ASEAN Regional Forum

Space Security Workshop

Hoi An, Vietnam

December 6-7, 2012

Co-Chairs' Summary Report

1. Pursuant to the decision of the 19th ASEAN Regional Forum (ARF) Ministerial Meeting in Phnom Penh, Cambodia, 12 July 2012, the ARF Space Security Workshop was held on 6-7 December in Hoi An, Viet Nam. The Workshop was hosted by the government of Viet Nam, co-chaired and organised by the governments of Vietnam and Australia, co-sponsored by the governments of Japan, the United States, and the European Union, and supported by the United Nations Institute for Disarmament Research (UNIDIR).
2. The Workshop was co-chaired by Mr. Vu Ho, Deputy Director-General, ASEAN Department, Ministry of Foreign Affairs of Viet Nam, and Mr. John Quinn, Assistant Secretary, International Security Division, Department of Foreign Affairs and Trade, Australia.
3. The Workshop was attended by representatives and experts from all ARF participants, except the Democratic People's Republic of Korea, Myanmar, Papua New Guinea, the Philippines and Timor-Leste. Representatives of the ASEAN Secretariat, UNIDIR and other multilateral frameworks, including the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS), and various track two institutions were also present. The agenda appears as **Annex 1**, and the list of participants as **Annex 2**.

Day 1: Opening Remarks and Introduction

4. Mr. Pham Quang Vinh, Deputy Minister of Foreign Affairs of Viet Nam, delivered the Workshop's welcome address. He noted the ARF's valuable contribution to the region's security and prosperity, notably developing habits and norms of cooperation, dialogue and preventive diplomacy. He emphasised the ARF's role in identifying, analysing and addressing the threats – both traditional and non-traditional – to the region, and suggested that ARF countries work together to develop rules and norms to address these. This workshop was the first ARF occasion to address space security; it offered the opportunity to set ARF consideration of this issue on a positive course. A welcome dimension of the workshop was that it brought together national experts and representatives from UN and other multilateral fora. Vietnam was active in both space related research and the practical application of space technology, having established a national space committee, as well as relevant policy and legal frameworks.
5. Co-chair, Mr John Quinn of the Australian Department of Foreign Affairs and Trade also made opening remarks. He drew attention to the strong attendance at the workshop of both ARF members and relevant international experts. This offered a unique opportunity for a productive exchange on space security issues. He also thanked the sponsors and supporters who had made the workshop possible. He then highlighted the shared dependency on space enabled infrastructure of all countries - for effective government, economic activity and

functioning of our wider societies. Space was also a critical enabler of many military capabilities. These considerations reinforced the importance of taking effective action to enhance the safety, security and sustainability of space which was now under threat, particularly from proliferating space debris. In this regard, he referred to the importance of the draft International Code of Conduct for Outer Space Activities which in particular addressed the debris problem. He outlined key strands of Australia's approach to space, including the development of a new Satellite Utilisation Policy. He said the workshop provided a timely opportunity to increase regional understanding of complex space security issues, take stock of developments, and consider possible ways forward, including within the ARF.

