



Opportunities of blockchain applications for the supply chain

27-11-2018

The use of blockchain for phytosanitary certificates
Geneva – World Trade Organization



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Agenda



- 1. Port of Antwerp – some facts & figures**
- 2. Potential of blockchain in the maritime supply chain**
- 3. Pilot case: the ePhyto certificate in the Port of Antwerp**

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Port of Antwerp – some facts & figures



Multifunctional Port

In Harmony

For the Future



224

million tonnes
of freight



29.820

acres
port area



13,5

million TEU



142.654

jobs in
the port



900

companies in
the port area



**Biggest banana import port
8 billion bananas per year**



**Biggest steel port in
Europe**



Second biggest chemical cluster worldwide



**Biggest tabaco supply
worldwide**



**Biggest coffee depot
27 billion cups of coffee**



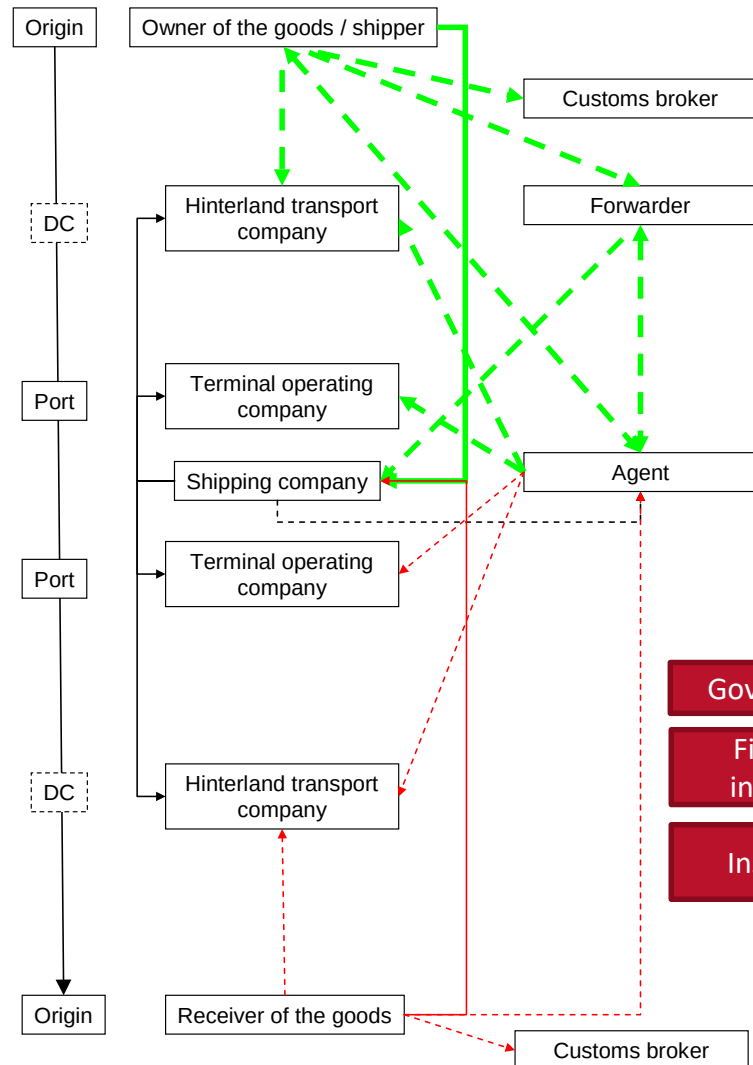
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Potential of blockchain in the maritime supply chain

Maritime supply chain - stakeholders

1 maritime transport,
on average:

- 30 – 40 participating actors
- $\pm$ 200 different interactions on documents



280 carriers



72 rail and barge
operators (containers)



