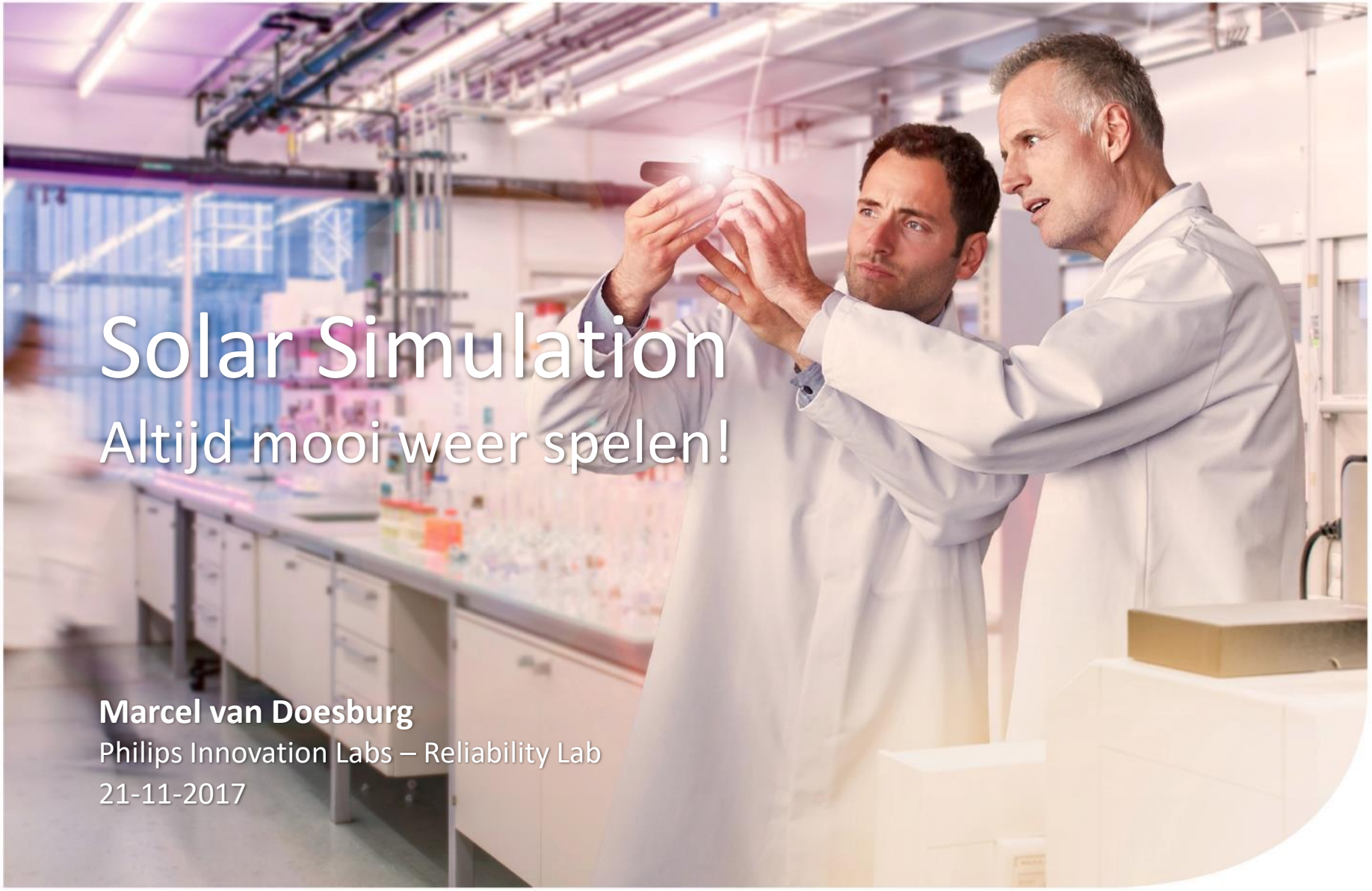

Solar Simulation

Altijd mooi weer spelen!

