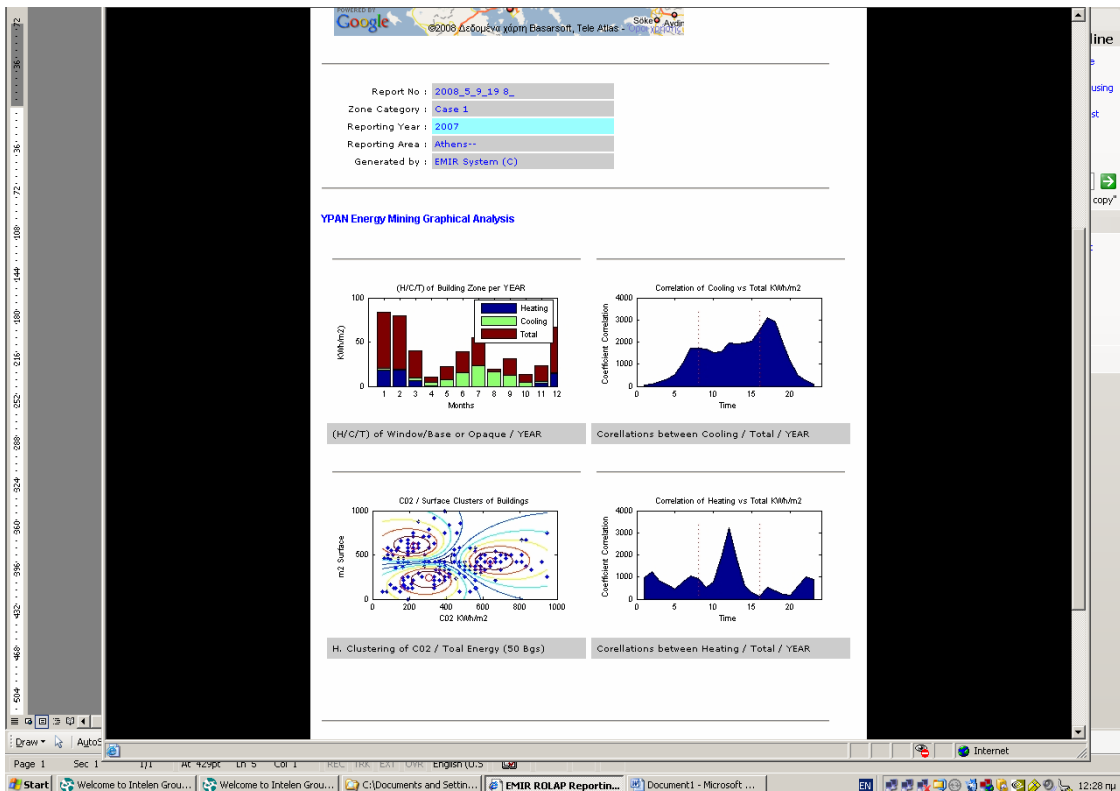


Clustering and Fuzzy c-means categorization of building consumptions in Athens



Open Protocol: XML is Ideal

```
• <XML>
• <METER_ID>111111111111111110125</METER_ID>
• <METER_ADDR>WEM Location</METER_ADDR>
• <METER_TIME>08/15/07 12:02 Wednesday</METER_TIME>
• <DMD_INT>15</DMD_INT>
• <NUM_SUB_INT>0</NUM_SUB_INT>
• <SRL_NUM>111111111111111110125</SRL_NUM>
• <CURR_TIER>A</CURR_TIER>
• <NUM_DMD_RESETS>5</NUM_DMD_RESETS>
• <MAX_KW_DEL>89.604</MAX_KW_DEL>
• <MAX_KW_DEL_T>08/14/07 12:43 </MAX_KW_DEL_T>
• <CUM_KW_DEL>375.554</CUM_KW_DEL>
• <CONT_CUM_KW_DEL>465.158</CONT_CUM_KW_DEL>
• <MAX_KVAR_DEL>8.035</MAX_KVAR_DEL>
• <MAX_KVAR_DEL_T>08/14/07 14:58 </MAX_KVAR_DEL_T>
• <CUM_KVAR_DEL>114.964</CUM_KVAR_DEL>
• <CONT_CUM_KVAR_DEL>122.999</CONT_CUM_KVAR_DEL>
• <KWH_DEL>3525.673</KWH_DEL>
• <KVARH_DEL>668.024</KVARH_DEL>
• </XML>
```

- The pilot is already running, using **ADSL and PLC (Power Line Communications) meters** and continuous Energy Stream Data is entering to our Energy Warehouse
- Until the end of 2008, extremely useful correlated Stochastic Data Mining output data will be available for consideration.
- More @ plugme.eu very soon and at <http://www.intelen.gr>
- Already, advanced mining and ranking algorithms are being used to cluster and rank multidimensional energy consumptions in the Greek Area... **The system is already learning correlated load behaviors and multidimensional consumption patterns.**
- **The next Step will be the bi-directional Demand-side Management and control of end-loads by using a central IT ontology unit to control the energy consumption of cities or blocks of buildings, using web-based advanced algorithms and XML-like control signals...This will SOLVE THE PEAK Problems of Summer periods**

Organisation details of INTELEN

INTELEN is a spin-off R&D group of Medialab NTUA, founded by a core-group of promising high-educated Greek Engineers, in order to create and disseminate high-level web-based Information Technology services of the Greek and International sector.

