



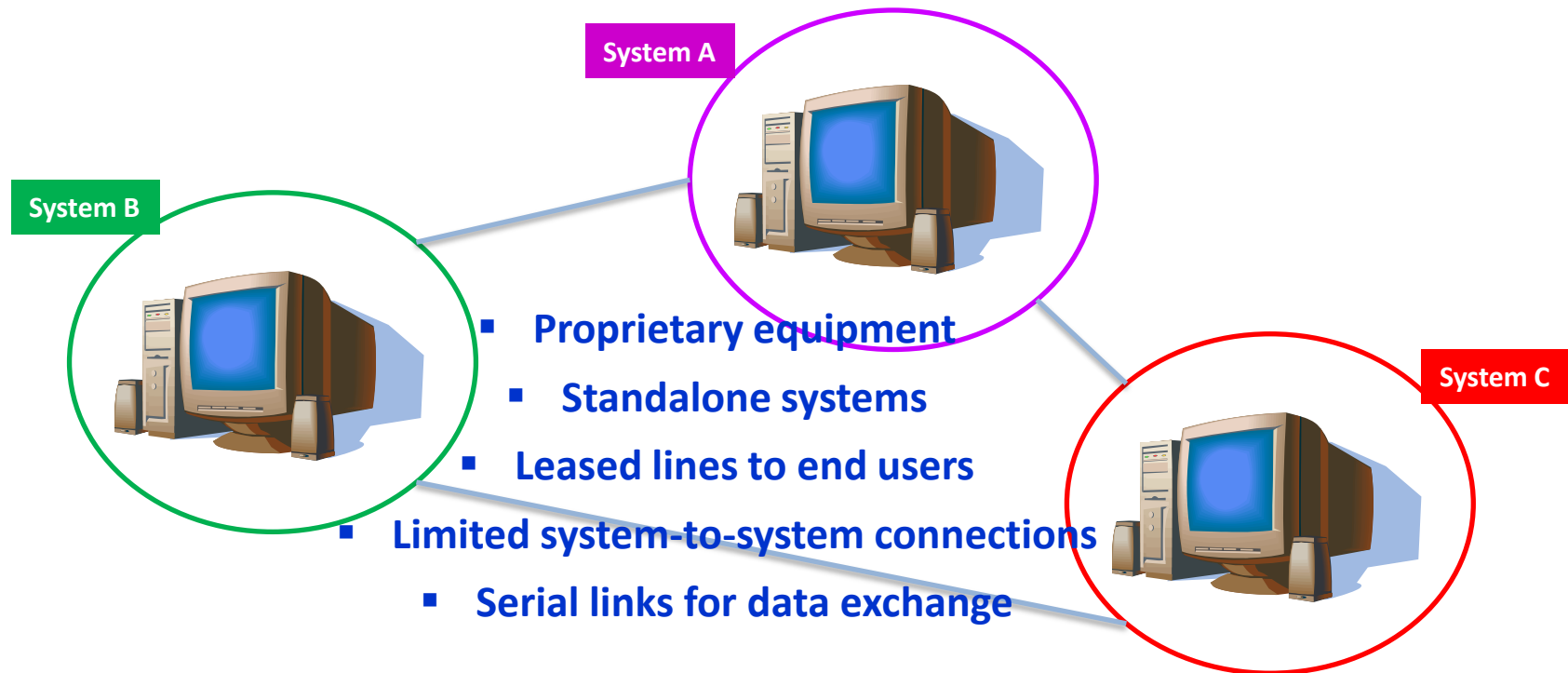
TWENTY SEVENTH MEETING OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG/27)

**IMPLEMENTATION OF EFFECTIVE CYBER
SECURITY MEASURES TO ACHIEVE A SAFE,
SECURED AND EFFICIENT AIR TRAFFIC
CONTROL SYSTEM IN HONG KONG**