Session 1 - Space Capabilities and Dependencies in the Asia-Pacific

6. In the **first session**, chaired by Mr Cherdkiat Atthakor of the Ministry of Foreign Affairs, Thailand, the Workshop considered the space environment, including the region's reliance upon space for a range of essential services, and the risks to the infrastructure that provides these services. Professor Kazuto Suzuki of Princeton University said Asia-Pacific countries, especially those in Southeast Asia, were heavily dependent on space, given the rapid growth in the region's economy, deficiencies in terrestrial infrastructure, and tremendous regional demand for communications, broadcasting and other space-enabled services. He said space was particularly important in fields such as environmental management, notably mapping, urban planning, meteorology and dealing with natural disasters, as illustrated by its role in helping to respond to the Great Eastern Japan Earthquake in 2011. The risks of losing access to space were thus very significant for the ARF region. There were only 15 or 16 dedicated military satellites in use in the region, in contrast to 54 civilian/commercial satellites, although some of the latter were dual-use. Satellites made a positive contribution to regional security through their non-offensive provision of stable, accurate and open source information which serves as confidence building measure. The presentation appears as **Annex 3**.
7. Dr Shannon Ryan of the Australian Defence Science and Technology Organisation outlined the growing threat of space debris to manned and robotic space vehicles. He traced the rapid growth in space debris to the current situation where there were approximately 500,000 pieces of debris larger than 1cm (large enough to seriously damage or destroy space vehicles) in orbit. Over 100 million pieces of smaller debris exist and are capable of damaging spacecraft, due to their very high speeds. Studies have shown that even if no new space debris were to be created, it would continue to proliferate through collisions between existing bodies at some altitudes in low earth orbit, where the challenge is particularly acute. Several concurrent strategies are commonly pursued to deal with the threat posed by debris, including collision avoidance manoeuvres based on JSpOC space situational awareness and conjunction notifications; and armouring space vehicles, which is expensive. Summing up Dr Ryan said: space was now heavily polluted; proliferation of debris in key orbits was now unsustainable; and even small items of debris could cause catastrophic damage. The presentation appears as **Annex 4**.
8. Dr John Sheldon of the Torridon Group provided a useful checklist of definitions of key space security terms. He described a range of technologies being developed to destroy or interfere with the satellites upon which potential adversaries (and other countries)

depended. Kinetic attacks could cause a dramatic increase in the volume of orbiting space debris. Non-kinetic interference included jamming radio frequencies, "spoofing" to take over control of satellites, or using lasers, electromagnetic pulses or cyber to disrupt their functioning. He argued that policy-makers should take a holistic view of protecting all dimensions of space systems, avoiding undue focus on the threat posed by space weapons, which were not a threat in the short to medium term. As well as the space segment, the launch, control, up-down link, and user segments, in addition to relevant supply chains, were all vulnerable to attack through either kinetic or non-kinetic means. Development of international norms also needed to take this holistic approach into account. The presentation appears as **Annex 5**.

9. These presentations stimulated discussion on a variety of issues, including different definitions of space security and the wider concept of security of space activities, the possibility of space-to-earth threats, the special vulnerability of ground stations, options for debris removal, and scope for closer regional and subregional cooperation in the space realm, including through the ARF, Asia-Pacific Regional Space Agencies Forum (APRSAF) and the Asia-Pacific Space Cooperation Organisation (APSCO).

Session 2 – Current International Space Security Framework

10. In the **second session,** chaired by Professor Sergio Marchisio, of the European Centre for Space Law, and the Italian Member of the UN Group of Government Experts on Space Transparency and Confidence-Building Measures, the workshop considered the international legal framework as it applied to space. The two speakers, along with the Chair, said there was general consensus that international law applied to the activities of states in outer space. Professor Nipant Chitasombat of Sripathum University, Thailand, noted that work had been underway at least since the 1940s to developing and clarifying the legal framework governing space. As well as the five treaties related to space, a range of non-binding declarations, including the UN Space Debris Mitigation Guidelines, were also applicable. A cumulative body of international law, including principles such as innocent passage borrowed from the maritime domain, had emerged in relation to space. Forums such as the UN COPUOS were contributing to the further development of this international legal framework. The presentation appears as **Annex 6**.
11. Mr Hugh Watson of the International Law Section of the Australian Department of Foreign Affairs and Trade outlined a number of principles of international law not explicitly referred to in the core space treaties and declarations which he argued to be applicable in the space context, including the prohibition of the use of force, the right of self-defence, international humanitarian law, the principles of good neighbourliness, the precautionary principle, and the law of state responsibility. He examined how these principles might apply in the case of certain actions in space. While there were a number of issues raised by the application of these principles which required further consideration and discussion, there was a clear normative thread in customary and conventional international law limiting State actions which might contaminate the space environment and interfere with the activities of other States in outer space. This norm was usefully reflected in the draft International Code of Conduct for Outer Space Activities. The presentation appears as **Annex 7**.
12. Subsequent discussion addressed questions such as whether international law provided a sufficient framework of rules and principles for operating in space, and, if not, which gaps

remained to be filled. Participants highlighted the importance of states becoming parties to the existing five space-related treaties - which brought responsibilities as well as benefits. The Chair noted the importance of universal adherence to and effective implementation of these existing treaties. To date only about half the UN's membership had become parties to these instruments.

