Langaton valaistuksenohjaus: faktat

Ville Rautavirta

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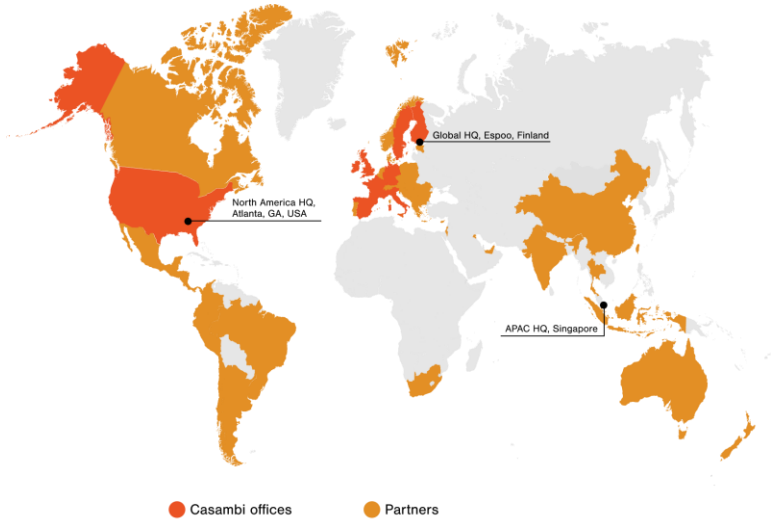
Leading wireless lighting control solution based on Bluetooth low energy

De-facto standard in Europe, next in North America and APAC



€20M+
Revenue

4M+
Nodes sold

75.000+
Projects worldwide

65%
Annual growth

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What is needed?

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Introducing CBM-003s

New Casambi Bluetooth modules

Three different antenna versions
for optimal reliability

Long-range mode (BETA)
providing up to 500 meters range

More memory and RAM
enabling new software updates and lighting control innovations for years to come

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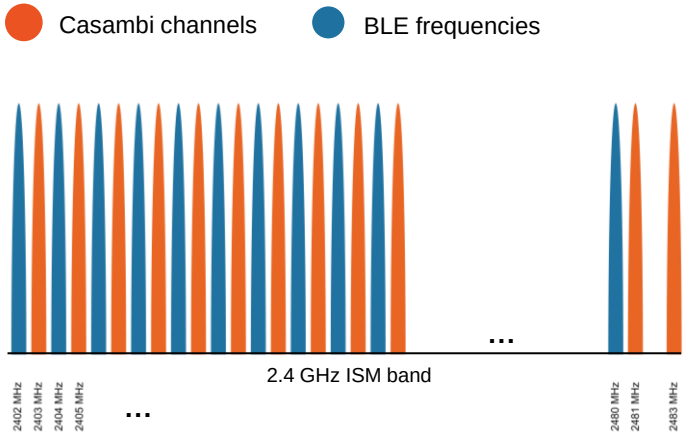
Radio performance

- Multiple, optimized antenna options
- BLE frequency hopping and general robustness, Casambi using own channels.



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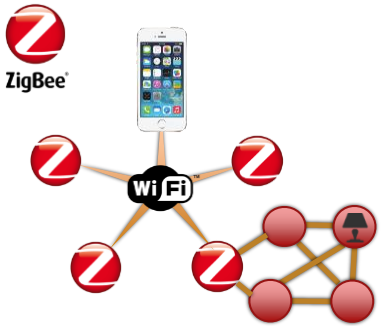
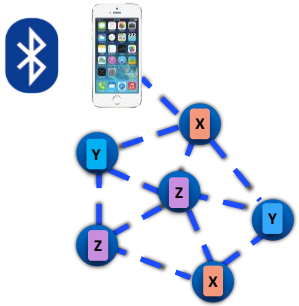
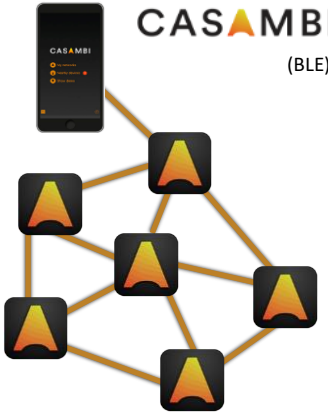
Wireless mesh solutions







