Pakistan School on

Internet Governance – pkSIG

Karachi, Pakistan.

Sep 2018

THE INTERNET OF THINGS (IOT) – ~~TECHNOLOGY & ENGINEERING PERSPECTIVE~~

Zakir Syed

PKSIG
Pakistan School on Internet Governance

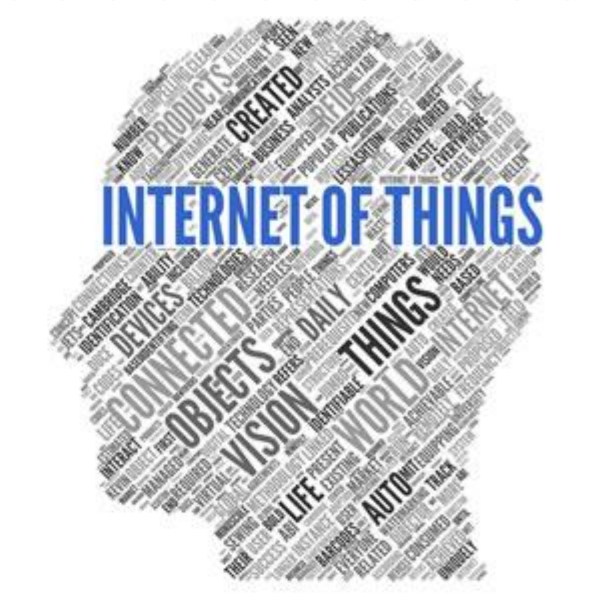
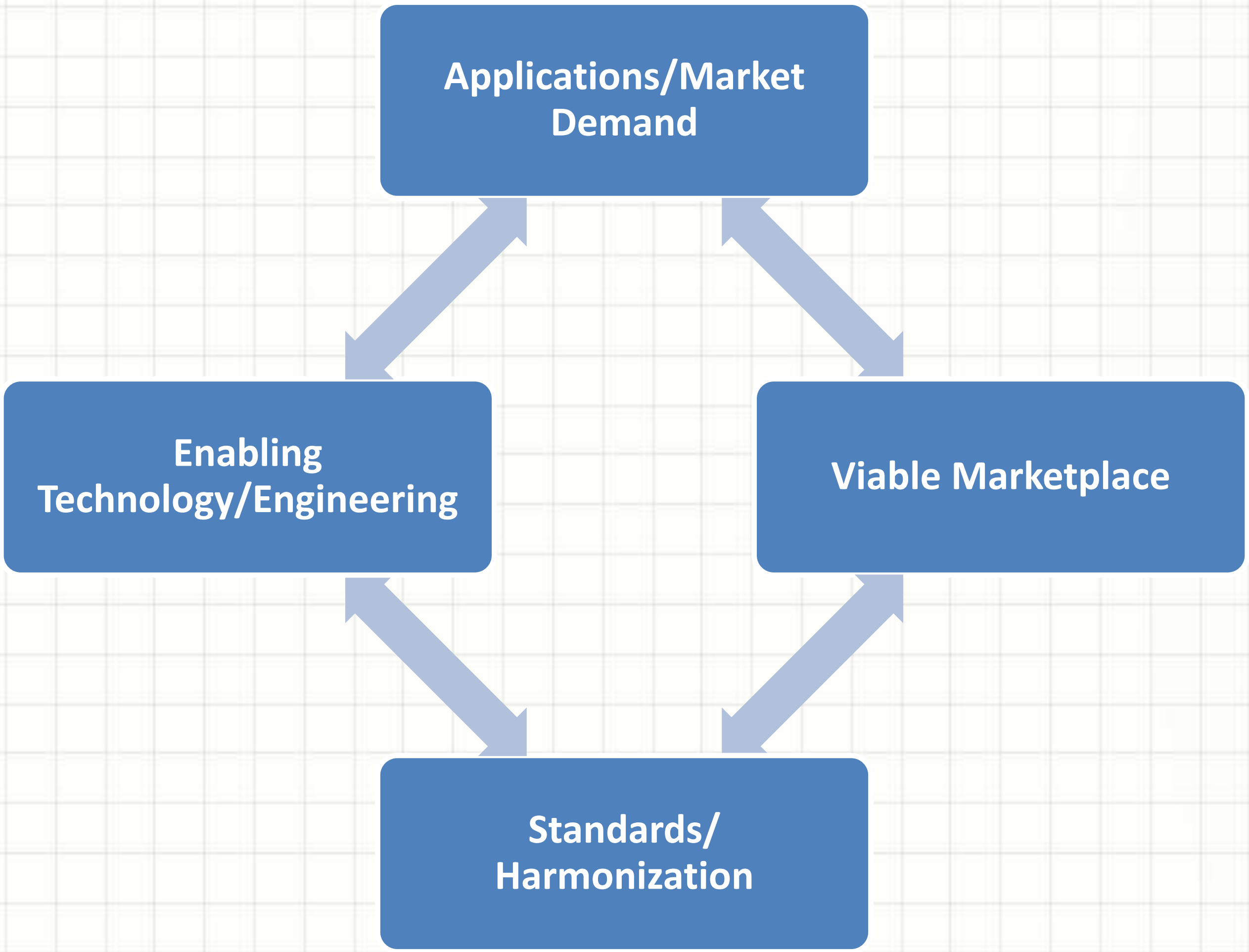


