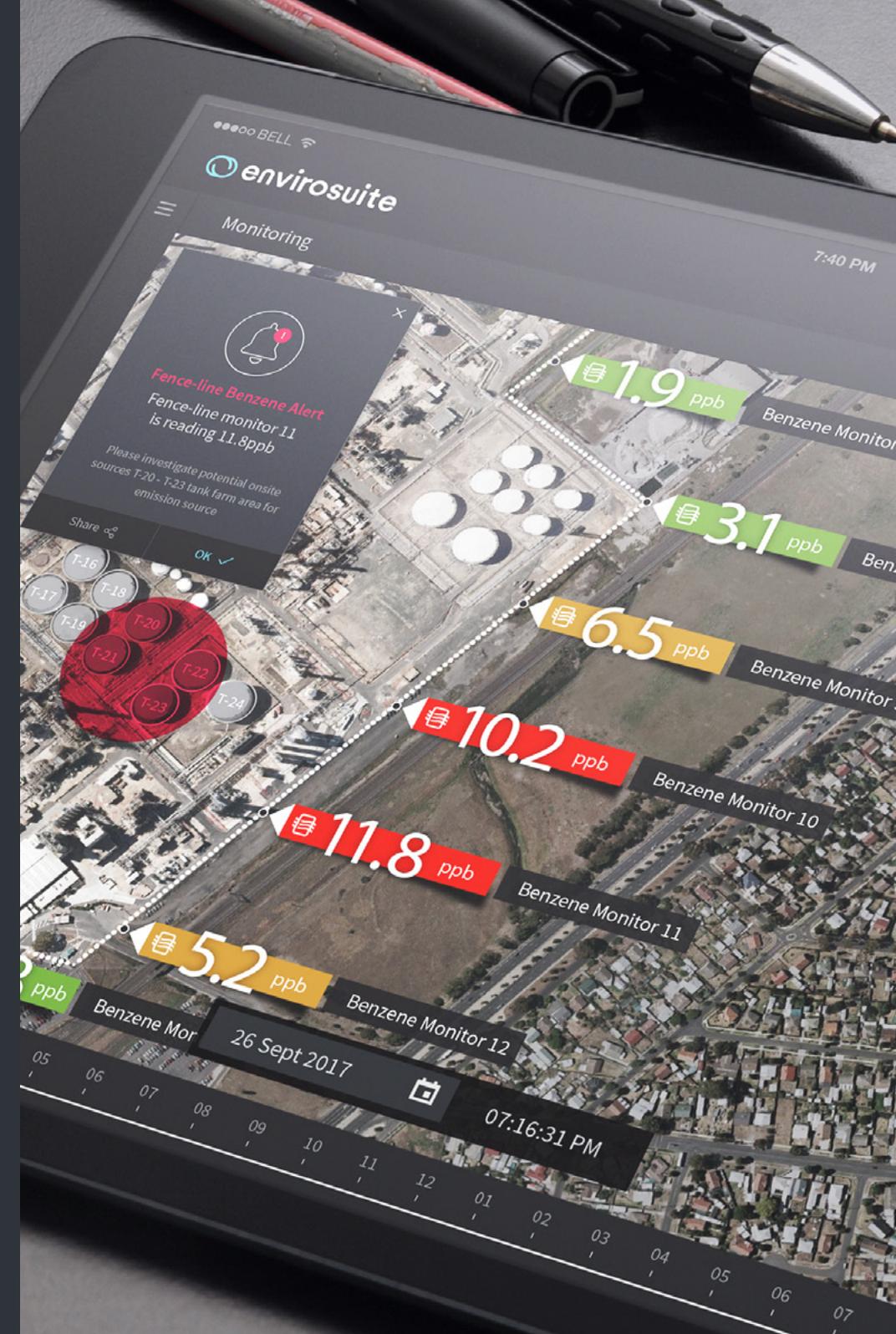


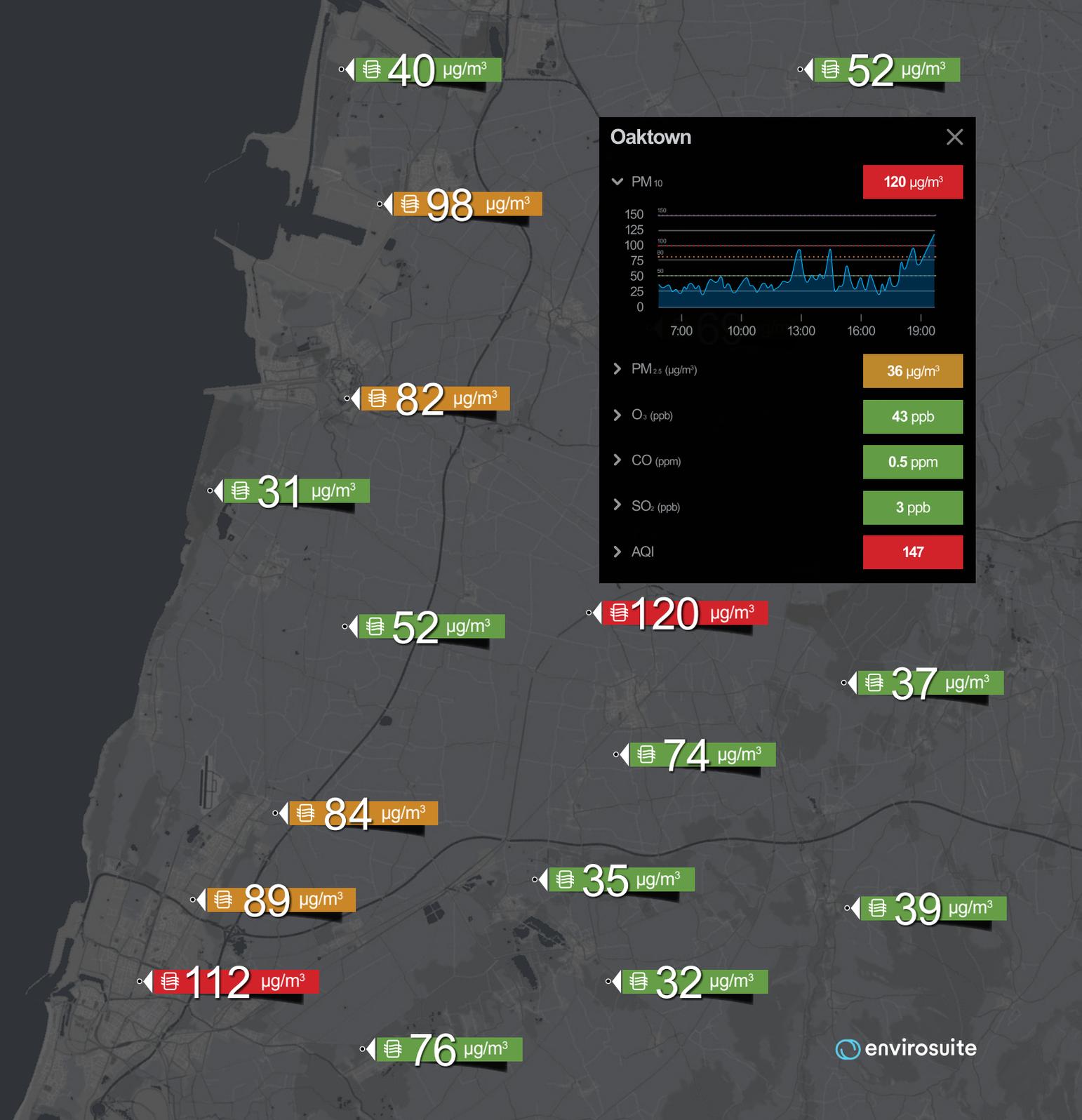


Maximizing the value of sensor data with action-oriented management systems

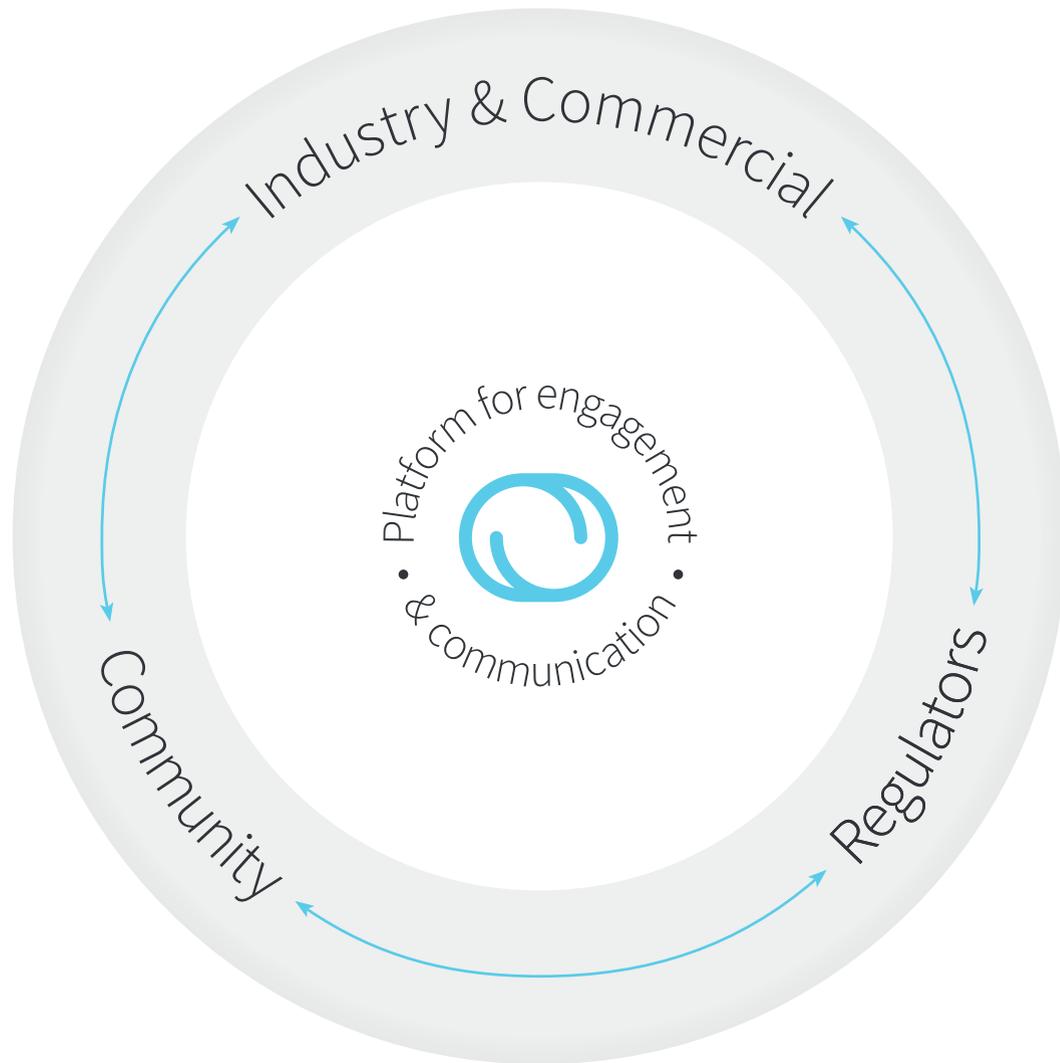


# Principles & Aims

- Next Generation sensors enable:
  - dense spatial network
  - hi-res temporal (real-time) data
- Full value is attained by:
  - integrating other data streams
  - scientific data processing
- Presented visually
  - easy to interpret
- Automated
- Accessible on-demand
- Provide decision support
  - turn data in actionable information



