



# Transforming the Future of Solid Waste Through Intelligent Technologies: AI in Action

**Thursday, March 19, 2026**

- 11:00 a.m. - 12:00 p.m. ET
- 10:00 a.m. - 11:00 p.m. CT
- 9:00 a.m. -10:00 a.m. MT
- 8:00 a.m. - 9:00 a.m. PT

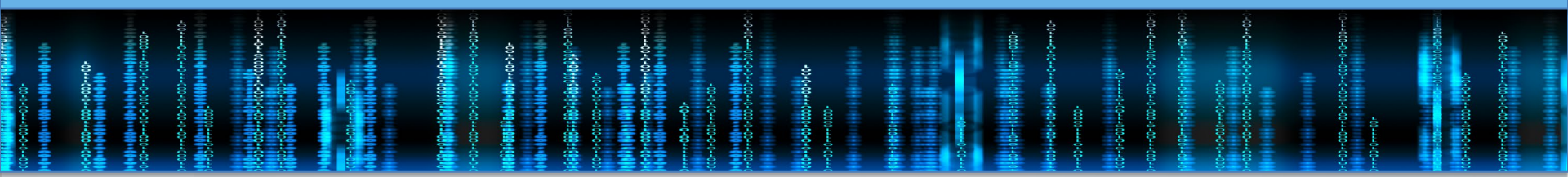
This program is sponsored by  
the APWA Solid Waste Committee


Speakers and instructors for APWA education offerings are practitioners and experts in public works and infrastructure issues and solutions. Some may have proprietary interest in services and products used by public works agencies and professionals.

Speakers for APWA educational offerings agree to refrain from specific product or services endorsements or promotions during APWA educational offerings.

## APWA Proprietary Interest Disclosure Statement

**Today's  
Program is  
eligible for .1  
Continuing  
Education Unit  
(CEU) credits.**





A link to the program evaluation will be emailed to you after the program.

To request CEU's - you must correctly answer 80% of the questions.



*APWA has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102; (703) 506-3275.*



# RESOURCE CENTER

**ONE PLACE** where a member can access:

- Past Click, Listen & Learn (CLL) presentations
- Content from past conferences (PWX and Snow)

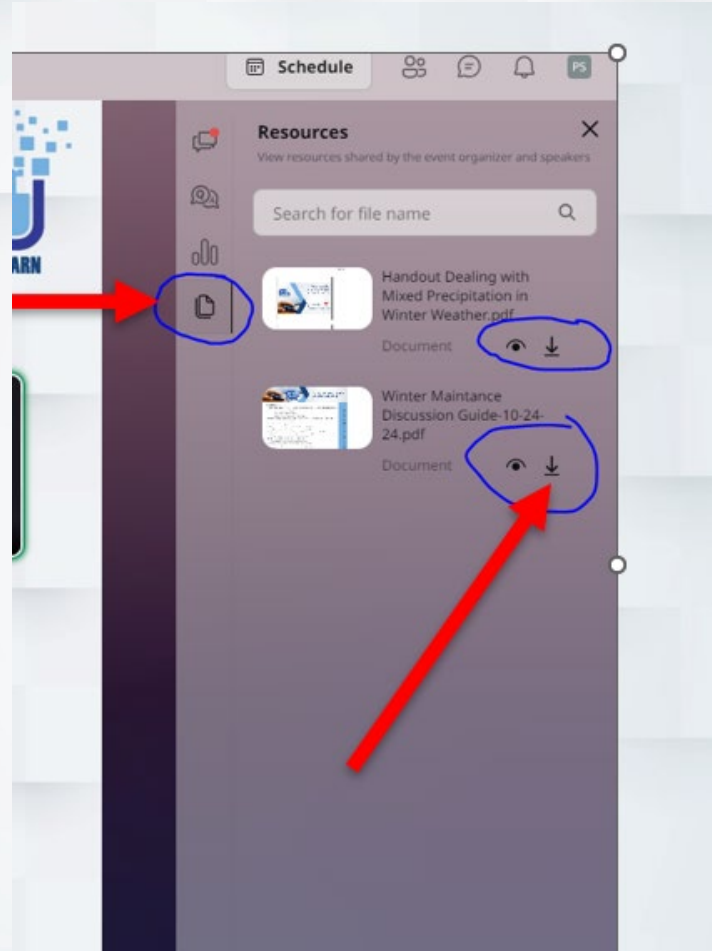
All searchable by topic. All without any extra fees beyond membership dues! No limits to how often you access or open the items in the Resource Center.

