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Information and Communication Technology Division
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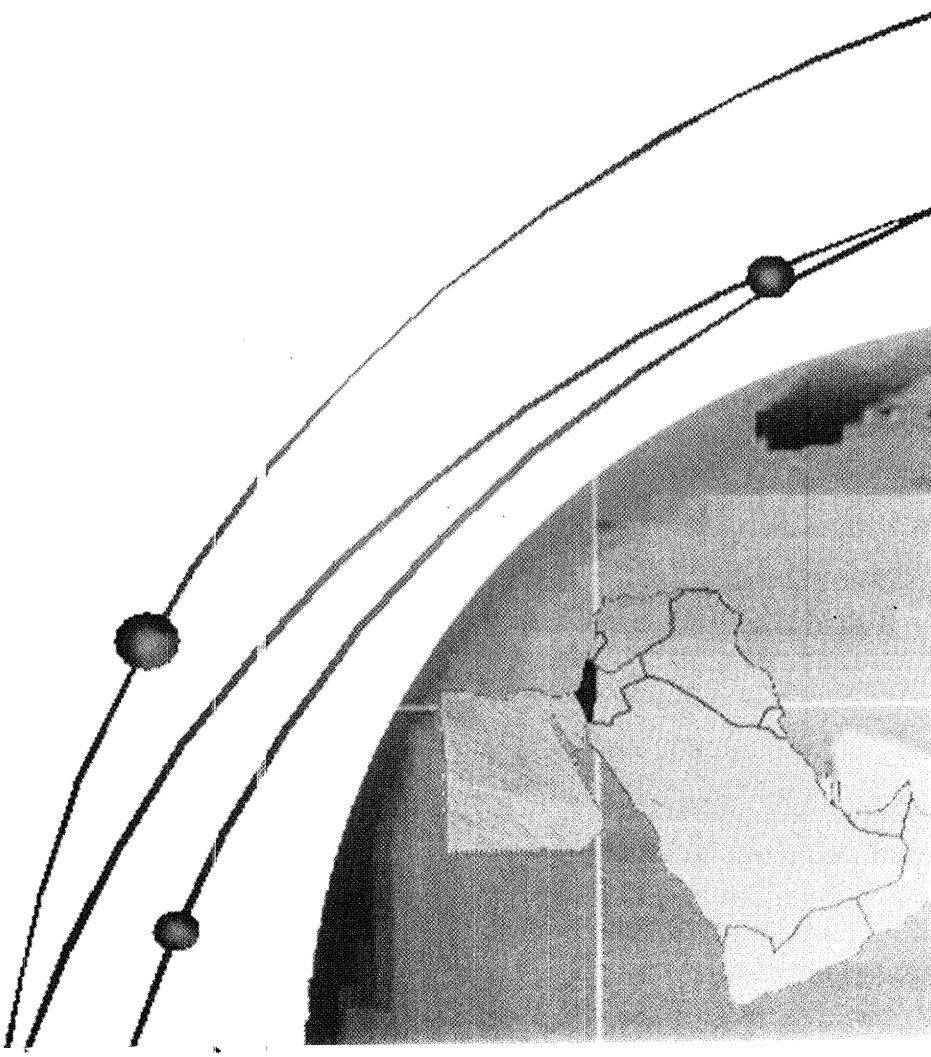
THE CASE OF INTEGRATED TRANSPORT



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Roundtable on ICT as an enabler for economic development:

The case of integrated transport

UN ESCWA
Beirut 29 –30 April 2004

Coll M. Hunter

The Vision:

Install a standard transport tracking system in a region to foster economic development:

- by installing an open:
  - community-wide (all economic agents)
  - multi-country (transit & land-locked)
  - Standard management information system
  - on the Web
- to improve operational efficiency
  - On modes (road + rail)
  - At interfaces (ports + ICDs + borders + Customs)

The Objectives

- Implement a real-time tracking system as part of an overall regional transport policy to stimulate growth and facilitate trade
- to:
  - Reduce transit times of goods
  - Improve productivity of installations and mobile assets
    - i.e. increase vehicle turn-around time (road & rail)
    - = additional carrying capacity with same vehicle fleet: road + rail
    - = additional throughput capacity for same installations: port + ICDs + border posts
  - Reduce costs
  - Reduce fraud

Where is this vision today?

