



The Smart City Protocol



- Common Language for Smart City Applications such as Outdoor Lighting Control, Waste Management and Parking
- Open Platform for Innovation
- Enabling Cross-departmental Cooperation
- Multi-vendor Choice
- Proven Global Standard

Smart Lighting drives Smart Cities

Flagship projects around the world are proving conclusively that Smart Cities will be delivered through effective collaboration between providers, enabled in part by the adoption of global standards, which enable interoperability and accelerate innovation.

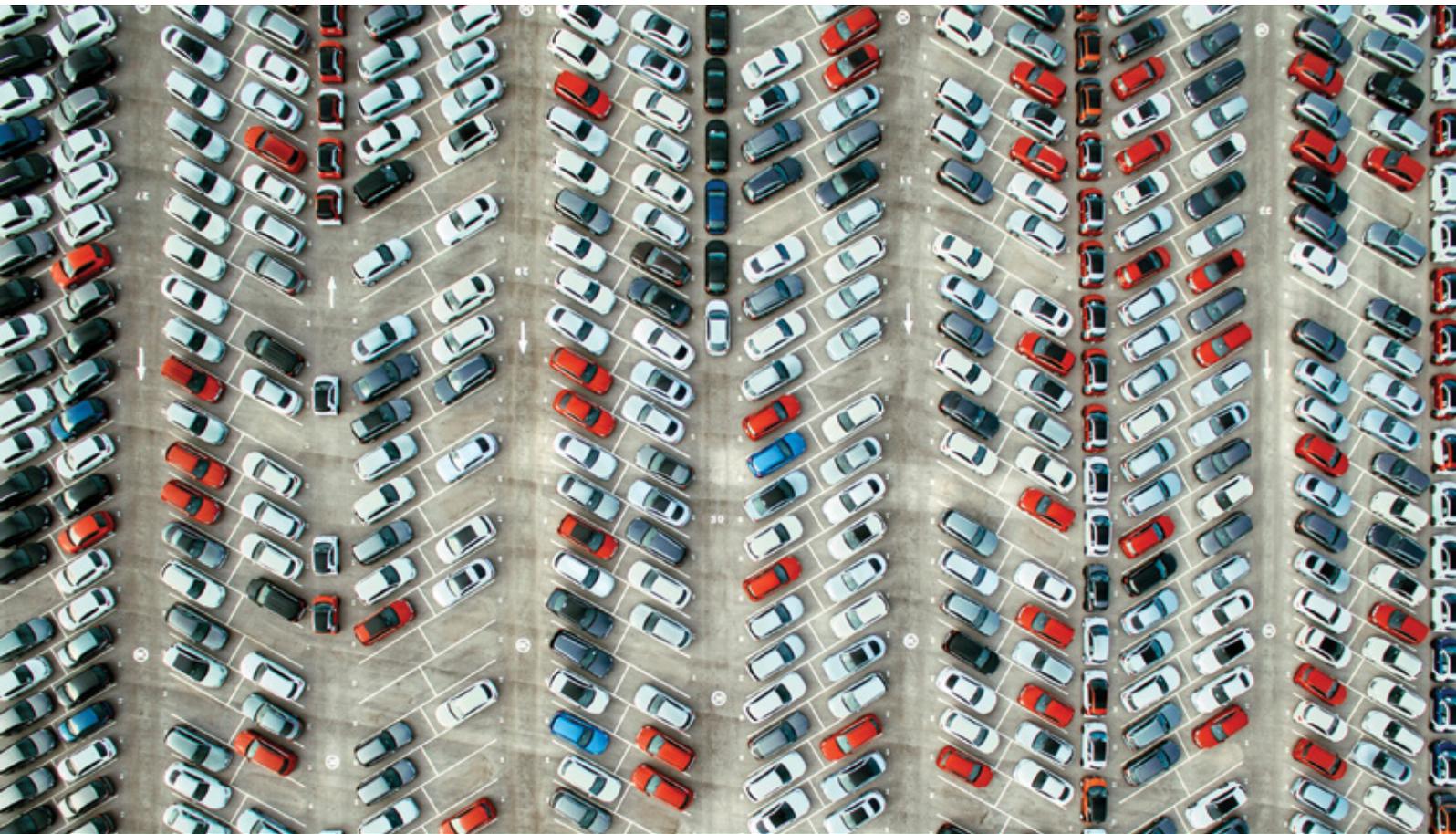
Smart outdoor lighting is widely expected to be the largest adopted solution in the smart city environment up to 2022 and after. That is why the TALQ Consortium decided to begin its work by enabling interoperability in this sector thereby giving choice and protection to cities and, in turn, accelerating adoption.

