ESCWA for Regional Integration
Information and Communication Technology Division
Round Table on ICT as an Enabler for Economic Development
29-30 April 2004
UN House, Beirut, Lebanon

Distr.
LIMITED
E/ESCWA/ICTD/2004/WG.1/5
26 April 2004
ORIGINAL: ENGLISH

THE DUBE TRADEPORT CYBERPORT: ICT AND LOGISTICS INTEGRATION FOR ECONOMIC DEVELOPMENT

By

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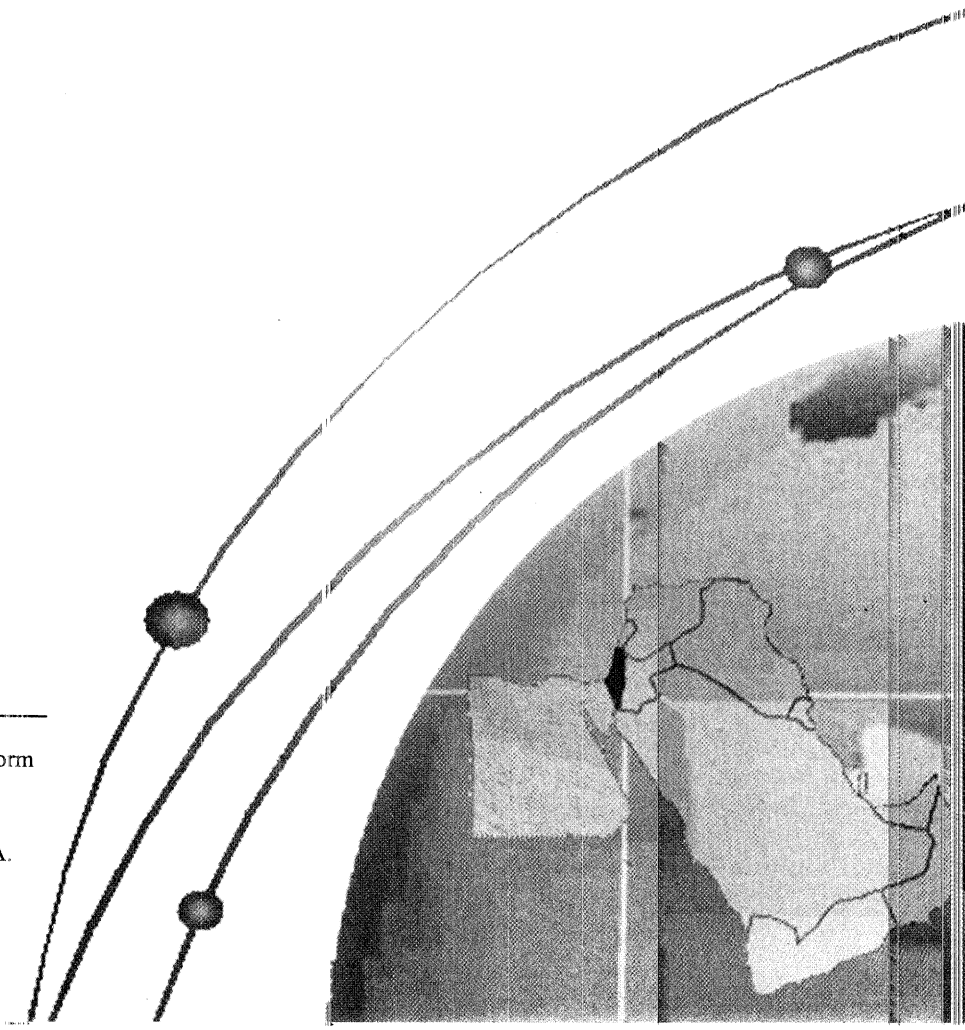

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INTRODUCTION

Information and Communication Technologies (ICT) play a vital role in supporting the processes of trade and development: not only do these technologies support productivity and innovation across sectors, they are also critical enablers of trade development itself, as they help correct, improve and make more relevant the very processes with which trade is conducted. Kaiser Associates, a global strategy consultancy focused on economic development issues, is working with the government of the Republic of South Africa and the provincial government of the Kwa Zulu Natal region, to help plan and launch the Dube TradePort, a multi-modal trade and logistics hub in the city of Durban. As part of this cooperation, Kaiser Associates assists in planning the Dube TradePort's Cyberport, a network and platform solution to enhance logistics efficiency and catalyse trade from South Africa. The following presentation highlights some of the conceptual issues in planning such a facility, and the operational challenges for launch. It also examines, on an illustrative basis, to what extent the Cyberport, as other ICT enablers, may be applicable to ESCWA member countries to promote economic and trade development.

I. CONTEXT AND PRESENTATION OF THE DUBE TRADE PORT PROJECT

A. SOUTH AFRICA, A COUNTRY UNDERGOING ECONOMIC REFORMS FOR SOCIAL DEVELOPMENT

Ever since the end of the Apartheid era, with the first democratic elections underway, the Republic of South Africa (RSA) embarked on several strategic economic development projects. The focus of national policy since 1994 has been, amongst others, to (1) change the structure of the economy from inward protection to export orientation and increased openness, to (2) contribute towards the reduction of overall price levels both for consumers and input prices for producers, to (3) enhance the competitiveness of firms and the overall performance of the economy, to (4) create a more equitable economy by expanding economic opportunities and extending access to these opportunities, to (5) integrate the economy into the global production, trade and investment environment (seeking to increase the capacity to add more value, attract and absorb more technology, increase knowledge intensity and integrate the use of ICT) and (6) provide the necessary trade policy framework for firms to improve their penetration of foreign markets, diversifying exports basket and destinations, providing for rules-based, certainty and predictability and favourable trade policy and practices in the global trade system and of major trading partners.

As such, the RSA pursues active engagement in the World Trade Organisation (WTO), bilateral agreements (European Union, United States of America, Mercosur, India, and European Free Trade Association), creating the conditions for regional development and growth through trade (South African Development Community (SADC) agreement) and infrastructure and production linkages. The RSA also seeks to contribute to the renewal, stability, growth of Africa through the New Partnership for Africa's Development (NEPAD) programme, with emphasis on good governance, infrastructure, communications links, trade, agricultural development and health. Through this policy and economic transformation processes, the importance of addressing the microeconomic fundamentals underpinning the economy became increasingly evident, thus leading to the Microeconomic Reform Strategy (MRS): it aims, amongst others, to improve the efficiency of input sectors. The attention given to a more equitable distribution of economic activity is in favour of KwaZulu-Natal (KZN Province, see Table 1 herein), which has a relatively low GGP per capita. In addition, the Integrated Manufacturing Strategy (IMS) provides a conceptual framework for understanding the shifting drivers of global competitiveness, the organisation of production in terms of value matrices, the role of the state and the key levers available for government to transform the economy.

B. ICT AND LOGISTICS, TWO FOCUS AREAS FOR GROWTH

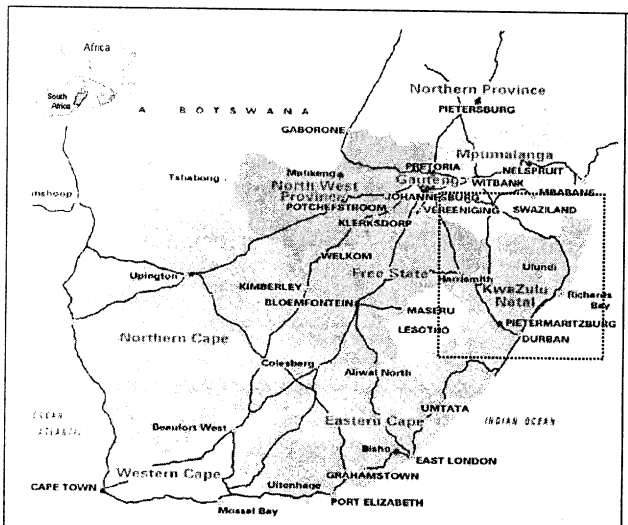
ICT is one of the priority sectors identified through IMS, alongside tourism, cultural industries, and export sectors. This prioritisation has been fleshed out in sector strategies, summits and charter agreements, including a national ICT strategy.

With respect to transport policy, the Transport White Paper and "Moving South Africa" documents set a brief for the transformation of transport in South Africa including objectives that converge with DTP in the following areas: (1) "Inter-modal co-ordination" through incentives rather than regulation, (2) strategic planning of transport infrastructure and services, (3) meeting the needs of domestic and global customers, to expand trade and tourism, (4) increasing transport cost efficiencies and service levels in competitiveness of key industry sectors, and (5) improving the effectiveness of freight corridors, in particular between Gauteng Province and Durban. At the KZN provincial level, several strategies have been put in play to accomplish national and regional objectives. The Dube TradePort, a convergent logistics hub for the KZN region, is one of these strategic tools. Specifically, DTP will serve a wide catchment area and will contribute to some key economic objectives including (1) creating an operating business environment conducive to growth and development, and (2) reinforcing the potential of local businesses, in identified growth sectors, to rapidly increase their profile of high-value manufactured

exports and attract new investors to the region as part of the global manufacturing platform. As South Africa's second most important manufacturing region serviced by the continent's premier port (Durban), DTP is the materialisation of an opportunity to reinforce the region's position as a key location in global manufacturing processes. In its operational mode, it has been decided that the DTP will rely on a Public Private Partnership (PPP) structure where the airport structure is proposed as a 35-year design, build, part finance and operate concession structure. The KZN Province will own the underlying land and provide the PPP with full economic use for the time period. At the end of the concession, economic rights shall revert to the Province.

