



دائرة البلديات والنقل
DEPARTMENT OF MUNICIPALITIES
AND TRANSPORT

Cool Abu Dhabi Challenge

DEADLINE MAY 12, 2020
TOTAL PRIZES \$100,000

Cool Abu Dhabi Competition

The Department of Municipalities and Transport (DMT) of Abu Dhabi invites you to participate in a global creative ideas competition to improve outdoor thermal comfort in public spaces by mitigating the impact of the Urban Heat Island Effect in the city. The competition is open to all; but is specifically looking for designers, architects, engineers, landscape architects, material scientists, educators, researchers, students, artists and/or inter-disciplinary teams from across the globe, to contribute. The winning entries will represent the most original and innovative ideas that attempt to reduce Heat Island Effect in a prototypical urban site in Abu Dhabi through design interventions or material and scientific innovations. Entries are not limited to architectural design interventions and are encouraged to work across scales, technologies, systems, and materials.

The DMT is responsible for initiating, driving and supporting Abu Dhabi's urban development strategies. By materializing the Emirate's vision and overarching principles into

physical settings, the DMT develops strategic plans that shape the future of the Emirates. As the largest of the UAE's seven Emirates, Abu Dhabi is a vibrant and diverse capital city and is a seamless blend of modernity and tradition, which is reflected in its architecture, landmarks, and attractions. Over the past decade, there has been a concentrated effort to develop its tourism, education, finance, and cultural sectors to diversify the growing economy of Abu Dhabi. The city has rapidly evolved with many new developments and the construction of landmark buildings such as the Louvre, Masdar City and Yas Island.

As this development continues forward, and the imminent threats of climate change increase, Abu Dhabi is looking to improve its climate resilience. This competition is a part of a series of climate interventions currently underway in Abu Dhabi to make the lives of its residents more environmentally sustainable and healthy by encouraging active lifestyles and enhancing the vibrancy of its public spaces.





About Department of Municipalities and Transport (DMT)

The Department of Municipalities and Transport (DMT) was established by Law No. 30 of 2019 and is the entity responsible for managing the urban planning and transport sectors, and three regional municipalities.

As the entity responsible for supporting the growth and urban development of Abu Dhabi Emirate, the DMT guides, regulates and monitors urban development activities. The expert authority improves municipal work to provide comprehensive services and creates higher living standards for residents through the supervision and management of the municipalities.

The DMT ensures the highest standards of safety, security, sustainability and technological developments of land, air and maritime transport networks of the Emirate, in line with the highest international standards and UAE legislation.

One of the DMT's top priorities is to fulfil the vision of H.H. Sheikh Khalifa bin Zayed Al Nahyan, President of the United Arab Emirates and Ruler of Abu Dhabi, which draws on the vision of our UAE Founding Father, the late Sheikh Zayed bin Sultan Al Nahyan.



