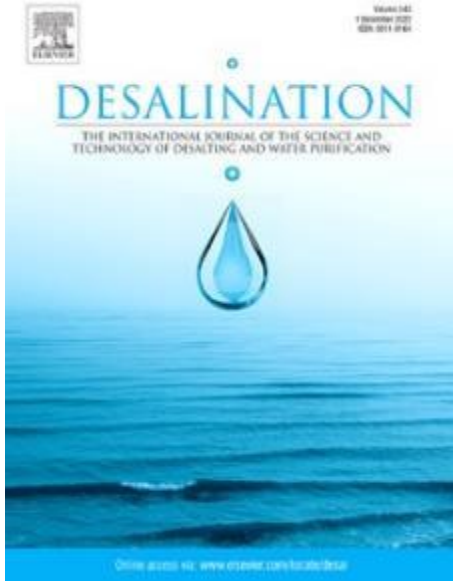
13 Issued Patents



EPA COLLABORATION

EPA

MICRONIC TECHNOLOGIES™
THE CLEAN WATER SOLUTION



Long Term Cooperative R&D Agreement (CRADA)

MARKETS AND EARLY ADOPTERS

MARKETS

CHEESE WASTE	LANDFILL LEACHATE	CRITICAL ELEMENTS
$0.3B	$5B	$15B

EARLY ADOPTERS

GRANDE CHEESE COMPANY

VEOLIA

RioTinto

MICRONIC LEVERAGING RESOURCES

Funders/Investors

USDA NIFA
United States Department of Agriculture
National Institute of Food and Agriculture

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Office of Naval Research ONR Science & Technology

Virginia Tobacco Region Revitalization Commission

CAV ANGELS

APPALACHIAN COMMUNITY CAPITAL

VIPC | VIRGINIA INNOVATION PARTNERSHIP CORPORATION
Connecting Innovators with Opportunity

TechSolve

Academic Collaborators

UC CINCINNATI

BEREA COLLEGE

UVA WISE

VT VIRGINIA TECH

MICRONIC TEAM

Kelly Rock
CTO, Inventor
& Co-Founder

Karen Sorber
CEO & Co-Founder

Nathalie Ionesco, PhD
PROGRAM MANAGER

Projects Led by Industry Leader

Robert Dunki-Jacobs
Product Engineer

Don Jordan, PhD
Sr. Scientist
Consultant

John Neal, PhD
Systems Engineer

Michael Lawless
Strategic
Consultant

Global Water Leader

Innovative Sustainability

End-to-End Expertise

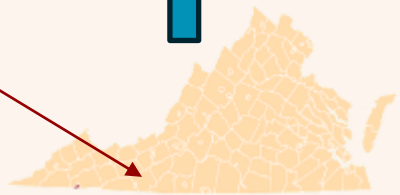
Acquisition Integration

Profitable Growth Driver

MICRONIC MEETS THE ESG MARK

E	ENVIRONMENT
S	SOCIAL
G	GOVERNANCE

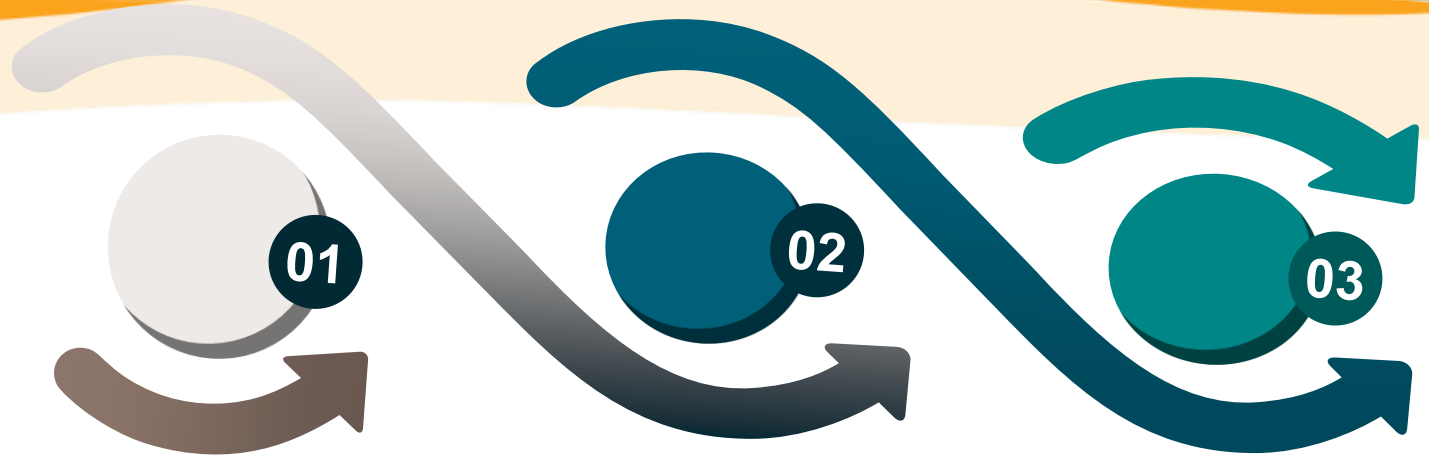
Bristol, Virginia



OPPORTUNITIES ZONES

Alloy DEVELOPMENT CO.

