The GTPNET Phase II - Moving Contacts to Contracts

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This report describes the UNTPDC Internet based technologies and the performances on individual services (Mirror Sites, Incubator, ETO system, Newsgroups, email switch) which contributed to make the UNTPDC one of the most visited Trading Site on the Internet. The UNTPDC Sites runs what we believe to be one of the highest volume web services on the Internet. All UNTPDC servers combined currently take a total of between four and five million hits per day (2 to 3 millions for ETO Newsgroups and 1,5 to 2 million for the Web Sites), and this number continues to grow.

The UNTPDC Internet operations started in June 1993 with the introduction of email on the GTPNet, connecting Trade Points and Trade Promotion Organizations around the world. In July 1993 the UNTPDC also introduced the Electronic Trading Opportunity ETO system which uses email based technology to broadcast trade and investment leads among Trade Points and ETO subscribers in more than 173 countries. In March 1994 the UNTPDC developed the first Gopher based application for trade which was at that time a quite popular site connecting many Gophers related to Trade and Investment.

This initial email and Gopher based network constituted at that time the basic backbone of the GTPNet and ensure the access from low bandwidth countries. In January 1995 the network was reinforced with the development of two main Web Sites (Geneva and Thailand). Again the UNTPDC was the first project to develop a Web Site at the UNICC and since this time the UNTPDC Web Site at the UNICC is the most visited Site among UN agencies in Geneva collecting as much as 60% of the total traffic generated by the UNICC (statistics are provided in annex 2).

The UNTPDC moved their office to Melbourne in June 1995 to establish a larger data center in cooperation with the Royal Melbourne Institute of Technology (RMIT) which is the lead institution for Internet based applications in Australia. With this cooperation the UNTPDC also joined forces with existing acedmic networks which are presently providing the UNTPDC with the required bandwith and data center performances to support the ever increasing traffic of the Trading Network.

As title of comparison, in January 1995 the UNTPDC Web servers registered 25,000 accesses (hits) per month, in January 1997 the total number of accesses is 38.7 million per month making the UNTPDC the most visited trading site on the Internet. To this Web Site access we should add the ETO NewsGroups which receives 2 million access per day and broadcast over 2.5 million emails every day. The ETO total email broadcast reached 0ne billion emails in October 1996.

The ETO system now reach over 7 million companies around the world, with a distribution of 40% via email, 30% via newsgroups and the Web TradingPlace (direct download), 20% via bulletin board services (ASCII based services) and the rest 10% via fax on demand, newspapers, ETO brochures, phone broadcast, etc. This large amount of companies receive ETOS everyday, some few seconds after broadcasting via email, others few days via newspapers but all of

them have at least one way to receive and participate on the ETO exchange.

This tremendous increase in traffic and performance is mainly due to tree raisons (1) the establishment of UNTPDC servers to 30 Mirror Sites operating in high bandwidth environment such as universities, (2) the very popular Electronic Trading Opportunity system, broadcasted via email and newsgroups which is available in nearly all developing countries, and (3) the establishment of the UNTPDC Internet Incubator which is use by Trade Points, International Organizations (ITC, ESCAP, UNIDO) and ETO Associates to establish their Web Sites.

1. The UNTPDC Mirror Sites

The traffic and content size of our web site grew very quickly, and the UNTPDC collected a number of tools to help manage the machines and content. We used a number of existing programs, some of which we enhanced, and developed a few internally as well. One of the solutions the UNTPDC found to alliavate the ever increasing tarffic was to establish Mirror Sites. From the two original sites the UNTPDC established a combination of the 30 UNTPDC Web Sites strategically distributed around the world. Presently the overall activity of these Mirror Sites recorded in January 1997 the total of 38.7 million accesses.

