

A nighttime cityscape with a green tint. In the foreground, a multi-lane highway curves to the right, with long-exposure light trails from cars in shades of green and yellow. The background is filled with illuminated skyscrapers and buildings, some with distinctive architectural features like a tall, white, segmented tower on the left. The overall scene is vibrant and modern.

Signify

Unlocking the extraordinary
potential of light

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Signify

the world leader in lighting

We provide high-quality energy efficient lighting products, systems and services

No. 1

Connected, LED,
Conventional

32.000

people employed
in 70 countries

No. 1

Industry leader
Dow Jones
Sustainability Index

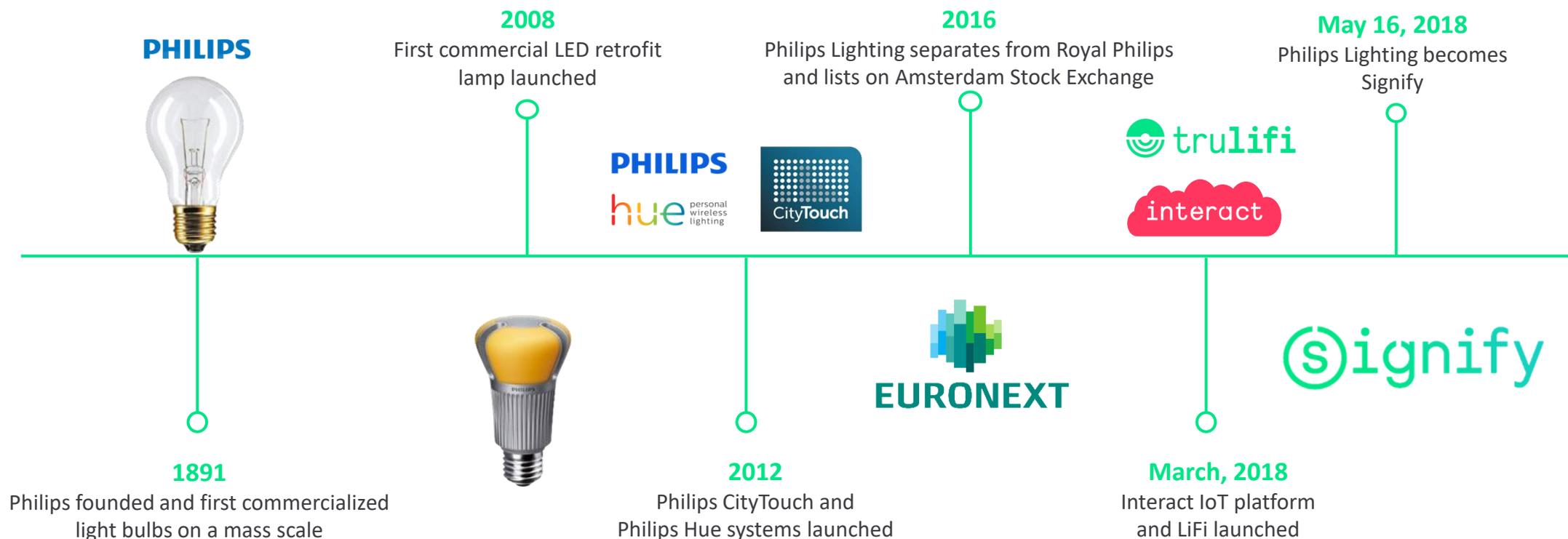
€6.2bn

Sales in 2019
driven in ~ 75% from
professional branch

No. 1

in Lighting for
IoT

From Philips Lighting to Signify, 125 years of legacy



©signify

Meet our global brands

PHILIPS

Our global brand for consumer
and professional lighting

PHILIPS

hue personal
wireless
lighting

WIZ

 **COLOR
KINETICS**

 **MODULAR
LIGHTING —
INSTRUMENTS**

interact

Our Internet of Things platform
and connected lighting systems

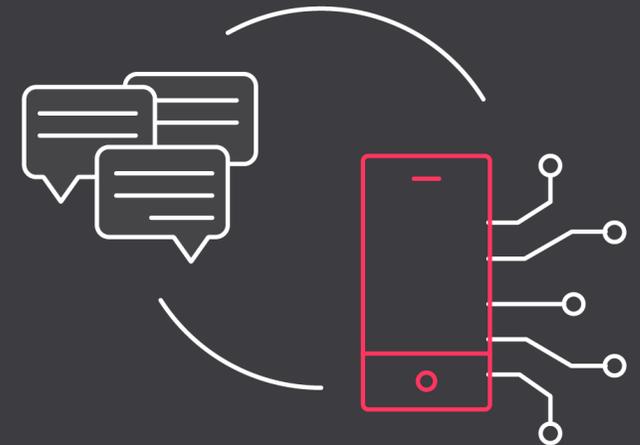
Our world is changing ... See how connected lighting can make a difference



