

A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines. The nodes are represented by small circles, some of which are solid grey and others are hollow with a grey outline. The lines connecting them are thin and grey, creating a dense, organic structure that resembles a molecular or biological network.

# SOAP

SIMPLE OBJECT ACCESS  
PROTOCOL

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# Quem somos


- Felipe Melo
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1.

# Introdução

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Introdução

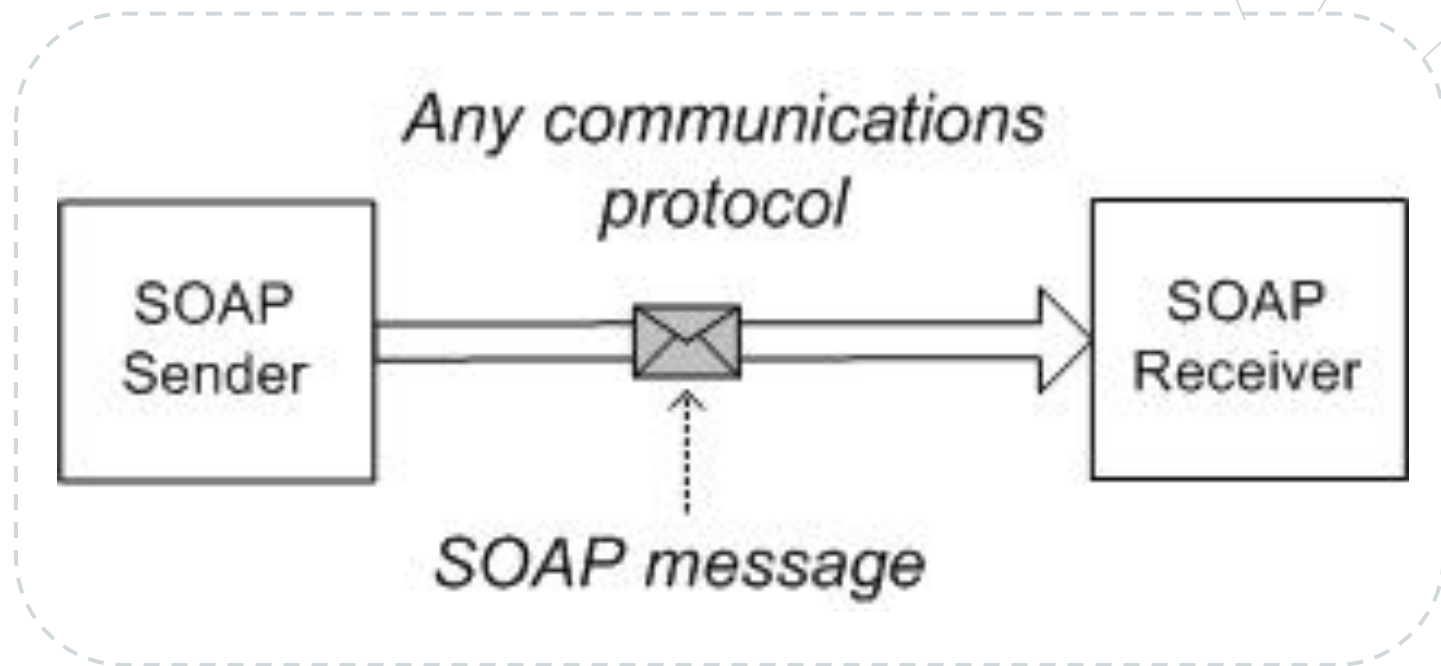
# Simple ~~Object~~ Access Protocol



## Introdução

Inicialmente, este protocolo era voltado ao acesso a **objetos**, porém foi identificado com o tempo, que, deveria abranger uma **audiência muito maior.**

## Introdução





## Introdução

### **1. Extensível**

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2. Praticável em uma variedade de protocolos de rede fundamentais.

---

### **3. Independente de modelos de programação**







“

*simplicidade*


>

*ALL*



## 1. Extensível

Por isso, o SOAP não possui diversas funcionalidades encontradas em outros Sistemas Distribuídos, como, **segurança**, **roteamento**, **confiança**, etc.



## 1. Extensível

Define um framework de comunicações que permite muitas **features** serem adicionadas como *extensões em camadas*.

