

Evaluation of integrated control strategies in relation with future building regulations in France

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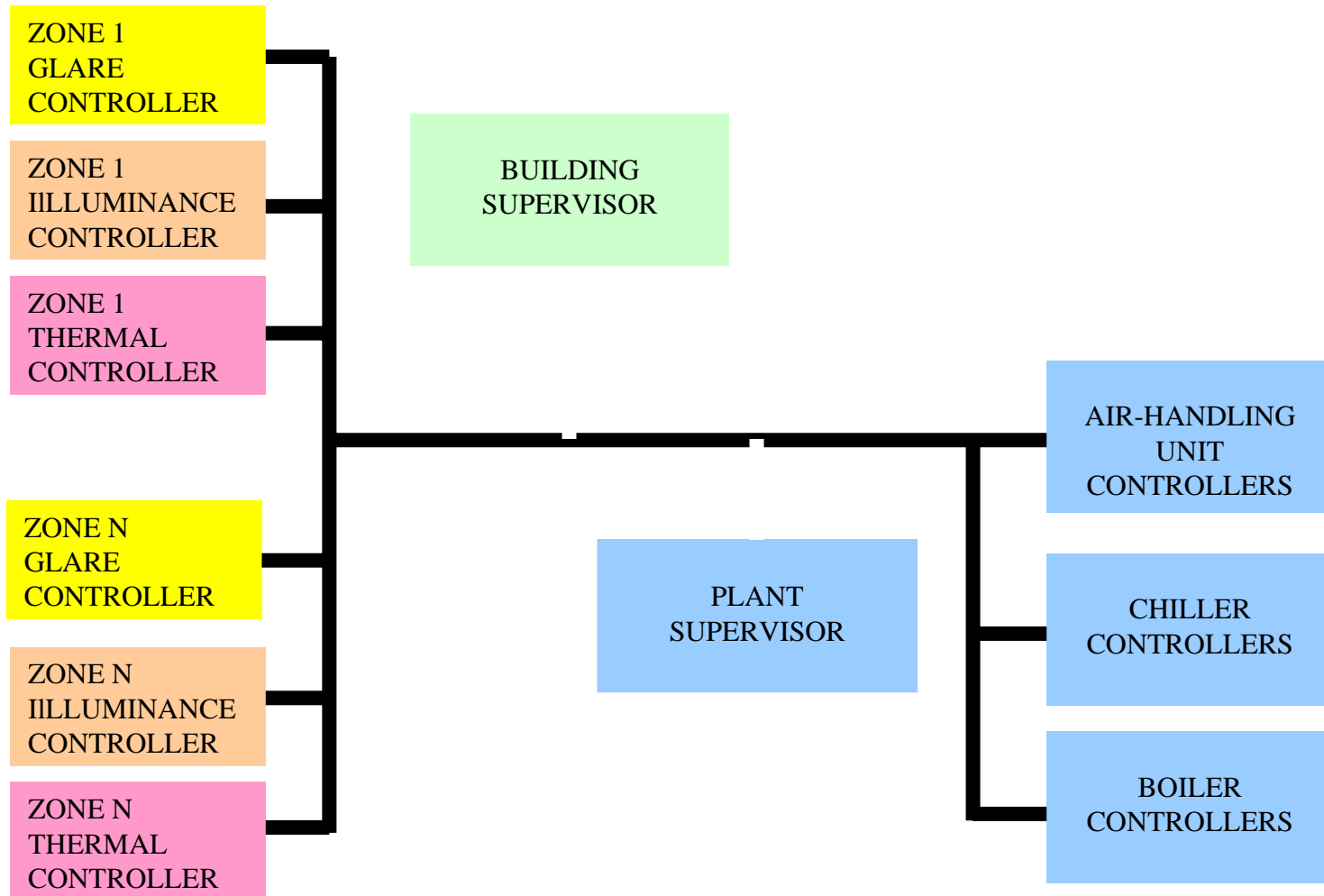
- ◆ Development of integrated control for lighting systems (existing and innovative)
- ◆ How to evaluate ?
 - Comfort ? Savings ? Energywise ?
- ◆ How is lighting taken into account in energy performance of buildings ?
- ◆ Use in building regulations
- ◆ Use of more innovative concepts in «Low energy buildings»

Research projects

- ◆ « High tech » buildings
 - Innovative control, communication...

- ◆ « Low energy buildings »
 - Active facades, decentralised production of energy...

