IP500® OEM Alliance @
BIM VIRTUAL 2020

Smart BUILDING and IP500

VDI Installation Guideline with IP500

The global standard for wireless connectivity provides:

Highest Wireless Performance

Lowest Cost of Ownership

**Interoperability**

Safety & Security Regulations

SMART Buildings and IP500

IP500 wireless mesh network can respond to all applications needed
in building automation.

This is achievable thanks to the sophisticated architecture of IP500 dealing with:

- ➤ redundancy as part of IP500 network concept:
    - o automatic frequency switch between sub GHz and 2.4 GHz;
    - o mesh networking where each IP500 device follows at least 2 different routes;
    - o fault tolerant, load balancing gateways based on Scalaris architecture;
- ➤ scalability and operability between all IP500 devices connected to the network;
- ➤ reinforced by applications features running on a local BMS.
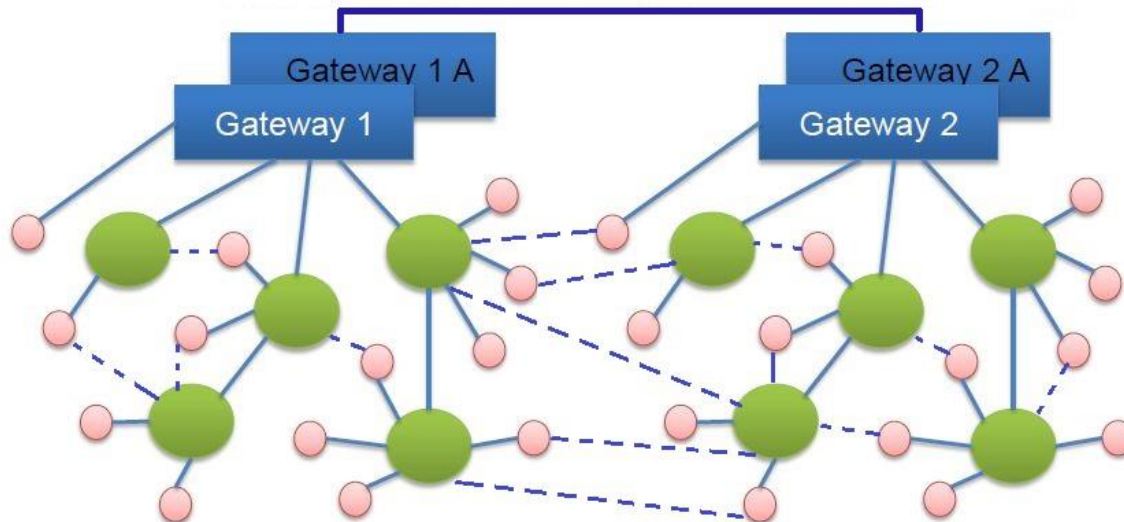
BUT:

➤ People have a critical attitude towards using automation in Buildings;

➤ they prefer to deploy solutions by theme (lighting) or applied only per rooms;

➤ Comprehensive approach to building equipment avoided. High-level functions deployment become then impossible;

➤ Most consultants, planners and installers companies have difficulties to present:
  o the advantages of automation to their customers
  o objectively and in a readily understandable manner.

➤ Nevertheless, building system automation can:
  o Lower the operation cost (energy, maintenance..);
  o optimize benefits like comfort, well-being;
  o promote the rent out or getting a higher selling price.

➤ SOLUTION: implementation of VDI guideline 3813

Decision makers, planners, installers are be able to understand and apply the room control functions through the VDI guidance methodology .

What is VDI 3813 about?

➢ The methodology must be comprehensible by all stakeholders from the begin up to the final installation;

➢ the concept taking in account must be simple but relevant for real automation application implementation. Thus, the buildings are subdivided according to the "shell model":

o **Segment**: smallest functional unit in which room control functions are implemented;

o **Room**: consists of one or more segments. Possibly, room reconfiguration using existing segments without physically changing assigned functions to a segment;

o **Area**: consists of one or more rooms (could be a corridor, a story or an atrium);

o **Building**: consists of one or more areas.
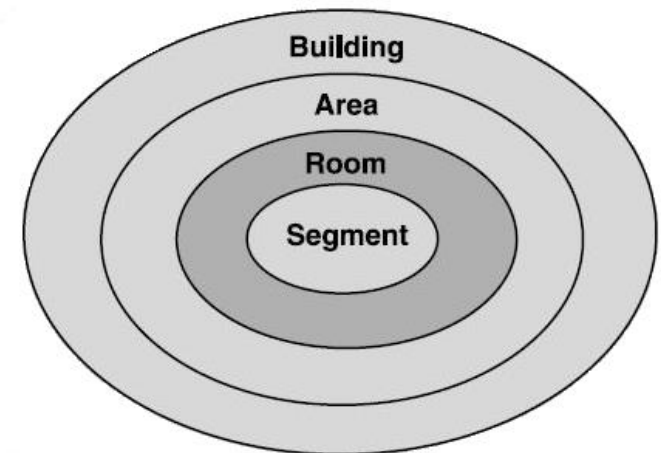
Some functions are applied to the whole building like Wind speed, external temperature, external brightness measurements and rain detection;

Same case for a function like a building facade anti-glare protection.

