



# **Unit 5: Cloud applications and future of Cloud computing**

## **“Cloud Computing”**

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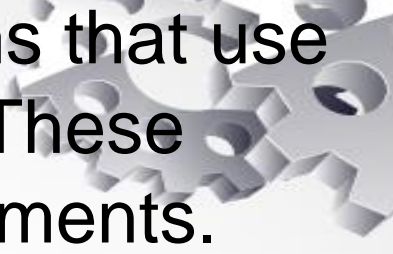
# Content

- Web applications
- Social and cloud computing
- Big Data and IoT
- Cloud Security, Compliance and Standards



# Web applications

- A web service is any piece of software that makes itself available over the internet and uses a standardized XML messaging system. XML is used to encode all communications to a web service. For example, a client invokes a web service by sending an XML message, then waits for a corresponding XML response. As all communication is in XML, web services are not tied to any one operating system or programming language—Java can talk with Perl; Windows applications can talk with Unix applications.
- Web services are self-contained, modular, distributed, dynamic applications that can be described, published, located, or invoked over the network to create products, processes, and supply chains. These applications can be local, distributed, or web-based. Web services are built on top of open standards such as TCP/IP, HTTP, Java, HTML, and XML.

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- Web services are XML-based information exchange systems that use the Internet for direct application-to-application interaction. These systems can include programs, objects, messages, or documents.
  - A web service is a collection of open protocols and standards used for exchanging data between applications or systems. Software applications written in various programming languages and running on various platforms can use web services to exchange data over computer networks like the Internet in a manner similar to interprocess communication on a single computer. This interoperability (e.g., between Java and Python, or Windows and Linux applications) is due to the use of open standards.

# Summary




To summarize, a complete web service is, therefore, any service that –

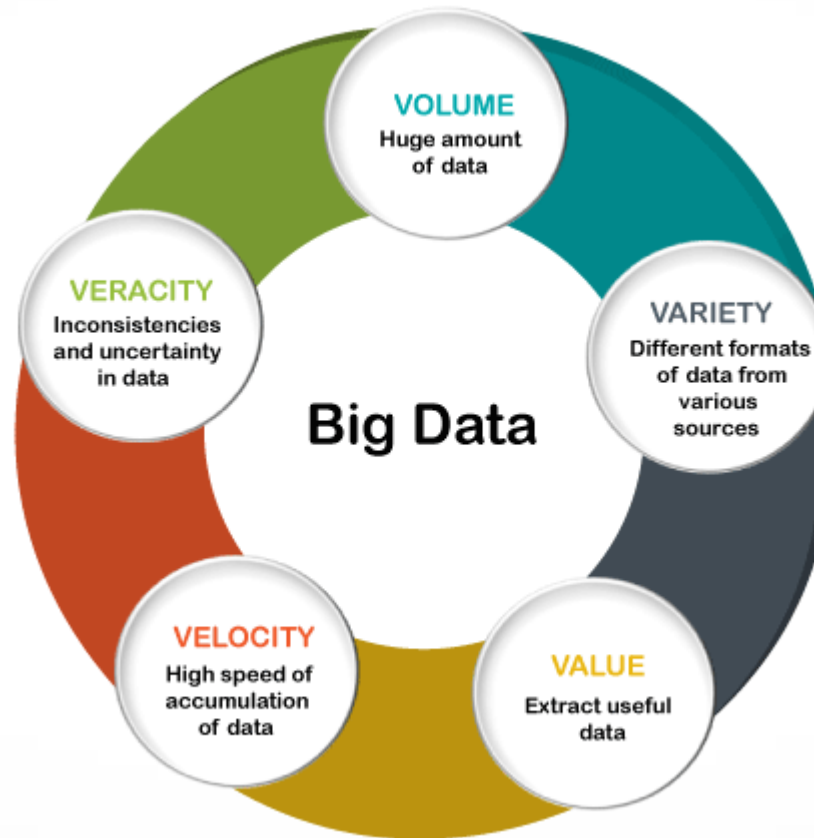
- Is available over the Internet or private (intranet) networks
- Uses a standardized XML messaging system
- Is not tied to any one operating system or programming language
- Is self-describing via a common XML grammar
- Is discoverable via a simple find mechanism

# Social and cloud computing

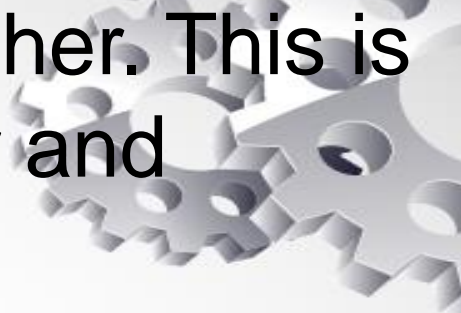
- Social cloud computing is an area of computer science that generalizes cloud computing to include the sharing, bartering and renting of computing resources across peers whose owners and operators are verified through a social network or reputation system
- Cloud-based social networking platforms like Facebook, Twitter, LinkedIn, and Instagram are built on cloud computing technology and use it to store and manage vast amounts of user-generated data
- Social networks also help boost internet usability by storing heavy multimedia content in cloud storage systems

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- Social cloud computing is also referred to as peer-to-peer computing.
  - It extends cloud computing to include those interested in engaging in the sharing economy of cloud services outside the boundaries of formal commercial data centers run by cloud providers.