Integrated control



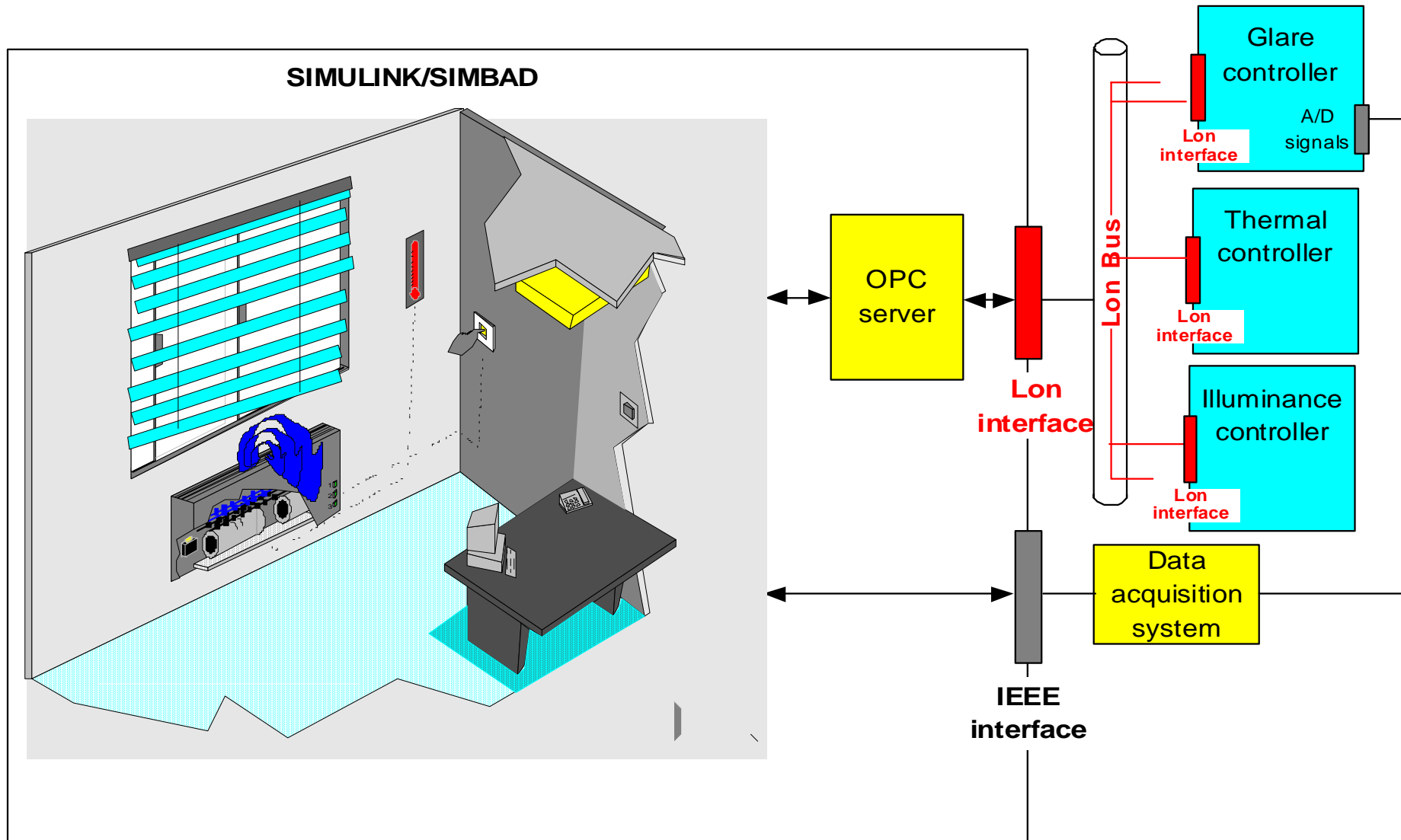
Aims at the zone level

- ◆ At the zone level the different applications shall enable to reach the following goals:
 - Provide requested thermal comfort
 - Provide requested illuminance level
 - Avoid glare or provide requested contrast level
- ◆ To reach these three different goals three different actuators can be used at the zone level:
 - Heating/cooling actuator
 - Artificial lighting / light pipes
 - Active facade (solar protecting, SPD glass panes, active skylights...)

Methods used to design and test controllers and control strategies

- ◆ implement strategy in a control environment
- ◆ test it using a simulation environment
- ◆ iterate to solve problems
- ◆ write fonctionnal specifications
- ◆ transfer fonctionnal specifications to product specification
- ◆ develop prototype (if possible)
- ◆ install prototype on the emulator
- ◆ validate prototype

Emulation layout



Applications

- ◆ Assessment of the integrated control with respect to energy consumption
- ◆ Classification for use in regulations
- ◆ Application in more advanced low energy buildings