

# SIBIU

## PREPARED FOR IMPLEMENTING SMART CITY CONCEPT

DANUBE ECONOMIC FORUM, October 2016, Austria

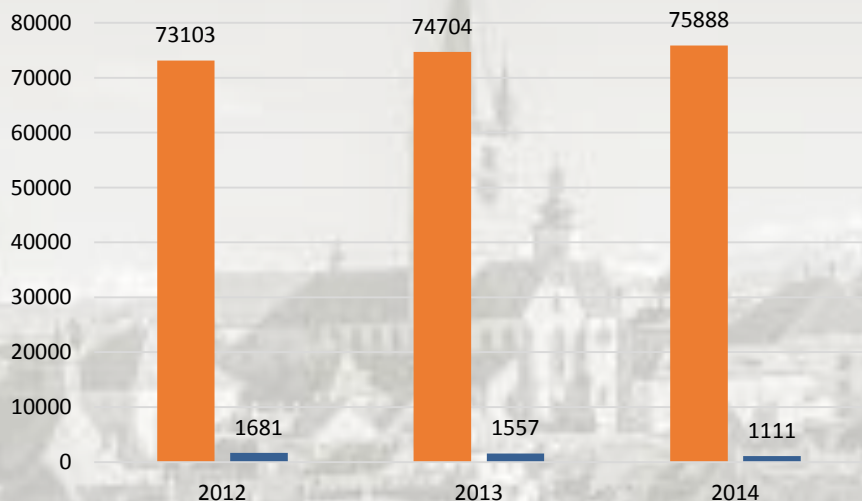
# CURRENT BACKGROUND – ECONOMIC DEVELOPMENT



Sibiu city a positive trend in the Central Region of Romania

## AT CITY LEVEL

Employees vs. unemployed people



## AT COUNTY LEVEL

Key figures 2014, a consolidation year

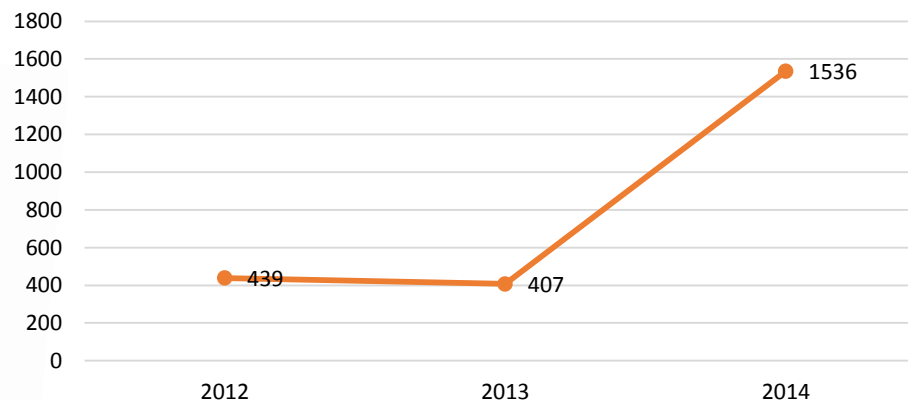
- ✓ unemployment rate 4.6%
- ✓ turnover increased with 7%
- ✓ 3 industrial parks and 2 industrial areas
- ✓ 2585 registered companies with foreign or mixed capital from the Netherlands, Germany, Austria, Sweden, France, Luxembourg, Italy, etc.
- ✓ modern local transport infrastructure, a central geographical position in Romania - the main routes' hub between the Black Sea and Western Europe
- ✓ Sibiu International Airport, expanded and upgraded, connect the city with major destinations as Germany, Italy, Austria, Spain etc.

Source: Romanian National Institute of Statistics; Chamber of Commerce, Industry and Agriculture of Sibiu county

# CURRENT BACKGROUND – RDI

## Sibiu city on the growth in the field of research and development

Employees in research and development at the end of the year



Source: Romanian National Institute of Statistics



# CURRENT BACKGROUND – EDUCATION



Sibiu city, following closely Timisoara and Brasov, is an example to follow in **DUAL vocational education system**

- Technical College “INDEPENDENTA” in partnership with Sibiu County - Regional Education Inspectorate, Sibiu Mayorality, private Romanian local companies and the German Economic Club Transilvania (Deutschen Wirtschaftsclubs Siebenbürgen-DWS)
- Technological College “HENRI COANDA” in partnership with COMPA S.A.
- Technological College for Architecture and Constructions “CAROL I” in partnership with CON-A S.A.

