

## Manhole Security Solution

Manhole sensors and automation of human activities protect social infrastructure



Hitachi Systems offers “Manhole Security Solutions” by leveraging real time sensor monitoring with IoT and business process management (BPM) platform.

The real time sensor monitoring of the vast number of manholes in the city and the automation of activities and processes in the emergency can remove the various risks in the social security by protecting social infrastructures from thefts and vandalism, and early detecting possibilities of terrorists/spying etc.

And, not only for the social security, this also supports regular maintenance works.

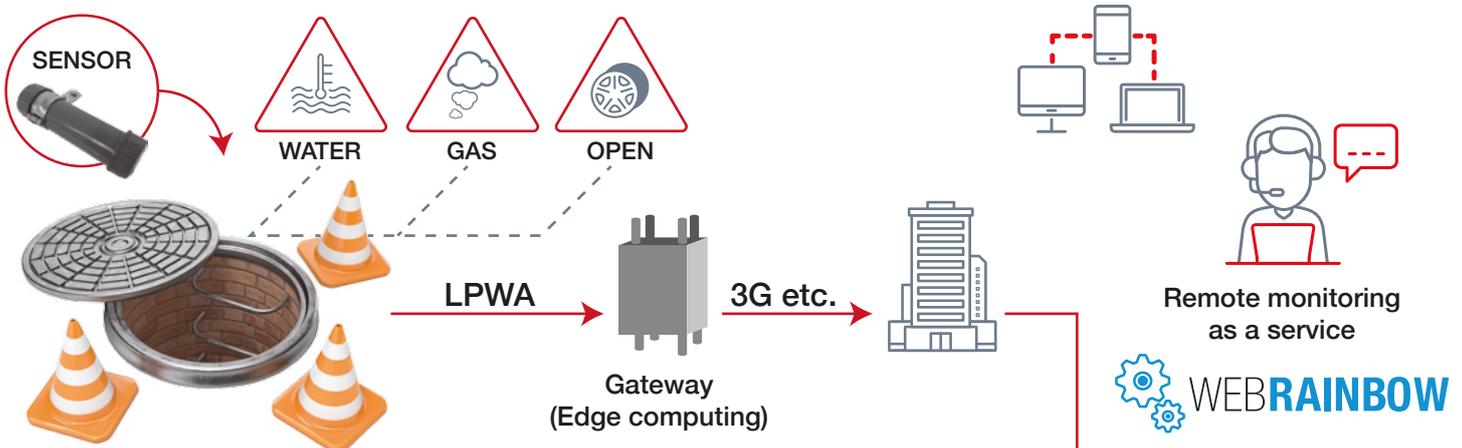
### Prevent variety of risks

 Terrorists and Spying Activities

 Thefts and Vandalism

 Accidents due to Unexpected Personnel Entry

 Incidents Caused by Deterioration and Natural Disasters

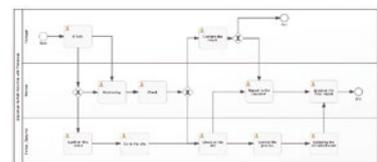


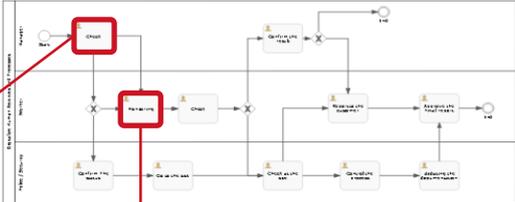
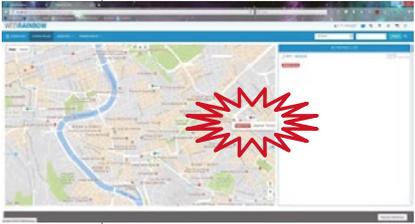
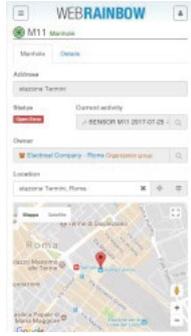
### Digitalize Human Activities and Processes

  
Police / Security Guard

  
Maintenance Worker

  
Equipment Specialist



Structure	Functions	Characteristics
<p><b>Sensors</b></p>	<ul style="list-style-type: none"> <li>• Open/close sensor</li> <li>• Temperature sensor</li> <li>• Humidity sensor</li> <li>• Water level sensor</li> <li>• Water quality sensor</li> <li>• Flow rate sensor etc.</li> </ul>	<p><b>Sensors can be used on various type of manhole</b></p> <ul style="list-style-type: none"> <li>• Joint development in Japan with <b>TOMISU</b> (Manhole cover manufacturer) and <b>eTRUST</b> (Sensor developer)</li> <li>• Improvement by <b>POC</b> tests</li> </ul> 
<p><b>Network</b></p>	<p>Wireless transmission of the data from the sensor to the platform.</p>	<p><b>LPWA usage</b></p> <ul style="list-style-type: none"> <li>• LoRaWAN, SIGFOX, etc. (To be selected depending on the environment)</li> </ul> <p><b>Mobile phone carrier network</b></p> <ul style="list-style-type: none"> <li>• 3G, 4G</li> </ul>
<p><b>Platform</b></p>	<p>Sensor's data collection, accumulation, analysis, visualization.</p> <p>Alert notification by threshold</p>	<p><b>Visualizing by the portal site</b></p> <ul style="list-style-type: none"> <li>• Status of the cover (opened/closed)</li> <li>• Conditions inside the manhole</li> </ul>     

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\*All specifications and appearances represented in this brochure are subject to change without notice.