WiFi Router ZigBee Gateway

Single point of failure

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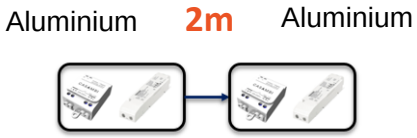
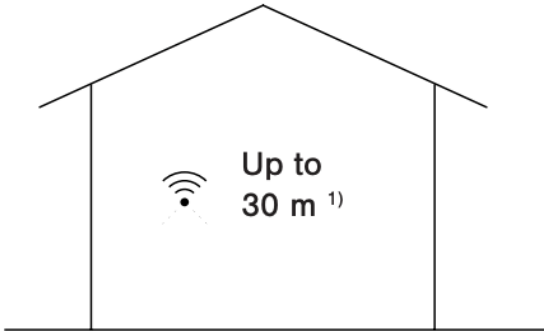
BLE Range 4.x vs. 5.x





*line of sight

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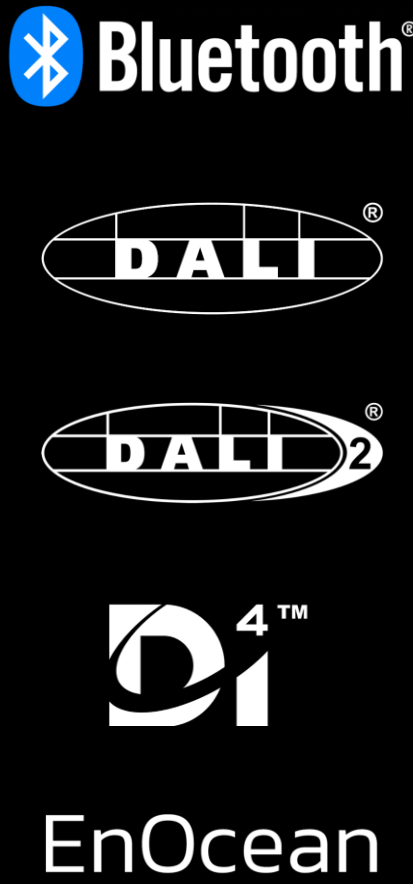
Standard Interfaces

Casambi is committed to supporting the relevant industry-standard protocols and interfaces.



Hardware CBU - Casambi Bluetooth Unit

- CBU-ASD — Analogue Stand-alone/Sensor DALI
- CBU-TED — Trailing Edge Dimmer
- CBU-PWM4 — Pulse Width Modulation 4-ch.
- CBU-DCS — DALI Controller Slave
- CBU-A2D — Analog 2-ch. / 1x DALI
- Xpress — “X” layout switch panel

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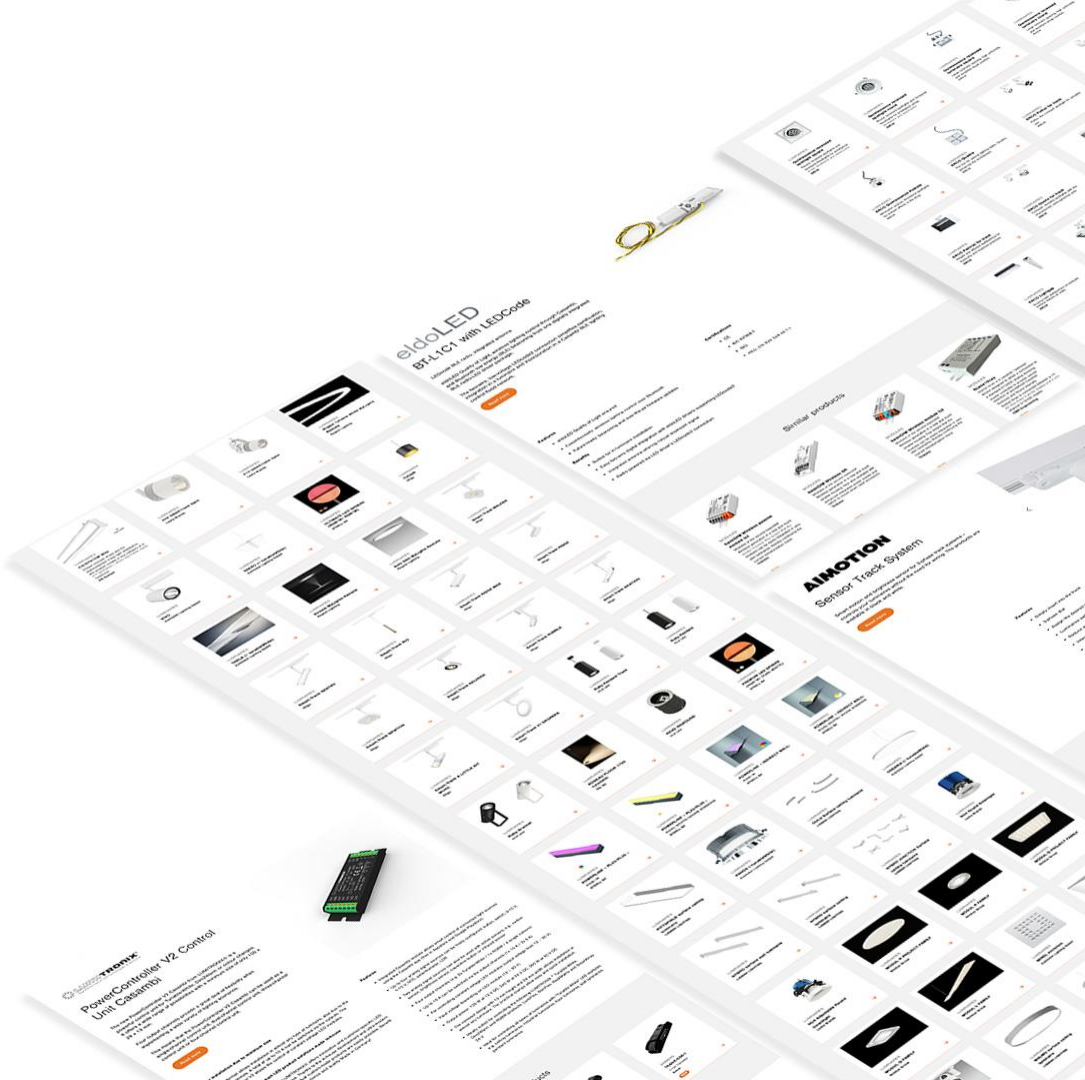
Open Ecosystem