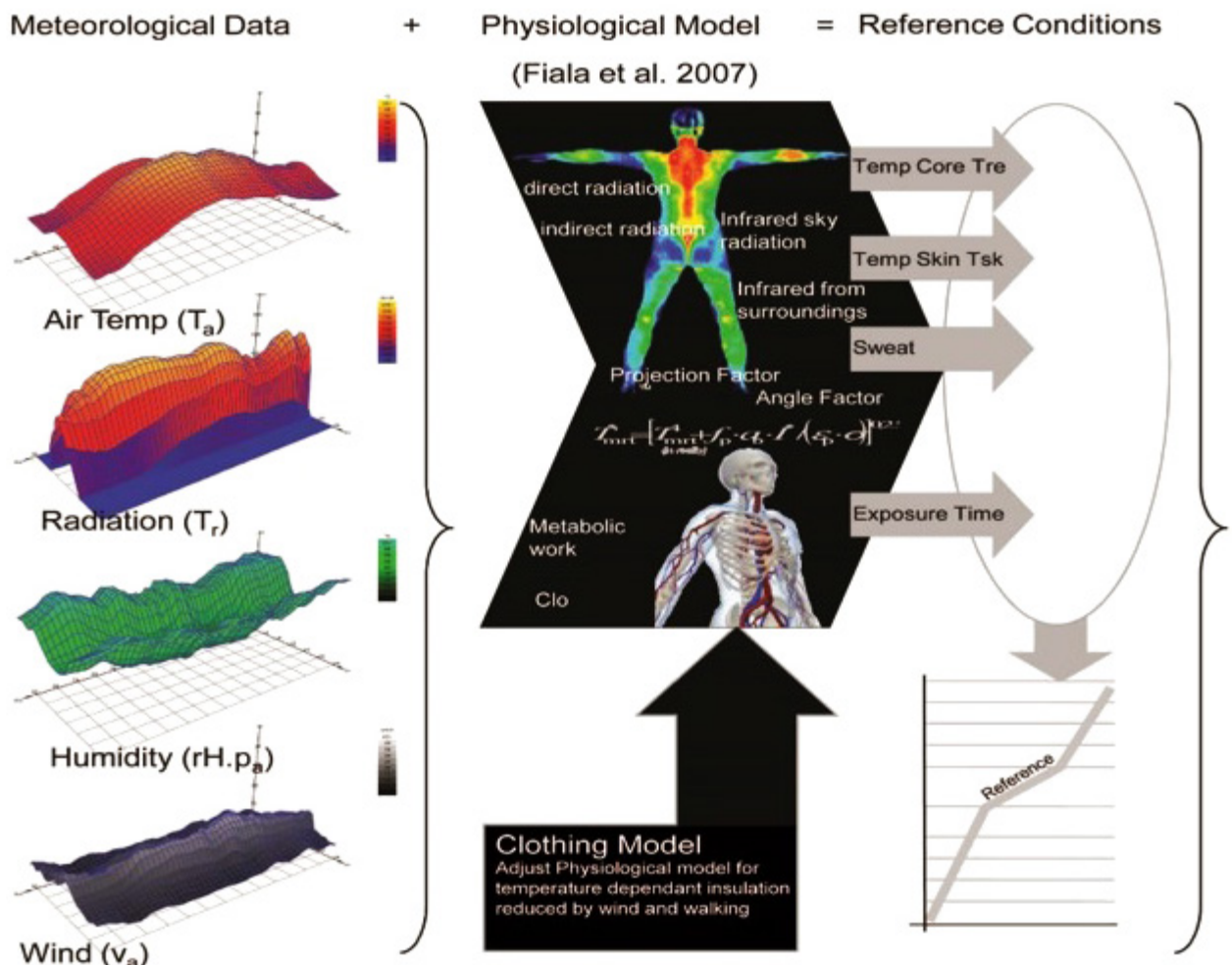
1.0 The Challenge

Outdoor thermal comfort conditions influence several choices that inhabitants make every single day — to walk to a local shop, take public transit, cycle, eat outside at a restaurant, talk with colleagues, friends, and neighbors or simply go to a park. One of the critical issues in designing outdoor spaces is considering human thermal comfort. Making people more comfortable allows them to enjoy and spend more time in outdoor spaces and be a part of a thriving city. Improved thermal comfort in public spaces not only results in less time spent indoors and consequently, reduced energy consumption but also valuable outcomes emerge such as wellness, enjoyment, and safety. It helps develop a sense of belonging, an identity for the design and increases peoples' level of satisfaction.

For an extreme climate such as Abu Dhabi's, the harsh conditions felt across significant months of the year certainly reduce the feasibility of such external activities taking place. It restricts peoples' choices and impacts subsequent health outcomes.

Due to the Urban Heat Island Effect, the city center of Abu Dhabi is estimated to be several degrees Celsius warmer than the surrounding natural environment. Solar absorption and re-radiation from the surrounding context, including swaths of asphalt parking, existing surface materials, the heat released by automobiles as well as the anthropogenic heat released by cooling the buildings, and lack of air movement result in felt temperatures being much higher than the prevalent air temperature.

Throughout the year, Abu Dhabi experiences a wide range of thermal stress levels typically between 'comfortable' (9-26°C) to 'extreme heat stress' (above 46°C). The majority of 'very strong heat stress' (38-46°C) and 'extreme heat stress' (above 46°C) occurs between April and October with the most comfortable conditions occurring between October to April. While it is highly desirable to improve thermal comfort throughout the year, this competition requires the respondents to focus on the shoulder months of May and October for their interventions.

