



Purpose: Over the last number of years, the European Commission DG CONNECT Unit H.4, Trust and Security, has been advocating the need for and building of international cooperation (INCO) in the areas of Trustworthy ICT, including network and information security, cyber security, trust, and privacy. Following on from the INCO-Trust project [<http://www.inco-trust.eu/>], the BIC project [<http://www.bic-trust.eu/>] developed three core foundations driving EU-International cooperation with India, Brazil, and South Africa, namely (1) advocacy and alignment of EU RTD + policy priorities as a basis of mutually beneficial cooperation; (2) community building with researchers, industry, and programme management (i.e. funding bodies), and (3) establishing a long term strategic platform and mechanisms for sustaining multi-lateral INCO.

BIC – Objectives

- ✓ Charting the landscape of India, Brazil, and South Africa and their initial match to EU trust, security and privacy themes;
- ✓ Prioritisation of the EU suggested vision and research directions amongst the new countries (India, Brazil, and South Africa), including alignment of work programmes;
- ✓ Global alignment, consensus and outreach of the European visions of international cooperation and challenges across all targeted countries;
- ✓ Definition of Tangible International Activities including establishing success metrics and setting up projects.

BIC - Implementation

- ✓ Establish BIC Cooperation platform, including Int'l Advisory & Working Groups (for post BIC);
- ✓ Support the BIC platform with secretariat, organisational aspects, web portal and other supports;
- ✓ Collect, analyse and promote the work of the BIC cooperation platform;
- ✓ Carry out an alignment between countries and the EU, prioritising on the mutually beneficial research topics for EU - international cooperation;
- ✓ Disseminate activities in international communities through workshops, web portal, and social media;
- ✓ Creating a programme structure setting up in-country bodies for international cooperation.

BIC - Impact

- ✓ Changing the mind-set from bi-lateral INCO activities to focus instead on multi-lateral INCO activities for Trustworthy ICT;
- ✓ The establishment and setting up of an EU-centric international cooperation platform, including an International Advisory Group, Core Working Groups, and Extended Working Groups¹, all for the purpose of developing a longer term strategy for international cooperation for Trustworthy ICT that will continue after the lifetime of BIC;
- ✓ Raising the profile of international cooperation for Trustworthy ICT from an early 'nascent' stage to one of major importance as now expressed for Horizon 2020;
- ✓ Providing analysis on prioritised research topics and recommendations, including road mapping details for international cooperation in trustworthy ICT;
- ✓ Permanently raising the EU BIC brand name in the international communities and developing long lasting relationships with other projects and initiatives, including programme management.

¹ An Extended Working Group (EWG) is composed of eminent members of the research, industry, and government community in each country working together on building future research programmes related INCO & Trustworthy ICT. Additional information on BIC's EWG at http://www.bic-trust.eu/files/2013/01/D2.5_BIC_WG_V1.0.pdf.

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The six priority research topics identified as potential topics for EU and India, Brazil, and South Africa researchers for mutually beneficial cooperation in the area of trust and security are:

1. Research in Cyber security, including an international data sharing framework;
2. Trust and Privacy, taking into account the human – oriented and cultural aspects;
3. Mobile security, Social media and Cloud security;
4. Security of Applications and data protection;
5. Identity management, accountability frameworks;
6. Future Internet Security, across a variety of domains e.g. Internet of Things, Smart Cities,

