Smart Cities
MIAMI 2023
CONFERENCE

UNIVERSITY OF MIAMI

Institute for Data Science and Computing
School of Architecture
Climate Resilience Academy

smart cities.miami.edu

Dean Rodolphe el-Khoury

Provost Jeffrey Duerk

Smart Cities MIAMI 2023

Day 1 • Thursday, March 30 ❙❙ Lakeside Village Expo Center
Day 2 • Friday, March 31 ❙❙ Lakeside Village Pavilion 1000

Welcome! to the 6th annual Smart Cities MIAMI Conference hosted by the University of Miami School of Architecture and the Institute for Data Science and Computing (IDSC) in partnership with the Climate Resilience Academy. We extend special thanks to our **Presenting Sponsor Double C**.

To aid in the design and development of more sustainable, livable, and resilient cities, the University of Miami brings cutting-edge research in urban planning, architecture, and engineering in alignment with computational resources and analytical methods. The annual Smart Cities MIAMI Conference is an extension of these efforts, providing a forum for leaders in academia, industry, and government to closely examine evolving theories and practices in the Smart City field. The topics considered vary in scope and nature within a general theme that is particularly relevant for each year.

Smart Cities MIAMI 2023 will consider the impact of climate change and its related stressors on South Florida and will focus on opportunities enabled by smart-city technology for enhancing resilience from responsive infrastructure to big-data-driven modeling.

PRESENTING SPONSOR • **Double C**

Double C
Designs

We are a **design, construction, and development** company focused on clients' needs, **integrating multi-discipline groups,** with the ability to execute projects at the
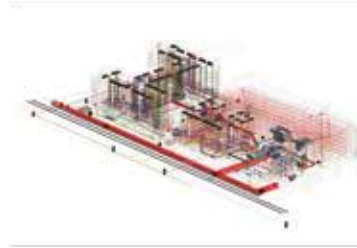
Illustrative image of the project
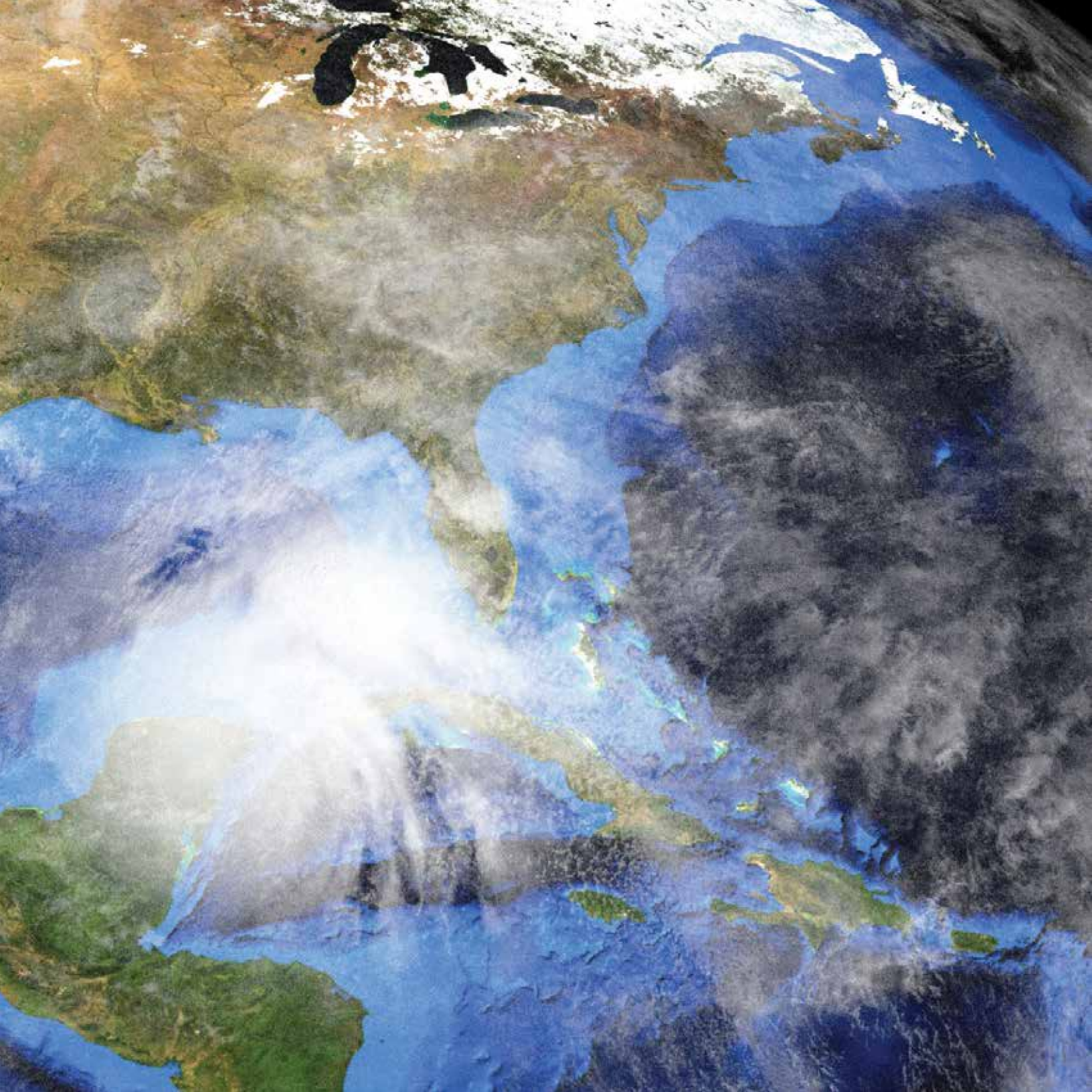
Century Town Center 1

highest standards of quality, **efficiency, and sustainability.** We are technology-driven, providing the tools necessary to deliver a successful project.