3F Filippi
Stucchi
Aicci
Aimotion
Airam
Alto
annell
Arditi
Aura Light
Aura Light Italia
Baltensweiler
Barthelme
Belid
Bertronic
B Leuchten
Bopp
Bruck
buschfeld
BYOK
CableCup
carus
Catellani & Smith
Clearvision
CLS
Cooledge
Comotronic
Creation
DALC NET
Danlers
DEFA
Deltalight
DGA
dietal
Digimax
DMX Engineering
Drees
Dyfelli
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Evolux
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Gewiss
gottardo
GREAlpha
Harvard
Helvar
Holders
Holtkötter
ILTI
ilumisa
Internova
IP44.de
Ivela
Jung
Kera
Knapstein
Lamp
LDM
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LED Linear
LEDS C4
LEDsGO
LEDworks
Lensvector
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Lichtteam
lichtwerk
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Lightnet
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Lival
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McWong
Mean Well
MGL
Modular Instruments
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Myrolia
Natevo
nimbus
Nordeon
Nordlicht
9010
novantadieci
Occhio
Octa Light
Olfer
Oligo
Orbit
Orbium
Osram
PAN
Performance Lighting
Philips
planlicht
PLH
Power Light
Precision Lighting
Projection
Proled
Province
Radiant
Radium
Rebel Controls
Regent
Reggiani
Regiolux
Ridi Group
Ropag
Ruco
rutec
RZB Lighting
Sattler
scemtec
Seoul
serien
TAL
Targetti
TCI
Teco
tempLED
Thorn
tobias grau
Trato
Tridonic
Trisys
Tunto
unios
unipro
Vadsbo
Vimar
walalight
Wila
wkr leuchten
XLite
Zeeta
Zumtobel

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Simplicity

- The control system comes fully integrated into the fixtures.
- Nothing extra – just luminaires, sensors and switches.
- Easy to specify, install, configure and use.

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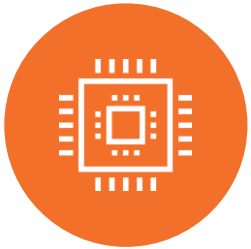
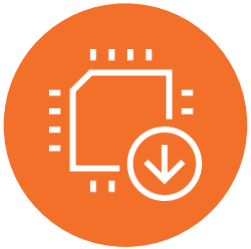
Ecosystem Building Blocks



Silicon

BLE SoC

(System-on-Chip)



Firmware

Complex software with mesh, security and most of the lighting control functionality

Software

Full-featured lighting control application.

Control devices

LED-drivers, Sensors, Switches

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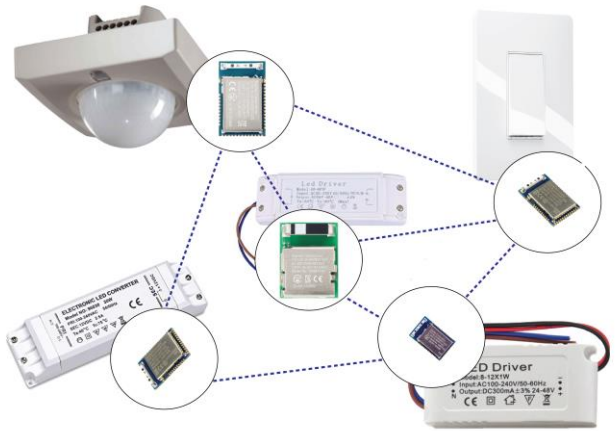
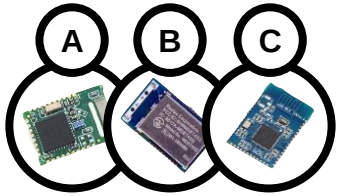
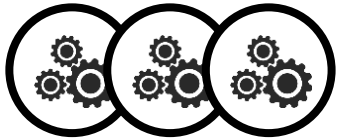
Standards-based Ecosystem