The TALQ Consortium, founded by leading lighting industry players in 2012, has developed the leading global standard enabling interoperability between communication networks in the field and the software platforms managing applications via these networks. Achieving this required close collaboration between industry competitors to offer real benefits to cities and municipalities.

TALQ is an open consortium for industry members. As a non-profit organisation, the TALQ Consortium supports and educates cities and solution providers by, for example, publicising the use of the TALQ technical specifications, how to implement them and the benefits of their adoption.

To learn more about us, our members and partners, please visit www.talq-consortium.org





The challenges of building up Smart Cities

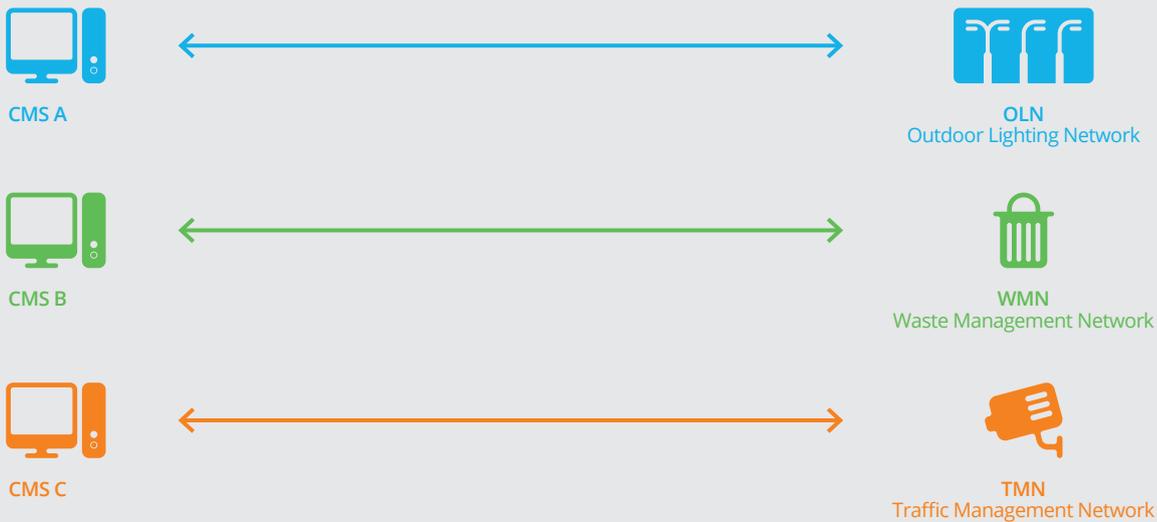
Every day, it seems, a new Smart City project is announced: streetlights are being connected more and more both to save energy and increase the quality of lighting services on the streets; waste containers are being monitored to reduce truck traffic whilst helping cities to get cleaner; vacant parking spaces are detected and advertised to drivers both to reduce pollution and to allow variable pricing depending on their availability.

Most of the available solutions, however, are proprietary - locking cities into single vendor solutions. Thanks to the TALQ Smart City Protocol, cities can now choose and adopt interoperable solutions e.g. smart streetlights, smart waste and parking sensors from different vendors - all controlled by a single central management system.

The new **TALQ interface is a specification for information exchange**, suitable for implementation in various products and systems. This way, interoperability between Central Management Systems (CMS) and Outdoor Device Networks from different vendors will be enabled, such that a single or many CMSs can control different networks and smart city applications in different parts of a city or region.

