CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA
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Seventy-eighth meeting of the Standing Committee
Geneva (Switzerland), 3-8 February 2025

Regulation of trade

ELECTRONIC SYSTEMS AND INFORMATION TECHNOLOGY

1. This document has been submitted by the Secretariat, in consultation with the Chair (Switzerland) of the CITES Standing Committee working group on electronic systems and information technologies.

2. At its 19th meeting (CoP19; Panama City, 2022), the Conference of Parties adopted Decision 19.150 to 19.152 on *Electronic systems and information technology*:

Directed to Parties

19.150   *Parties are invited to:*

  a)   *use the eCITES Implementation Framework, the latest edition of the CITES electronic permitting toolkit, Guidelines and specifications for Electronic Permit Information eXchange (EPIX) of CITES permits and certificates, and the Guidance on CITES electronic signatures in planning and implementing electronic CITES systems;*

  b)   *consider the implementation of electronic CITES systems in a manner designed to meet CITES requirements, including those provided in Resolution Conf. 12.3 (Rev. CoP19) on* Permits and certificates *to increase transparency and efficiency of the permit issuance and control process, to prevent use of fraudulent permits, and to provide quality data for reporting and improved sustainability assessment;*

  c)   *work with the customs, National Plant Protection Organizations (NPPOs) and other relevant agencies to ensure that trade in CITES-listed specimens is in compliance with CITES requirements and, where appropriate, in line with, or integrated into, other relevant national cross-border trade systems and procedures;*

  d)   *share experience, challenges and know-how with other Parties on the development and implementation of electronic CITES permit management systems and use of the electronic equivalent of paper-based permits and certificates, and provide inputs to the Secretariat for continuous improvement of eCITES reference materials;*

  e)   *take note of the eCITES BaseSolution as an automated permit management system option that is now available to Parties for implementation;*

  f)   *call upon donor countries and agencies to provide financial support towards the implementation of electronic CITES permit management systems in developing countries; and*

  g)   *submit to the Secretariat information on the use of HS codes for risk-based control procedures.*

Directed to Standing Committee, in consultation with the Secretariat

19.151 *The Standing Committee shall, in consultation with the Secretariat, undertake the following tasks:*

a) *work with the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Economic Commission for Europe (UNECE), the International Trade Centre (ITC), the World Bank, the World Customs Organization (WCO), the World Trade Organization (WTO), the Secretariat of the International Plant Protection Convention (IPPC), and other relevant partners, to continue the exchange of information and the development and implementation of joint projects that would facilitate Parties' access to electronic permitting systems that comply with CITES requirements and where appropriate are aligned with international trade standards and norms;*

b) *work with relevant partners on the further development of standards and solutions for Electronic Permit Information eXchange (EPIX) for the exchange of CITES permit and certificate data and the improvement of the validation of CITES permit data by CITES Management Authorities and customs officials;*

c) *recognizing the importance of the requirement for endorsement of permits and certificates at export, explore possible alternatives to the physical endorsement;*

d) *monitor and advise on Parties' work related to the development of traceability systems for specimens of CITES-listed species to facilitate their harmonization with CITES permits and certificates;*

e) *monitor the use of HS codes in implementing risk-based control procedures in different countries;*

f) *support the development of the capacity of Management Authorities, especially those with the greatest needs, to electronically collect, secure, maintain, and transmit data using systems compatible with those of the Secretariat and other Management Authorities;*

g) *consider ways in which electronic CITES permitting systems can simplify procedures for the non-commercial movement of musical instruments; and*

h) *submit reports on activities undertaken under paragraphs a) to g) of the present Decision and make recommendations to the Conference of the Parties at its 20th meeting.*

Directed to Secretariat

19.152 *The Secretariat shall, subject to the availability of external funding:*

a) *undertake a study on the information used by different Parties in a risk-based approach for CITES trade controls;*

b) *collect information from Parties on any issues encountered with regard to the application of national data protection laws that affect implementation of Electronic Permit Information eXchange (EPIX) for the exchange of CITES permits and certificates;*

c) *support the work of the Standing Committee under Decision 19.151 through the organization of workshops, consultations, preparation of studies and guidance materials on relevant topics as identified by the Standing Committee; and*

d) *provide capacity-building and advisory services to support Parties interested in implementing electronic solutions for the management and control of CITES permits and certificates and support Parties in establishing electronic permit systems and information exchanges.*

Implementation of Decision 19.150

3. Decision 19.150 urges Parties to implement electronic CITES permitting systems in compliance with the requirements outlined in Res Conf. 12.3 (Rev CoP19) on Permits and Certificates. It encourages leveraging

tools such as the eCITES Implementation Framework and related guidelines to enhance transparency and efficiency in permitting processes. Additionally, it invites Parties to collaborate with customs and relevant agencies to ensure compliance, share experiences, and improve eCITES systems, while noting the availability of the eCITES BaseSolution. The Decision also underscores the importance of donor support for developing countries and the use of HS codes for risk-based control procedures. These elements have been incorporated into the draft new decision contained in Annex 1 to ensure their continued relevance and to build on existing efforts by the Parties on these elements.

Implementation of Decision 19.151

International cooperation

4. Pursuant to Decision 19.151, paragraph a), the Secretariat has enhanced its collaboration through participation in joint projects, publications and events with various international organizations, such as UN/CEFACT, UNECE, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the International Chamber of Commerce (ICC), UNCTAD and WCO. The Secretariat has engaged with UN/CEFACT on the project *Digitization of Transit Accompanying Documents* and has participated regularly in UN/CEFACT Forums and plenaries and in the UNECE-ESCAP Task Force on EPIX, chaired by the Chair of the CITES Standing Committee's working group on electronic systems and information technology (ESIT). The Chair of the UNECE-ESCAP Task Force on EPIX, UNECE, and ESCAP, in consultation with the Secretariat, agreed to discontinue the work of the Task Force after its meeting on 9 May 2023, since EPIX has been included in the Decision directed to the Standing Committee and thus in the work of the ESIT working group. Another example of collaboration is the Secretariat's contribution to the ICC Digital Standards Initiative (DSI) publication on Key Trade Documents and Data Elements. This effort aimed to provide a comprehensive analysis of electronic CITES permits and certificates in supply chains, including the stakeholders involved, key data elements, and prevailing digital standards.

