GSM/GPRS Remote AMR Solution

SONGYANG INDUSTRIAL LIMITED

Communications

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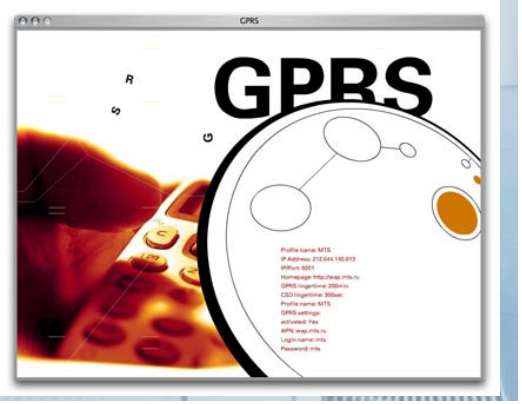
Introduction

GSM /GPRS
FOR REMOTE READING OF ELECTRICITY METERS

For new AMR projects entirely based on Wireless, GPRS/GSM is an innovative solution that offers many advantages



Advantage of GPRS

High Speed

Low cost

Scalability

Constantly connected

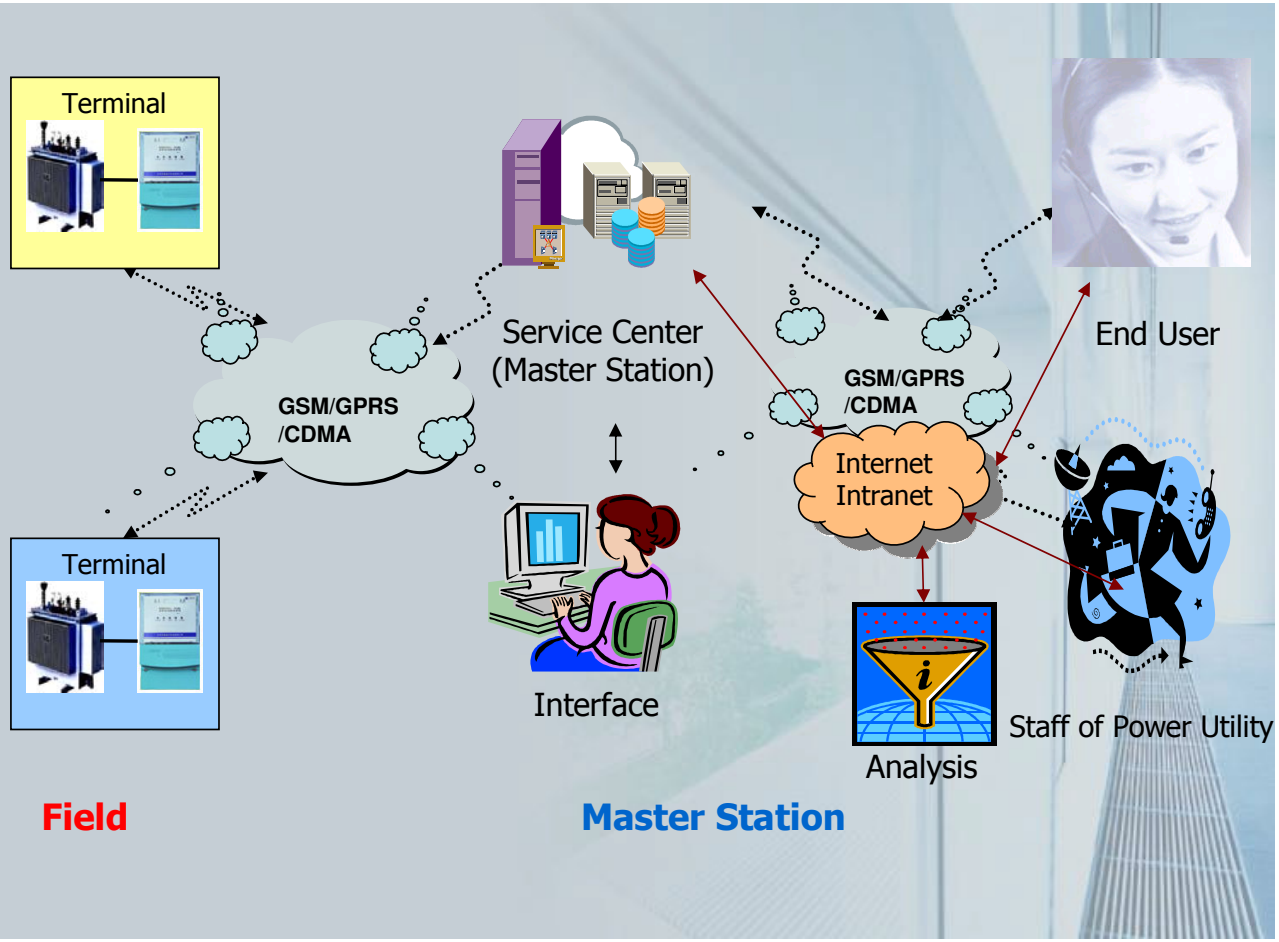
Easy of Installation

... with GPRS

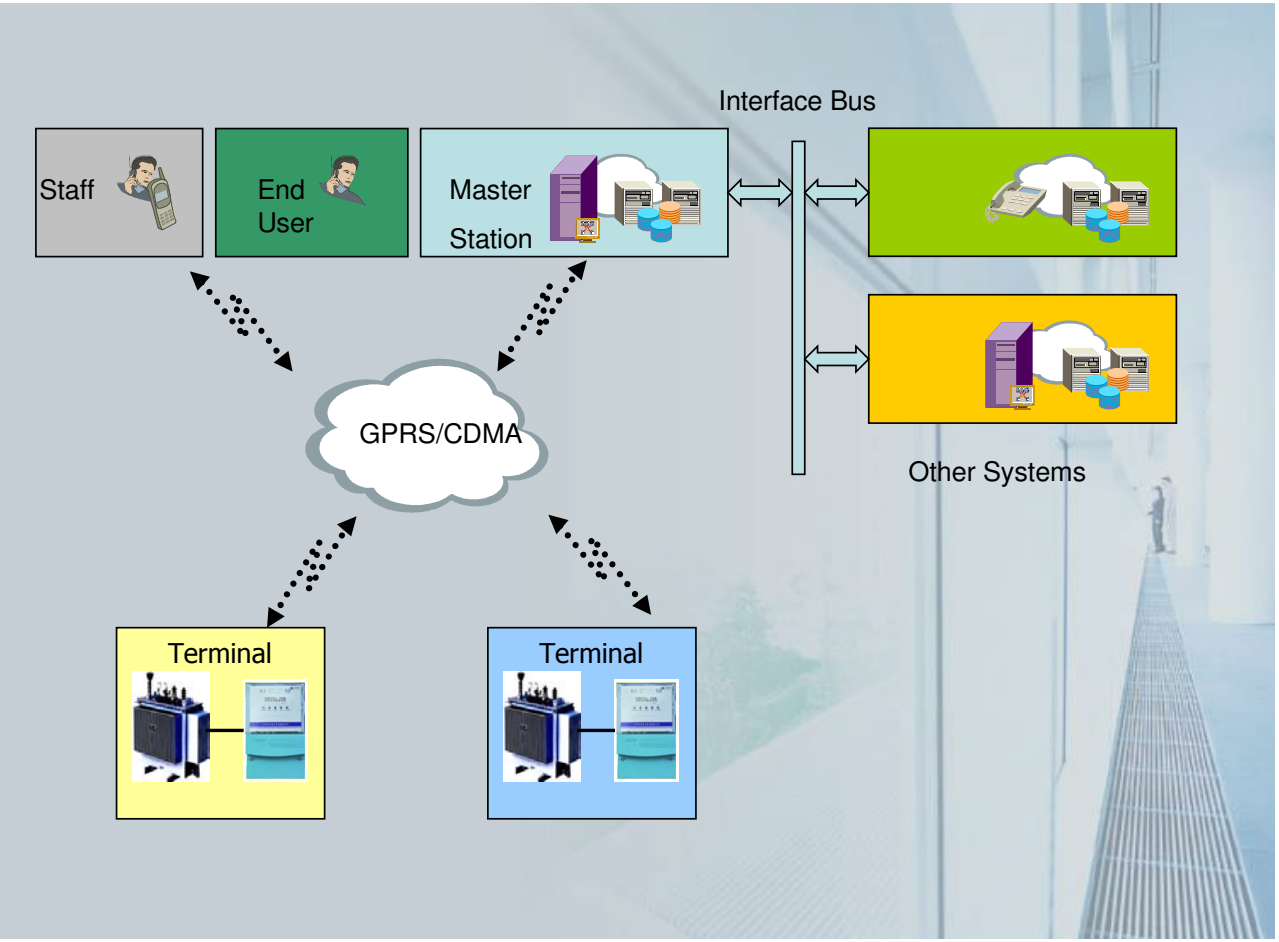
Figure – Wireless Communications

		SMS	Data Call	GPRS
COST	Connection	Excellent	Good	Good
	Maintenance	Excellent	Good	Excellent
	Transmission	Fair	Fair	Excellent
TECHNICAL	Ease of Installation	Excellent	Excellent	Excellent
	Scalability	Excellent	Fair	Excellent
	Reliability	Excellent	Good	Excellent