OUR PILOT PROCESS

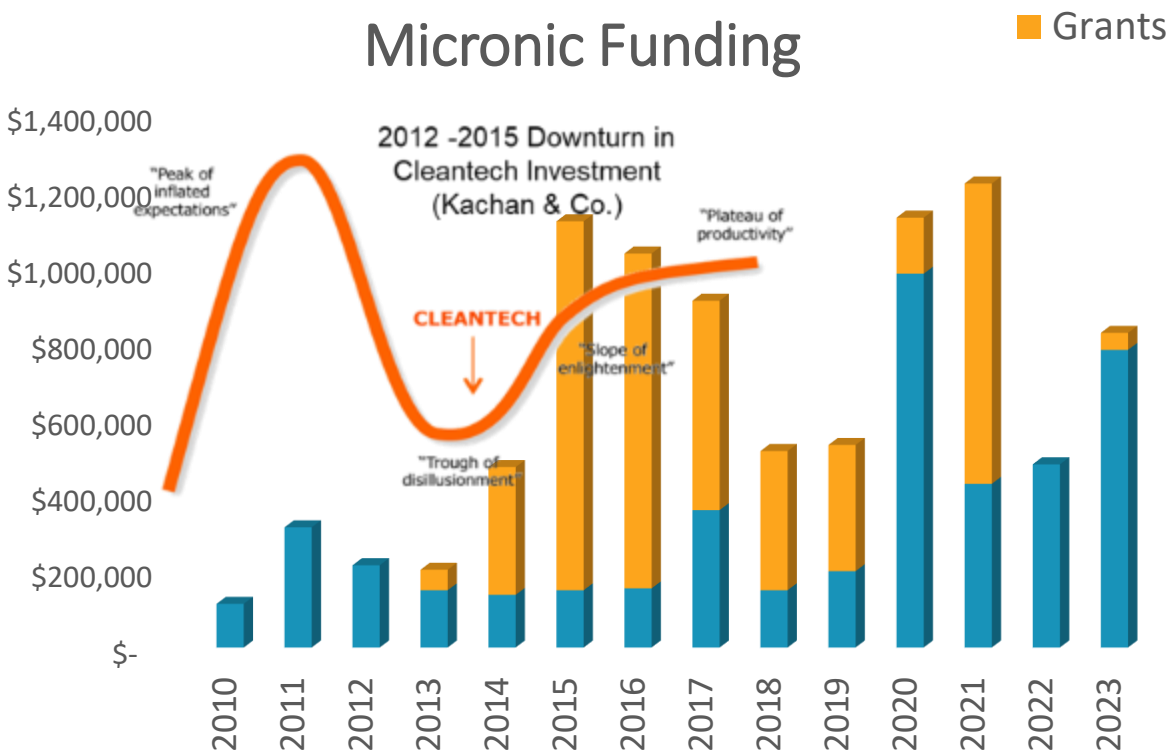


PROCESS WATER

CONDUCT ROI ANALYSIS

IMPLEMENT PILOT

WHY PARTNER WITH MICRONIC?
Micronic is a Resilient Cleantech Company



CONTACT INFO

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CEO and Co-founder

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Nathalie Ionesco, PhD.
Program Manager

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MICRONIC TECHNOLOGIES™
THE CLEAN WATER SOLUTION

PECHA KUCHA ABSTRACT

While many manufactures and facilities are targeting net zero sustainability on future expansions to their Utility Assets, sustainability goals can be realized now through real time analysis of energy usage in your existing facility.

In this session you will learn about techniques to leverage data from AHU, Compressors, Chillers, Boilers, and Key Manufacturing Assets to determine energy consumption and establish a culture driven to limit energy and waste.

Hello – Tommy O’Brien

thomas.obrien@rovisys.com

Tommy O’Brien

Group Manager – RoviSys

Tommy has been with RoviSys since 2005, focusing on integrating manufacturing systems. Tommy’s experience includes automation, network infrastructure, manufacturing execution systems and production visualization & analytics.

Tommy assists manufacturers in identifying opportunities to improve their production and efficiency by leveraging existing IT/OT infrastructure.

RoviSys takes a holistic, vendor-independent approach to your manufacturing system infrastructure. Our experts have years of IT/OT convergence experience and practical business experience integrating business objectives, existing technologies, and new solutions. Our goal is to deliver reliable solutions with measurable ROI.

RoviSys is a Global System Integrator

North America

North America

Europe

Nederland | Ireland

Asia Pacific

Singapore | Taiwan | Indonesia
Malaysia | Thailand

17
Locations

1300+
Employees

$280MM+
Revenue

RoviSys Service Capabilities

Process & Building Automation
Upstream, Downstream, Sensors, Batch, Packaging, Utilities, Environmental, DCS/PLC, HMI

Digital Transformation
Process Historian, Electronic Batch Records, Analytics, Data Management, MES

OT & Infrastructure
Network Design, Security Management, Virtualized Infrastructure, Cyber Resiliency

Validation
Computer Systems, Process, Equipment GMP, GAMP, GDP

RoviSys is a Holistic Service Provider

Every aspect of our business is focused on delivering automation and information solutions.

Our Expertise and Services enable us to work with our Clients, driving initiatives and solutions from design to deployment.

RoviSys Service Capabilities

Process & Building Automation
Upstream, Downstream, Sensors, Batch, Packaging, Utilities, Environmental, DCS/PLC, HMI

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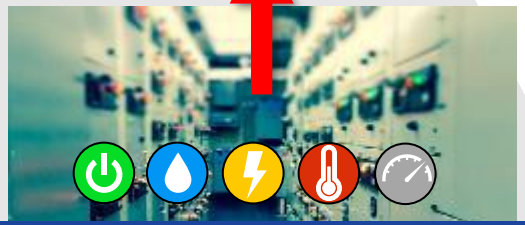
What is a Data Historian?

Historian Data Storage & Data Collectors



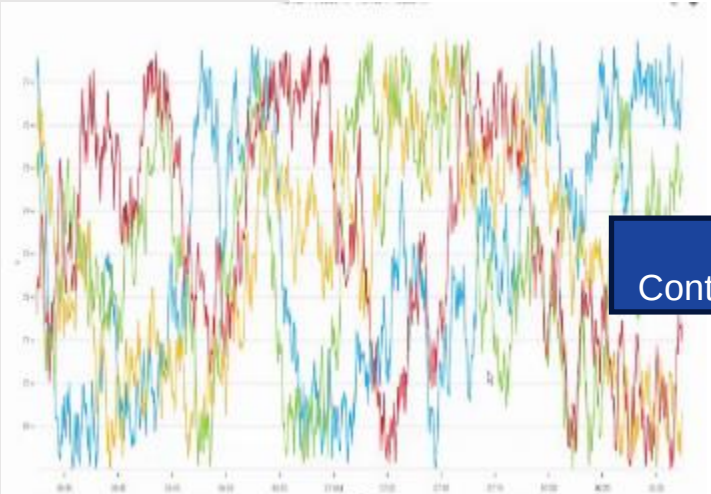
Data Historians are a type of database designed to collect time-series data from various equipment and assets. Data Historians efficiently store and readily recall stored data.