The UNTPDC Mirror Sites provides now the possibility to access the ETO system locally (with the exception of the ETO Newsgroups). The ETO Web system represents over 65% of the overall traffic of the UNTPDC Web Sites. The detail of the traffic registered by all UNTPDC Mirror Sites combined is:

Total completed requests: 38 711 269
1. Total redirected requests: 2 417 028
2. Average requests per day: 1 290 375
3. Number of distinct files requested: 1 668 428
4. Number of distinct hosts served: 1 975 971
5. Number of new hosts served in last 7 days: 461 860
6. Total bytes transferred: 368 264 875 911
7. Average bytes transferred per day: 1 275 495 543

The UNTPDC Mirror Sites are presently operational in different 30 servers in 23 countries and over 80 new mirror sites in 65 countries are presently under development and to be ready by the end of 1997. The present geographical distribution of UNTPDC Mirror Sites is quite homogeneous with 10 Mirror Sites already operational in developing countries and 3 Mirror Sites in Africa (Egypt, Zimbabwe and South Africa) and 20 in developed countries.

The UNTPDC Mirror Sites are operated the UNTPDC Mirror Site software which allows all UNTPDC Mirror Sites to have the same data by transferring updates automatically from the main Server in Melbourne and Geneva to the Mirror Sites location. The MS Software avoids copying files unnecessarily by comparing the file time-stamps and sizes before transferring, only new updates at the UNTPDC Hots. The software among other things, can optionally compress the files (html, pictures, videos) using gzip, and split files. The UNTPDC Mirror Sites are free and the hosting non-profit organization is required to provide the required storage. Maintenance of Mirror Sites is organized by UNTPDC automatically and do not require any local staff.

The UNTPDC Mirror Sites are of great interest for both developing and developed countries. It is an excellent collaborative model on which all parties are beneficiaries and the best possible model for the expansion of the Trading Network to remote areas of the world with low bandwidth. The UNTPDC Mirror Sites are beneficial for:

1. developing countries, as they can have their Web Sites located in main import markets around the world such as (Japan, Switzerland, USA, Italy, Canada, Belgium, Finland, Spain. etc.). With the presence at the UNTPDC Web Sites developing countries can guarantee their Web Pages to penetrate into these markets on which establishing a Web Site using a local Internet provider will have prohibitive price for developing countries.

2. develop countries, as it allow them to access new markets and have their databases locally available in countries

with low bandwidth which will make very difficult for them otherwise to access these data by accessing a remote server. Also it allow develop countries to subcontract services from developing countries Web specialist supporting the Mirror Sites.

The operational UNTPDC Mirror Sites are located:
1.http://www.unicc.org/untpdc/ SWITZERLAND
2.http://urgento.gse.rmit.edu.au/untpdc/ AUSTRALIA 1 (MEL)
3.http://harmonic.gse.rmit.edu.au/untpdc/ AUSTRALIA 2 (MEL)
4.http://w3.gsm.mq.edu.au/untpdc/ AUSTRALIA 3 (SYD)
5.http://heroic.gse.rmit.edu.au/untpdc/ AUSTRALIA 4 (MEL)
6.http://historic.gse.rmit.edu.au/untpdc AUSTRALIA 5 (MEL)
7.http://hectic.gse.rmit.edu.au/untpdc/ AUSTRALIA 6 (MEL)
8.http://untpdc.tradepoint.be/untpdc/ BELGIUM
9.http://pucaix.rdc.puc-rio.br/untpdc/ BRAZIL
10.http://www.globalcon.org/untpdc/ CANADA
11.http://sunsite.ms.mff.cuni.cz/untpdc/ CZECH REPUBLIC

