

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA



Sixty-ninth meeting of the Standing Committee
Geneva (Switzerland), 27 November -1 December 2017

Interpretation and implementation matters

Trade control and traceability

Electronic systems and information technologies

THE CITES BLOCKCHAIN CHALLENGE

This document has been prepared by the Secretariat in relation to agenda item 40 on *Electronic systems and information technologies*.

The CITES Blockchain Challenge

Can Blockchain prevent the use of fraudulent CITES certificates and permits?

Background

Researchers and companies have contacted the CITES Secretariat regarding research on the potential of Blockchain to enhance the implementation of the Convention. In order to best direct these efforts the CITES Secretariat has drafted this *CITES Blockchain Challenge*, which describes a potentially interesting case for the use of Blockchain to support CITES and the outputs that the Secretariat is interested in.

Current 'eCITES' landscape

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) aims to regulate international trade in CITES-listed species to ensure that such trade is not detrimental to the survival of the species in the wild, by requiring that any such trade is legal, sustainable and traceable. The Convention is almost universal with 183 Parties. The CITES permit¹ is the core mechanism of the Convention to document the legality of trade and ensure the traceability of trade in specimens of CITES-listed species.

Currently CITES permits are issued and exchanged in paper format only. The validation of CITES paper permits is cumbersome and insecure. Unscrupulous traders exploit this weakness by presenting fraudulent CITES trade documents to Authorities, knowing well that the Authorities have limited validation instruments available to them. No reliable information on the extent of this fraud is yet available but the use of fraudulent trade documentation is recognised as an important challenge that affects the effective implementation of the Convention.

CITES Parties are encouraged to automate their permit processes and to implement electronic permit systems (eCITES). The Convention fully supports the use of electronic CITES permits based on the UN/CEFACT ebXML standard.

An important aspect of the eCITES effort is the implementation of Electronic Permit Information Exchange (EPIX) between Parties, namely between countries, for exchange of electronic CITES permits. EPIX will prevent the use of fraudulent permits and significantly streamline legal trade in specimens of CITES-listed species.

Some Parties already started preparatory work on EPIX using Web Service (WSDL) technology to exchange electronic permits. To avoid the need for the use of digital signatures on the permits, they must be directly exchanged between the secured systems of the Authorities of the exporting and importing country.

Existing paper permits are passed from the issuing authority to the exporter who passes it to the importer who will present it to the authorities in the importing country. In an electronic workflow the

¹ In this paper the term "permit" denotes CITES permits and certificates

permits are exchanged directly between the authorities of the exporting and importing country using Transport Layer Security (TLS).

The implementation of a new workflow for electronic permits raises important issues relating to the responsibility and liability of the authorities, as well as issues concerning legislation, standards and technology and sustainable funding, which have not yet been resolved.

Blockchain is an emerging technology that could potentially provide a radically different approach and solution to CITES permit exchange and validation. As the policy and political decisions have already been taken under CITES regarding the agreed business processes of issuing and receiving permits, there is an opportunity to focus in this Challenge on technical issues. Being aware of its potential the CITES Secretariat has formulated the *CITES Blockchain Challenge* to encourage researchers and solution providers to conduct research on the use of Blockchain for CITES and in doing so how to best direct their efforts.

The CITES Blockchain Challenge

Can Blockchain implement a system for secure, efficient and affordable exchange of CITES permits between authorized Parties and private sector stakeholders that is based on the existing agreed business process, which is currently paper based?

Research is expected to provide information on the:

- feasibility and requirements of the solution
- information flows and business processes
- details of the benefits and costs for CITES Parties and stakeholders
- accessibility and scalability for small and medium sized enterprises and developing countries as well as fall back to manual procedures if systems are not available
- compliance with the Convention and any changes in the Convention requirements that may be required by the proposed Blockchain solution
- requirements such as Public Key Infrastructure (PKI), specific national legislation, etc.
- openness of the solution, i.e. whether proprietary software or standards are used
- costs and proposals for sustainable funding
- archiving and accessibility to the permits over time

Annex 1 of this document provides further information on the preferences and constraints of the electronic CITES permit information exchange.