The following elements for Africa and West Asia are valid up to end 2003:

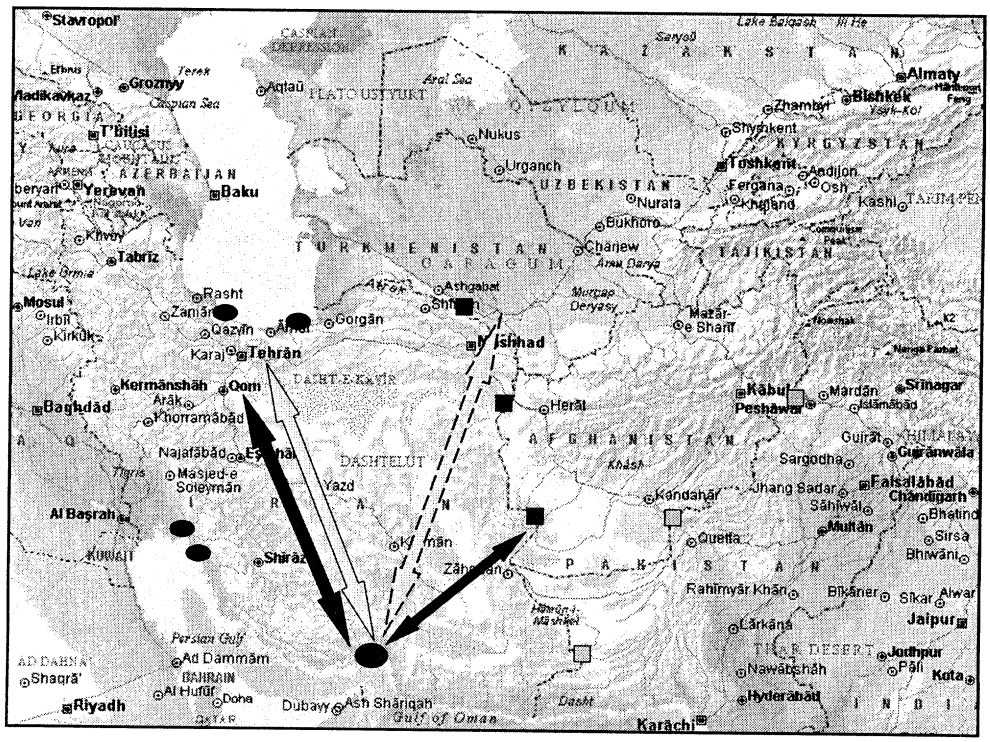
- **UNCTAD installed such a system in Eastern and Southern Africa:**
  ACIS RailTracker & PortTracker
- **UNCTAD partly installed such a system in Iran:**
  ACIS PortTracker in all Iranian ports – discussions under way for Road- & RailTracker
- **UNCTAD partly installed such a system in Lebanon:**
  ACIS PortTracker (HarbourMaster in Beirut)

- **UNCTAD poised to install ACIS:**
  - **In Pakistan – RailTracker + discussions under way for Port- & RoadTracker (China)**
  - **In Egypt – RailTracker on ENR (EU)**
  - **in Afghanistan – discussions under way for RoadTracker (Asian Dev Bank)**
  - **And throughout the West African Region (UEMOA) – RoadTracker (African Dev Bank)**

.....a few more details on the African and Iranian examples.....

The Government of the I. R. of Iran took a step-by-step approach:

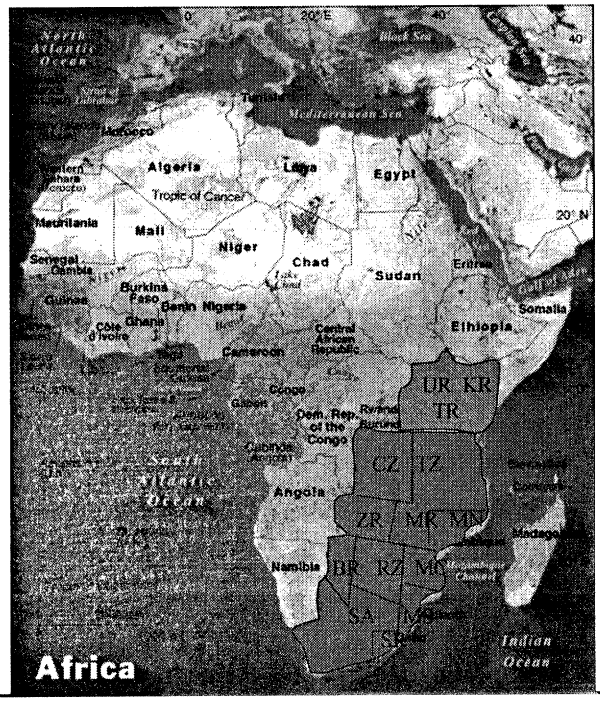
- **UNCTAD installed a port monitoring/tracking system (PortTracker) in the main port of Bandar Abbas with assistance from the Ports & Shipping Organisation (PSO) [1999-2002] – funded by PSO and UNDP**
- **PSO then installed this same module in other Iranian ports (transfer of technology) [2002-2003] – entirely funded by PSO**
- **Discussions started with Transport and Terminals Organisation (TTO): TTO now requesting UNCTAD to undertake a study to advise on possible modernisation of road transport sector management [underway and funded by TTO]**
- **Possible future link of PortTracker with road and rail modes in Iran**
- **+ Link with neighbouring land-locked countries:**
  - **Afghanistan opting for RoadTracker/border post management**
  - **Pakistan has already opted for RailTracker and is considering RoadTracker and border post management**



…as for the Eastern Southern African example...

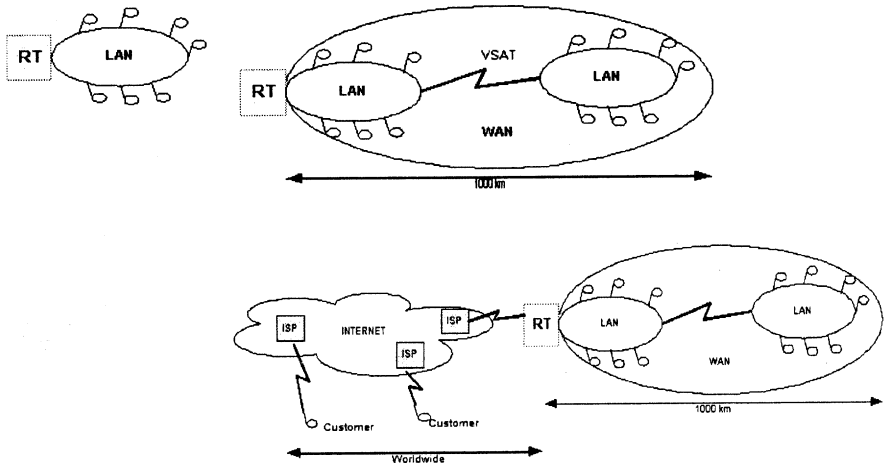
- **Data Distribution =**
  - B2C Customer Access
  - B2B between Railways
- **Wide Access Range**

NB: RT is also working in Sudan but SRC network not regionally interconnected



Wide Access Range:

- = **RT is accessible from a LAN, a WAN and Internet**



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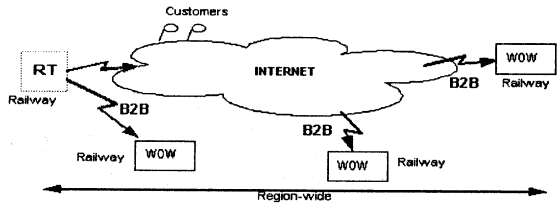
Data Distribution **(with different objectives)**

- **Customers can access RT through Internet** (in fact, since 1997!)
  A **Customer** can access only (but all) **his own consignments and wagons** used to transport them:

  - **Railways** of the same community **exchange data (B2B)**
  - Any operation concerning another railway is sent to its WOW (World Outside the Window) system
  - When the railway is the **wagon owner,** or the **origin** of the consignment, or **intermediate** on the consignment trip, or the **final destination** of the consignment



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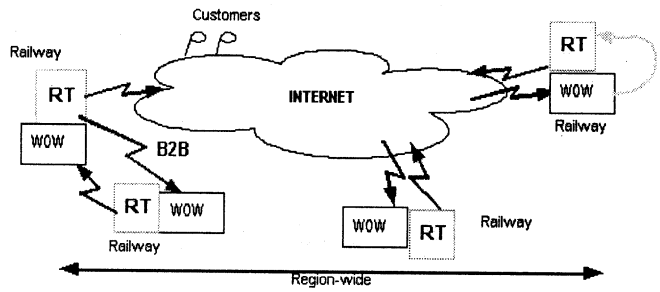
B2B between Railways

