WORLD CUSTOMS ORGANIZATION
ORGANISATION MONDIALE DES DOUANES
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PERMANENT TECHNICAL COMMITTEE
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-
5-8 May 2025

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Brussels, 17 April 2025.

SMART CUSTOMS PROJECT

(Updates on the Smart Customs Project)

(Item XIV.a on the Agenda)

SUMMARY

Purpose of document

Launched in December 2023, the WCO Smart Customs Project (SCP) aims to identify Members' status of technology adoption and needs, foster the application of technological and innovative solutions in Customs, reduce the technology gaps among Members and help them better understand the technologies available to tackle global challenges.

This document aims to provide an update on key Project developments, including Members' level of participation, new Project deliverables such as the AI/ML Readiness Self-Assessment Tool, the Case Study on the Adoption of Artificial Intelligence (AI) and Machine Learning (ML) in China Customs, the detailed Report on the Adoption of AI and ML in Customs and the newly launched Smart Customs Community Portal.

Additionally, the document reports on the outcomes of extensive Member consultations regarding the project approach, including the nomination of National Contact Points (NCPs) and the establishment of a structured repository to ensure continuous access to up-to-date information on Members' experiences with disruptive technologies.

To lay the foundation for a key project deliverable, the document also presents a draft outline of the updated Study Report on Disruptive Technologies, scheduled for completion in 2026.

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Action required of the Permanent Technical Committee

The Permanent Technical Committee is invited to:

- take note of the progress made under the Smart Customs Project;
- take note of the initiative to develop a structured repository of Members' experiences with the adoption of disruptive technologies; and
- discuss the draft outline of the updated Study Report on Disruptive Technologies.

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I. Introduction

1. The WCO/WTO Study Report on Disruptive Technologies (2022) emphasizes that a holistic approach to technology is crucial for the 'Smart' Customs of the future. Customs administrations worldwide have a unique opportunity to leverage disruptive technologies to enhance efficiency, transparency and security across global supply chains.

2. However, Customs administrations are currently adopting technologies in a largely independent manner, leading to disparities in their technological development.

3. To fully harness these innovations, Customs agencies must effectively identify, understand and integrate emerging technologies. In response, the WCO launched the Smart Customs Project (SCP) in December 2023, funded by China Customs. The initiative aims to assess Members' current technological adoption, address digital gaps, promote innovative solutions, and enhance Members' understanding of available technologies to tackle global challenges.

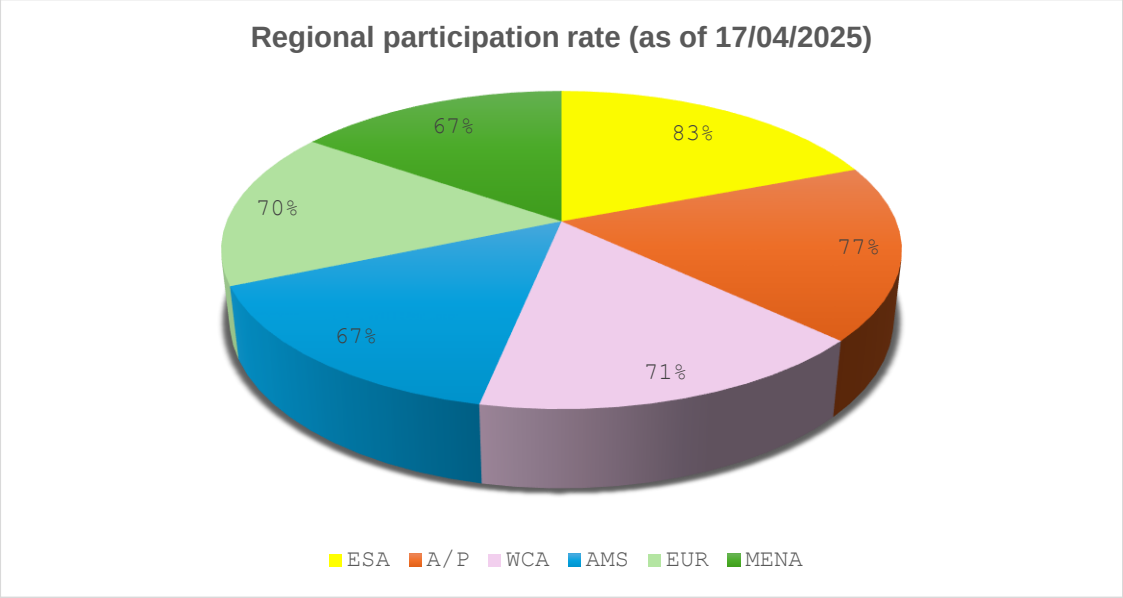
4. The SCP focuses on the following domains:
    a) Updating the WCO Study Report on Disruptive Technologies. This includes further updates of existing sections, as well as the addition of new sections dedicated to specific technologies identified during the project;
    b) Developing detailed information about the business processes, policy arrangements, legal requirements, minimum technical specifications (for the implementation/integration), costs and trends associated with specific identified technologies;
    c) Publishing a research paper on the challenges faced by Customs in adopting and leveraging innovative technologies;
    d) Developing a Community Portal to share and push knowledge on technologies and innovative solutions applied to Customs; and
    e) Conducting an analysis/survey of Members' needs, in order to be able to provide them in the future with appropriate technical assistance and capacity building in this field.

