

East Meets West - The Challenge of Globalisation



8th European Conference Construction in Europe

Conference Programme

East meets West - the Challenge of Globalisation

Thursday 10 April 1997

Conference Chairman's

Opening Address:

Kurt Torster - Member of Board of Management;
Head of Operations, Lurgi Öl Gas Chemie GmbH

Keynote:

Globalisation & Competitiveness

Helmut Schmitt von Sydow - DGIII - European Commission

Session One:

Perspectives on Globalisation

Session Chairman:

Terry Lazenby - Chief Engineer, BP International Ltd

This session will examine the process and implications of globalisation from three geo-economic perspectives and assess the strategies of the respective engineering and construction industries for responding to it.

The Far East and the Pacific Rim

Hiroshi Tanaka - Deputy General Manager, JGC

The American Continent

Susan Farrell - Director of Business Planning, Brown & Root Ltd

Russia and the former Soviet Union

Andrei Orlov - FSU Expert & Manager FSU Commercial,
Kvaerner John Brown

Panel Discussion and Session Summary

* * * * *

Conference Programme - continued

Friday 11 April 1997

Session Two: The Responses to Globalisation

This session will examine the aspect of the manner in which the industry has responded to globalisation.

The Global Approach to Lumpsum Turnkey Contracting

Dr Armin Franke - Director of Projects & Head of Project Management
Lurgi Öl Gas Chemie GmbH, Frankfurt

Project Finance in an Uncertain World

Rauf Diwan - Power Department Director,
International Finance Corporation

Communication and Technology

Bill Mitchell - IT Director, Kvaerner John Brown

Panel Discussion and Session Summary

Session Three: The Impact of Globalisation

Session Chairman:

Alain Pierru - Project Director, Elf Oil UK Ltd

This session will assess the impact of globalisation on the management of projects with multinational participation.

Florida Overland Express -

Eugene Skoropowski - Director of Transportation Services

Rough CCGT Power Station - Pakistan

Hans-Dieter Martin - Deputy Director of Marketing, Powerplants and
Turbine Generators, Siemens AG, KWU FM/F-KIN

Global Contracting to Achieve an Exceptional Business Result

Roger Holmes - Alliance Project Director,
PT Petrokimia Nusantara Interindo

Panel Discussion and Session Summary

Conference Chairman's

Closing Address:

Kurt Torster - Member of Board of Management;
Head of Operations, Lurgi Öl Gas Chemie GmbH

DELEGATE LIST OF ATTENDEES - ALPHABETICALLY BY ORGANISATION

ATTENDEE NAME	ORGANISATION
Ronald LeBright	ABB LUMMUS GLOBAL
Josef Gregor	ABB LUMMUS GLOBAL
Jan Van Adrichem	ABB LUMMUS GLOBAL BV
Gary Field	BECHTEL LIMITED
John McAllister	BG PLC
Paul Campbell	BOC PROCESS PLANTS
Tony Probert	BP INTERNATIONAL
Chas Lambert	BROWN & ROOT CIVIL SERVICES
Peter Absalom	CCG CONTRACTING INTERNATIONAL LTD
Frank Neels	CFE/MBG
Aaron Morby	CONSTRUCTION NEWS
Guy Dury	COPPEE-COURTOY
Jean Verbrugge	COPPEE-COURTOY
Dr Mark Mawhinney	DEPARTMENT OF ENVIRONMENT
Steve Davies	DEPARTMENT OF TRADE AND INDUSTRY
Richard Riley	DEPARTMENT OF TRADE AND INDUSTRY
Mr E U Rhee	DONG-AH CONSTRUCTION CO LTD
Brenig Williams	ECIA
Jacques Clade	ELECTRICITE DE FRANCE
Sylvi Debes-Cross	EPCI
Phillipe Jean	EUROPEAN COMMISSION
Henri Chausteur	FABRICOM
Tony van den Brande	FLUOR DANIEL BV
Dennis Singleton	FOSTER WHEELER ENERGY LIMITED
Sally Roe	FRESHFIELDS
Martin Melling	GEC ALSTHOM ENGINEERING SYSTEMS
Martin Austick	GEC ALSTHOM ENGINEERING SYSTEMS
Tomas Fialho de Oliveira	GUEDOL ENGENHARIA LDA
John Burt	HERTEL (UK) LIMITED
Mr Y Horie	JGC CORPORATION
Robert Pollock	KVAERNER JOHN BROWN
Dr J Schulze	KVAERNER JOHN BROWN BV
Mr N R Iyer	KVAERNER JOHN BROWN BV
Malcolm McGill	KVAERNER JOHN BROWN BV
Anthony Y Evans	LAING CIVIL ENGINEERING
Rod Halliburton	LAING ENGINEERING LTD
Len Porter	LLOYDS REGISTER
Joachim Engelmann	LURGI ANLAGENBAU CHEMNITZ GmbH
Detlef Preuss	LURGI OL-GAS-CHEMIE
Mike Welsh	M W KELLOGG LTD
Michel Franz	MINISTERE DE L'INDUSTRIE
Bill Fairney	NATIONAL POWER PLC
Martin S Borthwick	NATIONAL POWER PLC
David Hollier	OSO, DEPARTMENT OF TRADE & INDUSTRY
Dennis Causier	PIPEWORK INTERNATIONAL
Frank J Van Heijningen	RAYTHEON ENGINEERING & CONSTRUCTION
Jean Jacques Steimer	RAYTHEON LITWIN
Klaus Steinmann	RUHRGAS AG
George Rosenberg	SHADBOLT & CO
Walter Mueller	SIEMENS AG KWU
Siegfried Kupczok	SIEMENS AG KWU
Benito Manoli	SNAMPROGETTI
Mike Hockey	SNAMPROGETTI
Luc Bossyns	STORK MEC NV
Manfred Schlosser	STRABAG AG
Francois Mentre	TECHNIP
Mirella Colarieti	TECHNIPETROL SPa
Luca Mori	TECNIMONT S.P.A.
Stephen Marshall	TEXACO BRITAIN LTD
Dr Wolfgang Kuhnel	V.D.M.A.

SPEAKERS AND ECI STAFF - LISTED ALPHABETICALLY

ATTENDEE NAME

ORGANISATION

Dr Fritz Bruhl
Rauf Diwan
Susan Farrell
Dr Armin Franke
Roger Holmes
Terry Lazenby
Hans-Dieter Martin
William Mitchell
Andrei Orlov
Alain Pierru
Eugene Skoropowski
Kurt Torster
Helmut Schmitt von Sydow

MANNESMANN DEMAG AG
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BROWN & ROOT ENERGY SERVICES
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BP INTERNATIONAL
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FLORIDA OVERLAND EXPRESS
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EUROPEAN COMMISSION

Dr Andrew Baldwin
Colette Budjoso
Caroline Davis
Chris Marchant
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FOR THE 8TH EUROPEAN CONFERENCE **BERLIN 1997**

Wines with the Gala Dinner
Thursday 10 April

FLUOR DANIEL

Industrie-und Anlagenbau
Nurnberger Str. 16-18
04103 Leipzig



Snamprogetti

Refreshment Break
Friday 11 April



EXHIBITORS

FOR THE 8TH EUROPEAN CONFERENCE **BERLIN 1997**

SHADBOLT & CO

Solicitors

Shadbolt & Co are a highly regarded specialist major project and construction law firm with offices close to Gatwick Airport near London. They have wide international experience in this field.

HOECHST AKTIENGESELLSCHAFT

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East meets West
- the Challenge of Globalisation

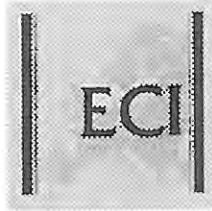
Kurt Torster

Kurt Torster M.S.Ch.E

Currently Mr Torster is a Member of the Board of Management of Lurgi Öl Gas Chemie in Frankfurt am Main. He is responsible for Project Management and Engineering for the Lurgi Öl Gas Chemie Group, worldwide.

His background in the engineering and construction industry stretches over 30 years.

Mr Torster has lived and worked in the USA, Brazil, The Netherlands, Greece, Japan and Germany.



8th European Conference Construction in Europe

East meets West

The Challenge of Globalisation

Kurt Torster

LURGI

Globalisation

What it is:

Globalisation is an inevitable consequence of political and economical developments accelerated by late 20th century technology. "In essence, it means nothing else than the use of world-wide resources to increase the gap between costs and turnover" - Winfred Munster

What it is not:

Globalisation is not Westernisation.

LURGI

Globalisation *Cont.*

The following priorities are necessary:

■ Globalisation of sales and market

- *proximity to customers*
- *be responsive to market changes*
- *develop local sales capabilities, i.e. in India, China, South-East Asia, South America & others*

■ Positioning as "Global Player"

- *We must invest in new markets to be close to our clients.*
- *Set-up new facilities in foreign countries based on joint ventures, alliances, mergers and/or acquisitions. Internal growth alone may be too slow.*

LURGI

Globalisation *Cont.*

■ Lowering the costs / realign the split of work

- *Lower engineering costs - use of "Low Cost" engineering centers in India, China, Poland etc. Chinese engineering costs are 70% lower than in Europe. Engineering costs are often the deciding factor.*
- *World-wide procurement*
- *Develop "Low Cost" supply markets, i.e. Czech Republic, Poland, China, India.*
- *Maximise local content - the amount of local content is often a strong factor on winning projects*

LURGI

Globalisation *Cont.*

- Whole competence centers will be relocated to foreign locations.
- Partnerships with chemical / refining / petrochemical companies and other E/Cs for acquisition of technology
- E/Cs will form joint ventures on projects with other international E/Cs and pairing up with local companies

LURGI

Globalisation *Cont.*

- The E/C must be capable to execute LSTK projects world-wide and be project driven
competent project managers are needed
global exchange of key management personnel
old department project execution will disappear
- World-wide financing capabilities
- Risk management
- Willing to take risks on new contract models ie BOT, BOO, BLT, equity participation
- Standardisation / Modularisation

LURGI

Intelligent Execution Systems

- As competitive measures mount in the global E/C business - need a radical way to reduce project costs and schedules
- Intelligent P & IDs
- 3D System with "Walkthrough" - virtual designs - can visualise from any perspective
- Dynamic modelling
- Computer photogrammetry - Retrofits
- Revamps
- Automatic pipe routing

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Intelligent Execution Systems *cont*

- Project Data Base
- Document Management Systems
- Material Management Systems

LURGI

Modern Data Communication Systems

The ability to transfer data globally allows doing engineering simultaneously in various countries

- EDI - linking 3D to manufacturers and the construction sites
- Telecommunication networks link E/Cs with their subsidiaries, clients and suppliers around the world
 - Group ware
 - Lotus notes

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Strategic Goals

Cut project schedule by 15 - 20 %

Cut project cost by 25 - 30 %

Service portion West Europe 40 %

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8th European Conference Construction in Europe

SESSION ONE ***'Perspectives in Globalisation'***

Session Chairman:

Terry Lazenby of BP International Ltd

Bsc (Chem Eng) Feng Msc (Management)
FI ChemE FInstPet CdipAF

Terry Lazenby was appointed Chief Engineer BP International Ltd in 1993. In the 34 years he has been with BP he has held a number of senior positions as follows:

Manager, BP Research and Engineering Centre;
General Manager, BP Engineering;
Director, Manufacturing and Supply, BP Oil UK Ltd;
Works General Manager, BP Chemicals, Grangemouth.

Prior to 1981, Terry held various senior positions in Process Engineering and Project Management.

He has been Chairman of the Board of British Pipeline Agency from 1987 to date.

His current external involvements are:

Executive Chairman STEP (Standard for Exchange of Product Model Data)
Executive Chairman UK Process Industries Consortium
Chairman Executive Committee International Energy Agency Process Integration (IEA)
Chairman ACTIVE (Achieving Competitiveness Through Value Engineering)
(part of the joint DTI/industry initiative for the Process Plant Construction Industry)
Visiting Professor Department of Process Integration UMIST
Member of the Senate of the Engineering Council



8th European Conference Construction in Europe

The Far East and the Pacific Rim

Hiroshi Tanaka

Hiroshi Tanaka / Tsyuyoshi Okada

Mr Tanaka has 30 years of experience in the engineering and construction industry, with JGC. As Deputy General Manager of JGC's Operations Administration Division, he is responsible for corporate quality management, environmental planning, safety administration, development planning, IT resources management, and operations administration.

His previous career includes key person, team manager and department manager on project administration, operations of JGC's affiliate in Indonesia, proposal services and operations administration as staff to senior management.

Mr Tanaka is Vice Chair of the Project Management Committee of ENAA, Japanese project industry association, member of the Project Management Institute (PMI) U.S.A. and national delegate to the Global Project Management Forum.

He holds Bachelor of Laws in Political Science from Keio University, graduated in 1967, and is a certified Project Management Professional (PMP) of PMI.

The Paper was jointly prepared by: Mr Okada:

Mr Okada has 35 years of experience in the engineering and construction industry, of which he has been with JGC for 30 years. Mr Okada is Senior Managing Director primarily responsible for strategic business development and engineering operations.

At JGC, he has constantly been engaged in international project operations, as project engineer, project engineering manager, project manager/project director and project sponsor on projects in Venezuela, Argentina, Brunei, Malaysia, Hong Kong, Indonesia, Singapore, Kuwait, Algeria, Nigeria and so forth.

Prior to the current positions, he was General Manager of JGC's International Project Division. Mr Okada holds BS in Chemical Engineering from Shizuoka University, graduated in 1962.



8th ECI European Conference

Perspectives on Globalization The Far East and Pacific Rim

Berlin, April 10-11, 1997

Tsuyoshi Okada

Hiroshi Tanaka



JGC CORPORATION



Topics

- ◆ **Introduction to the Region**
- ◆ **JGC Project Experience in the Region**
- ◆ **Future Projects**
- ◆ **Globalization - Requirements on Contractors**
- ◆ **Impact on Contractors**
- ◆ **Summary**

Slide-5 shows the GDP per capita figures for 1995 and those expected for 2010 of the countries in the region, as seen along the vertical axis, and as against the historical development of the GDP numbers for Japan which are plotted along the horizontal time axis.

By way of illustration, typical business cultural aspects of the region follow (Slides-6 and 7), of which, connotation slightly differs depending on the country owing to each cultural background.

Management Style

Management in Asia Pacific is characterized by three main features, consensus, bottom-up decision making, and a lump sum mentality. By lump sum mentality, it is meant that Asians tend to focus on the total, the overall picture, leaving the details to those who will directly carry out the work. This mentality is, thus, well suited to lump sum contracts and helps to explain their prevalence in Asia.

Contracting Practices

Asians generally avoid clear definitions of contractual obligations and dislike precisely worded, rigid statements, but rather, they view contracts as a mere business formality. In other words, Asians tend to rely on compromise based on long-term relationships.

Negotiation Style

Negotiations in Asia are rather tough.

First, negotiations reflect local cultures. Asian business is based on consensus and, thus, business deals in Asia require long preparation, many meetings, and careful study on how to get the best results without generating a conflict. While Westerners tend to look upon the negotiation as a constructive, straightforward process to reach an agreement, Asians often repeat consensus-building at major milestones of negotiations, which Westerners often find very frustrating.

Second, lump sum contracts prevail in the region, and re-bidding quite often occurs, which also makes the negotiations tough.

Project Management Style

Project management is a hybrid of art and science. Project management in Asia is bottom-line oriented, focusing on successful project completion while meeting the triangle constraints of quality, schedule and costs. Here, primary emphasis is placed on experience of project managers, or the art side. Partially because Asian contractors operate mostly on a lump sum contract basis, less attention has been paid to project management processes, or the science side. However, as the influence of ISO compliant

Perspectives on Globalization The Far East and Pacific Rim

Tsuyoshi Okada

Senior Managing Director

Hiroshi Tanaka

Deputy General Manager

JGC Corporation

Tokyo, Japan

This presentation addresses perspectives on globalization in the Asia Pacific countries as seen from JGC Corporation, one of the leading engineering and construction companies primarily based in the region.

First, an introduction to the Asia Pacific region is offered in terms of expanse, diversity in various aspects and growth prospects. Then, project prospects in this region, in both hydrocarbon development and infrastructure investment, are projected based on relevant statistics and project information resources. These discussions are followed by the speaker's analysis of the drivers and requirements for globalization in the region, and insight into impacts that those globalization drives would have on contractors.

Introduction to the Asia Pacific Region (Slide Nos. 3 through 7)

There is no clear-cut consensus on the scope of Asia Pacific. For this presentation, the region is defined as the area from Japan in the Northeast, China in the West, Myanmar in the South and Indonesia in the Southeast as shown in Slide-3.

The Asia Pacific Region is a vast area with a population of 1.7 billion people that is about five times larger than EU, and this population is expected to grow by 25% by 2010, while the population of EU will remain virtually constant.

As shown in Slide-4, there is a marked diversity of economic development status as well as cultural and social landscapes among the countries.

The growth rates in the region are generally much higher than those prevalent in major Western economies, with the exception of Japan, which is comparable.

A variety of religions and colonial heritage in the region has brought about cultural and social diversity among the countries. It is noted that while the original colonial heritage still remains in some systems in some countries, the influence of other Western countries, is also observed as a result of economic ties.

business management systems is established, and the system of modern project management processes is being valued in Western countries, Asians have started rebuilding project management processes to be more transparent and well balanced as well as to offer the same framework as that of our Western colleagues.

JGC Project Experience in the Region (Slides Nos. 8 and 9)

As a token of JGC's qualifications to address project globalization issues in Asia Pacific at this esteemed conference, these two visuals show JGC's project experience since 1980 in this region.

Setting aside Japan, JGC's home base with 1,200 projects worth US\$15 billion, JGC has completed 200 projects elsewhere in the region. In particular, JGC has logged US\$14 billion worth of work in the five Southeast Asian countries of Indonesia, Malaysia, Brunei, Singapore and Thailand. JGC is also active in China, Taiwan and the Philippines; particularly in China, JGC has handled more than 50 projects.

Future Projects (Slides Nos. 10 through 15)

Slide-10 depicts reserves of oil, natural gas, and coal in million tons of oil equivalent in this region. China's vast potential merits special attention.

Slide-11 indicates prospects of hydrocarbon projects in the region. The salient characteristic of this projection is a well-balanced mix of the three representative types of projects in the HP industry, namely, refinery, ethylene and base-load LNG projects, reflecting the region's motorization drive, petrochemicals boom, and demands for LNG as a clean, high-efficiency source of energy.

Regarding infrastructure, World Bank data in 1993 is quoted in Slide-12, which shows infrastructure stock per capita versus GDP per capita, in the countries in the region. It is statistically presumed from this graph that China, Indonesia, Thailand and Korea have higher potential for infrastructure investment.

The Asian Development Bank (ADB) estimates that 1 trillion US dollars worth of infrastructure projects should be required in East Asia within this century, although this may be questionable.

Slide-13 plots major planned projects in power generation, telecommunications networks, highways, super-express railways and airports based on published data.

Recently, the World Bank released the source shares of development financing destined for the developing countries in 1996, which indicates 86% (equivalent to US\$244B) of the total financing was from the private sector. In Asia almost every day, some infrastructure projects are announced, and an absolute majority of those projects are, in fact, privately financed.

As depicted in Slide-14, the pattern of industrial development in the Southeast Asian countries is quite unique. While Japan's industrial development pattern, cited for comparison in this diagram, has been renowned as a high-growth model and therefore one many Asian countries are modeling, that of the rest of the region as a whole is even further accelerated in that the starts of development in the respective industries were considerably more advanced than in Japan when compared against GDP per capita at the starting time.

This phenomenon has been caused by cyclic impacts of economic development opportunities, motivations and implementations (Slide-15). The region's low-cost production opportunities first invited accelerated investment in the manufacturing sector, which used to be export-oriented, and this fueled economic growth which, coupled with efficient technology transferred from the West and Japan, put on the domestic market affordable durable goods, such as cars and electrical appliances, among others.

The resultant motorization drive and market boom, which are raising local living standards, are also inducing modern energy consumption, and that is leading to expanding infrastructure investment in addition to added manufacturing development, including expanding petrochemicals production capacity.

At the same time, the production of light industrial goods is being shifted to countries like China, Vietnam and Myanmar.

The current target of Asia's forerunners is response to high-tech opportunities.

The hard question is whether this growth is sustainable over the long term.

Globalization - Drivers and Requirements (Slides Nos. 16 and 17)

Against the geographical, economic and cultural characteristics as well as project perspectives of Asia Pacific, drivers for globalization and impacts of globalization on contractors are examined.

In this borderless economy, an increasing number of owner companies are seeking and realizing **international investments** to most profitably deploy financial and other managerial resources of their corporations. In Asia Pacific, quite a few owners from Western countries and Asian NIES countries are planning investments. This requires in-depth knowledge of international practices of both, owners and contractors.

In the face of mega-competition, investment projects are required to enhance **competitiveness** by sourcing project resources on a worldwide basis as well as drawing on contractors' innovative project execution expertise.

Next, to enhance the viability of projects, **financing** for capital investment projects should be from the most attractive sources or in an innovative form, which would require an optimum mix of traditional financing packages, project financing, or capital

participation from contractors.

The fourth driver, **national interests**, needs particular attention in Asia Pacific. National interests are expressed most directly in the form of local content in project execution and technology transfer to a lesser degree.

In this era of **electronics communications**, project participants should be well geared to exploit the maximum opportunities offered by information and communications technology as it can be utilized most profitably to reinforce the virtual project organization concept.

Advanced IT is important at discrete players in the process industry; and standardization of communications technology must go along with IT. As one of the leading members in Japan's J-CALS/PlantCALS consortium, JGC pays high regard to European standardization initiatives such as PISTEP, SPI-NL, POSC-CAESAR and the European leadership in the global PIEBASE.

At the same time, due consideration should be given to the local project environment, typically characterized by the following factors, which would affect project operations (Slide-17).

Throughout Asia, projects are subjected to a variety of **government licenses, permits, approvals and inspections**. Adequate approaches, such as government liaison, use of licensed professional engineers in Singapore, Malaysia, etc., should be developed, and appropriate estimates of the time required for obtaining these authorizations should be factored into the overall project schedule.

In some countries, **taxation** practices are complicated. Thus, working knowledge of taxation practices is important, in addition to studying tax laws.

In tune with increases in capital investment projects, many countries are now imposing **import restrictions** or import duties on plant equipment with varying tariffs. For instance, to import equipment into China, import duties of average 23% and import VAT of 17% are levied..

Local content policies require prime contractors for capital investment projects to meet specific target figures. On government projects in Indonesia and Malaysia, minimum local content requirements are 30 to 40%, and in many bidding cases, bidders are encouraged to offer percentage numbers for competition.