200 container terminals



+1000
Distribution
centres in
the port



+900
Logistics
service
providers

Maritime supply chain - inefficiencies

		Port and hinterland stakeholders								Authorities				Other third parties	
Inefficiencies	Shipper	Freight forwarder	Customs declarant	Shipping line	Terminal operator	Hinterland transport			Receiver of the goods	Port Authority	Customs	Harbor master, pilotage	Others (e.g. Police, Sanitary and veterinary authorities)	Agent	Financial institutes
Time															
ETA/ATA estimation				X	X	X		X	X		X	X			
Operations planning				X	X	X	X	X	X				X		
Document flow															
Goods ownership documents (CMR, B/L,...)	X								X					X	
Hardcopy documents (Phytosanitary certif.)	X								X	X			X	X	
Customs declaration	X	X	X	X		X	X			X	X		X	X	
Information flow															
Track and Trace						X	X	X	X						
Payment confirmation	X	X	X	X	X	X	X	X	X		X			X	X
Cargo related															
Shipment fragmentation	X	X				X	X	X	X				X		
Loading units				X	X	X	X	X							
Financial flow	X	X	X	X					X						X

Early adopters in the maritime supply chain



Maritime Logistics + Blockchain Timeline

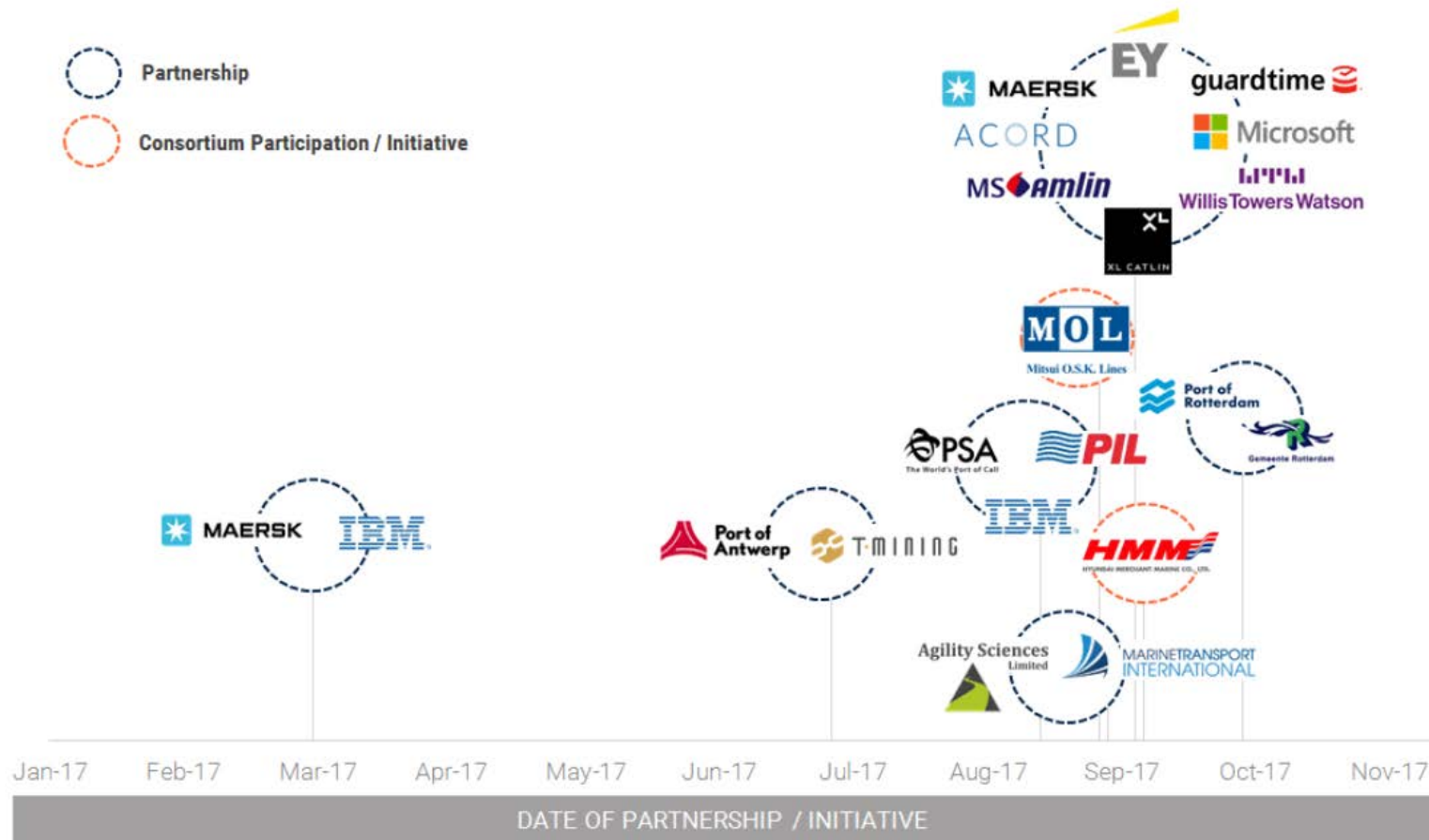
Select 2017 Blockchain Partnerships and Initiatives in the Maritime Logistics Space



