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TRANSITIONING TO NEW MAINTENANCE STRATEGIES WITH REMOTE MONITORING

Leveraging IoT in Elevator Maintenance

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WHITE PAPER



interlift
2017

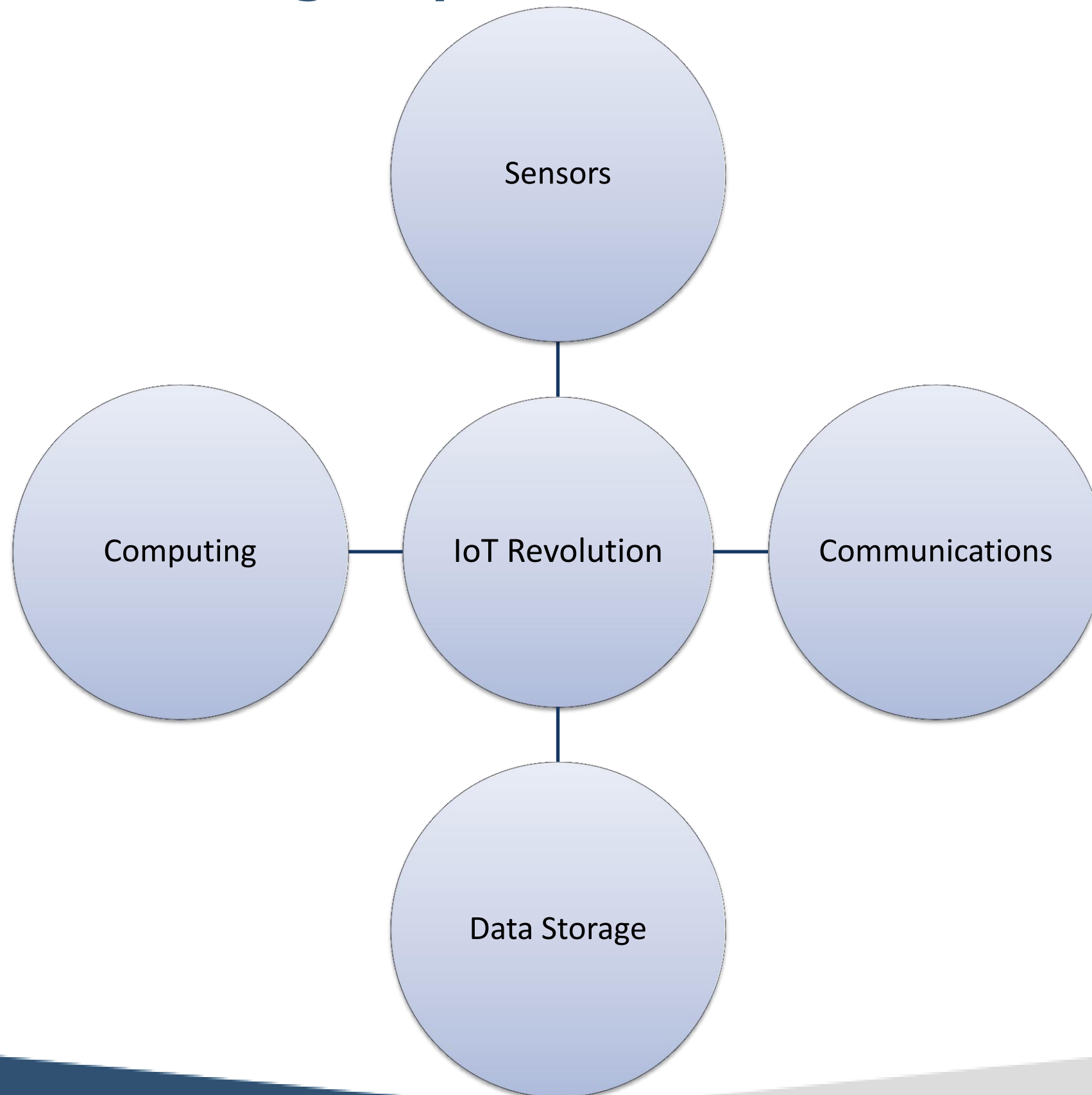
Agenda

- Introduction
- Maintenance Strategies
- The Growth of IoT
- Utilizing IoT for Vertical Transportation

