Lucerne University of
Applied Sciences and Arts
HOCHSCHULE
LUZERN
Technik & Architektur
FH Zentralschweiz

KAN Kommission
Arbeitsschutz und
Normung

Non-visual effects of light

© freshidea/fotolia.com

EUROSHNET Conference

Anna Dammann
Commission for Occupational Health and
Safety and Standardization (KAN)

Reto Häfliger
Licht@hslu
Lucerne University of Applied Sciences and Arts

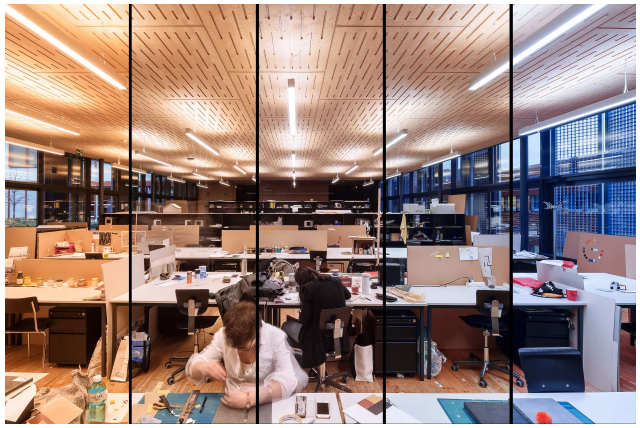
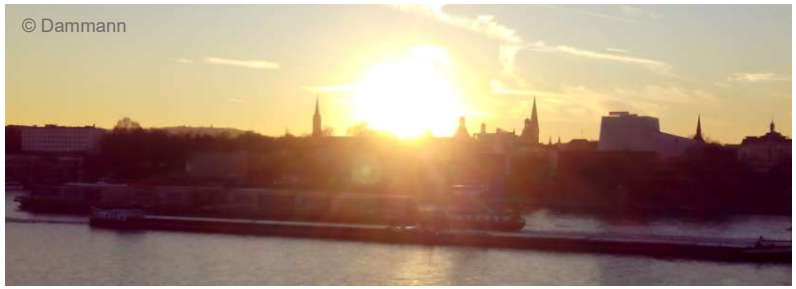


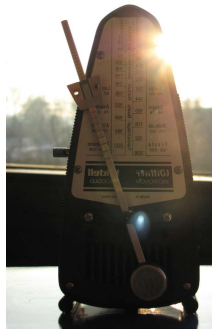
Photo: Reto Häfliger

Dresden, 12 June 2019

KAN Kommission Arbeitsschutz und Normung

Light has non-visual effects – also at the workplace

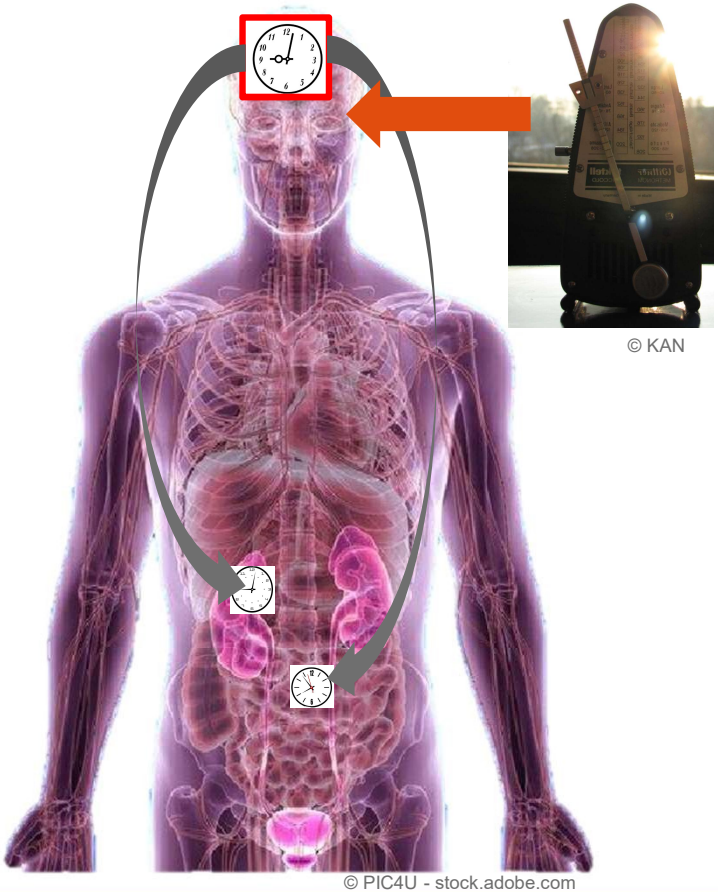

© Dammann


© KAN

EUROSHNET
Anna Dammann
Dresden, 12 June 2019


© freshidea/fotolia.com

Light as the metronome of our "inner clock"