Double C
Construction

326 residential units

30,000 sq ft of retail in first floor

586 parking spaces for rent

Construction process of the project

Doral, Florida

Agenda ‖ Day One

Climate Resilience in Smart Cities
Lakeside Village Expo Center

11:30 AM	EXHIBITS Open
12:00 PM	Registration Opens + Buffet LUNCH
1:00 PM	CONFERENCE Opens
	Welcome | Provost Jeff Duerk
	Event Opening Address and Keynote Intro | Dean Rodolphe el-Khoury
1:10 PM	OPENING KEYNOTE | Ben Kirtman
1:40 PM	PANEL 1 "Smart and/or Resilient"
2:25 PM	BREAK | EXHIBITS
2:45 PM	PANEL 2 "Resilient Networks"
3:30 PM	BREAK | EXHIBITS
3:50 PM	PANEL 3 "Design and Policy for Coastal Resilience"
4:35 PM	CLOSING KEYNOTE | The Honorable Daniella Levine Cava
5:10 PM	Closing Message | Dean Rodolphe el-Khoury
5:12 PM	NETWORKING RECEPTION + EXHIBITS
7:00 PM	DAY 1 CONFERENCE Ends

Smart Cities
MIAMI 2023
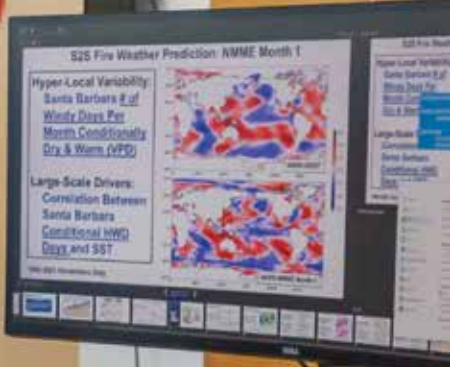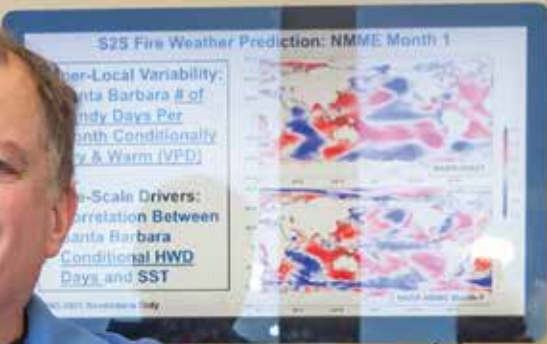
Climatologist Ben Kirtman

Opening Keynote **||** [1:10—1:40 PM]

At the Forefront of Earth Systems Research
In recent years, Miami has taken center stage as ground zero for climate change. At the forefront of studies on the predictability and variability of Earth's climate system, University of Miami Rosenstiel School of Marine, Atmospheric, and Earth Science professor of atmospheric science Dr. Ben Kirtman is known worldwide for using atmosphere-ocean general circulation models to bring unprecedented detail to climate change measurement.

In January 2023, Dr. Kirtman was honored as the inaugural William R. Middlethon Endowed Chair of Earth Sciences. Currently, he serves as the Director of the NOAA (National Oceanic and Atmospheric Administration) Cooperative Institute for Marine and Atmospheric Studies (CIMAS), a Federally supported center of excellence that brings together the research and educational resources of 10 partner universities to provide research opportunities, educational training, and outreach to students and postdoctoral scientists in NOAA-funded research. He's also Deputy Director of the University of Miami Institute for Data Science and Computing (IDSC) and heads their IDSC Earth Systems Science program.

Globally respected for his expertise, Dr. Kirtman has enjoyed a leadership role in the World Climate Research Program's (WCRP) seasonal-to-interannual prediction activities. In particular, he has chaired the international CLIVAR Working Group on Seasonal to Interannual Prediction (WGSIP) and the WCRP Task Force for Seasonal Prediction (TFSP). He was also a coordinating lead author for the Intergovernmental Panel on Climate Change (IPCC) Working Group One—the Scientific Basis. IPCC is the Geneva-based organization created by the United Nations to educate the world about climate change and its impact.

In his research, Kirtman studies the predictability and variability of the Earth's climate system. Approached by NOAA in 2010 to help the Federal Government apply weather predicting models using his methodologies, Dr. Kirtman developed a system called the North American Multi-Model Ensemble

or NMME. Six years later, in 2016, the NMME was officially adopted as the operational system used to make forecasts for warning and hazards to the public. In praise of the role of the University of Miami's supercomputing power in making this happen, Dr. Kirtman said "We have to deliver on time, in real time, all the time, for the Federal Government. I couldn't have done it without the advanced computing power of UM IDSC." The NMME forecast is freely available to companies and government agencies across the U.S. and in other countries, who use it to make decisions about everything from water resource management to energy use planning.

Career Track

In 1987, Dr. Kirtman received his BS in Applied Mathematics from the University of California-San Diego, and his MS and PhD in 1992 from the University of Maryland–College Park. From 1993-2002, Dr. Kirtman was a research scientist with the Center for Ocean-Land-Atmosphere Studies, and in 2002, joined the faculty of George Mason University as a tenured Associate Professor. In 2007, Dr. Kirtman moved to the Rosenstiel School as a full professor of meteorology and physical oceanography and program director for the climate and environmental hazards program at the University's Center for Computational Science (then CCS, now IDSC). Dr. Kirtman is an Associate Editor of the American Geophysical Union Journal of Geophysical Research (Atmospheres section). Previously, he served as Executive Editor of Climate Dynamics. He is the author and/or co-author of over 200 peer-reviewed papers focused on understanding and predicting climate variability on time scales from days to decades.

Awards and Accolades

In 2018, Dr. Kirtman was elected as a Fellow in the American Meteorological Society, which recognizes "outstanding contributions to the atmospheric or related oceanic or hydrologic sciences or their applications during a substantial period of years." Dr. Kirtman was also awarded the Stony Brook School of Marine and Atmospheric Science (SOMAS) Robert D. Cess Distinguished Lecture in Recognition of Outstanding Contributions to Atmospheric Science. He was a 2017-18 recipient of the UM Provost's Award for Scholarly Activity and received the Department of Atmospheric Sciences undergraduate teaching award in 2016, 2017, and 2018. In 2011, Dr. Kirtman was appointed Associate Dean of Research for the Rosenstiel School. In 2008, he received the Distinguished Alumnus Award from the Department of Atmospheric and Oceanic Science at the University of Maryland. In support of his research, Dr. Kirtman has received numerous grants from NSF, DOE, NOAA, NASA, and the Office of Naval Research.

It's time for a climate change of mind

How our climate is changing
BEN KIRTMAN
University of Miami, Rosenstiel School of Marine & Atmospheric Science Professor

Ben Kirtman
University of Miami Scientist

Panel 1 || Smart and/or Resilient [1:40—2:25 PM]

How does smart-city infrastructure facilitate adaptation? What are the promising technologies in the climate-solutions space? What are the challenges from a cyber-security angle? What are the ethical and legal consequences of technology-driven solutions? These and other questions tackle the promise and potential pitfalls of technological solutions to climate change impacts.