**No travel. No scheduling hassles. No delays while waiting for someone else's approval. No waiting for registration payment to be processed.**

For more information go online to  
[www.apwa.org/resources/resource-center](http://www.apwa.org/resources/resource-center).



Handout for Today's Program can be download from the right-hand chat panel.



# Viewing the Presentation

The screenshot displays a webinar interface. The top header shows the title "Precipitation in Winter Maintenance". Below it, a slide is visible with the text "Working with Mixed Precipitation in Winter Maintenance" and the logo for the "AMERICAN PUBLIC WORKS ASSOCIATION". To the right of the slide is a control panel featuring a logo with a lightbulb and gears, and the text "CLICK, LISTEN & LEARN". A red arrow points to a small square icon in the top right corner of the control panel. Further right, there are buttons for "Schedule", a shield icon, and a user icon. Below these is a "Chat" section with the text "Enjoy interacting with the pe webinar!". A vertical sidebar on the right contains icons for chat, a document, and a magnifying glass.



# Communication & Engagement Opportunities

Copy of Managing Public Art in the Right-of-Way

**APWA** AMERICAN PUBLIC WORKS ASSOCIATION

**CLICK, LISTEN & LEARN**

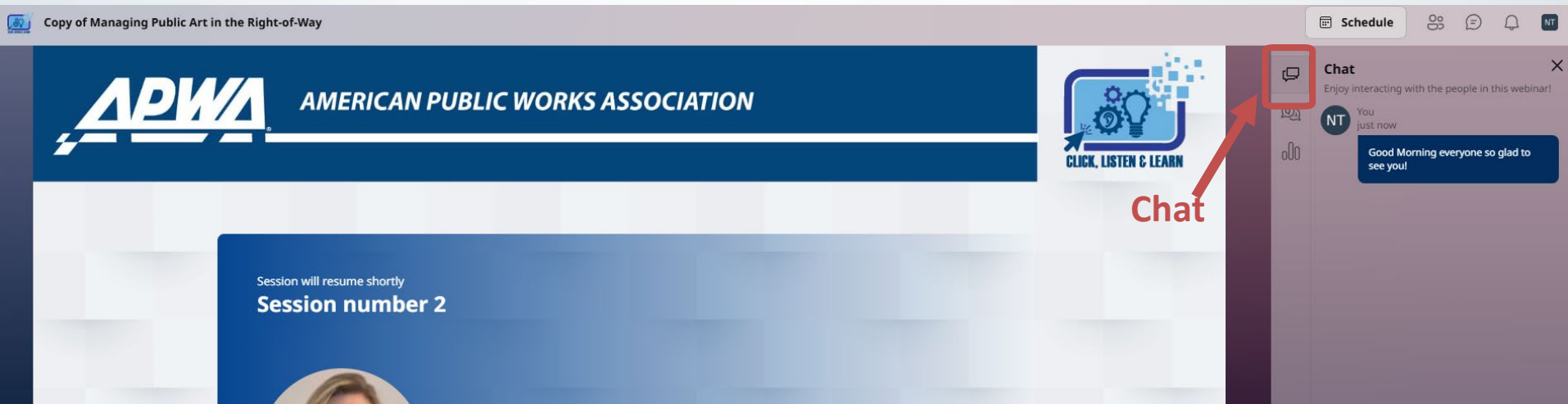
Session will resume shortly  
**Session number 2**

