

Summary Report

Study on the Mutually Supportive Advancement of APEC'S Trade Facilitation and Secure Trade Goals post September 11



**Analysis and Case Studies prepared for APEC
by the Pacific Economic Cooperation Council,
August 2004**



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The Pacific Economic Cooperation Council (PECC) founded in 1980 serves as a forum to discuss cooperation and policy coordination in the Pacific Region. PECC's expert networks composed of analysts, officials and businessmen provide practical policy advice on trade, finance, and sectoral issues to the region's governments. PECC is the only non-government official observer of the APEC process. See: <http://www.pecc.org> for more details.

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Summary Report



SECURE TRADE IS EVERYONE'S BUSINESS

The breakdown in international supply chain networks in the aftermath of the events of September 11 2001 affected everyone, from manufacturers to consumers. These extraordinary circumstances compelled business leaders and governments alike to rethink their strategies and modes of actions in the face of the challenges emerging from the new security and trading environments. To a very large extent, governments and businesses have understood that the solution to making trade more secure and minimizing the direct and indirect costs of terrorism lies in the effective use of technology and in domestic and international cooperation and coordination.

Maritime trade is especially vulnerable to terrorism, due to the sheer number of cargos handled every day. However, at a time when the world demand for maritime freight is at its highest level, securing the maritime portion of the supply chain is today more necessary than ever before. Sustained international cooperation and coordination between governments and businesses is vital to ensure that the systems put in place remain dynamic, responsive and flexible enough to incorporate new technologies and new policy settings.

THE CHALLENGE FOR APEC

The Asia Pacific Economic Cooperation (APEC) forum's long-term objectives are in line with this new reality. APEC's central goal is to help its 21 member

economies meet the Bogor Goals of free and open trade and investment in the Asia-Pacific by 2010 for developed economies and 2020 for developing economies. In October 2001 in Shanghai, APEC Leaders agreed to work on concrete measures to cut transactions costs in international trade by 5 percent across the region by the end of 2006.

"Leaders instruct Ministers to identify....concrete actions and measures to implement the APEC Trade Facilitation Principles by 2006 in close partnership with the private sector. The objective is to realize a significant reduction in the transaction costs by endeavoring to reduce them by 5% across the APEC region over the next 5 years. Leaders also instruct Ministers to explore the possibility of setting objective criteria on trade facilitation, taking fully into account the diversity among the members as well as progress achieved in respective economies so far. Leaders also agree that assistance programmes to help build the capacity of developing economies in trade facilitation is particularly important." 

At the same time, APEC members were facing new challenges as they also sought to achieve higher levels of security in the trading system following the experience of the events of September 11. As the security-driven agenda developed in the following years, some economies expressed concern about whether the goals of the security agenda would conflict with those of the trade facilitation agenda.

Taking these concerns into consideration, APEC commissioned in early 2004 a multi-country study to examine developments in trade facilitation and in



efforts to secure trade in the Asia Pacific region. The study included six practical cases studies (see boxes below) from the region illustrating how business, port authorities and other agencies engaged in maritime trade and security are meeting the challenges.

Results from the study indicate that the responses and the costs of responses to the new requirements are different

operational efficiency of the supply chains. Indeed, performance levels in supply chains may improve because of the higher quality and coordination of the information flow along the chain. Investment in these technologies contributes to the long-term achievement of APEC's facilitation goals but the terrorist threat has brought forward these investments and made them lumpier than might otherwise have been the case.

Better security and lower transaction costs

An important element in the rapid modernization of US Customs is the establishment of an Automated Customs Environment (ACE). This facility, which began operating in February 2003 includes a new portal for US Customs, an account management service, and a system for processing electronically-filed data about cargo. It also includes the 'capability to access data in the international supply chain that Customs needs [in order] to anticipate, identify, track and intercept high-risk shipments'. This system illustrates the complementarity between initiatives undertaken for facilitation goals and the security objectives. A cost-benefit study was also undertaken of ACE and in a report published in 2002 it was found that the system would reduce 'transactions costs' for companies by US\$22.2b over the following 20 years (in present value terms) and would save US Customs US\$4.4b over the same period. 

among exporters, either in terms of the products they export or the size of their firms. Exporters of natural products may face more complex challenges than other manufacturers. Small firms face a relatively greater burden than large firms. Some firms however had already adopted the sorts of technologies required to meet the new requirements. The direct cost of meeting the new requirements may be significant, but there are often positive ripple effects on the

TECHNOLOGY HELPS MITIGATE COSTS OF SECURING SUPPLY CHAINS

Business often responds to risks for commercial reasons, driven by their own cost-and-benefit calculations, rather than the overall contribution to other businesses and economies. In face of the extraordinary circumstances in the wake of 9-11, governments could not react by relying solely on incentive measures. Instead they acted by mandating changes that required business to make immediate investments in technologies and systems that may not have been made at all.

