

# Modular Ultra-Compact Smart Grid Concept



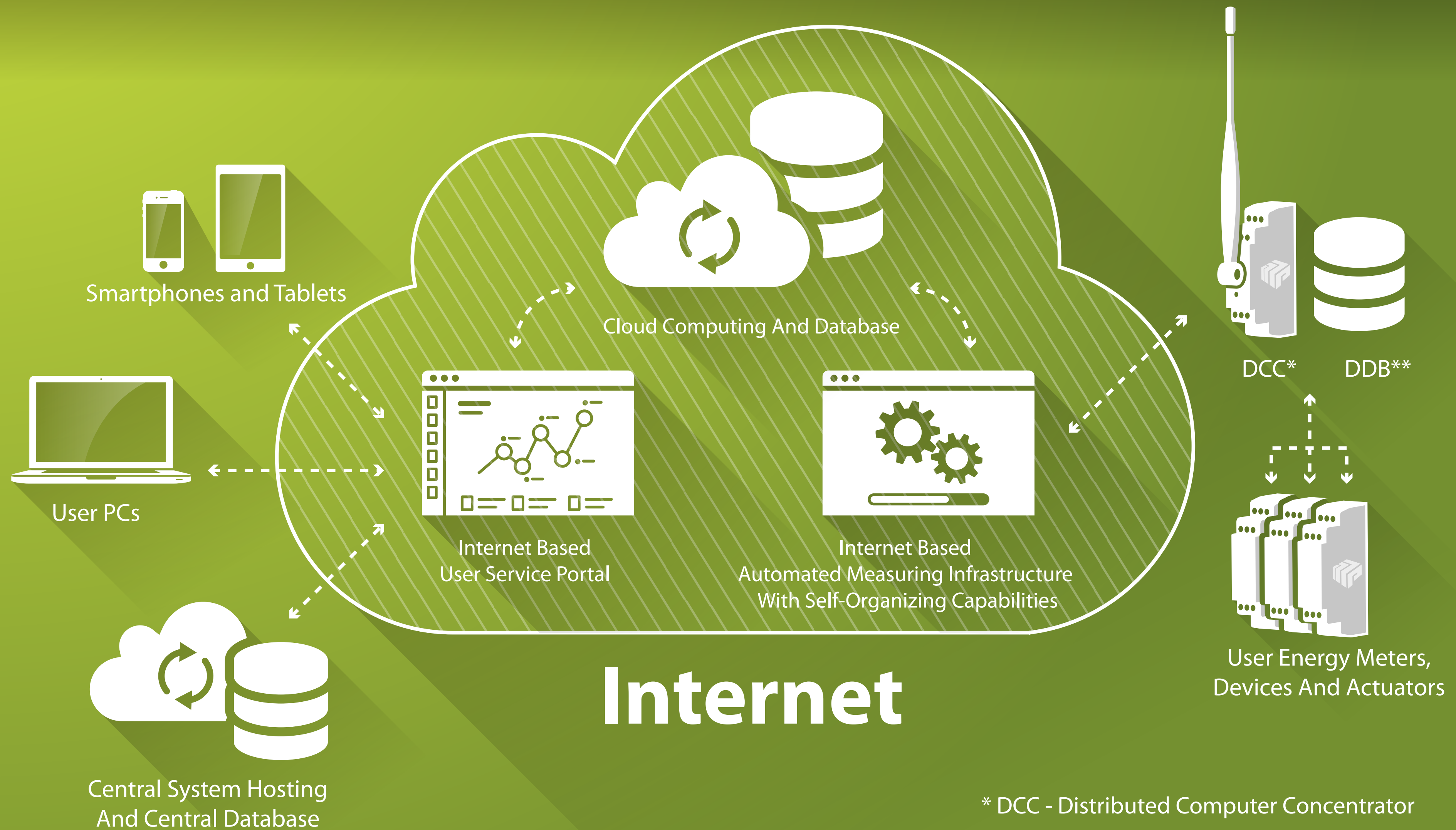
**GREEN EMBEDDED  
SYSTEMS** 

# Main Goals



- High throughput distributed system architecture
- Let meters to become very simple and cheap by doing only measurement tasks and move all the “smartness” into one single device (the ultra-compact local computer-concentrator)
- All profile data accumulation and communication tasks, to be performed on site in real time, in a switchboard, panel or cabinet – cumulated and performed in a fully functional Linux embedded computer, fit in a single DIN rail position box
- Meter and profile data to be collected and processed on site, then stored in a local database, and then sent with very high speed at the upper level, which allows very high total system throughput for hundreds of thousands grid nodes
- Direct Internet access to the raw metering data, using the most modern and state-of-the-art, flexible and reliable data transfer and communication methods, stacks and protocols