**Chat**

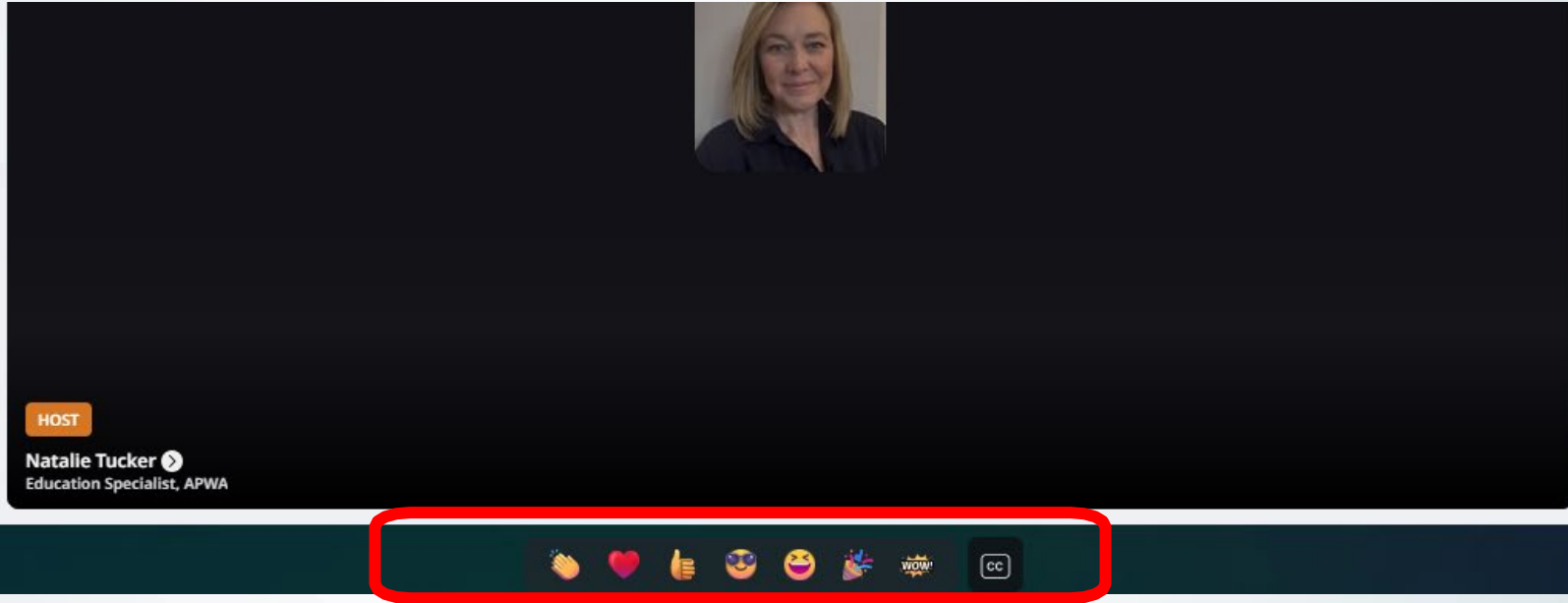
**Chat**  
Enjoy interacting with the people in this webinar!

You just now  
NT

Good Morning everyone so glad to see you!




# Reactions











A screenshot of a video player interface. The main content area is dark with a small video thumbnail of a woman in the top right corner. Below the thumbnail, the text "HOST" is in an orange box, followed by "Natalie Tucker" and "Education Specialist, APWA". At the bottom, a dark green reaction bar is highlighted with a red border, containing icons for clapping hands, a heart, a thumbs up, a sunglasses emoji, a grinning face with tongue out emoji, a party popper, a "WOW!" icon, and a "CC" icon.

