



# Comfort Management

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THORN



**Poor Lighting = Poor Performance**

1:5:200

1:5:200

Construction costs  
of a building

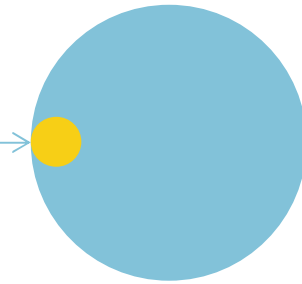
Good to focus on saving  
purchase & install cost



1:5:200

Maintenance and operating costs over the years

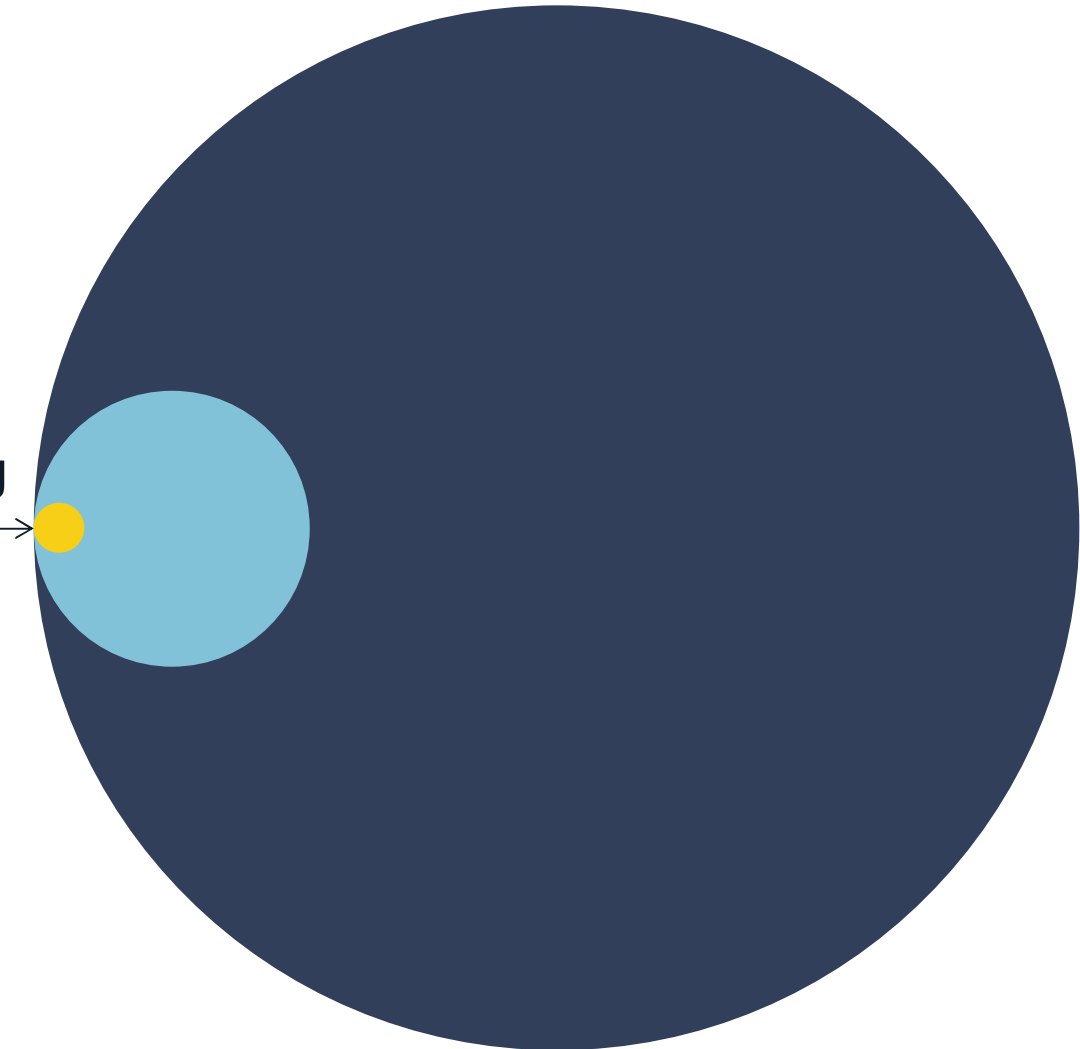
Good to focus on saving on maintenance through life