Marcel van Doesburg
Philips Innovation Labs – Reliability Lab
21-11-2017

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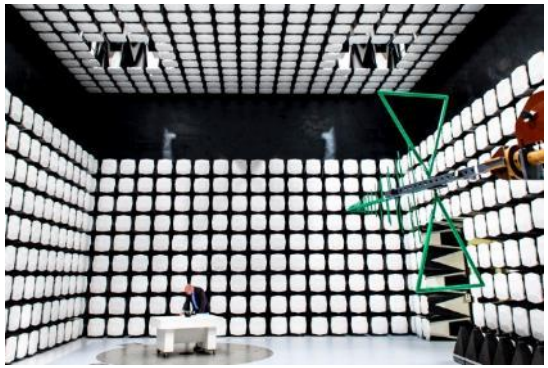
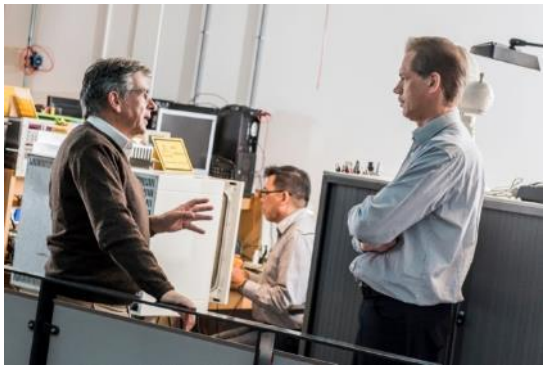
Our **five labs**



Electromagnetic Compatibility & Wireless Connectivity lab



Electronic Design Services lab

Material Analysis lab

Reliability lab

Prototyping lab

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Content

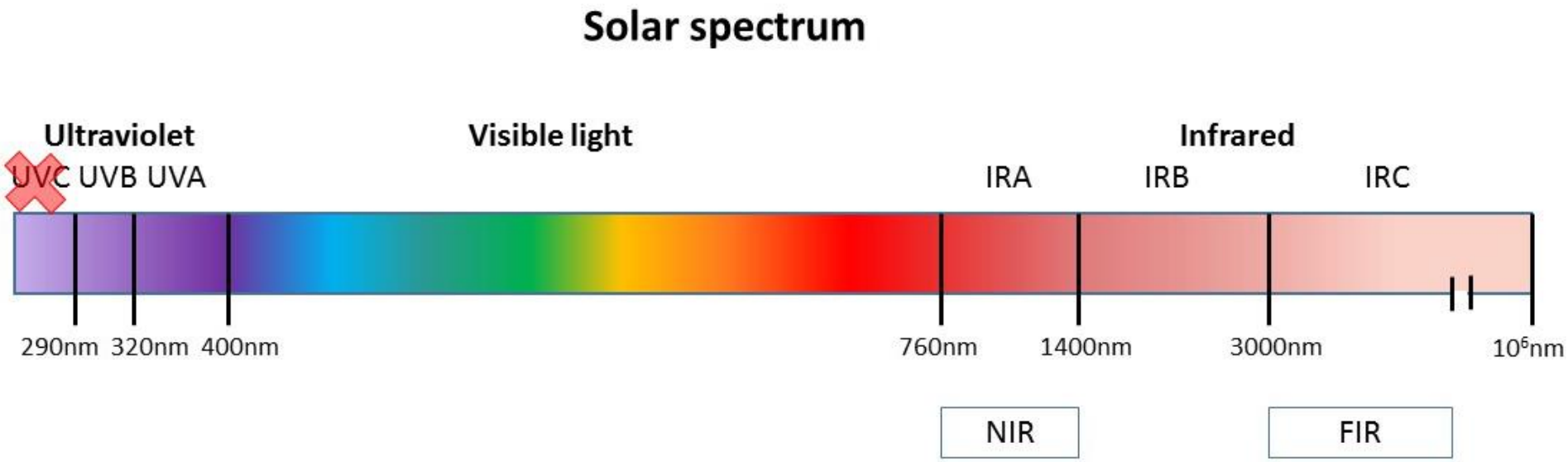
- Why Solar Testing?
- Effect of solar radiation on a product
- What is sunlight?
- Application knowledge
- Simulation in Lab environment
- Analysis techniques
- Defining a Solar test
- Material investigation
- Example

Why Solar testing?