HOST

Natalie Tucker 

Education Specialist, APWA

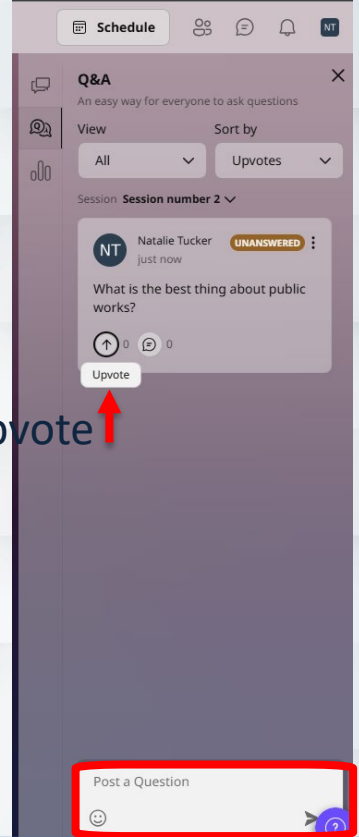
       

# Program Questions

1. If you have questions for our speakers, you may ask them using the Q&A feature.

2. Choose to Upvote a question that is the same as your question.

Q & A →



Upvote ↑

## Today's Moderator:



Tyler Bandemer  
Solid Waste Manager  
City of Loveland,  
Colorado

# Learning Objectives

*After completing this course, participants will be better able to:*

- *Identify key applications of AI technologies within the Solid Waste sector.*
- *Evaluate the benefits and challenges associated with integrating AI into solid waste operations.*
- *Analyze strategies for effectively using AI in Solid Waste management.*



Nominations to join an APWA knowledge team or subcommittee are considered year-round. Share your interest via the QR code below.



# Get Involved with APWA

# Today's Speakers



Robert Swain  
Public Works Manager  
City of Grand Rapids, Michigan



Nora Dempsey  
Global Business Development Advisor  
Nord Engineering



Giuseppe Roberto Marseglia  
Board Member  
Waise Waste



**Robert Swain**  
Public Works Manager  
City of Grand Rapids MI



## Grand Rapids, MI

- 200,000 Residents – 1,077,370 Metro Population
- Over 2 Million Visitors Annually
- 45 Sq Miles
- 660 Miles of Road Network
- 100+ Public Works vehicles (CNG, diesel, electric)
- Plow, sweeper, trash, recycle, yard waste routes city wide
- Beer City USA!