The impacts of downtime

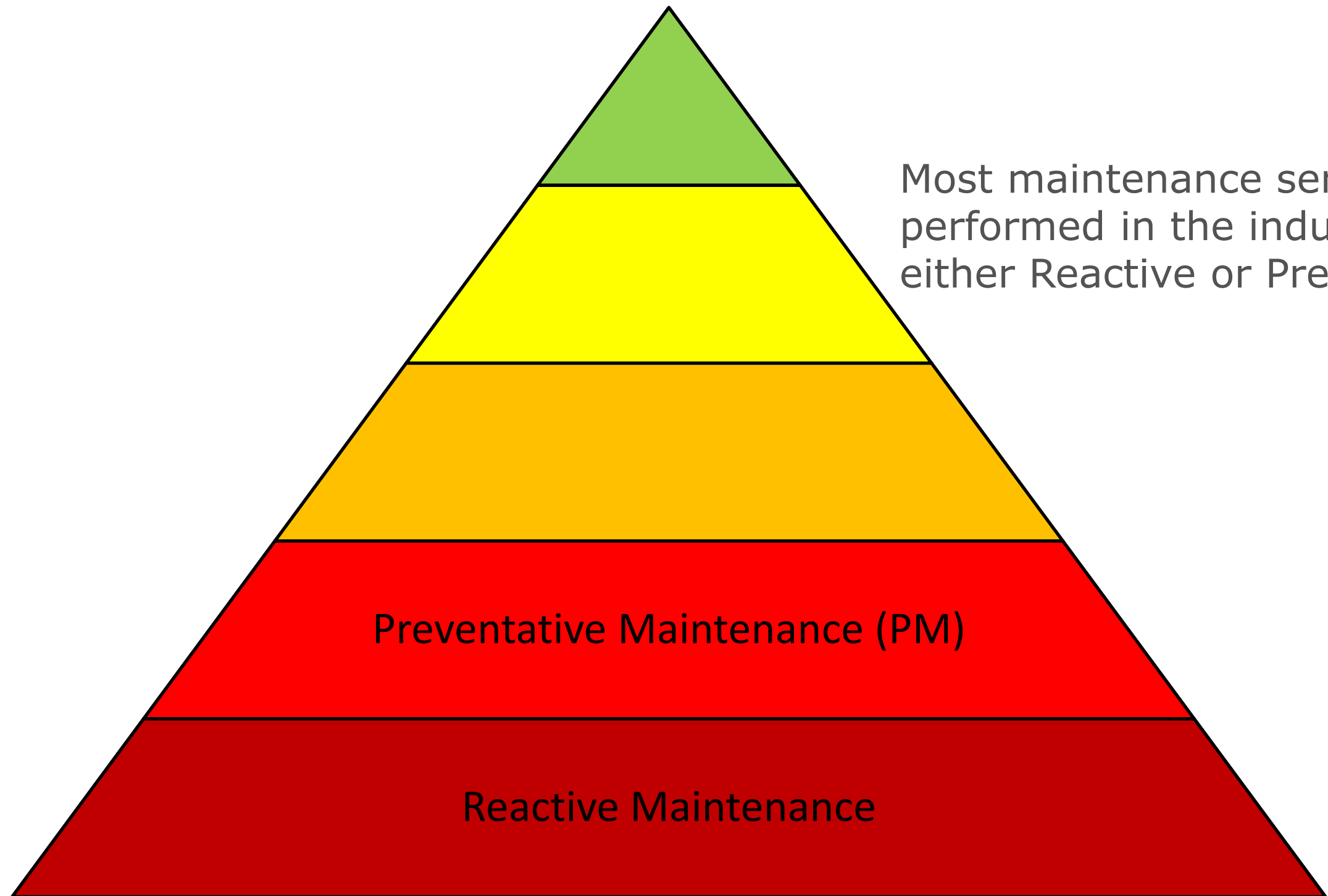
- Tenants
 - Increases frustration
 - Decreases productivity
- Building Owners
 - Increases operating costs
 - Impacts profitability
- Service Providers
 - Staffing inefficiencies
 - Increased costs