1:5:200

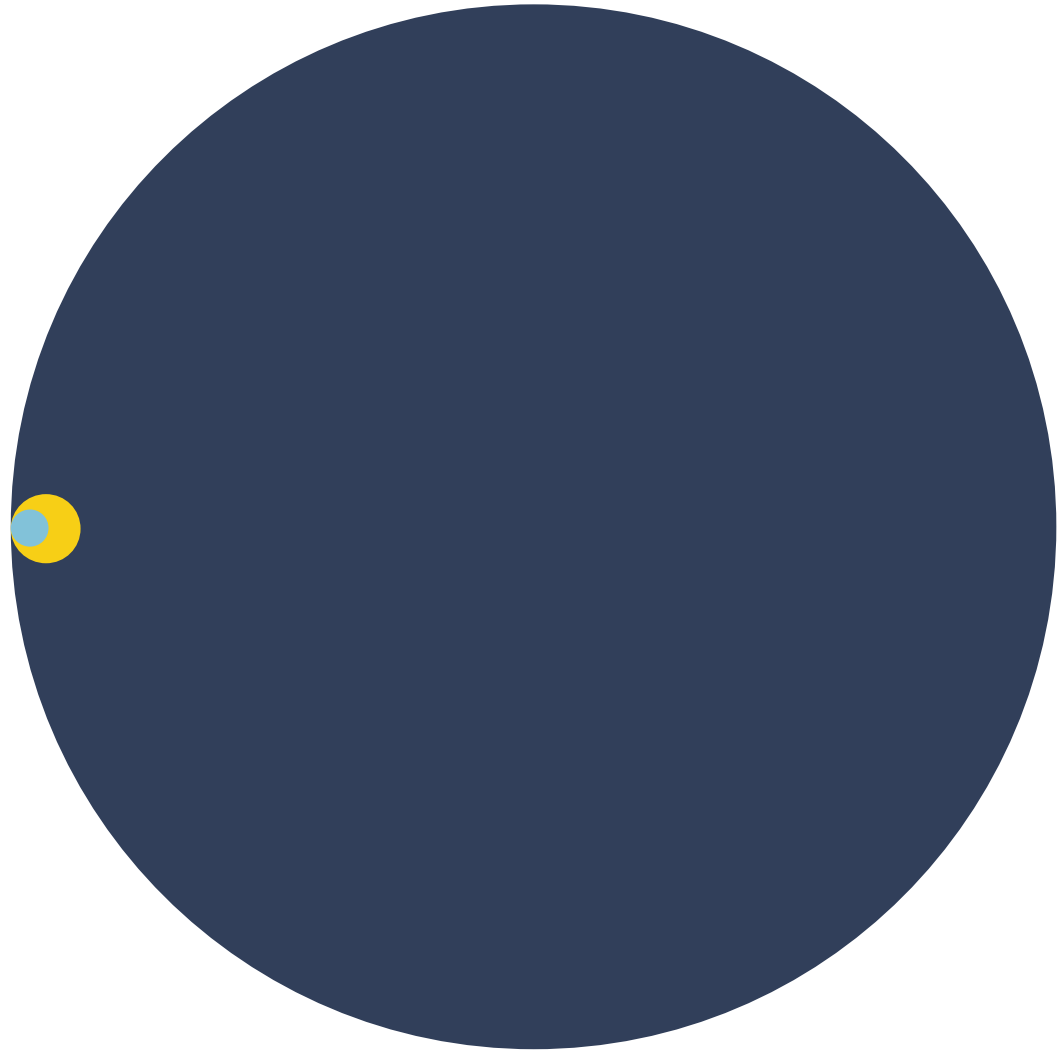
Business operating costs of  
people working in that building

But the big expense is still  
staff costs at 90% of a  
building operating costs




5:2:60

It is still clear that getting the best out of your staff is paramount if you want to get value for those expenses.







People are the  
expensive yet  
most valuable  
asset for a  
company...