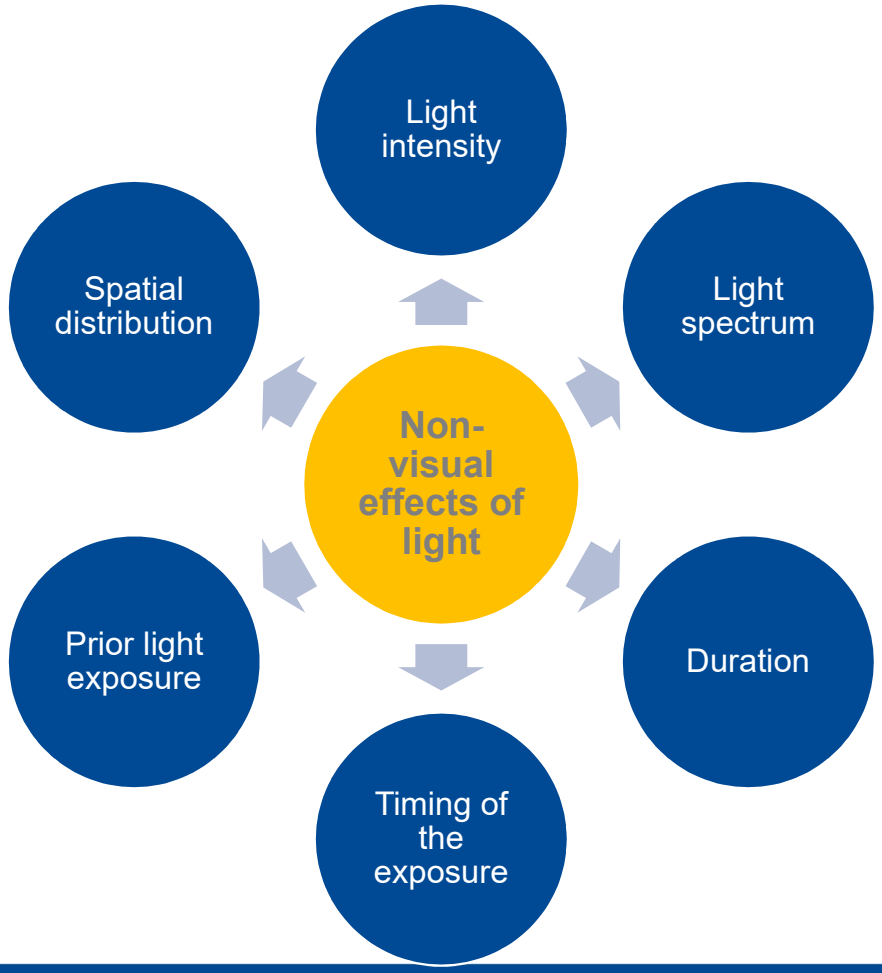


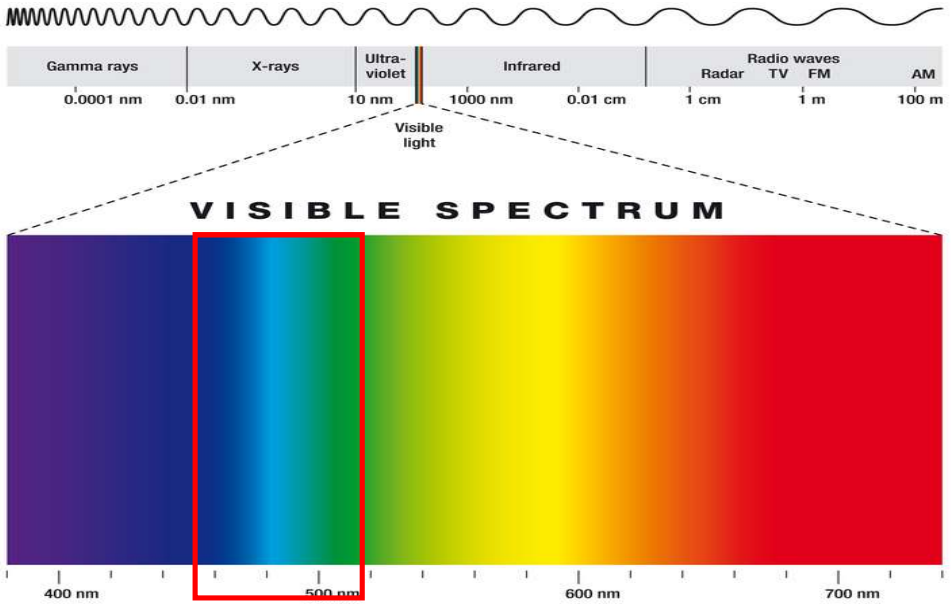
© KAN

© PIC4U - stock.adobe.com

- Light meets special receptors in the eye
- Light signals are forwarded to the "master clock”
- The master clock adjusts different rhythms to each other

Influencing variables





Chronotype

Standardization world – non-visual effects

DIN (Vornorm) 5031-100

Definition and calculation of melanopic sensitivity functions

DIN FNL 27

© sunt - Fotoliaotolia.com

DIN (Fachbericht) 67600

recommendations for use → occupational health and safety

CIE

© jeremyculpdesign - Fotoliaotolia.com

CIE S 026/E:2018

Definition and calculation of spectral sensitivity functions

CEN/TC 169/WG 13

© DenisIsmagilov - Fotoliaotolia.com

CEN/TR 16791

Definition and calculation of spectral sensitivity functions

ISO TC 274

© jeremyculpdesign - Fotoliaotolia.com

ISO/PDTR 21783

Literature review

(in progress)

What is occupational health and safety doing in Germany?

KAN

- **KAN position paper**
- Exchange of information (workshop)
- **Literature review**

Government committee (AStA)

- Recommendation published

German Social Accident Insurance (DGUV)

- Information paper published

- Highlighting findings for OSH
- Basis for formation of opinion with regard to standardization
- **Describe the need for further research**

www.kan.de/publikationen/kan-studien/

© alphaspirit - Fotolia.com

What do you take with you?

- Daylight has priority for illuminating workplaces
- New lighting systems which specifically trigger the non-visual effects of light are already on the market
- Any light can cause these effects unplanned
- Proper light at the right time strengthens the inner clock

- Pay attention to the inner clock (lark or owl?)
- Light is also effective in your free time:
  go out during lunch breaks and outside working hours!

KAN Kommission Arbeitsschutz und Normung

Contact

Anna Dammann

Commission for Occupational Health and Safety and Standardization (KAN)
KAN Secretariat

Tel.: +49 22 41 231 - 3449
Dammann@kan.de
www.kan.de

Gefördert durch:

Bundesministerium für Arbeit und Soziales

aufgrund eines Beschlusses des Deutschen Bundestages

Lucerne University of
Applied Sciences and Arts
HOCHSCHULE
LUZERN
Technik & Architektur
FH Zentralschweiz