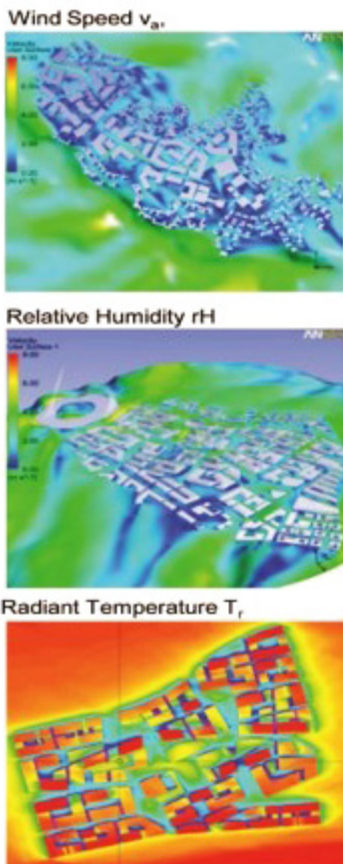


For public space comfort, 'moderate heat stress' (27-32°C) is considered acceptable. It is important to note that temperatures presented are not air temperature, but Universal Thermal Climate Index (UTCI) equivalent temperatures; air temperatures are typically lower than the UTCI. UTCI provides a means of illustrating thermal stress through a scale that measures the heat or cold stress. It is based on a combination of weather variables (Mean Radiant Temperature, Dry Bulb Temperature, Relative Humidity, and Wind Velocity), the clothing insulation value and the metabolic rate based on the type of activity taking place.

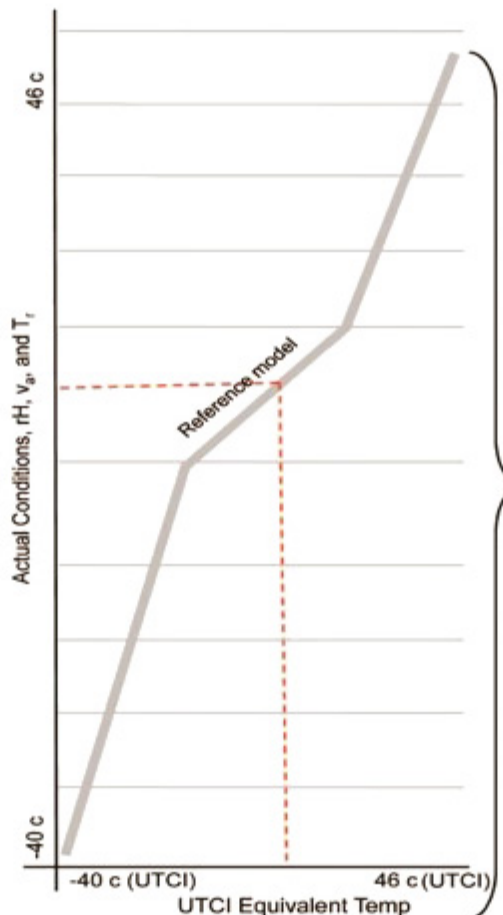
The prize-winning competition entries shall holistically address the above challenges, more specifically Heat Island Effect through design, engineering, scientific, anthropological, and material and planting propositions. While maximising passive means is preferred, rational use of efficient active and mechanical systems for public space comfort is strongly encouraged.

Climate sensitive and people-centric approaches should form the core focus of the design. In addition to the technical dimension of the intervention, its aesthetics should also drive people's desire to interact and occupy public space.