The population and skills of craft labor in the region has increased over the last decade. However, **labor availability** for specific projects should always be checked carefully in terms of quantity and quality. Attention should be paid to the fact that for protecting national labor forces, the countries are generally **imposing stringent restrictions** on the import of craftsmen. Labor skills training for technology transfer is also important.

Impact on Contractors (Slides Nos. 18 through 20)

Now, we shall examine how these globalization drivers will have an impact on contractors in the future.

As background information, the chronological globalization process and a case of globalized project execution on a project for Singapore, both experienced by JGC, are presented on Slides-18 and 19.

JGC's chronological globalization process is shown in Slide-18

The 1960's and 70's were the stages of sporadic international project operations and enhanced market presence through distributed marketing offices, respectively.

In the latter half of 1970's and after the Plaza convention, JGC started pursuing increased competitiveness in the international market by establishing our own procurement offices in both Europe and North America and developing overseas engineering resources.

In the late 80's, due recognition of regional markets became critical. This meant that to be competitive, we had to add local EPC capabilities in some strategic regions, which could allow us to carry out projects locally up to some scale, in a self-contained, and cost-effective manner.

The 1990's has seen our strategies for globalization. We are aligning our corporate organization for the better control of our operations, fine-tuning our worldwide office network and teaming up with our allies at various echelons.

Slide-19 shows the countries in Europe, America and Asia which participated in a close to a billion dollar refinery project in Singapore recently completed on a turnkey basis by JGC. This case attests to the primary conception of this conference that process plant projects are being globalized.

Slide-20 tries to identify changes required on the part of contractors in keeping up-to-date with globalization drivers. The slide shows functions of project development and operations, salient impact factors and resultant changes required.

In the **marketing** phase, to make the best use of increased investments, contractors need to strategically locate regional offices which, in conjunction with contractor operations centers, can swiftly cater to project needs on a cost effective basis. Also, a fine-tuned project development strategy, including pre-contract investment optimization exercises with owners, will be essential. It should be noted that as Western owner companies deepen local presence in this region, they tend to demand contractors' in-country or in-region front-end engineering capabilities, on small to partially mid-sized projects.

A major challenge in **project management** is managing projects executed at multiple locations. Synchronized and efficient coordination and control of various activities at various corners of the world, involving more cultural interfaces than now, will be required of contractors. Contractor capabilities and literacy of electronic links as well as electronic project databases and repositories will be one of tomorrow's qualifications.

In the **engineering phase**, local content and the pursuit of engineering cost competitiveness will further escalate in our region so that contractors' commitment to streamlined office networks with optimum distribution of work functions among offices, including ongoing utilization of low-cost engineering centers, and to the continuing training of regional engineering resources, will be fully tested.

In **procurement** as well, local content will be a factor: local content policy will accelerate from the current casual application to a more consistent one in the future and from buying less complicated items in the local market to more complicated ones, for which possessing capable manufacturing instructors to safeguard quality and production programs will be one of a contractor's required strengths. Also, the development of competitive supply sources worldwide will escalate and procurement networking strategies should determine efficiency in this regard.

Local content will again continue to be a major factor in the **construction** phase. An expanded subcontractor list should cover growing yet competitive subcontractors. Also, training will be essential to upgrade local subcontractors to meet our quality and schedule objectives. Prime contractors' supply capabilities for craft supervisors would enable utilization of low cost subcontractors.

Further, construction is an area which offers cost reduction opportunities by means of innovative construction technology. For instance, JGC is utilizing induction pipe bending, pre-stressed concrete piperacks, dressed-up erection of columns, etc.

Contractors' ongoing **post-project services** to clients through local presence, such as maintenance and retrofitting, will become increasingly more important as owners' life-cycle plant support concepts intensify.

Summary (Slides 21 through 23)

In summary, Asia Pacific is a vast region with a very large, yet growing population, diverse cultural traits, and all in all, dynamism. The region is blessed with high a high economic growth profile, which will be maintained into the 21st century, if properly managed.

The trends and change drivers most felt in the Asia Pacific countries are recapped as follows.

Honoring national interests, first of all, will gain more importance in establishing your corporation as a good corporate citizen and enjoying the full cooperation of local interests, which is one of the keys to success in this region.

Global competitiveness is not the exception in this region.

Requirements for **sophisticated financing** to open up project viability or enhance project profitability will tax contractors' business skills.

Asia Pacific's growth prospects can translate into owners' view that contractors' ability to realize short project cycle times is one of the crucial contractor qualifications as it will enable owners to capture **windows of opportunity**.

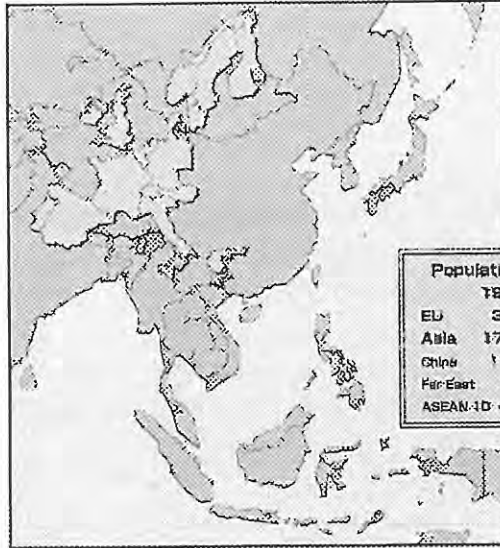
There is a growing awareness of **safety and environmental protection**, which will require contractors to demonstrate an integrated quality-safety-environment management capability while meeting schedule and cost objectives of projects.

The trends and drivers mentioned so far would impose such requirements on contractors in the future as:

- ◆ **Flexibility** in working under various contractual formats and styles of project operations so that contractors can respond to those optimal to the projects in question
- ◆ **Lump-sum capabilities** by which contractors can take manageable risks, demonstrate self-motivated, efficient project execution leading to shorter project schedules, while meeting contractual quality requirements
- ◆ **Financing skills**
- ◆ **Construction management capabilities** backed by an in-depth knowledge of the local project environment
- ◆ **Multiple-location engineering capabilities**
- ◆ **Worldwide materials sourcing capabilities**
- ◆ **Networked operation centers**, which means not only networking among contractors' internal centers but also networking with industry colleagues' centers
- ◆ Ability to form cross-cultural project organizations

Introduction to the Region

Definition of the Asia Pacific Region



Population (Million)		
	1993	2010
EU	370	370
Asia	1750	2190
China	1120	1370
Far-East	190	210
ASEAN-10	440	610

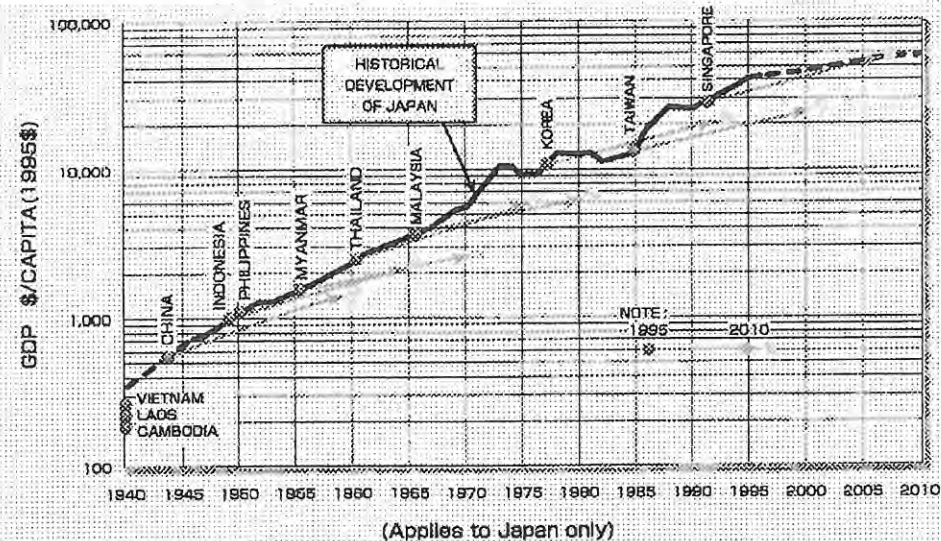
Introduction to the Region

Cultural and Social Diversity in the Region

Country	Predominant Religion	Colonial Influence	Growth Rate % GDP
China	Buddhist	None	9.9
Thailand	Buddhist	None	8.6
Indonesia	Moslem	Dutch	8.1
Malaysia	Moslem	British	8.0
South Korea	Buddhist/Christian	Japan	6.4
Singapore	Buddhist	British	5.8
Taiwan	Buddhist	Japan	5.6
Philippines	Christian (R. C.)	Spanish	5.2
Japan	Buddhist	None	3.2
Vietnam	Buddhist	French	N.A.
Myanmar	Buddhist	British	N.A.
Brunei	Moslem	British	N.A.

Growth Rate = 1996

Introduction to the Region GDP per Capita of the Countries in the Region



Introduction to the Region Business Culture

- ◆ **Management Style**
 - ◆ Consensus
 - ◆ Bottom-up decision making
 - ◆ Lump sum mentality
- ◆ **Contractual Practices**
 - ◆ Avoid clear definition of responsibilities
 - ◆ Compromise based on long-term relationships
 - ◆ Voluntary fulfillment of obligations

Introduction to the Region Business Culture

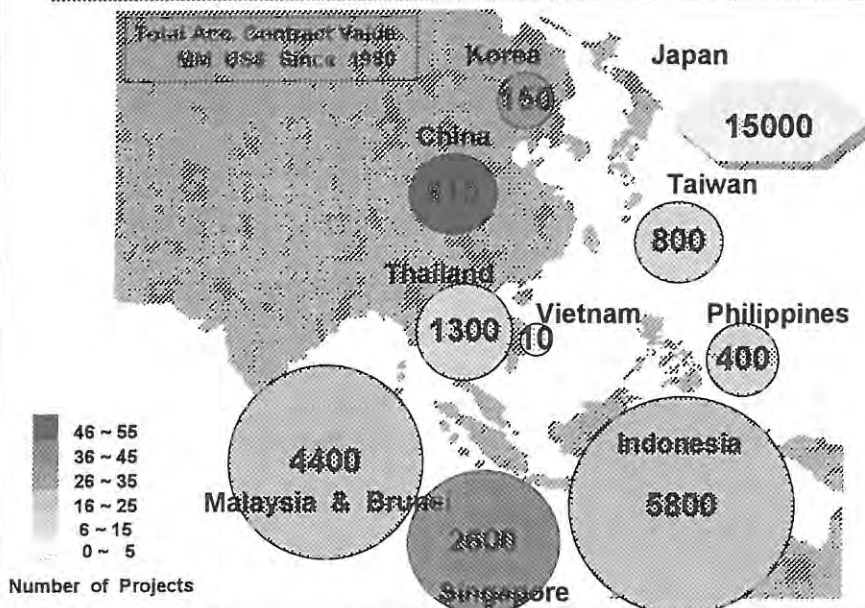
◆ Negotiation Style

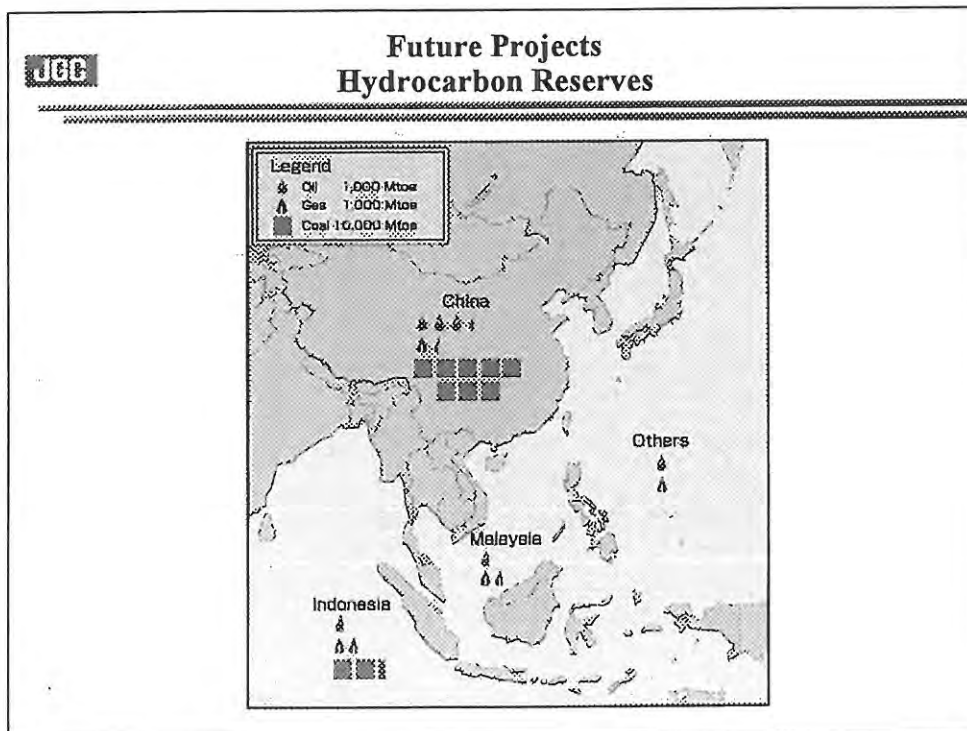
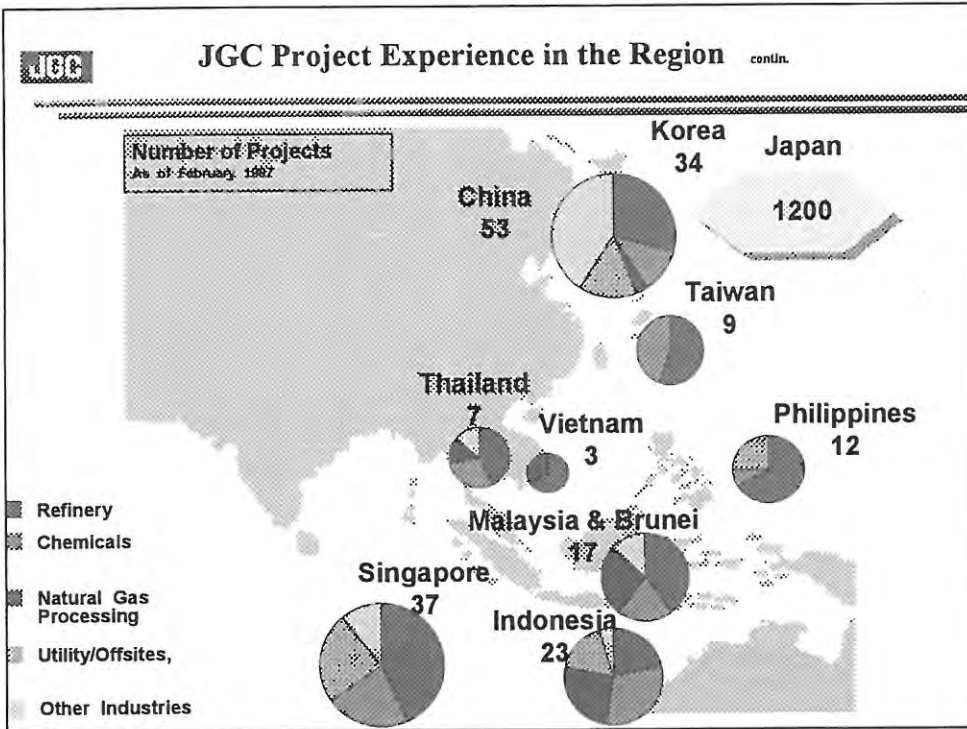
- ◆ Avoid open conflict in discussions
- ◆ Lengthy process due to repeated consensus building
- ◆ Allows efficient execution owing to consensus, but less responsive to changes

◆ Project Management Style

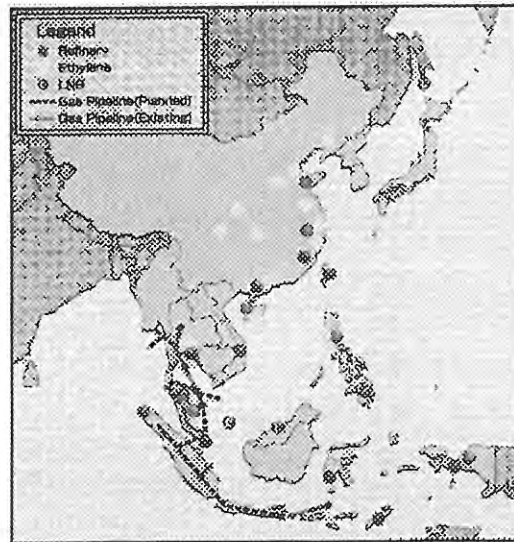
- ◆ QCD bottom-line oriented
- ◆ Emphasis on experience, or art, rather than processes
- ◆ Recent changes to balanced processes due to ISO influence & modern PM concepts

JGC Project Experience in the Region



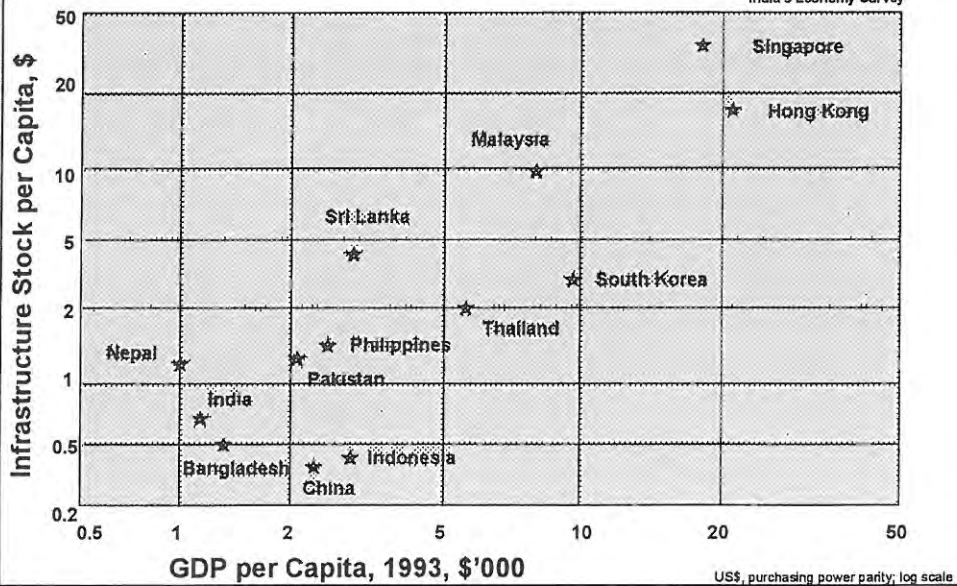


Future Projects Future Hydrocarbon Projects



Future Projects Infrastructure Stocks

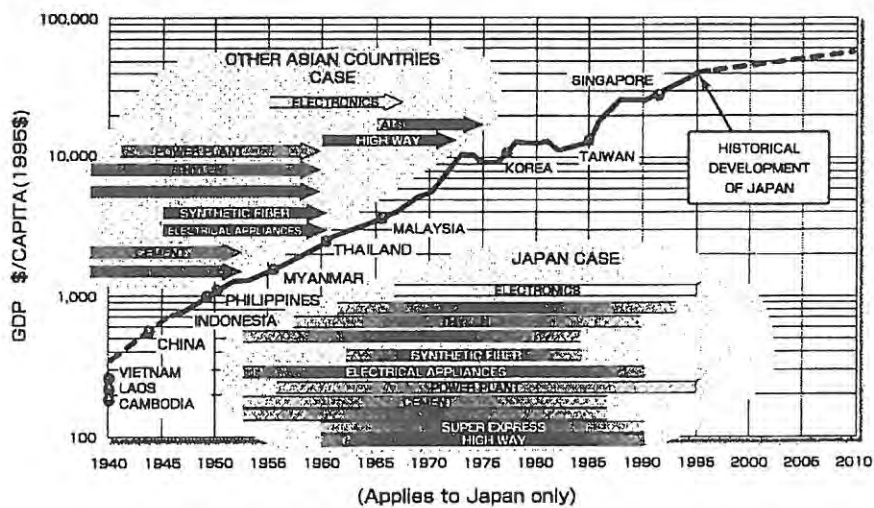
Source: World Bank; CIA
India's Economy Survey



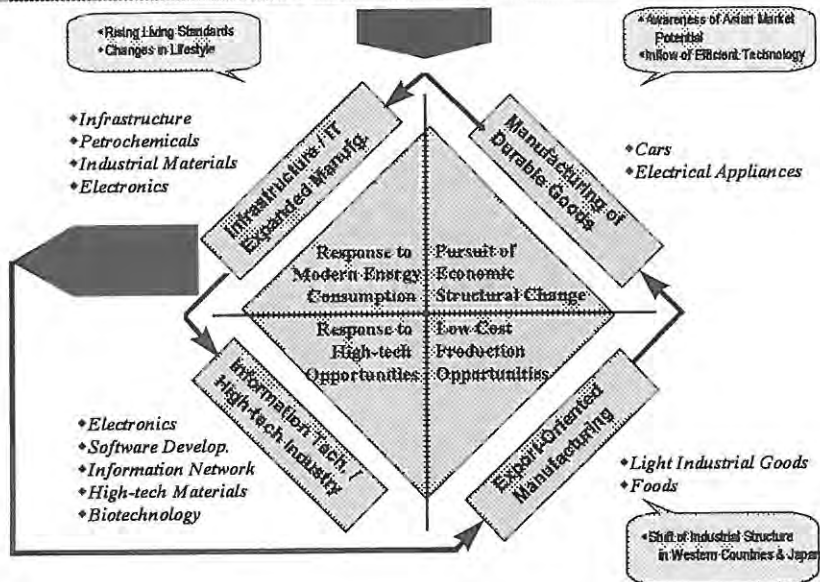
Future Projects Anticipated Major Infrastructure Projects



Future Projects Unique Pattern of Industrial Development in Asia Pacific



Development Model



Globalization - Requirements on Contractors Drivers for Globalization

DRIVERS

- ◆ International Investment
- ◆ Competitiveness
- ◆ Multi-national Financing
- ◆ National Interests
- ◆ Electronic Communications

