

ISHIR develops Home Area Automation Solution for an Energy Utility Company

Client

The client is a leading energy utility company in U.S.

Challenges

The client wanted to share the real-time information on energy consumption, bills and establish a two-way communication with their end users. They wanted them to participate in energy saving programs, and give them full control to manage their energy consumption remotely. They set forth the following expectations:

- Availability of real time consumption information
- Manage peak load and Time of Use (TOU) based pricing through better demand program
- Reliable, cleaner and cost-effective power supply with fewer and briefer outages
- Pressure from retailer for low cost energy availability
- Pressure to reduce CO2 emission & Eco damage
- Enablement of end user via providing opportunities to optimize their consumption and reduce energy bills
- Active participation of end consumer in Energy Saving Programs

Solution

Under the Smart Energy program, ISHIR designed a solution for Home Area Automation. Smart Grid's key concept is consumer enablement for better control over energy expense and a two-way communication between the supplier and consumer.

This solution is a complete package of smart devices, energy gateway and web applications. When a new user gets registered under smart energy program with Utility, then at the time of user configuration, the device commissioning and stabilization (to establish communication between smart devices and gateway) is enabled. ISHIR's team then created and generated user credentials for a new user in application, so that user can control and manage all the features given in the applications.

The solution contains two web applications - CIP (Consumer Information Portal) and DRMS (Demand Response Management System) to overcome the challenges mentioned above.

