



클라우드 컴퓨팅의 미래 : 기술, 정책, 그리고 AI (인공지능)

MSIT ICT INDUSTRY OUTLOOK CONFERENCE 2020

내용 진행 소개

- BSA 소개
- Cloud Computing and Related Technologies
- Artificial Intelligence (AI)

BSA : The Software Alliance 소개

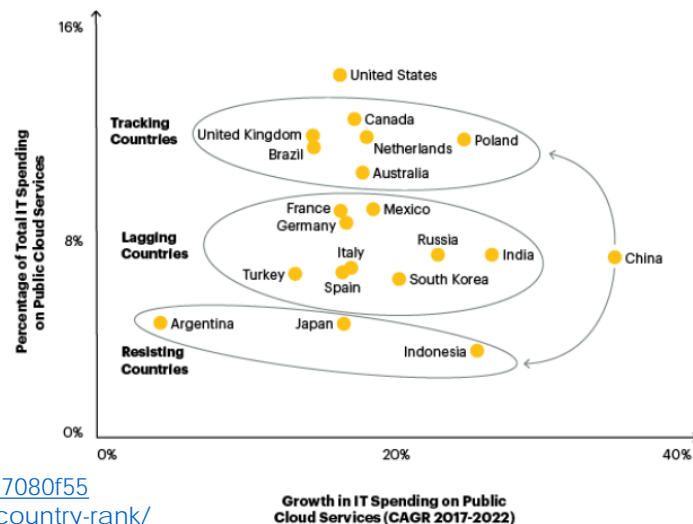
- 전세계적으로, 소프트웨어 산업을 지원하는 단체로 Digital economy 의 기술혁신과 성장을 도모하는 정책을 추진하고 있음
- 미국 Washington DC 에 본사
- 국제적으로 역할 – APAC 지역 본부 in Singapore, Bangkok, Beijing, New Delhi, Seoul, and Tokyo

BSA Global/APAC Policy Members



The Rise of Cloud Computing

- However, cloud computing is becoming more widely adopted in Korea, with legislation being implemented in each industry to ease legacy restrictions
- Gartner, a global research institute projected domestic expenditure on IT goods & services to grow 4% compared to last year, reaching KRW 87.5 trillion and exceeding KRW 98.5 trillion by 2022.
- Moreover, Gartner expects the global public cloud service market to grow 17.5% in 2019, reaching a market value of KRW 243 trillion. The domestic market is projected to grow over 20% and reach a market value of KRW 2.34 trillion.
- Faster and Bigger than forecasted!
- IaaS (37.9%)
PaaS (0.1%)
SaaS (32.2%)



Source: <https://www.lexology.com/library/detail.aspx?g=afb2f7f3-1ba8-480d-9714-9b35b7080f55>
Source: <https://www.gartner.com/smarterwithgartner/cloud-adoption-where-does-your-country-rank/>
© BSA | The Software Alliance

Cloud Computing Technology - 1

(NIST: National Institute of Standards and Technology)

- **On-demand self-service.** A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.
- **Broad network access.** Capabilities are available over the (**high speed**) network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations).
- **Resource pooling.** The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or datacenter). Examples of resources include storage, processing, memory, and network bandwidth.

Source: [the National Institute of Standards and Technology](#)

Cloud Computing Technology - 2

(NIST: National Institute of Standards and Technology)

- **Rapid elasticity.** Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be appropriated in any quantity at any time.
- **Measured service.** Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service.

Source: [the National Institute of Standards and Technology](#)

Rising Adoption of the Cloud

- **Areas of Interests (클라우드 적용 관심 분야)**
 - **New Business and Small and Medium Enterprise (신규 및 중소기업)**
 - **Migration from legacy IT infrastructure (IT 개선)**
 - **Multi location (물리적 복수 지역)**
 - **Scheduled Project (기간이 정해진 프로젝트)**
 - **Promotion (판촉)**
 - **IOT (기계정보)**
 - **Peak Time business (순간 최고용량 필요)**
 - **Super computing power (수퍼컴 처리)**
 - **Government (정부)**

Source: <https://www.microsoft.com/en-sg/apac/trustedcloud/korea-healthcare-service.aspx>