It is important for governments to understand the supply chain and take supply chain effects into account in order to achieve the longer term goals on transactions costs. Some governments moved quickly to adopt new technologies, led by developments in the US.

The majority of post-9/11 security requirements were unilateral initiatives implemented by the US. The speed of



development has been impressive. Key technological developments include the introduction of Radio Frequency Identification (RFID) tags. Major international changes in regulation include the introduction of the International Maritime Organization's International Ship and Port Facility Security (ISPS) Code, the US government's Customs-Trade Partnership against Terrorism (C-TPAT), the Container Security Initiative (CSI), the Bioterrorism Act and the 24-hour Manifest Rule.

RFID (Radio Frequency Identification)

Although RFID tags take many forms and shapes, they all contain a computer chip that can hold approximately 128 bytes of information, (compared with 1.1 bytes in a bar code). When the tagged item, such as a container, a case or even a single product, passes by a reading station, the presence of the item is recorded. The chip is now estimated to cost **15-20 US cents a piece**, but some indicate that the price could fall to **5 US cents a tag by 2005**. US retail giant Walmart has required its top 100 suppliers to add RFID tags to all cases or containers shipped to the company by January 2005. Other suppliers are expected to comply by 2006.

Example of an 2"x 2" RFID tag:



Alien "2 x 2" tag by Alien Technology

THAILAND

Supply chain security: a cost-benefit analysis

The Thai case examines the experience of a shrimp exporter. For that firm, the effect of the new security policies has been to make mandatory, actions that were previously assessed and adopted by the firm on commercial terms. The burden of meeting the new regulations could be relatively large for smaller firms, according to the case study, and some form of cooperation between small firms and shipping companies might be desirable in order for those firms to meet the requirements.

Thailand and the US have developed a project, as an initiative developed through APEC, to increase security in the transport system between the ports of Laem Chabang and Seattle. This pilot project tested the feasibility of an end-to-end supply chain security solution by using electronic seals owned by Savi Technology of the United States. The project is implemented at the Laem Chabang Port. The solution employs the RFID tags that can track movement of containers through the entire supply chain from where they are stuffed and sealed at the exporter's facility to distributors' premises in the United States. The project involved infrastructure costs in the range of \$US0.44m, a one time implementation cost of \$US3.43m, operating costs approximating \$US0.1m per year, plus a cost per container of \$US86. A cost-benefit analysis was then undertaken.

The results showed that there was an 80 percent probability that the net benefits would exceed US\$220 per container, thanks to a fall in the probability of inspection on arrival, lower costs associated with US Custom's trade security measures, reductions in 'safety stock' and inventory carrying costs, and reductions in theft and pilferage. 🗝️



AUSTRALIA

Sydney Ports and ISPS compliance

The challenges of meeting the July 1 2004 compliance deadline is highlighted in this case study. At the time of the study (early 2004), surveys indicated that industry firms and port facilities in Australia had not achieved sufficient progress toward meeting the July 2004 deadline for the implementation of the ISPS Code.

Sydney Ports was required to offer a security plan covering, among other things, protection against the unauthorised possession in, or transport on board vessels into or out of, Sydney Ports; prevention of unauthorised access into port premises, ships docked at Port facilities and designated security areas within Port facilities; response protocol and evacuation procedures for threats and breaches of security at Port facilities; and response protocol to any directions handed down from the Government.