# Stakeholders



## Industry & Commercial

- Integrated management system for:
  - operational decision support
  - optimization & risk management
- Automated system

## Regulators

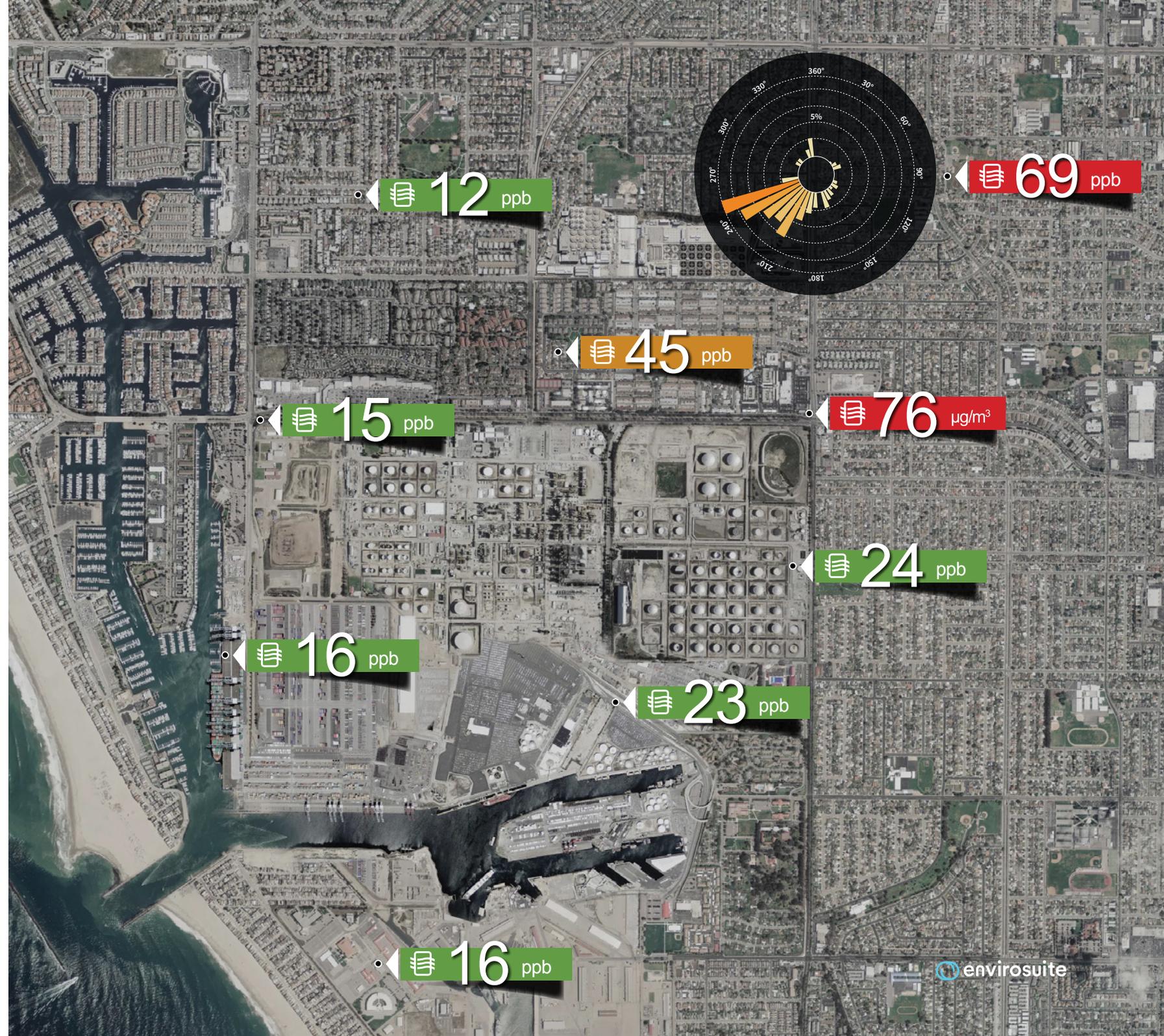
- Data management & visualization
- Investigation and analysis

