Smart cities – case of Hungary

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Content

1. **The Urban Cycle**
2. **Europe: Towards the Information Society**
3. **Smart City Research in Europe**
4. **Smart City Initiatives in Hungary**
5. **Smart City Concept and Urban Planning**

The items of urban life cycle

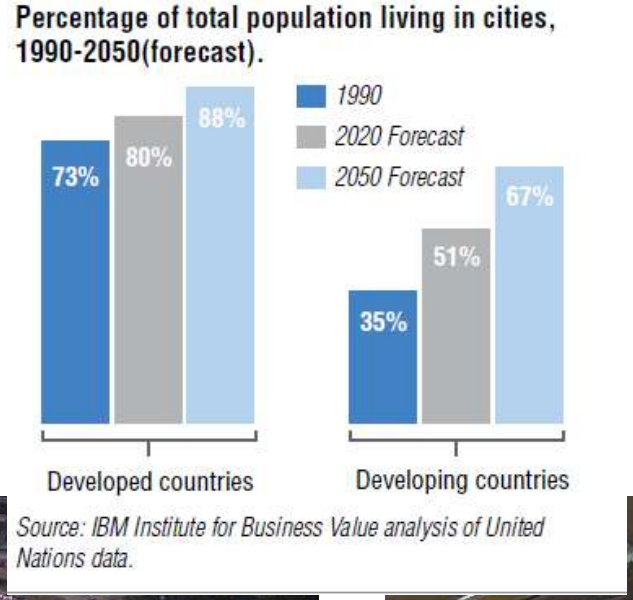
Dutch school (Klaassen at al. 1981)

- urbanization
- suburbanization
- des-urbanization
- re-urbanization

Enyedi (1988)

- explosion of city network (urbanization)
- suburbanization (relative de-concentration)
- des-urbanization
- information society

Increasing number and rate of city dwellers



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Europe: towards the information society

December 1993:

„ Growth, competitiveness and employmnet: The challanges and ways forward into the 21st century" (EC White Paper)

- infastucture development of informatics related to the economy

June 1994

Bangemann report: „Europe and the Global Information Society – Recommendation to the European Council" (10 applications)

- teleworking, distance learning
- a network for cross universities and research centres
- road traffic management, air traffic control
- healthcare networks
- electonic tendering
- trans-european public administration network
- city information highway

Information society strategies

Term of the turn of the milleneum

Levels

- national
- sub-national/regional
- local

Success countries

- Scandinavian countries
- The United Kingdom

Smart Planet – IBM 2008

Instrumentation:

Instrumentation, or digitization, of a city's system means that the workings of that system are turned into data points and the system is made measurable. By 2010 there is likely to be 1 billion transistors, the building block of the digital age, for every human being.

Interconnected:

means that different parts of a core system can be joined and "speak" to each other, turning data into information.

Intelligence:

refers to the ability to use the information created, model patterns of behavior, or likely outcomes and translate them into real knowledge, allowing informed actions.

Source: Pongrácz (2013)