Population growth & urbanization



Resource challenges

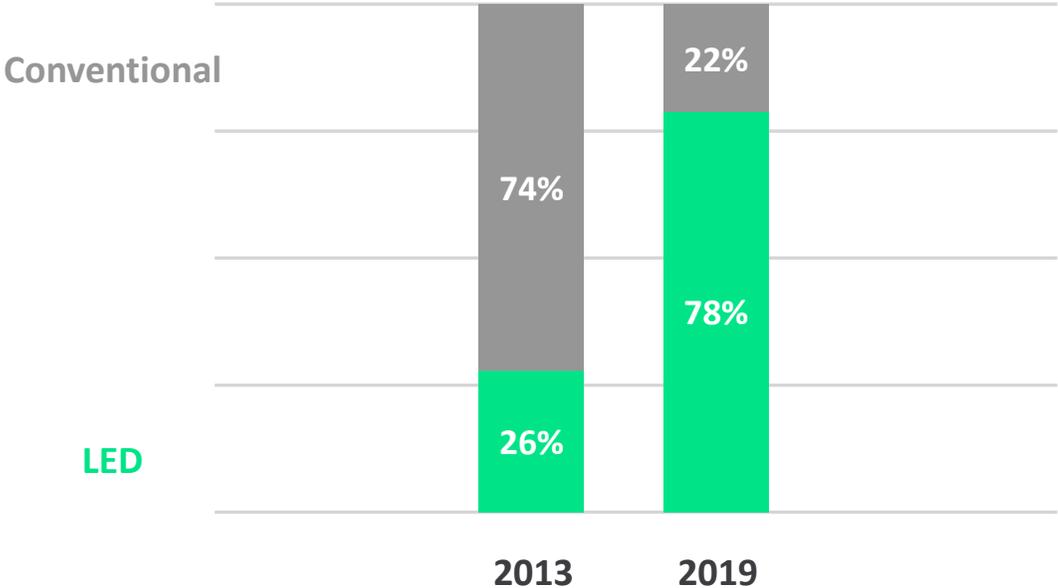


Digitization

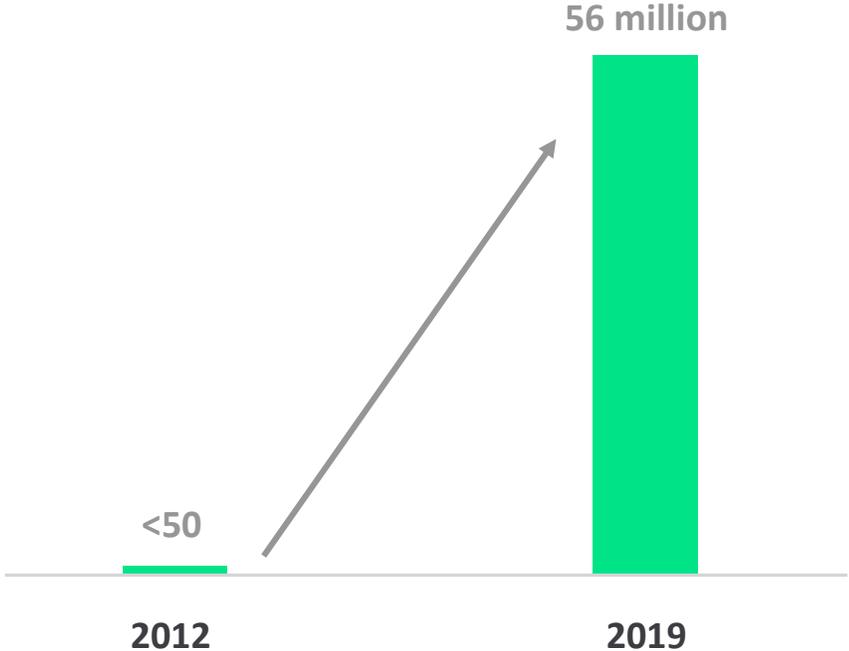
- Right light and safety
- Energy efficiency with performance
- Sustainable resource constraint
- Mobility
- New applications beyond illumination

We're transforming our business

Transition from conventional to LED-based sales (in % of total sales)