Effect of Solar radiation on a product

What is sunlight?

Sunlight is a portion of the electromagnetic radiation given off by the sun



UV: 7%

VIS: 43%

IR: 50%

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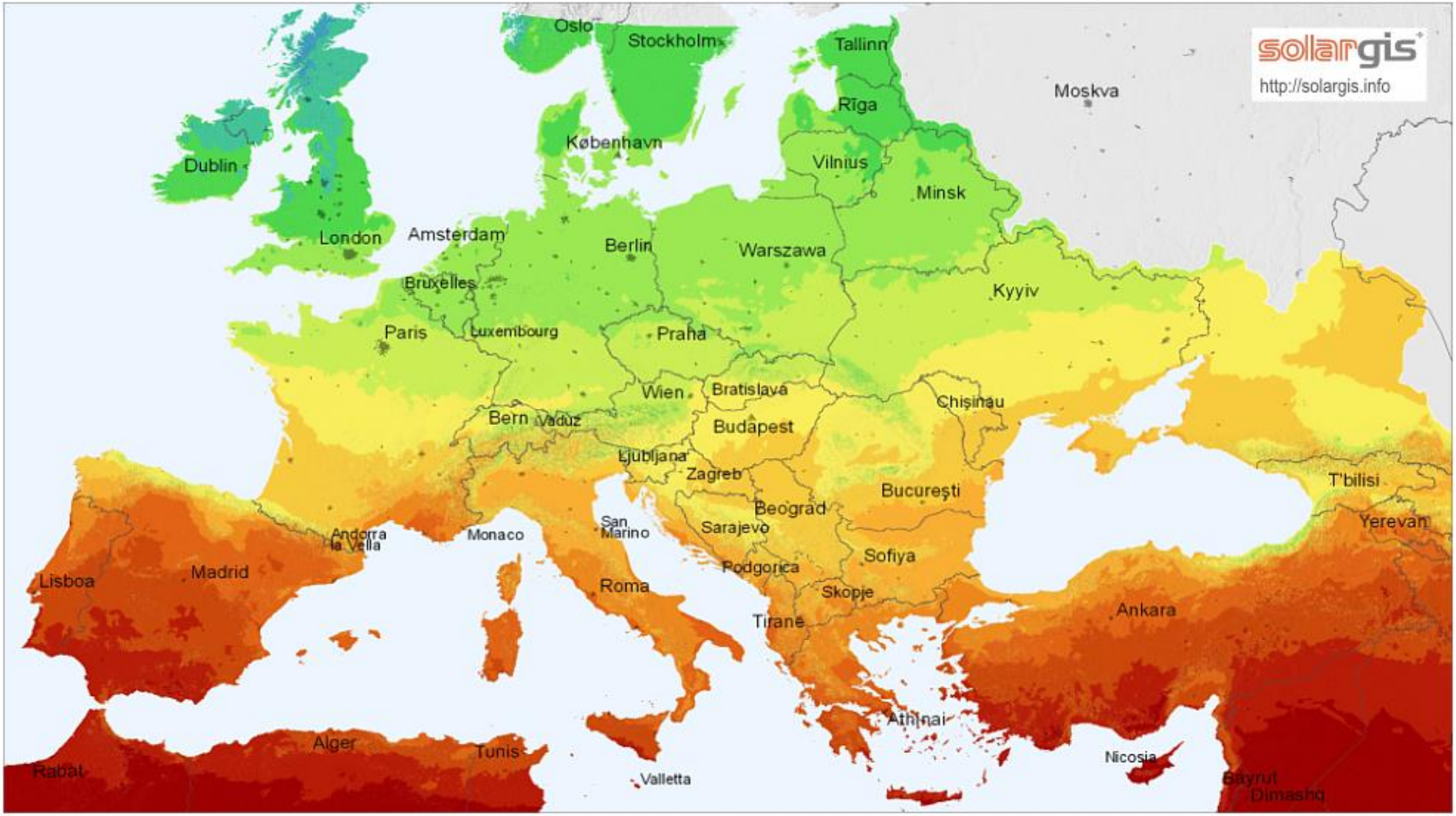
Application knowledge