'Intelligent' vs 'Smart' cities

Intelligent cities

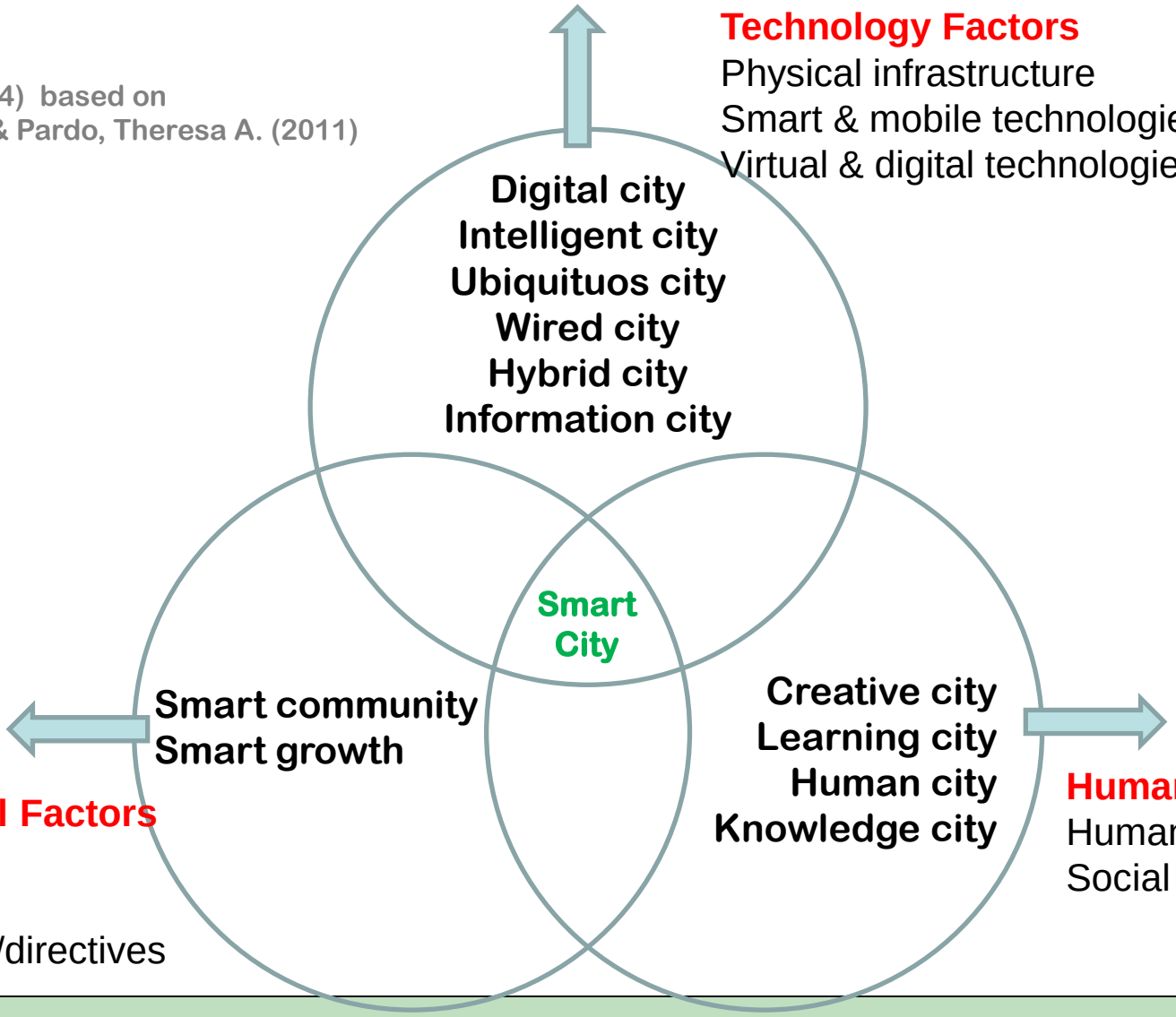
- Applications of ICT in the communication between city management and local residence
  - ensure to give and get information
  - e-administration

Smart cities

- ICT as city management tool
  EFFICIENCY, COST-EFFECTIVENESS, RELIABILITY and
  TRANSPARENCY & COMMUNICATION

What is a Smart City? Conceptualizing Smart City

Source:
Giffiinger (2014) based on
Nam, Taewoo & Pardo, Theresa A. (2011)



Technology Factors
Physical infrastructure
Smart & mobile technologies
Virtual & digital technologies

Institutional Factors
Governance
Policy
Regulations/directives

Human Factors
Human infrastructure
Social capital

Smart City research in Europe

2007: TU Wien, TU Delft, Univ. Ljubljana

www.smart-cities.eu

- 70 European medium size cities
(over 100,000 and under 500,000 inhabitants)

- 74 Eurostat based indicators (6 themes)

