Ministry of Transport

ICT BULLETIN

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5G

5th Generation Mobile Network

5G is the 5th generation mobile network. It is a new global wireless standard after 1G, 2G, 3G, and 4G networks. 5G enables a new kind of network that is designed to connect virtually everyone and everything together including machines, objects, and devices.

5G wireless technology is meant to deliver higher multi-Gbps peak data speeds, ultra low latency, more reliability, massive network capacity, increased availability, and a more uniform user experience to more users. Higher performance and improved efficiency empower new user experiences and connects new industries

5G is an investment for the next decade, and in previous mobile transitions, we've seen most of the big changes happening years after the first announcement. Take 4G, for instance. The first 4G phones in the US appeared in 2010, but the 4G applications that changed our world didn't appear until later. Snapchat came in 2012, and Uber became widespread in 2013. Video calls over LTE networks also became big in the US around 2013. With the 5G transition, there's another twist.

There are three main kinds of 5G—low-band, mid-band, and high-band—and while the US put its bet on low and high, it turns out that mid-band is probably the best way to do it. Here in the US there aren't much in terms of mid-band airwaves available for 5G. The government is playing catchup and will auction some off at the end of 2020.

Starlink

SpaceX is the popular private space agencies and its quest to enter into the broadband service, the SpaceX Starlink mission will bring a revolution in this sector. Recently, the founder of SpaceX; Elon Musk has launched 58 Starlink satellites into space making it a total of 480 satellites into the Low Earth Orbit (LEO).

Figure 1 Cameras on the International Space Station capture Spacex Starlink Satellite "Train" over an aurora

Objectives

The main aim of Starlink project is to provide high-speed internet service to customers around the world, especially in remote or under-served areas. The internet speed is expected and propelled to be 1GB/sec. However, SpaceX's internet access will first be presented in only two countries, the USA and Canada.

The company also stated that the positive cash flow from selling satellite internet services would be necessary to fund their Mars plans. SpaceX has long-term plans to develop and deploy a version of the satellite communication system to serve Mars.

Figure 2 SpaceX's Starlink user terminal to receive Starlink's signal.

Development

Product development began in 2015. Two prototype test-flight satellites were launched in February 2018. Additional test satellites and 60 operational satellites were deployed in May 2019.

Deployments

As of September 2020, SpaceX was launching up to 60 satellites at a time, aiming to deploy 1,440 spacecraft to provide near-global service by late 2021 or 2022. SpaceX planned a private beta service in the Northern United States and Canada by August 2020 and a public beta in November 2020.
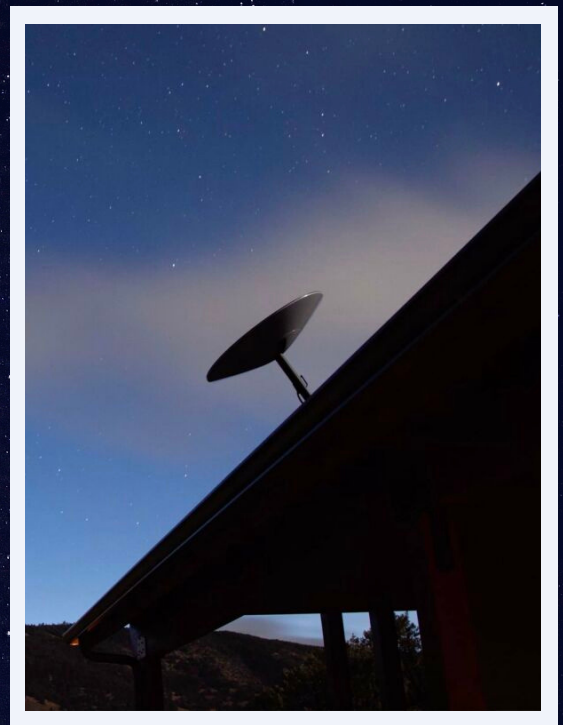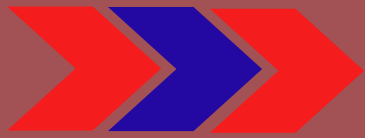
Prasarana myrapidTap Cashless Payment App
Limited To MRT Feeder Buses For Now

CONTRIBUTER: NORAIDA MOHAMED
SOURCE: PRASARANA

Prasarana has recently developed myrapidTap, the app allows its users to use cashless payment for the use of the company's services including Rapid Transit buses, LRT, and so on myrapidTap is intended to be an alternative payment method for users who rely on their public transport services. MyrapidTap application is another ongoing initiative from Prasarana and its subsidiaries to further facilitate the public in using public transport (provided by the company) through technological advances, especially promoting a cashless payment system.