12.http://www.cinde.or.cr/untpdc/ COSTA RICA
13.http://sunsite.scu.eun.eg/untpdc/ EGYPT
14.http://tradepoint.cs.tut.fi/untpdc/ FINLAND
15.http://sunsite.ust.hk/untpdc/ HONGKONG
16.http://www.dprin.go.id/untpdc/ INDONESIA (JAKARTA)
17.http://untpdc.petra.ac.id/untpdc/ INDONESIA (SURABAYA)
18.http://www.tptelisr.org.il/untpdc/ ISRAEL
19.http://www.cineca.it/untpdc/ ITALY
20.http://sunsite.sut.ac.jp/untpdc/ JAPAN
21.http://sunsite.icm.edu.pl/untpdc/ POLAND
22.http://www.infos.pt/untpdc/ PORTUGAL
23.http://www.sai.msu.su/untpdc/ RUSSIA
24.http://www.tpsingapore.org/untpdc/ SINGAPORE
25.http://www.tradepoint.si/untpdc/ SLOVENIA
26.http://sunsite.wits.ac.za/untpdc/ SOUTH AFRICA
27.http://www2.ulpgc.es/untpdc/ SPAIN
28.http://www.zimtrade.co.zw/untpdc/ ZIMBABWE
29.http://www.tradepointla.org/untpdc/ USA (LA)
30.http://sealus.umn.edu/untpdc/ USA (ST PAUL/MINNEAPOLIS)

A total of 80 new Mirror Sites in 65 countries are presently under development which will be added to the existing 30 sites in 23 countries by the en of 1997. In some countries we are installing Mirror Sites in several cities in order to decentralize access and alleviate the traffic and increase access speed. The new mirror sites under development will be located in the following countries:
24. http://www.untpdc.msite.uk (United Kingdom)
25. http://www.untpdc.msite.se (Sweden)
26. http://www.untpdc.msite.fr (France)
27. http://www.untpdc.msite.kr (South Korea)
28. http://www.untpdc.msite.cn (China - Beijing, Shanghai)
29. http://www.untpdc.msite.sg (Singapore)
30. http://www.untpdc.msite.gr (Greece)
31. http://www.untpdc.msite.no (Norway)
32. http://www.untpdc.msite.us (USA- Tampa, New York, San Francisco, Detroit, Miami)
33. http://www.untpdc.msite.ar (Argentina- Cordoba, Buenos Aires)
34. http://www.untpdc.msite.mx (Mexico)
35. http://www.untpdc.msite.th (Thailand)
36. http://www.untpdc.msite.in (India - Madras, New Delhi, Cochin, Calcutta)

37. http://www.untpdc.msite.hk (Hong Kong)
38. http://www.untpdc.msite.at (Austria)
39. http://www.untpdc.msite.ie (Ireland)
40. http://www.untpdc.msite.lv (Latvia)
41. http://www.untpdc.msite.eg (Egypt)
42. http://www.untpdc.msite.nz (New Zealand)
43. http://www.untpdc.msite.my (Malaysia)
44. http://www.untpdc.msite.uy (Uruguay)
45. http://www.untpdc.msite.bo (Bolivia)
46. http://www.untpdc.msite.pl (Poland)
47. http://www.untpdc.msite.hr (Croatia)
48. http://www.untpdc.msite.cl (Chile)
49. http://www.untpdc.msite.ua (Ukraine)
50. http://www.untpdc.msite.hu (Hungary)
51. http://www.untpdc.msite.ae (United Arab Emirates)
52. http://www.untpdc.msite.ee (Estonia)
53. http://www.untpdc.msite.co (Colombia)
54. http://www.untpdc.msite.zm (Zambia)
55. http://www.untpdc.msite.do (Dominican Republic)
56. http://www.untpdc.msite.cr (Costa Rica)
57. http://www.untpdc.msite.lu (Luxembourg)
58. http://www.untpdc.msite.kw (Kuwait)
59. http://www.untpdc.msite.is (Iceland)
60. http://www.untpdc.msite.ro (Romania)
61. http://www.untpdc.msite.ke (Kenya)
62. http://www.untpdc.msite.sk (Slovak Republic)
63. http://www.untpdc.msite.mt (Malta)
64. http://www.untpdc.msite.ni (Nicaragua)
65. http://www.untpdc.msite.pe (Peru)
66. http://www.untpdc.msite.pa (Panama)
67. http://www.untpdc.msite.sv (El Salvador)
68. http://www.untpdc.msite.lt (Lithuania)
69. http://www.untpdc.msite.ph (Philippines)
70. http://www.untpdc.msite.fj (Fiji)
71. http://www.untpdc.msite.lb (Lebanon)
72. http://www.untpdc.msite.bh (Bahrain)
73. http://www.untpdc.msite.mu (Mauritius)
74. http://www.untpdc.msite.ve (Venezuela)
75. http://www.untpdc.msite.ec (Ecuador)
76. http://www.untpdc.msite.dm (Dominica)
77. http://www.untpdc.msite.pk (Pakistan)
78. http://www.untpdc.msite.na (Namibia)
79. http://www.untpdc.msite.sz (Swaziland)
80. http://www.untpdc.msite.np (Nepal)
81. http://www.untpdc.msite.jo (Jordan)
82. http://www.untpdc.msite.mv (Maldives)
83. http://www.untpdc.msite.gt (Guatemala)
84. http://www.untpdc.msite.hn (Honduras)
85. http://www.untpdc.msite.fm (Micronesia)
86. http://www.untpdc.msite.lc (Saint Lucia)
87. http://www.untpdc.msite.ma (Morocco)
88. http://www.untpdc.msite.jm (Jamaica)

