A GLOBAL EPHYTO FEASIBILITY STUDY

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Study Objectives

1. Raise awareness and comprehension about what an ePhyto system is and isn't;
2. Determine whether a point to point or a single point approach is most cost effective, efficient, managerially sustainable, and fraud resistant;
3. Assess financial viability of an IPPC ePhyto system.

Definitions – ePhyto Certifcate

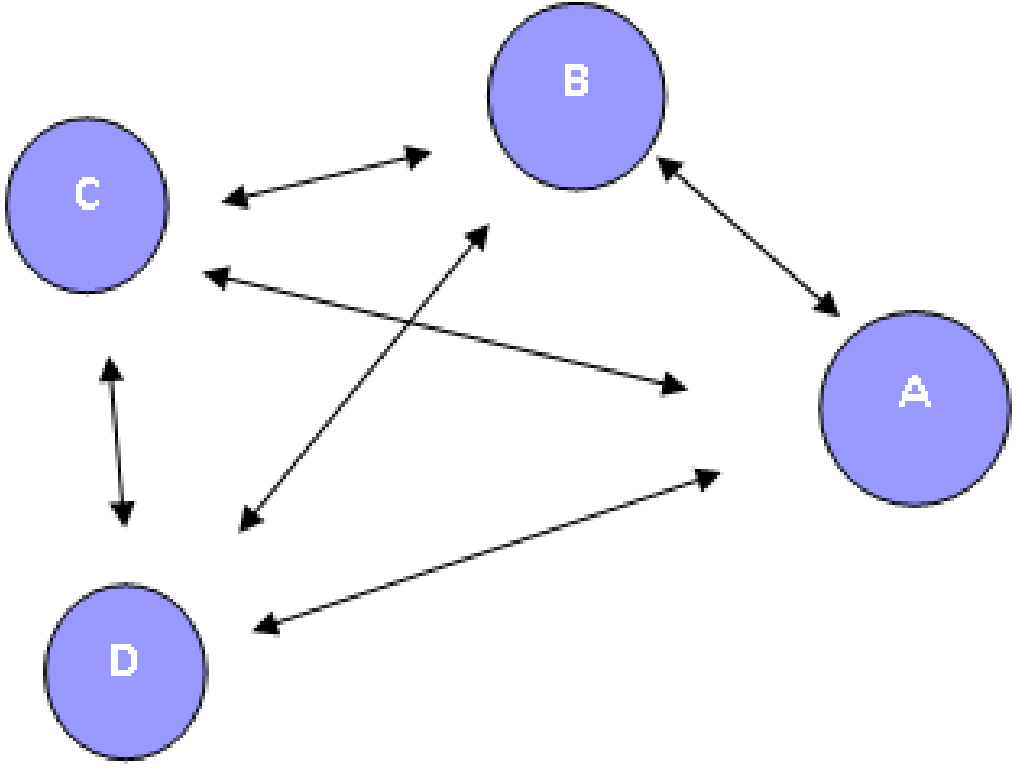
- An electronic phytosanitary certificate.
- Is NOT a copy of a printed phytosanitary certificate that is emailed.
- Is a secured data set using XML for transmission securely and electronically between an exporting and an importing NPPO.
- Is the equivalent of a paper phytosanitary certificate and may be used if accepted by the NPPO of the importing country.