Image: engineering.com

The term “internet of things” —IoT is used to describe everything that we don’t usually think of as a computer (or a mobile phone) that is connected to the internet.

Internet of Things – Ecosystem



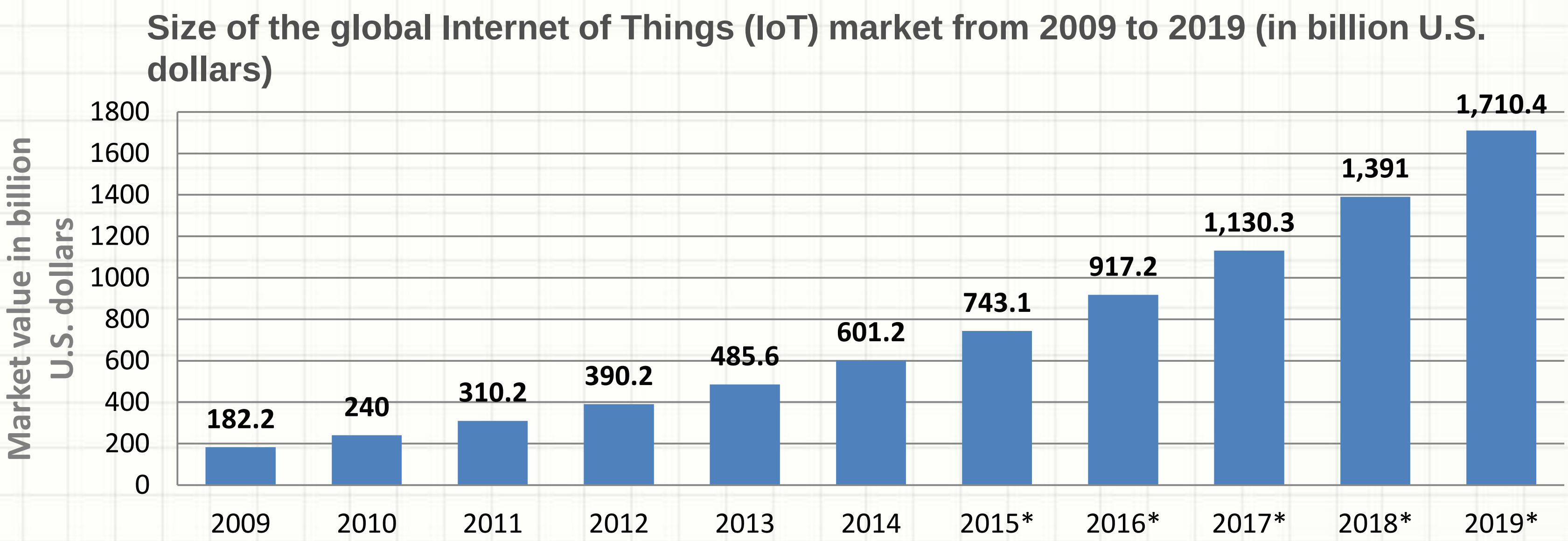
Internet of Things – Global Trends

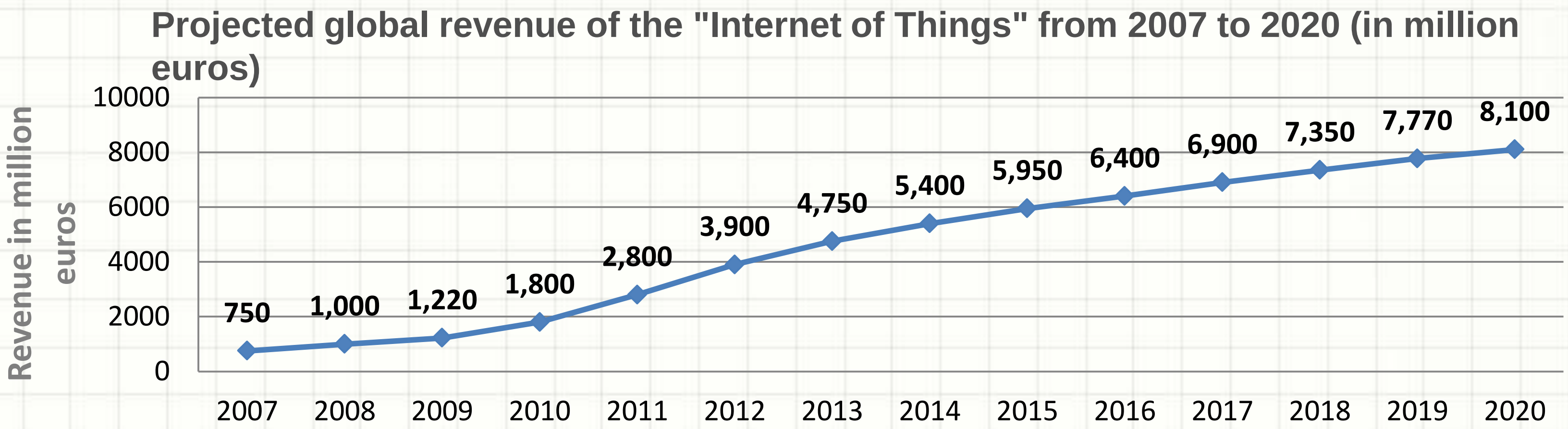
- Gartner expects 26 billion connected devices by 2020
- Cisco has forecast 50 billion devices by then.
- McKinsey forecasts the value generated to be up to $11 trillion per annum by 2025

- By 2020, 90% of consumer cars will have an Internet connection, up from less than 10 percent in 2013

- Estimates vary about how many “things” will be connected to the Internet by 2020, but the more conservative sources put that figure at around 26 billion, double the 13 billion figure connected in 2015.