Micro Climate Models



= UTCI Equivalent Temp =

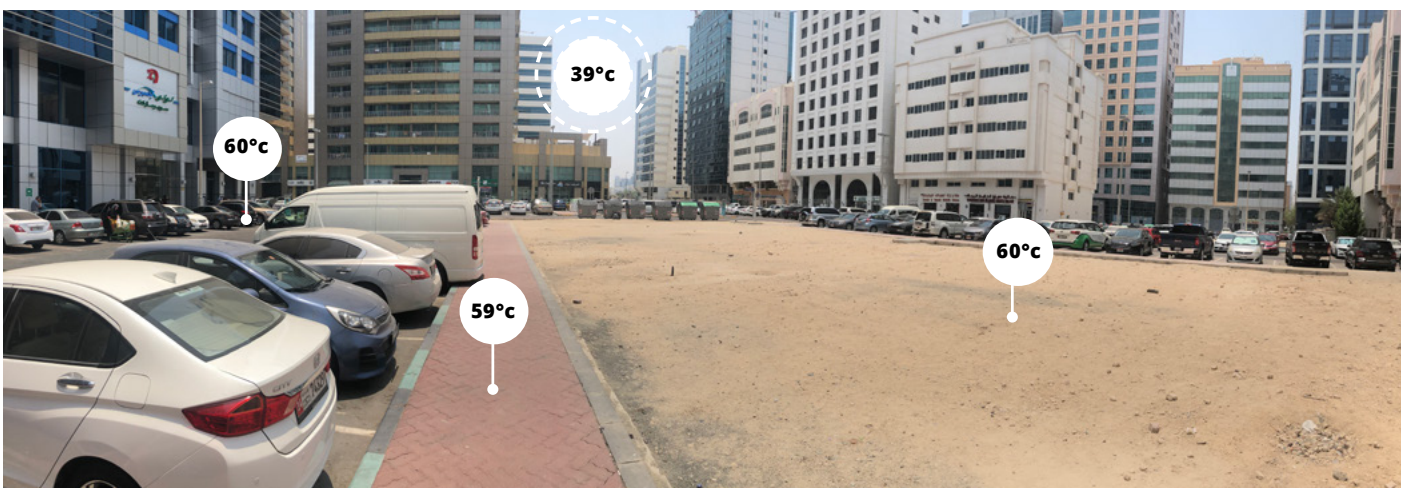


UTCI (°C) Equivalent Temp.	Stress Category
above +46	extreme heat stress
+38 to +46	very strong heat stress
+32 to +38	strong heat stress
+26 to +32	moderate heat stress
+9 to +26	no thermal stress
+9 to 0	slight cold stress
0 to -13	moderate cold stress
-13 to -27	strong cold stress
-27 to -40	very strong cold stress
below -40	extreme cold stress

2.0 The Site

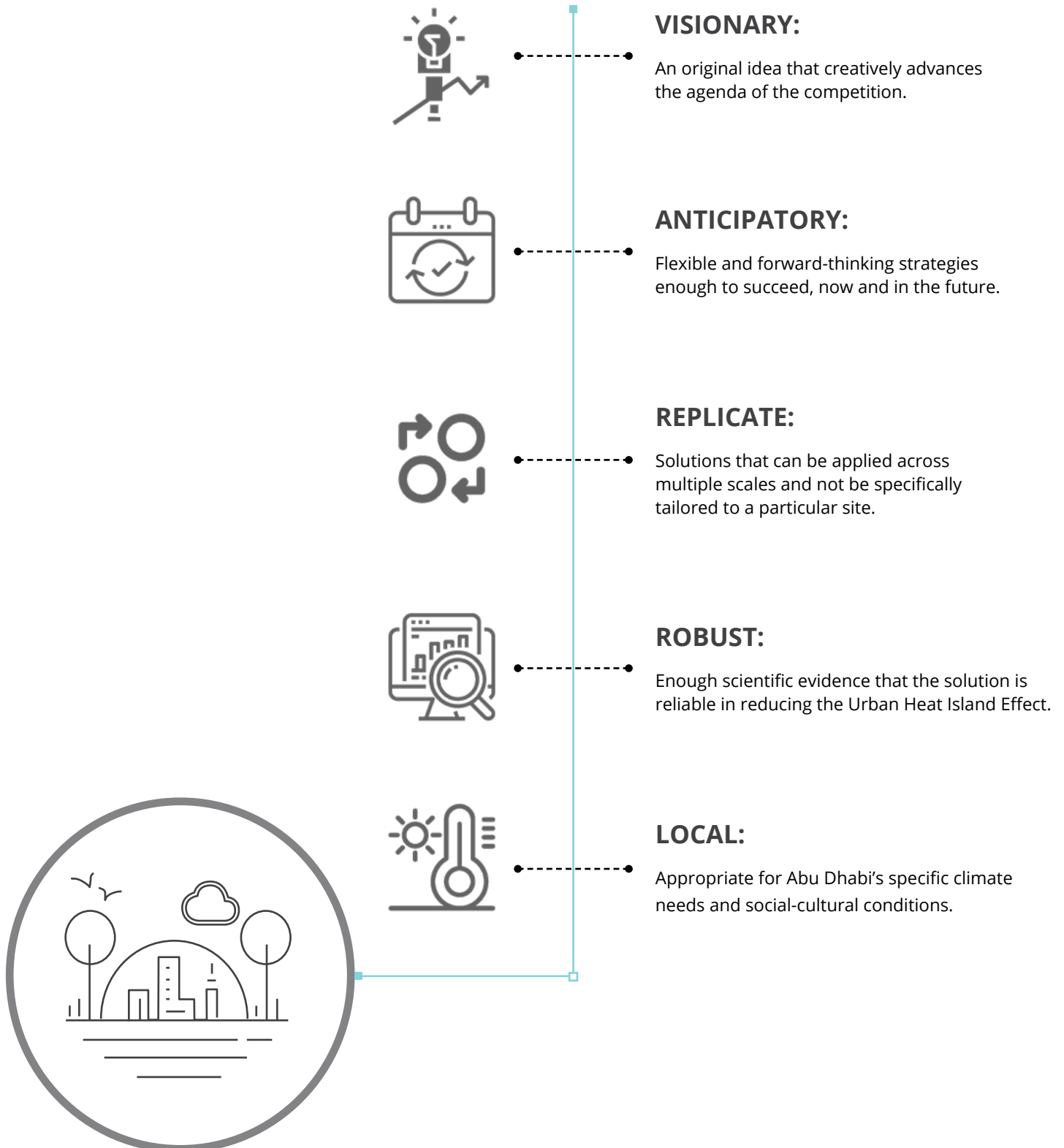
A hypothetical site in Abu Dhabi will be the subject of this competition. The site contains a small open plaza surrounded by a surface parking lot and abutted by 15-story buildings on all sides. This is a typical Abu Dhabi downtown block condition and can serve as a good proxy for investigating ideas that can be replicated across Abu Dhabi.