5. The Secretariat has further strengthened its collaborative engagement with experts from UN/CEFACT, UNCTAD's Automated System for Customs Data (ASYCUDA), WTO, and WCO, some of whom participate in workshops and provide guidance on technical matters related to CITES e-permitting systems. Thanks to financial contributions of Switzerland, the United Kingdom of Great Britain and Northern Ireland and the United States of America, UNCTAD-ASYCUDA continued to maintain and develop the eCITES BaseSolution, an off-the-shelf solution for electronic CITES permitting systems. To date, UNCTAD-ASYCUDA has implemented the eCITES BaseSolution in Mozambique and Sri Lanka.

United Nations Global Survey on Digital and Sustainable Trade Facilitation

6. Pursuant to Decision 19.151, paragraph a), and Decision 19.152, paragraph c), and as contained in SC77 Doc. 49, the Secretariat took the initiative to add a new question about electronic CITES permitting system in the biennial United Nations Global Survey on Digital and Sustainable Trade Facilitation in 2023. The updated Survey results indicated partial eCITES system implementation in 33 Parties, with 14 Parties in the planning stages out of 163 respondent Parties. According to the Survey methodology, full implementation includes implementation of electronic permit information exchange between countries, which has not been reported in 2023. Nevertheless, it is evident that the majority of the Parties are yet to implement their national systems. The Secretariat notes the challenges including financial resources for the developing country Parties. The Secretariat suggests Parties to review their plans for developing national single windows with the aim to integrate eCITES systems. Parties are encouraged to follow the eCITES Implementation Framework for guidance on eCITES project implementation.

7. The next biennial Survey is expected to be launched in early 2025. The Survey question related to eCITES will be reviewed before the launch of the Survey. The Secretariat encourages the Parties to take part in the 2025 Survey, which is managed by the United Nations Regional Commissions for their respective regions. Responses to the entire Survey is usually coordinated by a government agency (e.g. Ministry/Department of Trade, Economy or Customs or Foreign Affairs) in each country. In this context, Management Authorities are requested to submit responses to the question related to eCITES, either to the coordinating entity or to the Secretariat directly. In case of the latter, the Secretariat will share the responses to the relevant United Nations Regional Commission. The Secretariat will issue a detailed notification once the 2025 Survey is launched.

E-Permitting Toolkit and Guidelines and specifications for Electronic Permit Information Exchange (EPIX)

8.   Pursuant to Decision 19.151, paragraph a) and f), and Decision 19.152, paragraph c), the Secretariat has published version 3.0 of the CITES Electronic Permitting Toolkit in [English](#), [French](#) and [Spanish](#). Pursuant to Decision 19.151, paragraph b), the Secretariat translated the [Guidelines and specifications for EPIX](#) for CITES Permits and Certificates into [French](#) and [Spanish](#). Subject to the availability of extrabudgetary resources, the Secretariat will revise the Guidelines based on the results from the pilot-test by Switzerland and eCITES BaseSolution, which uses the latest technical specifications from the version 3.0 of the CITES Electronic Permitting Toolkit.

Study and guidelines on two-dimensional (2D) barcode

9.   Pursuant to Decision 19.151, paragraph c), the Secretariat conducted a study on the use of two-dimensional (2D) barcodes on CITES permits/certificates. The objective of this study was to collect information on the use of 2D barcodes by CITES Parties as an alternative to physical endorsement of CITES permits/certificates, and to prepare guidelines for CITES Parties on the use of such codes. The study analysed information from Australia, Bahrain, Belgium, Canada, the European Union, Germany, Mozambique, Norway, the Philippines, Saudi Arabia, Singapore, South Africa, Switzerland, Thailand, the United Arab Emirates and the United States of America.

10.   The main findings of the study are summarized as follows:

   a)   There are different ways CITES Parties use 2D barcodes for permits/certificates, such as linking directly to the original document, managing access via a website, or displaying partial or full permit information. Some computer applications are restricted for internal use. CITES permitting conditions require a so-called federated trust environment, where multiple authorities manage their systems independently but collectively to provide a unified service.

   b)   The main reason for a Party to adopt 2D barcodes is to verify the authenticity and validity of documents, including matching permit data (e.g., specimens, quantity) with actual goods.

   c)   Online access is not always available when processing permits due to connectivity issues or system failures, impacting real-time verification.

   d)   While 2D barcodes are linked to electronic permits, they do not require electronic communication between CITES Parties, but the issuing authorities need sufficient information technology (IT) infrastructure to support their use.

   e)   Several Parties expressed the need to adopt a uniform and standard approach to the adoption of 2D barcodes across the CITES community to enable the systems to interoperate properly.

11.   The study concluded that the use of 2D barcodes alone is not sufficient for the authentication or endorsement of CITES permits/certificates. The solution must integrate access to reliable information both offline and online. The technology must support the data format and access to relevant information to add value for CITES Parties. A number of business requirements for CITES Parties were identified as follows:

   a)   Security: The 2D barcode should authenticate the permit's origin and validate critical information like validity, specimen(s), and quantity. It should also support non-repudiation[1], ensuring the integrity and origin of the data.

   b)   Access to information: Scanning a 2D barcode may not require online connectivity, but the subsequent data processing and retrieval may need the user to be connected to the internet. Connectivity includes considerations like timeliness, data access, interoperability, and completeness.

   c)   Simplicity: The solution should be easy to use, ideally at no cost, requiring minimal tools or specific apps. If encrypted data is used, all Parties should employ the same application for consistency.

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[1]   *User can be confident of the authenticity of the data and the origin/issuer of the data.*

d) Automated data capture and processing: The 2D barcode can act as a portable data record, enabling automatic data capture and integration into IT systems, reducing manual data entry.

e) Identification: The data captured must be accurate and globally unique for identifying the permit issuer, permit number, and species.

f) International standards: The barcode solution should follow international standards to ensure competitiveness and interoperability between different providers.

12. The study evaluated various alternatives for implementing a 2D barcode solution to ensure alignment with business requirements. The following table summarizes the assessment of the possible solutions against the business requirements that have been identified.

