The Bar-Ilan University Smart Cities Impact Centre

Improving the Quality of Urban Life

Bar-Ilan University's Smart Cities Impact Centre – Making the Difference between a Place and a Space

Shifting demographics, accelerated urbanization, multitudinous technological innovation – it has become increasingly challenging for municipalities to make intelligent choices which will protect the world we live in and provide their residents with a better quality of life. The plethora of solutions is mind-boggling, but finding the **right** solution for a **particular problem** in a **particular city** is especially challenging.

The need to effectively navigate the labyrinth of technological and human solutions led to the establishment of the Bar-Ilan University Smart Cities Impact Centre in 2016. It's goal: to create an ecosystem which brings together under one roof the university's academic experts with entrepreneurs, citizens, local government, city planners, technology providers, startups and social innovators in order to find the best smart cities solution.

University Campus as Living Laboratory

The Bar-Ilan Metropolis – seven cities surrounding the university's 140-acre campus strategically situated in Israel's centre – represents a microcosm of typical problems facing most western cities in areas such as transportation, networks, energy, sanitation, and security.

The Smart Cities Impact Centre offers the BIU campus as the "living lab" for smart city development and experimentation. With 17,000 students and 2,500 faculty and staff, and thousands of members of the surrounding community who participate in BIU programs, the campus shares many of the same problems as neighboring cities. Avoiding traffic jams, parking problems and clean-energy transit solutions, maintaining facilities in an economically and environmentally viable way, providing open green space in a relatively small area – all these are issues which impact on urban hubs. The Centre – which aspires to be Israel's university impact leader in smart city integration and decision-making – brings together all interested parties to try new approaches which have the potential to change hundreds of thousands of lives in our surrounding societies.

Our Partners

ISR Technologies, transportation solutions, including digital signage, public transport, enhanced services, and autonomous vehicle technology. Offices Middle East, North America. ISR can work with local municipalities and residents to create efficient urban mobility solutions.

Pelephone, IOT solution: advanced management platforms, overall cyber protection and integration services. Pelephone launched two dedicated IOT networks, to meet the needs of IoT business.

HY Group, a LG Electronics distributor providing solutions for Smart Cities, From OLED, UHD TV, Signage, LED Street, Outdoor & indoor lighting. A "One Stop Shop" Project Planning, Integration, Installation, Maintenance and Service. HY Develops and Integrates C^2 Systems, Sensors, Security Cameras, EV Charging Stations and Smart Poles.

Moderro, Moderro, remote expertise and digital signage that improve communication, interaction, and productivity. Focused on Smart Cities, Public transportation, Finance and Healthcare. Moderro engineers developed the Cisco digital signage and remote expertise solution. Emphasis on video synchronization, ease of deployment, and remote management capabilities.

Tondo, Smart Lighting, an open and flexible platform that connects lighting, sensors, and applications. Tondo enables monitoring and control, making it easy to create a smart, connected and economical city.

ASN, A low power high efficient protocol, 433 MHz frequency that provides high reliability, efficiency and immunity for the IOT sensors data transfer. ASN developed high accuracy wireless battery operated Parking Sensor, with dual sensing methodology, reporting parking availability.

Geoda, location and urban services. With GIS core and a team of urban planners and location experts, we reveal connections within the data, transforming it to smart spatial knowledge, insights and trends.

IPgallery, IoT and real-time AI/ML analytics and predictions based Smart City and Urban Mobility solutions and Apps. Including Real-time & Big Data platform, Cross-vertical services, Sentiment analysis, Main operations visualization and executable Dashboard. Personalized App for Urban Mobility, Public Safety, Environment and Engagement.

Mashov Automotive System, operates and provides a platform for universities and start-ups that develops products and services for the Autonomous public transportation industry.

Whizz, ridesharing lines service, based on private cars. Employs big-data algorithms & behavioral economics to help riders & drivers commute. Riders pay $5 and drivers enjoy up to $400 on their fixed route to work.

Mobileye, Computer vision and machine learning, data analysis, localization and mapping for Driver Assistance Systems and autonomous driving. Reduces the risk of accidents and offers solutions for collisions avoidance and blind spots detection in urban environments.

MyCity360, developed an IOT smart parking platform that helps improve parking services and optimize revenues.