Comparison of studies on smart cities

	European smart city research (R. Giffinger, 2007)	IBM Smarter City Assessment	Hungarian Smarter City Assessment (2011)
Type of examined settlements	European cities with universities	Cities from all over the world	Hungarian cities
Size of examined settlements	medium size (100000 – 500000 inhabitants)	large and medium size cities	small and medium size cities
Used indicators	74 indicators mostly Eurostat based	more than 200 indicators, weighting based on specific city priorities, so can be different in cities, indicators from IBM Global Location Strategies	80 indicators from National Statistical Office, GKIenet and from own databases, same weighting in each city
Level of indicators	35 local indicators, 39 regional and national indicators	local level indicators	local level indicators
Type of examination	ranking	scoring	scoring and principal component analysis
Other sources	-	Global Location Strategies' extensive **experience** in the selected cities, particularly for intangible factors	document analysis, consultation and face to face meetings

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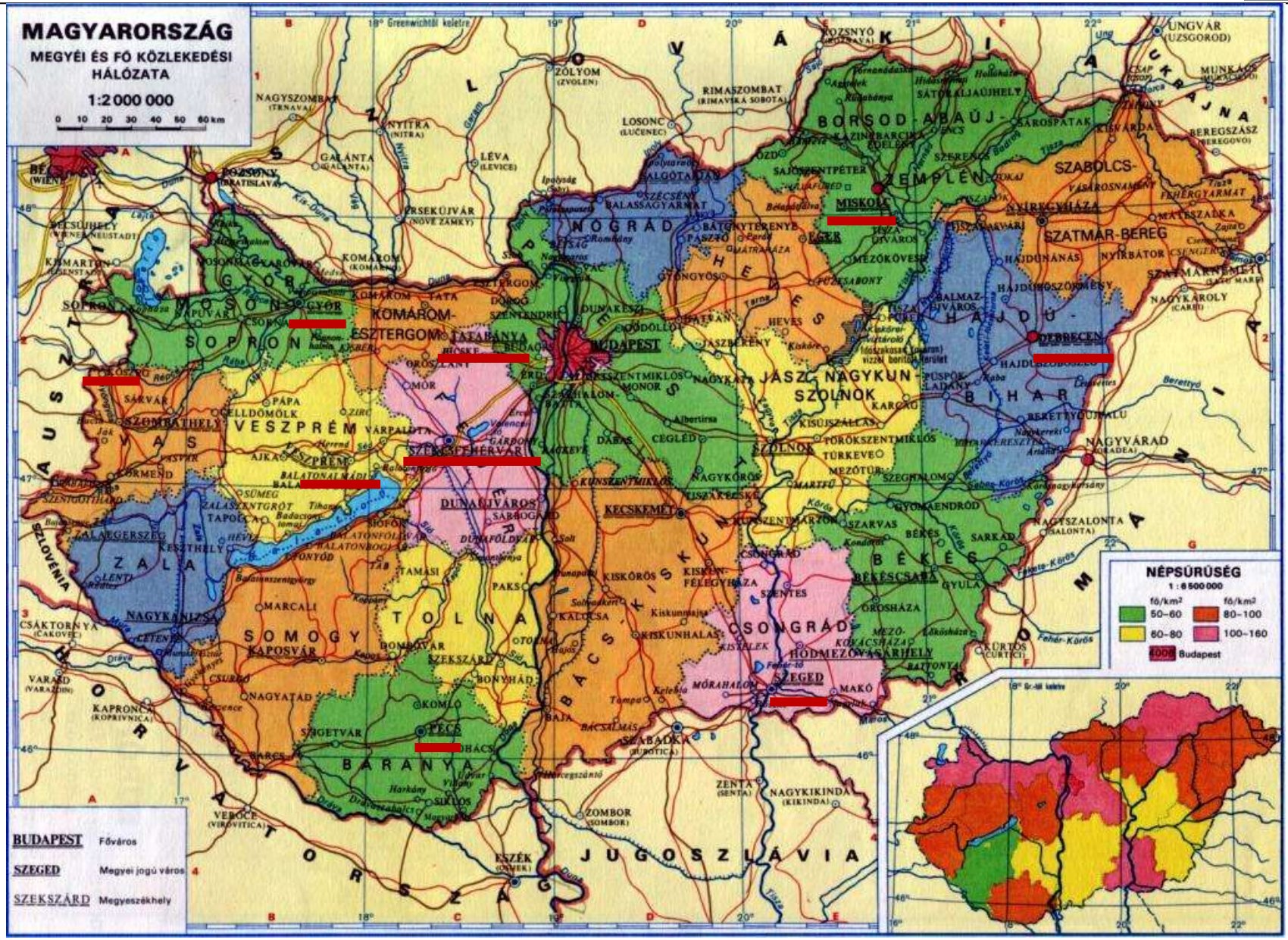
Smarter city assessment in Hungary – Research objectives