Geographical location

Europe



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Geographical location

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Simulation in Lab environment

QUV Weathering tester

ATLAS XLS+

ATLAS ALPHA LM

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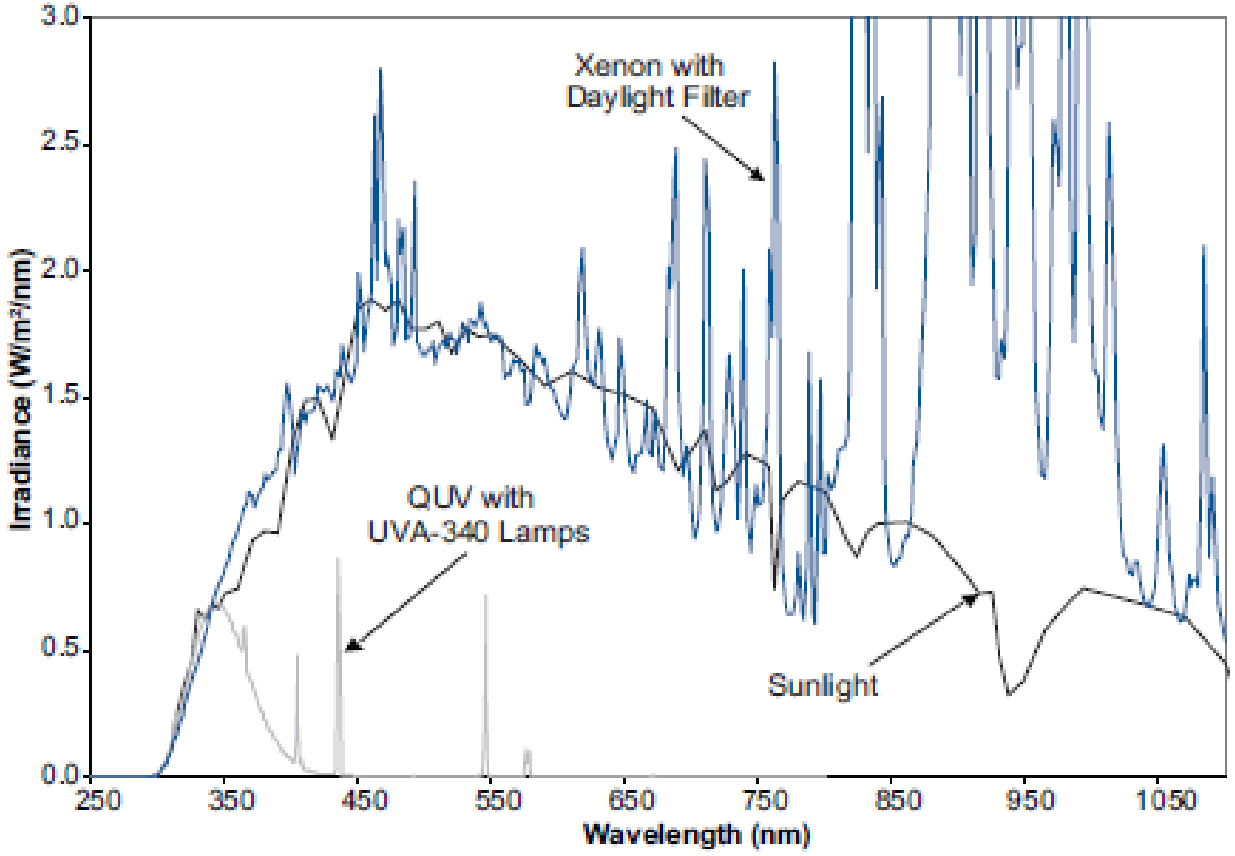
Sunlight, Xenon and Fluorescent UV



