



aIM4SMEs HU-IM

Hungarian **IM** - Project Part of EU-Project:
„Automatic **Intelligent Metering** For Small and
Medium-sized Businesses”

EMG - Energy Management Group

Pilot Region: Veszprém County - Hungary

Project meeting 5: 21 – 22 January 2010, Brussels

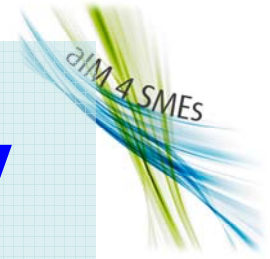
**Preparation: Steering Committee Meeting -
Veszprém County Administration 15 January 2010**



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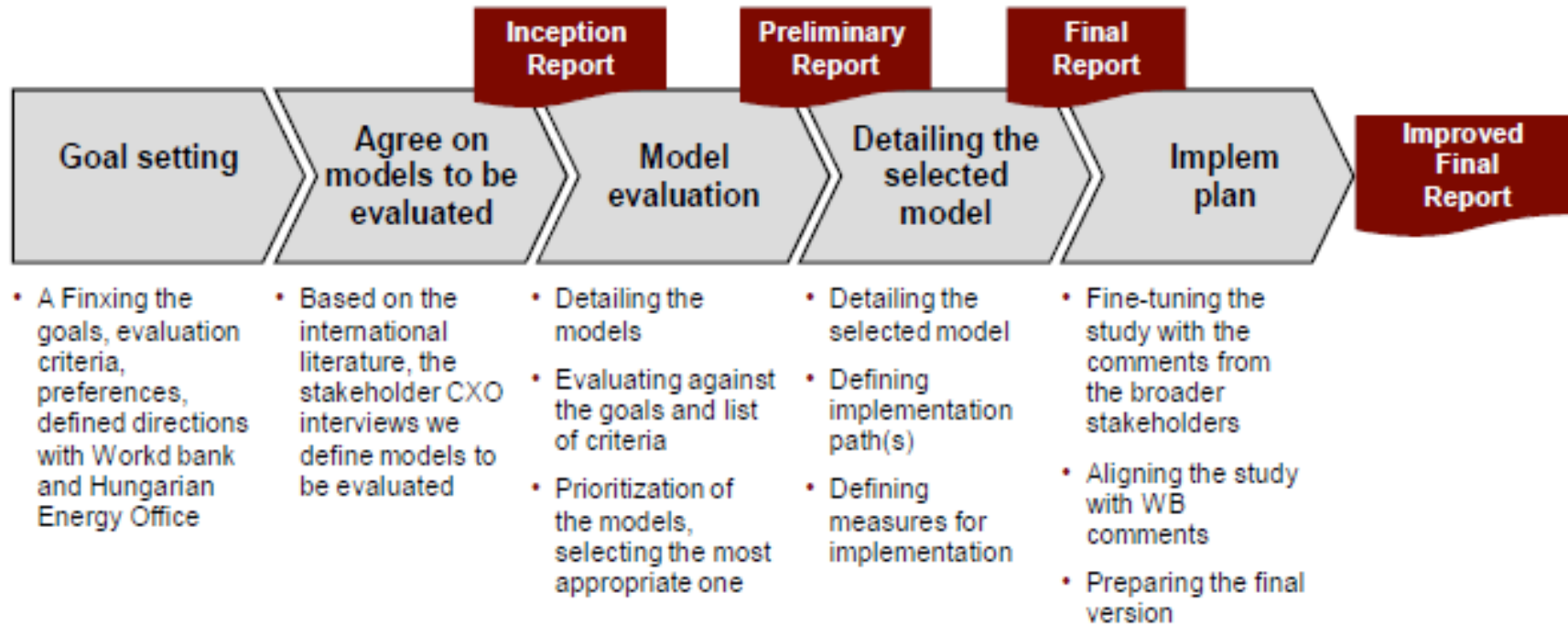
1. Situation of “IM” in Hungary



HEO - Hungarian Energy Office by public tendering started a “**SMs - Smart Metering Study**” with August 2009