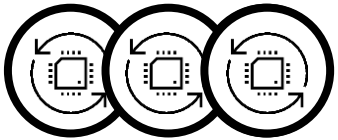




Different BLE SoCs
from different vendors



Different runtime
resources, different
limitations



Multiple different firmware
implementations,
oldest version

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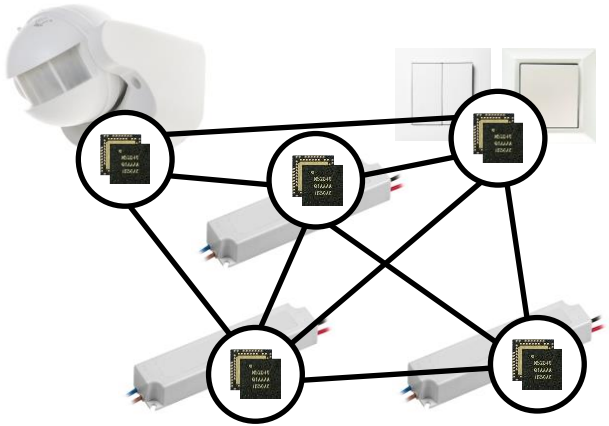
Proprietary Ecosystem Architecture



Same BLE SoC

Same runtime resources

Single firmware implementation, newest version

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Ecosystem comparison

	Standards-based Ecosystems	CASAMBI	Proprietary Systems
Silicon, BLE SoC	Multiple Vendors	One Vendor	One Vendor
Firmware	Multiple Vendors	One Vendor	One Vendor
Control Devices	Multiple Vendors	Multiple Vendors	One Vendor

Open Interfaces

- Casambi Open APIs
  - Cloud API
  - Extension interface
- Partners can also extend the Casambi system with software and service solutions.

adquio BINARY FORGE IAM Holders ANALYTICS WideSky

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Security

- Open Vulnerability program together with HackerOne
- Certified member ioXt – The Global standard for IoT Security

https://www.ioxtalliance.org/

ioXt internet of secure things

hackerone

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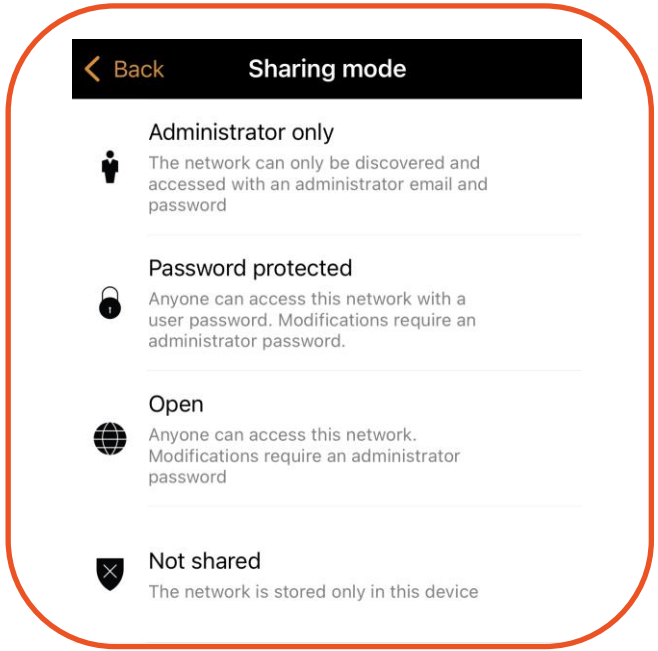
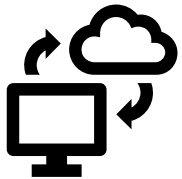
Accessibility