## Education system in Sibiu, 2014

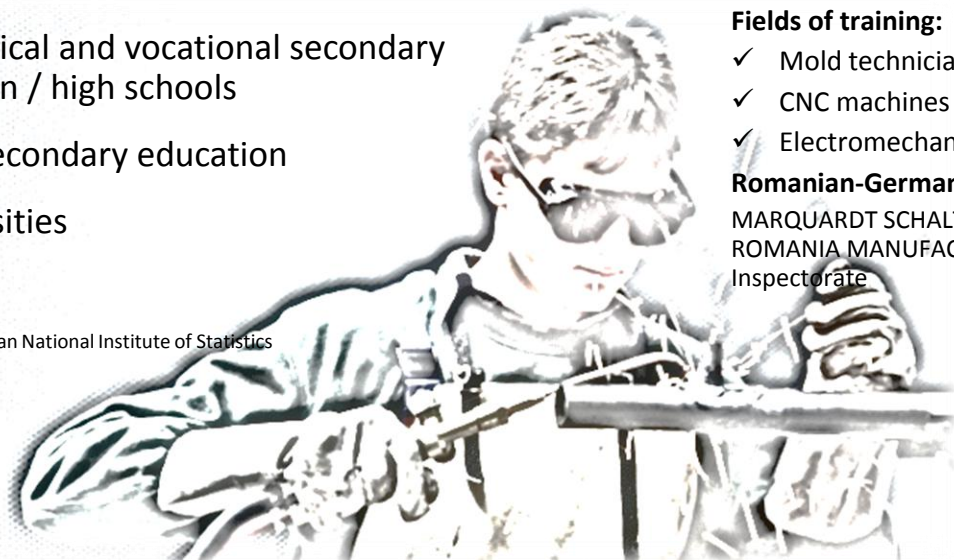
**17** elementary and gymnasium / primary schools

**17** technical and vocational secondary education / high schools

**4** post-secondary education

**4** universities

Source: Romanian National Institute of Statistics



## Dual vocational education system at INDEPENDENTA

**Starting date:** 2014

**Duration:** 3 years

**Number of prentices:** 139 students

**Fields of training:**

- ✓ Mold technician
- ✓ CNC machines operator
- ✓ Electromechanical systems and industrial machinery

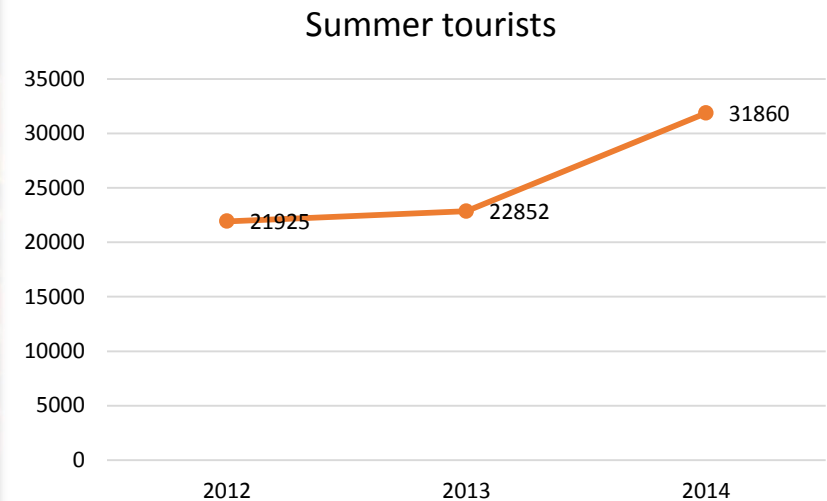
**Romanian-German Association for Dua vocational education system:**

MARQUARDT SCHALTSYSTEME S.C.S., WITTENSTEIN SRL, BRAND-L S.R.L., HARTING ROMANIA MANUFACTURING S.C.S., Sibiu Mayorality, Sibiu County - Regional Education Inspectorate



# CURRENT BACKGROUND – TOURISM

Sibiu city a major attraction for Transylvania, in terms of historical heritage, local traditions, vivacity and enthusiasm of the contemporary cultural life



