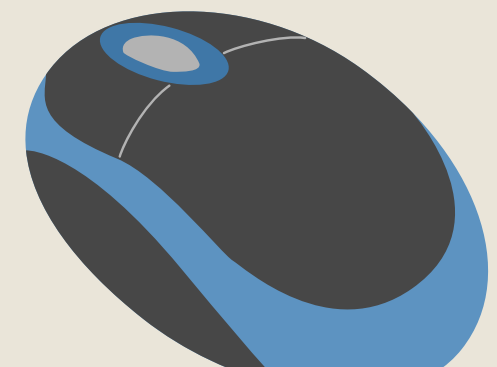


Architecture des  
systemes  
d'information  
d'entreprise

# web Service

Remal Manel  
Khial Belkaise





## *Problematic*

“In today's digital enterprise landscape, organizations rely on a wide variety of software applications, databases, and platforms that are often built using different programming languages and technologies. Ensuring smooth and reliable communication between these heterogeneous systems has become one of the most critical challenges in enterprise IT management. This raises the following question: How do Web Services enable seamless integration and interoperability between heterogeneous information systems within modern enterprises?”





*Web  
service  
definition*

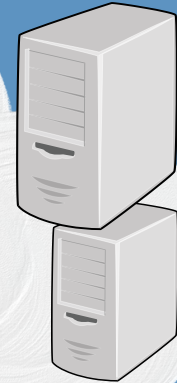


*WEB*

“Is a global information system built on top of the internet, where millions of interconnected documents, resources, and services are linked together and accessed through browsers like ‘Chrome’ or ‘Firefox’ using standard protocols like ‘HTTP’ and ‘URL’.”



*Web  
service  
definition*



*Service*

“Is a set of functionalities provided by a software component that other systems or users can request and consume to accomplish a specific goal.”





## *Web service definition*



“Is a software component accessible over the internet that enables different applications, platforms or devices to communicate and exchange data with each other using standard protocols.”