MODERATOR Pete Martinez

Chairman and CEO of the SIVOTEC family of companies: high tech and scientific innovators at the massive intersection of health, sports, technology, big data analytics, and AI. Pete is also the Chairman of RaiseLink a FinTech platform for advanced investor-startup matching, engagement, and related services.

sivotechbioinformatics.com

PANELISTS

David R. Chapman, PhD

An Associate Professor with the Department of Computer Science and a core member of the UM IDSC AI + Machine Learning program, David's research emphasizes computer vision and image processing algorithms with applications to medical imaging analytics.

Tony Cho

Tony is a real estate pioneer, impact entrepreneur, and CEO + Founder of Future of Cities—a mission-driven consortium and multi-pronged platform invested in transforming the built environment. @TonyChoMrMagic

Kenneth W. Goodman, PhD FACMI, FACE

Ken is the Director of the University of Miami Institute for Bioethics and Health Policy, the UM Ethics Programs, and the UM Institute for Data Science and Computing's Data Ethics + Society program.

bioethics.miami.edu | @UMiamiEthics

Matt Haggman, JD

Matt is Executive Vice President, One Community One Goal at the Miami-Dade Beacon Council. In this role he leads the efforts of this community-wide strategic initiative focused on shaping Miami-Dade's economic future.

opportunity.miami | @matthaggman

Cyrus Hodes

Cyrus is the Co-Founder of the World Climate Tech Summit, Duckweed Bio, and the AI Initiative (The Future Society), and a Partner at FoundersX Venture.

worldclimatetechsummit.com

Ingrid Vasiliu-Feltes, MD

Forbes Business Council Member, Founder of the Institute for Science Entrepreneurship and Investments, Co-Founder of the World Smart Cities Economic Development Council, Lecturer UM Herbert Business School, past Chief Quality and Safety Officer UM Miller School of Medicine. @IngridVasiliu

Yelena Yesha, PhD

Yelena is the Knight Foundation Endowed Chair of Data Science and AI. at UM. She is also the Innovation Officer and Head of International Relations for the UM Institute for Data Scienc and Computing. A tech pioneer, she served as Founding Director of NSF CARTA. @YelenaYesha

Panel 2 ‖ Resilient Networks [2:45—3:30 PM]

Power grids, telecommunications, transportation infrastructure: the networks that are fundamental to the workings of a city are increasingly disrupted by climate change impacts. The panel presents and discusses the use of technology in developing adaptation strategies and solutions.

MODERATOR ## Pratim Biswas, PhD

Professor Biswas is the Dean of the University of Miami College of Engineering and a Member of the National Academy of Engineering. A faculty member in the Department of Chemical, Environmental, and Materials Engineering with an affiliated appointment at the Rosenstiel School of Marine, Atmospheric, and Earth Sciences, he is a pioneer in his field, recognized for applying aerosol science and engineering to multiple areas such as energy and environmental nanotechnology, solar energy, air pollution control, and medicine. Dean Biswas heads the University's Aerosol and Air Quality Research Lab (AAQRL).

coe.miami.edu | @EngineerUMiami

PANELISTS

Guillermo Aleman

Guillermo is Manager of Technology and Innovation on the Smart Grid and Innovation team for Florida Power & Light. He leads multiple teams responsible for the development and testing of new technologies, predictive algorithms, and applications for situational awareness and intelligence.

Mingzhe Chen, PhD

Mingzhe is an Assistant Professor in the Dept. of Electrical and Computer Engineering, and a core member of the AI + Machine Learning program at IDSC. His research is at the intersection of machine learning, game theory, optimization, wireless communications, and networking.

Carlos Cruz-Casas, PE

As Chief Innovation Officer for the Miami-Dade County Department of Transportation and Public Works, Carlos's primary focus is to introduce mobility innovation and to plan for a fully integrated transportation system.

miamidade.gov | @EuloisCleckley

Matt Denesuk, PhD

As SVP of Data Analytics & AI at Royal Caribbean Group, Matt leads the development and deployment of data- and data-science-driven capabilities in areas such as revenue management, industrial operations, customer experience, marketing, sales, hotel operations, and supply chain.

**royalcaribbean**group.com | @mtdn

Brian Freed

Brian's diverse career path to COO of Eagle Aerospace started on Wall Street then transitioned to digital airfield solutions, with stints in HPC and connected pharmaceutical solutions. Throughout, he's maintained a strong focus on the data lifecycle, including point of capture, data storage, data networking, data analysis, and cloud-to-edge solutions for closed-loop response.

eagle-aerospace.com

Raimundo Rodulfo, PE, MSEM, PMP, CSSBB

As Director of Innovation and Technology, Raimundo leads strategic planning, oversight and management of citywide IT operations, infrastructure, and smart city initiatives for the City of Coral Gables.

coralgables.com | @raimundorodulfo
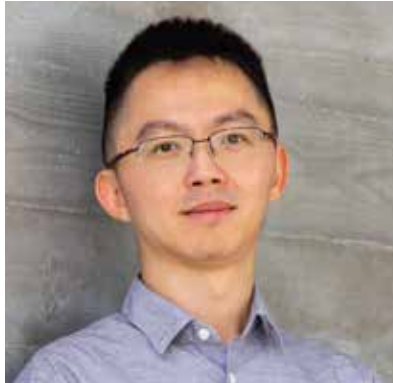
Panel 3 || Coastal Resilience [3:50—4:35 PM]

The panel considers innovative design solutions and municipal strategies addressing the double threats of intensifying weather events and incremental sea-level rise. Could policy and innovation effectively align to protect vulnerable coastlines?

MODERATOR ## Ana Peralta Chammas

As the Director of Innovation for Miami-Dade County, Ana's eye for innovation, strategic vision, and multidisciplinary experience has helped advance IT strategy and the organizational transformation that drive the customer experience. By cultivating competencies in innovation infrastructure and digital strategy, she has the vision for what a Future Ready government needs to make community impact.

miamidade.gov | @MiamiDadeCounty

PANELISTS

Esber Andiroglu, PhD
Dr. Andiroglu is an Associate Professor of Practice in the Department of Civil and Architectural Engineering with a secondary appointment at School of Architecture. He's also the Director of MS in Construction Management Program offered by College of Engineering.

