Standards and Codes: A personal view

Peter Raynham
The Lighting Process
The Lighting Process

Electrical Input

Voltage and current all precisely measured, CO₂ emissions can be calculated.
The Lighting Process

Luminaire Light Output
Intensity and flux measured, performance though life estimated
The Lighting Process

The Lit Environment

Illuminance measured or calculated on any surface, many further metrics may be used.
The Lighting Process

Luminance Pattern
Modelled or measured using HDR images
The Lighting Process

Impact on Observer

... complicated
Human Visual Performance

- Time of Day
- Retinal Illuminance
- Light Spectrum

Circadian System

- Phase Shift
- Alerting Effect

Human Performance

Cognitive Performance

- Task Performance
- Motor Performance

Visual Performance

- Fatigue

Visual Size

- Luminance Contrast
- Colour Difference
- Retinal Image Quality
- Retinal Illuminance

Task

- Lighting

Motivation

- Mood
- Expectations

Visual Discomfort

- Visual Message
  - Glare
  - Flicker

Management

- Personality

Culture

- Visual Perception of Environment

Context
Standards

• Where do they come from?
• Which standards do I need?
  – Is there an easier way?
• What use are they?
• Who do they help?
• What is their impact
Standards Bodies
Which Standards?

• **Products:**
  – Lamps
  – Luminaires
  – Components

• **Applications:**
  – Workplaces
  – Roads
  – Sports
Applications

- EN 12464-1
- EN 12464-2
- EN 15193
- EN 13201 – 2, 3, 4
- EN 12193
An Easier Way?

The SLL Code for Lighting
What’s the use of standards

• Provide a set of minimum guide values
• Provide a common set of values for use as the basis of design

• Limit design freedom
Who are Standards For?

- Expert lighting professionals?
- Less expert designers / engineers
- Specifiers who do not understand lighting

- Do they all use standards in an appropriate way?
What is the Impact of Standards?

• Boyce’s criteria for lighting quality:
  – See what you want to see
  – Freedom from glare
  – Lifts the spirits

• Bad / Mediocre / Good

• Standards will only get part way on the road to quality!
Conclusion

- There are lots of standards!
- They can be useful
- There are some downsides

Questions?