

Introduction

Look forward to the death of IoT as a standalone component and long live IoT technology in business and enterprise systems.

Source: <https://sdtimes.com/iiot/iiot-dead-long-live-iiot/>

IIOT Layers

Six layers of IOT



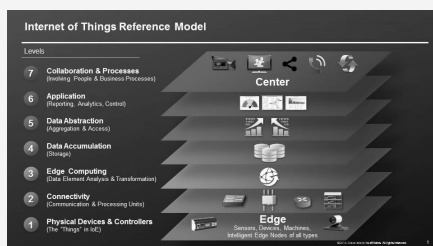
Six Layers of the Industrial Internet of Things

- 1. The 'thing' or mechanical part:** a motor, excavator or part of a building.
- 2. Sensors and actuators with embedded software:** this makes the thing into a 'smart connected product' – sometimes called an 'IoT device.'
- 3. Connectivity:** enables 'products' to communicate with back-end systems. In large, complex systems this often includes 'edge computers' that act as collection points for the data and provide pre-processing before data is sent to the cloud.
- 4. Product access and data routing:** systems that control and manage who has access to what.
- 5. Product-specific software applications:** this layer makes appropriate connections and integration with other enterprise applications.
- 6. Enterprise applications:** Includes analytics, often provided through cloud computing. for example, ERP, PLM and MRO (maintenance, repair and operation) systems.

The main players of Industrial IoT (cont)

- **The routers that collect data from devices and route it to the Internet** (or wherever it needs to go) from Aruba, Cisco, Dell, Ericsson, Juniper and others, are increasing their capability and flexibility with SDN (Software Defined Networking). Electric Imp offers products and services to add connectivity to products and create software for the product and its back-end systems.
- **'Edge' or 'fog' computing** is becoming critical to industrial IoT solutions because of the huge amounts of data being collected by billions of sensors. Edge computers pre-process this data before sending it to the cloud. This reduces data traffic, increases resilience and improves security by 'ring-fencing' groups of devices. Edge computing is a major thrust for Cisco, Foghorn and HPE who all have products that help consolidate and analyse data before it is sent up to the IoT platform in the cloud. The cloud computing providers also provide edge compute capability by different means, for example Amazon has AWS Greengrass and Microsoft has Azure IoT Edge..
- **Enterprise software** – providers of critical enterprise systems such as SAP and IFS (ERP systems) and Salesforce (CRM) are providing IoT capability.
- **BIM/AEC providers** such as Bentley, Intergraph (Hexagon) and Trimble are using IoT in their solutions in several ways including logistics, security, wearables and drones.
- **System Integrators / Management Consultants** – most major consulting / systems integration companies include IIoT as an important part of 'digital transformation' –leveraging digital technology such as IoT to radically change the way a company works and does business. This moves them towards 'Industry 4.0' and is an essential part of the Fourth Industrial Revolution (4IR).

Industrial Internet of Things - IIOT



The main players of Industrial IoT

■ **Industrial automation companies** such as GE, Rockwell Automation and Siemens have known for many years the value of control systems and data acquisition, and it even has a name – ‘SCADA’ (Supervisory Control and Data Acquisition). They now offer IoT capability, often integrated with their SCADA systems.

■ **The major ‘cloud computing’ providers;** Amazon, Google, IBM, Microsoft and Oracle, also offer comprehensive IoT platforms.

■ **The big four PLM companies:** Autodesk, Dassault Systèmes, PTC and Siemens – provide IoT platforms.

■ **Specialist IoT providers** such as Aeris, Arkessa, Electric Imp, Exosite and RTI have developed their own IoT products.

■ **At the ‘microprocessor end’ of the IoT stack,** companies like ARM, Intel and Texas Instruments are expanding their solutions to support IoT ‘from the ground up’ using embedded software and sensors.

■ **Communications companies** like AT&T, BT and NTT provide connectivity products from global cellular through satellite to low power wide area and short-range communications.



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