The UNTPDC MS Software was written for use by UNTPDC Labs archive and database maintainers but can be used

by anyone on the Internet wanting to transfer a large amount of files via ftp. This will be particular usefull for Trade Points using the UNTPDC Incubator services and requiring to transfer large amount of HTML files to their UNTPDC Incubator directories.

The UNTPDC MS Software performs the following steps:
- connects to the remote site (Trade Point, UNTPDC),
- internally builds a directory listing of the local target directory,
- builds one for the remote directory,
- compares them,
- creates any subdirectories required,
- transfers the appropriate files (setting their time-stamps to match those on the remote site),
- creates any symbolic links,
- removes any unnecessary objects and finally drops the connection.

For further information on how to use the UNTPDC Mirror Site please access the UNTPDC Mirror Site Web Site at: http://www.unicc.org/untpdc/welcome.html

2. The Electronic Trading Opportunity ETO System

The Electronic Trading Opportunity (ETO) System, was started by the UNCTAD-TPDC in June 1993. As the name suggests, ETOs are offers and demands for products, services, and investment. They are collected from Trade Points and ETO Associates and then distributed electronically via an e-mail central switch and via Internet News groups to subscribers worldwide.

ETO-EDIFACT

Two Expert Groups on Trade Efficiency have already discussed different aspects of the ETO system. The first major task of the Expert Group on Information and Standards was to develop a UN/EDIFACT-compatible format for sending and receiving ETOs. This format has been completed and is currently operational in 30% of Trade Points around the world and over 3,000 ETO associates from the total of 15,000 are using the ETO-EDI structure. This ETO-EDIFACT is the first truly business to business EDIFACT based application on the Internet as it combines both the trading mechanism on the ETO with the EDI conversion.

The ETO-EDIFACT system works on a very business like approach which is greatly appreciate by companies using it. The big advantage of this new format is that it allows automated database exchange among Trade Points and reconstruction of non compatible databases to the ETO format. The Expert Group on Financial Sustainability and Cooperation among Trade Points discussed more policy-oriented aspects of ETOs, e.g. who can send and receive ETOs, the role of third party information providers, pricing of ETOs, etc. The draft report of this Expert Group is available at the UNTPDC Web Site at the Trade Efficiency Library. Clearly, every effort is being made to make ETOs fully compatible with international standards and to make them more useful for Trade Points.

