

Public Private Partnerships (PPP) for Infrastructure

Panos D. Prevedouros, PhD



PPP ARE NOW A NATIONAL PRIORITY

“Some of what we have suggested will be controversial. It will necessitate a cultural change to move from a government-monopoly model for much of our transportation infrastructure toward acceptance of the private sector and market forces.”

Norman Mineta, U.S. Chamber of Commerce, July 6, 2006

“I do see PPP as a hot-ticket item. Probably when you look at surface transportation, the most exciting thing to come out of DOT besides money has been the introduction of PPP in this country.”

Kenneth Mead, Inspector General, U.S. DOT, July 3, 2006

Elbe Tunnel -- Germany



PPP INTRODUCTION

PPP is contracts that provide a greater role for the private sector in the construction and/or operation of a segment of the transportation system or a unit of infrastructure: bridge, tunnel, wastewater treatment plant, solid waste plant, ...

Most states face a long-term gap between available funding and infrastructure needs which grow due to an aging infrastructure, insufficient capacity, and new technology. But there is a strong reluctance to increase taxes to meet needs.

Gas taxes are no longer an adequate source of funds for the increasing costs drivers are exacting on the system. → Graph

There is not enough \$\$\$ in state, fed hwy. funds

Combined Federal and Average State Motor Fuel Tax Rates

Cents per gallon

50

40

30

20

10

0

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004

GAO-06-554 – 2004 constant prices

HEADLINES

**Chicago received
\$1.83 billion for
the long-term
lease of the
Skyway Bridge**

**Indiana received
\$3.85 billion for
the lease of the
Indiana Toll Road**

Gefyra – Greece (2006 ASCE Award)



PPP EXAMPLES

California – South Bay Expressway will be a 10 mile express toll road when it debuts in early 2007. It will connect to the Mexican border and promises fast and reliable travel. The road will cost \$635 million with \$48 million in land contributed by local developers. A \$140 million federal loan is part of the financing package, with the balance coming from privately raised bank debt and equity.

Trans-Texas Corridor (TTC): In March 2005 a Comprehensive Development Agreement was signed. Under this agreement Cintra-Zachry proposed a 50-year concession agreement under which they would finance \$6.0 billion of infrastructure projects in the TTC-35 corridor (Oklahoma to Mexico/Gulf Coast) and the State of Texas would be paid \$1.2 billion for the concession rights.

PPP EXAMPLES

Virginia Pocahontas Parkway: The project, through innovative financing, was opened in 2002, 15 years before the date originally programmed under traditional government financing.

Virginia I-495 Capital Beltway HOT Lanes: The project will cost about \$900 million and will be primarily financed with private sector funds. Two mile high-occupancy toll (HOT) lanes will be built in each direction on the capital beltway. Carpoolers, buses and emergency vehicles will ride free.



Chunnel Tunnel Links – France and UK

PPP IS USUALLY SUPERIOR TO CONVENTIONAL CONTRACTS (1/3)

UK: of 451 PPP projects (trans and non-trans) found that 88% came in on or ahead of schedule; as opposed to 70% of public projects being late

Pocahontas Parkway came in \$10 million below the original \$324 million estimated costs

- **Virginia Route 288** came in \$47 million below the original estimated cost of \$283 million

PPP IS USUALLY SUPERIOR TO CONVENTIONAL CONTRACTS (2/3)

Denver E-470 Toll Road Segments II – IV came in \$189 million below the original cost estimate of \$597 million

In contrast, mega projects managed by the public under the traditional three step design-bid-build process (e.g., Boston's "Big Dig") had many delays and cost overruns

- Government is subject to onerous procurement, operating and budgeting rules

PPP IS USUALLY SUPERIOR TO CONVENTIONAL CONTRACTS (3/3)

People in government tend to be most concerned about repercussions in the next election.