Number of connected light points



Connect to leverage LED benefits

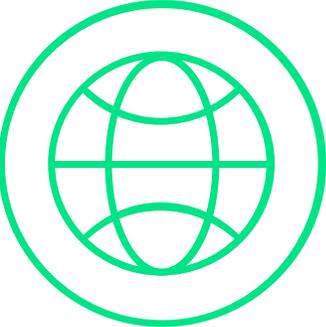


Up to 80% energy savings when coupled with smart controls

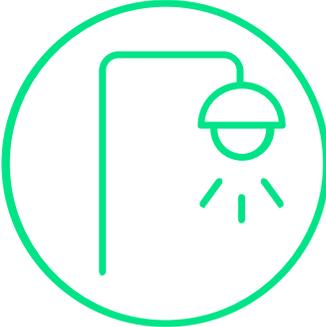


50-70% energy savings with LED

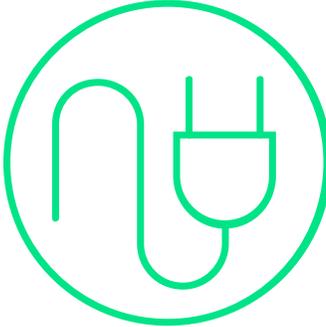
Public lighting is everywhere but connected lighting is not



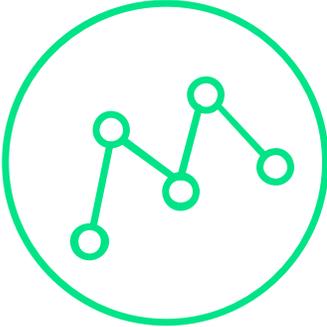
~**300 million** street lights worldwide¹



On average, public lighting is more than **20 years** old³



Lighting can account for up to **40%** of a city's total energy consumption²



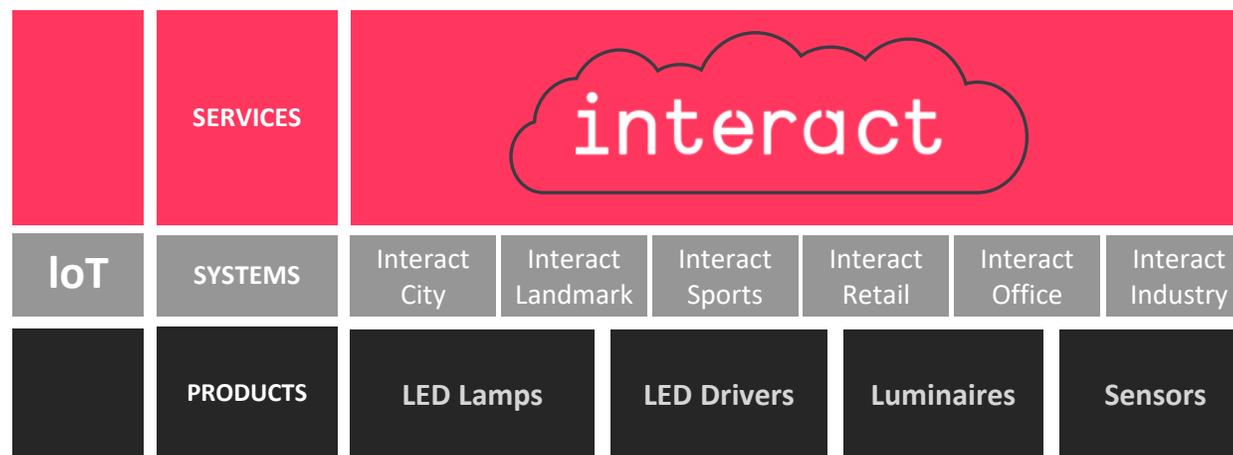
~**2%** of installed systems are connected, expected to reach **35%** by 2025³

¹ Northeast Group, *Global LED and Smart Street Lighting Forecast 2015-2025*

² European PPP Expertise Centre (EPEC), European Commission, *Energy Efficient Street Lighting*, 2013

³ Philips market analysis

Interact Lighting connected



Interact City



Interact Landmark



Interact Sports



Interact Retail



Interact Office



Interact Industry



Interact Hospitality



Interact City



With Interact City, you can:

- Make your streets safer for citizens
- Remotely Control, Monitor and Program your Street Lights
- Manage all your streetlighting assets in 1 platform
- Optimize your energy consumption
- Better plan your maintenance personnel
- Visualize data through one dashboard
- Kick start your Smart City ambition with Public Street Lighting Central Management System
- Integrate with other software to control lighting
- Secure application designed to the highest Cybersecurity standards of IEC 62443 develop process

