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MULTI-UTILITY INTEGRITY SYSTEM

WHAT IS PHOSPHORUS?

Phosphorus is a sophisticated geospatial infrastructure network management & monitoring system, which provides real-time performance monitoring of various assets/networks. This multi-utility management system integrates with a GIS platform to provide wide usability for a number of industries.

HOW WE DO IT

"Through cutting edge technology and continuous management, we aim to protect society and urban environments from potential and future disasters."

WHY PHOSPHORUS?

- Utility Sensor Detection & Integrity Management
- Geospatial Asset Management System
- Damage Prevention, Detection & Repairs

THE NEED FOR PHOSPHORUS

Utility networks are comprised of key assets that are vital for the continued operation and growth of society Networks such as electrical distribution, oil & gas transmission, telecom, fiber optic, water & sewer networks, and much more are part of our every day life and continued societal function. Because society is accustomed to such networks and depend on them so heavily, any malfunction can wreak havoc in an urban environment. There are numerous instances of this occurring around the world, where networks are not properly managed, resulting in delayed responses and serious damage.

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"Camp Fire, the deadliest in California history, was caused by PG&E electrical transmission lines."

PG&E: **CASE STUDY**

Perhaps the best recent illustration of serious damage due to utility mismanagement is PG&E's faulty electrical equipment, which destroyed many regions in California. Because of asset negligence, the onus has been put on PG&E for causing 17 wildfires through North Bay Wine country and other regions in October 2017 as well as the lethal wildfire that scorched Butte County and essentially destroyed the town of Paradise in November 2018. This disaster has caused PG&E to incur a debt of almost $69 billion, causing them to file for Chapter 11 bankruptcy. It is important to note that this is not an isolated incident and given the vast network of utilities and infrastructure, this can and will happen again if proper precautions are not taken.

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"Fiber optic cables are critical to financial transactions, including credit, debt financing, funding, investing, procurement and more, and account for US$10 trillion in transactional value each day."

-US Securities & Exchange Commission

RISK MITIGATION

Utility network damage can have serious repercussions. In the event of major damage to a fiber optic network, for example, consequences could include complete shutdown to whole stock markets, putting companies and industries at serious financial risk. Collapsing sewer networks can cause environmental damage and bacterial epidemics leading to serious and widespread illness. Leaking pipelines can trigger massive explosions and cost hundreds of millions (or even billions) of dollars in damage. Because of society's reliance on and proximity to utilities, it is essential that damage prevention and detection is carried out in the fastest way possible. If this is not carried out with efficiency and speed, society leaves itself open to various crises that have destructive financial, social, and environmental consequences. To ensure society protects itself from such issues, a precise multi-utility integrity management system is critical for preventing and managing asset damage.

With a multi-utility integrity management system, vast networks of utilities are always monitored to ensure optimal performance. With such a system, users receive alerts when irregularities or damage occurs. This system can fast track damage, confirming that it is taken care of right away. INTUS Smartcities' system, Phosphorus, offers this type of asset management capability and more, by utilizing utility-specific sensors, data, and GIS to create a full management service loop, ensuring that damage prevention and repairs are done expeditiously.

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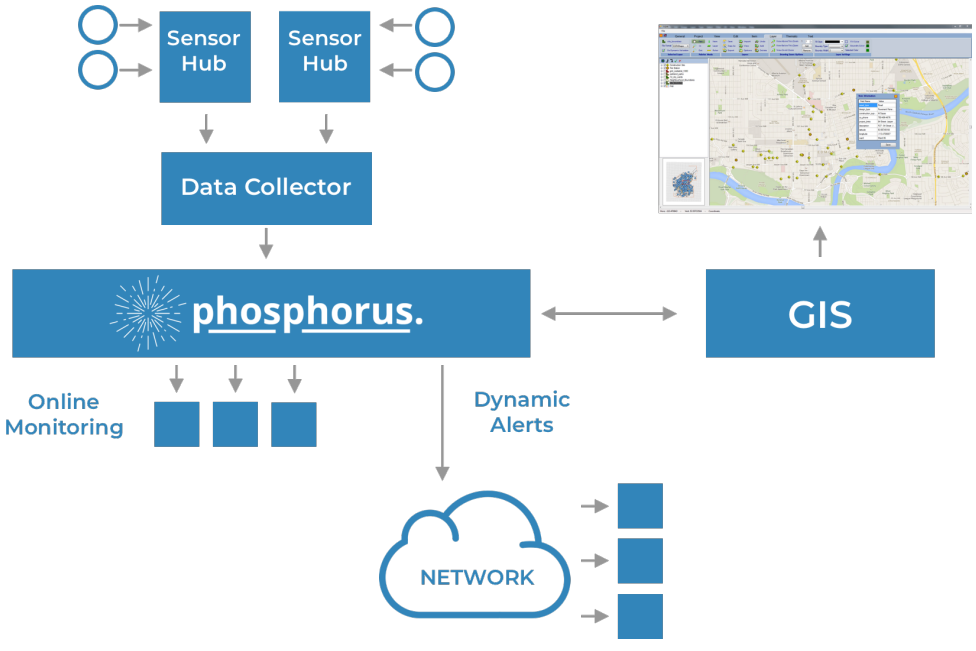
SYSTEM **OVERVIEW**

