The growth of the Internet of Things (IoT) predicts a staggering growth in the number of chip-enabled devices, and in the amount of data that will be collected from these devices and processed in data centers. As the number of devices grows, the amount of data generated expands exponentially – especially since much more is at stake if devices fail. Fortunately, businesses are rising to meet the challenge.

### The Impact of IoT on Semiconductor Fabrics

**Challenges for Fabricators**

1. **Capacity and Cost**
   - Fabricators must grow dramatically to keep up with the explosion of data being collected from devices.
   - The global market for processors is expected to grow by roughly 350% by the year 2025.

2. **Performance and Complexity**
   - Chip designs are increasingly complex in their geometries and materials, requiring more process steps and more care in handling.
   - Perfection is required at every step. Put simply, “every chip matters.”

3. **Yield and Reliability**
   - Material and environmental purity will be scrutinized at every step to ensure high yield and high reliability, particularly for chips in critical uses.

**Annual Size of Global Data Sphere**

- **Source:** IHS, 2016
- **Source:** IHS, 2017

**75 Billion IoT Devices. We Cannot Afford Defects.**

- With the migration from 4G to 5G networks, and the explosion of “smart” everything, the number of chip-enabled IoT devices is expected to grow from ~23 billion in 2018 to 75 billion devices by the year 2025. These devices fall into a number of industries, including those critical for our health and safety.

**IoT Semiconductors Market**

- **Medical**
  - Medical smart home
  - Smart city
  - Transportation

- **Chip-enabled medical devices**
  - Can provide real-time health data to doctors and patients.

- **Basic appliances,** lighting systems, environmental controls, and security systems will have intelligence and connectivity.

- **Law enforcement and traffic regulation** can be enhanced with widespread use of sensors, cameras, and control systems.

- **Cameras and sensors** abound in modern vehicles and public transportation, eventually leading toward self-driving technology.

Learn More

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