The Cyberport, discussed further in this paper, is a "subset" of the DTP strategy. Table 1 herein summarises the way the KZN region's strategy fits with the overall plan, and how it articulates operationally.

TABLE 1. GEOGRAPHY AND KEY FIGURES OF SOUTH AFRICA AND THE KWA ZULU NATAL (KZN) PROVINCE



Republic of South Africa (RSA)
Size: 1,219,912 sq km
2002 population: 42,768,678
2002 GDP: USD 427.7 billion (purchasing power parity)
2003 GDP per head: USD 10,000 (purchasing power parity)

Province of Kwa Zulu Natal (KZN)
Size: 91 500 sq km (7.5%)
2003 population: 8,500,000 (20% of population)
2003 GDP: USD 69 billion (16.1% of national GDP)
2003 GDP per head: 5,023 (purchasing power parity)

Source: CIA fact book 2003 and Ithala (KZN investment agency)

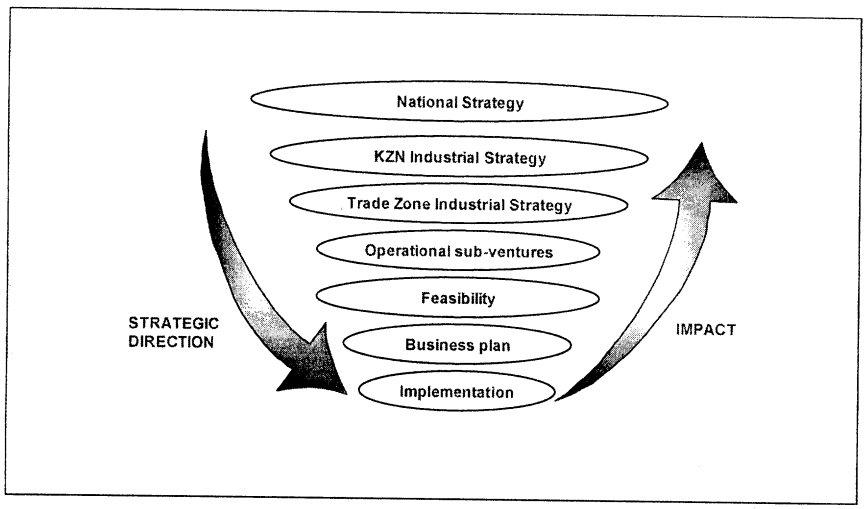
C. THE DUBE TRADE PORT, CONCEPT AND VISION

The DTP Trade Zone project is situated within a wider context of socio-economic policy objectives, as illustrated in the diagram below. These objectives both directly shape the objectives of the Trade Zone, and the approach that should be taken to delivering the project. The Dube Tradeport as a whole is seen as a key initiative in boosting the economy of KZN that can also be a resource to support growth in South Africa and the SADC region to enable sustained competitive advantage over the next 20 years. In particular, DTP aims to:

- Create an air platform, including a runway that is viable in the long-term, linked into other transport modes such as rail, road and ocean;
- Stimulate tourism potential in the region by creating greater accessibility by air;
- Create an accessible logistics platform, reduce overall transport/logistics costs and improve reliability/consistency of access to freight capacity;

- Create a world-class export-oriented Trade Zone to support manufacturers, the logistics industry and other business service providers;
- Include a focus on training workers to international standards;
- Develop an approach integrated with national and provincial policy and strategy.

Figure 1. Context of DTP strategic objectives



Source: Republic of South Africa and KZN industrial strategies

Within this vision, the specific objectives of the Trade Zone include the following:

- Creation of world-class export-oriented environment for tenants, operators, value-added logistics and other service providers;
- Servicing the KZN region, as a gateway to key global markets;
- Development of enabling ICT environment, including access to broadband capability and ICT services;
- Development of a world-class perishables centre, Cyberport and other ventures;
- Encouraging industry development in niche product clusters and market areas that are enabled by airfreight and multi-modal linkages

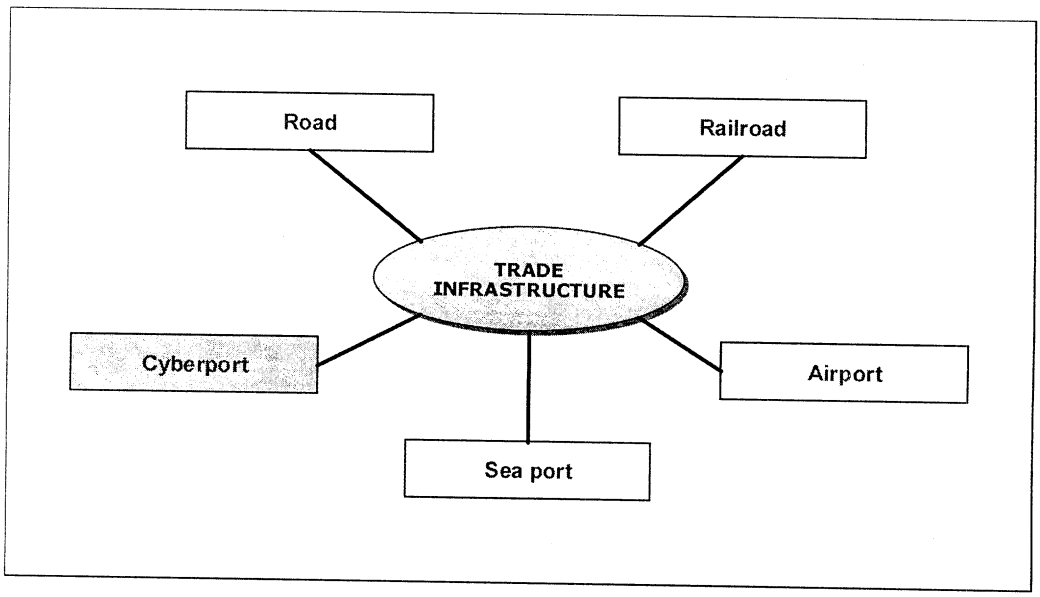
The DTP Cyberport is one of the many subsets of the DTP projects. It is given equal importance as other ventures and business units. Described in detail in the sections below, the DTP Cyberport aims to add a technology layer to the DTP, affording tenants and users to integrate with the electronic procurement, supply chain, and trade modes.

II. THE CYBERPORT'S VALUE PROPOSITION

A. A TECHNOLOGY INTEGRATED MULTI-MODAL LOGISTICS AND TRADE HUB

The DTP Cyberport is conceptually understood as an additional "port of transit" of South African goods and services from the RSA into the "outside" world. Initially, the concept was thought as being on par with the Durban port, Durban International Airport, and the rail and road network feeding into the Trade Zone. As illustrated in Figure 2 herein, the Cyberport does not necessarily require a spatially delineated geography. However, the DTP Cyberport leverages the DTP's unique proposition to create an additional layer of services on top of the multi-modal logistics hub.

Figure 2. The Cyberport, a technology-based infrastructure



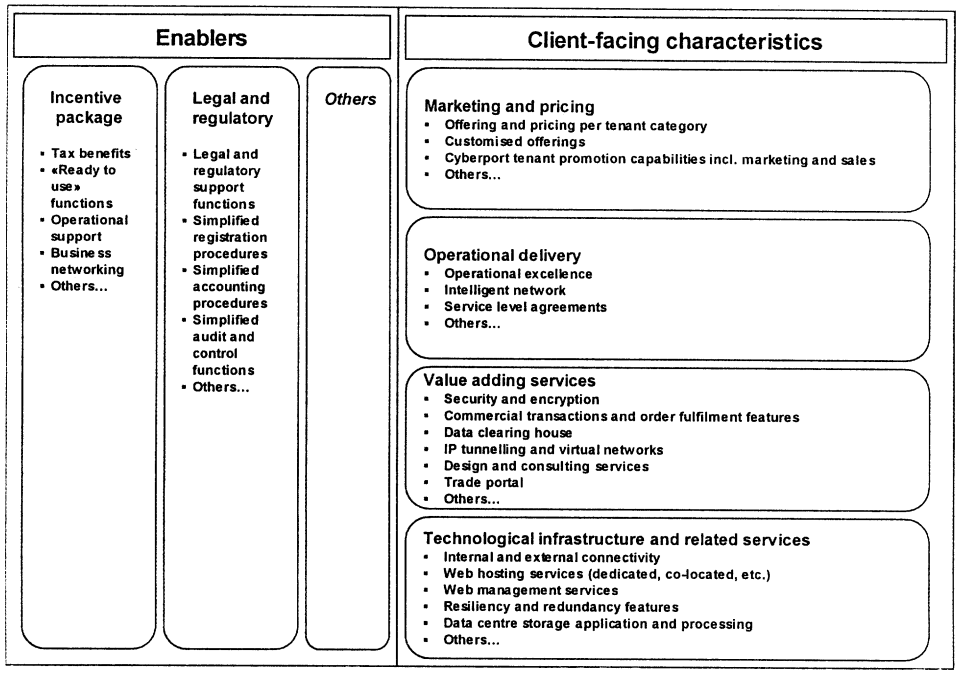
The DTP's Cyberport core value proposition components include full multi-modal logistics (road, rail, ocean and air) integration in a unique platform, with technological fulfilment capabilities for the entire trading value chain. Bandwidth, resilience features, hosting, data centres and transactional facilities will be offered on the infrastructure side. These are essential components of DTP's Cyberport technological platform. Additionally, value adding services will include (1) security and encryption, (2) commercial transactions and order fulfilment functions, (3) data clearing, (4) IP tunnelling and solutions for corporate multi-sites, (5) design and consulting services, (6) trade portal and technological support. These types of services typically give rise to Service Level Agreements (SLAs), and are increasingly common. They will allow for margin capture when excellent operational delivery mechanisms are in place.