Source: Romanian National Institute of Statistics; <http://www.turism.sibiu.ro/>

# SIGNATORY MEMBER



Up to 150 TH inhabitants

about 342,000 MWh of the energy  
consumed + 87,000 tons of CO<sub>2</sub> cut

**21%**

CO<sub>2</sub> emissions reduction target to be  
reached by Sibiu Municipality

2012



2020

# KEY FIELDS OF ACTION

## SIBIU Sustainable Energy Action Plan

- **Buildings, Equipment/Facilities**
  - Municipal, residential and tertiary buildings
  - Municipal Public Lighting
  - Water supply and Sewerage system
- **Transport**
  - Municipal fleet
  - Public transport
  - Private and commercial transport
- **Local Cogeneration** (power and heat generation plant)  
*while preserving its historical and cultural heritage*



# PILOT PROJECT Sibiu Smart District HIPODROM “SSDH”





# SSDH – Romanian Partners companies involved



NRGSG Technik

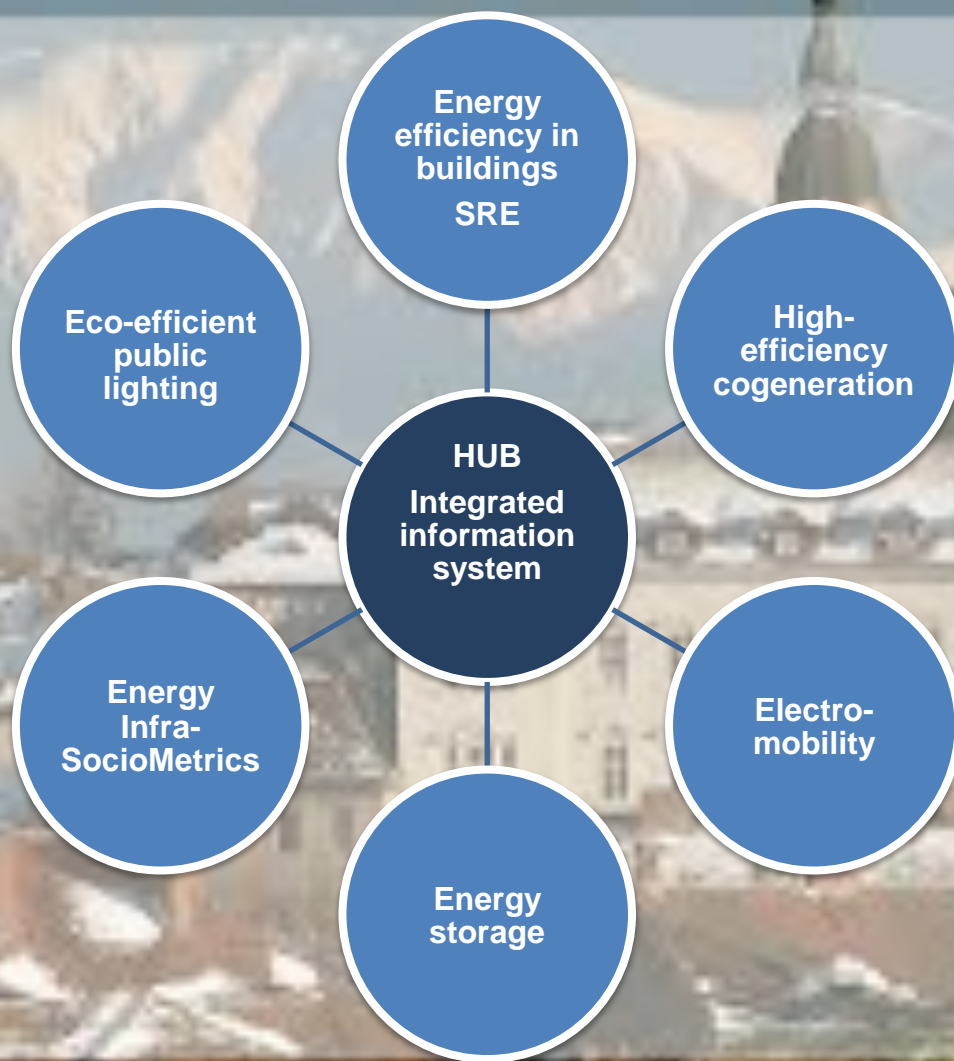
SIEMENS



GDF SUEZ

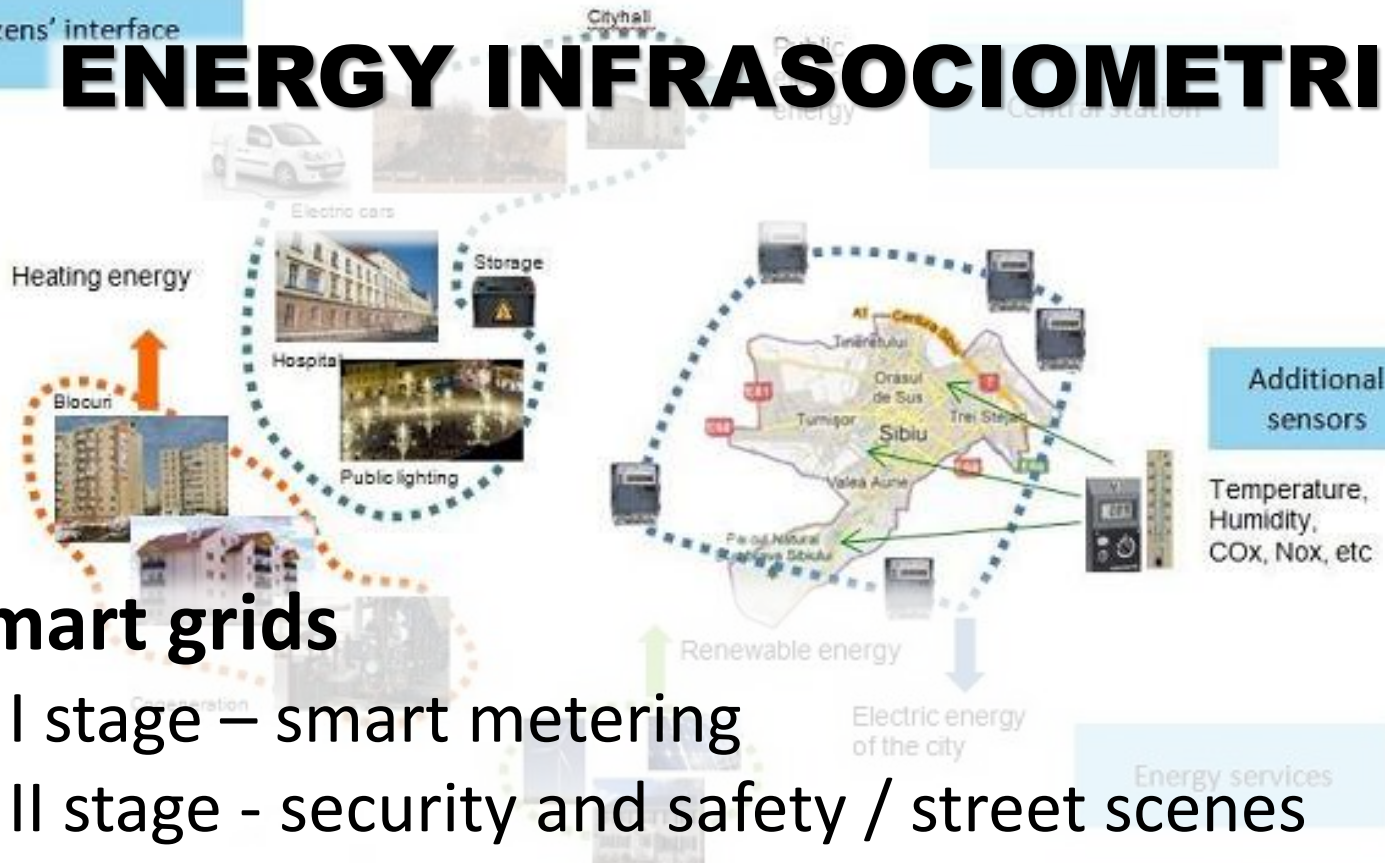


# SSDH CONCEPT



Citizens' interface

# ENERGY INFRASOCIOMETRICS



## Smart grids

- ✓ I stage – smart metering
- ✓ II stage - security and safety / street scenes monitoring