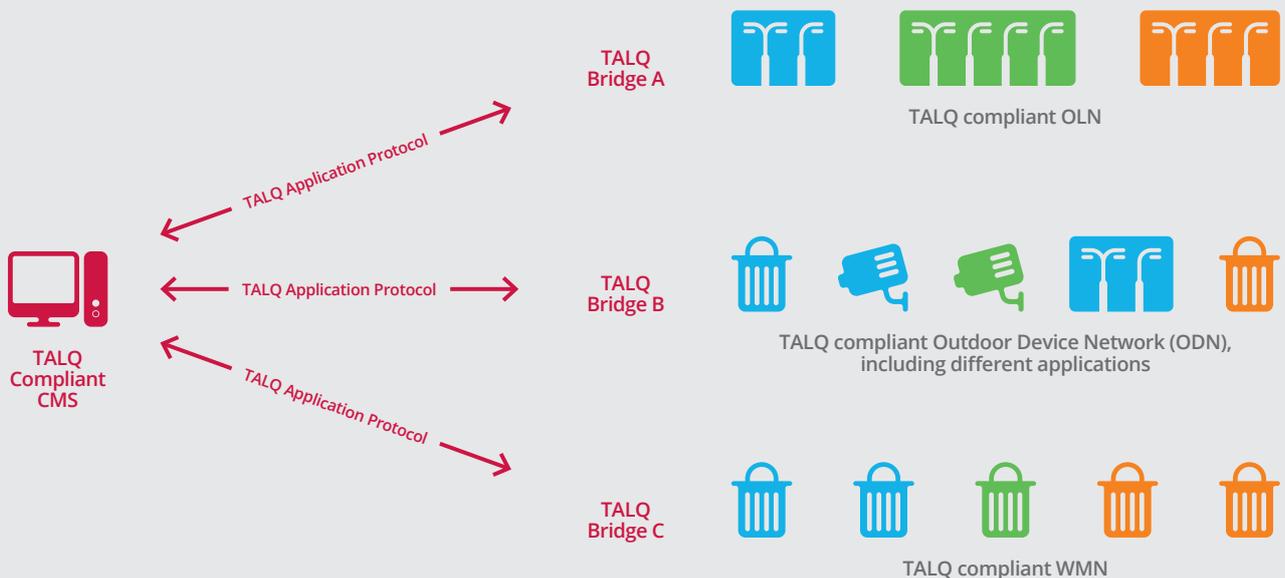
Setting a standard for smart city management

Today's challenge is the complexity associated with multiple proprietary systems and interfaces. The lack of standards makes integration of different systems and smooth deployment of various systems for different applications in one region or city nearly impossible. Setting up efficient management of the various applications is a huge issue for operators and public entities.



