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# Olingua Franca: Creating Secure Networked Control Systems (IBM)

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## Recommended Citation

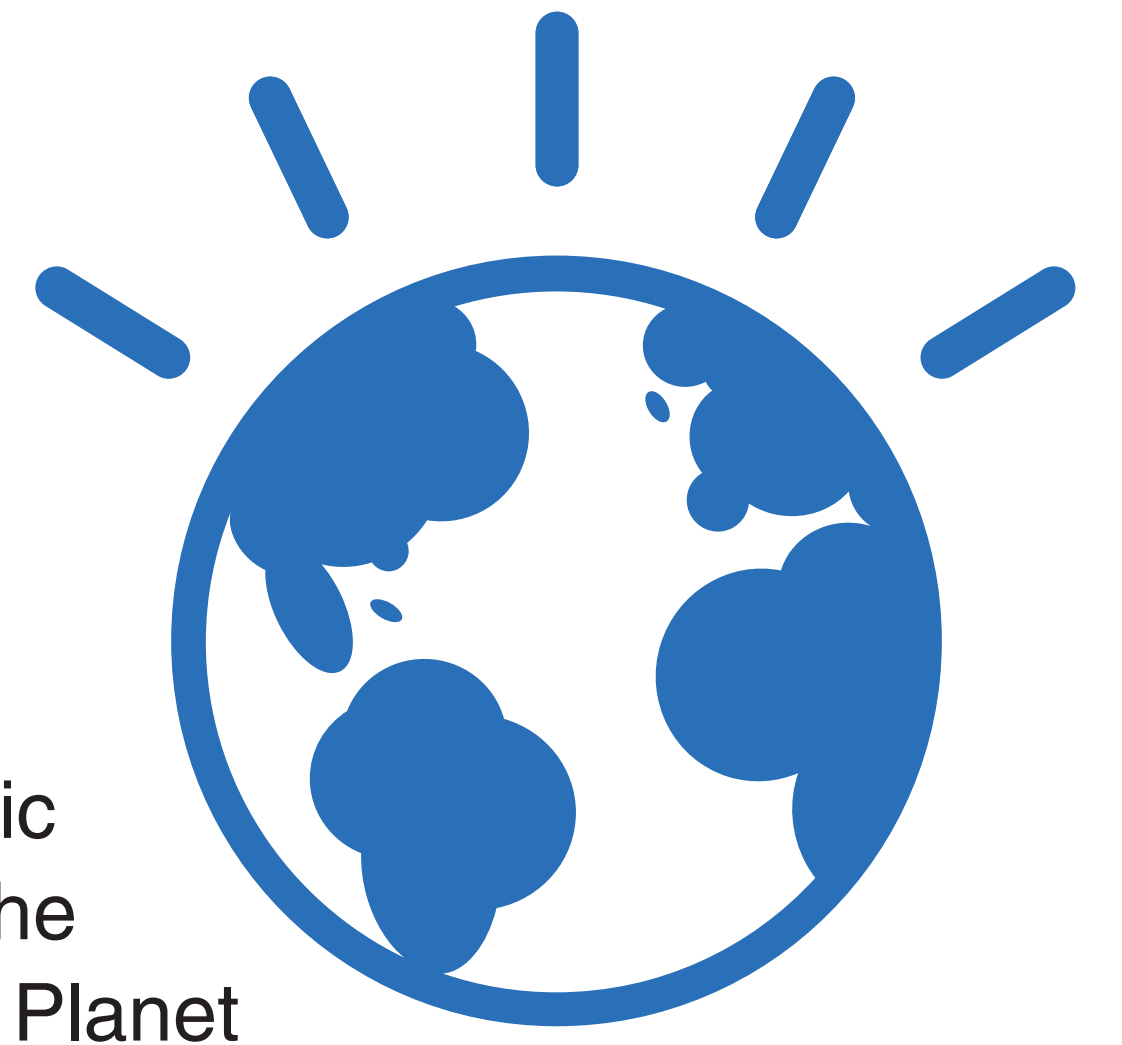
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## A secure software architecture used to develop robust and smart distributed control systems

- Our world is becoming **INSTRUMENTED**
- Our world is becoming **INTERCONNECTED**
- Virtually all things, processes and ways of working are becoming **INTELLIGENT**

Olingua Franca embodies these trends and creates a developer-friendly platform to securely interconnect control system components, bring high-order logic to low level systems, and create the virtual environment for a Smarter Planet