- a demand-response system that enables management and control and takes demand based automatic decisions in energy efficient neighbourhoods
- a network of smart meters able to measure electricity consumption, production of renewable energy, other public utilities and environmental factors



# LOW CO<sub>2</sub> DISTRICT



TRACTEBEL Engineering  
GDF SUEZ

GROUP

 **EnergoBit**

**SIEMENS**

 **IEPE**

 **electrica**  
S.A.  
sursa ta de energie



- ✓ Higher buildings energy performance – municipal buildings
- ✓ Enhanced use of RES - PV
- ✓ Eco-efficient lighting
- ✓ Energy storage



# HIGH EFFICIENT COGENERATION

TRACTEBEL Engineering  
GDF SUEZ



- **upgrading the existing cogeneration plant** supplying heat and hot water for all public buildings, as well as for the 800 apartments already connected to DH system
- mitigating the natural gas consumption and consequently the heat bill

# e-MOBILITY



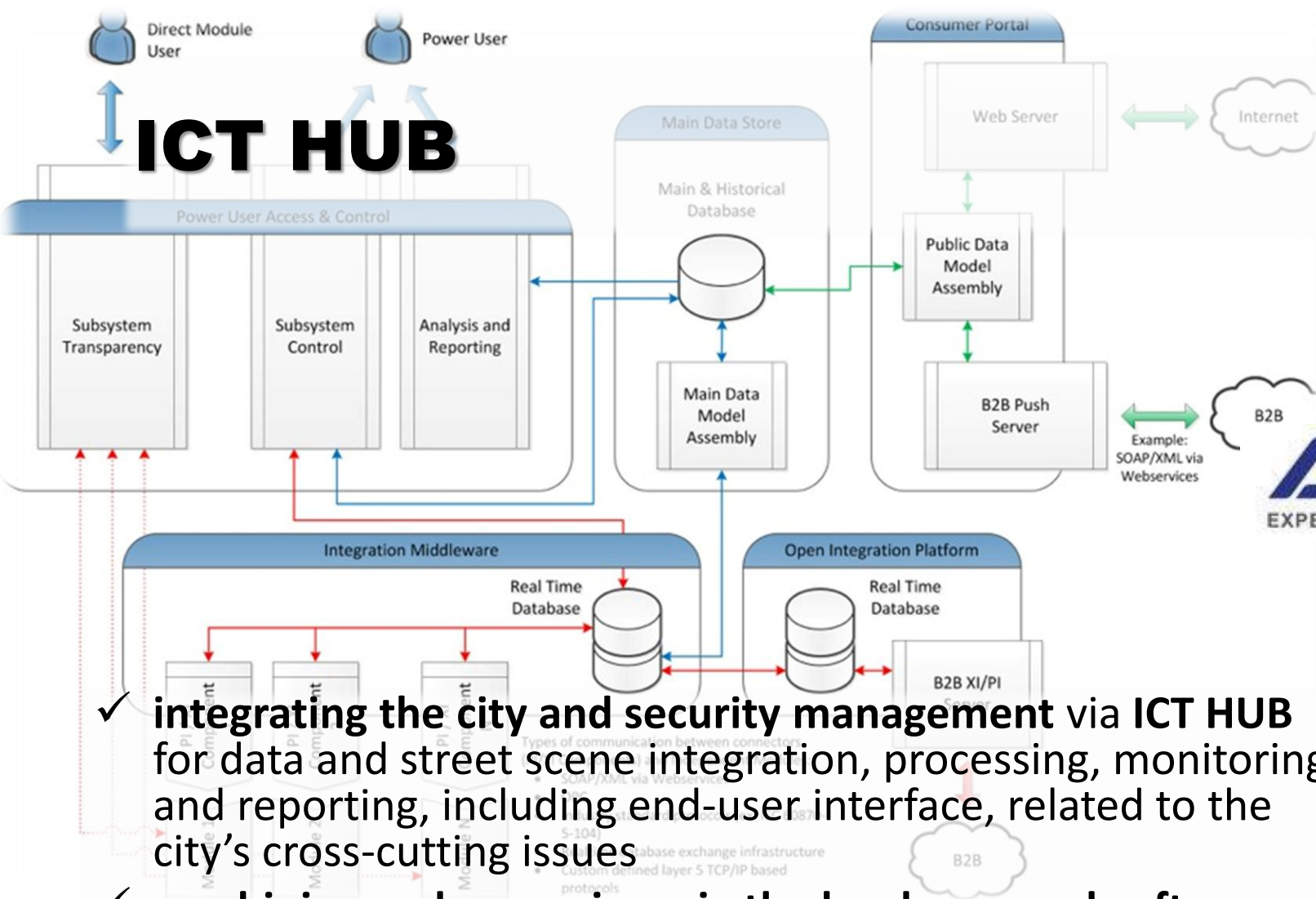
NRGSG Technik

 **electrica**  
S.A.  
sursa ta de energie

## Greening the mobility via e-mobility and intelligent & secure traffic management

- E-bike sharing points, with charging stations connected to lighting poles
- Electro mobility sharing through various capacities and types of electro-vehicles for public institutions (e.g. police, education, health centres etc.)





- ✓ **integrating the city and security management via ICT HUB** for data and street scene integration, processing, monitoring and reporting, including end-user interface, related to the city's cross-cutting issues
