MATTER	Advanced Web Programming	**NRC**	8011
RACE	Software Engineering	**Teacher**	Dr. Edison Lascano
THEME	Soap		
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1. Introduction:

SOAP (Simple Object Access Protocol) is an XML-based protocol designed for communication between applications in distributed networks. Initially developed by Microsoft in collaboration with other players, SOAP became a standard of the World Wide Web Consortium (W3C). This protocol allows applications to exchange information in a structured way, regardless of the programming language or platform on which they are developed.

In this research, we will explore the fundamentals of SOAP, its architecture, advantages, disadvantages, and its relevance compared to other standards such as REST in system integration.

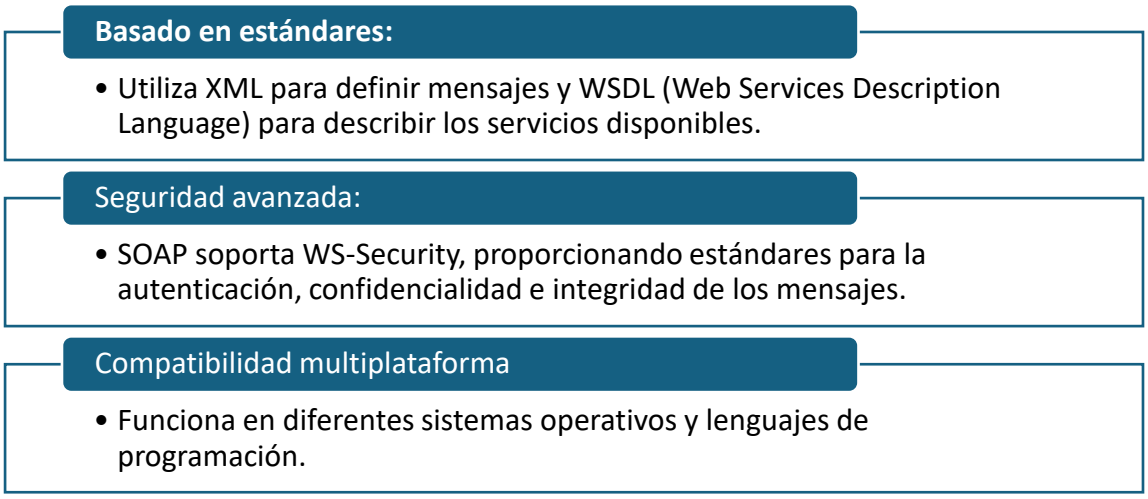
2. Research

SOAP is a protocol that defines how messages between web services should be structured. It uses XML as the message format and is independent of the transport protocol, although it is commonly used with HTTP or SMTP.

Structure of a SOAP message:

- **Envelope:** Contains the general structure of the message.
- **Header: Includes** optional information, such as authentication or routing.
- **Body:** Contains the data or logic of the message.
- **Fault:** Optional, details errors if the message is not processed correctly.

Main features of SOAP:



Practical example:

A SOAP service to check the balance of a bank account could be structured as follows:

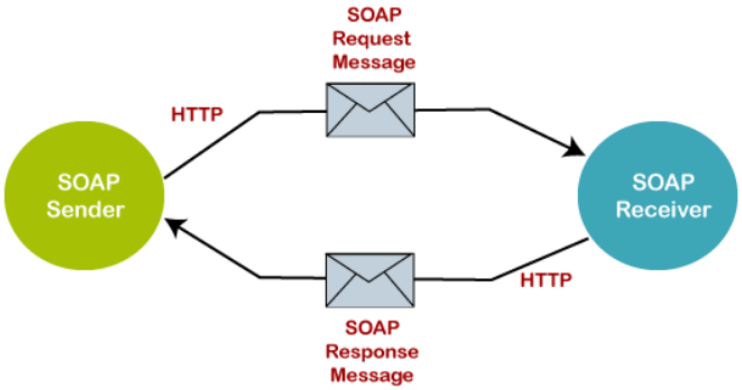
Request:

```
<soap:Envelope
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <GetAccountBalance xmlns="http://example.com/banking">
      <AccountNumber>123456</AccountNumber>
    </GetAccountBalance>
  </soap:Body>
</soap:Envelope>
```

Response:

```
<soap:Envelope
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <GetAccountBalanceResponse xmlns="http://example.com/banking">
      <Balance>1500.00</Balance>
    </GetAccountBalanceResponse>
  </soap:Body>
</soap:Envelope>
```

SOAP stands for Simple Object Access Protocol is a network platform used in a web service to exchange or communicate data between two different machines on a network. It uses the XML data format to transfer messages over the HTTP protocol. In Web services, SOAP allows the user's request to interact with other programming languages.



3. Analysis

SOAP has been widely used in enterprise environments where reliability and security are critical. However, with the emergence of lighter alternatives like REST, their adoption has declined in modern applications. SOAP remains relevant in sectors such as finance, healthcare, and telecommunications, where strict standards are essential.

Compared to REST, SOAP excels in transactional operations and high-security scenarios, but its greater complexity can be a hindrance in simpler or performance-constrained applications.

4. Conclusion

SOAP has played a crucial role in web service integration for decades, offering a robust and secure solution for communication between systems. Although REST has gained popularity for its simplicity and flexibility, SOAP remains a solid choice in enterprise applications that require advanced features such as distributed transactions and tight security.

5. References

- W3C. (2007). *SOAP Version 1.2 Part 1: Messaging Framework*. Retrieved from https://www.w3.org/TR/soap12-part1/.
- Chappell, D. (2002). *Understanding SOAP: A Beginner's Guide*. Addison-Wesley.
- IBM Developer. (2025). *SOAP vs. REST: Choosing the Right API Style*. Available at: https://developer.ibm.com.