Definitions – ePhyto System

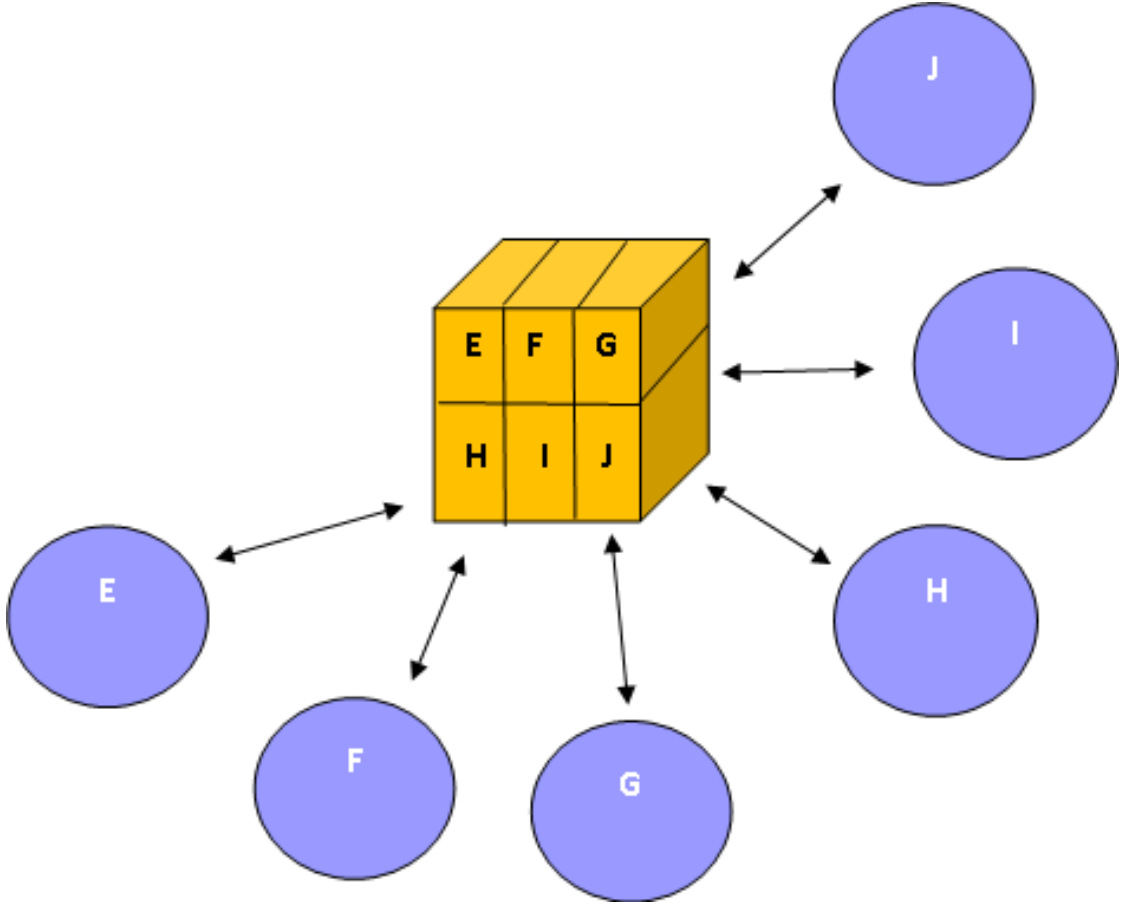
- Produces and transmits (sends & receives) ePhyto certificates.
- Involves 2 national systems and an exchange/transmission mechanism.

- Two transmission options:
  - Point to point - bilateral
  - Single point – multi-lateral hub

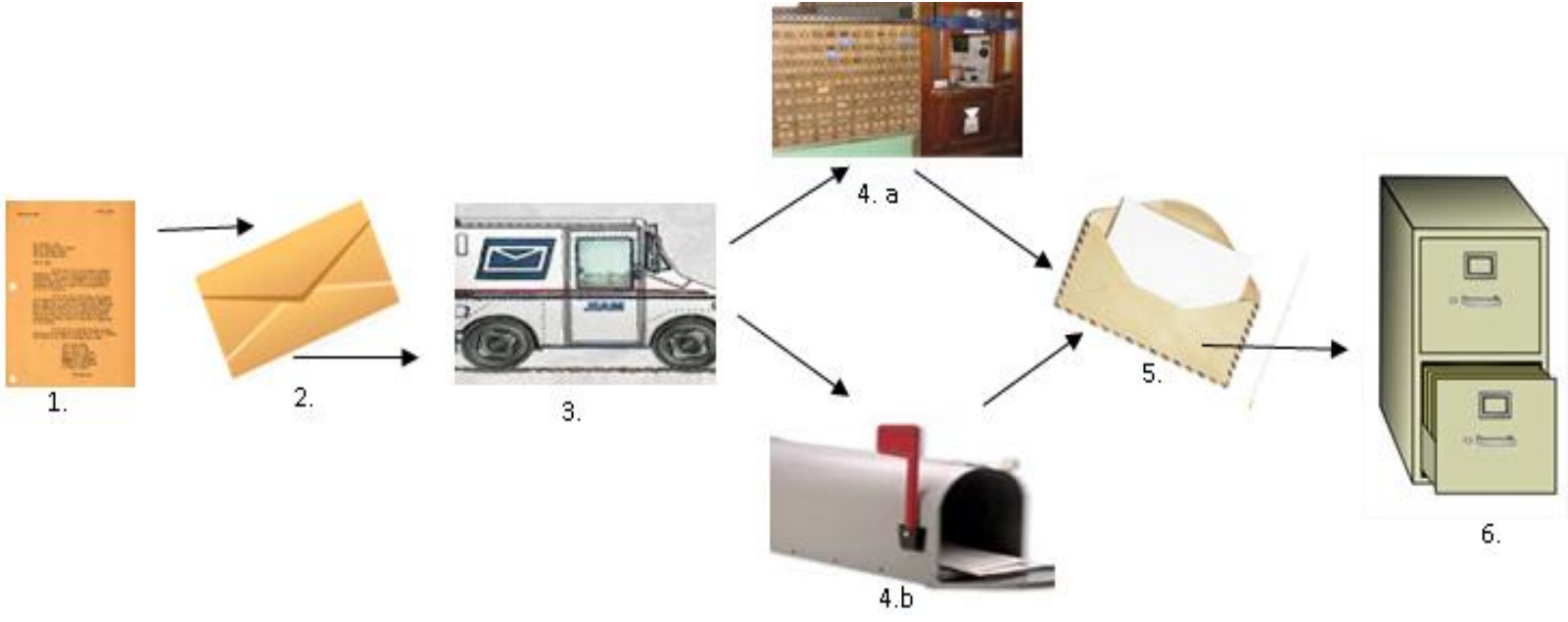
Definitions - Point to Point transmission