*The costs of implementing the new security measures clearly must be lower than the costs of non-compliance, otherwise the measures would not be adopted. However, the costs of implementation are likely to be significant. One estimate of costs to Australian port and shipping operators places the costs at **A\$300m**. The Australian Government has committed funds to assist in the implementation of the measures, including **A\$15m** for improved X-ray facilities at Sydney, Melbourne, Brisbane, and Fremantle. Whilst the nature of the security measures is clandestine, making particular examples of security projects difficult to find, some other new security measures at port facilities include: water-side security measures, land-side exclusion zones and fencing, surveillance, and security patrols. *

International Ship and Port Facility Security (ISPS) Code

A key initiative of the International Maritime Organization (IMO), the ISPS Code is a comprehensive set of guidelines providing standardized and consistent framework of evaluating risks and eliminating vulnerability of ships and port facilities through ship and port security measures. The ISPS Code is implemented through chapter XI-2 Special measures to enhance maritime security in the International Convention for the Safety of Life at Sea (SOLAS). The Code contains mandatory security-related requirements for Governments, port authorities and shipping companies, together with a series of guidelines about how to meet these requirements in a non-mandatory section. The IMO reported that, on June 30 2004, the eve of the entry-into-force date, that a majority of ships and ports worldwide had achieved full compliance with the ISPS Code.



Customs-Trade Partnership against Terrorism (C-TPAT)

The C-TPAT is a voluntary scheme open to participants who agree to comply with a specified supply chain security profile. C-TPAT certification allows companies to ensure a more secure supply chain for their employees, suppliers and customers and enjoy a number of benefits such as reduced number of inspections (reduced border times) and an emphasis on self-policing (rather than Customs verifications).

CANADA

Trade in Manufactured Goods at the US-Canada border

The Canadian case study refers to a Vancouver-based exporter of wheels and rims. The study finds the new requirements have had little impact on the design of the production and delivery systems of the firm. Prior to the 9-11 attacks, the company had already moved to an online system of providing the necessary documentation for its exported products. The extra costs related to new security fees imposed on land carriers, ocean containers and airlines did not affect the company in a major way.

*The company did however notice increased time delays at some border crossings after September 11. To deal with that problem, at the time the case was prepared, it was applying for **C-TPAT** status. Complying to the C-TPAT program implies new investment in technologies and procedures but the systems that it would install to achieve that status would have other benefits in terms of security to all its own operations. Overall, these C-TPAT-related investments do not represent a major expense; the company estimates a one-time investment ranging between C\$3,000 and C\$4,000 over the next year, mainly devoted to purchasing and installing security cameras on its factory's property and to conducting background checks (in collaboration with the Royal Canadian Mounted Police) on all personnel coming in contact with the freights. US customs will subsequently approve and certify the employees. An important modification to the company's supply chain in response to C-TPAT requirements is its choice of carriers: after obtaining C-TPAT accreditation, the company will need to use C-TPAT-credited carriers in order to fully benefit from the program. 🔒*



Container Security Initiative (CSI)

The CSI places US Customs Service staff at foreign ports to pre-screen containers. This initiative is to be extended from its initial coverage of 18 of the world's busiest ports to 100% coverage of containers entering the US.

SINGAPORE Report on the Implementation of Cargo Security Measures

Together with Hong Kong, the Port of Singapore is the world's top two container ports. Transshipment cargo remains a very large proportion of the containers handled through the port. The Singapore case study provides details of the types of changes made in port administration and stresses that an effective security system requires the attention of the transport and logistics industry at large. To fulfil the new maritime security requirements, the Port of Singapore has accelerated implementation of the Automatic Identification Systems (AIS) for the tracking of ships, and restricted access to key areas such as the waters around the offshore oil terminals. The Maritime Port Authority (MPA) worked closely with security agencies to ensure the security of our port installations and ships. Gamma-ray scanners to screen containers will be installed. In addition, MPA has implemented an enhanced export control system to bring in line with requirements of the **Container Security Initiative (CSI)**.

