Electronic Declarations DGAIEC

Web Services - User Guide

Version 1.8

ELECTRONIC DECLARATIONS DGAIEC

Web Services - User Guide

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1.2	2010-09-09	Submission address updates	4
1.3	2010-10-13	Included section about Electronic Declarations Server Certificate	2.1
1.4	2010-10-22	Security requirements update	3.2
1.5	2010-12-09	Updated public key format that is sent to validation	2.2
		Included Public Key export instructions	8
1.6	2010-12-28	Updated production addresses for ICS and SDS webservices	4.1; 4.2
1.7	2010-02-28	Included section about test Software	9
1.8	2011-03-16	Submission address updates (ECS and SDS Air Way Webservices)	4

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1. Introduction

This document describes the procedures and requirements necessary for the use of Web services provided by the DGAIEC - Electronic Declarations Portal [1] .

This document is intended for companies wishing to develop solutions which enable users to the Electronic Declarations, perform Customs transactions through Web Services already available.

The software provider's digital certificate, ensures that the message was sent by software produced by that software provider, which is responsible for correctly transmit the trader's (customer) messages. This certificate is the same in Test/Production environment.

The trader is responsible for sending the message and message content, since it uses it's own credentials in the DGAIEC Portal (Username/Password) that in turn are used by the Portuguese Customs Administration to assure non repudiation of the transmitted data. (These credentials must only be known to the Trader and should be different in Test/Production environments).

2. Prerequisites for using the service

2.1. Server Certificate

The SSL server certificate in use by Electronic Declarations can be reached at:
https://www.e-financas.gov.pt/dgaiec/

2.2. Client Certificate

The use of the service described in this document requires the prior submission to DGITA (see 7. Contacts) to:

- Company's Public Key Certificate its Certification Chain

  (The certificate public key an certification chain must be sent to validation in the format: Cryptographic message Syntax Standard - PKCS #7 Certificates (.P7B) - with the option: Include all certificates in the certification path if possible)

The public key should be emailed in a Zip file.

The certificate must have the following properties (Key Usage):

- Digital Signature;
- Non Repudiation;
- Key Encipherment;
- Data Encipherment

The client application must have access to the private key of the this certificate.

2.3. Test Environment

The test environment should be used to validate the format of the application and submitted data.
To gain access to this environment, valid credentials should be requested in the form of a NIF / Password or EORI Number / Password valid in the test environment for scenarios to be tested.

3. Technical Requirements

3.1. Connection to Portal of Electronic Declarations

Requests via Web Service to the site of Electronic Declarations must meet the following requirements in regard to their connection:

- Method: **POST**
- Protocol: **HTTPS**

3.2. Security

3.2.1. Authentication of the client application

As mentioned before, applications must be made via HTTPS protocol, which requires the use of a digital certificate to authenticate the client application to the server.

3.2.2. Web Services Security Specification

Web services described in this document were implemented according to the SOAP specification and follow the WS-Security 1.1 OASIS Standard [2].

In the following table it is specified which security requirements are expected for each web service invocation:

Identificação	Requisitos de segurança
SDS and SDS Air Way System Web Services	• User authentication
ICS System Web Services	• User authentication
SIC-EU (EMCS) System Web Services	• User authentication • SOAP message integrity and authenticity
ECS System Web Services	• User authentication

	• SOAP message integrity and authenticity

3.2.2.1. SOAP Message integrity and authenticity

To ensure the integrity and authenticity of SOAP messages, requests made to Web Services that demand this requirement must meet the following technical specifications:

- Digital Signature of SOAP messages: messages sent by the client applications must include a *security header* containing a digital signature generated with the client certificate's private key. This signature will be validated on the server with the certificate's public key.

  Example of a SOAP header containing a *security header* with a *signature* element:

```
<soapenv:Header>
  <wsse:Security xmlns:wsse="...">
    <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
      <ds:SignedInfo>
        <ds:CanonicalizationMethod Algorithm="..."/>
          <ds:SignatureMethod Algorithm="..."/>
            <ds:Reference URI="...">
              <ds:Transforms>
                <ds:Transform Algorithm="..."/>
              </ds:Transforms>
              <ds:DigestMethod Algorithm="..."/>
                <ds:DigestValue>
                  digestValue
                </ds:DigestValue>
            </ds:Reference>
      </ds:SignedInfo>
      <ds:SignatureValue>
        signatureValue
      </ds:SignatureValue>
      <ds:KeyInfo Id="...">
        <wsse:SecurityTokenReference wsu:Id="..." xmlns:wsu="...">
          <ds:X509Data>
            <ds:X509IssuerSerial>
              <ds:X509IssuerName>
                certificateIssuerName
              </ds:X509IssuerName>
              <ds:X509SerialNumber>
                certificateSerialNumber
              </ds:X509SerialNumber>
            </ds:X509IssuerSerial>
          </ds:X509Data>
        </wsse:SecurityTokenReference>
      </ds:KeyInfo>
    </ds:Signature>
  </wsse:Security>
</soapenv:Header>
```

