Smart lighting and its usage in galleries
What can smart lighting offer to galleries?

• A deeper, richer visitor experience
  – Light quality: sustained, accurate colour portrayal
  – Location-based information services
• A more sustainable operation
  – Maintenance savings
  – Energy savings
  – Conservation management
  – Easier (re) commissioning

• Three fundamental questions

Van Gogh Museum, Amsterdam.
Lighting Design by Henk van der Geest
Luminaires by Mike Stoane Lighting

XICATO®
Light quality for architecture, artwork, people
Peer to peer communication

No wires. No centralized controller.
Easier (re) commissioning

I'm Gallery 1, sensor #1, and I sense motion.

Do I listen to Gallery 1, sensor #1?
Yes.
What do I do?
I go to 80% intensity.

Turn around and scalability
Commissioning at Museon, The Hague, 19th October 2016
Maintenance savings

- Prolonged life through auto protection
- Real-time status and preventative maintenance
- Historical data
  - Payback claim verification
Energy saving via SUBTLE use of sensors

- Natural light
- Movement
New ways of communicating, 1
Using sensors

- Experience
- Revelation
- Not just enhancing characters in a play; lighting is a character itself
Conservation management using sensors

Managing light exposure to minimise photochemical action

- Light dose (Lux-hours / year) is a function of:
  - The spectral sensitivity of the illuminated object
  - The spectral power distribution (SPD) of the light
  - The Preservation Target (years, decades, centuries, millennia)

- Methodologies
  - Limit when the art is shown (frequency or duration). Lighting is fixed during opening times
  - Above, plus vary lighting during open times according to a fixed schedule, eg for the Ardabil carpet at the Victoria & Albert museum
  - Above, with smart lighting linked to occupancy and ambient light sensors

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<thead>
<tr>
<th>Category</th>
<th>LOAED</th>
<th>Preservation Targets</th>
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<tr>
<td></td>
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<td>1000 yrs</td>
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<td>days/yr</td>
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Conservation management using sensors

- Position sensors next to paintings and calibrate
- Set desired maximum light level on each painting
- Program exposure limit (lux hrs) into app for each painting
- App estimates display time at that level (hours per season)
- User tweaks parameters periodically to achieve actual desired display time
- User to set illumination level for painting when no presence is detected
- Database tracks and displays occupancy, lux levels and lux hours for each painting, with advice
- Alarm function
New ways of communicating, 2
Indoor positioning

XICATO®
Hypothetical application

- Overall power management
- Energy data
- Maintenance alerts

Wallace Collection, London
Lighting Design: SVA
Luminaires: MSL

Administration & Database

BMS / CMS

BLE Multi sensor (movement and light)

Localised control for commissioning

XICATO®
Three fundamental questions
Affordable?

• Reduced system costs c/w traditional
  – Dimming driver integrated into module
  – No control wires and no hub
  – Use existing smartphone and/or tablet for commissioning and usage
  – Free software

• Design and installation
  – No communication wiring to be installed
  – Modules preconfigured with position data linked to lighting plan
  – One and not two people to install control plan
  – All upgrades are OTA
Intuitive to use?

Usage of apps demystifies controls and bring usage from the elite to the all
Interoperable?

interoperable prototype test events (IOP)

Interoperability is essential to all Bluetooth technology solutions.

For consumers, interoperability means that Bluetooth enabled products work together the way they are supposed to. For developers, it means that Bluetooth technology solutions support compatible profiles and roles.