# Modular ultra-compact smart grid system cloud based architecture



\* DCC - Distributed Computer Concentrator

\*\* DDB - Distributed Database

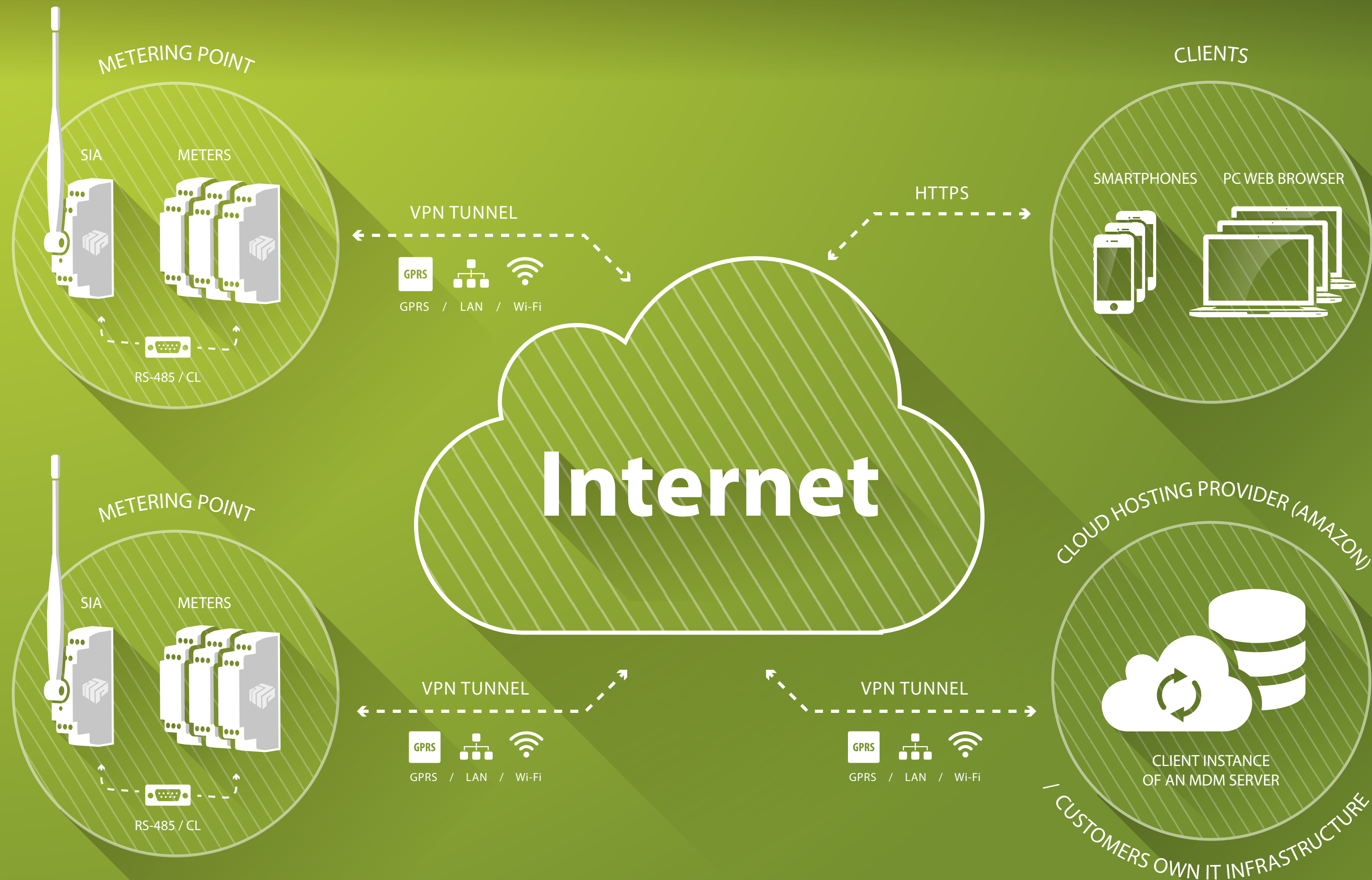


# Ultra-compact computer-concentrators



- Fully functional embedded Linux device  
Very flexible in order to fit into various use cases  
Aggregates multiple devices (not only meters),  
using different protocols, at the same time.
- Gives real computer “intelligence” to the devices  
connected to it, which is unprecedented even in  
the world of smart meters
- Very low power consumption (<1W)
- Very low average price per individual metering  
point
- Fits into single position DIN rail box, which makes  
it possible to be installed virtually everywhere
- Supports all IoT communication concept protocols  
like Ethernet, GPRS, Wi-Fi, 898 GHz long range or  
2.4GHz short range low power RF with the Internet  
compatible 6LoWPAN protocol

