

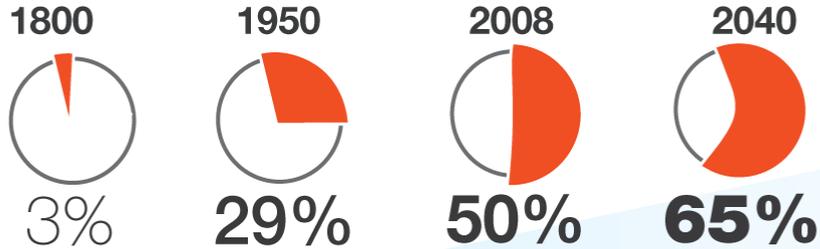
Smart and Sustainable Cities POV

Using analytics to create smart cities

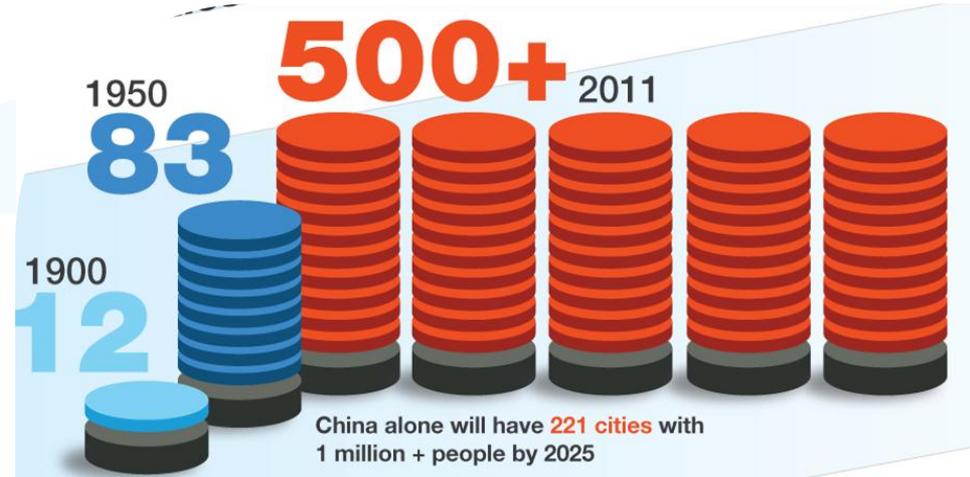


History of Cities...

- % of population living in cities



- # of cities with more than 1 million people



- 21 Megacities with over 10 million people
29 by 2025 – up until 1975 there were 3
- Cities use **60%-80%** of the world's annual energy needs

Rising Urbanization.....

Urbanization is the key to the development of the world' economies; but in developing countries 32% of the urban population live in “slums”.



Shadow cities
Informal Settlements
“Slums”

1 billion

people call “slums” their home today

2X by 2030

CHAOTIC

UNSUSTAINABLE

INEFFICIENT

PLANNING

STRATEGIC THINKING

INNOVATIVE USE OF IT

ORGANISED

SUSTAINABLE

EFFICIENT

Sustainability Macro Trends



What is a Sustainable and Smart City?

SMART CITIES

requires an integrated management of the economic, social and infrastructure aspect of urbanization with the use of advanced networked information