- ✓ **combining and managing, via the hardware and software platform, of a multiple data sources from all SSDH modules,** thus putting the basis for operational and decision making improvements, and enabling intelligent economic development

# IMPLEMENTATION EXPECTED RESULTS

## Sustainable development benefits:

1. **Environment** (reducing CO<sub>2</sub> emissions; increasing resources use efficiency)
2. **Economy** (increasing energy savings and cost-effectiveness; new business models development and procurements of innovative solutions; recommendation for improving existing regulatory frameworks; highly **replicating & up-scaling potential**)
3. **Social** (increasing citizens' quality of life, security and safety; citizen empowerment & engagement; jobs creation)



# **SSDH FINANCIAL EFFORT**

## **about 20 mil.EUR**

### **Targeted financial resources**

- **ESIF / Regional and Large Infrastructure OP**
- **HORIZON 2020**
- **Territorial Cooperation – Danube Transnational Program**
- **Bilateral programs e.g. USTDA / Swiss-RO cooperation**
- **Local budget**

Synchronized financial scheme in order to better manage the investments development within the key fields of action

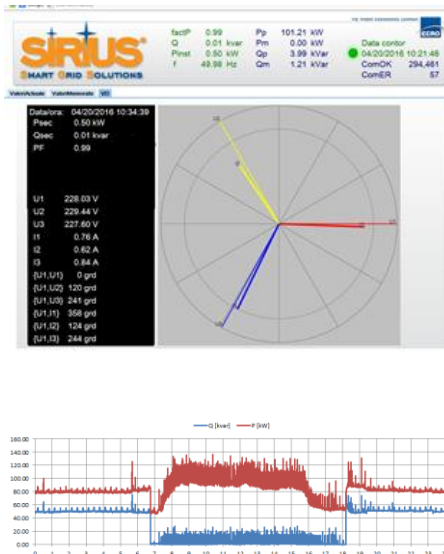


# SMALL PROOFS OF CONCEPT – ALREADY PUT IN PRACTICE

## Smart metering

### Unbundled Smart Meter (USM)

Installed and tested for  
Sibiu Municipality building



## Eco-efficient lighting

Nicolae Iorga Street belonging to  
SSDH

½ street old technology (53  
apparatus)

½ street (49 apparatus) latest  
innovative technology with LED and  
a smart meter for comparison



