

ict for **sustainable** homes

“Innovative products and services for the home”

Symphony: a digital home integrated platform

Alessandro Martucci, Nextworks

Nextworks S.r.l.

- **Established in 2002 in Pisa, Italy**
- **Main strengths**
 - **Know-how** in a well focused set of ICT architectures and technologies
 - Skills in planning and executing projects, and in engineering integrated systems
 - **Own R&D** + co-funded projects (Regional, National, EC)
 - In the control & automation field: SOFIA EC Artemis project and DAGON regional project
- **Divisions**
 - Network Control & Management (\Rightarrow research, consulting, 3rd-party developments)
 - Control & Automation Systems (\Rightarrow products)
- **Technology domains**
 - control and automation
 - digital video coding & transport, VoIP
 - embedded systems
 - transport and access networks



Everything comes from R&D and became Best®

BRAND YACHTS EVENTS & MEDIA *Benetti* CAPTAIN'S BRIDGE OWNER'S LOUNGE

HISTORY SHIPYARD INNOVATION SERVICE & REFIT

BEST

- ▶ BENETTI'S EXCLUSIVE SEA TECHNOLOGY
- ▶ COMMUNICATIONS
- ▶ ENTERTAINMENT
- ▶ AUTOMATION
- ▶ SAFETY & CONTROL
- ▶ BEST VIDEO

BEST
INTEGRATION OF BRIDGE SYSTEMS
DIESEL-ELECTRIC PROPULSION

BENETTI'S EXCLUSIVE SEA TECHNOLOGY

Benetti's Exclusive Sea Technology – BEST – is the new exclusive technological platform created by Benetti, that integrates all the on-board electrical systems.

In BEST all subsystems, although different in function and technology, can communicate with each other using a common language: television "talks" with lights and cameras "talk" with phones. This is possible because every function has an open interface that enables communication with the rest of the system.

BEST is made up of a single network infrastructure and middleware software that correlate all devices and different components through the exchange of signals and events. BEST is based on stable technological foundations constituted by a pervasive network of connections that reaches all the on-board systems.

The physical network act like the yacht's nervous system because it conveys all the information to different devices through signals exchange.

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Everything comes from R&D and became Best®

BEST
BENETTI'S EXCLUSIVE SEA TECHNOLOGY



NEXTWORKS
ENGINEERING FORWARD

A core platform for digital home services

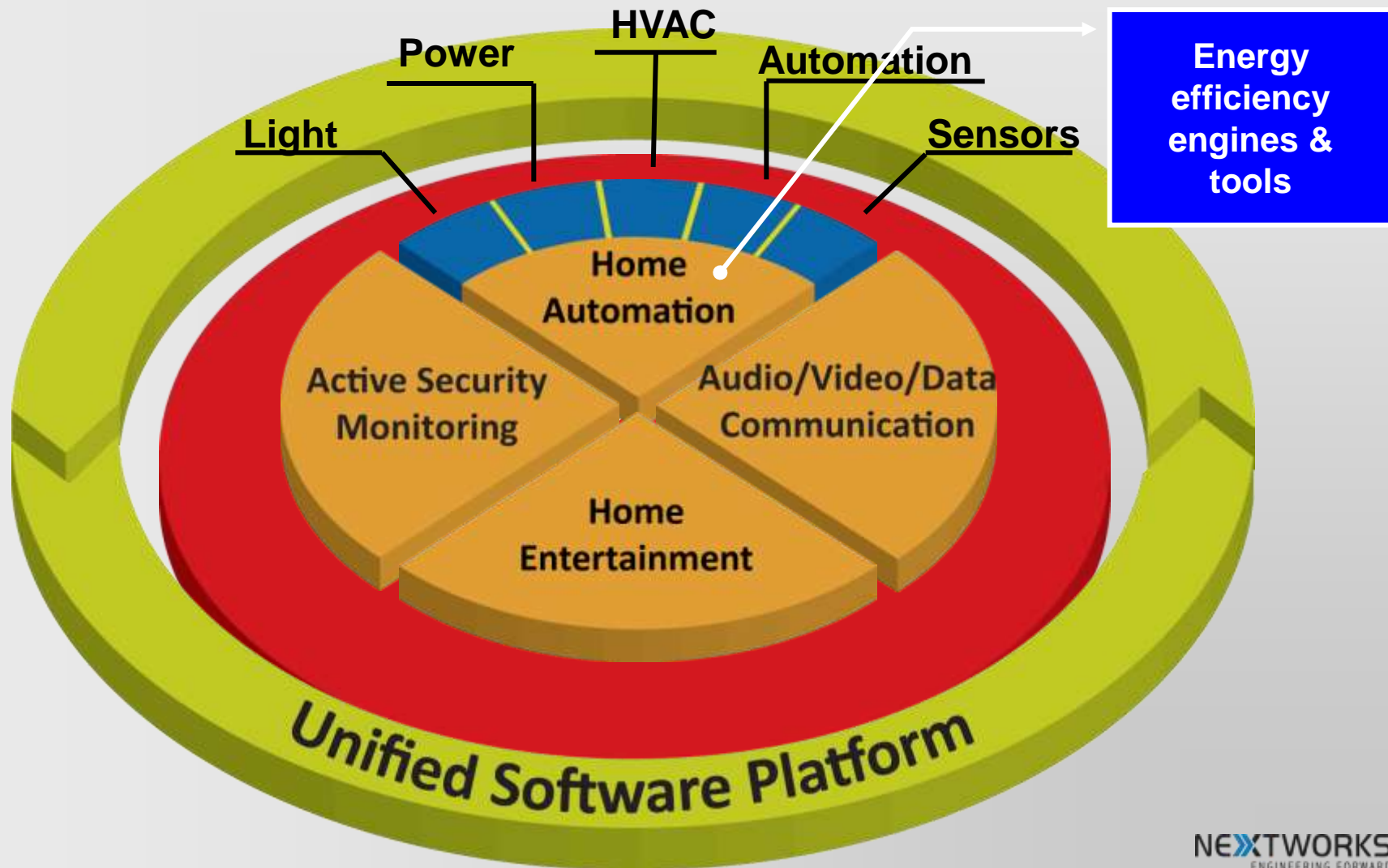
- A comprehensive solution
 - A service-oriented **middleware** integrating many subsystems into a unified and IP-based platform
 - Including tech **gateways** (e.g. communications, domotics) and **terminals** (video, VoIP, controllers)
 - Subsystems:
 - **Home Automation/Domotics** – lighting control, HVAC, RFID-based presence services, environment sensors, remote calls and scene management
 - **Security, Safety and Surveillance** – safety for people and things, indoor and outdoor video control and recording
 - **Communications** – voice, data and video communications based on different technologies (Wi-Fi, DECT, Dual Mode GSM/Wi-Fi) and integrated with entertainment, surveillance and other subsystems
 - **Entertainment** – pervasive distribution of movies, music, information and digital & visual art throughout the home
- A stable platform, with a naval application of the technology
 - Currently 20+ installations on mega-yachts (60mt) and mid-size yachts since 2006
- www.hellosymphony.it