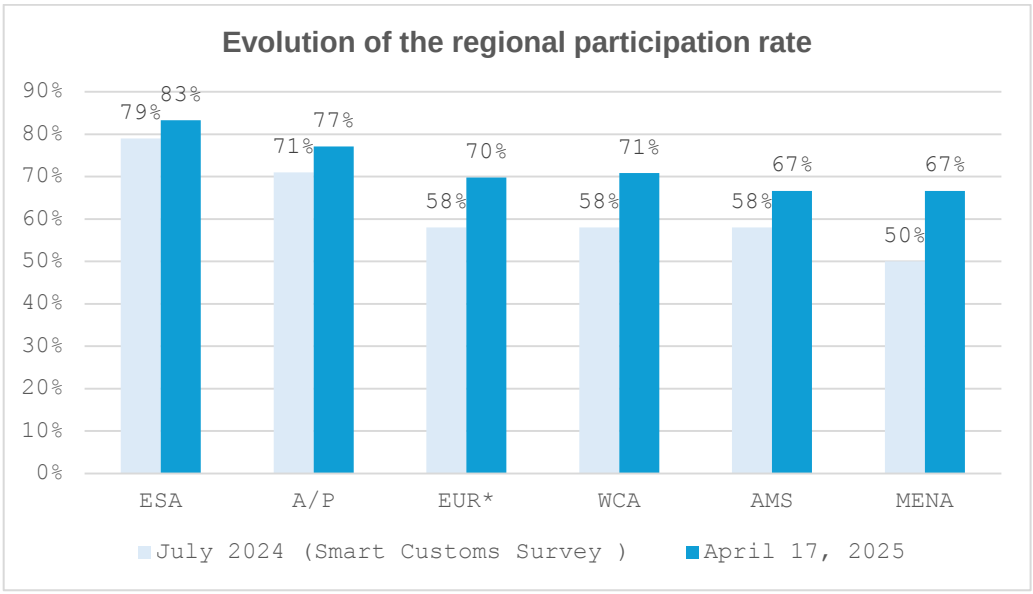
5. The technologies in focus (Artificial Intelligence and Machine Learning, Blockchain and Cloud Computing) have been identified through regional consultations with Members and a survey aimed at assessing Members needs and status of technological adoption. The results of the Smart Customs Survey (July 2024) can be consulted through the Report available on the WCO website.

6. In addition to the technical focus of the project, the research component will examine the challenges Customs face in innovating and adopting technologies. It will provide insights from strategic, sociological, organizational and cultural perspectives to offer a comprehensive understanding of the appropriation challenges faced by Customs.

7. The Permanent Technical Committee (PTC) had already been briefed orally on SCP developments during the 243rd/244th Sessions in April 2024 and 245th/246th Sessions in October 2024, including the results of the Smart Customs Survey, the development phases of the Smart Customs Community Portal and the regional workshops organized in the Americas and Caribbean (AMS) region in March 2024 and the Asia/Pacific (A/P) region in September 2024 respectively.

8. Since the last PTC session, Members' participation in the Project has increased by 16% with 135 Members having currently nominated NCPs. This ensures regional balance and the strong representation of 72% of the WCO membership as of 17 April 2025. Details of the evolution in Members' participation are presented below.





