Template for information regarding Company and Technology

Sr.	Description	Details
1	Name of the company	**Maven Systems Pvt. Ltd.**
2	Year of Establishment	2009
3	Verticals in which operating	- M2M / IoT - Hardware / software development services
4	Credentials of company (Quality Approvals, Type of registration/Small, Medium, Large Scale, Manufacturing Locations etc.)	- Small scale

5	Main Products /Components	- M2M / IoT
		  o Asset / equipment monitoring
		  o Vehicle tracking
		  o Smart metering
		  o Lighting automation
		  o Wireless automation
		- Hardware and software development services
		  o Embedded product development
		  o Smartphone / cloud development

6	Previous experience in technology transfer	An American start-up has been provided asset / equipment monitoring platform with customized look and feel and shared IP basis.
7	Details of technology offered	Cloud platform for asset / equipment monitoring that connects to a variety of readily available field gateways. The platform provides, location tracking, real-time monitoring of parameters, instant SMS / email alerts and reports for analytics. Additionally configuration module helps to use same cloud platform by multiple tenants. Smartphone connectivity modules enabled on-the-go connectivity.
8	Contact Details Name: Address: E-mail: Telephone No.: Mobile: Website:	**Name:** Mr. Dhananjay Kulkarni **Address:** "Govind", 7 C Shri Ganesh krupa society S No 91/1, Kothrud, Pune 411038, India. **Email:** inquiries@mavensystems.com **Telephone:** +91-20-32403635 **Mobile:** +91 98509 26914 **Website:** www.mavensystems.com
9	Type of Partnership/ Joint Venture desired	Partnership
10	Any Other relevant Details	

Overview of M2M offerings

Overview

Maven Systems has developed variety of M2M solutions. Be it industrial controls, sophisticated machines, heavy equipment, HVAC controls, vehicles, electricity / water / gas meters or even home appliances, Maven has delivered end-to-end solutions from hardware design, embedded development, cloud connectivity and smartphone apps!

Maven provides platform for building secure and scalable M2M / IoT solutions with quick time to market. Platforms are offered for following domains:

- Asset / heavy equipment monitoring
- Vehicle tracking
- Smart metering
- Lighting automation
- Wireless automation

M2M offerings

Offerings

Maven's M2M / IoT ecosystem offers:

- Machine connectivity and data acquisition.
- Battery operated or electricity powered wireless modules.
- Collecting data in local network and sending it to cloud server.
- Mesh networking in the local area network extending range to several kilometers.
- Different types of gateways /data concentrators with GSM, Ethernet, Wi-Fi and Bluetooth connectivity.
- Data mining and presenting it in analytical reports.
- Smartphone connectivity.

Quick-to-market

Leverage Maven's experience in M2M arena for quick time to market by using Maven's expertise:

- Maven has delivered M2M hardware devices for data acquisition from both non-intelligent (raw sensors) and intelligent (protocol-based) devices.
- Maven has developed firmware on microcontrollers from Microchip, TI, Atmel, Cypress, Maxim Integrated, Freescale etc. and ensured that the data reaches the cloud servers.
- Maven Systems has delivered cloud and smartphone applications ensuring real-time data and alarm monitoring and conclusive analytical data useful for decision making.