Reduced lighting energy consumption	Up to 80%
Achieve sustainable operations targets	Up to 80% Reduction of CO ₂ Emissions
Optimize operations	Improve efficiency by at least 50% with effective maintenance planning with in-depth knowledge of all asset information
Reduce down-time of luminaires	Less than 1% down-time with real-time fault detection and fast resolution responses
Reduced citizens' complaints	Track 100% of the issues and resolve them before complaints are reported
Improve traffic and pedestrian safety	Better lighting reduces up to 20% crime and 30% road accidents with injuries
Protect Data & against unauthorized usage	Signify is certified to IEC62443-4-1 Security Certification by Dekra

80%

Reduced lighting energy consumption

UV-C background

What is UV light?

Ultraviolet (UV) light is invisible to human eyes. It can be subdivided into three categories:

UV-A (from 315 to 400 nm)

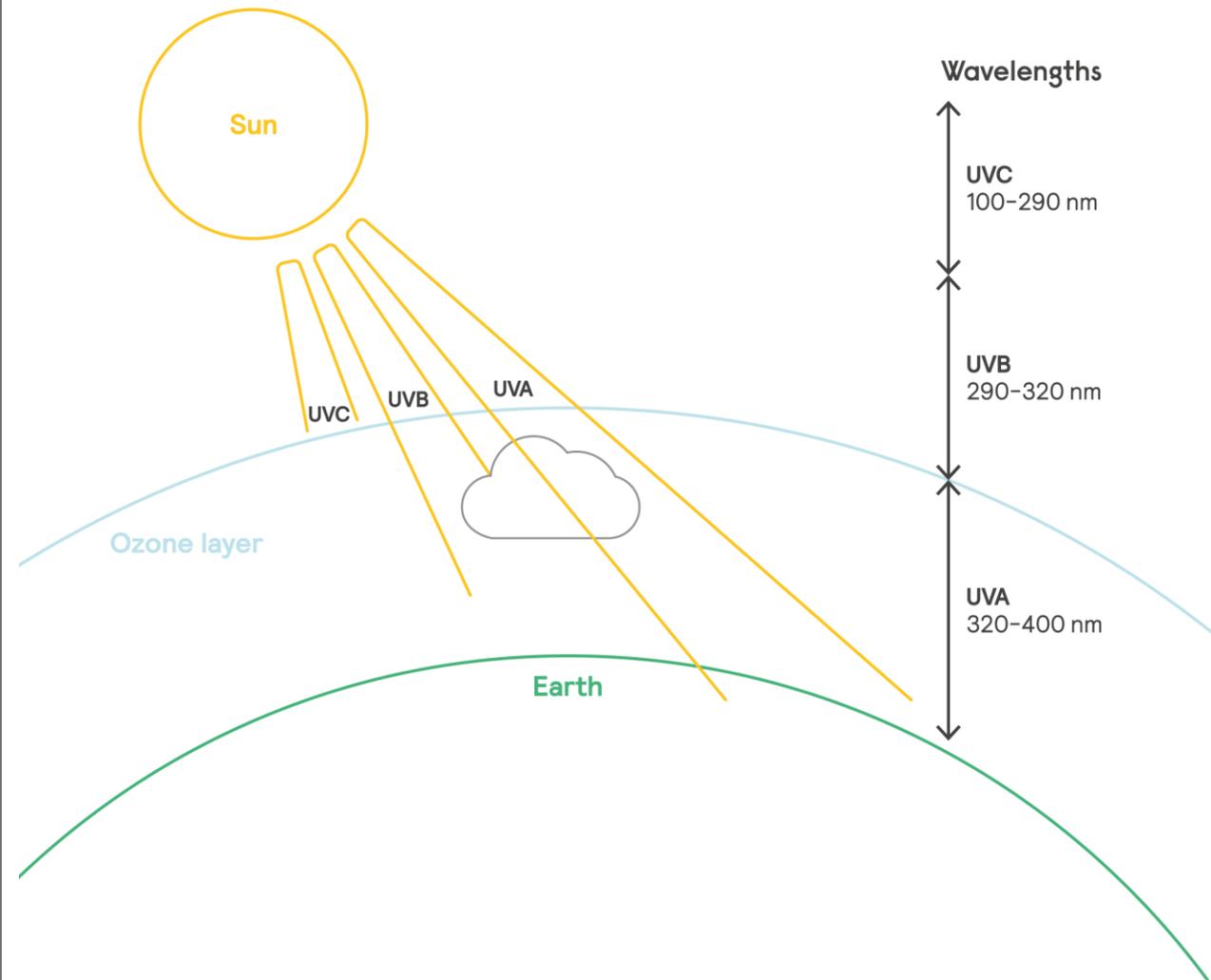
- For use with curing, sun tanning and insect traps.