The DTP's Cyberport operations will include (1) seamless processes, (2) a unique customer point of contact, and (3) a systematic customer value management approach. Pricing and marketing tools will deliver margin once all the previously mentioned value proposition components are in place and mastered. This includes creating specific offerings per customer type (e.g. the banking community at DTP) or bespoke offerings for high-value tenants.

The DTP Cyberport is expected to deliver a series of benefits to DTP tenants, the end-users. These "client-facing" benefits are perceived as distinctive competitive advantage tools for the entire DTP, to

warrant effective participation of customers in the project. In parallel, a series of enablers, (Cyberport-specific or not), is expected to allow for the Cyberport's uptake. Together, the client-facing benefits and the enablers would make up the Cyberport's core value proposition, as highlighted in Figure 3.

Figure 3. Potential DTP Cyberport value proposition



Source: DTP and Kaiser Associates

These items are complemented by a series of enablers, which may be Cyberport-specific, including:

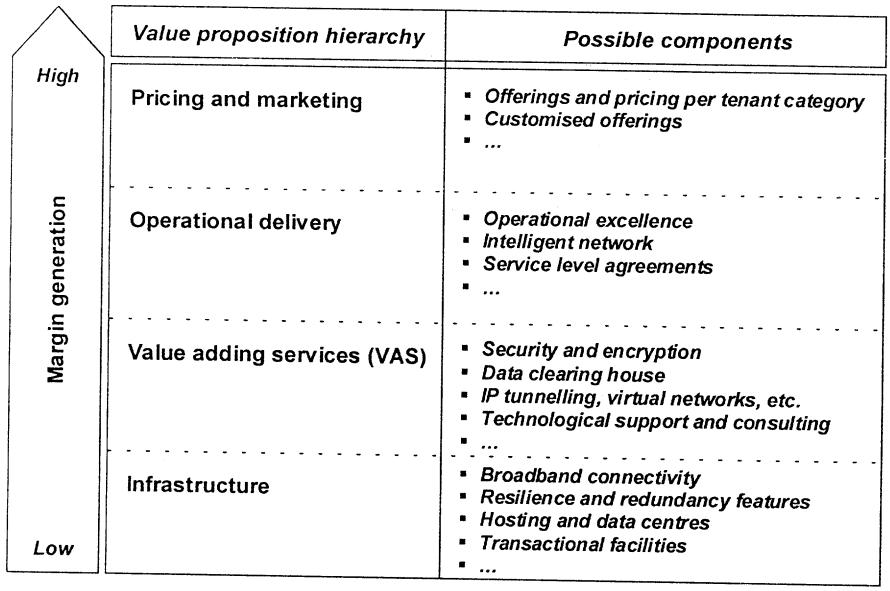
- Incentive package: operational "ready-to-use" features and efficient business networks and commerce facilitation;
- Legal and regulatory support: in the form of simplified registration, accounting and audit functions, with a dedicated regulatory environment.

As Figure 4 herein highlights, revenue and margin capture at the DTP Cyberport follow a hierarchy, as some of the benefits become "standard" and others are perceived as increasingly important for electronic transactions and the order fulfilment process.

B. A Comprehensive Solution Catering to a Variety of Stakeholders

The DTP Cyberport is conceived as a trade platform, where goods, services and invoices flow in both directions. The objective of the setting is to enable, simplify and encourage such trade. Given the wide range of products and services, (textile, clothing, perishables, commodities, electronic goods, spare parts, etc., but also tourism, banking, freight, insurance, investments) and given the broad target market audience, the Cyberport aims to electronically smoothen and integrate global bi-directional supply chains. The Cyberport's value proposition relies on the participation of a series of users, stakeholders, and logistics participants. Eventually, it will have to integrate functionalities catering to a wide variety of players, as highlighted in Figure 5 hereunder, offering linkages with:

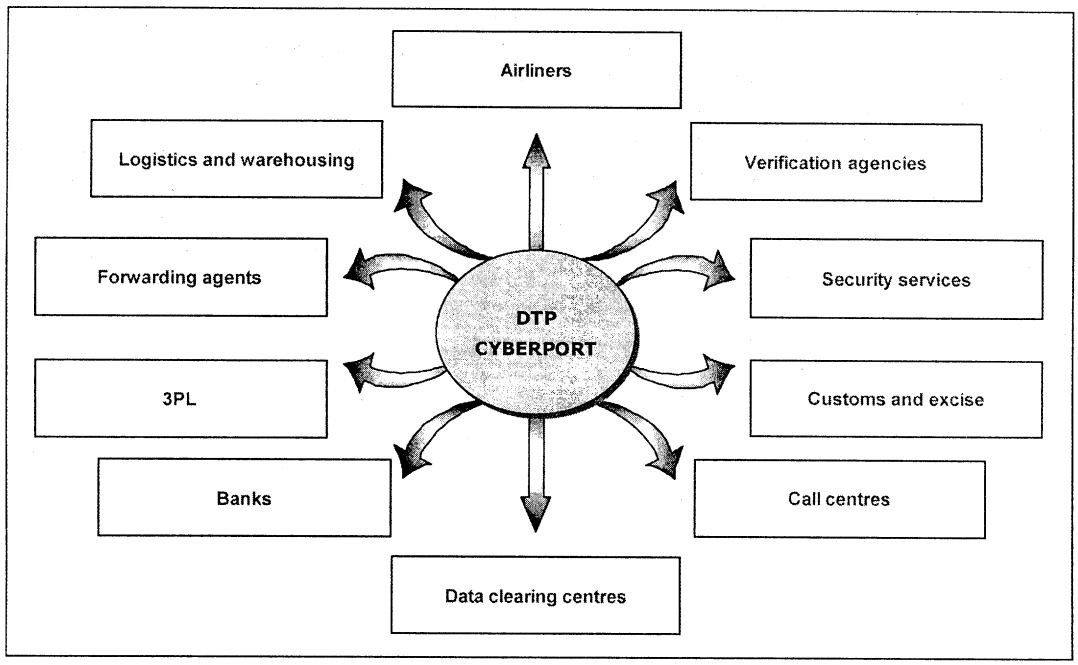
Figure 4. Hierarchy of client-facing value proposition components and margin capture potential



Source: DTP and Kaiser Associates

- Warehousing and logistics management players, taking into consideration the trade volume initiated by the integrated exchange centre that is provided by the facility;
- Forwarding agents;
- Planning capabilities with shipping companies and airlines, with competitive long-haul capabilities by air, sea and land;
- Banks, providing the full range of services, not only limited to the trade credit, but also complying with international banking standards in the area of trade related financial instruments;
- Data clearing centres, providing trade operators (buyers and sellers, local, regional and international) with the full range of services, most notably including compatibility with standards adopted by international buyers and sellers;
- Call centres;
- Customs and excise, to reduce red tape, improve transparency in tax reporting and facilitate payments;
- Security services, whether provided by the public or the private sector, must be capable of providing for the security requirements of large clients, and countries with strict security requirements;
- Verification agencies of quantity and quality of products traded, capable also of providing the information through electronic data interchange (EDI) tools.

Figure 5. Summary of Cyberport stakeholders



Source: DTP and Kaiser Associates

C. A Series of Functionalities Enhancing Seamless Trade

In its IT and platform architecture, the DTP Cyberport will help trade and economic development through convergent software solutions, touching on logistics, financial, electronic data interchange and trade applications. The Cyberport's front-end functionalities service must therefore include:

- Supply chain management functionalities, connecting the various organisations' operations directly to customers, suppliers, partners and employees. This will be particularly important to coordinate internal revisions of plans and schedules across industry functions, with demand centralised via the Cyberport. Benefits include improved communications with customers, and readiness to process repeat orders electronically;
- Support functions for order taking and order fulfilment, mainly through order processing solutions;
- Stock and warehouse replenishment functions, linking the forwarders' and logistics providers' facilities with similar functions in exporters' organisations.