- The digital signature must be created according with the following information:
  - SOAP element to sign:

    SOAP Body

  - Canonicalization Method Algorithm:

    http://www.w3.org/2001/10/xml-exc-c14n#

  - Signature Method Algorithm:

    http://www.w3.org/2000/09/xmldsig#rsa-sha1

  - Key Identifier Type:

X509IssuerSerial (certificate issuer name and serial number)

3.2.2.2. User Authentication

All users responsible for submitting the requests must be authenticated on the Electronic Declarations site, assuming the use of valid credentials for this purpose. Thus, all requests must meet the following technical specifications:

- Messages must include a SOAP *security header* with *UsernameToken* containing *Username* and *Password* (matching access credentials to the Electronic Declarations website).

  Example of a SOAP header containing a *security header* with *UsernameToken*:

```
<soapenv:Header>
  <wsse:Security>
    <wsse:UsernameToken wsu:Id="...">
      <wsse:Username>NIF ou identificador EORI</wsse:Username>
      <wsse:Password Type="...">Senha de acesso</wsse:Password>
    </wsse:UsernameToken>
  </wsse:Security>
</soapenv:Header>
```

- The type of password specified in the *Type* attribute of *Password* element, must be:
  - **http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText**
- The *Username* content can be:
  - A valid NIF with access to Portal DGAIEC

    Example: 123456789
  - A sub-user NIF with valid Access to Portal DGAIEC,

    Example: 123456789/2 (sub-user 2 of NIF: 123456789).
  - A valid EORI identifier with prior access to Portal DGAIEC

    Example: ES12345676.

- The password must match the password of the user identified by: *Username*.

4. Submission URL's

4.1. SDS System Web Services

Environment	Address
Quality / Test	https://www.e-financas.gov.pt:700/jsp-dgaiec/externalWebservice.jsp?external=sdsqualidadews
Production	https://www.e-financas.gov.pt:400/jsp-dgaiec/externalWebservice.jsp?external=sdsws

4.2. SDS – Air Way System Web Services

Environment	Address
Quality / Test	https://www.e-financas.gov.pt:700/jsp-dgaiec/externalWebservice.jsp?external=sdsdepqualidadews

4.3. ICS System Web Services

Environment	Endereço
Quality / Test	https://www.e-financas.gov.pt:700/jsp-dgaiec/externalWebservice.jsp?external=icsqualidadews
Production	https://www.e-financas.gov.pt:400/jsp-dgaiec/externalWebservice.jsp?external=icsws

4.4. SIC-EU System Web Services

Ambiente	Endereço
Quality / Test	https://www.e-financas.gov.pt:700/jsp-dgaiec/externalWebservice.jsp?external=siceuws
Production	https://www.e-financas.gov.pt:400/jsp-dgaiec/externalWebservice.jsp?external=siceuws

4.5. ECS System Web Services

Ambiente	Endereço
Quality / Test	https://www.e-financas.gov.pt:700/jsp-dgaiec/externalWebservice.jsp?external=ecsqualidadews
Production	https://www.e-financas.gov.pt:400/jsp-dgaiec/externalWebservice.jsp?external=ecsws

4.6. Web Service WSDL definitions

To obtain a specific Web Service WSDL, please use the contacts refered in Chapter 7 - Contacts.

5. References

[1] Electronic Declarations (DGAIEC):
http://www.e-financas.gov.pt/de/jsp-dgaiec/main.jsp

[2] OASIS
http://www.oasis-open.org

6. Definitions, Acronyms and Abbreviations

DGAIEC	Direcção-Geral das Alfândegas e dos Impostos Especiais sobre o Consumo
Client Application	Application developed by a third party and used to access Web Service
Web Service	Web Service available through a network (Internet, Intranet or other) used for exchanging data between applications and systems.
OASIS	Organization for the Advancement of Structured Information Standards
SOAP	Simple Object Access Protocol

7. Contacts

Phone: 213820603

Email: SI - ASA - Área de Sistemas Aduaneiros (si-asa@dgita.min-financas.pt)

