LET'S TALK DIGITAL

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Let's Talk Digital is a monthly newsletter that was created to build awareness on Digital Banking and provide a platform for industry practitioners to share insight and current trends on this exciting subject matter in relation to the Banking and Finance industry.

Agile Organizations in a Digital Age

By Ian Goh Suan Hooi

The Digital Transformation is characterized by the need for organizations to be able to rapidly adapt to a rapidly evolving business landscape. This implies flexibility not just in IT systems, but in the way, companies are structured, how decisions are made and how value is measured. To this end, companies have had to rethink how they should be organized to be responsive in the Digital Age. This article presents some of the current thoughts on this subject

Run Your Code Without Managing Servers

By Koh Wyhow

You have an algorithm written in Python either in Google, Colab or Jupyter Notebook. How do you make it simple for your business users to run this code themselves? This is usually referred to as productionalizing your code. There are several ways to do this depending on your requirements, whether for internal or external clients. In this example, I demonstrate a way to do this using Google Cloud Functions. This example is also applicable in AWS' Lambda and Azure's Functions

To find out more about the Digital Banking programmes that ABS offers, visit

www.asianbankingschool.com/our-programmes/centre-for-digital-banking

Ian Goh Suan Hooi

With more than two decades in the industry, Ian's career spans multiple industries including Financial, Logistics, and Telecommunications both as a vendor and end user. He has held roles in multiple parts of the IT delivery value chain including operations, project and program management, systems integration and more recently IT strategy and architecture. He has experience in various domains including CRM, Business Intelligence and SOA.

Ian's current interest is in the impact of the digital economy on an organization. Given the need for agility within IT and the availability of Infrastructure, Platform and Software as near commodity services through cloud service providers, the lines between IT and business are blurring. Thus, requiring individuals to have a broader understanding of organizational dynamics and the need to embrace new approaches to service management such as bimodal IT, DevOps and Lean. Ian is passionate about helping IT professionals in redefining their role within this context.

Ian holds a master degree in electronics engineering and a bachelor degree in Information and Electronics Engineering from Curtin University, Western Australia. He also holds professional certifications from ITIL, TMForum, IASA and the Open Group.

Koh Wyhow

Koh Wyhow is the manager of the data science team at Star Media Group Berhad. He focuses on delivering advanced analytics and business intelligence solutions for the organisation like chatbots and image recognition solutions. He consulted for client in the airlines, media, property, and FMCG industries during his time as a senior consultant at EY's Data and Analytics team.

He was one of the data scientists which implemented strategies to run a national data-driven campaign for INVOKE in the 14th General Elections. As an independent learner, he picked up basic Python programming skills after office hours during his days as a Further Mathematics lecturer at a private college. Wyhow holds a BSc in Mathematics from the National University of Singapore.

AGILE ORGANIZATIONS IN A DIGITAL AGE

By Ian Goh Suan Hooi

The digital transformation is pervasive in its impact on an organization. More than about the use of technology, for an organization to effectively digitally transformed, it may have to challenge its preconceived ideas about organization structures and decision hierarchies.

If I were to choose one acronym to describe the current business environment, it would be VUCA (Volatility, Uncertainty, Complexity and Ambiguity).

The rate and difficulty in predicting change have created several conditions that require an organization's attention: -

- The demands of Customers, Vendors, and Regulators are changing to keep up with the evolving environment. The right go to market strategy one day may fall on the wayside as technology enables new access channels. New capabilities in digital IDs may require regulators to issue new guidelines to FIs. To cope, organizations must have the agility or nimbleness to change course when required.

- Access to Information (and misinformation) has never been easier. With the digitization of information, the volume, veracity, variety and velocity mean that organizations must rapidly and frequently communicate with customers, partners and colleagues.

- The definition of a "good" employee is evolving. Creative knowledge and the ability to learn have become more important. To attract and retain these "learning workers", organizations are required to offer a distinctive value proposition.

- Technology is disrupting traditional, well established business models. For example, ride share services disrupt Taxi services, Airbnb has disrupted the hotel industry and more recently, virtual banks and traditional banks. To remain relevant, organizations need to at least be aware of these threats and develop capabilities to deal with them.