The existing context such as the adjoining buildings etc. cannot be altered. The key site for the intervention is the plaza. The parking lot on-site should continue to retain its parking function and the number of parking spaces should be maintained.



3.0 Criteria

The following criteria represent a prize-winning submission:



4.0 Jury



KISHORE VARANASI (JURY CHAIR) **PRINCIPAL | CBT**

Kishore Varanasi is an urban designer, strategist, and educator who specializes in developing authentic design solutions for cities at all scales that address human connection, social equity, and climate resilience.

As a principal at CBT, Kishore shaped cities and communities internationally with sustainable and holistic outcomes for both public and private sector clients over the past 25 years. Kishore's innovative contributions stem from his ability to converge the interests of people, governments, and investors and by inspiring creative collaborations and fresh approaches to city building. His significant recent work includes the Masdar City Master Plan, Lincoln Yards in Chicago, Blueway for the New England Aquarium, Cambridge Crossing, Boston University Master Plan, Suffolk Downs Master Plan, Hudayriyat Island Master Plan, Bhavani Islands Master Plan and For Abu Dhabi Climate Interventions.

Kishore is a regular critic and teacher at various institutions including MIT, Harvard University, Yale University and the Boston Architectural College. He serves on the Boards of the Van Alen Institute Climate Council, Boston Architecture College and Boston Harbor Now. He holds a Master of Science in Urbanism from MIT and a Master of Architecture from the University of Illinois at Urbana-Champaign.



IYAD ALSAKA **PARTNER | OMA**

Iyad Alsaka joined OMA as a director in 2007 and became partner in 2011. Responsible for OMA's work in the Middle East and Africa, Iyad has led projects including the acclaimed masterplan for Waterfront City in Dubai, the HAI Airport City masterplan in Doha, and Concrete in Alserkal Avenue, a new public venue for Dubai's cultural district. Before joining OMA, Iyad was director of design and development at Dubai Holding where he was responsible for numerous projects. Born in 1969 in Syria, Iyad holds a degree in Architectural Engineering from the University of Aleppo.