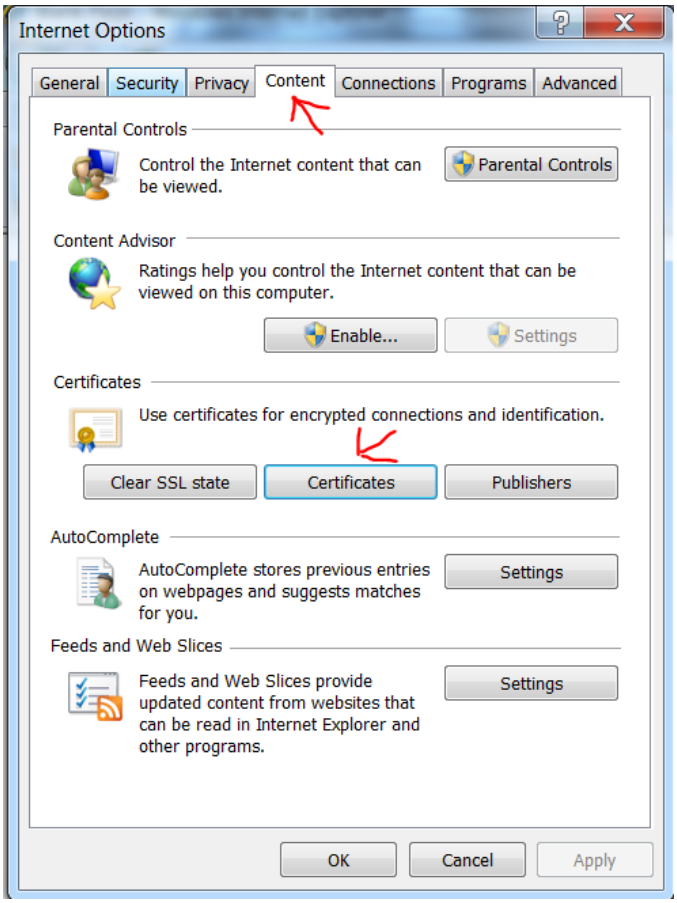
8. How to export the certificate public key

We describe the instructions to obtain a certificate public key in a Windows machine.

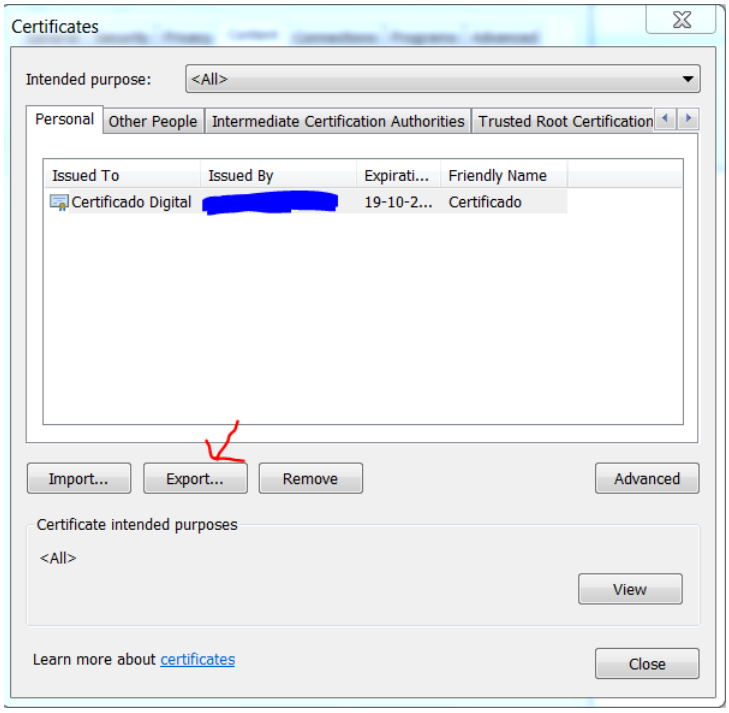
It is assumed that the certificate was previously imported in the Windows Operative System and an Internet Explorer 8 Browser is being used. For other combinations of OS an browser, the instructions should be adapted accordingly.