Light dosimeter - recording an individual's light history

EUROSHNET Conference

Reto Häfliger
Licht@hslu – Lucerne University of Applied Sciences and Arts

Dresden, 12 June 2019

Approach

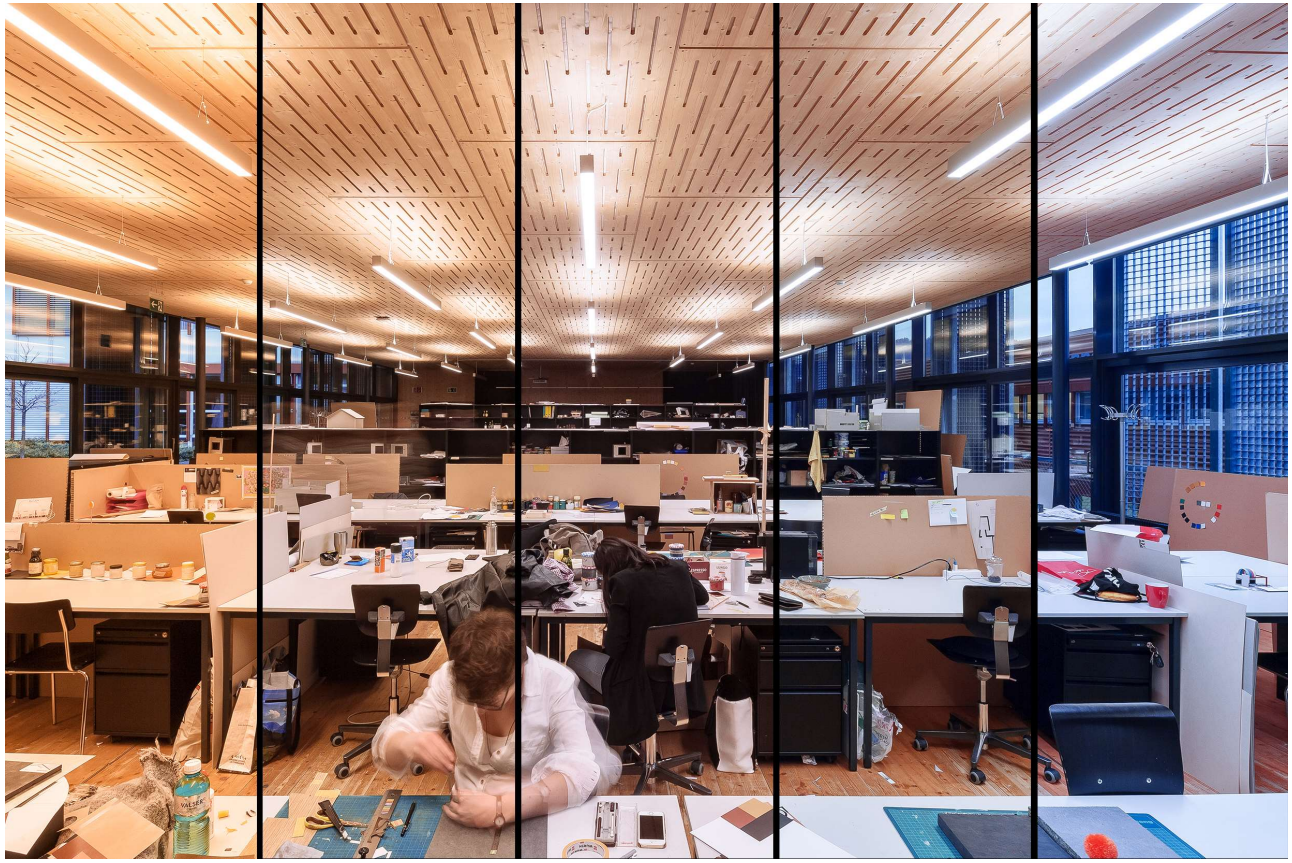


Photo: Reto Häfliger

- Daylight has priority
- New lighting systems
- Unplanned effects
- The inner clock
- Light is also effective in your free time

Each person has a ‘Light History’, i.e. the light/dark patterns experienced in the past

Measuring and recording light

"Measure what is measurable, and make measurable what is not so."