The DTP Cyberport's IT platform builds a bespoke solution, that cover the shared requirements of a series of industries. Electronics and electrical spare parts companies, perishables exporters, vehicle parts manufacturers, and clothing and textile companies, are priority segments addressed in the DTP Cyberport. These diverse industry types require a solution that is simple, actionable, and immediately "implementable", covering basic industry requirements for integrated electronic trade. The DTP Cyberport's IT platform could be built in tiers, gradually deployed with increased levels of coverage, depth of services and integration, from time to time.

The DTP Cyberport concept relies on standardised communication modes. Great benefit is taken from United Nations defined standards such as EDI and UN EDIFACT. Specifically, by using universally established rules, EDI tagging will allow the Cyberport participants to electronically receive, interpret and interact with other computers or trading platforms whilst minimising human intervention, thus reducing error risks. Technically, tagging groups of data elements into units referred to as segments", altogether constitute the message used in trade transactions. New technologies such as the Extensible Mark-up Language (XML) and Electronic Business Extensible Mark-up Language (ebXML) are themselves manifestations of EDI. They allow for improved legibility of tags. ebXML is specifically expected to be more accessible to Small, Medium and Micro Enterprises (SMMEs), and allow for a smoother, less costly, integration into electronic supply chains.

Note: It may be important to note that XML is, as a technology, a requirement for suppliers to the US public administration and armed services. The fact that a public authority would "enforce" such solutions has helped tremendously industries learn and adapt to technological change. Other examples for standardisation of communications and trade processes exist in Europe through ESPRIT, is the pan-European vehicle for standardisation. ECMA, (The European Computer Manufacturers' Association) is another vehicle. Both are European policy tools.

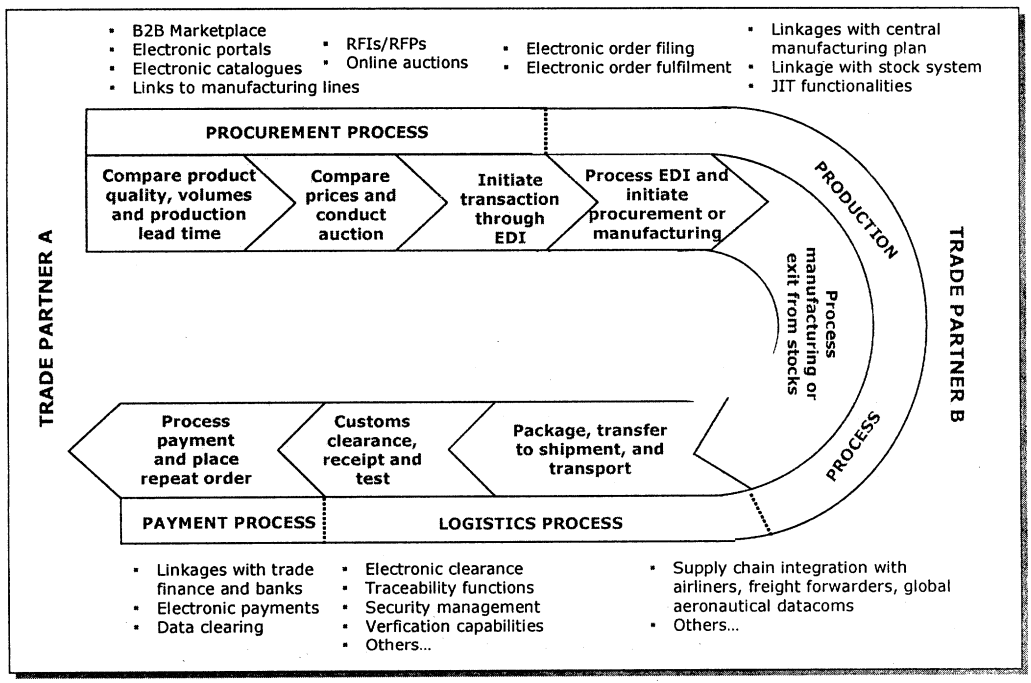
III. THE CYBERPORT, A CATALYST FOR TRADE CONVERGENCE AND EXPORT DEVELOPMENT

A. THE CYBERPORT: A CATALYST FOR TRADE CONVERGENCE AND EXPORT DEVELOPMENT

In the context of the DTP and KZN's economic development objectives, providing the necessary infrastructure to facilitate internal and external trade is a clear priority. ICT is recognised as a major foundation of the enabling environment for facilitating all processes across a trade transaction's value chain. Several reasons underpin this decision. They include (1) efficiency benefits expected to be gained within each South African exporting company, allowing for the creation of cost and time advantage, (2) efficiency benefits to be gained at a sectoral level for South African industries, thus better positioning them of the global competitive landscape, and (3) benefits to be gained through "spill-over" effects, in terms of employment creation and the emergence of ICT-related industries.

Figure 6 herein presents an illustrative transaction value chain between two standard trade partners. Each step of this process has been measured to yield efficiencies through electronic enablement. Research conducted by Intel with the semi-conductor industry, through its Rosettanet platform (see http://www.rosettanet.com for further detail) showcases process automations yields[1], in certain areas, of up to 67% time savings (e.g. purchase orders), 56% yield on advance shipment notifications, and a 50% yield on remittance advices. Similar benefits should be observed when the DTP Cyberport is fully implemented (at this stage, no forward measurements of such benefits have yet been undertaken).

Figure 6. Illustrative Trade Partner Transaction Value Chain



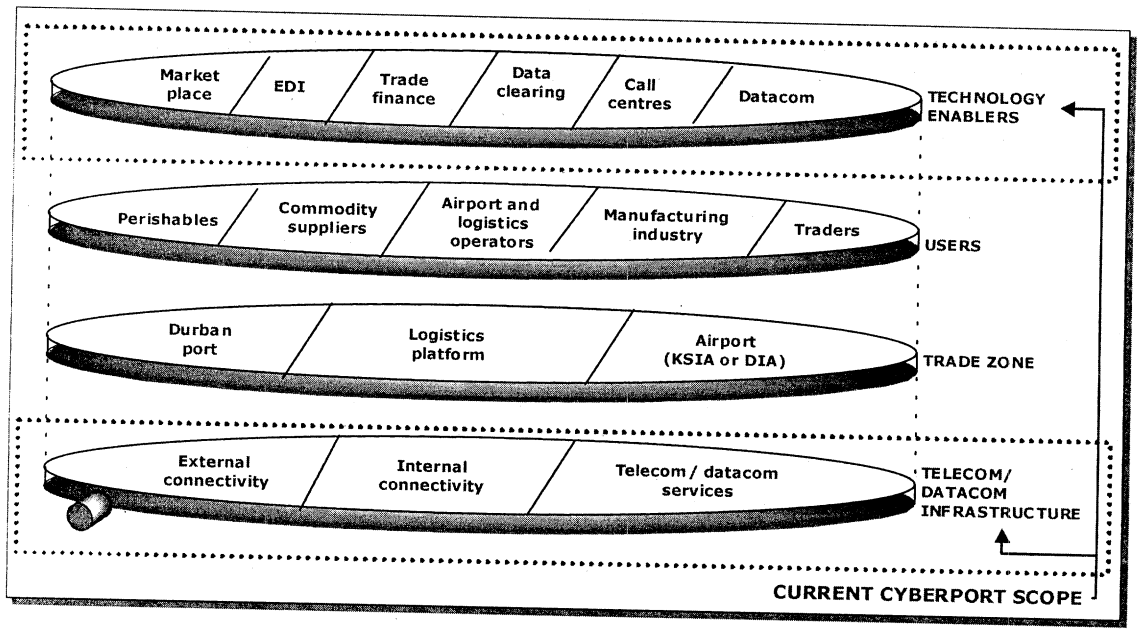
Source: Kaiser Associates

The DTP Cyberport is conceived to be the bridge between the bricks-and mortar logistics platforms that is being developed at the DTP, and the need for effective technology enablement that facilitates

[1] See "Automating through RosettaNet, an Intel case study of order and payment automation in the Asia Pacific region", January 2003.

national and international trade communications. As illustrated in Figure 7 below, the Cyberport concept extends beyond basic infrastructure elements to recognise a layered approach that provides end-to-end transactional services to the logistics platform.

Figure 7. Cyberport Layered Concept Definition



Source: Kaiser Associates

This layered approach defines three areas of value delivery that together provide a strong value proposition for the tenants of the Cyberport:

- Bandwidth and connectivity: telecommunication and data communication infrastructure to enable buyers and sellers to communicate at an adequate speed and reliability that meet their business process requirements;
- Trade enabling services: the activities associated with making trade transactions possible, including banking, insurance, and freight services;
- Value-adding services: this the core of Cyberport's value proposition, and is made up of the technological platform that will provide the trade enabling services to effectively integrate and connect end-users together and with external markets.