In order to be responsive to the changes in the environment, McKinsey suggests that our view of organizations as rigid machines which served us well during the industrial and information age should be superseded with a view of organizations as a dynamic organism as described in figure 1 *https://www.mckinsey.com/business-functions/organization/our-insights/the-five-trademarks-of-agile-organizations*

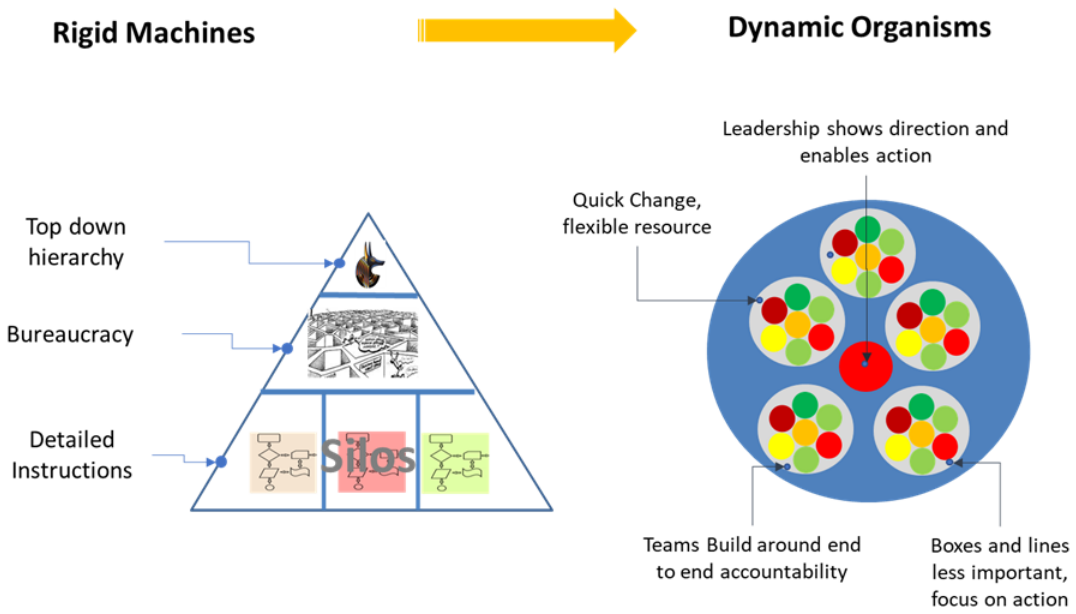

Figure 1: Organizations as Dynamic Organisms

Another way to look at this is that the traditional "Command and Control model" as we normally observed in traditional organizational hierarchies assume that Change is predictable and that an organization's goal is to become an efficient enterprise. This view is changing to one of "Sense and response", acknowledging that the nature of change itself is unpredictable and thus the goal of an enterprise is to be able to adapt to the changes i.e. an "adaptive enterprise" [Adaptive Enterprise: Stephen H. Haeckel 1999]

Five key characteristics of organizations which have achieved this agility as described by McKinsey are [*https://www.mckinsey.com/business-functions/organization/our-insights/how-to-create-an-agile-organization*]: -

