

# A Beginner's Guide to The International Plant Protection Convention's **ePhyto Solution**

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International Plant Protection Convention Secretariat

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# What is an ePhyto?

ePhyto is short for “electronic phytosanitary certificate”.

ePhyto is the electronic equivalent of a paper phytosanitary certificate (ISPM 12)

ISPM 12

Phytosanitary certificates - Appendix 1

This appendix was adopted by the Ninth Session of the Commission on Phytosanitary Measures in April 2014.  
This appendix is for reference purposes only and is not a prescriptive part of the standard.

## **APPENDIX 1: Electronic phytosanitary certificates, information on standard XML schemas and exchange mechanisms (2014)**

### **Introduction**

Electronic phytosanitary certificates are the electronic equivalents of phytosanitary certificates in paper form and may be used if they are accepted by the national plant protection organization (NPPO) of the importing country. When electronic phytosanitary certificates are issued by the NPPO of the exporting or re-exporting country, they should be made directly available to the NPPO of the importing country.



# This is an ePhyto.

```
+ <SPSExchangedDocument>
- <SPSConsignment>
  - <ram:ConsignorSPSParty>
    <ram:Name>TEST SA</ram:Name>
    - <ram:SpecifiedSPSAddress>
      <ram:LineOne>Rivadavia 157, NEUQUEN (8300), NEUQUEN</ram:LineOne>
    </ram:SpecifiedSPSAddress>
  </ram:ConsignorSPSParty>
  - <ram:ConsigneeSPSParty>
    <ram:Name>TEST ORGANIC INC.</ram:Name>
    - <ram:SpecifiedSPSAddress>
      <ram:LineOne>901 S 2nd Street - Mount Vernon.WA 99899</ram:LineOne>
    </ram:SpecifiedSPSAddress>
  </ram:ConsigneeSPSParty>
  - <ram:ExportSPSCountry>
    <ram:ID>AR</ram:ID>
    <ram:Name>NULL</ram:Name>
  </ram:ExportSPSCountry>
  - <ram:ImportSPSCountry>
    <ram:ID>US</ram:ID>
    <ram:Name>NULL</ram:Name>
  </ram:ImportSPSCountry>
  - <ram:TransitSPSCountry>
    <ram:ID>CL</ram:ID>
    <ram:Name>NULL</ram:Name>
  </ram:TransitSPSCountry>
  - <ram:UnloadingBaseportSPSLocation>
    <ram:Name>LOS ANGELES - USA</ram:Name>
  </ram:UnloadingBaseportSPSLocation>
  - <ram:ExaminationSPSEvent>
    - <ram:OccurrenceSPSLocation>
      <ram:Name>NULL</ram:Name>
    </ram:OccurrenceSPSLocation>
  </ram:ExaminationSPSEvent>
  - <ram:MainCarriageSPSTransportMovement>
    <ram:ModeCode>1</ram:ModeCode>
    - <ram:UsedSPSTransportMeans>
      <ram:Name>Container ship</ram:Name>
    </ram:UsedSPSTransportMeans>
  </ram:MainCarriageSPSTransportMovement>
  - <ram:IncludedSPSConsignmentItem>
    - <ram:IncludedSPSTradeLineItem>
      <ram:SequenceNumeric>0</ram:SequenceNumeric>
      <ram:Description languageID="en">Fresh Pear</ram:Description>
```



ePhyto is produced, transmitted and received in XML

XML is the acronym for [eXtensible Markup Language](#).

It is an internationally recognized computer language.

Its format is machine readable but can be easily converted to a more user friendly format such as a PDF file