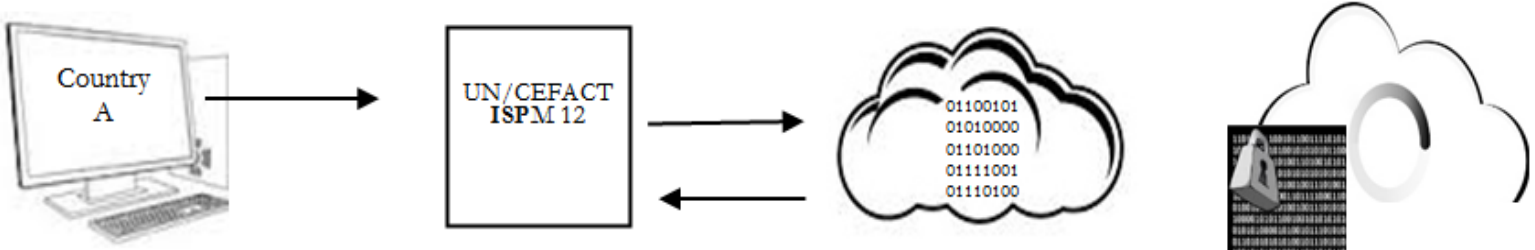
Definitions – Single Point (Hub) Transmission



II.2 Basic Functionality



ePhyto System



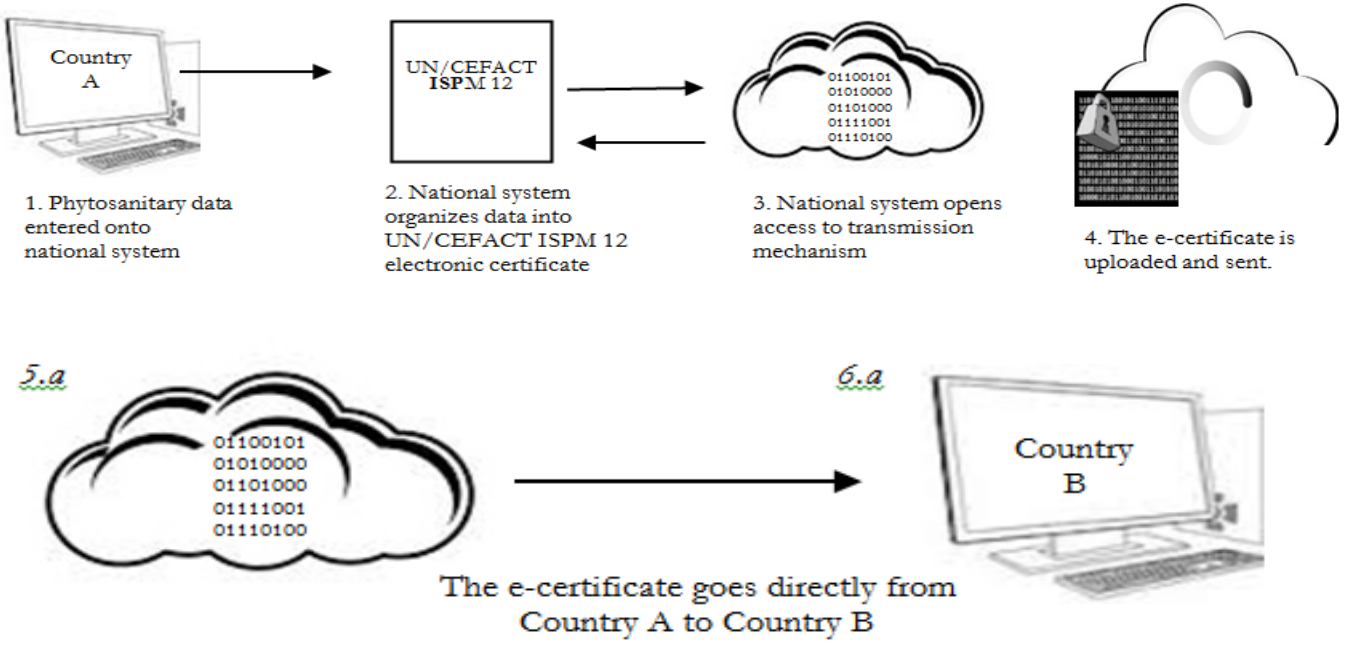
1. Phytosanitary data entered onto national system