Symphony



Integrated home automation

Integration as a key enabler for EE



Integration: advantages

	Integrated Systems	Stand alone Systems
Cabling	Only one cabling for different systems	Each system has its own cabling
Configuration and Maintenance	Unified services configuration. You will not have to program each single device or scenario, but you will manage them all together in one single way	Each system has its own configuration and programming approach and its diagnostic procedures
User Interface	You can access the system through many different devices with a single use and control approach	Need to manage several heterogeneous subsystems with different interfaces and control logics
Upgrade and system update	Remote upgrade is cost effective, system ready to integrate flexibly current and future digital devices	The addition of new services may require high installation costs
Energy saving	[Co] Generation and loads control in order to get the best solution in terms of energy budget	Lack of integration in the technology present on the market, such as KNX, ModBus, LON, Vantage, Zumtobel...

Middleware: unified software platform

Events

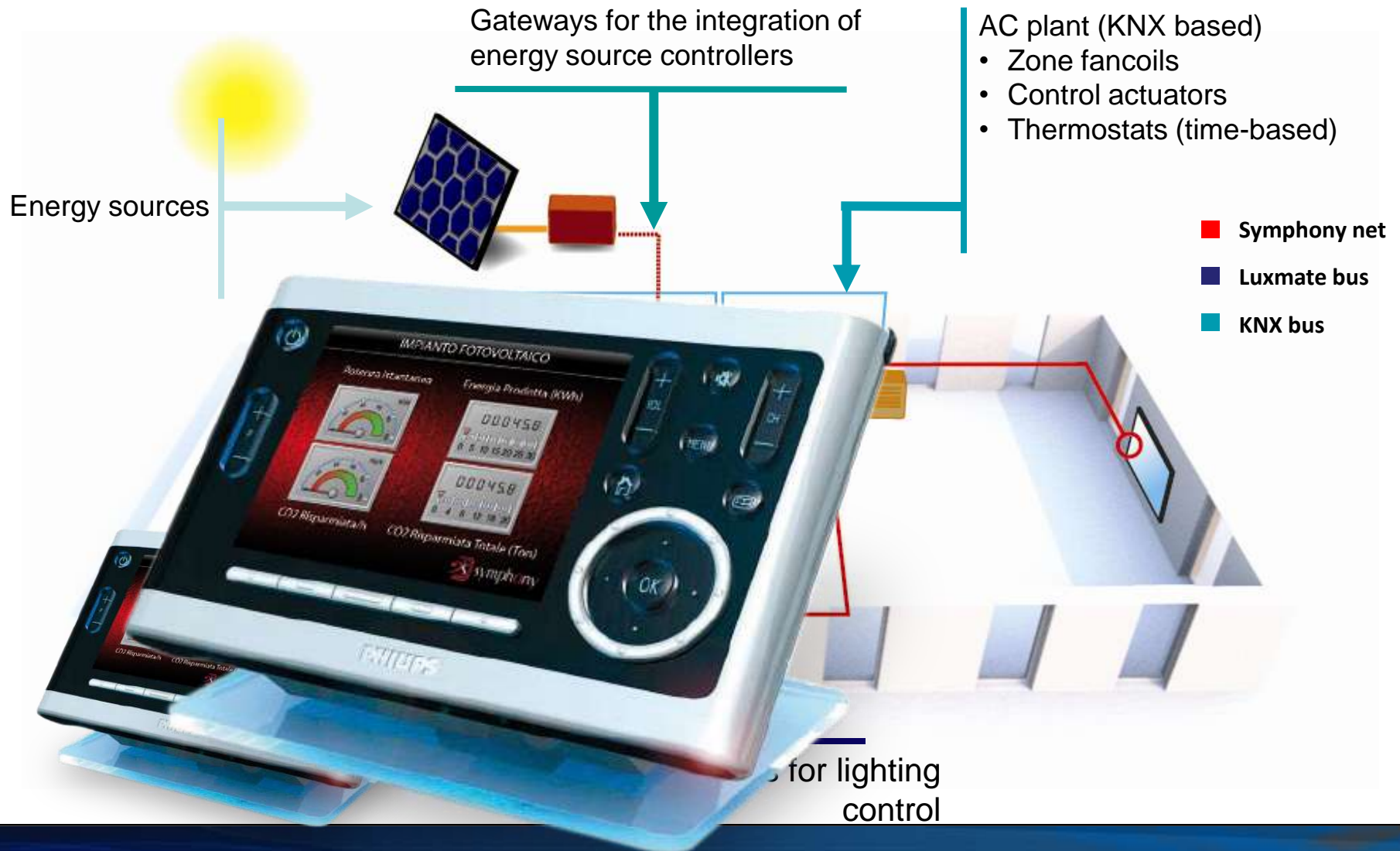


Actions

- Remote's button
- Touch panel button
- Physical button
- DTMF on the phone
- Motion detection on camera
- Security Alarm
- Threshold for water/smoke /temp/hum/... sensors
- GPS Position
- RFID/Badge people recognition
- ...

- A/V Client notification (popup)
- A/V Client function activation (ex. broadcast audio/video)
- Domotic scene activation
- Phone Call
- SMS/MMS
- Touch panel alarm
- Buzzer activation
- Camera positioning
- ...

A snapshot insight of energy management in Symphony



EE in Symphony; now...