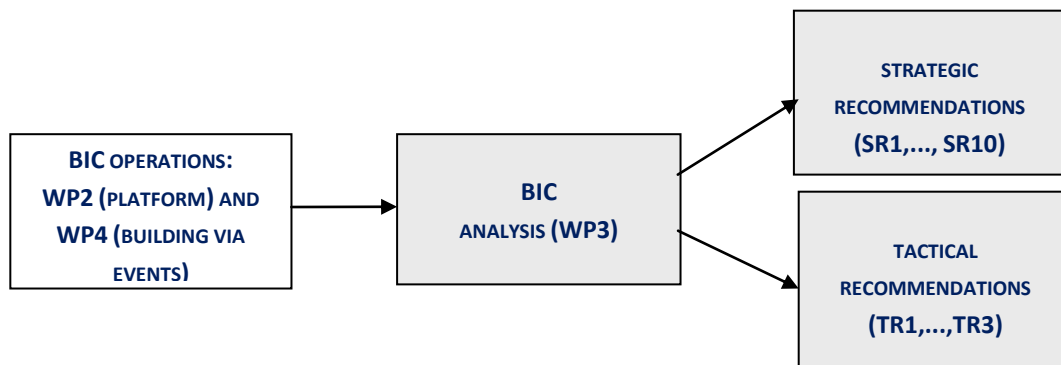


Figure 1 - BIC recommendations structure

The long-term **Strategic Recommendations**² (H2020 and 2015-2025) for international cooperation in the field of Trustworthy ICT research and technological development are:

1. There is a need for new global approaches, meta-models and methodologies;
2. Global cyber security is a moving landscape of attacks, surveillance and failures;
3. International cooperation research is an essential H2020 requirement;
4. The international community must agree on grand principles;
5. There must be a shift in emphasis from the tactical bi-lateral collaborations to a strategic multi-lateral approach;
6. There is a need to keep an international open-ness in the specifications of services and standardisation;
7. There is a need for an international mobility model approach;
8. There is a need for an international approach dealing with the massive abstraction of software and data (e.g. resilience of virtualisation);
9. An international cooperation is needed to deal with the fragility of interconnections;
10. We need an international approach to steer the evolution and strengthening of the digital ecosystem in terms of network security governance and surveillance.

The shorter term **Tactical Recommendations** are:

1. The work of the BIC project, and its structural components (IAG, EWGs) should be continued, and expanded to other countries, in the long term;
2. The EU and BIC countries should formally recognise the Extended Working Groups as the nodal in-country agency/body to be called upon for discussions regarding future H2020 (and beyond) international cooperation activities;
3. The EWG should draw up and formalise their terms of references / objectives in synchronisation with one another and get these ratified by their respective Programme Management / Governments.

² The definitions, rationale, steps required and suggested road mapping (timing) information for each of these recommendations are detailed in the BIC report entitled D3.2. Final recommendations report on future global research challenges in ICT trust and security, which is available at http://www.bic-trust.eu/files/2013/01/D32-Final-Recommendations_report_V2.0.pdf.



The original structure of the BIC international cooperation platform, as shown in Figure 2, was based on a traditional mixture of top-down and bottom-up approaches, using an International Advisory Group (IAG) being supported by three ‘Core’ Working Groups (CWGs). Two of the core working groups, ‘WG1: Human Oriented Trust and Security’ and ‘WG2: Network Information Security/Cyber Security’ were focussed on technical / societal areas while the third working group ‘WG3, Programme Management and Funding Focus’, focused on activities related to the processes and mechanisms involved in facilitating and supporting INCO for Trustworthy ICT.

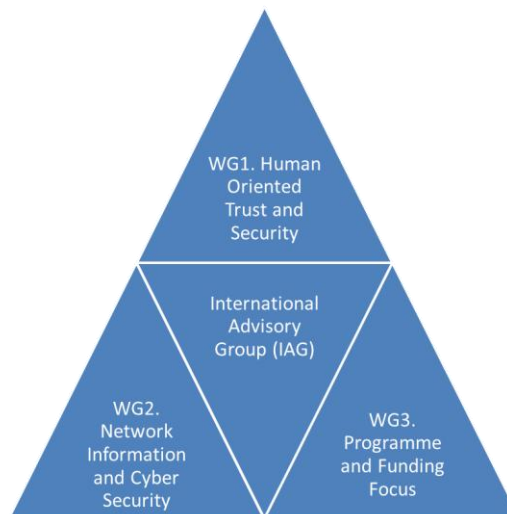


Figure 2. Original structure of BIC project and IAG/WGs

As the project progressed and evolved, moving into the phase where a longer term strategy was being brainstormed, it was suggested by members of the IAG (spearheaded by the India delegation and backed by the International Advisory Group) that BIC’s impact could be greatly enhanced if the foundations to sustain INCO were developed by BIC to last beyond the conclusion of the project. The suggestion was to develop a “Local Interests and Ownership” mechanism to develop a longer term sustainable model that would enable a larger grouping of key stakeholders (research, industry, government) to meet on a regular basis to promote their work in a stronger collective voice to their own funding agencies and feed into the wider BIC community objectives. Thus, the concept of setting up in-country EWGs (“Extended Working Groups”), as shown in Figure 2 below, was borne and consequently implemented in 2013.