# Cloud based AMI system and mobile app



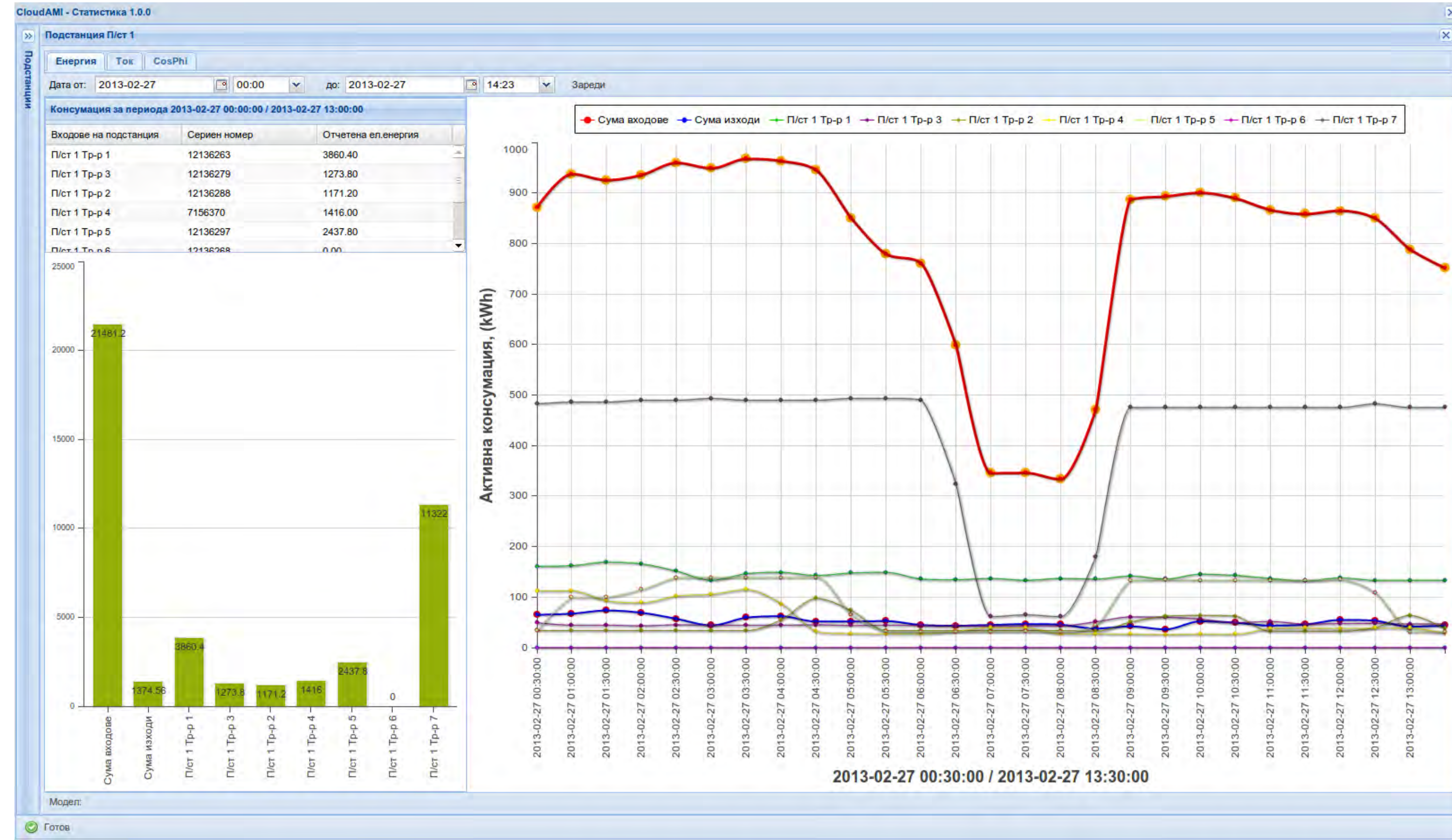
# Mobile and Web accessed



# Cloud based AMI system and mobile app



# Virtual points and balance in real time





# Export to XLS

Вирт. Хидротурс - Всичко

Консумация Профил на консумацията

Експорт към XLS Почасов експорт към XLS

Дата	+A, (kWh)	-A, (kWh)
2014-07-14 00:00:00	22.77	0
2014-07-14 00:30:00	19.89	0
2014-07-14 01:00:00	16.5	0
2014-07-14 01:30:00	14.76	0
2014-07-14 02:00:00	12.78	0
2014-07-14 02:30:00	11.67	0
2014-07-14 03:00:00	11.55	0
2014-07-14 03:30:00	13.5	0
2014-07-14 04:00:00	13.29	0
2014-07-14 04:30:00	11.97	0
2014-07-14 05:00:00	12.81	0
2014-07-14 05:30:00	11.4	0
2014-07-14 06:00:00	15.75	0
2014-07-14 06:30:00	17.52	0
2014-07-14 07:00:00	17.7	0
2014-07-14 07:30:00	17.34	0
2014-07-14 08:00:00	17.85	0
2014-07-14 08:30:00	15.93	0
2014-07-14 09:00:00	17.82	0
2014-07-14 09:30:00	17.91	0
2014-07-14 10:00:00	20.13	0
2014-07-14 10:30:00	22.17	0
2014-07-14 11:00:00	18.93	0
2014-07-14 11:30:00	20.13	0
2014-07-14 12:00:00	16.98	0
2014-07-14 12:30:00	19.56	0
2014-07-14 13:00:00	20.46	0
2014-07-14 13:30:00	19.02	0
2014-07-14 14:00:00	19.59	0
2014-07-14 14:30:00	20.76	0

Дата от: 2014-07-14 00:00 до: 2014-07-15 00:00 Зареди

Активна консумация (A+/-)



# Usage



- Controlled measurement - at office buildings. The system can be used for distributing the total electric bill among the renters. In big factories it can be used for controlling the system installed by the electricity provider.
- Control the quality of the electric power
- The end up customers can use it to optimize their electricity usage, learn and change their habits and change them so they can optimize their electric bills.

# Cloud Hosting



- Integrated service accessed by all clients through Internet using all known platforms ( Windows, Linux, OSX, iPhone/iPad, Android)
- No investment in licences for software, servers and IT personnel
- Data security through communication cripting, cashing the data with user's password.
- High quality solution through monitoring from professionals.
- All new added functionalities are provided free of charge to all customers
- Data Back-up and load balancing of all servers

# Clients



# Thank you!



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