INTELEN is a mirror of the Greek research potential targeting the opened Greek and International market, in the domains of web-based IT, Data Fusion, Energy Information Systems, Knowledge Engineering and Management with integrated Ambient Intelligence.

Our main philosophy is the bi-directional use of Internet. We take Internet as the basic means and method of accessing information and at the same time we use Internet to deliver web-based services to our clients. Internet is mainly considered as a big repository of chaotic information and at the same time a huge communication layer that brings together many people over services.

By using advanced algorithms that search, retrieve and categorise distributed knowledge, we create dynamic knowledge banks and use this knowledge over the Internet to serve our customers needs for an effective Knowledge management procedure. The use of this knowledge repository is being realised through web-based technology, Internet and VPNs.

Our domain of applications is mainly the Energy Domain. Following extensive research activity on modern Energy Information Systems (EIS), Energy Data Mining, web-based Retrieval on Energy measurements, Ontology modelling, Internet-based Intelligence and Knowledge Management, INTELEN has already created two systems and methods of managing and manipulating telemetry-based Energy data and Energy sources through Internet and web-based IT systems. Both systems are protected by two Patents from OBI and in the future by the European Patent Office..

Our target and scope is to become an innovative leading Greek high-tech company that will take into advantage and use the invaluable Greek research potential and create advanced and future-oriented web-based services, according to the future society's needs.

EMIR Project (Innovation Prize OTENET, 2 Patents, EU I-Techprater Prizes, etc):

A project to analyze and rank Energy Customers and Consumptions over Internet using adaptive search machine technology and bi-directional data mining. Projected to Mobile Services as well

- A web middleware-based intelligent system for Energy location-based Services (Google Maps)
- Better on-line management of total energy usage
- Get details about the amount and timing of your energy using profiling
- Identify and implement operational strategies to control load factor
- Understand and improve consumption Clustering and Statistical profiling patterns
- Measure and verify anticipated energy savings and RES investments
- Highlight anomalies in electric consumption
- Provide E-Commissioning Services based on Google Maps
- Create dynamic web-Energy KPIs and Scorecards for measuring Business Impacts
- Energy suppliers can acquire faster data enabling proactive energy management
- Immediately turns this data into valuable knowledge for customers
- Offer improved services to commercial and industrial clients
- Tracks and compares in real time usage and load
- Compare that to what has been scheduled and initiate any localized demand
- Manages peaks efficiently for spot market purchases
- Reduce the risks in a volatile energy market
- Everything on-line with real IP-based messaging among customers
- Load-based Energy Services and CO2 environmental control
- A web-based Decision Support Tool to assess CO2 emissions and reduction
- Collection and analysis of energy data and determination of the national target
- Analysis and forecast of growth in end-demand for energy by sector and use
- Make available energy technologies and forecast of technological development
- Determination of economic potential for energy savings and planning of measures
- Improve energy end-use efficiency with e-commissioning
- Determination of intermediate national target
- Improve Energy Efficiency Action Plan for CO2 (EEAP)
- Provide core processes and Energy KM for ESCOs and personalized Services
- Identify core IT and Energy Governance processes and Best Practices
- Correlates micro-climate variables with spatial data and building processes

Cooperation type - Offered - Requested	- RTD-cooperation (Both) - RP7 cooperation project (Both)
Areas of activity:	- Network of the future - Internet of Services, SW & virtualisation - Intelligent information management

Coordination (Offer) - [Intelligent web-based Energy Information Systems for Energy KM and adaptive Energy Mining \(+ Ambient Mobile Services\)](#)

More @ <http://www.intelen.gr>

More @ <http://www.plugme.eu>

The project performs internet-based (portal) energy management functions over ADSL such as organizing energy use data, identifying energy consumption anomalies, managing energy costs, and automating demand response strategies and focused customer profiling. In this project, an innovative web-based intelligent Energy Information System (google-like machine) is created, for optimal energy management and minimisation of home and factory energy consumption (RES impact). This project assesses up to what extent intelligent, flexible, active electrical distribution nets based on Demand Side Integration (DSI) can contribute to improved energy services in larger European cities. At the site of the participating municipalities, the absolute quantity of energy saved and CO2 emissions reduction through this intelligent technology is determined. The contribution to better embedding of renewable energy resources (RES) is also estimated at each site. The functionality is pure web-based and there is also bi-directional messaging to Energy Customers for real-time communication (IP-based messages and emails). It is the next generation of a personalised Energy Google-like system. The idea won the 2nd place in the Greek National Innovation contest 2006-2007 and protected by two Patent applications in Greece. A new virtual - mobile services - energy community is coming up...

The central IT Entity will control and optimize load energy profiles of block of buildings or even cities

Coordination (Offer) - [Intelligent Load Profiling and bi-directional Energy Demand-side Management using LBS \(+ Ambient Adaptive Mobile Services\)](#)

More @ <http://www.intelen.gr>

More @ <http://www.plugme.eu>

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Intelen Team

"The Sky is the Limit..."