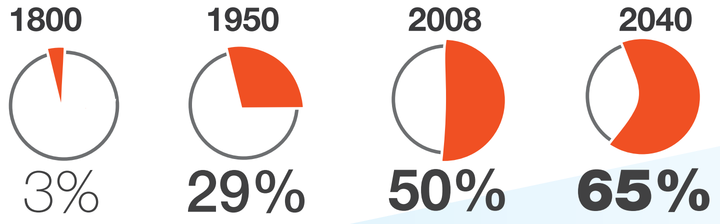
ANATOMY OF A SMART CITY

"The 19th century was a century of empires, 20th century was a century of nation states and the 21st century will be a century of cities."

- Former Denver Mayor W. Webb

THE WORLD IS NOW URBANIZED

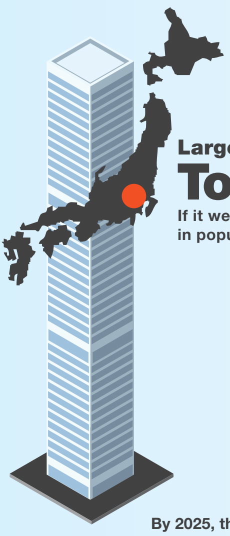
% of population living in cities



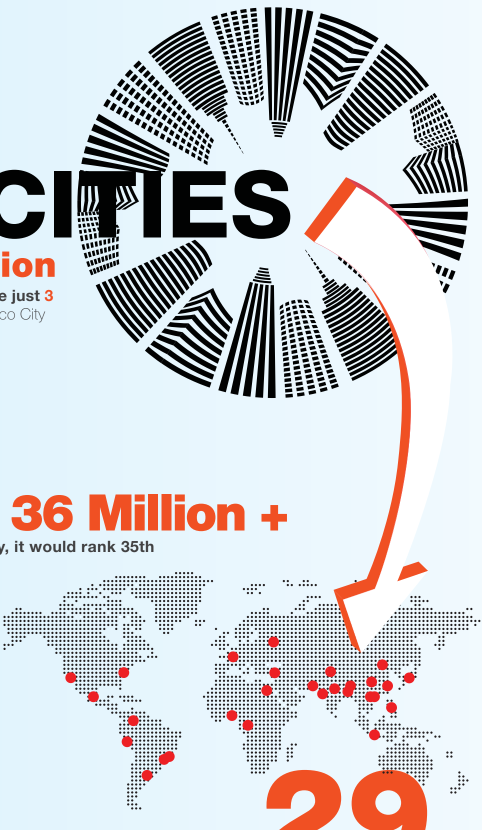
1.3 million
people are currently moving into cities each week

There are **21 MEGACITIES**
With over 10 Million people

Up until 1975 there were just 3
New York, Tokyo and Mexico City



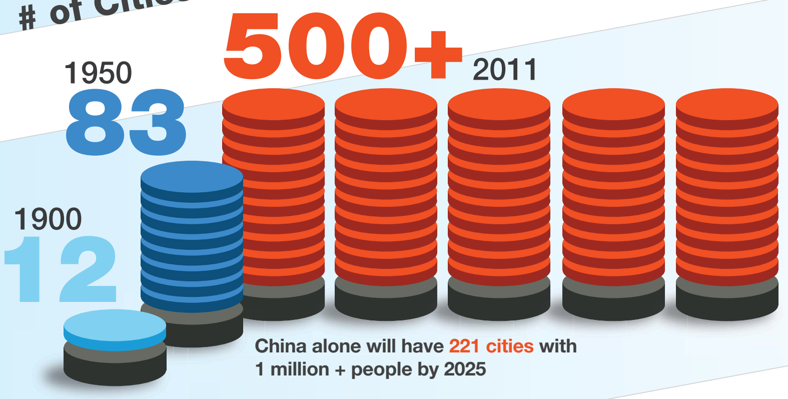
Largest City:
Tokyo 36 Million +
If it were a country, it would rank 35th in population size



29

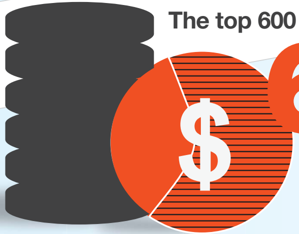
By 2025, the number of megacities is expected to reach 29 with an additional five in Asia (Shenzhen, Chongqing, Guangzhou, Jakarta and Lahore)**, two in Latin America** (Bogotá and Lima)**, and one in Africa** (Kinshasa)

of Cities with more than 1 million People



China alone will have 221 cities with 1 million + people by 2025

ECONOMIC INFLUENCE

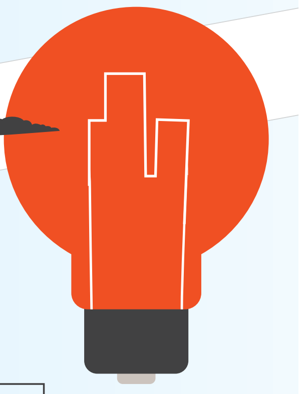


The top 600 urban centers generate **60%** of global GDP

In the developing world, as much as 80% of future economic growth will occur in cities