Data Historians automate the collection of time-series **data from Equipment Sensors** from all over your facility, enabling engineering, maintenance, and operations to use this data for ***visualization, advanced analytics, and prescriptive maintenance.***

Creating Data Context From Time Series Data

Time Series Data Must be Tamed!

Data Contextualization is the process of providing related information to time-series data set to promote corrective actions and informed decisions.

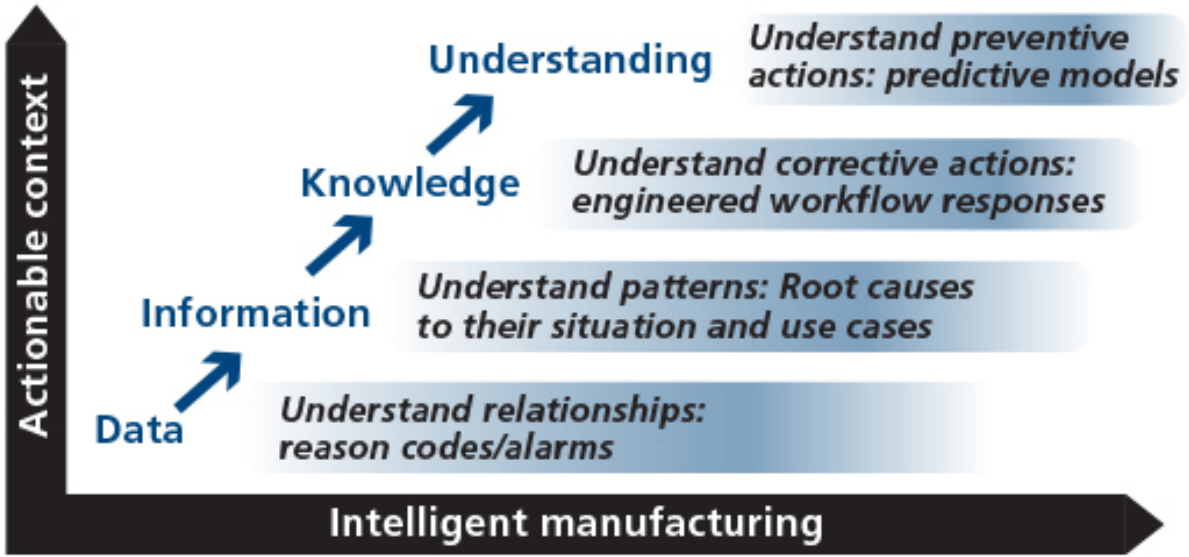


Data Contextualization

Time Series Data without Context is Hard to Interpret!

Effective Data Contextualization and Dashboarding Improve Decision Making

Data Driven Decisions with Historian



Effective Data Historian Solutions Create Knowledge in the Workforce.

Transform raw data from assets by **adding relevant context** focused at **improving decision making.**

ISA: https://www.isa.org/intech-home/2017/november-december/features/isa-95-to-support-smart-manufacturing-iiot

Success Stories

The Problem

Our Solution

Project Result

Yogurt Production Goes Green: A “Cultured” Way to Save Energy

Sustainability Challenge

Yogurt manufacturer had vast amount of Historian data, but was not usable enough to track energy usage

HTST pasteurization is energy Intensive:

Electricity: 16 kW/hr
Utility Cooling: 25m3/hr

Yogurt Production Goes Green: A “Cultured” Way to Save Energy

Consultation Services Identify Approach to Contextualization

RoviSys led Digital Transformation Workshop pinpointed an opportunity to harness **Virtual Energy Sensors in Historian** to calculated real-time energy analytics.

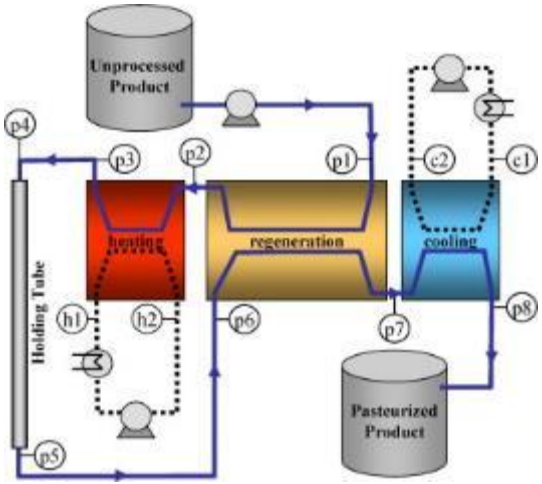
Manufacturing Execution System **(MES)** data included production schedules and product information to **enhance data context and gain further insight.**

Effective Digital Transformation Workshop are inclusive

Yogurt Production Goes Green: A “Cultured” Way to Save Energy

Real Time Asset Based Energy Analytics

Developed **real-time energy** model **(Q)** for every asset. Assets included **major equipment**: Heat Exchangers, Motors, Mixers, Homogenizers, and Vessel Jackets.



Example Heat Exchanger Energy Model:

$$Q_{HEX} = \int \left(C_p \, x \, \Delta T \, x \, \frac{m}{t} \right) x \, S_t$$

Example Motor Energy Model:

$$Q_{MTR} = \int \left(\frac{V \, x \, I \, x \, PF \, x \, \sqrt{3}}{1000} \right) x \, St \, x \, Sp$$

Yogurt Production Goes Green: A “Cultured” Way to Save Energy

Production Line Energy Roll-up and Data Contextualization

Production Line energy was modeled by rolling up energy analytics associated with each asset.

Example Energy Model for a Production Line:

$$Q_{HTST1} = QMTR_1 + QHEX_1 + QH_{MGZ1} + Q \ldots$$

MES Data provided production campaign records, allowing an energy model to be associated with each product.