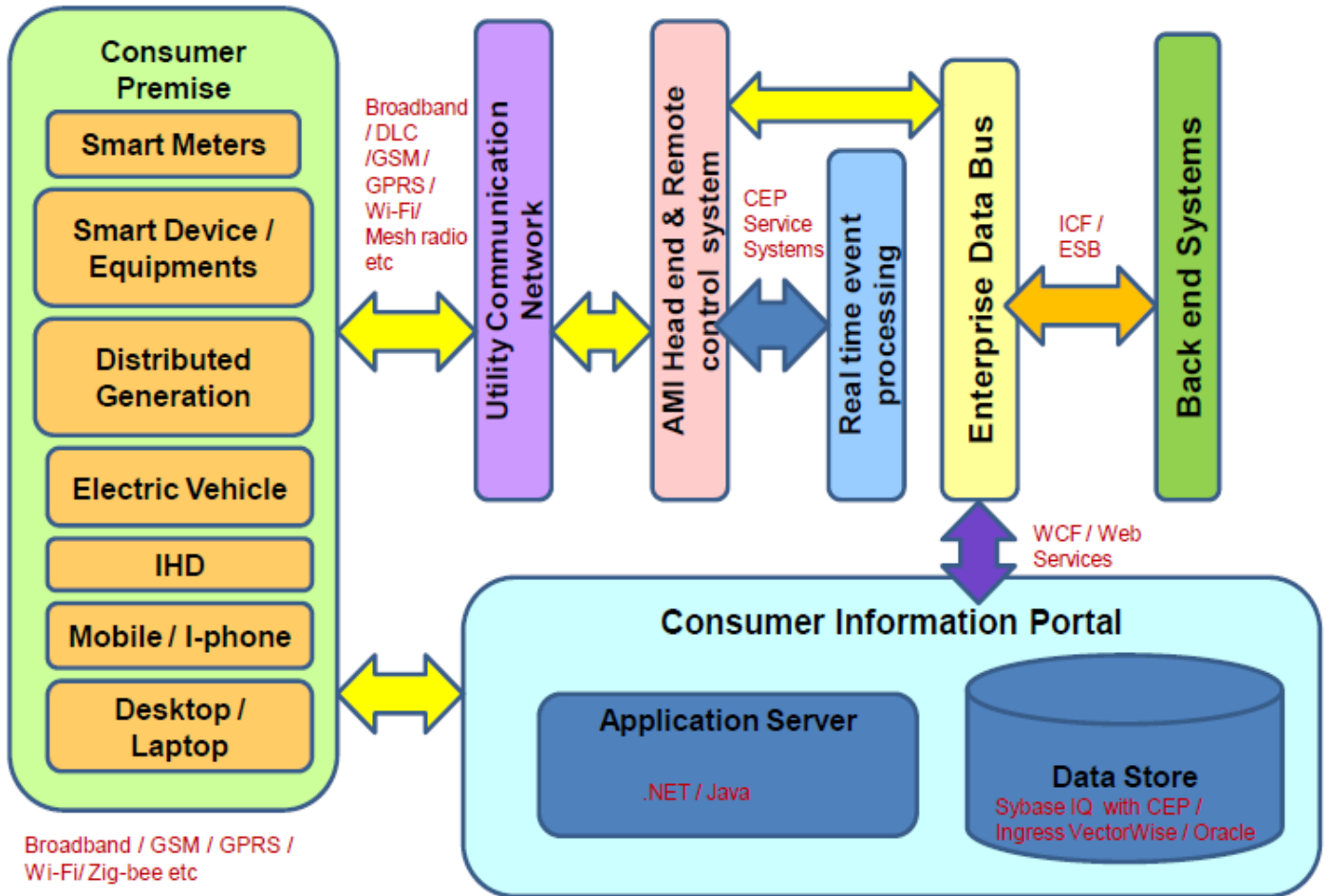
Consumer Information Portal

CIP enables consumers to define an energy usage budget to manage their energy consumption, energy bill, manage/control devices remotely, handle real time tariff signals, participate in Demand Response Programs to reduce energy demand during peak load scenario with the help of DR Events and notifications sent by Energy supplier, user can define modes and associate devices with it to automatically turn on/off based on their requirement and availability.

Demand Response Management System

With the help of DRMS application, Utility admin can create a DR program and invite consumers to participate in this program. It also provides facility to send bulk notifications to the consumer and get their confirmation for participation.

High-Level Architecture



Consumer Information Portal -- Dashboard

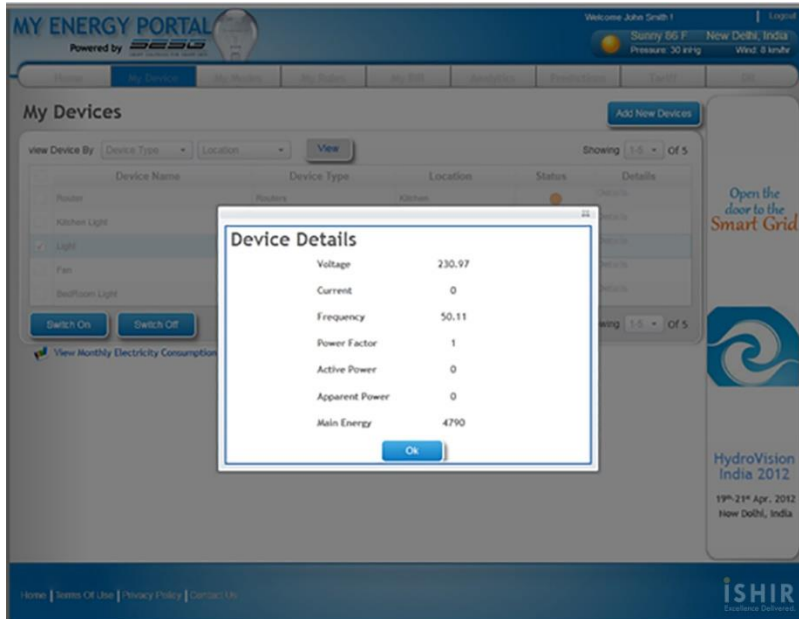
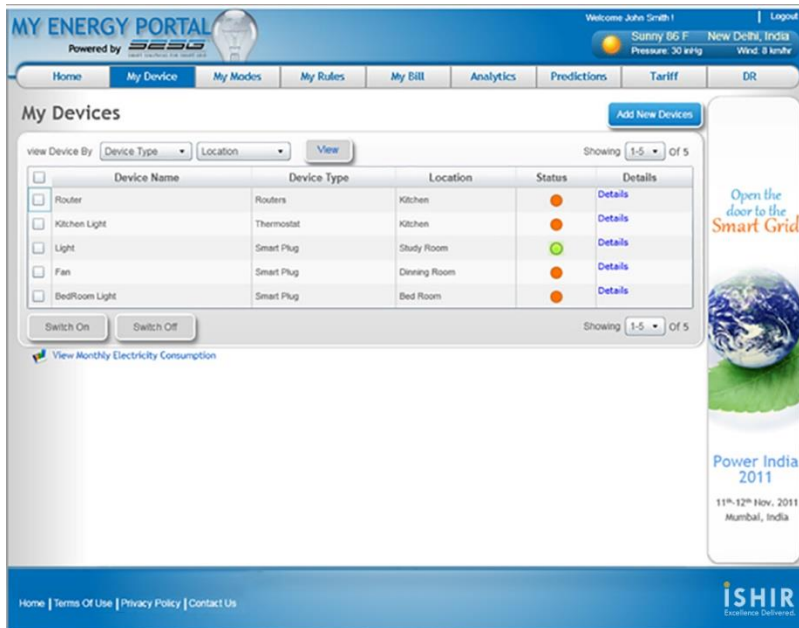
User can get a holistic view of current consumptions and current stats with help of below mentioned options:

- **Usages Analysis, Energy Poll, and Competition Results** - Users can get the different type of real time consumption analytics. Can Participate in any Poll or Competition that is launched by utility
- **Alerts and Notifications** - Users can see the Alerts and Notifications sent by Utility based on specific events
- **Active Modes** - Users can see the current active mode highlighted as green border and get the devices that are currently on as per mode



Consumer Information Portal – My Device

- **Device List** - Users can get the list of all active devices with their status. They can switch on / Off single/ many devices at a time by selecting check boxes
- **Add New Device** - Users can add any new device by clicking on add new device option and can reactivate any deactivated devices.
- **Device Details** - By clicking on the details hyperlink for any device, user can view the device details like current, voltage, etc.



Consumer Information Portal – My Modes

- **My Modes** - Users can define their modes based on their need, as and when required
- **Add Custom Mode** - Users can create any new custom mode
- **Select Devices** - Users can associate device, that they want to keep on when this mode gets activated
- **Set Mode Timings** - Users can set the timing for mode execution, when they want to operate that mode

MY ENERGY PORTAL
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Pressure: 30 inHg Wind: 8 km/hr

Home My Device **My Modes** My Rules My Bill Analytics Predictions Tariff DR

My Modes [Add Custom Modes](#)

Home Away Sleep Vacation DRMode Summer Morning

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Open the door to the Smart Grid

Renewable Energy World India 2012
19th-21st Apr. 2012
New Delhi, India

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All Devices
View Device By: Location [View](#)

Device Name	Location

Devices in Selected Mode
View Device By: Location [View](#)

Device Name	Location
<input checked="" type="checkbox"/> Light	Dining Room
<input checked="" type="checkbox"/> Billion Light	Living Room

[Save](#)