2. National system organizes data into UN/CEFACT ISPM 12 electronic certificate

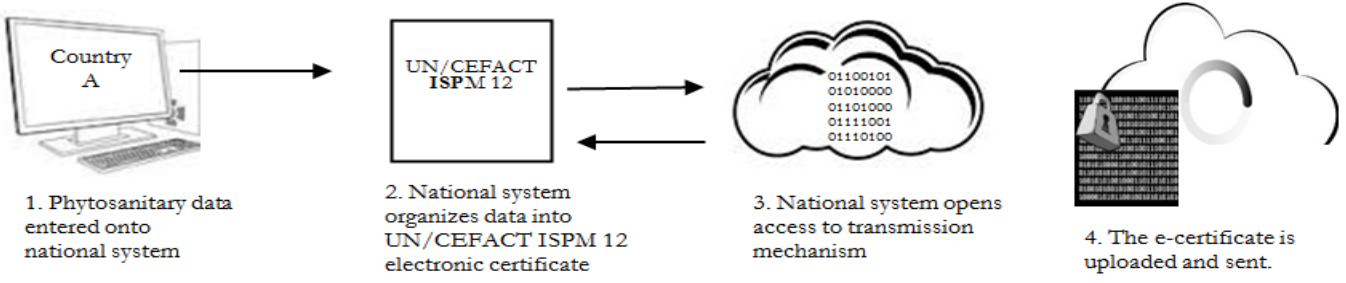
3. National system opens access to transmission mechanism

4. The e-certificate is uploaded and sent.

Point to Point



Hub


Country A
UN/CEFACT ISPM 12
01100101 01010000 01101000 01111001 01110100
1. Phytosanitary data entered onto national system
2. National system organizes data into UN/CEFACT ISPM 12 electronic certificate
3. National system opens access to transmission mechanism
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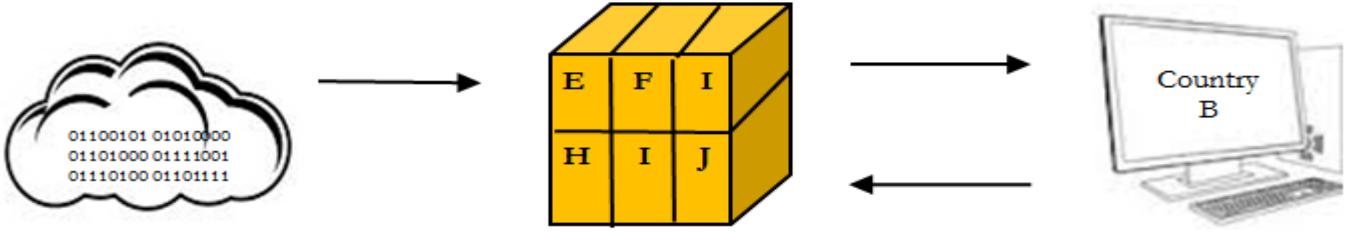

01100101 01010000 01101000 01111001 01110100 01101111
E F I
H I J
Country B
5.b
The e-certificate goes from Country A to Country B's mailbox in the hub
6.b
The hub notifies Country B it has an e-certificate in its box
7
Country B's national system retrieves the e-certificate from its box

The Post Office Analogy

II.3 Case Sudies

- Netherlands: Point to Point

  - CLIENT
  - Access agreement
  - Adjustments to CLIENT and other country national system to allow exporting country to transmit data via internet to CLIENT
- New Zealand: Single Point (Hub)

  - Proof of concept prototype hub developed
  - Multiple countries exchanging data via a hub in standardized environment.

II.4 Point to Point / Hub Comparision

Point to Point

- Without standardisation, must bilaterally negotiate rules and protocol, and adapt national system for each trading partner (cost, complexity).
- May bilaterally agree rules, protocols, etc, faster than IPPC can get agreement.