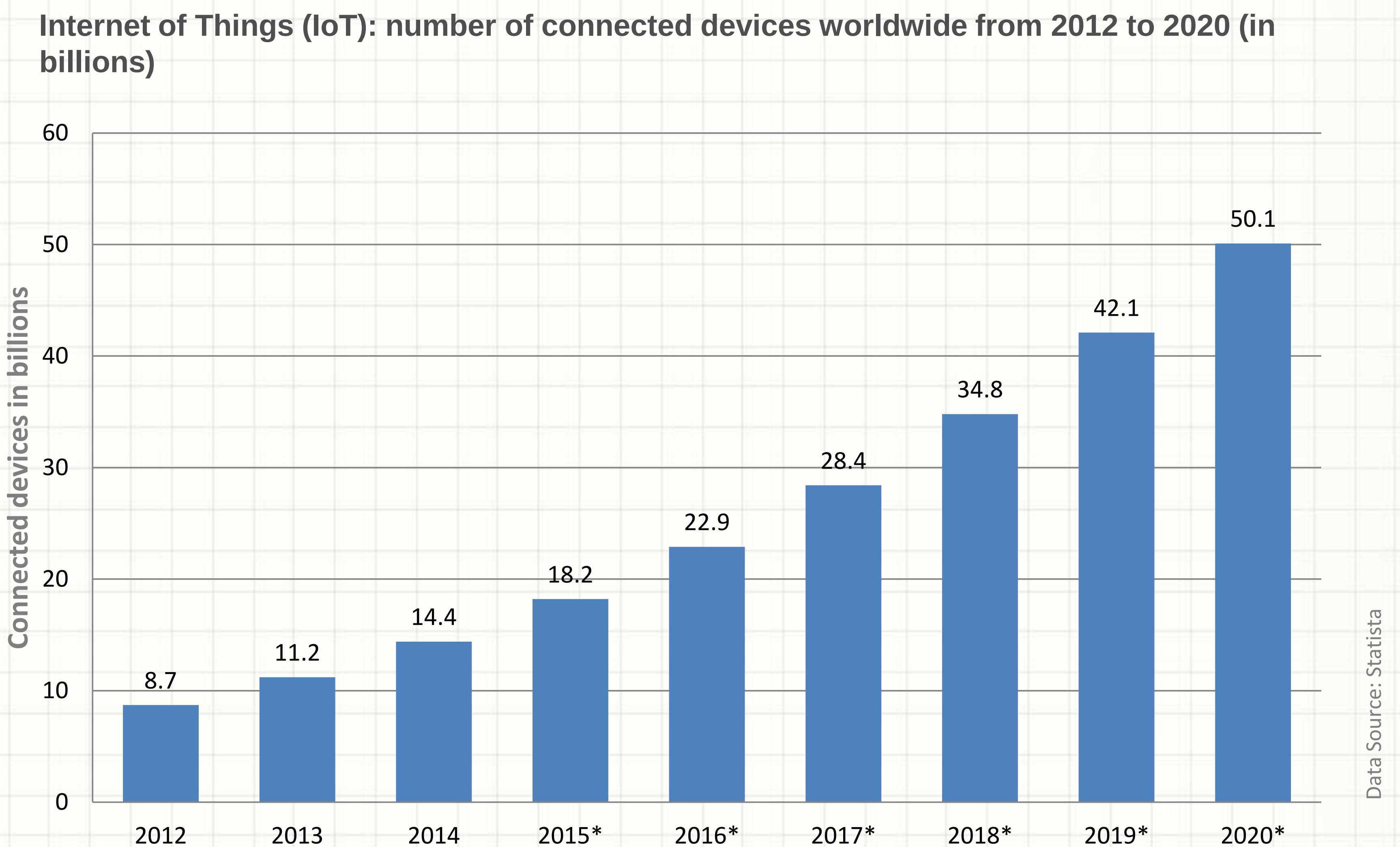
Internet of Things – Global Trends





Data Source: Statista

Internet of Things – Global Trends



Internet of Things – Recent Developments

Apple's HealthKit: A platform that functions as a dashboard for a number of critical metrics as well as a hub for selected third-party fitness products as a way to help protect health information that some connected devices may collect.

Microsoft's Microsoft Health: , A "cloud-based service that work in conjunction with Microsoft's HealthVault, which offers "a trusted place to store health information and share it with medical professionals on a security-enhanced platform.

Intel's IoT Platform: Released to kick start development in the IoT space. It is designed to make it easier for developers to connect devices securely, bring device data to the cloud, and make sense of that data with analytics.

Internet of Things – Recent Developments

BIG DATA

Whitehouse Big Data Report: “the notice and consent framework threatens to be overcome” in certain instances, “**such as the collection of ambient data by our household appliances.”**

Europe’s Article 29WG – Issued an opinion on recent developments on IoT. It says, **“users must remain in complete control of their personal data** throughout the product lifecycle and when organizations rely on consent as a basis for processing, the consent should be fully informed, freely given and specific.

The U.S. National Highway Traffic Safety Administration and FBI issued a warning about **cars being “increasingly vulnerable” to hacking**.

Proposed legislation - Whether or not **car hacking will be punishable by life in prison**—at least, in Michigan.

Part of IoTUK, an integrated £40 million, three-year, government program that seeks to advance the UK’s global leadership in IoT and **increase the adoption of high quality IoT technologies and services.**

Internet of Things – Recent Developments

In addition to the policy work by governments – international bodies and standards organizations related to IoT, continue to contribute to the development of this evolving area. For example:

oneM2M: A global standards body, released a proposed security standard for IoT devices. The standard addresses issues such as **authentication**, **identity management**, and **access control**.