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Analysis techniques

Tensile tester

IK tester

colorimeter

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Defining a solar test

- Example strap sportwatch

Amount of hours: 10 hours * 52 weeks * 4 weeks = 2080 hr

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User scenario

Average annual sun: 1025 kWh/m2

Per hour: 0.1173 kWh/m2

2080 hr * 0.1173 kWh/m2 = 244 kWh

Power solar tester: 1.120 kW/m2

244/ 1.120 = 218 hr = 9 days

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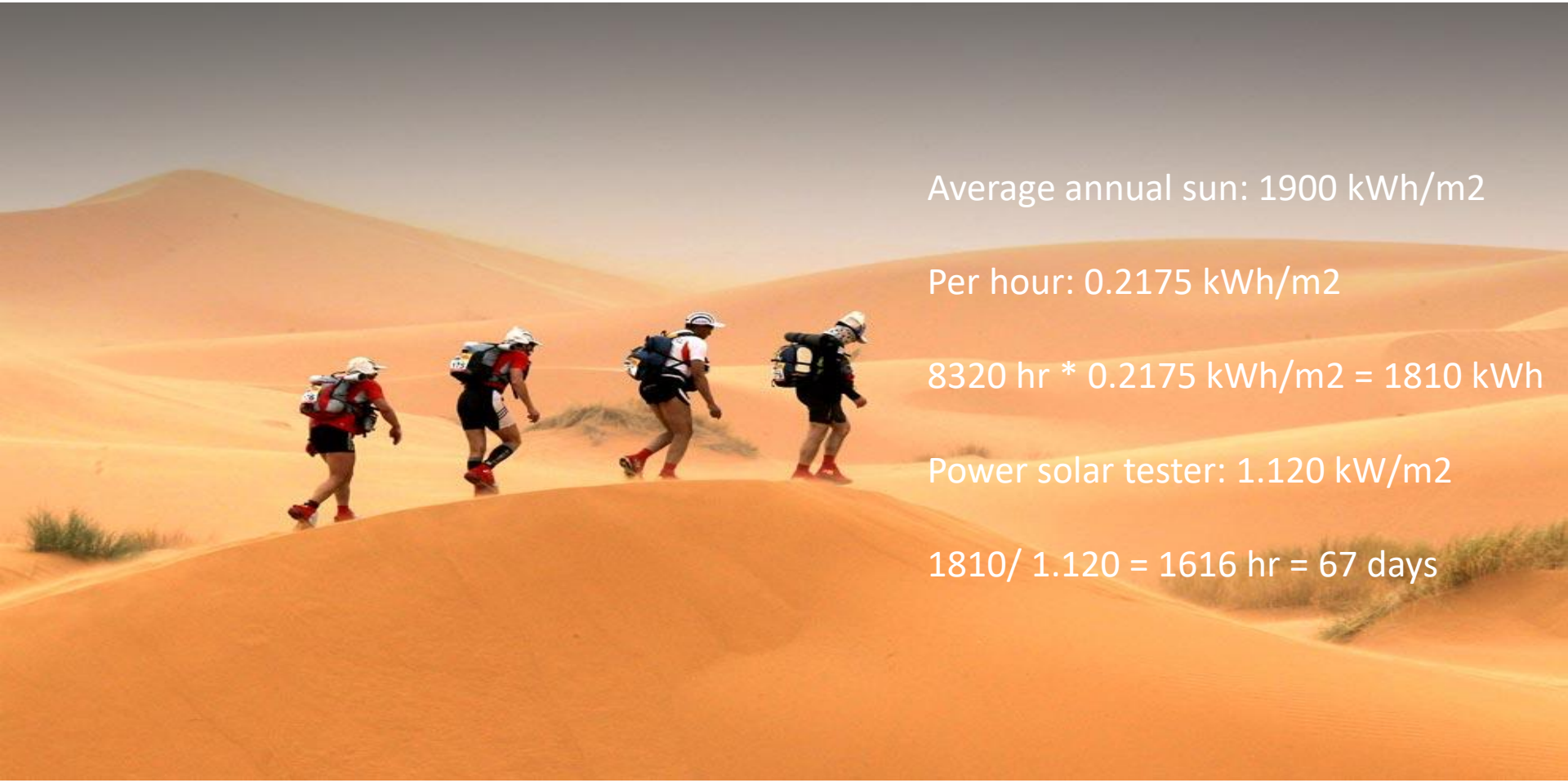
Another user scenario