Rising Adoption of the Cloud: Others

- **The National Institute for Astrophysics (Istituto Nazionale di Astrofisica or INAF)** chose AWS for on-demand computing to perform the large-scale calculations to detect bio signatures in the atmosphere of planets outside of our solar system for the first time.
- **Formula 1** decided to move from on-premises data centers to AWS and standardizing on AWS's machine learning and data analytics services to accelerate its cloud transformation. In order to enhance its race strategies, data tracking systems, and digital broadcasts.
- **U.S. Government** moving from Cloud First to Cloud Smart. Agencies including The U.S. Army, Air Force, Navy, DOJ, USDA, Department of Education and more are already adopting cloud computing and now the federal government is strategically converting its legacy on-premise system to cloud to leverage cloud computing's security capabilities

Source: <https://aws.amazon.com/ko/solutions/case-studies/kbs/>

Source: [FEDERAL CLOUD COMPUTING STRATEGY](#)

BSA Cloud Computing Scorecard

- Only report to regularly track change in the international policy landscape for cloud computing
- Ranks 24 countries for cloud readiness – representing 80% of global IT market
- 10 Asia-Pacific countries surveyed: Australia, China, India, Indonesia, Japan, Korea, Malaysia, Singapore, Thailand, and Vietnam
- Assists policy makers in identifying and addressing weaknesses in each market and encourages countries to work together to ensure a healthy cloud ecosystem globally