Partnership



Consortium Participation / Initiative



3

Pilot case: the ePhyto certificate in the Port of Antwerp

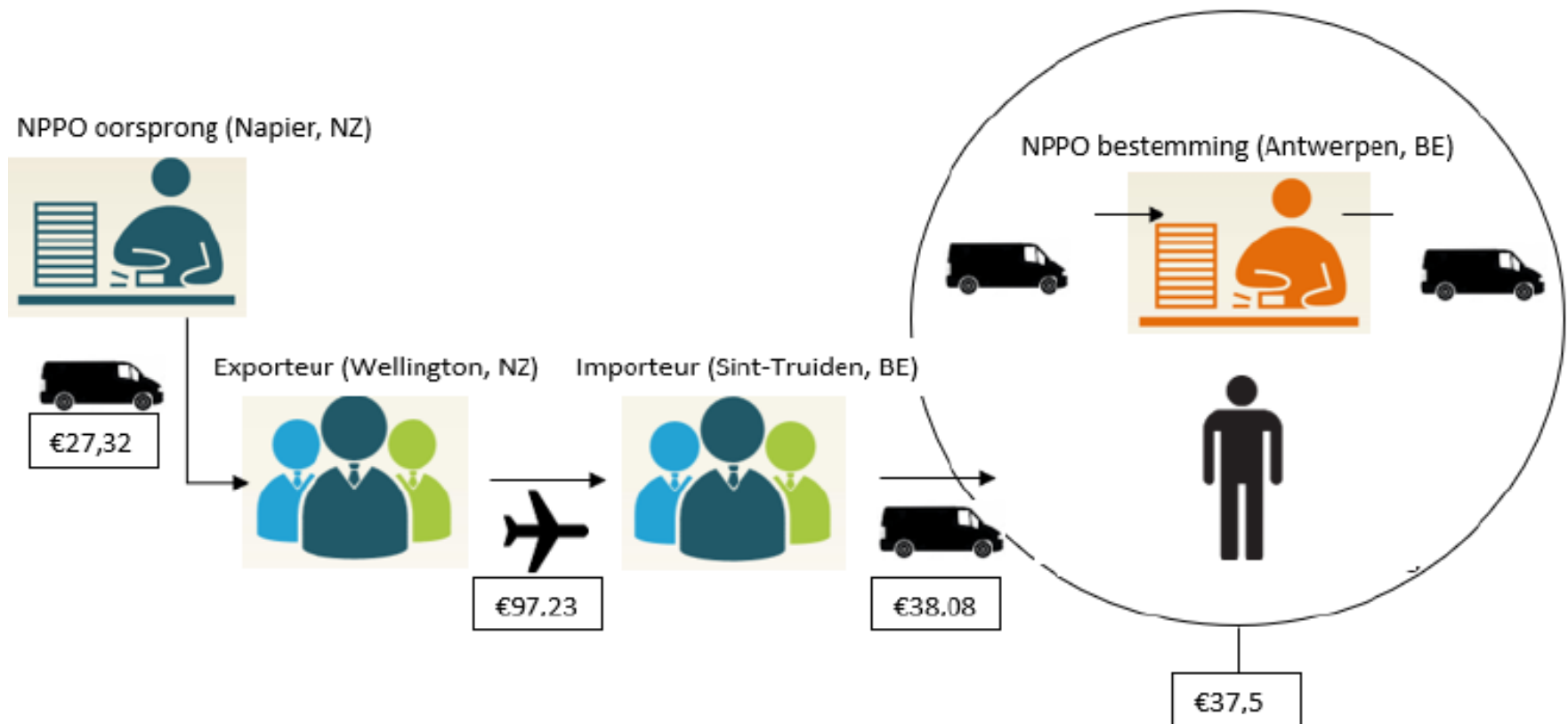
ePhyto exchange via Blockchain

- Proof of Concept was set up for a specific apple trade between New Zealand (Port of Napier) and the Port of Antwerp
- PoC builds further upon Smart Contract building blocks, on top of the basic blockchain technology
- Executed during the months June, July & August 2018 (launched on June 14th)