## Community

- Information:
  - reports
  - maps

# Event Analysis Investigation

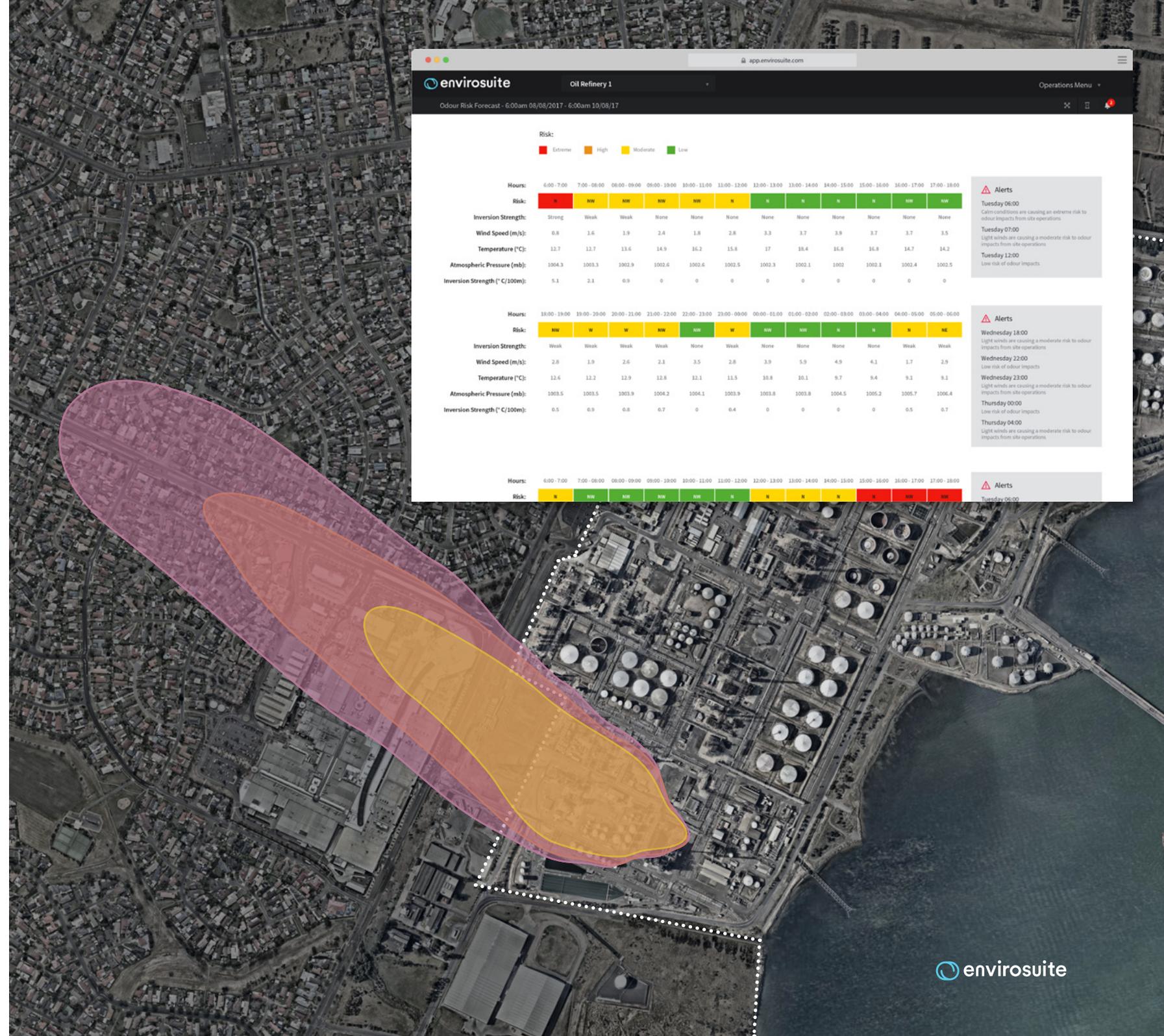
- Investigate events
  - reports and analysis using multiple data streams
- Determine root cause
- Understand context
- Lessons inform mitigation strategy