B. Bandwidth and Connectivity

Effective connectivity and the availability of sufficient and reliable bandwidth are essential for the delivery of the Cyberport value proposition. Appropriate links with the international Internet Protocol (IP) backbone are important, as is the availability of reliable telecommunications infrastructure within the RSA. The present regulatory environment restricts connectivity options, within the telecommunications industry and outside. The internal (RSA backbone) and external (link to the global IP backbone) capabilities of the incumbent operator suggest that it may provide a reliable option for the Cyberport. The incumbent developed its broadband network to use Multiple Protocol Label Switching (MPLS)[2], a

[2] MPLS is a versatile solution to address problems such as speed, scalability, quality of service management, and traffic engineering. This solution meets the bandwidth management and service requirements of next-generation IP-based backbone

platform that offers IP-based Virtual Private Networks (VPN)[3], which enables it to deliver connectivity and value-added services that meet the requirement of large-scale enterprises. To provide the necessary bandwidth and connectivity structure for the Cyberport, effective planning of the underlying elements is essential. Available telecommunications infrastructure that meet bandwidth and reliability requirements of the project, in addition the service delivery capabilities of existing operators, provide for a straightforward approach to the decision on connectivity. Additionally, satellite connectivity protocols may be used, to connect the DTP Cyberport's Teleport to the global IP backbone. Such a solution will require further analysis, as the telecommunications legal and regulatory framework evolves.

At this stage of the planning for DTP's Cyberport, several network configurations are considered: they may require the usage of fixed or wireless connectivity protocols within the DTP Trade Zone, as well as connectivity solutions with the global IP backbone. Two scenarios are envisaged, one where a build of an own network would be required, the other where a partnership would be sought with a third party IP carrier. Given that Voice over IP (VoIP) is still not authorised in the present RSA regulatory context, voice solutions may be provisioned through the Public Switch Telecommunications Network (PSTN) provider or through authorised wireless telecommunications operators. The key aspect of the possible IP connectivity solution is dubbed "IP convergence", basically, the ability to technically deliver voice, managed data communications, VoIP, media broadcast, and security, encryption, and value adding services, on an IP basis. MPLS, a versatile solution addressing problems such as speed, scalability, quality of service management, and traffic engineering, will be used. This solution meets the bandwidth management and service requirements of next-generation IP–based backbone networks. MPLS addresses issues related to scalability and routing and can exist over existing Asynchronous Transfer Mode (ATM) and frame-relay networks.

The technical solution envisaged could use an IP-VPN. In that configuration, the incumbent or a third party IP carrier would use its standard bandwidth offer to provide connectivity internally using (1) fibre optics, (2) specialised links, (3) Digital Subscriber Line (DSL) connectivity, or (4) digital telecommunication switches, as the platform accommodates several delivery modes. Technical characteristics of a broadband IP VPN include IP tunnelling, encryption and security features, and redundancy features through secondary lines. Stringent SLAs and help line and support features typically complement such services. The telecommunications operator would provide routers, and switches, as per Figure 8 hereunder. To connect multiple users by a central point using MPLS, the operator would need to install a router large enough for MPLS, to allow international telephony, video conferencing, data communications and all other business-critical services. For an area such as the DTP zone, technical rollout of basic infrastructure could take between 2 and 3 years for cables and nodes, but that is yet to be determined based on the magnitude of the project.

C. TRADE-ENABLING SERVICES

An important element of the DTP Cyberport is the effective link between logistics infrastructure and services that facilitate access to foreign markets, and the ICT infrastructure that enables direct communication with these markets. Therefore, a key focus of the project is to ensure that the essential logistics infrastructure and services are planned and implemented side-by-side with the Cyberport. In addition to providing a multi-modal transportation infrastructure (i.e. airport, port, and land transport terminals), it is necessary to ensure that the appropriate logistics enabling services are represented. In essence, industries including airlines, freight forwarders and logistics service providers, and banking and insurance need to be represented amongst the users of the Cyberport to ensure seamless technology, logistics, and transportation convergence.

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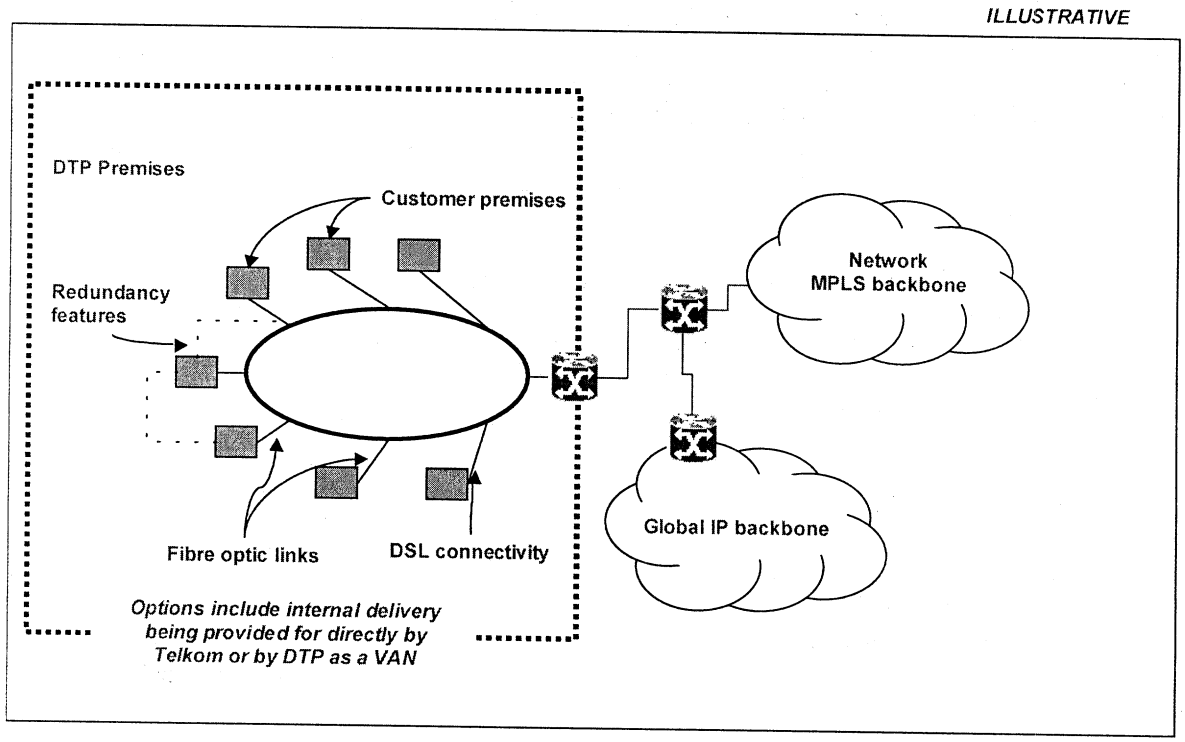
networks. MPLS addresses issues related to scalability and routing and can existing Asynchronous Transfer Mode (ATM) and frame-relay networks.

[3] VPNs simulate a private network by using IP tunnelling and encryption technologies over public network infrastructure. VPNs provide the security and reliability necessary for the transmission of critical data

Figure 8. Possible Network Layout for DTP's Cyberport, using MPLS

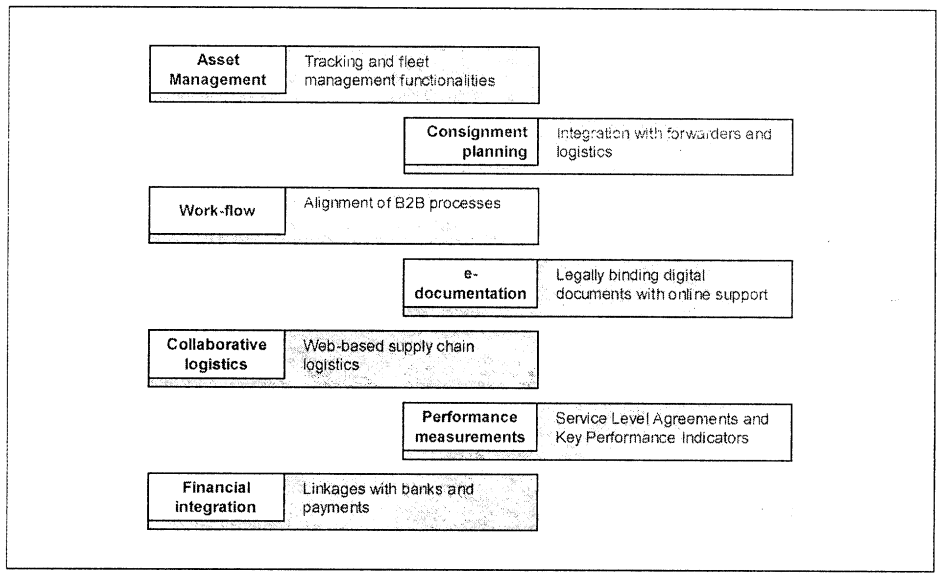


Source: Kaiser Associates / RSA telecommunications operators

As described in Figure 8 hereafter, potential value proposition applications include:

- Asset management applications: allowing for integrated fleet management benefits to end-users and logistics operators, enabling DTP Cyberport exporters to track, in real-time, the location of their shipments to better manage client relationships;
- Consignment planning applications: enabling forwarders to increase efficiency of operations, through "just in time" planning capabilities;
- Work-flow applications: supporting integrated and simplified working processes between DTP Cyberport tenants, markets, and South Africa's customs and excise services;
- E-documentation applications: building on the developing legal and regulatory framework in the RSA, and incorporating developments of South Africa's Electronic Communications and Transactions Act (ECT);
- Collaborative logistics: enabling hosting web-based logistics marketplace solutions, encompassing services critical to logistics execution including planning, negotiations, transactions, shipment execution, etc.
- Performance measurement applications: allowing DTP Cyberport members to constantly learn and improve operations, by benchmarking internally and externally, and keeping track of performance towards own markets;
- Financial integration applications: applications for clearing and processing of letters of credit and other financial documentary exchanges.