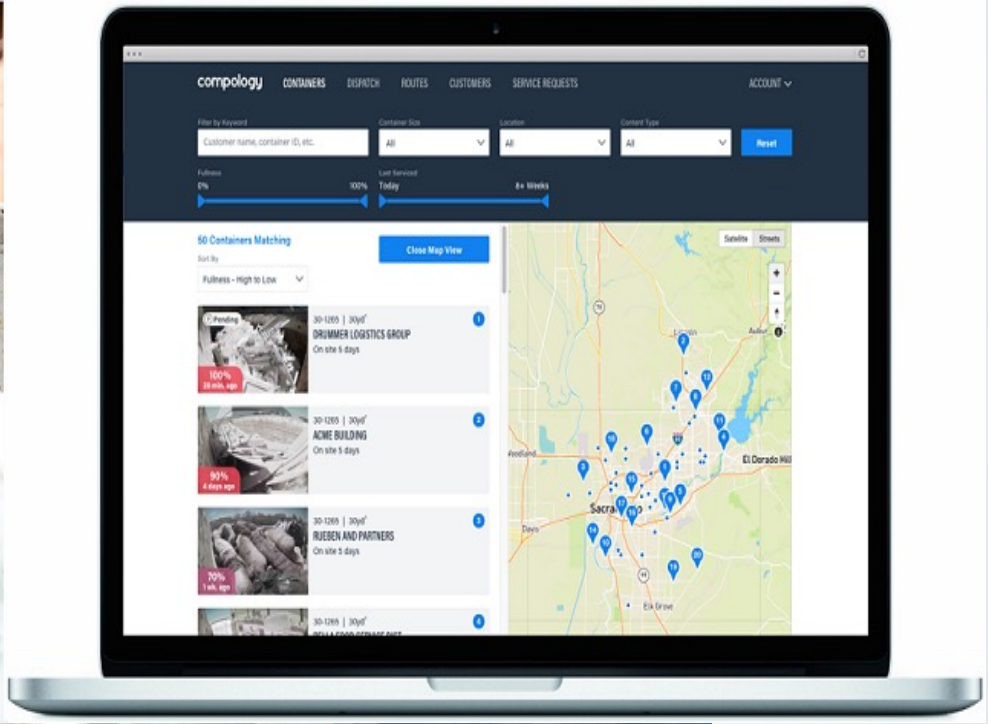
## Technology in Municipal Operations



# Where might technology assist operations?

- "You forgot to empty my trash cart."
- "You haven't plowed our street in ten years!"
- Equipment costs are increasing where can we save \$\$
- Contamination of recycle and organics is too much, what can we do?
- How can we reduce 311 calls for potholes etc.?

# Smart Dumpsters



# Recycling Contamination Solutions



# Countermeasures and Results

When we emptied your recycling into the truck—our team noticed these “NO” items in your cart.

*Cuando vaciamos su reciclaje en el camión, nuestro equipo notó algunos materiales que “NO” deberían estar en su contenedor.*

## OOPS!

**KEEP THESE ITEMS OUT OF CURBSIDE RECYCLING:**



**Do not Bag Recyclables**  
(no garbage)  
*No coloque artículos que se puedan reciclar en una bolsa.  
(no reciclar basura)*



**No Plastic Bags or Plastic Wrap**  
(return to retail)  
*No reciclar bolsas de plástico  
(devolver a la tienda)*



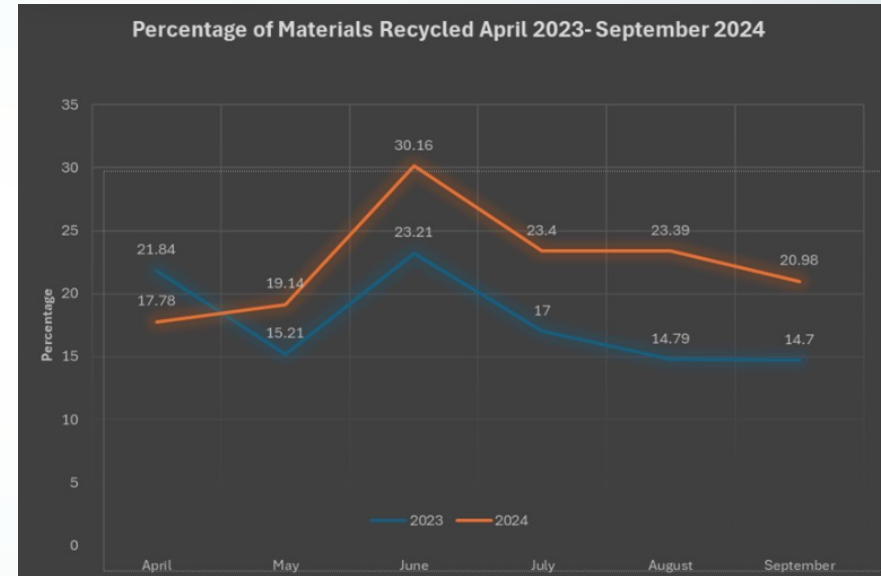
**No Tanglers, Cords, Hoses, or Chains**  
*No reciclar mangueras, cables ni cadenas*