There are two types of ETOs sent by e-mail: tagged and free text. The tagged ETOs are sent to the UNCTAD TPDC by Trade Points and some ETO Associates using data capture screen available in all UNTPDC Mirror Sites. They consist of specified data fields, each of which is identified by a tag (code) at the beginning. When the ETO system first started, three-character tags were used. Now, the UN/EDIFACT-compatible five-character tags are used as part of the ETO format agreed upon by the Expert Group. The tagged-ETOs are the highest quality ETOs.

The free text ETOs have not been processed by the UNCTAD TPDC and are unstructured. They are forwarded to the central ETO-e-mail switch from the Internet--both from individual companies and ETO Associates. Currently, approximately nine hundred of these are received or collected each working day by the UNCTAD-TPDC. Some are sent out via e-mail; others are put into the News groups, described below.

ETO NEWSGROUPS

Since January 1996, the UNCTAD-TPDC has also begun distributing ETOs via News groups on the GTPNet server. Each News group contains a specific category of ETOs, which can be viewed by country subcategory on the WWW server.. Electronic mail users can also subscribe to specific News groups and receive the contents directly in their electronic mailboxes. Presently the email traffic of the UNTPDC to the GTPNet is one of the largest single email traffic on a Trade network on the Internet. Over 2.5 million emails are broadcasted every day from the ETO mailing switch to ETO email users around the world. All this email traffic is provided at no cost to companies around the world which they receive a highly valued information for the cost of an email.

The ETO News groups have become immediately popular with the Internet community. The number of hits has increased from 870,000 in the month of January 1996 to approximately 2 million hits per day in January 1997. (A "hit" is registered every time a user clicks on a hypertext link to download an ETO from the newsgroups.) Companies are in some cases connected to the ETO Newsgroups 24 hours a day monitoring the arrival of new ETOs and answering them immediately following a very similar working method of stock-market brokerage operations. The ETO newsgroups and ETO TradePlace is projected to grow to over 10 million hits per day at the end of 1997. Many Internet providers are extracting ETOs from the newsgroups and published them in their home sites and email switched.

When one adds up the three categories of ETO-dissemination, it is clear that a tremendous amount of information passes over the system. At the time of the last Trade Point Programme assessment in January 1995, a total of 5 Gigabytes of information had passed over the ETO system since June 1993. Currently, the data flow volume is 7.2 Terabites per month due the large activity performed by UNTPDC Mirror Sites!

Over 25,000 trade organizations receive ETOs daily via e-mail or News groups, from this number we have 359 ministries, 726 chambers of commerce, 250 Trade Promotion Organizations, 570 NGOs, 114 Board of Investments, 1,345 Trading Organizations and the rest are Trade Point, ETO Associates and SME's subscribing to ETO . The total reach of ETOs is much more than that, since many of these organizations re-broadcast the ETOs. For example, Trade Point Korea distributes the ETOs daily to its 67,000 customers. A reasonable estimate is that over 7 million companies received ETOs in December 1996. This estimate is based on information received from Trade Points, ETO Associates and WWW queries. ETOs are received via e-mail, BBS, specialized databases, Home Pages, News groups, publications, newspapers and CD\ROMs depending on the distributor and country.

A particularly important feature of the ETO system is free of charge for the dissemination and some Trade Points charge a small fee to allow companies without email to send the ETOs via the Trade Point. Also that ETOs are distributed point-to-point and company-to-company without traditional delay of processing and re-disseminating informational typical on other Trade Information systems. This is in contrast to older systems which posted information on a bulletin board system or relied on country-to country exchanges at a more official level. Companies receive ETOs in their e-mail boxes or from their local Trade Point or they download the ETOs from the ETO News groups straight into their computers. The ETO system is directly in touch with the people who make trade happen.

SECURE ETO

A Secure ETO system is now operational between countries with a secure intranet connection to the UNTPDC servers. Presently a secure link is operational between China, Australia and US. Via this secure link Secure ETOs are disseminated behind the firewall which avoid Internet users to access this restricted information which will be very soon provide secure services for electronic transfer of funds and point to point electronic trading.