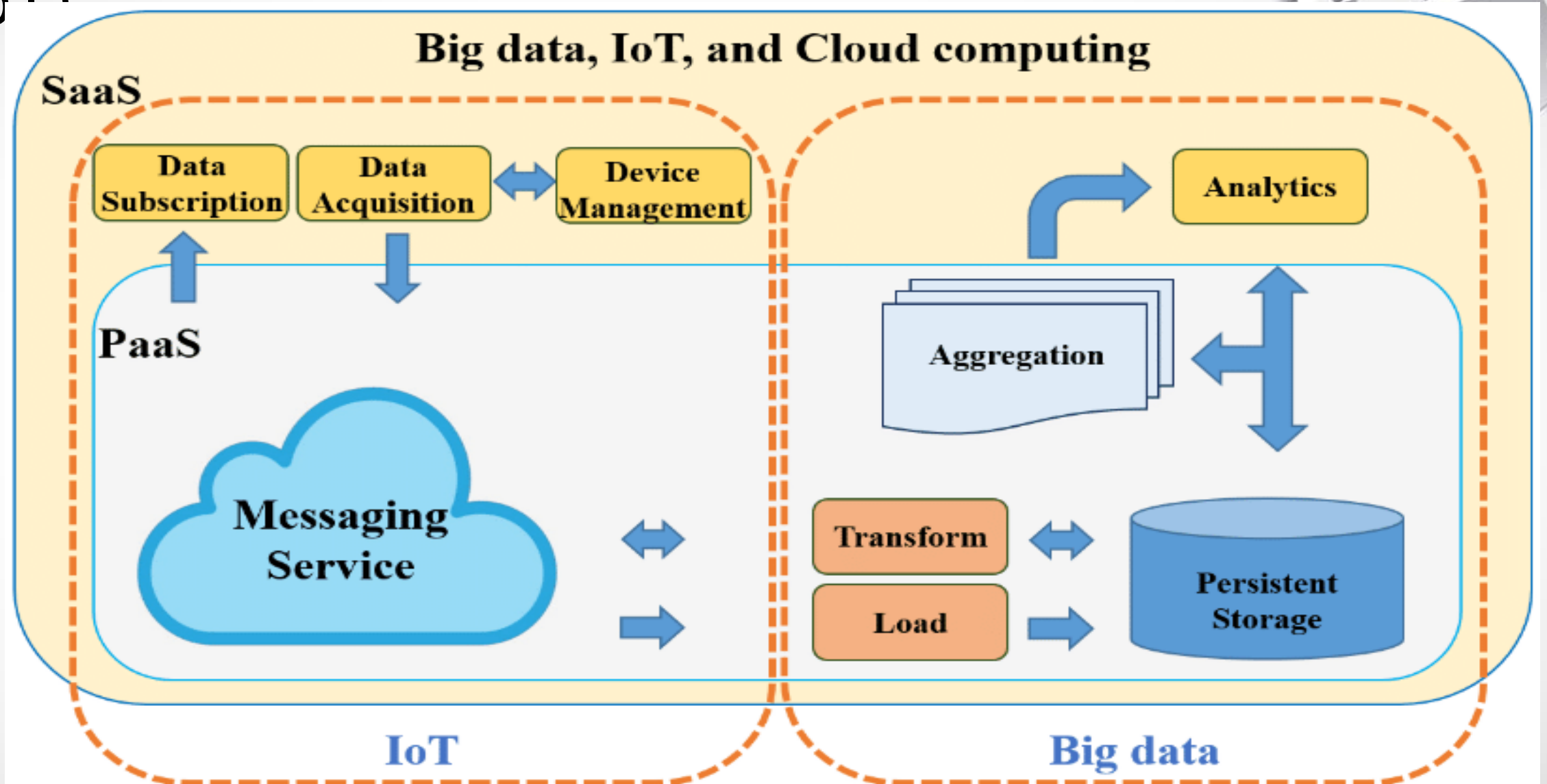
# Big Data and Cloud computing







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- The cloud and big data analytics are often used together. This is because big data requires huge computational power and storage. Cloud computing offers on-demand storage, computation resources, and tools to store and analyze big data. Hence, big data cloud computing and big data cloud analytics are becoming increasingly popular.
  - The rise of big data on cloud computing has made the process of analyzing big data more efficient. Businesses can choose from three types of cloud computing services, IaaS, PaaS, and SaaS, for cloud-based big data analytics. These services are available on a pay-per-use or subscription basis, which means users only pay for the services they use.

# Big Data, Cloud Computing, and Internet of Things (IoT)



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- IoT, big data, and cloud computing are all closely related. Before we discuss the relationship between IoT, big data, and cloud computing, let's first define IoT.
  - IoT is a system of connected smart devices, such as home appliances, sensors, and vehicles. IoT devices communicate and transfer data via the internet without any human intervention.
  - This modern technology offers several benefits, such as automated processes, reduced labor costs, waste reduction, enhanced service delivery, and more. So, how is it related to the cloud and big data?

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- IoT involves collecting real-time data all the time. For example, smart cities install IoT sensors throughout the city to collect real-time data related to traffic, lighting, etc. Similarly, for precision agriculture, sensors are placed in the field to examine soil conditions, temperature, and moisture. This large volume of data needs huge storage space and computational capacity that cloud computing can provide.