



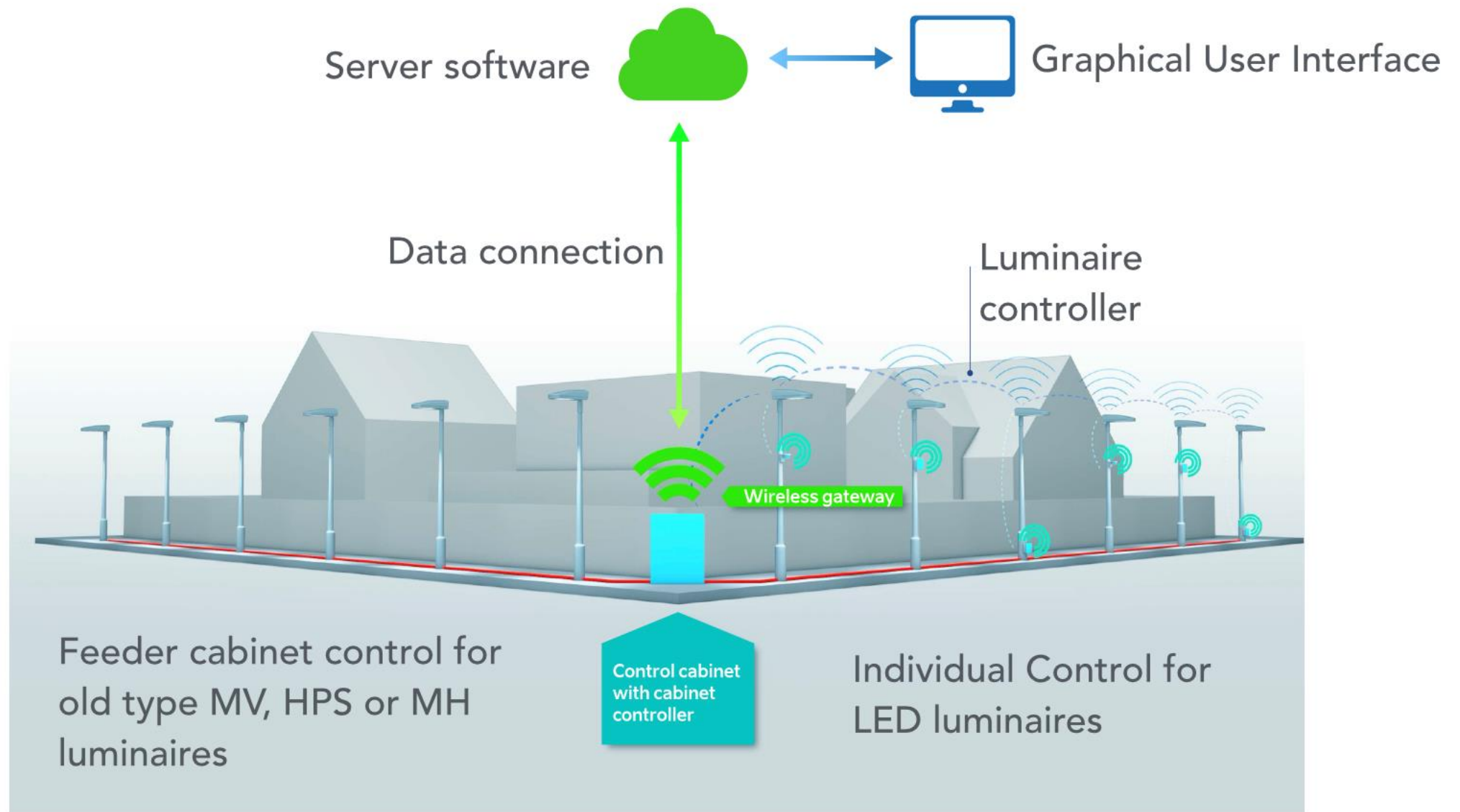
Wireless street light control systems

Seeing the trees behind the forest

Lights on! Lighting the Baltic Sea Region
22.-23.09.2021 | Tallinn, Estonia

Alar Vörk
Co-founder, CEO
lumoflex[®]
INTELLIGENT LIGHTING CONTROL

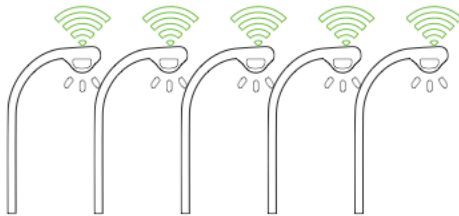
Street light control system



Wireless communication options

NB-IoT

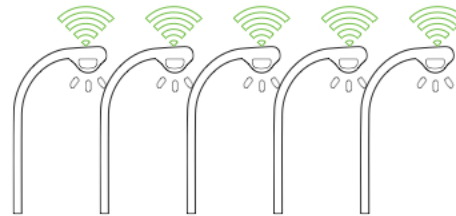
(GSM)



Each node
connects directly
with existing gsm
network

LPWAN

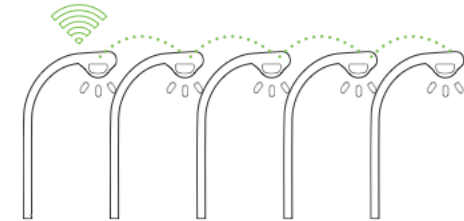
(Lora, Sigfox, proprietary)