An investor-owned company or investment fund answers to its shareholders for whom it has to generate income and wealth long term. **It generates that income not by catering to special interests and lobbyists but by single-minded attention to its customers, the motorist in the case of toll roads.**

Source: *NY State DOT on PPPs*

Millau Viaduct – France



PPP FEATURES

Successful PPP: delivers the maximum infrastructure for the lowest cost to both the taxpayer and the user

Hard to distinguish between the user and taxpayer in many of these projects – tolls are a user fee or tax – PPPs deliver the maximum infrastructure in the quickest amount of time for the tax paid

- Canada and the UK have the *Public Sector Comparator*, an accounting expert, who compares what the PPP cost is versus the cost under traditional government contracting



**Great
Belt Link
--
Denmark**

PPP ADVANTAGES (1/2)

- PPP improve the likelihood that critical projects will get done sooner and cheaper
- PPP increase the funding available for infrastructure by billions of dollars, accelerating construction of critical projects
- PPP lower the costs for highway operations by allowing private sector innovation and a strong customer service orientation to dominate
- PPP lead to the completion of large construction projects on-time and on-budget, and without risk to the public for cost overruns
- PPP protect the public interests when a contract with the private sector incorporates strict performance standards and holds user fees in check through caps on periodic increases linked to inflation

PPP ADVANTAGES (2/2)

There is a strong market demand for sound transportation infrastructure assets internationally.

Pension funds and other large institutional investors have billions to invest safely. They are anxious to invest in infrastructure assets with growing traffic projections, stable government conditions, and long useful lives, e.g., Macquarie Global Infrastructure Total Return Fund.

Pension funds look for 8-10% (not 20+%) return on investment. In other words, tollways are similar to investing in utility shares; low risk and stable, moderate return investing.



Attica Tollway -- Greece

WHY LOOK INTO PPPs? (1/2)

Standard & Poor's *drivers of change* which cause DOTs to rethink conventional financing and operations:

- Growing requirements for roadway capacity in congested metropolitan regions, and desire to improve economy
- A continuing slow erosion of gas taxes and general public funds for road maintenance and development combined with an aging network of roads, and bridges
- Reluctance or inability of governments to assume risk and commit financial resources to large projects
- Increased acceptance of tolling in the U.S., and advances in electronic technology that facilitate non-stop operations and enable variable pricing in response to congestion

WHY LOOK INTO PPPs? (2/2)

- New methods and contracts associated with private sector provision of historically publicly provided roadway projects with documented success in US, EU and elsewhere
- Efforts at many states to develop or expand enabling legislation for PPPs
- Limitations associated with conventional U.S. public finance techniques (e.g., bonds) that focus on back-loaded debt, and fixed-amortization schedules that are often dependent on optimistic revenue growth assumptions
- Interest in the U.S. market from large international developers, investors, and operators of concessions



Tampa Expressway -- Florida

PPP HALLMARKS OF SUCCESS (1/2)

The community needs to want the project

The project needs to be one that can be environmentally cleared in a relatively compact period of time

The communities affected by the project are willing to have it tolled -- or to accept whatever other financial mechanisms are being used to pay for it

There needs to be solid state legislative authority for the procurement process to use PPP and reach those agreements; bipartisan support in the legislature

PPP HALLMARKS OF SUCCESS (2/2)

The governor needs to support using a PPP for a particular project

DOT senior management needs to be truly on board; cutting across design, construction, maintenance and finance section of the state DOT

Time is of the essence for the private sector: initial risk analysis costs for bidding can run as high as 1% of total installed cost; for a billion dollar project, there is \$10 million at-risk before financial close, coming in from competing consortia of the private sector side

The selection process for PPP procurement must be fair, transparent and competitive

Skye Bridge – UK



CHALLENGES OF PPP PROGRAMS IN THE U.S. (1/3)

State DOTs are concerned that the private sector can come into local communities like a bull in the china shop

AG's office: they do not say no because it is a legal impossibility; they say no because they do not feel comfortable; the solution is to introduce them to their peers in other states who have stood exactly in the same shoes before and were asked to make the same decisions

