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LIGHTING MANAGEMENT CONSULTANTS

Lighting Infrastructure Consulting
Energy | Economics | Environment

Efficient Exterior Lighting - Car Parks & Precinct Lighting

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New Concepts in Lighting Efficiency

New approaches are influencing commercial lighting internationally

**the Right Light,
at the Right Place,
at the Right Time**

Lighting Market Drivers - Disruptive Change

from **Analogue** Technology to **Digital** Technology

from **Individual** Luminaires to **Connected** Luminaires

from **Static** Lighting Application to **Dynamic** Lighting Application

from **Product** Based Assessment to **Systems** Based Assessment

equipment costs **Decreasing**

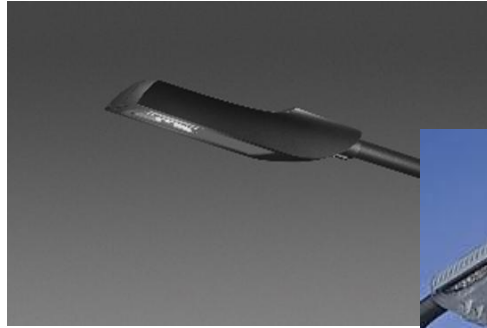
functionality and performance **Increasing**

New Standards for Exterior Lighting

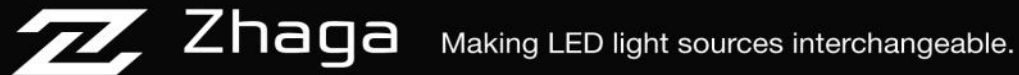
- British Standard BS 5489-1:2013 Just published
- European Standard EN 13201:2013 About to be published
- Industry led standardisation - Zhaga for LED, TALQ for Controls

- AS/NZS1158 Updates for new technology
 - a) Quick update to Part 6 Luminaires, to permit LED and Induction technology
 - b) Full update of all 7 Parts
 - c) **New** AS/NZS1158.7 Remote Monitoring and Adaptive Control

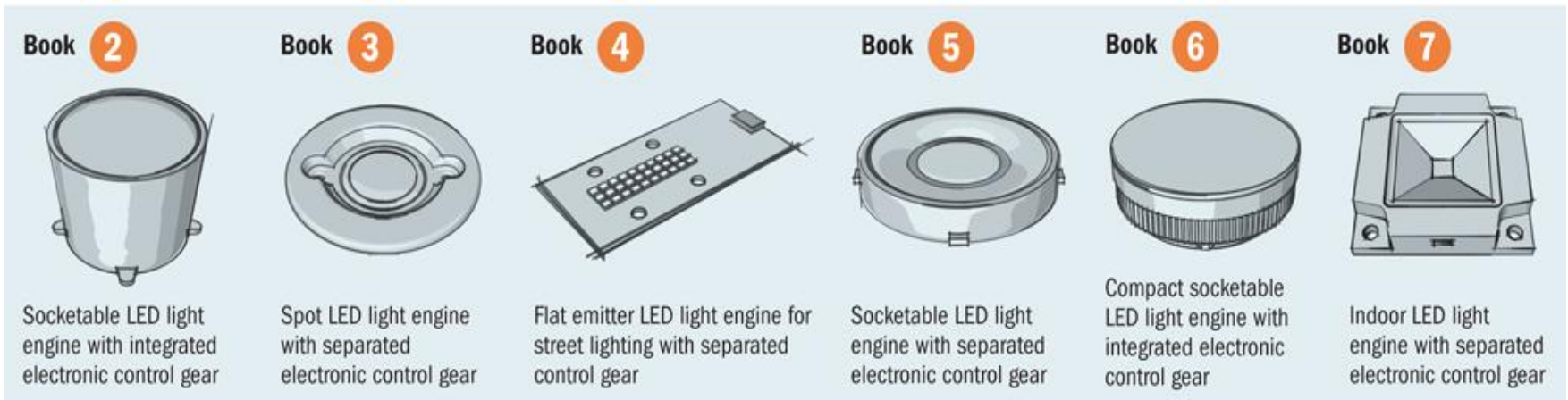
Exterior Lighting - Luminaires



The Zhaga Consortium



- Formed in 2010, now 180 member companies



The Zhaga Consortium

- **Zhaga Interface Specification Book 4: High-intensity LED light engines**
- Zhaga Interface Specification Book 4 defines the interfaces of a LED light engine (non-socketable LED module with separate electronic control gear).