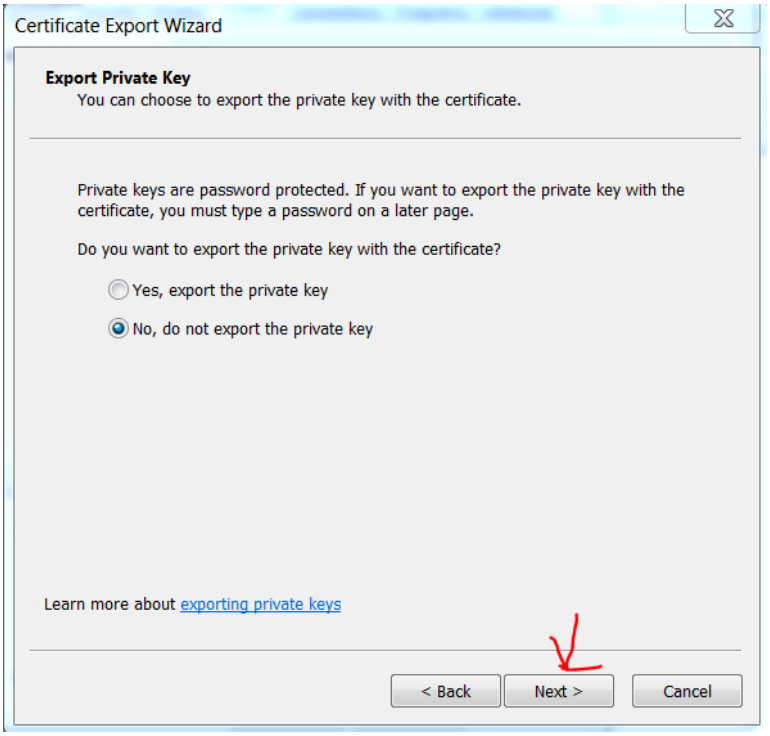
8.1. Certificate Location

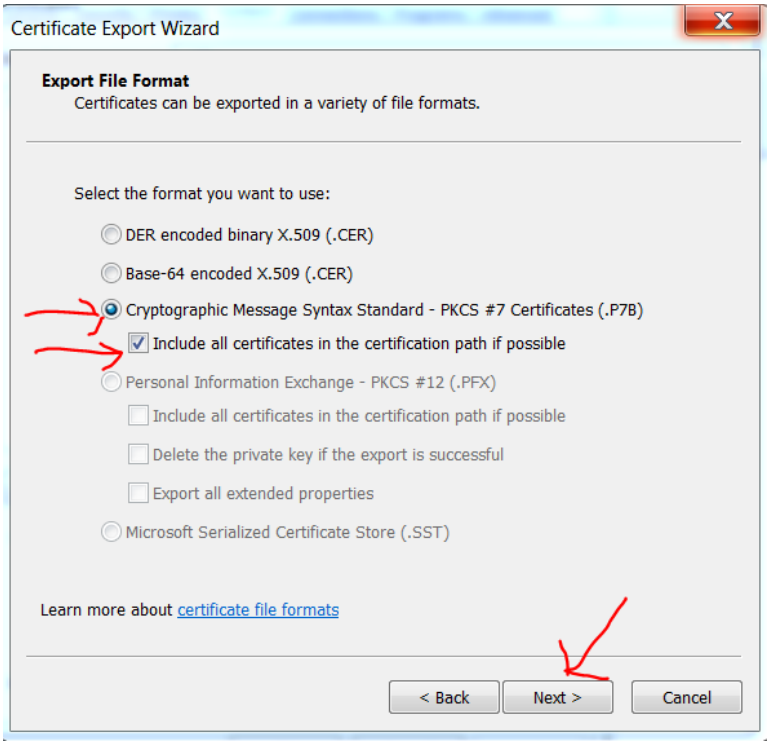
The certificate can be found in the Browser in the Menu: Tools -> Internet Options -> Content -> Certificates