All outputs should be made available in a format that is targeted towards a non-technical audience.

Use of submissions

The CITES Secretariat will make substantial submissions available to the CITES Standing Committee for its consideration. The Secretariat reserves the right to make materials received through the Challenge available to Parties and the public.

The CITES Secretariat is not in a position to endorse specific companies or solutions. The use of the CITES and the UN logos is regulated by UN and other rules. The use of the CITES logo by private sector entities requires the explicit and written consent of the CITES Secretariat.

The CITES Secretariat will not consider materials that do not specifically focus on CITES processes or that are mainly of a commercial promotional character.

The CITES Secretariat currently has no funding available to support Blockchain related research. All contributions to this Challenge must be *pro bono*.

Annex:

Specific guidance and background information to researchers

Convention requirements

- Parties cannot end up in a “sole provider situation” where all CITES permits have to be exchanged through a central mechanism. A solution requires Parties to be free to choose between different service providers and products.
- The solution must ensure that a permit can be used only once.
- Issuing Authorities must be able to collect systematic information on the history of the permit (whether it was used, change of quantities, etc.) either during the transaction or when the transaction is completed.
- The solution should allow data/permits to be retrieved years after the trade transaction occurred.
- It must be possible to make the distinction between volumes authorized for trade and volumes actually traded (i.e. Box 15 & 16 for comments by customs).

Technical specifications

- The solution should be accessible to SMEs and developing countries with low Internet connectivity. While access to ICT is generally good in most countries, some locations where permits are needed do not have reliable Internet access. This might require fall back to manual procedures.
- Many countries do not have operational Public Key Infrastructure (PKI) solutions available that are consistent with national legal requirements. In addition, cross border certification of digital certificates is not yet recognised by most countries. Therefore solutions should not assume that certification is generally available. However, it can be assumed that peer to peer certification is available for example between exporter and importer and that all participating Government Agencies recognise each other’s certificates. Agencies are not expected to certify permits through individual certificates of their officers. Rather it is expected that agencies authenticate the permit with a signature of the agency.

Preferences

- Of particular interest are the information flows under the Blockchain solution, how stakeholders can get access to permit information, how the different levels of read and write access are implemented.
- It would be useful to receive information on who will benefit from the solution, the costs for implementation and operation, and options for sustainable funding.

Information on Cross border workflow of paper and electronic permit exchange

There are fundamental differences in the use of paper and electronic permits. Information in an electronic permit can be easily changed using an XML editor while changes in a paper permit will leave some form of trace. In addition, an electronic permit that has been used for an export operation cannot be stamped by Customs like a paper permit. Therefore it could be used many times. To overcome these difficulties the document workflow for electronic CITES permits is different from the paper Permit workflow.

Document workflow for CITES paper Permits

Figure 1 describes the workflow of a paper permit. The Exporter requests a paper permit from the MA (Step 1). The MA creates a record in its permit database and issues a paper permit (Step 2). The exporter sends the paper permit to the Importer (Step 3). The Importer presents the Permit to Customs and/or to the MA (Step 4).