Business Requirement	URL to Permit/ Certificate (Option 1)	URL to website giving access to Permit /Certificate (Option 2)	Structured data (Option 3)	Encrypted data with digital signature (Option 4)	Verifiable credentials (Option 5)
Security	Low	Low to Medium	Low	High	High
Connectivity	Required	Required	Not needed	Not needed	Preferable
Simplicity	High	Medium	App required	App required	App required
Automation	No	No	Yes	Yes	Yes
Identification	No	No	Required	Required	Required
Standards	N/A	N/A	Required Stable	Required Stable	Required Maturing

13. On the basis of the study, the Secretariat developed the *Guidelines on the use of two-dimensional (2D) barcodes on CITES permits/certificates* contained in Annex 2 to the present document. The objective of these guidelines is to provide technical and business details on the possible solutions identified in the study on the use of 2D barcodes on CITES permits/certificates. The preferred data carrier is the QR Code, as it offers several advantages over other barcode solutions, such as: ability to encode different types of information and support multiple character sets; capacity of holding both small and large amounts of data; wide use in various applications, including marketing, ticketing, product labelling, and mobile payments, where efficient data capture and seamless information retrieval are important. Additionally, scanning a QR code with a mobile device does not require a special application, as most devices have built-in support for reading them. The *Guidelines* recommend ISO/IEC 18004 and ISO/IEC 15415 standards for QR codes on CITES permits/certificates.

14. The *Guidelines* also describe the alternatives for endorsement of CITES permits/certificates including their advantages, disadvantages, cost and standards references. The recommended solution is 'QR code encoding encrypted data with a digital signature' (option 4 in the table) as it meets the business requirements. In addition, upon endorsement by the working group on ESIT, this solution should be assessed through pilot implementation projects. Furthermore, given the varying level of readiness of CITES Parties, other options and preferably the "URL to web site giving access to permit/certificate" (option 2 in the table) may also be explored.

15. The members of the intersessional working group on electronic systems and information technologies discussed potential alternatives to physically endorsing CITES permits at borders, including in transit situations. Some members shared their endorsement procedures, with certain practices involving two-dimensional barcodes, such as QR codes, used in various ways. However, some Parties expressed concerns about the variety of endorsement options, which could create confusion for the importing Party's border control agencies. Furthermore, the members reviewed the *Guidelines* and recommended that the Standing Committee agree on the *Guidelines on the use of two-dimensional (2D) barcodes on CITES permits/certificates* contained in Annex 2 to the present document.

HS codes for risk-based control procedure and traceability systems

16. Pursuant to Decision 19.151, paragraph d), and e) and Decision 19.150 paragraph g), the Secretariat issued Notification to the Parties No. 2024/107 requesting information from Parties on use of HS codes in implementing risk-based control procedures. The Secretariat received responses on the use of HS codes from Croatia, the European Union, Finland, Germany, Indonesia, Mexico, Singapore, Sweden and UNCTAD. The responses are analysed in paragraphs 16 to 26.

<u>Risk management and control procedures</u>

17. General approach: Many countries, especially EU members like Germany, Finland, Sweden, and the Netherlands, reported using the [Customs Risk Management Framework](#), prioritizing safety and security over CITES-specific criteria due to the generality of HS codes, which can be too broad for targeted enforcement. EU countries often rely on TARIC (EU's integrated tariff) or Combined Nomenclature (CN) codes as a more granular alternative to HS codes. This enables better alignment with CITES needs and enhances data-sharing and intelligence exchange within the EU Customs Risk Management Framework.

18. Non-EU approaches: In Mexico, HS codes are actively used for risk management in alignment with non-tariff regulations to streamline customs verifications for CITES-listed species. It links goods with Non-Tariff Regulations and Restrictions (RRNAs) directly to the General Import and Export Tax Law (TIGIE). This connection makes it easier to calculate contributions and ensures effective compliance with NRNAs, resulting in more precise control. They employ an alert system in collaboration with environmental authorities, enhancing detection at customs.

<u>Limitations of HS codes</u>

19. The first limitation is broad categorization. Across responses, a significant limitation noted is the HS code's inability to capture species-specific data. Many goods are grouped under broad codes that fail to distinguish between CITES-listed species and non-CITES goods, as mentioned by Sweden and Singapore. The second limitation is lack of data precision. Mexico and UNCTAD highlighted that while HS codes facilitate initial screenings, they are often inadequate alone for accurate tracking of CITES-listed species without further data augmentation or inclusion of species-specific identifiers.

<u>Digital and electronic systems</u>

20. Singapore uses a digital permitting system that integrates HS and product codes for CITES-listed species. It includes a stock card system to track CITES specimens' imports and re-exports, ensuring quantities remain within allowed limits. The Netherlands employ HS codes within a profiling system where import/export declarations must confirm if goods are CITES-regulated, contributing to effective verification in high-risk cases.

<u>Recommendations for improvement</u>

21. The first recommendation is related to augmenting HS codes with additional parameters. Suggestions from UNCTAD included embedding HS codes in the CITES permit dataset for better verification and adapting digital permitting systems to enhance traceability through data elements like ports of entry/exit (UNCTAD response). The following recommendation is regarding multilevel codes for greater specificity. Sweden and Singapore suggested combining HS codes with additional indicators (e.g., product codes or country-specific nomenclature) to overcome HS codes' generality and improve accuracy in identifying CITES-listed species. Other parameters can include routes and transportation modes. Finally, the responses emphasized the importance of physical inspections to identify irregularities, such as false declarations or quota violations, despite the benefits of electronic systems and HS codes.

22. The members of the working group examined the challenges associated with using HS codes for risk-based control procedures across different countries. Despite these challenges and current practices of using HS codes, described in paragraph 16-19, the members of the working group agreed that HS codes could still help streamline risk-based controls by narrowing down shipments containing CITES-listed specimens to a more manageable scope. The working group decided to continue reviewing the role of HS codes in risk-based control procedures, as this topic requires further exploration and proposed draft decisions contained in Annex 1 to the present document.

Traceability systems

23. Notification [No. 2024/107](#) included a request for information on traceability systems for harmonization with CITES permits/certificates. Only Singapore responded about traceability systems. Singapore's system tracks imports and re-exports of CITES-listed specimens, recording all imported CITES-listed specimens. For re-export, traders must apply through an e-permitting system that verifies stock levels. If sufficient stock is available, the application is forwarded to the Management Authority for approval. Traders cannot re-export more than the originally imported quantity.