4 levels access





Cloud backup – can be accessed from any device with proper credentials

Not shared – *only available on current device*

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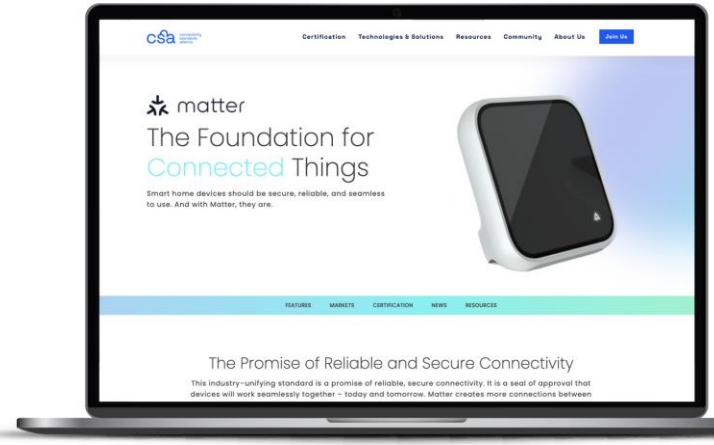
Matter

- Apple Home and Google Home apps will support Matter.
- Siri, Google Assistant and Alexa will support Matter.



Google Home

Google Assistant

alexa

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Casambi Pro

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Applications

Listed/protected buildings with significant historic or cultural value

- Very restricted in terms of changes, new wiring etc.

Refurbishment: Hotels, restaurants etc

- Existing wired controls

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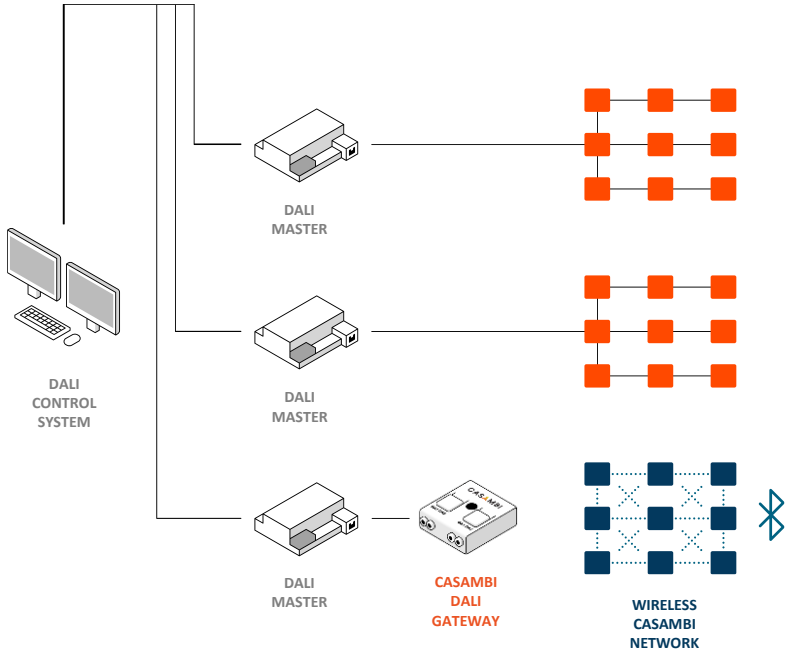
DALI Gateway in action