13. Dr Dao Ngoc Chien of the Office of the Vietnam Space Committee then delivered a special presentation on the key steps undertaken by Vietnam in recent years to strengthen its space-related capabilities, policy and coordination. The presentation appears as **Annex 8**.

Session 3 – Prospects for Space Arms Control

14. In the **third session**, chaired by Mr Sean Kelly of the Australian Department of Foreign Affairs and Trade, the workshop examined space arms control issues. Mr Ben Baseley-Walker of UNIDIR discussed the history of the UN disarmament machinery which had been addressing the 'security' aspects of space – the Committee on Disarmament, UNIDIR, the UN Secretariat, the UN General Assembly, especially the First Committee, and the UN Group of Governmental Experts on Space Transparency and Confidence Building Measures (UNGGE on TCBMs). He noted that security was only one dimension of space and that complementary processes were underway to address these and other interrelated elements. There was a need to balance the interests of states which had already played a role in space with those of others who were more recently starting to reap the benefits of space. Space was a critical tool to improve human security. The presentation appears as **Annex 9**.
15. Mr Zhang Ze of the Ministry of Foreign Affairs of the People's Republic of China drew a distinction between space security and space safety, noting the importance of space arms control to prevent armed conflict in space. He outlined the history and rationale of the Chinese/Russian proposal for a legally-binding treaty preventing the placement of weapons in space, known as the PPWT. China's view was that action to address space debris and to promote space arms control could be addressed in parallel. He stated that the current draft text of the PPWT provided a good basis for negotiations. The presentation appears as **Annex 10**.
16. Dr Rajeswari Pillai Rajagopalan of the Observer Research Foundation, New Delhi, provided an overview of current arrangements relevant to space arms control, including the Outer Space Treaty (OST), and PAROS, identifying some of the advantages and drawbacks of these various approaches. She saw a need for a new regime to deal with space security issues, noting the increase in countries and other bodies engaged on these issues. She viewed the substance of the proposed International Code of Conduct as a reasonably good. However, she said, this initiative had not been well "sold" to other countries. It was now crucial to build consensus around this draft and generate stronger international ownership of it through a much more inclusive, effective consultation process. Without this, the draft Code would lack credibility. Bringing Asian countries, especially major regional powers, on board the draft Code would be particularly important. The presentation appears as **Annex 11**.
17. Participants discussed the challenges around verification of any space-related arms control treaty, and in defining a 'space weapon', especially given that many technologies and goods were dual-use in nature. There was also debate about how to build consensus on the way forward, notably whether this would best be done through the PPWT, other United Nations

processes, or the proposed International Code of Conduct. Some participants argued that various initiatives should be pursued in parallel and complementary fashion.

Session 4 – Strategies to Improve the Security and Safety of the Space Environment