Example MES Date:

Event Description	Start Time	End Time	State
HTST1 - Vanilla Greek Yogurt Production	5/22/23 10:04:34	5/22/23 23:33:45	**PRODUCTION**
HTST1 – Unplanned Downtime	5/22/23 23:33:46	5/23/23 00:34:34	DOWNTIME
HTST1 – Vanilla Greek Yogurt Production	5/23/23 00:34:35	5/23/23 09:44:23	**PRODUCTION**
HTST1 – Production Changeover	5/23/23 09:44:24	5/23/23 12:00:00	CHANGEOVER

Yogurt Production Goes Green: A “Cultured” Way to Save Energy

RoviSys Identifies Energy Saving Correlation

Identical products energy consumption was different across production lines

By linking MES production data with energy use, the yogurt manufacturer optimized their production to save energy

Success Story – Asset Health Monitoring

The Problem

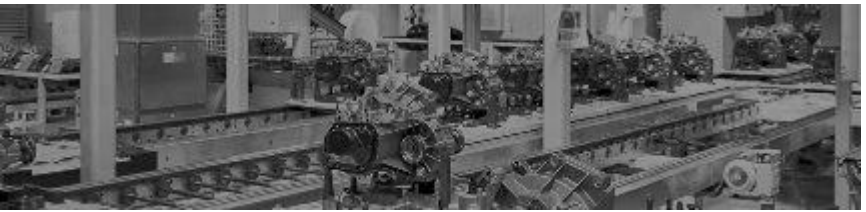
Outdated Technology & No Historical Data

The Solution

Developed and baselined performance with Historian Analytics. Analytics **detected a worn bearing** and alerted the Maintenance, allowing them to repair the motor and **avoid unplanned downtime**.

Success Story – Fault Detection and Diagnostics (FDD) technology

The FDD solution enabled plant operators to swiftly detect BMS faults, identify energy inefficiencies, and empower maintenance team to make informed decisions regarding support and repairs to the Building Management Systems and HVAC.



Data Analytics: Where to Begin?

Starting a digital transformation initiative or data analytics project can be challenging.

Failing on the first deployment may stall this initiative at your business.

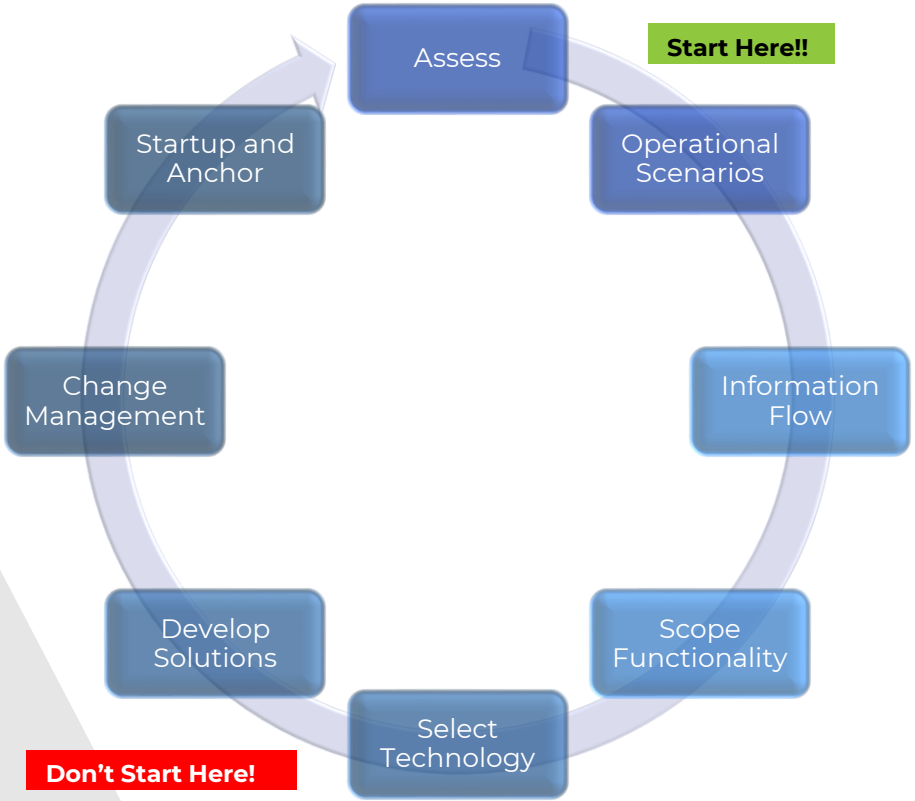
It can be challenging to select the Data Analytics Project to start with.

Smart Manufacturing Consultation & Delivery

- **Identify Business Drivers First!**
- **Technology provides a Tool to solve challenges in manufacturing.**
- **Valuable Tools need to Solve Worth While Challenges!**
- **Start small, Think Big**

Smart Manufacturing Engagement process

Ensure you involve and train the people that run your Business



RoviSys Smart Manufacturing Delivery Process

Enabling Digital Transformation

RoviSys Consultation Drives Digital Transformation

RoviSys helps our clients identify how **Emerging Technology** can be used to **gain competitive edge in manufacturing**.

Interconnection

Devices, Sensors, Controls, Systems, People

Information Transparency

Provide access to useful information Remove non-essentials

Interaction

Intuitive Easy to Understand Visualization Creates more Interaction

Smart Decisions

Flexibility and agility in Decision making from AI/ML

THANKS!

Any questions?