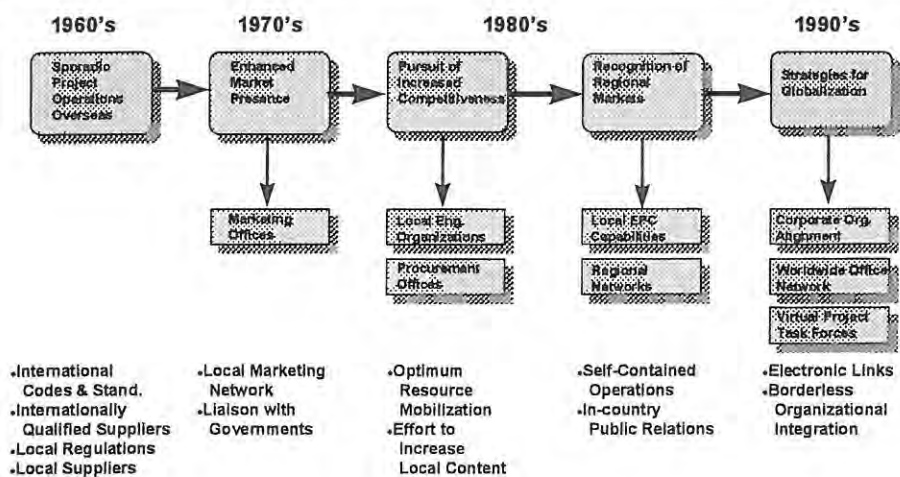
RESULTANT REQUIREMENTS

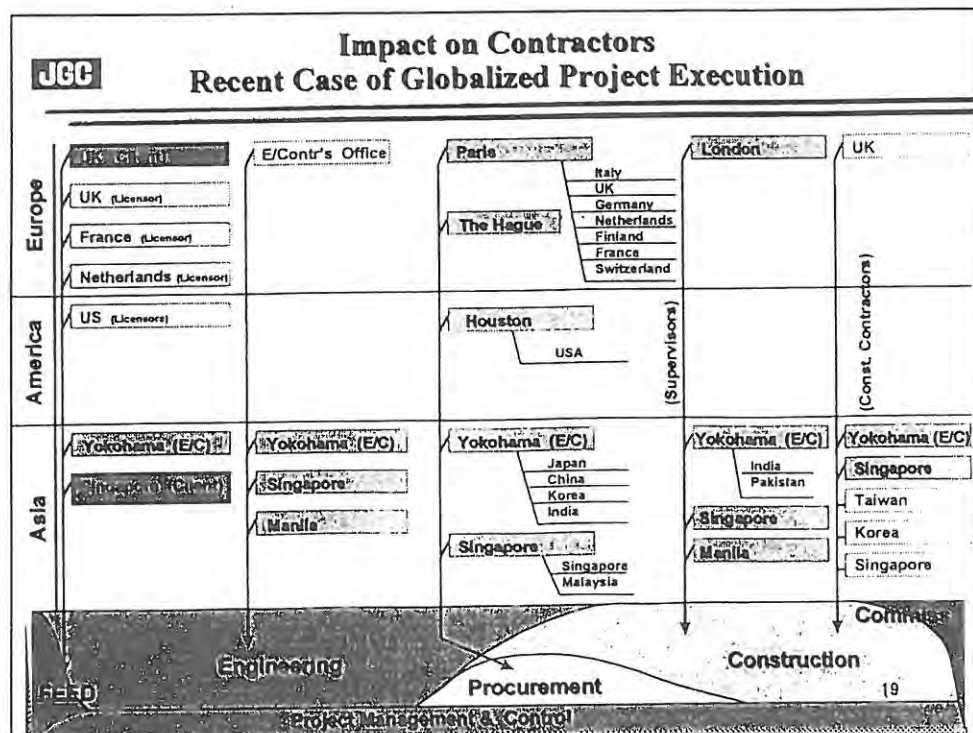
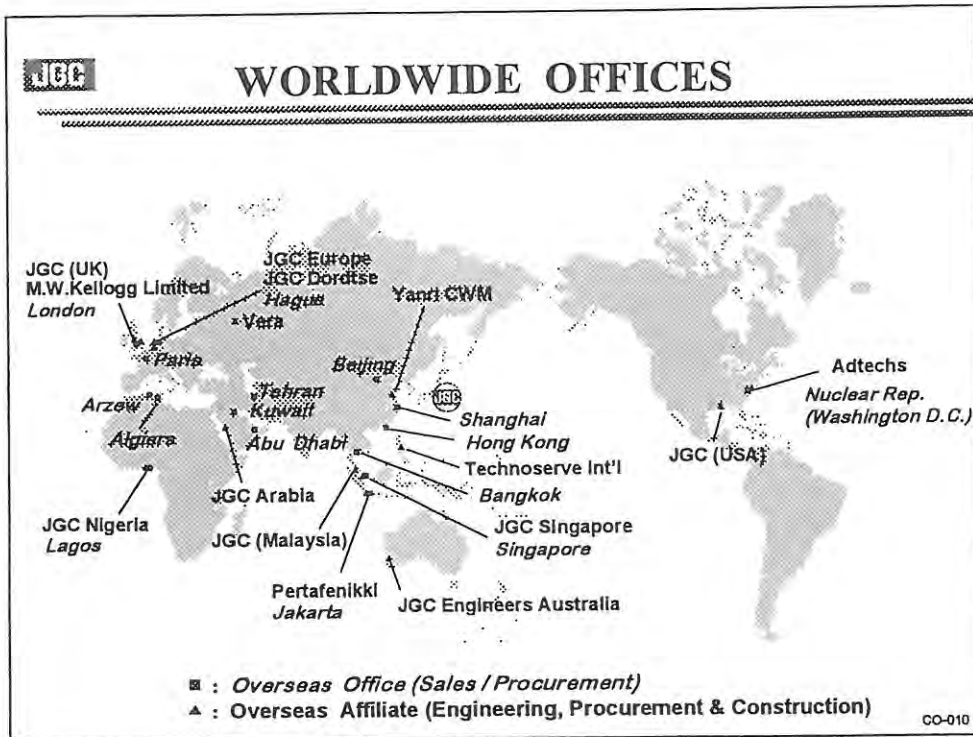
- Knowledge of International Practices
- Worldwide Sourcing of Project Execution Resources
- Innovative Project Execution
- Strategic Procurement
- Use of Local Resources
- Virtual Project Organizations

Globalization - Requirements on Contractors Local Project Environment

- ◆ Government Licenses, Permits, Approvals and Inspections
- ◆ Taxation
- ◆ Importation Restrictions and Duty Exemptions
- ◆ Local Content Mandates
- ◆ Labor Availability and Restrictions on Labor Import

Impact on Contractors Chronological Globalization Process -The Case of An Asian EC Company







Impact on Contractors Change Perspectives

FUNCTION	IMPACT	CHANGES
Marketing	Response to Increased Investment	Regional Offices Innovative Project Development
Project Management	Multiple Locations	Electronic Links/EDMS
Engineering	Local Content Cost Competitiveness	Offices Networking Continuing Training
Procurement	Local Content Price Competitiveness	Manufacturing Instructors World Sourcing Network
Construction	Local Content	Expanded Subcontractor List Training Craft Supervisor Force Innovative Construction Technology
Post-Project Services	Competitiveness Local Presence	Life-cycle Plant Support



Summary Prospects of Asia Pacific

- ◆ **Vast Region / Large Population**
- ◆ **Diversity**
- ◆ **Fast Growing Economies**
- ◆ **Concurrent Industrial / Infrastructure Development**
- ◆ **High Potential as Project Market**

Summary Trends and Change Drivers

- ◆ Manifesting National Interests
- ◆ Global Competitiveness
- ◆ Sophisticated Financing Schemes
- ◆ Windows of Market Opportunity
- ◆ Stricter Safety and Environmental Management Requirements

Summary Requirements on Contractors in the Future

- ◆ Flexibility - Contract Formats / Project Operations
- ◆ Lump Sum Project Capabilities
- ◆ Financing Capabilities
- ◆ Multi-office Project Operations Capabilities
- ◆ Construction Management Capabilities
- ◆ Worldwide Materials Sourcing Capabilities
- ◆ Networked Operation Centers
- ◆ Ability to Form Cross-cultural Project Teams with Industry Colleagues



8th European Conference Construction in Europe

The American Continent

Susan Farrell

Susan Farrell

Ms Farrell is Director of Strategy and Planning and a member of the Executive Management Team for Brown & Root Energy Services, a division of Halliburton. She has been involved in international strategic planning for twenty years and developed particular expertise in the integration of economic, political and financial factors.

Prior to joining Brown & Root, Ms Farrell spent a number of years with another leading energy contractor, specialising in the offshore construction industry. She has written several papers in the international aspects of alliances, most recently an article titled "Best Intentions: Lessons Learned on International Partnering and Alliance Contracts". Her current research is exploring the influence of cultural differences on the implementation of successful projects. A new paper entitled "International Alliances: Closing the Cultural Gap" will be published in May.

Before entering the energy industry, Ms Farrell worked in the Benelux Countries as a strategy consultant and speaks French and Dutch. She has an undergraduate degree in Economics and an MBA. Ms Farrell currently lives in London with her husband and two children.

Successful Strategies for a Global Business

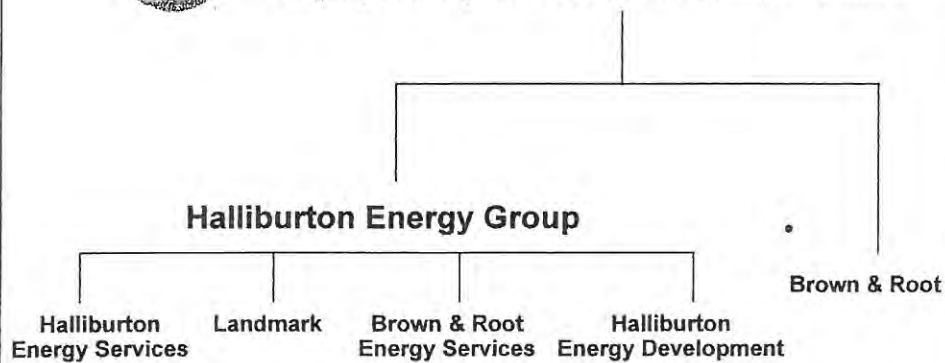
An American Perspective

April 1997



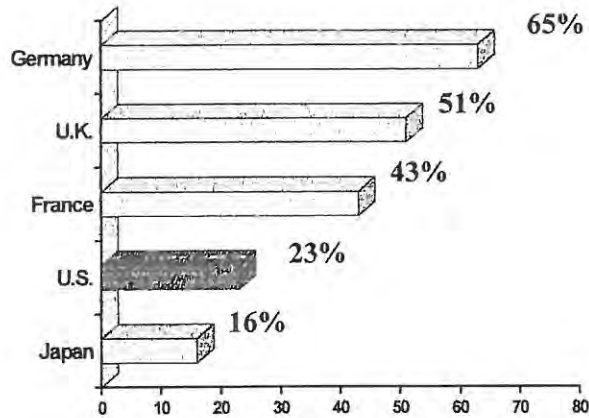
Halliburton Company

Employees: 50,000+ 1996 Revenue: \$7.4 Billion



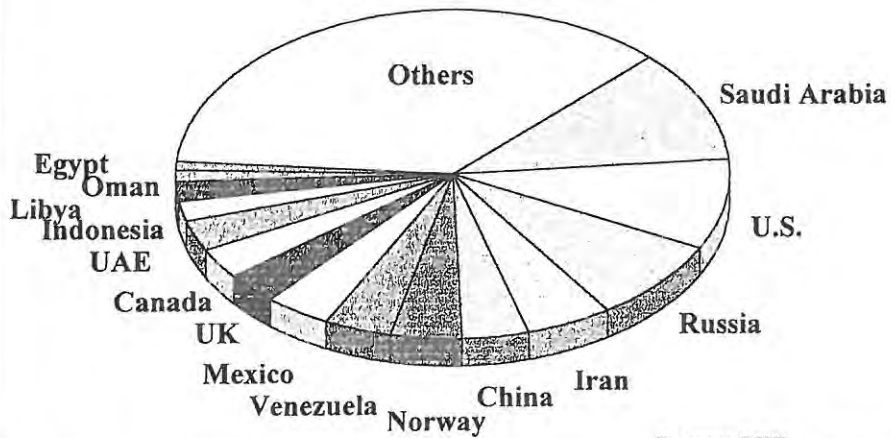
The U.S. is a Relatively Insular Economy

Imports Plus Exports as a Percent of GDP



The Oil Market is Global

1996 Oil Production

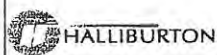


Source: PIW



More than Half of the World's Top Oil Companies are NOCs

1. Aramco	Saudi Arabia	11. Chevron	U.S.
2. PDVSA	Venezuela	12. Sonatrach	Algeria
3. RD Shell	NL/UK	13. Amoco	U.S.
4. NIOC	Iran	14. Texaco	U.S.
5. Exxon	U.S.	15. ENI	Italy
6. Pemex	Mexico	16. Petrobras	Brazil
7. Mobil	U.S.	17. CNPC	China
8. KPC	Kuwait	18. Total	France
9. Pertamina	Indonesia	19. Elf	France
10. BP	U.K.	20. INOC	Iraq



Source: PIW



Companies are Evolving Towards Global Corporations

	Domestic	Internat'l	Multi-national	Global
Orientation	Product	Market	Price	Strategy
Competitive Strategy	Domestic	Multi-Domestic	Multinat'l	Global
Importance of World Business	Marginal	Important	Extremely Important	Dominant
Production Location	Domestic	Primary Mkts	Multinat'l, Least Cost	Global, Least Cost
Structure	Functional Divisions	Functional, Int'l Division	Multinat'l Business Lines	Global, Alliances



Source: N.J. Adler



The Industry Model is Changing: New Focus, New Opportunities

NOCs ➡ Outside Home Country

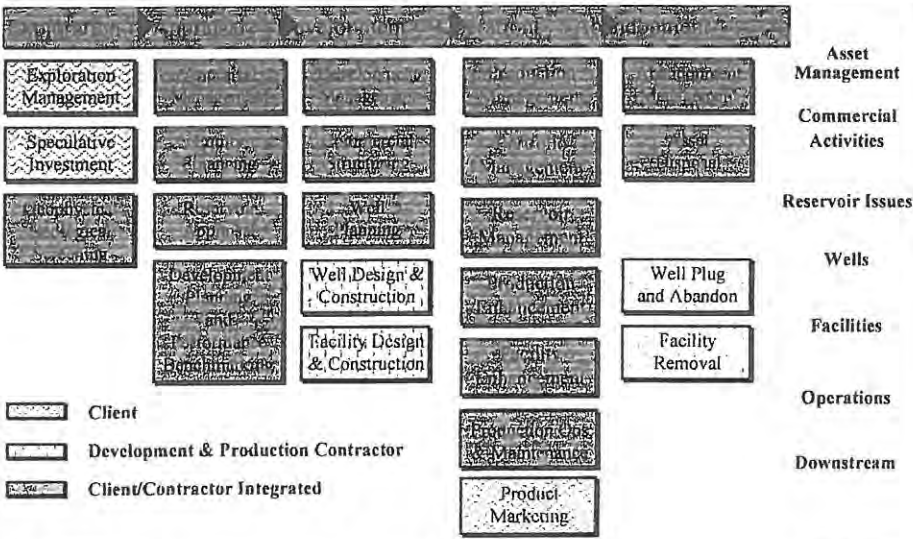
Independents ➡ New Territories

IOCs ➡ Assessing Core Businesses

Service Companies ➡ Expanding Capabilities



Integrated Teams Develop and Operate Fields



The Alliance Structure is Changing the Nature of Interaction among Companies

Recent Capex Alliances

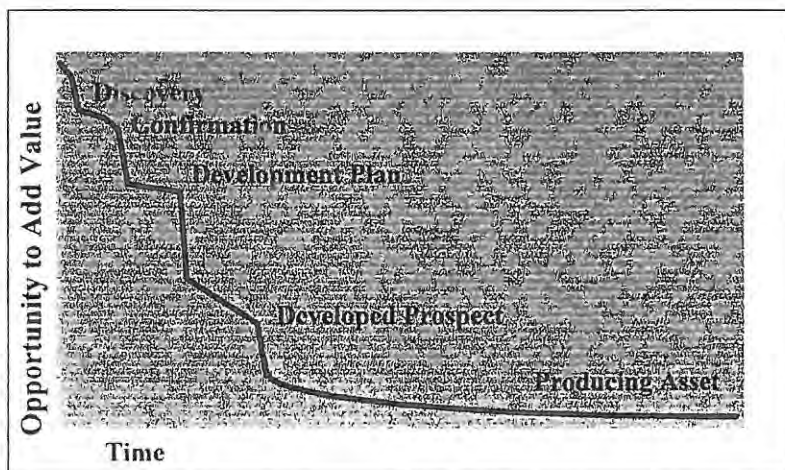
BP	Andrew	U.K.	£250+ million
Conoco	CMS2	U.K.	£50+
Mobil	Wandoo	Australia	\$300+
QGPC	Dukhan	Qatar	\$250+
PetroCanada	Terra Nova	Canada	tba
Cairn Energy	Sangu	Bangladesh	tba



HALLIBURTON



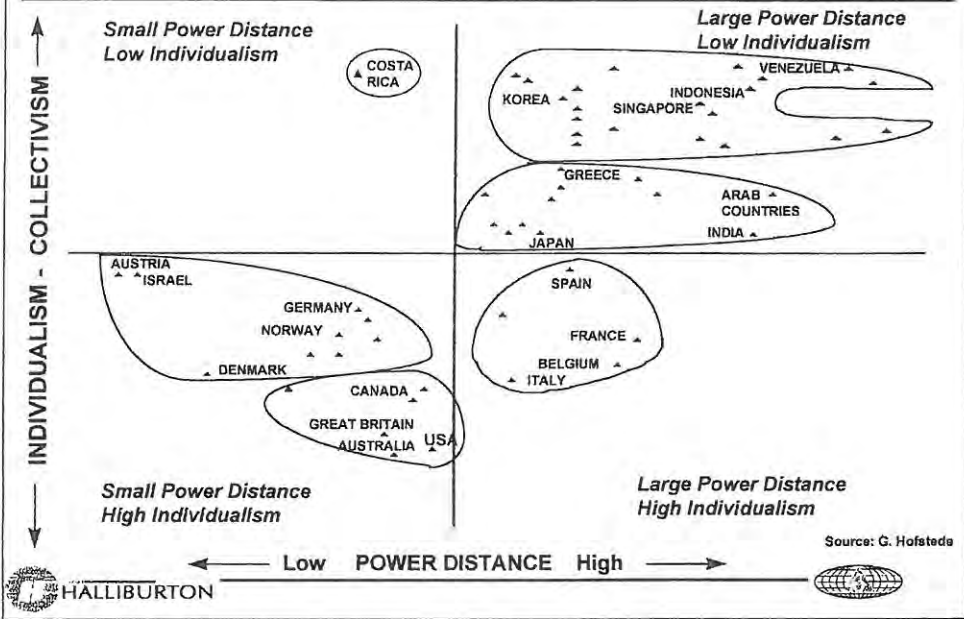
The Ability to Influence Value Decreases with Time



HALLIBURTON



Cultural Awareness is Critical for Success



A Global Organisation along Three Axes



Creating our Own Future with Global Opportunities

**Inventing the Future is not changing what is,
But Creating what isn't**



HALLIBURTON



Successful Strategies for a Global Business

An American Perspective

April 1997



HALLIBURTON





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Russia and the former Soviet Union

Andrei Orlov

Andrei Orlov

Andrei Orlov is a member of the Russian Union of Journalists and Foreign member of the Royal Institute of International Affairs.

He has over 12 years experience in strategic and geopolitical aspects of major projects in Russia and other CIS countries, and was previously the Head of Tass Political Desk and the Chief economic analyst of the TASS World service (Moscow, Russia).

Mr Orlov is a speaker at international conferences on strategic aspects of major projects in the CIS countries, in particular cross-border pipeline projects.

As a Russian/CIS affairs expert Mr Orlov is regularly invited to round table discussions and interviews by the BBC and other media. As a Russian national Mr Orlov does not require entry visas to the CIS countries and is not subject to many of the security limitations in these countries.

Experience

1994 - Present **KVAERNER JOHN BROWN LTD - Interface Manager (CIS)**

Mr Orlov responsibility covers all technical, commercial and political aspects related to Kvaerner John Brown's activities in Russia and the other CIS countries. This activity relates to the identification of business opportunities, the formation of strategies for business development, and support to tender preparation and project execution.

1985-1991 **TASS News Agency of the Soviet Union**

Chief Economic analyst, Head of the Parliamentary Desk

1979-1984 **UNITED NATIONS**

Worked in the United Nations offices in Switzerland and the USA.

***Paper not available
at time of publication***

***For further information
on this presentation
Please contact the ECI***



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SESSION TWO
'The Responses to Globalisation'



**8th European Conference
Construction in Europe**

***The Global Approach to Lumpsum
Turnkey Contracting***

Dr Armin Franke

Dr Armin Franke

Currently Director of Projects and Head of Project Management with Lurgi - Öl - Gas - Chemie GmbH having previously held the position of Head of Project Controls within the Company. Extensive experience within the fields of both project management and project controls, inclusive of the overall control and supervision of multidisciplined personnel within those departments for prestigious client projects related to the Oil, Gas, Petrochemical, Chemical, Power Generation (Nuclear and Conventional) and Metallurgical Industries.

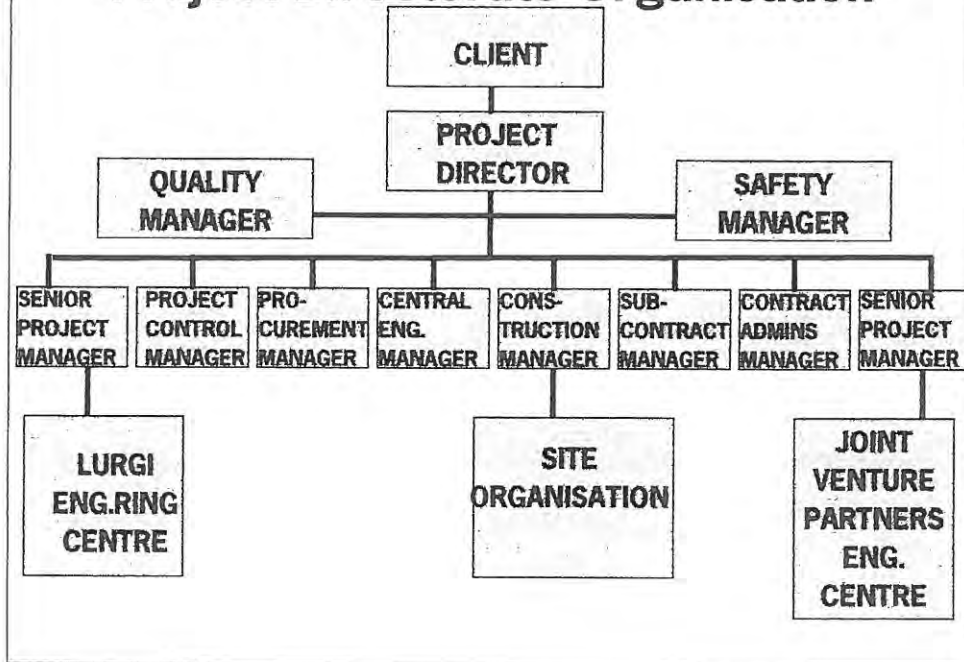
Extensive experience regarding all aspects of lumpsum, turnkey contracting and consultancy engineering. Lecturer in Project Management and Project Control for several Universities and Institutes.