Phosphorus is a multi-utility integrity system that provides a variety of sensors specific for each independent utility. These sensors communicate directly with the geospatial asset management system. Through the use of sensors, abnormalities can be captured in real-time, detecting malfunction or critical failure of a network. These disturbances are sent to a sensor hub and finally into a data collector. Phosphorus is able to communicate with this data collection unit, receiving all data accumulated in real time. All the info collected is sent to GIS, which integrates, organizes, and renders the asset and its location in both 2D and 3D. In other words, GIS works with Phosphorus to provides dynamic infrastructure mapping and incident highlighting during times of emergency. Both Phosphorus and GIS work together in a 360˚ loop to enforce the proper maintenance and repairs of a network. Information is constantly being communicated by both systems, allowing for dynamic alerting to be sent over a cloud-based network. Along with the alerts, a work order is created, highlighting the specific elements damaged and the course of action for repairs. Phosphorus offers cross platform capability with the ability to communicate with 3rd party online monitoring software from companies such as SAP and ESRI.

SYSTEM **DIAGRAM**



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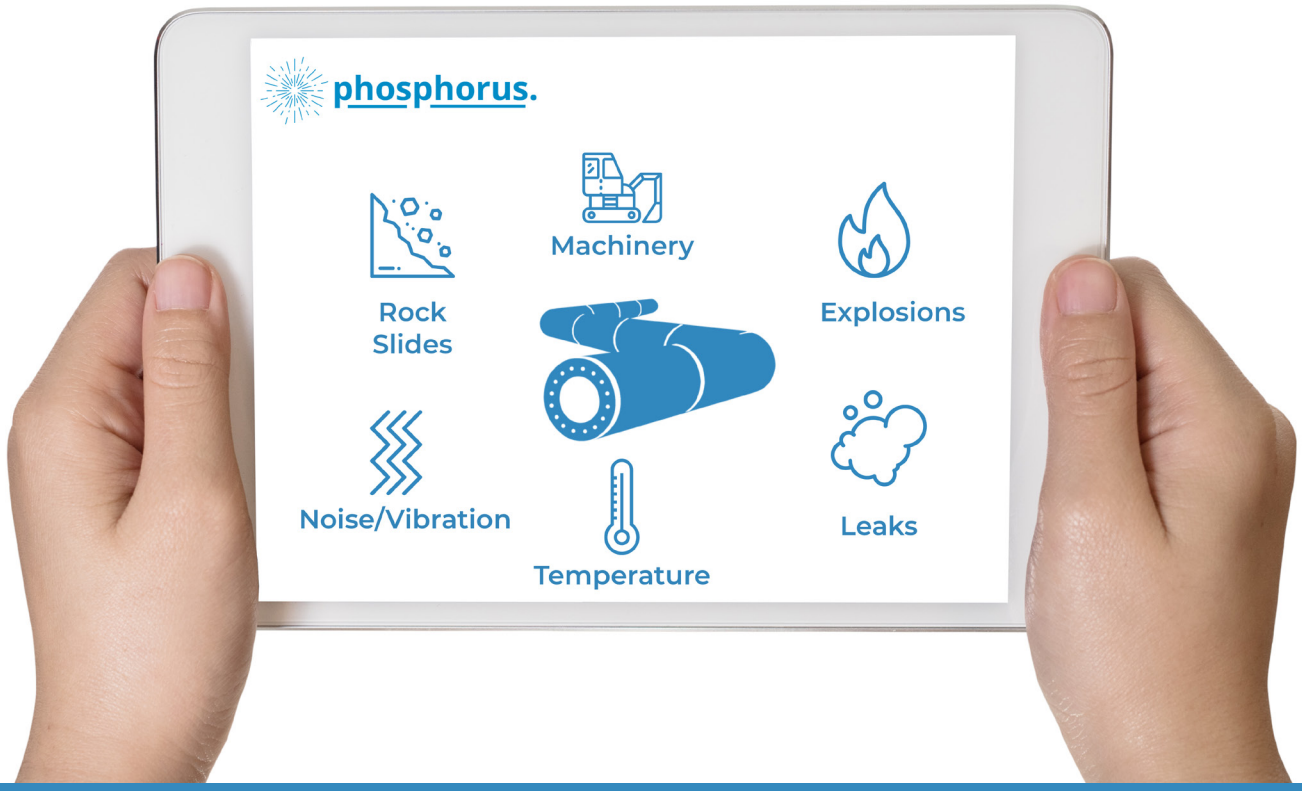
DETECTION SCENARIOS