Study on the information used in a risk-based approach for CITES trade controls

24. Pursuant to Decision 19.152, paragraph a), the Secretariat launched a *study on the information used by different Parties in a risk-based approach for CITES trade controls.* The study is ongoing at the time of writing the present document. The Secretariat will report the findings of the study at the 81st meeting of the CITES Standing Committee. More information is contained in document SC78 Doc. 52 on *Risk assessment and analysis for border control of CITES-listed species.*

National data protection laws in relation to EPIX

25. In line with Decision 19.152, paragraph b), the Secretariat issued Notification No. 2024/112 inviting Parties to provide information on *Data protection laws and implementation of Electronic Permit Information Exchange.* Singapore, the United Kingdom of Great Britain and Northern Ireland, the United States of America and Zimbabwe responded to this Notification. Permit applicants are informed about how their data will be used and have the option to withhold certain information, although doing so may impact the approval of their applications. Additionally, personal information is shared with relevant agencies strictly on a need-to-know basis to ensure compliance with CITES permitting requirements. Privacy statements on application forms and the website clearly outline the permissible uses and sharing practices for this data. The summary of the responses is contained in Annex 3 to the present document.

26. Based on the absence of fully functioning EPIX and therefore limited analysis on national data protection policies, the working group decided to continue reviewing this, as this topic requires further exploration and proposed draft decisions contained in Annex 1 to the present document.

Non-commercial movement of musical instruments

27. Regarding Decision 19.151, paragraph g), no progress has been made on ways in which electronic CITES permitting systems can simplify the procedures for the movement of musical instruments. However, the Secretariat notes that this is linked to Decision 19.160 on the rapid movement of wildlife diagnostic samples and musical instruments and suggests renewing Decision 19.151, paragraph g) until work on Decision 19.160 as reported in document SC78 Doc. 56 has been completed.

Implementation of Decision 19.152

Capacity-building activities

28. As directed by Decision 19.152, paragraphs c) and d), the Secretariat held a hybrid CITES-ESCAP regional workshop on electronic CITES permitting systems for Asian Parties in Bangkok from 17 to18 July 2023. Information about the workshop is detailed in document SC77 Doc. 49.

29. The CITES Africa regional workshop (in-person) was held for African Parties in Nairobi from 9 to 10 October 2024. Management Authorities from Algeria, Angola, Cameroon, the Central African Republic, Chad, Comoros, Ethiopia, Gabon, Kenya, Madagascar, Malawi, Mali, Morocco, Mozambique, Nigeria, Seychelles, South Africa, Sudan, Togo, Uganda, the United Republic of Tanzania, Zambia, and Zimbabwe were represented. Additionally, representatives from UNCTAD, the World Bank, and TRAFFIC attended, along with three UN/CEFACT experts. Topics covered included: Electronic CITES Toolkit version 3.0; 2D barcodes in CITES permits; alternatives to physical endorsement; EPIX; integration with national single window systems; alignment with HS codes; eCITES project implementation; and ASYCUDA eCITES BaseSolution. Representatives from Kenya, Morocco, Mozambique, South Africa and Uganda presented their existing e-permitting systems, while Madagascar and Sudan introduced their plans to launch such systems. The participants agreed on a set of recommendations, which were subsequently discussed at the third working group meeting held online on 28 October 2024. Some recommendations have been incorporated into the draft decisions contained in Annex 1 to the present document. The Secretariat is grateful for the financial support received from Switzerland to carry out the Asia and Africa regional workshops.

30. The Secretariat, in collaboration with UNCTAD-ASYCUDA, provided support to Vanuatu and Viet Nam in planning the implementation of an e-permitting system. This included conducting two feasibility assessments for the system's implementation in these countries, as well as organizing a regional workshop on electronic CITES permit systems. Further details can be found in document SC77 Doc. 49.

31. Furthermore, the Secretariat has supported several Parties through bilateral consultations on topics related to e-permitting systems since CoP19 including Angola, Costa Rica, Ghana, Kyrgyzstan, Madagascar, Morocco, Nigeria, Vanuatu, Venezuela, and Viet Nam.

Recommendations

32. The Standing Committee is invited to:

    a) take note of the progress made in the implementation of Decisions 19.151 and 19.152;

    b) agree that Decisions 19.150 to 19.152 have been implemented, and can be proposed for deletion to the Conference of the Parties, noting that Decision 19.151, paragraph g), which has been integrated into the new draft decisions contained in Annex 1;

    c) review and submit the draft decisions contained in Annex 1 to the present document to the Conference of the Parties; and

    d) agree on the *Guidelines on the use of two-dimensional (2D) barcodes on CITES permits/certificates* contained in Annex 2 to the present document.

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DRAFT DECISIONS ON
ELECTRONIC SYSTEMS AND INFORMATION TECHNOLOGY
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Directed to Parties

20.AA Parties are invited to:

a) use the *eCITES Implementation Framework*, the latest edition of the CITES electronic permitting toolkit, Guidelines and specifications for Electronic Permit Information eXchange (EPIX) of CITES permits and certificates, and the *Guidance on CITES electronic signatures*, and the *Guidelines on the use of two-dimensional (2D) barcodes on CITES permits/certificates* in planning and implementing electronic CITES systems;

b) consider the implementation of electronic CITES systems in a manner designed to meet CITES requirements, including those provided in Resolution Conf. 12.3 (Rev. CoP19) on *Permits and certificates* to increase transparency and efficiency of the permit issuance and control process, to prevent use of fraudulent permits, and to provide quality data for reporting and improved sustainability assessment;

c) work with the customs, National Plant Protection Organizations (NPPOs) and other relevant agencies to ensure that trade in CITES-listed specimens is in compliance with CITES requirements and, where appropriate, in line with, or integrated into, other relevant national cross-border trade systems and procedures;

d) share experience, challenges and know-how with other Parties on the development and implementation of electronic CITES permit management systems and use of the electronic equivalent of paper-based permits and certificates, and provide inputs to the Secretariat for continuous improvement of eCITES reference materials;

e) take note of the *eCITES BaseSolution* as an automated permit management system option that is now available to Parties for implementation;

f) call upon donor countries and agencies to provide financial support towards the implementation of electronic CITES permit management systems in developing countries;

g) submit to the Secretariat information on the use of HS codes for risk-based control procedures;

h) maintain reliable back-up systems for ensuring continuity of electronic permits systems;

i) plan the electronic permitting system in a holistic manner considering the interoperability and integration between the CITES systems and other national, regional or global solutions, as appropriate; in particular explore opportunities for integrating National Single Windows systems in their respective countries;

j) follow a phased approach for implementation of the e-permitting systems;

k) consider designating specific ports of entry and exit for streamlining trade controls of CITES species;

l) recognizing the importance of the requirement for endorsement of permits and certificates at export, consider implementing pilot projects on possible alternatives to the physical endorsement of CITES permits/certificates based on the *Guidelines on the use of 2D barcodes on CITES permits/certificates*; and

m) notify the Secretariat when QR codes are used in electronic permits and certificates, the security features implemented and the standards being used in them.