Topics

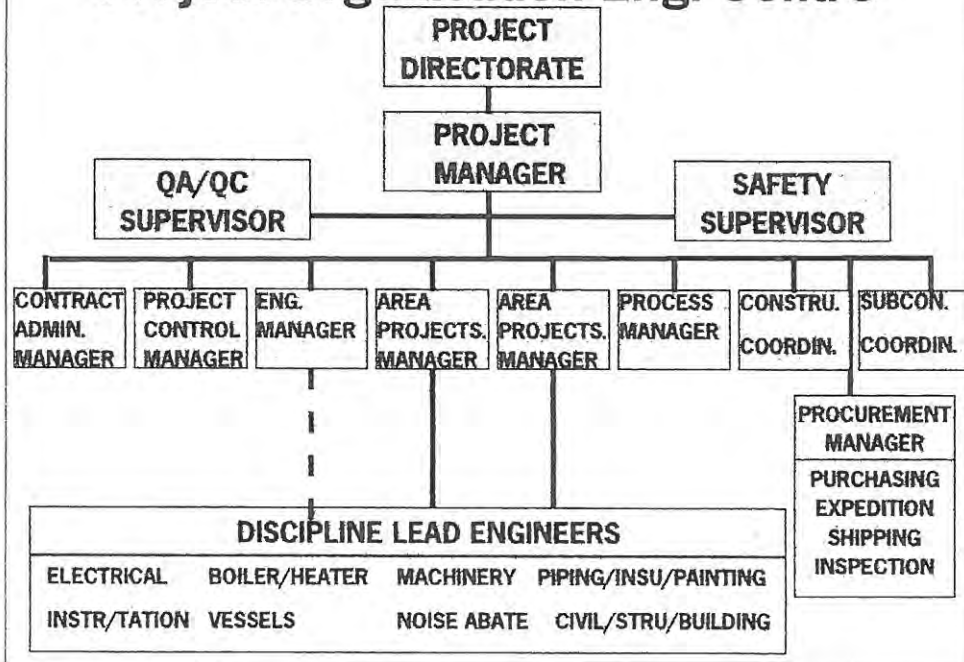
- Lurgi in Brief
- Project Management Approach
- Philosophy of Global Project Execution
- Consortium Approach
- Major Globally Executed Project

Project Management Approach

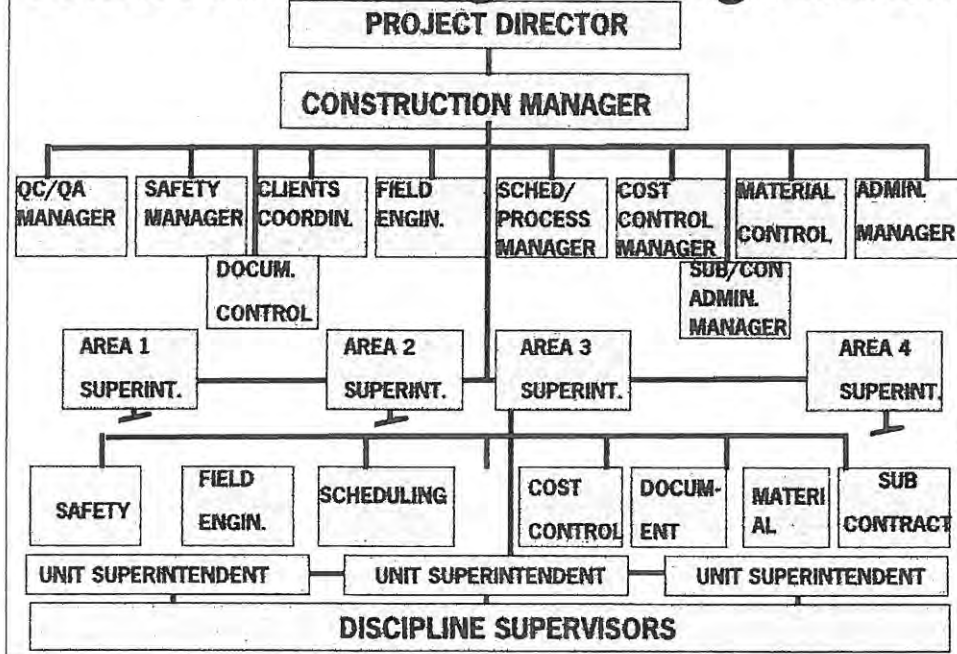
Project Directorate Organisation



Project Organisation Eng. Centre



Construction Management Organisation



Project implementation

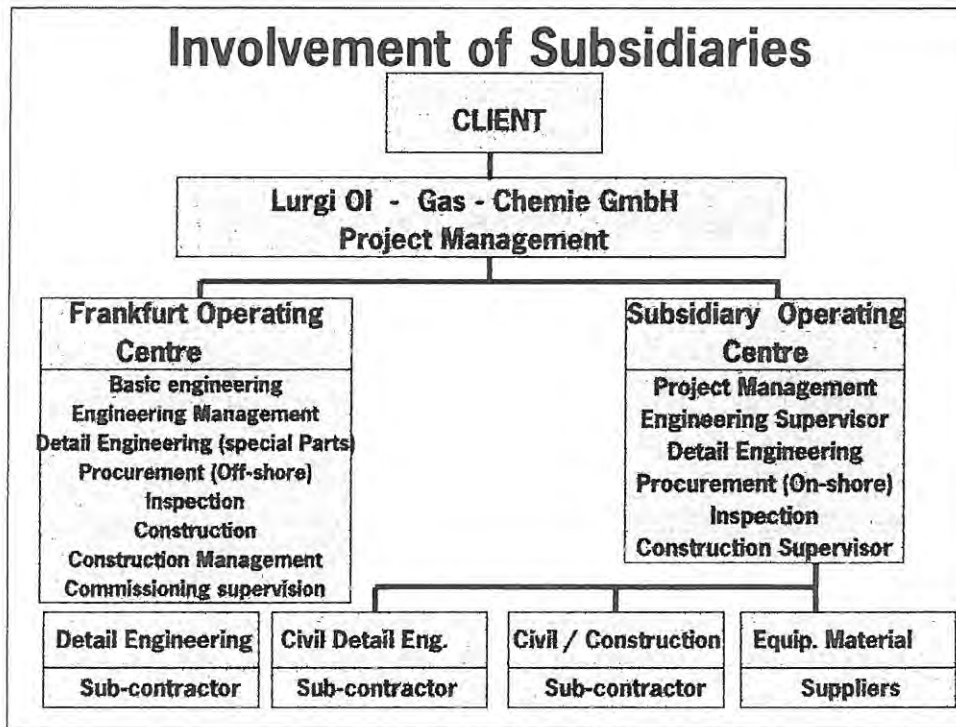
Index

- Project Execution Procedures
- Project control
- Engineering & Design
- Authority Engineering
- Procurement
- Material-Remove-Management
- Subcontracting
- Construction Management
- Commissioning

Philosophy of Global Project Execution

Lurgi Philosophy on Global Project execution

- Implementation Task Force
- Joint Management and Construction Team
- Integrated Engineering
- Efficient Communication Systems
- Permanent Know How Transfer
- Uniformity in Quality Management
- Safety Management



Execution of Consortium Projects

General Concepts

- Lurgi adopts the leading role within JV or Consortium
Single point responsibility with client
- Implementation of Lurgi Project Management System
- On-shore Off-shore concept to meet requirements for protective local markets

Project Organisation and Project Execution Concept
Contract Model For Joint Venture Organisation

Contract model	High tech Units	Open arts units offsites and utilities
1. Overall proj. Mgm.	Joint venture directorate	
2. Engineering	Lurgi	Joint Venture partner
3. Procurement	-	
Equipment	Lurgi	Joint Venture partner
Bulk equipment	Consolidated bulks by directorate	
Subcontracts	Joint venture directorate	
4. Construction	-	
Management	Joint Venture directorate	
Execution	Major sub-contractors	
5. Precommissioning	Lurgi	Joint Venture partner
6. Training	Licensior/Lurgi	Joint Venture partner
7. Start up	Client/Licensior/Lurgi	Client/Joint Venture partner

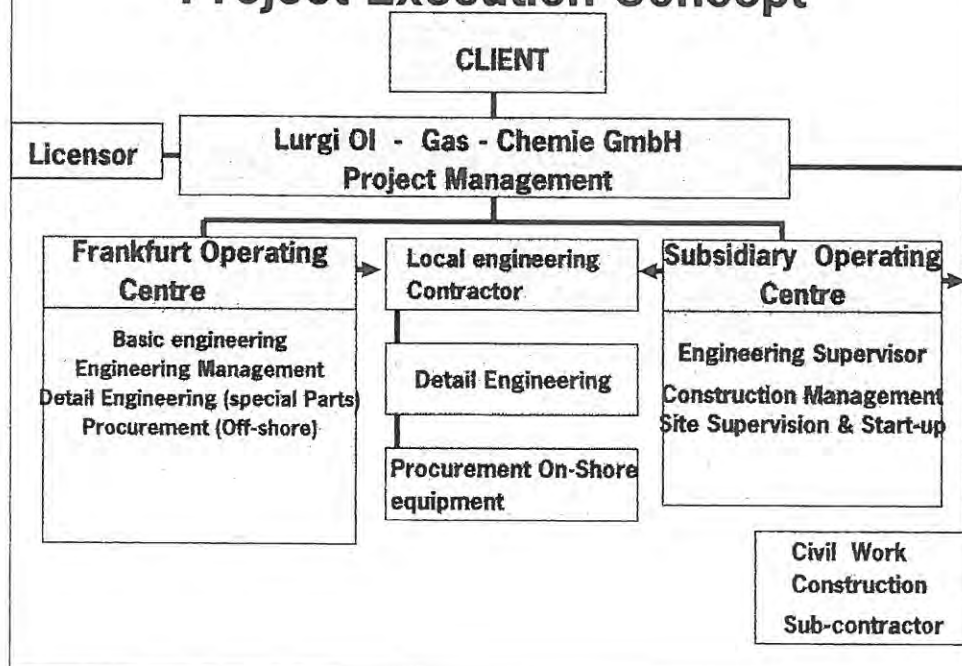
**Major Globally
Executed Project**

Lurgis Experience

Current Major Project

- Project : PTA Plant - 250.00mt/aPTA
- Contract : TIC > 200Mio US\$
Lump Sum for Services and
Off-Shore supply
- Time frame : 1995 - 1999
- Engineering Man-hours : approx.. 200.000h
approx.. 60.000h in Lurgi Office
- Engineering/Construction
Supervision : approx. 40.000h

Project Execution Concept



Current Major Project Contract Structure

Contracts

- Licence agreement
- Engineering and associated services agreement
 - Overall project mgmt.
 - Basic engineering
 - Supervision of Detail
 - Engineering & Construction
- Equipment supply agreement (Off-shore policy)
- Detail engineering and construction supervision
- Supply of bulk equipment (On-shore portion)
- Civil and construction works

Contractors

- Licensor, Lurgi Ol, Gas, Chemie
- Licensor, Lurgi Ol, Gas, Chemie/Lurgi India
- Licensor, Lurgi Ol, Gas, Chemie
- Local Engineering Contractor
- Local Supplies
- Local Contractors

Summary

- Lurgi in brief
- Project management Approach
- Philosophy of Global Project Execution
- Consortium Approach
- Major Globally Executed Project



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Construction in Europe

Project Finance in an Uncertain World

Rauf Diwan

Rauf Diwan

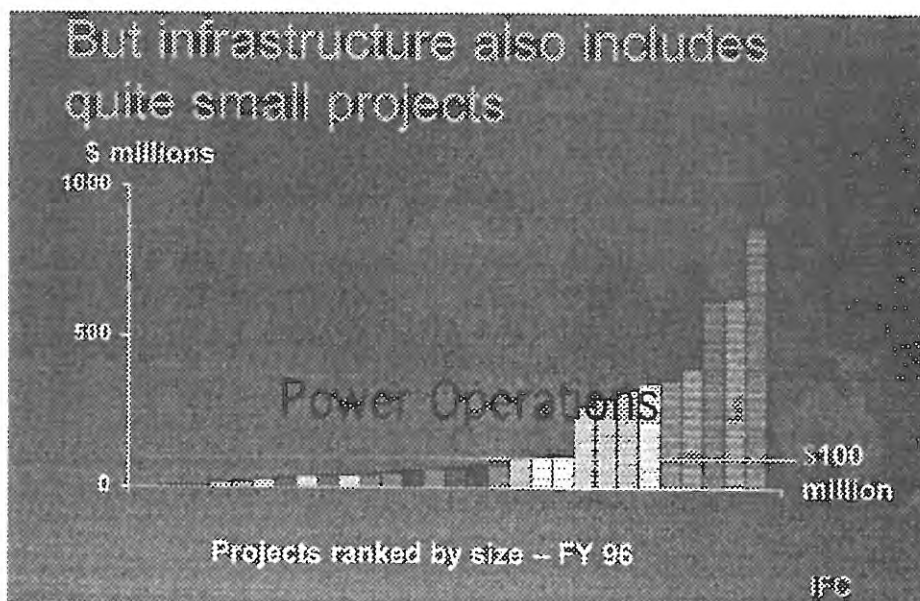
Rauf Diwan is the Director of IFC's Power Department responsible for IFC investments worldwide in this sector. He has extensive experience in both public and private sectors. He was the Principal Investment Officer in the Power Division from 1992 to 1994. At that time, he was responsible for power projects in China, the Philippines, Indonesia and Pakistan and was the task manager for the IFC power sector policy advice adopted by the Government of Pakistan in March 1994. He was promoted to Division Manager of East Asia in April 1994, prior to being appointed Manager of the Power Division in February 1996, then the Director in January 1997.

He has an undergraduate degree in Chemical Engineering and an MBA in finance from Columbia University

IFC: Investing in Developments

Power Operations

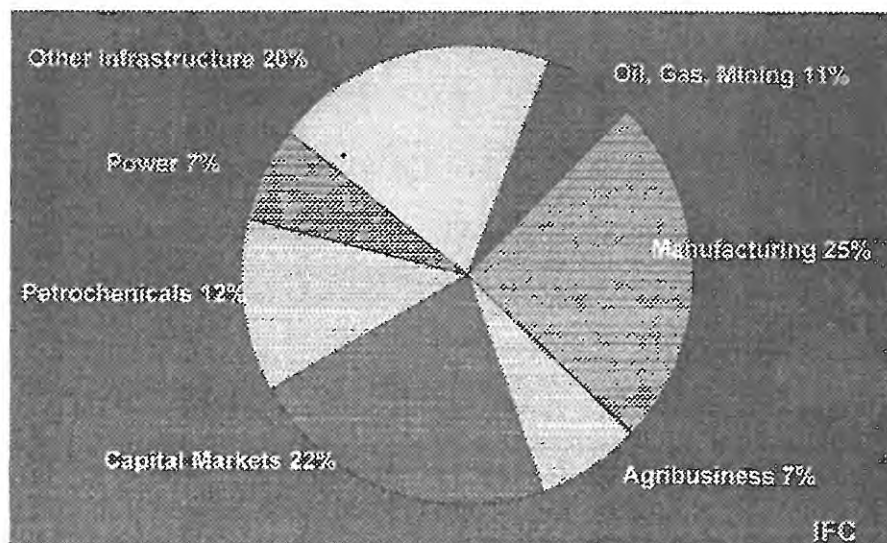
Rauf Diwan



Private investors have transformed infrastructure

- Rapid increases in level and quality of services
- Huge new investments at no cost to government
- General improvement in the business climate

Infrastructure's Share



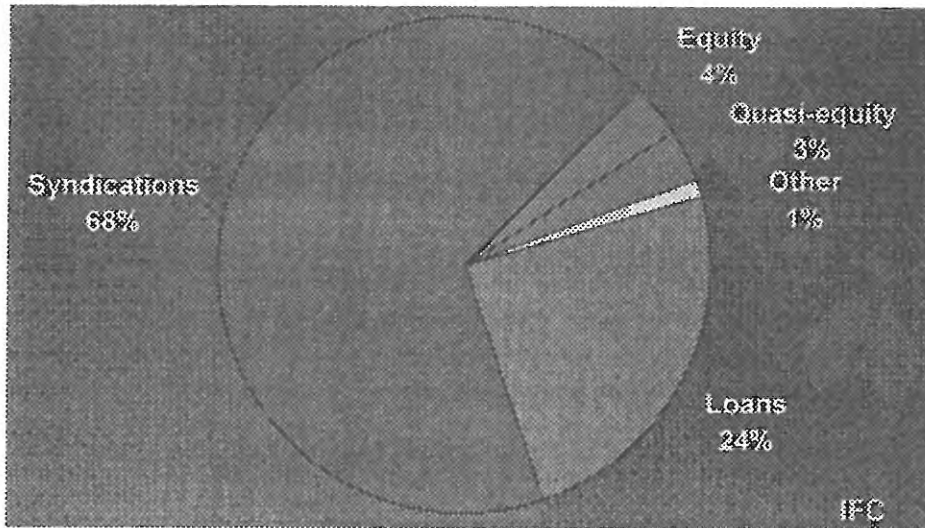
**Private investors have rapidly
expanded access to infrastructure
Power**

- 8 hour blackouts in Philippines ended in 18 months
- 20,000 MW on offer in Pakistan, 6,000 MW in Indonesia
- Nearly 600,000 new customers connected in Buenos Aires in 18 months

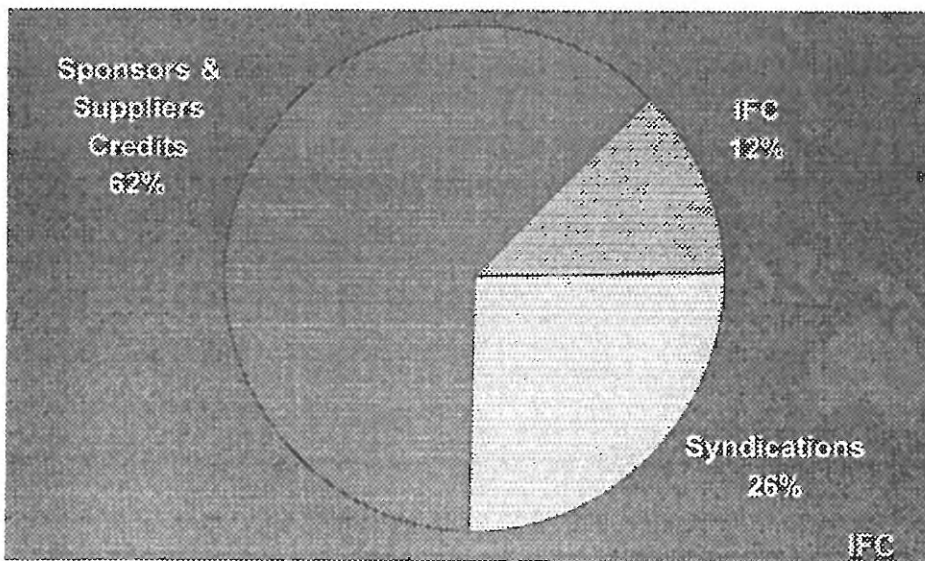
Recent power financings

■ Philippines	
- Sual	1.4 billion
■ Pakistan	
- Uch	690 million
■ Argentina	
- Edenor	402 million
- Edesur	328 million

IFC financing for infrastructure



Partners in infrastructure finance



New private capital sources

- Pension funds
- Insurance companies
- Longer terms from commercial banks

New IFC instruments

- Pre-privatisation investments
- Secured bonds
- Subordinated debt
- Mezzanine finance

And the World Banks guarantee

How the multilaterals can help

Public Sector

- Advice and assistance on macroeconomic management
- TA on policy reform and regulation
- Financing needed public sector assets

Private Sector

- Structuring and mobilising finance
- Credit enhancement
- Political risk cover



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Communicating and Technology

Bill Mitchell

Bill Mitchell

Bill Mitchell has worked for Kvaerner John Brown's Information Technology group for 11 years in a variety of divisions, including structural, offshore and engineering and construction.

Bill is currently the IT Director for Kvaerner John Brown.

Company Profile:

Kvaerner John Brown is part of Kvaerner ASA. It provides total engineering management, construction and technology services to the process industries.

Kvaerner John Brown employs 11,000 personnel in 35 offices in 29 countries.

Kvaerner John Browns work is creating the global office with electronic corridors using systems applying to the ISO 'open' standards, has been recognised as a pioneering engineering and project control milestone. The following accolades have been awarded to Kvaerner John Brown:

Unix Expo 'International Award for Excellence in Open Systems'

ROSA 'Open Systems User of the Year'

Sunday Times 'IT Award for Business Excellence'

Arthur Anderson Award for 'Technical Innovation in IT'

Computer Weekly 'Process & Manufacturing Industries Award'

Responses to Globalisation: Communication and Technology

**Bill Mitchell,
Snr V.P. Information Technology,
Kvaerner John Brown**

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Agenda

- **Introduction**
- **Strategy**
- **Deliverables**
- **Futures**
- **Conclusions / Questions**

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Kvaerner John Brown

- Founded in 1832
- Originally in steel & shipbuilding
- Migrated to design & construction
- Grown to serve:
 - Oil & gas
 - Chemicals
 - Polymers
 - Pharmaceuticals
 - Refining
- Around the World

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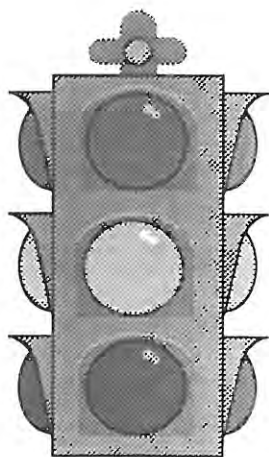
DRIVERS FOR GLOBALISATION



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BRAKES ON CHANGE



- FEAR OF CHANGE
- LACK OF SHARED VISION
- LOCAL WORKING METHODS
- DIFFERENT TOOLSETS
- LACK OF INTERNATIONAL STANDARDS

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Global Projects.....