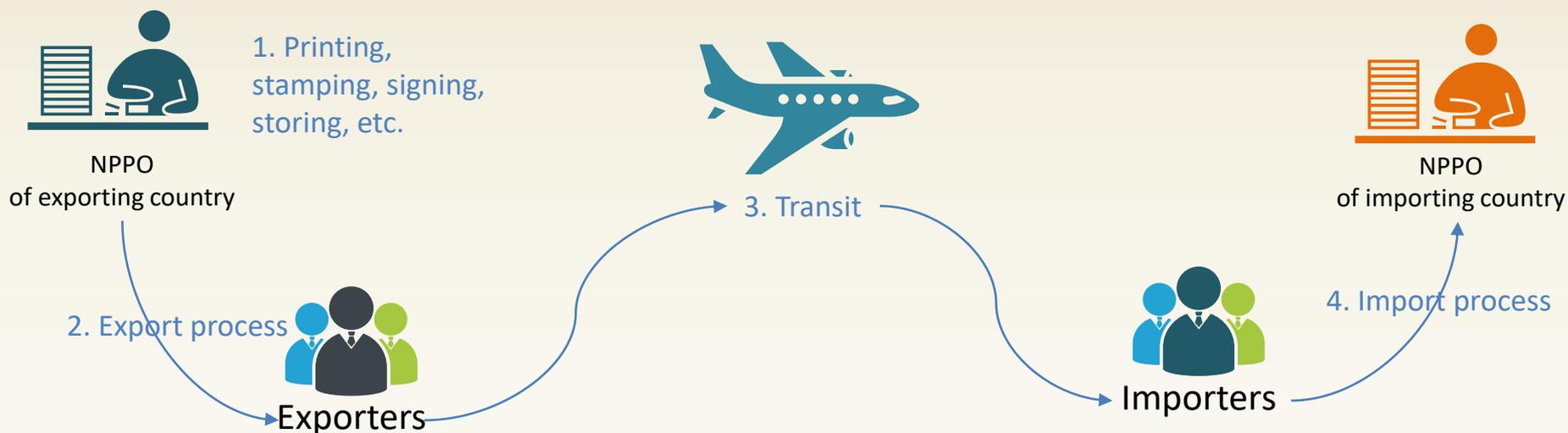
It is standardized to allow communication through the Internet between different computer systems.

It is one of the most widely used computer languages for sharing structured information.

# Differences between paper certificates, PDF/JPG and ePhyto

	<b>Paper</b>	<b>PDF/JPG</b>	<b>ePhyto</b>
Form	Paper	Digital picture	Data
Human-readable	Yes	Yes	Yes
Computer-readable	No	No	Yes
Can be transmitted electronically	No	Yes	Yes
Can be transmitted digitally	No	No	Yes
Delivery time	Long	Immediate	Immediate
Data analysis	No	No	Yes

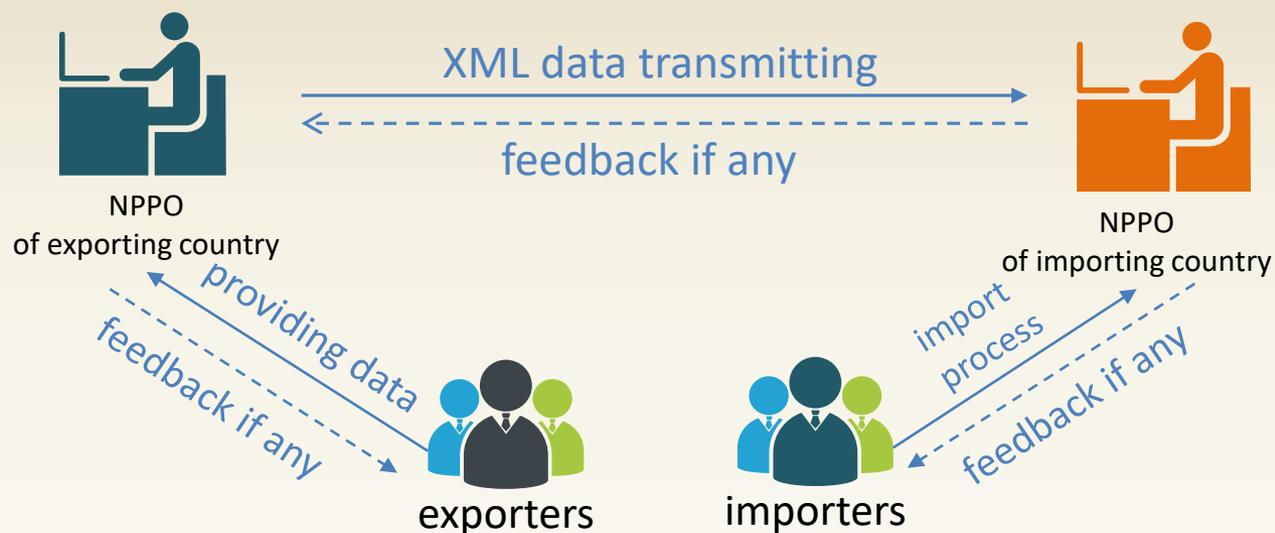
# Why ePhyto?