This Secure ETO introduces the secure requirements at the GTPNet for validation, authentication and secure payment processing using the Secure ETO System over both public networks (such as the Internet) and private networks or private Internets (such as the GTPNet).

The Secure ETO system

89.Enable confidentiality of payment information
90.Ensure integrity for all purchase order data transmitted via public networks
91.Provide verification that the Secure ETO user is using legitimate branded account with the Trade Point.
92.Provide verification that a Trade Point or merchant can accept transactions thought its relationship with an acquiring financial institution.
93.Facilitate and encourage interoperability across software and networks providers

Each of these requirement is addressed by one corresponding feature of the Secure ETO system specifications which provides:
94.Confidentiality of information
95.Payment information integrity
96.SmartCard holder account authentication
97.Merchant authentication
98.Interoperability with the ETO system on the Internet and GTPNet

THE ETO Secure Browser and SEAL Server

Another important step towards to globalization of the ETO system was the development by the UNTPDC of the ETO Secure Browser. The browser software was downloaded since September 1996 over 600,000 times from UNTPDC servers.

Presently the secure browser is on its second beta version which now includes a Secure Link function which connects ETO browser users directly to a Java applet which organize the EDIFACT conversion of the ETO message. Authorized ETO users can download the ETO Secure Browser Beta 2 from UNTPDC Web Sites around the world accessible from: http://www.unicc.org/untpdc/mirror/mirror.html. In cooperation with several IT companies , the UNTPDC build custom intranet applications for the Secure ETO system connected to database, such as Oracle, Informix, Sybase, or SQL Server which integrates the SEAL Server.

The ETO Database serve act as the central repository of information and the ETO data can easily be accessed anywhere in the world by generating a query from the Secure ETO browser which serves as a universal front end that can access legacy data, email, and external Web sites.

The ETO Secure Browser and ETO Authentication Server is an interoperable application client that works on Windows 3.x, Windows NT and Windows 95. This consistent interface means that Trade Points no longer have to purchase expensive specialzed software or hardware to run their ETO application and that they have the freedom to use the system that best fits the ETO System needs for other productivity applications.

For Trade Points wishing to provide Secure Intranet Services and Secure ETO they can use now the Secure Electronic Authentication Server which enables Trade Points to issue, sign, and manage ETO public-key certificates using Secure Sockets Layer (SSL) for secure, private communication over the Internet or a corporate intranet. The SEAL Server provides Web-based certificate management that enables an enterprise-wide security infrastructure. Open standards support, including SSL, X.509v3, PKCS, LDAP, HTML, and HTTP, Software signing, using the industry-standard RSA digital signature.

The first Secure segment of the the GTPNet is now operational between China with the Ministry of Foreign Trade and Economic Cooperation EDI Centre, the UNTPDC in Melbourne and the Uniersity of Minnesota SEAL Lab in US. The 3 Servers are connected via T1 connection and using the SEAL server web based certification management and secure ETO transactions. Twelve other Secure Links are presently under development connecting South Africa, Senegal, Indonesia, Fiji, Trinidad and Tobago, Costa Rica, Brazil, Korea, Japan, Swintzerland, New Zealand, Thailand and Singapore to the UNTPDC SEAL center.

Volume of ETO Recorded Transactions

Although it is very difficult to give an exact figure on the number of concluded transactions generated by the ETO system we have information provided by several Trade Points which indicates that the ETO system is presently concluding a large figure of successful transactions. From data received from China, Zimbabwe, Brazil, US, Indonesia, India, Israel and other Trade Points using the ETO system extensively we can forecast that an average of 100 million dollars is transacted via the ETO system every month. In many cases some transactions are quite large with an average of 100,000 US per transaction.