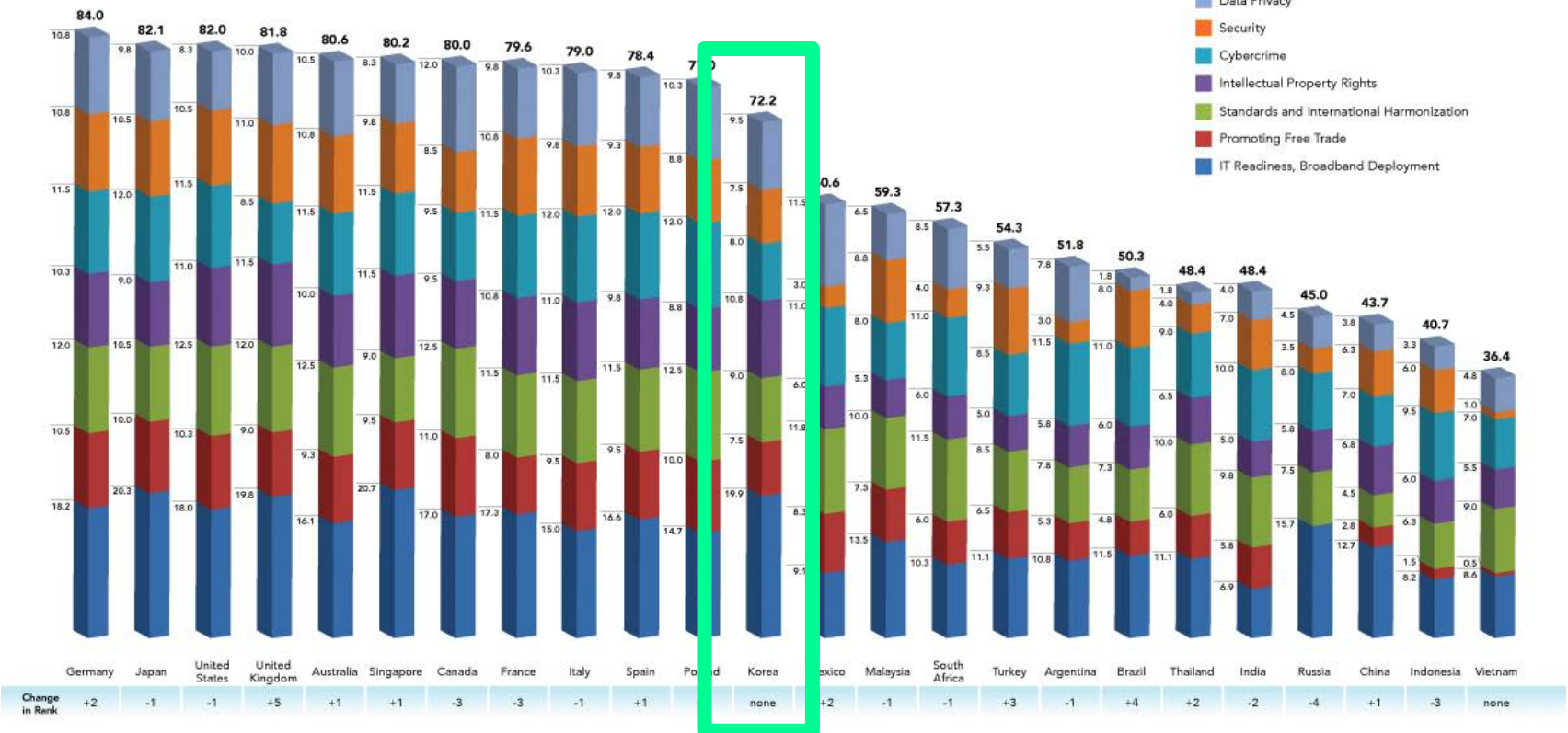
Scorecard Rankings

2018 BSA Global Cloud Computing Scorecard

By focusing new attention on the policy areas that matter most to cloud computing, the 2018 Scorecard shows continuing improvements in the policy environment for cloud computing in key global economies.



- Data Privacy
- Security
- Cybercrime
- Intellectual Property Rights
- Standards and International Harmonization
- Promoting Free Trade
- IT Readiness, Broadband Deployment



Where Korea Stands

- Overall, with its rank of 12th out of 24, Korea's position in the Scorecard rankings remains largely unchanged
- Korea has a strong commitment to the promotion of the digital economy, and its laws and standards are generally based on international models
- Korea scored well in the IT readiness and broadband deployment section of the scorecard
- However, Korea imposes complex notice and consent requirements, which affect data flows that are critical for cloud computing
- Additional requirements on the top of International Common Criteria for Information Technology Security Evaluation
ex) CSAP

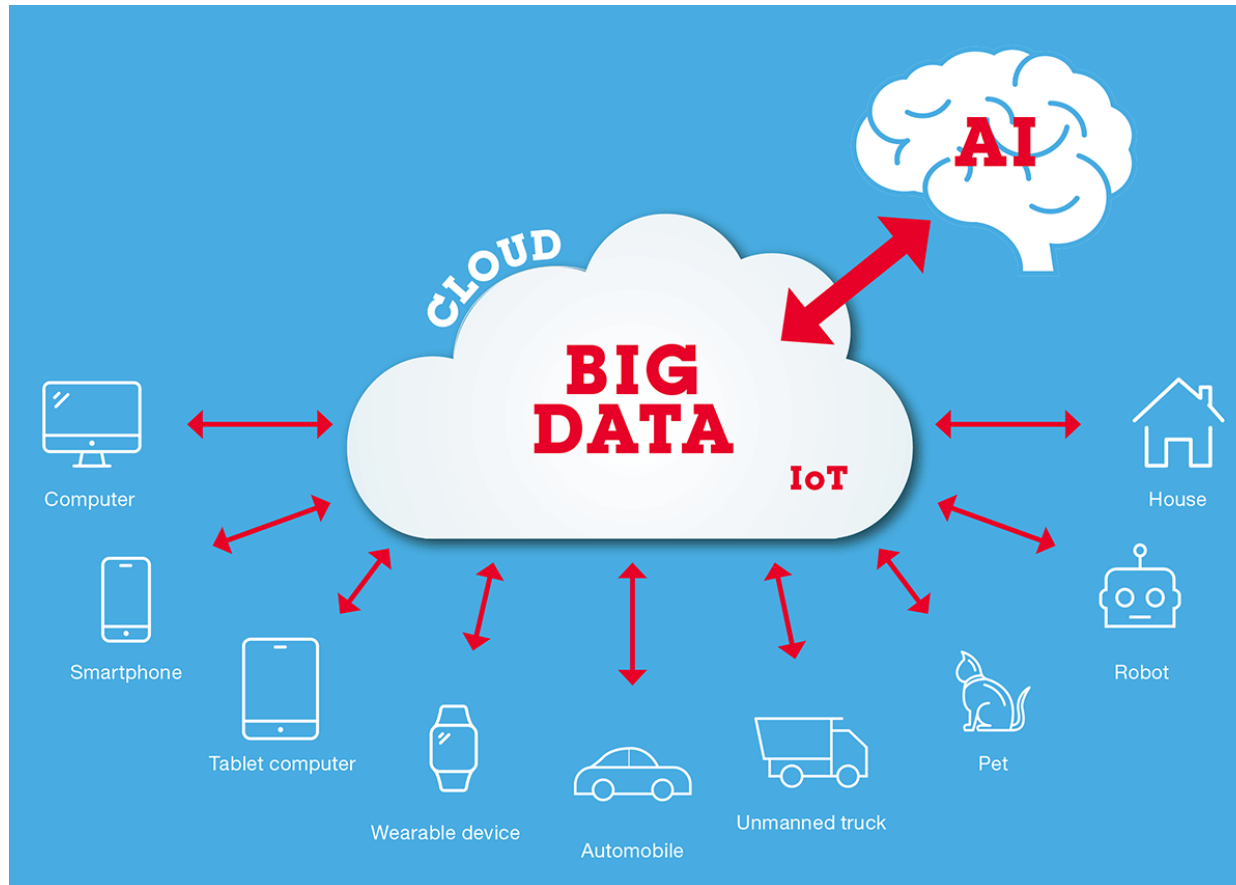
Cross-Border Data Transfer: Myths vs. Facts (국내외 데이터 전송 : 잘못된 정보와 사실)