Presented by Hong Kong, China

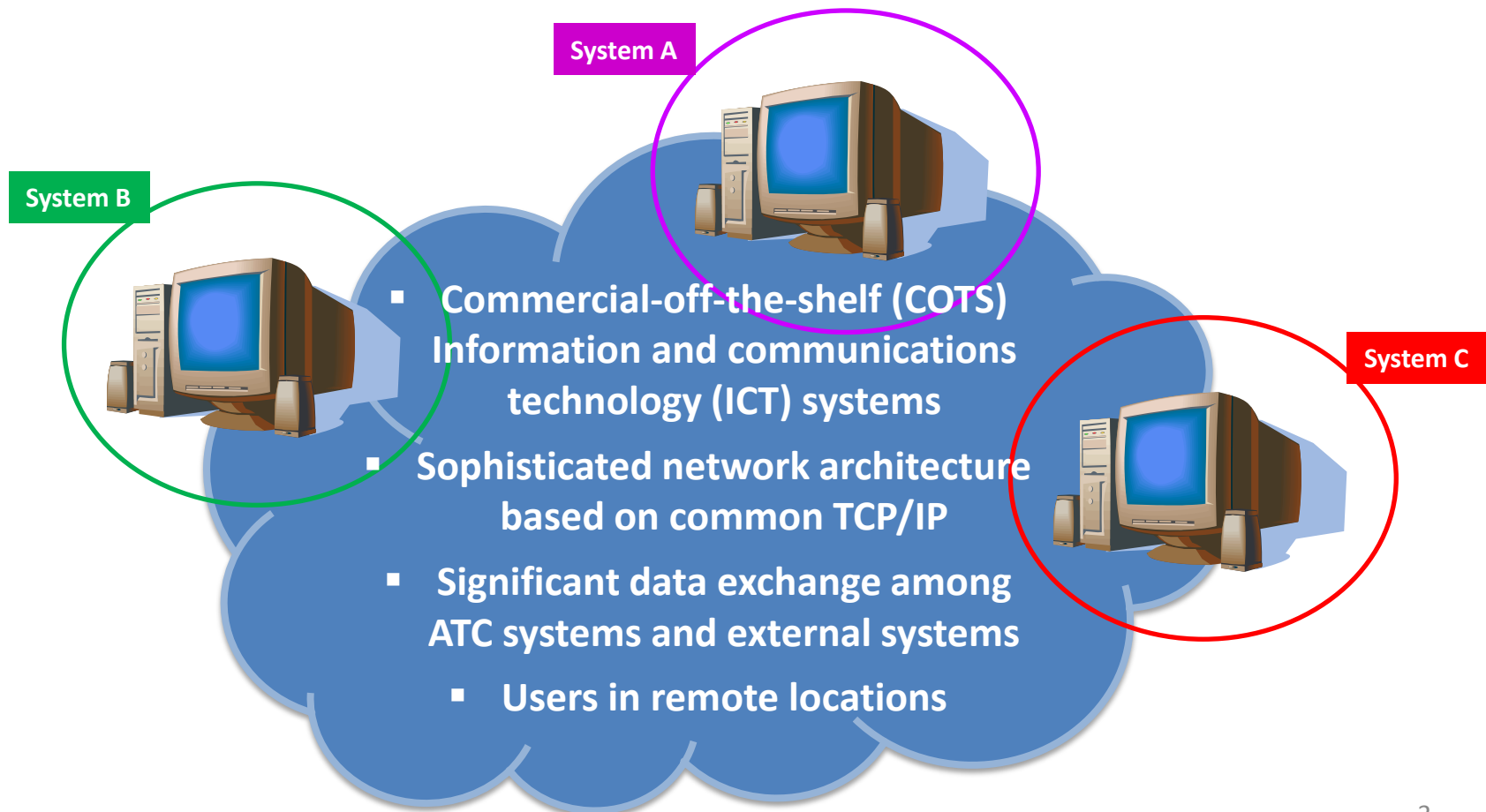
Background – Conventional vs. New Generation ATC Systems

■ Conventional ATC Systems



Background – Conventional vs. New Generation ATC Systems

■ New Generation ATC Systems



Background – Cyber Security Threats

- To address the growing concerns on cyber security threats, ICAO published Doc 9985 “ATM Security Manual” in 2013
- Hong Kong, China
 - fully supports ICAO’s initiative on protecting ATC system infrastructure against the growing cyber security threats
 - has established a cyber security management framework for pursuing compliance with the cyber security control requirements in ICAO Doc 9985