Each Railway – using the WOW system - can look at:

- **its wagons on foreign networks (history of operations)**
- **the consignments of its customers**
- **the wagons on the neighbouring network coming to the border crossing**



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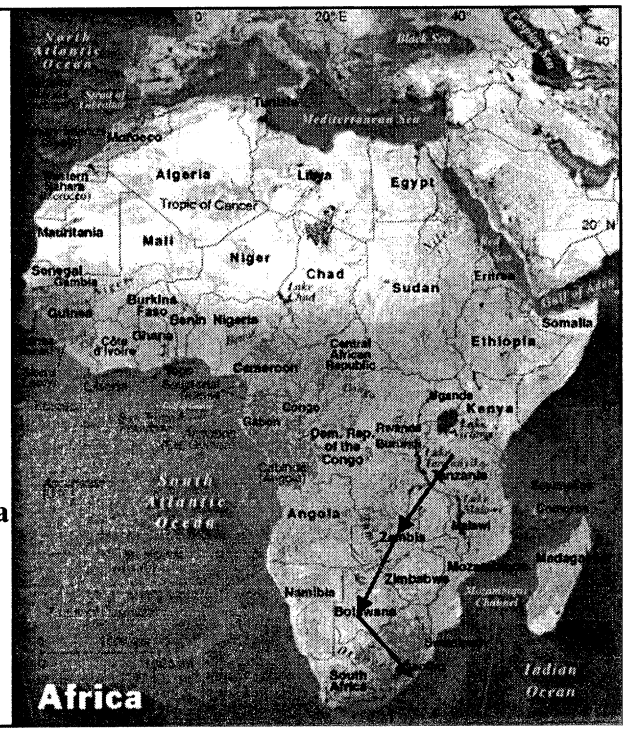
Example of regional traffic and data exchange:

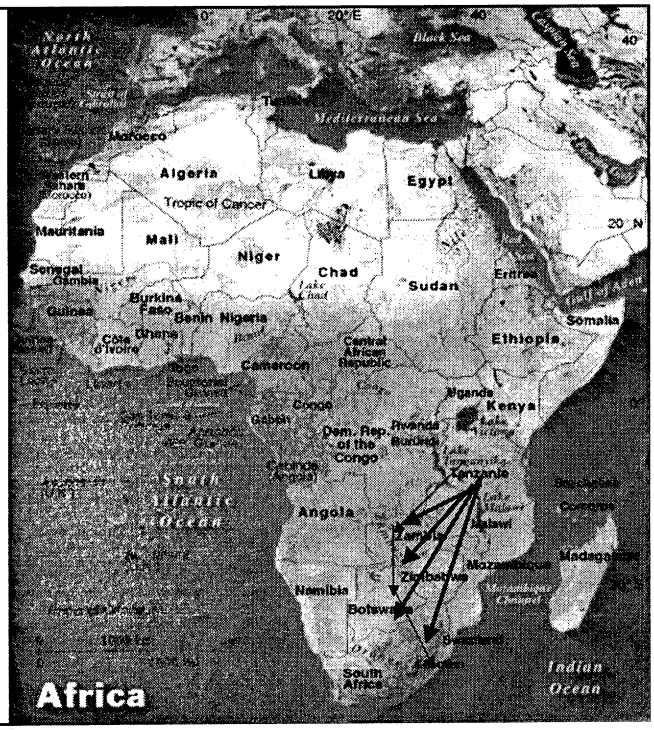
Container scheduled from middle of Tanzania to Port of Durban



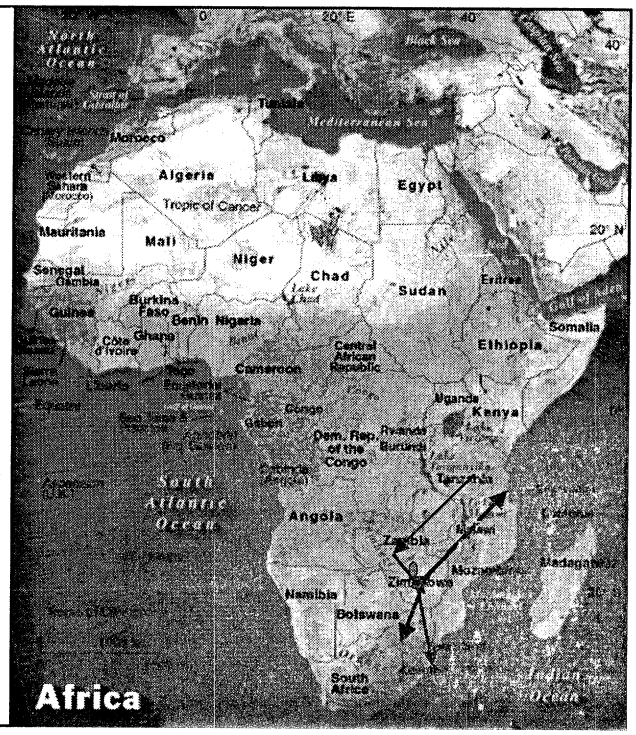
When this consignment is recorded into RT, an XML message is sent to the WOW system of each railway on the path.