ENVIRONMENTAL IMPACT

Cities use
60%-80%
of the world's annual energy needs



Lighting alone represents **19%** of the world's total electricity consumption

All OF THE ABOVE

The need for SMARTER CITIES

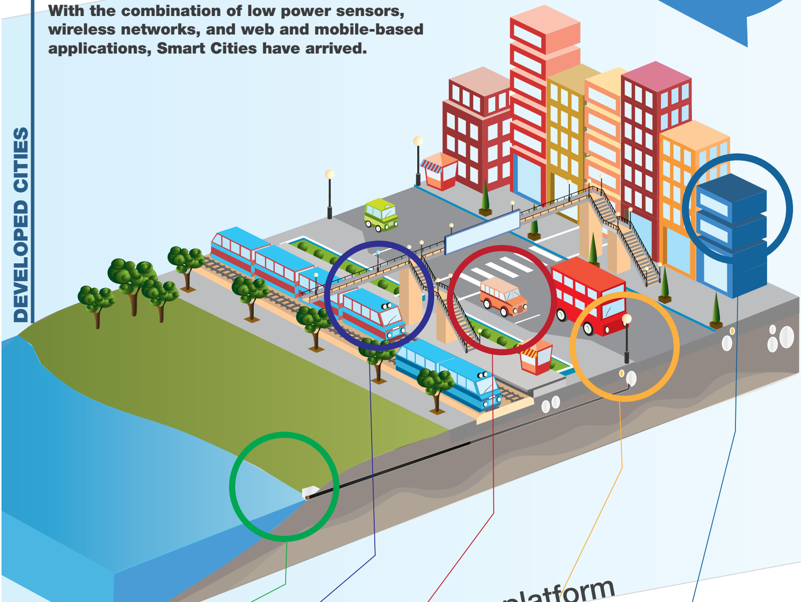
DRIVEN BY:

Sensors + Networks + Engagement

RESULTING IN:

REAL-TIME URBAN INFORMATICS

With the combination of low power sensors, wireless networks, and web and mobile-based applications, Smart Cities have arrived.



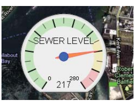
MEASUREMENT: Your city as a platform

ENVIRONMENT

By way of new sensor networks the accurate monitoring of environmental conditions like pollution levels, wildlife counts, and water runoff all become possible.

dontflush.me

The idea behind this project is to use sensors measuring levels in Combined Sewer Overflows and an SMS alert system to enable local residents to reduce their wastewater production before and during an overflow event to avoid polluting their local waterways.



SAFETY

Structural Health Monitoring of buildings, bridges and dams as well as advanced warnings systems in emergency situations can now be put in place.

ガイガーマップJp
Geiger Maps Jp

After receiving incomplete radiation level information from authorities after the Japanese earthquake a group of individuals took it upon themselves to start a project using open source hardware & data to generate crowd-sourced geiger maps and readings across Japan.

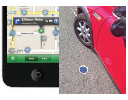
Niigata
Fukushima
Tochigi
Utsunomiya
Maebashi
Saitama
1.410 μSv/h
2.000 μSv/h
328.000 μSv/h
0.440 μSv/h
0.448 μSv/h
0.100 μSv/h
0.110 μSv/h

TRANSPORATION

Through sensors embedded in roadways and street lights, real-time transit and traffic can be managed for the purpose of reducing travel time and fuel inefficiencies.

STREETLINE
CONNECTING THE REAL WORLD

Through Streetline's Parker application, and locally embedded wireless sensors, users can identify real time availability of parking spaces on their phones and city officials can better manage and price their infastructure and resources.



UTILITES

A smart utility grid will empower end users to be more aware of their energy uses, and allow utility companies to deliver only as much energy or water as is required.