Implementation – CACSC and CACSWG

- CAD ANS Cyber Security Committee (CACSC)
 - To set out policies and steer the implementation of cyber security control measures throughout the whole life cycle of ATC system
- CAD ANS Cyber Security Working Group (CACSWG)
 - To support the CACSC as an executive arm

Implementation – Level 1 requirements in ICAO Doc 9985

- CACSWG
 - conducted thorough gap analysis for ATC system infrastructure against all Level 1 and Level 2 cyber security control requirements as outlined in ICAO Doc 9985
 - recommended to implement Level 1 control requirements after conducting cost-benefit analysis and obtained endorsement from the CACSC

Implementation – Policy and Guidelines

- To promulgate cyber security policies and implementation guidelines to all the stakeholders concerned through three cyber security documents
 - CAD Cyber Security Manual (CCSM)
 - CAD Cyber Security Handbook (CCSH)
 - CAD User Account Management Policy (CUAMP)
- These documents have been revamped accordingly taking into account the latest cyber security requirements in ICAO Doc 9985.

Implementation – Assessments (1)

- Ten core ATC subsystems were identified

Existing

- Radar Data Processing System & Flight Data Processing System
- Aeronautical Information Database
- Automatic Message Switching System
- ATS Message Handling System
- Speech Processing Equipment

New

- Air Traffic Management System
- Aeronautical Information Management System
- ATS Message Handling System
- Voice Control Switching System
- ATC System Network Infrastructure

Implementation – Assessments (2)



SMS for assessment on cyber security risks

Independent Security Assessment on ATC System Network Infrastructure

Cyber security police for critical infrastructures
by the HKPF

Implementation – Assessments (2)




SMS for assessment on cyber security risks

- Series of verification tests and inspections on the design and implementation
- Audits on cyber security requirements against the CCSM and CCSH
- Audits on ATC system access control framework against the CUAMP



Independent Security Assessment on ATC System Network Infrastructure



Cyber security police for critical infrastructures
by the HKPF

Implementation – Assessments (2)




SMS for assessment on cyber security risks



Independent Security Assessment on ATC System Network Infrastructure

- Penetration Tests : Port Scanning & Web Application Vulnerability Test
- Audit on ATC data network with interconnecting various sub-systems and external interfaces to the aviation community
- Audit on new ATMS and its associated network (completed in May 2016, achieved an 'Excellent' grading)



Cyber security police for critical infrastructures by the HKPF

Implementation – Assessments (2)



SMS for assessment on cyber security risks

Independent Security Assessment on ATC System Network Infrastructure

Cyber security police for critical infrastructures
by the HKPF

- Based on meetings, discussions, documentation review, dataflow and workflow analysis
- Audit on overall design, information flow, network robustness and data integrity of the new ATC system; as well as
- Cyber security readiness of personnel and policy
- The cyber security provisions and readiness of the new ATC system were concluded 'satisfactory'
- Direct reporting mechanism to HKPF was established as recommended
- Regular e-Security audit by HKPF was arranged

CNS SG/20 and 53rd DG-CA Conference

- Hong Kong China has brought forward an important subject of cyber security during the CNS SG/20 and the 53rd DG-CA Conference
- CNS SG/20
 - a specific agenda item for cyber security under its standing agenda will be included
- 53rd DG-CA Conference
 - this subject is considered to be brought up in the coming 39th Session of the ICAO Assembly
- The ICAO has been jointly working with ACI, IATA, CANSO, etc on a Civil Aviation Cyber Security Action Plan

- The meeting is invited to:
 - note the establishment of an effective cyber security management framework required for a safe and secured ATC system infrastructure;
 - note the latest development and achievements made by Hong Kong, China on implementing cyber security control measures to protect ATC system infrastructure;
 - note that CNS Sub-group would include a specific agenda item on cyber security;

- The meeting is invited to:
 - seek support from the ICAO in organizing seminars/workshops to discuss, facilitate and exchange experience among States/Administrations, with a view to promoting better understanding of cyber security and planning for implementation of the ICAO Doc 9985 ATM Security Manual; and
 - encourage States/Administrations to pursue appropriate level of compliance to the cyber security control requirements as stated in the ICAO Doc 9985 ATM Security Manual and make collaborative efforts to effectively address cyber security threats.

Thank You

