10th Eduniversal - Dubai
Smart Cities: the role of the University

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Agenda

The rising importance of cities

Concept and criteria

Masdar Smart City

Lisbon Smart City

BGI - IUL MIT Portugal

The World Urban Population

World Population

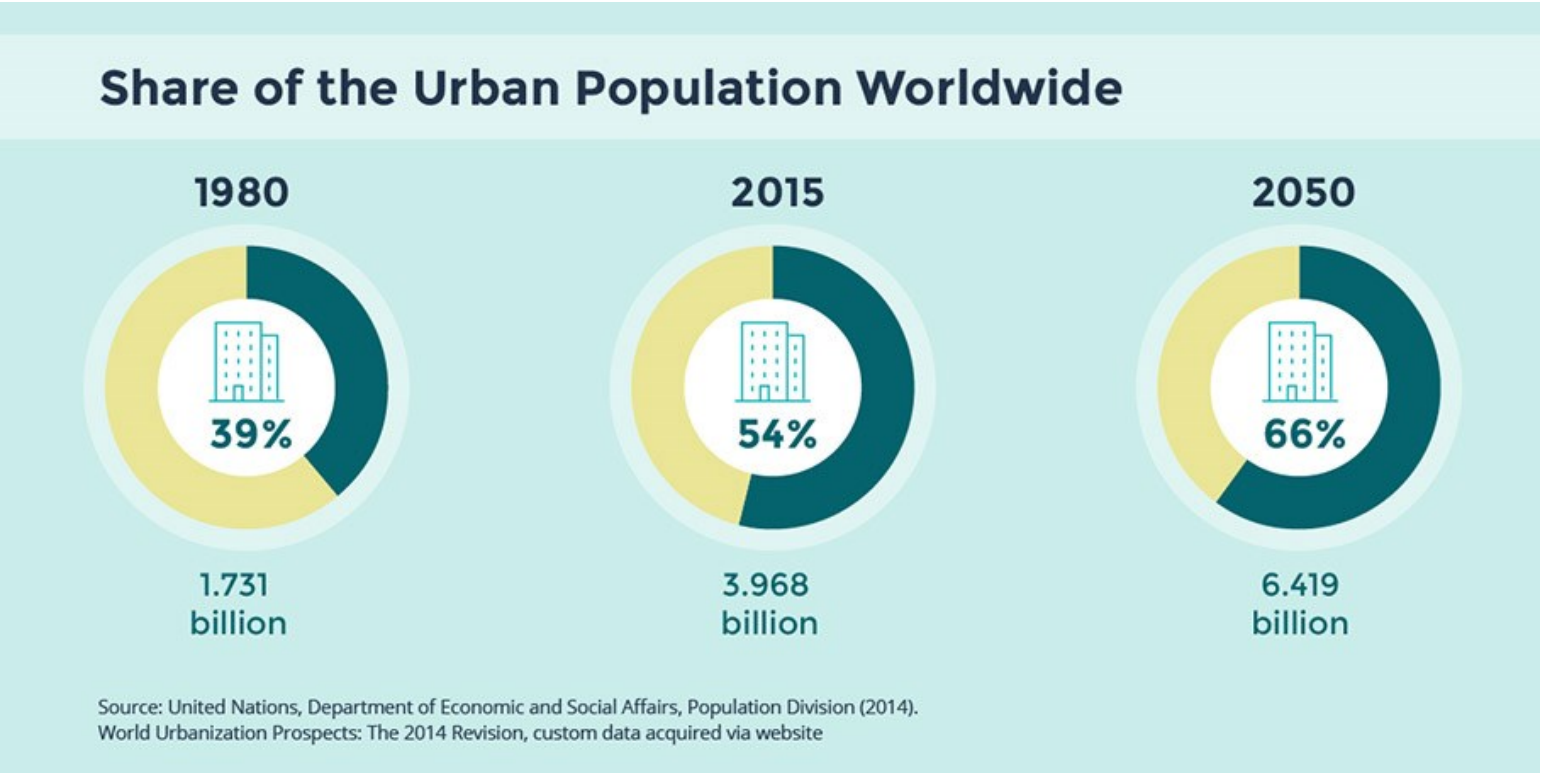
1980 4.439 billion

2014 7.349 billion

2050 9.725 billion

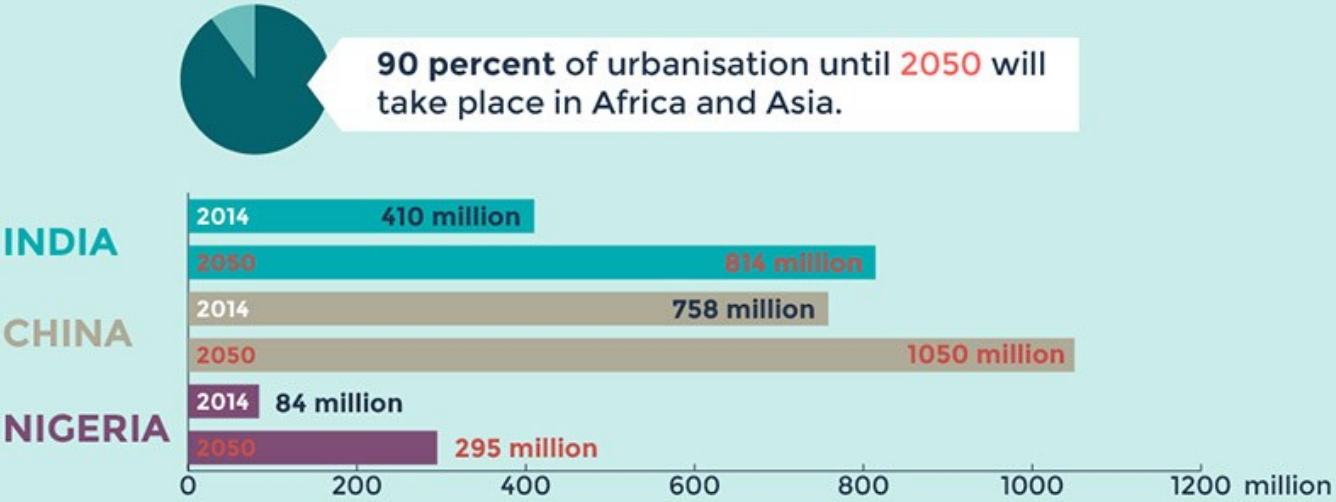
Source: United Nations, Department of Economic and Social Affairs, Population Division (2014).
World Urbanization Prospects: The 2014 Revision, custom data acquired via website

The World Urban Population



The World Urban Population

Where Urbanisation Happens