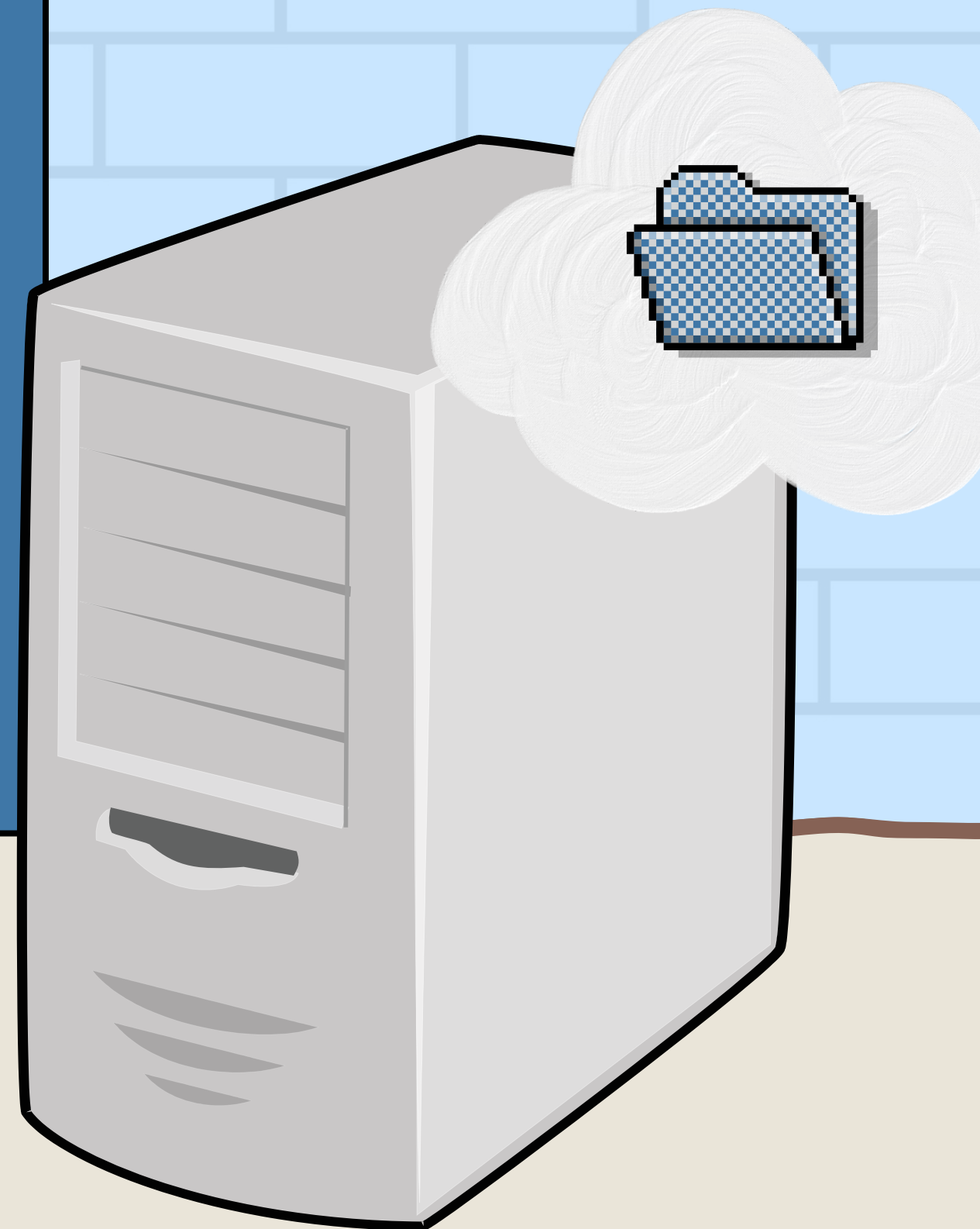
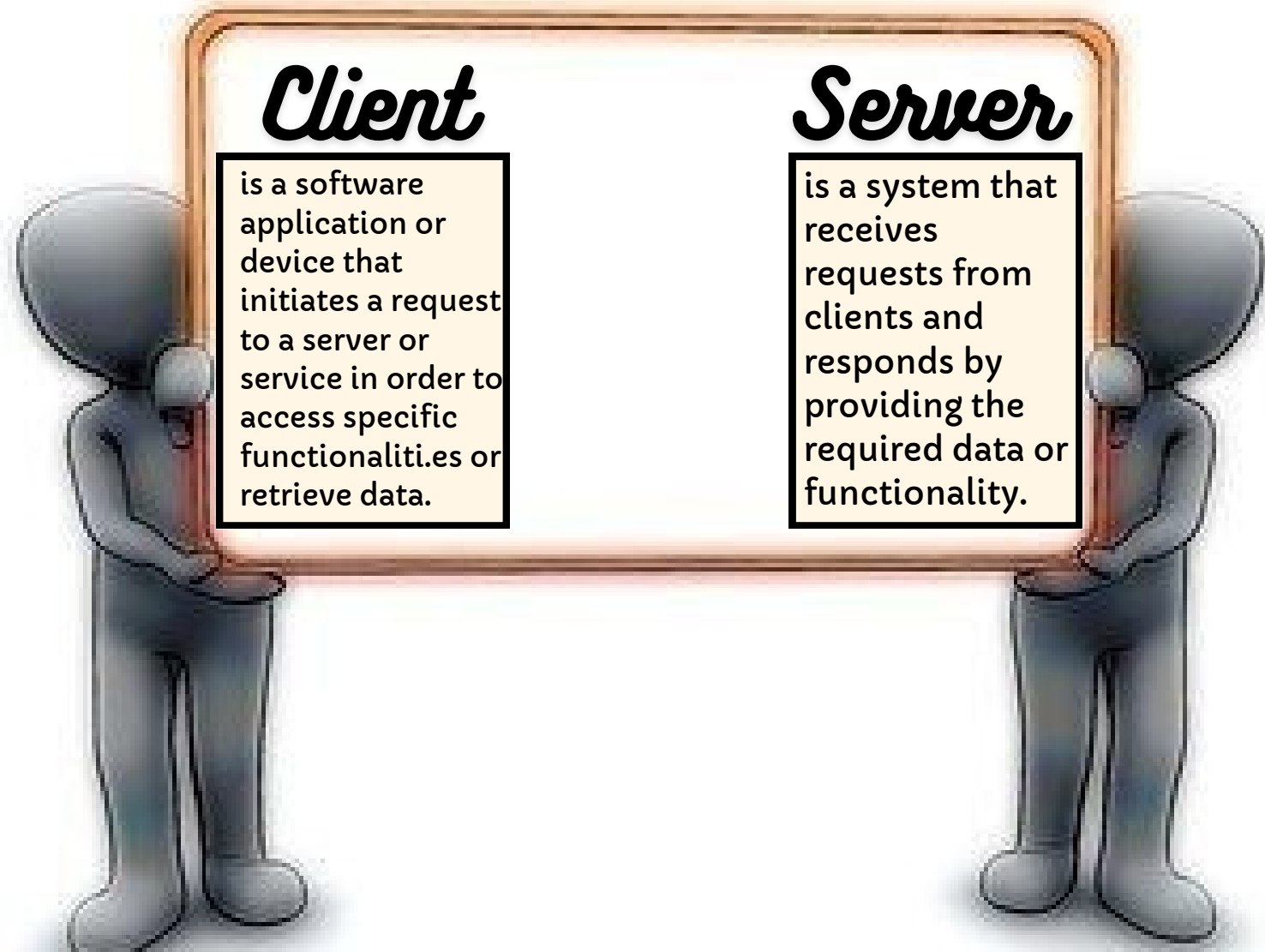