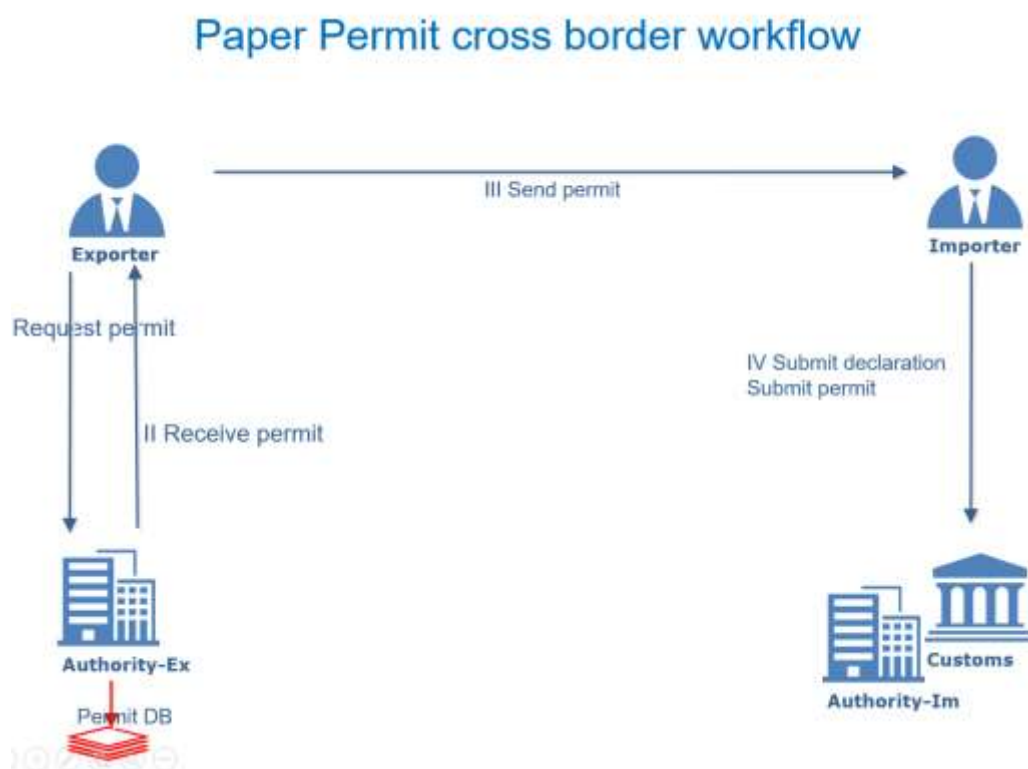


Figure 1 Cross border document flow of paper permits. Electronic components are marked in red

Document workflow for electronic CITES Permits (WSDL scenario)

Figure 2 describes the workflow of an electronic permit exchange. The Exporter requests a permit from the Management Authority (Step 1). The MA creates a record in its permit database and issues

a permit identifier² (ID) (Step 2). The MA may also print a hardcopy of the electronic permit. However, this copy will be marked as “COPY” and cannot be used for official use. The exporter sends the permit ID to the Importer (Step 3). The Importer sends the Permit ID to Customs and/or to the MA (Step 4). Customs/MA send an electronic request for the permit data to the issuing MA (Step 5). The issuing MA sends an electronic message with the permit data to the importing country (Step 6).