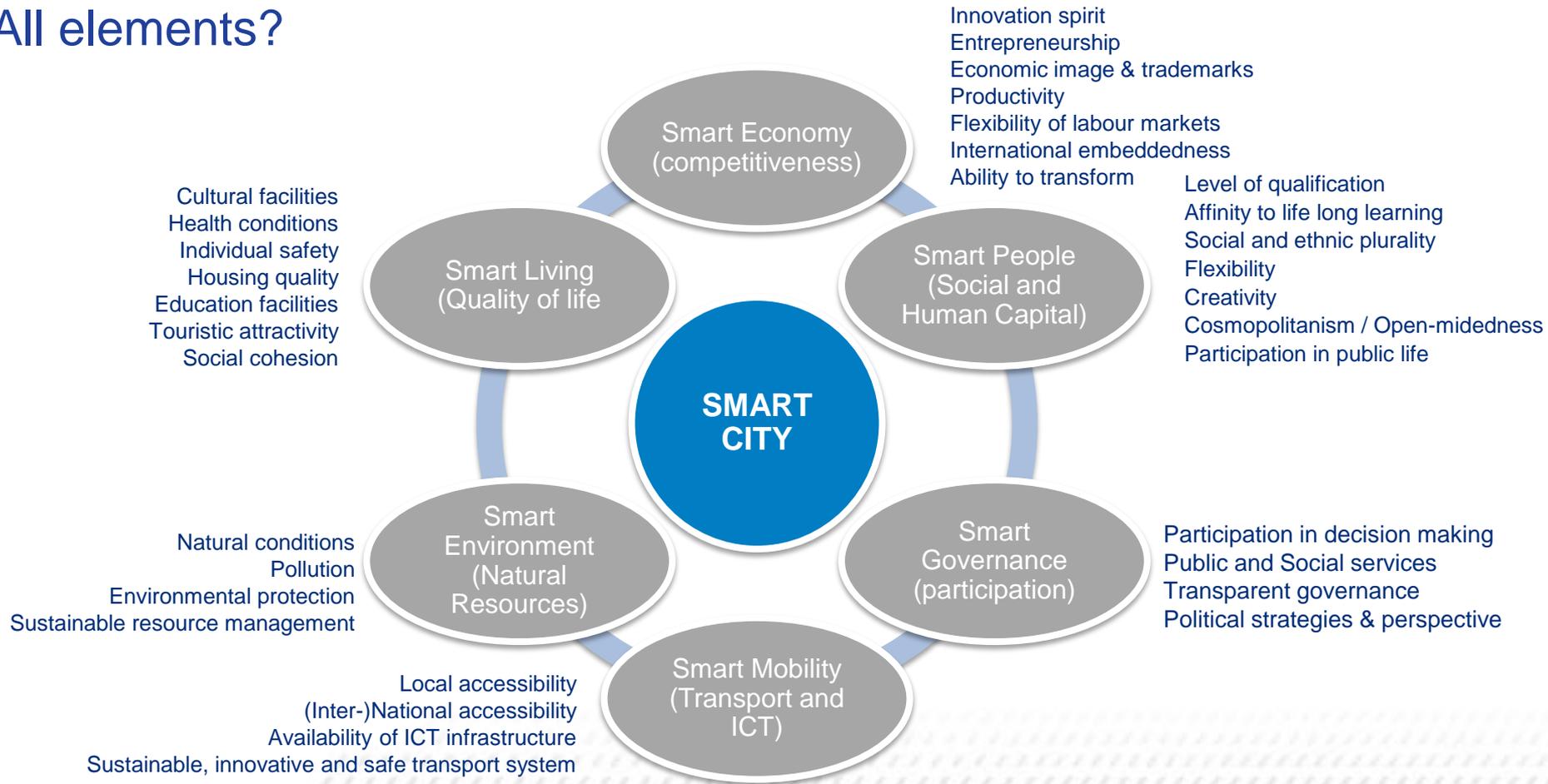


reconcile the challenges of rapid growth with “SMARTNESS”

SUSTAINABLE CITIES

"improving the quality of life in a city, including ecological, cultural, political, institutional, social and economic components without leaving a burden on future generations..."

All elements?