- Elaboration by Consulting Consortium of Force Motrice Hungary and A.T. Kearney,
- Collaboration with HU-IM project is under negotiation
 - Main aim > Introduction of **IM working methods** in Hungary
- **HEO** gets financial support from the **World Bank**
- **WB** expects utilization of SMs in a wider environment

SMs - Working steps



2. HU-IM Project Workflow



Main objectives of **HU-IM** Project:

- **Energy performance of Hungarian buildings have to be improved** – building sector claims 50% of HU primary energy consumptions – EU average is only 40%
- **“EU best practice”** how to raise energy efficiency of building sector will be needed
- In line with **HEO’s SM-Model - “Regional Energy Optimization & Management Model”** in **collaboration with County Administration level** have to be developed



HU-IM Management Structure

Partners of **EMG** - Energy Management Group:

- **Csanády & Partners Consulting Ltd.**
- **RFV - Regional Development, Investor, Producer and Public Service Company plc** (co-financing partner)
- **ubitronix system solutions gmbh** (IT-Partner)
- **In preparation:** Participation of Hungarian leading companies in mobile communication, solar and geothermic sector



HU-IM Clients & future Partners

Veszprém County President supported by mandate letter end of March 2009 HU-IM Project by contribution of **14 Test-Buildings**

- Annual energy consumption: **over 1 million €**
- Renewal of heating system in progress – “Buderus Condensing Wall Hung Boilers GB 162 Cascades” with advanced steering module are installed – investment value: **260 million HUF = ca. 945,500 €**
- **HU-IM EMG** - will contribute **UIEMs - Unified Intelligent Energy Management System** to secure past and future investments in building infrastructure



HU-IM UIEMs Working Packages 1

HU-IM UIEMs WPs are in line with **aIM4SMEs Working Packages** – slight difference is given in **WP 2/3 - Engaging SMEs & Metering set up**:

- **“Engaging SMEs”** - will be started when public building metering set up happens successfully
- **10 leading companies** of Veszprém County are pre selected as HU-IM clients
- **“Metering set up”** – is supported by **UIM – Utility Inside Manager-light** software - by ubitronix gmbh / first data delivery to DYNAMATlite is done

HU-IM UIEMs Working Packages 2



WP 4 Data analysis is supported by online visualization tool of **UIM software** and will be used to support **WP 5/6 - Bureau Service & Training** of building users

- UIM runs online without any need for software instalment on client's PCs
- Links to commonly used business software is foreseen and possible
- UIM-Demo Version could be enlarged to a full version at any time

HU-IM UIEMs Working Packages 3



WP 7 – Dissemination & Public Awareness Actions, are under conception and will be started soon based on experiences with running Test-Buildings and:

- **Enlargement strategy** for gas and water metering, and heating system monitoring is done
- Negotiations about collaboration with **EON** as regional utility company for Electricity & Gas and Water Company “**Bakonykarszt Zrt**” are started