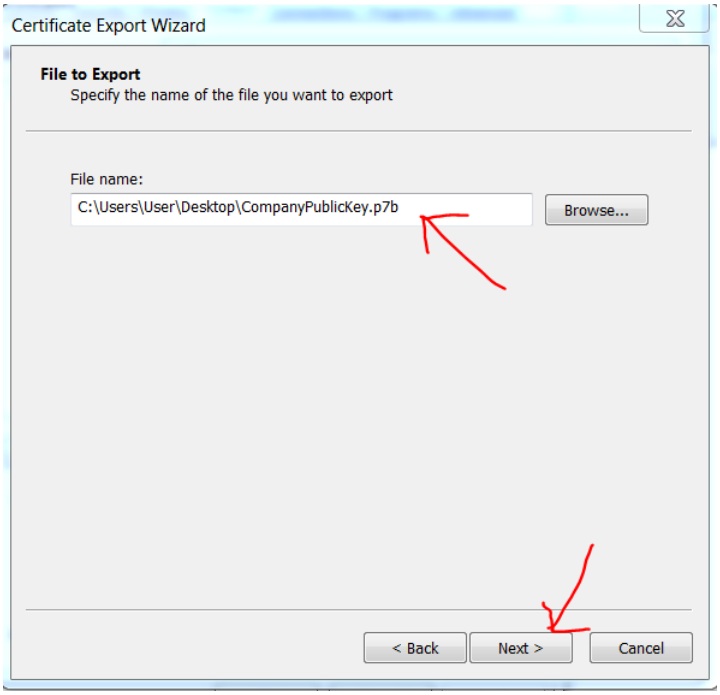


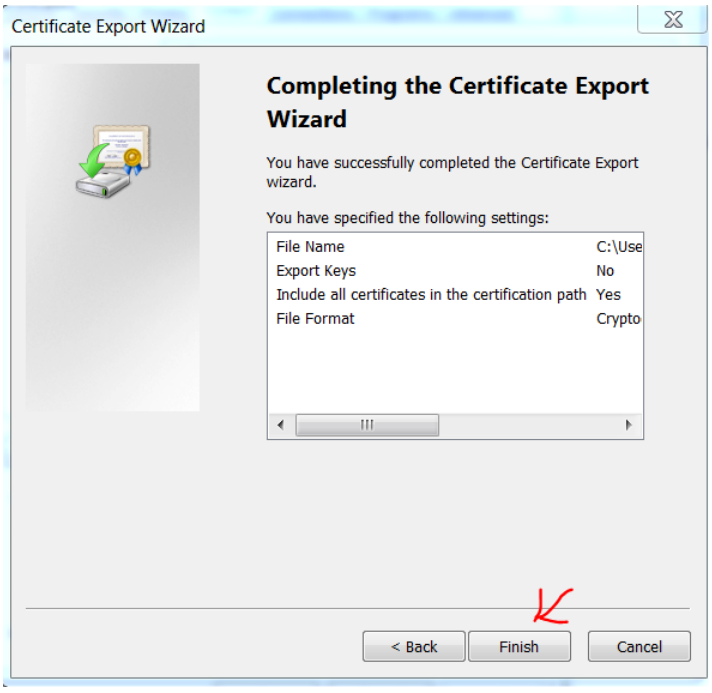
8.2. Export the Public Key




Certificate Export Wizard
Export Private Key
You can choose to export the private key with the certificate.
Private keys are password protected. If you want to export the private key with the certificate, you must type a password on a later page.
Do you want to export the private key with the certificate?
Yes, export the private key
No, do not export the private key
Learn more about exporting private keys
< Back
Next >
Cancel

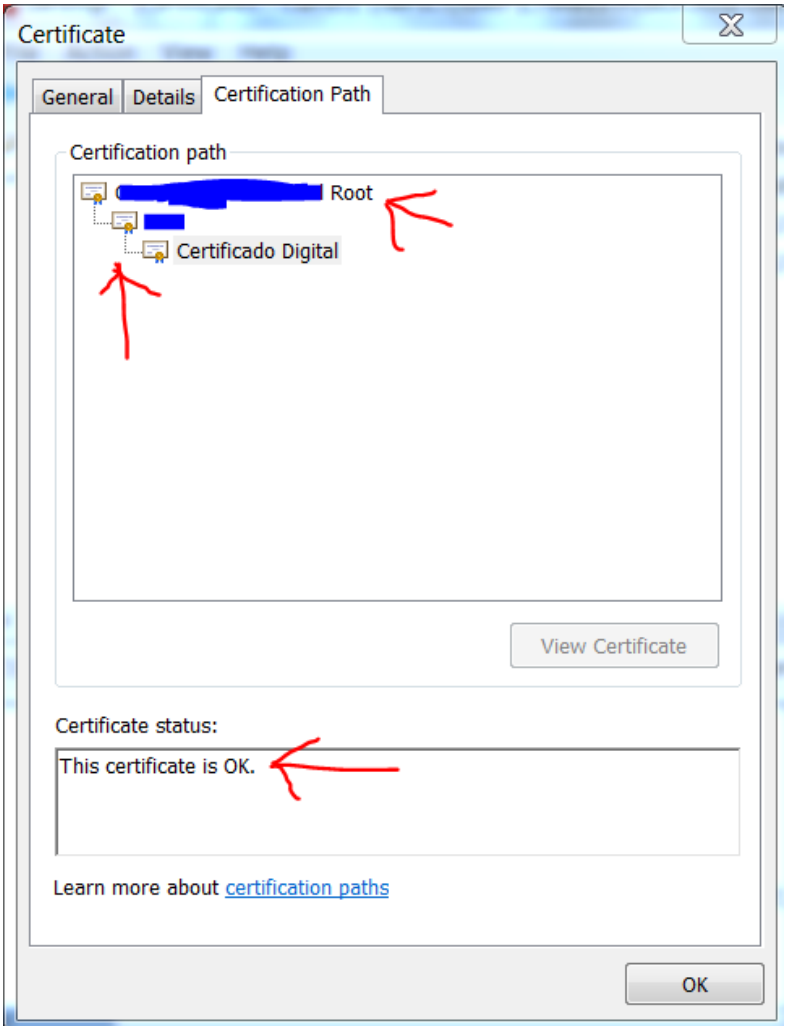

Certificate Export Wizard
Export File Format
Certificates can be exported in a variety of file formats.
Select the format you want to use:
DER encoded binary X.509 (.CER)
Base-64 encoded X.509 (.CER)
Cryptographic Message Syntax Standard - PKCS #7 Certificates (.P7B)
Include all certificates in the certification path if possible
Personal Information Exchange - PKCS #12 (.PFX)
Include all certificates in the certification path if possible
Delete the private key if the export is successful
Export all extended properties
Microsoft Serialized Certificate Store (.SST)
Learn more about certificate file formats
< Back
Next >
Cancel