CHALLENGES OF PPP PROGRAMS IN THE U.S. (2/3)

Public sector (USA): adding staff with a set of skills to assess total taxpayer impact

PPP risk analysis not a financial calculation; it is an economic evaluation; it requires a different set of skills

If PPPs are to have a long-term future at the state level, the economic benefits of them must be demonstrated

DOTs know how to develop projects; they know about the public process, but they are clueless when it comes to what a bond is or how to do project finance

CHALLENGES OF PPP PROGRAMS IN THE U.S. (3/3)

Private sector (USA): strengthening maintenance skills →
PPPs are about life cycle costs

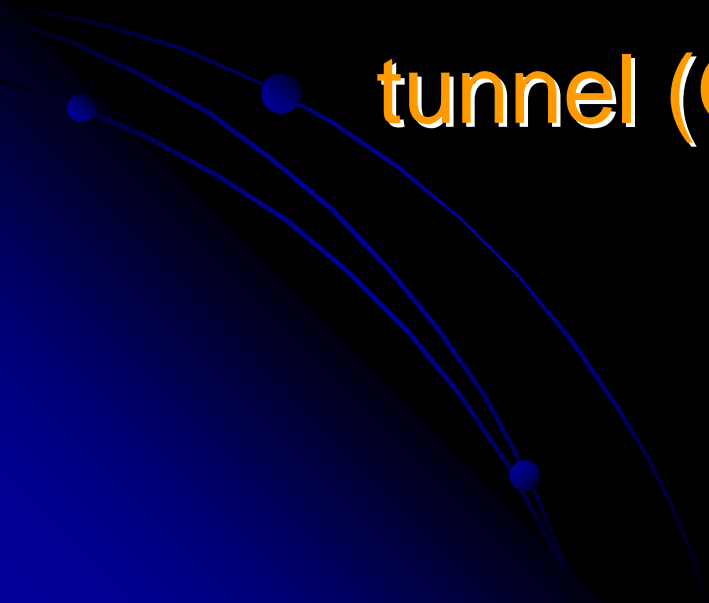
U.S. infrastructure contractors are comparatively less
experienced in providing highway maintenance

Most of Canada's and New Zealand's highway maintenance
is being outsourced

U.S. constructors have not offered much in the way of long-term operations and management of facilities. There is some resistance in providing this kind of service; it affects cost predictability, long-term liability, and balance sheet risk that is very different from the kind they are used to taking