With the introduction of the Secure ETO system and the authentication and validation system it will be easier to monitor the feedback and increase the number and volume of transactions generated by the ETO system. Presently one of the main reason avoiding the successful conclusion of an ETO transaction is the lack of validation or authentication of the real existence of the source or demand which is quite difficult to monitor via the Internet. Also the UNTPDC ensures that the ETO system is use for legal trade by deleting all non-legal products or defamatory mails which some cases are sent to the ETO switch with the objective to be broadcasted to the mailing lists.

3. The UNTPDC Internet Incubator

Another important service which largelly contributed to the expansion of the GTPNet and the UNTPDC Sites is the Internet Incubator. This service started in May 1995 with the creation f FTP environment so Trade Points and authorized agencies could load the Web Sites automatically using the UNTPDC as a Web Server.

The main objectives of the UNTPDC Internet Incubator service are:
99. to allow Trade Points (especially in developing countries) without access to the Internet and without infrastructures to operate Internet servers to have a real presence on the Internet;
to help Trade Points establish links to national organizations in their countries present on the Gopher and Web and to benefit from selected information of particular interest to Trade Efficiency available on the UNCTAD-TPDC Web;
100. to use the UNCTAD-TPDC servers as data depositories for countries without national data centers or server capability;
101. to help Trade Points in both developed and developing countries to use the latest graphical design techniques applicable to the Web and improve the graphical presentations of their Home Pages and product catalogues.

The design, multimedia preparation and composition of their Home Pages are usually carried out by the Trade Points at the national level. For production of ETO-Visuals (product catalogues), the HTML files required to design the Web applications can be sent upon request to the Trade Points via e-mail. Trade Points send their Web pages via e-mail or diskette to the UNTPDC, where they are integrated into the GTPNet server.

Already 112 Trade Points are being incubated by the UNTPDC. An excellent example is the Harare Trade Point, which has uploaded not only Trade Point information, but also an entire searchable company database onto the GTPNet server. The Harare Trade Point also is now providing UNTPDC Mirror Site services to their local community. Other countries in Africa like Senegal, Kenya and Zambia are following the good example of Zimbabwe and developing their entire Web Server and providing their own Trade point Incubator services to local companies. The impact of the Incubator is extraordinary in local communities as in one operation the Trade Point can update up to 30 Servers around the world which allows a company in (.eg. Harare) to have international presence at nearly no cost.

Presently the UNTPDC Internet Incubator includes over 7 GB of Home Pages from Trade Points and ETO Associates using the Incubator. The UNTPDC is also providing Incubation services to some UN organizations such as (ITC, ESCAP, UNIDO), Interregional Organizations (ADB, IATIN, AICO) and Government Agencies (Ministries, Trade Promotion Organizations, etc). The usage of the UNTPDC Incubator is for the moment free although the UNTPDC will need to start charging the cost of the memory as the system is growing very fast with the commercialization of these Incubator service by many Trade Points.

Trade Point Advertisement using UNTPDC Servers and Mirror Sites

The potential of Trade Points using the UNTPDC Servers and Mirror Sites for advertisement are extraordinary and a secure source of incomes for the Trade Points in developing countries The advertisement possibilities in the ETO N TradingPlace and NewsGroups are enormous specially due to the easy break-down per category of ETO. Each time a person post or retrieve and ETO from the ETO NewsGroup an advertisement fee will be charged. This fee can be very small something like 2 cents of dollar each time and will be charged directly to the telephone bill of the subscribers to avoid complex billing systems and heavy administration.

Advertisement on the Trade Point Incubator:

The advertisement in the Trade Point Incubator will work similar to present systems Lycos, Internet Shopping Network, Netscape, etc. A banner will be display at each Trade point Home Page for the companies providing sponsorship to a Trade Point.

This type of advertisement could generate a potential revenue of 50,000 USD a month (5,000 ETO Associates time 100 dollars a day) just by using the present ETO Associates.