Figure 9. DTP Cyberport Value Proposition Layered Applications (Illustrative)



Source: Kaiser Associates

D. VALUE-ADDING SERVICES

One of the main challenges of implementing the Cyberport is the need to integrate a wide array of end-users across different industries. As illustrated in Table 2, a high-level analysis of trade processes across key RSA industries, as defined by the average number of steps in a typical transaction, suggests differences in process complexity. In parallel, there is anticipation that electronic support for such processes, including leveraging the benefits of standardisation and recurrence patterns could generate cost substantial cost savings to Cyberport participants.

TABLE 2. PROCESS COMPLEXITY AND EELECTRONIC ENABLEMENT IN SELECTED INDUSTRIES

Industry	**Number of steps in a typical transaction**	**Opportunities for electronic enablement**
Perishables	17	▪ Error reduction ▪ 10-15% time savings in fulfilment cycle
Clothing and textiles	10	▪ Increased competitiveness ▪ Higher industry yields
Vehicle parts	12	▪ Increased competitiveness ▪ Up to 10% time savings in fulfilment cycles
Electronics	11	▪ Increase overall efficiency and competitiveness
Logistics services	8	▪ Increased international competitiveness of small and mid-size businesses
Illustrative of certain RSA industries		

Source: Kaiser Associates

This varying degree of process complexity results in a variation in the value sought by different end-user groups from electronic platforms, and hence their requirements of such platforms. It is now increasingly possible, due to emerging supply chain integration applications, to effectively provide a single platform that addresses the process requirements of multiple end-user groups. Technology applications that are able to meet the different requirements of end-user groups will contribute to the financial viability of the DTP Cyberport. Initial investments into the technology platform will provide project sustainability and meet business requirements of this long-term economic development initiative. The DTP Cyberport does not specifically encompass revisiting the existing procedures within each client industry, let alone, reviewing specific corporate practices. However, for the sake of efficiency of the integrated solution, a review and simplification of potentially cumbersome processes will be initiated, to offer the DTP Cyberport the opportunity to bring solutions using efficient processes, not to electronically transpose existing inefficiencies. Benefit is taken from examining some of the successful data messaging solutions in developed markets. The example of Covisint, highlighted in Box 1 herein, provides valuable insights as to data management methods, alignment of users and role of the operator.

Box 1. Covisint and the Automotive Industry

Covisint was conceived by the automotive industry's three main players, Ford Motor Company, General Motors, and DaimlerChrysler, to converge individual e-business efforts that aimed to streamline internal and external supply chains. Previously, each manufacturer had to forge single connections to its suppliers and dealerships to facilitate the supply chain processes. These connections generally focused on extending the manufacturer's internal EDI standard of communication to other players in the supply chain, without implementing additional value-adding applications or services. In parallel, private and semi-private networks communication, including GE's Global Exchange Services, were positioned as EDI Value Added Networks, providing a host of basic communication enablement services across different sectors, including the automotive industry.

Covisint's objectives and core strategy underwent much iteration to emerge as a centre of communication and medium of information exchange for the industry. The vision remained one that addresses strategic issues with high impact on industry revenues. Identifying those issues for facilitation was a key challenge: "We could spend time addressing an issue that represents a fraction of this multi-billion dollar industry, and at the beginning we did, but clients made it clear that the focus should be on greater impact rather than greater span" - executive at Covisint

Starting out with a view to provide access to a number of managed applications in an ASP[4] model, Covisint re-organised its offerings and repositioned to respond to the core challenge facing the industry, which was effective communication along the length of the production and distribution supply chains. Initial applications included auctioning, product cataloguing, and quote management, however deeper understanding and experience with industry requirements changed the focus to one of providing a value-added medium for communication, likened by executives at Covisint to an 'efficient telephone network'. "Industry players already have their own internal applications addressing various supply chain management issues. They do not want to re-organise to use an outside service. What they want is to be able to keep their respective applications AND be able to communicate together" – executive at Covisint.

In addition to addressing a key strategic issue facing the industry, the focus on simply providing an efficient and highly reliable value-added communication medium ensured scale adoption, and participation from the widest cross-section of industry participants. In a highly competitive environment, providing an application or service that might be a key competitive advantage of one of the industry's participants would effectively heighten rivalry between Covisint and potential participants in the exchange.

For Covisint, technology infrastructure and enablers do not underline the value proposition of the exchange. In contrast to a host of value added networks for which providing a cost-effective EDI-enablement service was a core value proposition, Covisint views enabling standardised electronic business communication as a pre-requisite to the realisation of the full potential value of the exchange. Urging the industry to adopt XML-based standards, according to Covisint, would ensure that all players can benefit internally, as well as from the exchange itself. "It is not EDI versus XML, and Covisint is not an EDI-to-XML service. EDI is here to stay because a lot of large organisations have structured their internal processes around it. We simply provide an XML-conduit to facilitate the communication BUT that's not what our key proposition. If there was no need for our protocol mapping application (between a number of enterprise-specific internal protocols and XML), we believe that we would still have a strong value proposition" – executive at Covisint.

The evolution of Covisint's platform and value proposition provides a number of key insights into the development of B2B e-business platforms. The blurred line between B2B electronic enablement platforms and ASPs is coming into focus. Exchanges, and other B2B electronic enablement platforms, are increasingly addressing basic business communication processes, independent from industry-specific applications. This evolution is also defining the boundaries between B2B electronic enablement platforms and traditional communication value added networks. Whereas the introduction and growth of XML and other web-based communication protocols is affecting business communication, providing XML capability will quickly be viewed as a base offering. Successful platforms will identify that key challenge communication challenge facing their industry or industries and provide the most effective medium for its enablement, whether with or without customised technology infrastructure.

Source: Kaiser Associates / Covisint

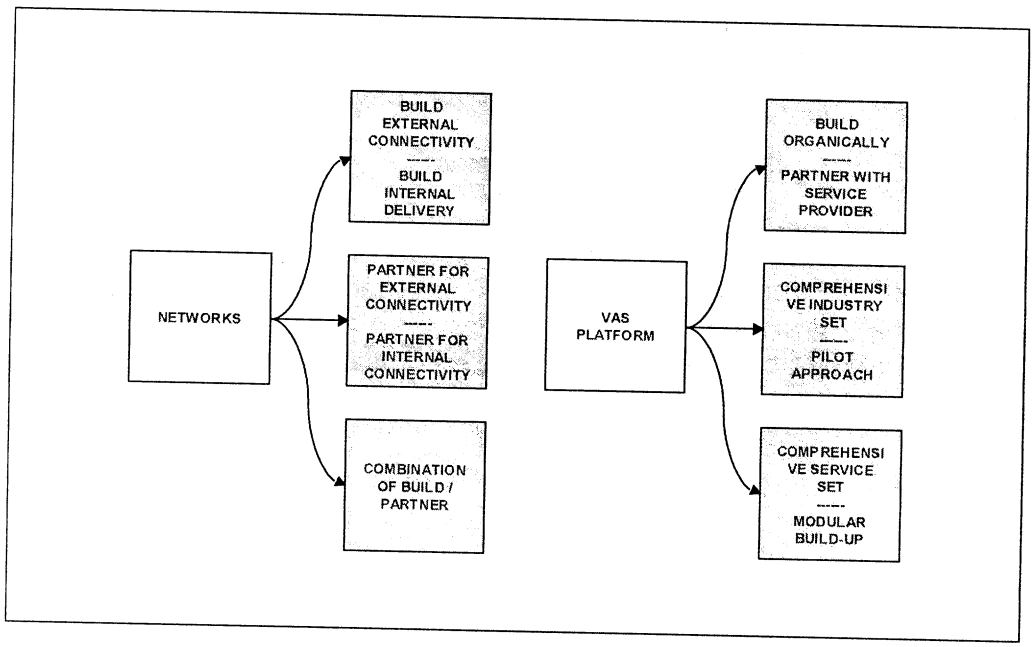
[4] ASP: An Application Service Provider provides their clients with shared access to one or more technology applications and/or services through public and/or private networks.