Milbat, an NGO specializing in developing unique assistive devices to increase the independence and quality of life of disabled people and the elderly, such as "Heron", a small robotic unit that opens doors via an app.

mPrest, Monitoring and control solutions provider for: defense, security, utility and IoT sectors. From a single facility to a multinational corporation. mPrest nurtures partnerships with SIs to improve system performance, cost and risk.

Greener Israel, Waste Management and IOT, solar powered with compactor that increases capacity. A sensor measures the capacity gives operational view.

Gaash Lighting, is a designer and manufacturer of high quality, energy saving lighting solutions. Gaash developed a Wi-Fi based smart luminaire.

RadGreen, Enviro-system consistently monitors air quality, noise, and radiation parameters. Tracks activity in buildings and smart cities, while delivering real time alerts and conducting complex statistics.

Hashkaya Ecologit, integrates agriculture technologies to a smart urban park systems. The system combines an irrigation controller, tensiometers and electromagnetism system. The combined systems saves water.

Netafim, produces drippers, dripper-lines, sprinklers and micro-emitters. Netafim also manufactures and distributes crop management technologies, monitoring and control systems, dosing systems, and crop management software.

E.I.D, monitoring and control systems provider, programmable controllers, data log and analysis, real time monitoring. IoT solutions, lighting, water leakages, air quality, traffic, meteorological stations, temperature, optical, ultrasonic, pressure.

VF®, Designing and building vertical gardens and vertical agriculture. The vision is to create a healthier environment through urban vertical fields relying on innovation, IOT, technology & eco-solutions.

Madey Vered Developing, manufacturing and marketing network solutions and integrated products and services for water, electricity and gas utilities. An end-to-end solution includes data management IoT meters, Telemetry & Data logger.

TotalSec Systems. Security and control systems provider. Smart video surveillance, Access control, building management system, Cyber solutions for CCTV and BMS systems, parking management, C&C (command and control) management software, system integration.

Cella-V, Design, develop and manufacture waste IT sensors and cloud services. Shelf or tailor made products. RF communication, Modems and GPS technologies. Designed and developed in Israel and are installed worldwide.

Examples of Current Projects

Water

As many cities face aging pipelines and water supplies, leaks are becoming more frequent and more costly. Finding and fixing leaks is a critical way for cities to conduct preventative maintenance. Aquarius Spectrum, a technology leader in online leak detection, is conducting a pilot program in which their unique acoustic sensors for leak detection have been put into place in campus facilities.

Heat

BIU is cooperating with Nanjing University (China) to conduct an experiment on their respective campuses which offers solutions for the Urban Heat Island phenomenon.

Pollution

The BIU Smart City Impact Centre, in collaboration with adjacent municipalities, will be setting pollution measuring sensors around school's area to study pollution levels when children are dropped off in the morning and picked up in the afternoon. A uniquely designed application will help parents form carpools to reduce vehicular traffic at peak hours.

Transportation

Smart cards were installed in bus stops around campus, and in buses routed to these stations. The Smart Cards feed BIU's control centre with real time data about the number of people in each station, and the location of each bus en route, alerting dispatchers as to the need for more or less buses in real time.