The chart describes the common flow of paper certificates:

- The process is long and involves many actors;
- Rectification will be long if errors in documentation occurs;
- There is risk of loss or damage of the certificate during the various transfers;
- There is risk of a certificate being changed or altered, or a fraudulent certificate being introduced through the chain of transfer;
- Paper certificate processes can be an important bottleneck in the trade transaction

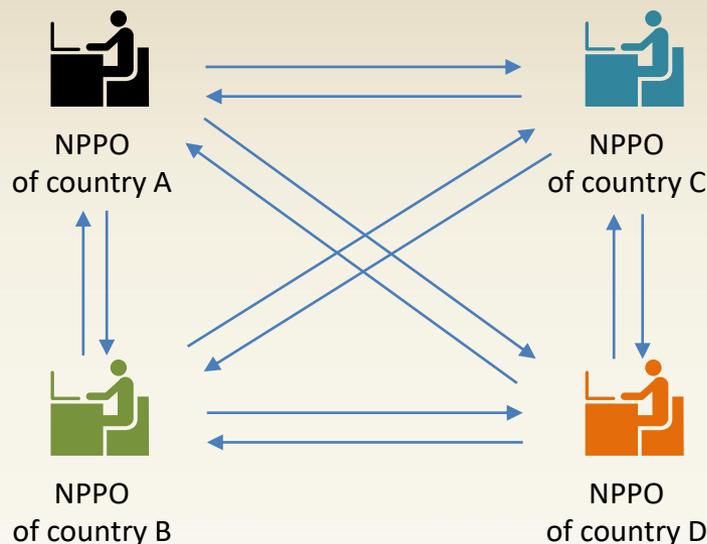
# ePhyto flowchart



The chart describes the ePhyto process:

- Simple and fast process;
- In the event of an error rectification will be much quicker;
- Lower risk of data loss or damage;
- Increased security of certificates as data goes from one competent authority to another and is encrypted during transfer;
- Cost and time saving through reduced administration of paper, etc;
- Importing NPPO receives certificate in advance of commodity arrival which allows them to evaluate and identify appropriate risk mitigation steps to facilitate import processing ahead of time

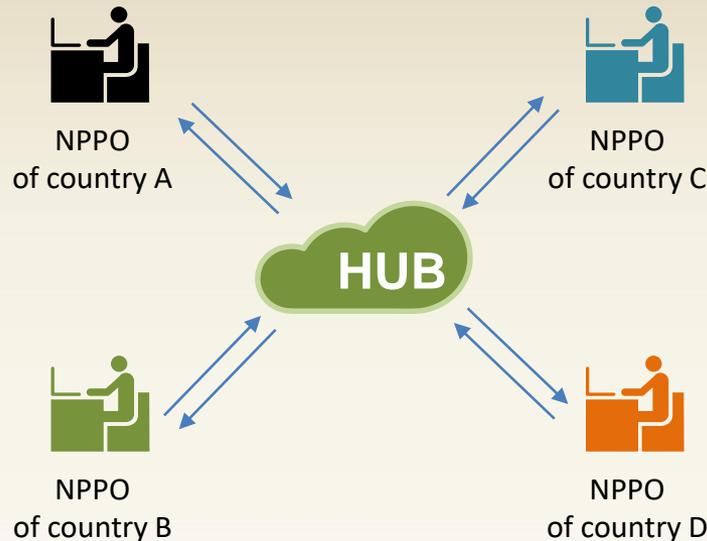
# Two alternatives of ePhyto transmission



## Point-to-point transmission

Point-to-point exchange is when ePhyto exchange occurs directly between an exporting country and an importing country.

In each case, the country needs to establish separate bilateral arrangements with each country to facilitate exchange.



## Single-point transmission (HUB)

Single point (HUB) exchange allows exchanges between all of the countries connected to the hub