IV. OPERATIONAL ISSUES IN IMPLEMENTING THE CYBERPORT

A. CYBERPORT DECISION POINTS

Two key points in delivering the DTP Cyberport emerge: (1) the network set-up described above, and (2) the architecture of the VAS platform linking in Cyberport constituents with the global trading place. Typically, in implementing the Cyberport as with the entire DTP project, decision-making is focussed on an arbitrage between affordability and profitability of the project. Although the Cyberport is part of a national endeavour, it is subjected to investment decisions brought about by the PPP structure, where private investors will require some clear profitability measures. As highlighted in Figure 9 below, networks require a decision based on the build/partner tension, whilst the VAS platform requires deeper analysis in terms of (1) the build per se, (2) key focus industries, and (3) width of value proposition in terms of functionalities.

Figure 10. Decision Sets in the Cyberport's Build-up Process



Source: DTP and Kaiser Associates

As mentioned earlier, the DTP Cyberport is a tool, not an objective in itself. The *objective is to increase exports of national and regional producers to regional and international markets*. Some of the implications of this reminder are that, in the process of devising the proper network and platform set-up, the DTP is taking rigorous action at (1) not conducting an "over investment" decision in technology, as the focus is the right investment level in the customer value proposition; and (2) avoiding taking a technological view of the Cyberport, as ICT tools in this instance are enablers. The ICT tools installed, the protocols adopted, the technologies chosen and the programmes installed must all aim at this same objective: simplify the task of the decision makers to initiate trade and create recurrence.

B. OPERATIONAL STEPS IN POPULATING AND BUILDING THE CYBERPORT

The DTP Cyberport will likely lend itself to a marketing and partnership plan with South African potential end-users, as well as logistics service providers, banks, and other proposed participants. Specifically, the Cyberport will have to deal with a series of resistance factors covering, on the end-user side:

- The perception, by local SMMEs, that technology costs constitute barriers to entry: alternatives such as creating a bargaining power relative to IT equipment vendors, may have to be put in play;
- The idea that a major skills upgrade is required from SMMEs to be effective operators of the Cyberport: it is anticipated that the standardised trade features mentioned above, coupled with "user-friendly" technologies such as the ebXML, may help override some of these concerns;
- The unforeseen benefits of electronic transactions in terms of efficiency gains, error reduction, processing time improvement and general quality upgrades: the Cyberport organisation will have to generate charismatic messages highlighting these core benefits, and based on analogies from global electronic marketplaces, data messaging platforms and other online trading facilities;
- The process alignment requirements between industries, to ensure that shared software solutions are effectively put into play;
- The large commonality in transaction processes across industry chains, as a long list of "common" inefficiencies suggests potential for a common electronic remedy to such issues.

C. Marketing and Service Focus of the Cyberport: Modular and Scalable Set-Ups

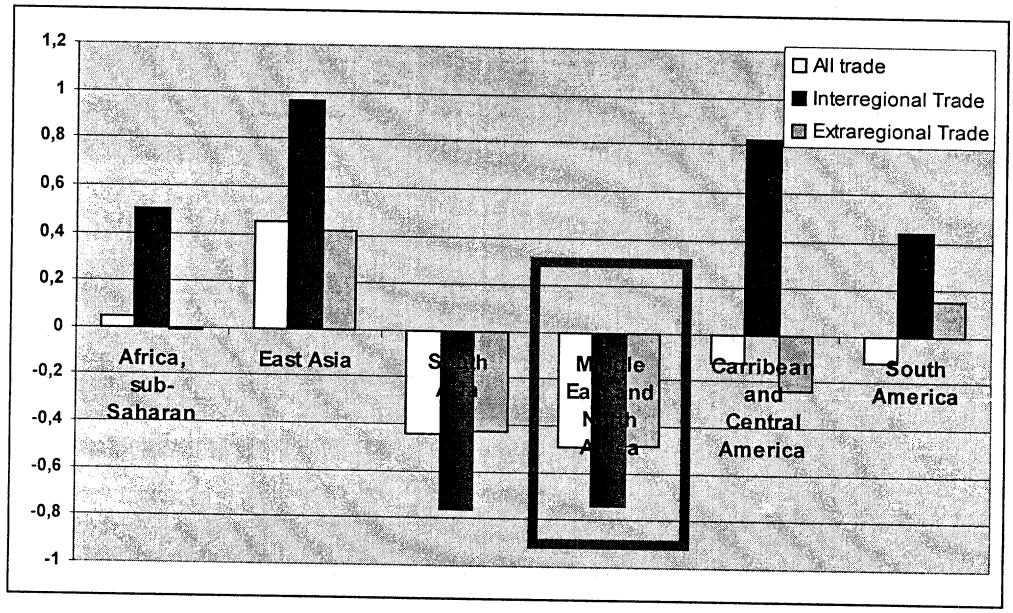
The DTP Cyberport has three levels of novelty for the South African market, touching on (1) typical technology platform aiming to facilitate trade between various parties, (2) the relative novelty of electronic trading in South Africa, and (3) the particular convergence of technology with logistics, may require a thorough market review, with a gradual build of technical capabilities, coupled with a gradual introduction of services.

In this "tiered mentality", it is envisaged that the DTP Cyberport could build a first layer of data messaging services, with a series of security, authentication, encryption, format standardising, protocol inter-operability, and formats. Following that first step, extended to a "pilot" group or "market innovators", the Cyberport could then extend operations into (1) new industry verticals and (2) different levels of services, from auctioning to real-time trading.

V. THE CYBERPORT, AN EXAMPLE FOR THE ARAB AREA?

Greater economic integration and interregional trade has been one of the key objectives of public policy of Arab states. From 1965 and the vision for the Arab Common Market, intra-regional trade developed stronger institutional and political support. However, interregional trade amongst Arab states remains one of the lowest in the world. As table 3 illustrates, using a comparison actual and predicted trade as an indicator for unrealised potential, Arab states provided the largest difference for both interregional and extra regional trade. In both areas, actual trade fell short of values predicted. The Arab states came second to South Asia as the region with the least interregional trade, and were least in terms of extra regional trade. A study conducted by the IMF and the University of Georgetown[5] conducted in 2000 found that the Middle East and North Africa states[6] substantially under-performed their expected trade volumes, based on a gravity model. Specifically, as Table 3 herein highlights, the region is the worst performer in such measurements.

TABLE 3. DEVIATIONS FROM EXPECTED TRADE STANDARDS, 1995-1999, (AVERAGE DIFFERENCE BETWEEN ACTUAL AND PREDICTED TRADE, IN LOGARITHMS)



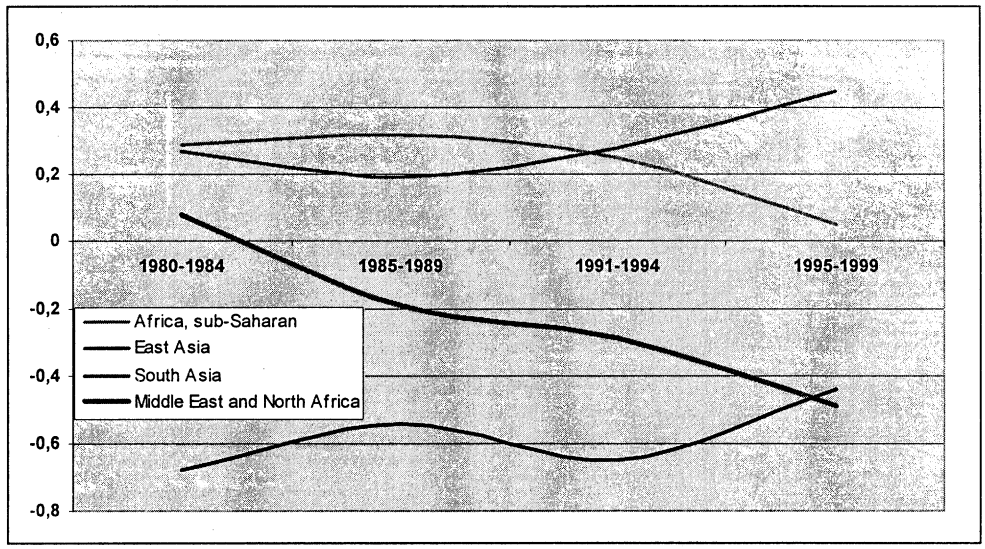
Source: IMF Staff estimates.

In addition, total bilateral trade for Arab states has steadily declined between 1980 and 1999, as indicated by Table 4 hereunder, where the difference between actual trade and predicted trade was the highest of any region.

[5] 'Intra-Arab Trade: Is It Too Little?' published in 1999 by the International Monetary Fund and the Department of Economics at Georgetown University;

[6] Defined as Algeria, Egypt, Iran, Israel, Jordan, Mauritania, Morocco, Saudi Arabia, Syria, Tunisia, Turkey and Yemen.

Table 4. Changes in Bilateral Trade Over Time, (Average Difference between Actual and Predicted Trade, in Logarithms), 1980-1999



Source: IMF Staff estimates.

