IoT Paradigm

CSI 421-Internet Of Things

Universitas Esa Unggul

- IoT Paradigm

- **Semua Bahan mengacu kepada buku :** The Internet of Things: Enabling Technologies, Platforms, and Use Cases [Pethuru Raj, Anupama C. Raman]

Why the IoT Is Strategically Sound

- ***IoT Leads to Smarter Computing***
- ***IoT Delivers Smarter Environments***
- ***IoT Prescribes the Shift toward People IT***

Enterprise transformation happens by doing the following ve things:

1. Infrastructure optimization
2. Process excellence
3. Architecture assimilation
4. Technology adaption and adoption
5. Leverage data (internal as well as external) toward actionable insights

The Diversity of IoT Data Sources

- *Data from passive sources*
- *Data from active sources*
- *Data from dynamic sources (fog devices)*

The evolution of the Internet paradigm

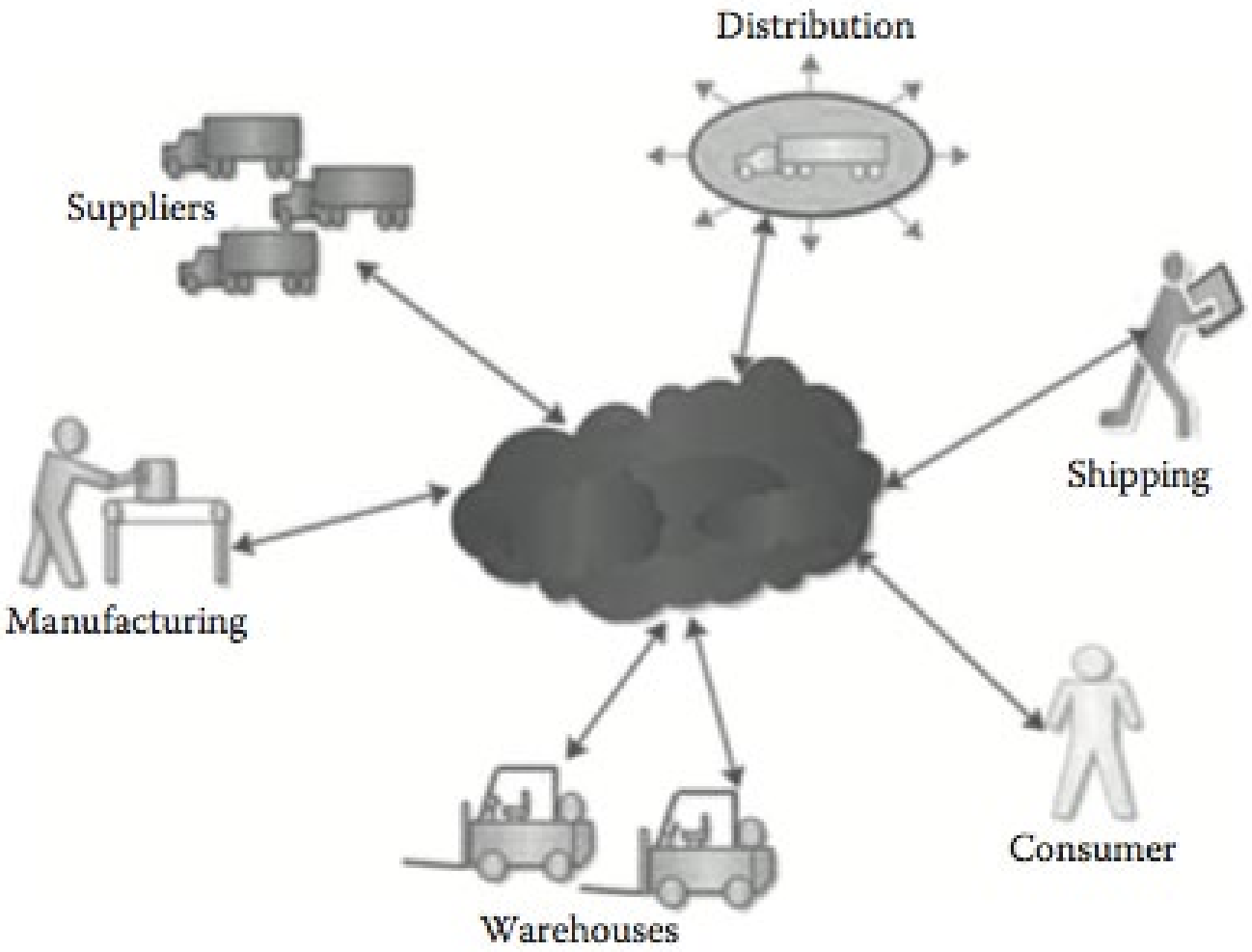
At the Connectivity and Infrastructure Level
The Internet of Computers (IoC)
The Internet of Devices (IoD)
The Internet of Services (IoS)
The Internet of Things (IoT)
The Internet of Energy (IoE)