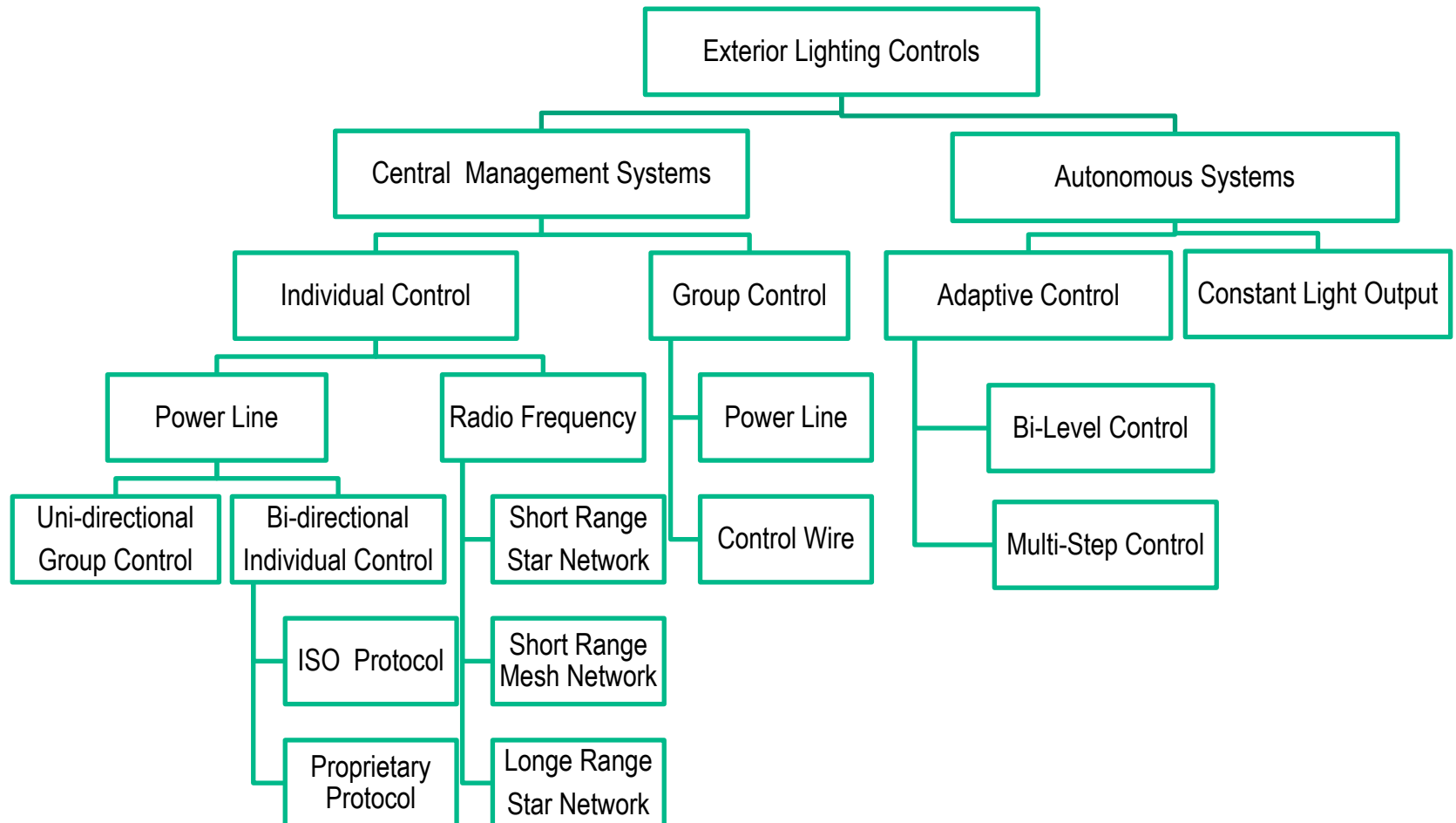
Smart LED Drivers - Exterior Luminaires

Embedded intelligence is now available

- Autonomous - Some are programmable
- Networked – Connected smart systems



Exterior Lighting Controls Hierarchy



Adaptive Lighting Control

Definition –

“Adapting the lighting delivery to suit the prevailing conditions and requirements”