Intelligent control through the TALQ Smart City Protocol

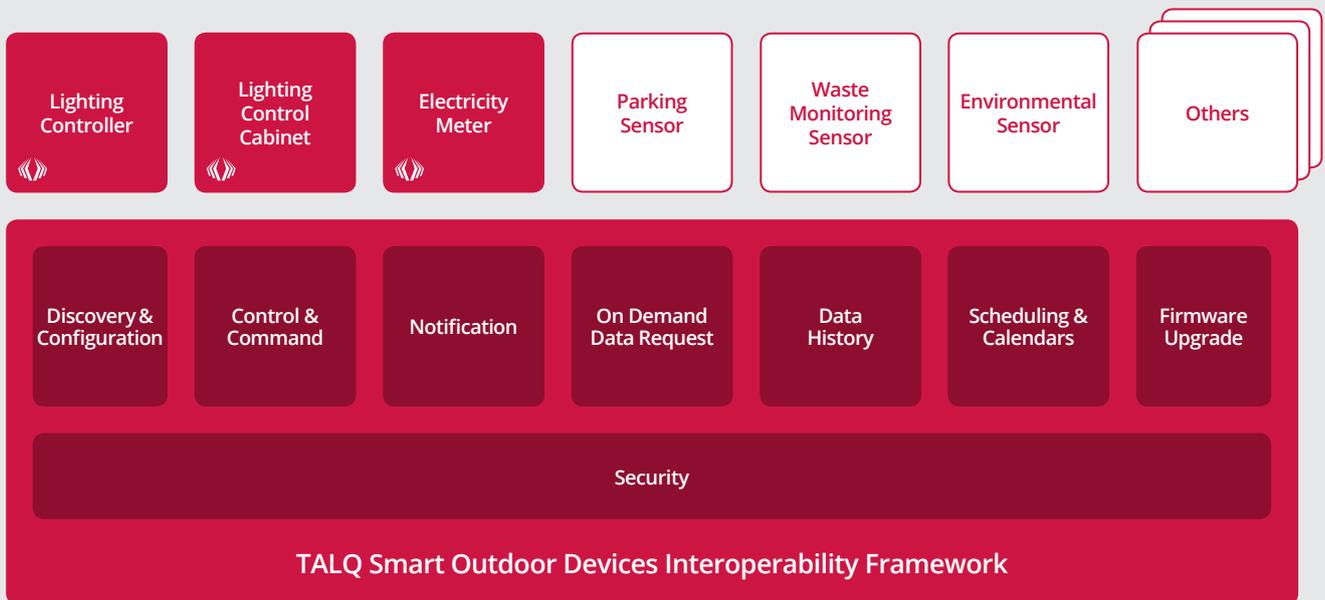
The TALQ Specification defines a management interface for outdoor device networks, where a single Central Management System (CMS) can control different device networks for various applications in different parts of a city or region. It supports system monitoring and joint data collection, as well as simplified configuration and upgrades.



TALQ Architecture and Framework

Smart City Applications

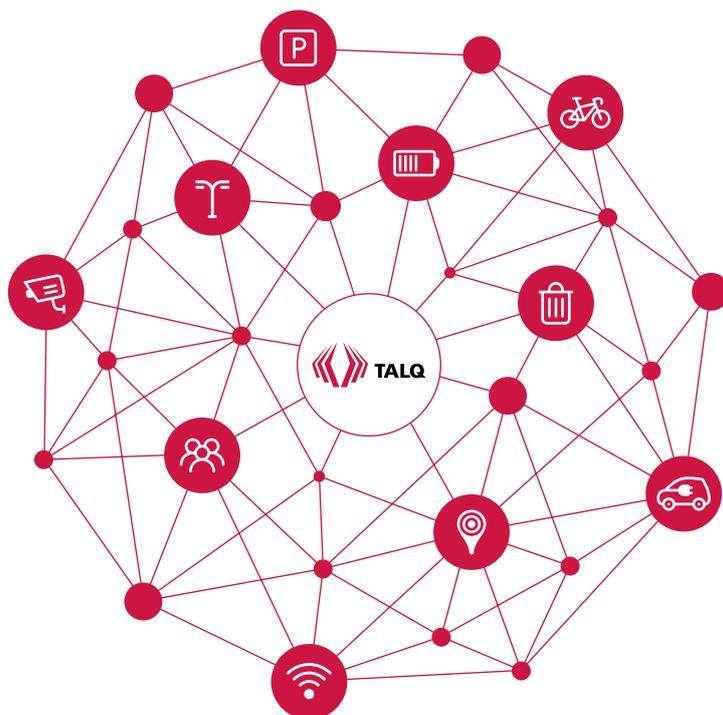
Certification Available 



The TALQ Specification defines an application layer protocol that includes message types, data format, parameters and the behavior of the application end-points on the Outdoor Device Network side (called TALQ Bridge) and at the CMS.

One of the design principles adopted is to leverage existing industry standard protocols as much as possible in order to reduce duplication. As such, the TALQ Smart City Protocol relies on underlying data transport and network layer services to establish communication between the TALQ end-points. The top layer defines a set of messages, data types and elements needed to model resources, functions and services to support the different application requirements.