AllSeen Alliance: A cross-industry consortium dedicated to enabling the **interoperability** of billions of devices, services and apps that comprise the Internet of Things. (AllJoyn OpenSource Framework)

IoTivity: An open source software framework enabling seamless device-to-device **connectivity** to address the emerging needs of the Internet of Things.

Released **IoT Trust Framework.** Guidance for device manufacturers and developers to enhance the security, privacy and sustainability of their devices and data they collect.

Internet of Things – Recent Developments

Internet Society published a detailed whitepaper providing an overview of the IoT and exploring related **issues** and **challenges**.

To bring clarity and disseminate this information globally, IEEE has launched the IoT **Technical** Community.

To promote a unified approach in ITU-T for development of **technical standards** (Recommendations) enabling IoT on a global scale. It is now, Study Group 20 on *"IoT and its applications including smart cities and communities".*

GSMA's Mobile IoT Initiative – to accelerate the **commercial** availability of Low Power Wide Area (LPWA) solutions in **licensed spectrum**.

IETF IoT WG, IPv6 over Low-power WPAN (6LoWPAN). For **adapting IPv6** to IEEE 802.15.4 (WPAN) networks that use very small packet sizes by means of header compression. IETF97 – The I in IoT: Implications for a Global Open Internet.

From the Internet of things to the Internet of Botnets!

Image: hackread.com

A picture is worth a thousand words but I am not an artist!

Internet of Things – Way Forward

- The risk of an **inadequate legal framework** regulating the IoT requires urgent action on a global scale and may require new approaches in standardization, legislation, and regulation.

- The IoT domain is evolving and may well develop into its **most challenging and most rewarding area**— from a research & development point of view and, hopefully, from business & economical point of view as well.

- A **complexity** with IoT comes from the fact that IoT intends to support a number of different applications **covering a wide array of disciplines** that are not part of the ICT domain.

- To be able to reap the many potential benefits of the IoT, several challenges regarding the **design and execution** of IoT related processes need to be **revisited** in order to see wider and in particular commercial deployments of IoT.

Thank you!

Q&A