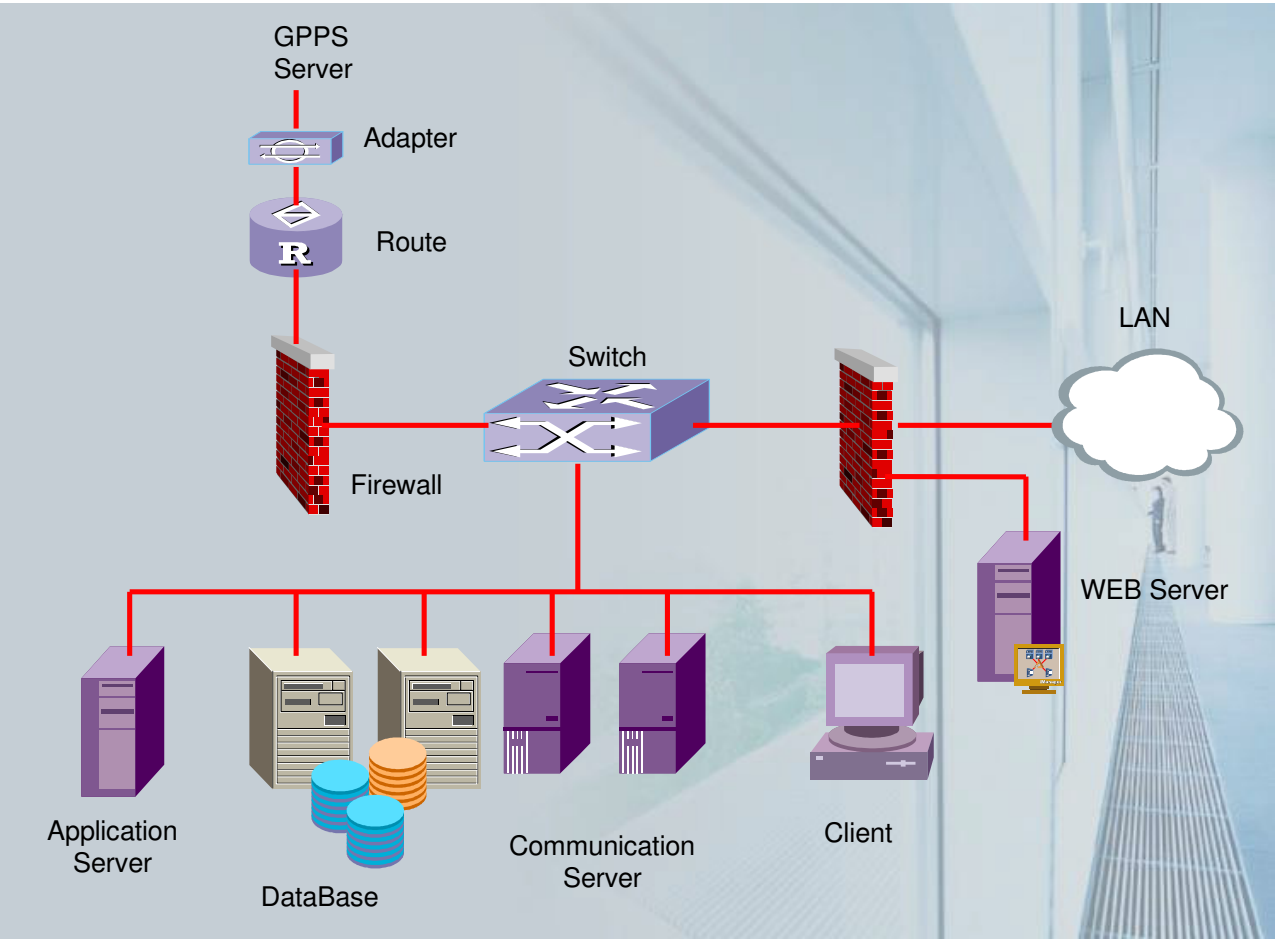
Typical Scenario – GR System



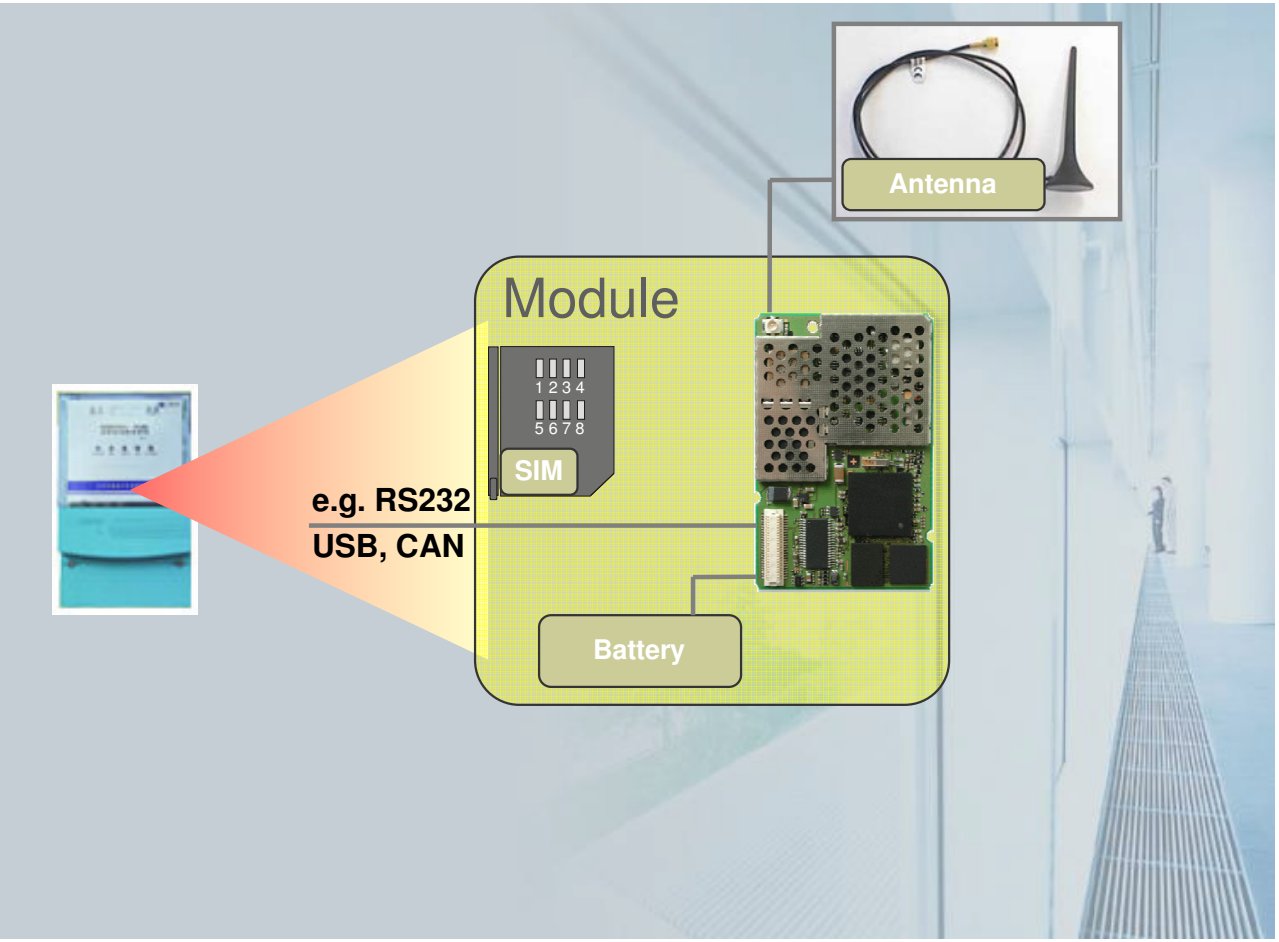
Infrastructure – GR System



Infrastructure – Master Station of GR.



Terminal – Smart Meter with Wireless module



Terminal – Feature

- 32-bit RISC CPU
- Precision Metering
- Well-known wireless module. e.g. Siemens, Sony-Ericsson…
- Multi protocol supported, compatibility with IEC series Proto.
- Auto Field Event Detect

Terminal – Characteristics

item	technical specification	item	Technical specification
Precision	Active: Class0.5/1.0 Reactive: Class2.0 Voltage, Current, Power: Class 1.0 Frequency: 0.01HZ	Impulse Constant	200imp/kW·h 200imp/kVar·h
Rating Frequency	50Hz	Design Longevity	15Years
Normal Operating Voltage	0.8Un~1.15Un	Normal Operating Temperature	-20℃~+65℃
Limit Operating Voltage	0.6 Un~1.25Un	Limit Operating Temperature	-25℃~+70℃
Power Consumption	≤2W，5VA	Temperature of storage and transportation	-25℃~+70℃
Veracity of clock	≤0.5s/d	Environmental humidity	＜85%
Keeping data time after power cut	≥10Yesrs	Dimension size	262×175×93(mm)
Battery operating time	≥5Years	Net weight	2.5kg