Brian Haus, PhD
Brian is a Professor in and Chair of the Dept. of Ocean Sciences at UM Rosenstiel School of Marine, Atmospheric, and Earth Science. He is the founding director of the SUSTAIN wind-wave laboratory. His research focuses on air-sea interactions, hurricane impacts, coastal winds and waves, and improving coastal resilience through hybrid engineered and natural systems.

sustain.earth.miami.edu

Landolf Rhode-Barbarigos, PhD
Landolf is an Assistant Professor in the Department of Civil and Architectural Engineering with secondary appointments at the School of Architecture and the Department of Ocean Sciences at the Rosenstiel School of Marine, Atmospheric, and Earth Science. He is an expert in structural morphology.

umcaselab.com | @landolf

Roland Samimy, PhD
Roland holds the position of Chief Resilience and Sustainability Officer for the Village of Key Biscayne, where he is responsible for the development, oversight, and delivery of initiatives targeted towards advancing resilience and sustainability across the community to address chronic and acute impacts from climate change and sea level rise.

keybiscayne.fl.gov

photo courtesy of JohnnyMilano.net

The Honorable
Daniella Levine Cava
Closing Keynote || [4:35—5:10 PM]

Daniella Levine Cava was elected Miami-Dade County's first-ever woman Mayor in November 2020. She entered the Mayor's office following a 40-year career as a relentless advocate for South Florida families in public service and elected leadership. As Miami-Dade County Mayor, she oversees a metropolitan government with nearly 30,000 employees serving nearly 3 million residents, managing an annual budget of approximately $10 billion. Since taking office, she has worked to protect lives and livelihoods by deploying a countywide operation to distribute coronavirus vaccines efficiently and equitably across Miami-Dade; appointing the County's first Chief Medical officer; and working closely with city leaders and the business community to spread a unified pandemic response message. In collaboration with the Board of County Commissioners, she is working to distribute millions of federal dollars in American Rescue Plan relief funds to support small businesses and residents impacted by the pandemic, to invest in critical infrastructure projects, and to kickstart long-term recovery.

Mayor Levine Cava's administration is focused on building a stronger, more inclusive, more resilient Miami-Dade: prioritizing reforms to make our county safer and prevent gun violence through the Peace and Prosperity Plan; restoring and reinvigorating a thriving economy that delivers economic

security for Miami-Dade businesses and families and attracts new industries; saving Biscayne Bay and building and protecting our environment; and directly engaging with residents to make local government more responsive, transparent, and accountable.

A social worker, lawyer, and community activist, she was first elected in 2014, and re-elected in August 2018, to serve as the Miami-Dade County Commissioner representing District 8. As Commissioner, she invested in Miami-Dade small businesses and expanded economic opportunity, protected the environment and our water, increased the County police force for underserved areas, advocated for an expanded, reliable public transportation system, worked to create affordable housing and revitalize neighborhoods, and helped make local government more accountable and transparent. She came to elected office after having served as an advocate for South Florida families for over 30 years. She served special needs children, low-income families, and immigrants at Legal Services of Greater Miami, and then represented children in foster care and adoption system as Acting Associate and Legal Director for the Guardian Ad Litem Program.

In the aftermath of Hurricane Andrew, she was recruited to create a new intake system for child-abuse cases with the Department for Children and Families. Her efforts were concentrated in the neighborhoods of District 8 where she helped restore the lives and homes of those devastated by the storm.

In 1996, Mayor Levine Cava founded Catalyst Miami to help low- and middle-income families through service, education, and advocacy. Catalyst helps approximately 5,000 people each year to become more self-sufficient and civically engaged.

She is the Immediate Past Chair of the South Florida Regional Planning Council (SFRPC) and served as an SFRPC Council Member from 2015 – 2020. She has served on the Florida Bar Committee on Legal Needs of Children; the boards of League of Women Voters, Orange Bowl Foundation, North Dade Medical Foundation, South Florida Health Information Initiative, and several national boards. She's won numerous awards from various organizations including: the Commission on Ethics, Red Cross, American Society for Public Administration, ACLU, National Council of Jewish Women, and the League of Women Voters, among others.

Born in New York and raised partly in Latin America, Mayor Levine Cava received her Bachelor's degree in psychology with honors from Yale University and graduate degrees in law and social work from Columbia University. She came to South Florida in 1980 to join her husband, Dr. Robert Cava—a Miami native—who returned home to join his father in medical practice. Daniella and Robert raised two children, Eliza and Edward, in Miami-Dade, supported by strong networks of friends, families, and co-workers.

Exhibits

▶ **ADMIX Innovations**

▶ **Advanced Computing Services**—University of Miami IDSC

▶ **AI Recycling Project**—UM IDSC + Lid Vizion + REMADE Institute

▶ **Eagle Aerospace**—Airfield Solutions

▶ **Geospatial Data Special Collections** (GDSC)—UM IDSC

▶ **Green U** —UM Sustainability

▶ **Health Hub**—RAD-UM Lab | School of Architecture

▶ **Master of Science in Data Science** (MSDS)

▶ **Prototyping Ecology**—Rafael Rodriguez

▶ **Reorienting Smart City Metrics**

▶ **SEAHIVE™** —Brain Haus, SUSTAIN Lab

Admix Innovations

Andy Cohen CEO
George Libel FOUNDER
Matt Piazza FOUNDER/INVENTOR
Steven Wagenberg STRATEGIC ALLIANCES
 AND PARTNERSHIPS

> **admix**innovations.com

Admix Innovations has invented an admixture delivery system that directly solves for dispersion, cohesion, and the homogenization of ASTM and DOT approved nano- and micro-sized particles into cementitious products. This includes Graphene! Our Admix drastically alters the properties of cement generating more than 40 product permutations using standard mixers available on a job site. PLUS this tech allows Admix Innovations to add a wide array of components into their mix that NO ONE else has achieved while not losing any of the inherent benefits of their admix (added strength, tensile and flexural, insulation, fire-proofing, sound-proofing, etc. . . . , and even impermeability/waterproof).

Smart Cities MIAMI 2023
EXHIBIT

IDSC

Advanced Computing Services || UM IDSC

Ravi Vadapalli DIRECTOR
J. Warner Baringer ASSISTANT DIRECTOR

> idsc.miami.edu/services

The University of Miami Institute for Data Science and Computing Advanced Computing team designs and analyzes high-performance computing (HPC) systems for big-data-system users from a variety of application areas. The team has expertise in developing distributed computing, software, and databases. They are also exploring and developing new parallel-computing paradigms and architectures for researchers who need to process, store, retrieve, analyze, and understand massive data sets, where computation and storage breakthroughs are essential. IDSC ACS strives for synergy and interaction with all classes of research.