- Wide range of domotics technologies supported
 - KNX, LON, VANTAGE, LUTRON, MODBUS, CONDARIA, YACHTICA..
- Applying principles of CEN/UNI EN 15232 (*“Energy performance of buildings – Impact of Building Automation, Controls and Building Management”*)
- Control of energy co-generation systems
- Time-based charge management of electrical loads
- Zone-based temperature tuning
- Indoor climate adaptation to external conditions
- Automated controls of curtains/blinds, coordinated with climate control
- Management of artificial lighting based on natural lighting and presence control

...and in the future

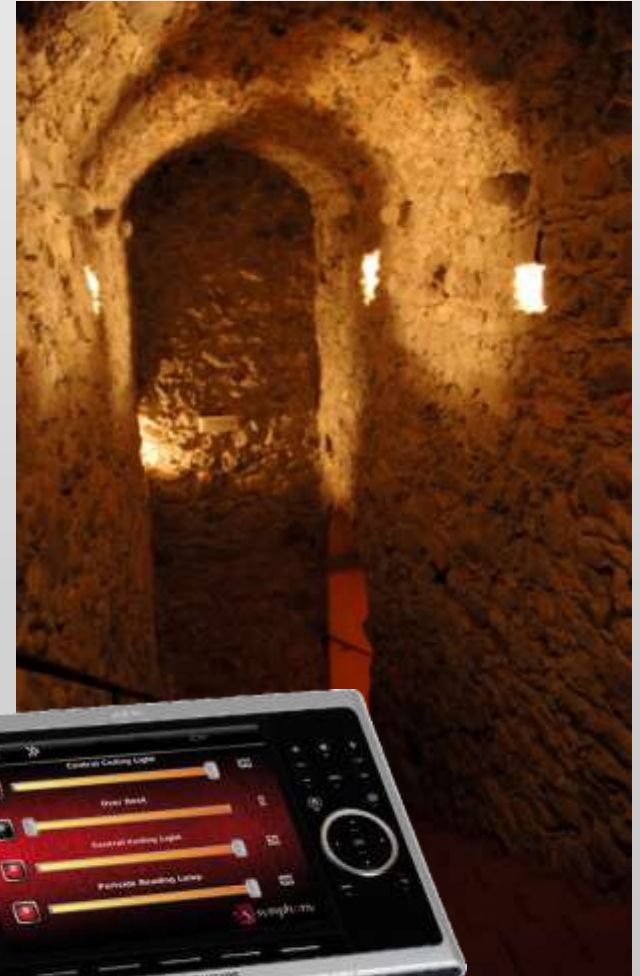
- Easy integration/evolution of energy management functions
- Dynamic adaptation of the building to the “context” in terms of
 - User profiles
 - Preferences (static info)
 - Adaptation to users’ behaviours (dynamic info)
 - Detection and re-adaptation in case of deviations from the basic profile
 - Human-Device Interface (HID) issues for the usage of this functions
 - Environmental conditions
 - Automatic planning of activities based on outdoor conditions (current and *future*)
 - Advanced algorithms for the comprehensive coordination of building global resources to optimize its energy budget
- Integration of new devices and services
 - New mechanisms and interoperability platforms
 - Context-awareness mechanisms
 - Automated service-discovery
 - Distributed and highly fine-grained control (up to each single device – light, actuator, sensor, etc.)

Case study: a green country guesthouse in the green in Tuscany

- The user interface is intuitive, in order for new guests to use the system effectively with a quick learning curve
- Appliances and devices are discreet, in order to preserve aesthetics and interior design
- Avoid wall buttons and switches, hide devices in a dedicated technical space, use wireless controls.
- Integrated a specific lighting system, based on a proprietary technology
- Entertainment and communications services with accounting
- Complete control over comfort and automation on wireless touch panels
- Video surveillance and environment sensors for wine cellar, etc.



Symphony at work



Thank you! See you in our “symphonized” demo...

For further info:

Alessandro Martucci
a.martucci@nextworks.it

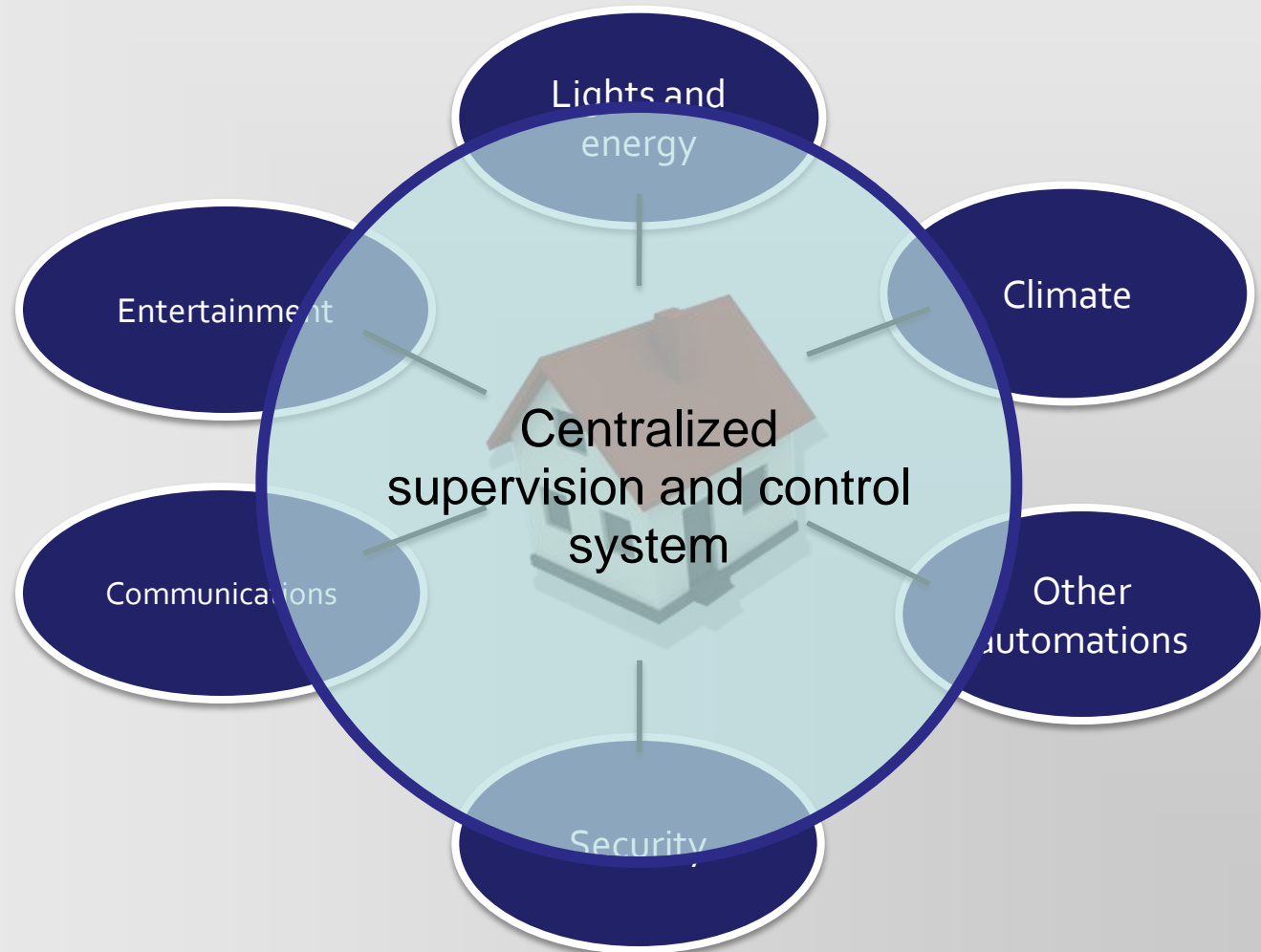
www.nextworks.it



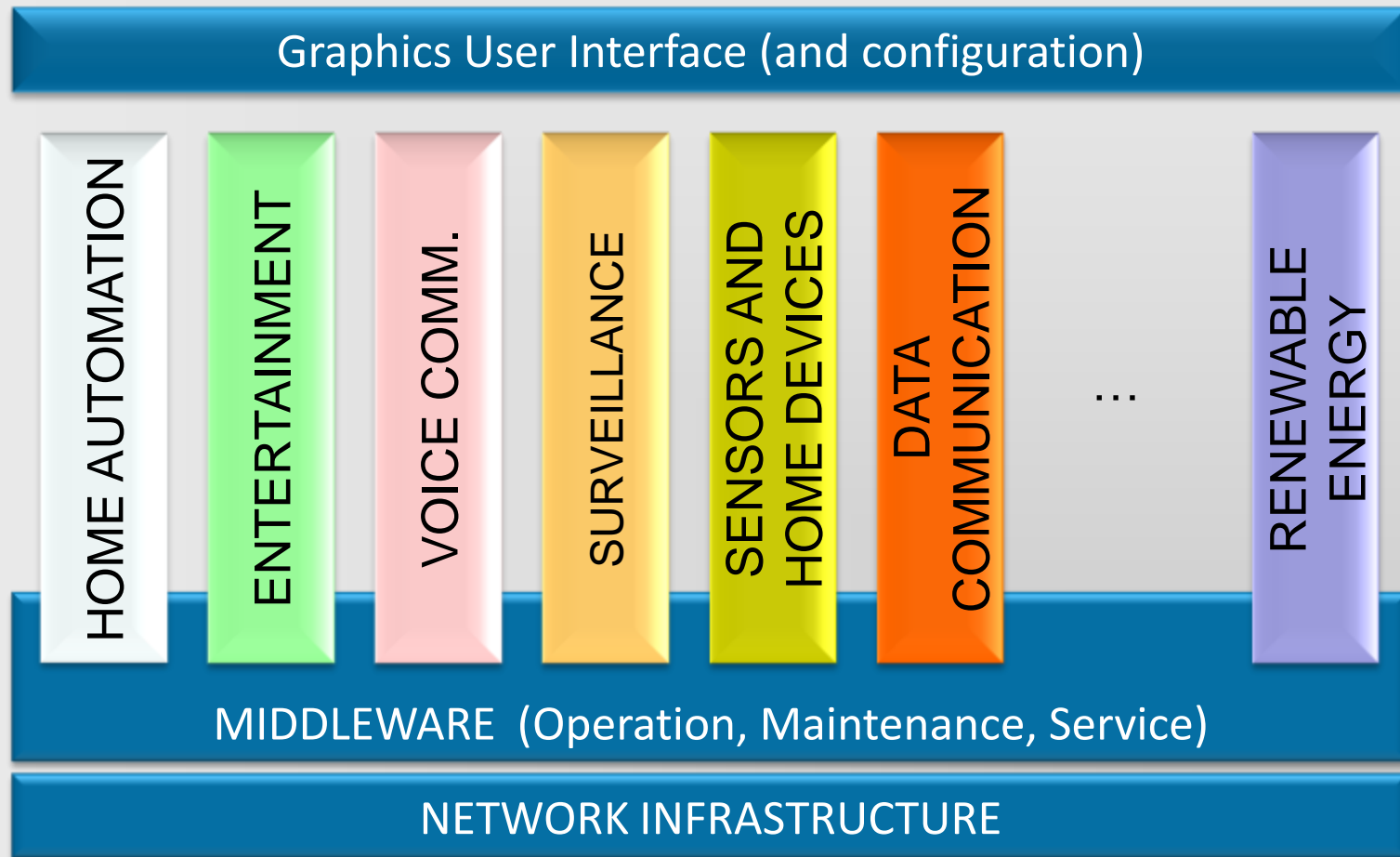
Summary

- Who is Nextworks
- Symphony *Unified Software Platform* overview
- [maybe 1]: Best™, Benetti Exclusive Sea Technology
- [maybe 2]: a case study - country guesthouse in Tuscany