At the Content and Service Level
Web 1.0 (The simple web - Reading only)
Web 2.0 (The social web - Reading and writing)
Web 3.0 (The semantic web - The automated searching and delivering right and relevant info for human interpretation)
Web 4.0 (The smart web - Real time extraction and delivery of actionable insights to human consumption)

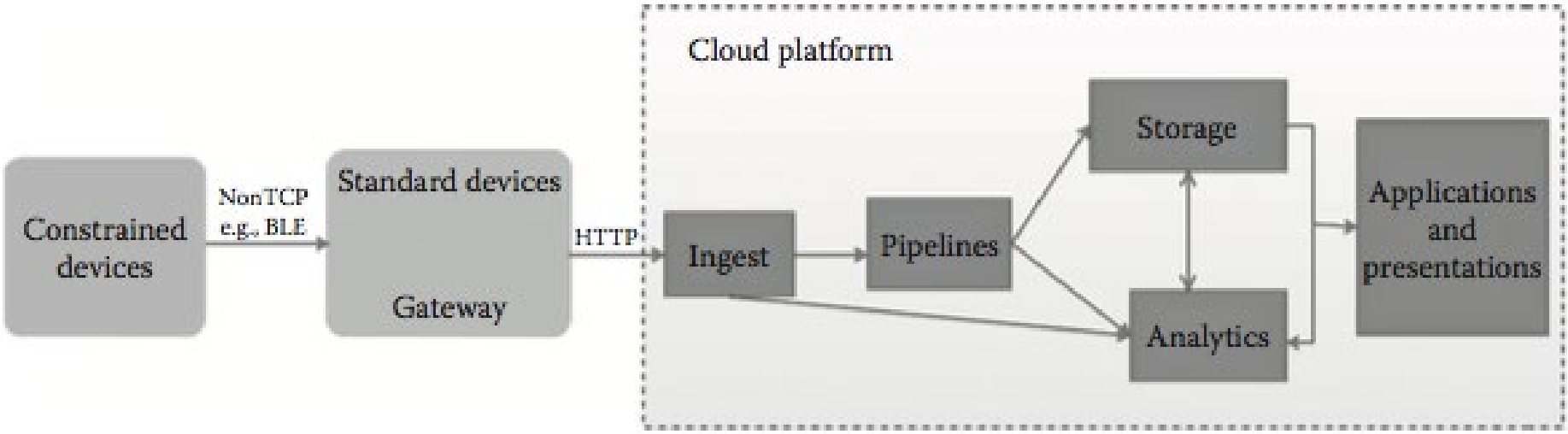
The Popular M2M Applications

- *Smart Energy*
- *Smart Health Care*
- *Smart Home Security*
- *Smart Cargo Handling*
- *Smart Traffic Management*
- *Smart Inventory and Replenishment Management*
- *Smart Cash Payment*
- *Smart Tracking*
- *Smart Displays*
- *Smart Cargo Handling*
- *Smart Traffic Management*
- *Smart Inventory and Replenishment Management*
- *Smart Cash Payment*
- *Smart Tracking*
- *Smart Displays*
- *Smarter Manufacturing*
- *Smart Asset Management*
- *Smarter Retailing*