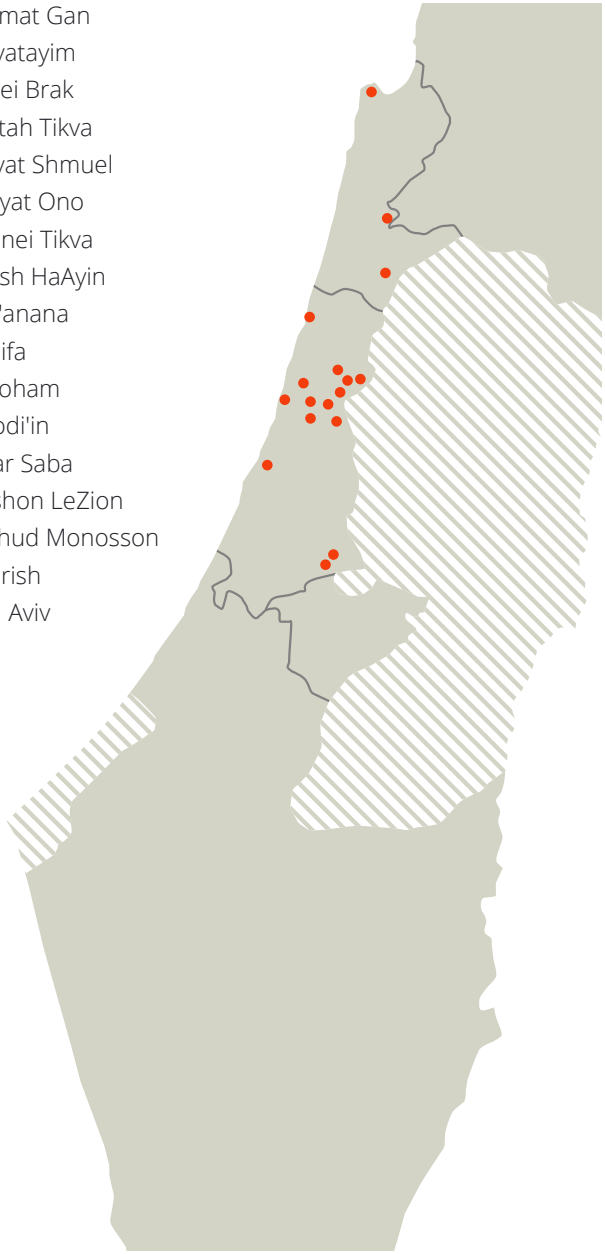
Another project monitors the public transportation-usage patterns of university goers with the collaboration of one of Israel's largest taxi companies, cutting down travel time, reducing traffic around campus, and increasing user satisfaction for university students, staff and faculty.

Environment

Mobile controllers have been installed across BIU's campus monitoring smart city systems. These controllers monitor environmental conditions in real time, and provide crucial data to system administrators. Additional GPS controllers were installed on campus shuttles, and provide real time information about shuttle location, capacity levels, and more.

Participating cities

Ramat Gan
Givatayim
Bnei Brak
Petah Tikva
Givat Shmuel
Kiryat Ono
Ganei Tikva
Rosh HaAyin
Ra'anana
Haifa
Shoham
Modi'in
Kfar Saba
Rishon LeZion
Yehud Monosson
Harish
Tel Aviv



Smart City Impact Centre – The Team

The center comprises a multidisciplinary team of researchers and experts from the Faculty of Engineering. The Graduate School of Business Administration, the Azrieli Faculty of Medicine, and the Faculties of Law, Social Science, and Exact Science. The center's Steering Committee is comprised of the Mayors of the participating cities.

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Pilots and demos installed throughout the campus

1 EID Electronics
Green wall
Greener Israel
Milbat
ISR Technologies
mPrest
Netafim
Radgreen
Pelephone
HY Group
Moderro
TotalSec Systems
Tondo
Geoda
IPgallery
Madey Vered
TotalSec Systems

2 Gaash Lighting

3 ASN
Hashkaya Ecologit

4 My City 360

5 Mashov Automotive System

6 Milbat

7 Green Wall
Netafim

Urban Futures Lab

The Urban Futures Lab, headed by Dr. Michelle L. Oren, is the Centre's core of urban research and experimentation. The lab's purpose is to test and explore transformative techniques and practices of urban futuring at the intersection between visions for future urban places, new technologies and infrastructures. The general aim is to generate new knowledge about the forms and dynamics of smart urbanism and their socio-technical implications. The lab seeks to unveil to what measure cities can be understood through sensorial data, how does software interact with space in daily urban life in the 'real time city' and to what measure they contribute for an improved and more efficient urban management.

AI for Citizens Lab

The Artificial Intelligence, AI, for Citizens Lab, led by Dr. Iris Yuster, connects between citizens, city leaders and AI technology, and places citizens, the most important stakeholders, in the centre. The lab analyzes citizens' challenges, needs and interests, to help city leaders prioritize and plan meaningful AI projects that improve citizens' life quality. We are continuously exploring the AI's impact on citizens' satisfaction, loyalty, engagement, motivation, contribution, etc. and evaluate the added value of the projects for both citizens and the city. When AI meets the citizens' needs it gives cities the opportunity to develop new ways to interact with their citizens, offers them much more intelligent services and personalized journeys that boost life quality.