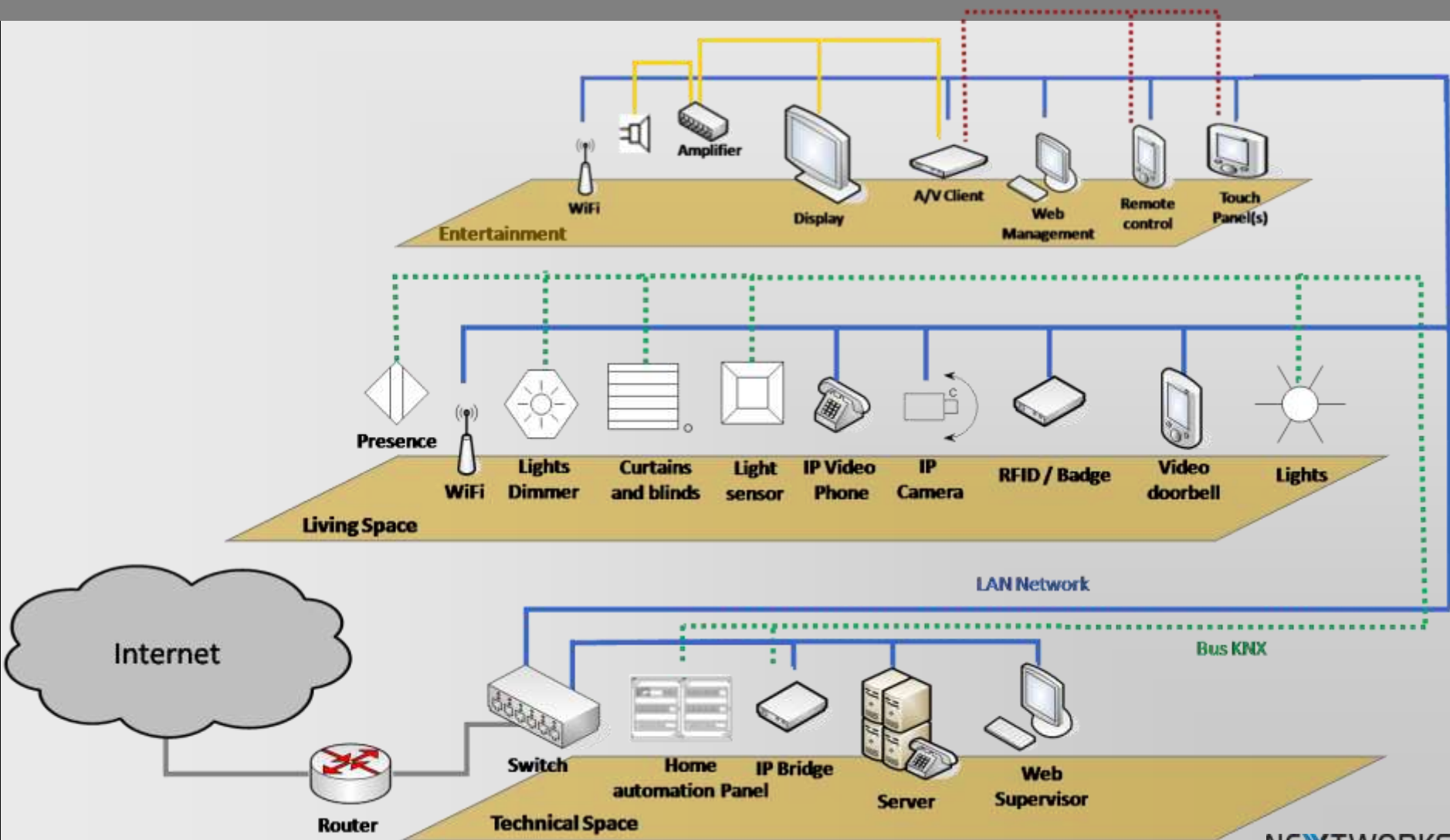
Integration



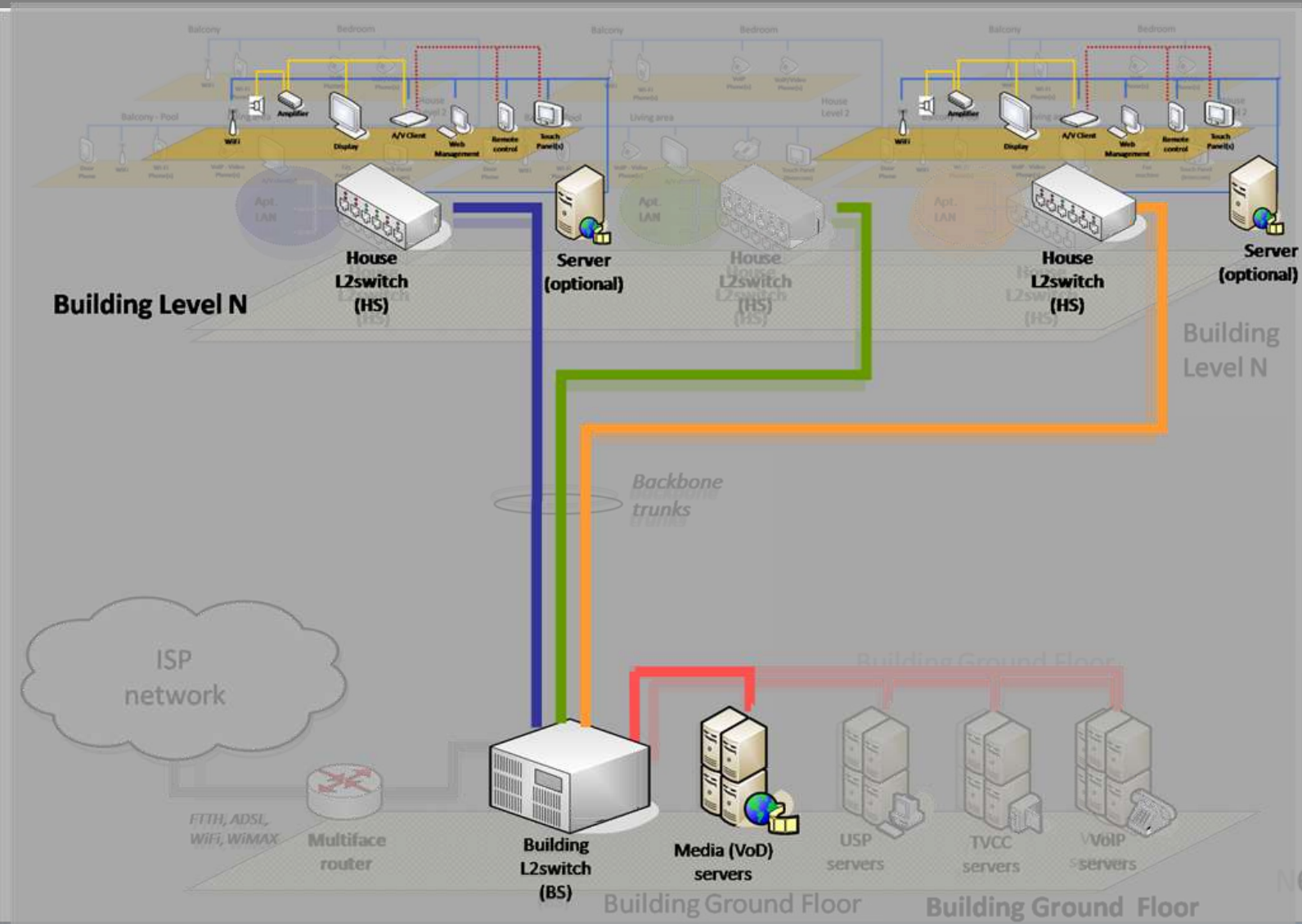
Our innovation: the middleware



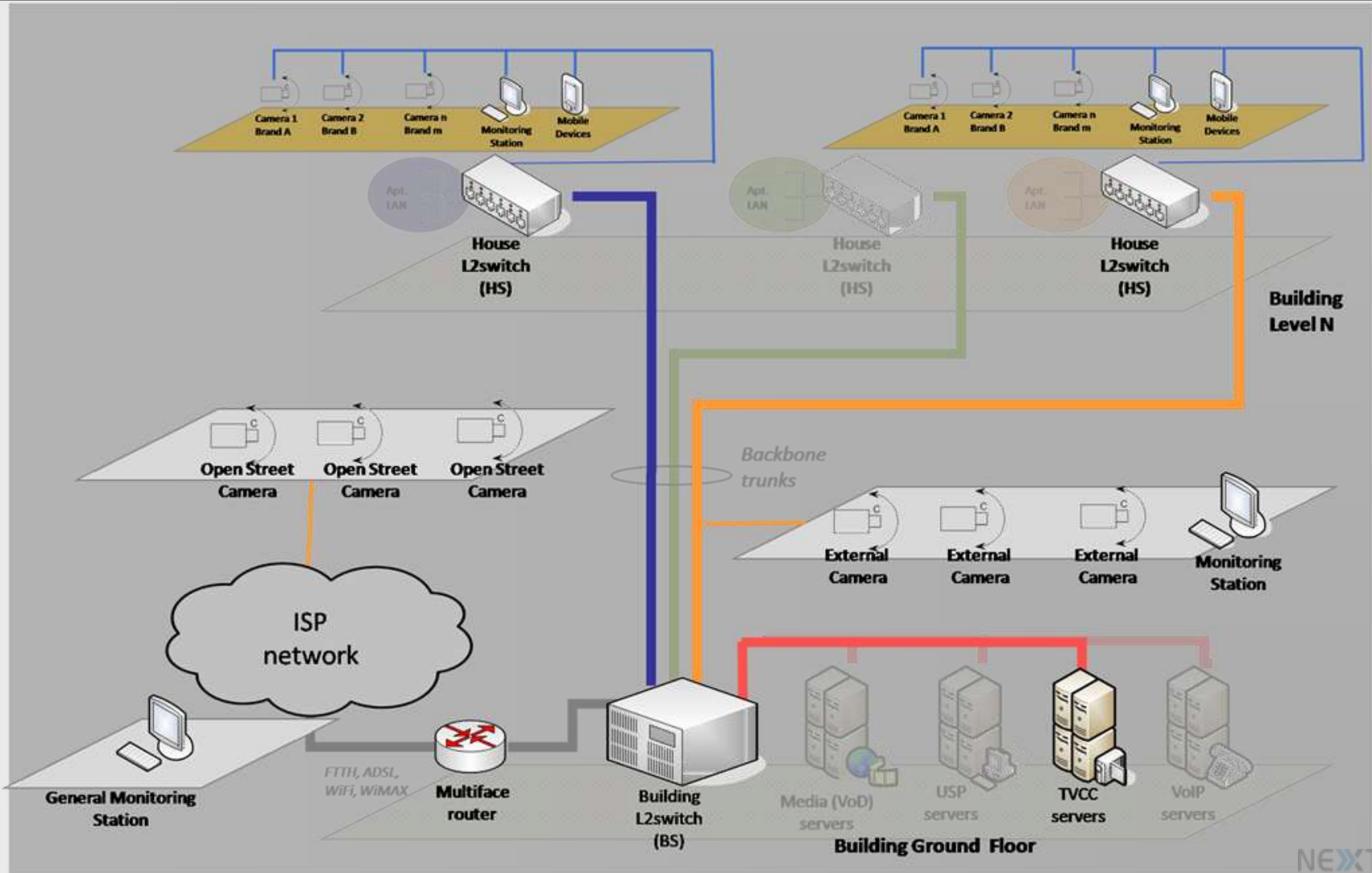
Symphony architectural diagram: house deployment



Symphony architectural diagram: building deployment



Symphony the evolution: smart city



BEST[®] – Benetti Exclusive Sea Technology

BEST
BENETTI'S EXCLUSIVE SEA TECHNOLOGY



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Case study: *Benetti's Exclusive Sea Technology* [1/4]

- Issues to be addressed
 - Simplify *cabling* infrastructure (each service has its own cabling)
 - Avoid *configuration* and *maintenance* nightmares (each service has its own installer, procedures, diagnostics, ...)
 - Provide users with an *easy to use* and *consistent* interface (each service has its own graphics, icons, layout, ...)
 - Allow for *easy* system *modifications* and *upgrades* (the ship must be dismantled to add new services, e.g. surveillance)
 - Guarantee *scalable* reliability
 - Create a standard, yet allowing *highly customized* realizations
 - Unify user interface look 'n feel to reinforce brand

Case study: *Benetti's Exclusive Sea Technology* [2/4]

- Nextworks proposal
 - Migrate every service to an *IP based infrastructure*, and deploy cat. 5e cabling
 - Develop a *custom middleware* to provide protocol translation for services
 - Adopt *industry standards* whenever possible, avoiding proprietary solutions
 - Software based approach
 - Keep an open-ended approach, to accommodate any possible service and device
 - Deploy a *scalable, open* and *future-proof* system

Case study: *Benetti's Exclusive Sea Technology* [3/4]