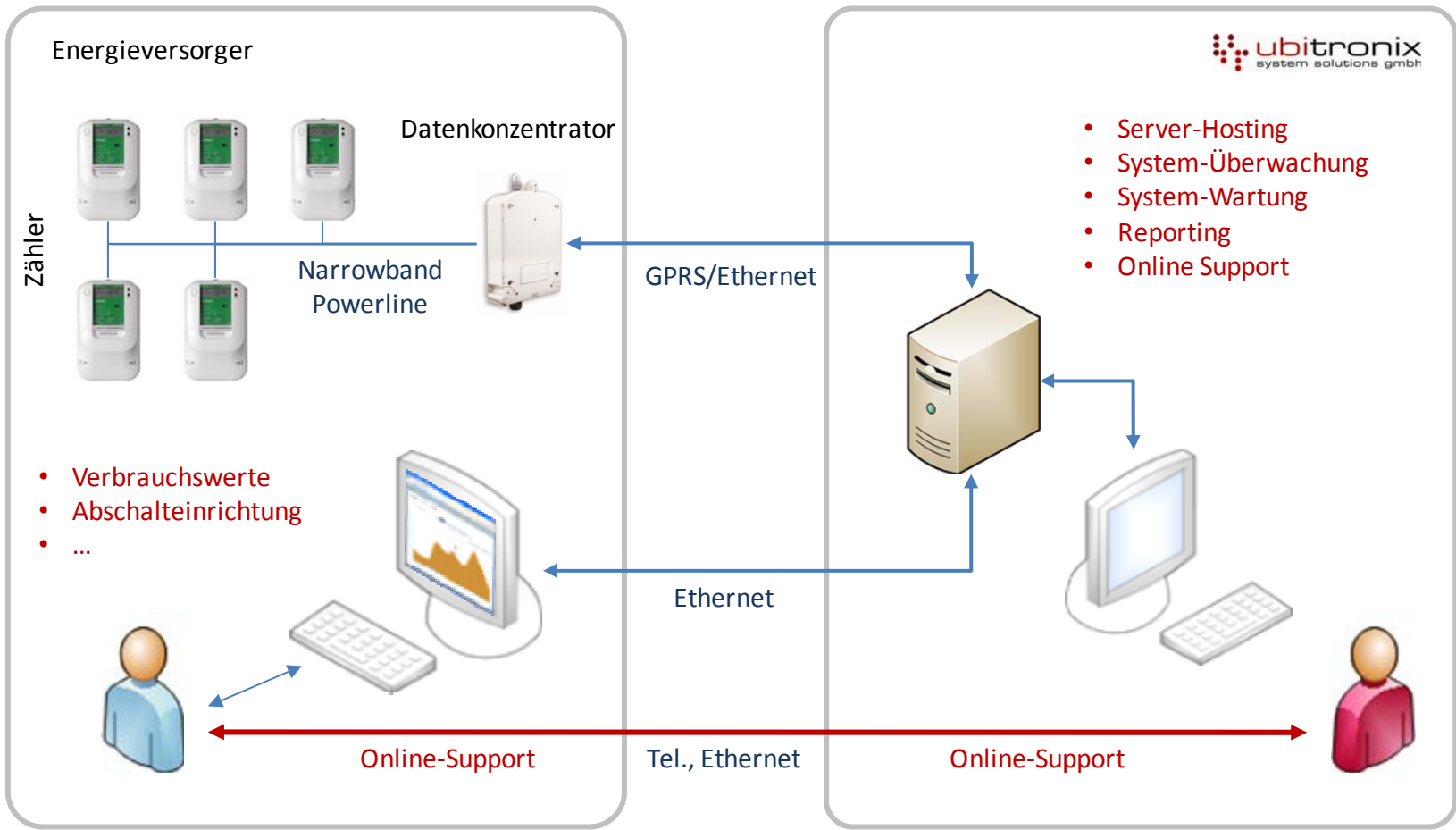
3. UIEM – Unified Intelligent Energy Management System



UIEMs permits remote reading of electricity, gas, water and heat meters but also realizes :

- Visualisation of Energy Consumption Data via UIM and is structured in 4 Layers:
 - **Layer 1:** Sub Metering Layer (M-Bus interface with wireless M-Bus Bridge for reading of gas, water and heat meters wired or based on RF communication)
 - **Layer 2:** Main Metering Layer (PLC to DC - data concentrator)
 - **Layer 3:** Wide Area Network Layer (e.g. DC with GPRS modem)
 - **Layer 4:** UIEM Control Centre Layer (UIEM servers)
- Exporting of Energy Consumption Data to Enterprise Applications – on both networks ends

HU-IM UIEM System Architecture



UIEM - Implementation

Lessons learned 1:



Successfully enlargement of **UIEM System** mainly for commercial clients in Hungary will need following actions:

- Condition of grid management have to be improved - by introduction of Smart Metering - but strong “Public” support will be needed to organize “**fair cost sharing**”
- Energy Efficiency of operation of Hungarian Buildings have to be raised – introduction of “Smart Metering” will need “**open standards**” than we are able to realize “**Intelligent Metering**”
- Data protocol of RF connected end devices have to get M-Bus interfaces – see **Nokeval heat sensor products** - negotiations about data import into UIEM System are started