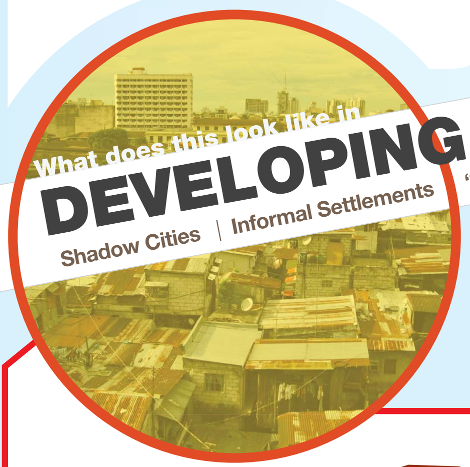
A new system installed by IBM in the country of Malta integrates both water and power systems, and is able to identify water leaks and electricity losses in the grid. 250,000 interactive meters monitor real time usage, set variable rates, and reward customers who consume less energy.

BUILDINGS

Smart Buildings utilize monitoring devices that track usage and empower users and service providers to better control and reduce electricity demands.

nest

The Nest thermostat is enabled with both Zigbee and Wi-Fi chips, so that it can be connected to and managed from your mobile phone or online. The thermostat also can learn from your usage patterns and adapts to your behaviors and preferences over time.



What does this look like in DEVELOPING CITIES?

Shadow Cities | Informal Settlements | "Slums" | Favelas

The majority of world population growth will occur in the urban areas of developing countries, whose population is projected to increase

2.5 billion in 2009
TO
5.2 billion in 2050

1 billion

people call "slums" home today

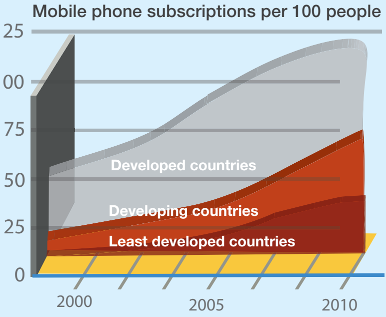
The UN defines a slum as a household that lacks access to one or more of the following:

- **Access to improved water**
- **Access to improved sanitation**
- **Security of tenure**
- **Durability of housing**
- **Sufficient living area**

2x

This number is expected to double to 2 billiion by 2030

One bright spot for the world's poor has been increased access to cell phones and information:



Nokia 1100 - The best selling phone of all time with over 250 million units sold

There are: **5 billion** mobile subscriptions worldwide in 2011

Perspective: In India there are 670 million cell phone subscriptions and only 366 million people have access to private toilets.

Leading to new ways for the urban poor to manage their environment

Mapping
& ACCURATE REPORTS

Ushahidi

The open source Ushahidi platform serves as an initial model for what has been coined as 'activist mapping' - the combination of social activism, citizen journalism and geospatial information sent via mobile.

Rede Jovem 10 anos

The Rede Jovem project used citizen reporters, cell phones, and an open source Wikimap application to map and gain awareness for five slums (home to 150.000 residents) in Rio de Janeiro.

News
& RESOURCES

CGNet swara

CGnet Swara is a citizen journalism channel in Chhattisgarh, India, that allows citizen journalists and interested parties to call a phone number to record or listen to local news content.

BBC জানালা

BBC Janala provides locals access to hundreds of free English language audio lessons. This is used to further educate and open opportunities to improve the country's economic growth.

Finances
& WORK

JANA

Jana (formerly txteagle) mission is to offer global organizations access to emerging market consumers via their phones. Users are compensated with cell phone air time for surveys that are completed via SMS (Air time is increasingly used as a form of currency to purchase real goods).

M-PESA

M-PESA allows Kenyans to make cash withdrawals, deposits, and transfers through their mobile phone and caters specifically to customers that don't have access to traditional banking systems.

OUTLOOK

FINANCIAL

The Smarter cities IT market opportunity is expected to be: $34 **Billion** annually

CIVIC & ENVIRONMENTAL

Cisco estimates that cities that run on information can improve their energy efficiency by **30%** within 20 years.

YOU
+
SERVICES
+
NETWORKS
+
OPEN DATA
+
SENSORS
=

ADAPTIVE SENSEABLE EFFICIENT Cities

Postscapes™
Tracking the Internet of Things

SOURCES:

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World Urbanization Prospects, the 2009 Revision - UN
Effect of Mobiles on Socio-economic Life of Urban Poor - Ankur Sarin Rekha Jain
Preparing for China's urban billion - McKinsey Global
The Challenge of Slums: Global Report on Human Settlements 2003 - UN
The Transition to a Predominantly Urban World and its Underpinnings - David Satterthwaite
Raising the I.Q. of City Services - NYTimes
How Mobile Devices Are Changing the World's Information Ecosystem - Center for International Media Assistancea
Raising the I.Q. of City Services - NYTimes

PROJECT LINKS & IMAGE CREDITS:

DEVELOPED	DEVELOPING
dontflush.me	ushahidi.com
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