IDSC

AI Recycling Project

Amin Sarafraz, PhD
RESEARCH ASSISTANT PROFESSOR
Dept. of Civil and Architectural Engineering
IDSC Systems and Data Engineering

Shawn Wilborne, JD + **Lamar Giggetts**
CO-FOUNDERS
Lid Vizion, LLC

This project used machine learning and computer vision to develop a database and train an AI algorithm to recognize hundreds of different materials. This helps residents dispose of materials according to local regulations, prevents recyclable materials from going to waste, and prevents dangerous materials from being mishandled, which stops pollution and creates a safer environment for frontline workers. Additionally, an API (application programming initiative) was created that allows devices or software programs to communicate with each other. It can be "plugged into" existing municipal recycling applications in communities across the country, providing consumers with photos and descriptions of what materials are acceptable for their local area. This collaborative initiative was funded by the University of Miami (UM), Lid Vizion, and a matching grant from the REMADE Institute, a public-private partnership established by the U.S. Department of Energy (DOE) to accelerate the nation's transition to a circular (recycling-based) economy.

Smart Cities MIAMI 2023

EXHIBIT

Eagle Aerospace
Your Airfield Solutions Partner

Brian S. Freed, CFA
Chief Operating Officer

> **eagle**-aerospace.com

Eagle Aerospace, a Team Eagle Company, is committed to providing technology that improves the safety, efficiency, and sustainability of airfields. Our technology solutions are focused on delivering comprehensive runway condition reports, preventing incursions, and offering timely, accurate, and smart airfield inspection solutions. We merge our extensive industry experience with state-of-the-art data analytics and machine learning solutions to enhance airfield safety and operations by providing objective and automated tools. These tools improve productivity and minimize the risk of errors resulting from subjective estimates.

IDSC

Geospatial Digital Special Collections

Chris Mader, SENIOR DIRECTOR
UM IDSC Systems + Data Engineering

Tim Norris, DATA SCIENTIST
University of Miami Libraries and
UM IDSC Systems + Data Engineering

> idsc.miami.edu/**projects**

The University of Miami Geospatial Digital Special Collections (GDSC) is a joint initiative between the Institute for Data Science and Computing (IDSC) and the University of Miami Libraries to make geographic data at the University of Miami more discoverable, accessible, and interoperable. To do this, GDSC provides a non-proprietary platform to dynamically discover, publish, and/or consume geographic data as a service. The data made available through GDSC will be a highly curated set of collections—or special collections—of geographic data with coverage in south Florida and the Global South of the western hemisphere. These special collections will fulfill University of Miami goals to serve as a repository of information for local communities, such as those that form part of the current U-LINK resilience academy, as well as geographies included in president Frenk's hemispheric initiative.

Smart Cities MIAMI 2023 EXHIBIT

Green U
Office of Sustainability

Teddy Lhoutellier
SUSTAINABILITY DIRECTOR

> **greenu.**miami.edu

Green U is more than just an office, it is the culmination of all efforts to increase sustainability throughout the University of Miami while educating its community to be better stewards of the environment. From transportation solutions to recycling programs, public-awareness campaigns to research initiatives, Green U is helping the University grow greener every day.

Health Hub:
Reflecting Your Healthiest Self

TEAM

Sylvia Daunert, MILLER SCHOOL OF MEDICINE
Rodolphe el-Khoury, SCHOOL OF ARCHITECTURE
Donnie Garcia-Navarro, RAD LAB
Indrit Alushani, RAD LAB
Leonidas Bachas, COLLEGE OF ARTS + SCIENCES
Sapna Deo, MILLER SCHOOL OF MEDICINE
Yelena Yesha, IDSC
Nick Tsinoremas, IDSC

> **healthhub.idsc.miami.edu**

As demands on health care facilities continue to increase, one way to keep communities healthy might be as simple as looking in the mirror. Health Hub, an interdisciplinary collaboration between the School of Architecture, Miller School of Medicine, and the University of Miami Institute for Data Science and Computing is a smart medicine cabinet that bridges technology with interactive sensors to create a multipurpose health station in your bathroom. Designed to be part of your morning routine, Health Hub displays a range of data on your vitals, including medication reminders, and also has telemedicine capabilities, enabling your health care provider to virtually perform and assess preliminary exams.

RAD LAB

SmartCities MIAMI 2023 EXHIBIT

Master of Science in Data Science

Maryann Tatum Tobin
ASSOCIATE DEAN FOR PROFESSIONAL EDUCATION
College of Arts + Sciences

Lina I. Lopez
ASSOCIATE DIRECTOR OF PROGRAMS
Office of Interdisciplinary + Professional Studies

> **msdatascience.as.**miami.edu

The University of Miami's Master of Science in Data Science allows students to apply data science techniques to a variety of interests. The program has statistics and machine learning at its core, allowing students to learn practical techniques in data science, explore solutions to domain-specific problems, and experience real-world data science applications through internships. Concentrations in Smart Cities, Technical Data Science, Data Visualization, Marine and Atmospheric Sciences, Marketing, and Educational Measurement and Statistics are offered.
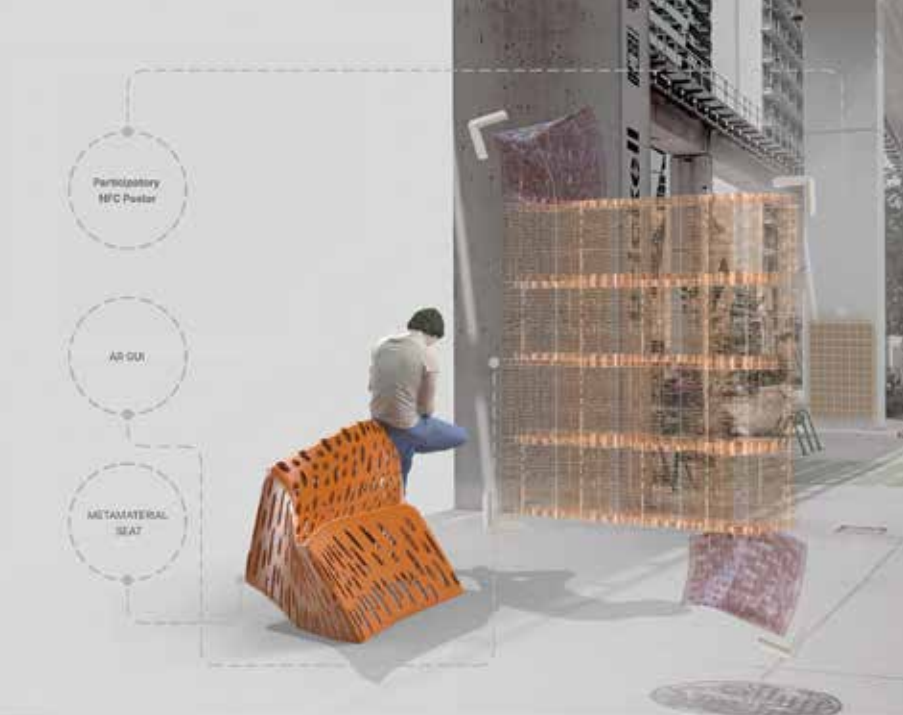
Prototyping Ecology