You can find me at **thomas.obrien@rovisys.com**

WORKHORSE™

Understanding EV Charging Infrastructure Implementation

Steve Conrad - Workhorse Group

– Manager of Customer Success and Training

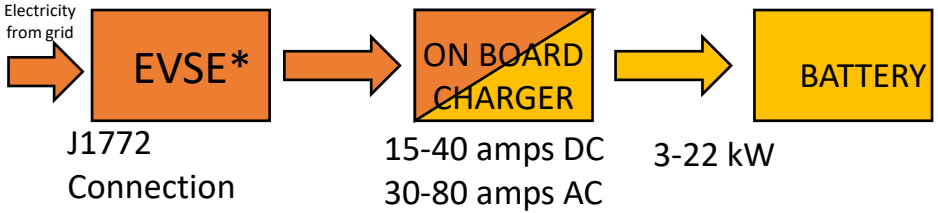
Workhorse Group

Outline

- How charging works
- Levels of charging
- Types of EVSEs
- EVSE owner considerations
- Infrastructure considerations
- Design integration considerations

How Charging Works

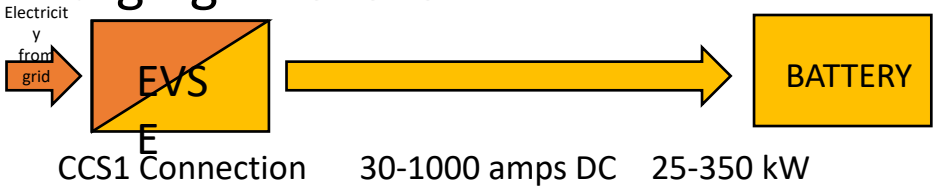
Charging – Level 2



AC — Electricity from grid and motor (generator)

DC — Electricity from Battery

Charging – Level 3



*EVSE –Electric Vehicle Service Equipment

Levels of Charging

Level 1
- Plugs into a standard 110V outlet
- Lowest level of charging
- Not practical for charging from a low SOC
- Not practical for commercial vehicles

Level 2
- 220 V required
- 3kWh up to 22kWh
- 30-80 Amps
- Less expensive to implement than Level 3
- Commonly available public charger.
- Practical for both passenger and some commercial vehicles.
- Significantly lower cost than Level 3 EVSEs

Levels of Charging

Level 3

- Highest charging rates
- 480V often needed
- 15 kWh up to 350 kWh
- Can be expensive to implement. >$10K
- Good for large batteries in commercial vehicles
- Good for quickly charging passenger vehicles
- By-passes on-board charging system

Types of Chargers

- umb’ Chargers
- ug and play
- nable to recover st
- o ability to track age
- ss expensive
- o need for nnectivity
- ss cost

Types of Chargers

- nart' Chargers
- quires data nection
- n charge for use
- lity to limit ess
- ess with card or le
- re expensive

Charging from an EVSE owner standpoint

Customers

Employees

Work Vehicles

EVSE Owner Considerations for:
-Customers
-Employees

Customers

- How many?
- How long do they stay?
- Turnover rate?
- Peak times?
- Size of lot?
- Proximity to entrance?

Employees

- How many?
- Size of lot?
- Shared with others?
- Proximity to entrance?
- Pay for charging?

EVSE Owner Considerations for:
-Work Vehicles

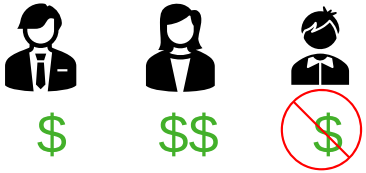
Work Vehicles

- What kinds of vehicles?
- How many of each kind?
- Duty cycle for each type?
- *Charge port location on each vehicle?*
- Where do they park?
- Specified parking spots?

EVSE Owner -Other Considerations

Cost Recovery

Customized Charging Rates



Limit Use

Profit Center

Infrastructure Considerations

- al/Building level
- ic Service
- ment
- et
- e
-

Infrastructure Considerations

- l/National Level
- ration capacity
  cially for large fleets
  ge trucks.
- ions for subsequent
  ing on long routes.