Applications functions

The stakeholders can take in account in a list the function he wants to implement like:

➢ **Lighting functions:**
  - **Standard**: on/off manually or automatically;
  - **Light control dimmable**: if light dropped than the brightness will be regulated in case of presence detection;
  - **Daylight utilization**: blinds control manually or automatically by time program with / without presence detection or anti-glare protection

➢ **Air conditioning functions:**
  - **Room temperature control heating**: with/without presence detection;
  - **Room temperature control cooling**: with/without presence detection or ventilation dependent;
  - **Room ventilation**: with presence detection;
  - **Room ventilation**: with mixed gas (VOC) detection;
  - **Windows opening**: manually or automatically;
  - **Windows ventilation**: mixed gas guided ;
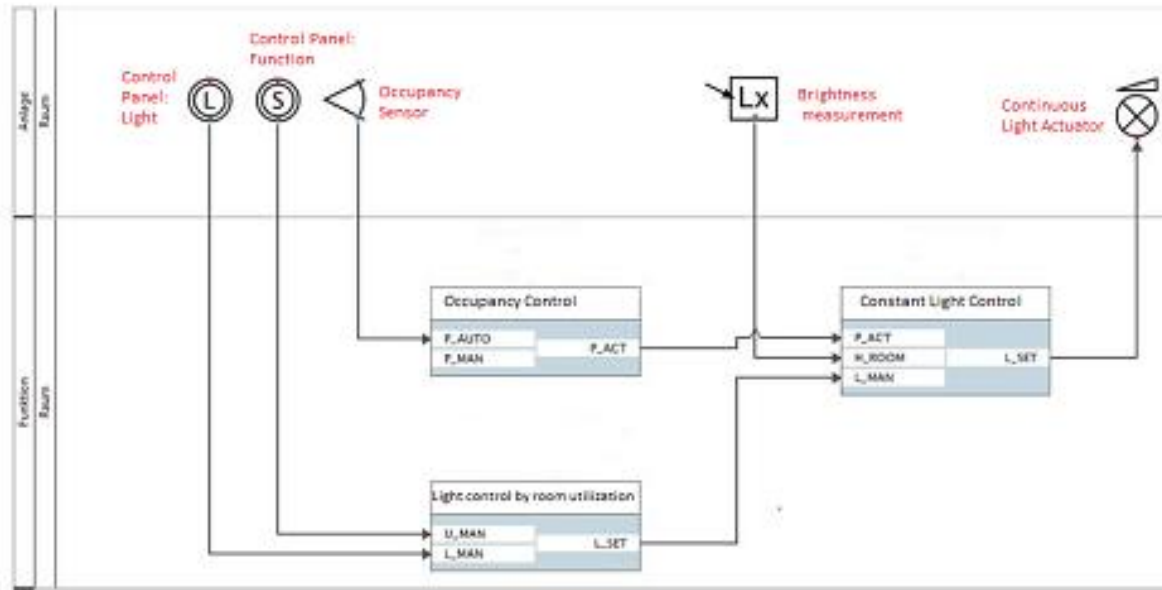 - **Windows ventilation**: free night cooling.

➢ **Sun protection:**
  - local manual or automatic blinds control;
  - shading correction

➢ **Air quality**

General Description of room solutions:

➢ Actuator and sensor have specific symbol like: "occupancy sensor"

➢ Utilization of specific function blocs like "Occupancy Control"

➢ The input & output information and optional parameter are designed as follows:

 o **P_** people presence, **U_** Room utilization, **L_** Light; **H_** illumination level

 o **AUTO**: automatically, **MAN**: manually, **ACT**: actual**, SET**: set value

 o **P-AUTO**: presence in the room, automatically detected by a sensor

 o **L_MAN**: light control coming from the manual control unit

SMART Buildings and IP500

The IP500 architecture promote the use of VDI 3813 scheme so that the stakeholders can improve their coordination. The proposed VDI 3813 function bloc scheme can be implemented using for example TRIC GA software from Mervisoft GmbH company.

But IP500 can provide much more like:

➢ Following VDI 3813 logic, implementation of functions like intrusion & fire detection, access control;

➢ Possible improvement by using external information coming from a Cloud based application;

➢ VDI 3813 doesn't specify the needed software which has to be implemented, the IP500 Alliance may provide the specification of the software running on a BMS platform like PcVue.

Thank you for your attention