



# UNIVERSITY OF TWENTE.

## INTRODUCTION TO CLOUD COMPUTING

DCC THEMATIC SESSION ON CLOUD COMPUTING

dr.ing. Serkan Girgin MSc  
[s.girgin@utwente.nl](mailto:s.girgin@utwente.nl)

An isometric illustration of cloud computing. On the left, a blue building with a white antenna on its roof represents a data center. To the right, several people are shown working at various desks and chairs, each with a computer monitor and wireless signal waves above them, representing users accessing cloud services. The background is a light blue grid with white lines and dots, symbolizing a network or data flow.

**Main Characteristics**

- On-demand self-service
- Broad network access
- Resource pooling
- Rapid elasticity
- Measured service

**Cloud computing** is the on-demand availability of computer system resources, especially **data storage** and **computing power**, *without direct active management* by the user

# Cloud Computing Services

- **Software as a Service (SaaS)**

[On-demand software]

- Provider supplies the infrastructure and platforms that run the applications
- User uses provided applications through an interface

- **Platform as a service (PaaS)**

- Provider supplies the infrastructure, services, and tools that allow the user to deploy applications
- User deploys applications and alters settings of the application-hosting environment

- **Infrastructure as a service (IaaS)**

[On-demand hardware]

- Provider supplies the infrastructure
- User deploys and run arbitrary software, including OS

- **Function as a service (FaaS)**

Currently we are using one!

- R Studio Cloud
- Matlab Online
- Authorea
- ...

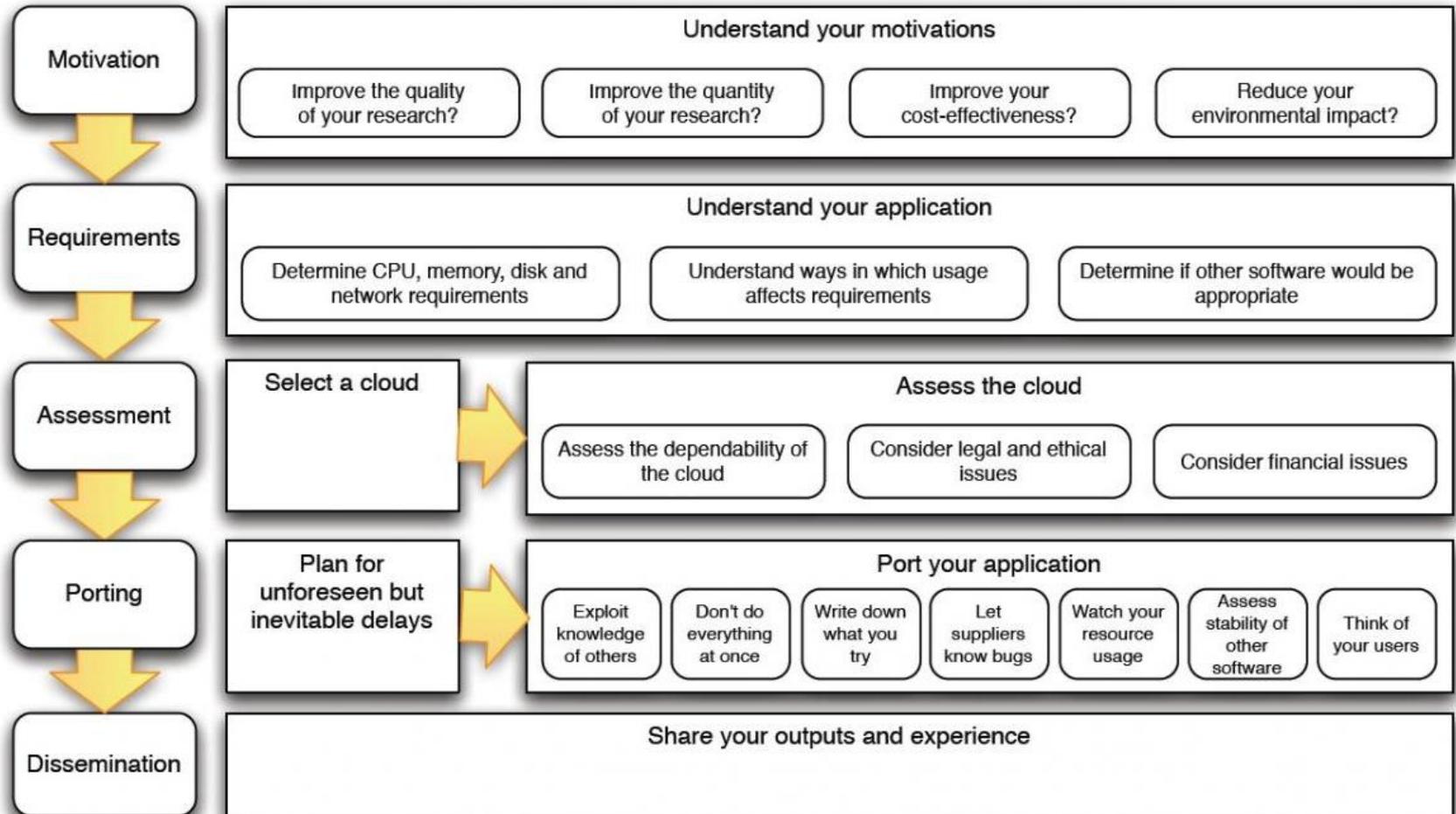
e.g. ITC Computing Platform

- Google Colab
- Amazon SageMaker
- Azure ML Studio
- ...

e.g. LISA VRE

- Microsoft Azure
- Amazon AWS
- Google Cloud
- ...

# Moving to the Cloud



Source: [Best practice for using cloud in research \(Hong et al., 2018\)](#)