- Pilot objectives:
 - creating **a more secure and efficient maritime trade process** by developing a digitized phytosanitary certificate based on blockchain technology
 - to make use of blockchain technology as **a sustainable solution** for reliability and traceability in **b2g-interactions**
 - to illustrate **a working concept for certificates management** in a digital, electronic way
 - to **prove process improvements** compared with the actual paper-based process
- Benefits to prove :
 - **faster**: no shifting and waiting on papers, paper losses, ...
 - **earlier**: NPPO sees the certificates much earlier in the process, as they are uploaded
 - more **environmental friendly** solution: less papers, no paper-transports,...
 - **secure & reliable**: no fraude possible via use of BC technology
 - **traceability** via BC audit-trail

Pilot case: phytosanitary certificate

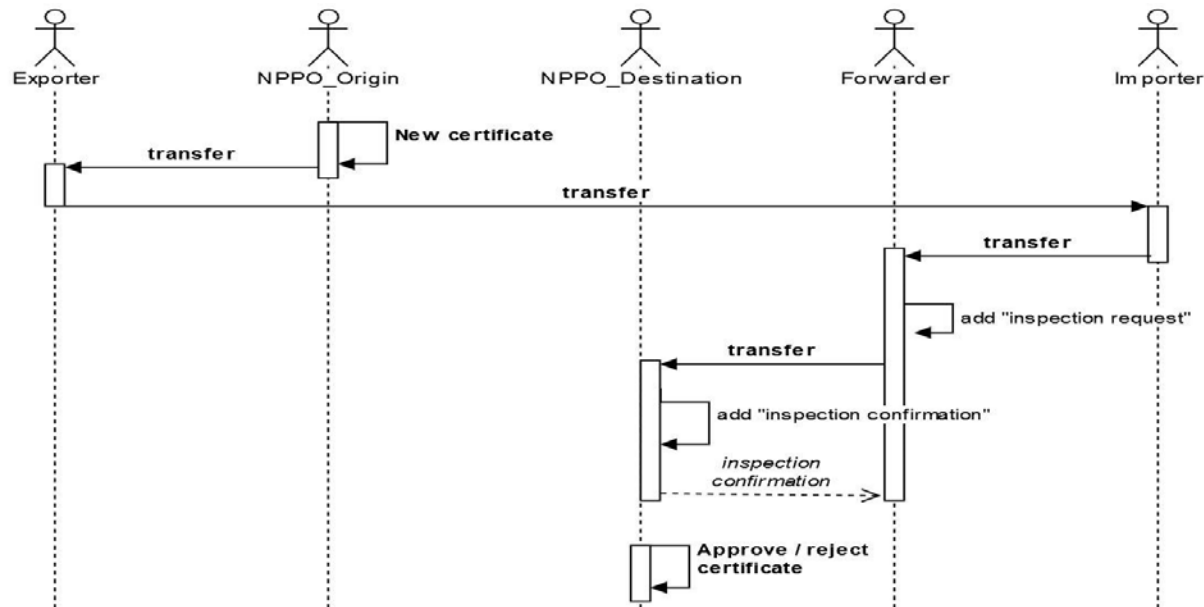
A declaration used in international commerce for shipments of plants and plant products. Certificate issued by the National Plant Protection Organisation of the exporting country to be presented to the NPPO of the importing country.



