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Application of Iot in Electrical Grid

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Abstract: The field of Internet of Things has grown widely in nearly all areas of technologies most recent be Organization MAS, Mobiles and Electrical where its indulgence is most novel. Work has already been started where sensors, smart meters and actuators, grids and this is most economically done through the use of solar cells that can even be modified by the usage of multi-lens distance focusing system, which is a future research scope of this paper. The authors here propose the use of wireless signals to control, supply, distribute, and manage and prapogate the electric current on demand by utilizing zonal electric grids powered by solar cells.

Keywords: IOT; Electrical; Grid, Solar Cells; magnification.

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I. LITERATURE REVIEW

Traditional power grids are being transformed into Smart Grids (SGs) to solve the problems of uni-directional information flow, energy wastage, growing energy demand, relia-bility and security. SGs offer bi-directional energy flow between service providers and consumers, involving power generation, transmission, and distribution and utilization systems. SGs employ various devices for the monitoring, analysis and control of the grid, deployed at power plants, distribution centers andin consumers' premises in a very large number. Hence, an SG requires connectivity, automation and the tracking of such devices. This is achieved with the help of Internet of Things (IoT) [1]. IoT helps SG systems to support various network func-tions throughout the generation, transmission, distribution and consumption of energy by incorporating IoT devices (such assensors, actuators and smart meters), as well as by providing the connectivity, automation and tracking for such devices. In this paper, we provide the first comprehensive survey on IoT-aided SG systems [1][2], which includes the existing architectures, applications and prototypes of IoT-aided SG systems. This survey also highlights the open issues, challenges and future research directions for IoT-aided SG systems.

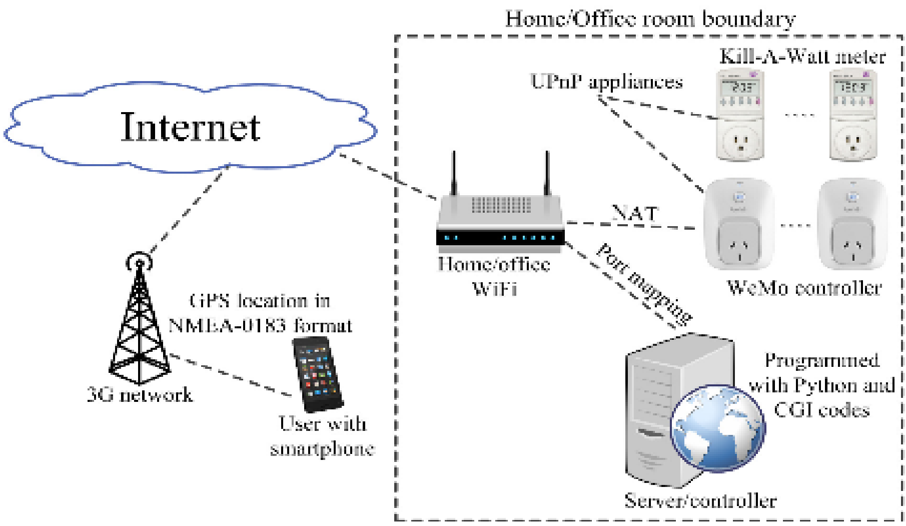

Fig. 1 GPS and Port Mapping

II. IOT BASED SOLAR EMPOWERED GRID

To work in a distributed environment, there needs to be a grid along with solar cells, better using multi-cell inter-distance focusing system (future research). The two solutions provided by the authors here are using either a radio emitter or receiver or internet wireless local loop (WLL) near every solar grid unit connected by internet. Solar cells charge and deliver electricity to grids. In order to satisfy the demand of a consumer the best fit memory allocation algorithm must be applied or as the need be.

III. BEST FIT MEMORY ALLOCATION ALGORITHM

This concept is taken from the strategy of memory allocation in operating Systems where the next demand of memory block is provided with best fit algorithm from amongt the best holes available. Similarly in Electrical systems in order to avoid confusion and chaos the electrical wires have been tried to remove except those in 'solar grid' reticulation and electrical distributed solar grids as shown in figure 1.
Each Solar Grid Unit, SGU is attached with a wireless router in such a fasion that forms a mesh topology.