GeoHEMS - Generator monitoring

Overview

- Maven has developed a hardware + software solution for remotely monitoring generators.
- Generator data is transmitted to cloud server using GPRS.
- Real-time data and reports are available 24 x 7 on internet browsers and smartphones.
- Must for generators used in:
  - ➢ Mining operations.
  - ➢ Telecom towers.
  - ➢ Construction / infrastructure projects.
  - ➢ Manufacturing plants.
  - ➢ Commercial premises / data centers / health care etc.
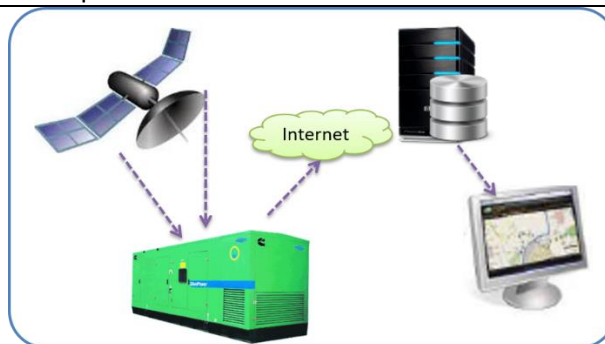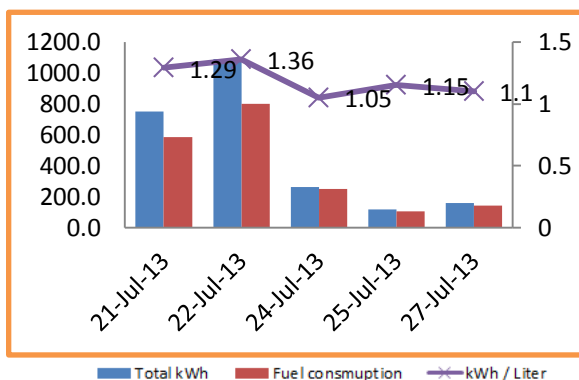 - ➢ Generator rental companies.

Benefits

- Stop fuel thefts and hence save on 8-10%of the losses incurred due to fuel thefts.
- Monitor generator health by acting on warning alarms and eliminate **Shutdown** / **Fail-to-Start** situations, thus avoid catastrophic failures, downtimes and huge operational losses.
- Monitor generator efficiency / productivity by monitoring energy output and save on operational losses.

Features

- Fuel monitoring using highly accurate sensor and robust algorithm. Provides details of fuel consumed, filled and removed.
- Comprehensive monitoring of all the parameters and alarms using Modbus over RS485 based protocol.
- Energy monitoring for finding out productivity of generators.
- Preventive maintenance alerts using SMS and emails for keeping generators healthy.
- Historical reports / analytics for performance analysis and enhancements.

Start time	End time	Fuel filled in liters
		177
06-Jun, 09:30	06-Jun, 09:30	577
06-Jun, 15:22	06-Jun, 15:50	374
06-Jun, 21:00	06-Jun, 23:12	

GeoHEMS – Equipment monitoring

Overview

- Maven has developed a hardware + software solution for remotely monitoring construction and mining equipment.
- Generator data is transmitted to cloud server using GPRS.
- Real-time data and reports are available 24 x 7 on internet browsers and smartphones.
- Useful for equipment like:
  - Excavators.
  - Wheel / backhoe loaders.
  - Ready-mix concrete trucks.
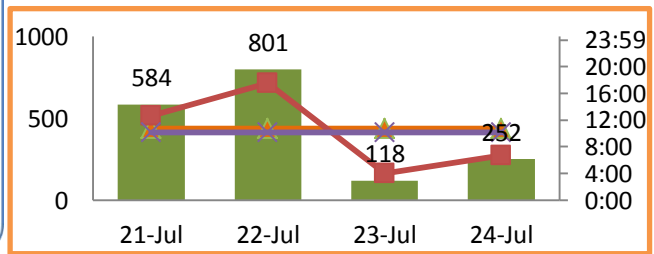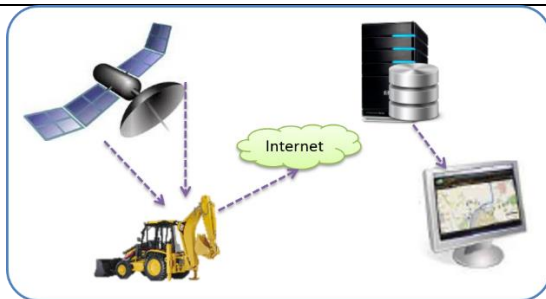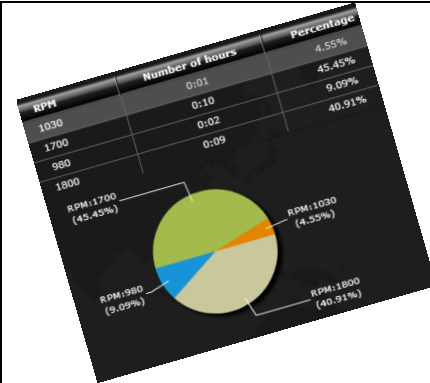 - Dump trucks.
  - Cranes.
  - Crushers.