Each node
connects with
public or private
LPWAN network

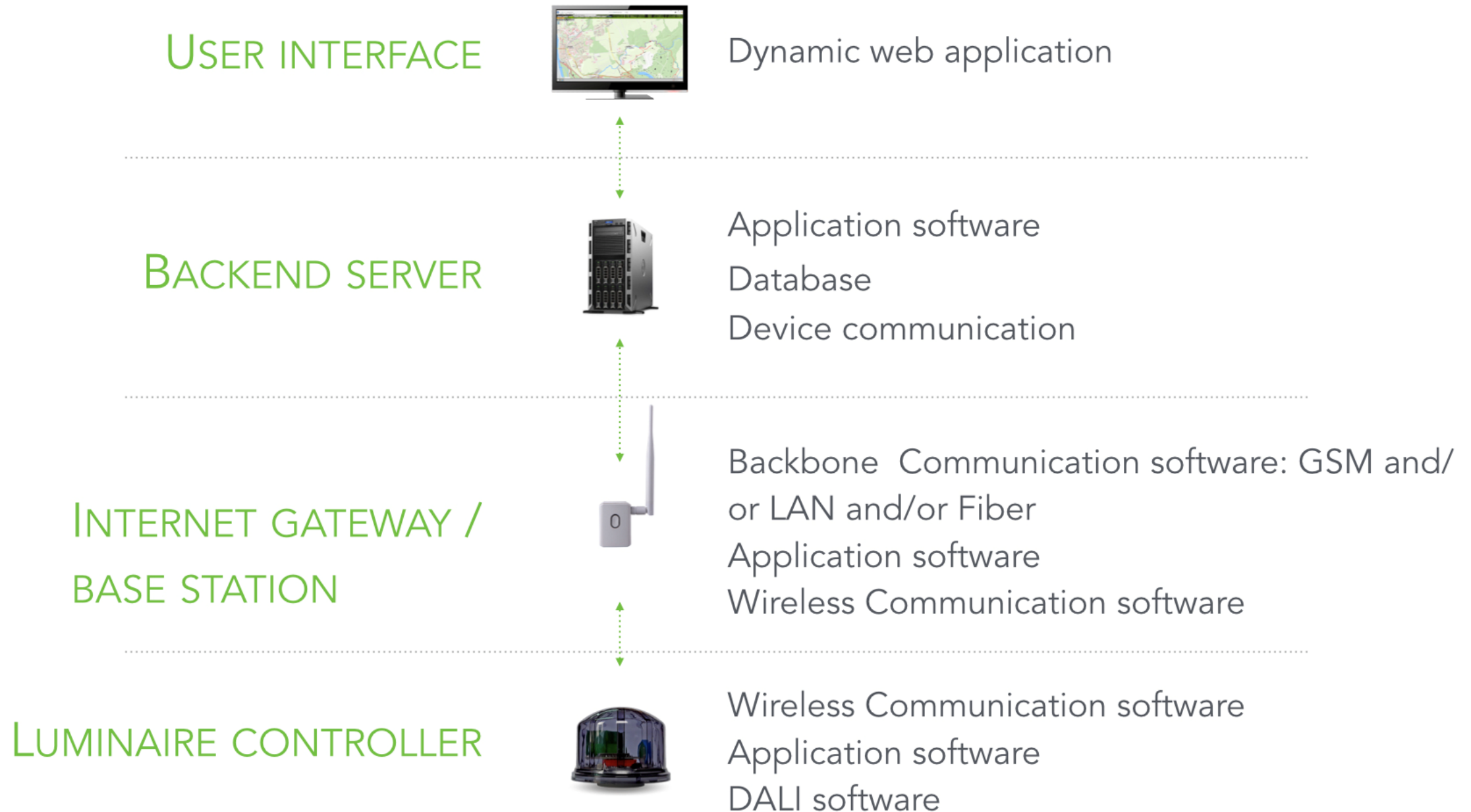
WIRELESS MESH

(ZigBee, 6lowpan, proprietary)



Each node
connects with each
other and establish
software
connection using
group gateway

Control system architecture



Now, let's look at some misconceptions



WARRANTY



LIFETIME

Warranty covers manufacturing defects
which occur within 1-2 years

Lifetime is given by nominal working temperature

$t_c 25^{\circ}\text{C} = 100\,000$ hours

$t_c 65^{\circ}\text{C} = ???$



LORA, ZIGBEE, NB-IOT, 5G...
ARE JUST MESSAGE CARRIERS

Interoperability

SAME COMMUNICATION PROTOCOL DOESN'T MEAN INTEROPERABILITY



