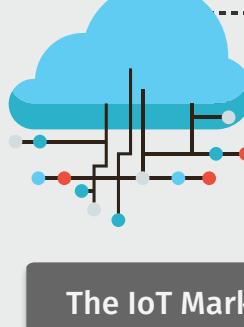


# THE DEFINITIVE GUIDE TO THE INTERNET OF THINGS



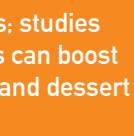
## The IoT Market Continues to Grow

The IoT market will swell to **\$4.3 TRILLION USD** by 2020 according to Machina Research.

The number of IoT devices will grow to **26 BILLION UNITS** in the US by 2020 according to Gartner.

## Many Industries Will Gain from IoT

**27%** of the value in future IoT revenue will be in manufacturing.



"Smart" IoT / M2M-enabled factories alone could reap **\$1.9 TRILLION USD** in profits between now and 2022.

Restaurants can be more efficient and improve their profits: studies have shown IoT systems can boost appetizers sales by 20% and dessert sales by 30%

IoT devices reduced emergency hospital admission by 20% and even mortality rates by 45%

Fleet telematics solutions can enhance delivery performance increase service radius, reduce payroll and cut down on truck idle times

The utilities market could save an estimated \$20 billion worldwide by 2020 vs. manual meter readings

## Digital Data & Calibration

Data collected by IoT / M2M sensors must be converted into a range of digital values to be used by the application. Calibration of the sensor signals may also be needed to ensure that the data reading is accurate to the required degree.

## Content-Encoding

When a device transmits its data to the servers and receives commands and instructions from the servers, both the device and server must agree on the format and information that is sent.

Here are the most common industry formats:

JSON (JavaScript Object Notation) is readable by humans

MQTT (Message Queuing Telemetry Transport) is non-human readable

COAP (Constrained Application Protocol) is readable by humans

XMP (Extensible Messaging and Presence Protocol) is non-human readable

INTRUSION DETECTION

DETECTION

PHYSICAL ACCESS SECURITY

Provide secured entrance to the data center

SECURITY TRAINING

Train employees on how to secure computers and devices; Also understand data safety

SOFTWARE UPDATES

Ensure there is a policy to implement the latest version of the software for security fixes

Carrier/Operator Selection

Supply Chain Management

Device Management

Customer Support Process

Device Certification

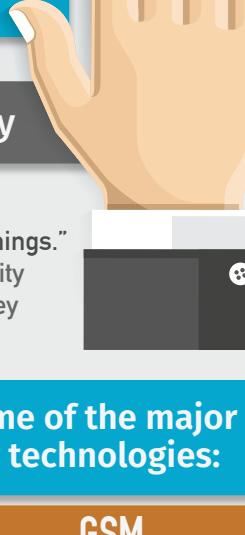
AERIS

aeris

## A VISUAL WALK-THROUGH



## Key Parts of the IoT Process and What You Need to Know



### Connectivity

Think of connectivity as the "Internet" in the "Internet of Things." You need to select a connectivity solution for the devices, so they are talking to each other.

### Here are some of the major connectivity technologies:

#### CDMA

(Code Division Multiple Access)

#### GSM

(Global System for Mobile Communications)

### Wired connections

### Wireless technologies

-Long-range: 2G, 3G, 4G/LTE and 5G

-Short-range: Bluetooth, Zigbee, 6LowPAN

### IoT / M2M Sensors

A sensor is a device that detects or measures a physical property and records, indicates or otherwise responds to it.

Here are the most common type of sensors:

#### Accelerometers (measure acceleration or change in velocity)

#### Multi-Axis Accelerometers (measure the change in speed or vibration in more than one direction or dimension)

Temperature Sensors (measure the temperature and is most often used in industrial applications where a temperature reading is needed for process control)

Light Sensors (cover a broad range of potential applications from automated brightness control to medical diagnostics equipment)

MEMS Sensors (Micro-Electro-Mechanical Systems)

Simple Switch Sensors (measure whether something is "open" or "closed")

### IoT Analytics

Devices usually report data in constant streams which typically must be processed in real-time or near-real-time. Given a large amount of streamed data, it is important to analyze the data, determine what is useful and extract the relevant information.

Here are also major type of analytics:

#### Descriptive Analytics

Gives a numerical representation of the data that is on hand right now.

Answers questions like:  
"What happened?"  
"How often?"  
"How accurate?"

#### Diagnostic Analytics

This type of analytics is often combined with descriptive analytics, and together they can give data greater interactivity.

Answers questions like:  
"Why did this happen?"

#### Predictive Analytics

Provides a means of projecting what will happen next based on what has happened in the past.

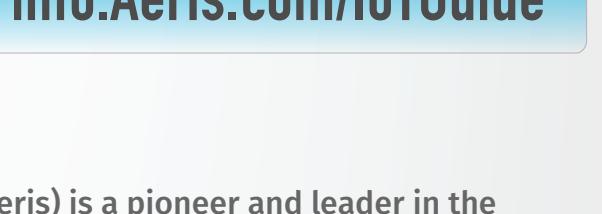
#### Prescriptive Analytics

Uses models to both recommend actions and forecast outcomes to reduce risk.

### Implement an IoT Solution

Once an IoT device and application have been built, managing the entire lifecycle becomes critical.

Here are the key components of the deployment process:



Get the eBook at  
[info.Aeris.com/IoTGuide](http://info.Aeris.com/IoTGuide)

ABOUT AERIS

Aeris Communications, Inc. (Aeris) is a pioneer and leader in the machine-to-machine (M2M) market, an integral part of the Internet of Things, (IoT). We are both a technology provider and a cellular network operator delivering comprehensive M2M / IoT services to leading brands around the world. In other words, we put the "Internet" in the Internet of Things.

[www.aeris.com](http://www.aeris.com)

©2015