**No Food or Liquid**  
(empty and dry)  
*No reciclar alimentos ni líquidos  
(vacío todos los recipientes)*



**No Yard Waste**  
*No reciclar residuos de jardinería*



# The Evolution of PAYT



# Service Verification and Overloaded carts



# Assisting Winter Operations

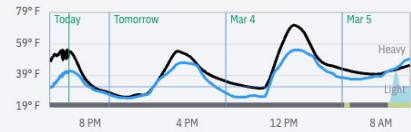
## Breton & Burton

Light Rain 66 hrs 21 mins  
Wet 66 hrs 21 mins

PRECIP: 0.5 in rain over next 72 hours

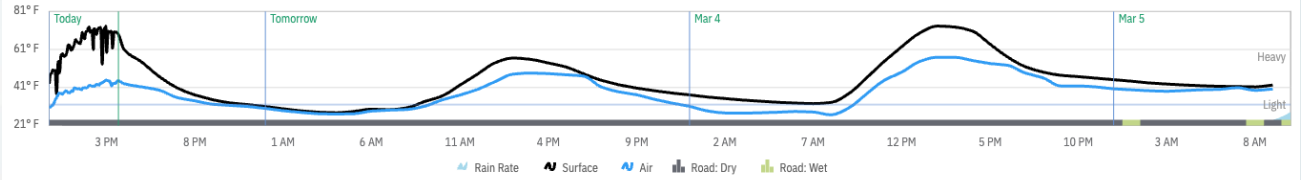


Air: 41.1°F Sur: 50.5°F H: 44.2% D: 21°F W: 8.7mph SE



Time: Mar 02, 26 3:40 PM CST

Air: 41.7°F Sur: 54.4°F H: 44.7% D: 20.7°F  
W: 8.2mph COF: 1 Cond: Dry

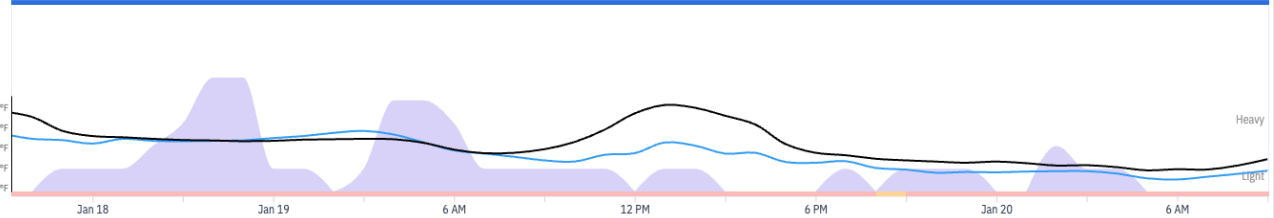


Time: Mar 02, 26 3:38 PM CST

Air: 44.6°F Sur: 69.6°F H: 38.7% D: 22.5°F  
W: 8.3mph COF: 1 Cond: Dry

## Storm Lookback

Storm 260118



Time: 1/18/2026, 3:12:50 PM

Air: 18.5°F Sur: 24.1°F H: 70% D: 10.5°F  
Cond: Snow

# Upcoming Initiatives

Search or ask questions

Filter 0 assets

**Irregular Road Conditions**  
1,160 of 3,679

**Condition Types** All None

- Road Cracking only
- Repaved/Uneven Roads only
- Patched Pothole only
- Bridge Joints only
- Manhole only
- Alligator Cracks only
- Pothole only
- Inlet only

**Time Range** Days  
Start Oct 10, 2025 End Dec 8, 2025

**G-Force Threshold** 2.50 G  
Min 0.29G Max 5.11G

**Irregular Road Condition**

0:05 / 0:05

Time  
Oct 24, 2025, 10:50 AM  
G-Force  
2.51G



# Considerations and Concerns

Cost



Policy



Fear of Unknowns





Department of  
Public Works  
CITY OF GRAND RAPIDS

Bob Swain  
Public Works Manager  
[Rgswain@grand-rapids.mi.us](mailto:Rgswain@grand-rapids.mi.us)