The final solution: BEST – a Benetti exclusive product for luxury yachting

- Infrastructure: redundant
 - User devices: A/V clients
 - Server room: from one site
 - User services
 - Entertainment
 - Comfort and Automation
 - Communications and networking
 - Navigation and monitoring
 - Remote diagnostic and assistance
- Service benefits for the yacht owner**
- Complete range of services
 - Personalized solutions
 - Remote assistance and upgrades
 - Optimized infrastructure
- Service benefits for the shipyard**
- 40% less cabling, saving materials and weight
 - 50% reduction for on board assistance
 - New revenue streams from customizations and services
 - Seamless system modifications
 - Cutting edge technology

Case study: *Benetti's Exclusive Sea Technology* [4/4]

There are currently ca. 20 BEST installations on 50-65 mt long yachts. Typical systems are composed of:

- 10-15 high definition A/V stations
- More than 50 devices, including wireless touch panels, VoIP phones, video cameras, etc.
- Over 150 automation control points managed by the system
- Over 400 sqm surface (across 5 bridges) covered by WiFi



M/Y "Wind" (60 m)



M/Y "Silver Angel" (64,5 m)

Case study: a green country guesthouse in the green in Tuscany

Requirements for the integrated building automation system

- **Entertainment and communications services with accounting**
Symphony provided Video on Demand service and Communications server for phone and Internet access.
- **Complete control over comfort and automation on wireless touch panels**
Philips Pronto remotes have been selected to match the customer's tastes.
- **Video surveillance and environment sensors for wine cellar, etc.**
Symphony's surveillance and monitoring modules are adopted.