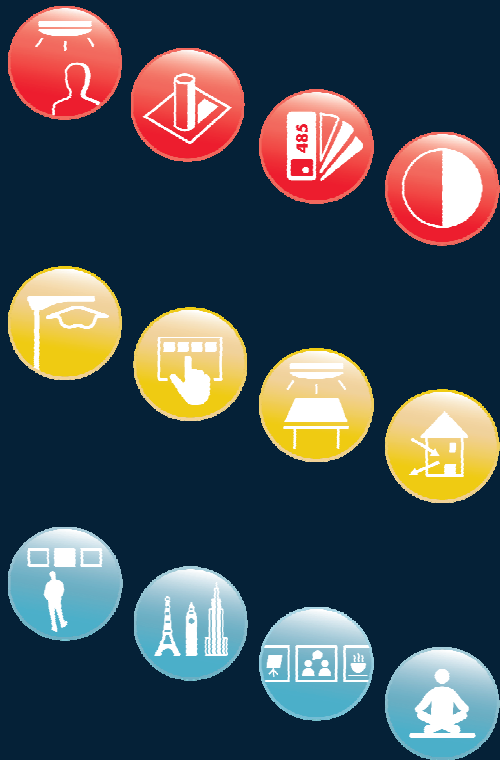
“If the person who works at your company is 100 percent proud of the brand and you **give them the tools** to do a good job and they are treated well, they're going to be happy.”

*Richard Branson*



**How do we solve this problem?**

# 12 ways to make quality lighting easy for you



- Performance icons

**Illumination** – task, space, face

**Modelling** – modelling index, illumination ratios

**Colour** – measurements - spectrum, Ra/Rf/Rg, TLCI, CT

**Contrast** – glare, colour, uniformity, flicker

- Efficiency icons

**Technology** – distribution, lamp and ballast efficacy

**Control** – presence/absence, daylight, task/scene, timed off

**Application** – installation, use, task, zoning, maintenance

**Environment** – reflectance, visible smart metering

- Comfort icons

**Atmosphere** - mood

**Interest** – highlights, stimulation

**Appeal** – additional elements, unique and tasteful

**Balance** – visual guidance, natural rhythms



# Illumination





# Task





# Space







Face





**Communication  
goes deeper**

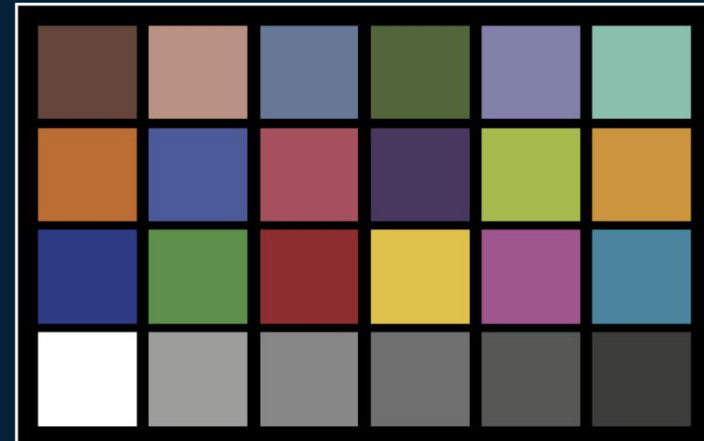


# TLCI & Flicker



**Colour** – the measure and impression of the colour composition of light viewed by people or technology

*TLCI* – A measure that indicates how accurately colours are revealed for cameras



Television Lighting Consistency Index-2012

Sector	Lightness	Chroma	Hue
R	+	+	0
R/Y	0	0	-
Y	0	0	--
Y/G	-	-	0
G	--	-	+
G/C	0	0	++
C	0	0	+
C/B	+	0	+
B	0	0	-
B/M	+	-	+
M	+	0	++
M/R	+	0	++++



**Colour –**  
Ra, Rf, Rg, TLCI or all?



**Contrast** – the experience of light against dark either directly or via reflection impacts how effectively we can see in any situation