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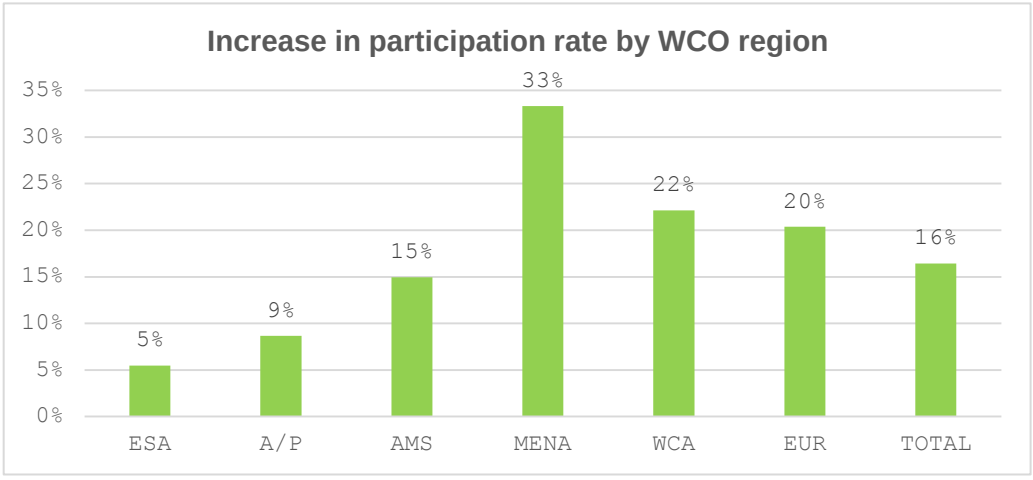


II. Project deliverables

9. The SCP has adopted an inclusive approach to ensure that project deliverables are fit-for-use and that synergies are developed across the different WCO initiatives related to disruptive technologies. To this end, the Project is organizing regular internal coordination meetings. This has been reflected in the section dedicated to “Synergies” on the SCP Community Portal.

10. Moreover, several online meetings in both English and French (17 and 20 June 2024, 5 and 6 September 2024, 21 January 2025 and 24 February 2025) have been organized to consult Members on key decisions and ensure Project deliverables align with their needs and interests. NCPs were updated on project developments and participated in brainstorming sessions on lessons learned from implementing disruptive technologies. They also discussed the optimal number of NCPs, agreeing that three per Member

administration was ideal, balancing expert and coordination roles. However, they acknowledged that up to five NCPs might be necessary in certain cases, allowing flexibility for additional nominations based on specific needs.

11. Additionally, a consultative group of Members was formed to refine the structure of the SCP Portal and Discussion Forums. Through three ad-hoc meetings (11 October 2024, 29 November 2024 and 20 January 2025), they actively contributed to testing before the Portal's release in December 2024.

12. In order to help bridge the digital gap among WCO Members, on 31 January 2025 a detailed Case Study on the adoption of Artificial Intelligence (AI) and Machine Learning (ML) in China Customs was published on the WCO website and in the Smart Customs Community Portal. This Case Study presents the information collected through the first national study mission on AI/ML adoption, held in China from 28 October 2024 to 1 November 2024. It contributes valuable insights into critical aspects of AI/ML adoption such as strategy and vision, data management, leadership and governance, policy arrangements, the legal framework, technology and tools, skills and training, stakeholder engagement, costs, innovation and future plans for leveraging AI/ML technologies. It also provides details of several use cases, including the Intelligent Control Model (TianXuan), Smart Image Analysis and other intelligent models under development.

13. In addition to the case study, the SCP has released the Artificial Intelligence and Machine Learning Readiness Self-Assessment Tool. It is designed to help Customs administrations evaluate their readiness for AI/ML adoption, identify weaknesses, explore potential use cases and improvement opportunities, and build internal capacities to strategically leverage AI and ML technologies.

14. Finally, the WCO has released a detailed Report on the Adoption of Artificial Intelligence (AI) and Machine Learning (ML) in Customs, which provides in-depth insights into AI/ML adoption in Customs, covering technical frameworks, governance, risk management, business processes, and capacity-building. It outlines key requirements, including data management, legal and ethical considerations, cost-benefit analysis and infrastructure needs. Best practices, such as pilot testing, inter-agency and cross-border collaboration, and workforce upskilling, are highlighted. The report also emphasizes cybersecurity, interoperability, and compliance with data protection regulations. Building Machine Learning Operations (MLOps) is identified as essential for efficiency, model reliability and scalability. Ethical considerations, including fairness, transparency, and accountability, are addressed to mitigate biases. By providing a structured approach, the report helps Customs administrations navigate technical and regulatory challenges, enhancing trade facilitation and border security.