A new class of intelligent products

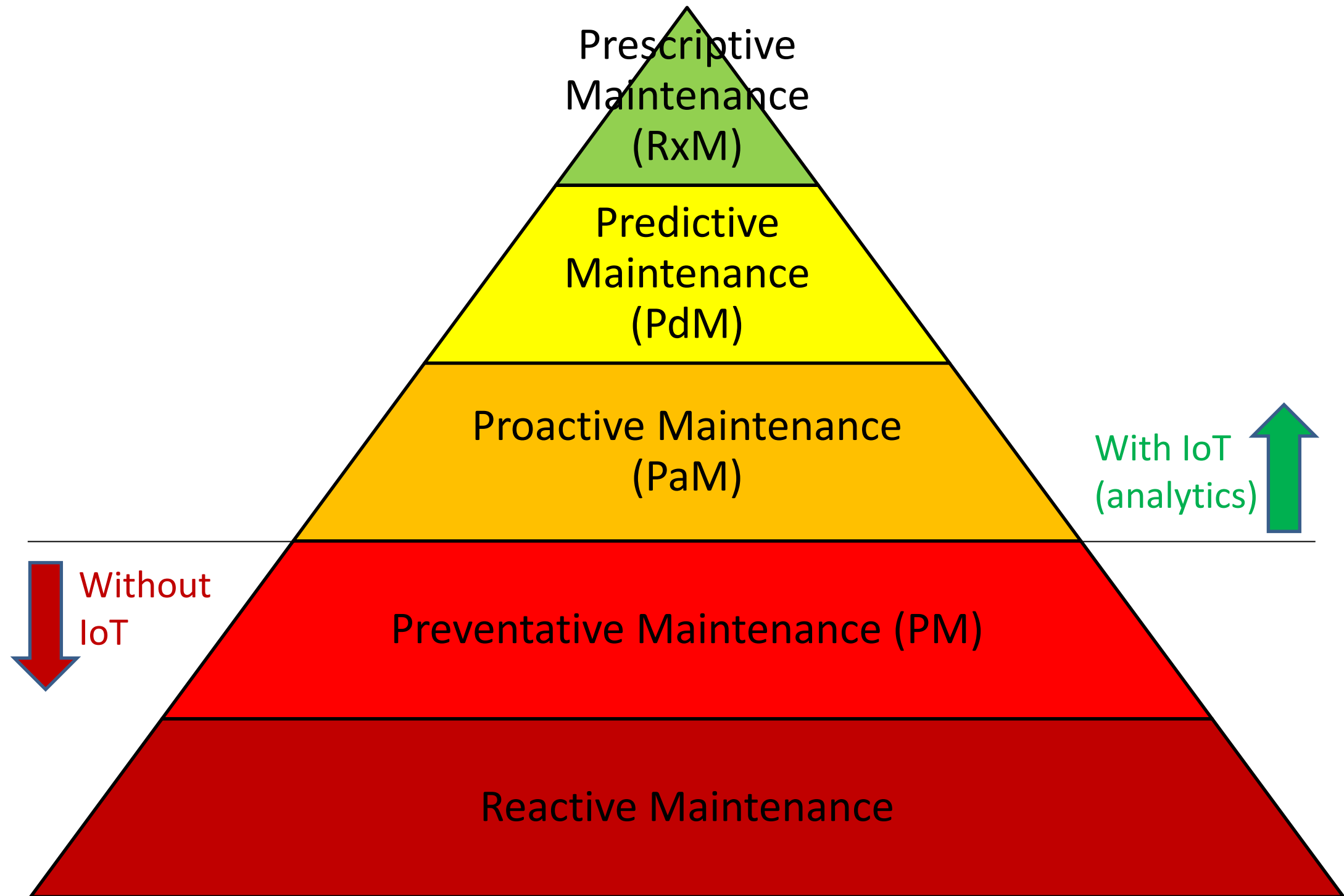


Maintenance Strategies

The Maintenance Pyramid

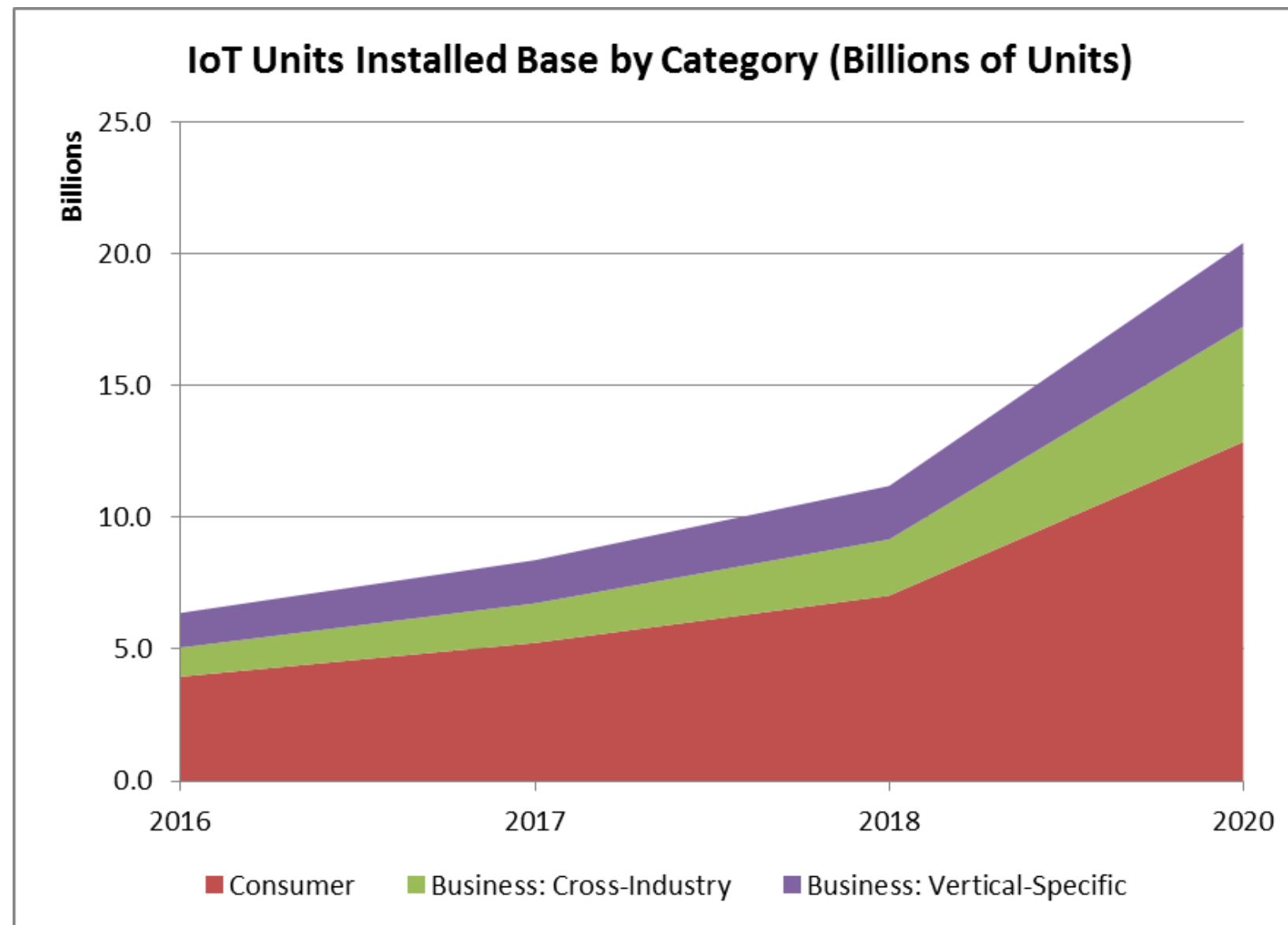


The Maintenance Pyramid



The Growth of IoT

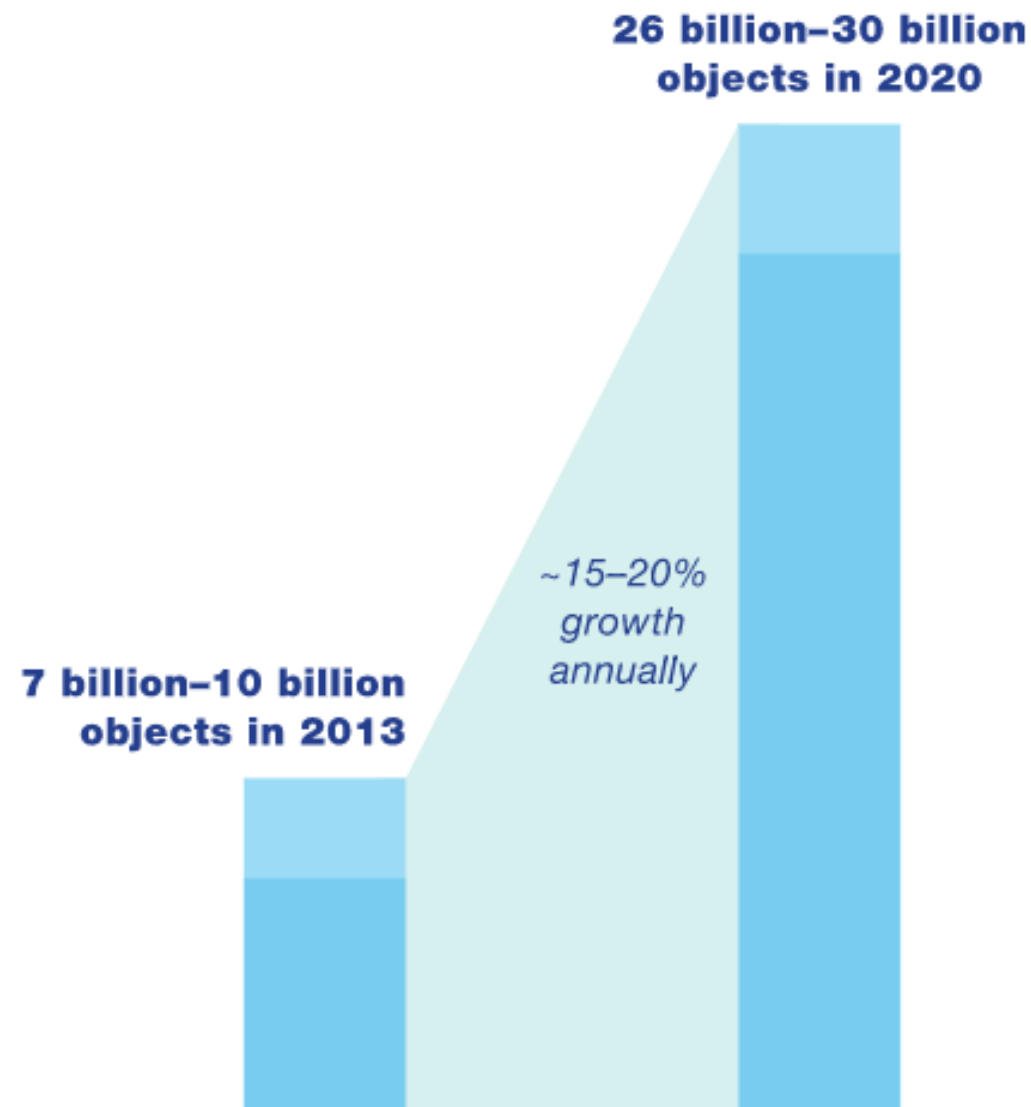
20 to 30 Billion connected devices by Year 2020



Source: Press Release, *Gartner Says 8.4 Billion Connected "Things" Will Be in Use in 2017, Up 31 Percent From 2016*, Gartner, February 7, 2017

20 to 30 Billion connected devices by Year 2020

Some 30 billion objects may be connected to the Internet of Things¹ by 2020.



¹A networking of physical objects via embedded devices that collect and/or transmit information.

Source: Forecasts derived from ABI Research; expert interviews; Gartner; IDC; McKinsey analysis