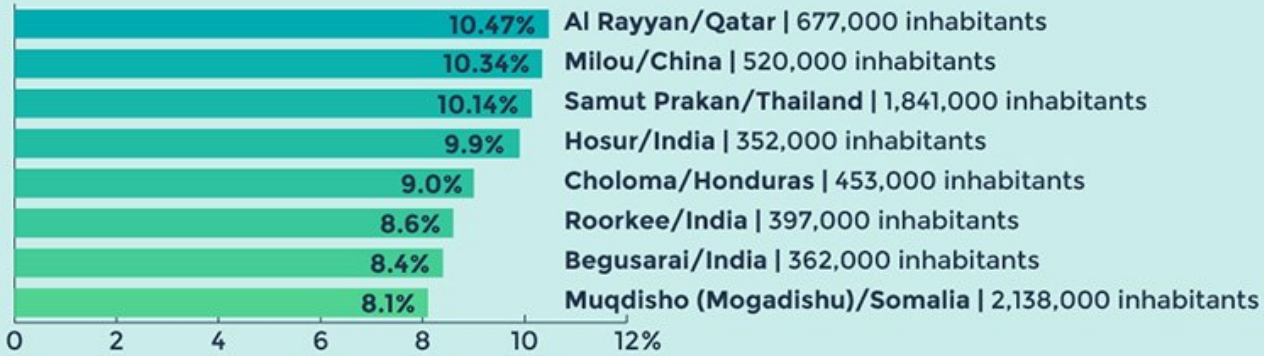


Source: United Nations, Department of Economic and Social Affairs, Population Division (2014).
World Urbanization Prospects: The 2014 Revision, custom data acquired via website

The World Urban Population

Cities with the Highest Growth Rate

Growth rate per year in urban agglomerations of more than 300,000 inhabitants from 2010 until 2015



Source: United Nations, Department of Economic and Social Affairs, Population Division (2014).
World Urbanization Prospects: The 2014 Revision, custom data acquired via website

The World Urban Population

Around half of the world's urban population lives in cities with less than half a million inhabitants.