# Predictive Management

## Forecasting

- Root cause analysis informs predictive management
- Automated risk reporting
- Scenario assessment
  - planned vs alternative
  - planned using forecast conditions
- Plan ahead, be prepared



# Predictive Management

## Real-time monitoring

- Tiered alert thresholds
- Linked to operational response plans

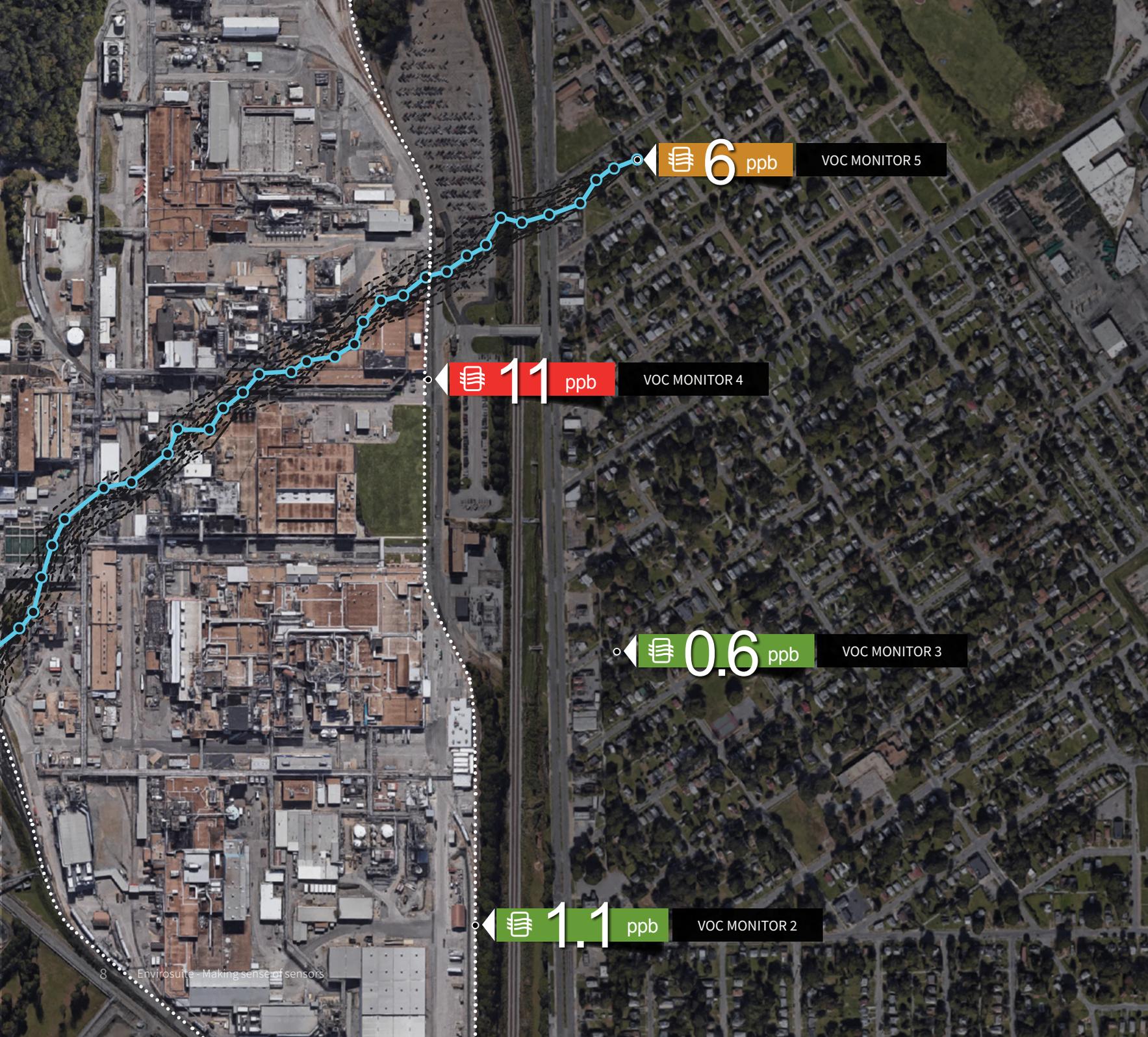




# Fenceline and community monitoring:

## Real-time source Identification

- Monitoring network
  - air quality
  - meteorology