The app is also planned to be further expanded and include a travel planning facility for city dwellers to plan their travel accordingly. Basically, the new myrapidTap application enables you to pay for your public transport fares wirelessly by scanning a QR code.

However, the only MyRapid service that supports this approach at this time are MRT feeder buses, and it is not known when this would be implemented to its other transportation modes such as its train and intercity bus services. Being a cashless payment option for MyRapid users, myrapidTap also functions as yet another e-Wallet mobile application. With no ability of allowing users to redirect payments to third party cashless payment apps such as Boost or GrabPay, this means that they are required to top up the app's own e-Wallet amount for the services. It is clear that Prasarana are planning to take the app an extra mile further by introducing eCommerce features such as in-app online shopping.

Prasarana may also take advantage of the app's e-Wallet and cashless payment capabilities to compete with other services such as Boost, GrabPay and even Touch 'n Go E-wallet in the near future.
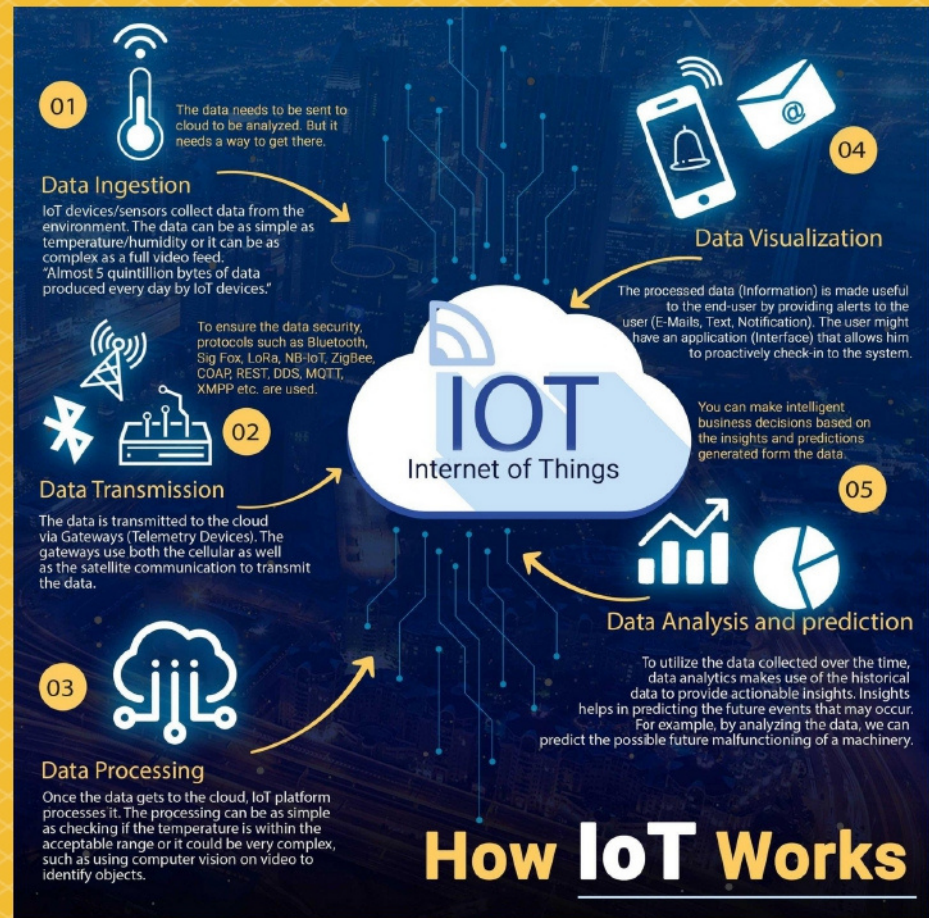
What IoT (Internet of Things)

The Internet Of Things describes the network of physical object, everyday objects or things that are embedded with sensors, software, electronics, other forms of hardware and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet.
They also can be remotely monitored and controlled.

The steps involved around IoT

01

The data needs to be sent to cloud to be analyzed. But it needs a way to get there.

Data Ingestion

IoT devices/sensors collect data from the environment. The data can be as simple as temperature/humidity or it can be as complex as a full video feed.
"Almost 5 quintillion bytes of data produced every day by IoT devices."