Directed to the Standing Committee, in consultation with the Secretariat

20.BB The Standing Committee shall, in consultation with the Secretariat, undertake the following tasks:

a) work with relevant partners and Parties on the further development of standards and solutions for Electronic Permit Information eXchange (EPIX) for the exchange of CITES permit and certificate data and the improvement of the validation of CITES permit data by CITES Management Authorities and customs officials;

b) recognizing the importance of the requirement for endorsement of permits and certificates at export, monitor Parties' pilot projects on possible alternatives to the physical endorsement of CITES permits/certificates based on the *Guidelines on the use of 2D barcodes on CITES permits/certificates*;

c) monitor and advise on Parties' work related to the development of traceability systems for specimens of CITES-listed species to facilitate their harmonization with CITES permits and certificates;

d) continue to monitor the use of HS codes in implementing risk-based control procedures in different Parties;

e) support building capacity of Management Authorities, especially those with the greatest needs, in line with the guidance developed, to electronically collect, secure, maintain, and transmit data, using e-permitting systems compatible with the technical specifications of the Secretariat and other Management Authorities;

f) consider ways in which electronic CITES permitting systems can simplify procedures for the non-commercial movement of musical instruments; and

g) submit reports on activities undertaken under paragraphs a) to g) of the present Decision and make recommendations to the Conference of the Parties at its 21st meeting, as appropriate.

Directed to the Secretariat

20.CC Subject to the availability of extrabudgetary resources, the Secretariat shall:

a) finalize the study on the information used by different Parties in a risk-based approach for CITES trade controls;

b) collect information from Parties on any issues encountered with regard to the application of national data protection laws that affect implementation of Electronic Permit Information eXchange (EPIX) for the exchange of CITES permits and certificates;

c) support the work of the Standing Committee under Decision 20.BB through the organization of workshops, consultations, preparation of studies and guidance materials on relevant topics as identified by the Standing Committee;

d) provide capacity-building and advisory services including feasibility studies to support Parties interested in implementing electronic solutions for the management and control of CITES permits and certificates and support Parties in establishing electronic permit systems and information exchanges;

e) work with the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Economic Commission for Europe (UNECE), the International Trade Centre (ITC), the World Bank, the World Customs Organization (WCO), the World Trade Organization (WTO), the Secretariat of the International Plant Protection Convention (IPPC), and other relevant partners, to continue the exchange of information and the development and implementation of joint projects that would facilitate Parties' access to advance the implementation of the electronic permitting systems that comply with CITES requirements and where appropriate are aligned with international trade standards and norms;

f)   continue to exchange information with relevant partners and participate in relevant fora for contributing to the use of HS codes in implementing risk-based control procedures.

g)   in accordance with the *Guidelines on the use of 2D barcodes on CITES permits/certificates,* continue to work with Parties and relevant partners to advance the use of 2D bar codes, in particular with the view of ensuring security aspects to prevent fraudulent use of electronic permits and certificates and developing standards for their use; and

h)   report to the Standing Committee on the activities undertaken under paragraph a) to f) of the present Decision.

Guidelines on the use of 2D barcodes on CITES permits/certificates

Contents

It should be noted that as there are significant and continuing developments in the area of barcode-related authentication methods and the topic is a work-in-progress. These guidelines will need to be reviewed and refined on a continuing basis into the future.

Objective of the guidelines

The objective of these guidelines is to provide technical and business details on the possible solutions identified in the study on the use of 2D barcodes on CITES Permits/Certificates. The possible solutions are described, including a reference to the applicable standards. The advantages and disadvantages of each possible solution, and an indication of their cost, are also presented.

Actors

The actors involved in issuing and reading CITES permits can vary depending on the country and its specific implementation of the treaty. Below is a general overview of the actors involved:

- **CITES Management Authority**: Each country that is a signatory to the CITES treaty designates a national CITES Management Authority. This authority is responsible for overseeing and regulating the implementation of CITES regulations within their respective countries. They issue permits and certificates for the import, export, and re-export of CITES-listed species.
- **CITES Scientific Authority**: In addition to the Management Authority, each country also designates a CITES Scientific Authority. This authority provides scientific expertise and advice on the status of species and their trade implications. They play a crucial role in determining whether trade in a particular species is sustainable and can be permitted under CITES regulations.
- **Applicants and Permit Holders**: Individuals or entities that wish to engage in international trade of CITES-listed species, whether for commercial, scientific, or other purposes, are required to apply for permits. These permits are issued by the national CITES Management Authority. Permit holders are responsible for complying with the terms and conditions of the permits.
- **Customs and Border Control Agencies**: In many countries, customs and border control agencies are involved in the enforcement of CITES regulations. They inspect shipments of animals and plants to ensure that they are accompanied by the necessary CITES permits and certificates.
- **Wildlife Enforcement Agencies**: These agencies are responsible for investigating and addressing violations of CITES regulations. They work to combat illegal wildlife trade, enforce permit requirements, and collaborate with other law enforcement agencies at national and international levels.
- **Inspectors and Monitors**: Trained inspectors and monitors may be tasked with verifying the accuracy of the information provided on CITES permits and certificates, ensuring that the species being traded match the documentation, and reporting any discrepancies.
- **CITES Secretariat**: The CITES Secretariat is an administrative body that facilitates communication and cooperation among member countries, supports the implementation of the convention, and maintains a database of CITES-listed species. While not directly involved in issuing permits, the CITES Secretariat plays a central role in coordinating international efforts related to the treaty.

Many actors are involved in the processes related to the issuance, management, and use of CITES permits/certificates. It is important to note that the Parties are diversified in terms of trade volume, financial situation, information technology resources, etc. This will impact the choice of a solution by a given party deciding to adopt 2D barcodes on CITES permits/certificates.

Data carrier solution

Introduction

The preferred technical solution for the choice of a barcode is QR Code. The advantages of QR Code versus other barcode solutions include the following:

- QR Codes can encode various types of information and multiple character sets.
- QR Codes can hold small or large amounts of information.
- QR Codes are widely utilised for marketing, ticketing, product labelling, mobile payments, and other applications that require efficient data capture and seamless information retrieval.
- QR Code reading process by a mobile device does not require a special application as it is often embedded in the native software of the device.

The choice of the QR Code and the specifications described in the next section apply to all the data content solutions presented in Chapter 4.