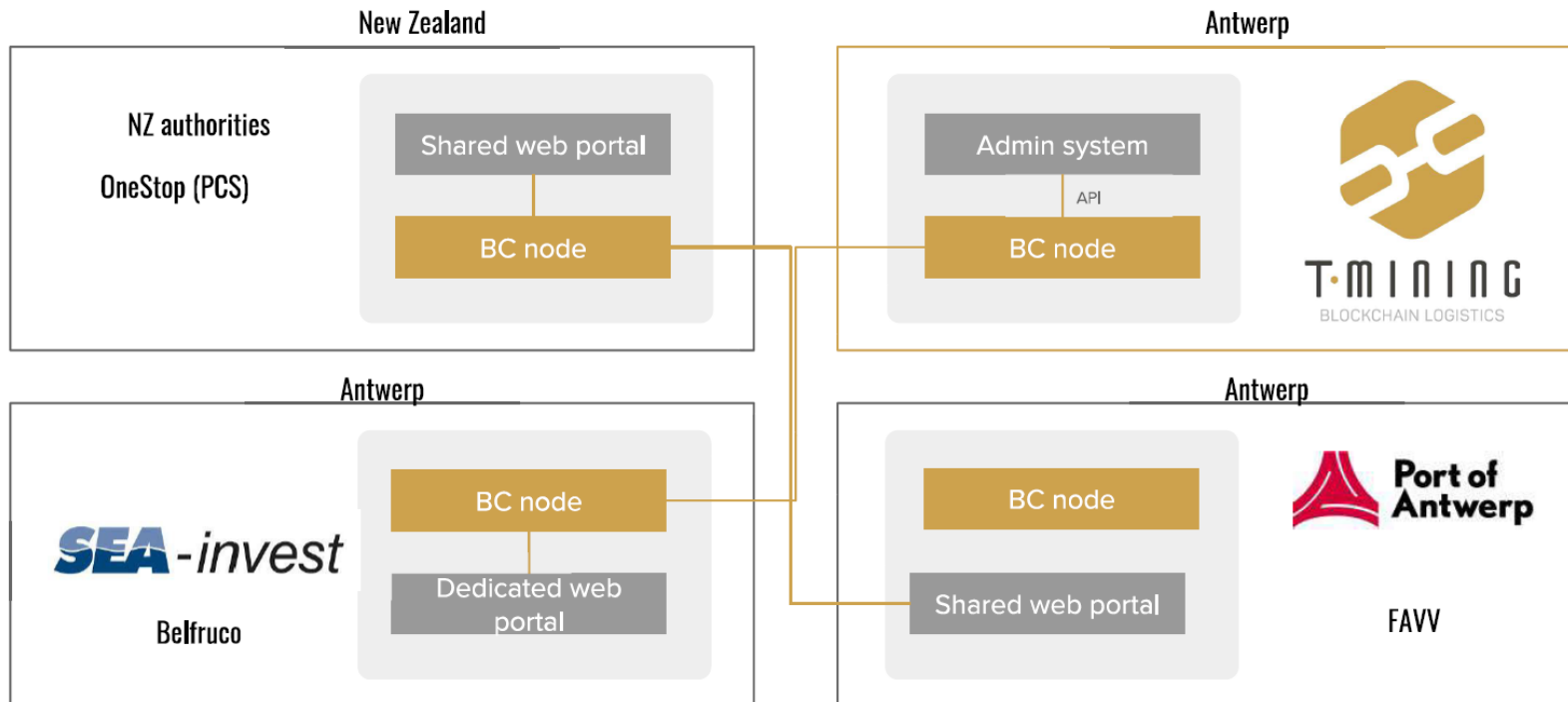
Why this project ?

- Solutions available on g2g-level
 - Bilateral agreements between countries
 - European TRACES system for EU member states
 - IPPC ePhyto Hub pilot
- But no (digital) visibility nor interactions on b2b- and b2g-levels
 - exporter – importer
 - importer – forwarder
 - forwarder – NPPO
- A very strong belief in use of blockchain for documents & certificates in a b2g-context
- ...although we know that, from a legislation viewpoint, this solution will not be accepted 'today' in an official context