a public art intervention by
Rafael Rodriguez Garciga
ARTIST

> rafaelrodriguezgarciga.com/
prototyping-ecology

Everyday life is becoming ever more digital. Prototyping Ecology— a public art intervention in partnership with the MUD foundation—looks at the impacts of digitization as prototyping reality, where data becomes a series of physical states through the use of technological tools and devices. By bringing the prototyping effect of digitization into the spotlight, this project delves into the idea of a smart city and the various ecologies it creates – biophysical, technical, and social. Prototyping Ecology hopes to redefine our understanding of a smart city and its impacts on daily life. It functions as ACT DAO's proof of concept.

@rafaelrodriguezgarciga
@rafaelrgarciga

SmartCities
MIAMI 2023
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PUBLICATION

Reorienting Smart City Metrics
to Emphasize Resident Well-Being:
## A Disparity-Oriented Approach

Rajvi Shah, BS
GEOGRAPHY AND
SUSTAINABLE DEVELOPMENT

Gladiz Velez, BA
ECOSYSTEM SCIENCE
AND POLICY

PRESENTATION

This research identifies areas that may be most and least likely to benefit from smart city investments. It applies a disparity-oriented focus to promote human-centered solutions to smart city planning efforts. We analyzed five metropolitan areas (San Jose, Miami, New York, Denver, and Seattle) under a disparity-oriented focus utilizing SPSS PCA analysis and GIS software to promote human-centered solutions to smart city planning effort in three domains: socioeconomics, public transit access, and digital divide. Reorienting solutions can ultimately increase community equity and engagement in urban life.

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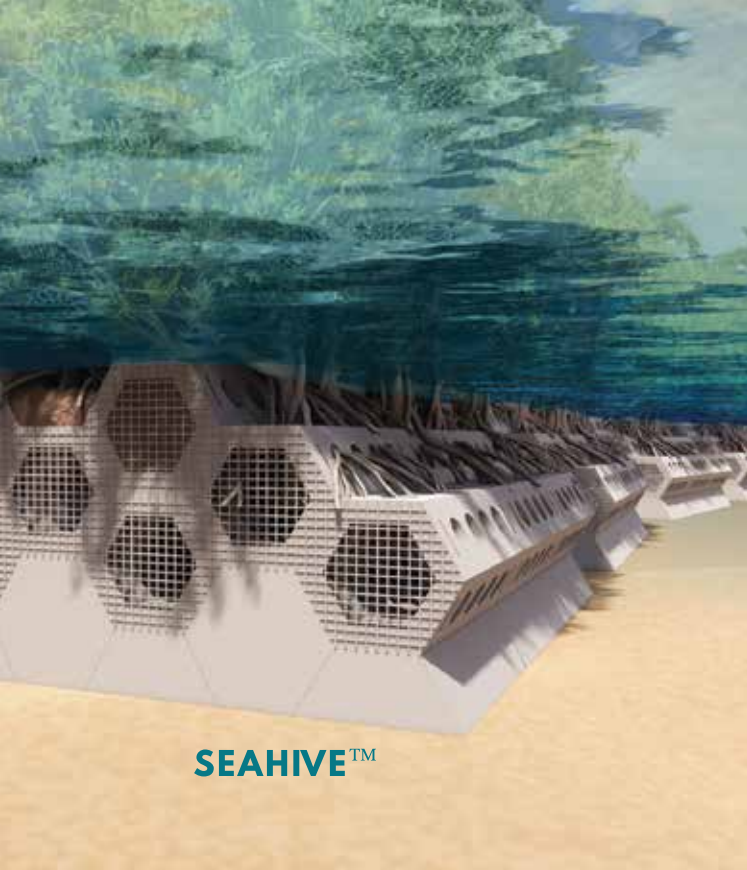
SEAHIVE™

Innovative Hybrid Engineered and Natural Systems for Enhanced Coastal Community Resilience

CIVIL + ARCHITECTURAL ENGINEERING
Esber Andiroglu • Antonio Nanni • Landolf Rhode-Barbarigos • Prannoy Suraneni

MARINE BIOLOGY + ECOLOGY
Rafael Araujo • Evan D'Alessandro • Andrew Baker • Diego Lirman

Renee Evans LEARNING INNOVATION + FACULTY ENGAGEMENT
Arthur Gleason PHYSICS **Brian Haus** OCEAN SCIENCES
Jyotika Ramaprasad COMMUNICATIONS

> **sustain.earth.miami.edu**

As natural threats for coastal communities such as tropical storms and hurricanes continue to exacerbate by climate change, the need for reliable, cost-effective, and sustainable solutions that mitigate their destructive effects increases. Wave attack represents a major coastal damage mechanism. Waves can impact the integrity of structures especially on their seaward face and/or cause scouring at their toe. They can also lead to overtopping, which increases flooding. Reducing wave impacts in coastal communities is thus critical. This study will assess the wave-reducing capacity of coral reefs quantifying the impact of corals on wave-height attenuation, and consequently, wave-energy dissipation through physical testing at the SUrge STructure Atmosphere INteraction (SUSTAIN) Facility at the University of Miami.

UNIVERSITY OF MIAMI

SmartCities MIAMI 2023 EXHIBIT

UNIVERSITY OF MIAMI
INSTITUTE for DATA SCIENCE
& COMPUTING

IDSC Systems and Data Engineering

is a team of professionals who actively seek collaborative partners for new and innovative systems development projects, and for opportunities to explore and apply novel and emerging methods such as AI/ML. The team has supported work in clinical research, drug discovery, genomics, mapping, and urban planning, observational biology/ecology, and the digital humanities.

Email idsc@miami.edu for more information.
idsc.miami.edu • @UMIDSC • 305/243-4962

Networking Reception

[5:10—7:00 PM]

Get social! Stay for refreshments and meet the Exhibitors and Panelists.