Source: United Nations, Department of Economic and Social Affairs, Population Division (2014).
World Urbanization Prospects: The 2014 Revision, custom data acquired via website

Smart City concept and criteria

A unique definition can not be found

Trends that Smart Cities must take in consideration

EU, Cities of tomorrow. Challenges, visions, ways forward. In: European Commission, Directorate General for Regional Policy (2011). Cited in Monson, Andres (2015)

Smart City concept and criteria

Comprehensive approach

Interconnection of all the urban aspects

Infrastructures central piece of the Smart City

Technology enabler. Combination, connection and integration systems fundamental for a city being truly smart

EU, Cities of tomorrow. Challenges, visions, ways forward. In: European Commission, Directorate General for Regional Policy (2011). Cited in Monson, Andres (2015)

Definitions

"Regional competitiveness, transport and information technologies, economics, natural resources, human and social capital, quality of life, and participation of citizens in the governance of cities." Giffinger et al. 2007

"A smart city is one that has digital technology embedded across all city functions." Smart Cities Council

"A city can be defined as 'smart' when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic development and a high quality of life, with a wise management of natural resources, through participatory action and engagement." Caragliu and Nijkamp, 2009

"We identified eight key aspects that define a Smart City: smart governance, smart energy, smart building, smart mobility, smart infrastructure, smart technology, smart healthcare and smart citizen." Frost and Sullivan, 2014

Smart City concept and criteria

Mono-topic descriptions

Emphasis on one urban aspect (economy, environment, people, governance, mobility, living)

Neglect other circumstances involved in a city

EU, Cities of tomorrow. Challenges, visions, ways forward. In: European Commission, Directorate General for Regional Policy (2011). Cited in Monson, Andres (2015)

Holistic view of the Smart City concept

Smart City dimensions

Main city dimensions

http://urp-bd.blogspot.pt/2014/07/concept-of-green-city.html

Smart City challenges

Smart city model can lead to a better city planning and management and thus, to the achievement of a sustainable model of urban growth

Not all attempts are successful – *dockless* bike sharing has led to destruction and waste

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Smart Cities Examples

CITY	STARTING DATE	MAIN GOALS
Stockholm	1994	e-services: political announcements, parking space booking and snow clearance. Triple helix concept of smart cities (university, industry, government working together in a smart city strategy.
Amsterdam	2009	Reduce traffic. Save energy. Improve public safety
Barcelona	2012	Smart traffic. Integrated technologies.

Smart Cities Examples

CITY	STARTING DATE	MAIN GOALS
Madrid	2015	Waste management. Green areas. Promotion of entrepreneurship.
Manchester	2016	Internet of Things (IoT) smart cities demonstrator.
Columbus, Ohio	2017	Building of transportation infrastructures for autonomous vehicles.
Dublin	2017	Quality of life. Open data platform.
Milton Keynes	___	Water and transportation use. Scheme for promoting citizen-led sustainability issues in the city. MOOC to inform citizens about what a Smart City is.

Largest Cities Along History (BC)

DATE	CITY	COUNTRY	POPULATION (THOUSANDS)
-3000	Memphis	Egypt	30
-2240	Akkad	Iraq	50
-2075	Girsu	Iraq	50
-2030	Ur	Iraq	65
-1980	Thebes	Egypt	65
-1700	Babylon	Iraq	60
-1670	Avaris	Egypt	100
-1500	Memphis	Egypt	100
-1400	Thebes	Egypt	120
-1000	Haojing	China	100
-900	Thebes	Egypt	60
-668	Nineveh	Iraq	120
-600	Babylon	Iraq	200
-320	Alexandria	Egypt	300
-300	Pataliputra	India	350
-200	Changan	China	400
-25	Rome	Italy	600

Largest Cities Along History (AC)

DATE	CITY	COUNTRY	POPULATION (THOUSANDS)
340	Constantinople	Turkey	400
570	Ctesiphon	Iraq	500
637	Changan	China	800
775	Baghdad	Iraq	1100
935	Cordova	Spain	450
1013	Kaifeng	China	420
1127	Constantinopla	Turkey	200
1170	Fez	Morocco	200
1180	Hangzhou	China	432
1358	Jingling	China	487
1450	Beijing	China	706
1650	Istanbul	Turkey	750
1710	Beijing	China	1350
1825	London	UK	7419
1925	New York	US	15755
1965	Tokyo	Japan	20500
…	…	…	…