Singapore's container throughput, 1999-2004

Year	Total Ship Arrivals (No.)	Container Ships (No.)	Container Throughput ('000 TEUs)
1999	141,523	16,706	15,944.80
2000	145,383	16,971	17,086.90
2001	146,265	17,049	15,571.10
2002	142,745	16,418	16,940.90
2003	135,386	16,155	18,410.50
2004	133,185	17,333	21,329.10

Source. Maritime and Port Authority, Singapore

Training shippers, port operators, and public officials in the new systems and procedures also became a necessity to build capacity. In addition to conducting a number of workshops, seminars and international conferences, MPA has authorised eight classification societies as Recognised Security Organisations (RSOs) on a provisional basis. RSOs act on behalf of MPA to verify the compliance of Singapore-flagged ships with the ISPS Code. Upon verification, the ships are issued with Certificates of Compliance, which would be eventually be upgraded to the International Ship Security Certificates. In order to facilitate the implementation of new security requirements, MPA also appointed another seven organizations to serve as RSOs for port facilities. Owners and operators of port facilities can engage these organisations to conduct or endorse Port Facility Security Assessments (PFSAs), which are required under the ISPS Code to serve as the basis for the formulation of Port Facility Security Plans (PFSPs).

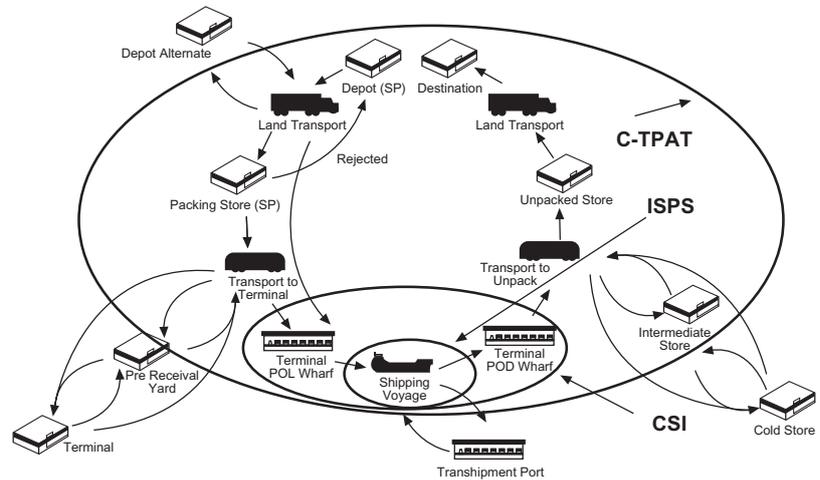
The coordination efforts in Singapore's maritime industry also showed in the distribution of costs. For example the surcharge on shippers resulting from the Advanced Manifest Compliance were divided among relevant bodies: shippers and logistics service providers are bearing the costs associated with the implementation of the enhanced security measures while Singapore Customs pays for the cost of inspection and the purchase of gamma-ray screening machines, while the terminal operator, PSA Corporation has also done its part to facilitate the transmission of information between the terminal and customs by integrating scanning processes into its operations processes.



24-Hour Advance Cargo Manifest Rule

This initiative, introduced by the US Customs Service in 2002, requires cargo manifests to be provided electronically 24 hours before loading a container bound for a US port.

Figure 1- Scope of risk management measures



Source: Rahman and Findlay (2003)