Benefits

- Stop fuel thefts and hence save on 8-10%of the losses incurred due to fuel thefts.
- Monitor equipment health using preventive maintenance and eliminate catastrophic failures, downtimes and huge operational losses.
- Increase the equipment productivity and stop their abuse / misuse and even thefts.
- Monitor and increase operator productivity.

Features

- Fuel monitoring using highly accurate sensor and robust algorithm. Provides details of fuel consumed, filled and removed.
- CAN / J1939 based ECU monitoring for monitoring critical parameters and health of equipment
- Camera and RFID for operator monitoring
- Location and work hour monitoring to precise billing.
- Remote immobilizer for controlling equipment usage.
- Preventive maintenance alerts using SMS and emails for keeping generators healthy.
- Historical reports / analytics for performance analysis and enhancements

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GeoHEMS – Commercial vehicle monitoring

Overview

- Maven has developed a hardware + software solution for remotely monitoring commercial vehicles.
- Location and engine data is transmitted over GPRS to the cloud server continuously.
- Real-time data and reports are available 24 x 7 internet browsers and smartphones.
- Useful for commercial vehicles like :
  - Tankers / trailers.
  - Refrigerated trucks.
  - Trucks.
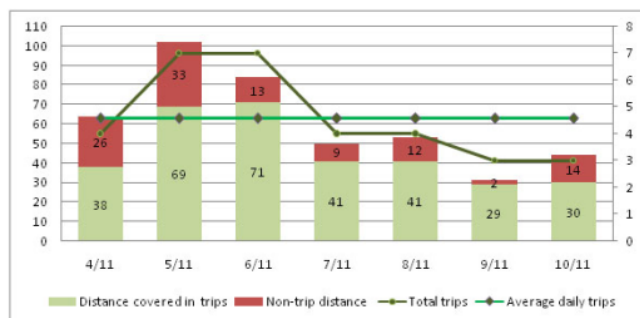 - Buses.
  - Taxis / cabs.
  - Private cars.

Features

- Fuel monitoring using highly accurate sensor and robust algorithm. Provides details of fuel consumed, filled and removed.
- OBD based vehicle tracking enabling remote diagnostics.
- Location monitoring along with Geofences and trips.
- Integration with SAP / ERP systems for automated audits.
- Advanced monitoring include, temperature monitoring, tanker lid monitoring.
- Historical reports / analytics for performance analysis and enhancements

Benefits

- Stop fuel thefts and hence save on 8-10%of the losses incurred due to fuel thefts.
- Monitor the kilometers travelled, trips made, thus increase the operational efficiency of fleet.
- Stop adulteration of goods by monitoring lids of chemical / fuel / milk tankers and monitoring temperature of reefer vans.
- Stop frauds and save a lot of money by integrating field data directly in SAP / ERP systems.
- Protect passengers (especially lady passengers) in taxis / cabs.