- Starting from the definition of smart cities, reviewing the competitiveness of ***nine Hungarian cities***: Debrecen, Szeged, Győr, Pécs, Miskolc, Veszprém, Székesfehérvár, Tatabánya, Kőszeg.
- Elaboration of the ***methodology of evaluation*****.**
- Elaboration of ***development objectives*** based on the conducted situation analysis.
- formulation of strategic and project proposals taking into account the strategic objectives and vision.
- ***Resource possibilities***.
- ***Visualization of results.***


MAGYARORSZÁG
MEGYÉI ÉS FŐ KÖZLEKEDÉSI HÁLÓZATA
1:2 000 000
0 10 20 30 40 50 60 km
BUDAPEST Főváros
SZEGED Megyei jogú város
SZEKSZÁRD Megyeszékhely
NÉPSŰRŰSÉG
1 : 6 500 000
fő/km² 50–60
fő/km² 60–80
fő/km² 80–100
fő/km² 100–160
4000 Budapest

Methodology of city assessments 1

- Building on the methodology of ***IBM Smarter City Assessment*.**
- Using the experiences and results of ***national and international city assessment*** surveys.
- The main objective of our analysis was the ***presentation of smartness of cities*** in some chosen dimensions.
- Intention: using only the necessary amount of subjective items essential to present the smartness and operation of the cities, not loosing the ***objectivity*** of hard indicators.

Methodology of city assessments 2

- ***Using almost 80 indicators*** from the databases of Central Statistical Office, GKIenet, Hungarian Academy of Sciences; ***analysis of documents*** (strategies, development programs, visions) and ***face to face meetings.***
- ***Scoring:*** measuring the city performance for each of the smarter city system.
- ***Statistical weighting:*** largest weight for people system and business system.

↓

Based on the situation analysis the main development directions can be elaborated built on the vision and strategic ideas of cities. Identifies challenges that cities face and where improvements can be made.