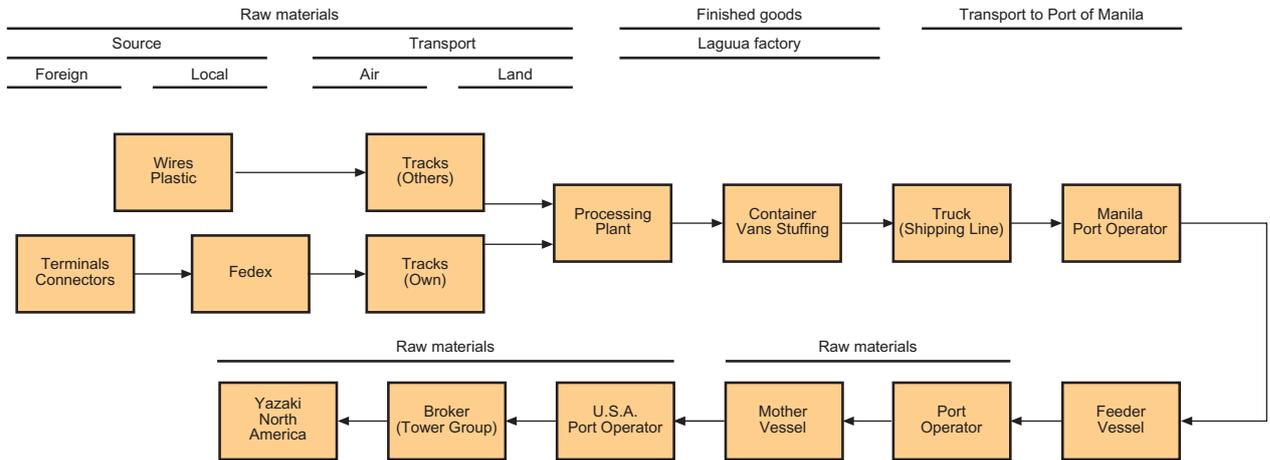
PHILIPPINES

The Case of Two Manufacturing Firms

The Philippines report compares the experience of the automotive components manufacturer (YTM) to that of an exporter of canned tuna (Philbest). YTM and Philbest differ in the nature of their production processes. YTM's manufacturing process is more stable since the availability and delivery of its raw materials and thus its inventory levels can be scheduled with relative certainty. In the case of Philbest, the production process in tuna canning operation depends on a number of factors: availability and volume of fish catch, international prices and demand, and the decision of fish catchers to supply fresh fish to canning operation. Moreover, there is also trade in tuna parts (belly, tail, head) and other processed products, which have their own supply-demand-price variability. The variability in supply and demand conditions in tuna operations makes compliance to the advance submission of bill of lading and other documents more difficult for Philbest than it is for YTM. 🔒



Yazaki-Torres Manufacturing, Inc. Supply Chain



The Bioterrorism Act

As part of its efforts to protect the nation's food supply against terrorism and other

*Since the new US regulation requiring **24-hour advance submission** of manifests is reckoned on the last port of call prior to the US ports, exports documents from the Philippines may still be amended by the shipping lines before the containers are loaded in Kaoshiung. The setup allows exporters to do last-minute changes even after the feeder vessel has left Manila, albeit such change is subject to US\$40-fine per bill of lading imposed by the shipping line. Security arrangements can thus be complied with at the last transshipment port.*

The effects of 9/11 on the supply chain therefore vary depending on the nature of a company's operations. YTM's supply chain management has remained substantially the same while Philbest has to adapt to more security regulations affecting food processing. Food exporters, because their raw material comes from natural sources, face greater uncertainty on the supply side of their business and therefore potentially more difficulty in meeting all the reporting deadlines. 🔒

food-related emergencies, the US Food and Drug Administration (FDA) passed the Bioterrorism Act of 2002 requiring that FDA receive advance information on import shipments. All foods and beverages whether or not intended for human consumption are subject to the new requirements. The Bioterrorism Act imposes an enormous cost from the technological viewpoint, requiring all foreign facilities that manufacture, process, pack or hold food intended for human or animal consumption in the US to establish and maintain records of their operation for up to two year in a data warehouse that allows a quick access and posterior reporting of questions formulated by the FDA. These conditions force the producers/ shippers to incorporate expensive hardware and software to handle these requirements as well as maintaining a high security standard.



THE COST OF RESPONSES

Business not only bears monetary costs but also faces the costs of delays associated with the inspections or time taken to complete paperwork. Some estimates put the cost of a delay in moving goods across borders equivalent to an extra ad valorem tariff of 0.5 percent for every day of delay.

Business also reacts to the changing perceptions of risk. A key concern is the disruption in supply of products. Business may decide to bear that risk itself, in which case extra costs would be incurred. It may also duplicate its sources of supply, or add to inventories, which can also be expensive. In 2001, large US companies on average held 1.36 months of inventory, compared to 1.57 months in the early 1990s. The OECD (2003) gives the results of a study which reported that inventory levels would rise in 2002 to 1.43 months if companies were to move back to a 'just in case' approach to inventory holding rather than a 'just in time' approach. It was estimated that this would **add \$US50b to \$US80b to business costs.**

Ultimately, the extent of these costs –although uncertain— is likely to be much less than the extent of costs of inaction. Some of these measures have the potential to change long-established practices in the industry – for the better. This then, is the silver lining. In a 2003 report, the OECD indicated that most participants in the international maritime trading system agree that the recently enacted maritime security measures are

desirable. They are not free, but they do bring along benefits that go beyond their mitigating impacts on terrorism. Indeed, responses to terrorist threats have offered new opportunities for the maritime transport industry to improve its organization, processes and operations.