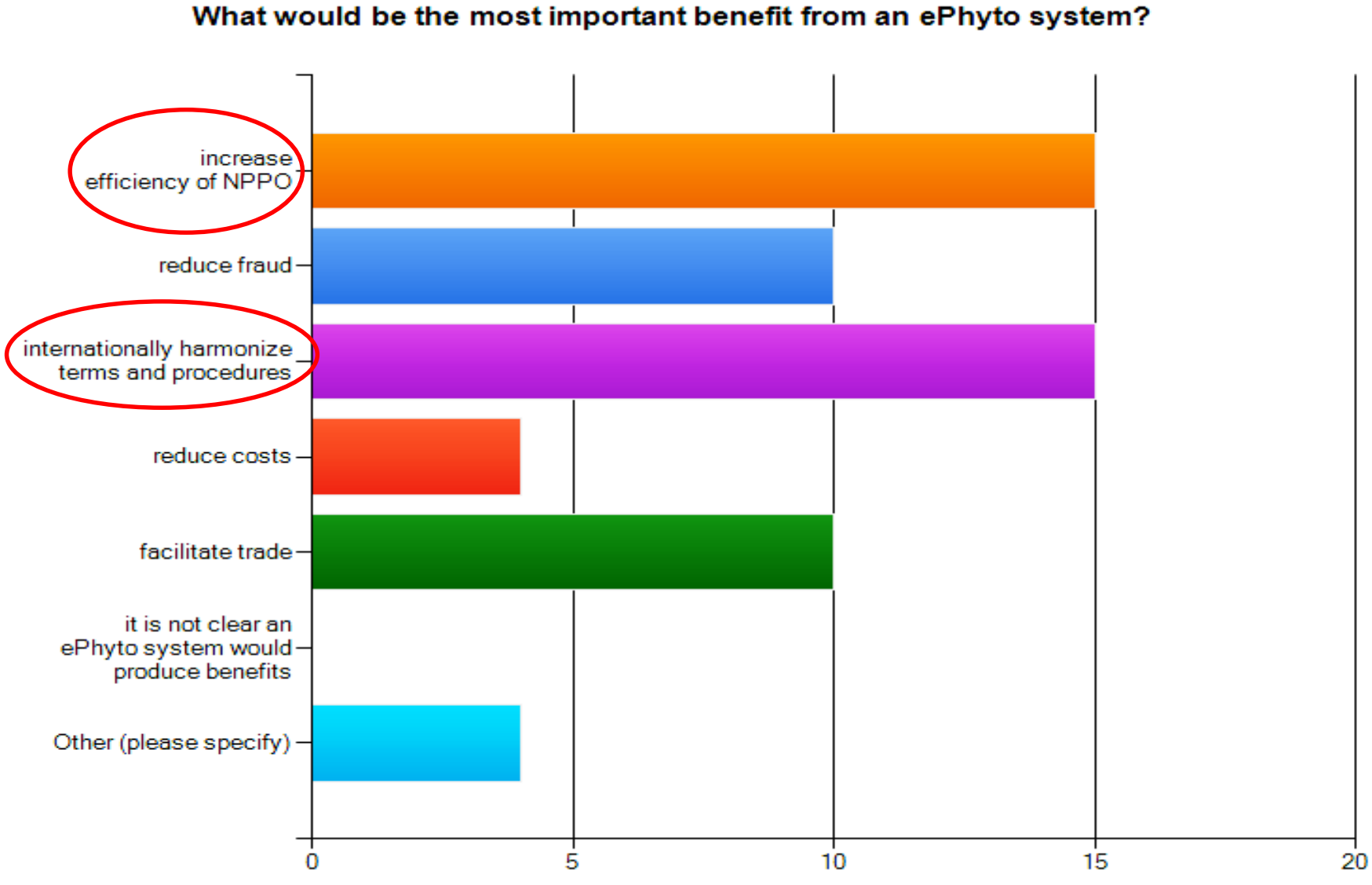
Hub ePhyto System

- Cannot exist without standardisation.
- With standardisation all countries can participate.
- One transmission system to maintain.
- Simpler.
- Lower cost.

With standardization both can co-exist.

II.5 Standardization

- To be effective both single point and point to point ePhyto solutions require:
  - Standardizing Transmission Control Protocol for all NPPOs.
  - Harmonizing operating/business rules – e.g. certificate verification, withdrawal, replacement, re-export, etc.
  - Harmonizing schema, terms, codes and fields within ePhyto certificate data.


What would be the most important benefit from an ePhyto system?
increase efficiency of NPPO
reduce fraud
internationally harmonize terms and procedures
reduce costs
facilitate trade
it is not clear an ePhyto system would produce benefits
Other (please specify)
0
5
10
15
20

II.6 Hosting Environment

- For point to point options the hosting environment needs to be negotiated between the two countries.

- If IPPC sponsored hub is built, the IPPC should select a suitable vendor to host it. A “cloud” platform should be used.