When the loaded wagon is attached to a train, another message is sent to each of the same railways.

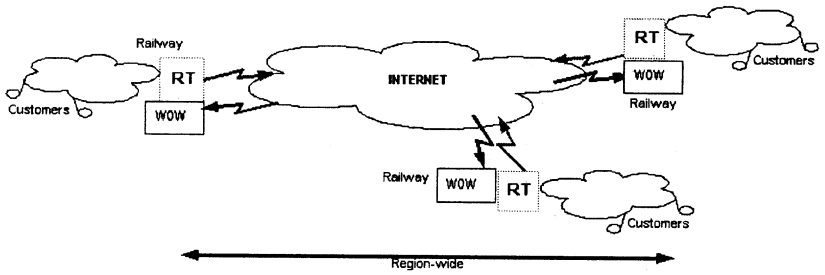
And so on…



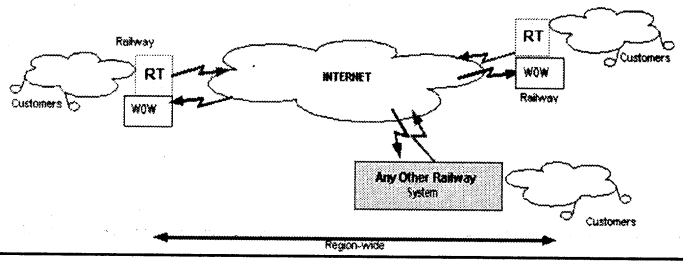
In fact, all the operations 'en route' are reported (XML messages) to the railways still involved.



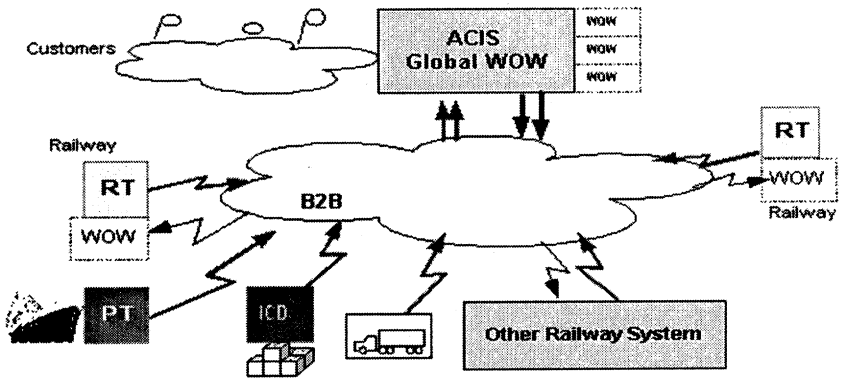
Today several RT servers exchange messages



- With a connexion to another railway system (e.g. South African Railways)



- Via standard codes,
- unique customer-id/password,
- aggregated database structures…



…this expertise can be shared !

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The proof of the pudding is in the eating…

…. where is my container, where are my goods, where is the train, the rolling stock, where are my wagons … ?

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To accomplish this,
UNCTAD proposed its
Advance Cargo Information System (ACIS)
which had produced proven results …

For instance, on the rail mode, an independent evaluation undertaken in 2002 for 5 railways of Eastern/Southern Africa showed that ACIS generated…..