15. Given the insights offered by these tools, Members are invited to discuss specific aspects of AI/ML implementation through the Smart Customs Community Portal and to share their experiences and observations regarding best practices and pitfalls in the field of technology adoption, leveraging on the Smart Customs Community Portal.

The Smart Customs Community Portal

16. On 18 December 2024, the WCO launched a new web platform, in both English and French, to facilitate knowledge sharing on the application of technological and innovative solutions and enable Customs to facilitate and secure global supply chains through the use of disruptive technologies.

17. The platform, called the "Smart Customs Community Portal" (https://scp.wcoomd.org), is funded by the Customs Cooperation Fund of China (CCF-China) and is a cornerstone of the WCO SCP, an initiative aiming to bridge the digital divide among WCO Members.

18. The Portal is to serve as a hub for knowledge dissemination and collaboration on the development, deployment, use and maintenance of various technologies and devices, such as artificial intelligence, big data, biometrics, blockchain, cloud computing, geospatial mapping, the Internet of things, virtual reality, robots and drones.

19. The concept behind the development of the Portal relies on the following considerations and needs:
    - The lack of comprehensive information, knowledge sharing platforms, and capacity-building initiatives exacerbates the difficulties faced by Customs administrations in harnessing the full benefits of disruptive technologies.
    - Customs experts value the opportunity to exchange experiences. However, workshops do not allow for continuous interaction, leading to gaps in communication between events, which are sometimes organized in the same region only after a period of several years.
    - The absence of a centralized platform for Customs professionals to exchange experiences, share best practices and collaborate on technological solutions hampers the collective efforts to address common challenges and seize opportunities presented by disruptive technologies.
    - This fragmented landscape inhibits the development of harmonized approaches, impedes innovation diffusion, and perpetuates the technology divide among Customs administrations worldwide.

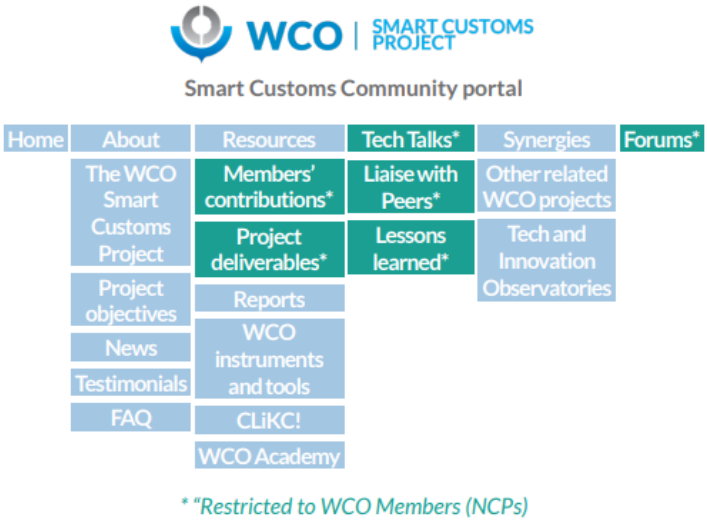
20. By facilitating information exchange, fostering peer-to-peer learning, and promoting the application of innovative solutions to enhance Customs performance, the SCP Community Portal has been designed to enable Customs administrations to enhance their technological capabilities, optimize operational processes and safeguard global supply chains in an increasingly digitalized environment.

21. The specific objectives of the Portal can be summarized as follows:
    - Build a Customs community of experts: establish an active network of NCPs responsible for technology adoption and Customs digitalization strategies.
    - Enable a safe environment for dialogue and peer learning: provide a secure platform for informal dialogue among NCPs regarding technology adoption;

and foster information exchange, peer-to-peer learning, and the application of innovative solutions to improve Customs performance.

- Collect and update experiences and knowledge: continuously gather and update experiences and knowledge on technology adoption by Customs administrations.
- Serve as a hub for knowledge dissemination and collaboration: act as a central hub for sharing knowledge, building capacity, and fostering collaboration among community members.
- Share knowledge on technology in Customs: share and disseminate knowledge on technology applications in Customs among community members.
- Increase visibility of Project outcomes: raise awareness and visibility of outcomes of the SCP.