Pilot case – process flow



Pilot case – blockchain infrastructure (1)



ePhyto app

- Web UI access for every stakeholder in the supply chain (exporter, importer, forwarder & NPPO)
- APIs available, so ERP-integration is possible

ePhyto

FAVVUser1

Create new document

Details

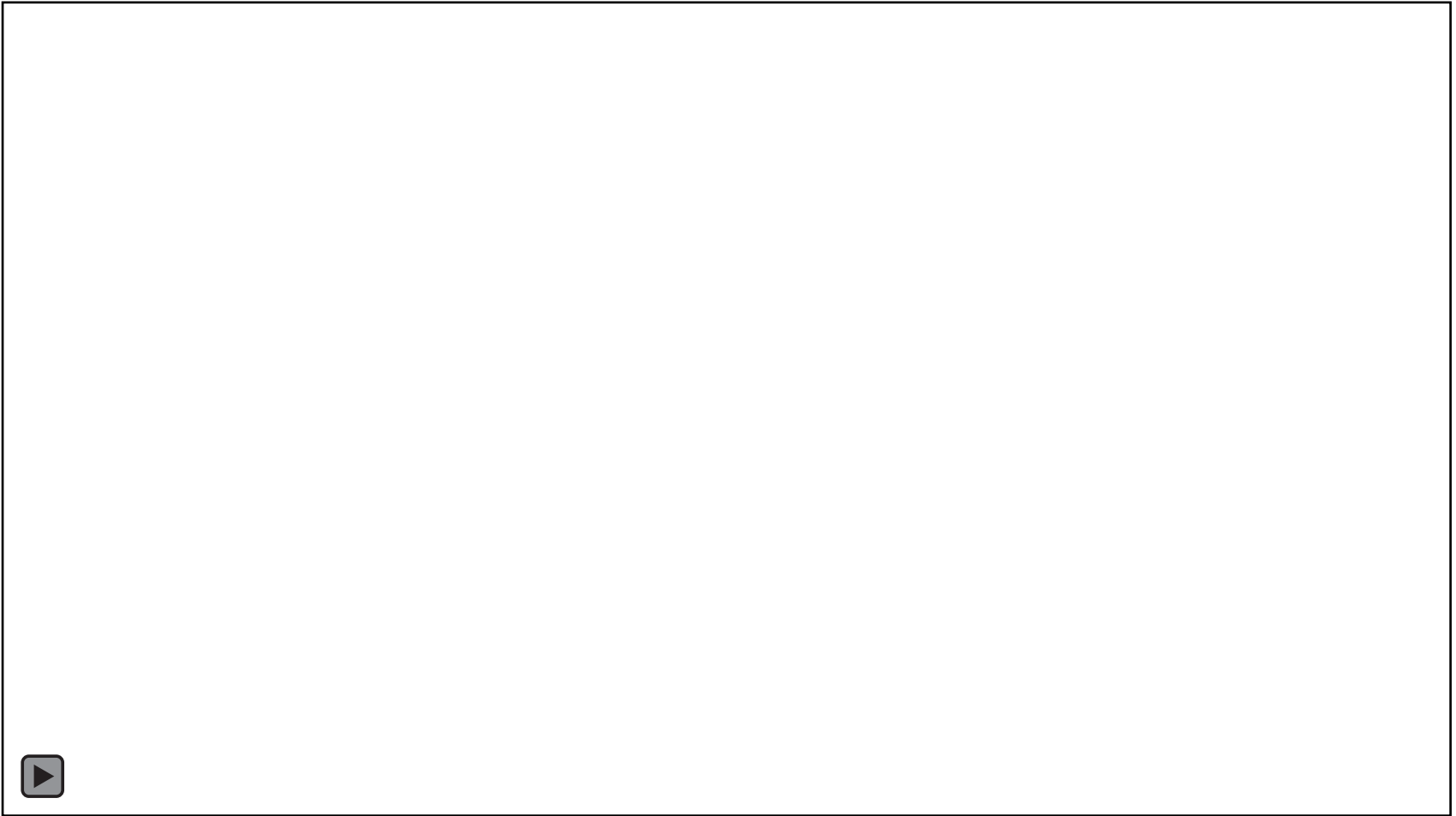
Add comment

Transfer

Share

Reference	Created by	Owned by	Type	Status	Action
 EN18624 - GOTTFRIED SCHULTE FC823R	Exporter	FAVV	ephyto	Approved	
 EN18601 LICA MAERSK 844N	Exporter	FAVV	ephyto	Approved	
 EN18610 LEDA MAERSK 851N	Exporter	FAVV	ephyto	Rejected	
 EN18621 MSC BANU FC824R	Exporter	FAVV	ephyto	Approved	
 EN18631 CMA CGM POINTEE DES SALINES 8515	Exporter	FAVV	ephyto	Approved	
 EN18635 JOSEPHINE MAERSK 843N	Exporter	FAVV	ephyto	Created	
 EN18663 MSC ADITI KE823R	Exporter	FAVV	ephyto	Approved	
 EN18684 JOSEPHINE MAERSK 843N	Exporter	FAVV	ephyto	Approved	
 EN18685 JOSEPHINE MAERSK 843N	Exporter	FAVV	ephyto	Approved	
 EN18686 JOSEPHINE MAERSK 843N	Exporter	FAVV	ephyto	Approved	

ePhyto app (2)





Costs versus Benefits

	Costs	Benefits
FAVV (Belgian NPPO)		- administration reduction - optimisation control process
Port of Antwerp	pilot case facilitation	- competitiveness (port + MarSC) - keep / attract cargo flows
Exporter	Subscription fee or ERP-integration	digital upload reduces high delivery costs
Importer	Subscription fee or ERP-integration	- no time loss - administrative simplification - electronic archive
Terminal operator	Subscription fee or ERP-integration	- staff time reduction - eliminate risks of too early pickup
