Asia/Pacific UAS/RPAS/AAM: the Latest Developments, Strengths, Challenges and Opportunities

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Latest Developments in UAS Activities

APAC Regional Reference Materials Developments

- **Harmonized AAM regulations in APAC**
  - ✓ **CAAS (Singapore)** leading regional collaboration and hosting key summits.
  - ✓ Co-developed VTOL/AAM safety guidelines with regional partners.
  - ✓ **Focus**: BVLOS pathways, UTM enablement, urban integration; such as risk-based airworthiness, pilot training, flight corridors, communication protocols, airspace integration.
  - ✓ Designed to be adapted by regional regulators to accelerate the safe and consistent adoption.

- **APAC AAM Reference Materials for Regulators**
  - ✓ Jointly developed by 24 APAC States and launched on 14 July 2025.
  - ✓ Supports air taxis and drone ops via harmonized frameworks.
  - ✓ Updated regularly to reflect tech and operational changes.
  - ✓ Be submitted to ICAO for reference for global adoption.

APAC Regional Reference Materials

- **What the AAM Reference Materials Cover**
  - ✓ Risk-based airworthiness, pilot competency, UTM/ATM integration.
  - ✓ Flight corridor planning, comms protocols, minimum safety performance.
  - ✓ Governance and collaboration models for States and industry.
  - ✓ Adaptable guidance for national adoption and cross-border alignment.

- **Implications for APAC States**
  - ✓ **Policy development**: States can leverage these guidelines.
  - ✓ **Cross-Border Harmonization**: The collaboration promotes consistency in safety standards and procedures.

National Developments

- **China** has been moving forward through low-altitude economy (LAE)
  - ✓ **National strategy**: infrastructure, manufacturing, applications (UAM, logistics, tourism, firefighting) by flights within 1,000 meters of airspace.
  - ✓ **CAAC projects industry size**: 2T Yuan by 2030.
  - ✓ **Rapid movement**: EH216-S achieved Production Certificate (April 2024).
  - ✓ **Challenges**: international certification differences and transparency concerns.

- Drone policies in **India** saw significant updates in 2025
  - ✓ Mandatory digital sky registration for drones over 250 grams.
  - ✓ Increased penalties for violations like flying in "no-fly zones".
  - ✓ Mandatory remote pilot certificates for commercial operators.
  - ✓ Ongoing support for drone-related startups through initiatives like the "Drone Shakti" programme.

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Key Strengths in the Asia/Pacific Region

Risk-Based, Operation-Centric Regulation (APAC Trend)

- States are adopting risk-based oversight approaches that enable advanced operational use cases while upholding the highest safety standards.
  - ✓ **Hong Kong China**: Tiered SUA + eSUA portal.
  - ✓ **Indonesia**: CASR 107/22 + sandbox trials.
  - ✓ **Japan**: Level-4 BVLOS (over people) with registration/Remote ID/certification.
  - ✓ **Republic of Korea**: K-SORA + “Drone One-Stop”.
  - ✓ **Singapore**: Dual permit (Operator + Activity), clear BVLOS tiers.

Digital Systems & Early UTM Foundations (APAC Trend)

- Digital systems reduce manual workload and enable scalable BVLOS.
  - ✓ ICAO new provisions on RPAS with applicability dates in 2026-2028.
  - ✓ UTM readiness varies; data models not aligned.
  - ✓ Airports show value but lack standardized emergency management (EM) safety and response governance.

- States movements and integrated trials
  - ✓ **Australia**: FIMS + USS (UAS Service Suppliers) ecosystem; detection at 29 controlled airports.
  - ✓ **Japan**: FISS/DIPS for flight intent sharing and deconfliction.
  - ✓ **Hong Kong China/Indonesia/Republic of Korea/Singapore**: digital portals for registration, permits, and intent-sharing.