EPIX Permit cross border workflow

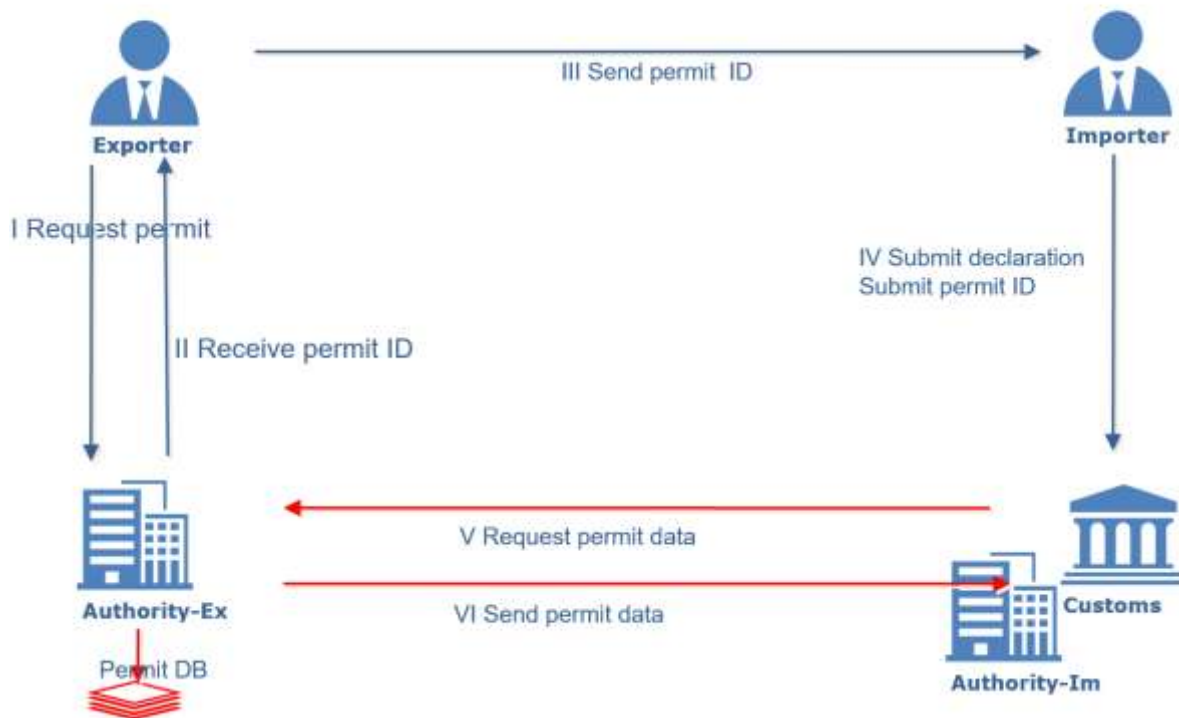


Figure 2 EPIX electronic permit workflow Electronic components are marked in red

This workflow is substantially different from the paper workflow as the permits are now exchanged between the MAs. The exporter and importer only exchange the Permit ID.

This means that responsibilities for procuring and exchanging the permit and for data confidentiality now lies with the Authorities in both countries. The authorities are responsible to the trader for the success of the exchange.

Signatures in electronic CITES permits

² On CITES permits the ID is referred to as the “PERMIT/CERTIFICATE No.,” printed in box 1 of the permit.

CITES decision Conf. 12.3 (Rev CoP16)³ states that Parties that use electronic permits need to use an electronic equivalent for the physical signatures in the Permit.

Different methods exist to implement an electronic signature in a document. UN/CEFACT Recommendation 14 on authentication of trade documents advises Governments to avoid over-engineering of electronic signature solutions and recommends as best practice that electronic signatures in a trade document should match the level of security provided by a physical signature on a paper Permit.

In most administrative systems, the electronic equivalent of a physical signature is implemented by authenticating the user, for example through a username and password. The system will then log all activities of this user, for example which documents were approved by the user. This audit trail ensures that the Authority can at any time identify who signed and approved documents.

Procurement and funding of solutions for cross border exchange of CITES permits

Decisions on the use of electronic Platforms for the exchange of electronic CITES permits and the control of the procurement process are in the realm of the national authority that decides to use such a platform. The CITES Secretariat is not involved in their final decision making and procurement process.

CITES Management Authorities will typically request a fee for issuance of permits. Each Party sets its own policy on fees. Although Parties do not report information on the fees to the CITES Secretariat, they seem to vary significantly between countries – the Secretariat has been made aware of fees ranging between one USD and fifty USD. Permit fees may offer an opportunity to self-fund a Blockchain. It is common practice of countries to leverage an “electronic document surcharge”, i.e. increased fees for electronic submission and processing of trade documents. This is justified if traders benefit from faster and more reliable services.

The General Agreement on Tariffs and Trade (GATT) Article VIII limits fees and charges for formalities related to importation and exportation to the approximate costs of services rendered. This article applies also to CITES permitting fees.