# *The Place of Web Services in Enterprise Information System architecture*

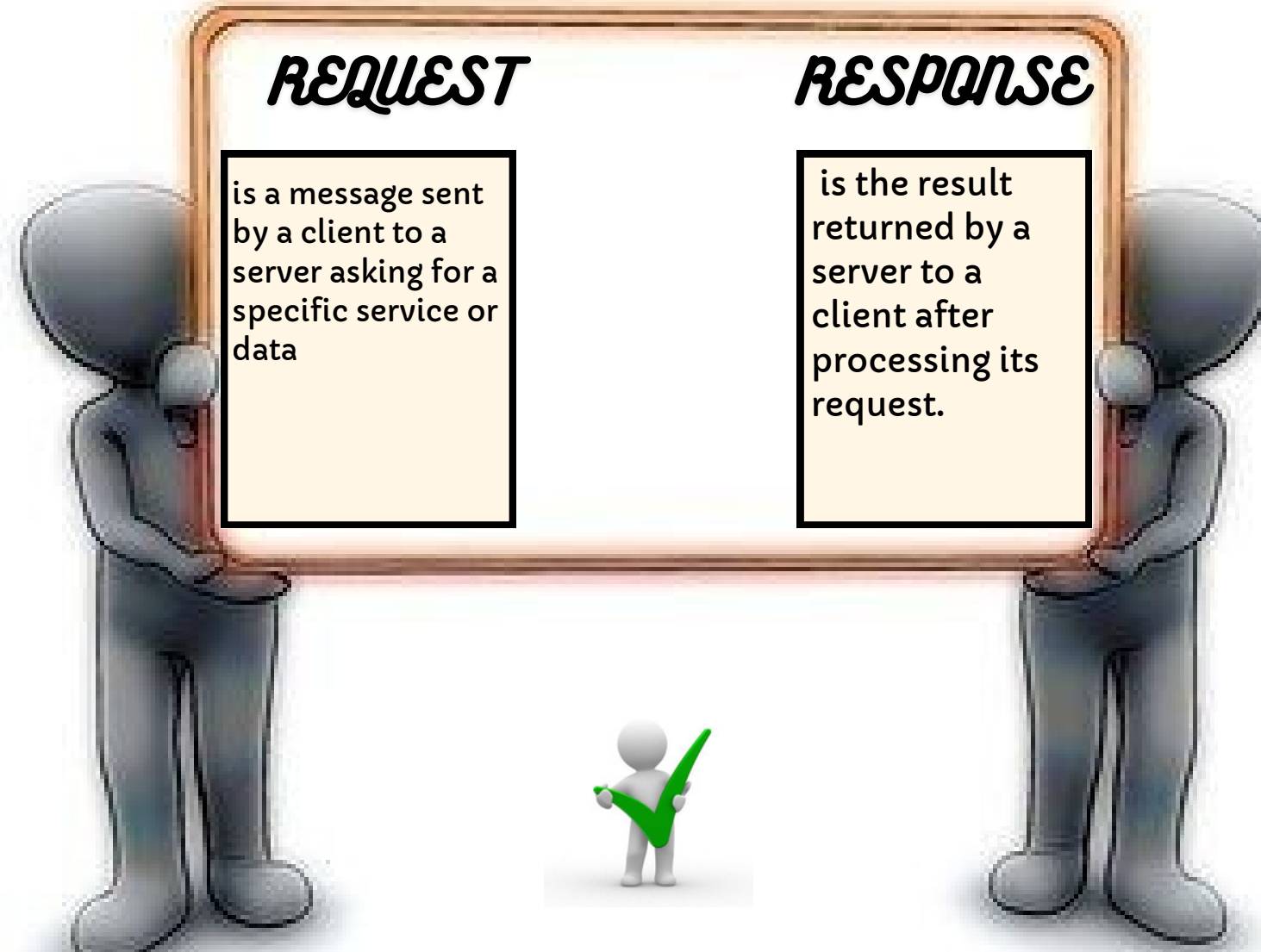
"In modern enterprise information system architecture, Web Services play a central and strategic role as the main communication bridge between different software components. Enterprises today rely on a wide variety of applications, databases, and platforms that need to work together efficiently. Web Services provide a standardized and platform-independent way to connect these systems, allowing them to share data and functionalities seamlessly. They form the backbone of Service-Oriented Architecture (SOA), where each business function is exposed as an independent service that can be reused and integrated across the entire enterprise. By sitting in the middle layer of the architecture, Web Services act as intermediaries between the front-end applications used by employees or customers and the back-end systems such as databases, ERP, and CRM. This integration layer ensures that all parts of the enterprise information system communicate effectively, regardless of the technology or programming language they are built on, making the overall system more flexible, scalable, and easier to maintain."