The protocol is using XML for data encoding. A RESTful/JSON version will be available soon. The data is transported over an application messaging layer based on HTTP (HyperText Transfer Protocol). The application support messaging (HTTP), transport and network layers are considered as part of a reference protocol stack and thus specified for compliance testing.



A flexible solution

In order to enable integration across different applications and networks the TALQ Specification defines mandatory interoperable functionality and allows optional interoperable features. Additionally TALQ also enables differentiation through vendor specific features.

The most commonly used operations are covered by the mandatory functionalities. The optional definitions address frequently requested additional features. CMS and TALQ Bridge implementations accept optional attributes and supplier specific attributes/events without problems, but they are not required to implement corresponding functionality.

Mandatory

Functionalities needed to pass the TALQ interoperability tests and be compliant with other TALQ ODN or CMS

Base functionalities include

- Discovery and configuration
- Lighting control including schedules and calendars*
- Data collection/logging/monitoring
- On demand data requests/events
- Group management
- Security

Optional

Vendor can choose from the optional TALQ functionality

Examples of optional functionalities

- Metering
- CLO, maintenance factor, scenes...*

Vendor specific

Not specified in TALQ, format defined

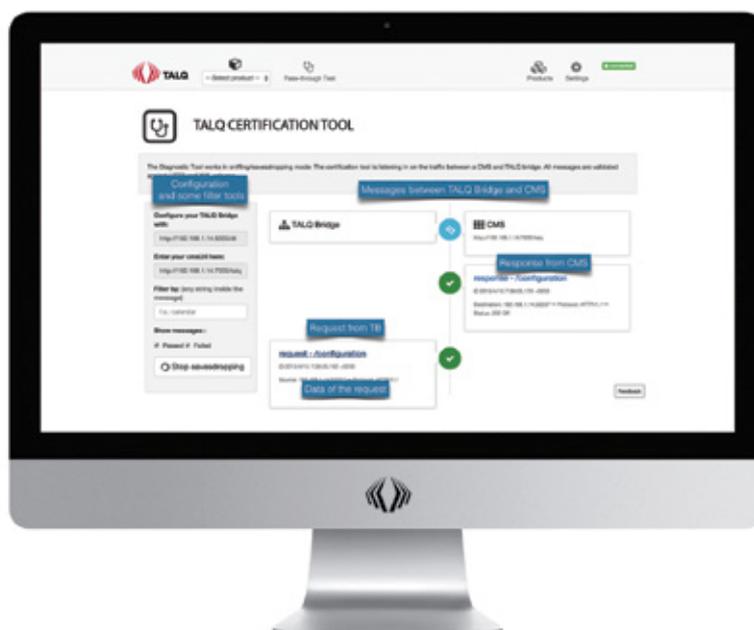
Unique vendor functions and features

- TALQ gives guidelines for implementation
- Vendor-specific data transfer

**example functionalities of lighting sector*

A certified global standard

The TALQ Consortium has set up a carefully created Certification Program with transparent procedures and an intelligent test suite to assure full interoperability between different systems.



Member companies can challenge their own systems with the software-based test suite until they feel confident that their implementation of the TALQ Specification has been successful. Additional regular plug fest sessions allow the members to test their solution in collaboration with systems of other vendors.

Official certification of TALQ-compliance is awarded by the TALQ Certification Workgroup within a few days after companies submit all of the necessary files and declarations for certification.



Certified TALQ compliant products are identified by the TALQ symbol and listed in a product registry on the TALQ website.

Through the implementation of the TALQ Smart City Protocol municipalities, cities and other operators investing in smart city applications can benefit from a broad interoperable product choice. This way TALQ fosters competition and helps to achieve benefits for users, society and the environment.

Help to define the future of smart outdoor devices

Join as a Member

Regular and Associate Membership is available for companies who intend to provide TALQ compliant products.

Join the Partner Program

The TALQ Partner Program seeks the involvement of municipalities, utilities, consultants and others who plan, operate or control smart outdoor device networks.

For more information please visit
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