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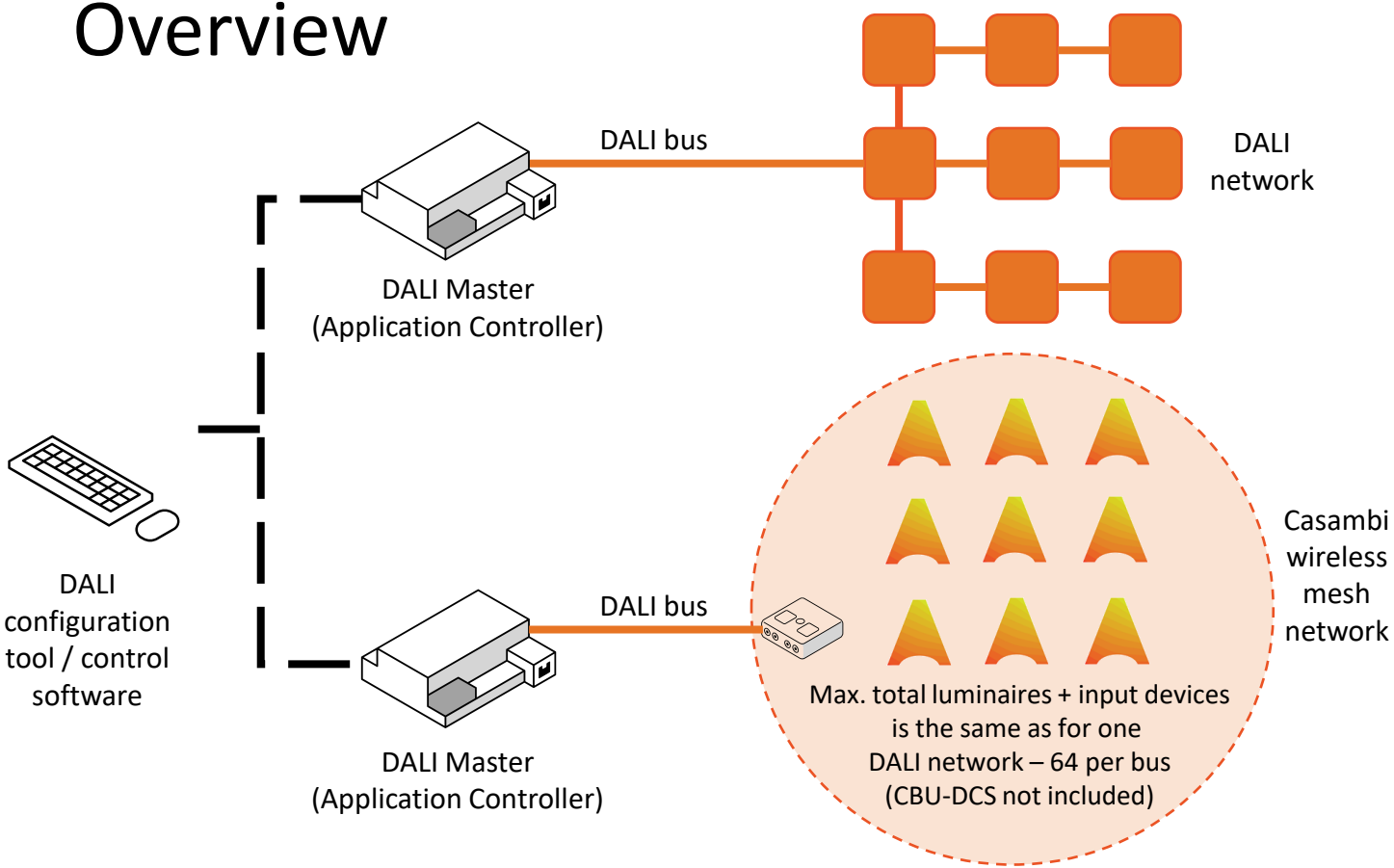
Overview



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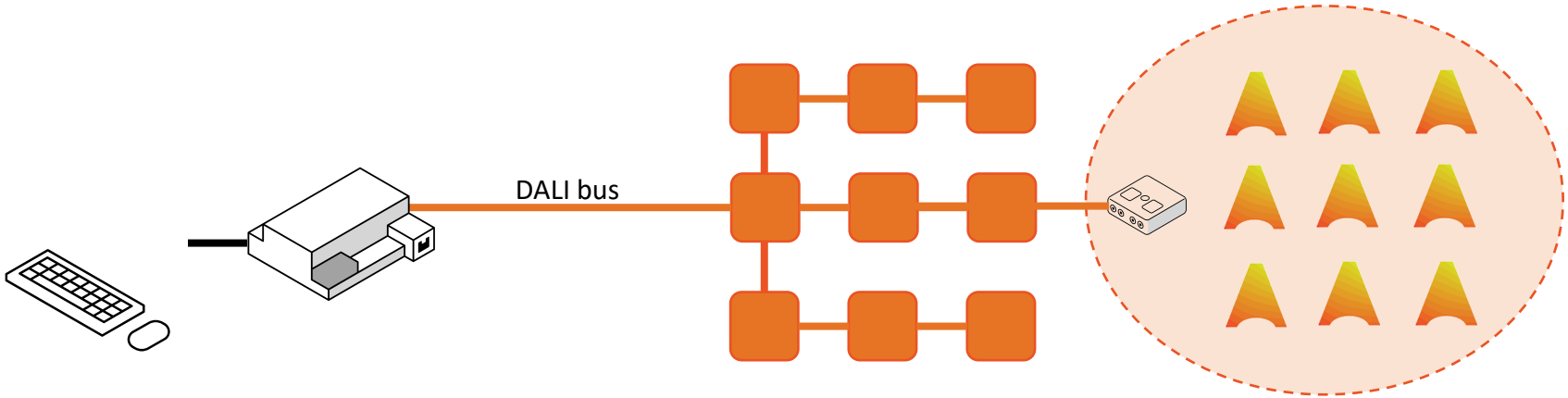
Expand an existing DALI network



Max. total luminaires + input devices
is the same as for one DALI network – 64 units per DALI bus
(CBU-DCS not included)

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Wireless lighting control.
And the fluorescent ban.
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Banned

- EU Commission bans the sale of fluorescent lighting (T5&T8 LFL, T5&T9 ring, CFL*) as of September 2023.
  *February 2023

Saving

- Approx. €18.2B, 190TWh of electricity.
- 1.8 tonnes of toxic mercury.