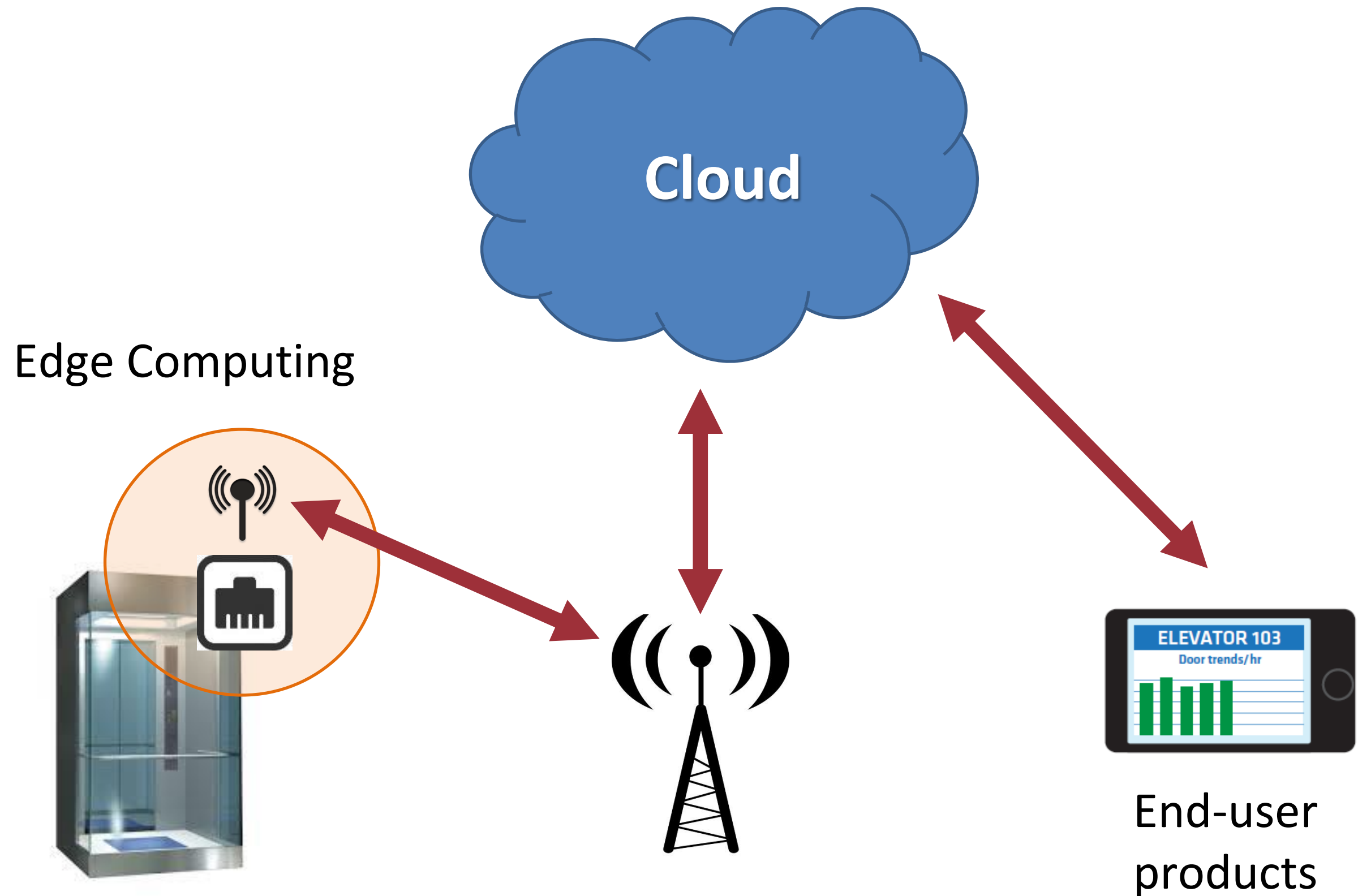
Source: *The Internet of Things: Sizing up the opportunity*, McKinsey & Company, December 2014

Utilizing IoT for Vertical Transportation

Remote monitoring product development

- Diagnostics with Raw Data.
 - Basically trying to interpret the signals in a raw fashion.
- Alerting.
 - Very simply, using signals to alert the user to when the elevator is out of order.
- Top Down Engineering.
 - By example a user defined sequence analyzer designed in earlier versions of remote monitoring.
- IoT Sensors, communication, cloud and machine learning.
 - Provides actionable information without a person designing the diagnostics. Making use of self-learning adaptive algorithms is one key example.

The Cloud and Edge Computing



Domain Expertise valued

- Off the shelf IoT hardware tools and analytics solutions
 - Allow for quick prototyping
 - They lack in features and
 - Not well suited for commercial production
- Predictive tools don't exist in the Industrial IoT world
- Domain Expertise provides greater actionable insights
- An IoT solution suited for the elevator industry
 - Deploying IoT sensor technology to pull machine data from any elevator
 - Leverage edge computing
 - Cloud storage for data and delivery of UI products

Summary

- IoT is changing the maintenance methodologies for elevators
 - Explosion of IoT connected devices by year 2020
 - Decreasing costs for IoT components
- Benefits
 - Reduce costs and downtime
 - Dispatch staff and service personnel efficiently
 - Transition from older maintenance strategies to proactive-based and eventually predictive maintenance strategies



Johannes Guntsch

*Global Product Development Manager
Draka Elevator Products,
a business unit of Prysmian Group*

Kyle Hendren

*Global Marketing & Product Manager
Draka Elevator Products,
a business unit of Prysmian Group*

Draka Elevator

+1-877-372-5237

elevator.eu@prysmiangroup.com

www.drakaelevator.com

Dan Bryant

*Co-founder & CEO/CTO
Datahoist*

Chris Pearce

*Co-founder & VP Business Development
Datahoist*

Datahoist, Inc.

+1-512-587-7156

dbryant@datahoist.com

www.datahoist.com



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Group

Thank you!

Please visit us at
HALL 3 / STAND 3178

Prysmian
Group