Deployment – Master Station Component

Client

Win Form/Browser

Application Server

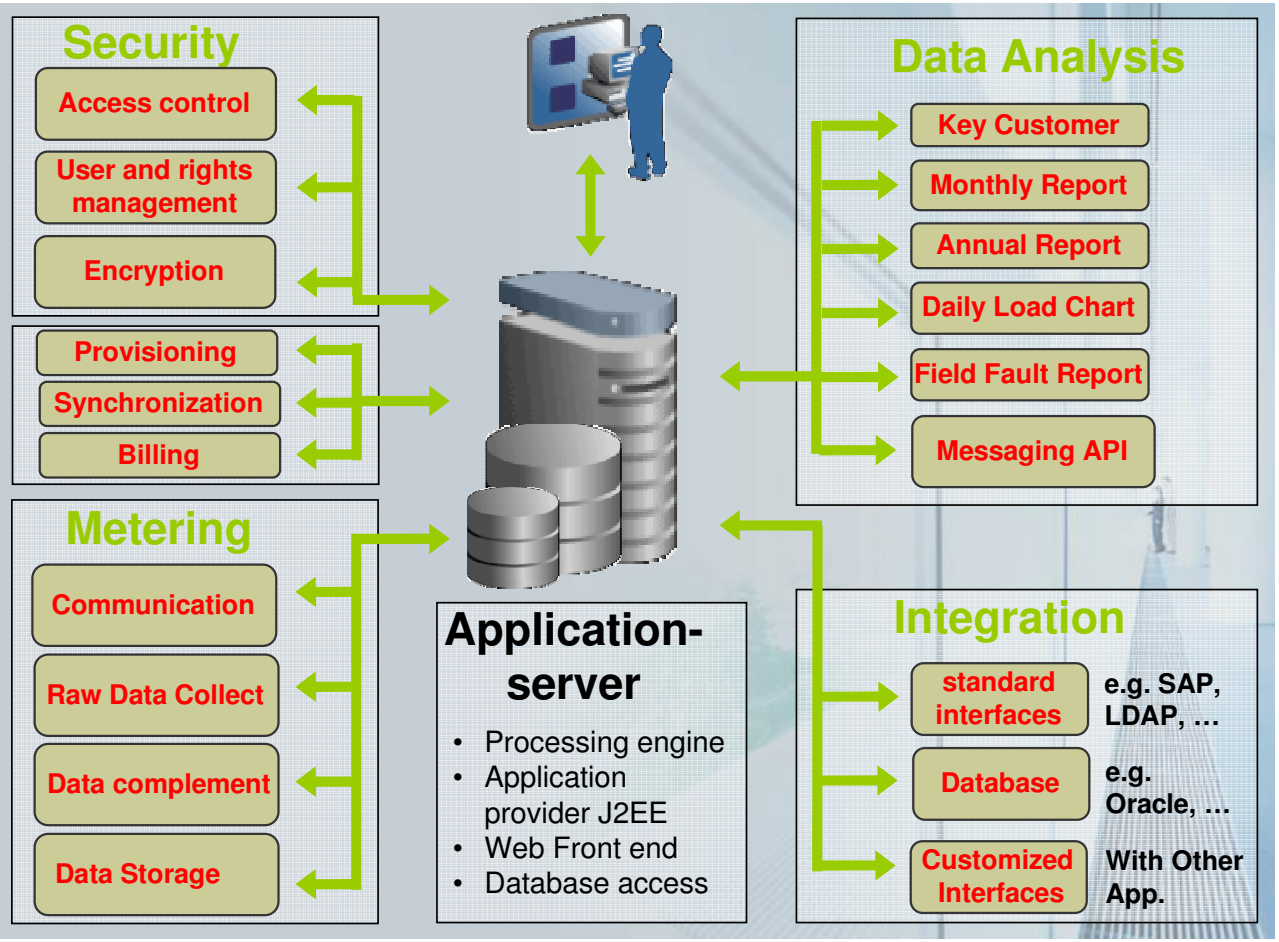
- Data Analysis
- Metering
- Messaging
- Security
- Management
- Caching
- Interfacing
- Web Server

Distributed Framework

Database

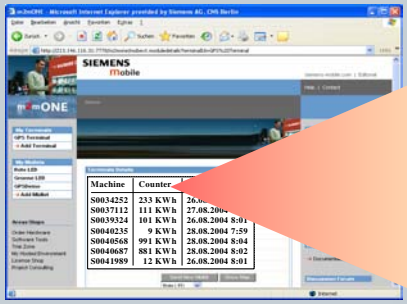
Storing of e.g.
- Business data
- User data
- machine data (counter, settings)

Component of the Application server …



Typical Application

- **Metering**
  - Periodic measurement reporting (daily, monthly)
  - Collect measurement values from terminal at server and store them in a data base
  - Graphical analysis of data