Forwarder	Subscription fee or ERP-integration	- No time loss - administrative simplification - electronic archive - Less risks in orchestrating their supply chain

Next steps – working in parallel

Operational perspective :

- Extending the current pilot case with other countries & communities
- Extending with other stakeholders, e.g. Customs
- Extending not only in maritime port context, but also in airport context (e.g. Brussels Airport Company)
- Piloting with other certificates/documents:
 - Veterinary certificate
 - Certificate of Origin
- Aligning with other, similar initiatives on a global scale (integrating platforms)

Regulatory perspective :

- Following, supporting, ... legislation changes on digital 'context' :
 - uniformity between paperbased and fully digital processes
 - uniformity between paper and digital documents
 - legal equality between handwritten and electronic signatures
(e.g. awaiting Implementing Act on electronic signatures for phytosanitary certificates)

Conclusions

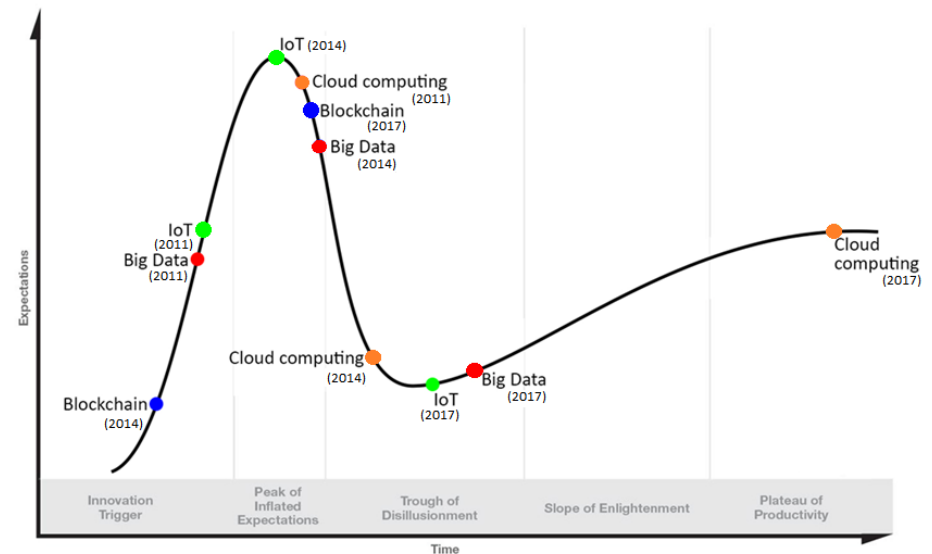
- Great potential
- Open for any type of document, certificate, authorisation, ...

- Tresholds:
 - Legislation
 - Global aspect (i.e. complexity)
 - Commercial risk
 - Time to market

- Challenge – from Pilot to Practice

- “Chain thinking”
Don’t do this by yourself, but work
and think together

Co.CREATE → Co.INNOVATE



Source: Kokken, 2018
based on Gartner Hype Cycle for Emerging Technologies

Thank you !



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