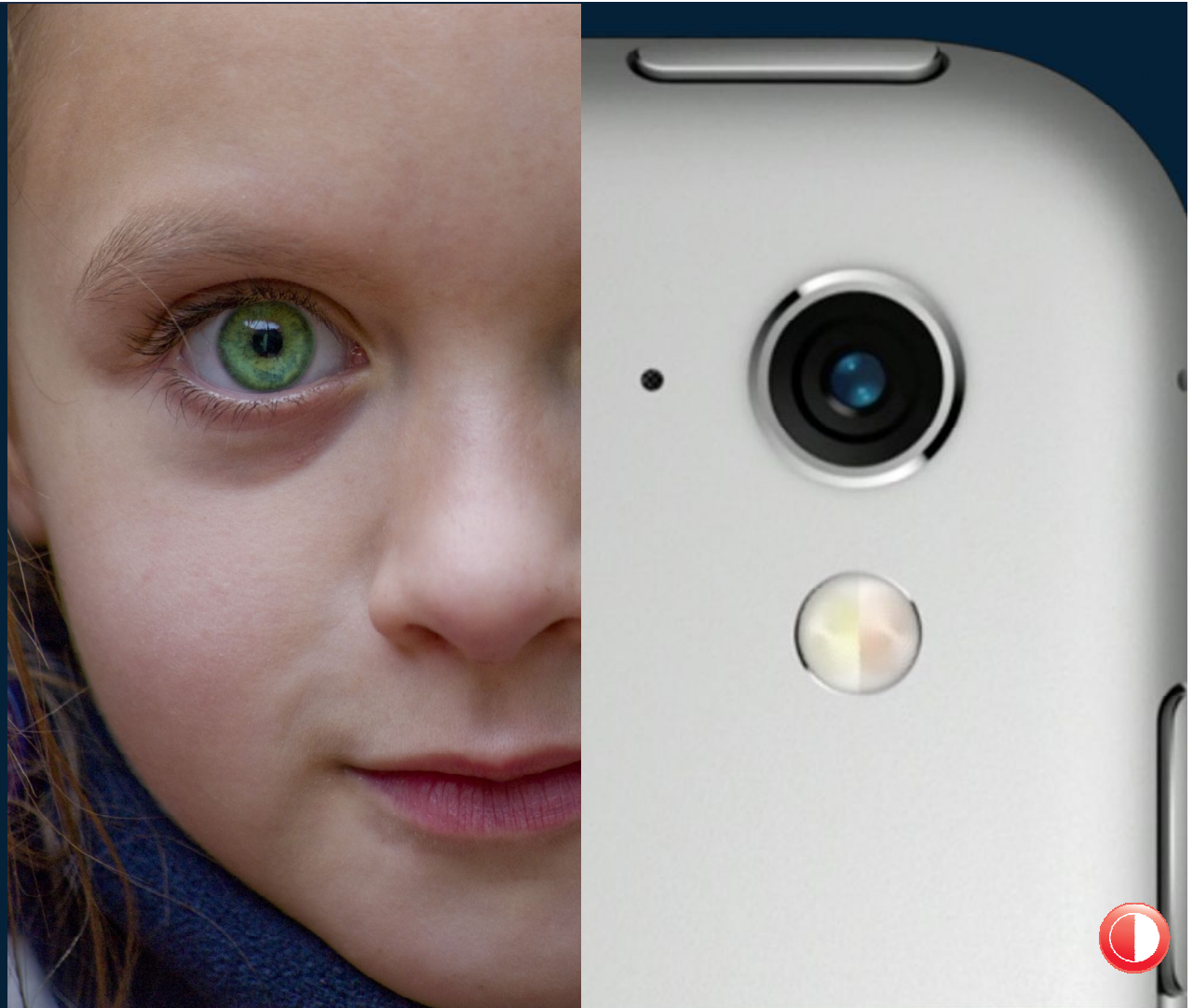
*Flicker* – The effect of changing contrast over time





## Contrast

*Flicker* for people  
or cameras?

