CLAIMS:

1. A system comprising:

a plurality of devices connected to one or more circuits in a power distribution grid;

a head end system, HES, configured to communicate with the plurality of devices;

a controller configured to receive data from the plurality of devices and to communicate with the HES via one or more HES application programming interfaces, APIs,

wherein the controller is configured to request and receive, via the one or more HES APIs, device information relating to the plurality of devices, and

wherein the controller is configured to manage one or more services relating to the one or more circuits in the power distribution grid based on the device information.

2. A system according to claim 1, wherein each device of the plurality of devices is an electric meter configured to measure a power consumption of an end consumer.

3. A system according to claim 1 or 2, wherein the controller is configured to manage power flow and/or voltage by automatically controlling voltage regulator and capacitor bank switching operations and/or wherein the controller is configured to manage a distributed energy resource, DER, and/or to manage battery charge and discharge at an end user associated with a device of the plurality of devices.

4. A system according to any one of the preceding claims, wherein the device information comprises, for each device, one or more of

location information, relating to the physical location of the device and/or a distance between device and other devices of the plurality of devices,

circuit information for identifying one or more circuits to which the device is connected,

load information, relating to the power consumption of the end consumer associated with the device,

phase information, relating to the electric phase of the device, quality of supply, QOS, information,

supply impedance,

temperature,

communication congestion, communication latency, communication throughput, communication route,

acceleration,

vibration,

supply voltage, load current, power,

sound, and

light exposure.

5. A system according to any one of the preceding claims, wherein the controller is configured to:

select a master device of the plurality of devices based on the device information, wherein the master device is configured to facilitate communication between the plurality of devices; and optionally

transmit an activation message to the selected master device to activate an appropriate application on the master device to act as a master device.

6. A system according to any one of the preceding claims, wherein the controller is configured to:

request from the HES a list of devices comprising a set of properties, and wherein the HES is configured to, in response to receiving the request, provide a list of the plurality of devices filtered based on the set of properties; and optionally

update the set of properties based on a response from the HES.

7. A system according to any one of the preceding claims, wherein

the plurality of devices and the HES are comprised by an advanced metering infrastructure, AMI, and

wherein the HES and one or more of devices are configured to communicate using the AMI and independently of the controller and the HES APIs; and optionally

the controller is configured to group devices of the plurality of devices based on the device information.

8. A system according to any one of the preceding claims, wherein the controller is configured to identify a problem meter based on the device information and, in response to identifying the problem meter, transmit an activation message to the HES via a HES API to cause the HES to activate an application in each device in a same group as the problem meter.

9. A system according to any one of the preceding claims, wherein the HES is configured to provide a mechanism for peer-to-peer communication between devices of the plurality of devices, and optionally wherein the plurality of devices is configured for peer-to-peer communication in an application layer of an Open Systems Interconnection model.

10. A method of controlling a power distribution network, the method comprising:

at a controller, requesting device information from a head-end system, HES, wherein the device information relates to a plurality of devices connected to one or more circuits in a power distribution grid;

at the HES, transmitting device information to the controller via one or more HES application programming interfaces, APIs;

at the controller, managing power flow and/or voltage in the one or more circuits in the power distribution grid based on the device information.

11. A method according to claim 10, wherein the step of managing comprises automatically controlling voltage regulator and capacitor bank switching operations, and/or wherein the step of managing comprises automatically controlling a distributed energy resource, DER, or battery charge or discharge at an end user associated with a device of the plurality of devices.

12. A method according to claim 10 or 11 further comprising, in the controller:

electing a master device of the plurality of devices based on the device information, wherein the master device facilitates communication between the plurality of devices; and optionally

transmitting an activation message to the selected master device to activate an appropriate application on the master device to act as a master device.

13. A method according to any one of claims 10 to 12:

wherein the step of requesting device information comprises requesting from the HES a list of devices comprising a set of properties, and wherein the HES, in response to receiving the request, provides a list of the plurality of devices filtered based on the set of properties; and optionally

in the controller, updating the set of properties based on a response form the HES and sending a new request with the updated set of properties.

14. A method according to any one of claims 10 to 13 further comprising, facilitating communication between the plurality of devices and the HES over an advanced metering infrastructure, AMI.

15. A method according to any one of claims 10 to 14 further comprising, in the controller:

grouping devices of the plurality of devices based on the device information,

and

identifying a problem meter based on the device information and, in response to identifying the problem meter, transmitting and activation message to the HES via a HES API to cause the HES to activate an application in each device in a same group as the problem meter.