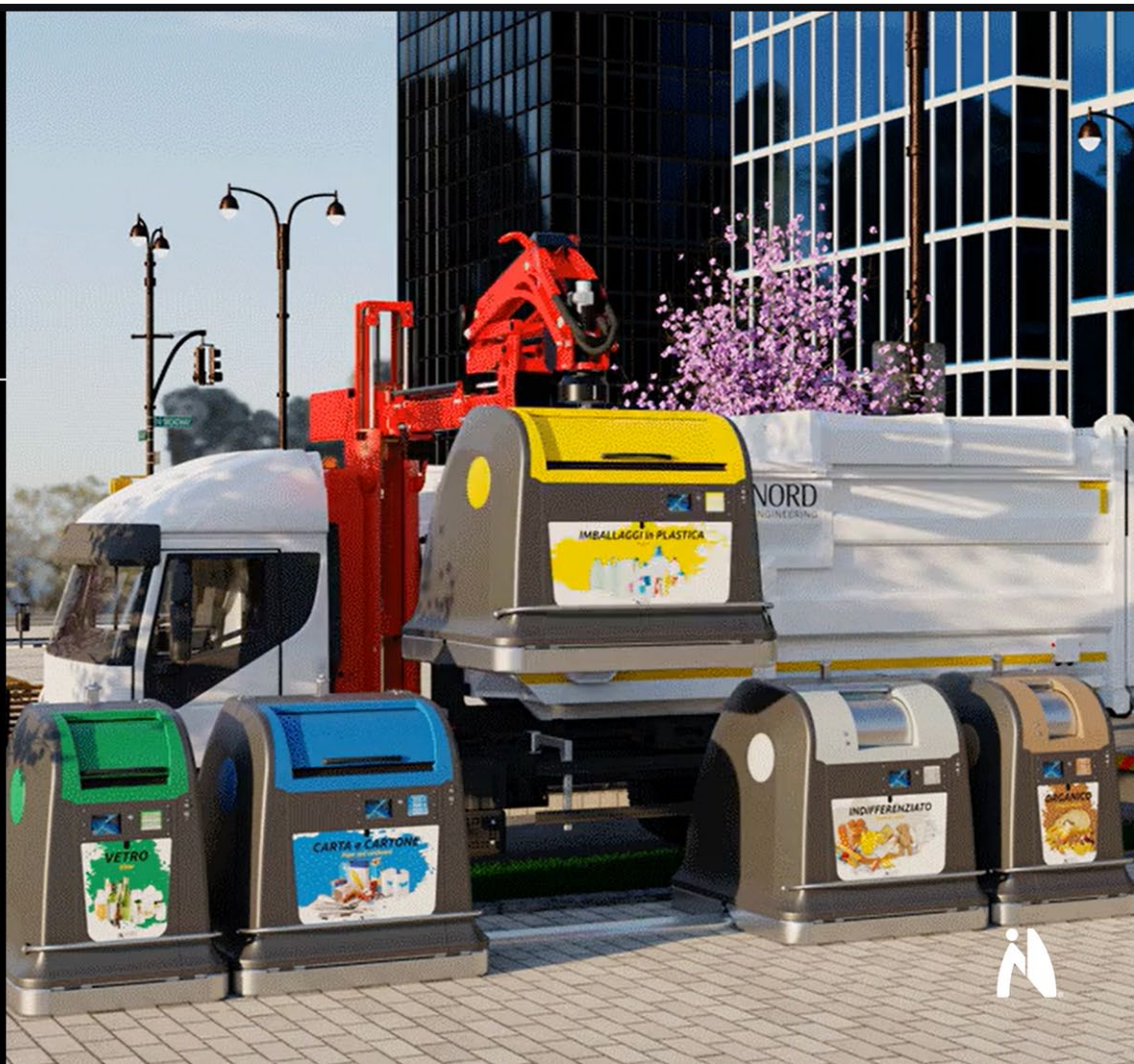
Nora Dempsey  
Director of Business Development  
Nord Engineering