Light-Dosimeter2.0

© Licht@hslu

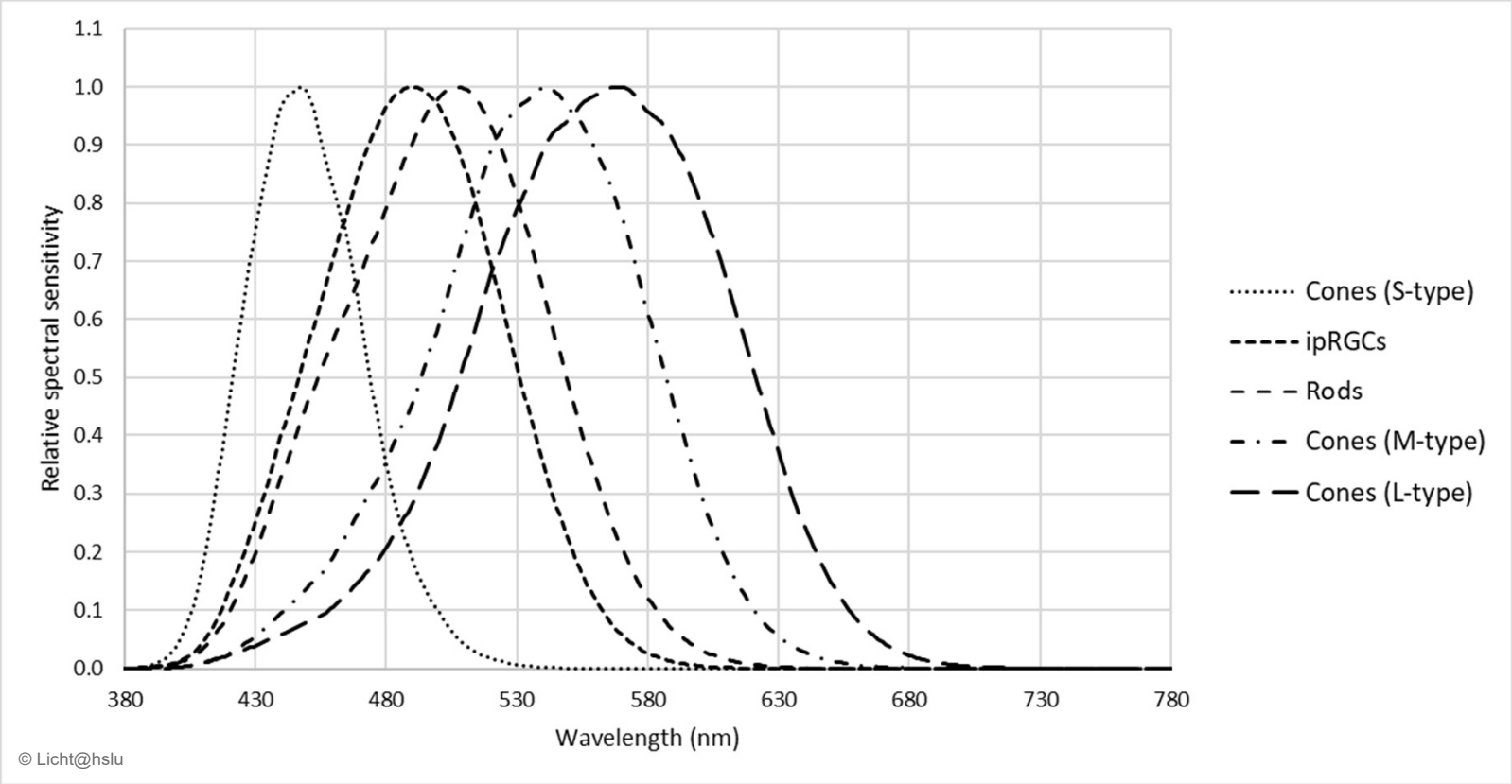
Funded by
VELUX STIFTUNG

Project partner:

- An interdisciplinary team from the Lucerne University of Applied Sciences and Arts with a background in light and lighting, electrical engineering, building services engineering, product design and economics
- Centre for Chronobiology, Psychiatric Hospital of the University of Basel
- Swiss Federal Office of Metrology, Bern
- Munich University of Applied Sciences, “Light and Health”, Munich