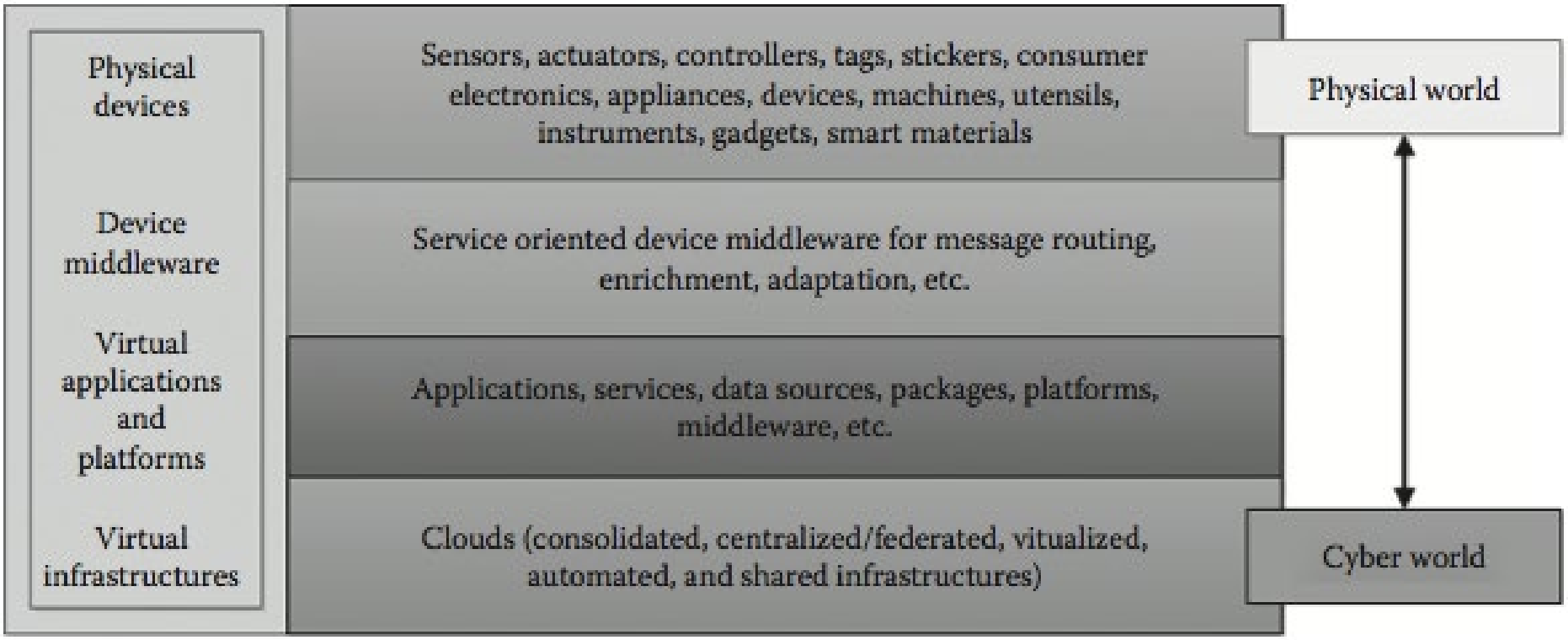
A cloud-based integrated environment



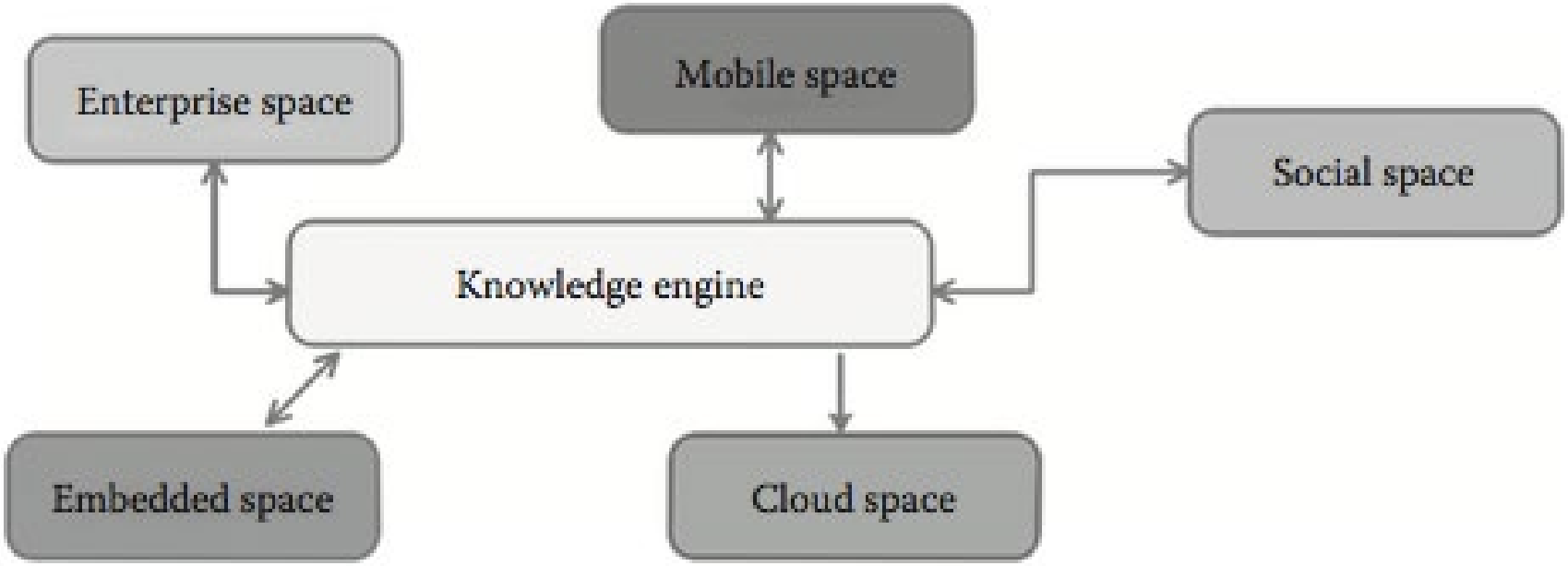
Google cloud platform architecture for stream processing from millions of intelligent devices.



