POLICY BRIEF

Cloud: Fueling ASEAN's Digital Revolution

ASEAN
ECONOMIC
FORUM

ASEAN
FINTECH FORUM

TiE
SINGAPORE
FOSTERING
ENTREPRENEURSHIP

órbit
FUTURE ACADEMY

Skills
For
Future
Jobs

german
cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by
giz

TECH FOR
GOOD
INSTITUTE

Author – Fahmi Pane, Program Manager, ASEAN Economic Forum
Reviewer - Rafi Fadhilah, Editor, ASEAN Economic Forum

Table of Contents

List of Abbreviations

AEF   : ASEAN Economic Forum
AFF   : ASEAN Fintech Forum
AI   : Artificial Intelligence
AMS   : ASEAN Member States
ASEAN : Association of South East Asian Nations
ATIGA : ASEAN Trade in Goods Agreement
DEFA : Digital Economy Framework Agreement
GDP   : Gross Domestic Product
GIZ   : The Deutsche Gesellschaft für Internationale Zusammenarbeit
MSME : Micro, small, and medium enterprises
TFGI   : Tech for Good Institute

ASEAN ECONOMIC FORUM

ASEAN Economic Forum

POLICY ROUNDTABLE
CLOUD: FUELLING ASEAN'S
DIGITAL REVOLUTION

OUR SPEAKERS

SACHIN V. GOPALAN
CHAIRMAN, ASEAN
ECONOMIC FORUM

CYRUS DARUWALA
CHAIRMAN
ASEAN FINTECH FORUM

CITRA NASRUDDIN
PROGRAM DIRECTOR
TECH FOR GOOD
INSTITUTE

HARISH PILLAY
TECHNOLOGIST. DY
CHAIRMAN
SINGAPORE IT STANDARDS
COMMITTEE

MADANJIT SINGH
FOUNDER, ASIA MARKET
PARTNERS
CHAPTER HEAD, PAVILLION
SINGAPORE

DANIEL SCHROEDER
DIGITAL
TRANSFORMATION
STRATEGIST
GIZ

NALIN SINGH
CEO
ORBIT FUTURE ACADEMY

PRANTIK MAZUMDAR
PRESIDENT
TIE SINGAPORE

HOTEL MULIA, JAKARTA | **May 19, 2025**
17.00 - onwards
UTC+07

ASEAN ECONOMIC FORUM

ASEAN FINTECH FORUM

TiE SINGAPORE FOSTERING

orbit FUTURE ACADEMY | Skills For Future Jobs

german cooperation | implemented by giz

TECH FOR GOOD INSTITUTE

Watch the Highlight on YouTube: **ASEAN ECONOMIC FORUM**   www.aseaneconomicforum.com

Executive Summary

The digital economy in the ASEAN region has been accelerating economic integration, enhancing competitiveness, fostering sustainable development and increasing intra-trade and inter-trade of ASEAN. The ASEAN Digital Economy Framework Agreement (DEFA) provides a strategic framework for ASEAN to harness the power of digital technologies to drive economic growth and development. At the same time, businesses need to leverage this avenue by implementing robust and scalable digital solutions, such as Cloud-native technologies, with their ability to enable rapid innovation, scalability and resilience.

The implementation of the Cloud-native technologies is important also because there are some pressing global issues which might impact the economic slowdown in the ASEAN region. Cloud-native technologies may be the way forward to resolve these issues. Some of these issues include global warming or climate change, kinetic conflicts and major wars; and unipolar world order dictated by the US President Donald Trump. All these are leading towards an economic slowdown.

Cloud-native technologies can be adopted under the provisions of DEFA, which is currently in its final stages of discussions. With its implementation, intra-trade ASEAN should increase. ASEAN should grow from USD 3.7 trillion to 7 trillion by 2030 and we hope that intra-trade across ASEAN will also grow.

By adopting these technologies, AMS countries can increase collaboration with each other. This is true of both small countries, such as Brunei Darussalam and Singapore, as well as the larger ones, such as Indonesia and Thailand. This can improve both intra-trade and inter-trade ASEAN with China and India, among others. However, there are challenges to enlarge Cloud implementation, such as gaps in economy size, local politics, gap in maturity and technology access, data ownership, resilience, residency, privacy and security.

