

Future Power Systems 12 - New data from the Industry to the customer

Now, we need to look at the data flow in the opposite direction.

This will mainly comprise instructions and signals to change the intended Import-Export profile of DER premises in response to the data offered to do same.

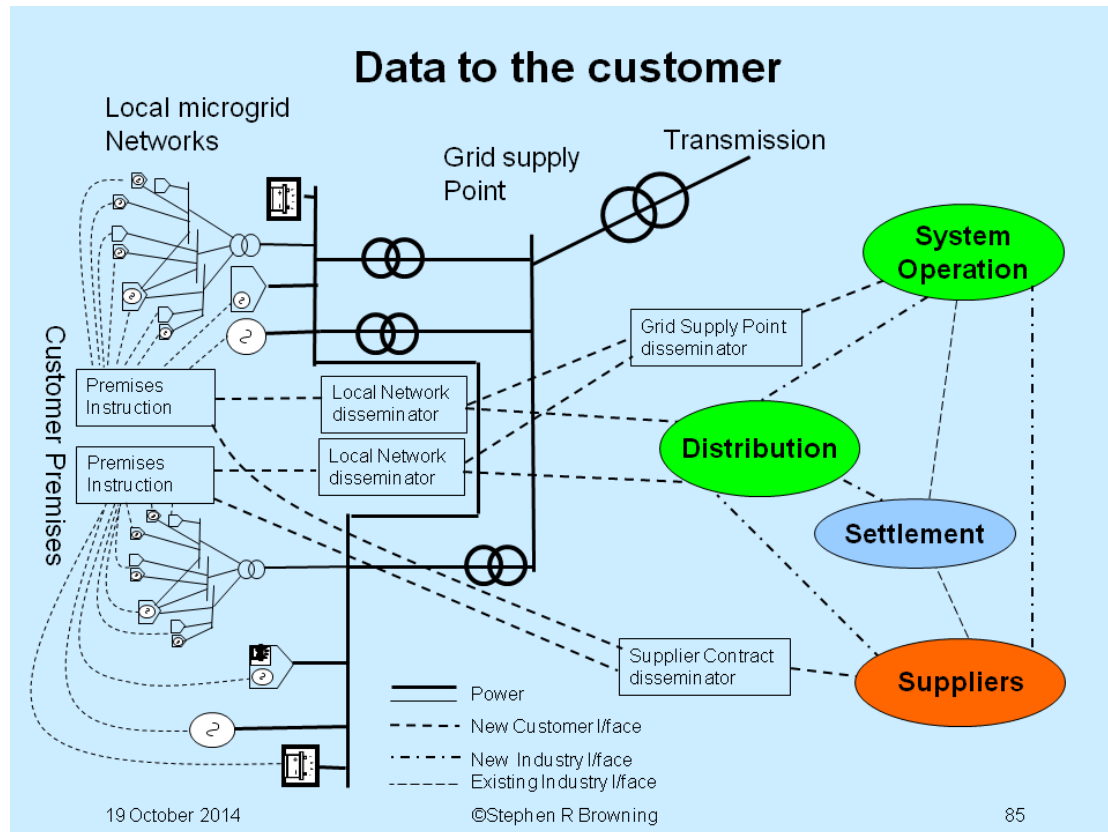
The important thing to remember is that because the system is always in balance, everything affects everything else!

The reverse route comprises a series of disseminators in parallel with each aggregator unit. When the distributor, the system operator, or a market supplier accepts an 'offer' from a block of DER resource, the block instruction has to be disseminated back to the original premises and then to the individual equipment that will make the necessary response.

In addition, the instruction needs to be accommodated by the other parties. For example, if the system operator instructs a DER block power change by location, the resulting action will impact each supplier party who has a contract with one or more of the component premises. In Great Britain, the resultant energy change needs to be aggregated by the supplier by half an hour to avoid distorting the supplier's contracted energy within the settlement process. There are already mechanisms in place to do this for dispatch and ancillary service provision on large units. In addition, the power change may only be achievable if the distribution operator takes (albeit automatic) action to maintain network stability.

It is important to note the change in role for the distribution operator who now starts to be a (partly automatic) distribution system operator. The concept of control of active DER resources is being tried out in various locations, to permit larger amounts of distributed generation to be connected as long as local security can be maintained by intertripping or other active output management schemes if fault conditions occur. In Great Britain, these initiatives are being configured within specific areas known as local dispatch zones (LDZs.)

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The combined control of variable demand, storage and generation and aggregation/dissemination of instructions is being tried out within the virtual power pool concept as part of smart networks research.

For an instructed change, which will comprise power and duration, this is all fairly simple to manage. However, the easiest way to cause DERs to respond is by simple tariff price switching as with the ENEL (Italian) Telegstore system and other simple distributed demand switching methods. The impact of a price change on a group power and voltage profile and supplier energy can be more difficult to gauge.