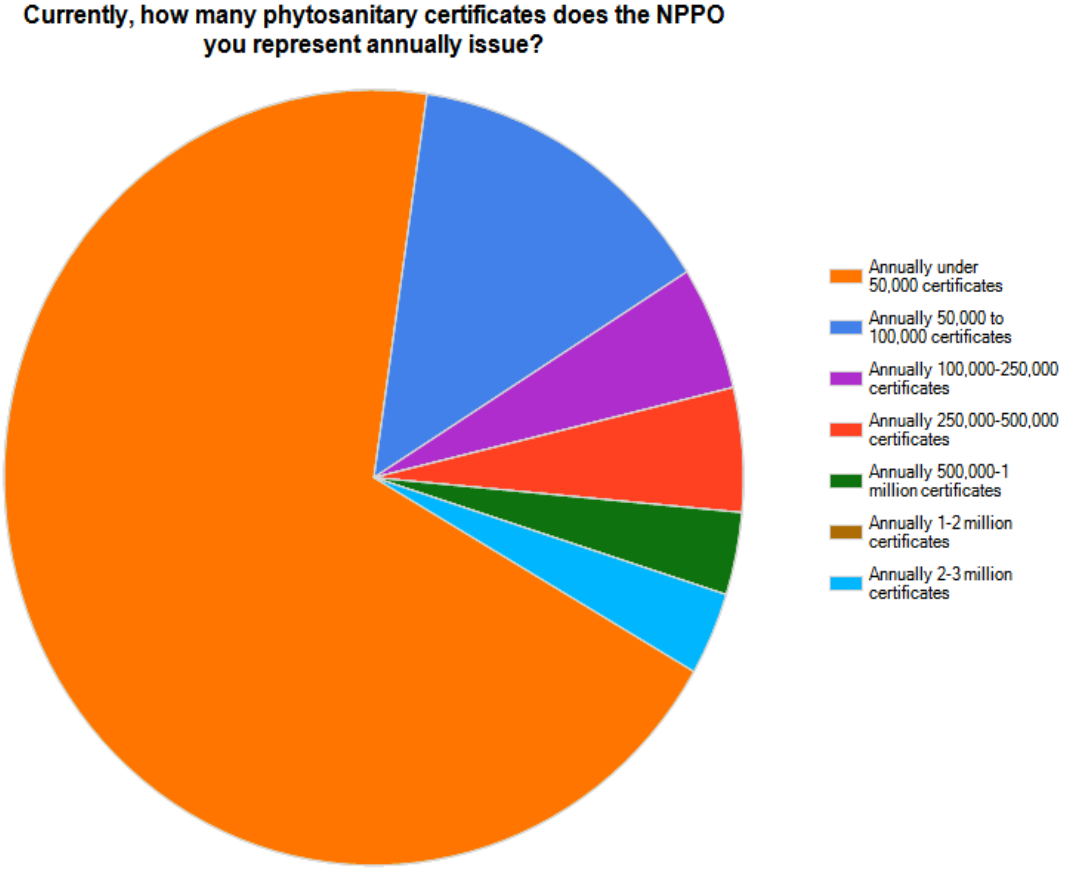
II.7 Redundancy

- Any ePhyto system should have inherent redundancy (back-up/contingency) through, e.g. Back up servers in different locations.

- Any IPPC sponsored hub to be designed such that ePhyto certificates are deleted from primary and back up servers once they have been received by the importing NPPO.

II.8 Scale

- Initially 1.5 – 3.0 million transactions per annum.
- Up to 4 – 6 million transactions per annum.
- Considered very small system.



II.9 Security

- ePhyto system must be secure
- No data stored in ePhyto system
- Three levels of transmission security should be provided:
  - Access Security - Only IPPC signatories can access the transmission protocol (unique key for each NPPO)
  - Data security – data encrypted and cannot be changed once entered by the NPPO.
  - Exchange security – prevention of unauthorised diversion or mining data during transmission.

PART III: POLICY ISSUES

III.1 Sovereignty

- Q: Who owns certificates?
- A: Same as current situation with paper
  - NPPO's involved in the exchange own the ePhyto certificates and the data contained in them.

III.2 Regulatory

- **May include regulations:**
  - To require certificate information in a prescribed format
  - To require a paper certificate
  - That do not allow a charge to be made for a certificate
- **Participation in any ePhyto system is voluntary**
- **Some NPPOs may need to change regulations before they can participate.**
- **These concerns should not inhibit development of ePhyto system.**

III.3 Political Access

- Q. Could national intelligence agencies access ePhyto certificates?
- ePhyto certificates are encrypted, transmission is encrypted.
- ePhyto system is not a database – it doesn't hold certificates after they have been picked up from mailbox.
- The hub servers should be located in countries that legally protect the confidentiality of the data.

III.4 Legal

- No legal concerns from FAO for IPPC to develop ephyto system.
- IPPC liability would need to be managed:
  - IPPC like Postal Service – not liable.
  - System failure? System back up, plus NPPO back up to keep electronic copies and have ability to re-send.
  - NPPO's use ePhyto system voluntarily.
- NPPOs should agree to hold the IPPC harmless for failure or data loss and recognise that they are voluntarily availing themselves of a transaction option the IPPC has made available.

PART IV: FINANCIAL SUSTAINABILITY

Hub Development Costs (estimates)

- Dependent on Functionality.
- Scope, Design, Build.

- Hub = US$300,000 – US$400,000

- Hub with National System = US$450,000 – US$650,000
  (Basic, generic)

Maintenance Costs (estimates)

- Technical Upgrades = US$100,000
- Hosting (dependent of volume of certificates)
  - Assuming 2,000,000 certificates per year
    = US$215,000 – US$300,000.
  - 24/7 technical assistance in 6 FAO languages
    = US$240,000.
  - Cost per certificate = US$0.25 – US$0.35