Dr. Roberto Marseglia  
AI Expert  
Alia Servizi Ambientali



# EASY System

INTEGRATED SYSTEM  
FOR ALL TYPES  
OF CITIES





# From Renaissance to the Digital Era

Roberto Marseglia

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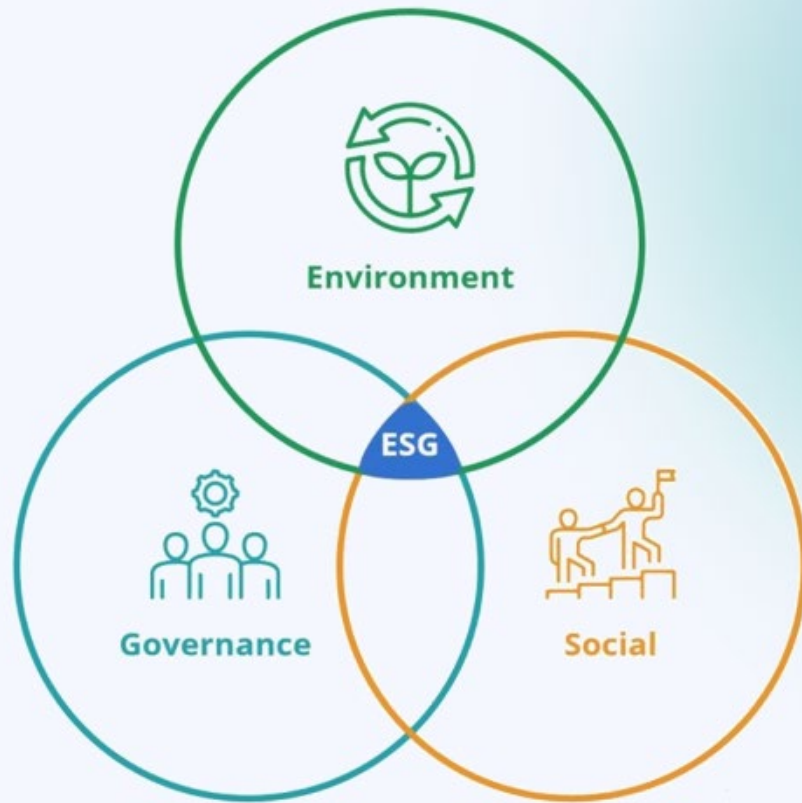


Industrial efficiency



Water consumption  
Energy consumption

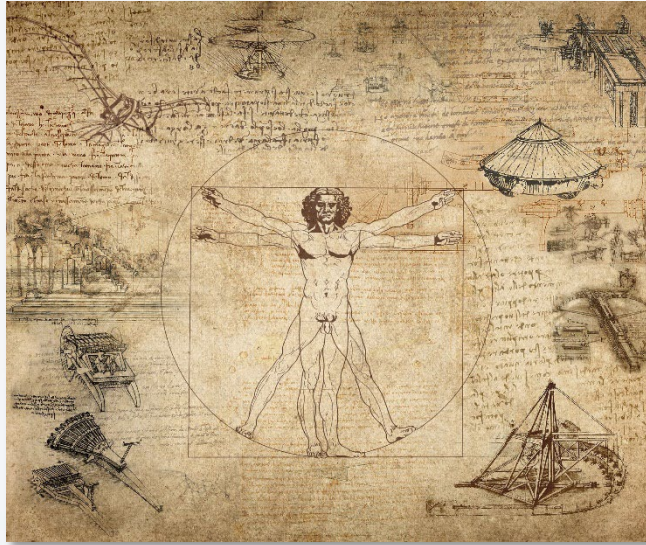








If Leonardo da Vinci had been asked whether he was an **artist or an engineer**, he probably wouldn't have been able to choose: **beauty completed technique**, and technique was in the service of beauty.



# With Da Vinci in mind, we are building the multiutility of the future

On January 26, 2023, we brought to life the **multiutility of local public services**, creating an integrated player in the fields of environment, energy, and water: a project in full development thanks to the involvement of ever more new regional and beyond entities.

For this reason, we are able to pursue synergistic strategies for **ecological and energy transition** for the benefit of our territories



# The dynamic change in needs and objectives

We have designed and implemented electronics to transform the bin into a "territorial sensor" for user recognition, for tracking and controlling disposal, filling level, state of use and optimization of emptying (Smart Bin).

The group currently holds two patents for the complete solution and is acquiring others.

The configuration of the electronics consists of:

- Main Board
- NFC Card
- GPS card
- GSM card
- Volumetric sensor



# Smart



Come get me





From the users' perspective, it enables the creation of **pay-as-you-throw tariffs** that include a discount based on the amount of sorted recyclable material relative to the total waste.



The technology we have developed makes it possible to identify and track citizens' deliveries and orient services based on filling forecasts: we do have a **digital twin of our territory**