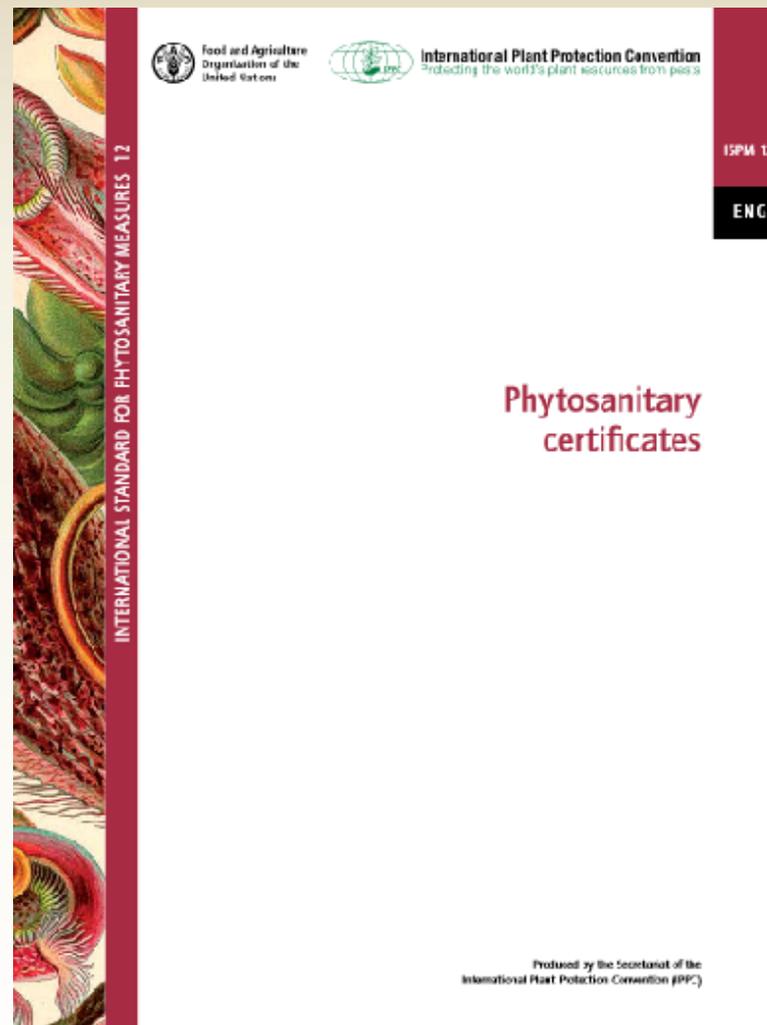
Any new country connecting to the hub will be able to exchange certificates with all of the other connected countries

# The harmonized schema, codes and lists

To facilitate the exchange of ePhytos between various NPPOs, a harmonized schema, codes and lists are needed to ensure that the receiving NPPO can read the sending NPPO message.

CPM-9(2014) adopted the [Appendix 1 Electronic phytosanitary certificates, information on standard XML schemas and exchange mechanisms \(2014\)](#) to ISPM 12.

NPPOs are encouraged to [use standardized \(harmonized\) terms, codes and text for the data elements](#) associated with the XML message for ePhytos



# Appendix 1 – harmonized guidance on:

## 1. XML message structure

- UN/CEFACT schema and mapping

## 2. XML schema contents

- Country names
  - 2 letters country codes of ISO
- Scientific names of plants and pests
- Description of consignment
- Treatments
- Additional declarations
- Name of authorized officer