*How does it work?*



*How does it work?*



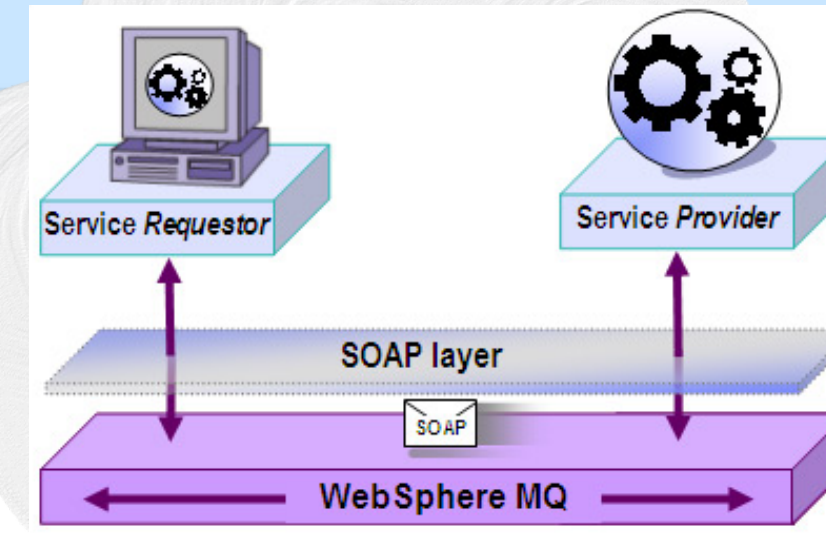


## Types of Web Services

### SOAP

#### Simple Object Access Protocol

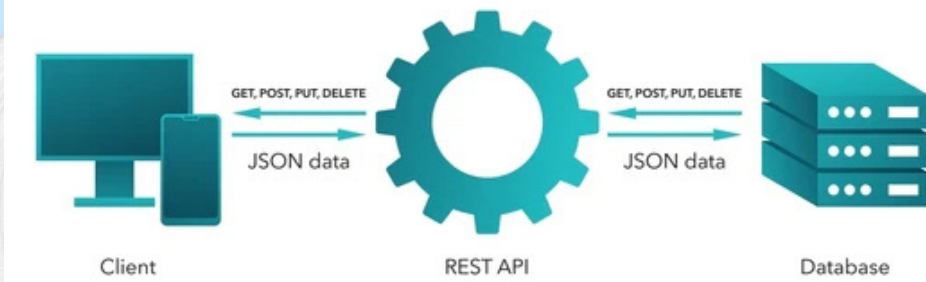
“is an XML-based web service protocol that works independently of any programming language or platform. It supports both stateful and stateless operations, allowing flexible and efficient communication between systems. Major companies like IBM and Microsoft have widely adopted it in their infrastructures.”