With a view to the adoption of Cloud-native technologies, the ASEAN Economic Forum's policy roundtable recommended some policies for ASEAN Member States, ASEAN Secretariat and business player in ASEAN region, such as –
1. Improving Cloud governance at regional, national and organisational level,
2. Implementing and Enlarging DEFA,
3. Sovereign Cloud Stacks,

4. Upskilling, both in Universities and Industries; and
5. Entrepreneurial Opportunities, including for the MSMEs (micro, small, and medium enterprises).

Introduction

The digital economy has emerged as a transformative force in global trade, reshaping traditional business models and creating innovative growth avenues. In the ASEAN region, embracing the digital economy is pivotal to advancing economic integration, enhancing competitiveness and fostering sustainable development.

Realising the full promise of this digital transformation however, requires embracing cutting-edge technologies and agile methodologies, particularly in the context of regional digital integration.

Background

The digital economy is rapidly reshaping the global landscape and ASEAN is no exception. The region's burgeoning digital landscape presents significant opportunities for economic growth, job creation and improved quality of life. The Boston Consulting Group projects that through natural digital adoption, ASEAN's digital economy could grow from USD300 billion to nearly USD 1 trillion by 2030. However, navigating this complex and rapidly evolving environment requires a shift in how we build and run software applications. This is where Cloud-native technologies come into play.

Need for DEFA

An economic slowdown across ASEAN is foreseen in the near future and DEFA is a critical route to resolve this challenge. Implementation of DEFA shall make it easier to adopt the Cloud-native technologies, which are critical to resolving the challenges faced by the region.

Expected Outcomes of the Discussion

- **ASEAN's Digital Landscape:** The event was designed to provide insights into the current state of the digital economy in ASEAN, highlighting the challenges and opportunities for businesses and governments.

- **Cloud-Native and DEFA:** Discussions aimed to focus on how Cloud-native technologies can help businesses leverage the opportunities created by DEFA, such as streamlined cross border trade and access to new markets.
- **Agile and Cloud-Native Synergy:** The event aimed to explore how agile methodologies complement and enhance Cloud-native development, enabling faster and more iterative delivery of value.
- **Real-World Case Studies:** Presentations from organisations that have successfully implemented Cloud-native strategies to showcase the practical benefits and lessons learned.
- **Addressing the Skills Gap:** The event aimed to explore strategies for developing the next generation of cloud-native professionals in ASEAN, addressing the skills gap and fostering a thriving digital ecosystem.
- **Security and Compliance:** Discussions aimed to cover the critical aspects of security and compliance in Cloud-native environments, ensuring that businesses can operate safely and responsibly.
- **The Future of Cloud-Native:** The event looked ahead to the future of Cloud-native, exploring emerging trends and technologies and their potential impact on ASEAN's digital economy.

Setting the Agenda

In his opening remarks of the Roundtable on **Cloud – Fueling ASEAN's Digital Revolution,** Ashish Kapahi, CEO, ASEAN Economic Forum (AEF) highlighted that there are many global challenges which are impacting the current economic landscape. These include disruption in climate, kinetic conflicts and major wars; and unilateral world order advocated by the US President Donald Trump. The tariff war, which may disturb global supply chain, increase the price of goods and services that reach the end users, reduce aggregate consumption, decrease state's income from income tax and value added tax; and consequently, reduce economic growth of each country.

This is all leading towards a global economic slowdown and ASEAN Member States (AMS), will be equally impacted as other regions. Although ASEAN's economy is around USD 3.7 trillion, it facilitates over 8% of the global trade flows punching way above its weight. Hence, it has huge exposure to the global trade and economic environment and will be impacted by a global slowdown.. Moreover, intra-trade between ASEAN is still small at only 23%.