- The rapid and seamless movement of data across borders is essential to the 21st century global economy

Myth	Fact
Data localization requirements and data transfer restrictions benefit the economies of the countries that implement them.	Data localization requirements and data transfer restrictions hurt local companies by preventing them from accessing the most innovative SWs.
Transferring data cross-borders is only a priority for multinational technology corporations.	Cross-border data transfers power innovation and growth across the globe and all sectors of the economy.
It is necessary to restrict cross border data transfers to allow law enforcement to conduct investigations of user data where there is evidence of criminal conduct.	It is not necessary to impose data localization requirements for law enforcement authorities to gain access to the data.
Data localization requirements and data transfer restrictions are necessary to ensure cyber and data security.	How data is protected is much more important to security than where it is stored.
Data localization requirements and data transfer restrictions are necessary to protect personal data.	Data localization requirements and data transfer restrictions are not necessary to ensure

Source: <https://www.lexology.com/library/detail.aspx?g=afb2f7f3-1ba8-480d-9714-9b35b7080f55>

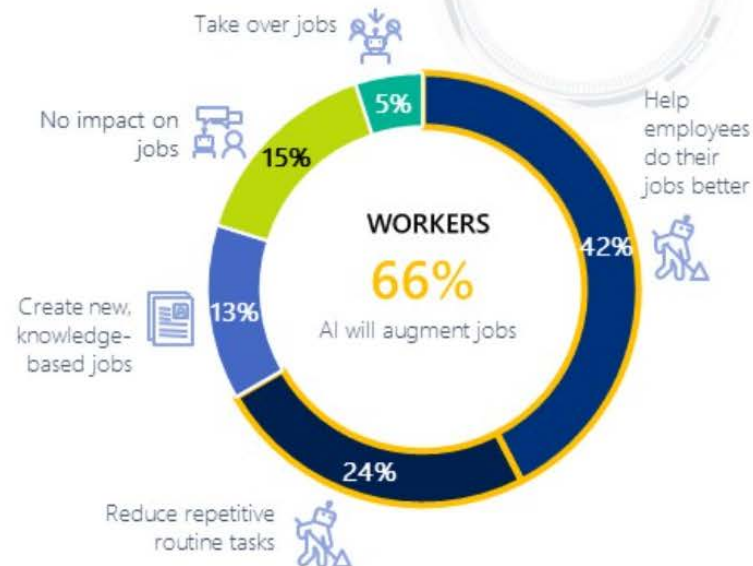
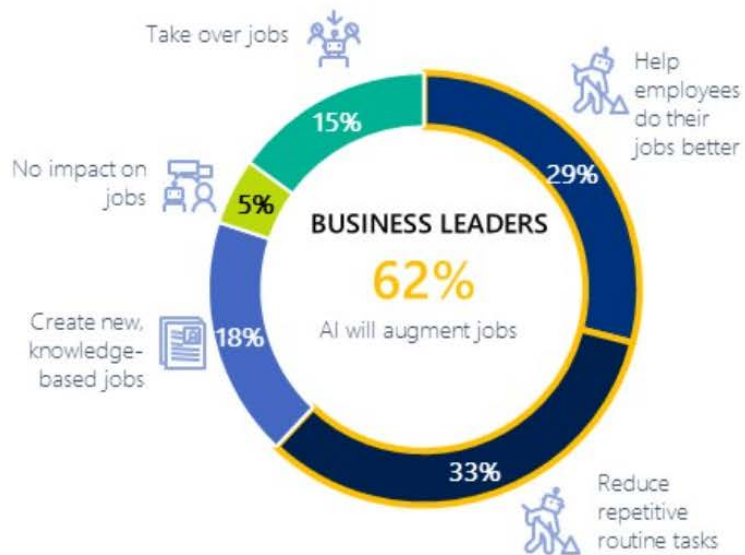
Cloud and AI