General Design/Planning Considerations

Design and Build with the Future in Mind

Cable Management

Integration into Design

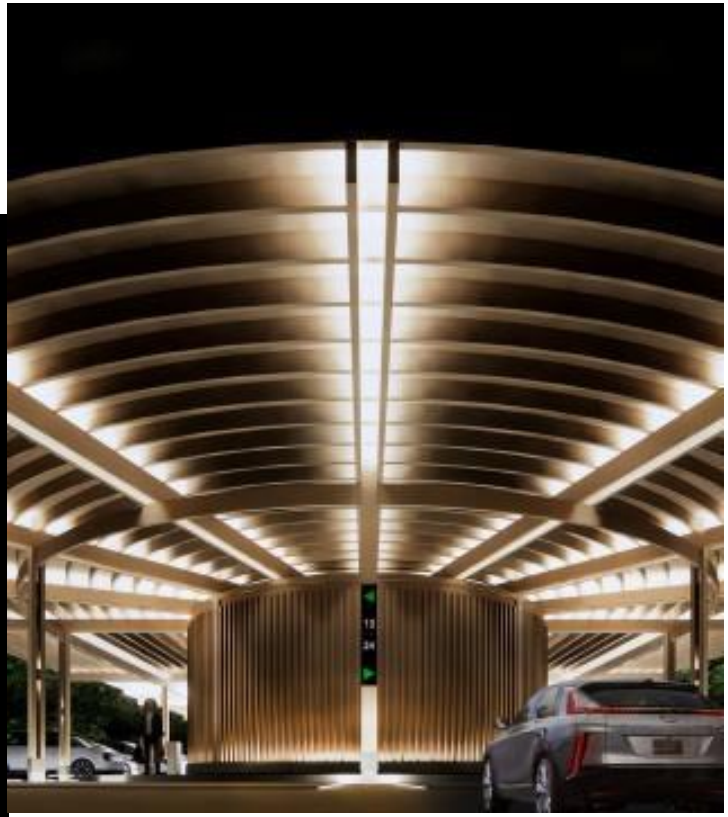
Integration Into New Design

Integration into existing design

Urban Challenges

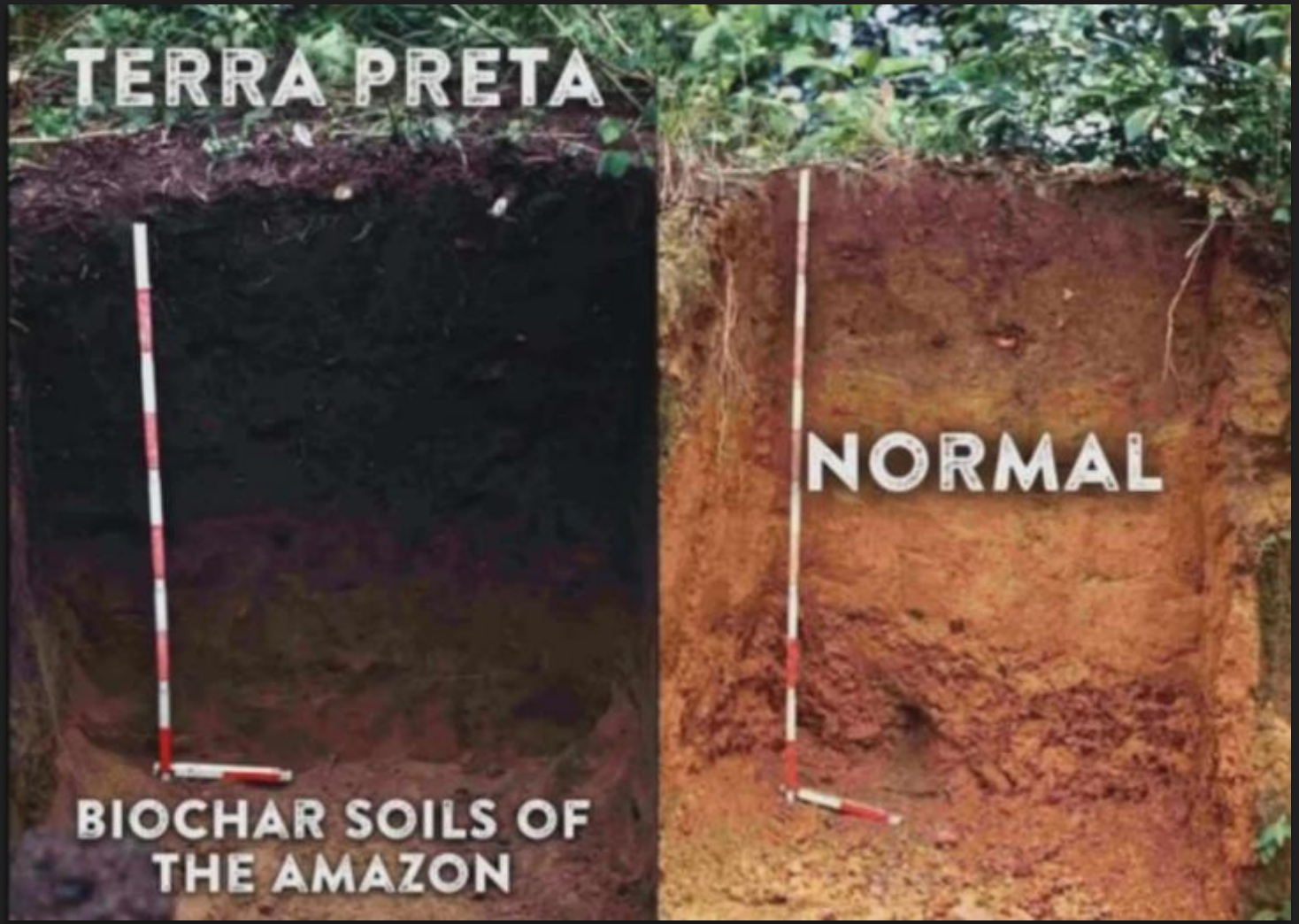
Outlook

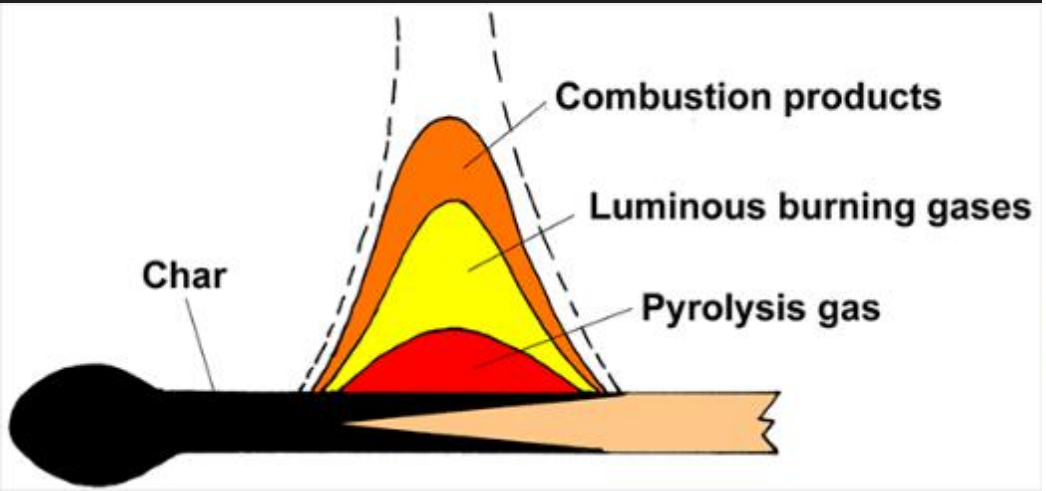
What does the future hold?