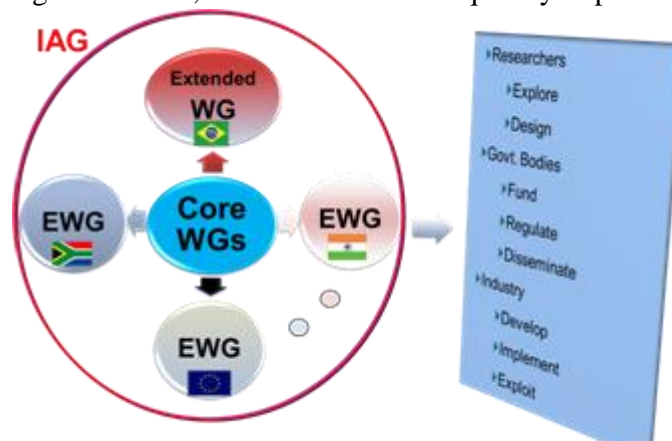


Figure 3. Revised structure of BIC project including IAG-CWGs-EWGs

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Although not part of the original schema of the BIC platform structure, the newly formed EWGs (“Extended Working Groups”) are envisaged to play a crucial role for the BIC objectives on developing a longer term INCO strategy on mobilising towards multi-lateral research and innovation on the priority research areas. The EWG role, in essence is to:

- Identify, analyse and compile all the projects / initiatives being initiated by the in-country research institutes and industry of the country, classify the research projects and proposals for their domestic or international scope, necessity and suitability of such projects for INCO;
- Establish a Knowledge Bank as a source of information about all the research bodies, researchers, research work, industry participants, Government support, relevant processes, rules, etc.;
- Recommend such research proposals and projects for suitable inclusion / funding by respective bodies (EU, Govt. of Brazil, India, ...);
- Establish a cooperation platform with regular meetings with appropriate in-country Government bodies for necessary support such as approvals of plans and programme, mechanisms for funds’ allocations especially in light of the revised H2020 funding policy, and necessary authorizations as and when required;
- Establish a set up for involvement of the researchers and industry at the earliest possible stage. Towards this, work closely with Research and Industry forums within their countries such as EU NIS Platform, JWG on Cyber Security in India, Centres of Excellence in Cyber Security research, Observer Research Foundation - ORF (India), FICCI (India), NASSCOM (India), The Brazilian Association of Information Technology and Communication Companies (Brasscom), and similar forums in other countries;
- Identify suitable industry participants and create a conducive environment to motivate the industry elements for active participation;
- Work closely with the EWGs of other member countries to facilitate multi-lateral cooperation of various projects of the country duly identified;
- Identify the need and facilitate formation and setting up of Specialist Function Groups (SFGs) on project to project basis where SFGs are envisaged as specialists at functional level;
- Establish an ecosystem that will help generate a strong momentum for working together as a composite body of researchers and industry elements, to strongly promote the research topics that should be funded in future calls such as the EU’s Horizon 2020 (H2020) and/or other national or international programmes;
- Work together to determine the success metrics and Critical Success Factors (CSFs) that are to be considered essential before embarking on any project.

In conclusion, there is a requirement to focus on the ways and means to achieve IAG-EWG sustainability, by involving the right stakeholders from the research communities, industry, government funding and implementation agencies in all countries. The EWG is an important concept and the EWG bodies should not be allowed to disintegrate and stop functioning after the conclusion of the BIC project as these working groups can provide very valuable inputs to the upcoming Horizon 2020 programme, and potentially other research programmes as well.

A number of tactical short term recommendations have been elaborated regarding the steps needed to happen to facilitate the continuation of this important IAG-EWG concept in Deliverable D3.2 Final report on Future global challenges in ICT Trust and Security, available at http://www.bic-trust.eu/files/2013/01/D32-Final-Recommendations_report_V2.0.pdf.