## EV charging station

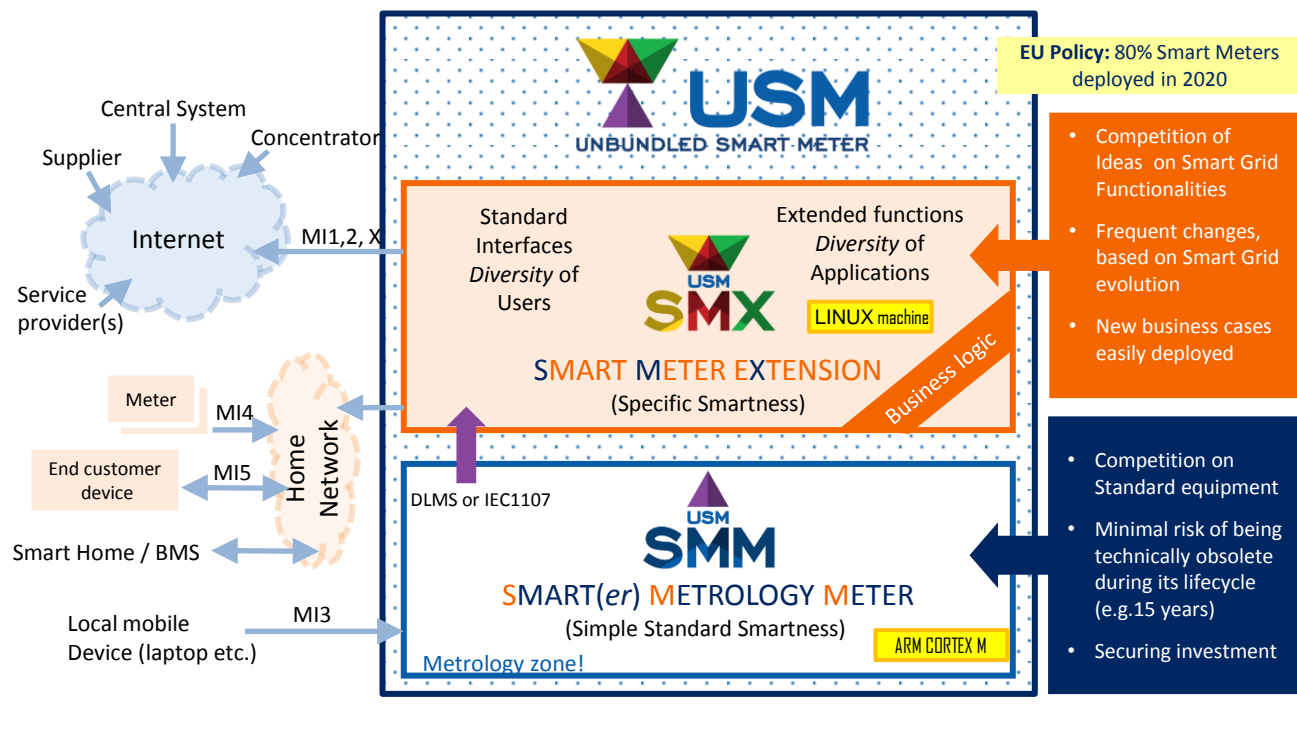
Cazarma 90 - Parking area

1 x public station with 2 sockets and  
2 reserved parking lots

Menekes type 2 (power supply at  
380V / 22 kW) and Schuko type (220  
V / 3.7 kW)



# Unbundled Smart Meter (USM) in Nobel Grid



- Support for **Smart Grid** with real-time data
- Support for **Power Quality**
- Support for **Energy Services**
- Support for **Dynamic Energy Markets**
- Support for **Production and Storage** control
- Support for **Security and Privacy**

Support for **Unknown yet !**

(services of the future)

# Eco-Efficient Public Lighting

**BENEFITS** of a centralised real-time management of the lighting system =  
**LOW MAINTENANCE COSTS**

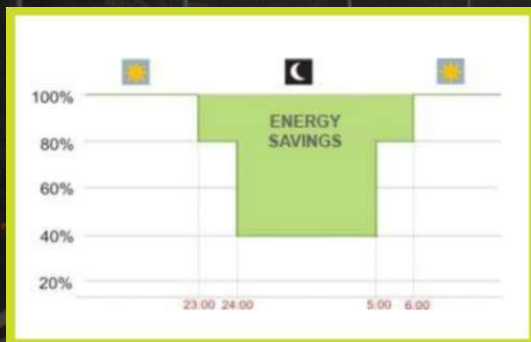
**Dynamic lighting** correlated with the city's rhythm (Dynamically changing the luminance level, and / or illumination as a result of monitoring the vehicular and / or pedestrian traffic)

= **power savings**

**Adaptive lighting** to users, areas and functional  
= **extended availability of urban areas**

**Interactive lighting** without compromising public safety  
= **enhances the feeling of belonging**

Extends the life of lighting equipment  
= **resource savings**





# e-Mobility Charging Infrastructure



**Supporting the use of electric vehicles by creating a public charging infrastructure;**

Charging stations are already installed in public parking even if electric vehicles have not reached a critical mass;