To ensure the data security, protocols such as Bluetooth, Sig Fox, LoRa, NB-IoT, ZigBee, COAP, REST, DDS, MQTT, XMPP etc. are used.

02

Data Transmission

The data is transmitted to the cloud via Gateways (Telemetry Devices). The gateways use both the cellular as well as the satellite communication to transmit the data.

03

Data Processing

Once the data gets to the cloud, IoT platform processes it. The processing can be as simple as checking if the temperature is within the acceptable range or it could be very complex, such as using computer vision on video to identify objects.

IOT Internet of Things

04

Data Visualization

The processed data (Information) is made useful to the end-user by providing alerts to the user (E-Mails, Text, Notification). The user might have an application (Interface) that allows him to proactively check-in to the system.

You can make intelligent business decisions based on the insights and predictions generated form the data.

05

Data Analysis and prediction

To utilize the data collected over the time, data analytics makes use of the historical data to provide actionable insights. Insights helps in predicting the future events that may occur. For example, by analyzing the data, we can predict the possible future malfunctioning of a machinery.

How IoT Works

How IoT works?

- Data Ingestion
- Data Transmission
- Data Processing
- Data Visualization
- Data Analysis & Prediction

IoT Protocols

- **Bluetooth**
- **Zigbee**
- **Z-Wave**
- **6LoWPAN**
- **Thread**
- **WiFi**
- **Cellular**
- **NFC**
- **SigFox**
- **Neul**
- **LoRaWAN**

CONTRIBUTOR: NOR HASMA IDAYU
source: blogappscript.com

KEEP YOUR PASSWORD SAFE

1 DO NOT RE-USE YOUR OLD PASSWORDS WHEN ASKED TO CHANGE THE PASSWORD

2 DO NOT REVEAL YOUR PASSWORD FOR ANY REASON WHATSOEVER

3 DO NOT ENABLE THE 'SAVE PASSWORD' OPTION IF PROMPTED TO DO SO

4 DO NOT WRITE YOUR PASSWORD DOWN AND LEAVE IT LYING AROUND IN FULL VIEW

5 DO NOT USE THE SAME PASSWORD FOR WORK AND PERSONAL ACTIVITIES

YOUR DATA IS VALUABLE ASSET

KEEP IT SAFE

BYOD

(Bring Your Own Device)

Thousands of schools and companies around the nation are
going 'BYOD' to save big bucks by allowing students and employees to use their own personal mobile devices in the
classroom and office. The decision to go BYOD isn't one school a school or company should take lightly.
Here are some points to consider.

PROS

Students and employees can
use familiar devices to complete their tasks

BYOD saves companies and schools money
by allowing people to use devices they
already have.

Students and employees will likely remember
to bring devices if they enjoy using them.

Students stay engaged and take control
on their own learning

The technology students and employees
own tends to be more cutting edge

CONS

Students may forget to bring devices or their
charges

Students and employees may not be able to
afford these devices

Applications and tools may not be universal
across all platforms.

Getting everyone's devices to work together
can be difficult.

Better security and management result in IT
costs increasing.

Laravel

I would like to share my experience that developers might missed in development using Laravel PHP framework. Here you go;

1

Please use Laravel pagination in the beginning of development to display records in your grid such as dataTables. Many developers only will face problems after many records added to the system. In other frameworks pagination can be very painful but in Laravel it will be very convenient, easy-to-use pagination of database records with no configuration needed. No need to worry If you already developed the system, with very minimal changes you able to use pagination. Most probably you need to modify your eloquent query by adding ->paginate(15) at your controller and add one link {{ $paramterobject->links() }} at view (normally outside of foreach table loop).