Time Scheduled Adaptive Lighting –

Peak period, shoulder period, off-peak period – daily, weekly, events

Activity Based Adaptive Lighting -

- Vehicular movements – sensors
- Pedestrian movements- sensors

Lighting Controls Strategies

- **CLO – Constant Light Output** aka LDC and MFH

Programmed control algorithms that maintain constant light output over the lightsource lifetime by ramping power up in inverse proportion to the lumen depreciation curve.

- **VLO – Virtual Light Output**

Adjustment of the delivered light level to exactly the right lumen output required to achieve lighting design compliance, and no more. Rather than coarse 50/70/100/150/250W increments.

- **Light Level Adjustment (up or down)**

Adjustment of light levels over the nightly cycle to suit the activities prevailing at the various times eg peak-time, shoulder-time, off-peak time.

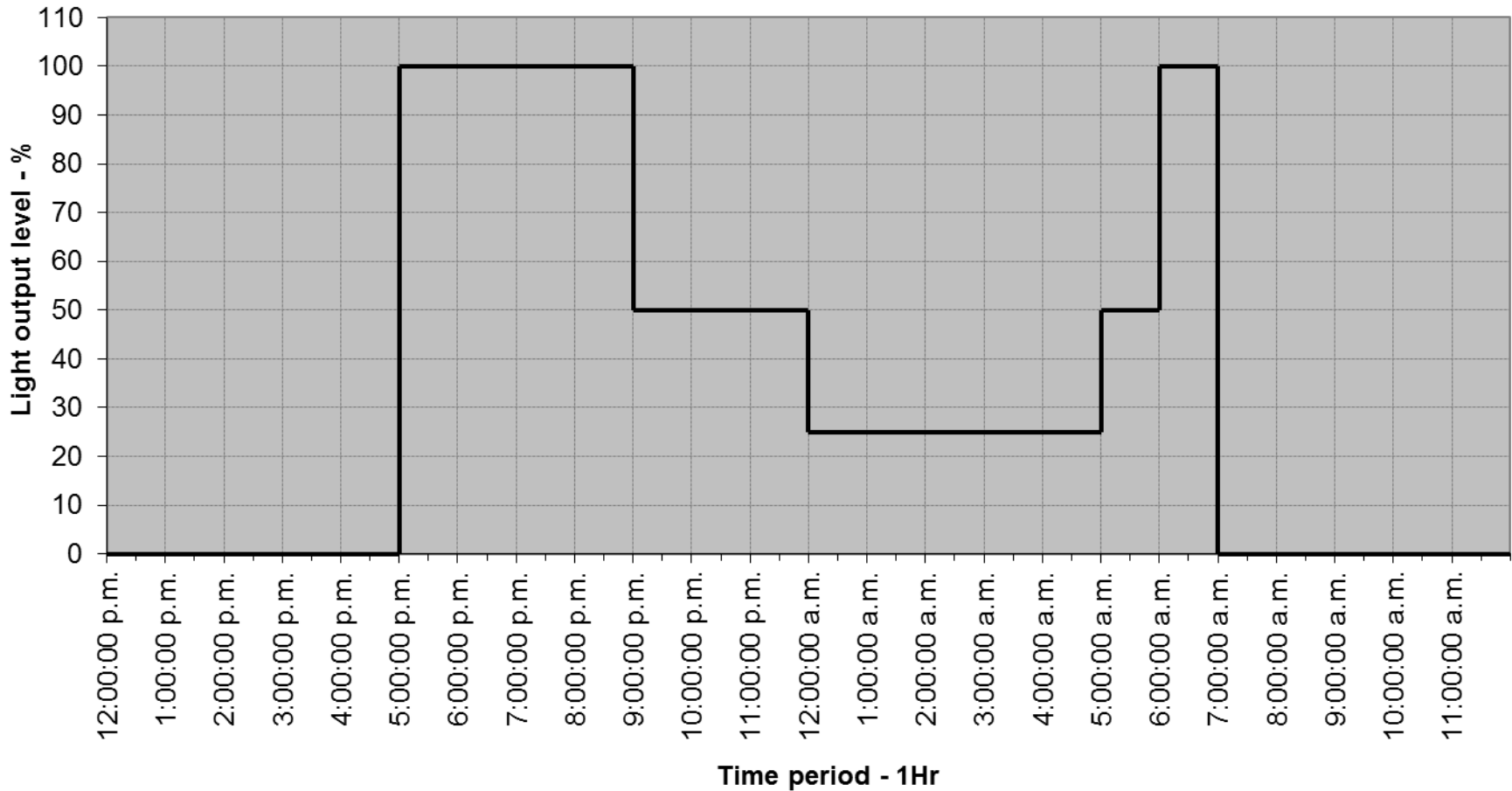
- **Light on Demand**

Sensor based activation to apply light only when human or vehicular triggering dictates a need

Adaptive Lighting Profiles

EXTERIOR CAR PARK - ADAPTIVE LIGHTING PROFILE

WINTER PROFILE - AS/NZS 1158 Cat 11a to 11b to Cat 11c



Exterior Lighting Controls - Application

Autonomous Systems – Simple application

Standalone embedded intelligence - programmable and non-programmable

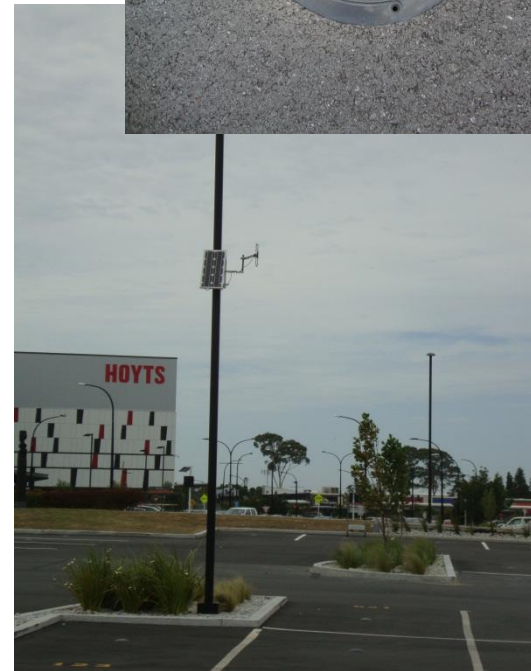
- Constant Light Output
- Light output optimisation
- Bi-Level, Step-Level, Part-Night Adaptive Control

Central Management Systems – Larger user application

- Internet connected Remote Monitoring and Adaptive Control Systems
- Real-time monitoring control and communication