Kapahi further pointed out that DEFA is currently in its final stages. After its implementation, intra-trade ASEAN should increase. ASEAN should grow from USD 3.7 trillion to 7 trillion by 2030; and we hope intra-trade ASEAN will also grow. He emphasized that adoption of Cloud native technologies across the ASEAN shall play a critical role in this growth.

ASEAN's Digital Landscape
Economy Size

The total GDP of ASEAN reached US$3.7 trillion in 2023, positioning it as the fifth largest economy in the world, after the United States (USD 25.5 trillion), China (USD 17.9 trillion), Japan (USD 4.2 trillion) and Germany (USD 4.1 trillion). Looking ahead, projections indicate that ASEAN's GDP is poised to reach an estimated USD 4.5 trillion by the year 2030 (ASEAN Statistical Brief, January 2024).

ASEAN economy size however, is projected to grow from USD 3.7 trillion to 7 trillion by 2030, after ASEAN's Digital Economy Framework Agreement (DEFA) is finalised and implemented by the end of 2025. The intra-trade ASEAN is also expected to grow, as well as the inter-trade of ASEAN with big economies. The Boston Consulting Group has projected that through natural digital adoption, ASEAN's digital economy could grow from USD 300 billion to nearly USD 1 trillion by 2030.

The digital economy is the driving force for ASEAN Member States (AMS) to accelerate economic growth as well as economic distribution. Digitisation creates wider opportunities for large enterprises and governments to streamline their organisation structure, business process model and marketing. Moreover, digitisation brings greater chances for micro, small, and medium enterprises (MSMEs) to expand their market and business relations beyond the borders of the states.

Opportunities with Cloud
Cloud creates immense opportunities for all stakeholders for economic growth. By adopting Cloud-native environment, the infrastructure can be upgraded for the state-of-the-art digital technologies, inter-State and intra-State communication can be improved and can be accelerated and many digital platforms for business growth and opportunities can be opened up.

Implementing Cloud in ASEAN

Currently, South East Asia is experiencing significant growth in Cloud adoption, with businesses across various sectors embracing Cloud-native technologies to modernize their operations and gain a competitive edge. The Cloud computing market in South East Asia reached approximately USD 2.18 billion in 2022, marking a 25% increase from the previous year.

Further, according to Statista 2025, Cloud computing revenues in ASEAN countries have reached USD 5.96 million in Singapore. It is in stark contrast to other AMS, such as Indonesia at 1.88 million, Malaysia at 1.54 million and Thailand at 1.49 million.

The market and revenue of Cloud computing will increase as Cloud grows, including among MSMEs. However, knowledge about Cloud native as well as capital access for MSMEs should be uplifted to create new markets and new opportunities to expand cloud native in AMS.

Challenges in the Current Situation

The current situation in the ASEAN region has some challenges that need to be addressed. Following is an overview of these –

Gap in Economy Sizes

There is a gap in economy sizes among the AMS. This situation is shown in the table below.

Table 1. Gross Domestic Product (GDP) at current prices and
GDP per Capita in 2022

No	Country	GDP in million USD	GDP per Capita in USD
1.	Brunei Darussalam	16,678	34,446
2.	Cambodia	29,610	1,758
3.	Indonesia	1,317,259	4,778
4.	Lao PDR	15,049	2,022
5.	Malaysia	407,027	12,448
6.	Myanmar	60,967	1,093

No	Country	GDP in million USD	GDP per Capita in USD
7.	Philippines	404,709	3,623
8.	Singapore	466,709	82,794
9.	Thailand	495,302	7,494
10.	Vietnam	408,695	4,109

Source – ASEAN Statistical Year Book 2023, p 51

Gap in economy sizes means gap of power to adapt, adopt and enlarge Cloud implementation, especially if a country has small GDP and GDP per capita. This gap must be attended to in DEFA implementation for ASEAN as an organisation, in order to create digital infrastructure across ASEAN countries.

Local Politics, Gap in Maturity and Technology Access
Covid-19 has changed the perspective about Cloud implementation. The regulators have learnt to be less open to the need of collaboration in data processing to mitigate Covid impact. However, there is still a need to encourage people in Cloud adoption. Especially in a regulated environment, there's not only a need to make sure regulators are on board, but also to convince them to collaborate with the private sector and the people.