Total estimated additional revenue due to increased carrying capacity = USD 20,5 M per annum

through reduction of:

- **wagon turnaround time**
- **consignment transit time**
- **wagon detention time**

Total estimated savings on rail wagon hire charges between the 5 countries = USD 6,4 M per annum

- **through reduction of dwell time of foreign wagons**

(for 10,000 operational wagons, 10,000 kms track, 8 MT cargo)

So, what is ACIS ?:

The Advance Cargo Information System

is a generic name given to a « tool box »:

- to address multi-modal cargo transit and transport resource problems
- each application is independent of each other
- but is designed with a modular approach
- to enable all to « co-habit »
- and freely exchange data
- in an industry accepted standard form
- and operate in difficult physical environments
- using a wide range of novel technologies – from simple/robust to sophisticated, as the terrain permits

ACIS is a Transport Information System

Designed, developed and implemented by UNCTAD;

Funded by: European Union,
World Bank,
United Nations Development Programme,
USAID
French, German and Belgian Cooperation
and national operators,

To track cargo and rolling stock on modes and at interfaces

- Ports
- Railways
- Roads
- Lakes / Rivers
- + GLUE

There are 4 ACIS OUTPUTS (1/2)

▪ADVANCE INFORMATION:
for short-term traffic planning by users based on:
- manifest data (imports)
- cargo booking data (exports)
- tracking data (transit cargo)

•"SPOT" INFORMATION FOR USERS
- Actual position of cargo
- Actual position of transport vehicle (trucks, wagons…)
- Record of Movement

….4 ACIS OUTPUTS (2/2)

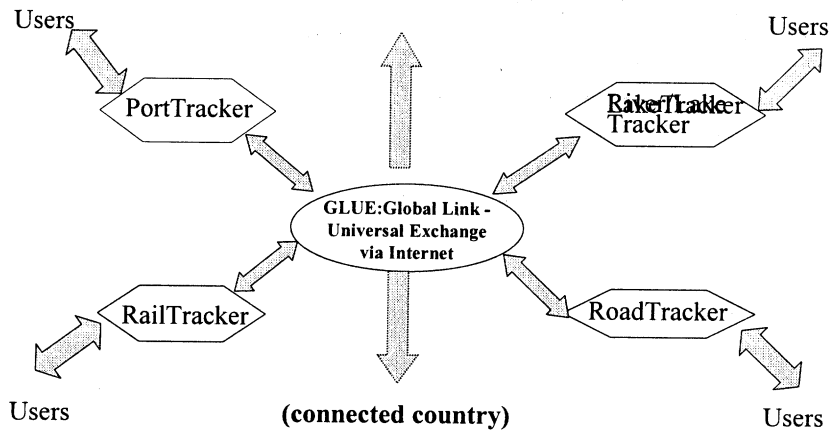
• MONTHLY TRAFFIC STATISTICS

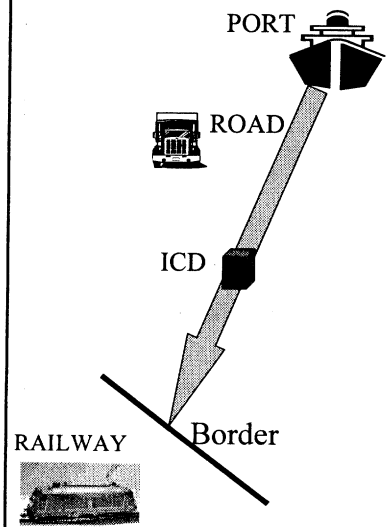
For operators and planners:
- operational statistics
- planning statistics

• PERFORMANCE INDICATORS

For operators and macro-economic planning (Mid and long-term):
- management control
- logistics planning – modal choice
- resource utilisation