Exemplo:

- ◎ **Global XML Web Services Architecture (GXA)**
- ◎ **WS-\***
  - **Addressing**
  - **Notification**
  - **Security**
  - **etc.**

## 2. Protocolos

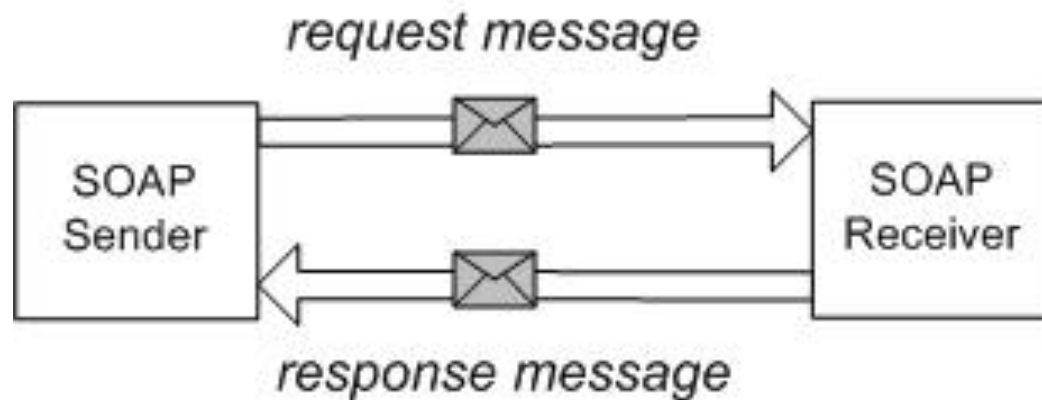
- TCP
- HTTP
- SMTP
- MSMQ

As especificações do SOAP fornecem um framework flexível para definir a ligação de um protocolo arbitrário e uma ligação explícita para HTTP (já que é tão largamente utilizado).

### 3. Qualquer Modelo de Programação

SOAP não está amarrado  
ao RPC

SOAP aceita qualquer  
padrão de troca de  
mensagens, dos quais,  
*request/*  
*response* é apenas um.



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2.

# **Versões do SOAP**

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## SOAP 1.1

Namespace  
Name

<http://schemas.xmlsoap.org/soap/envelope/>

Spec Location

<http://www.w3.org/TR/SOAP/>

## SOAP 1.2

Namespace  
Name

<http://www.w3.org/2002/12/soap-envelope>

Spec Location

<http://www.w3.org/TR/soap12-part0/> (Primer)  
<http://www.w3.org/TR/soap12-part1/>  
[http://www.w3.org/TR/soap12-part2](http://www.w3.org/TR/soap12-part2/)

---

tabela de versões do SOAP

A decorative network diagram at the bottom of the page, featuring a series of interconnected nodes and lines, resembling a molecular structure or a network graph. The nodes are represented by circles of varying sizes, some with internal patterns, and the lines are thin and grey.

A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines. The nodes are represented by small circles, some of which are solid grey and others are hollow with a grey outline. The lines connecting them are thin and grey, creating a dense, organic structure that tapers off towards the right.

3.