  - Interfaces to existing customer systems



Terminal	Counter	Time Stamp
T0003211	233 KWh	26.08.2004 8:00
T0002321	111 KWh	27.08.2004 8:00
T0009324	101 KWh	26.08.2004 8:00
T0040235	9 KWh	28.08.2004 7:00
T0040568	991 KWh	28.08.2004 8:00
T0040687	881 KWh	28.08.2004 8:00
T0041989	12 KWh	26.08.2004 8:00

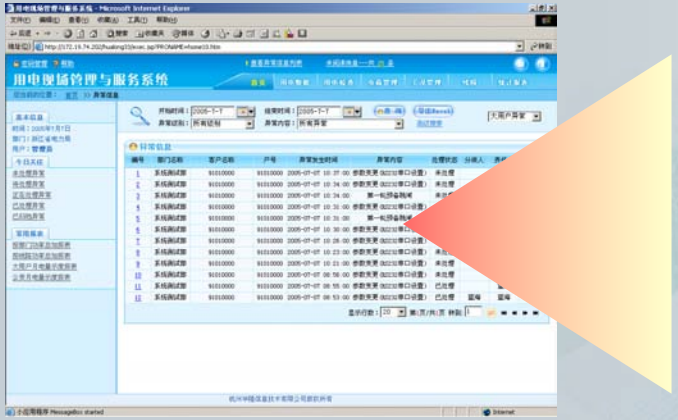
Typical Application

- **Metering—supporting data item**
  - Positive active electricity energy（multi-tariff）
  - Negative active electricity energy（multi-tariff）
  - Three-phase voltage
  - Three-phase current
  - Active power(total,three phase)
  - Reactive power(total,three phase)
  - Demand and time