Route	Start time	End time	Total time	Distance (km)
*SEABIRD - JNPT	12/8/2013 23:37	13/8/2013 1:37	2:00	9
JNPT - Seabird	13/8/2013 1:59	13/8/2013 4:22	2:23	11
SEABIRD - CWC	13/8/2013 11:31	13/8/2013 13:00	1:29	6
CWC - Seabird	13/8/2013 13:30	13/8/2013 13:56	0:26	6

1 - 4 of 7 Records

GeoHEMS – School bus monitoring

Overview

- Maven has developed school bus monitoring solution for ensuring safety of students and increasing convenience of parents.
- Advanced monitoring options such as RFID, BLE, camera etc. provides peace of mind to school authorities and parents.
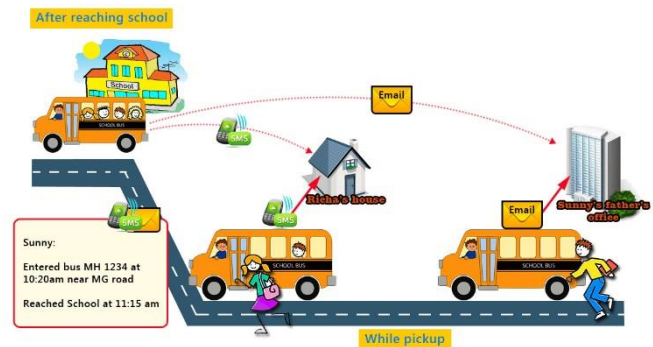
Features

- Get elapsed time about school bus reaching the bus stops.
- RFID based alerts to parents when the students board / alight the bus.
- Break down and panic alerts in form of instant SMSs.
- Continuous monitoring using internet browsers and smartphone apps.
- Over-speeding / rash driving alerts.

Benefits

- Bring unreliable drivers in check.
- No worry for school authorities and parents as student whereabouts are continuously known.
- Safety concerns are addressed by monitoring over speeding / rash driving.
- Stop misuse of school vehicles.
- Increased convenience to parents as the elapsed time of school bus is gotten just 10 minutes prior to the bus reaching the stop.

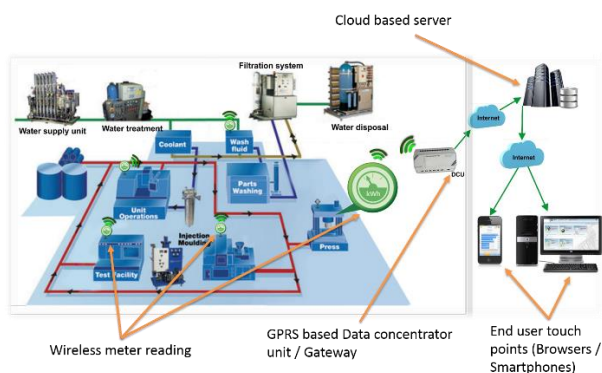CONFIDENTIAL

MonitorMyMeter – Sub-metering solutions

Overview

- Maven has developed wireless sub-metering solutions for collecting and analyzing metering data wirelessly.
- Wireless technology over 2.4 and Sub-1 GHz collect data from a local network and transfer data to could server over GPRS network.
- Meter data collection using handheld units is also available.
- Water and electricity sub metering can be achieved using the solution.

Features

- Collet meter wirelessly – retrofit solutions, no wiring required.
- Get range up to few kilometers using mesh technology.
- Battery operated data collection modules for water sub-metering.
- Connect up to 500 wireless modules to 1 data concentrator and save on recurring costs.

Benefits

- Helps to identify problems with equipment / machines. Addressing these problems may not only save energy, but prolong the life of the equipment or identify a piece of equipment that is failing.
- Identification of unnecessary equipment / machines running (such as air conditioners, lights) at undesired times like nights, off shifts, or during the weekends – thus save costs.
- Ability to get information to the facility managers the same day to identify cause of pilferage and take speedy corrective action.
- Benchmarking and comparison of usage across similar facilities (stores, warehouses, different divisions or buildings).
- Comparison of usage over different seasons (summer / winter) and different months / weeks.