# **Framework de Mensagem**


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## Framework de Mensagens

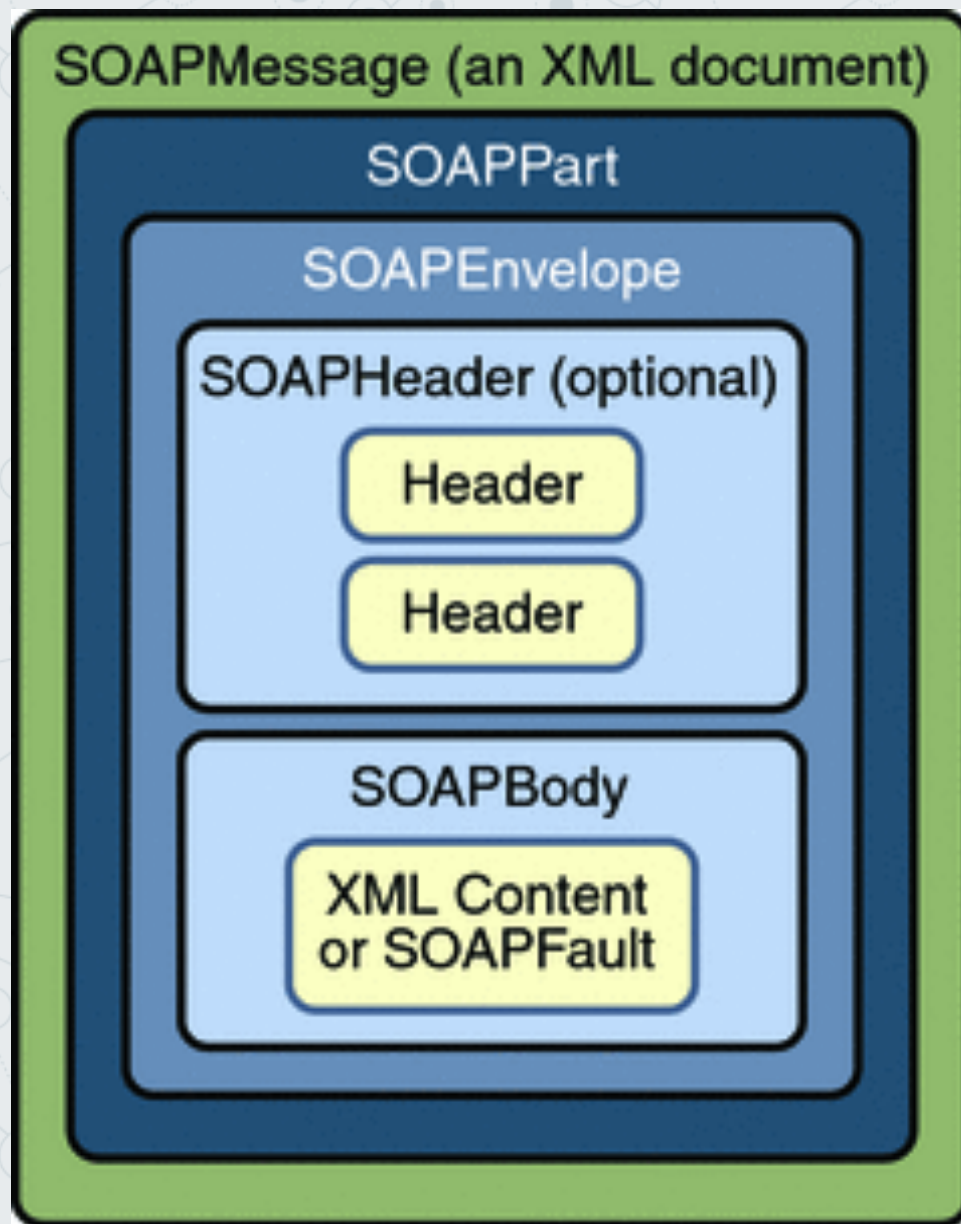
O Framework de Mensagens do SOAP define um conjunto de elementos para empacotar mensagens XML para transporte entre sistemas



## Framework de Mensagens

- ⊙ Envelope
- ⊙ Head
- ⊙ Body
- ⊙ Fault






# Framework de Mensagens

```
1  <?xml version="1.0"?>
2  <soap:Envelope
3  xmlns:soap="http://www.w3.org/2001/12/soap-envelope"
4  soap:encodingStyle="http://www.w3.org/2001/12/soap-encoding">
5
6  <soap:Header>
7  ...
8  </soap:Header>
9
10     <soap:Body>
11     ...
12     <soap:Fault>
13     ...
14     </soap:Fault>
15     </soap:Body>
16
17 </soap:Envelope>
```



## Framework de Mensagens

O Framework de Mensagens também define um elemento chamado **Fault** para representar erros dentro do elemento **Body** quando alguma coisa dá errada.





## Framework de Mensagens

O elemento **Fault** deve conter um **faultcode** seguido por um elemento **faultstring**.






Framework de Mensagens

## **VersionMismatch**

O processador encontrou um namespace inválido para o elemento **Envelope**.






## Framework de Mensagens

### **MustUnderstand**

Um filho imediato do elemento **Header** que não foi entendido ou não obedecido pelo processador continha um atributo mustUnderstand com valor “1”.