# *RESTful*

## *Representational State Transfer*

“are fast platform-independent services that treat data as resources and return responses in JSON or XML format. More popular than SOAP today, they work by transferring the state of objects in response to client requests.”



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# Components of Web Services

## *XML or JSON*

*are the two main formats used by web services to exchange data. XML uses tags to structure data, while JSON uses key-value pairs, making it lighter and simpler. Both are essential for web service communication.*

## *SOAP or REST*

*are the two main protocols used by web services to exchange data between applications. SOAP relies on XML and specific messaging formats, while REST uses simple HTTP requests, making it more flexible and easier to use*

## *Service provider & service consumer*

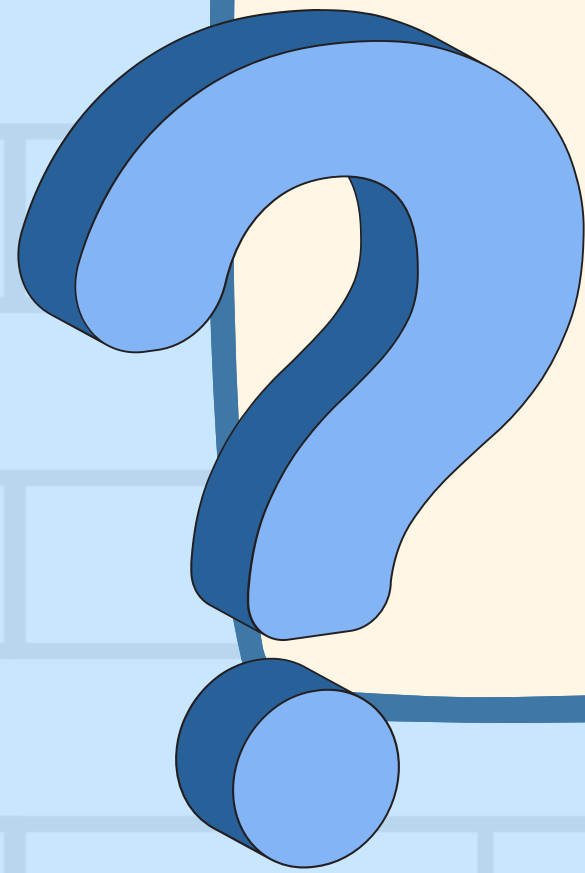
*A service provider creates and publishes a web service, while a service consumer accesses and uses it. Both parties communicate with each other using the protocols and data formats defined by the web service.*

