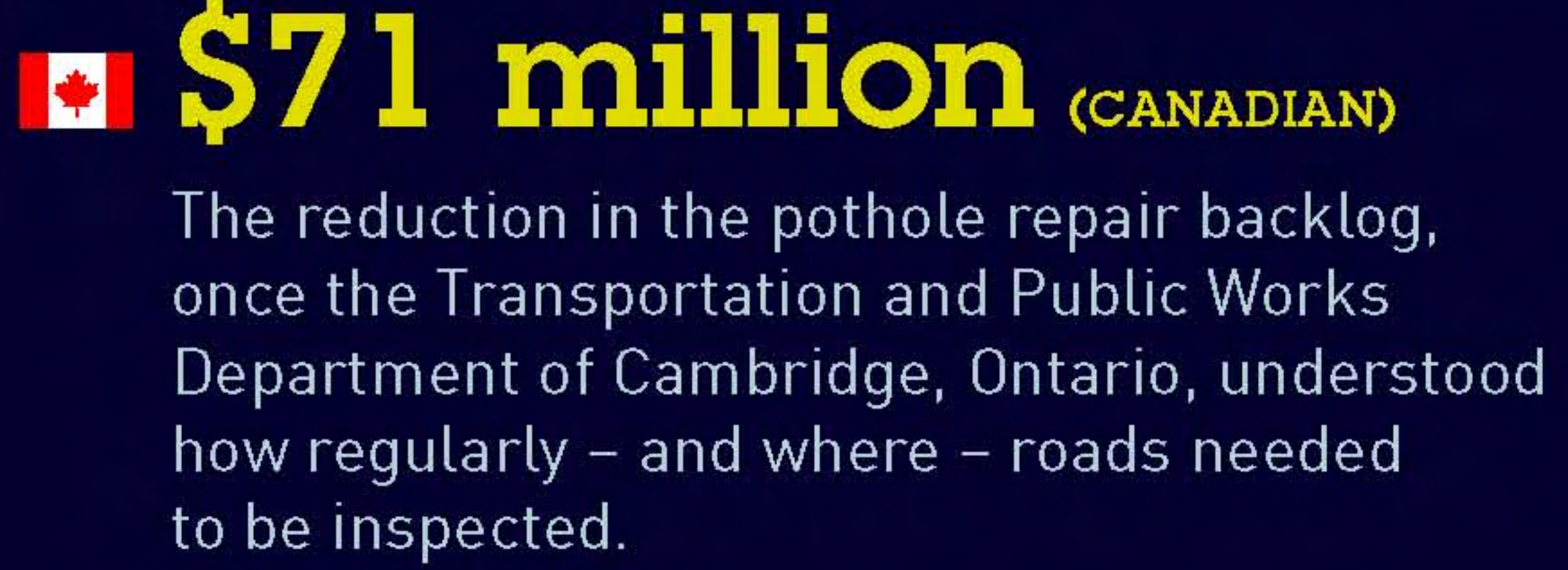