Lisbon Smart City

The Intelligent Management Platform of the City of Lisbon, launched in July 2017

- Works with Integrated Operational Center (COI)
- Innovative tools for collaborative management of events
- Civil Protection, Fire Brigade, Municipal Police, City Council working together

https://goo.gl/WhuUyA

http://www.smartopenlisboa.com

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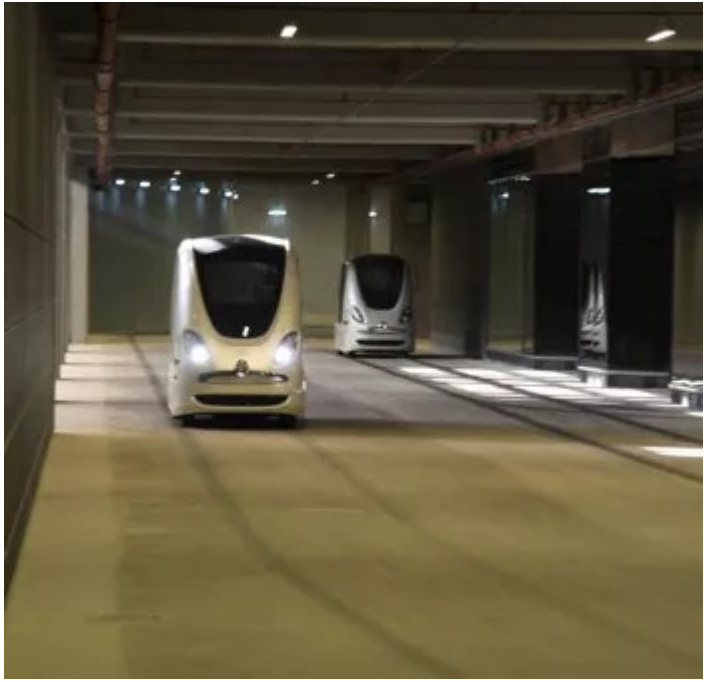
Masdar Smart City



What technology can bring to Smart Cities

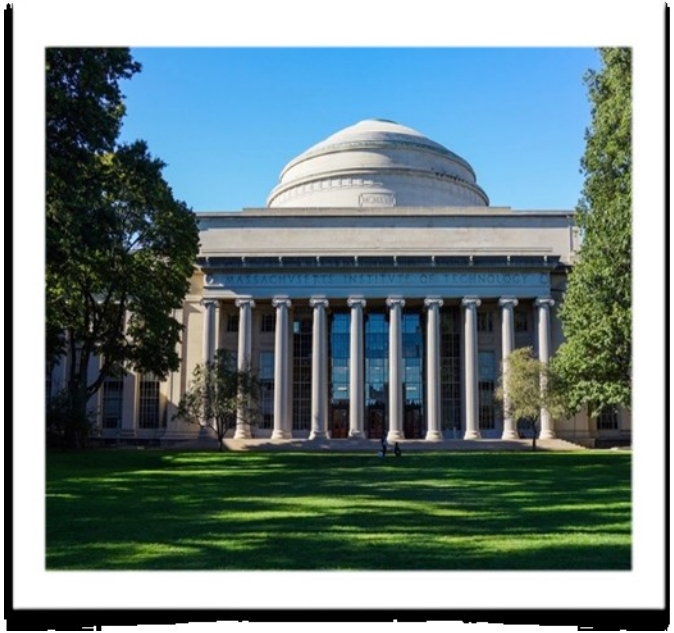
Parking	Grid/Energy
Data-Driven Urban Planning	Smarter Transport
Environmental Sensors	Connectivity
Waste Management	Traffic/Transit Data
Water Software & Analytics	Disaster Management

Technology: The basis of economic disruptions

We define startups operating in the smart cities segment as those that are helping to connect services, utilities, and roads to the internet.

These startups are providing data-driven services that help cities increase their efficiency in using resources and/or help increase public transit-related mobility for city consumers.

BGI GENESIS



"Spillover" of the MIT Portugal Program - Innovation & Entrepreneurship Initiative, to commercialise promising science and technology (2013)

An hybrid between the MIT100k, i-teams and the Deshpande centre for technological innovation grants

15 year Special Purpose Vehicle launched with support from Caixa Capital and FCT in Q12013

BGI Focus Areas

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Focused in 4 market verticals, tech-based new ventures:

- Medical Devices & Health IT
- Smart Cities & Industrial solutions 4.0
- Enterprise IT & Smart Data (*a.k.a. big data*)
- Water Economy.

* - ventures that take 5+ years to get to market and considerable human and financial resources to achieve commercialization.