The Gap

- Approx. 250 million units of installed stock for T5 & T8 plus other types will need replacing across Europe over the next 6 years.

Example from Sweden

- Installed base of minimum 17-20 million luminaires with fluorescent
- The member companies of the Swedish lighting association sell approximately 1 million luminaires in the ‘fluo segment’ per year
- That’s 20 year’s worth of sales that needs to happen in the next 5 years!

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LED Upgrade

- Installations to be upgraded to LED
- Generating approx. 190TWh of energy savings

New Regulations

- European Lighting standard EN 12464-1.
- Updated in 2021 with implementations started in February 2022.

Further Savings

- Unlocked using **wireless lighting controls.**
- With minimal disruption to existing buildings.


Wireless lighting control.
For outdoor projects.
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Current Market

- Most outdoor installations are only ‘on/off’
- Some utilize driver-based local night dimming
- Less than 10% in ‘Smart Cities’

Current Need

- Local control
- City beautification
- Energy Saving

Future Need

- Cloud-based services
- Service & Maintenance driving cost


Wireless outdoor lighting control.
Why now.
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D4i standard

- Enables IoT-ready luminaires

Zhaga-D4i

- Guarantees compatibility
- Standardization of form factor

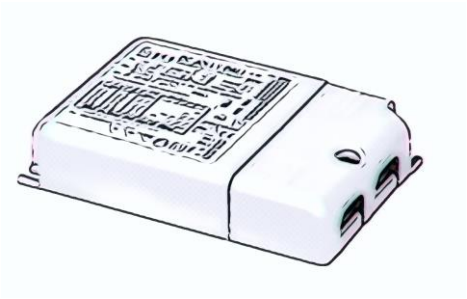
BLE 5

- Long-range mode of 200+ meters

Provides

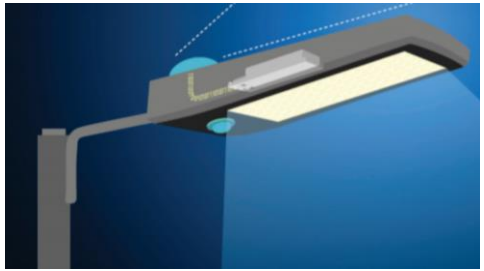
- **Part 251** - Additional info - such as color temp, CCT, installation date
- **Part 252** - Energy consumption
- **Part 253** - Service and maintenance-related info, error messages, current, voltage

- **Part 250** - Power supply on DALI line
- **Part 150** - Extra power supply (not mandatory)



Enables

- **Part 351** - Two nodes to communicate within the same luminaire



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Defines

- How D4i nodes can be compatible with Zhaga-D4i luminaires.

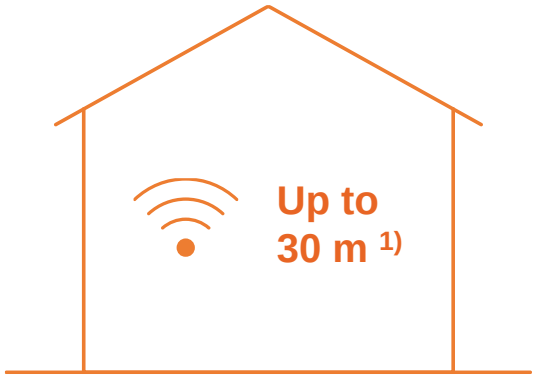
Creates

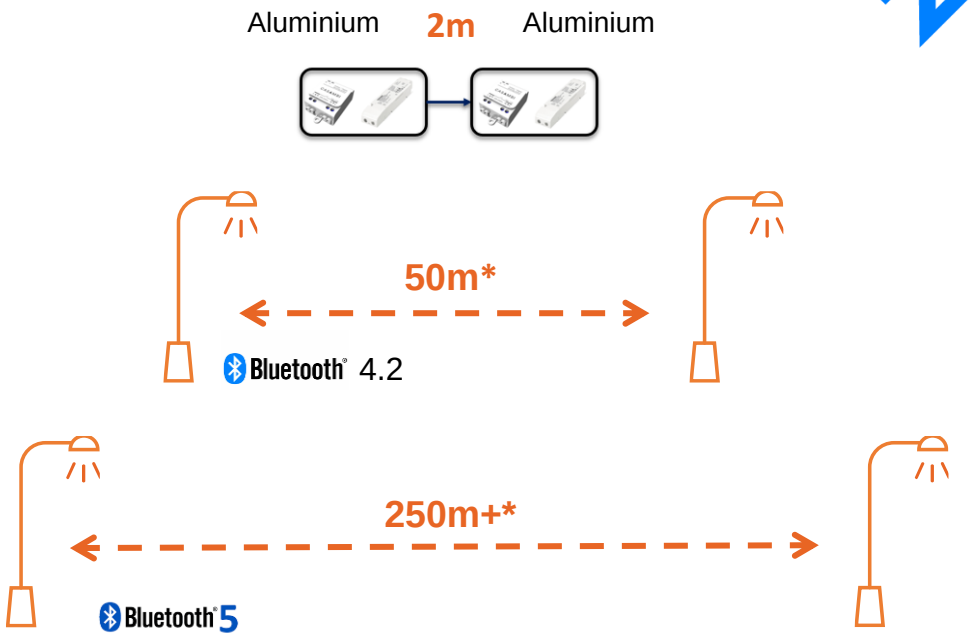
- A standardized and open IoT- ready platform.