## Framework de Mensagens

### **Client**

Indica que a mensagem foi formulada incorretamente ou não continha a informação apropriada pra ser bem-sucedida.






## Framework de Mensagens

### **Server**

Esta classe de erros indica que a mensagem não pôde ser processada por razões não diretamente ligadas ao conteúdo da mensagem mas sim ao processamento da mensagem.



```
<soap:Envelope
  xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <soap:Fault>
      <faultcode>soap:Server</faultcode>
      <faultstring>Insufficient funds</faultstring>
      <detail>
        <x:TransferError xmlns:x="urn:examples-org:banking">
          <sourceAccount>22-342439</sourceAccount>
          <transferAmount>100.00</transferAmount>
          <currentBalance>89.23</currentBalance>
        </x:TransferError>
      </detail>
    </x:TransferFunds>
  </soap:Body>
</soap:Envelope>
```

Exemplo



```
<soap:Envelope
  xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <x:TransferFunds xmlns:x="urn:examples-org:banking">
      <from>22-342439</from>
      <to>98-283843</to>
      <amount>100.00</amount>
    </x:TransferFunds>
  </soap:Body>
</soap:Envelope>
```

Exemplo

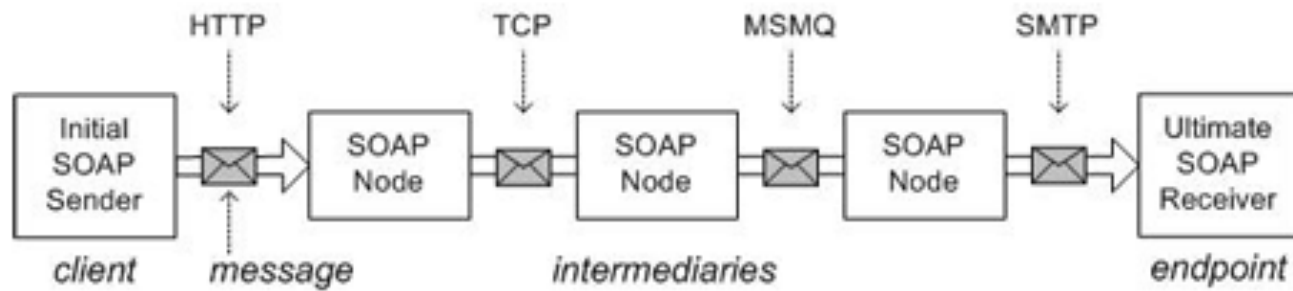


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# 4. **Modelos de Aplicação**

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## Modelo de Processamento



# HTTP

```
POST /path/bank.asmx HTTP/1.1
Content-Type: text/xml
SOAPAction: "urn:banking:transfer"
Content-Length: nnnn

<soap:Envelope...
```

Request

```
HTTP/1.1 200 OK
Content-Type: text/xml
Content-Length: nnnn

<soap:Envelope...
```

Response

```
HTTP/1.1 500 Internal Server Error
Content-Type: text/xml
Content-Length: nnnn

<soap:Envelope...
```

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# 5. RPC


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## RPCs

Apesar de evoluir para longe dos objetos, o SOAP ainda define uma convenção para encapsular e trocar chamadas RPC.



## RPC

Para fazer uma chamada de método usando SOAP, a infraestrutura precisa das seguintes informações:

- ◎ Endpoint location (URI)
- ◎ Method name
- ◎ Parameter (names/values)
- ◎ Optional method signature
- ◎ Optional header data