- Real-time visual indicators of sources
- On-demand reports and analysis



# Fenceline and community monitoring:

## Real-time source Identification

- Trajectory identifying time and pathway traveled
- Automatically triggered by sensors
- Alternatively triggered by community observations

# Fenceline and community monitoring:

## Real-time source Identification

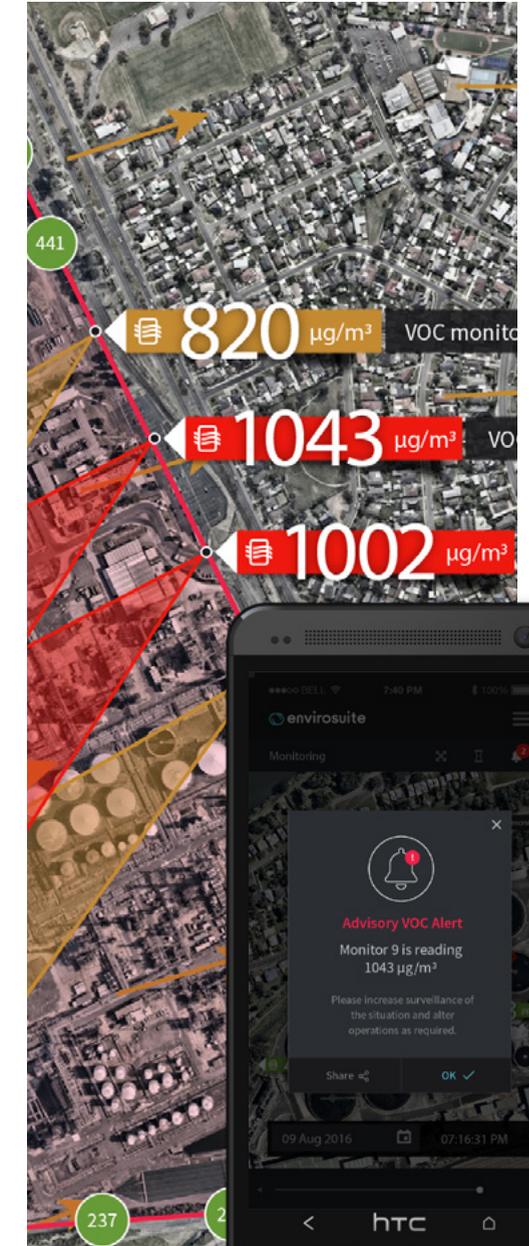
- Automated source area or equipment identification
- Fine temporal resolution data feed required
- Machine learning improves accuracy over time