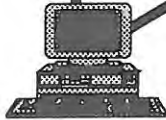


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...demand Global Solutions

Front End Engineering

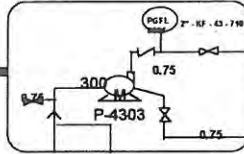


Program Report Project CCM

Type	Est. cost	Vol	Unit	Qty
Equipment	200	100	kg	20
Steel	300	100	kg	70
Concrete	20	100	kg	100
Cable/Trip	600	20	kg	20
WAC	30	10	kg	30
Piping	240	100	kg	20
Submers	400	50	kg	10
Hydrocarbon	600	10	kg	60
Insulation	800	0	kg	0

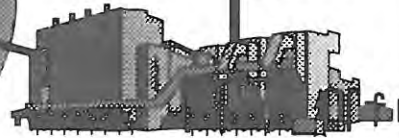
Chart: Program 12.000
Add Projects

Detail Design



Project Management

- Cost
- Materials
- Schedule



Plant Operations

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GLOBAL CAPABILITY

- Ability to use total resources
- To provide concurrent engineering
- Originate projects with our Global Clients
- Deliver the product and expertise anywhere
- Ability to tailor response

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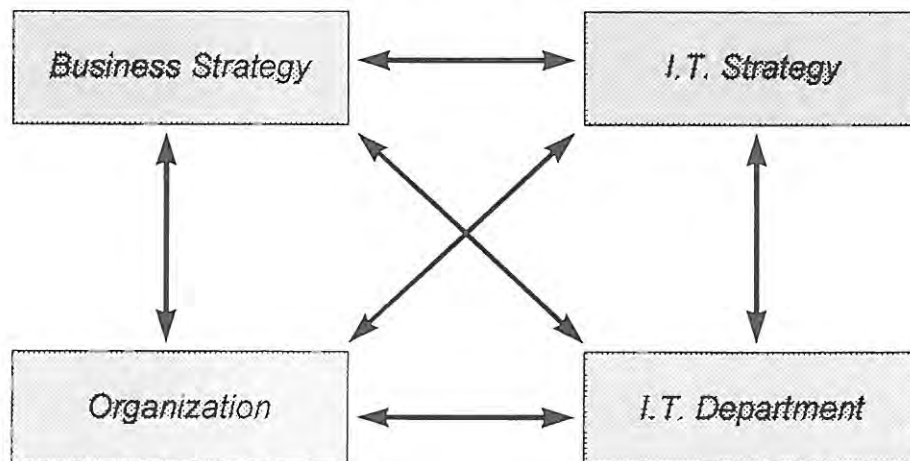
Strategic Objectives

- To Meet the Business needs of the 90's and beyond
- Reduce Engineering Man-hours and T.I.C
- Maximise Use of State of the Art Computer Technology to Improve Efficiency
- Provide Seamless Integration and a Single Source of Data
- Develop Strategic Customer Partnerships
- Provide Common I.T. Systems across all Offices

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I.T. & Business Strategy Alignment



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Agenda

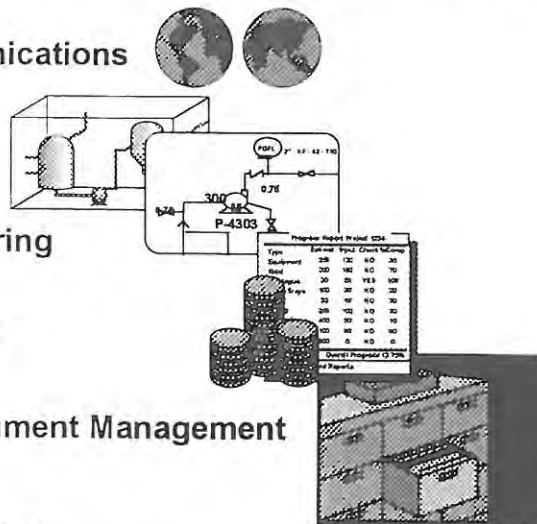
- Introduction
- Strategy
- Deliverables
- Futures
- Conclusions / Questions

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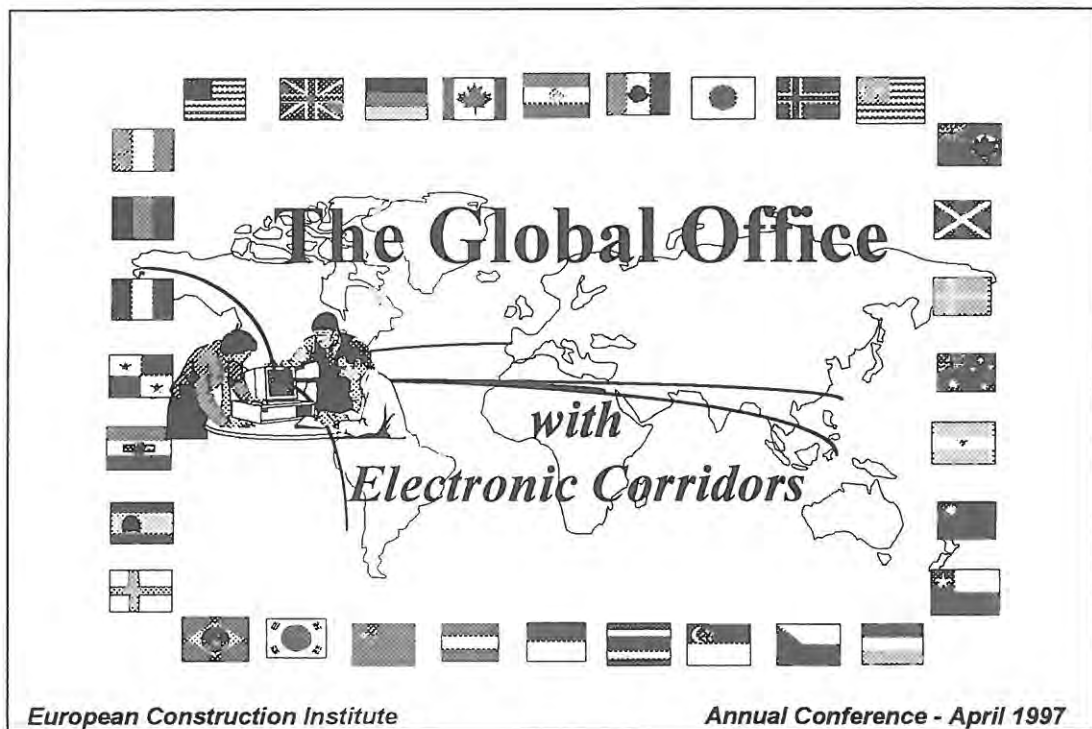
GLOBAL ENGINEERING COMPONENTS

- Global Communications
- CAD Review
- Global Engineering
- Project Control
- Electronic Document Management



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The Global Office

- Single task, multiple offices, integrated design
- Resource levelling by sharing
- Access to expertise (*global strength, local presence*)
- Virtual teams (*creating scale without mass*)
- 24 hr working (*a new day starts every hour*)
- Integration of low cost engineering skills
- Integration with Client

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3D CAD Around the Globe

**Houston
New Jersey**

**Bombay
Bangalore**

Canada

Zoetermeer

**London
Portsmouth
Aberdeen**

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ENGINES: Global Data Management

Global Network

AutoFLOW

ENGINES
Project Engineering Database

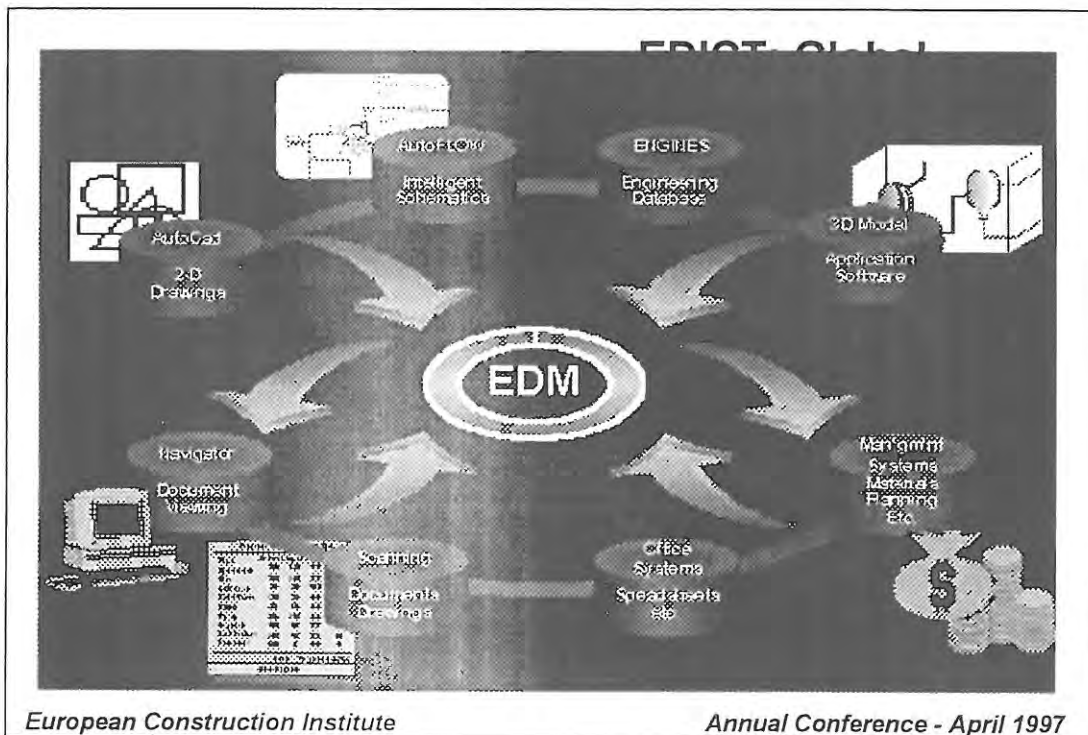
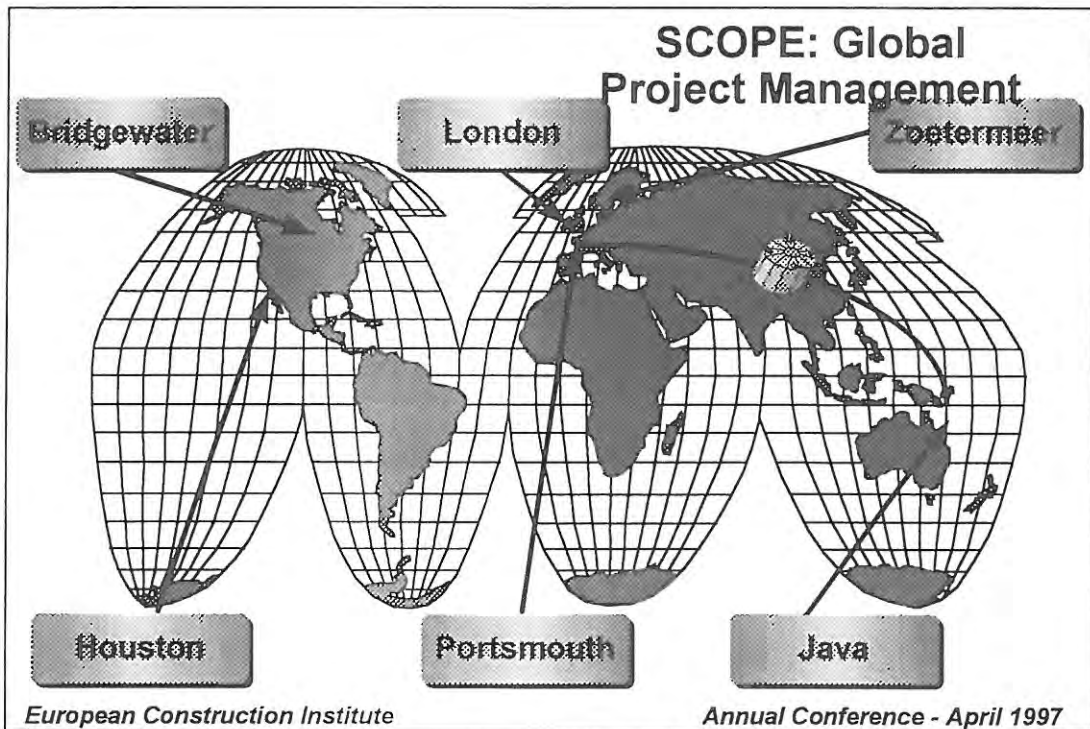
SCOPE
Project Management System

RDMS

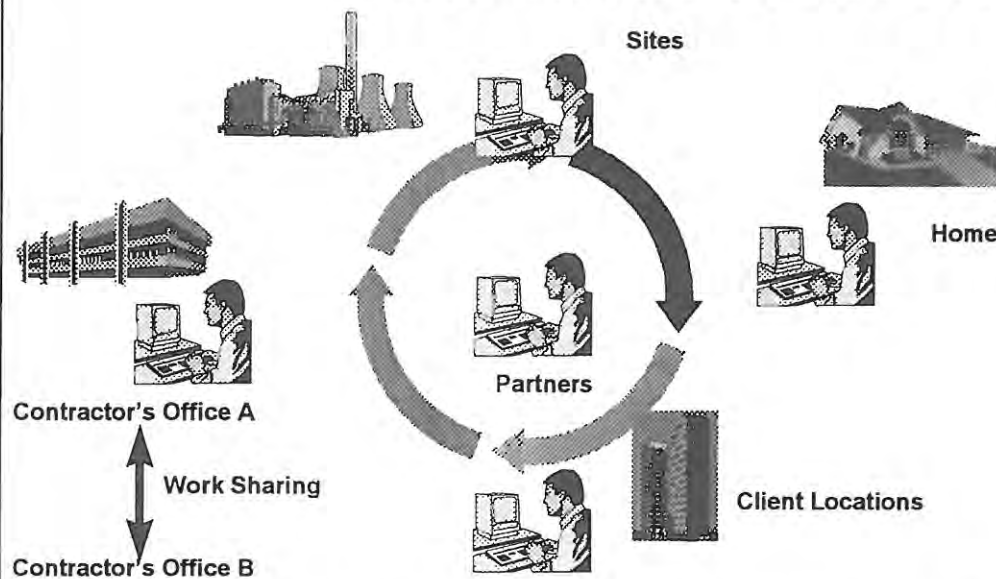
DELIVERABLES

- 2D CAD DIAGRAMS
- SPEC SHEETS
- DATA SHEETS
- REPORTS
- REQS & ORDERS
- LAYOUTS & GAs
- ISO METRICS
- MTO

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The Virtual Task Force



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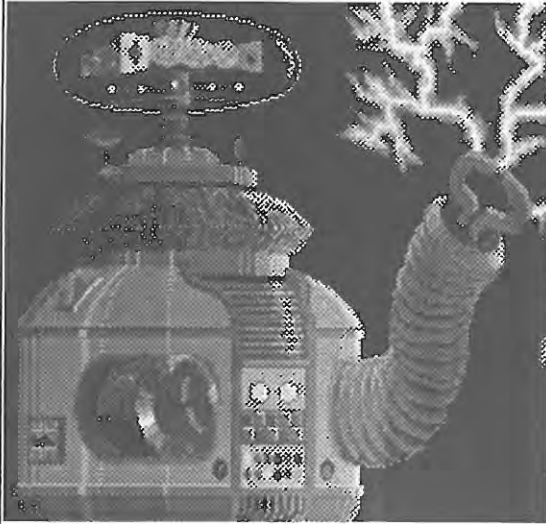
Agenda

- Introduction
- Strategy
- Deliverables
- Futures
- Conclusions / Questions

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Future Technology

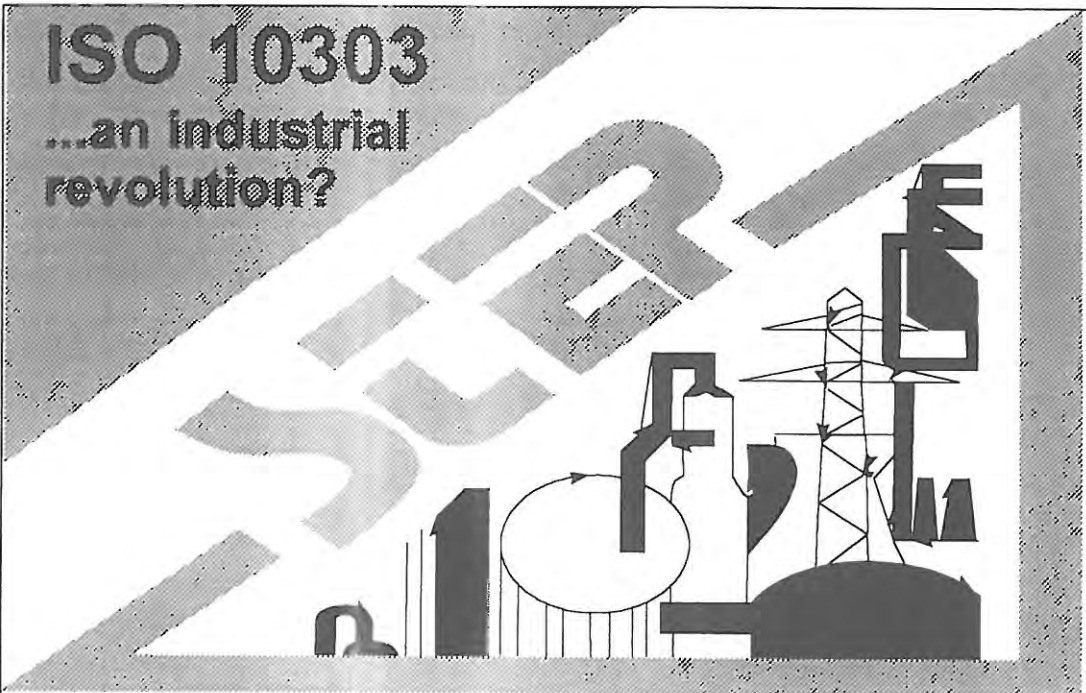


- Multi-media
- Voice Recognition
- Virtual Reality
- Expert Systems / Neural Networks
- Object Orientation
- Robotics
- ISO STEP (Standard for Exchange of Product Data)
- Internet / Intranet

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ISO 10303
...an industrial
revolution?

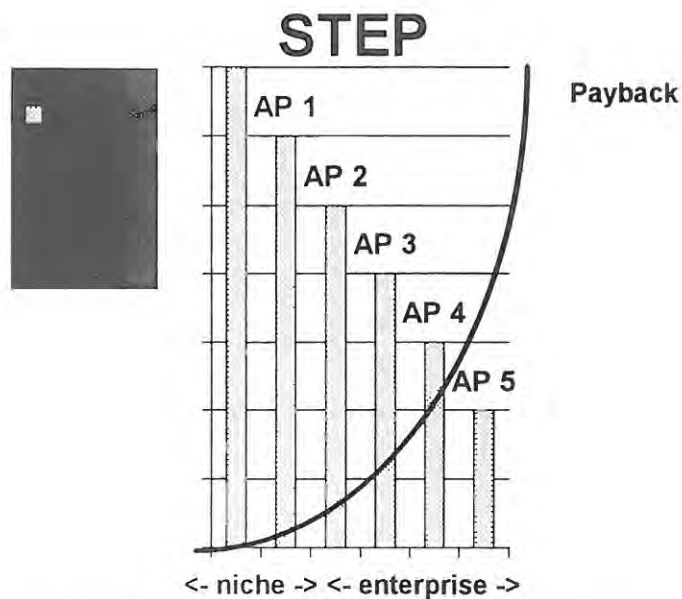


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STEP Background

- **Standard for the Exchange of Product Model Data -- STEP**
- **STEP is an informal name for the suite of ISO 10303 standards**
- **STEP provides a neutral tool for the representation and use of a wide variety of Product Data**
- **Usages of STEP include data exchange, sharing, remote access and archiving**



Internet / Intranet

- **The Digital Revolution?**
- **Or “Silicon Snake Oil”?**

Internet / Intranet

- **Internet Definition**
 - **An open global network of networks**
 - **A garage-sale in Cyberspace...?**
- **Internet Characteristics**
 - **Rapid Growth & Development (30m users)**
 - **Unmanaged / Unregulated**
 - **A Wealth of Information - useful and useless**
 - **Unstructured - no all embracing menu structure**
 - **Searchable**
 - **Free Services**

Internet / Intranet

“The true value...is less about information and more about community. It is creating a totally new, global, social fabric”

Nicholas Negroponte, “Being Digital”

“But what an impoverished community! One without a church, cafe, art gallery, theater or tavern. Plenty of human contact, but no humanity”

Clifford Stoll, “Silicon Snake Oil”