Average annual sun: 1900 kWh/m2

Per hour: 0.2175 kWh/m2

8320 hr * 0.2175 kWh/m2 = 1810 kWh

Power solar tester: 1.120 kW/m2

1810/ 1.120 = 1616 hr = 67 days

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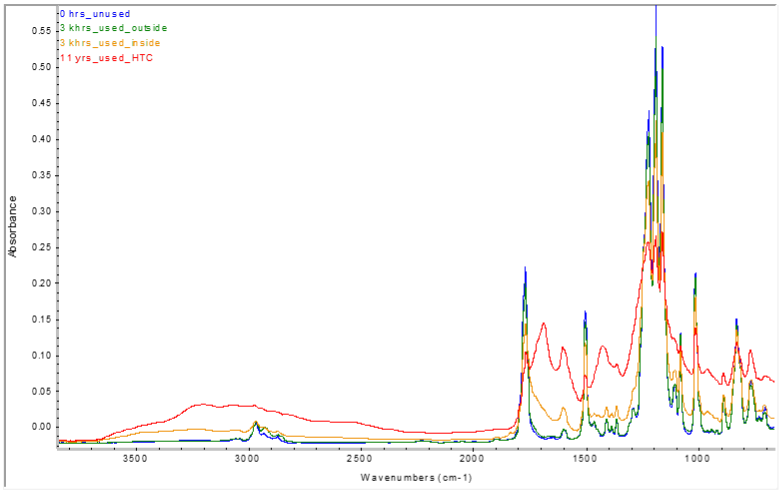
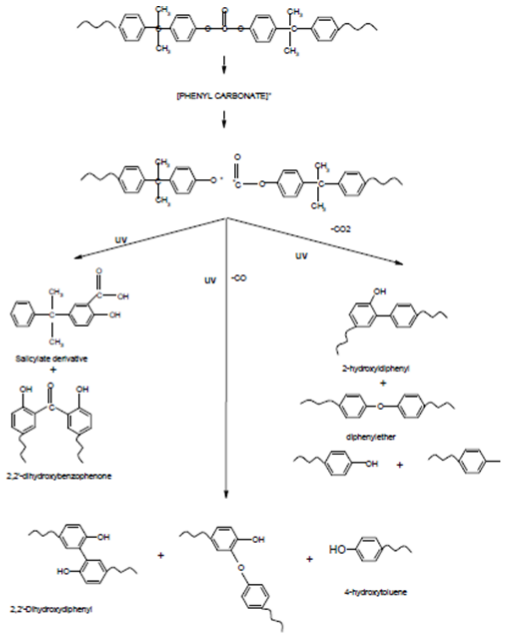
Material investigation (FT-IR analysis)