IOT Signal Sending and Receiving

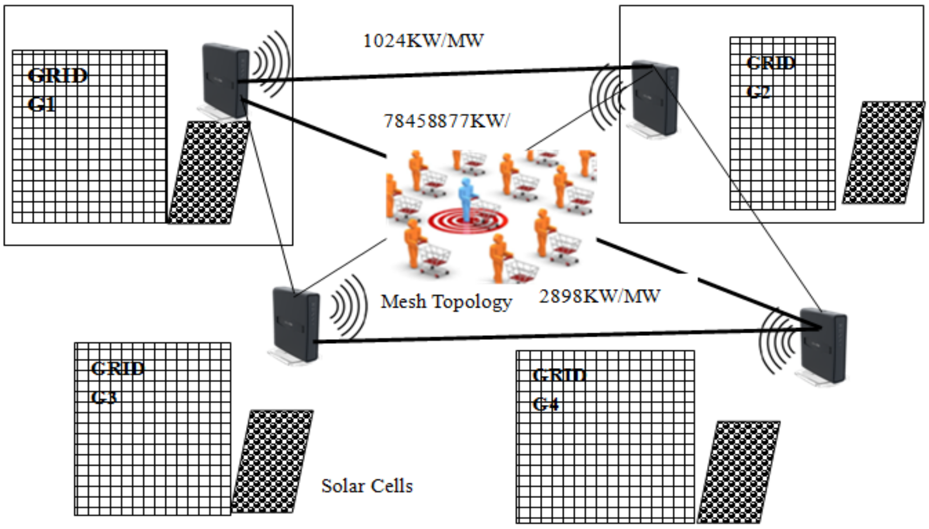

Figure 2 IOT Signal Sending and Receiving

The consumer's demand for electricity is sent by one wireless device or router (if we use the existing internet). The demand is first fulfilled by the nearest power hub. In case that power hub does not have sufficient power, it will then request its immediate neighbor successively with either beadth first or depth first algorithm to select most suitable power hub.

Load Balancing

The above phenomenon is demonstrated by the example of DBMS where load balancing is done in order to satisfy the user requests.
The concept of Signal transmission from wifi device attached to power hub (solar cells + Grid) is actually the numeric value of the amount of power in KW, say, 20000KW that is transmitted by the wireless system of the internet from one power hub to another.
Suppose, Power Hub 1, now called PH1 has a request for 24000 KW then the wireless device attached to it will transmit a signal first to its own PH like <25000>. The electricity is supplied to many consumers simultaneously so there is a mechanism defined here such that if one PH goes less in power some other PH takes over. And this is done by sending a signal <KW Request> from one wireless device to another. If the new PH is capable then it supplies with the <KW Response> otherwise it gathers whatever power available from its nearest neighbours that fulfills its needs. The amount of power in KWs that is required by any of the PHs are transmitted as signals containing <numeric valued KWs> and then the power is accumulated from various different PHs by exchanging the signals.
Assumptions:
PH: Power Hub
WD: Wireless Device
SIG: SIGNAL<PowerNeed in KW/MW>

CON: Consumer

The algorithm is shown below for one cycle:
1. N1 is Integer
2. Consumer1<----- **N1** KW/MW FROM PH1
3. N1 is transferred through SIG
4. If PH1 is sufficient to handle the request, N1 is supplied.
5. If PH1 is insufficient to handle the request,

PH1 passes SIG to all its neigbours and gets the best fit for cumulative power from varied Power Grids.

6. This division and distribution of electricity goes on satisfying the needs of the consumer and through the solar cells next to the grid, current continues to be generated.

7. END

IV. CONCLUSION

The authors have proposed the model for distributed electricity consumption as per consumer needs by the use of IOT. Wireless signals transfer the electricity demands in numeric form like <450098MW> from one PH to another PH and this happens in a shared and cumulative way just as memory is allocated in an Operating System. As future work multi-convex lens layers under the sun with accurate adjustment to maximize and balance the light energy, thereby converting into heat energy is proposed.

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