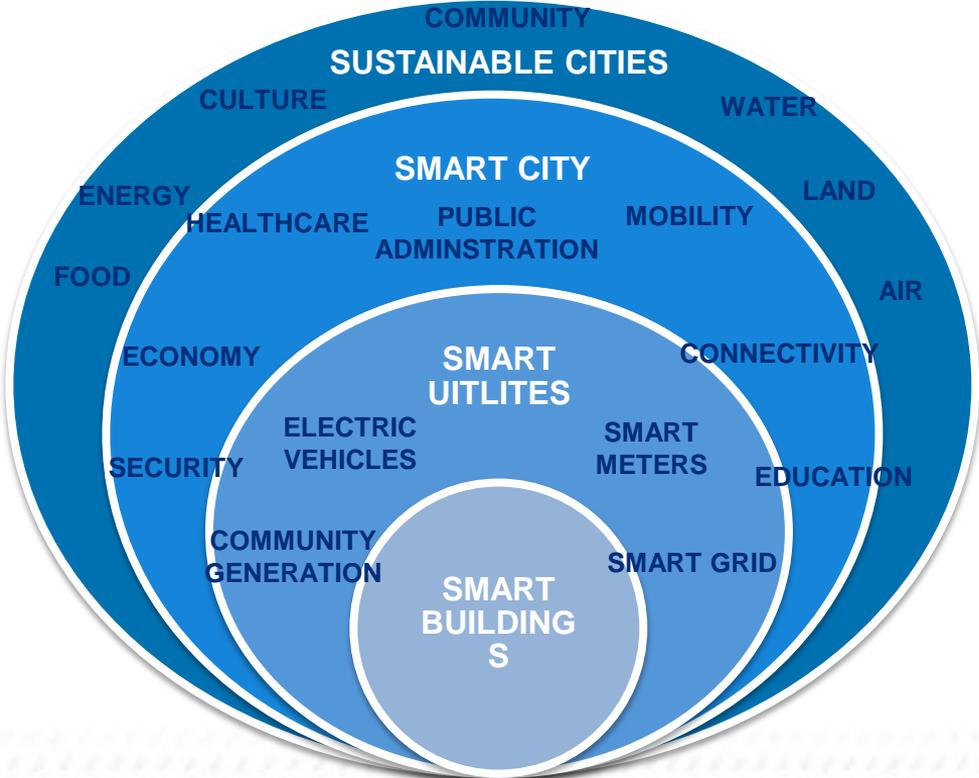


Sustainable and Smart City

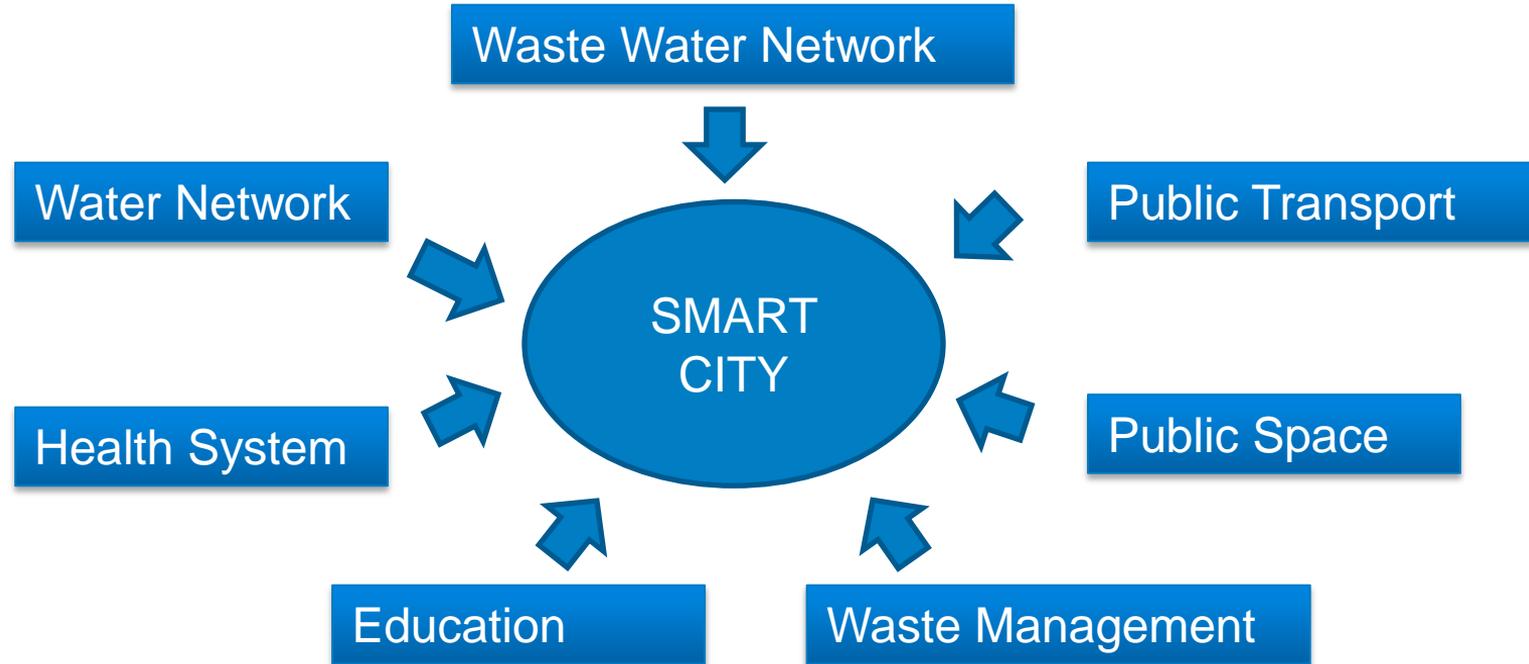
SUSTAINABLE CITIES



(encompasses)



Problem Statement – How to reconcile and manage so many issues?



The challenge that we will all face



Big Issues

+

Big Problems

=

Big Data



Smart City? Yes if we are talking new city.



<http://www.smartcity-planning.co.jp>

New Cities



VS

Old Cities



Is this Smart?

Does installing a smart meter on this old pipe make it smart?



+



= Smart?

Smart Meter

Corroded Old Pipe

Smart should not be a substitute for Efficient

Experts – Lots of them!

- Urban Designers
- Traffic Planners
- Engineers
- Police/Law Enforcement
- Telecommunications
- Politicians?



Smart Cities we can say are all about working together.



London 2012 Olympics Redevelopment

But do we consider it to be a
smart city?

Some Facts

- 98% of construction waste diverted from landfill and reused or recycled instead
- Nearly 2 million tonnes of contaminated soil was cleaned for reuse on the Olympic Park in the UK's largest soil-washing operation
- 63% of materials delivered to the Olympic Park site by weight by rail or water. 4 million tonnes of goods will have been moved by rail by the start of the Games, saving 120,000 tonnes of CO₂ from an equivalent delivery operation by lorry
- 4,000 smooth newts, 100 toads and 300 common lizards relocated off the park, as well as fish including pike and eels. Over 1 hectare of new wildlife habitat was created on Hackney Marsh to accommodate these
- Over 4,000 trees, 74,000 plants, 60,000 bulbs and 240,000 wetland plants will be planted to create a new open green space for London, one of the largest planting projects ever undertaken in the UK
- Park and venues feature 45 hectares of wildlife habitats - including reedbeds, grasslands, woodlands, 525 bird boxes, 150 bat boxes and artificial otter holts
- Olympic Park sports venues will use 56% less drinking water than equivalent buildings - through features such as low flow water fixtures and toilets and the use of reclaimed water
- New energy infrastructure will help achieve 50% reduction in CO₂ emissions from permanent buildings on the site
- The Olympic Village will achieve 44% reduction in carbon emissions and 30% reduction in water use - meeting Government's 'Code for Sustainable Homes Level Four'