Lessons learned 2:

- Successfully enlargement of UIEM System will need guaranteed service input – **EMG** offers to clients an “**ESC - Energy Saving Contract**”
- **ESC - Pilot contracts** are under negotiation with Veszprém County Administration to carry out UIEM services for selected 14 pilot buildings.
- Use and integration of RES - Renewable Energy Sources are also topic of ESC’s scope of work
- ESC negotiation proceedings are supported by UIM Demo Version:

https://uiem.ubitronix.com/basic/en/uim_light/



HU-IM part of aIM4SMEs Project: List of Public Buildings, Veszprém County

Intelligent Energy Europe

Contract no. EIE/07/136/SI2.466711, Duration: 12/2007 – 03/2010

5	Name of Building/Company		Idősek Otthona és Módszertani Intézménye, Kúlsóvat (Psychiatric nursing home)	
	Address		http://www.lakvat.hu/kulsovat/idosek-otthonarol-roviden	
	Street		Béni Balogh Adám u. 1	
	City		9532 Kúlsóvat,	
	Name of Director		First name	Last name
			József	Szalai
	Contact		Phone	Mobile
			0036 89342150	0036 302372682
			idok@vpmegye.hu	
	Clerk (HVAC Technician)			
	Name		First name	Last name
			Zoltánné	Sebestyén
	Contact		Phone	Mobile
			0036 89342150	
			idok@vpmegye.hu	
	Buildings Key-Data		Occupation:	
	Year of construction:	1973	hours per day:	24
	Usable Area in m2	4,264	days per week:	7
	Number of Users	88 (Staff)+198	weeks per year:	52
	Annual Energy Consumption		2008	2007
	Electricity (kWh)	294,459	222,928	219,921
	Gas (GJ)	3,993	3,505	3,748
	Gas (m3)	116,574	102,336	109,435
	Gas (kWh)	1,109,167	973,696	1,041,241
	Water (m3)	10,219	7,245	8,474
	Summary (kWh)	1,403,626	1,196,624	1,261,162
	Electricity 1 kWh/HUF	40.31	40.31	40.31
	Gas 1 kWh/HUF	12.39	10.48	11.73
	Energy Index (kWh/m2/a)	329.18	280.63	295.77
	Annual Cost of Energy consumption		2008	2007
	Electricity (HUF)	11,870,400	8,986,800	8,865,600
	Gas (HUF)	13,741,200	10,204,800	12,214,800
	Others			
	Water (HUF)	4,098,000	2,890,800	3,033,600
	Summary (HUF)	29,709,600	22,082,400	24,114,000
	Technical specification of meters		Registration number and products name	
	Electricity	Registration number meter 1:		View
	Connection #:	Meter #: 20180736105310		
	Modem #:	Types: SL 7000.SL761C 230V 5A		
	Gas	Registration number meter 1:		
		0001081800; (08)08206968		
		Producer:		
	2 gas sub meters	Registration number meter 1:		
		Producer:		
		Producer: MOM		
	Water	Registration number meter 1:		
	2 sub meters	Producer: MOM		
		Producer: MOM		
	Remarks:			
	Operation started 1973, 3rd building wings established round 1980			
	HU-IM E-Metering equipment:		Date of Installation: 17 - 20 th Dec.2009	
	DC: LJ 00037 437	Main Building:	ELON021 772	
	CT: ELON 0245 573	Kitchen:	ELON021 787	
		Laundry:	ELON021 337	