22. Established following consultation with Members, the Portal has both public and restricted areas:
    - The public section includes information on the SCP and other WCO initiatives, instruments and tools, as well as links to external websites and eLearning courses.
    - The restricted section of the Portal, accessible to NCPs nominated by WCO Member administrations, is divided into the following sub-sections:
        - Member contributions: a collection of research and perspectives from WCO Members on the adoption of disruptive technologies.
        - WCO SCP deliverables, including dedicated research, self-assessment tools, as well as case studies and reports on the adoption of the technologies that have been identified as being of most interest to Customs administrations, namely: artificial intelligence/machine learning, blockchain and cloud computing.
        - NCPs section, where WCO Members can share their contact information.
        - Discussion forums on key technologies, as well as on transversal topics.



23. Based on the Results of the WCO Smart Customs Survey (July 2024) and consultations with NCPs, the Project has selected key technologies for discussion in the first release of

the Forum. This focused approach aims to facilitate discussions on technical topics that are of greatest interest to Members.

24. The Forum is currently structured according to the following categories:
    1. Artificial Intelligence and Machine Learning
    2. Big Data and Data Analytics
    3. Biometrics
    4. Blockchain
    5. Cloud Computing
    6. Drones
    7. Geospatial Mapping
    8. Internet of Things
    9. Robots
    10. Scanners
    11. Virtual, Augmented and Mixed Reality
    12. Other Disruptive Technologies.

25. Each category is detailed in the following sub-categories:

    - Requests for Advice
    - Call for Collaboration and Partnership
    - Sharing Research, Innovations and Trends
    - Sharing Experiences and Use Cases

    Moreover, other Forums are dedicated to transversal topics, such as:
    1. Portal Updates
        - Selection of the next theme of the month
        - Revisions to Forum Items
        - Other Sections of the Portal
    2. Policy and Procedures
        - Legal Framework and Regulation
        - Governance
        - Ethics
        - Cybersecurity
        - Customs Processes
    3. Green Technologies
    4. KPI development.

26. The Portal is constantly evolving. A central theme of discussion might be selected each month to boost focused conversation around specific issues or technologies, based on Members' needs.

27. A recent enhancement to the Forums is the introduction of an automatic translation feature that supports 49 languages. This functionality is expected to enhance user engagement and facilitate seamless interactions among peers.

28. Further planned updates of the Portal will include the addition of a dedicated space for Members to share experiences and insights on best practices and pitfalls in technology adoption.

III. The Project approach to the update of the Study Report on Disruptive Technologies

Structured repository of Members' experiences with disruptive technologies

29. The collection of case studies on the adoption of disruptive technologies has been conducted at a three-year interval (2018, 2021 and 2024). The outcomes have constituted the information base for the first and the second editions of the Study Report on Disruptive Technologies, which were released in 2019 and 2022 respectively as dynamic tools requiring regular updates.

30. To complement the information contained in the Study Report, the Project developed a collateral initiative to establish a structured repository of Members' experiences with disruptive technologies.

31. The vision behind the repository is *to complement other project deliverables by providing continuously updated, structured information on Members' experiences with disruptive technologies. The repository will enable Members to efficiently explore a continuously updated collection of practices from their peers, supporting the assessment of available technology solutions and the resolution of deployment challenges, while fostering peer learning.*

32. Based on their search results in the repository, Members can engage in focused discussions through the forums available on the Smart Customs Community Portal.

33. To make sure beforehand that the initiative would constitute a useful resource for Members, three rounds of pilot testing and expert review were undertaken with active NCP engagement through a dedicated survey that was progressively fine-tuned, incorporating Members' feedback.

34. While the first and the second iterations held respectively from 7 to 22 November 2024 and 7 to 17 January 2025 involved a group of volunteer NCPs, the third iteration held from 7 to 21 February 2025 was open to all NCPs in order to allow the collection of broader feedback. The test aimed to evaluate the usefulness and feasibility of the requested information, focusing on its relevance, completeness and practicality.

35. Participation in the survey was stable, with a total number of 25 Members participating in the three iterations in writing and between 60 and 80 participants providing feedback during each plenary NCP meeting.