Several factors have contributed to the low level of interregional trade of Arab states regionally and with the rest of the world including[7]:

- National policies: whereas few countries in the region have adopted free trade policies (e.g. Gulf Cooperation Council), the impact of these policies on actual trade barriers remains minimal. Border formalities and procedures, and the complex requirement for documentation and other clearance represent a major obstacle to trade by affecting market transparency;
- Tariffs: tariff barriers for the region as a whole are amongst the highest in the world. In addition, non tariff barriers, including quota restrictions on imports, exist in many parts of the region;
- Homogeneity of resource endowment: resources across many Arab states are relatively similar whether in terms of minerals or agriculture. This limits the opportunity for trade amongst these states
- Transport logistics: the complexity of border formality procedures and the observed lack of a developed logistics infrastructure have contributed to the high transport costs. High transport costs effectively restrict access to regional as well as international markets, and in the majority of countries, including the Arab states, these cost represent the main impediment to trade.

From an international trade perspective, transport logistics and the lack of a diversified export base have placed significant obstacles on growth. The production sectors across Arab states have been relatively unsuccessful at providing a unified value proposition based on unique product attributes. In addition, appropriate logistics infrastructure, and the necessary convergence with the production and services sectors, has been sited in a number of previous of studies as among the main reasons for low trade levels[8].

[8] Based on arguments presented in 'The role of ESCWA in promoting trade and transport facilitation in the ESCWA region'.

Arab states stand to gain scale efficiencies by creating the necessary mechanisms for combining their manufacturing and agriculture production units on a national and even a regional level. The Cyberport concept, as presented above, builds on this very objective, providing a strong value proposition of effectively converging production, logistics, trade related services, and customs. A multi-modal trade hub with technological enablement, such as what is currently envisioned for the Cyberport in RSA, may be an option to consider for the Arab world to effectively address these trade development objectives.

The Cyberport could present a number of benefits that include: (1) development of increased awareness of Arab products, services and capabilities; (2) creation of skills in mastering international standards and purchasing requirements; (3) development of Arab skills in dealing with integrated international markets; and (4) development of the knowledge base required in connecting to the international markets, particularly dependent on technology.

By providing a platform that effectively aggregates production and provides direct connectivity to large international trading partners including the EU and the USA, the Cyberport could increase visibility of Arab produce and the quality and capabilities of the region. This interest could enhance the current levels of trade, or help in identifying opportunities where the region may hold a latent competitive advantage.

Direct connectivity with international markets could result in increased awareness of international standards and purchasing requirements. A potential impact of this exposure could be the development of local resources and skills capable of understanding international standards and dealing with integrated international markets.

Integration of players such as customs into an electronic process could help create efficiencies and competitiveness for certain players in the region: paper-based processes causing long delays, combined to lack of transparency of certain custom practices, cause the region to suffer delays in the trading process. By integrating customs into, say, a logistics hub in the region, the hypothesis would be that this would result in more efficiency and reduce any "underground" economy that may be thriving on current practices. This would require full political commitment for implementation, and alignment of stakeholders within individual countries, but will ultimately signal to the local market and foreign logistics participants an increased relevance of that country in trade. As such, re-working customs processes and removing obstacles for trade can help economic development, leveraging ICT tools.

Finally, the development of a Cyberport in the region could provide an opportunity for technology transfers and competence building. This convergence of technology and transport can help Arab states organically create the knowledge base in logistics related technologies. Examples of a platform such as Tejari.com in the UAE have shown that the region can (1) absorb technology developments, (2) contribute to developments and (3) build a centre of excellence on these bases. Presently, the Dubai platform is in the process of franchising its operations in the region (Lebanon, Jordan, Iraq, Kuwait), with further expansion planned.

VI. AREAS OF APPLICATION IN SELECTED ARAB COUNTRIES

It remains to be examined if it is a Cyberport, as a technology hub, that best befits specific requirements for trade development in the Arab world. Some solutions may prove less expensive, and less complex in their requirements to incorporate stakeholders. These could include:

- External and internal provision of bandwidth into trade zones: by better managing the procurement and distribution of bandwidth, some trade areas in Arab states could benefit from access to communications and possibly transactional services via the Internet. Research has documented the uneven access to bandwidth in the region, with some countries being more "favoured" than others. As plans such as the South-East Asia, Middle East, Western Europe 4 (SEA-ME-WE 4) project[9] unfold, it may be of particular importance to seek to connect Arab trade zones with such connectivity networks;
- Integration with customs: by further simplifying, automating and potentially integrating customs with the trading requirements of global players, the Arab region would tend to benefit from (1) faster time to market, (2) improved competitiveness of products, (3) improved reputation as a trading area, and (4) individual countries with customs electronically integrate with trade would have built a comparative advantage within the region;
- Industry verticals online trading facilities: some thriving Arab industrial sectors, such as textile in Egypt, commodities and perishables sectors, could gain bargaining weight by coalescing under the umbrella of a technology platform for better reach and trade with global electronic exchanges. Specific companies are already parties to the largest platforms globally. However, for smaller local players who may not have the technical expertise nor the energy to pursue "electronic expansion" independently, a shared solution built on a public and private partnership model could help these players achieve electronic scale, whilst sharing development costs;
- Technology enablement of existing trade zones: the Arab region has produced several industrial clusters and trade zones, some of them offering a wide breadth of tax benefits and other facilities to tenants. Few have built, besides portals with a series of services relevant to property management, any integrated technology trade solutions for their tenants. It may be useful, on a case-by-case basis, to consider the enablement of some trade zones where technology may bring scale and efficiency to the operation. Specifically, this may be relevant to some trade zones where few distinguishing factors have been built, as a means of creating comparative advantage;
- Thinking of Cyberport as a new tool for trade, on par with physical infrastructure: as was highlighted in Figure 2 above, it may interesting to think of a Cyberport as of another infrastructure solution enabling trade. The difference is that this is not necessarily linked to a geographical area. It may be however a means for governments, as part of their electronic government procedures, to create, and administer, jointly with the private sector, a trade platform that would be open to all participants from that country. This trade platform, reliant on a series of communications standards, would offer additional weight to manufacturers and exporters, and would also add benefits such as technology adoption and propagation, with ensuing overall development solutions. The same type of thinking and decision-making as when planning a seaport or an airport could apply.

[9] The Sea-Me-We 4 submarine cable will span 20,000 km (half of the circumference of the globe), linking 14 countries from France to Singapore via Italy, Algeria, Tunisia, Egypt, Saudi Arabia, United Arab Emirates, Pakistan, India, Sri Lanka, Bangladesh, Thailand and Malaysia with 16 landing points. Alcatel and Fujitsu have been awarded the project on a turnkey basis. It will deliver a new terabit cable, which is more than 32 times the initial capacity of the previous Sea-Me-We 3 system, and supports a huge data growth, leased line and broadband services.

A rationale for Cyberport being planned as a government-led initiative could be supported by the imperatives to act as a facilitator, not an administrator. New Arab ICT ministries could consider, whilst recommending such a solution, to look at Cyberport as a means for:

- Bridging Arab SMMEs' technological gaps through local service organisations or local IT associations against a fee, to build competitive edge and participate in the Cyberport;
- Standardising Arab SMMEs around a technology with a view for export. Once standardisation has proved its worth, it can be generalised and gradually adopted across sectors.

To conduct such solutions, some Arab states may want to consider removing the obstacles to the acquisition of PCs and other networking elements for target SMMEs. This could potentially translate into a requirement for funding in parallel to a Cyberport-like project for the area.

KAISER ASSOCIATES BUSINESS PROFILE AND CONTACTS

Kaiser Associates' Economic Development Practice (EDP) was established in 1998 as a distinct division of Kaiser Associates, a leading global strategy firm. Kaiser's Economic Development Practice offers a range of services to national and regional governments, development agencies and NGOs to ensure sustainable economic development, including the following:

- Sector development and diversification;
- Policy analysis and development;
- Programme development and management;
- Stakeholder analysis and management;
- Project feasibility assessment;
- Logistics infrastructure development;
- Capacity building.

Kaiser Associates' Economic Development Practice has its headquarters in Cape Town, with offices in Dubai, New Delhi, London, Washington D.C. and São Paulo.

Kaiser Associates has extensive experience in the ICT sector and other sectoral development and industrial strategy projects. It also has a proven track record of working in multi-stakeholder project environments at national and provincial levels, and therefore has an appreciation of the role, needs and perspectives of government, business, labour and other social partners with respect to economic development projects.

In addition, Kaiser's worldwide corporate practice has worked with the following global ICT companies, and therefore has an understanding of the commercial decision drivers for ICT companies globally:

- Apple Computer
- AT&T
- BBC
- Bell Atlantic
- Bell South
- British Telecom
- Hewlett-Packard
- Honeywell
- IBM
- Intel
- Lucent Technologies
- Microsoft
- Motorola
- Musstek
- Pacific Bell
- Philips
- Polaroid
- Siemens
- Texas Instruments
- US Sprint
- US West
- United Technologies

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