FT-IR

Spectral transmission measurements





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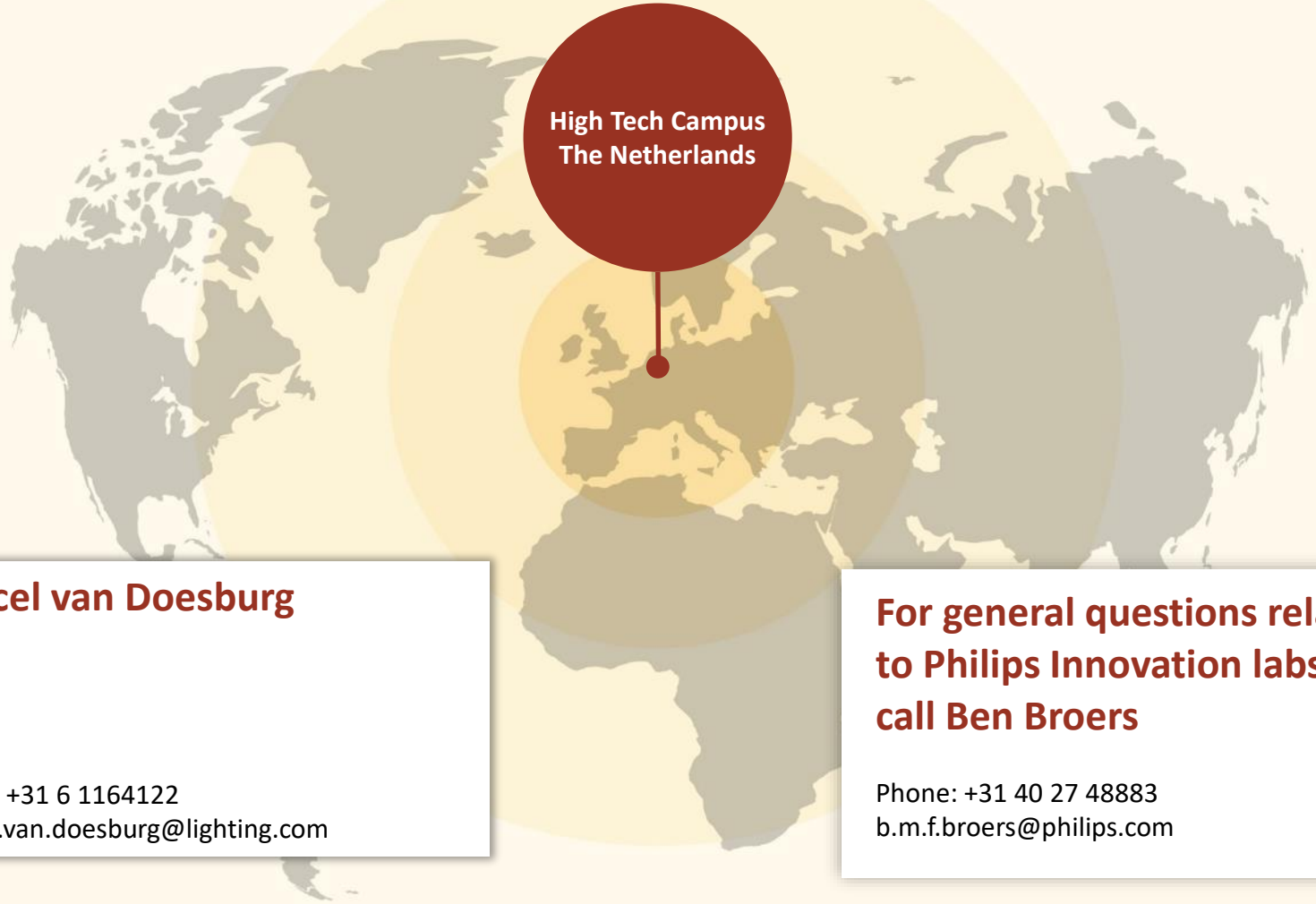
Local partner, **global reach**