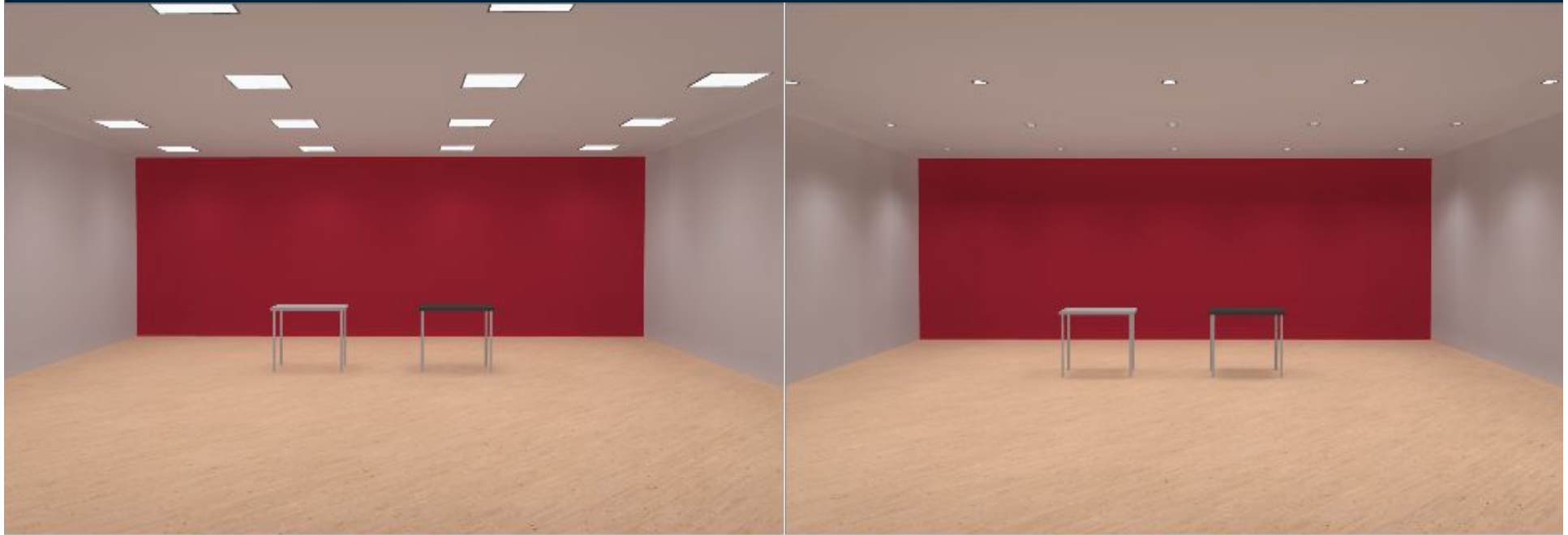




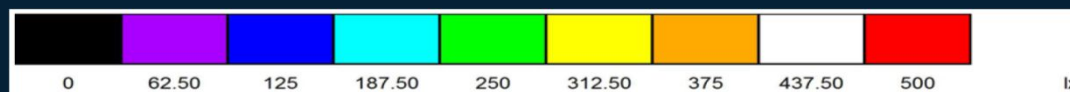
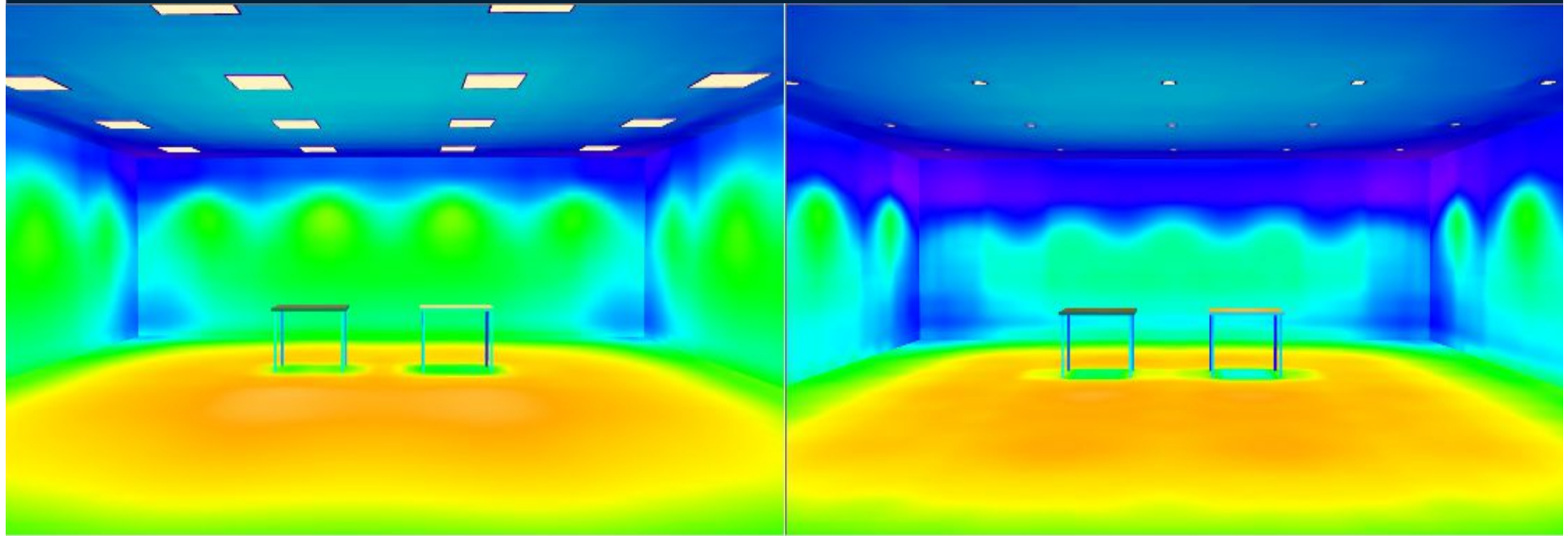