18. In the **fourth session**, chaired by Mr Phongsavanh Sisoulath of the Ministry of Foreign Affairs of the Lao People's Democratic Republic, the workshop examined strategies to improve the security and safety of the space environment. Dr Peter Martinez, of UN COPUOS and the South African Council for Space Affairs, explained what was meant by space 'sustainability', and set out the current agenda of UN COPUOS. The UN COPUOS working group on long-term sustainability of space activities (LTSSA WG) would produce a report and set of best practice 'voluntary non-binding guidelines' to be finalised by 2014. Problems being addressed included developing agreed definitions of terms such as "space situational awareness", "space faring" and "space safety". He said some non-space faring and space aspiring nations mistakenly saw the work of UN COPUOS as the responsibility of other countries. He therefore encouraged further engagement, especially of ASEAN countries, in the work of UN COPUOS. The presentation appears as **Annex 12**.
19. Ms Jessica Powers of the Office of the United States' Secretary of Defense explained the US approach towards cooperation in the space realm, which aimed to promote the common goal of responsible use of space which would enhance regional and global prosperity and security. One dimension of the Obama Administration's "rebalance" to Asia was intensifying space cooperation, both with traditional allies such as Japan, Australia and Canada, but also with other regional partners, especially ASEAN countries. Significant among US contributions was strengthening cooperation on space situational awareness, notably sharing data to avoid collisions in space. The United States was also contributing to development of the proposed International Code of Conduct. The presentation appears as **Annex 13**.
20. Dr Ray Williamson of the Secure World Foundation discussed Active Debris Removal (ADR) which raised complex technical, economic, legal and political issues. He accorded priority to action on large pieces of debris. Research showed that removing even five to ten large pieces of space debris would have a substantial long-term benefit in preventing further fragmentation/debris production. However, there were technical and other risks – including of producing more debris, and dealing with military payloads. Some ADR technologies could also be applied as anti-satellite weapons. This reinforced the need for active transparency and confidence building measures to accompany any ADR activities. Various questions arose from active debris removal, including who would pay, who owned the debris, and how could material in space be identified as "debris". He concluded that development of best practice ADR models was needed, as well as further legal and other research into the issues raised by ADR. The presentation appears as **Annex 14**.
21. Participants discussed whether a cooperative international approach to debris removal could be developed, and concerns that some proposed forms of debris removal could also be utilised as space weapons.

Session 5 – Space Transparency and Confidence-Building Measures

22. In the **fifth session**, chaired by Mr Raja Reza, Undersecretary of the Ministry of Foreign Affairs of Malaysia, the workshop focused on space transparency and confidence-building measures (TCBMs). Professor Sergio Marchisio of the UN Group of Government Experts (GGE) outlined the work of GGE on such TCBMs, which could provide an important way to enhance security in outer space. The GGE was expected to produce a consensus report in 2013 which would contain pragmatic and feasible recommendations to improve cooperation and minimise the risk of miscalculation in space activities. This work was to be inclusive of and complementary with other processes (such as UNGA First Committee, PAROS, and the draft International Code of Conduct). It would set out relevant basic principles as well as identifying information-sharing, confidence-building, policy and other operational measures such as notifications, familiarisation visits, and other forms of international cooperation. Proposed TCBMs would not be legally binding, but should positively influence behaviour in relation to space. The presentation appears as **Annex 15**.
23. Mr Juan Jose Almagro Herrador of the European Union Delegation to Vietnam provided a brief account of the history of the negotiations on the proposed International Code of Conduct, and outlined its contents. The Code attempted to lay down the basic rules to be observed by space-faring nations in both civil and military space activities. The Code was based on three principles – freedom for all to use outer space for peaceful purposes, preservation of the security and integrity of space objects in orbit, and due consideration for the legitimate security and defence interests of states. The added value of the proposed Code was its all-encompassing scope, its preventive approach, and its dynamic nature. The Code would be developed without prejudice to future work in other fora. The presentation appears as **Annex 16**.
24. Mr Frank Rose of the United States Department of State noted the increasing recognition by the international community of TCBMs as a way to increase security and reduce misunderstandings in relation to space. TCBMs had been used to good effect during and since the Cold War, and can be undertaken unilaterally, bilaterally, plurilaterally, multilaterally. They offered great potential to mitigate risk in an increasingly contested and congested space environment. Useful work was underway in various fora to develop TCBMs, including in the UN GGE and through the EU's proposal for an International Code of Conduct. Regional activities such as the Hoi An ARF space security workshop could also contribute to building confidence. Bilateral cooperation on space was another means by which the United States sought to improve transparency and build mutual confidence. For example, the United States provided notifications to other countries of collision risks which had also helped establish communication channels between relevant civil and defence organisations. The presentation appears as **Annex 17**.
25. Participants discussed the consultation process for the draft International Code of Conduct and how this could be improved. Several questions were asked about its substantive provisions, including how it would apply as a voluntary regime to commercial satellite operators. A range of speakers argued that there was now a need to move beyond concerns about deficiencies of process in relation to the draft Code and to focus on finalising its substantive provisions. There was also further debate about the feasibility of negotiating binding arms control agreements and the relative priority which should be accorded to this

and other initiatives such as the draft Code. The role of non-space faring nations was raised, including how they would benefit from access to space and that they needed capacity building and other assistance to do so.