SPECIAL FEATURES

We utilize cutting-edge **Hermes D** sensor technologies and field teams to bring:

- Dynamic methane gas leak detection for gas distribution networks
- On site leak detection for distribution lines and street lights
- Telematic alert notification & automatic inspection/repair order generation

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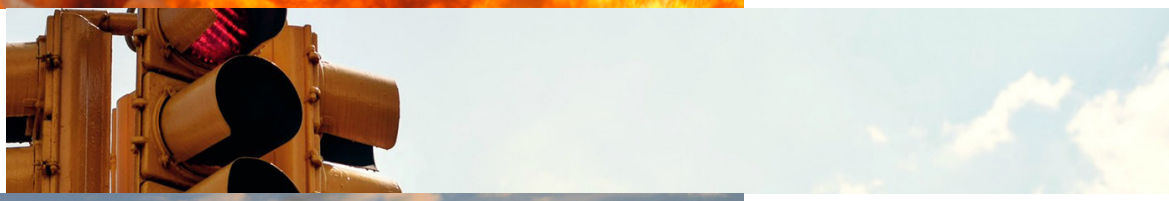
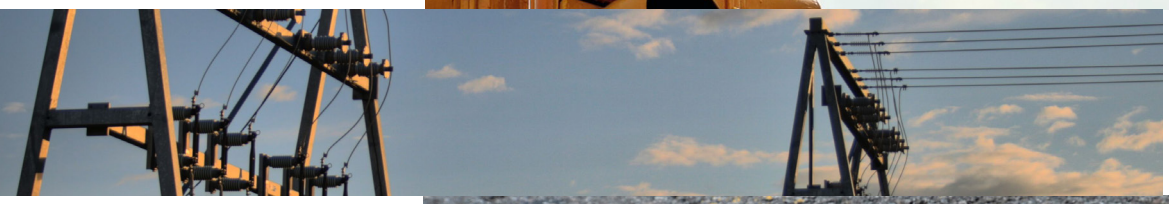
SYSTEM IMAGES

USAGE SCENARIOS

GAS EXPLOSIONS

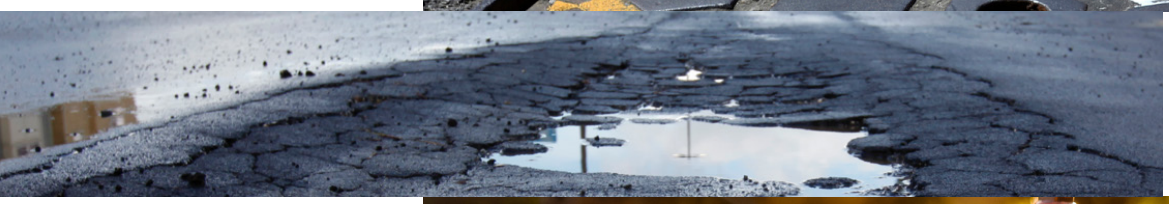
STREET LIGHTS





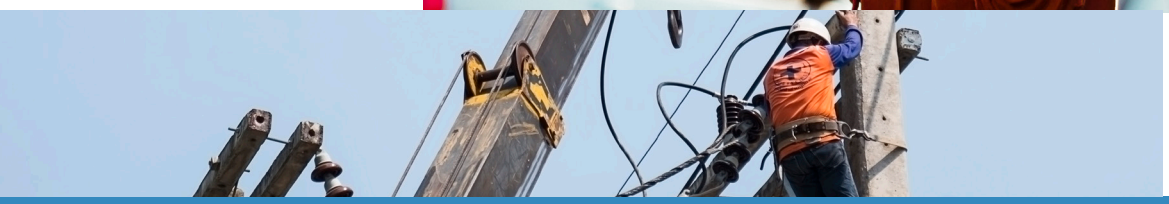
ELECTRIC NETWORKS

SEWERS



STORMWATER

FIRE HYDRANTS



MAINTENANCE

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FOR MORE **INFO**

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