BARBARA RÖMER **FOUNDER | STUDIO RÖMER**

Dr. Barbara Römer is an art curator and strategy consultant who specializes in developing cultural visions for cities. Born in Germany, she was educated at Princeton and received her PhD at Cambridge University, worked in museums in France and Japan, directed theatre in Germany, produced two feature films in the USA, and consulted with McKinsey & Company in the Munich and New York offices. She is the Founder of the Globe Theatre, a 21st-century theatre designed by Foster + Partners. In addition to heading Studio Römer (studioromer.com), she is a Senior Advisor to McKinsey and a Trustee of the Deutsches Museum.



RASMUS ASTRUP
PARTNER | SLA

Rasmus is partner in SLA and leads several of the studio's largest and most complex international projects. His strengths cover everything from strategic city development and advanced landscape design to local and recreational rainwater management and innovative lighting concepts. When it comes to sustainable landscape architecture and climate adaption, Rasmus is one of the leading specialists and an expert in conjoining the sustainability of buildings and their exterior in a holistic symbiosis. Rasmus has received numerous national and international awards for his work, including the Danish Landscape Award, The World Architecture News Award and the Copenhagen Award for Beautiful Architecture.



JOHN FERNANDEZ
PROFESSOR | MIT

Prof. John E. Fernández, Director John E. Fernández '85 is a professor of building technology in the Department of Architecture and a practicing architect. Fernández founded and directs the MIT Urban Metabolism Group, a highly multidisciplinary research group focused on the resource intensity of cities and design and technology pathways for future urbanization. He is author of two books, numerous articles in scientific and design, and author of nine book chapters. He is Chair of Sustainable Urban Systems for the International Society of Industrial Ecology and Associate Editor of the journal Sustainable Cities and Society. Fernández served as Director of the Building Technology Program in the Department of Architecture from 2010 to 2015 and as the Director of the International Design Center at MIT from 2012 to 2015. He previously served as the Director of Research for Sustainable Energy Systems of the MIT Portugal Program. Fernández is a member of the Board for New Ecology, Inc., and a member of the Board of Advisors for the Center for Sustainable Energy of the Fraunhofer Institute.