Intelligent Car Parking Systems

- The Base - Hamilton



Standardisation - The TALQ Consortium

- **Standardisation of a management software interface for Outdoor Lighting Networks**
- The TALQ interface is a software (application layer) protocol. The TALQ interface makes sure that different devices understand each other, since they talk the same “language”.



TALQ International Membership

- CAOS - Software – Germany
- GE - Luminaires and Controls - USA
- Harvard – Control Gear & Control Systems
- Hubbell Automation – Controls USA
- Kingsun - Luminaires - China
- KMW Luminaires – Korea
- Osram – Luminaires and Controls - Germany
- Philips – Luminaires and Controls - Holland
- Schreder - Luminaires - Belgium
- Sinapse Controls - Spain
- Streetlight.Vision – Software - France
- Telensa - Controls - UK
- Zumtobel – Luminaires - Germany

The Opportunity for Exterior Lighting

- Good LED Luminaires exceptional luminous efficacy and optical control
- Good control gear and good control systems offer flexibility to “rightsize” the dimensioning of the lighting system

- Luminaires 30-50% energy savings + Controls 15-25% energy savings

Good Planning + Good Design + Good Luminaires + Good Controls + Good Installation + Good Commissioning = Good results

The Risks ?

With any innovation there is risk, the question is - how to manage that risk?

- Experienced consultants
- Experienced suppliers
- Experienced installers

- Solid contracts - based on outcomes delivered. Promises = Contracts
- Solid warranties – short term? long term?

Thank You

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