Palava City



Lavasa City



Amanora Township



Road Infrastructure



Uninterrupted power



24 x 7 water supply



Piped Gas



Health care



Education

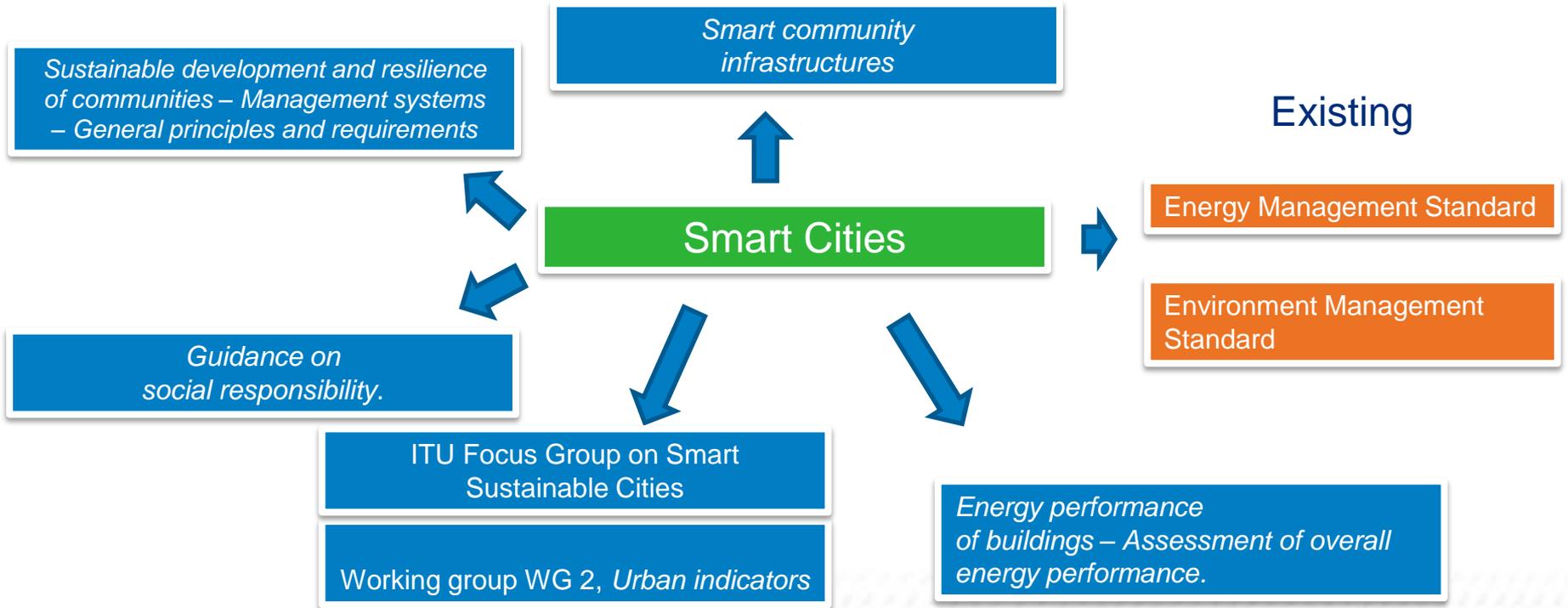