## 3. Exchange mechanism

## 4. Management of ePhytos

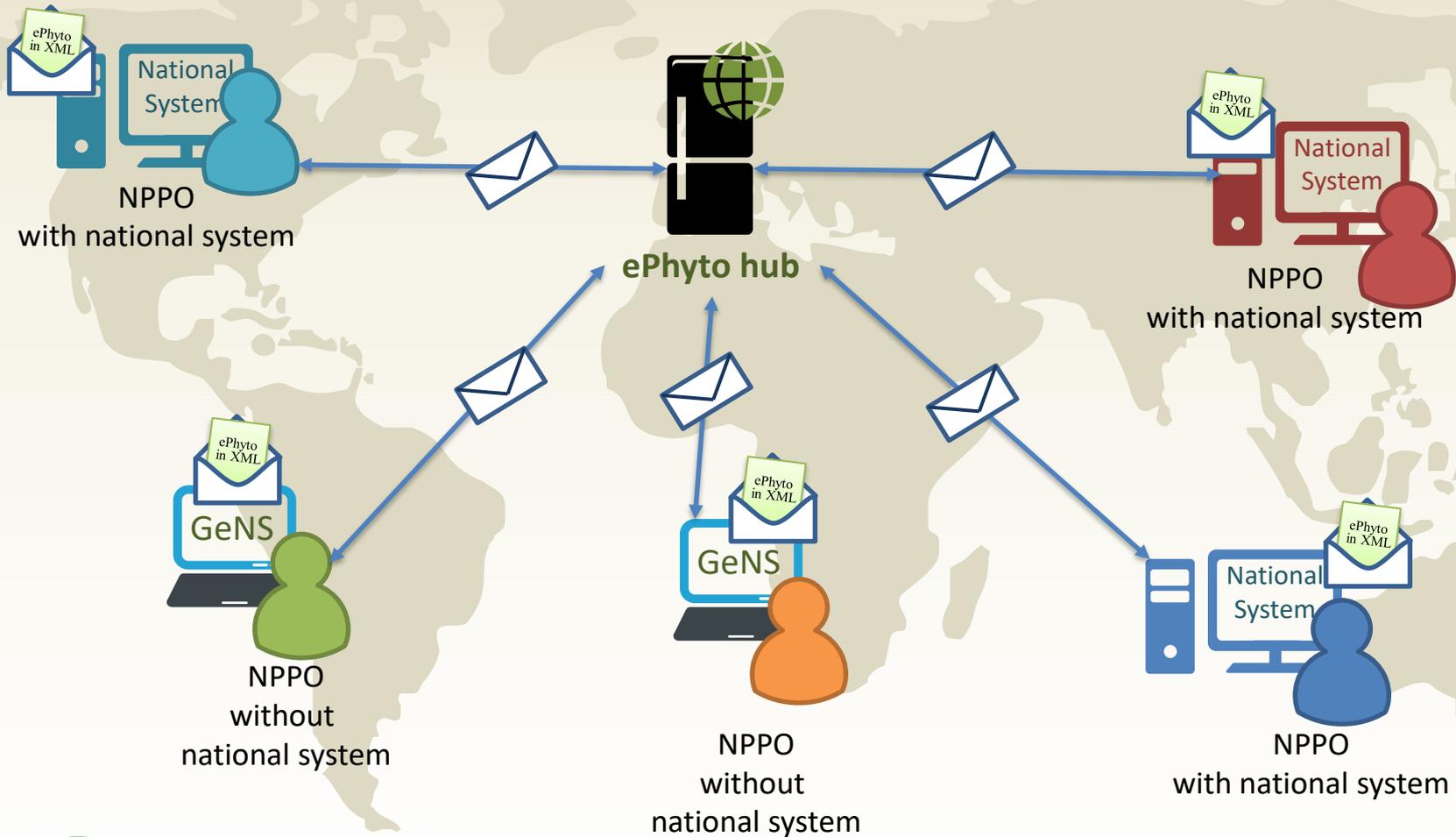
# The ePhyto Solution

Allows Contracting Parties with or without national electronic certificate system to exchange ePhytos through a single point

The ePhyto Solution consists of two major components:

1. A global hub – a centralized system to facilitate exchange of ePhytos between NPPOs;
2. A Generic ePhyto National System (GeNS) – a web-based system to allow countries WITHOUT their own systems to produce, send and receive ePhytos in the XML format and exchanged via the Hub.

# The ePhyto Solution



# Hub Components

Admin interface to manage NPPO information.

Provides a web service for exchanging ePhytos and tracking this process.

Reads the envelope header only to send the message to the destination. The privacy of the message content is maintained throughout the transmission.

Stores messages temporarily until they are delivered to the destination.

Uses Transport Layer Security (TLS) certificate to encrypt the data throughout the exchange.

NPPO Interface to allow the NPPO to verify the exchange.

Internal database to store tracking information



# GeNS

## Functions

Produces/receives ePhytos

Transmits ePhytos to the hub

Stores ePhyto data

Prints paper certificates for non-hub destination certificates

## Easy-to-use features

Web-based

Simple user interface

Can be used in low bandwidth environment

Contains a mobile friendly user-interface



# Benefits of implementing the ePhyto Solution

## Benefits of an ePhyto *(the electronic certificate)*

- Clearance of commodities is expedited.
- The risk of fraud/fake certificates is reduced.
- The risk of certificate loss or damage is minimized.
- Costs of paper and posting are saved.
- NPPO of importing countries are able to address certification problems in advance of commodity arrival.
- Efficiencies are improved by reducing data entry and validation.

## Benefits of the ePhyto Solution *(Hub + GeNS)*

- The structure and transmission of ePhytos are harmonized globally;
- Allows equal participation to countries without national system.
- NPPOs do not need to set up bilateral systems to connect with each other.
- It is possible to link with other international E-Systems (e.g. single window)

# Steps for countries to participate

Review the [technical documents](#)

Review the prerequisites for the [hub](#) or the [GeNS](#)

Evaluate your objectives for moving from paper certification to ePhyto

Conduct a business process evaluation and determine the steps required to implement

Request participation through a letter to the IPPC Secretariat ([ippc@fao.org](mailto:ippc@fao.org) )

# For more info:



- Visit the IPPC ePhyto – [home page](#)
- Contact a regional representative of the [ePhyto Steering Group](#) to learn what's going on in your region
- Follow the [activities](#) of the ePhyto Steering Group



*Plus, you could also contact:*  
[lppc-ephyto@fao.org](mailto:lppc-ephyto@fao.org)