QR Code specification

Example:

"https://example.com/example of a CITES permit using 2D barcode"

The application parameters for a printed QR Code on a CITES permit/certificate are:

- **Size**: The QR Code should be at least 2x2 cm in size for optimal scanning.
- **Contrast**: The QR Code should have high contrast between the black and white modules. This will make it easier to scan, especially on low-quality paper.
- **Quiet zone**: The QR Code should have a quiet zone around it. This is an area of empty space around the code that helps to prevent errors during scanning.
- **Error correction level**: The error correction level determines how much damage the QR Code can sustain before it becomes unreadable. A higher error correction level will make the code more robust, but it will also make the code larger.

The error correction level to be used for QR Codes on documents depends on factors such as the quality of printing, potential wear and tear, and the desired scanning distance. QR Codes have four error correction levels to choose from: Low, Medium, Quartile, and High. Each level corresponds to a different percentage of data that can be restored in case the QR Code is partially damaged or obscured. Here's a breakdown of the error correction levels and their typical use cases:

- **Low Error Correction** (L): About 7% of codewords can be restored. Suitable for applications where QR Codes are likely to remain undamaged, such as on high-quality print materials that are handled carefully.
- **Medium Error Correction** (M): About 15% of codewords can be restored. A good balance between error correction and data capacity. Suitable for general-purpose applications where QR Codes might be exposed to moderate wear and tear.

- **Quartile Error Correction** (Q): About 25% of codewords can be restored. Provides higher error correction for applications where QR Codes could be exposed to more challenging conditions or lower print quality.
- **High Error Correction** (H): About 30% of codewords can be restored. Offers the highest level of error correction and resilience against damage or degradation. Suitable for applications where QR Codes might be exposed to extreme conditions, such as harsh environments or low-quality printing.

In general, for documents that will be handled with care and have good printing quality, the Medium Error Correction level is sufficient. If there is a chance the document might be subjected to wear and tear or if the QR Code will be scanned from a distance, considering the Quartile Error Correction level could be a better option.

Here are some additional considerations for printing QR Codes on paper documents:

- **Paper type**: The type of paper used can affect the readability of the QR Code. Glossy paper is generally better than matte paper, as it reflects light more evenly.
- **Printing method**: The printing method can also affect the readability of the QR Code. Inkjet printers are generally better than laser printers, as they produce sharper images.
- **Storage conditions**: The paper supporting the QR Code should be stored in a cool, dry place to prevent it from fading or becoming damaged.

Standards references:

- [ISO/IEC 18004](#) Information technology — Automatic identification and data capture techniques — QR Code bar code symbology specification.
- [ISO/IEC 15415](#) Information technology — Automatic identification and data capture techniques — Bar code symbol print quality test specification — Two-dimensional symbols.

Data content solutions

URL to Permit/Certificate

The QR Code contains the URI (Uniform Resource Identifier) of a PDF of the permit stored on a web site. When scanning the QR Code, the user can see the permit on the screen and/or download a PDF copy of the permit/certificate.

Advantages:
- This solution is simple to implement and simple to use.

Disadvantages
- This solution requires online connectivity to access the web site managing the access to the PDF of the permit/certificate.
- When a user scans the QR Code that is printed on the permit and his device is connected to the internet, he can see on the screen an image of the document that he has in his hands, which might give the sense that the permit is genuine. It would however be easy for a rogue user to create a fake permit and a QR Code with a web address showing the permit in PDF format.
- This solution does not facilitate the automatic processing of data since it only enables to show or to download a PDF of a document.

Cost
- Low

Standards references:

- Uniform Resource Identifier (URI): Generic Syntax: https://datatracker.ietf.org/doc/html/rfc3986

URL to Web site giving access to Permit/Certificate

This scenario is similar to the previous one. Instead of a URI pointing directly to a document, the URL points to a website where the access to the PDF is managed. The access management can be very basic, such as asking the user to fill out a Captcha in order to avoid automated users, such as bots. It can be more sophisticated by requesting for example a user ID and password to access the PDF.

Advantages:
- This solution is simple to implement and to use.
- It provides some level of security through a website that may require users to declare their credentials such as user ID and password.

Disadvantages
- This solution requires online connectivity to access the website managing the access to the PDF of the permit/certificate.
- The Management Authority issuing the permit/certificate needs to manage the access rights to the information.
- The additional sense of security could be counter-productive because it is relatively easy to create a fake permit with a QR Code encoding the address of a fake website.
- This solution does not facilitate the automatic data processing since it only enables to show or to download a PDF of a document.

Cost
- Low to Medium

Standards references:

- Uniform Resource Identifier (URI): Generic Syntax: https://datatracker.ietf.org/doc/html/rfc3986

Plain structured data

In this scenario, the data encoded in the QR Code is a subset or the full information included in the permit/certificate. The information is encoded in a structured way in compliance with ISO/IEC 15434 and it can be processed by a computer.

Advantages:
- The QR Code is a portable data file that can be processed for rendering the permit/certificate data visually and for feeding IT applications with the permit information in structured format.
- The data can be encoded in a standard format that is compatible with the Electronic Permit Information eXchange (EPIX) specifications.
- The data collected upon reading the QR Code can be used to automatically feed the relevant IT applications.
- Reading the QR Code does not require connectivity and data can be collected and processed later on.

Disadvantages
- Users reading the QR Code need an application capable of processing the structured data.
- There is no inherent security in this solution. It would be easy to create a fake permit with a QR Code encoding the fake data.

Cost
- Medium

Standards references:

- <u>ISO/IEC 15434</u> Information technology — Automatic identification and data capture techniques — Syntax for high-capacity ADC media

Encrypted data with Digital Signature

Upon printing the permit/certificate, the issuer generates a QR Code that includes all the relevant permit information in a structured format with a digital signature. The digital signature is generated on the basis of the permit/certificate data and a private key owned by the issuer. Public keys are distributed by the issuer to any party that needs to scan the QR Code. Upon scanning the QR Code, the system gives access to the information that is encoded. This information can be used to check visually if it corresponds to what is printed on the document and for further processing by the user.

The digital signature of the data carrier is standardised by ISO/IEC 20248, an international standard that specifies a method for structuring and digitally signing data stored in barcodes and RFID tags. The purpose of the standard is to provide an open and interoperable method for verifying the originality and integrity of data in an offline use case. The standard defines a data structure for digital signatures that is based on the ISO/IEC 9594-8 standard for public key infrastructure (PKI).