36. As an outcome of the pilots, during the last NCP meeting on 24 February 2025, Members agreed that the survey could be considered mature for finalization. The finalized survey (**Annex I** to this document) is available at the following link (on Google Chrome) for consultation prior to its launch, tentatively foreseen for the end of May 2025: https://survey2.wcoomd.org/anonymous/home/93f96475-56bb-4089-b914-f83179fd1b19.

37. Additionally, Members agreed that the structured repository should remain restricted to WCO Members and might be incorporated as an additional feature of the Smart Customs Community Portal (restricted section).

38. Members' experiences collected in the repository might be considered for inclusion as Members' case studies in the updated Study Report on Disruptive Technologies.

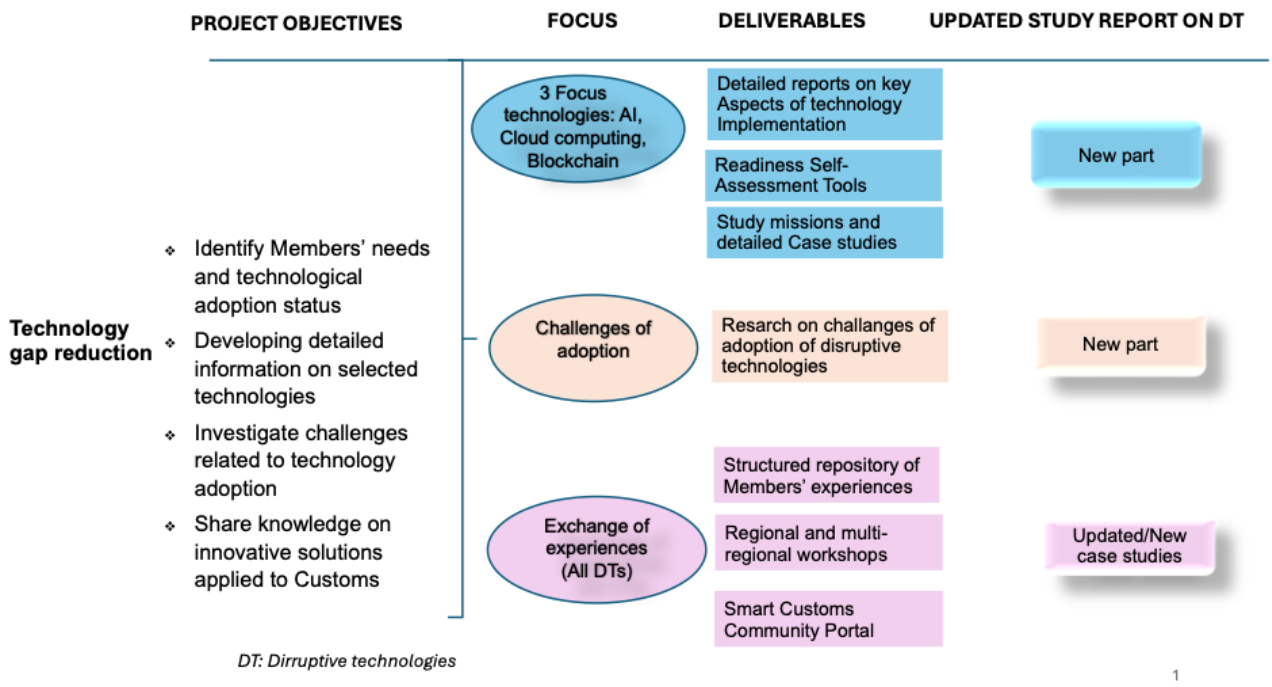
Draft outline of the updated version of the WCO Study Report on Disruptive Technologies

39. The draft outline of the updated Study Report on Disruptive Technologies, presented in the **Annex II**, restructures the previous version to balance depth of analysis, readability and comprehensiveness. By leveraging and complementing other project deliverables, it ensures a concise yet informative document, making it easy to read and useful in practical terms.

40. The significant change with respect to previous versions of the Study Report is that this update is supported by the deliverables from the SCP, which were specifically designed to contribute to this purpose.

41. The image below provides a graphic representation of the interplay between the various project deliverables and the updated Study Report on Disruptive Technologies, aligning with the project's specific objectives.

42. While the Study Report will offer a static overview of available disruptive technologies and Member case studies, the structured repository will enable continuous updates of structured information. Additionally, the Forum in the Smart Customs Community Portal will serve as a space for in-depth peer-to-peer discussions.



IV. Action required of the Permanent Technical Committee

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