Subsystems

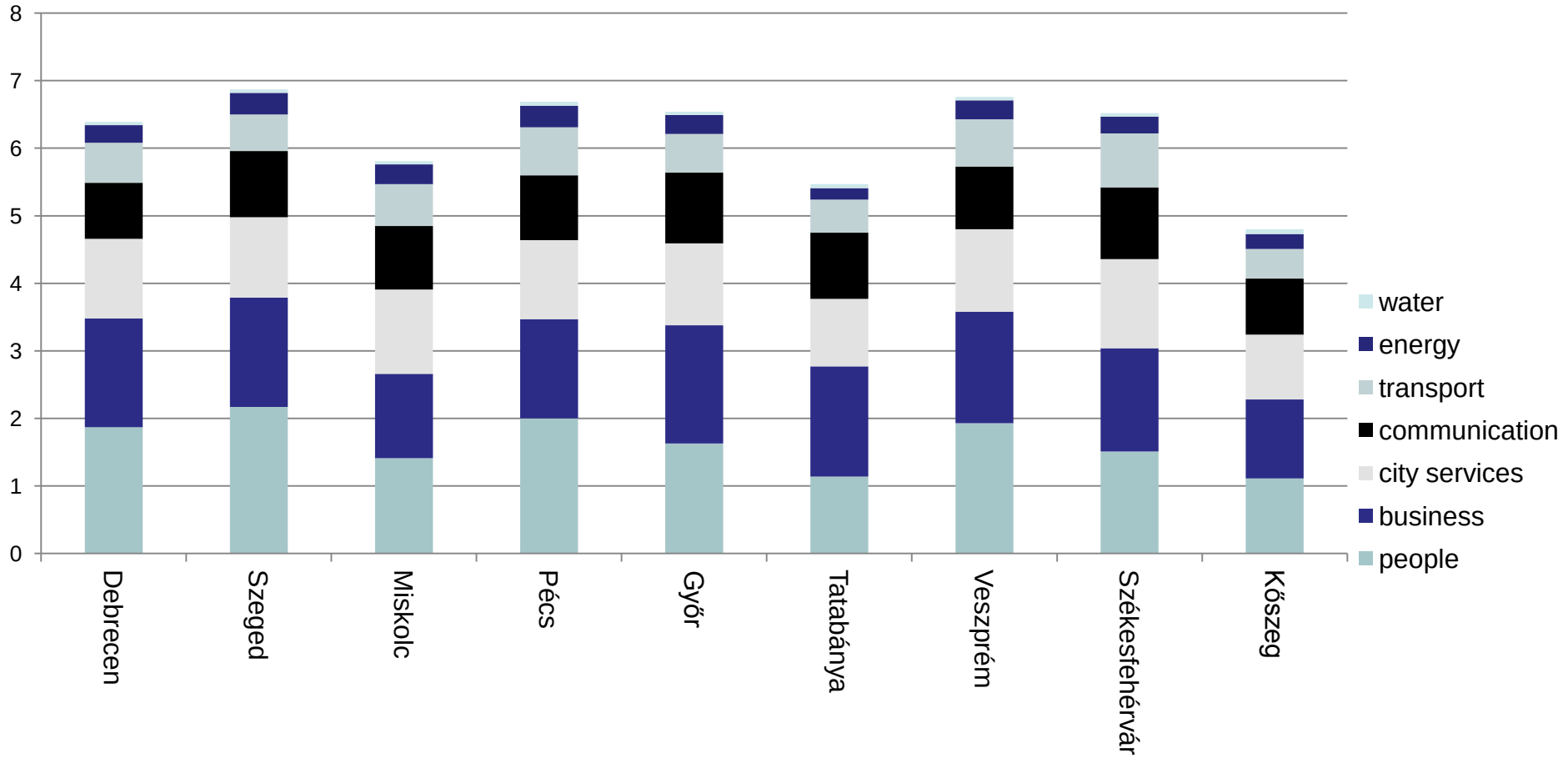
Within each system we examined four subsystems:

- Prerequisites
- Management (surveyed separately, not using scoring)
- Smarter Systems
- Outcomes

Framework of city assessments

	Prerequisites	Management	Smarter Systems	Outcomes
City services	Local government expenditure Local government staff	Coordinated service delivery	E-government Application and use of ICT for service delivery and management	Efficiency and effectiveness of public service delivery
People	Investment in education, health, housing, public safety and social services	Strategic planning and management for skills and health	Application and use of ICT for education and health	Education, health, housing, public safety and social outcomes
Business	Access to finance, administrative burden, barriers to trade, business real estate	Strategic planning and management for business (economic development strategy)	ICT use by firms E-business	Value added, business creation, innovation, job creation
Communication	Investment in communication infrastructure	Integrated strategic planning for communication system Coordinated regulation of communication system	High-speed broadband, Wi-fi	Communication system quality and accessibility
Transport	Investment in transport infrastructure and public transport. Quality of basic infrastructure.	Integrated strategic planning and performance management for transport	Use of RFID for traffic management. Use of congestion pricing (and type).	Congestion levels; Accessibility within and to city; Energy intensity of transport system, CO2 emissions from transport
Water	Investment in water infrastructure; Investment in flood defences	Integrated strategic planning and performance management for water	Use of smart technologies for water management	Water use; Water waste/loss;
Energy	Investment in energy infrastructure	Integrated strategic planning and performance management of energy system	Presence of smart grids; use of smart metering	Energy waste/loss; Reliability of energy supply; Renewable energy; CO2 emissions