Airport Readiness and Operational Use Cases (APAC Trend)

- Airports adopt mature playbooks for detection, response, and safe drone use cases
  - ✓ **Singapore** (24/7 multi-sensor ops center, ~15-minute response).
  - ✓ **Australia** (national detection network).
  - ✓ **Hong Kong China** (drone-based flight inspection).

- AAM Readiness: Phased, Evidence-Led Trials
  - ✓ "Build–Test–Refine–Scale" is guiding safe early deployment and public acceptance.
  - ✓ **Republic of Korea** (K-UAM Grand Challenge).
  - ✓ **Japan** (piloted eVTOL for Expo 2025).
  - ✓ **Indonesia** (2030–2045 AAM roadmap).

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Challenges to Address

What are the challenges in UAS policies?

- Implementation of RPAS Safety Stack
  - ✓ Harmonize implementation: States to implement the RPAS Safety Stack in accordance with the applicability dates of the respective provisions.
  - ✓ RPL, ROC, RPS/C2 airworthiness, C2 performance, SMS; lost-link/handover inconsistency.

- No Common Baseline for DAA & UTM–ATM Interfaces
  - ✓ Separation assurance and shared data models are not yet aligned across States.
  - ✓ Fragmented BVLOS operations near controlled airspace; limited scalability.

- Fragmented Airport C-UAS Rules & SOPs
  - ✓ Who detects vs. mitigates, sensor siting, EM-safety near NAVAIDs, and ATC coordination vary widely.
  - ✓ Uneven safety outcomes and higher costs across similar airport risks.

What are the challenges in UAS policies?

- Skills and shared evidence need strengthening for safe mixed operations
  - ✓ SORA/K-SORA, BVLOS safety cases, SMS/SSP; limited datasets on GNSS interference, lost-link, near-misses, micro-weather, noise, and public sentiment.

- Public Trust—Privacy, Noise, Transparency
  - ✓ Remote ID use, privacy safeguards, and noise reporting are not systematic.
  - ✓ Urban BVLOS/AAM corridors face pushback without consistent transparency and engagement.

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Opportunities and Areas for Improvement

Opportunities and areas for improvement on Regional Safety & Data Baseline

- Applicable RPAS Safety Stack by 2026-2028 (Annexes 1/6/8/10/19).
- Define DAA Minima & UTM–ATM Interfaces (latency, false alarm, conformance).
- Harmonize Airport C-UAS SOPs (sensor siting, EM safety, ATC workflows).
- Build Capacity & Data Commons (SORA/SMS training; incident/near-miss taxonomies; GNSS/noise data).
- Public Acceptance Frameworks (Remote ID transparency, noise criteria, community dashboards).

Needed Technical Harmonization

- RPAS Core: RPL (Annex 1), ROC + Annex 6 Part IV ops (Domestic RPAS operations), airworthiness (RPA & RPS; Annex 8), C2 (Annex 10), SMS (Annex 19)
- BVLOS/Integration: DAA minima (coop/non-coop), UTM–ATM interfaces (intent/conformance/tactical), lost-link/handover profiles
- Airport: EM-compatibility tests, ATC coordination, multi-sensor fusion, data governance
- Public: Remote ID transparency, noise/route criteria, engagement standards

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Key Takeaways and Conclusions

Key Takeaways

- **Strong foundations:**
  - ✓ Risk-based regulations, digital tools, airport operations experience, and AAM trials.

- **Next step:**
  - ✓ Align on safety fundamentals, DAA/UTM standards, and airport counter-UAS practices.

- **Future vision:**
  - ✓ Through regional alignment and shared learning, APAC can lead safe, scalable mixed operations and AAM integration.

Conclusion

- **APAC UAS/RPAS/AAM: from Trials to Real Operations**
  - ✓ APAC is moving from pilots to scaled operations in shared airspace.
  - ✓ Progress: risk-based rules, BVLOS trials, UTM deployment, airport C-UAS adoption.
  - ✓ Align with SARPs and global/regional references: certification recognition, undefined DAA minima, fragmented airport C-UAS practices.

Thank You

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