Furthermore, there are other indicators pointing to technology gaps. Internet access is still a problem for ASEAN, especially for running digital transformation.

One indicator was observed by Citra Nasruddin, Programme Director of Tech for Good Institute (TFGI), that 33% people in the South East Asian region have no access to the Internet. No Internet access means no Cloud access, as well as no opportunity for Cloud native development.

Data Ownership, Resilience, Residency, Privacy and Security
Data ownership, resilience, privacy and security have received attention from practitioners who attended AEF's policy roundtable. The issue will be more important when Cloud is enlarged in different countries; and people shall need cheaper, easier and more interoperable Cloud.

Another issue is cross border payment and it relates to the controller. The Association of Banks in ASEAN has been trying to create an ASEAN standard of payment data

on the interoperability framework, but it has taken years. However, in certain countries it is well regulated and has very good data protection, like Singapore and Hong Kong, which are the two major financial centres.

Further, in the multi-market or multi-country type of business offering, the main challenge will be of data residency issue. Because of this issue, there is a need to follow the multi-Cloud environment; and for all to focus on those aspects. Hence, it becomes a challenge for companies like start-ups; and for all to manage everything on that side.

Three Speakers who presented their ideas online – Madanjit Singh, Prantik Mazumdar and Harish Pillay. Moderator – Sachin Gopalan

Policy Recommendations

Following policies were recommended by the speakers, as well as observers at the ASEAN Economic Forum's Policy Round Table on Cloud –

1. Improving Cloud Governance at Regional, National and Organisational Levels

It was noted that Cloud governance should be improved to make it more democratic, more accessible for everybody and every business, including micro, small and medium enterprises (MSMEs); and guarantee the data owner and processor still hold the data sovereignty. Monopolistic models should be avoided, as well as to rely on certain Cloud providers. Data security, privacy, resilience and sovereignty are issues that must be paid attention.

Madanjit Singh, an agile expert, reiterated implementing Cloud with mixing training, leadership, culture and new working style. Leadership is important because it relates to the people to make sure the people will not feel half-hearted with Cloud implementation. He said that the people are the most difficult factor among the process, technology and people, so we need a leadership and new working style to make sure that Cloud implementation satisfies the people.

Nalin Singh, CEO, Orbit Future Academy highlighted democratisation of data and AI. He said that data was new oil and AI is new electricity. But, oil and electricity are democratised, so the people can use, generate and control them.

He further said that, unlike oil and electricity however, data, AI and Cloud are controlled by certain institutions. In Sachin Gopalan's words, they are in a monopolistic market. So, they should be released for public access, including MSMEs. Furthermore, synergies between commercial Cloud and public sector Cloud should be implemented.

Cyrus Daruwala said that China was a successful example which uses Cloud as enabler with support from the biggest bank (ICBC) and the biggest insurance company (Ping An), without relying on three biggest Cloud providers. In other words, he insisted that multi-stake holders' collaboration is needed, in both government and business sectors, to scale up the Cloud implementation.

Through this discussion, it emerged that Cloud governance should be improved at regional level through DEFA and its implementation. However, DEFA should improve it at the national level because all AMS will make the agreement in their own country. Then, the organisational level will be scaled up to comply with DEFA.

Group photo of Expert Speakers and Participants

2. Implementing and Enlarging DEFA

Internet and digital regulation in the ASEAN region is still fragmented in regulation, so it is not sufficient for digital transformation. Hence, ASEAN needs DEFA to digital advancement, including Cloud implementation, in the think tank's perspective as Citra Nasruddin, Program Director, Tech for Good Institute (TGFI) explained.

DEFA is a good attempt to standardise and common purpose between AMS. Sachin emphasised that DEFA will be a good start for ASEAN after it is agreed upon and signed. Besides, Ashish underscored that ASEAN needed an actionable framework, such as building digital public infrastructure after DEFA is agreed upon and strengthening implementation of ATIGA (ASEAN Trade in Goods Agreement). Cyrus suggested that DEFA should have parameters, so it can measure what has been done and how it has impacted the people, business and governments around ASEAN.