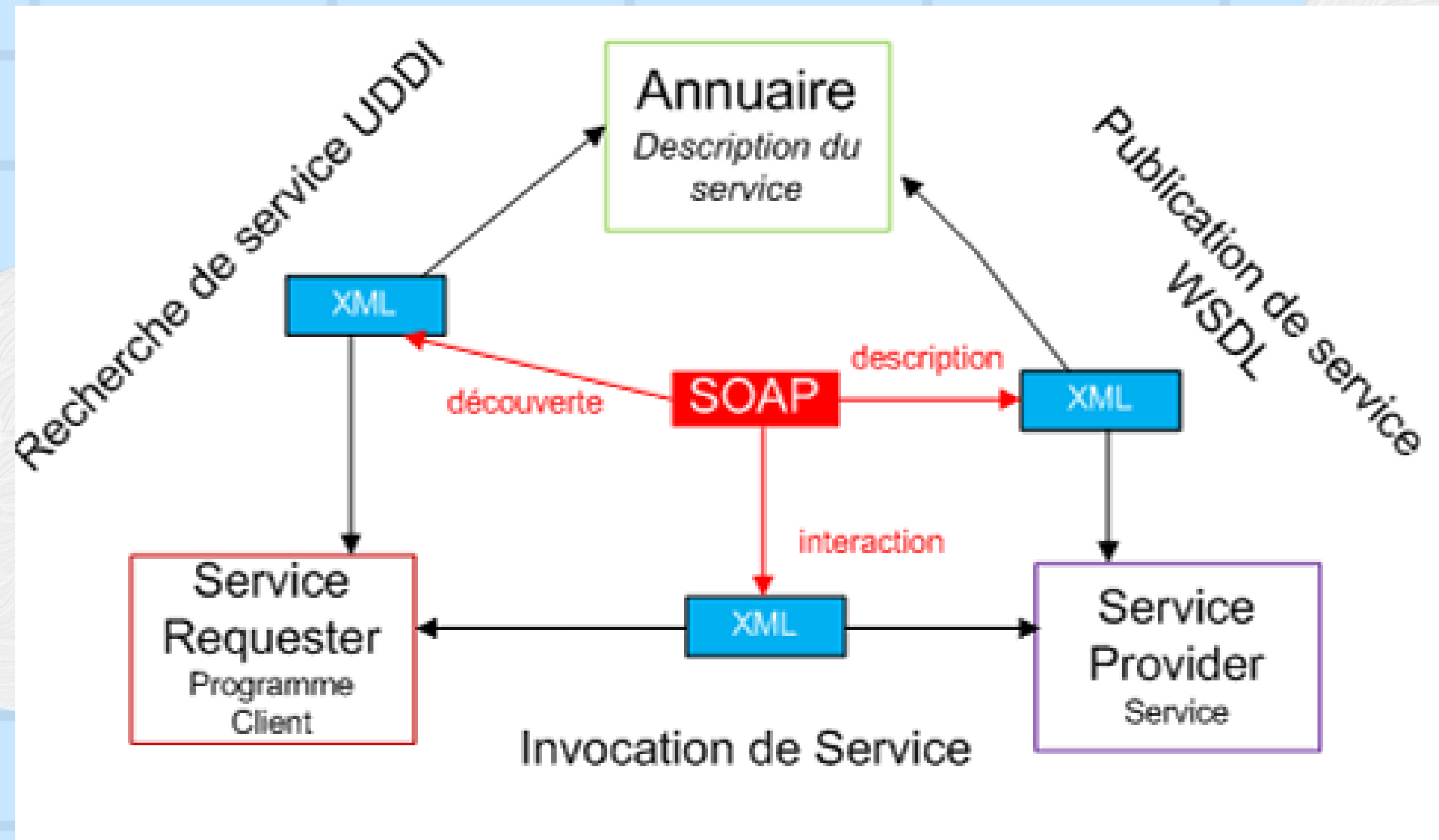
## *WSDL*

*is an XML-based language used to describe the interface of a web service. It defines the available operations, their parameters, and the data types used, providing a clear contract between the service and its clients.*

## *UDDI*

*is a directory service that allows developers to publish, discover, and locate web services. It provides a standard way for service providers to advertise their services and for clients to find and use them easily*



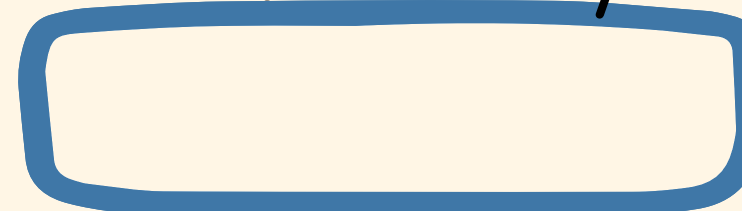






## Security of Web Services

*"Security is a fundamental aspect of Web Services, as they are exposed over the internet and can be accessed by any client, making them vulnerable to various threats such as unauthorized access, data interception, and identity theft. To protect Web Services, several mechanisms and standards have been put in place. For SOAP-based Web Services, WS-Security is the main standard that ensures message integrity and confidentiality by encrypting the content of SOAP messages. For REST-based Web Services, security is achieved through HTTPS, which encrypts the communication channel between the client and the server, preventing any data interception. In terms of authentication and authorization, modern Web Services rely on mechanisms such as API Keys, which identify the client application, OAuth 2.0, which allows secure delegated access without sharing credentials, and JWT (JSON Web Token), which is a compact and self-contained token used to verify the identity of the user between the client and the server. Together, these security mechanisms ensure that only authorized clients can access the Web Service, that exchanged data remains confidential and unaltered, and that the system is protected against common attacks such as SQL injection, man-in-the-middle attacks, and denial of service."*



Thank  
*You!*

Finish!