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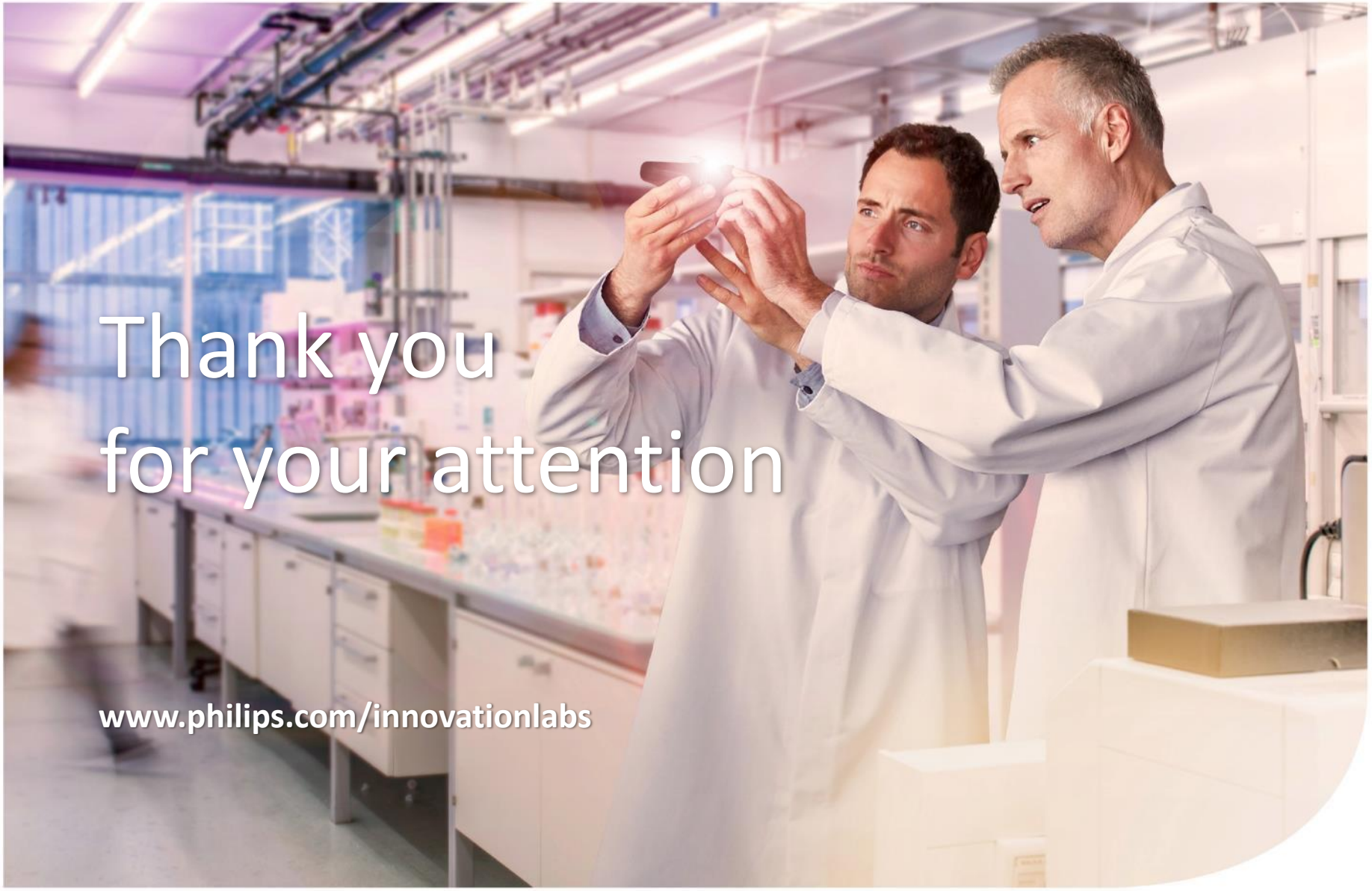

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