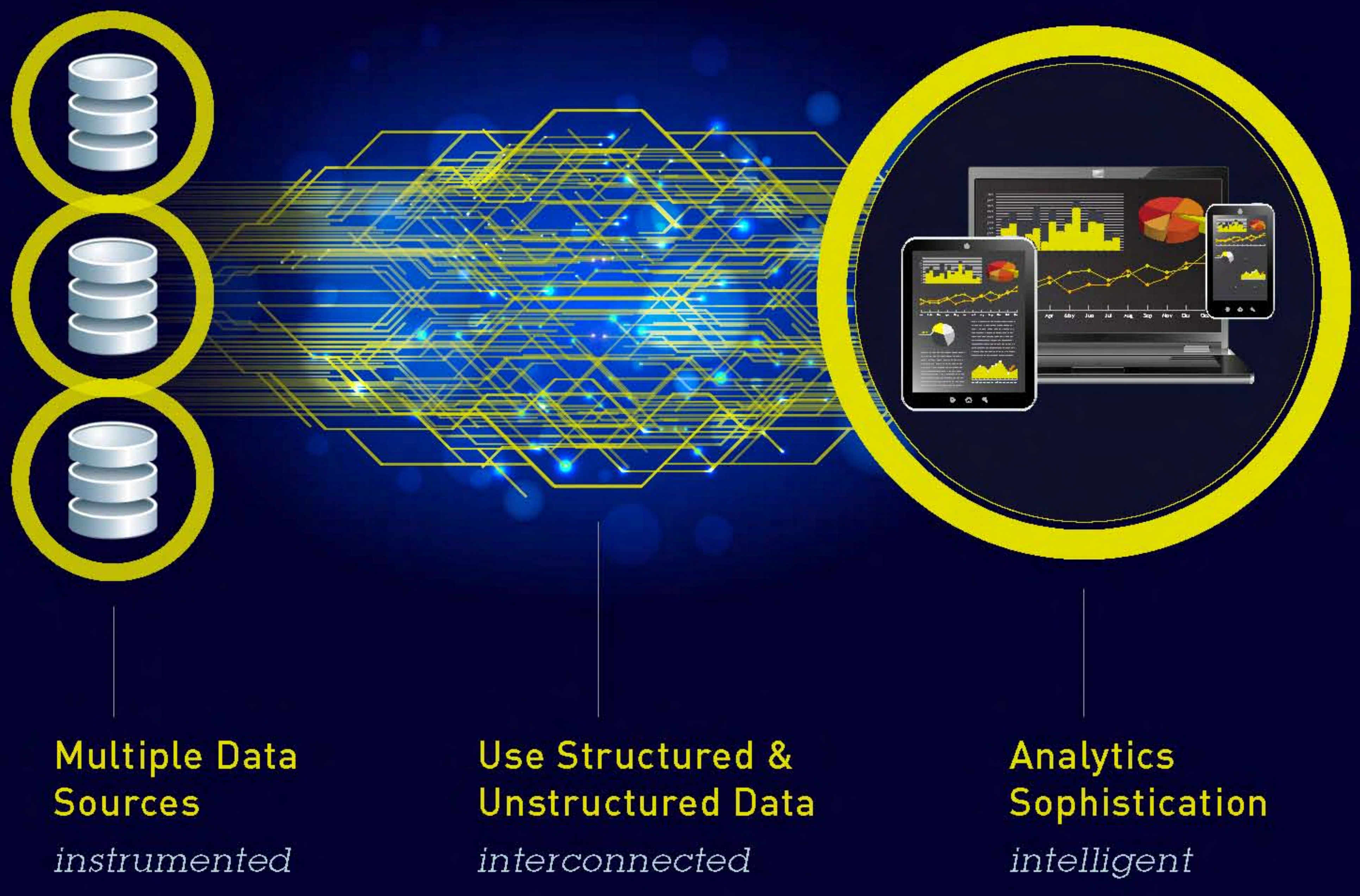


