DIUS

WHERE IDEAS ARE ENGINEERED

Case study :

AirQ

# Victoria's air quality network solution

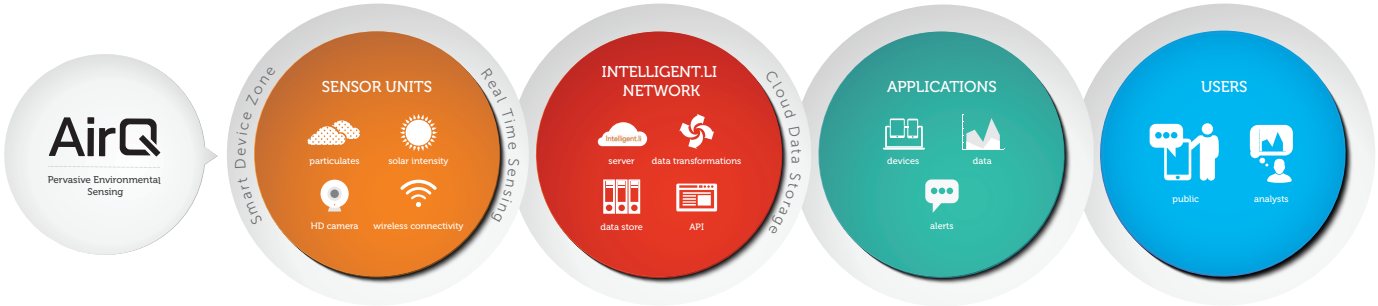
# AirQ

AirQ is a low-cost and complementary solution to EPA Victoria's already existing air quality network, aimed at giving more people access to important and localised air quality information.

With the emergence of low-cost and widely available sensor and communications technologies, we are able to get unprecedented insights into the world around us. DiUS has long been exploring innovative applications of these technologies to help better understand and address environmental issues.

EPA Victoria's air quality network consists of a small number of highly specialised and expensive air quality monitoring stations, strategically located across the state, that monitor the air quality for all Victorians. The data obtained at these locations is verified so that it meets stringent regulatory requirements. However, these regulatory requirements introduce significant delays between the time the monitoring occurs, to when the information becomes available to the general public.

DiUS, on behalf of its technology commercialisation subsidiary Percepscion, worked closely with EPA Victoria and the Department of Environment and Primary Industries to assess the potential for using a low cost sensor network capable of providing localised and near real-time air quality information. Delivered to proof of concept stage, AirQ is a next generation distributed air quality monitoring sensor platform that was developed and deployed at 11 locations across regional Victoria; six of which were co-located with EPA Victoria's existing air quality monitoring stations so that their accuracy and overall measurement of value could be assessed. The sensor units included two particulate sensors, a Raspberry Pi processor module, a broadband 4G LTE communications module, a smoke detector, high-definition camera and sensors for humidity, temperature, pressure and solar intensity, as well as 60 watt solar panel, a solar charge controller and a 12V/25Ah Lithium Iron Phosphate battery for power...all inside a weatherproof pole-mounted enclosure.

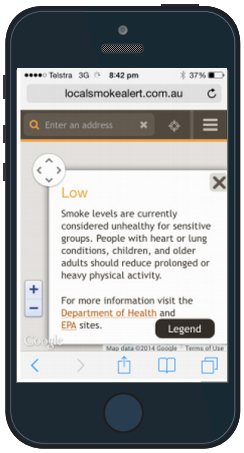
## Pervasive Environmental Sensing

To support the key customers of this information, two applications were built:

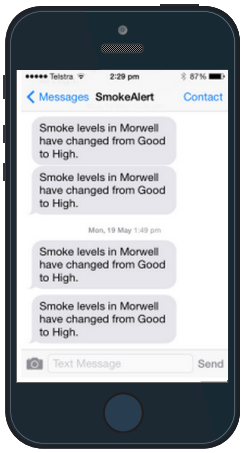
**Supporting Air Quality Analysts - A web-based user interface was developed to enable visualisation** and exploration of the data via Percepscion's Internet of Things (IoT) cloud-based data service, Intelligent.li. The data was sampled at intervals between five seconds and one minute depending on the sensor, whilst high-resolution images were recorded every 15 minutes.

**Servicing the Victorian Public** - The data obtained was also used to develop a simple and easy to understand three-level SmokeAlert index that would underpin a mobile-based application for the general public. The SmokeAlert index was developed based on the five-level EPA index which calculates air pollutant levels and provides information on air quality at a particular location.

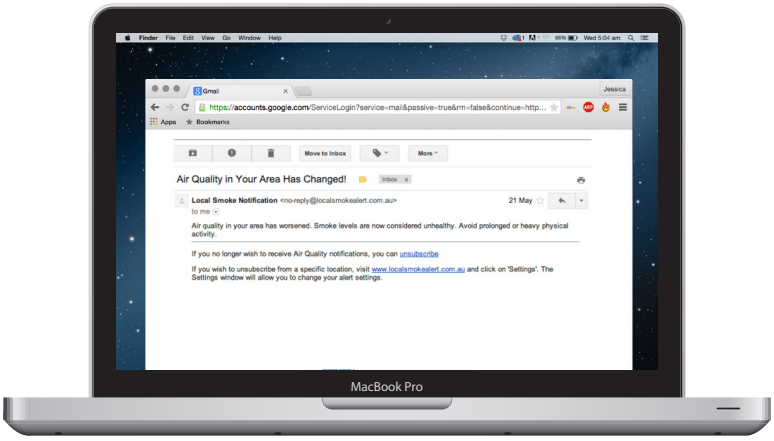
In addition, the mobile-based application also supported SMS text messages and email alerts to notify the general public when smoke levels have changed.




SmokeAlert 'Low' indication on a mobile device




SmokeAlert SMS text message notification




SmokeAlert email notification

AirQ is a next generation distributed air quality monitoring sensor platform that was developed and deployed at 11 locations across regional Victoria...

Throughout the development of AirQ, EPA Victoria worked closely with Percepscion, providing access to domain expertise, their air quality monitoring stations as well as collaborating to develop the SmokeAlert index for the general public.

Percepscion is continuing to work with the Victorian Government to further refine this platform and look at ways that these technologies can be best utilised to get unprecedented insights into our environment and improve the distribution of useful, accurate and timely information.

How can DiUS help you? DiUS can conceptualise your idea through design and into deployment; delivering IoT products that meet your customer's needs. We do this by applying design thinking; from analysis of your customers, ideation of the product concept, development of your product using a build-measure-learn cycle, right through to deployment of your product to your customer.

DiUS

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Celebrating 10 years of helping companies innovate and grow. We make it happen by delivering the right solution to get an idea to market or make a business of any size more responsive.


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