INDEPENDENT MODULAR COMPARTMENTS EXCHANGING DATA IN INDUSTRY ACCEPTED STANDARDS



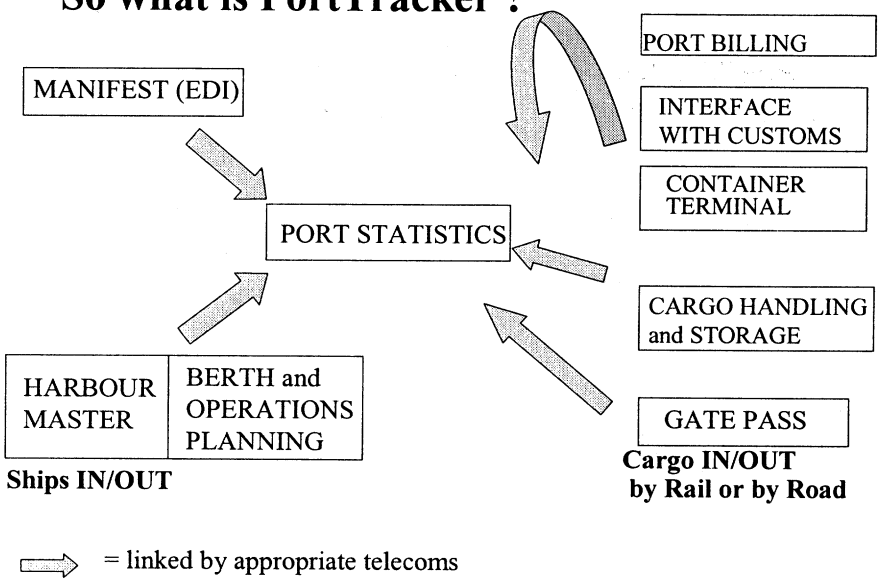


Before ACIS, there can be many <u>independent</u> information systems, such as...

PORT INVOICING
CONTAINER TERMINAL
SHIPPING/CUSTOMS AGENTS
FORWARDERS
CUSTOMS
STEVEDORES
SHIPPING LINES´ TRACKING
RAILWAY INVOICING
ROAD HAULIERS M.I.S.
OTHER ORGANIZATIONS.....

...using or not using EDI / XML...

So what is PortTracker ?



Then there is ***RoadTracker*** *(1/3)*

Comprising:

- **Vehicle Data Base**
- **Road Bill Data Entry**
- **Road Statistics**
- **Interface Monitoring System for cargo & vehicles:**
  - **At Borders**
  - **At any modal split**
  - **And at any interface (e.g. ICDs)**

(2/3)

Both RoadTracker and RailTracker can use many different technologies, depending on the site and the resources available:

- for data capture:
  - tags,
  - visual capture,
  - Transponders,
  - electronic seals....
- for data transmission:
  - VSATs,
  - VHF,
  - leased lines, etc...
  - .

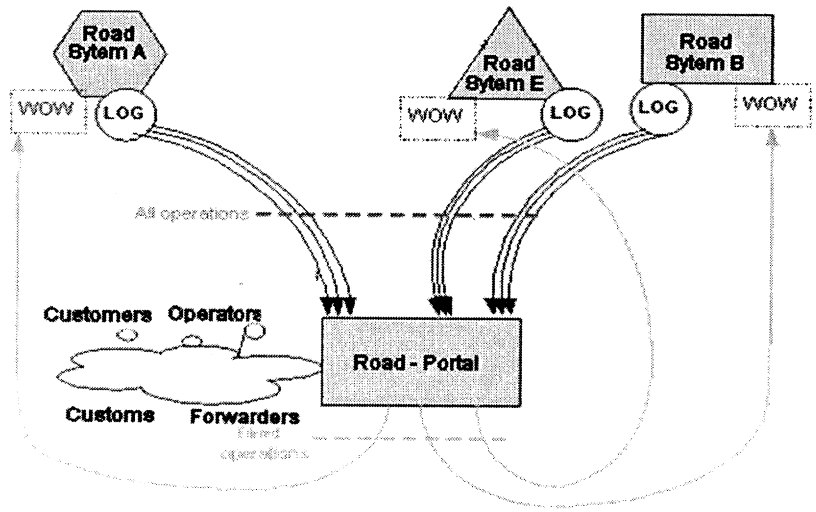
So what does RoadTracker do ?

- **Captures Cargo declarations**
  - **Third counry/bilateral; import/export; local; in-bond**
- **Captures cargo movement documents**
  - **Gate pass**
    - **Gate identification, vehicle, date/time, container & cargo items**
    - **Entry/exit vehicle at border/ICD/port**
  - **Check-point pass en-route**
  - **Transshipment pass at ICD or at border**
    - **Consignment un-grouped (last truck carries Transit document)**

•<u>Produces regular and reliable statistics</u>:

- •Quantities cargo
  - •per country, type cargo,
  - •imported/exported
  - •route/itinerary,
  - •origin/destination,
  - •parties involved, etc.
- •Transit times + Dwell times etc

…. And could connect regional road networks over the Internet like this:



So ACIS is an ICT designed:
• as an enabler for economic development and
• to change the transportation culture:

by promoting "business partnerships" between:

- operators/users
- whether private/public
- whether national/international

- in that ***customers are aware*** of reasons
  - for consignment delays
  - for poor quality of service

...SO AS TO IMPROVE MATTERS TOGETHER

Thank you !