Advantages:
- This solution meets most of the business requirements identified in the study.
- The data collected upon reading the QR Code can be used to feed automatically the relevant IT applications.

Disadvantages
- Users reading the QR Code need an application capable of processing the structured data.
- The issuer of the permit/certificate will need to manage the distribution of the PKI public keys to the target users.

Cost
- Medium to High

Standards references:

- <u>ISO/IEC 20248</u> Information technology — Automatic identification and data capture techniques — Digital signature data structure schema.

Encrypted data with Verifiable Credentials

Verifiable credentials are a secure and tamper-proof way to digitally represent and share information about an individual or entity's qualifications, attributes, or personal data. These credentials are based on decentralised identity systems and utilise cryptographic methods to ensure their integrity and authenticity. They enable users to present their credentials to others, such as employers or service providers, without revealing unnecessary personal information, therefore promoting privacy and data control.

Verifiable credentials can be combined with 2D barcodes to create a secure and efficient method of presenting and verifying identity information. Here is how it could work:

- Encoding Credentials: The verifiable credentials, containing relevant identity data, are securely encoded into a QR Code.
- Scanning the Barcode: When a user needs to present their credentials, they can simply show the QR Code on their mobile device or a printed document. The verifier can then scan the QR Code using a compatible scanner or smartphone app.
- Verification Process: The scanned QR Code contains the encrypted verifiable credentials. The verifier's application can decrypt and validate these credentials using cryptographic methods and

decentralized identity systems. The verification process can be performed offline, as the necessary validation data is embedded within the credentials themselves.

Advantages:
- This solution meets most of the business requirements identified in the study.
- The data collected upon reading the QR Code can be used to automatically feed the relevant IT applications.

Disadvantages
- Users reading the QR Code need an application capable of processing the structured data.
- The standard does not specify the syntax used to store the data on the barcode.
- The verification of the credentials requires on-line connectivity to a pubic blockchain or a central registry.
- The issuer of the permit/certificate will need to manage the distribution of the PKI public keys to the target users.

Cost
- Medium to High

Standards references:

- Verifiable Credentials Data Model

Access rights management

Some of the proposed solutions require to manage the access rights or the distribution of public keys to authorised users. The access rights to the electronic copy the document (solution 4.2) and the distribution of the public keys to authorised Parties (solutions 4.4 and 4.5) are in principle managed by the party issuing the permit/certificate.

There are 184 Management Authorities, and sometimes more than one issuing party per MA. Each authorised party (e.g. customs agencies) will need to get the access rights and public keys from each issuer, which can make the systems complex to manage and to maintain.

A possible solution to this problem is to create regional hubs through the cooperation of several MAs. For example, the MAs could be grouped in 5 regions across the world, resulting in 5 hubs tasked to manage and maintain the access rights to the permits/certificates issued by each MA.

Another option would be to centralise the management and maintenance of the access rights at global level under the responsibility of the CITES secretariat.

The actual operation of the central hub or regional hubs could be sub-contracted to service providers under the governance of the concerned MAs.

Interoperability

It cannot be expected that all MAs will adopt the same solution at the same time. The solutions presented in this document are interoperable in the sense that they do not conflict with each other. Some MAs may choose to start with a simple QR Code solution encoding the URL of an electronic copy of the document. Others may opt for a more sophisticated solution like the digital signature with the full permit/certificate data encoded in a secure way. It is even possible to adopt more than one solution at the same time, resulting in more than one QR Code printed on the permit/certificate. From a technical perspective, this is not a

problem. However, the eventual adoption of one single solution across the CITES community would be beneficial to the community.

Recommendations

Identification standards

The automatic processing that will be enabled by the introduction of 2D barcodes on CITES permits/certificates will heavily rely on data quality. The unambiguous identification of the Parties, the permit and the species are an essential requirement to the automation enabled by 2D barcodes. This is especially true when the data resulting from the scanning of the 2D barcode will be processed automatically by computer applications.

E-permits

The issuance of permits/certificates in electronic format is a pre-requisite to the successful adoption of 2D barcodes. CITES Parties willing to engage in the adoption of 2D barcodes need to ensure that their systems support the issuance and processing of electronic permits/certificates.

Recommended solution

The QR Code encoding encrypted data with a digital signature (see section 4.4) meets the business requirements identified in the study and is the most suitable way forward. Upon endorsement by the CITES Working Group on electronic systems and information technology, this solution should be assessed through pilot implementation projects. However, given the varying level of readiness and financial conditions of the CITES Parties, other options and preferably the URL to web site giving access to permit/certificate may be explored.

An example of a CITES permit (encrypted data) with a digital signature is presented in the Annex.

*   *   *

Annex: Example of a CITES permit with a digital signature

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES PERMIT No. **23ZZ000001** ☒ EXPORT ☐ IMPORT ☐ RE-EXPORT ☐ OTHER	Original 2. Valid until **2025-01-01**

3. Consignee (Name and address) **Utopia Planetial Importers** **54 avenue Peron, Bouvier** 3a. Country or destination **Utopia**	4. Permitee (name and address, country) **Lotus exotic animal exports PTY LTD** **40 Jalan Sultan Sulaiman 94W, Batang Benar**
5. Special conditions **Must match ASEAN requirements** For live animals, this permit or certificate is only valid if the transport conditions conform to the Guidelines for Transport of Live Animals or, in the case of air transport, to the IATA Live Animals Regulations	6. Name, address, national seal/stamp and country of Management Authority **Republic of Lilipgal** **Minstry of Animal Welfare and Protection** 16, Jalan Robson 77G Sarawak Jelutong +606-923 5894 ofernand @lilipgal.gov
5a. Objective of the operation **T - Commercial**	5b. Security stamp No. **N/A**

