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IMPLEMENTING AUTOMATED BORDER CONTROL (ABC): EXPERIENCE AND INSIGHTS FOR STATES

(Presented by Thailand, and co-sponsored by Singapore and Airports Council International (ACI))

EXECUTIVE SUMMARY

The paper highlights the implementation of Automated Border Control (ABC) systems for more seamless and efficient airport operations. It presents case studies from Thailand and Singapore, demonstrating how these systems improve operational efficiency, strengthen security outcomes and enhance passenger facilitation. The paper encourages States to explore the benefits of automated clearance and consider its implementation in accordance with their national priorities and International Civil Aviation Organization (ICAO) Standards, utilizing the ICAO ABC Cost Benefit Analysis Tool.

Strategic Goals:	This information paper relates to Strategic Goal *Aviation Delivers Seamless, Accessible and Reliable Mobility for All*.
Financial implications:	None
References:	Annex 9 — *Facilitation* ICAO Automated Border Control (ABC) Cost Benefit Analysis Tool

1. INTRODUCTION

1.1 The global aviation industry is experiencing continuous growth in passenger volumes, alongside evolving security threats. These places are increasing pressure on airports and border control authorities to maintain efficient and secure operations while ensuring a positive passenger experience. Automated Border Control (ABC) systems offer a significant opportunity to address these challenges through the integration of biometrics and data analytics, enabling expedited passenger processing, enhanced security and improved travel experiences. This paper shares Thailand and Singapore's experience with implementing ABC systems, demonstrating the benefits and highlighting key considerations for States. This is in line with Annex 9 — *Facilitation*, Standard 3.46 which encourages the use of technology to expedite passenger inspections.

2. INFORMATION

2.1 Case Study: Implementation Of Automated Clearance in Thailand and Singapore

2.1.1 Thailand has unveiled an innovative ABC system designed to elevate the immigration experience for travellers. Among its key features is the Thailand Digital arrival Card, a cutting-edge digital form that replaces the traditional paper-based arrival card. This advancement streamlines entry procedures and enhances the overall travel experience for those visiting Thailand. In addition, the Immigration Auto Channel—a passport screening system—has been introduced to modernise the passport control process. This system replaces some of the conventional checks conducted by immigration officers, allowing for increased efficiency and speed in passport processing. Currently, it is in the first phase, available only to eligible departing passengers, with plans to expand its use to all travellers in the future. Together, these initiatives promise to transform the way visitors enter Thailand, making the journey smoother and more enjoyable.

2.1.2 Singapore has implemented automated border clearance, including passport-less clearance at Changi Airport, as part of its New Clearance Concept (NCC). The NCC is a paradigm shift in border clearance, moving from manual processing at counters to automated lanes and document-less clearance for most passengers. This was made possible using biometrics and data, as well as streamlining and digitalizing clearance processes.

2.1.3 The systems by Thailand and Singapore have delivered several positive operational outcomes:

a) Improved passenger experience: There was substantial reduction in queuing and processing times for travellers, including families and persons with disabilities. Passengers can also enjoy document-less clearance processes;

b) Increased operational efficiency: Border control agencies were able to optimize manpower deployment and reduce border control resource requirements;

c) Enhanced security: There was more accurate identity verification, improved threat detection capabilities and advanced risk assessment capabilities; and

d) Infrastructure optimization: Airports saw increased passenger throughput without proportional infrastructure expansion.

2.1.4 While the outcomes clearly demonstrate the benefits of ABC system implementation, achieving these results required thorough planning and multiple iterations among stakeholders based on several critical factors. The experience gained in overcoming these challenges provides valuable insights for other States considering similar initiatives. One key area was technological integration, which involved coordinating various components such as biometric scanners, data systems and existing border control infrastructure. This process demanded strategic planning and collaboration among relevant stakeholders, including civil aviation authorities, immigration authorities, airport operators and technology providers. Another major concern was data privacy: ensuring the protection of passenger information and compliance with data privacy regulations was paramount. To address this, robust data protection measures were put in place to safeguard sensitive data. Additionally, system resilience was essential to maintain uninterrupted operations. This required the development of strong infrastructure, the implementation of backup systems, and the establishment of comprehensive business continuity plans to mitigate potential disruptions.

2.2 Strategic Benefits for States

2.2.1 ABC systems offer several strategic advantages for States beyond operational improvements to the immigration touchpoints. States implementing such systems can strengthen their airports by enhancing airlines' on-time performance through optimized passenger flow management. Traditionally, immigration checkpoints have been major bottlenecks in the passenger journey, with unpredictable processing times leading to delays that ripple through to departure schedules. ABC systems help ensure passengers reach their departure gates on time, thereby supporting better airline schedule adherence and reducing costly flight delays. The systems also provide increased adaptability to respond to sudden changes in travel patterns and health requirements during crises. For example, the system can be programmed to check for visa or vaccination certification, especially during health crises. Furthermore, by leveraging the automated border control system's enhanced access to databases and data, States can utilize advanced analytics to support long-term infrastructure planning and forecast passenger trends. This analytical capability enables authorities and airport operators to identify peak travel periods, predict resource requirements, optimize staff deployment, and make data-driven decisions about infrastructure expansion or modification.

2.3 Implementation Considerations and Way Forward

2.3.1 States are encouraged to explore ABC systems within their national contexts, considering their specific needs and priorities. The ICAO Automated Border Control Cost Benefit Analysis Tool can assist in the evaluation process by providing modifiable calculator sheets with assumed costs, enabling States to conduct financial analysis alongside qualitative benefits assessment. While this tool provides valuable guidance, it should be complemented by careful consideration of key operational factors including projected passenger volumes, airport capacity constraints and available manpower resources. States must also assess their resource availability and allocation in alignment with national priorities, while conducting thorough reviews of existing legal and regulatory frameworks to determine if the necessary conditions for implementation are already established or need to be developed.

2.3.2 Upon deciding to implement ABC systems, States must plan early for data sharing agreements with stakeholders and appropriate data privacy regulations, as these frameworks can take a long time to establish and are essential for ensuring passenger data protection and compliance with international standards. States should incorporate inclusive design principles to ensure automated clearance lanes cater to all travellers, including families and persons with disabilities. As part of system resiliency planning, comprehensive business continuity plans must be developed before the system's full deployment to ensure uninterrupted operations.

2.3.3 Knowledge sharing and collaboration among States will be crucial for the successful implementation of ABC systems and the realization of a truly seamless end-to-end travel experience. By exchanging insights, lessons learned and best practices, States can collectively address common challenges and accelerate the adoption of effective solutions. Thailand and Singapore stand ready to share their experiences with interested States, contributing to the advancement of this important initiative.

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