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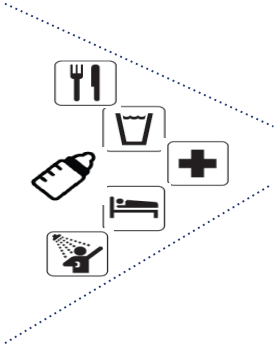
BGI - IUL MIT Portugal is an university based accelerator for new technology-based ventures

Contact network	> IBS, engineering and sciences schools, coaches, startups, associations, large companies.
Prestige	> One of Top 20 European accelerators, having raised over €100 Million
Experience	> 125 startups, 18 bootcamps, 7 acceleration editions and 54 countries
Global standing	> Partnered with MIT and organizing an annual bootcamp in Boston, USA, since 2010.
Venture Kicker	> BGI developed an artificial intelligence platform to study markets, partners, investors and competitors.

BGI Accelerator Model

Developed over a 7 year collaboration with MIT Portugal* in early stage deep innovation commercialization (* - inspired on Deshpande's model).

- 2.500 Entrepreneurs
- 900+ submissions
- 125 selected
- 7 Editions



BUILDING GLOBAL INNOVATORS
IUL MIT PORTUGAL ACCELERATOR

- 727 jobs
- 85 active startups
- 111M€ in financing
- Survival Rate 74%

INPUT:
Tech-based solutions aimed at Enduring global needs

CUSTOMER VALIDATIONS (B2B):

BASF
Galp
Amorim
Nokia
Cisco
GE
BRISA
Odebrecht
Google
...

OUTPUT:
Successful **Ventures** that generate societal & economic value

BGI Goals as a Tech-based Accelerator

1. Maximise chances of success of entrepreneurs: >75%
2. Bridging “talent” and “knowledge” gaps: 200+ mentors
3. “Compress time (& money)” by:
    - Finding beachhead markets (over 111Mio€ raised)
    - More and better data through (eg. VentureKickr)
    - Global networks (MIT, US&Canada, SA, EU, Asia)

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BGI Case study

VENIAM
THE INTERNET OF MOVING THINGS

Veniam Works Inc. (Delaware)

Veniam works (Smart cities), delivers Internet of moving things via mesh-connected vehicles to deliver key managed services for vehicles, fleets industries or cities.
Founded: 2012
Seed: US$0.5 million (BGI SA)
Series A: US$4.9 million (True & USV)
Series B: US$25 million
Team: 70+
Offices: San Francisco, Lisbon.

Investors

true ventures
USV
Verizon Ventures
BGI
E-TEAMS PROGRAM
YAMAHA MOTOR VENTURES AND LABORATORY SILICON VALLEY
CISCO
orange™

BGI Leveraging a Vibrant Pool of Tech Solutions

In the US there is a virtuous cycle of entrepreneurs helping each other and giving back to the institutions that helped them out to start their ventures [e.g. MIT], as a sort of philanthropy which is not developed here [in Portugal]. BGI and the close connections to the MIT entrepreneurial ecosystem were paramount to our success. Today we are a multimillion euro company that would not exist if it was not BGI and our US and Portuguese angel investors. We look forward to giving back one day soon.

ROBERTO UGO Movvo (PT) 1st Ed.

D-Orbit went through many selections and competitions, but BGI is the top in mentorship and acceleration-help.

LUCA ROSSETTINI, D-ORBIT co-founder (IT) 2nd Ed.

It was a lot of information to absorb and we had a lot of feedback on our Go to market strategy which was very positive. A fantastic initiative because it doesn't stop here. Its very seldom that you find experts willing to listen to you and share all the experience that they have in a generous and genuinely devoted way. BGI is very different from the similar cases I know. I am also extremely surprised how friendly the atmosphere is among all of the teams.

JOÃO BARROS, VENIAM (PT) 3th Ed.

Boston is a faster environment than Silicon Valley (SV); Instead of one meeting per day in SV, here you can have 5 per day. 1 week in Kendall Square is like 3 months in SV.

ORLANDO REMÉDIOS, Sensefinity (PT) 4th Ed.

BGI was crucial for us to connect and be accepted to TechStars Boston. Its support and networking keeps leveraging all the value we created since then.

CARLOS BOTO, DoDOC (PT) 5th Ed.

Universities can help cities become smarter

Supporting entrepreneurship and industry linkages

Promoting applied research

Cooperating with city councils and
regional development agencies

Acting as a test bed for innovation and sustainability

Engaging alumni – mentorship, angel investment

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Thanks for your attention!

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