PLANNING SMART CITIES OF THE FUTURE
FINDING THE GAPS

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CITIES FORUM

DRIVING THE CHANGE IN SUSTAINABLE URBAN DEVELOPMENT

Research | Advisory | Project Development

UNIVERSITY OF Southampton

Speaker Bio

Zeina Nazer a Researcher and Smart Mobility Expert with over 23 years experience Ze in the design, management, operations and performance evaluation of Intelligent Infrastructure Systems in the Middle East, Europe, S.E. Asia and USA.

Zeina has contributed to Standards development of ITS in Europe, US, New Zealand and ME and managed the delivery of several advisory services contracts to public sector clients relating to major Transport Master Plans, Public Private Partnership (PPP) and projects (PFI).

Currently pursuing her PhD on Autonomous Vehicles at University of Southampton. Zeina has Bachelor of Sciences in Civil Engineering from American University of Beirut;
MSc. in Transportation Engineering from University of Texas at Austin;
and MBA from University of Chicago. Zeina is a Professional Engineer licensed in the USA.

Zeina was awarded "Best Business Woman of the Year" at the 8th Middle East Businesswomen and Leaders Achievement Awards, Dubai, UAE.

Role of Cities Forum

We are a young collaborative platform of Global Development Sector Experts with a common goal of making our Cities More Liveable

Background

Cities Forum was born at the University of Oxford by a group of Experts who decided to join forces, skills, and global experiences in making cities more efficient, resilient and sustainable.

Through our Global team of experts, we have skills to review, analyse and prioritise city development projects that can create a catalytic economic impact for cities and Regions.

Our team brings international best practices, combined with local resources and knowledge. We combine in-depth technical excellence and strong capabilities in research and technology implementation in managing cities.

Our Objectives

- Promote urban and regional sustainable initiatives for resource efficient, low-carbon, smart and resilient cities.
- Conducts research, education, and community outreach to address sustainability challenges facing cities and metropolitan regions.
- Generate innovative solutions with advanced technological intervention to enhance the environment, economic vitality and social equity of cities worldwide.
- Fosters multi-disciplinary research with an emphasis on livability and sustainability challenges of cities and metropolitan regions.
- Undertake projects that support urban sustainability in countries worldwide.

A Quality Team

Our Multidisciplinary team of experts have combined experience of more than 100 man years in the areas of sustainable cities, mobility planning and management, environment and project financing

The team has worked in consulting, project development and financing sector and specialised in developing infrastructure on PPP format. The team has diversified experience in project advisory

We have access to the team of specialised planners, engineers, management consultants and technical specialists working in all areas of the built environment.

We are a UK Based company promoted by industry experts with primary focus of assisting governments authorities and private sector in developing infrastructure projects on PPP basis

Our Proven Track Record

Our team brings you experience in:

- The key infrastructure sectors where investment is most critical– urban development, transport, power, Education and Health
- Advising governments on infrastructure development, from high level strategies and concepts through to detailed design and project management
- Analysis of economic development potential and economic impacts
- Evaluating options for attracting private sector participation
- Assessing technical and financial feasibility of infrastructure projects

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Cities Forum Activities

Key Details

Cities Forum is supporting and accompanying cities and companies in achieving their sustainable development goals in the following manner:

– *We strive towards a carbon free future.*
– *We aim to increase efficiency in resource consumption.*
– *We build on data, connectivity and the IoT.*
– *We aim for processes that benefit the best solutions not the loudest or cheapest actors.*
– *We strive to provide future-proof solutions for sustainable cities.*

Research

Our team is working on various research projects in the area of electric vehicles, sustainable mobility, technology deployment in managing cities, carbon free cities, waste to energy, resilient cities

The R&D team offers collaboration opportunity with various cities authority, academic institutions and research labs in co develop products for next generation of cities.

Advisory

- Policy Reforms & Regulatory Structures for City and Infrastructure Development
- Mixed Used Development including special economic zone (SEZ), airport city, logistics city, etc.
- Strategy and Project Development of several rail, roads, airport, parking, ports and metro projects
- Logistics and Supply Chain
- Technology Deployment in effective project implementation
- Environment and Sustainability.