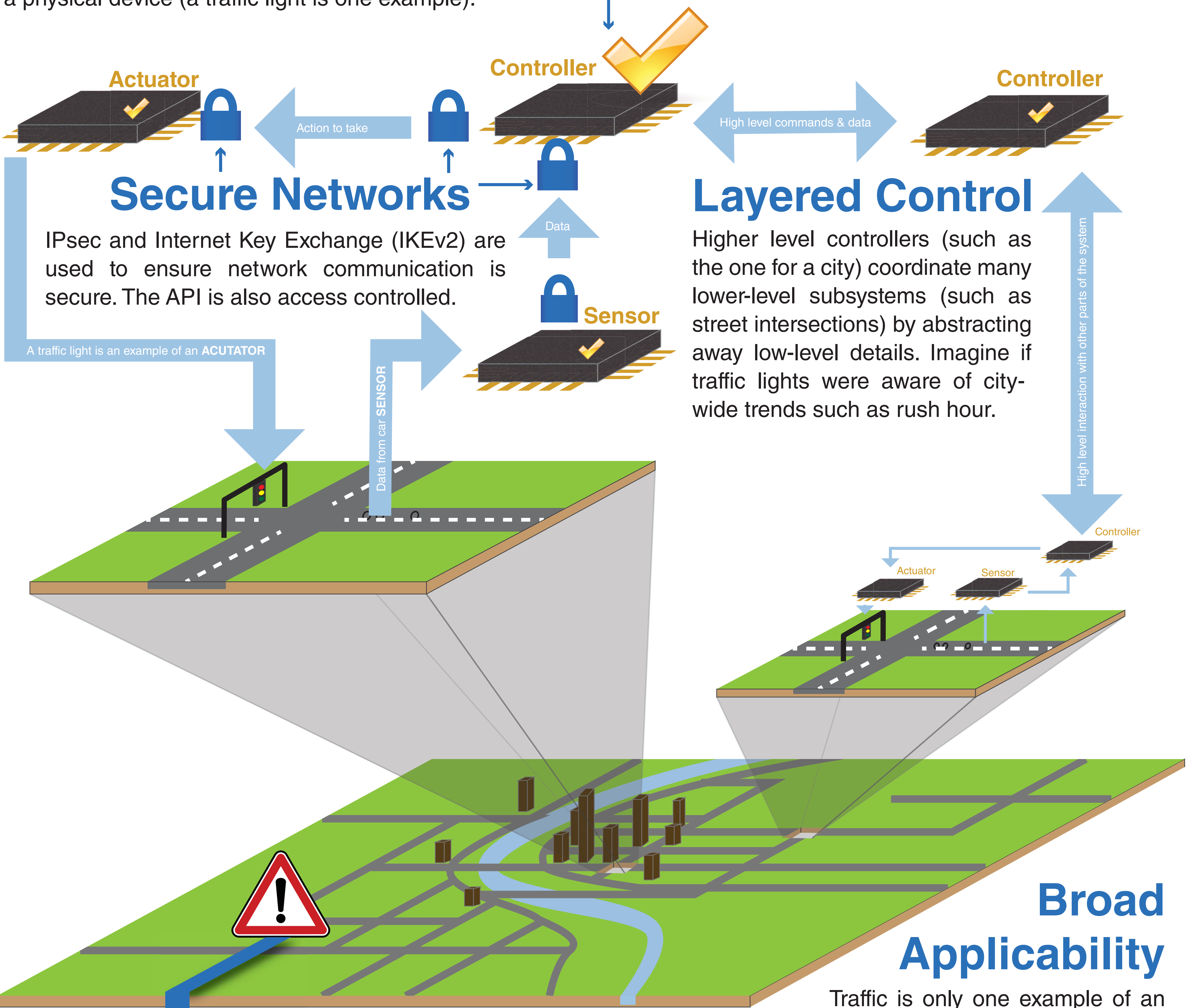


## Controls Architecture

Olingua Franca breaks down all control systems into Controllers, Sensors, and Actuators. Each virtual component (represented by microchip icons) is connected to a physical device (a traffic light is one example).

## Certified Components

All components within Olingua Franca must present cryptographically secure certificates to ensure a strong chain of trust



## Secure Networks

IPsec and Internet Key Exchange (IKEv2) are used to ensure network communication is secure. The API is also access controlled.

A traffic light is an example of an **ACTUATOR**

Data from car **SENSOR**

## Layered Control

Higher level controllers (such as the one for a city) coordinate many lower-level subsystems (such as street intersections) by abstracting away low-level details. Imagine if traffic lights were aware of city-wide trends such as rush hour.

High level interaction with other parts of the system

## Broad Applicability

Traffic is only one example of an application of Olingua Franca. The architecture applies to the smart control of power, water, heating, or any similar system.

## Resilient Systems

If components fail, Olingua Franca can automatically correct

The combined work of:

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IBM Liaison | Class of 2011 | Class of 2013 | Class of 2011 | Class of 2011 | Advisor | Class of 2011 | Class of 2011 | Class of 2011