Comparison Point to Point vs Single Point

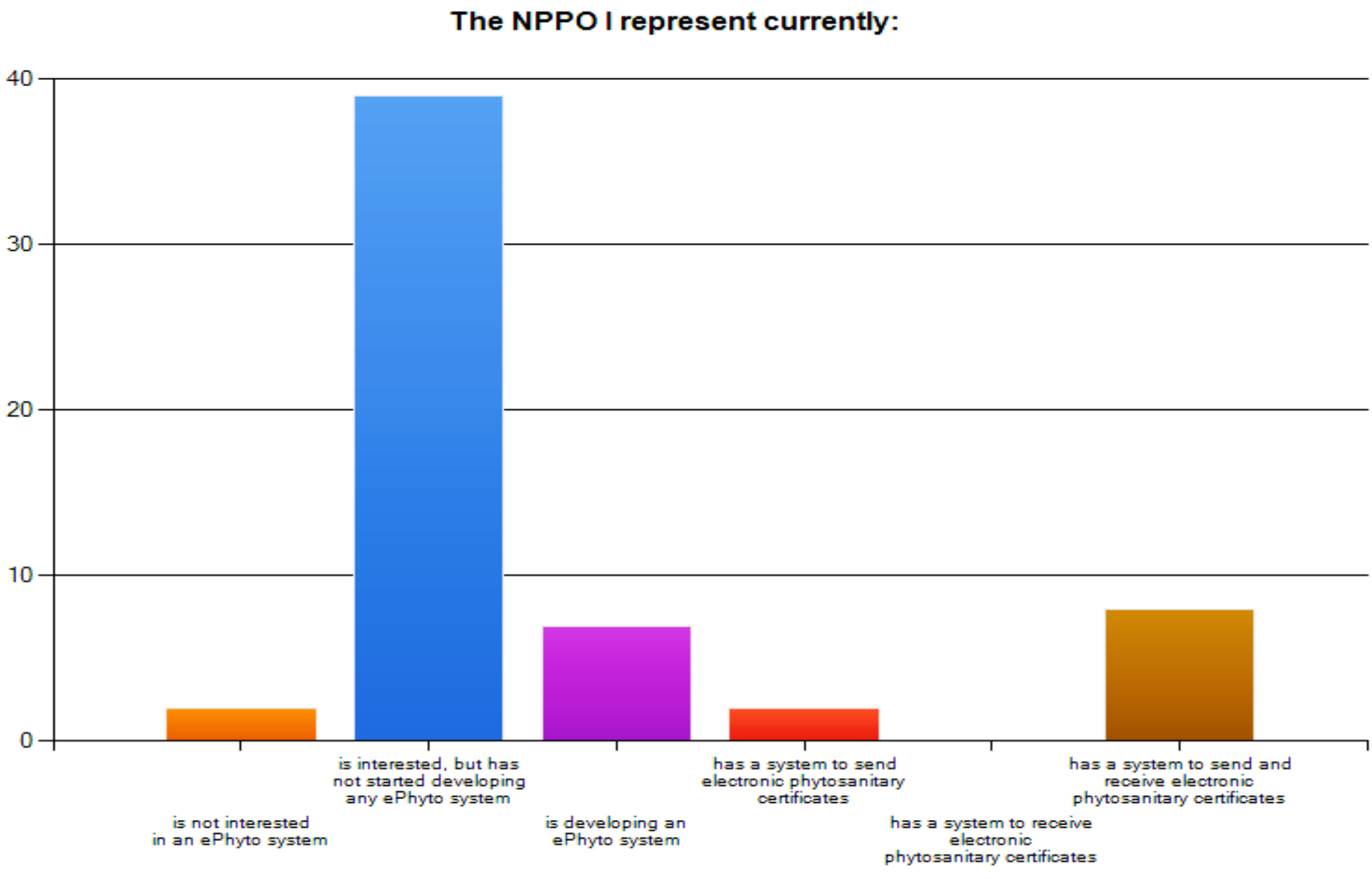
- Single point = ~US$350,000
- Negotiating and building bilateral point to point agreement = ~US$50,000

- 1 NPPO could develop point to point solutions with 7 trading partner NPPOs for same cost as building hub.