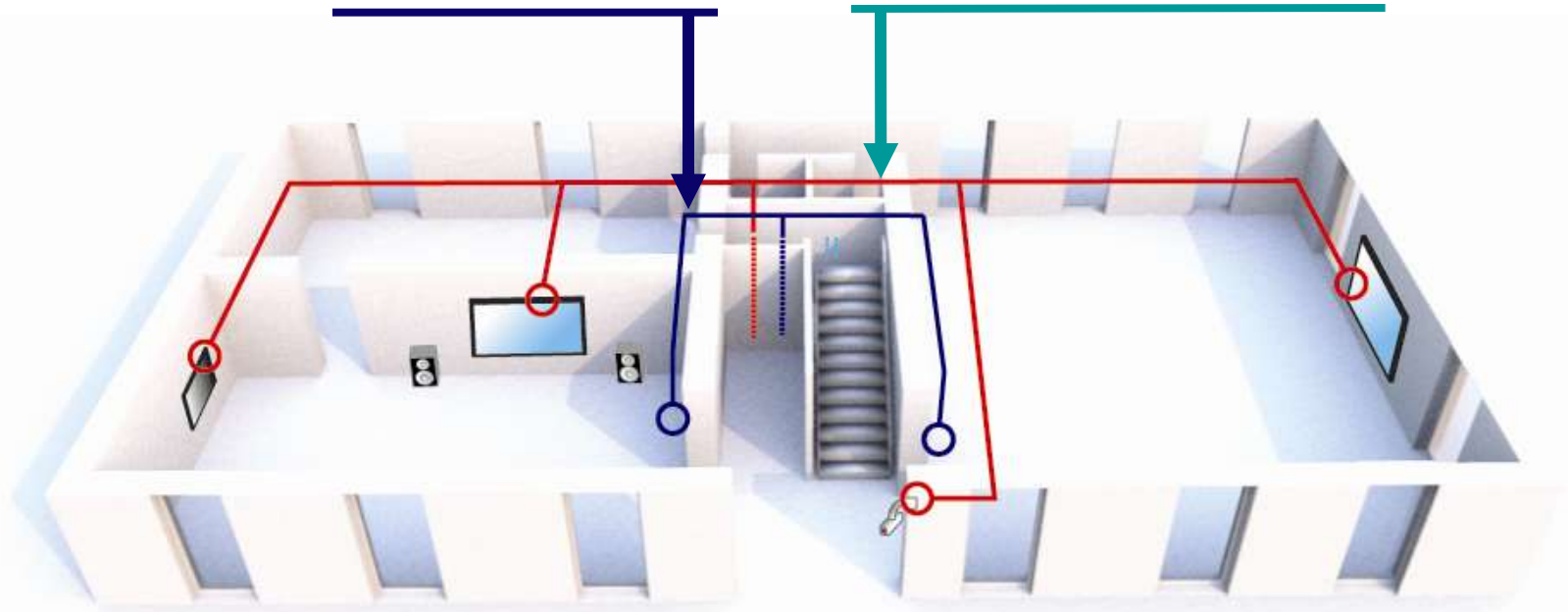


Integrating lighting controls

Symphony network for:

- Automation control (lighting and HVAC)
- Home Entertainment control
- Audio/Video distribution
- Data and voice communications
- Events and alarms notifications
- Video surveillance and anti-intrusion

LUXMATE bus for lighting control



■ Symphony net ■ LUXMATE bus

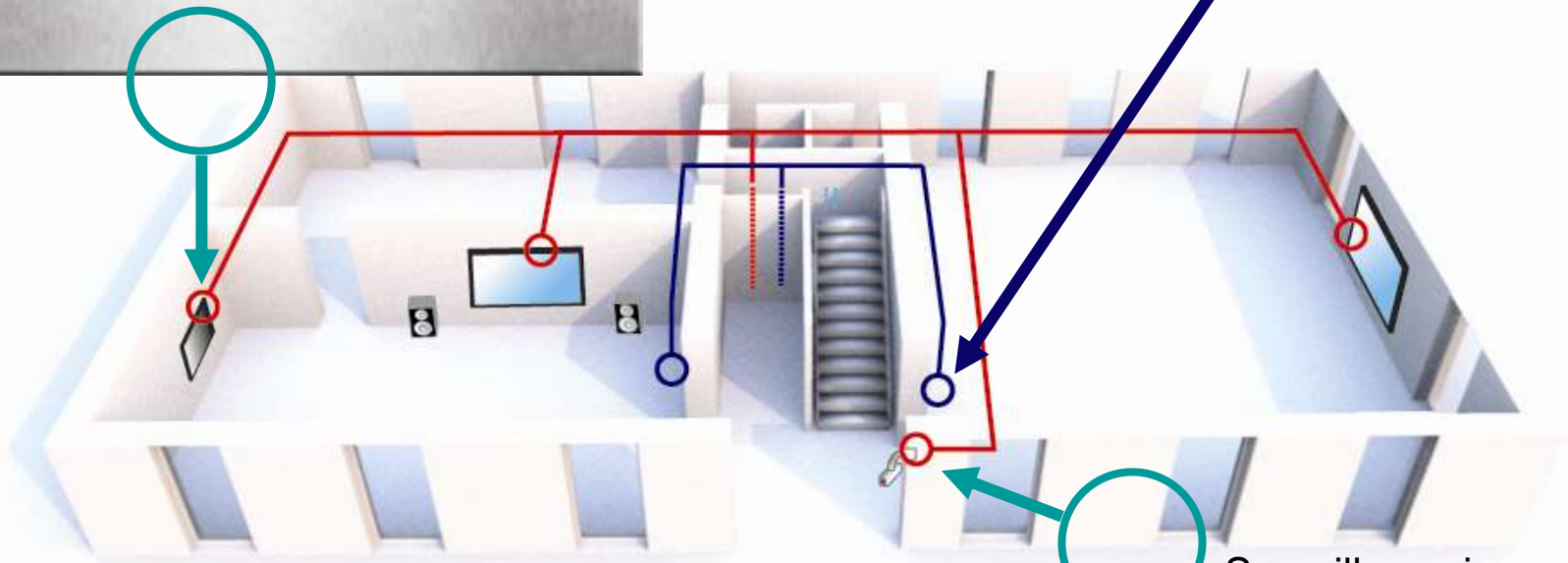
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Wall plates are directly connected to the LUXMATE bus