Day 2: Summing up Day 1 Outcomes

26. Co-chair Mr Vu Ho drew out some key themes from the day's proceedings, including Asia's role at the centre of global economic growth as well as some ongoing uncertainties in the security environment in the region. He identified a key question for the workshop: how best to promote regional cooperation in the area of space security in order to contribute to the prosperity and security of the region. He invited his Co-chair Mr Quinn to sum up the first day's discussions
27. Mr Quinn remarked on the positive atmospherics of the workshop which reflected a combination of the collegial approach adopted by the community of international space experts and the ASEAN spirit of cooperation, compromise and pragmatism.
28. There was broad acknowledgement that all nations were now dependent on a secure, safe and sustainable space environment, and that the growth of orbiting space debris threatened space-enabled services. There was also recognition that better integration was needed between the various strands of work being undertaken in relation to space, at the national, regional and global level. Those active in multilateral and other global processes had encouraged stronger engagement by ASEANs and other ARF member countries in these processes. Similarly, ARF member countries professed a willingness to provide more input into these processes. This latter point was especially relevant to development of the draft Code of Conduct.
29. There had been debate about various space security related initiatives; views differed on their relative priority. However, there was a sense from the discussion that these initiatives could be pursued concurrently in a complementary way.
30. Mr Quinn said a clear message from the first day's proceedings was that space debris, including that resulting from counter-space activities, was widely recognised by participants as a pressing problem. Various responses had been discussed, including better application of the UN Debris Mitigation Guidelines, and exploration of new technologies for addressing the problem. A range of speakers and participants saw the draft Code of Conduct as offering an important way forward.
31. Discussion of international security had been more contentious and raised complex questions. There was broad support for further transparency and confidence-building measures as an important next step in addressing these issues.
32. Mr Quinn noted that the workshop had confirmed keen regional interest in tapping into the benefits of space-based capabilities to tackle pressing environmental issues affecting our planet, especially in disaster mitigation and response. Participants had also highlighted the relevance of space-enabled infrastructure to sustaining rapid economic development. The region was assessed to be highly space-leveraged given the rapid uptake of technology, dynamic economic growth and deficiencies in terrestrial infrastructure. The role of the commercial sector in relation to space security had also been raised, including how best to engage this sector. In this regard, there were some parallels with cyber.
33. Mr Quinn concluded that there had been a strong sense from interventions that the workshop was very timely. There had been particular value in the information and analysis

provided by the panels of regional and global expert speakers. There seemed to be wide agreement that space security was an appropriate subject for ARF attention. However, there had only been limited discussion on next steps, and how the ARF might best continue to consider these issues. The breakout group discussions later that morning would provide a good opportunity to address these issues.