Guarantees

- Compatibility between Zhaga-D4i certified node and Zhaga-D4i certified luminaire.

BLE Range.
4.x vs 5.x





*line of sight

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Wireless outdoor lighting control. **Market Response.**

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Standardization

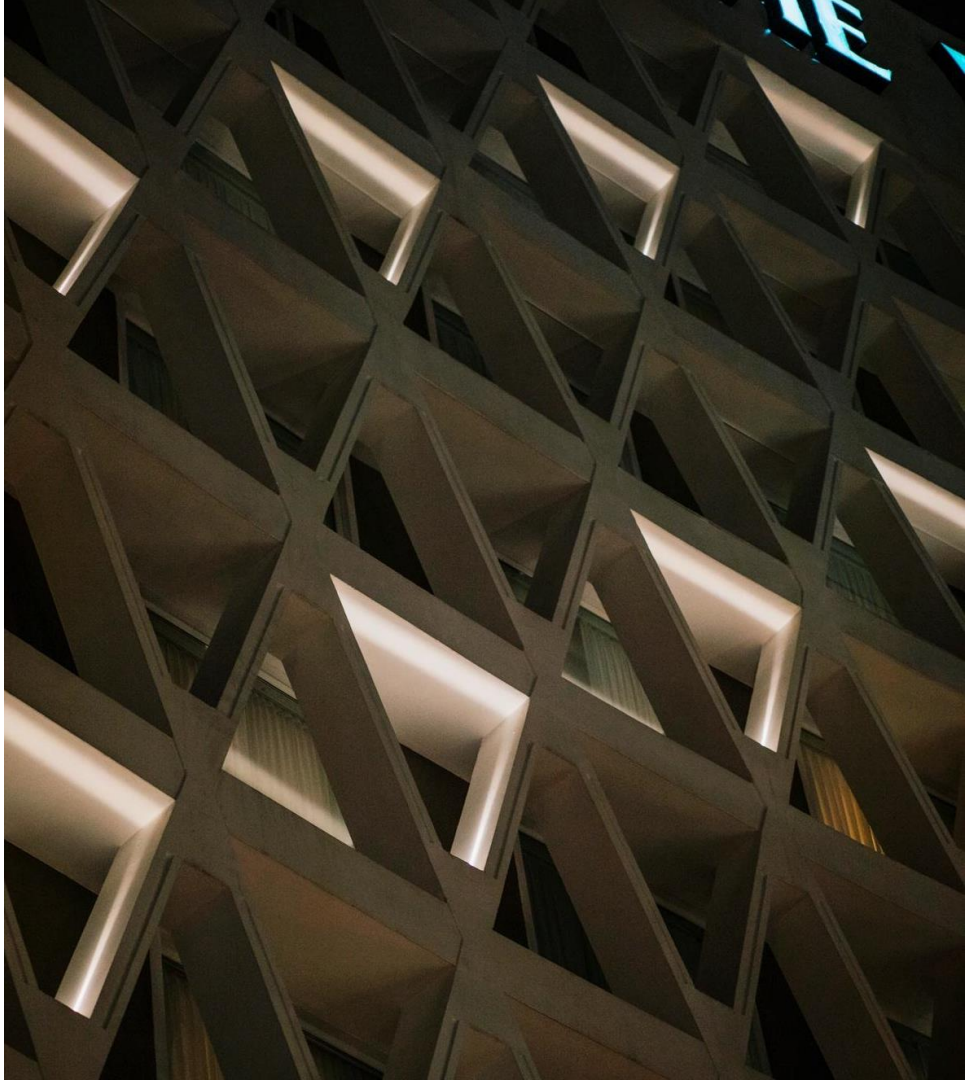
- Major outdoor OEMs are standardizing their base offering to be Zhaga-D4i compatible.

Requirement

- Specification from municipalities and public tenders include Zhaga-D4i as a ‘must-have’.

Casambi Ready

- Casambi’s strong offering and market position for wireless lighting control give us a clear advantage.



Kiitos!

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