Results of city assessments 1



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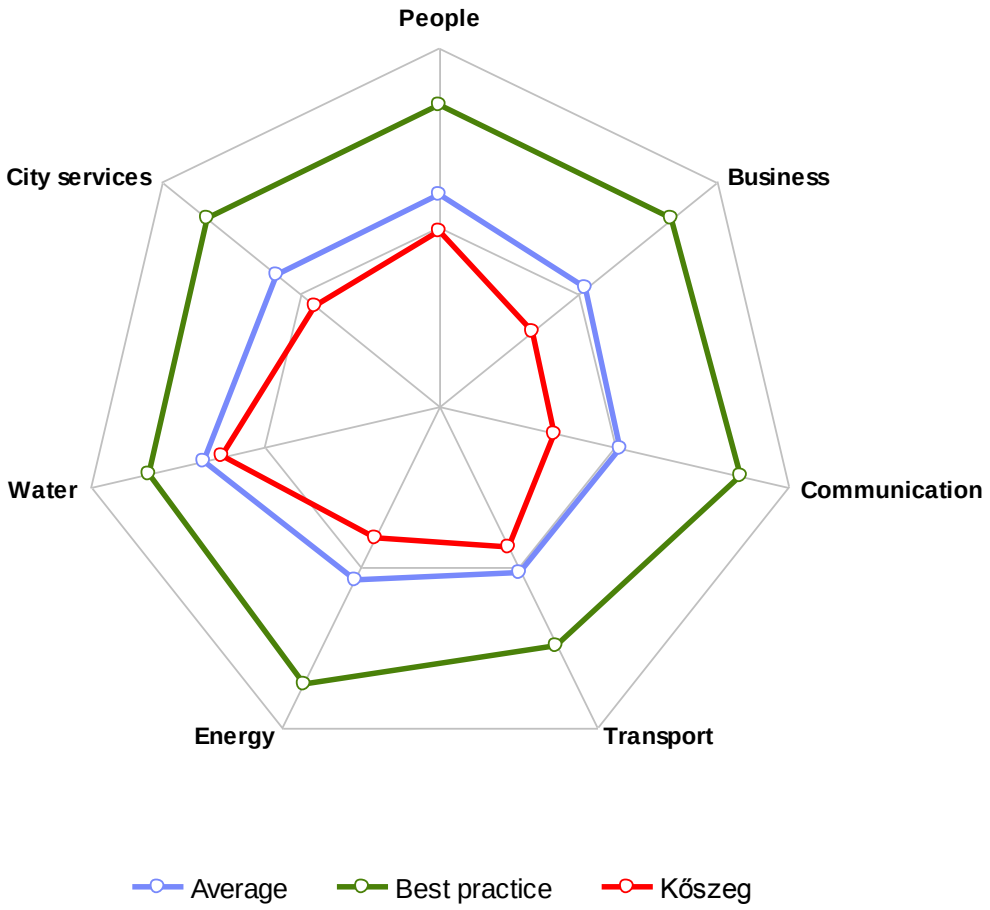
Result of city assessments 2



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Project ideas

- **Preparing missing strategies:**
  eg. developstrategy of local economy, transport, energy
- **Development of telecommunication infrstructure:**
  optic cabels, szélessávú internet and wi-fi
- **Inteligent public service management**
- **Inteligent transport (optimatization oflocal public transport).**
- **Intellgens tourism (new ICT applications in city marketing and info services).**
- **Inteligent municipal administration (e-government).**

Smart city initiatives in Hungary

From intelligent Győr towards smart Győr

2001: Strategic and operative programme of intelligent Győr – one of the first city information strategies in Hungary.

2008: Integrated Development Plan of Győr – one of the measures: implementation of the former Intelligent Győr programme

2011: intelligent buses and passenger information system

2013: smart city of Győr: contract with E.ON Hungaria (smart grid and metering, energy efficency)

Preparing the future

Integrated City Development Plans in Hungary

- vision & concept until 2030
  and
  program for the 2014-2020 EU Structural Fund Period
- central government initiative
- centrally regulated: joint outline (content and partnership)
- mandatory for medium size cities (centrally financed)
- mandated financial resources for large cities and urban neighborhoods

CHANCE TO PLAN SMART CITY

Thank you for your attention!

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