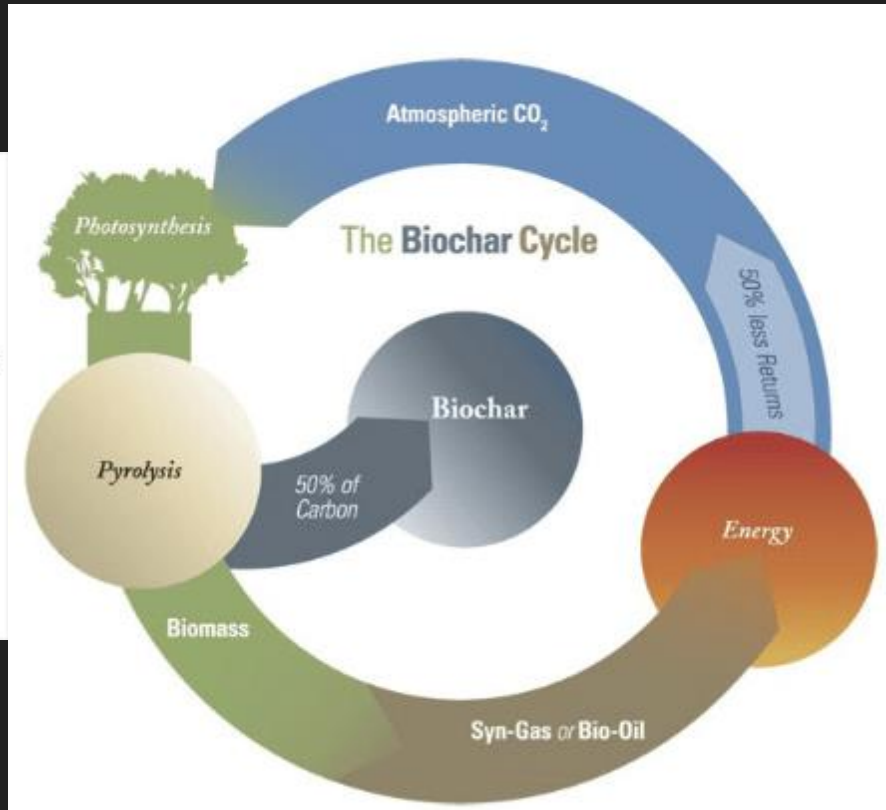


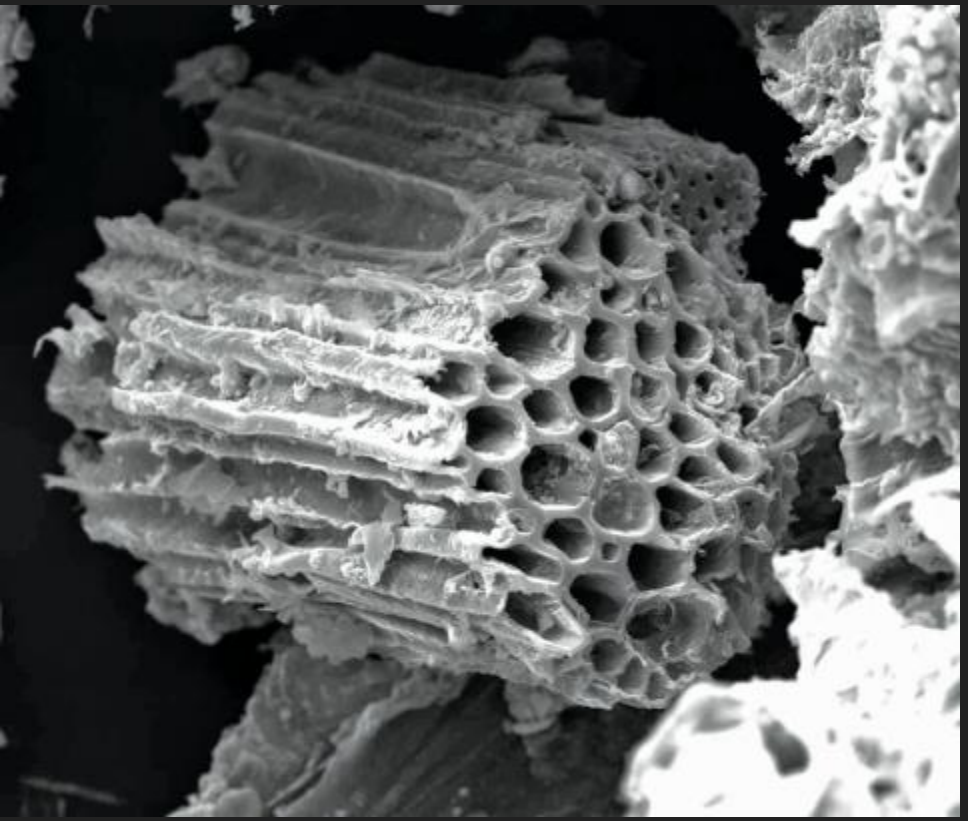
Our vision is to pioneer the transition to zero-emission commercial vehicles.

THE CINCINNATI BIOCHAR PROJECT


TERRA PRETA
BIOCHAR SOILS OF THE AMAZON
NORMAL


Combustion products
Luminous burning gases
Char
Pyrolysis gas


Atmospheric CO_2
Photosynthesis
The Biochar Cycle
50% less Returns
Biochar
Pyrolysis
50% of Carbon
Energy
Biomass
Syn-Gas or Bio-Oil




REDUCE YOUR
CARBON FOOTPRINT

STOCKHOLM BIOCHAR PROJECT

Bloomberg Philanthropies

QUEEN CITY

Turning Waste into Resource, Revenue and Resilience

1 INPUTS → **2 PRODUCTION** → **3 USES**

- Wood chips from Parks Dept

- Biochar Production

- Local/Regional Use
  - UTC
  - Stormwater
- External Sales
  - Biochar
  - Carbon Credits