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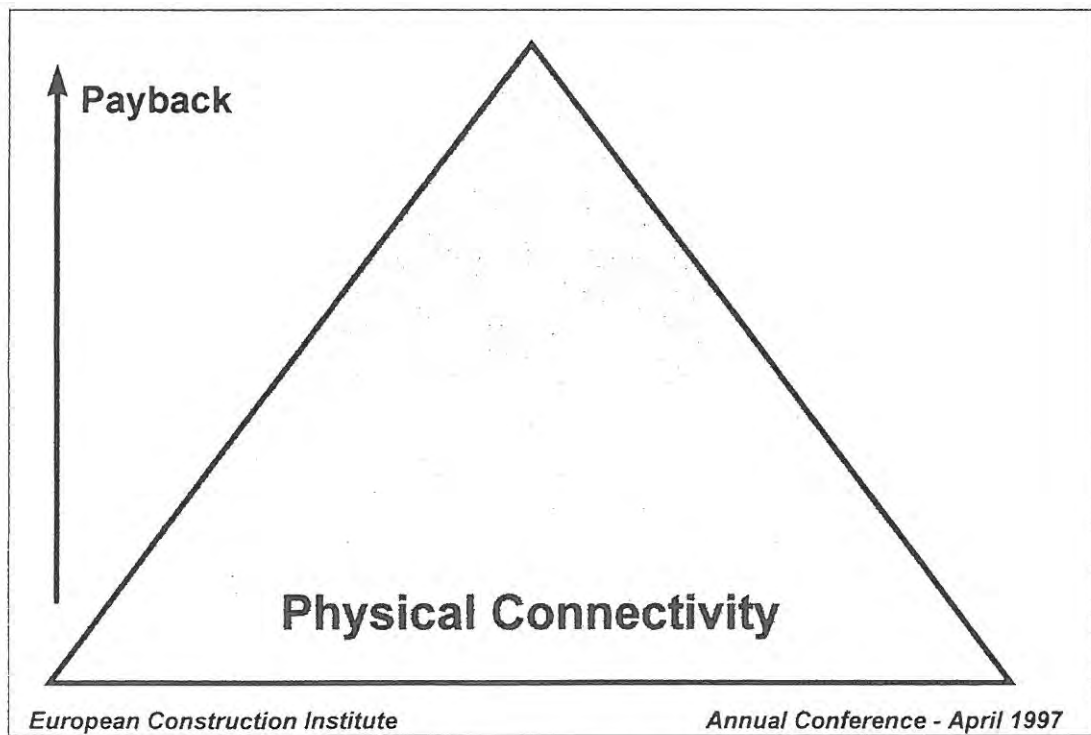
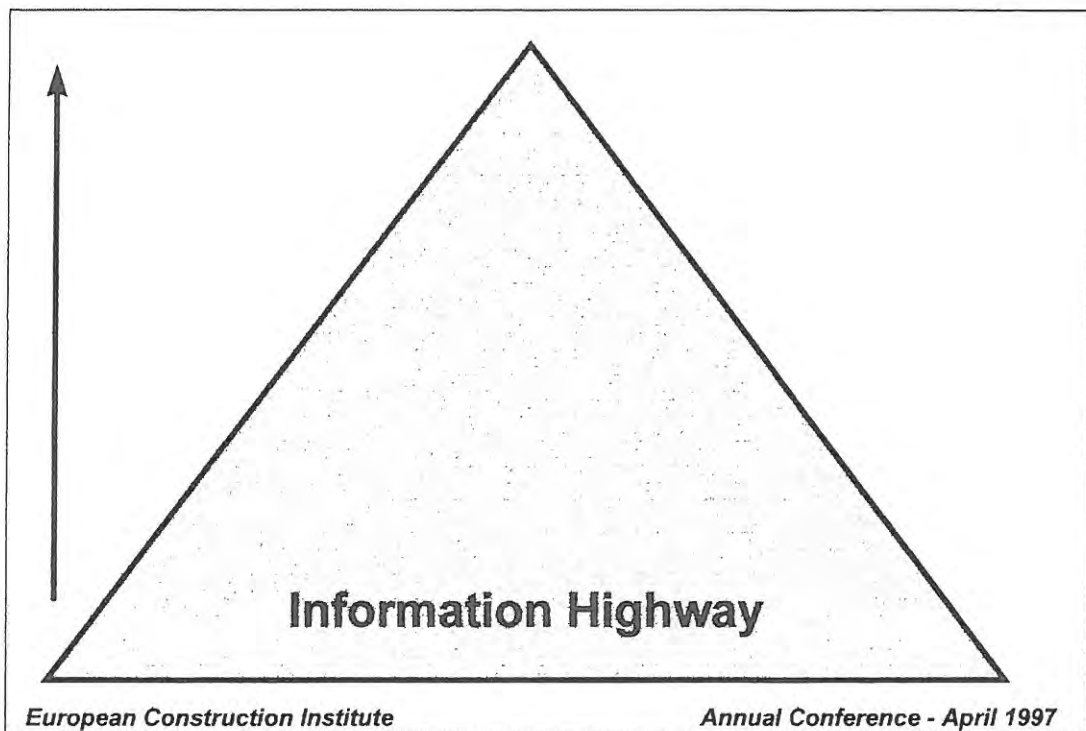
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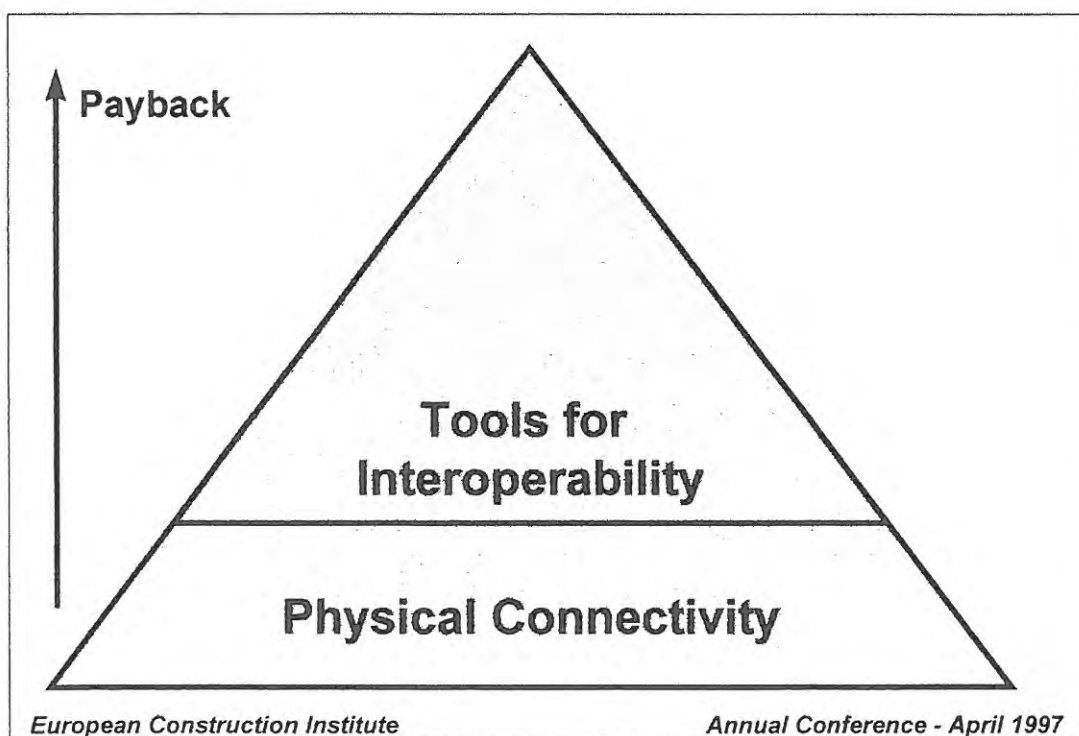
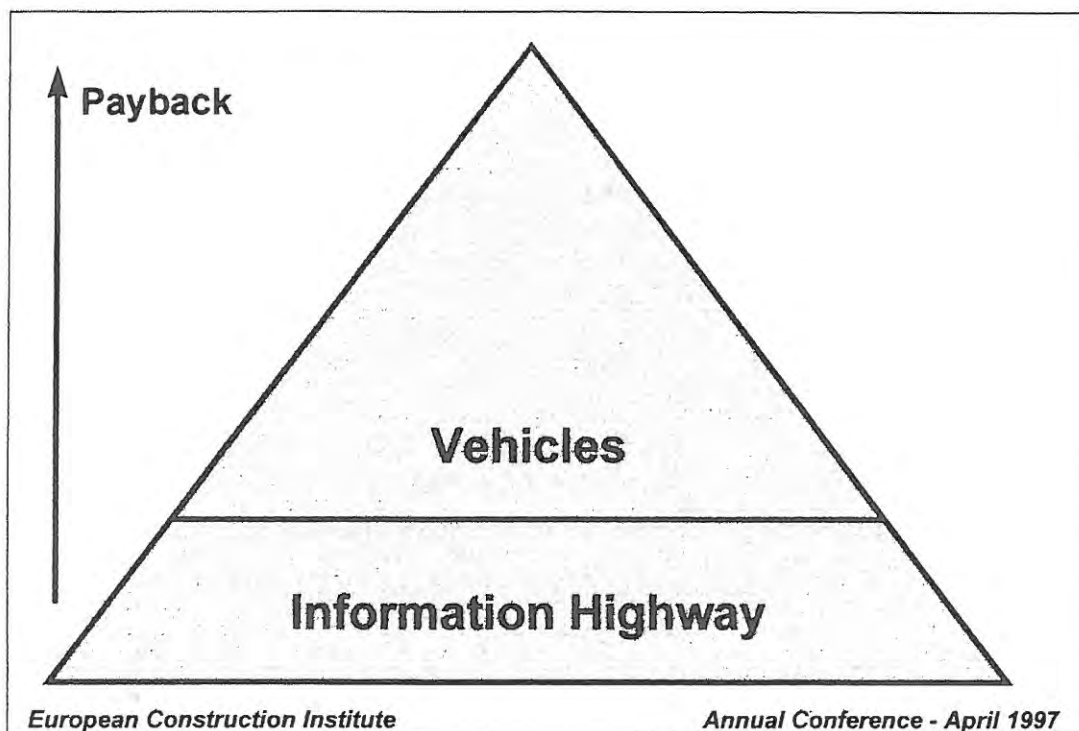
Agenda

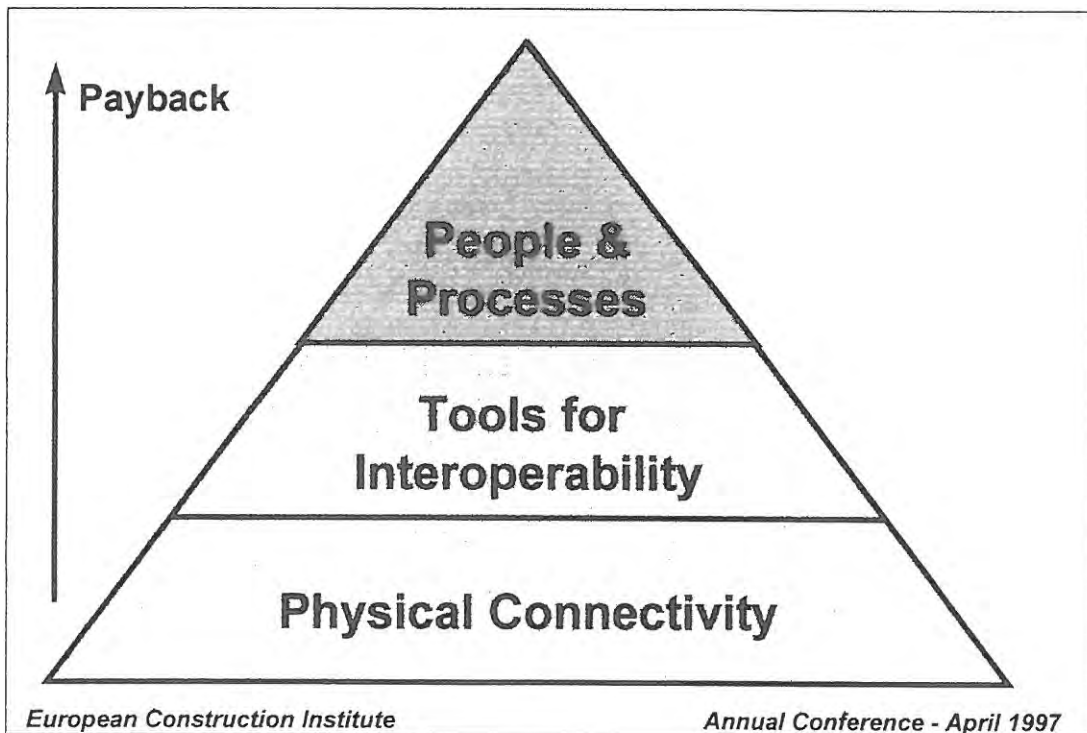
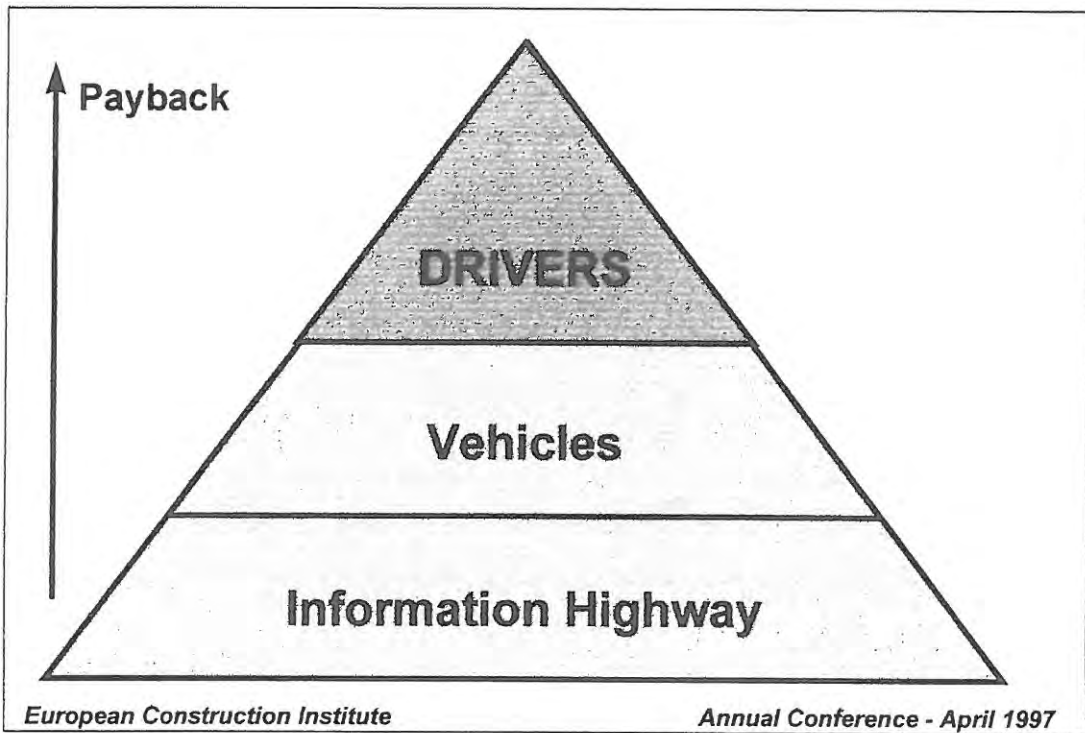
- **Introduction**
- **Strategy**
- **Deliverables**
- **Futures**
- **Conclusions / Questions**

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People



**Aligned
Empowered
Trained
Rewarded**

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PEOPLE & PROCESSES

- **Change cultural attitudes**
- **Change working practices**
- **Standardised Systems**
- **Less people per task**
- **Flexible Structure**

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Knowledge Capture

"The primary resource in post-capitalist society will be knowledge, and the leading social groups will be 'knowledge workers'"

Peter Drucker, Post Capitalist Society

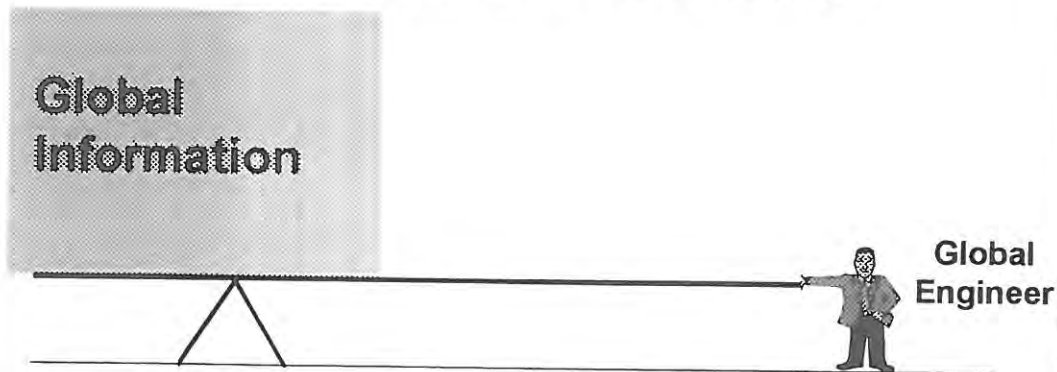
Our society is post-capitalist because knowledge -- not land, labor, or capital -- is now the only meaningful factor of production.

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LEVERAGE

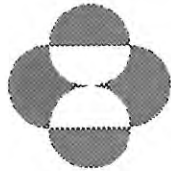
Positional Advantage; power to act effectively



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Client Alliances



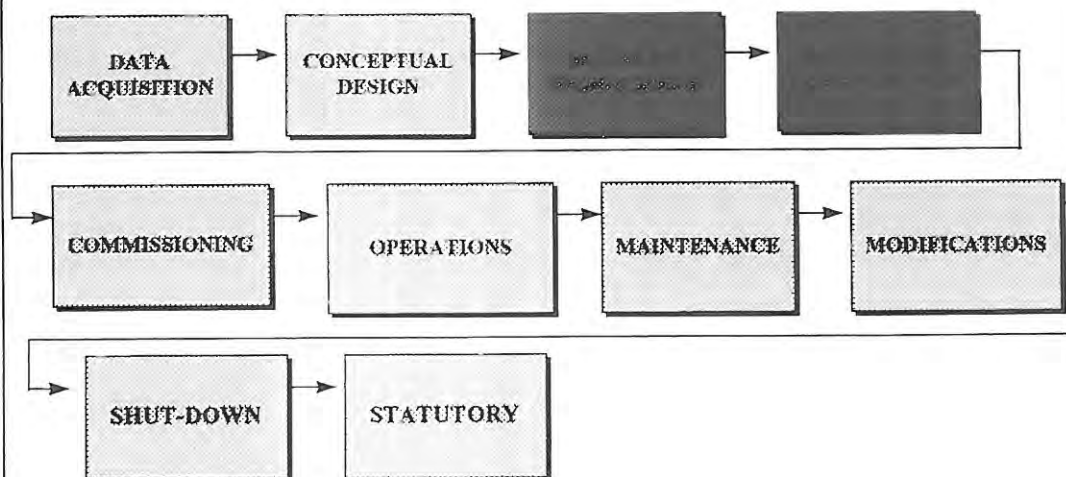
MERCK



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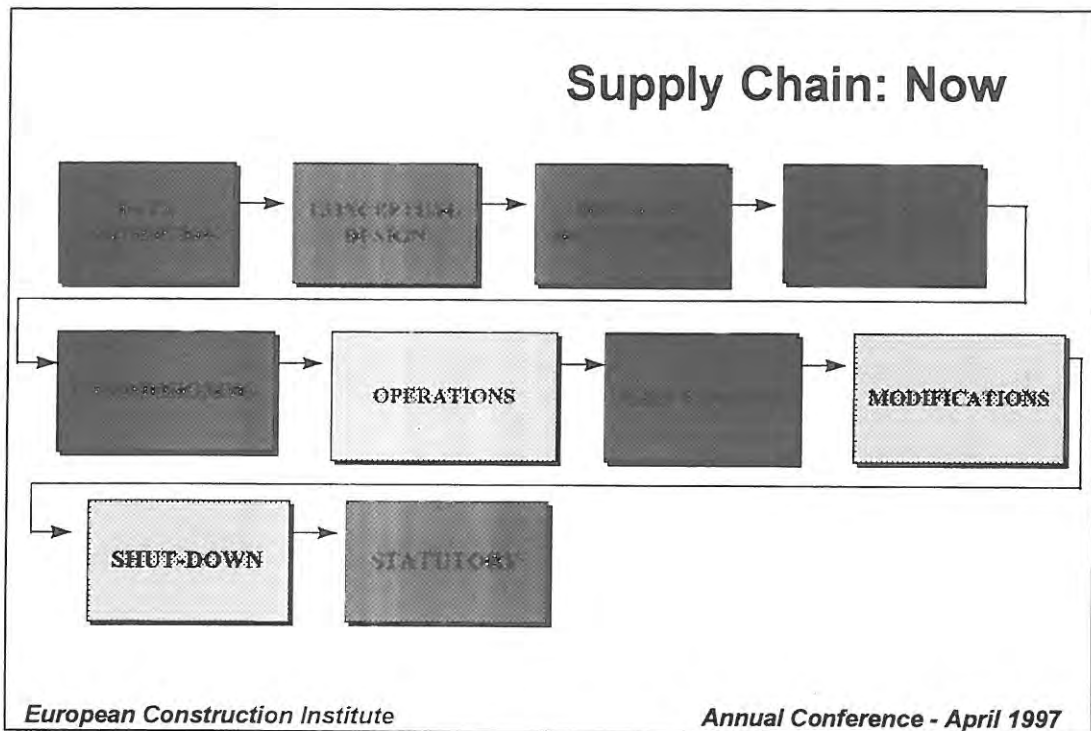
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Supply Chain: Before



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***“Information systems
cannot bestow sustained
advantage”***

Sir John Harvey-Jones

SUSTAINED ADVANTAGE

- **Develop “best of breed” communication and tools**
- **Evaluate the Process**
- **Develop the most effective relationships**
 - **internal and external Clients**
 - **vendors**
 - **subcontractors**
 - **suppliers**
- **Repeat all of the above**



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SESSION THREE ***'The Impact of Globalisation'***

Session Chairman:

Alain Pierru

Elf Oil UK Ltd

After having graduated from Ecole Nationale Supérieure de Chimie de LILLE and from Ecole Nationale Supérieure du Pétrole (I.F.P.), Alain PIERRU spent several years with major contractors in France and Italy and was involved mainly in process engineering activities before joining the ELF AQUITAINE Group in 1974 at the DONGES refinery (located in western France).

Three years later he joined the ELF Refining Construction Division in Paris and since then he has been in charge of several technical studies (Front End Engineering Design Packages together with cost estimates) and has been appointed Project Manager of major refining projects with Elf.

Therefore he has gained a wide and successful experience in the project management for the construction of new process facilities. In particular he has always sought the ways of making projects costs savings and was the leader of a working group focusing on the control and the reduction of costs in projects.

He is currently Project Director within ELF OIL UK LIMITED where he has been in charge of the construction of new process plants for the MILFORD HAVEN Refinery in Wales (particularly a Naphtha Isomerisation plant and a distillate hydrotreating plant to desulphurise the diesel oil) for about six years.

Alain PIERRU is the Elf Group's representative at the European Construction Institute (member of the ECI Programme Committee).



8th European Conference
Construction in Europe

Florida Overland Express

Eugene Skoropowski

Eugene Skoropowski

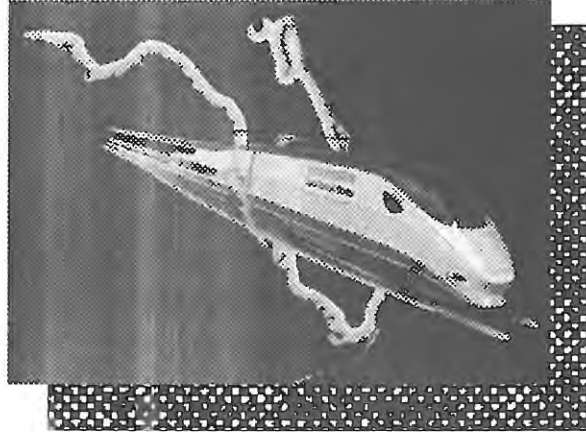
Gene is Director of Transportation Services for Irvine, California-based Fluor Daniel and is currently Director of Rail Planning for the Florida Overland eXpress (FOX), the Florida Department of Transportation's high speed rail franchisee.

Gene has been part of the passenger rail scene for some 28 years, first as Chief Railroad Services Officer of Boston's MBTA, and then as Assistant General Manager of SEPTA in Philadelphia. Prior to his Florida assignment, Gene was Project Director for Fluor Daniel's work on the massive Los Angeles County MetroRail system. He has also been involved on rail projects in San Francisco, Montreal, New Jersey, and in several New England States.

Gene is a member of the American Planning Association and the American Institute of Architects and practised in his home town of Boston for 10 years prior to his transportation career.

He is a graduate of The Catholic University of America in Washington, D.C., is married and has 3 grown up daughters. In his spare time, he has served on the Board of the National Association of Railroad Passengers (NARP) for 23 years and been its national vice-president of the past 8 years.

