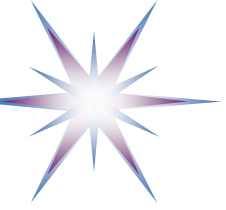


# Tutorial 1: Cloud native technologies and cloud based services development and management

- Cloud Computing and impact on telecom market
- Cloud native vs Cloud based
- NIST Cloud Computing definition and Reference Model
- General cloud use cases and usage scenarios
- Cloud enabling technologies: Virtualisation and Containers
  - Kubernetes architecture and components
- Summary and take away
  
- Additional information: Major cloud providers: AWS, Microsoft Azure, Google Cloud Platform (GCP)
  
- Practice: Getting starting with AWS cloud (optional and self-study)
  
- Tutorial and practice materials  
[https://drive.google.com/drive/folders/1nCqA0n51bS\\_98ACUudrAeqM468aZI7hq?usp=sharing](https://drive.google.com/drive/folders/1nCqA0n51bS_98ACUudrAeqM468aZI7hq?usp=sharing)



# Tutorial 2: Cloud Security and Compliance for cloud services development and assessment

## Part 1. Big Data and Cloud Security

- Cloud security models, services and mechanisms
- Cloud Security best practices: AWS and Microsoft Azure

## Part 2. Cloud Compliance and (Self-) Assessment

- Compliance standards, Security Controls
- CSA GRC Stack: Governance, Risk Management and Compliance
- PCI DSS Cloud Computing Guidelines

## Part 3. Privacy protection and regulations (Addendum)

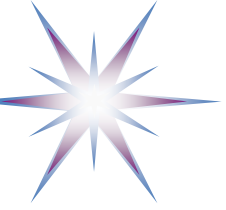
- Privacy related standards
- EU General Data Protection Regulation (GDPR)

## Part 4. Exercise/Practice

- CSA Consensus Assessment Initiative Questionnaire
- **Note: Security and compliance analysis to be included in the group project report**

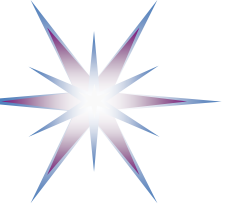
- Tutorial and practice materials

[https://drive.google.com/drive/folders/1nCqA0n51bS\\_98ACUudrAeqM468aZl7hq?usp=sharing](https://drive.google.com/drive/folders/1nCqA0n51bS_98ACUudrAeqM468aZl7hq?usp=sharing)



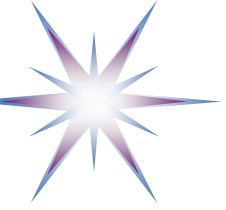
# Educational Resources: Cloud and Big Data

- AWS educational accounts and resources
- Azure educational accounts
- Community forums
- Educational and Self-study materials



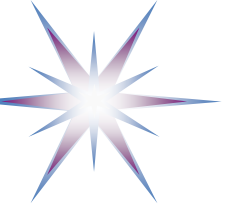
# Individual Educational Accounts - AWS

- You are provided with the AWS Academy Education Class account
  - All individual accounts with 100\$ credit
  - Limits and quotas for AWS resources applied
  - All resources in the region “us-east”
- Consider applying for individual AWS educational account as a Student
  - <https://aws.amazon.com/education/awseducate/>
  - Additional free credits 100\$ and whole year free tier resources
  - Use your university email address
  - You will have option at some stage to provide your creditcard number or not.
    - Even if you provide your creditcard, you will not be charged if you exceed your free credits
  - The benefit is that you will have less restrictions on resources use and much freedom in experimenting with AWS services



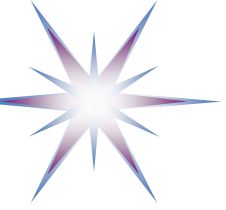
# Individual Educational Accounts - Azure

- Apply for free educational account  
<https://azure.microsoft.com/en-us/offers/ms-azr-0170p/>
  - You must use your university email address
- Azure for Students gets you started with
  - \$100 in Azure credits to be used within the first 12 months
  - Select free services without requiring a credit card at sign-up
- Free developer tools  
[https://portal.azure.com/#blade/Microsoft\\_Azure\\_Education/EducationMenuBlade/overview](https://portal.azure.com/#blade/Microsoft_Azure_Education/EducationMenuBlade/overview)
  - Access to professional developer tools including Azure DevOps, Artificial Intelligence (AI), Machine Learning, and other areas
- Access free learning paths and labs by Microsoft Learn (Microsoft and Azure services and tools)
  - <https://docs.microsoft.com/en-us/learn/>
- Read Acceptable Use policy: Prohibited use
- Limits and Quotas apply
  - You must upgrade your Azure Free Account to a Pay-As-You-Go subscription in order to increase quotas or limits.