DIFFERENT ENCRYPTION

10% dim

Supplier 1 0xA01C
Supplier 2 0x1AD0
Supplier 3 0x3A7D

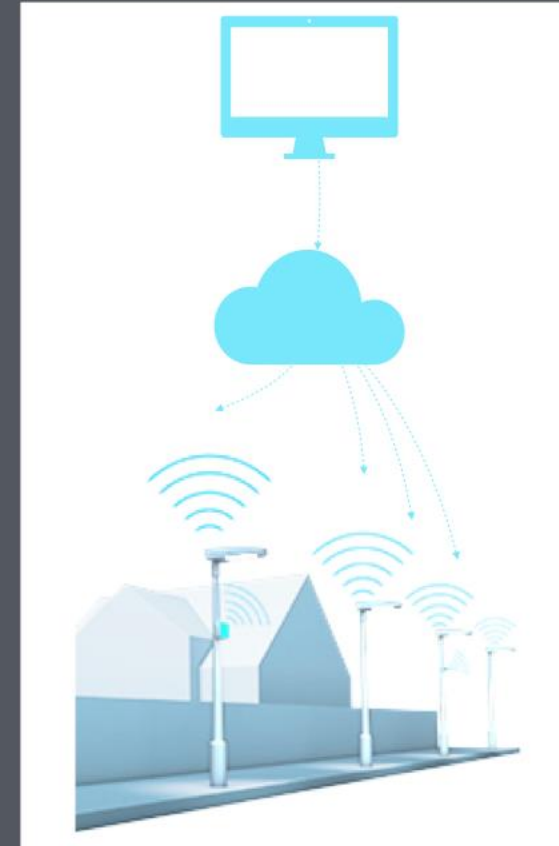
DIFFERENT MESSAGE

Over-the-air firmware update

NOT ALL IS EQUAL



technically OTA but...



this is what you really want to do

Dyamic lighting

SOUNDS FANCY, BUT...



More expensive control HW

Small additional savings

Limited sensing distance

People feel as easily spotted by
criminals

Uncomfortable in residential areas

Vehicles drive too fast

Detailed luminaire data

IT IS FANCY, BUT IF YOU HAVE THOUSANDS OF STREET LIGHTS?





May the light be with you!

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