## RPCs

# Exemplo:

### Método

```
double add(ref double x, double y)
```

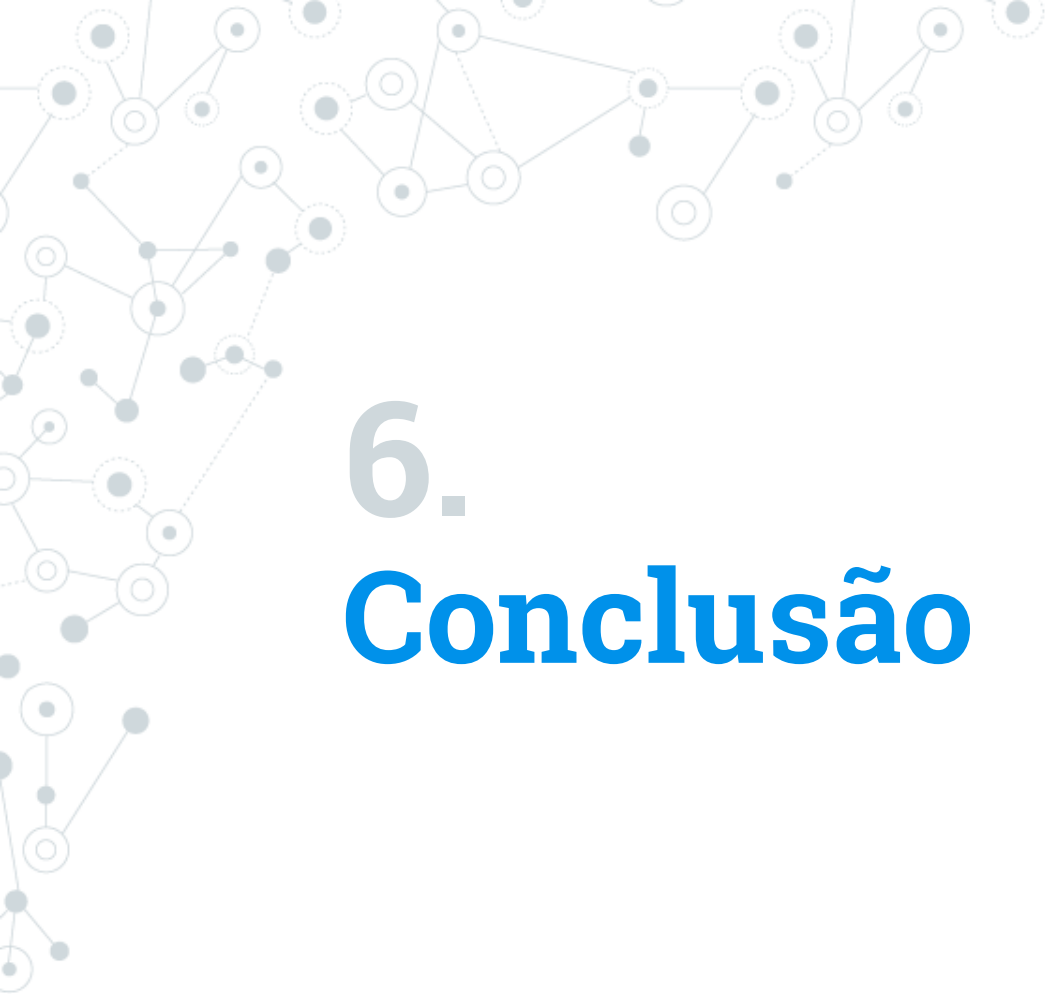
### Estrutura

```
struct add {  
    double x;  
    double y;  
}  
  
struct addResponse {  
    double result;  
    double x;  
}
```

### XML

```
<add>  
  <x>33</x>  
  <y>44</y>  
</add>
```

```
<addResponse>  
  <result>77</result>  
  <x>33</x>  
</addResponse>
```

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# 6. **Conclusão**



Conclusão

**Vantagens**

**Desvantagens**

## Conclusão

O mercado tem visto com cada vez mais cautela a adoção de SOAP como solução técnica, especialmente comparando-o à possibilidade de utilizar a Web como plataforma de integração.

## Conclusão

O Google, por exemplo, deixou de adotar SOAP nas buscas em 2009



“

*“... no momento atual, as vantagens técnicas deixaram de valer a pena, somente recomendamos o uso de Web services tradicionais via SOAP quando questões políticas estão envolvidas, como, por exemplo, acesso a um sistema SAP que já possui um serviço disponibilizado...”*

- Stefan Tilkov



## Referências

- ⊙ <https://msdn.microsoft.com/en-us/library/ms995800.aspx>
- ⊙ [http://www.w3.org/TR/2000/NOTE-SOAP-20000508/#\\_Toc478383486](http://www.w3.org/TR/2000/NOTE-SOAP-20000508/#_Toc478383486)
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- ⊙ Introdução à Arquitetura e Design de Software, Editora Campus