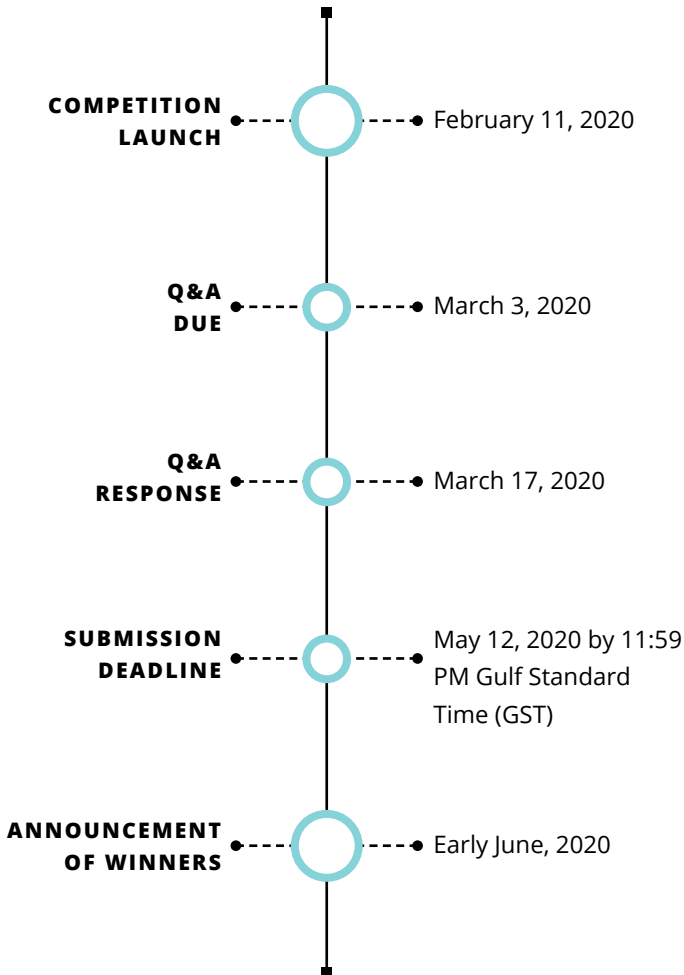


ROB COOKE
ASSOCIATE DIRECTOR |
BUROHAPPOLD

Rob is a Doctor of Engineering and Chartered Energy Engineer with 15 years industry experience. With BuroHappold Engineering he has been involved leading a range of new initiatives from cutting-edge research to development of new tools and services relating to energy and wider sustainability. Rob provides strategic sustainability thinking and guidance through to design advice for technology deployment. This has involved working throughout the design and construction process for projects of all scales, including auditing existing buildings, reviewing company-wide operations, individual building design and masterplanning new developments. With experience of providing sustainable design input for over 200 projects Rob offers extensive knowledge and valuable experience for informing design. This experience and a commitment to supporting research and innovation has helped many these projects achieve numerous industry awards for sustainable design. Rob was awarded Construction Week Middle East MEP Engineer of the Year 2012 and Engineer of the Year in the Middle East Architects Awards in 2013.

5.0 Competition Organization Structure

1. COMPETITION SCHEDULE



2. AWARDS

TOTAL PRIZE MONEY: **\$100,000**

- Number of Awards: Total prize money of \$100,000 USD will be distributed to up to **ten winning entries** (each winning entry will receive \$10,000). Winners may earn the opportunity to present their concepts to Abu Dhabi policy-makers.

3. COMPETITION SPONSOR

- The **Department of Municipalities and Transport** (DMT) of Abu Dhabi is the sponsor of this competition.

6.0 Submission Requirements:

1. PROJECT OVERVIEW

- 500-word maximum Project Overview, text only in the field provided on the website.

2. TEN-PAGE PROJECT PRESENTATION

- PDF format only
- Landscape A4 size (297mm wide × 210mm high)
- The minimum embedded image resolution of 300ppi strongly recommended.
- 20MB size limit. Title pages will count towards the ten-page maximum. Additional pages past the max page count will not be evaluated.
- Please name file **{entryname}_project.pdf.**

3. TWO PROJECT DISPLAY BOARDS

- PDF format only
- Landscape A0 in size (1189mm wide × 841mm high).
- The minimum embedded image resolution of 150ppi strongly recommended.
- 50MB size limit.
- Please name file **{entryname}_boards.pdf.**

4. TWO-MINUTE VIDEO

- .mp4 or .mov format.
- Minimum resolution of 720p (1280px × 720px) strictly enforced.
- No file size limit.
- Please name file **{entryname}_video.{mp4/mov}.**

5. REGISTRATION

- Once an entrant's account is created and registered, the required deliverables can be submitted directly via the awards portal at www.coolabudhabi.com.

7.0 Terms and Conditions

- By taking part in this Design Ideas Competition, entrants authorize the Department of Municipalities and Transport (DMT) to make public, exhibit, and disseminate their proposals, while the designer(s) retain authorship of their proprietary designs.
- DMT may edit the content of proposals or use only portions of proposals to make the proposals public.
- DMT is not committed to selecting any of the entrants, including the winners of the competition, for future design work or contracts.
- DMT is not committed to develop or implement any of the ideas submitted.
- However, DMT is continuously engages designers to develop similar projects and any similarity of these projects with any proposed entries is coincidental.
- DMT may base future designs for the project on components of proposals.
- Concerning the proposals in whole or part, each entrant grants DMT a perpetual non-exclusive license with the right to sublicense, display, reproduce, prepare derivative works, and distribute copies of the proposals.
- By registering to enter in the competition, each entrant thereby confirms they have the full right to grant this license.
- The entry must not be in use in any other context and it must not have been previously published or exhibited anywhere in the world.
- The design must be kept confidential until the results of the competition are published.
- Designs that have already been made public or are found to plagiarize any existing design, may harm public safety or social morality or which are found to infringe the intellectual property right of others will be disqualified.
- Persons affiliated with the DMT, Jurors, Sponsors, or the associates or family members of the aforementioned persons are not eligible to submit design entries
- There are no restrictions on team size and/or makeup.
- It is recommended (but not mandatory) that the team be comprised of interdisciplinary members so as to arrive at the most well-conceived result.
- Anyone is eligible to enter the Cool Abu Dhabi Design competition.
- There is no fee to enter as we strongly believe in supporting innovation and creativity in the field of climate change.