Because It's the backbone of everything!

APAC

Business Leaders and Workers agree: Artificial Intelligence will **augment**, not displace jobs



AI : 미래의 회의장면



AI Challenges: Bias and Trust

- Make prediction about future outcomes based on historical data, underrepresented sample data and inherent reflection of design choice of the creator

예) 취업, 입학사정, 공공정책

- Legal system, technical tools, and business processes being developed to enhance:

- Fairness (공정),
- Accountability (책임),
- Transparency (투명)

예) AI Fairness 360 (Open Source Tool Box)

AI Principles Framework Comparison Chart

Comparing International Frameworks for the Development of Responsible AI				
Value	Definitions	EU	Singapore	OECD
Human-Centered (인간중심)	AI systems should be designed to be inclusive, accommodating the needs of the individuals that interact with it, and used in a manner that is aligned with the values of the community in which it is deployed.	✓	✓	✓
Mitigate Risks and Promote Benefits (위험 최소화/이익극대)	AI systems should be designed and deployed for the benefit of end-users and avoid unintended negative impacts on third parties.	✓	✓	✓
Fairness (공정)	Governance and technical safeguards are important to identify and mitigate risks of unfair biases, particularly in circumstances where an AI system could have a consequential impact on people.	✓	✓	✓
Explainability (설명가능)	AI systems should be understandable; context will dictate the appropriate mechanisms for providing transparency about a particular system's decision-making processes.	✓	✓	✓
Privacy and Security (개인정보/보안)	AI systems should be secure and enable users to make informed choices regarding use of personal information.	✓	○	✓
Safety and Reliability (안전/신뢰)	AI systems should be designed to mitigate foreseeable safety risks and adequately tested to ensure that they operate as intended.	✓	✓	✓
Accountability (책임)	A lifecycle approach to AI accountability, including appropriate governance structures for the design phase and redress mechanisms following deployment is important.	✓	✓	✓
Risk-based and Proportionate (위험배분의 적정)	Risks are context-specific and encourages stakeholders to deploy risk management techniques that are tailored to specific use cases.	✓	✓	✓
Multiple Stakeholders (다수의 이해당사자)	Multiple stakeholders have important roles to play in mitigating risks involved in the development, deployment, and use of AI.	🌐	✓	✓
Promotes Innovation (혁신을 강조)	Government is a key enabler of AI innovation, and promotes a policy environment that is conducive to cross-border data flows, value-added data services, access to non-sensitive government data, R&D, and workforce development initiatives.	○	○	✓

Links and Resources

- Main BSA Website
<http://www.bsa.org>
- BSA Cloud Computing Scorecard
<http://cloudscorecard.bsa.org/2018/>
- BSA AI Principles Framework Comparison Chart
<https://ai.bsa.org/global-ai-principles-framework-comparison/>
- Microsoft Trusted Cloud – Korea
<https://www.microsoft.com/en-sg/apac/trustedcloud/korea.aspx>

Geun Kim, Country Manager, Korea
BSA | The Software Alliance
GeunK@bsa.org

Thank you