CHILE

The Effect of the Bioterrorism Act on Exporters' Logistics Costs

The challenge of facing uncertain supply systems is also evident in the case study of the Chilean salmon exporter. The logistics of Chilean fresh salmon exports are highly vulnerable to some of the Bioterrorism Act sections and requirements. In fact, the spatial distribution of production and processing plants, combined with the long distance between the shipments origin and the consumption market make the logistic chain considerably rigid. In addition, any delay in the export process for more than four hours may deteriorate the quality of the shipments.

The rule of Prior Notice represents a threat to the continuity of the exportation process, because it implies the possibility of long detentions as a result of administrative problems. Similarly, Section 303 establishes the Administrative Detention, where "perishable food" is defined as food that is not heat-treated, not frozen, and not otherwise preserved in a manner so as to prevent the quality of the food from being adversely affected if held longer than 7 days under normal shipping and storage conditions. 7 days is longer than the time that fresh salmon can be stored preserving the quality of the food.

The high costs of technology adoption for data warehousing and its security would have to be paid by the Chilean salmon industry, because the Bioterrorism Act fails to establish and maintain the required records or failure to make them available to FDA a prohibited act

Therefore, the US government can bring a criminal action in the Federal court to prosecute the exporter who failed to comply with this condition. 



COORDINATION AND COOPERATION: A ROLE FOR APEC

To a very large extent, success in advancing APEC's goals for facilitation and secure trade in a mutually supportive way depends on deepening the level of cooperation and coordination on a wide range of fronts at the international

APEC's STAR Initiative

The Secure Trade in the APEC Region (STAR) Initiative is APEC's flagship operation in this field. The STAR Initiative seeks to secure and enhance the flow of goods and people through measures to protect cargo, ships, international aviation and people in transit. The progress to date has been encouraging: APEC members have been cooperating to strengthen border security through enhanced supply chain security guidelines. Voluntary Private Sector Supply Chain Security Guidelines were approved by APEC in August 2004. These non-binding guidelines are business-friendly and used by the private sector to enhance their supply chain security practices. APEC has also consulted widely through a series of conferences on these topics. The STAR project and APEC's overall effort is supported by many APEC working groups which are working on particular areas of facilitation and secure trade. 🔒

level. This is required not only at the technical level for capacity building and to gain the networking effect of new technologies, but also at the policy and institutional level to build a credible process of regulation and system of governance. The participation of business is also crucial to ensure that there are market incentives for innovation and investment and that supply chains become more efficient.

APEC is well suited to facilitate this type of cooperation. Many of the officials which find themselves at the centre of these challenges have been working together for many years in APEC working groups. They have developed a culture of cooperation and understand the ways in which developed and developing economies can cooperate effectively. With such a track record, APEC can also ensure that circumstances and interests specific to the Asia Pacific region are understood in international forums.

APEC is already involved in a substantial program of cooperative work in trade facilitation and security. The APEC projects demonstrate the value of capacity building and international cooperation to help overcome constraints in investment, human resources and access to technology. The work program also shows the value of a community approach in resolving these issues at a minimum cost.

Next steps...

The dual challenge of promoting secure trade and trade facilitation is huge. However, careful planning can help overcome obstacles. Government-mandated regulation should be directed at achieving higher levels of security throughout the supply chain rather than focusing on specific detail of processes. Systems used to check conformance should also be managed without discrimination. This is by far the preferred approach as it allows different economies to adopt solutions and processes which make economic sense from their points of view given relative labour costs, skill levels, etc.



Investment in innovation and local solutions can help countries through the adjustment process. It is therefore important that there are incentives for investing in new technology. Suppliers of relevant complementary services should be able to emerge and security standards should not become impediments to trade and investment. Many governments of APEC have already established good information flows and strong consultative processes and technical capacity building programs are being put in place. However, the sheer pace of technological change will continue to pose a challenge for human resources in both government agencies and in business.

The threat of terrorism has heightened the challenge of secure trade by bringing the cost of adjustment into a shorter time frame. Over time, the search for and implementation of new technologies to make trade more secure is likely to have positive impacts on both government procedures and the wider supply chain. Evidence shows that real benefits come through stepping up cooperation domestically, across borders and with business. Since these three areas are strongly related, APEC, with its experience and expertise, has the capacity to provide a continuing forum for this cooperation.

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