#smartcitiesmiami
#miamitech

[Photo from Smart Cities MIAMI 2019]

UNIVERSITY OF MIAMI
COMPUTING DAY

APRIL 14 2023

Please join us for the University of Miami's inaugural Computing Day, part of a broad initiative to foster inter-disciplinary collaboration and innovation in computing. The event convenes corporate and government professionals, faculty and student scholars, and other audiences engaged in all facets of computing to design the future.

Highlights include a panel of alumni industry experts, faculty and student poster presentations, and a keynote address from **Pierre Baldi,** director of the Institute for Genomics and Bioinformatics and associate director of the Center for Machine Learning and Intelligent Systems at the University of California, Irvine, who has made significant contributions to the theory of AI and deep learning.

YOU'RE INVITED!

Friday, April 14, 2023
10 a.m. to 3 p.m.

Frost Institute for Chemistry and Molecular Science Building

Coral Gables Campus

REGISTER NOW

events.miami.edu/event/computing-day-2023

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The UM IDSC Creative Studio provides comprehensive XR software design and development consultancy services, supporting clients throughout the creation process, from conceptualization to release.

Our expertise ranges from crafting immersive experiences in augmented reality (AR), virtual reality (VR), and mixed reality (MR) to developing interactive installations. We specialize in creating state-of-the-art immersive software for a diverse range of applications, including pedagogy, research, and industry.

Let our team help you turn your concepts into reality and transform your digital interactions into revolutionary ones.

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idsc.miami.edu/creative-technologies

RAD Lab

The RAD Lab provides resources and expertise for project-based research on the spatial ramifications of embedded technology and ubiquitous computing.

The research is premised on the notion that every building or landscape component can be equipped with computational power. Projects at RAD develop models for such digitally enhanced environments to better handle persistent and emerging challenges in the areas of healthcare, building technology, and sustainability. The projects are set up for multi-disciplinary collaboration, and for potential development in partnership with industry.

Computing is migrating from dedicated static appliances to mobile devices, to objects of everyday life and physical environments, thanks to increasingly proliferating microchips and ever-expanding information networks. The spatial nature of ubiquitious computing directly implicates and empowers architecture, landscape, and urban design.

RAD capitalizes on this potential, bringing research to bear on the built environment from a variety of fields that exploit the spatial consequences of distributed computing: responsive and interactive systems, augmented reality, embedded/situated technology, ambient intelligence, mobile computing, and locative media.

RAD Lab Team
Rodolphe el-Khoury • Director
Indrit Alushani • Research Associate
Donnie Garcia-Navarro • Research Associate

RAD
LAB

Agenda ‖ Day Two
Spotlight on Miami and Medellin

Lakeside Village Pavilion 1000 ‖ [9:00 AM — 12:00 PM]

8:00 AM	Registration Opens + Light Breakfast
9:00 AM	CONFERENCE Opens
	OPENING KEYNOTE | Jorge Ponce Dawson
9:45 AM	PANEL 1 "Miami/Medellin: How to Build a Resilient City"
10:30 AM	BREAK
10:45 AM	PANEL 2 "Game Changers: Transformative Technology for the Building Industry"
11:30 AM	CLOSING KEYNOTE | Andrew Kudless
12:00 PM	CONFERENCE Ends

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Smart Cities MIAMI 2023

Jorge Ponce Dawson

Keynote Day Two || [9:00-9:45 AM]

Jorge has been Director of Broadway Malyan Madrid since 2002, where he leads projects in Spain, Europe, North Africa, and South America. An architect graduated from the Faculty of Architecture of Buenos Aires, he began his career at the Buenos Aires City Council Planning Department. He was the author of the winning project of Spain's international competition for the rehabilitation of the historic block of San Francisco, next to the well-known Plaza de Mayo. This contest opened the doors to Europe, where he joined one of the largest studios in Malaga, SMP Arquitectos (1992-96), carrying out large-scale projects in the residential, hotel, and retail sectors. Next, he directed the Ponce Dawson & Ballarin Architects (1996-2000) residential and retail projects throughout Costa del Sol. In 2000, he was hired by international studio RTKL's new office in Madrid, working on large shopping centers throughout Spain.

With 35 years of professional experience, Jorge is the author of landmark projects in the commercial centre industry, including FAN Mallorca, Torre Sevilla, Terrazas de Mayo, Paseo La Galería, and Mall of Sfax, Tunisia. He led the roll-out of Costco and Primark in Spain. In the hospitality sector, he developed Starwood Le Meridien Hotel, Barcelona and Melia Sol Don Hotel, Torremolinos. Under his leadership, Broadway Malyan has continuous work with Carrefour Property, Unibail Rodamco Westfield, IKEA, Eurofund, Merlin Properties, Frey, Grupo Lar, Intu, ECE, Costco, Primark, Neinver, Caixabank, Klepierre, Cencosud, Mall Plaza, Parque Arauco, Real Plaza, Mall Aventura, and others.

In the past decade, Jorge has lectured on topics related to new retail formats, market trends, urban design and future of cities, contributing to the global debate on climate change and the digital revolution. In 2016, he created clubdelecturas.com, the first global reading and debate community in Spanish, which today has more than 2,000 members. In 2018, Jorge launched the Broadway Malyan Think Tank (as a space for reflection to identify new market trends) and the Urban Debates cycle, together with the urban philosopher and sociologist Magdalena Plocikiewicz, to explore ways to move towards more humane and sustainable cities, assuming proximity as the new transformational paradigm.

Panel 1 || Miami/Medellin: How to Build a Resilient City
[9:45—10:30 AM]

The panel brings developers, architects, planners, and policy makers from different cities together to share and compare recent histories, current strategies, and visions for resilient futures in the face of climate change impacts and other stressors.