UV-B (from 280 to 315 nm)

- For medical use (i.e. phototherapy to treat skin conditions, including psoriasis)

UV-C (from 200 to 280 nm)

- For disinfection purposes and germicidal application



How does it work?

- UV-C radiation can **break the DNA and RNA** of bacteria, viruses and spores, meaning that they leave them harmless. There are **no known micro-organisms resistant to UVC**.¹
- UV-C technology has been used **safely and effectively** in hospitals and governmental buildings for more than **40 years**²
- Most UV-C solutions **utilize conventional lighting**, with LED now improving in efficiency
- The **peak output of our germicidal lamps (253.7nm)** is close to the maximum effectiveness of UV-C (265nm)

1) Fluence (UV Dose) Required to Achieve Incremental Log Inactivation of Bacteria, Protozoa, Viruses and Algae Revised, updated and expanded by Adel Haji Malayeri, Madjid Mohseni, Bill Cairns and James R. Bolton. With earlier contributions by Gabriel Chevretils (2006) and Eric Caron (2006) With peer review by Benoit Barbeau, Harold Wright (1999) and Karl G. Linden

2) EPA Report, "Building Retrofits for Increased Protection Against Airborne Chemical and Biological Releases" Pg. 56

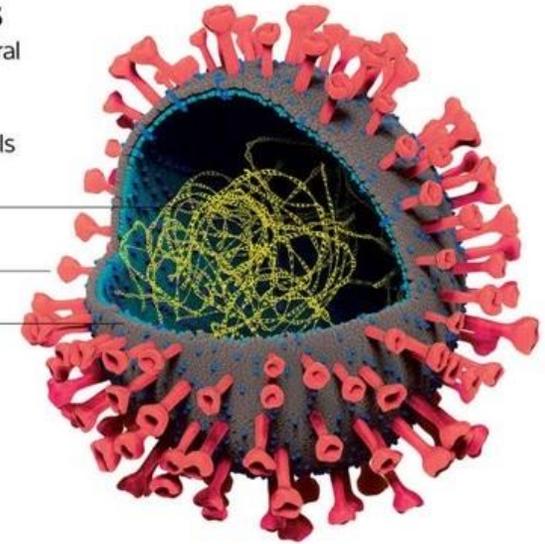
Anatomy of a virus

The covid-19 virus has several features we may be able to target with drugs to break it down and stop it entering cells

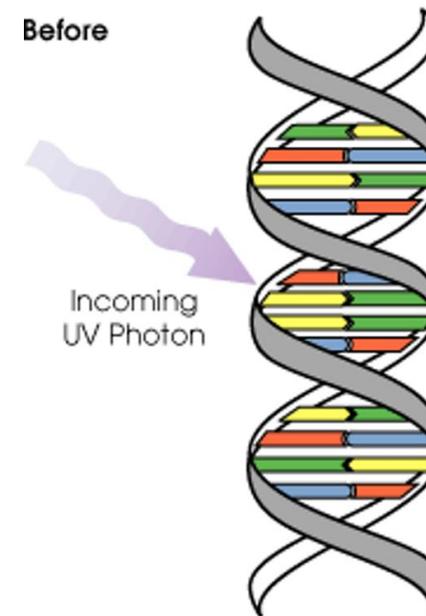
RNA enclosed in protein

Spike protein

Lipid membranes



Before



After



Why use UV-C as a disinfectant?



Reduce the risk of exposure
for guests and staff



Make guests and staff feel
better protected



Save cost by reducing
disinfection cycle time



Prevent excessive spending
on chemical sanitizers

Applications: **Surface:** Open luminaires and Cabinets **Air:** Upper air

Open luminaire



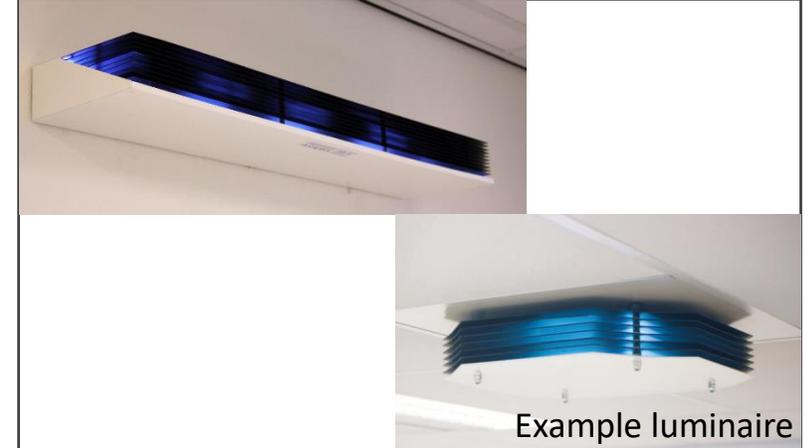
- UV-C luminaires for disinfection of both surfaces and air
- No people should be present in the room when the system is in use.