The Florida Overland eXpress



Construction in Europe

Eugene K. Skoropowski
FLORIDA OVERLAND EXPRESS
Orlando, Florida

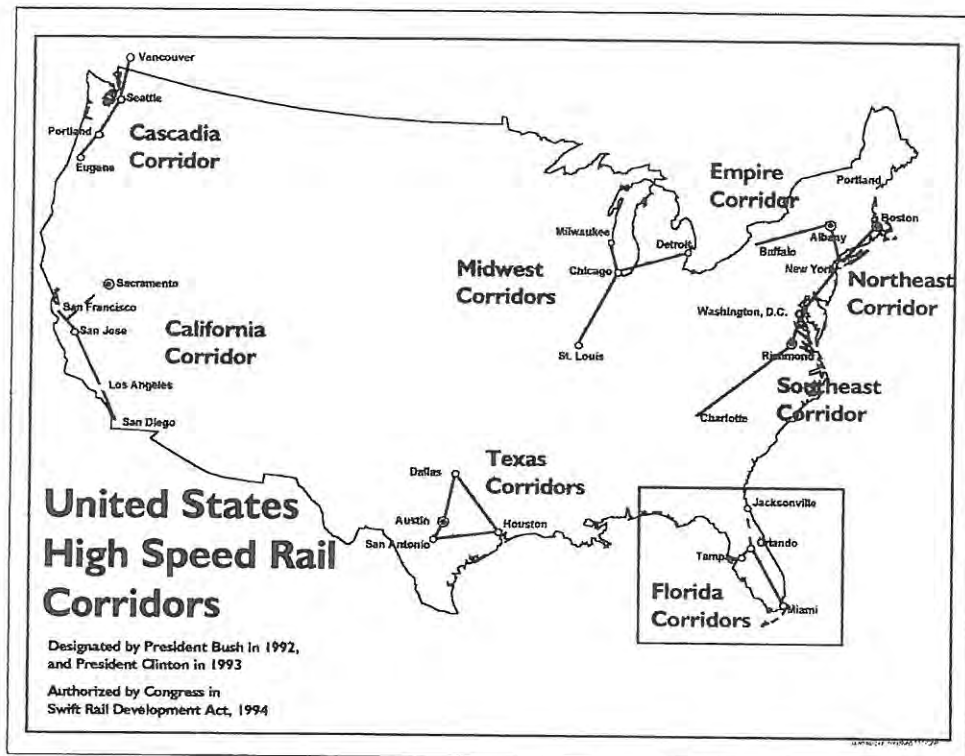
European Construction Institute
Berlin
10-11 April 1997

Past Failed Attempts

- 1980-82 San Diego - Los Angeles (Japanese Bullet Train)
- 1984-94 Anaheim, California - Las Vegas, Nevada (German Transrapid Maglev)
- 1988-90 Florida Miami-Orlando-Tampa (Swedish X2000)
- 1993-94 Texas TGV (French TGV)

Causes

- "Overly optimistic" — private sector can do it all
- Lack of public will
- Lack of public policy
- Lack of public resources



What Makes Florida's Current Program Different?

Florida Has:

- **Public Policy** — Enacted HSR Statute by Florida Legislature
- **Public Program** — Florida DOT Designated as Implementing Agency
- **Public Benefit Studies of HSR** — Limits On Size of Roads
- **Public Commitment to be an Investor of State Funds**



FLORIDA HAS TAKEN THE INITIATIVE

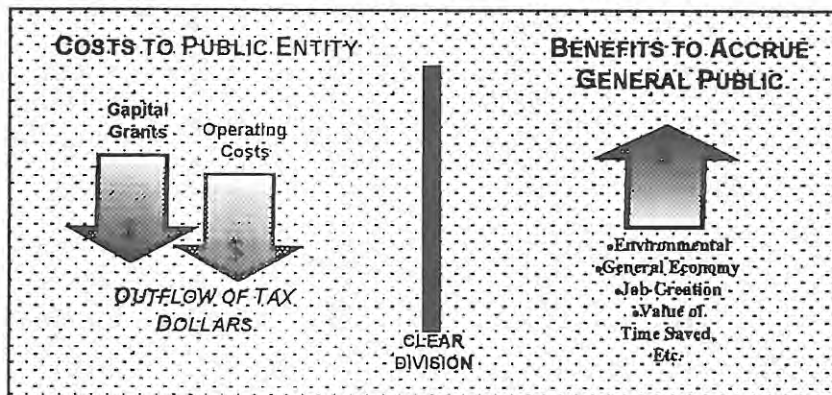
- **Private Sector Partners Selected** — Competitive Process
- **Private Sector Management, Operations** — Efficient Service
- **Private Sector Equity Participation** — A Private Sector Investor/Partner
- **Private Sector Access to Capital Marketplace** — Access New Capital Resources

Florida's Commitment

A Model for Other States

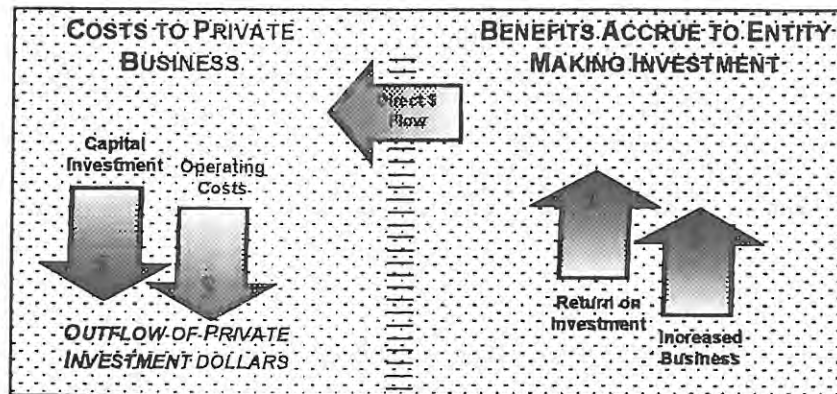
- FDOT Will Implement Legislatively Initiated Program
- Public Investment: \$70 MM Per Year For 40 Years
- Public Ownership of Fixed Facilities
- 40 Year Franchise Granted to Private Sector:
 - Design, Build, Operate, Maintain, Finance
- Shared Risk, Shared Reward

Typical Project — Public Sector



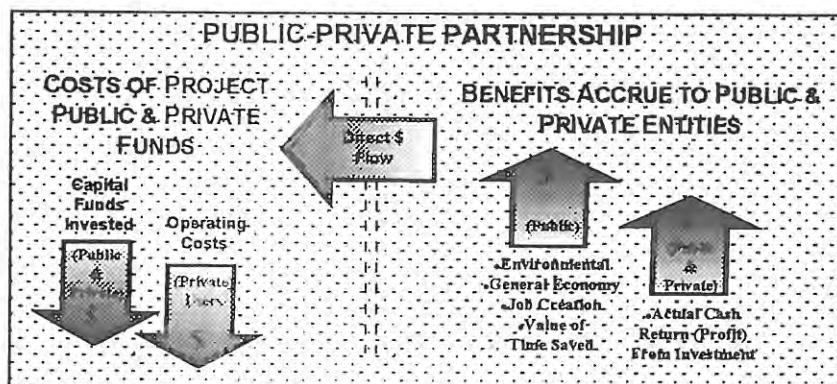
- No direct return in cash to the public

Typical Project — Private Sector



- Investing entity receives direct payback on its investment

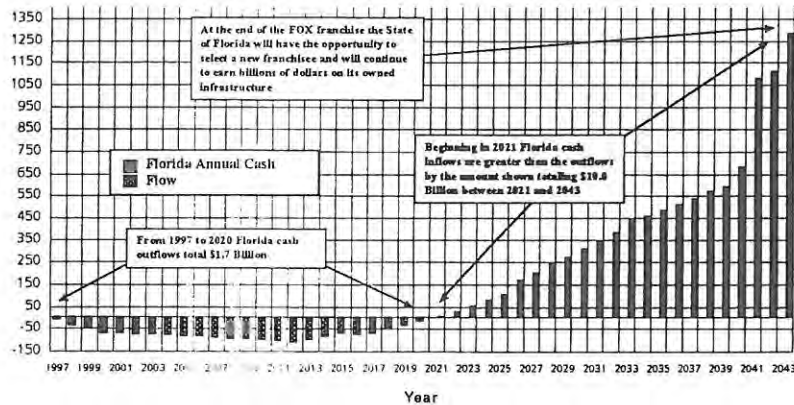
Why Florida's Approach to High Speed Rail Investment is Different Than Other Public Projects



- Public outlay is incremental
- Florida public is owner of their system (Investment is "Secured")
- Public is beneficiary of direct cash returns to assist in funding other public needs

How Much Will This Cost the State of Florida

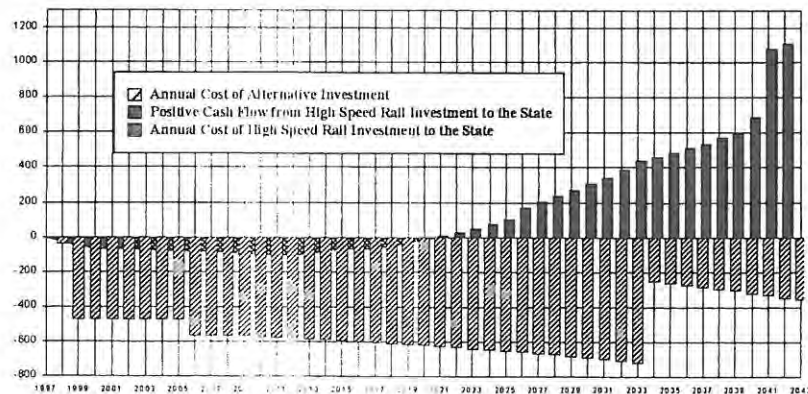
State of Florida Net Cash Flow



All figures are as contained in the PCPEA and assume 80% state participation of distributable cash which has not been negotiated.

What About an Alternative \$6.2 Billion Transportation Investment in Florida

Cost of \$6.2 Billion Alternative Investment



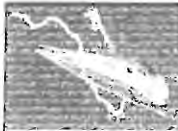
All figures are as contained in the PCPEA and assume 80% state participation of distributable cash which has not been negotiated.
Alternative cost of \$6.28 Billion amortized over 30 years at 5% interest rate plus maintenance.

Why Is Florida's Investment Approach So Different From Any Transit or Rail Project?

- Cash Proceeds Paid Directly to State
- Cash Returns Start 8 Years After Operation
- After 16 Years of Operation, Cash Returns to State Exceed Annual Contribution
- After Bonds Retired, Major Cash Income Source
- State Funds Never Go To Private Companies
- State Investment Secured By Ownership of All Fixed Access
- State Investment for Debt Service
- Private Investors Actually Provide Up-Front Equity

What Does the State's Investment Buy?

- \$5.3 Billion Intercity Passenger Transport System
- Revenue Producing Source of Income
Netting \$10 **Billion** Over 40 Year Franchise
- Appreciating State-Owned Asset
- Private Business Operation



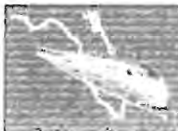
National Significance

- Model for Public-Procurement of Major Investments

- ▼ Rail
- ▼ Highway
- ▼ Other Infrastructure



- Florida's Program is Held by U.S. DOT to be a Model for the Nation



What The FOX Project Is

- First new intercity passenger rail system in North America in more than 100 years
- First state-of-the-art High Speed Rail system in the Western Hemisphere
- First North American Passenger Rail System designed to be fully integrated with all other forms of transport

320 Miles Long	2 Tracks for entire distance
200 mph running speeds (322 kph)	Uses proven, safe existing technology
No Road /Rail grade crossings	State-of-the-Art Stations
All Electric Operation	• Convenience • Comfort • Access • Safety
Frequent Service / Can Run Every 5 Mins.	Fully Fenced Right-of-Way — "WIDS"

- \$5.3 Billion project
- 2nd largest public works project in North America

FOX Team

■ Private Sector Partners



▼ Fluor Daniel



▼ Odebrecht Contractors of Florida



▼ Bombardier



▼ GEC Alsthom

■ Public Sector Partner



▼ Florida Department of Transportation

FOX Team

■ Engineering

- ▼ HDR Engineering (Tampa)
- ▼ Carter-Burgess (Orlando)
- ▼ Systra- Sofrétu- Sofrérail (Paris)
- ▼ HNTB Architects Engineers Planners (Miami, Orlando)
- ▼ STV Group (Orlando)
- ▼ Harmon Industries (Jacksonville)
- ▼ GE-Harris (Melbourne)
- ▼ University of Florida (Gainesville)

■ Media / Public Information

- ▼ Wragg & Casas (Miami)
- ▼ Evans Bros. Graphics Co. (Los Angeles)
- ▼ David Fierro and Associates (Miami)

■ Legal

- ▼ White & Case (Miami, New York)
- ▼ Holland & Knight (Florida)

■ Right-of-Way

- ▼ Universal Field Services (Tampa)

■ Architectural

- ▼ Bellon and Taylor (Miami, Orlando)
- ▼ Bermello & Ajamil and Partners, Inc. (Miami)
- ▼ Daniel, Mann, Johnson & Mendenhall (Miami, Tallahassee)

■ Environmental / Geotechnical

- ▼ Woodward-Clyde (Tallahassee)
- ▼ Dames & Moore (Boca Raton)
- ▼ Geotechnical and Environmental Consultants, Inc. (Orlando)

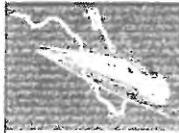
■ Operations

- ▼ Société Nationale des Chemins de fer Français (SNCF-French National Railways, Paris)

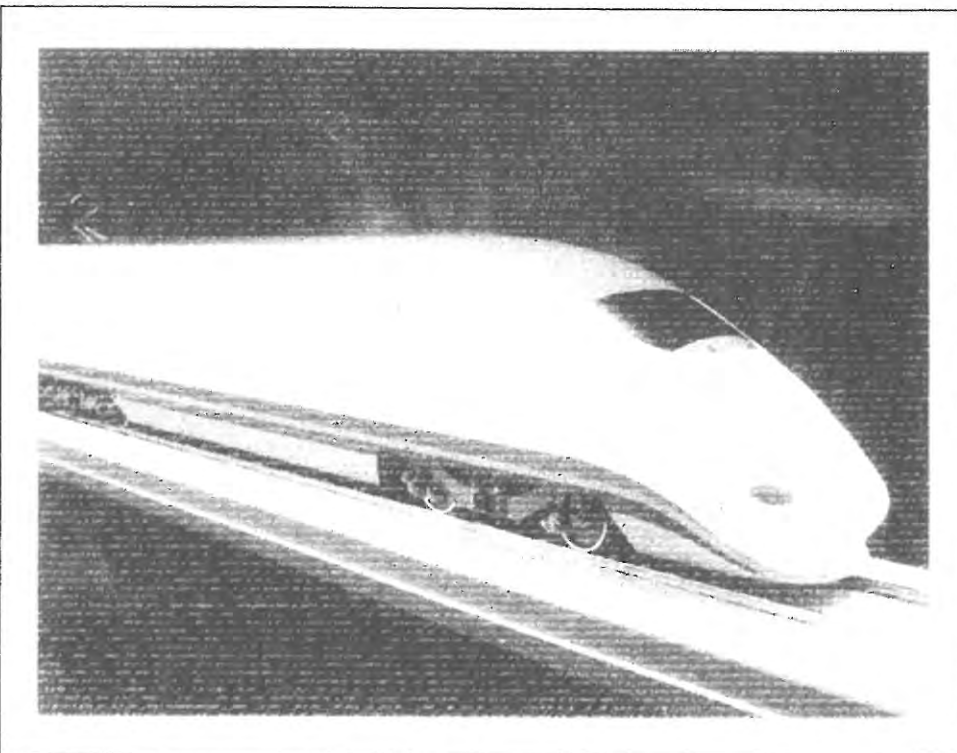
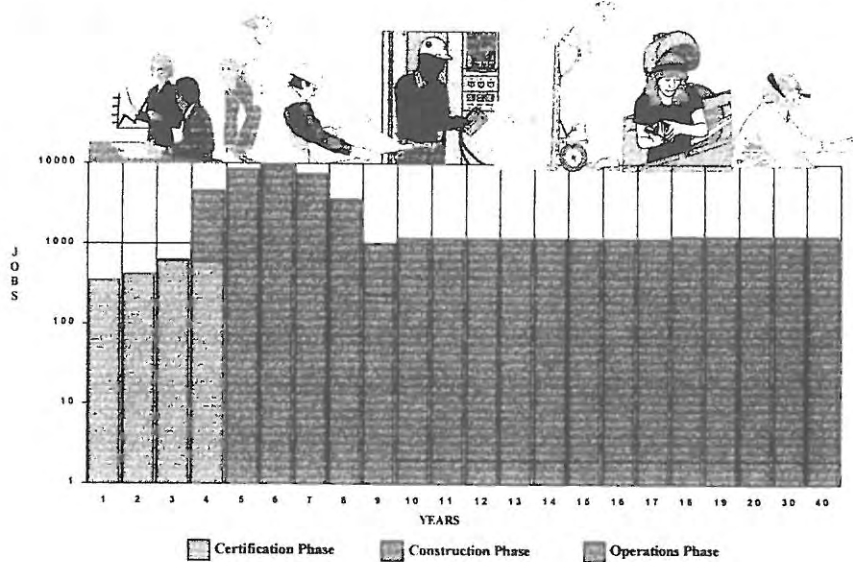
■ Financial / Socio-Economic

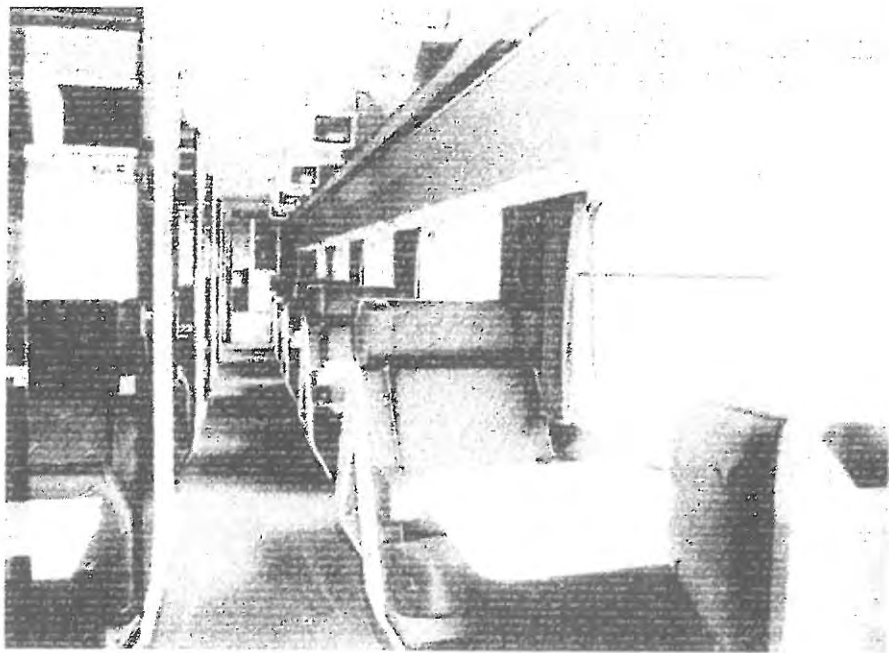
- ▼ Bear Stearns & Co., Inc. (New York)
- ▼ Banque Nationale de Paris (New York, Paris)
- ▼ Florida State University (Tallahassee)
- ▼ University of South Florida (Tampa)

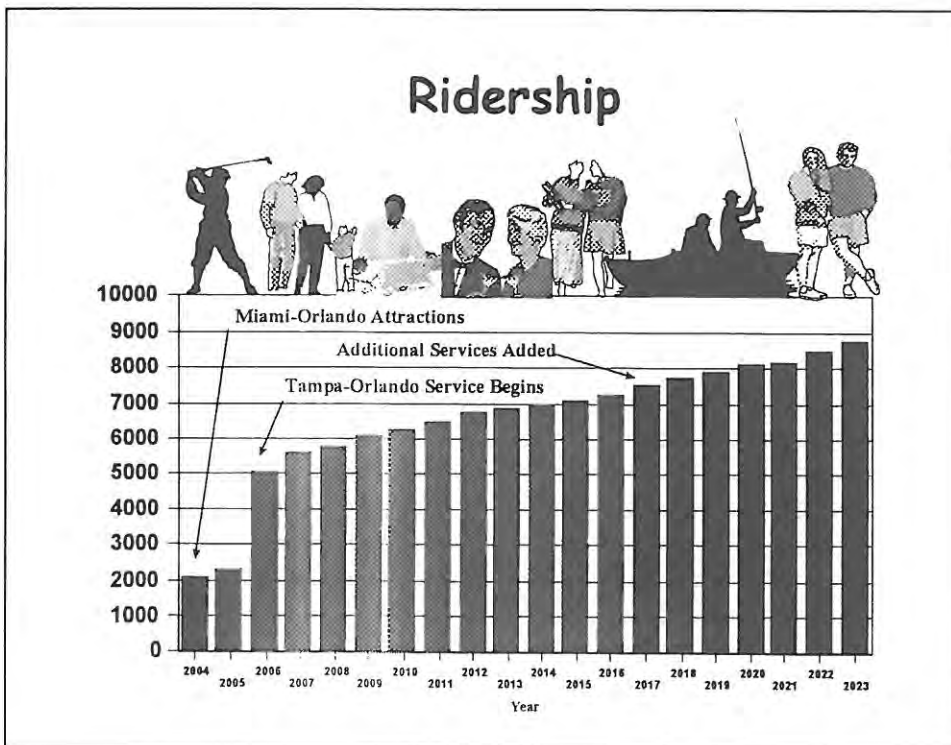
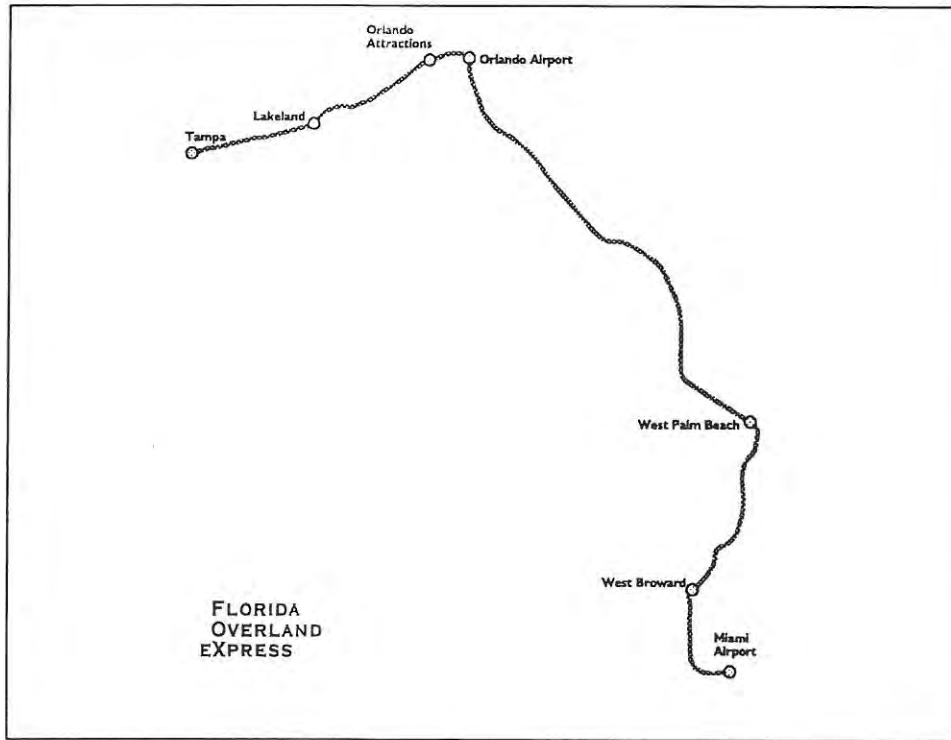
*Construction: The majority of construction contracts will be competitively bid in Florida.
The majority of materials procured will be competitively bid in Florida.*