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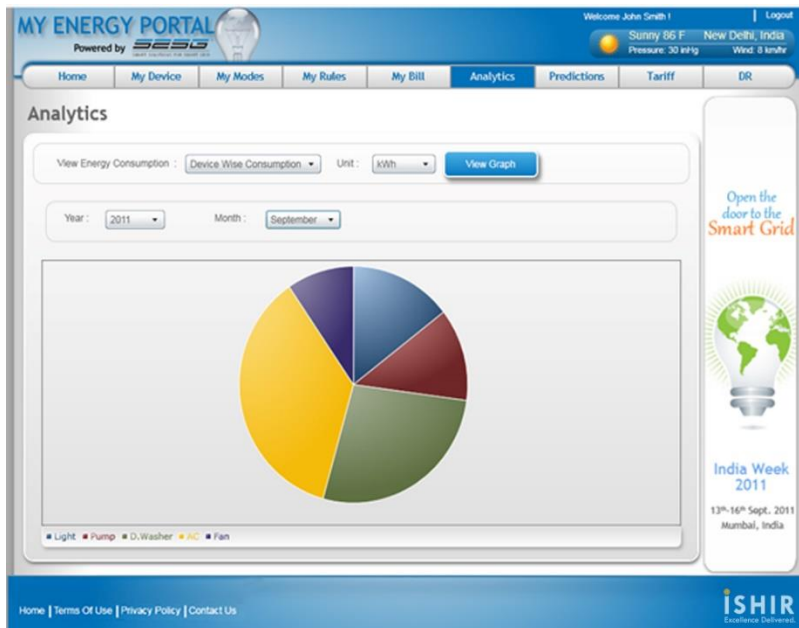
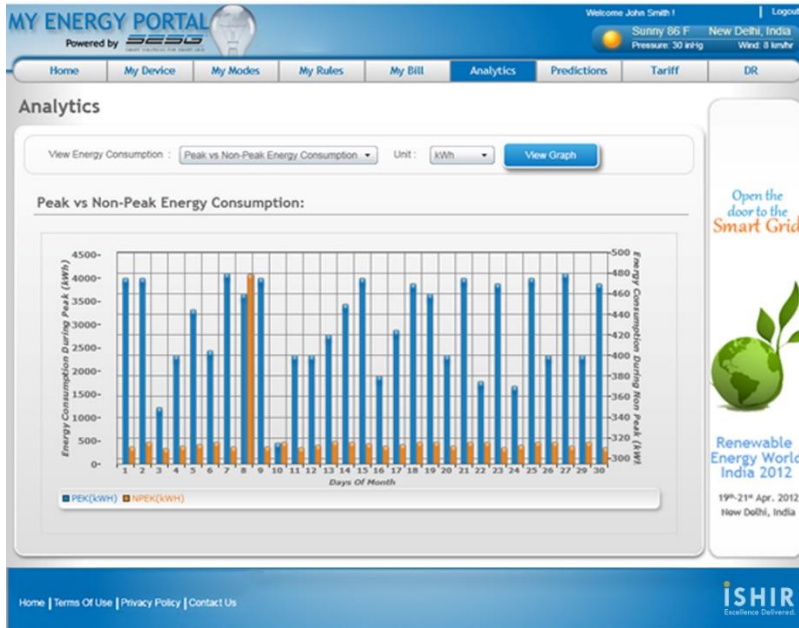
Consumer Information Portal – My Rules

- Users can set the rules for their monthly consumption either in kwh or in \$, based on these rules all alerts and notification will get generate.
- Consumption aggregate stats would get calculate based on these values alone

Month	Consumption	Unit	Unlimited
January	511	\$	<input type="checkbox"/>
February	611	kWh	<input type="checkbox"/>
March	101	kWh	<input type="checkbox"/>
April	305	kWh	<input type="checkbox"/>
May	100	\$	<input type="checkbox"/>
June	202	kWh	<input type="checkbox"/>
July	264	kWh	<input type="checkbox"/>
August	202	kWh	<input type="checkbox"/>
September	250	kWh	<input type="checkbox"/>
October	300	kWh	<input type="checkbox"/>
November	350	kWh	<input type="checkbox"/>
December		NA	<input type="checkbox"/>

Consumer Information Portal – Analytics

- **Peak Vs Non-Peak Energy** - Users can view their consumption patterns for Peak vs Non-Peak time
- **Device wise Consumption** - Users can view the device wise consumption chart
- **Monthly Consumption** - Users can view monthly consumptions
- **Daily Consumption** - Users can view the deeper level consumption patterns till the integration period level, if devices are able to send data every 15 minutes (a view can be created for 15 mins as well)



Consumer Information Portal – DR

- **All DR Programs** - Users can see the list of all Demand response programs launched by Utility, and register or unregister in these programs based on their requirement and interest
- **Register for a program** - When user registers for any DR program and sets the auto response mode on, then load gets automatically shut down whenever that event is raised, though users can again set the manual response from alert and notification section from the dashboard as well
- **Unregister from a program** - Users can unregister from any DR program at any point of time

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Home | My Device | My Modes | My Rules | My Bill | Analytics | Predictions | Tariff | DR

Demand Response

View Program: All View

Program Name	Start	End	Action
Seasonal Program	June	November	Edit / Un-Register
Optional Binding Curtailment			Edit / Un-Register

Refresh List

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India Week 2011
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Mumbai, India

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