2

Use eloquent relationships in Model rather than joining table in code. This will make your work easier and improve maintainability. With this relationship the complex joining become easier to implement. Sometimes it will slow the queries especially on heavy load of data with relationship but don't worry there are easy ways to modify your eloquent query like using "with". You can explore it later but for now try to use relationships using model first.
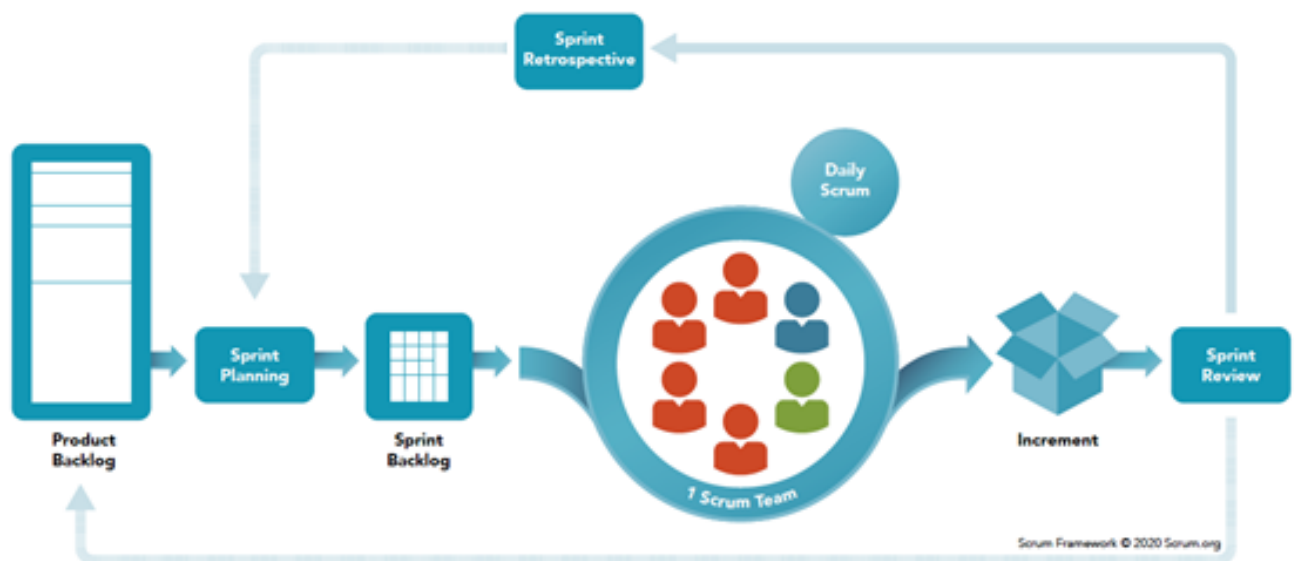
3

Let say you handle heavy load of traffic on your Laravel website, so you can consider using Laravel cache for your content. Sometimes we will have static content that will be hard coded in view. For that case you can use cache will be better to improve your performance. When we manually change it we can clear cache using artisan. Let say you have dynamic content such as daily updated content, so you can set duration as parameter in cache statement in your code. Finally for those already started APIs using Laravel framework this cache features will be very useful because your APIs no need to query database each time APIs are loaded and you can create or generate observer class that associated with specific model that you set in Laravel to clear cache once data added, updated or deleted from database. By using this your client response will be faster and same time database load will be less.

Contributor: Ts. Subramani Paiduthaly,

DEVELOPING SYSTEM USING AGILE METHODOLOGY

I am sure you guys heard about agile many times but only a few understand what agile methodology is and how to implement it in our organization. Do you know that the Ministry of Transport development team started using agile methodology in their software development? Many developers in government agencies or even in private companies will talk about agile methodology as their software development methodology but only a few implement it. I must congratulate the Ministry of Transport software development team to take initiative to try and implement this kind of methodology to achieve a rapid development strategy. In agile methodology, there are a few flavours or processes that you can use such as Scrum, Kanban and XP. In this article, I will only discuss Scrum agile process/ scrum framework. The primary stages in the scrum process are:

SCRUM FRAMEWORK

Scrum Framework © 2020 Scrum.org

1. **Creating a product backlog** – user stories as a prioritized list of development tasks. That means you just need to list out all your requirement as user stories.

2. **Sprint planning** – creating a sprint backlog – from the product backlog, sprint backlog should be created. Each sprint should be fit within 2 to 4 weeks that will produce working software at end of the sprint.

3. **Sprint work** – developing working software within the sprint. The scrum master will carry out a daily stand-up meeting or scrum meeting between team members to share progress and resolve problems experienced by the team. A few questions will be asked during the scrum meeting such as "What you have done yesterday?", "What problems are you experiencing currently?" and "What backlogs task do you have to settle it today?

4. **Testing and product demonstration** – towards the end of a sprint, the focus shifts to stabilizing and finalizing features, and conducting acceptance testing with product owners and customers.

1. **Creating a product backlog** – user stories as a prioritized list of development tasks. That means you just need to list out all your requirement as user stories.

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