Advertisement on local Trade Point Severs:

This type of advertisement will be organized at National level by Trade Points and will follow the same model than the Trade Point Incubator.

4. Secure Electronic Authentification Link SEAL project Basic Principles

- The secure level of the transaction chain depends on the weakest component
- Total security is only possible via dedicated secure links
- To provide domestic and international data communication, processing services and interface software to Trade Points and related organizations around the world.
- The security chain must gurantee global transaction security, from the smart card insertion in the SEAL terminal to its processing at the SEAL server level.
- The system adaptability must preserve the integrity of the security chain.
- The security chain gurantees security and interoperability

Main Principles
1.To guarantee each transaction authenticity
2.To guarantee each transaction recovery
3.The security level of a system is that of its weakest link

The links of the SEAL Global Secure Chain
Confidentiality
Aunthentication
Signature
Integrity
Registering
Validation
Transfer

System Description

SEAL aims at providing an open and comprehensive approach to secure electronic commerce over the Internet, public

information networks and private IntraNets.

It combines development of software applications for secure electronic commerce, integration into smart card and kiosk technology and development of global infrastructures for secure links using private Intranets.

The current phase of SEAL addresses a coherent security model and a generic, open security architecture for the electronic marketplace.

This architecture is independent of specific hardware, software, or network architectures. The most fundamental electronic commerce services, such as secure offering, order, payment and information delivery, are also integrated in this first phase.

Main Objectives
- a detailed description of commercial, legal, social, and technical requirements and options for an electronic marketplace;
- a coherent model and a generic, open architecture of an electronic marketplace, independent of
- specific hardware, software, and network architectures;
- specifications, designs, prototype implementations and evaluations for services enabling electronic commerce;
- information to the technical, scientific and general public, standardisation, and other ACTS projects.

The current phase concentrates on two topics:

- 1.The development of a framework and architecture for secure electronic commerce.
- 2.Within this framework and architecture, the provision of the most fundamental electronic commerce services, namely, offering, ordering, payment, and delivery for information services.

The following phases will concentrate on extending the architecture and developing more advanced services, e.g.:

- 1.Notary Services. For instance, "fair exchanges" will facilitate digital analog of registered mail, contract signing, purchases, etc., where no party can be dishonest with the others by not fulfilling their part of the commitment.
- 2.Attribute certificates or credentials with specific privacy properties.
- 3.Multi-media specific security services like protection of intellectual property rights.

SEAL uses and integrates existing architectures, tools, and services where appropriate. Initially, security toolkits developed by Cryptomathic and GMD will support the necessary authentication and certification functions. Payment toolkits will support cash-like (ecash) and credit-card (iKP/SET) payments.

Development is driven by market requirements and the state of the art in security and on-line information services. Requirements for multi-party security and the protection of the users' privacy receive prime attention.

The toolkit offers all necessary security services, based on the concept of "service managers" that provide a generic service interface to "service modules" that actually provide the required service. New "modules", corresponding to specific service implementations and products, can easily be integrated.

Although the initial version of the toolkit will be based on existing modules only (like the payment modules "ecash" and "iKP/SET"), new protocols and modules will be developed and integrated where necessary for the subsequent phases.

This concept allows for specific configurations (e.g., some modules might not be required by some users, or might not be allowed to be used in some countries) and ensures interoperability of different modules to the extend possible.

Conclusion and Future Directions

Although sites such as the UNTPDC are currently the exception, we expect that they will soon become the rule as the Internet continues its exceedingly rapid growth. Additionally, we expect content to become vastly more dynamic in the future, both on the front end (using mechanisms such as server push, Java, JavaScript). This promises to provide many new challenges, especially in the area of performance measurement and management. The solution is to continue expanding the services we described in this report and encouraging the collaborative spirit initialized by the UNTPDC with Universities, United Nations Organizations, Governments, Private sector organizations, all of them cooperating on a non-conditional basis for the expansion of the Global Information Infrastructure to the developing world.