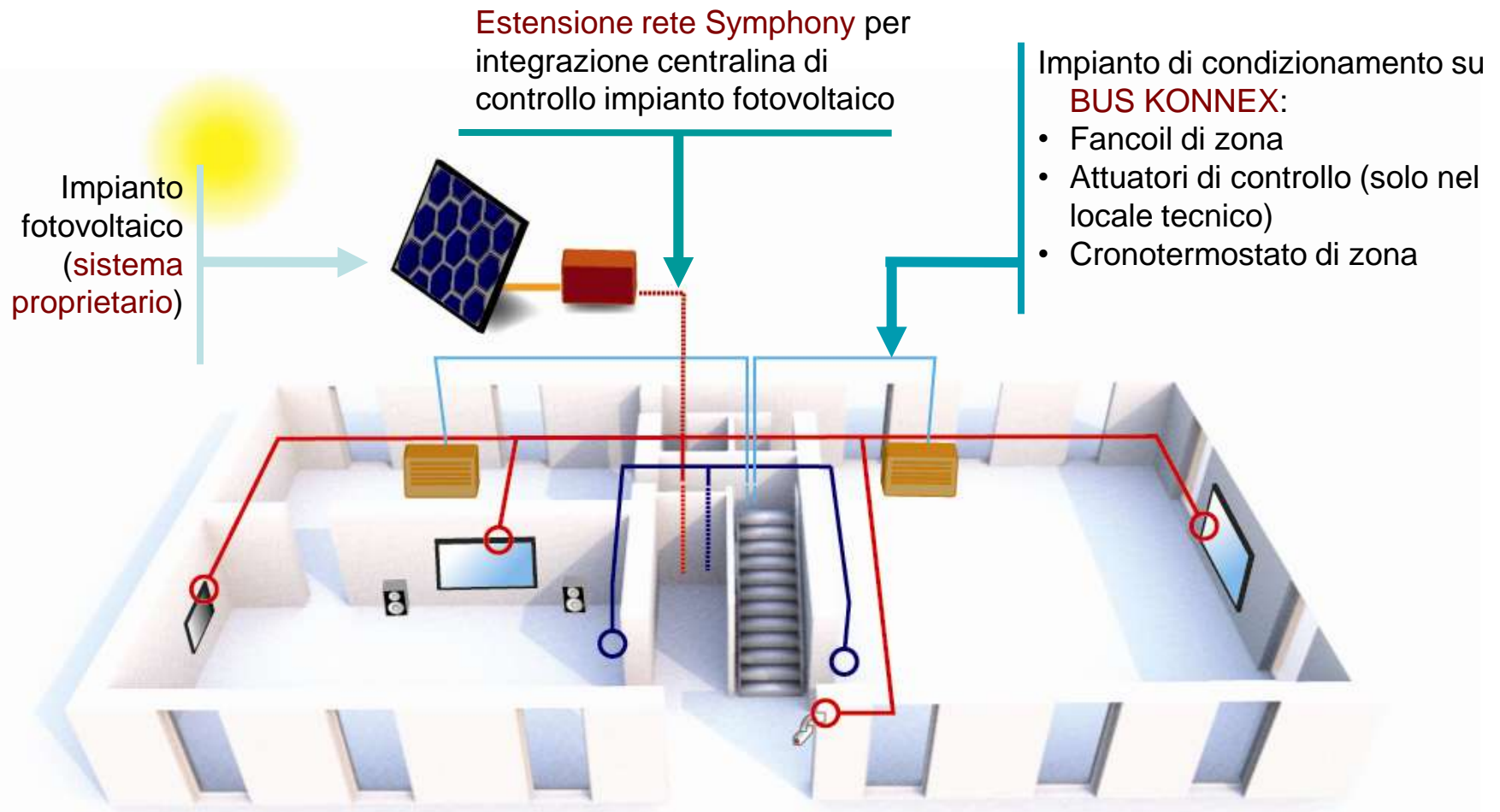
Touch panels are connected to the Symphony network



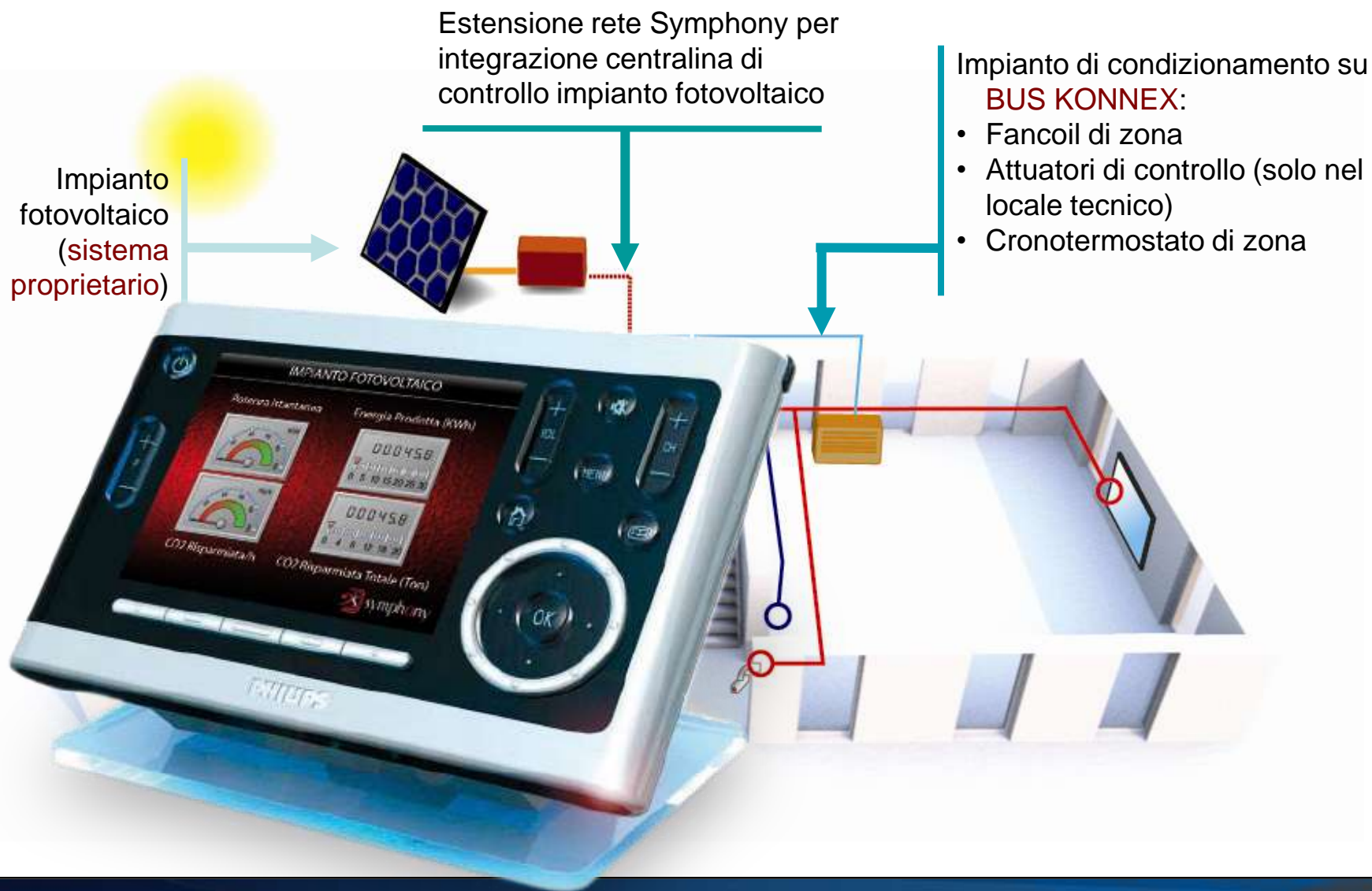
 Symphony net  LUXMATE bus

Surveillance is connected to the Symphony network

Evoluzione del sistema



Evoluzione del sistema



Smart city: infotainment service

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