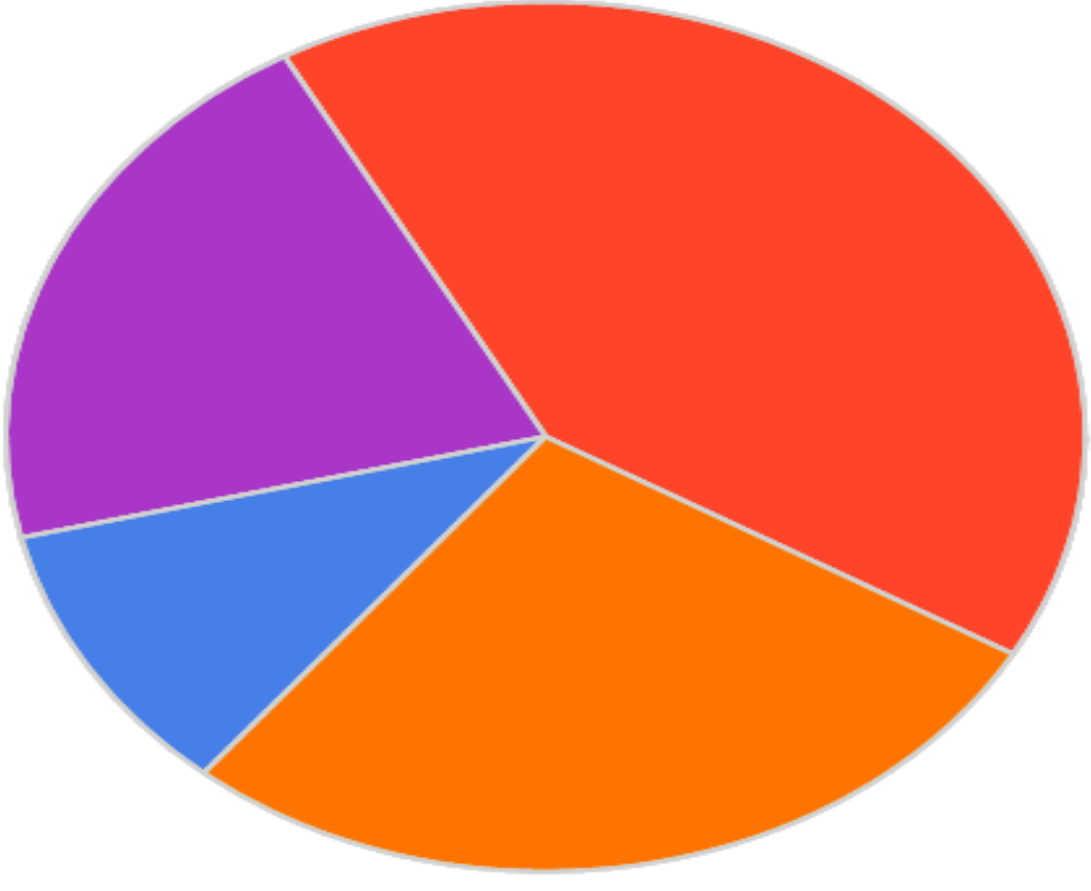
Funding the Costs

- Development Options:
  - Donor Countries – 4 or 5 countries share development costs and seek no reimbursement.
  - Loan / Reimbursement – 4 or 5 countries share development costs and are reimbursed by an additional charge per certificate for first 2 – 3 years.
- Ongoing Maintenance and Operation:
  - Fee per certificate

PART V: OUTREACH


The NPPO I represent currently:
40
30
20
10
0
is not interested in an ePhyto system
is interested, but has not started developing any ePhyto system
is developing an ePhyto system
has a system to send electronic phytosanitary certificates
has a system to receive electronic phytosanitary certificates
has a system to send and receive electronic phytosanitary certificates

Participating in an ePhyto system, depending on how it is constructed, could be as simple as participating in the current global email system, but even then each NPPO would need to build a national computer system capable of generating electronic phytosanitary certificates and of interfacing with the international ePhyto system. Depending on how elaborate the national system is, developing it could cost US50,000 or several times that. If your NPPO decided it wanted to participate in an ePhyto system, do you feel your NPPO has the resources to develop the necessary national system?



- Yes
- No, financial resources exist, but the technical capacity does not
- No, technical expertise is available, but sufficient finances do not ...
- No, both financial and technical assistance would be needed

Outreach

- An aggressive outreach program needs to accompany the development of an IPPC facilitated ePhyto system.
- Some countries will need financial assistance to engage in ePhyto.
- Some countries will need to be provided with a basic national system.
- Technical training will be needed.

PART VI: NEXT STEPS

Next Steps

1. Standardization
2. Scoping document to build hub ready to go out to bid
3. Finance – firm proposals
4. IPPC Account
5. Reassess once costs are known
6. Select Vendor for operation and maintenance
7. IPPC Steering Group - oversight
8. Outreach

RECOMMENDATIONS

Recommendations (1)

- Accept and use the same transmission control protocol (TCP) for the exchange of electronic phytosanitary data.
- Harmonize operating or business rules, and further harmonize codes, terms and schema.
- Develop a hub as a means of widely implementing the harmonized business rules and transmission practices.

Recommendations (2)

- Develop a scoping document for a IPPC sponsored hub. Stipulate that the hub be built such that:
  - no records of transmissions are kept;
  - ePhyto certificates are deleted from primary and backup servers once received by the importing NPPO.
  - require XML pattern on “the outside of the envelope”, to check the certificate is valid.
  - use https, Secure Sockets Layer (SSL) and other security features.

Recommendations (3)

- The hub servers located in countries that legally protect the confidentiality of the data.
- IPPC select a vendor to host. Use cloud platform.
- NPPOs agree to hold the IPPC harmless for system failure or data loss and recognize that they are voluntarily availing itself of a transaction option the IPPC has made available.
- Maintenance and operation paid by transaction fee.
- IPPC should build and make available a basic national system and provide training.
- Contractor to work with SG on common business rules.

Thanks