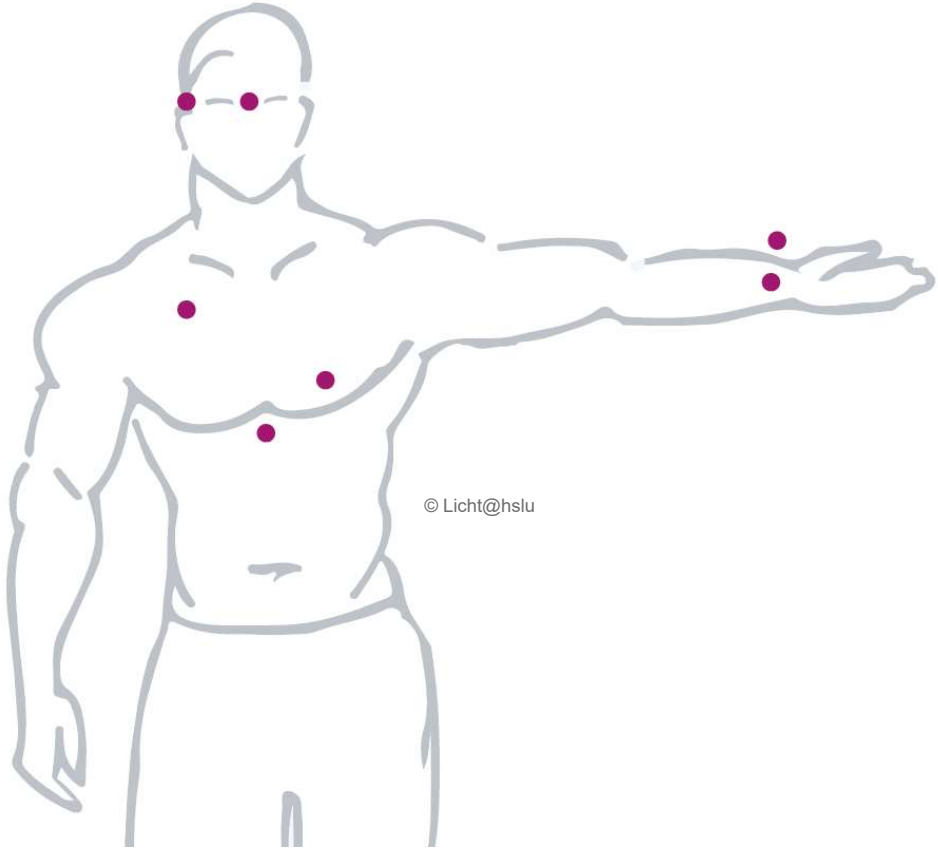
© KAN

CIE S 026/E:2018 - CIE System for Metrology of Optical Radiation for ipRGC-Influenced Responses to Light

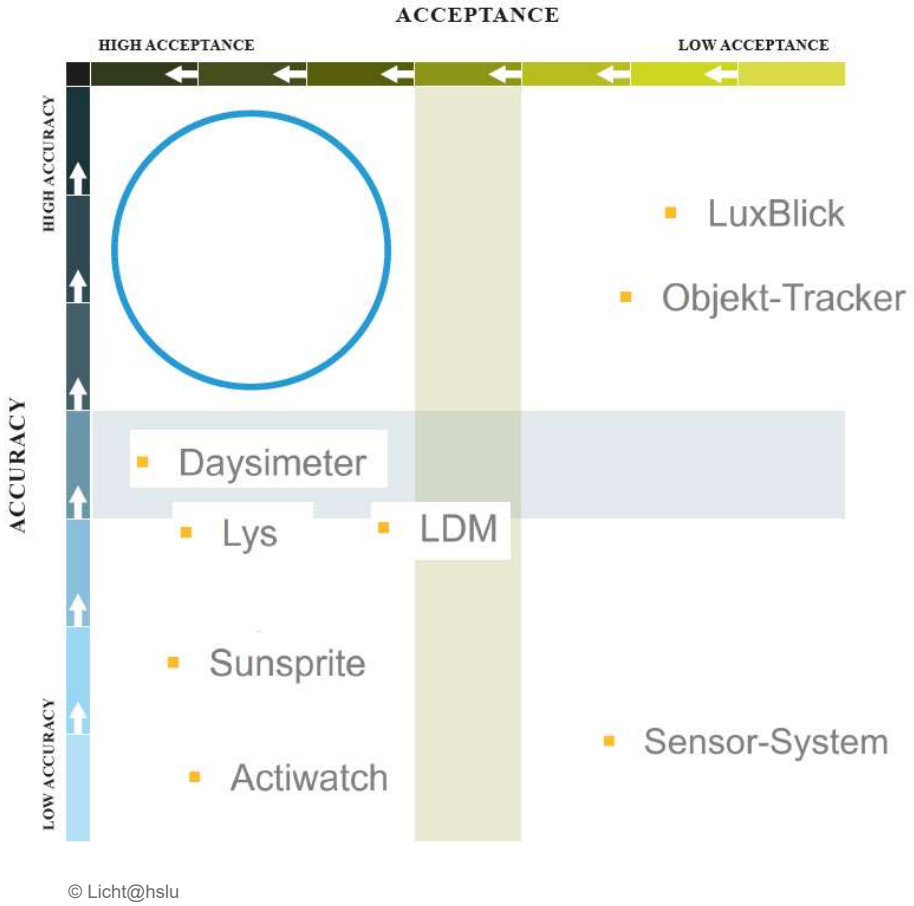


Existing devices

- Actiwatch
- ActTrust
- Daysimeter
- DimeMeter
- LDM Lichtdosimter (HSLU)
- LuxBlick
- Lys
- Objekt-Tracker
- Sensor-System
- Sunsprite