# Emergency Response

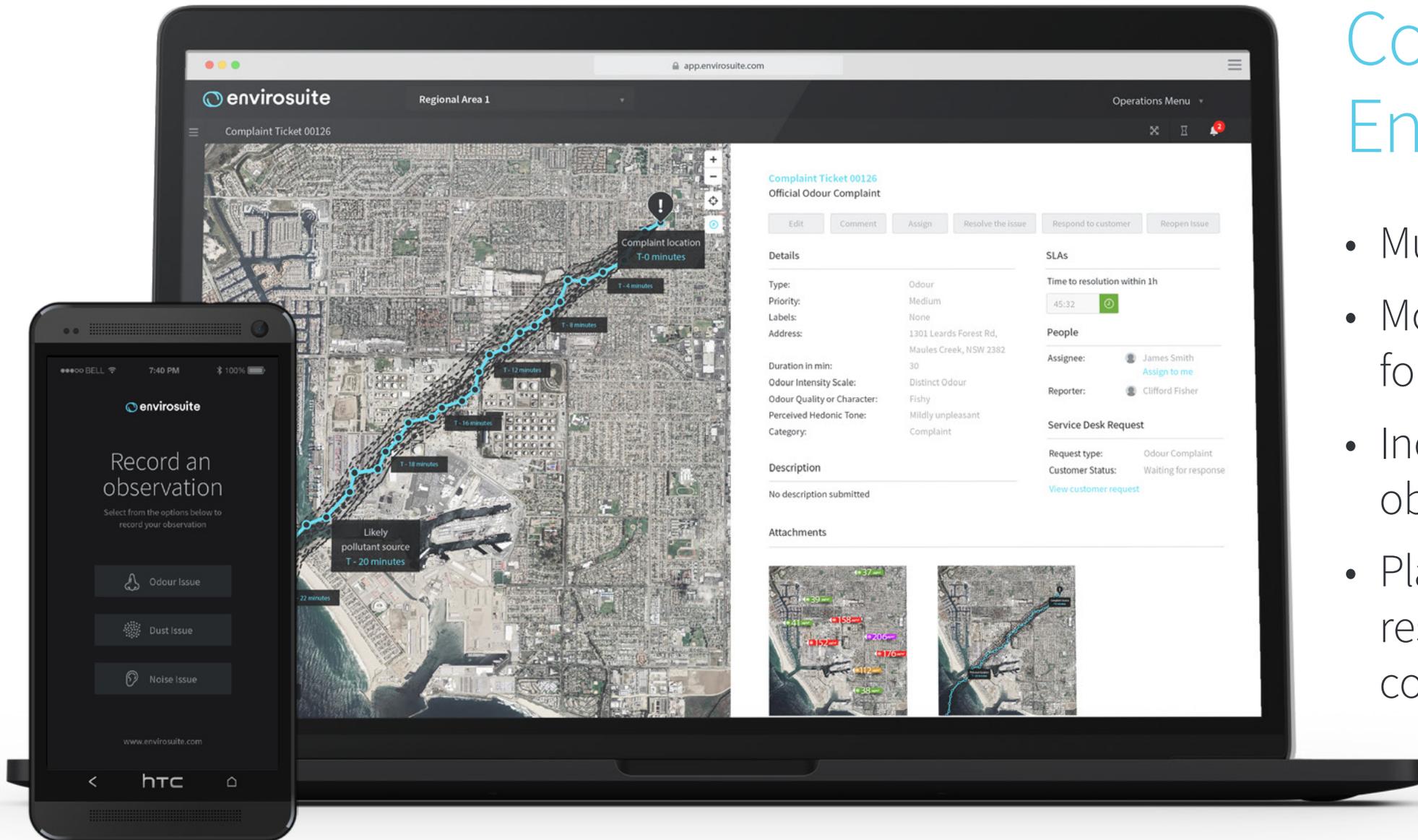
## Rapid Response

- Continuous system
- Activated by data feed from:
  - facility operational control system (emissions data)
  - fenceline or community monitoring network (ambient)
- Information to inform emergency response plan, updated progressively in real-time



# Community Engagement

- Multi-lingual platform
- Mobile and web based apps for simple data logging
- Incorporate community observations with analysis
- Platform to receive and respond to community concerns



# Summary

- Next Generation sensor data enables action-oriented management with:
  - dense spatial data
  - real-time data
- Systems should aim to be:
  - automated
  - accessible on-demand
  - real-time
  - easy to interpret
- When integrated with other data significant value can be achieved for operational decision support



*“ This is pro-active air quality management, enabling operational optimization, improved environmental performance and community engagement in a modular integrated system”*

## Thank-you

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