DEFA should be a solution, such as for data residency issues, especially for MSMEs and start-ups. It should go hand in hand because of the regulatory side of data residency, such as what the European Union has done. For ASEAN, it will definitely help the economy as well as to start up ecosystems.

3. Sovereign Cloud Stacks

Even though ASEAN needs an enlarging scale and role of Cloud, ASEAN should not depend on certain Cloud providers. ASEAN can consider an open-source perspective that provides the opportunities to many more companies and organisations, including micro, small and medium enterprises (MSMEs).

Harish Pillay, an expert who built Cloud architecture for a Cloud provider for a long time, said that the solution for ASEAN and businesses in this region that should be considered is applying Sovereign Cloud Stack (SCS). It is a great accomplishment if SCS will be mentioned in DEFA.

Harish added that SCS has been the common standard across Europe and it can be copied in Southeast Asia. It has the ability to common stacks across all service providers in all nation states, so ASEAN will have interoperability and ability to scale out, ability to create business to support the effort of the business area and of people who can participate in it. So, creating sovereign Cloud stacks is a way forward to move across different geographies in ASEAN.

Daniel Schroeder, an expert from GIZ, agreed on Harish's idea. He said that the Cloud should be controlled, connected, regulated and should be available for everyone. Sovereign Euro Stack as an example of SCS, can be considered. This Cloud model is accessible for everybody and every business. The data sovereignty is still held by the data owner who is running the data processing and applications. In essence, data sovereignty is the centrepiece and the others must follow it.

He said that furthermore, SCS will be maintained and deployed in a standard base of technology, including data center building and operation. It is very easy for the people to plug in/out, as well as for vendor solutions. SCS will be digital public infrastructure, but also to be digital public goods. It can be commercialised, but the public can adopt it and make it useful for them as other public goods.

He further said that SCS will guarantee the data owner, both governments and businesses, can control the data, analysis and their use. By using the modular SCS Software stack, Cloud providers can offer state-of-the-art Infrastructure-as-a-Service and Container-as-a-Service, while being fully compliant with data protection regulation and security standards. SCS is using and standardising existing and proven Open Source components such as e.g. Kubernetes and does extend them where required.

4. Upskilling in Universities and Industries
As for the digital gap, the skill gap still is a problem in this region. Most people don't understand why they need Cloud and AI, as Nalin underlined. So, people need digital skills as they need food, healthcare etc.

Skill development is important. Human capacity in this region should be improved for digital advancement, as underlined by Citra.

Prantik Mazumdar, President, TiE Singapore agreed and emphasised that upskilling on digital technology, as well as long life learning, should be optimised for the people. However, collaboration between university and industry must be improved.

Harish explained that universities can provide knowledge, training and methodology and they are needed to create new ideas. But, improving skill and education is a very long process.

According to him, polytechnic can be improved with collaboration between university and industry. Polytechnic is the solution to improve education and skill, through cooperation with industry. Partnership is useful in this endeavour.

He suggested that furthermore, Germany is a good example to describe how important it is to relate knowledge, skill and jobs. There are many skilled workers there, as Schroeder explained, as well as lots of opportunities. So, high level basic skills are needed to fulfill high level technology jobs.

5. Entrepreneurial Opportunities, including MSMEs (micro, small, and medium enterprises)

Entrepreneurial opportunities were underlined by Prantik Mazumdar, he said that this approach was needed to accelerate intra-trade ASEAN and become solutions beyond Cloud.

He made the following suggestions –
- Cybersecurity and digital ID solutions
- AI on the edge
- Technological accessibility to drive inclusion
- Last mile delivery and engagement
- RegTech and blockchain driven solutions to drive transparent and fair trading

Final Thoughts

ASEAN is the nerve centre of many international activities that are going on at the moment. With the implementation of DEFA, it is hoped that intra-ASEAN trade will increase. Hence, it is important to discuss how Cloud can bring about a digital revolution within ASEAN.