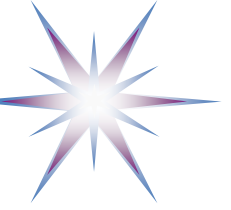
# General Cloud Starter Accounts

- AWS
  - 100 USD free credits for 1 year
  - Free tier services for 1 year
- Azure
  - 200 USD for 1 month
  - Free tier services for 1 year
- Google Cloud Platform
  - 300 USD for 1 year
  - Generous free tier services for 1 year



# Combine your classroom and self-study: Data Science Educational Resources

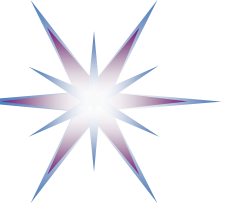
- Data Science Learning, Training and Certification
  - Self-learning is the main way of acquiring basic skills as well as improve your working competences
- Open Data and Educational Datasets
  - Important to test and develop your applications
- General Cloud Starter accounts (individual)
  - Access to variety of tools, computational resources and training



# Where to find more information

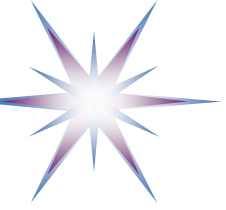
- First, revisit your lecture, follow recommended links
- Search web, use Wikipedia and other \*pedia as a first step, always check original sources
- Use online courses and tutorials
- Use developer forums to ask questions and search for answers
  - Stackoverflow - <https://stackoverflow.com/>
  - <https://softwareengineering.stackexchange.com/>
  - <https://dev.to/>
  - <https://www.experts-exchange.com/>
  - <https://www.quora.com/>





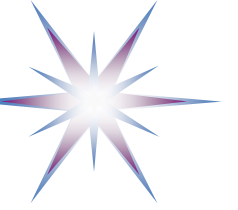
# Educational and Self-study materials

- Available on Canvas
  - Recommended literature and links to DevOps related resources and tools
  - Some DevOps related papers and studies on Canvas
- Search web, use Wikipedia and other \*pedia as a first step, always check sources
- Online courses and tutorials
  - AWS learning resources
    - <https://aws.amazon.com/training/self-paced-labs/>
    - <https://aws.amazon.com/getting-started/>
  - Microsoft Learn <https://docs.microsoft.com/en-us/learn/>
    - Multiple Learning paths, including certification
  - LinkedIn Learning (one month free trial, 279\$ annual fee)
    - <https://www.linkedin.com/learning/>
- Use developer forums to ask and search for answers
  - Stackoverflow - <https://stackoverflow.com/>
  - <https://softwareengineering.stackexchange.com/>
  - <https://dev.to/>
  - <https://www.experts-exchange.com/>
  - <https://www.quora.com/>



# Online Educational and Training Resources

- LinkedIn Education – paid 279 USD/Yr
  - <https://www.linkedin.com/learning/>
- DataCamp paid 588 USD/Yr, 1 Mo trial, free starter python and R courses – growing popularity
  - <https://www.datacamp.com/>
- Pluralsight 275USD/Yr, 10 days trial
  - <https://app.pluralsight.com/>
- Intel AI Academy – Variety of course on ML, AI, NLP
  - <https://software.intel.com/en-us/ai/academy>
- Microsoft Learn (former Virtual Academy)
  - <https://docs.microsoft.com/en-us/learn/>
- AWS Training and Certification
  - <https://aws.amazon.com/training/>
- IBM Learning Services
  - <https://www.ibm.com/services/learning/>
- Kaggle Data Science Micro-Course
  - <https://www.kaggle.com/learn/overview>
- Coursera, Udacity
  - Variety but less practically focused
- Certification and training PMI, DAMA, IIBA, TDWI
  - Primarily oriented on practitioners and IT managers



# Open Data, Educational Datasets and Professional Forums

- Registry of Open Data on AWS
  - <https://registry.opendata.aws/>
- Google Dataset Search (beta)
  - <https://toolbox.google.com/datasetsearch>
- Microsoft Research Open Data
  - <https://msropendata.com/>
- Github Open Data - <https://github.com/collections/open-data>
- Kaggle - <https://www.kaggle.com/datasets>
  - Variety of datasets, including mobile network, SDN,
- UCI Machine Learning Repository
  - <https://archive.ics.uci.edu>
- KDNuggets – community forum and blog - <https://www.kdnuggets.com/>
- Stackoverflow – community Q&A forum - <https://stackoverflow.com/>
- Check for more  
[https://en.wikipedia.org/wiki/List\\_of\\_datasets\\_for\\_machine-learning\\_research](https://en.wikipedia.org/wiki/List_of_datasets_for_machine-learning_research)