# Fixed Before It's Broken

## The Art & Science of Predictive Maintenance

A shift is underway in how chief operating officers, chief information officers, and their teams view maintenance across industries, from transportation to manufacturing to energy supply. Innovative organizations are now using analytics to predict not only where and when a problem will occur, before it occurs. They can also predict how it will occur – and how to resolve it.

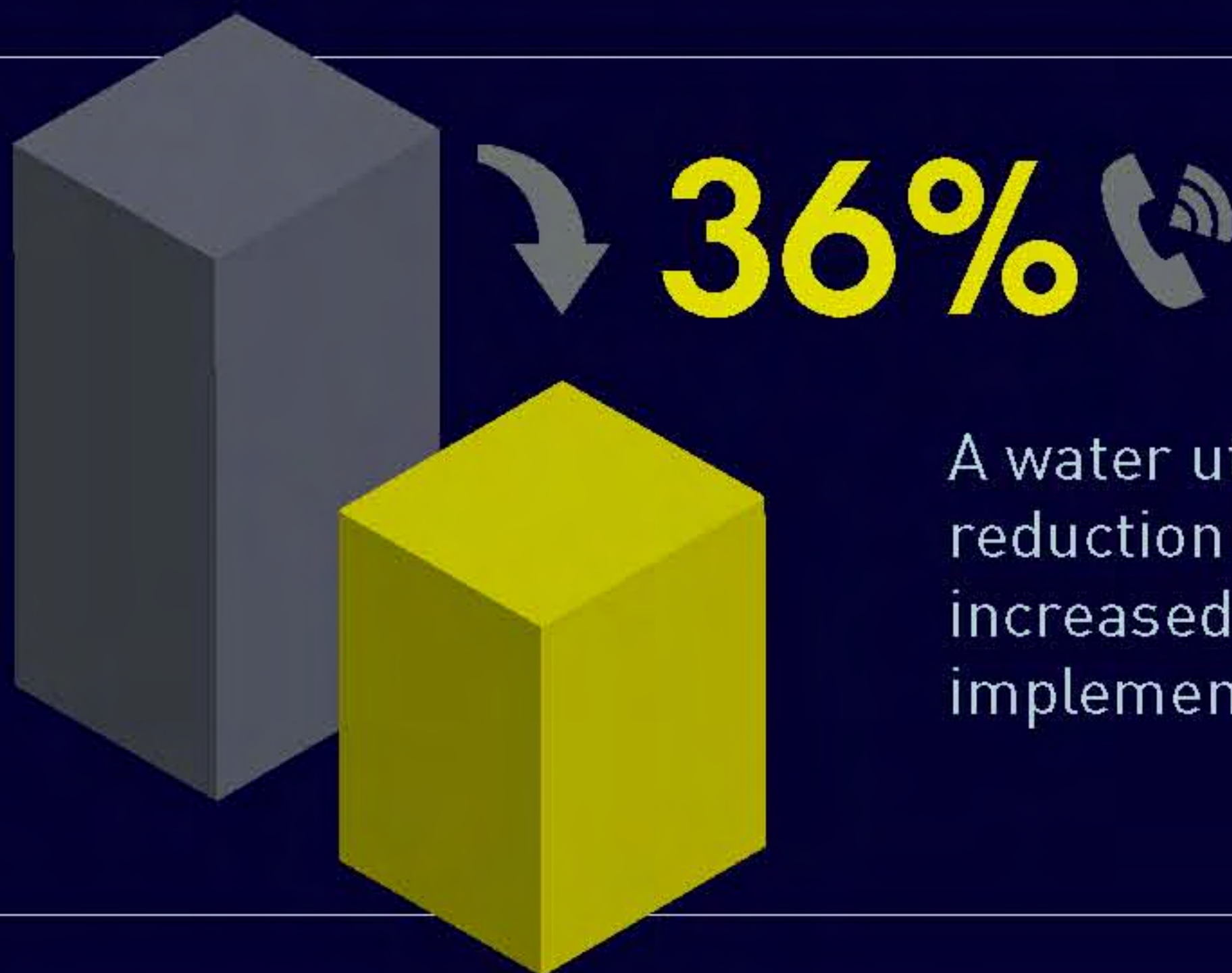


### \$1 million ⌚

What a large equipment manufacturer working with IBM saved in just two weeks by using preventive maintenance to spot problems and take action before failure occurred. By minimizing downtime and repair costs across all its manufacturing operations, the manufacturer achieved a



**1,400% ROI in 4 months.**



A water utility company achieved 36% reduction in customer calls through increased preventive maintenance and implementation of automated meter readings.

## 3x

Organizations that lead in analytics outperform those that are just beginning to adopt analytics by 3 times.<sup>3</sup>

**Predictive maintenance leverages rich but unstructured data already available in maintenance logs:**

- Equipment type
- Number of days in operation
- Operating voltage
- Days from last service
- Days until next service
- Failure history
- Planned and unplanned maintenance costs
- Parts analysis

## 5.4x

Top performers are 5.4 times more likely to use an analytic approach over intuition within business processes.<sup>4</sup>

**Predictive maintenance capabilities can:**

- Reduce TCO
- Provide forward visibility into equipment, process, and quality performance
- Help understand, monitor, predict, and control process variability
- Enable in-depth, root-cause failure analysis
- Optimize maintenance intervals
- Enhance equipment and process diagnostics capabilities
- Identify inappropriate operating and maintenance practices
- Determine optimum corrective action procedures
- Minimize unscheduled maintenance
- Improve field-level service
- Enhance production operations
- Reduce warranty claims costs

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<sup>1</sup> According to engineering estimates

<sup>2</sup> According to Goldman Sachs

<sup>3, 4</sup> IBM Institute for Business Value and MIT Sloan Management Review, Analytics: The New Path to Value, 2010; <http://www-05.ibm.com/de/solutions/asc/pdfs/analytics-path-to-value.pdf>