Session 6 – Contribution of Regional Cooperation Organisations to Space Security

34. **Session six,** chaired by Mr Tomofumi Nishinaga of the Ministry of Foreign Affairs, Japan, addressed regional space cooperation. Mr Zamri Shah Mastor of the Ministry of Science Technology and Innovation, Malaysia, explained the history of the Asia-Pacific Regional Space Agencies Forum (APRSAF), which was established in 1993 and (as at December 2011) included 325 organisations from 35 countries/regions and 24 international organisations. APRSAF operated as a flexible framework rather than through a legally binding agreement. APRSAF had four working groups and held an annual meeting to share information about its activities and future plans. APRSAF had played a lead role on regional initiatives such as the Sentinel program; its extensive regional network was particularly useful. APRSAF could consider new initiatives or working groups to address space debris and thus enhance regional space safety and security. The presentation appears as **Annex 18**.
35. Mr Zhang Ze, of the Ministry of Foreign Affairs of the People's Republic of China, set out the history of the Asia-Pacific Space Cooperation Organisation (APSCO), founded in 2008 in Beijing. It was an intergovernmental organisation; the convention establishing APSCO had been originally signed by eight governments (Bangladesh, China, Indonesia, Iran, Mongolia, Pakistan, Peru, Thailand) and subsequently Turkey. Its objective was to promote and strengthen the development of collaborative space programs among its member states and enhance cooperation. Membership was open to all countries of the region and observer status was available to countries outside the region. It had annual meetings and had been granted permanent observers status to the UN COPUOS in 2009. APSCO carried out education and training courses for its members, and held international symposiums and forums. Future activities included a space development plan, an education and training plan, and a feasibility study on an Asia-Pacific space law centre. The presentation appears as **Annex 19**.
36. The Chair, Mr Tomofumi Nishinaga noted there was some overlap in membership of the two organisations, and some existing cooperation. There was a need to think about how to cooperate further. Participants raised the need for regional bodies to engage the commercial sector.
37. Mr Vu Ho of the Ministry of Foreign Affairs, Viet Nam spoke on the potential role of the ARF in relation to space security. He noted the 20th anniversary of the ARF next year, recalling a series of landmark ARF developments such as the concept paper developed in 1997, the regional security statement adopted in 2009, and the 2010 Hanoi Plan of Action, as well as the evolution of relevant regional security architecture, including the East Asia Summit (EAS), ARF and ASEAN Defence Ministers Meeting Plus (ADMM-Plus) frameworks. The question now arose of how best to fit space security into these regional frameworks and synergise all the relevant issues. A bigger picture challenge was to ensure the ARF stayed in the centre of evolving regional architecture. He recommended the workshop discuss further

how to move forward with space security, especially how to best utilise the ARF in this regard.

Breakout group discussions

38. The workshop participants then divided into four breakout groups which were invited to address the following four broad questions as a guide to their further consideration of space security issues:
    - **a.** How has this Workshop contributed to your ability to develop national and international policies to safeguard continued access to the socio-economic and development benefits of space-enabled services by assuring a safe, secure and sustainable space domain?
    - **b.** Identify the top three transparency and confidence-building measures that ARF members should consider that contribute to safety and security in space, given the workshop's focus on the growing problem of space debris?
    - **c.** How best can the ARF and its members interact with ongoing multilateral processes on space security?
    - **d.** Should the ARF develop a work program on aspects of space security? What kind of practical contribution could the ARF make through some ongoing activity?
39. Breakout group A reported to the Plenary that the workshop had been very useful, especially in rectifying a regional deficit in "foundational" information about space security. It noted the importance of each country raising awareness within its own government of the urgency of the space debris issue in particular and explaining the high dependency of regional countries on space. One option would be to hold "a day without space" media awareness campaign. Given the wide and profound impacts of space security issues, it was important to engage the range of relevant ministries, especially those responsible for economic and industry issues, and to build consensus within national governments as a starting point for more effective international engagement. The group saw value in the ARF assuming an ongoing role with regard to space security. It suggested the development of an ARF work program on space security which would also engage industry. Further discussion of elements upon which the ARF might primarily focus might include provision of more information to ARF members on UN COPUOS and other multilateral processes, and on the existing space related treaty system, including for non-space faring nations.
40. Breakout group B concluded that the workshop had been ground-breaking and important, especially for foreign affairs officials, in enhancing understanding of space security. The group suggested that the next ARF workshop on space security should have a more specific focus such as on debris or TCBMs, according to ARF priorities. The group saw the Hoi An workshop in itself as a TCBM; it was thus very important to continue this process. Capacity-building and information-sharing on policy and legal issues were also identified as particularly important, especially for those countries at the early stages of formulating space policies. The group considered the ARF should encourage a stronger regional contribution to multilateral initiatives and other work on space, including UN COPUOS, the draft International Code of Conduct, and the Committee on Disarmament, and be well briefed on these developments. The group suggested the ARF could also discuss the possible application of space technology to resolution of regional issues, perhaps across its four

existing intersessional meetings addressing humanitarian and disaster relief, terrorism and transnational crime, non-proliferation and disarmament, and maritime security.