Certificate Export Wizard
File to Export
Specify the name of the file you want to export
File name:
C:\Users\User\Desktop\CompanyPublicKey.p7b
Browse...
< Back
Next >
Cancel


Certificate Export Wizard
Completing the Certificate Export Wizard
You have successfully completed the Certificate Export wizard.
You have specified the following settings:
File Name C:\Use
Export Keys No
Include all certificates in the certification path Yes
File Format Crypto
< Back
Finish
Cancel

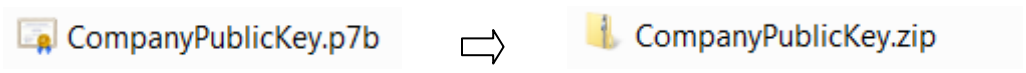
8.3. Check the Public Key

The public key must have a valid certification chain and it must be signed by a public and well known Root certification authority



8.4. Send the Public Key

The file that was obtained in **Error! Reference source not found.** must be ziped" and sent by email to validation.



9. How to test the Webservices with SOAP-UI

In order to test the Webservices the pre-requisites defined in: 3 Technical Requirements must be met. Namely one must produce a valid SOAP request that must be sent via the HTTPS protocol, by a Client Software with a pre-validated certificate and have the proper credentials user/pass for the test environment.

Note: It is a common mistake to test the webservice with a simple browser request or using a tool like “curl”. This kind of requests will simply be blocked by the infrastructure and no useful information will be given to the caller.

9.1. SOAP-UI Tool

SOAP-UI is a well known open-source tool for testing Webservices that enables testing SOAP interfaces and can be configured to meet the test requirements.

SOAP-UI is an opensource tool and a free version can be obtained at http://www.soapui.org/

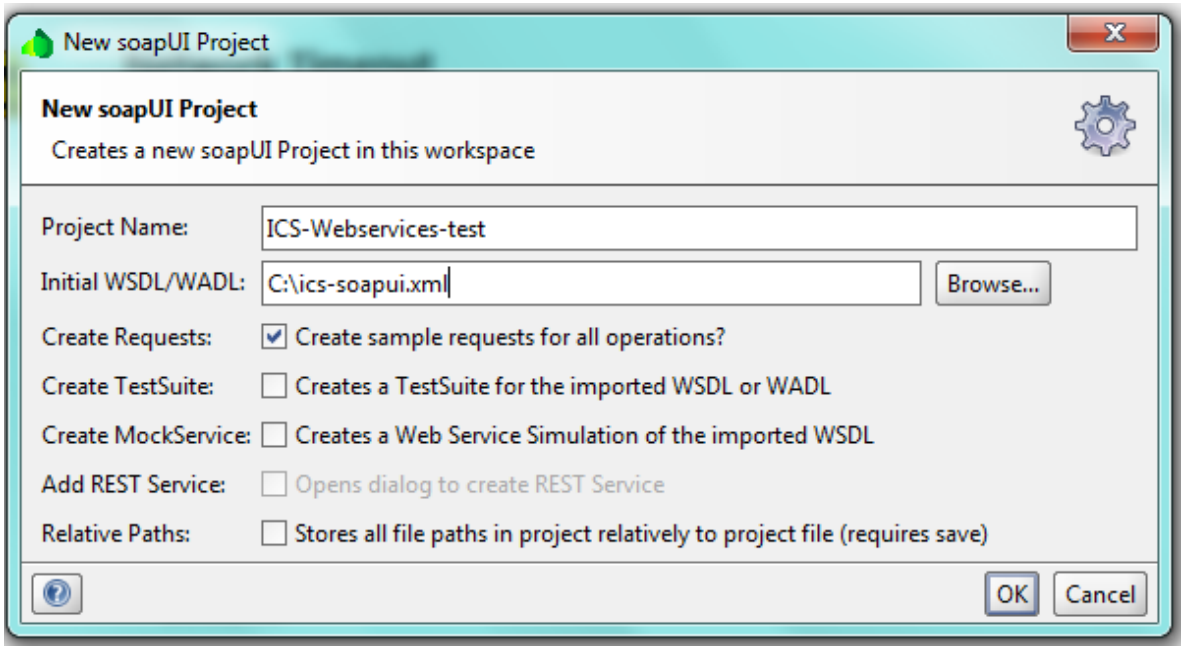
9.2. SOAP-UI Instalation

Follow the application installation instructions

9.3. SOAP-UI configuration

The following example illustrates the invocation of the ICS system Webservice testing using SOAP-UI:

1) **Create a new project**
   a) Menu File -> New soapUI Project
   b) Choose a name for the project and the WSDL (This WSDL is provided by: 7-`Contacts`).
   c) Check the option: Create sample requests for all operations



2) Configure client certificate authentication

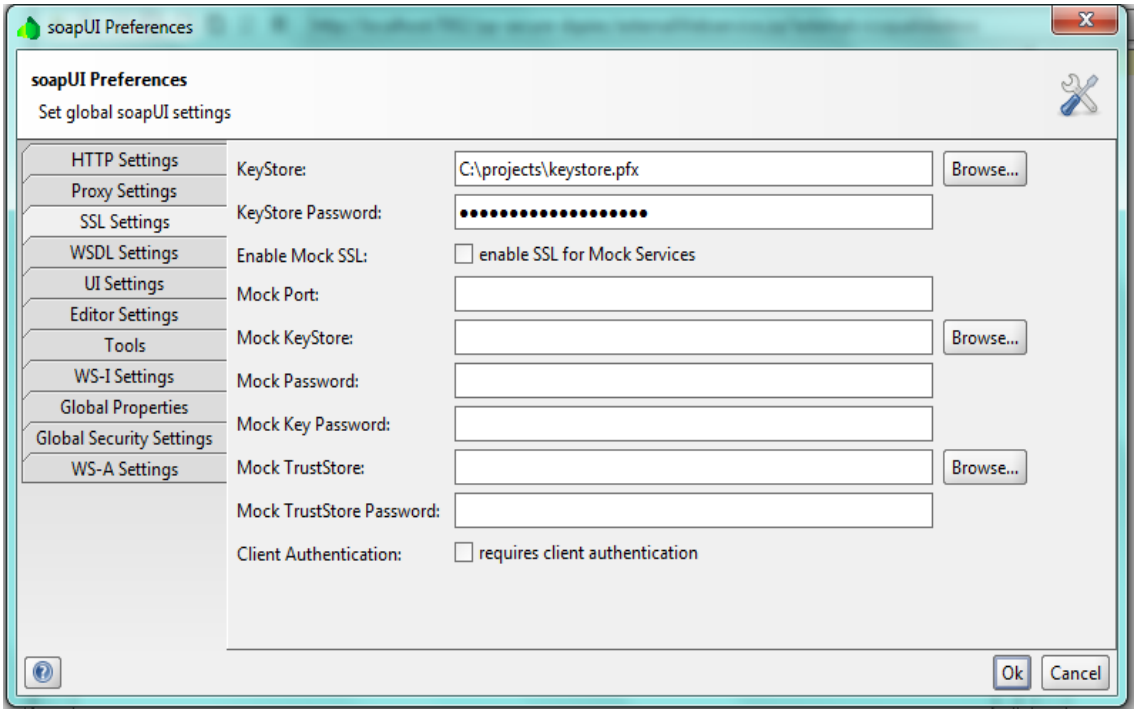
In order to use the client certificate to authenticate at the portal, the following option must be used.

a) Menu File > Preferences > SSL Settings

b) Enter the location of the KeyStore where the client certificate private key is stored

c) Enter the password of the KeyStore

d) Press: OK



3) Configure user authentication (without message digest)

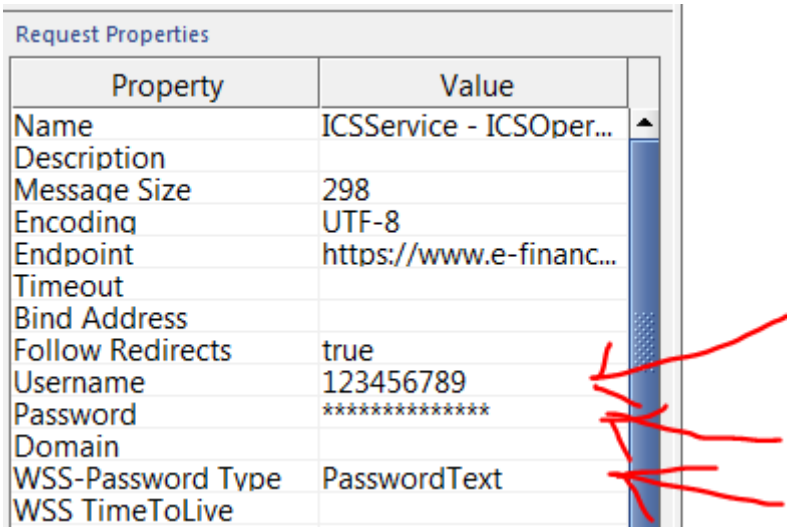
This configuration is a simplistic approach and applies only to requests without message digest.