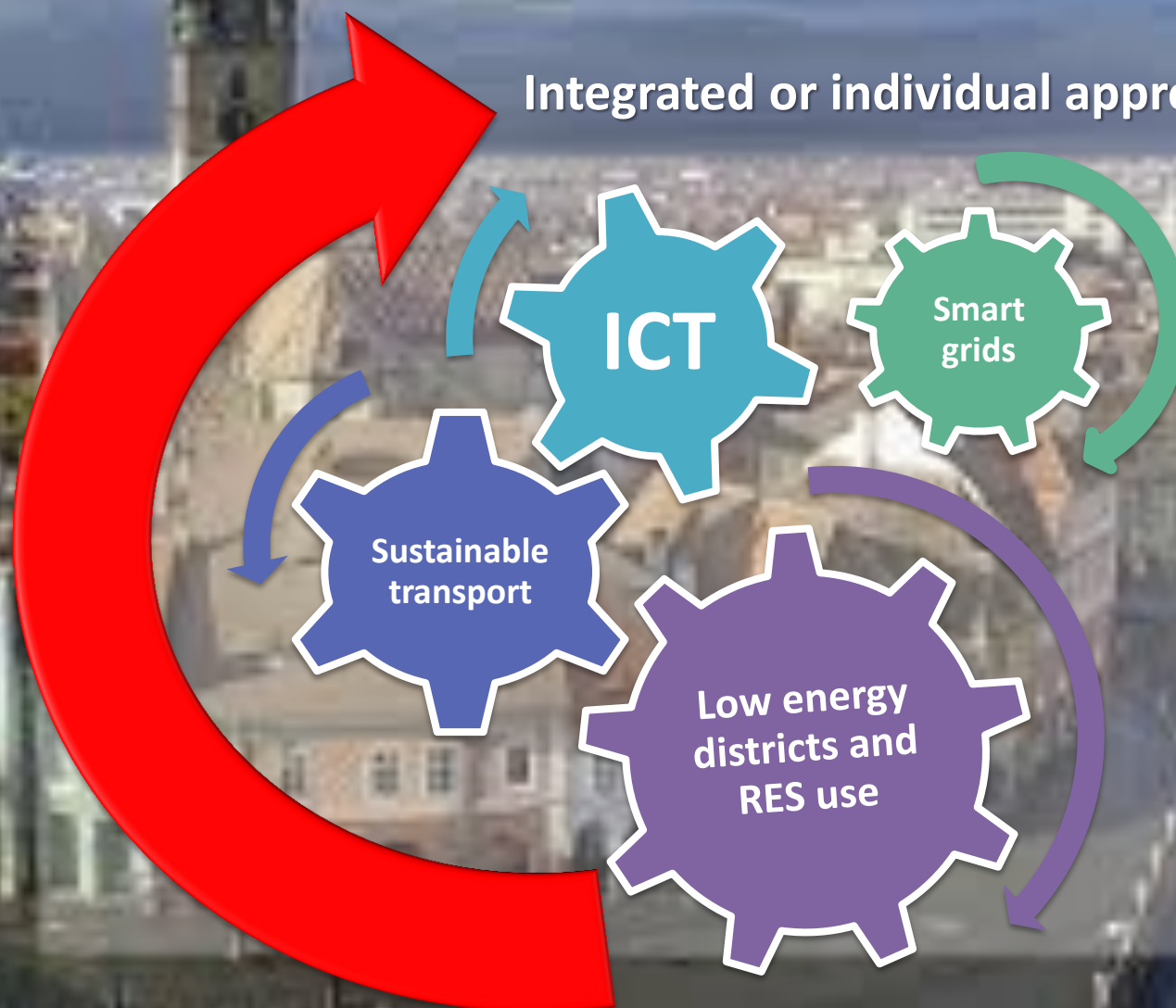
**Charging stations will serve a heterogeneous base of electric vehicles, Greening the mobility via e-mobility and intelligent & secure traffic management**

- E-bike sharing points, with charging stations connected to lighting poles
- Electro mobility sharing through various capacities and types of electro-vehicles for public institutions (e.g. police, education, health centres etc.)



# Opened for cooperation

Integrated or individual approach





# Thank you for your attention!

Tiberiu DRAGAN, SIBIU Local Council

Dorel STANESCU, Electrica Distributie  
Transilvania Sud – SDEE SIBIU (DSO)