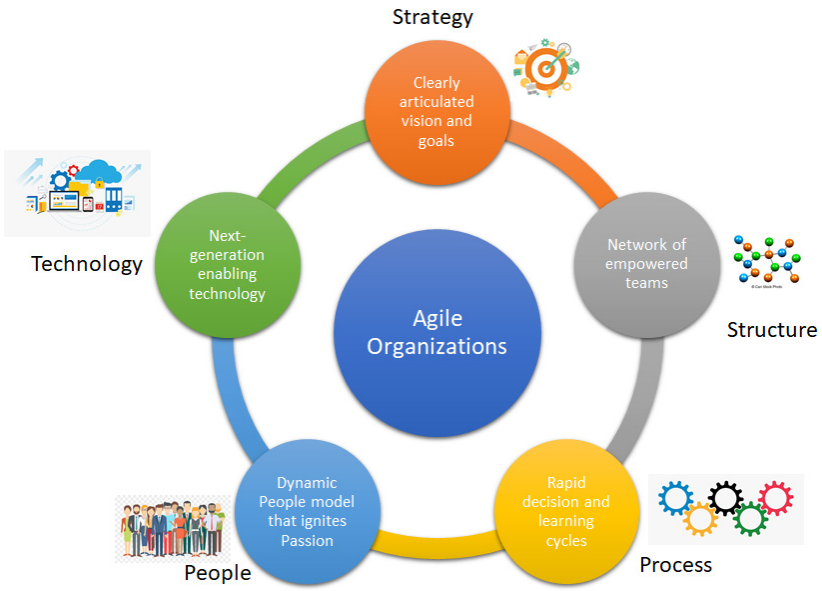

Figure 2: Characteristics of agile organizations

- **Strategy**
  - Agile organizations have clearly articulated visions and goals which are agreed upon and shared across the organization.
  - Proactively seek customer feedback and utilize the information to create new offerings or business models.
  - Clear metrics set up for resource allocation and are subject to regular review (i.e. know when to stop an initiative)

- **Structure**
  - Clear definition on the accountability of each roles
  - Decisions are made as close to the relevant teams as possible (minimize escalation)
  - Promote the development of external networks so the organization can have access to the best talents and ideas

- **Process**
  - Shared common language, processes and ways of work.
  - Shared goals measured by business impact, rather than activity.
  - Frequent and open discussions of performance against target

- **People**
  - Visionaries, architects, and coaches, rather than Planners, Directors and Controllers.
  - Promote positive peer behavior through a high trust environment rather than rules, processes, or hierarchies
  - Ability for employees to move horizontally or vertically between roles based on personal development goals.

- **Technology**
  - Incorporate technological innovations such as micro services, containers and serverless architectures.
  - Employ Cross functional teams throughout the entire product lifecycle
  - Extensive use of automated testing and deployment

A Case study of an Agile organization

An often-cited example of an agile organization is Spotify. Spotify is an international media services provider based in Sweden. It allows for users to browse for music or search for music by artist, album, genre, playlist or record label.

Users can create, edit and share playlists, share tracks on social media and make playlists for other users.

Spotify provides access to over 50 million songs, 450,000 podcasts and 2 billion playlists.

Multiple articles have been written on how their teams were structured (Two are referenced below). Instead of Divisions, Departments and Teams, Spotify speaks of Squads, Tribes, Chapters and Guilds.

https://medium.com/scaled-agile-framework/exploring-key-elements-of-spotifys-agile-scaling-model-471d2a23d7ea

https://www.youtube.com/watch?v=jyZEikKWhAU&feature=youtu.be

Spotify essentially developed their organization structure based on the following principles.

- Autonomy and trust
- Ownership and Accountability
- Failure is an opportunity to learn, innovate and change

Based on their own reports, these were the observed benefits.

- Enhanced velocity
- Processes are reduced to a minimum
- Minimized dependencies
- Lack of a firm structure makes problem solving easier
- Promotes clarity and transparency

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RUN YOUR CODE *WITHOUT MANAGING SERVERS*

By Koh Wyhow

Most data professionals run their Python or R scripts on notebooks hosted on their local machines, or on the cloud like AWS' SageMaker, GCP's AI Platform notebook, or even Google Colab. After writing code, it's likely your code will be used:

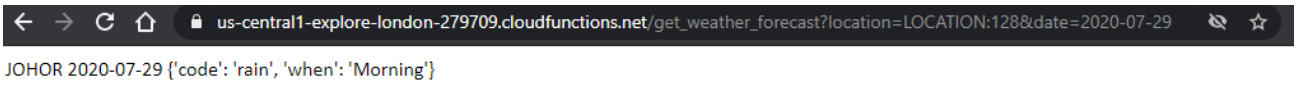
1. To send notifications to users in an app
2. To perform data cleaning and maintenance
3. To run tasks in the cloud instead of on the app
4. To integrate your code with third-party services or APIs or etc.

Traditionally, most of these applications would require your code to be hosted in an on-site server for it to run in a production environment. This obviously comes at a cost from server maintenance and other hardware costs. There are now cheaper options where you can write code, and deploy into the cloud for a production environment, without the hassle of managing servers or instances. One example of this is using Google Cloud Functions . This example is applicable to AWS' Lambda as well.