In the request Properties Panel, fill the following properties:

Username: With the Economic Operator EORI Number (if the operator is a Portuguese Operator, fill with the NIF – Fiscal Number) that was registered in the DGAIEC Portal

Password: Fill with the Password that was uses in the registration process in the DGAIEC Portal

WSS – Password Type: choose "Password Text"



4) Configure user authentication (with message digest)

Message Digest configuration requires access to the Tab: Security Configurations –> Outgoing WS Security Configurations.

Create a new Security Configuration and fill the: Username and Signature Tabs.

In the Signature Tab, define a Part:

Part: “Body”

Namespace: http://schemas.xmlsoap.org/soap/envelope/

Encode: Element

5) Perform an operation

a) Access the one operation on the left sidebar and change the request with valid content:

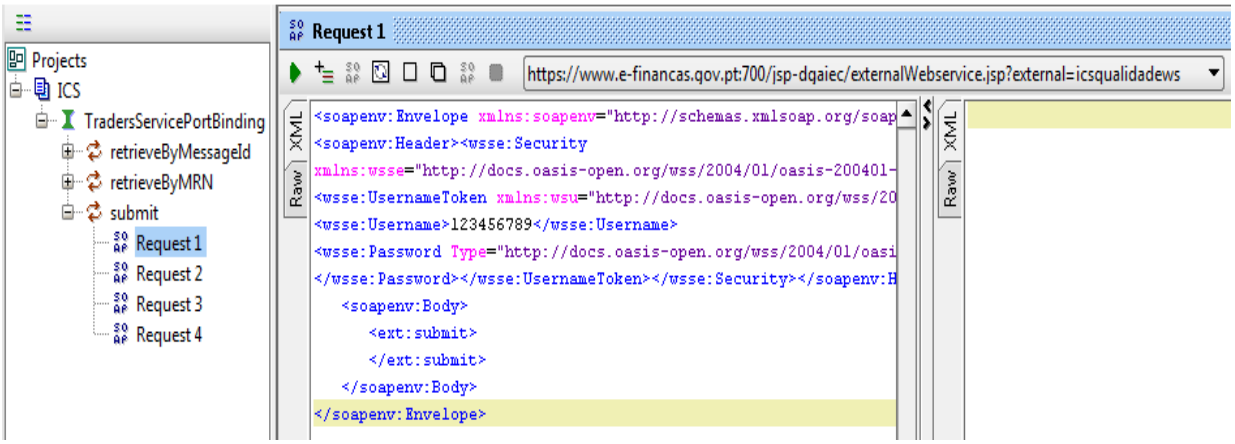
   a. In the <Body> Fill with appropriate XML for the operation being tested

   b. The <Username> should be automatically filled with the NIF or EORI number of the Economic Operator

   c. The <Password> should be automatically filled with the password that was chosen for authentication at the DGAIEC Portal

b) Set the endpoint (select one of the endpoints described in: (4 `Submission URL's`)

c) Submit the request (the green play button) and check the response in the right frame or the error log



9.4. Common errors and responses

9.4.1. Connection Errors

9.4.1.1. Error getting response; javax.net.ssl.SSLHanshakeException: Received fatal alert: handshake_failure

This means the handshake SSL handshake between SOAP UI and the DGAIEC Portal wasn't completed. This could mean the Client Certificate being used is not registered yet by the Portuguese Administration.

Please confirm that you received a confirmation of the registration by the Portuguese Administration.

Also check that: you are using the correct certificate store; that the store contains the client certificate that you are expecting to use and you are entering the correct key for that store.

9.4.1.2. ERROR:java.net.SocketTimeoutException: Read timed out

Please make sure you have Http connectivity between the client machine and the server machine Issue a (Ex: `telnet www.e-financas.gov.pt 700`) sould get a "`Connected to www.e-financas.gov.pt.`"

This could also mean the DGAIEC test Environment is unavailable, please redo the test a few more times and if still no response please contact: 7- `Contacts`

9.4.2. Authentication Errors

9.4.2.1. "No Username or Password in message!"

This means a valid Username ou Password was not provided in the UsernameToken, <Username> ou <Password>

9.4.3. Sintatic Errors

9.4.3.1. "Internal Error (from server)"

This probably means an invalid XML is being sent.

Please check the XML against the schema.

Contact (7- Contacts) and provide: The Date/Time of the Test in GMO+0, the full request that is being sent and the response obtained.