The integration of cyber and physical worlds.



The futuristic integrated environments.



The IoT: The Key Application Domains

- *New business possibilities*
- *Tending toward the insights as a service* **(***IaaS***)** *era*
- *Fresh revenue opportunities*
- *Automation at its peak*

The IoT Challenges and the Research Domains

- *Energy-efficient device architectures*
- *Elastic IoT infrastructures*
- *Highly optimized communication protocol*
- *Data deduplication and compression mechanisms*
- *Data reliability*
- *Device security*

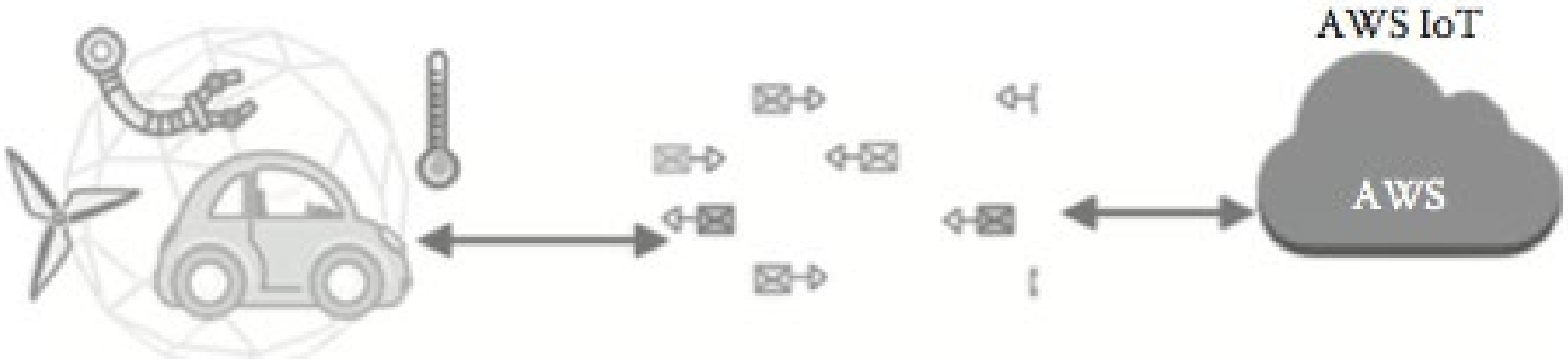
The Industrial Internet of Things (IIoT)

- *Improving operational effciency*
- *Optimizing assets*
- *Envisioning next-gen services*
- *Exploring fresh avenues for higher revenues*

Few sectors wherein the IoT is bound to make waves of distinct automation:

- *Automotive industry*
- *Energy industry*
- *Health care*
- *Industrial*
- *Retail*
- *Smart buildings*