Information on CITES trade can be obtained for from CITES trade database at <https://trade.cites.org/>. The database contains all CITES trade as reported by the Parties. The information is limited to quantities traded, no information on value of trade is reported. Reported trade transactions stand currently at 1 million transaction p.a. which translate in about the same amount of permits issued.

The CITES permit business process and document flow is similar to document flows of other permits used in international trade such as Sanitary and Phytosanitary certificates, Certificates of origin, quality certificates and import and export licenses. A Blockchain solution for CITES may be applicable for these documents as well.

³ <https://cites.org/sites/default/files/document/E-Res-12-03R16.pdf>

List of related documents

| Document | Synopsis with regard to eCITES domain |
|---|--|
| CITES Convention | <p>The Convention establishes a system of Permits to regulate trade in endangered species listed in the three Appendices of the Convention. Article VI of the Convention focuses on permit requirements. Article VIII requires Parties to send permit information in their national reports on CITES trade to the Secretariat.</p> <p>The Standard CITES Form Appendix VI of the Convention provides a CITES Form.</p> |
| Resolution Conf. 12.3 (Rev. CoP17) | <p>Provides detailed recommendations and specifications for CITES permits. Inter alia it establishes the equivalent of paper and electronic permits, recommends business processes for permit issuance and exchange, use of international standards, authentication and signatures, data semantics and code lists. CoP Decision 15.54 encourages parties to use the CITES electronic permitting toolkit. Annex 2 of Resolution Conf. 12.3 (Rev. CoP17) provides several standard forms.</p> <p>The CITES electronic permitting toolkit provides standards for electronic CITES permits, in particular data model and Schema for electronic CITES permits based on UN/CEFACT Core Component Library it's mapping to the WCO Data Model. The CoP recommends Parties to apply to the toolkit. The toolkit can be downloaded as PDF.</p> |
| Resolution Conf. 11.17 (Rev. CoP 16) | <p>Provides details on the preparation and submission of the annual national reports required in Article VIII. Urges parties to submit their reports in accordance with the Guidelines for the preparation and submission of CITES annual reports and the use of the CITES Toolkit</p> |
| Guidelines for the preparation and submission of CITES annual reports | <p>Describes structure, data elements, codes and the format of annual reports. As the information in an annual report is a subset of the data contained in the CITES permits this document also provides further specifications for data to be used in CITES permits.</p> |
| Decision 17.156 | <p>Requests Parties to inform the Secretariat regarding planned and ongoing projects related to electronic systems for CITES trade.</p> |
| Decision 17.157 | <p>Requests the Standing Committee to re-establish the Working Group on Electronic Systems and Information technologies and provides the terms of reference for this group.</p> |
| Decision 17.158 | <p>Requests the Standing Committee to monitor progress of implementation of electronic systems and the work of the Working Group and provide recommendations and suggestions for revision of Resolution Conf. 12.3 (Rev. CoP17) and Resolution Conf. 11.17 (Rev. CoP17) to the 18th meeting of the Conference of Parties as deemed necessary.</p> |
| Decision 17.159 | <p>Requests the Secretariat to publish information on planned and ongoing projects of Parties on its website, to liaise with Management Authorities, donor agencies and other stakeholders and to provide capacity building and advisory services.</p> |

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| Automation of CITES permit procedures | Briefing paper for decision makers; Summarizes eCITES tools and instruments. Available from the Secretariat. |
| eCITES Implementation Framework | Provides national project managers with a best practice approach to plan and manage the automation of their CITES processes. Available from the Secretariat. |
| UNCTAD eCITES software solution | An eCITES off-the-shelf software solution available to Parties. UNCTAD makes the system available to Parties in the framework of a technical cooperation project. UNCTAD eCITES provides full automation of all CITES permitting processes including automated risk management, electronic payment, Customs data exchange and electronic reporting. |
| eCITES XML validation | Web portal to validate a CITES XML permit against the specification of the ePermitting toolkit. The portal will return a technical compliance assessment. |