Shopping and fun

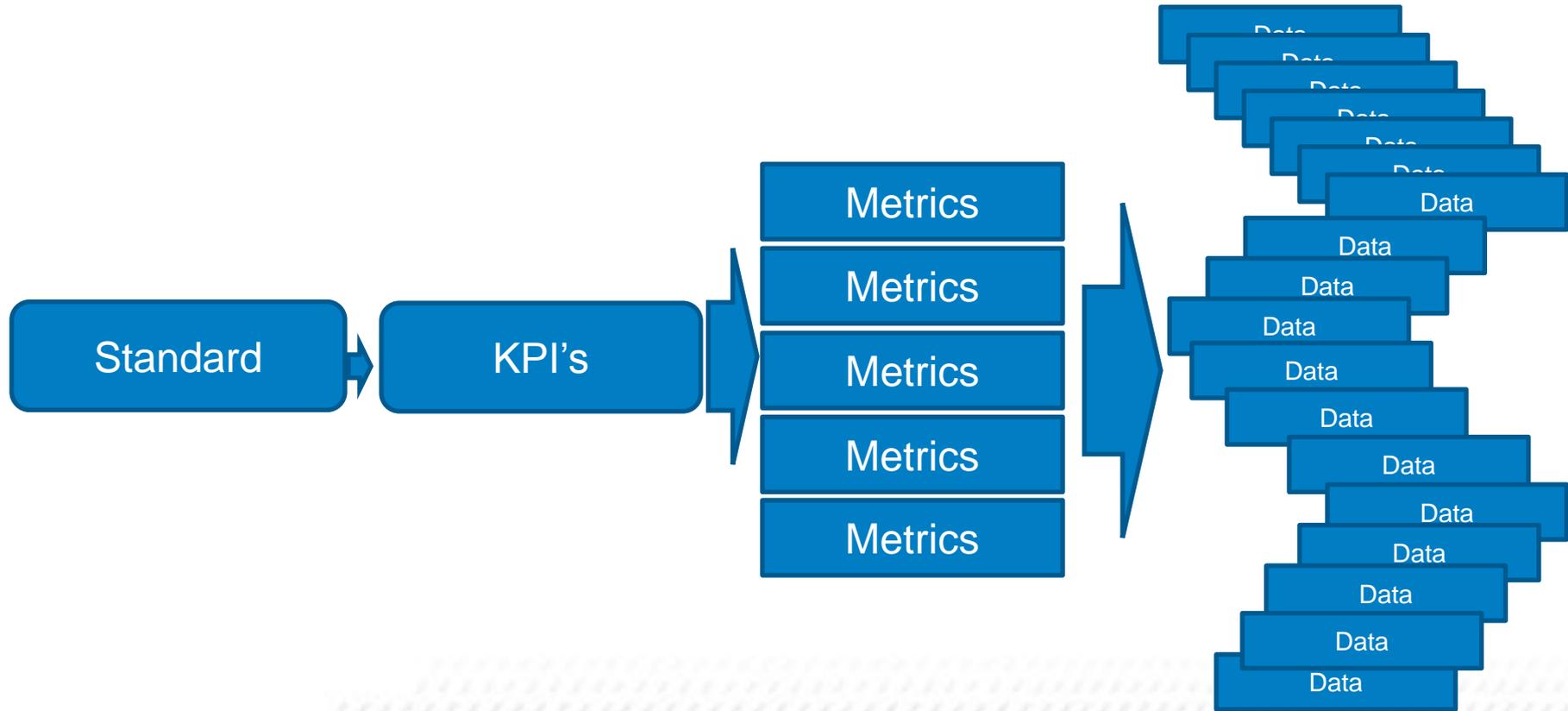


Digital living

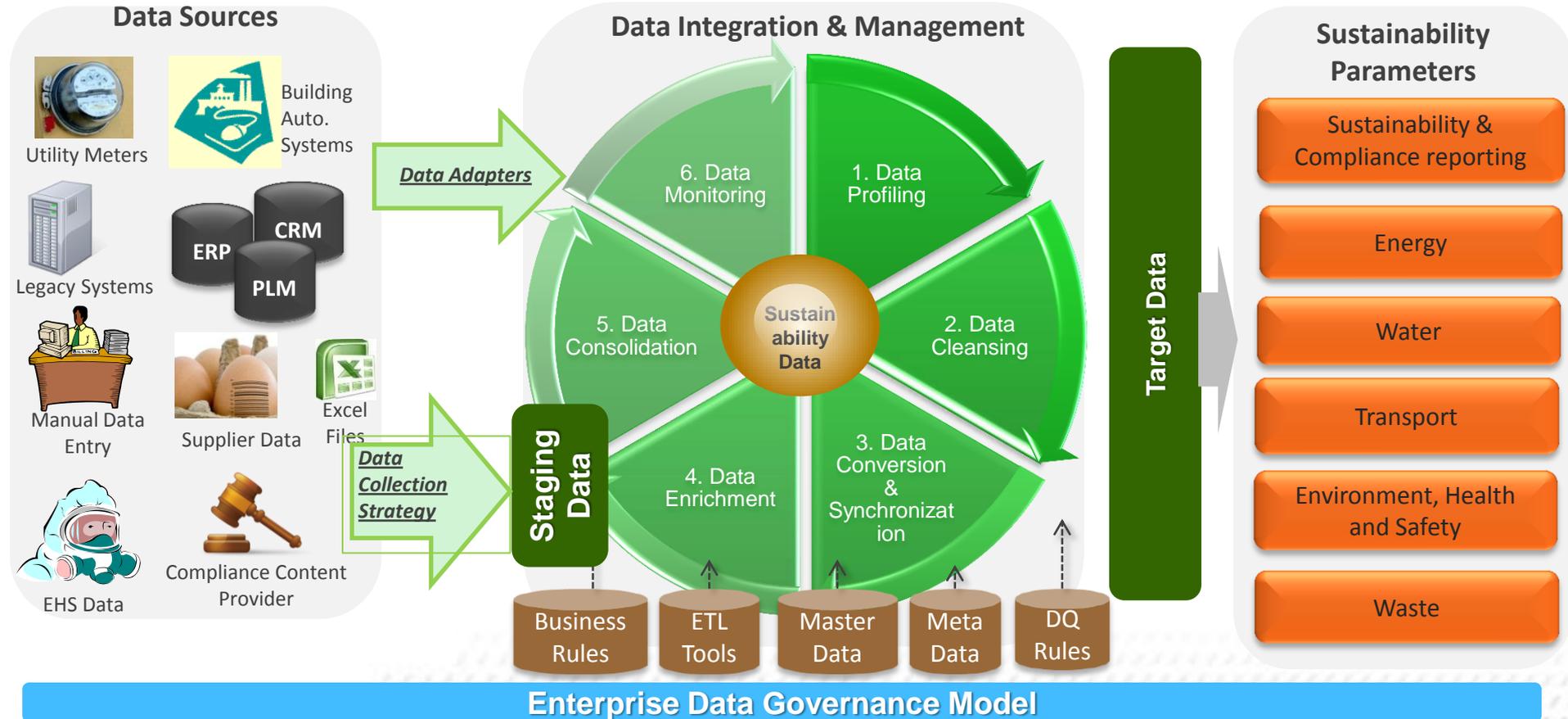
There will be Future Standards to guide us