Cabinets



- Primary uses are for disinfection and sterilization of objects

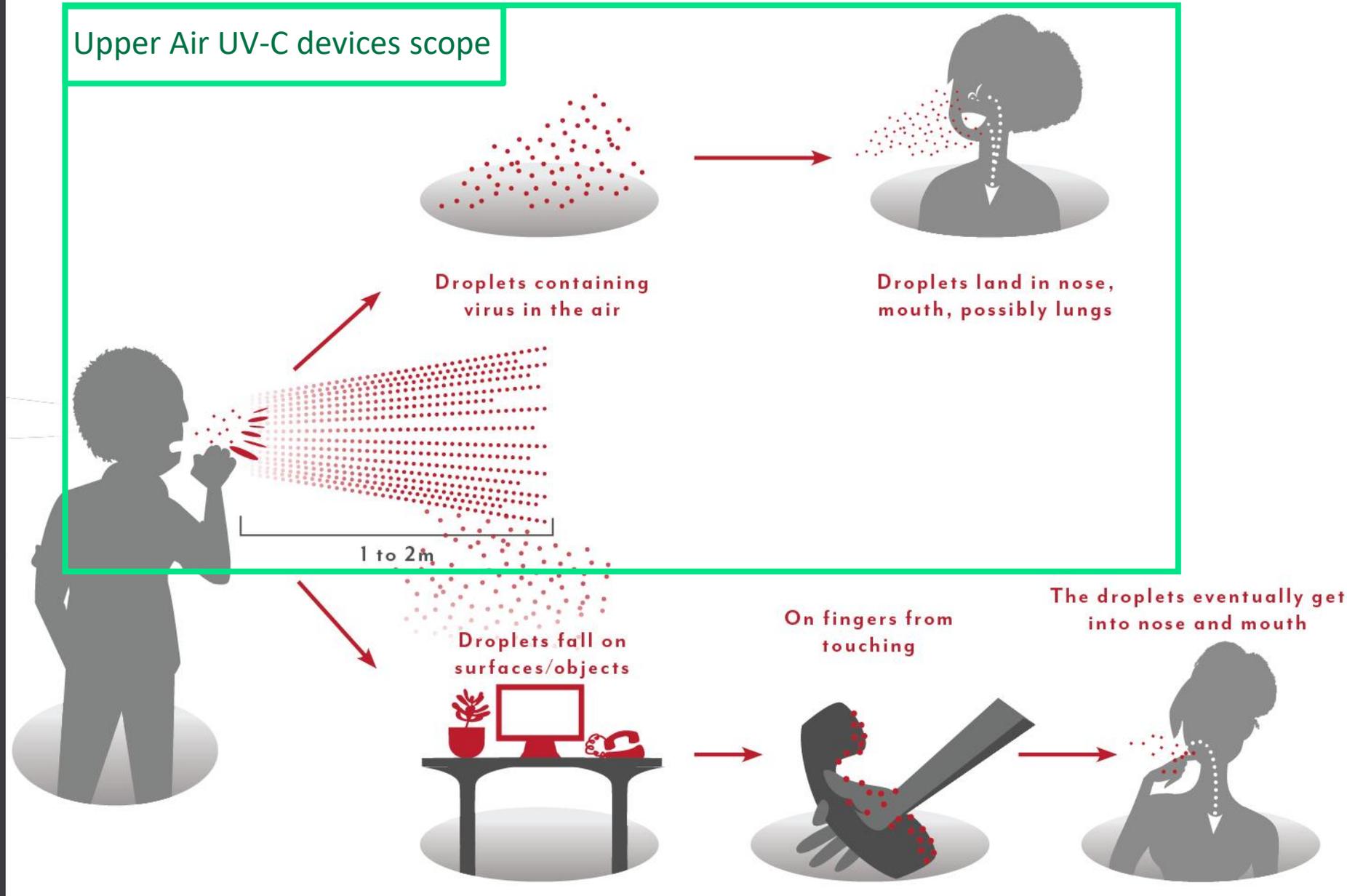
Upper air disinfection



- UV-C devices for disinfection of air
- Wall mounted, suspended or ceiling mounted
- Used with people present in the room