MODERATOR ## Carie Penabad

Carie holds a Bachelor of Architecture from the University of Miami and a Masters of Architecture in Urban Design from Harvard University. She is currently an Associate Professor at UM School of Architecture. Her publications include: **Marion Manley: Miami's First Woman Architect**, **Call to Order: Sustaining Simplicity in Architecture**, and the forthcoming book: **Made in Miami/Hecho en Miami**. Parallel to her teaching, writing, and research, Penabad is a founding partner of the Miami-based firm of CÚRE & PENABAD Architecture.

cureand**penabad**.com | @cureandpenabad | podcast: ON CITIES

PANELISTS

Matt Anderson

As Asst. Director for Mobility and Sustainability for the City of Coral Gables, Matt oversees the sustainability and resiliency program as well as alternative transportation options.

coralgables.**c**om

Natalia Castaño Cárdenas

Natalia is an architect at Universidad EAFIT (Medellin, Colombia) with a Master in Landscape, Environment, and City from the National University of La Plata, Argentina. She is Project Leader of URBAM at EAFIT.

eafit.edu.co/**urbam** | @talacastano

Álvaro Martínez Fernández, PE, SI

Álvaro is Regional VP of Structural Engineering at Double C by Conconcreto in Miami. He plans and oversees the execution of structural designs for all projects in the US.

conconcreto.com | @Conconcreto

Gian Carlo Mazzanti

Gian Carlo has 25+ years of professional experience and his studio, El Equipo Mazzanti, has gained notoriety for its design philosophy based on modules and systems, with which flexible elements capable of growing are generated and adapt over time, looking for architecture that is closer to the idea of strategy than to a finite and closed composition.

el**equipomazzanti**.com

## Elizabeth Plater-Zyberk, FAIA, LEED AP

Dean Emeritus Plater-Zyberk is the Malcolm Matheson Distinguished Professor of Architecture, and the Director of the Master of Urban Design Program. She teaches courses on urban design and built environment adaptation to climate change. She is recognized as a leader of New Urbanism.

dpz.com | @DPZCoDESIGN

Galen Treuer

Galen is the Head of Climate Tech and Economic Innovation for Miami-Dade County. He leads major climate tech projects and collaborates with other agencies and local governments to implement sustainable, climate resilient policies.

miamidade.gov | @galentreuer
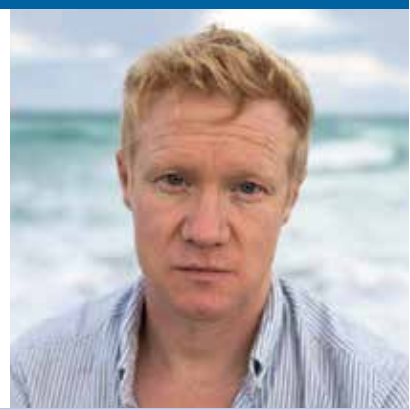
Panel 2 | Game Changers: Transformative Technology for the Building Industry [10:45—11:30 AM]

Most industries and professional fields have been transformed by new technology. The building industry has yet to undergo major disruptions. Radically innovative technologies may soon change that. The panel explores potential agents of disruption, from new building materials to additive manufacturing and AI.

MODERATOR ## W. Robert Miller

Bob Miller is a native of Miami and holds a degree in Architectural Engineering from the University of Miami ('77). Bob is a licensed general contractor and had a forty-two-year career as a principal and CEO of First Florida Building Corporation. First Florida has buildings in 48 states, Canada, and the Caribbean. During his tenure, First Florida produced more than two billion in revenues and constructed varied projects including: 12,000 apartments, numerous hotels and resorts, and a section of the Pan American Highway in Colombia. Bob sold First Florida to a key employee in 2017. Bob is a past president of the Associated General Contractors and a Board Member of Rebuilding Together National. He serves on the University of Miami School of Architecture Visiting Committee and is Chair of its Construction Management Board.

PANELISTS

Andy Cohen

Andy is the chairman and CEO of Admix Innovations, an early stage technology company that has solved for the dispersion, homogenization and adhesion of nanoparticles into a cementitious mix design.

admixinnovations.com

Maxwell Jarosz, AIA, LEED AP BDC+C

Max is the Director of Fabrication at UM. He teaches courses on robotics, digital fabrication, and emerging technology. He's currently serving as PI for the Double C Research Unit.

daftburo.com

Philip Lund-Nielsen

Philip is Co-founder of COBOD International, the World's #1 supplier of 3D printers for the construction industry, with investors General Electric (USA), Holcim (Switzerland), CEMEX (Mexico), and PERI Group (Germany).

cobod.com | @Cobod_global

Kenneth A. Smuts

Ken is the President of Renco, USA, Inc., a composite manufacturing and building industry start-up. He spearheaded the R+D of the Renco Structural Building System in the U.S. and has codified and secured Renco's approvals under the International Building Code (IBC).

renco-usa.com

Andrew Kudless

Closing Keynote || [11:30 AM]

Andrew Kudless is a designer based in Houston, Texas where he is the Bill Kendall Memorial Endowed Professor at the University of Houston's Hines College of Architecture Design as well as the Director of the Construction Robotics and Fabrication Technologies Lab (CRAFT Lab). Previously, Andrew has taught at the California College of the Arts, the Ohio State University, the Architectural Association, and Yale University.

In 2004, he founded Matsys, a design studio exploring the emergent relationships between architecture, engineering, biology, and computation. The work of Matsys has been exhibited internationally and is in the permanent collections of the San Francisco Museum of Modern Art, the Centre Pompidou in Paris, and the FRAC Centre in Orleans, France. His work on Confluence Park has won a number of awards including a 2019 AIA National Honor Award. In 2019, he became the first American designer to contribute to Louis Vuitton's Objets Nomades collection. He holds a Master of Arts in Emergent Technologies and Design from the Architectural Association and a Master of Architecture from Tulane University.

matsys.design

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CLIMATE RESILIENCE ACADEMY

The **CLIMATE RESILIENCE ACADEMY** was launched in 2022 to support University of Miami schools and colleges in interdisciplinary, problem-driven research and education. The academy will assist in training the next generation and in delivering solutions to climate change impacts and related stressors, in partnership with industry, government, universities, and other stakeholders.

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Smart Cities
MIAMI 2023
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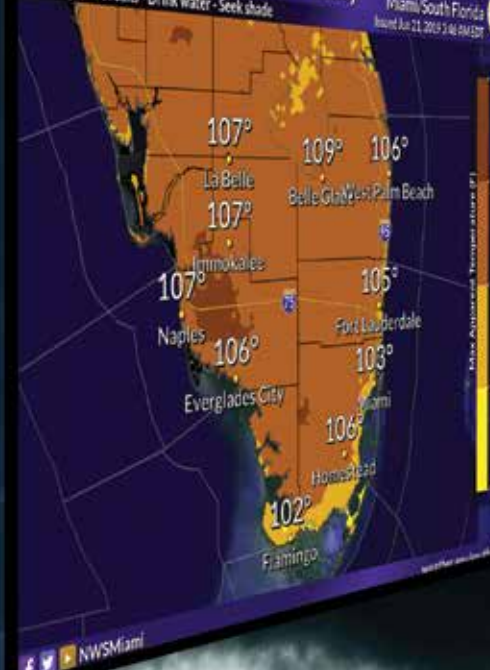
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