Standards will require data.



Metric Require Inputs - Sustainability Data Management Systems



Metrics will give you big data - Conceptual Solution to Smart Cities

Governance & Reporting

City Governance

- Policy setting
- Scenario Modelling

Reporting

- Voluntary
- Compliance
- CSR Reports

Analyze & Manage

Reporting Platform

- Reporting Engine
- Master Data Management
- Template Engine
- Workflow Mgmt.
- Content Management
- Dashboards

City Management

- Program & Project Mgmt.
- Monitoring and Targeting
- Procurement & Risk Management
- Asset Management
- Analytics
- Carbon Management
- Transport Management
- Water & Waste Management
- Alert Notifications

Data Aggregation

Middleware/ data aggregation

- ERP
- Asset Management
- EHS
- Social Data
- Compliance
- Supplier Data
- Utilities Data
- BMS, Ambient Sensor, Smart & Sub Meter Data

What in reality would people actually see – Mayor Level



Specialists Views

Overview Data Entry Summary **Electricity** Gas Water Waste Materials Social Economic Staff Web

HOME

Electricity Objective
 Drive all necessary action to measure, monitor and improve efficiency to reduce AIM SA's kWh consumption
 20% reduction of kWh from previous year
 Sub metering has been fitted to the AIM SA CMD in order to manage and optimise the electricity usage (right)

Sub Metering Map

Electricity Usage per Zone

This Year v Last Year

Electricity Usage per Month

Electricity Production Initiatives

Date	Summary	Details	Impact
2011-04-04	Smart meters	Installation of smart meters estimated savings of £2400 / year 80070 / year	↑
2010-07-05	PC management Controls	Program all PCs to switch off controls saved 1100 kWh / year £267 / year	↑
2010-05-03	AC schedules	AC conditioning schedules reviewed and times changed estimate a savings of 3440 kWh / year and £1624 / year	↑
2010-05-03	Foyer controls	40 x 50w LVD with 35w IRC in reception / meeting rooms and tea points saved 1500 kWh / year £375 / year	↑
2010-05-03	Server AC lamp	Temperature in server room changed by 2 degrees estimated savings 1900 kWh / year £467 / year	↑
2010-05-03	Switch off campaign in staff areas	740 kWh / year £179 / year	↑

Waiting for www.savingmorethanmoney.com...

Electricity Department

Water

Overview Data Entry Summary **Electricity** **Water** Gas Waste Materials Social Economic Staff Web

HOME

Water Objective
 Drive all necessary action to measure, monitor and improve efficiency to reduce AIM SA's kl water consumption

This Year v Last Year

Water Usage KPI

Water Saving Initiatives

Date	Summary	Details	Action
2010-12-31	2010 savings / waterless urinals	279 kl = £611	↑
2008-12-31	2008 savings / waterless urinals	271 kl saved = £142.72	↑
2008-12-31	2008 savings / waterless urinals	271 kl saved = £142	↑
2008-04-01	Waterless Urinals	2 Waterless urinals installed in mens bathroom.	↑

Water vs People Through CMD

Cost Vs Usage

Water Per Person

Waiting for www.savingmorethanmoney.com...



THANK YOU

www.infosys.com

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