Google's Cloud Functions is a serverless environment for developers to build and connect cloud services. All developers need to do is to write simple functions which are automatically triggered when an event being watched happens. Here is a simple example: notice the URL below has several parameters: `location` and `date`. This is a cloud function I built to extract weather forecast data using APIs offered by the Malaysian Meteorological Department for Pagoh for 29 July 2020.

https://us-central1-explore-london-279709.cloudfunctions.net/get_weather_forecast?location=LOCATION:128&date=2020-07-29

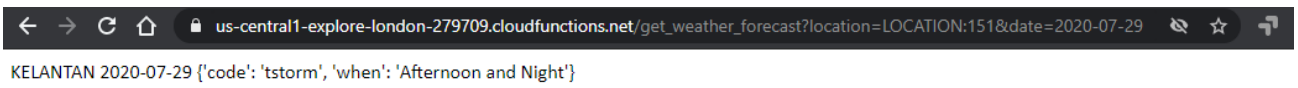
Using a browser to head to the URL gives you a snapshot below.



The URL returns the weather forecast for a location in Johor on a specified date.

Varying the URL to a location in Kelantan gives

https://us-central1-explore-london-279709.cloudfunctions.net/get_weather_forecast?location=LOCATION:151&date=2020-07-29



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https://cloud.google.com/functions
https://aws.amazon.com/lambda/
https://api.met.gov.my/

The URL now returns the weather forecast for a location in Kelantan on a specified date.

At the time of writing, the MET API Version 1 is working but due to be replaced with API Version 2 to be released at an unspecified date.

Feel free to try varying the location and date parameters. A sample of 10 location codes are listed as below:

ID	NAME	ID	NAME
LOCATION:135	Segamat	LOCATION:154	Kuala Krai
LOCATION:123	Batu Pahat	LOCATION:128	Pagoh
LOCATION:157	Pasir Mas	LOCATION:410	Kubang Pasu
LOCATION: 426	Serdang	LOCATION:156	Machang
LOCATION:122	Ayer Hitam	LOCATION:153	Kota Bahru

```
import requests

def get_location_date(request):
 location = request.args.get('location', 'LOCATION:237')
 date = request.args.get('date', '2020-07-27')
 location_date = get_weather_forecast(location, date)
 return location_date

def get_weather_forecast(location, date):
 headers = {'Authorization': 'METToken __INSERT TOKEN HERE__'}
 params = (
    ('datasetid', 'FORECAST'),
    ('datacategoryid', 'GENERAL'),
    ('locationid', location),
    ('start_date', date),
    ('end_date', date),
 )
 response = requests.get('https://api.met.gov.my/v2/data', headers=headers, params=params)
 sample = response.json()
 return(str(sample["results"][5]['locationrootname'])+""+str(date)+""+str(sample["results"][5]
['attributes']))
```

get_location_date(request) accepts the location and date parameters from the URL. The default parameters have been set for 'LOCATION:237' and '2020-07-27' for demonstration purposes.

get_weather_forecast(location, date) takes the location and date parameters, feeds it into the MET API, and processes the response for display on a website.

The architecture diagram for this script is a simple one:

1. Using an internet browser, the user heads to the URL which has the query parameters.
2. Google's Cloud Function will process the parameters and query MET API to get the relevant data.
3. The resulting data is then sent back to the user.

This cloud function has been programmed to respond to a HTTP request, which means the parameters the users are looking for are available within the URL. The response can be displayed on a website or be sent to an app for user consumption purposes.

Such functions can be configured to run at a certain frequency. One example would be a data cleaning function to run at the end of every day. The function can also be triggered in the event of new information being made available, i.e. a financial transaction to update a customer database etc. A common application would be to integrate a function with third-party services and APIs.

The advantage of using Functions-as-a-Service (FaaS) like Cloud Functions or Lambda, is the ease of deploying functions to a production environment, and the low cost involved (since no hardware costs are involved).

If you would like to do some hands on work with Google Cloud Functions, there are tutorials available on Tutorials | Cloud Functions Documents . A few example architectures can also be found on What can I do with Cloud Functions?

https://cloud.google.com/functions/docs/tutorials
https://firebase.google.com/docs/functions/use-cases

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