HU-IM PB Key Data Sheet

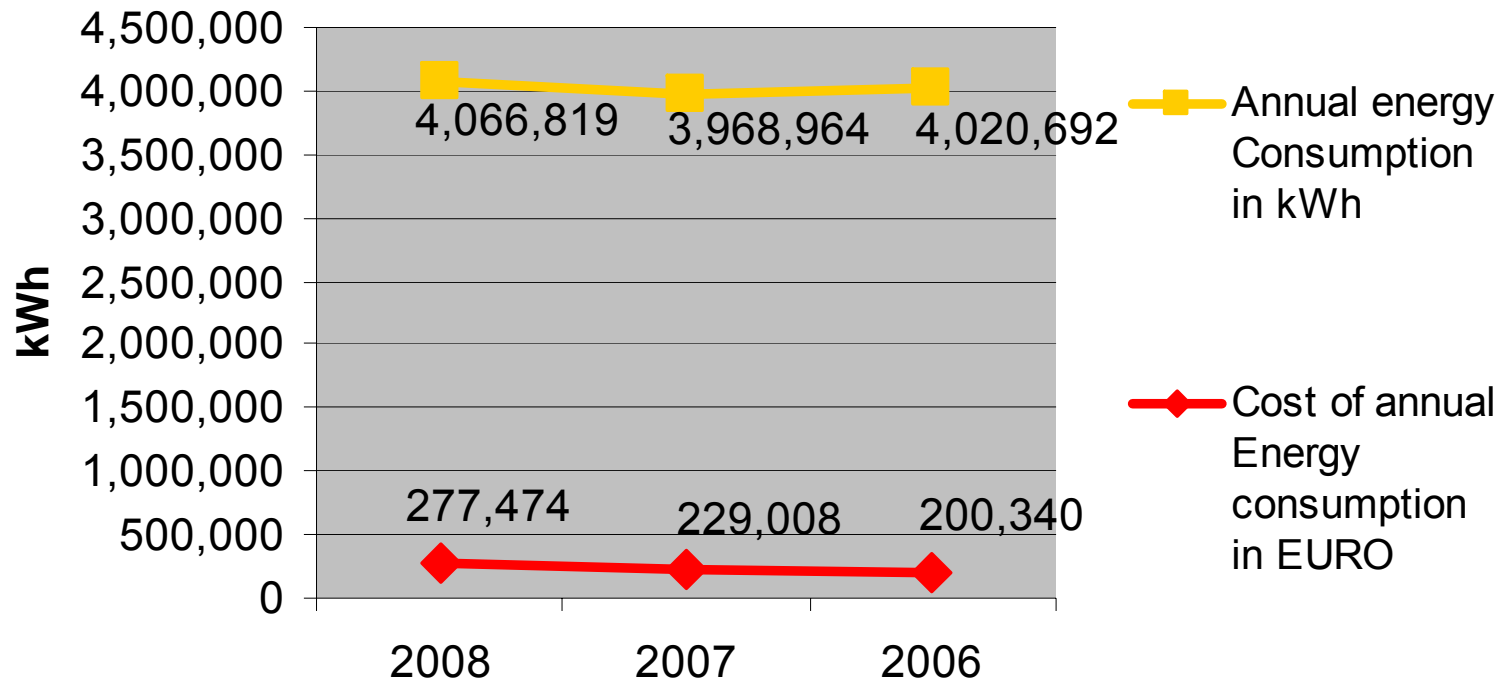
- Documentation of annual energy consumption data and related costs
- analysis of building technology behind
- Determine design of metering structure

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	Laundry:	ELON021 337



Baseline of ESC - Pilot contracts

Annual energy consumption of 3 selected Pilot-Buildings in Veszprém County is more or less constant, but costs of energy is growing in average by 15 – 20%





Set up of ESC-Services

Investment & annual energy costs per test building:

- renewal of heating and warm water boilers - in average **86,000 €** - energy saving effects presently unknown
- annual energy consumption costs about **80,000 €**
- raising 15 – 20% annually: **12.000 – 16.000 €**

Investment & annual operation costs of UIM per test building :

- Meters (E, Gas, Water) & communication infrastructure: **6,500 € = 13% of investment costs of boilers**
- Annual operation costs of data storage & transmission via GPRS per test building: **700 €**
- Local & online support as well as on site training demand for users up to 3 / 4 workshops - **6,000 – 8,000 €**

in total: 6,700 up to 8,700 € expected annual operation costs



Lessons learned 3:

**“If you can’t measure it –
you can’t manage it!”**

Stewart Conway, Project co-ordinator Leicester Energy Agency

EMG - Energy Management Group

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