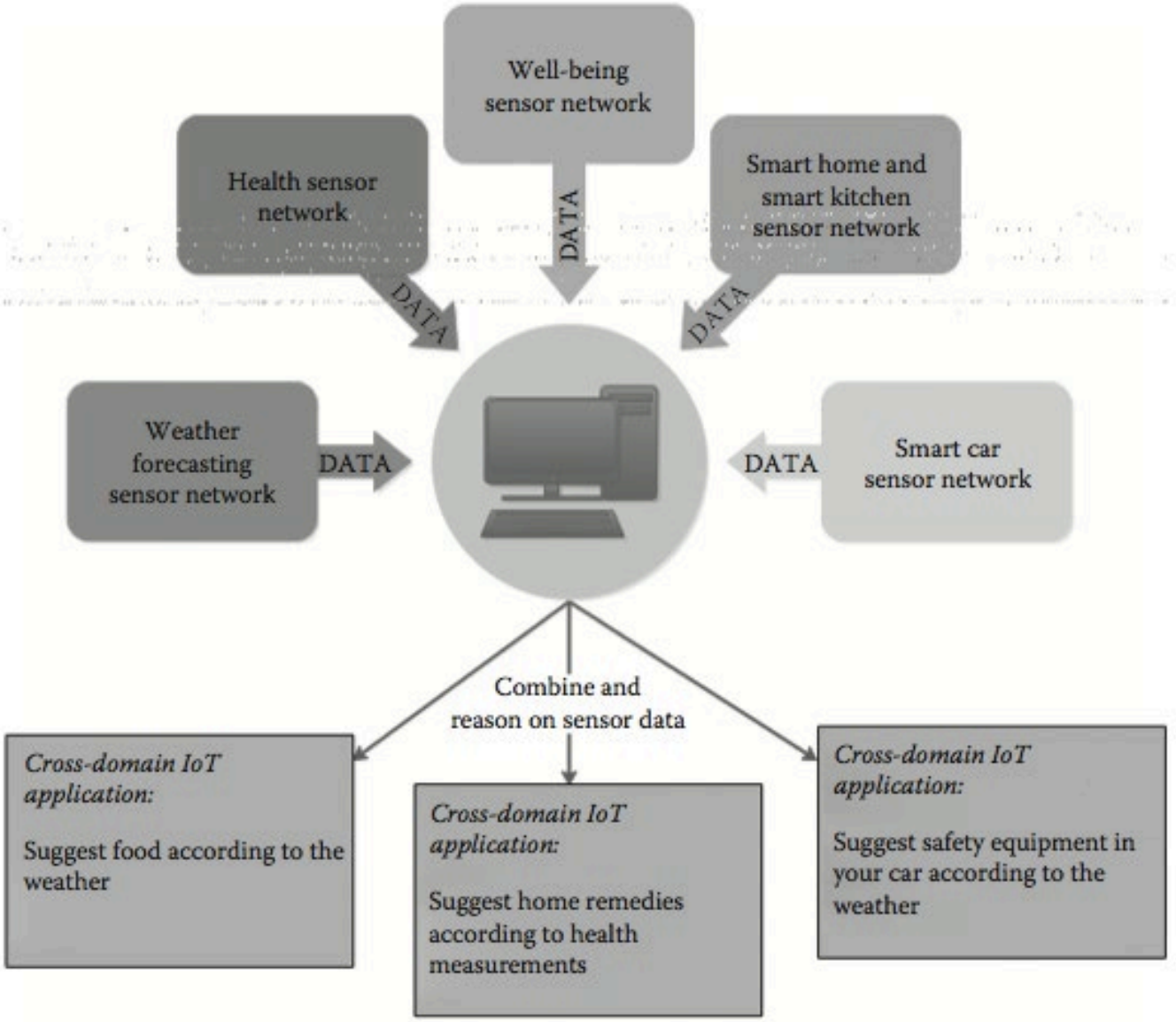
Device-to-cloud integration by AWS IoT.



Consumer IoT market are as follows:

- Revenue generation solutions
- An ecosystem of developers to create great apps
- Help at the design stage to make apps an integral part of a manufacturer's IoT strategy
- A global highly scalable cloud platform to handle connections with millions of connected devices
- Security solutions for authentication and data protection
- Compelling on-device and companion app store experience
- Web stores for ease of viewing IoT app catalog on regular devices
- Software updating and management solutions
- An app supply chain compatible with, and tested for, each device
- Integrations with the device and the manufacturer's back-end systems
- Support for the lifecycle of the device software

Device-to-device (D2D) integration



The semantic IoT platform architecture for weather information service engine