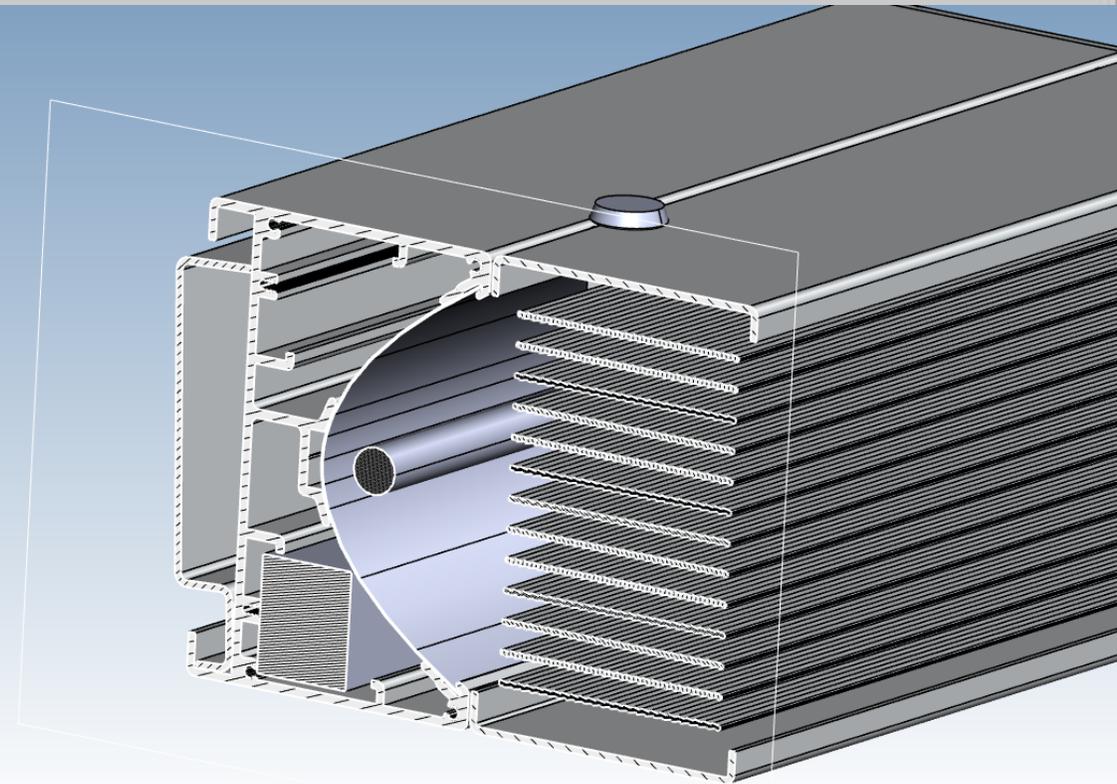
Virus transmission occurs through:

1. Direct air-borne transmission **between people**
2. Indirect air-borne transmission through **air flows**
3. Indirect surface-borne transmission via **contaminated surfaces**

