

Can Optical Wireless be converged with Home Networking technologies?

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Outline

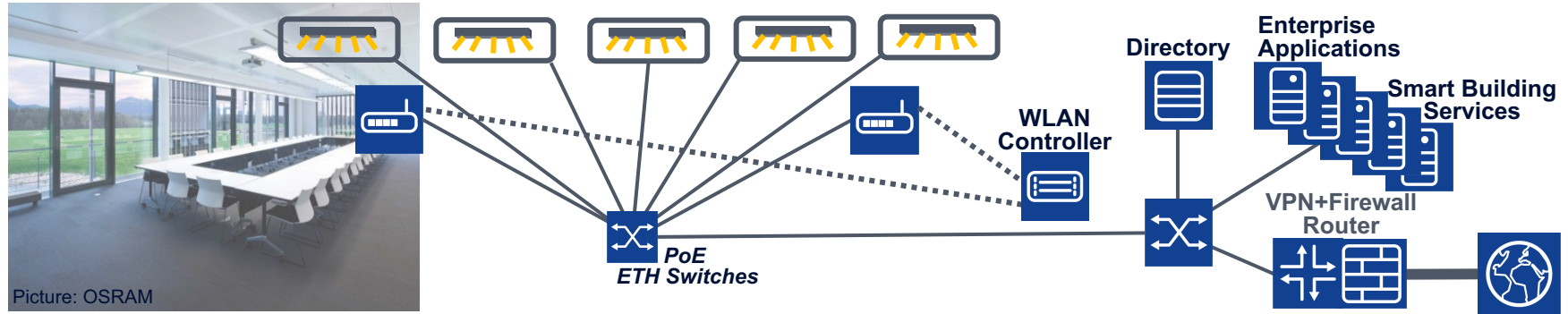
Can optical wireless be converged with home networking technologies?

- Feeding luminaires through Power over Ethernet
 - Obvious convergence of optical wireless with enterprise networking
- Optical wireless communication, the evolution of connected lighting
 - Convergence is beginning to happen in enterprises
- Radio communication dominates residential networks
 - Home networking is different
- The real challengers of OWC in the home
 - LED filament bulbs, life-time, human attitudes
- Conclusion
 - OWC is great!

Feeding luminaires through Power over Ethernet

Obvious convergence of optical wireless with enterprise networking

- LED based lighting fits well into the power budgets of PoE
- Attaching smart luminaires to the enterprise LAN makes them even smarter



- PoE switches are already widely deployed for Wi-Fi access points.
- All prerequisites fulfilled for deployment of optical wireless in PoE luminaires.
- Challenges can arise when extensive control and traffic steering is required.

Optical wireless communication, the evolution of connected lighting

Convergence is beginning to happen in enterprises

- Very first PoE lighting deployments:
 - Cisco offices in Toronto, RBC Waterpark Place
 - 1400 luminaires, 600 with intelligent sensors
 - “The Edge”, Netherland
 - 40 000 m², 6500 luminaires, 750 PoE switches
 - Deployments promise better energy efficiency and better space utilization
- PoE luminaires pave the way for optical wireless communication
 - Communication processor in the luminaire
 - High speed ‘backbone’ connectivity
 - Luminaires residing in the same communication infrastructure as Wi-Fi
- Various solutions regards traffic aggregation of OWC with Wi-Fi

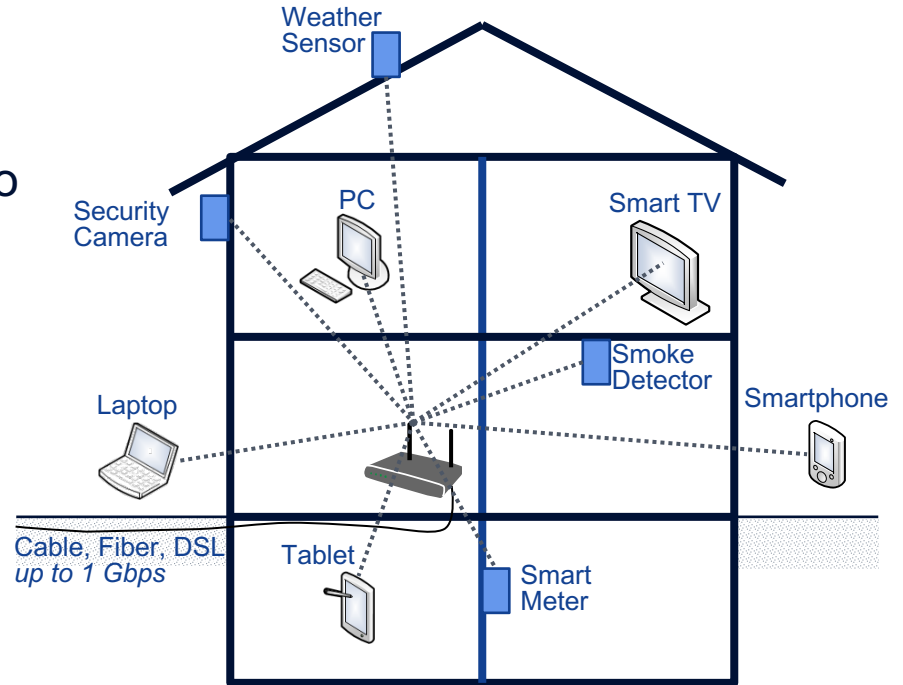


The Edge: Philips connected lighting for Deloitte - Photo credit: Ronald Tilleman

Radio communication dominates residential networks

Home networking is different

- Build around CPE/Wi-Fi Router
 - Attached to up to 1 Gbps uplink
- Most terminals connected through radio
 - Various standards, Wi-Fi dominates
 - Ethernet for a few fixed devices
 - No Power over Ethernet
 - Powerline for less demanding use cases
- Networking through plug&play
 - Hardly any functional integration
 - IoT through dedicated devices
 - Simplicity first, robustness second



The real challengers of OWC in the home

LED filament bulbs, life-time, human attitudes

- Rebirth of the traditional light-bulb through LED filament
 - Looks and behaves exactly like the legacy light bulb
 - Provides all the benefits of LED lighting to the installed base
 - Huge cost savings for power consumption and replacement
- Longer life-time of solutions than in commercial buildings
 - People stick to their used equipment and behavior
 - Refurbishments hardly ever touch the in-home mains
 - Configurations and installations are home-grown
- Daylight is used to a much bigger extend than in offices
 - Overall light levels are much lower than in commercial buildings
 - Lights are turned on for mechanical work, not for leisure



LEDVANCE
PARATHOM Retrofit Classic

Conclusion

OWC is great!

- ... when deployed in high density commercial environments
- ... when a managed enterprise network is in place
- ... when professional building management demands smart lighting
- ... when PoE lighting is likely to be deployed
- ... when most of the space does not get daylight
- ... when network capacity demand exceeds capabilities of radio technologies

The conditions above hardly apply to homes.

- However, OWC could become a more capable replacement of legacy IR

Questions? Comments!

NOKIA