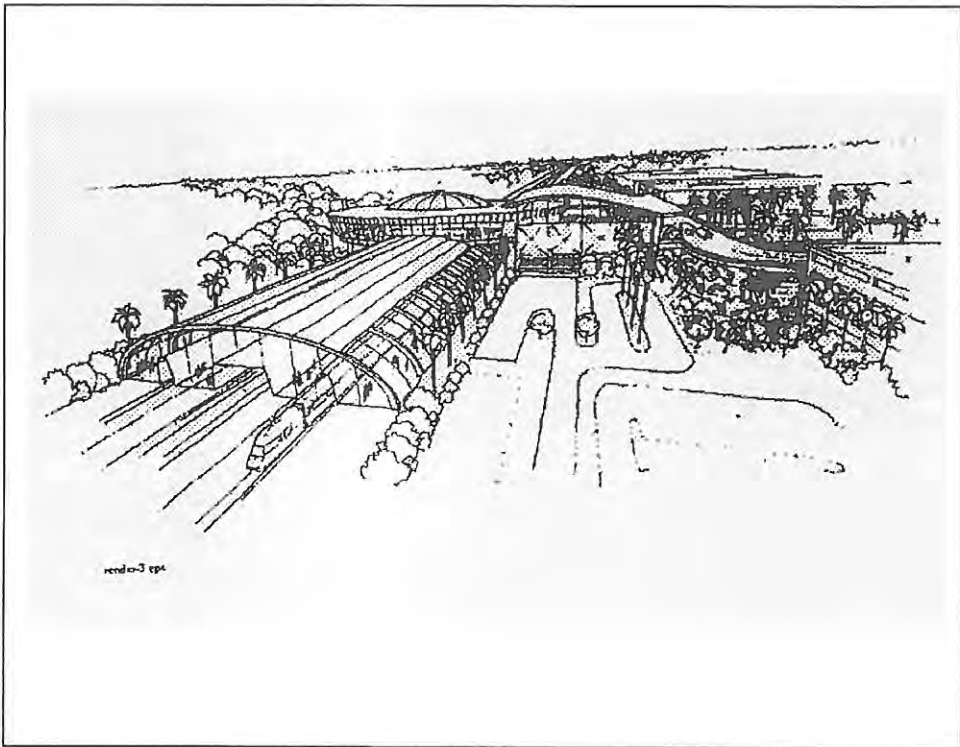
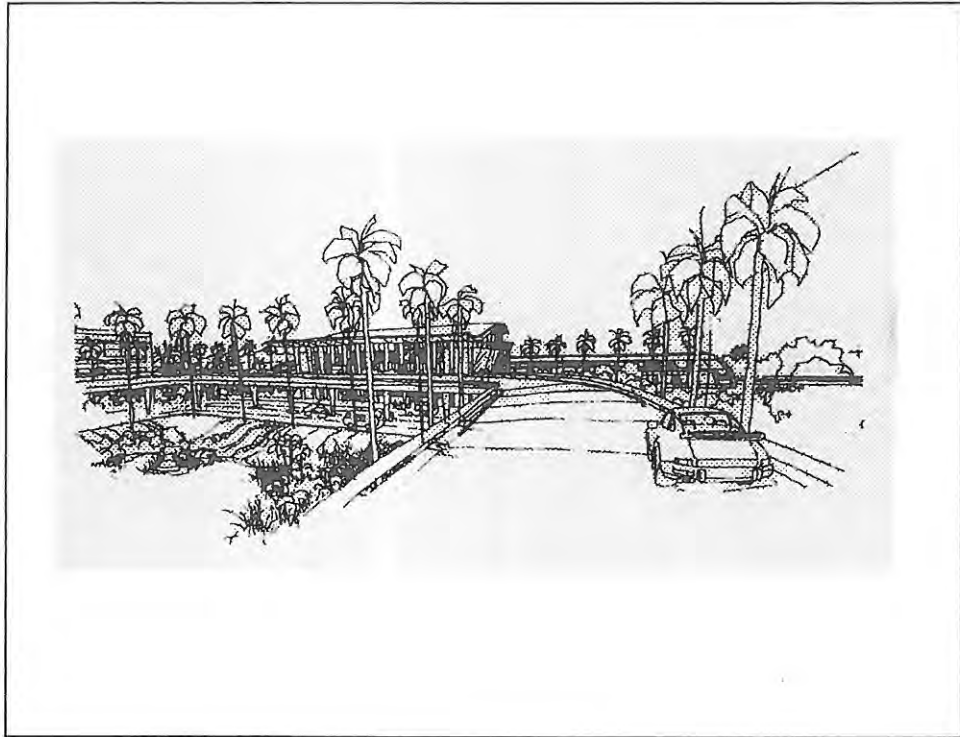


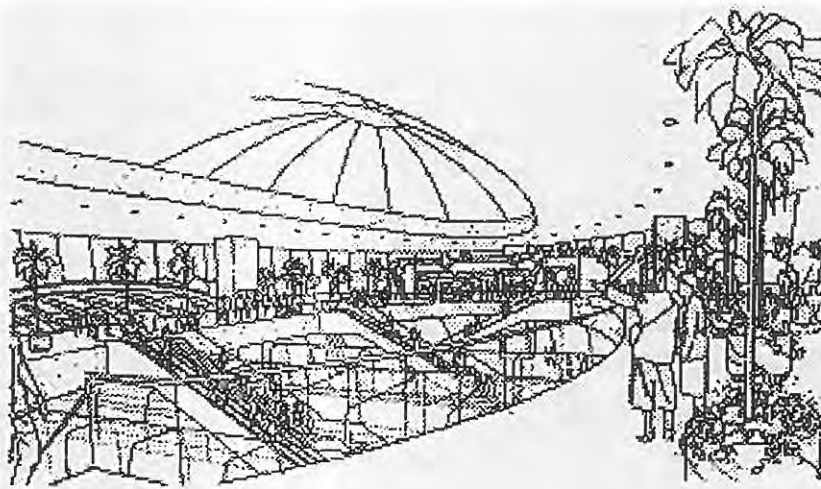
Direct Employment Impact







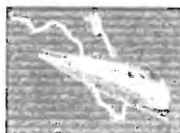
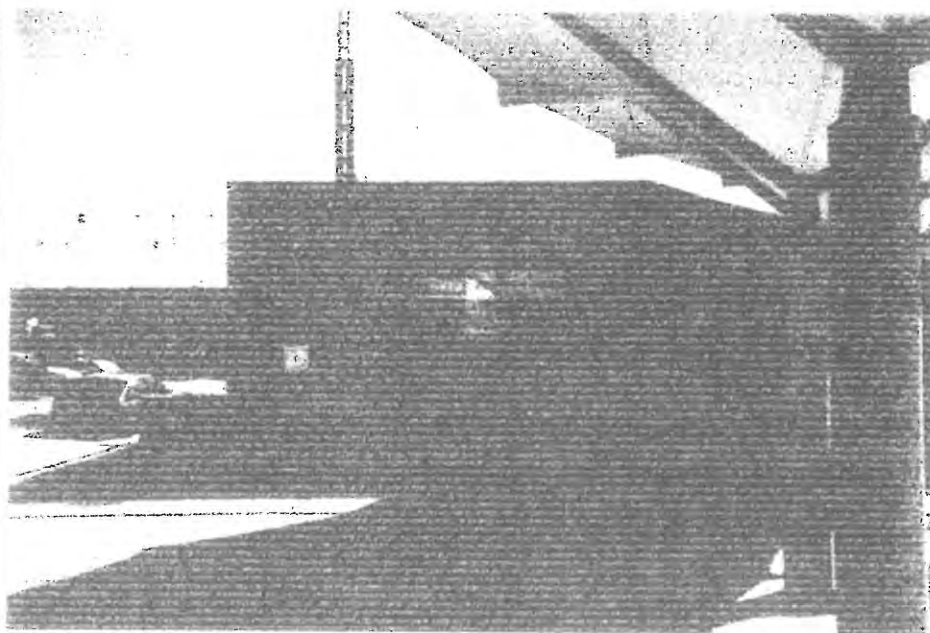




Private Partners

- Airlines
- Cruise & Travel Industry
- Attractions, Hotels, Convention Center
- Businesses & Commercial Developers
- Construction Industry, Suppliers, Trades
- Rental Cars





FOX

- Does not have a solution or answer for every issue
- Does not claim to know better than FDOT and local responsible agencies what's right for Florida
- Must have a strong partnership & involvement of Floridians at all levels of government
- Needs and welcomes comments and constructive suggestions on how to make this project the best design possible within the financial and other constraints
- Wants to make this project an example of all the best aspects of an involved process encompassing everyone interested in the project or impacted by it

Realism

- We commit to consensus approach to resolve specific issues
- We recognize consensus may not be possible to achieve on every issue
- We commit to pursuing the least intrusive, least invasive and least environmentally negative solution to issues when consensus eludes us (taking into account reasonable cost considerations)
- We commit to accommodating more costly solutions which are desired by parties willing to provide additional resources to achieve a more desirable end product

Process

Franchise Award: 27 February 1996
Final: 04 April 1996

Post-Franchise Financial Agreement (signed):	2 August 1996
Post-Franchise Pre-Certification Agreement:	12 November 1996
Engineering / Certification Complete:	1999
Financial Closing:	1999
Start Construction:	1999
First Operation: Miami - Orlando:	2004
Complete Project & Full Operation to Tampa:	2006
Submit Plan to Extend to Jacksonville:	2008
Operate Service for 40 years	



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Roush CCGT Power Station - Pakistan

Hans-Dieter Martin

Hans-Dieter Martin

Hans-Dieter Martin holds a university degree in electrical engineering from the Technical University in Aachen.

His professional career started in 1968 with development work on fast breeder reactors. In 1970 he was assigned project manager for the first nuclear power plant simulator training centre in Germany.

In parallel to the two PWR and BWR simulator projects he built up the power plant operating staff training organisation of Siemens which he directed till 1989. In this function he handled training and simulator projects in countries like Brazil and Argentina, Algeria, Egypt, Iran, Saudi-Arabia, China and of course the European countries. He also was active as an international consultant for the International Atomic Energy Agency for which he fulfilled various expert missions and gave many lectures in international seminars and training courses.

Since 1991 he is in the marketing division of Siemens Power Generation for fossil power plants and became a project manager for the combined cycle power project Kot Addu in Pakistan.

Since 1993 he is responsible for the sales and marketing of new fossil plants in various countries of the Middle East. In this function he developed the Rousch power plant which reached financial close in March 1996.

SIEMENS

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Roush CCGT Powerstation - Pakistan *Hans-Dieter Martin*

SIEMENS

Pakistan



Key Figures of Pakistan and Germany

Year	Population (Mill.)	GDP (Bill. DM)	Primary energy consumption (Mill. t Oil)	Electricity production (TWh)
	Pakistan/Germany	Pakistan/Germany	Pakistan/Germany	Pakistan/Germany
1980	83/78	37/2500	14/362	16/467
1990	112/78	68/3060	26/348	44/550
2000	148/79	118/3700	49/357	101/583

GOP Policy in 1994

No further Thermal Plants in the Public Sector

Private Power Plants through comprehensive security package:

Standardized IA (Implementation Agreement)

Standardized PPA (Power Purchase Agreement)

Standardized FSA (Fuel Supply Agreement)

Flat tariff of 6,5 US \$ Cents/kWh

Financing Concept

>20 % equity

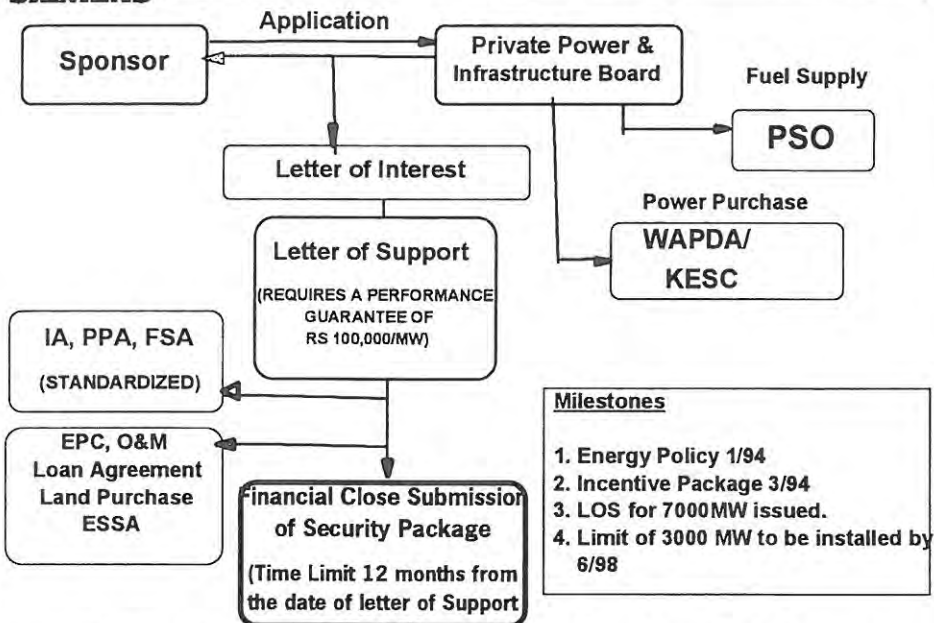
<40% subordinated loan (PSEDF)

balance commercial loans

Issuance of Letter of Interest, if project feasible

Letter of Support, valid for 1 year till Financial Close (after deposit of Performance Bond of 100000 PR/MW)

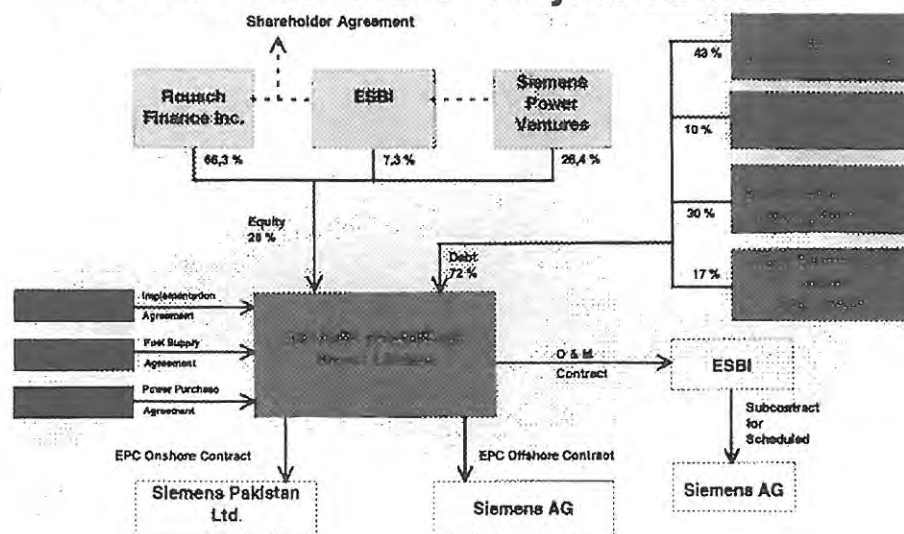
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Private Power Generation in Pakistan

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Rousch Power Plant - Project Structure



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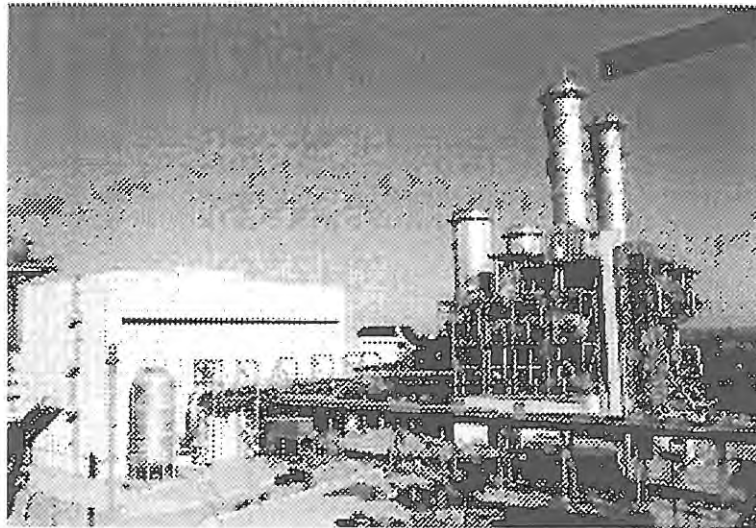
Kot Addu Power Plant, Units 13,14 &15



View of the Station Transformers onto the GTs Air Intake

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Kot Addu Power Plant, Units 13,14 &15



View of the Steam Turbine Building and the HRSGs

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Kot Addu Power Plant, Units 13,14 &15



View of main control room

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Differences between Reference Plant and Rousch Power Plant

	Kot Addu	Rousch
SCADA System	no	yes
Oil Tank Farm	no	yes
Oil Treatment	no	yes
Oil Decanting	no	yes
Water Injection	no	yes
Sewage Treatment Systems	not relevant	yes
Admin. Building	no	yes
Workshops	no	yes
Storage Building	no	yes
Staff Colony	no	yes
Area Development	no	yes
Access Road and Boundary Wall	no	yes
<u>System Requirements</u>		
Switch Yard	220 kV	500 kV
Demin. Plant	20 t/h	120 t/h *)
Make up Water	1800 t/h	700 t/h

*) for Water Injection etc.

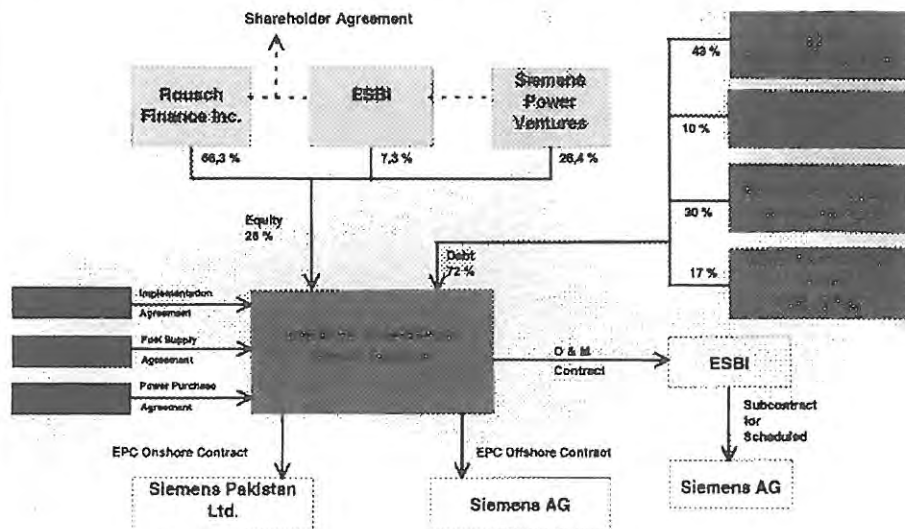
ROUSCH Power Plant

Package Supplier

Civil Design & Construction	Pakistan
Boilers & Steam/Feedwater System	Holland
BOP	USA
Fuel Treatment	Germany
Erection of Turbine Island & Electrical	Pakistan
Structural Steel	Germany
Cladding/Roofing	Malaysia

ICB-Packages

Project Structure



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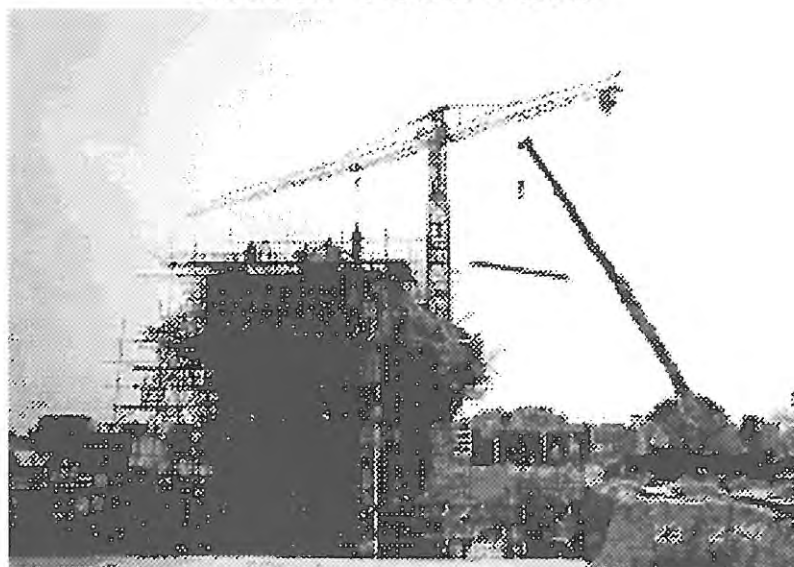
Rousch Power Plant



View of the UAA - Switchyard

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Rousch Power Plant



View of the UMA - Steam Turbine Pedestal



8th European Conference
Construction in Europe

***Global Contracting to Achieve an
Exceptional Business Result***

Roger Holmes

Roger Holmes

Roger Holmes graduated in Electrical Engineering from Heriot College (University).
Edinburgh.

Experience includes working for BP Chemicals for 27 years in a variety of positions
in UK operating sites and abroad.

For the past 12 years have been involved in Project Management within Business
Units. He has managed Projects in U.K., Belgium, France and the USA.

He took up his present assignment of Project Director for P.T. Peni Expansion
project in October 1994.

***Paper not available
at time of publication***

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