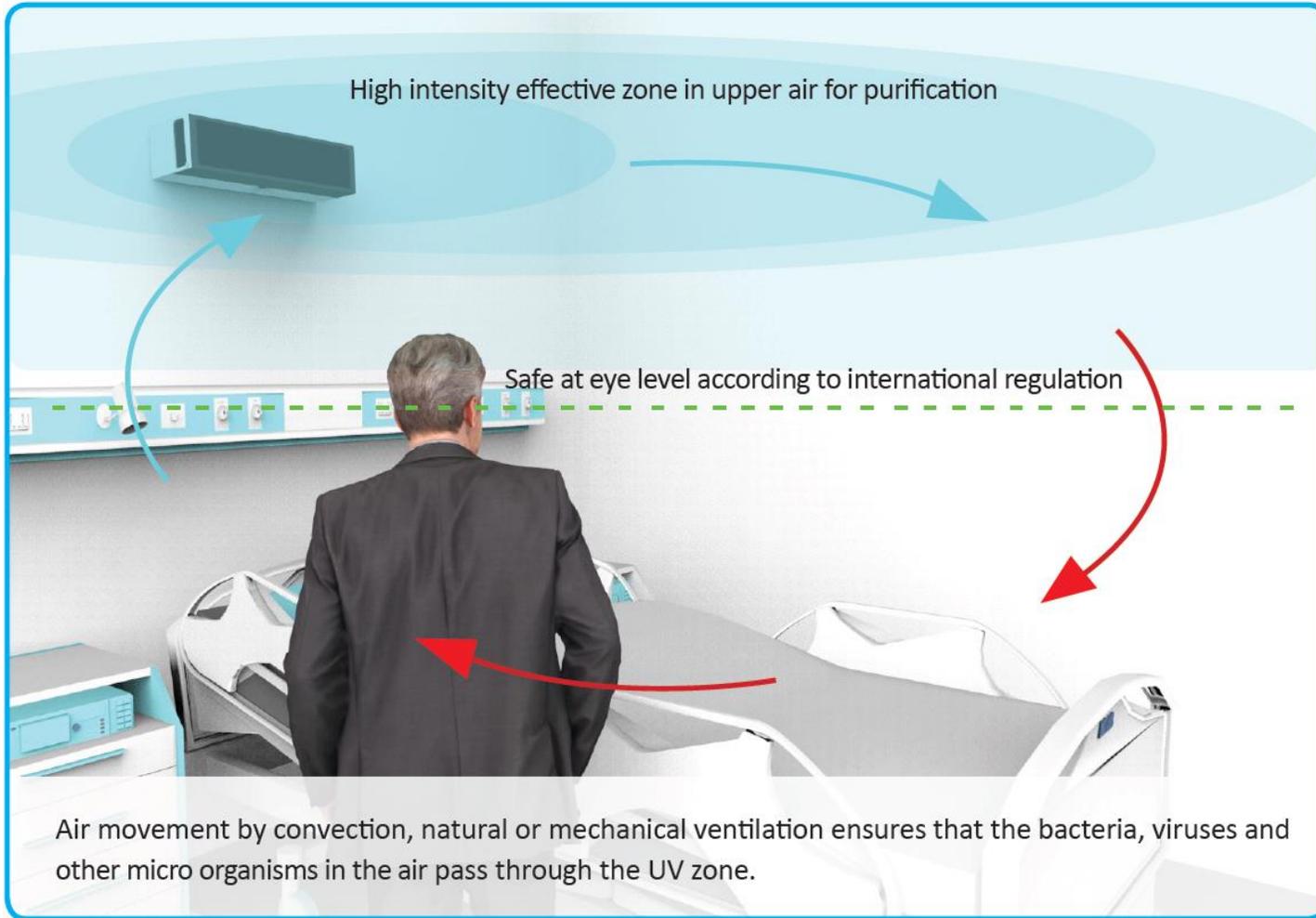


Upper air device – What is it?

- The device contains one or several UV-C lamps and electronic ballast
- The UV-C beam is shaped by a reflector, with or without louvres
- Louvres allow for a beam shape as horizontal as possible, which avoids reflection on the ceiling. These configurations are used for low ceiling height, as for example offices, standard rooms, etc.
- Versions without louvre are usually used when there is a wide space to cover between the ceiling and the device, as for example warehouses
- In both cases, care should be taken to limit the maximum irradiance to $0.2\mu\text{W}/\text{cm}^2$ at the level where people are present. This can be simulated and/or measured on site to ensure maximum safety.



Upper air - How does it work ?



- The device radiates UV-C only in the upper part of the room thanks to optics and louvres, enabling a safe use for people present in the room
- As it is used even when the room is occupied, the complete upper layer of air is consistently exposed to the UV-C rays
- The natural movement of air enables all air particles to be irradiated by UV-C rays. This movement can be helped by mean of mechanical ventilation
- As a result, a wide volume of air is permanently treated, inactivating all pathogens

Applications: Looking at just surface and air, there are numerous real-world segments where UV-C lighting is a viable disinfection solution

Retail



Work surfaces



Restrooms



Food



Transportation



Labs



Offices



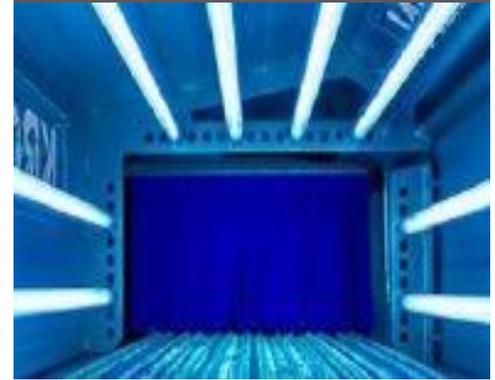
Hospitality



Entertainment



Custom chambers



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