Project Development

- The team has worked on more than 100 Projects in infrastructure sector with scope includes project feasibility, technical and financial due diligence, project financing, legal and contracts and O&M strategies
- We help Cities in identification and prioritisation of projects and work with authorities from concept to commissioning including raising finances to implement the projects

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My Research project at University of Southampton

Currently I am working on a research project at the University of Southampton on Light Detection and Ranging (LiDAR) challenges and opportunities in Autonomous Vehicles and Smart Cities using Artificial Intelligence. This research project is funded by DSTL and EPSRC.

By 2020, The European Union and the United States are mandating that all vehicles be equipped with autonomous emergency-braking systems and forward-collision warning systems. This means, the demand for advanced driver-assistance systems (ADAS) assisting with monitoring, warning, and braking.

The project aims to identify and compare technologies used for Autonomous Vehicles that could gain early support and therefore will have an advantage when Connected, Automated, Shared, and Electrical Vehicles reach the market. The challenge is to integrate Artificial Intelligence in the technologies adopted and how it will help the cities get smarter.

Finding The Gaps

There is an increasing abundancy of disruptive technologies with cross-disciplinary applications in moving people. Researchers and decision makers should keep up with the developments of these technologies and regulate them. One of the challenges are how smart cities are viewed from the tech industry and consumers perspective, versus how citizens think about technology for individual use and its impact for society as a whole.

Data is abundantly available in today's world. The combination of data with advanced computing power and Artificial Intelligence (AI) can be enhanced in using the information to create a solid foundation for foresight of new disruptive technologies and innovations.

The challenge is finding the gap between disruptive technologies between AV, CAV or CASE and the use of AI to make the smart cities of the future smarter. In other terms, what is stopping these developments at the moment.

Are We on The Road to Full Automation?

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS

Full Automation
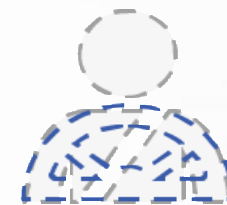
0	1	2	3	4	5
No Automation	**Driver Assistance**	**Partial Automation**	**Conditional Automation**	**High Automation**	**Full Automation**
Zero autonomy; the driver performs all driving tasks.	Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.	Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.	Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.	The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.	The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

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Benefits of Automation

SAFETY

Automated vehicles' potential to save lives and reduce injuries is rooted in one critical and tragic fact: 94 % of serious crashes are due to human error. Automated vehicles removes human error from the crash equation.

ECONOMIC AND SOCIETAL BENEFITS

Automated vehicles could deliver additional economic and additional societal benefits. A NHTSA study showed motor vehicle crashes cost billion of $ in economic activity, lost workplace productivity, and loss of life and decreased quality of life due to injuries. Eliminating the vast majority of motor vehicle crashes could erase these costs.

EFFICIENCY AND CONVENIENCE

Roads filled with automated vehicles could also cooperate to smooth traffic flow and reduce traffic congestion. The estimated billion hours in traffic delays cut into time at work or with family, increasing fuel costs and vehicle emission. With automated vehicles, the time and money spent commuting could be put to better use freeing up 50 min a day.

MOBILITY

Automated vehicles may provide new mobility options especially to elderly and people with some form of disability.

Benefits of Artificial Intelligence

Artificial intelligence will enable vehicles to manage, make sense of, and respond quickly to real-world data inputs from different sensors, but this will take time.

The challenges however, range from the technology, regulation, insurance related topics, as well as the moral considerations of derived actions and decisions.

The technical challenges to autonomous vehicles are solvable over time by advancing the state-of-the-art in well-understood design practices and techniques. However, based on the foreseen complexity of an autonomous vehicle, AI systems are a promising element to address a huge set of data, scenarios, and real-world decisions a human brain—consciously or subconsciously—today processes within a short period. And to make all of those decisions with high precision while operating the vehicle.

Is Automation the Inevitable Solution?

What about the impact of Autonomous Vehicles Technology
On Driver Skill? Is Automation Irreversible?

What is the Impact of Automation on Future Cities to become Smarter?

What about the Data? What about 5G mobility revolution?

Thank You

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