# Which space is better lit?



# Which space is better lit?











In fact 81% of Office staff reportedly use hand held devices such as Smartphones and tablets in daily work

## GLOBAL DATA

Mobile connections, including M2M  
Jan 2016

7,647,092,762

▲ 6.10%



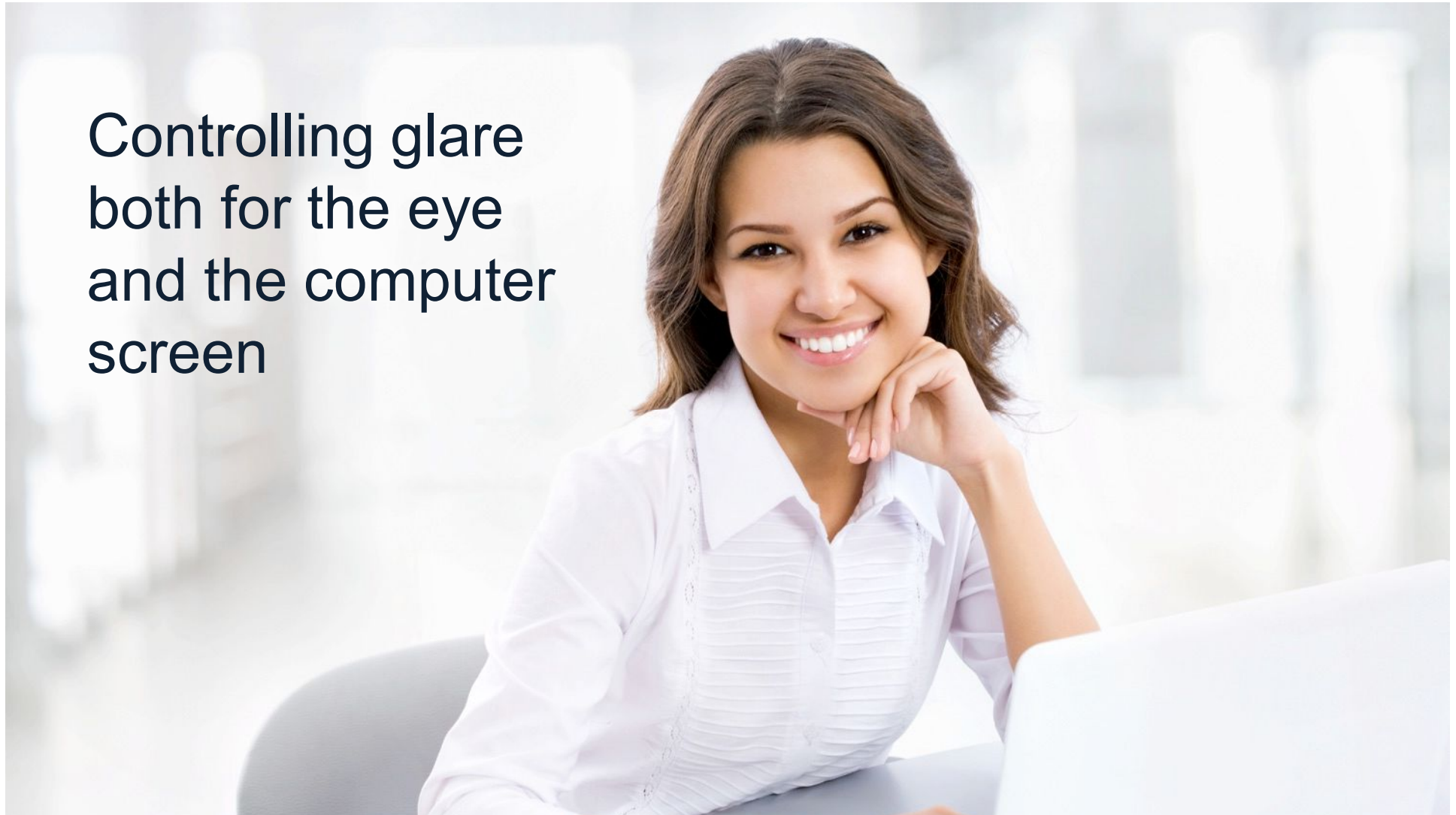
## World Population

7,298,786,572





Controlling glare  
both for the eye  
and the computer  
screen







**FACE + SPACE**



**TASK**





A blurred office scene with two people working at a laptop. The image has a dark, semi-transparent overlay. The text is centered over the image.

# Task / Face / Space Comfort Management

# Comfort Management

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