	7./8. Scientific name (genus and species) and common name of animal or plant	9. Description of specimens, including identifying marks or numbers (age/sex if live)	10. Appendix No. and source	11. Quantity (including unit)	11a. Total exported/Quota
A	7./8. **Myrmecophaga Tridactyla Anteater**	**N/A**	10. **Appendix: II ; Source: W - Specimens taken from the wild**	11. **2 NAR**	11a. **2**
	12. Country of origin * **N/A**	Permit No. **N/A** ; Date **N/A**	12a. Country of last re-export **N/A** ; Certificate no. **N/A** ; Date **N/A**		12b. No of the operation ** or date of acquisition *** **N/A**
B	7./8.	9.	10.	11.	11a.
	12. Country of origin *	Permit No. ; Date	12a. Country of last re-export ; Certificate no. ; Date		12b. No of the operation ** or date of acquisition ***
C	7./8.	9.	10.	11.	11a.
	12. Country of origin *	Permit No. ; Date	12a. Country of last re-export ; Certificate no. ; Date		12b. No of the operation ** or date of acquisition ***
D	7./8.	9.	10.	11.	11a.
	12. Country of origin *	Permit No. ; Date	12a. Country of last re-export ; Certificate no. ; Date		12b. No of the operation ** or date of acquisition ***
E	7./8.	9.	10.	11.	11a.
	12. Country of origin *	Permit No. ; Date	12a. Country of last re-export ; Certificate no. ; Date		12b. No of the operation ** or date of acquisition ***

*   Country in which the specimens were taken from the wild, bred in captivity or artificially propagated (only in case of re-export)
**   Only for specimens of Appendix I species bred in captivity or artificially propagated for commercial purposes
***   For pre-Convention specimens

13. THIS PERMIT IS ISSUED BY:

Ministry of Animal Wellfare and Protection
16, Jalan Robson 77G
Sarawak Jelutong, Utopia

Place	1693144576 Date	Security stamp, signature and official seal

14. EXPORT ENDORSEMENT: 15. Bill of lading/Air waybill number:

Block	Quantity				
A					
B					
C		Port of export	Date	Signature	Official stamp and title
D					
E					

The 2D barcode contains the following data:

Data field	Description	Value
1. specification version:	This field indicates the version of the specification being used	ISO/IEC 20248:2018
2. dauri:	Represents the URI for the domain authority	https://dauri.digsig.tools
3. daid:	Stands for the domain authority ID	QC DEUS
4. cid:	Represents a unique identifier, possibly a certificate ID	202
5. signature:	Holds a digital signature with a binary format of {256}	BgYgPYLWFC436_Tr2HxdqHA3 Z8MosZvO_XcLjtZLcwo=
6. timestamp:	A date field indicating when a certain event took place	2023-08-27T14:56:16
7. permit_number:	Holds a unique permit number with a type of string, a binary format of {10}, and a range of [0-9A-Z].	23ZZ000001
8. export:	A boolean field indicating if an item is for export.	TRUE
9. valid_until:	Specifies the validity period of a document or permit	01/01/2025
10. consignee:	Indicates the entity or individual receiving the goods with a type of string and a binary format of UTF8	Utopia Planetial importers
11. consignee_address:	Provides the address of the consignee with a type of string and a binary format of UTF8	54 avenue Peron, Bouvier
12. country_destination:	Indicates the destination country for the goods	Utopia
13. permitee:	Specifies the entity or individual who has been granted the permit	Lotus exotic animal exports PTY LTD
14. permitee_address:	Provides the address of the permitee	40 Jalan Sultan Sulaiman 94W, Batang Benar
15. special_conditions:	Lists any special conditions associated with the permit	Must match ASEAN requirements
16. objective_of_operation:	Indicates the purpose of the operation	Commercial
17. animal_scientific_name:	Provides the scientific name of the animal being traded	Myrmecophaga Tridactyla

18. animal_common_name:	Provides the common name of the animal being traded	Anteater
19. appendix_number_source:	Indicates the source and appendix number related to the animal	Specimens taken from the wild (Appendix: II)
20. quantity:	Indicates the quantity of the items being traded	2
21. quantity_unit:	Specifies the unit of measurement for the quantity	NAR
22. total_exported:	Indicates the total number of items exported	2

**Summary: Responses to Notification No. 2024/112 –
Data protection laws and implementation of Electronic Permit Information Exchange**

	Singapore	United Kingdom of Great Britain and Northern Ireland	United States of America	Zimbabwe (Responses are envisaged, as an e-permitting system has not been implemented)
Challenges with Data Protection	Singapore's system aligns with the Public Sector (Governance) Act and IM8 guidelines, covering data classification, secure development, vendor obligations, encryption, access control, and secure data disposal. The aim is to enforce strict data protection across government systems, including the CITES permitting system.	Although EPIX has not been implemented in the UK, the government has processes to comply with data protection laws for online services. These include departmental data-sharing policies and publicly available Personal Information Charters explaining data use, transfer, and protection for external users.	No challenges have been reported. The U.S. system complies with the Federal Information Security Modernization Act, which mandates security standards for protecting government data, including privacy and proprietary information.	Zimbabwe is developing an electronic permitting system, so it has not yet encountered operational challenges. Expected challenges include: Secure storage and transmission of data require robust encryption and infrastructure upgrades to comply with the Cyber and Data Protection Act. Protecting against data breaches and cyber-attacks due to legacy systems. Effective disposal of personal data may need new protocols and specialized technology. Regular audits may be necessary to ensure ongoing compliance.
User Consent	Consent is managed per the Personal Data Protection Act (PDPA) and IM8 guidelines, utilizing an opt-in model with provisions for data removal upon user request. To date, there have been no significant conflicts with national data protection regulations.	Users accessing online UK government services must register through a single account and agree to specific service privacy notices at the point of data collection. This ensures transparency in data collection, storage, and usage.	The Department of the Interior requires Privacy Impact Assessments for all IT systems, covering existing, developing, or modified systems. Personal data is shared on a need-to-know basis among relevant federal agencies, including the Fish and Wildlife Service (FWS). The system includes privacy	Conflicts may arise when user consent obtained through EPIX conflicts with national regulations on data sharing. This can be addressed by revising consent forms to comply with national laws.

			notices, and applicants are informed of data usage and sharing. Applicants can choose not to apply, but incomplete applications may prevent permit approval.	
Third-Party Service Providers	Third-party providers must meet strict security and compliance standards. Any concerns are resolved through vetting processes and contractual agreements.		No concerns or restrictions have been reported regarding third-party providers.	Concerns about data sovereignty and breaches may require third-party providers to follow local data protection regulations, including licensing and audits by the Data Protection Authority.
Data harmonization and sharing		International Data Sharing (ePhyto Example): The UK referenced its experience with ePhyto (electronic phytosanitary certificate exchange), where data sharing with international partners includes agreements specifying data protection obligations. Data shared internationally is encrypted, and no issues have been encountered in this context.		Aligning national and international data protection laws may aide in smoother EPIX and e-CITES operations. Ongoing training for data handlers is essential to maintain compliance.