Increase Production Efficiency by
- Utilizing heat
- Generating electricity


WARDER NURSERY
NATURE PRESERVE
RESIDENTIAL AREA
WARDER DR
NORTH BEND RD
CINCINNATI
PARKS

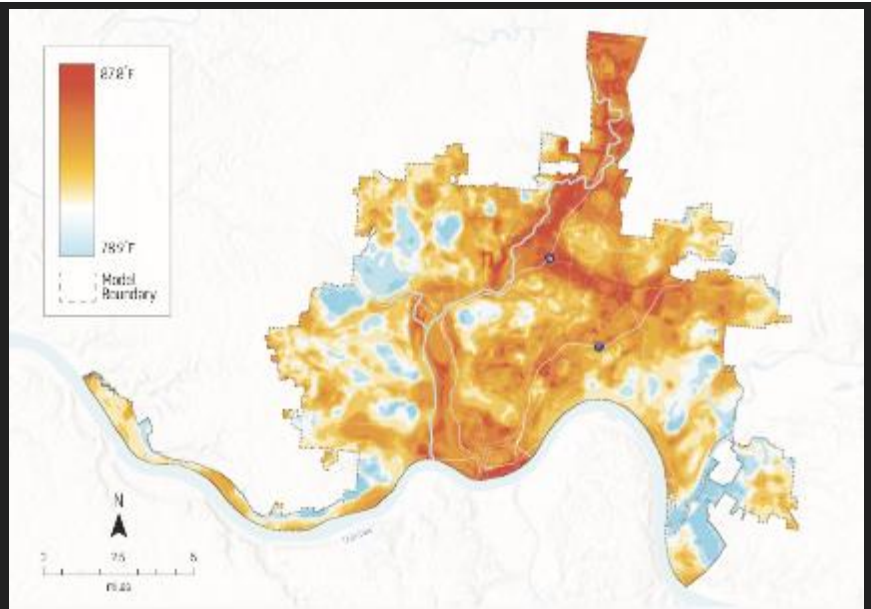
Biochar Can Help Solve Problems

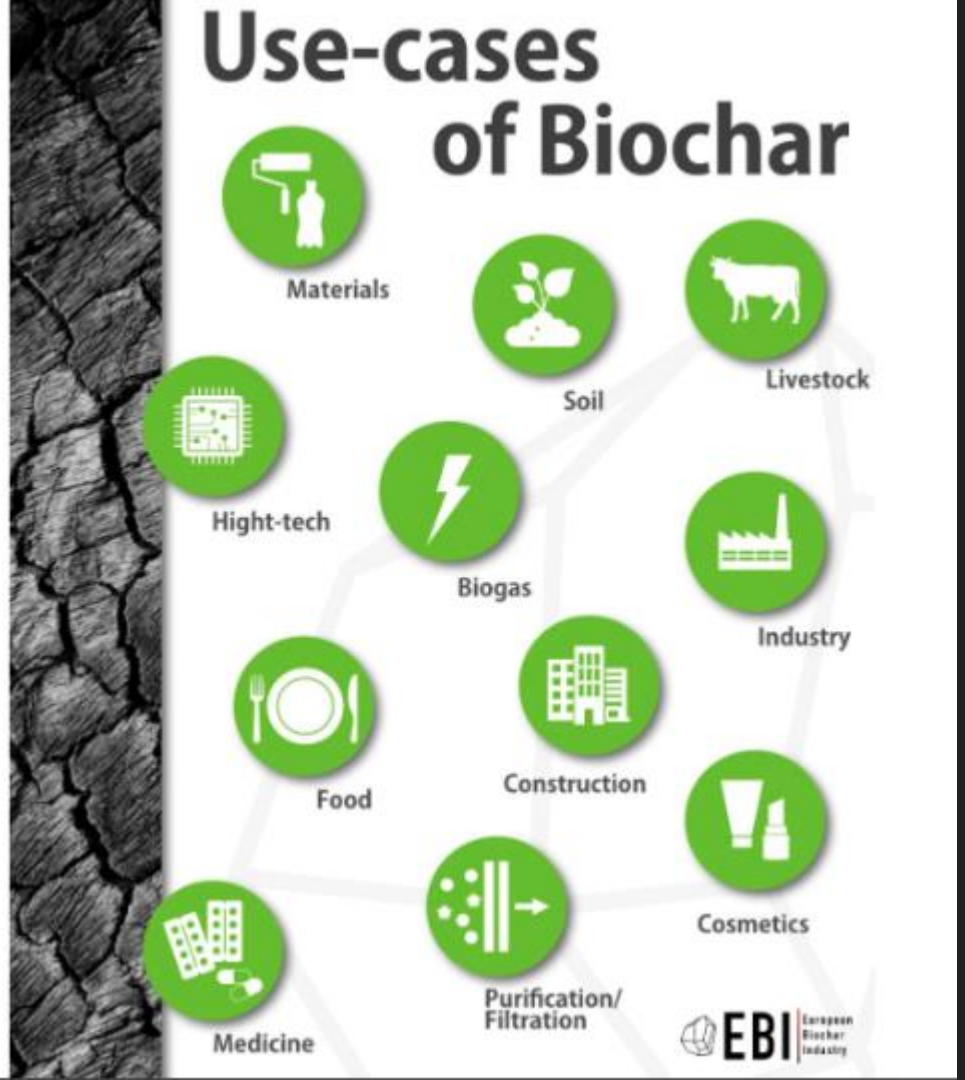
- Expand Urban Canopy
  - Tree Survival
    - Drought resilience
    - Contaminant filtration
  - Tree Growth
- Stormwater
  - Increase infiltration
  - Support green infrastructure

Cincinnati Biochar Project- Environmental Justice

NEWS FEATURE

Cincinnati's 'Heat Islands' Disproportionately Affect Lower-Income Neighborhoods and Areas with Larger Black Populations




Use-cases of Biochar
Materials
Soil
Livestock
Hight-tech
Biogas
Industry
Food
Construction
Cosmetics
Purification/ Filtration
Medicine
EBI
European Biochar Industry

Recommended Urban Stormwater BMPs for Biochar

Stormwater BMPs
Green Roof
Infiltration Trench/Basin
Bioretention/Sand Filter
Constructed Wetland
Filter Strip
Swale

Sanjay et al. (2018) Plenty of room for carbon on the ground: Potential applications of biochar for stormwater treatment, *Science of the Total Environment*, doi.org/10.1016/j.scitotenv.2018.01.037

Biochar and GI

Inside Climate News

Concrete is Worse for the Climate Than Flying. Why Aren't More People Talking About It?

'Carbon-negative' concrete invention removes CO2 from the air during manufacture

Researchers at Washington State University say they've developed a 'carbon negative' concrete that removes carbon dioxide from the air during its formation.

Coffee Biochar Boosts Concrete Strength By Nearly 30%, Scientists Find


Kathleen Draper · 1st
Board Chair at International Biochar Initiative
22h ·
Thank you to Marvel Designs and Mathew Schmid for developing some great new biochar concrete wall decor and benches. There is a lot of biochar in these pieces!


More revolutionary biochar building materials including SIPS and rubbery flooring. Exciting times indeed! Thanks William Hilgendorf
BioAsphalt™
by VERDE

ABOUT GROUT

(and biochar, of course!)

2 gallons of premixed grout
1 lb of powdered biochar
48 sf

Biochar used in
Tadalakt plaster


DISCLAIMER

CINCINNATI SKATEPARK PROJECT

Let’s collaborate!

sam@carbonharvestllc.com

Thank You