Moderator

Sachin Gopalan, Chairman, ASEAN Economic Forum

Speakers

1. Sachin Gopalan, Chairman, ASEAN Economic Forum,,
https://www.linkedin/in/sachingopalan
2. Cyrus Daruwala, Partner, Asia – 3Aventures, ASEAN Fintech Forum,
https://www.linkedin.com/in/cyrus-daruwala-5760b21/
3. Citra Nasruddin, Program Director, Tech for Good Institute (TGFI)
https://www.linkedin.com/in/citranasruddin/
4. Daniel Schroeder, Head of Digital Transformation Center of GIZ (The Deutsche
   Gesellschaft für Internationale Zusammenarbeit)
  https://www.linkedin.com/in/danschroed/
5. Prantik Mazumdar, President, TiE Singapore
https://www.linkedin.com/in/prantikmazumdar/
6.Nalin K Singh, CEO, Orbit Future Academy https://www.linkedin.com/in/nalin-k-s-4536473/
7. Madanjit Singh, Business Leader, Agiile Expert, Community Lead, Pavillion
Singapore www.linkedin.com/in/madanjitsingh
8. Harish Pillay, Dy Chair Singapore IT Standard Board, Politician
htpps://www.linkedin.com/in/harishpillay/
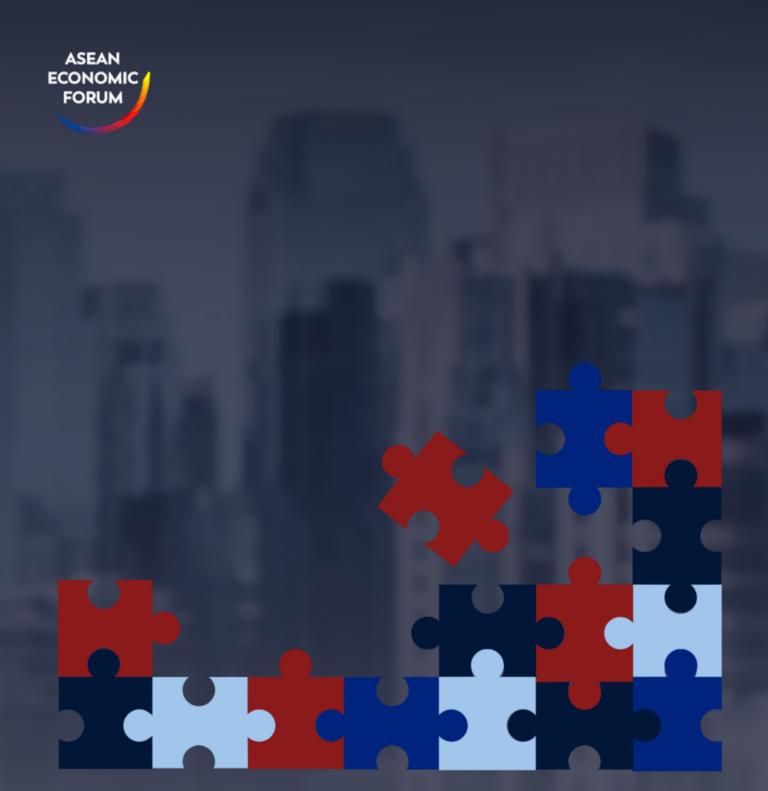
List of Observers

1. Gautham Devlekar,
https://www.linkedin.com/in/gauthamdevlekar/
2. Arya Sidharta, Bank of Jasa Jakarta
3. Ricardos Khoury, Novus Technologies
https://www.linkedin.com/in/ricardoskhoury/
4. Benny Jioe, Zurich Asuransi Indonesia https://www.linkedin.com/in/bennyjioe/
5. Dr Chatchai Thnarudee, Thanger & Co
https://www.linkedin.com/in/drchatchaithnarudee/

ASEAN ECONOMIC FORUM

The **ASEAN Economic Forum (AEF)** is an independent organization focused on socioeconomic development within ASEAN. It brings together researchers, policymakers, businesses, civil society, and academia to address policy challenges, promote regional cooperation, and foster economic integration.