Typical Application

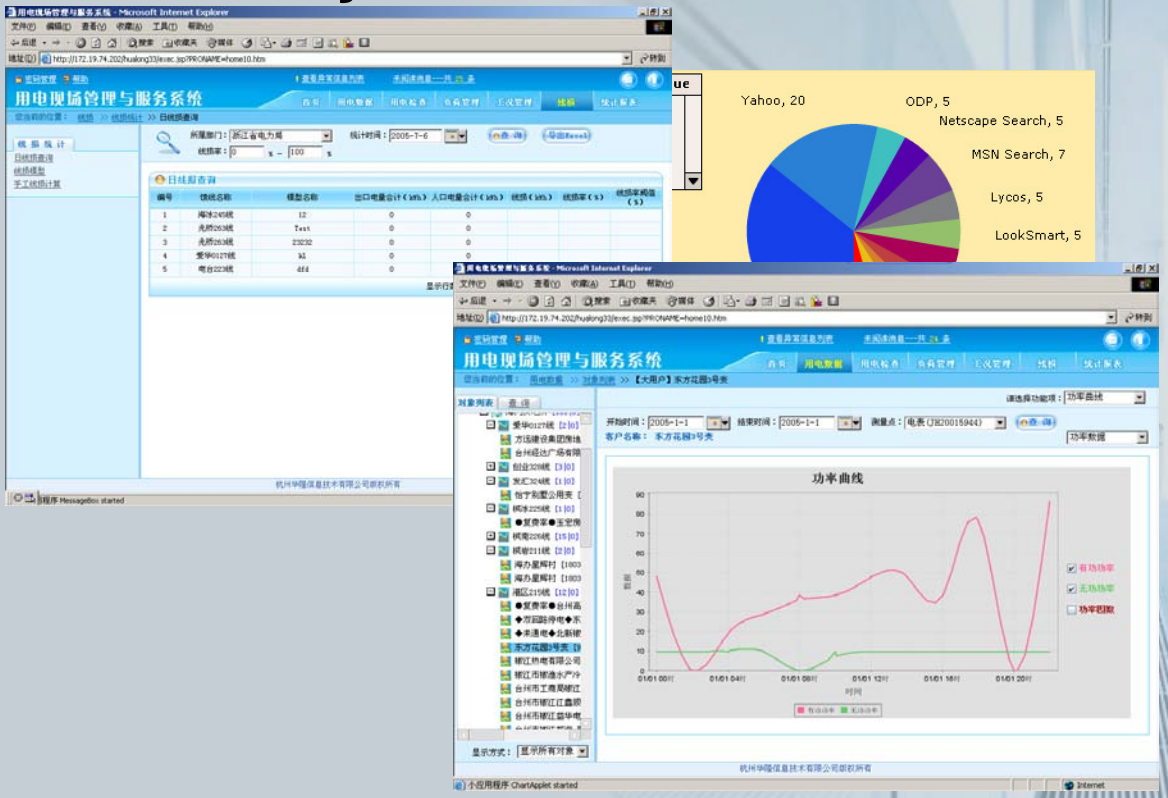
Field Fault/Exception Detect

- Voltage lost，over voltage，short of voltage
- Current lost，overload ，over current
- Phase lost
- Power reversal，phase reversal
- Parameter changing of meter
- Hardware malfunction
- etc



Typical Application

▪ Data Analysis



Advantages of GR System

- Aesthetically applicable design, advanced technology, leading in the field
- Overall plan of resolution, meeting the very requirement of the customers
- Systems stable running on site, abundant operating experiences
- Timely, comprehensive training and maintenance