GreenLightt– Lighting automation solution

Overview

- Maven Systems has developed wireless lighting automation solutions for street and commercial lighting.
- The solution is intended towards saving energy wasted because of no control over individual lights.
- Wireless technology over 2.4 and Sub-1 GHz are used for communication with lighting fixtures to control the ON / OFF status.
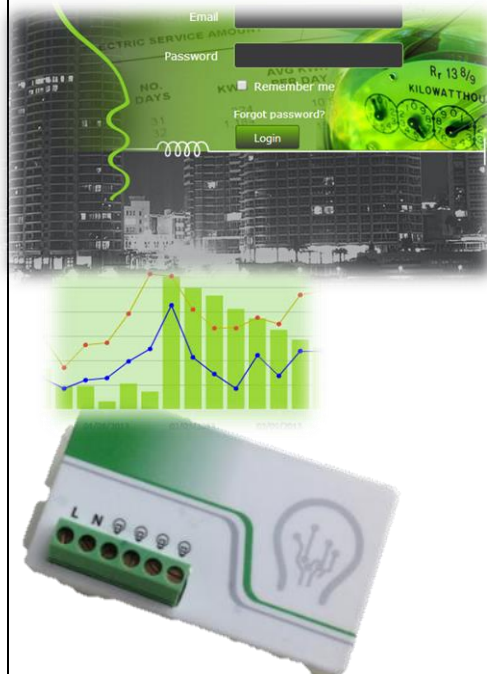
Features

- Wireless modules with range up to 500 meters in line of sight can control up to 2 modules.
- Dimming feature available enables in extra energy saving.
- Integration with motion controls, light sensors and season-based solutions aides in optimum energy saving.
- Fault identification helps in finding out faulty lights instantly.

Benefits

Wireless street light connected to cloud and mobile through DCU

- Retrofit solution helps in energy saving without needing infrastructure changes, thus you can start with energy saving and cost reduction in matter of a week's time!
- Remote diagnostics and instant alerts help you save the support cost by reducing field visits.
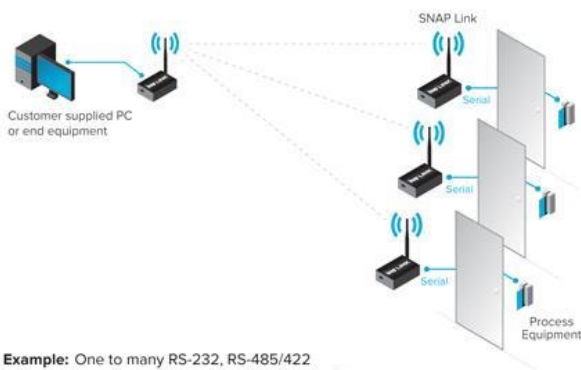
WiART– Wireless automation solutions

Overview

- WiART (wireless convertor modules) developed by Maven enable you to quickly convert your conventional wired solutions into wireless.
- These operate at license-free ISM frequency bands in India. WiART modules are perfect suit as they replace conventional cables!
- Application areas / industries:
    - Electric meters, water meters, energy meters, flow controllers, pressure controllers.
    - Solar panels, windmills, weighing scales.
    - Data loggers, controllers, PLCs, intelligent IOs, any industrial equipment with RS-232 port.

Features

- Plug-n-Play. No change in your existing devices.
- Supports one-to-one or one-to-many multi-drop connections.
- Point-to-point line of sight range of 600 meters.
- In-built repeater (SmartMesh) functionality to extend the effective distance to several kilometers.
- Can connect to GPRS enabled data concentrators to support cloud / remote connectivity.

Benefits

Example: One to many RS-232, RS-485/422 talking to three door pads and one ModBus device.

- Retrofit solution helps in building connectivity without the need of doing any infrastructure changes.
- Supports transparent mode – so single module can serve all your wireless automation needs.
- Save costs by eliminating need of repeaters.
- Remote diagnostics and instant alerts help you save the support cost by reducing field visits.