Carrying positions

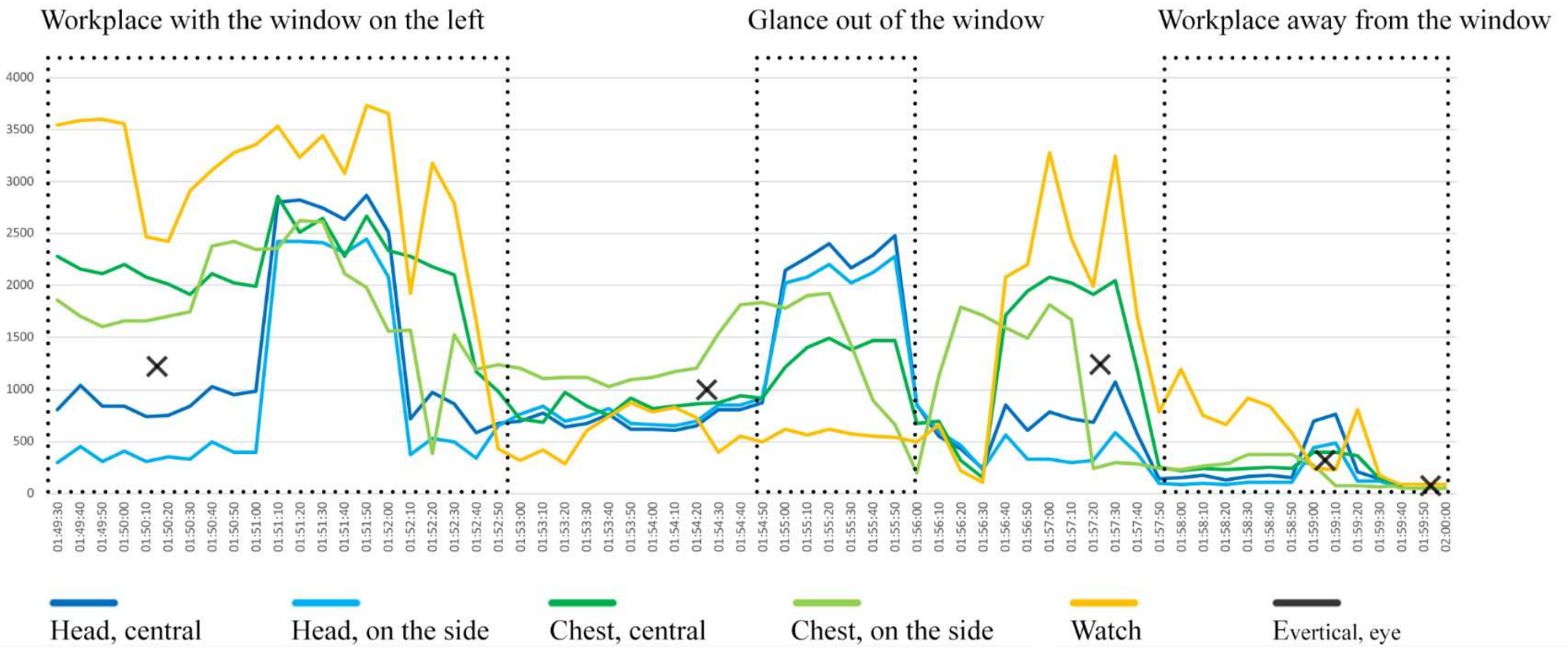


It is a trade-off between

- Accuracy
- Acceptance

In turn, accuracy depends not only on the carrying position, but also on other factors, such as type of light sensor, measurement frequency, user-friendliness and design.

Example



Summary

- Light has visual and non-visual effects
- Agreement reached in 2018 on the measures to be used
- Measuring and recording light over time is not standard yet
- The carrying position is a trade-off between accuracy and acceptance
- First prototypes available late 2019 / early 2020

We would love to hear from you.
Please get in touch!

Or visit the project website:
www.light-dosimeter.ch

Contact

Reto Häfliger
Research Associate
Licht@hslu
Lucerne University of Applied Sciences and Arts
Technikumstrasse 21
6048 Horw
Switzerland

Tel: +41 (0)41 349 33 18
reto.haefliger@hslu.ch
https://blog.hslu.ch/lichtathslu/
www.hslu.ch/licht