41. Breakout group C agreed that space security was a very important, cross-cutting issue affecting all aspects of life for all nations in the world, regardless of their levels of development. Awareness needed to be raised across the board, including with regard to the challenge of increasing space debris. Governments should work more closely together to advance dialogue and cooperation to achieve effective common action. ARF had a facilitating role to play as the region's primary forum for discussing the regional peace and stability. More discussion was needed under the umbrella of the ARF to decide the way forward. The group recommended that the discussion initiated through the Hoi An ARF workshop be continued, but that the ARF Inter-sessional Meeting on Non-proliferation and Disarmament (ISM on NPD) be asked to provide guidance on how best to move forward.
42. Breakout group D concluded that the workshop had been well organised and constructive, providing a comprehensive view of the issues– a good first step on information sharing. The group suggested that further ARF discussions be broadened to cover policy and technical aspects in more depth. There was also a need to reach out to build both consensus within ARF member countries and between ARF members on space issues. It could also be useful to "step outside the box" in further consideration of space security, such as encouraging more collaboration between researchers in ARF member states. On TCBMs, ASEAN member states should be encouraged to ratify existing treaties such as the OST, and to develop stronger capacity at a national level, including on space law and the development of specific space policy plans. The group suggested establishment of a network of ARF member space focal points at policy and operational level for each country. This would facilitate information exchange, including on best practice. Ideas put forward by other groups also resonated with Group D, such as encouraging the inclusion and participation of all ARF member states in the space-related work of the UNCOPUOUS and other relevant processes. It could be useful to explore some parallels identified between international consideration of the challenges of climate change and space debris. The ARF should in due course hold another workshop and consider developing a work program but action at the national level on space security should be given priority. This could usefully be put on the agenda at next ARG ISG.
43. Deputy Minister Vinh welcomed the reports of the various break-out groups which had built on the very useful presentations and discussions over preceding workshop sessions. There was broad agreement that the first workshop had been valuable, recognising that it could not of course canvass all the relevant issues. It was also clear that this subject was relevant to the ARF given its regional security framework role. The importance and cross-cutting nature of space security was also recognised, along with the need for effective coordination and cooperation at the global, regional and national levels to address it. However, further consideration was needed of how best to chart the way forward. It might thus be appropriate for the workshop's report to the ARF ISG to limit itself to recommending further ARF attention to this issue, without being too specific about modalities.

Conclusions and Steps Forward

44. From the presentations by speakers and subsequent discussion, including feedback from the four workshop break-out groups, the following broad conclusions emerged:
    a. Stronger regional and broader international cooperation would be necessary to enhance the security, safety and sustainability of space;
    b. This ARF Workshop was a ground-breaking initiative in the field of space security and had been particularly useful in increasing awareness of space security issues, including for foreign ministry officials dealing with international security issues;
    c. There should be a continuing role for the ARF on space issues. Modalities should be further considered through established ARF processes;
    d. There is a need for further awareness building on a national, regional and global level of space security issues, including the threat posed by proliferating space debris. This effort should not only reach across government to all relevant ministries and agencies, but also encompass the private sector and wider civil society;
    e. ARF and ARF members should intensify their engagement on space security issues, including contributing more actively in multilateral fora and other relevant global processes;
    f. Proponents of global initiatives should actively engage ARF members who were keen to contribute; and
    g. Further coordination among ARF members would be beneficial, and could be facilitated by initiatives such as the proposed identification of space security focal points in each ARF member country.
45. On next steps for the ARF, participants suggested that the various proposals raised in the workshop and reflected in the Co-chairs' report be considered at the next ARF inter-sessional Meeting (ISM) on Non-Proliferation and Disarmament, including the option of conducting a further workshop on space security which might lead to the possible development of an ARF work program for space. It would also be useful for the ARF ISM to consider the interlinkages between space security and other strands of the ARF agenda, such as humanitarian assistance and disaster relief.