Thermaiki Odos – Greece

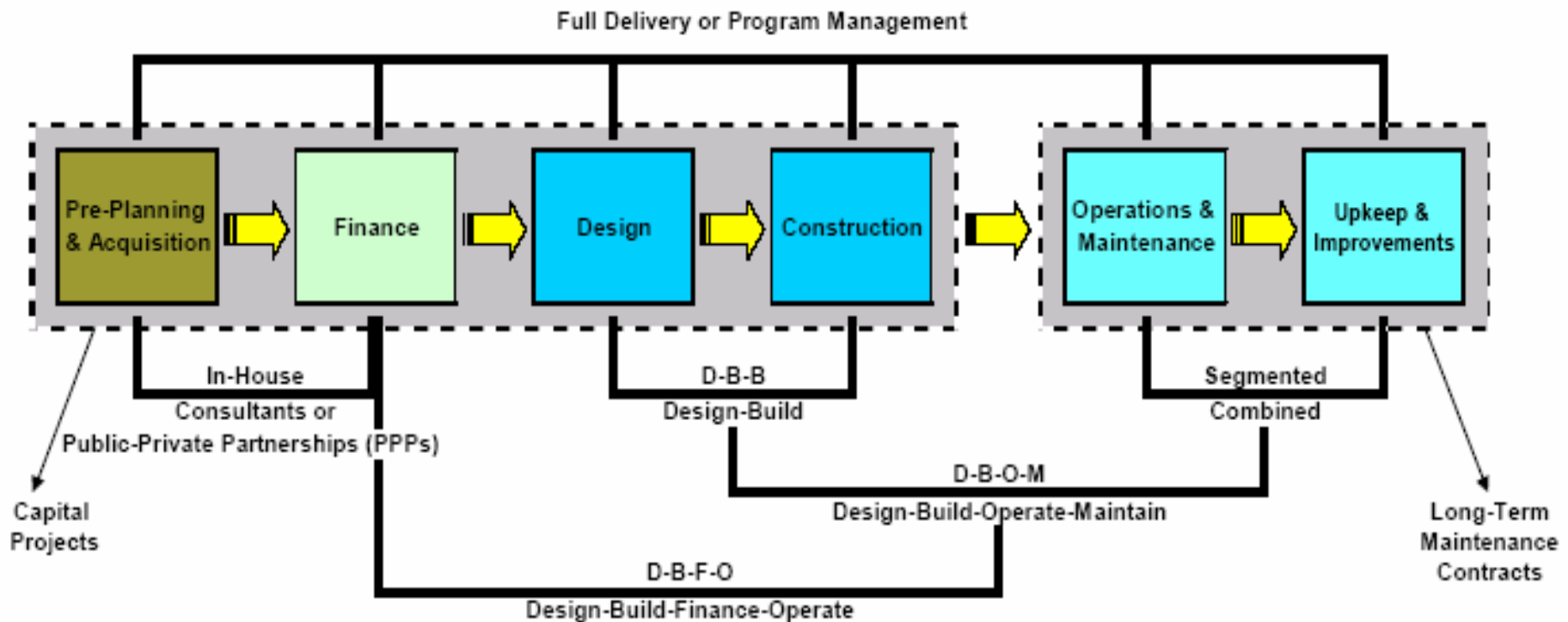
**VISSIM Simulation of toll plazas
at the end of the undersea
tunnel (Gulf of Thessaloniki)**



TYPES OF PPP AGREEMENTS

- Build-Operate-Transfer/Build-Transfer-Operate (BOT/BTO)
- Build-Own-Operate (BOO)
- **Concession**: for a specified period of time. In some cases, concessions have been granted for the operation and maintenance of facilities built by others.
- Design-Build (DB) and Design-Bid-Build (DBB)
- Design-Build-Operate-Maintain (DBOM): lifecycle responsibility and accountability
- Design-Build-Finance-Operate (DBFO)
- Management Contract
- Asset Sale
- Joint Development Agreement (JDA)

Alternative Contractual Arrangements for Delivering Highway Infrastructure



WORLDWIDE ROAD PROJECTS PLANNED OR COMPLETED: 1985-2004 (1/3)

Contract Type	Number	Percent	\$ Billion	Percent	\$B/Project
Concession	245	41%	\$124.2	39%	\$0.507
DBFO	61	10%	\$31.5	10%	\$0.516
DBOM	49	8%	\$35.7	11%	\$0.728
BOT/BTO	183	31%	\$84.4	26%	\$0.461
BOO	8	1%	\$1.9	1%	\$0.239
DB	41	7%	\$43.2	13%	\$1.054
Mgt Contract	12	2%	\$1.5	0%	\$0.127
Total	599	100%	\$322.4	100%	\$0.538

WORLDWIDE ROAD PROJECTS PLANNED OR COMPLETED: 1985-2004 (2/3)

Most of the toll highway projects in Europe are located in Spain, Germany, Greece, and Ireland – 30 years in duration

Most of the toll highway projects in Asia and the Far East are located in China, Malaysia, South Korea, Australia, and India – 30 years in duration

- Most of the toll highway projects in Latin America and the Caribbean are located in Brazil, Chile, Peru, and Argentina – 25 to 30 years in duration

Toll highway projects throughout North America: Mexico, U.S., and Canada – 30 years in duration

WORLDWIDE ROAD PROJECTS PLANNED OR COMPLETED: 1985-2004 (3/3)

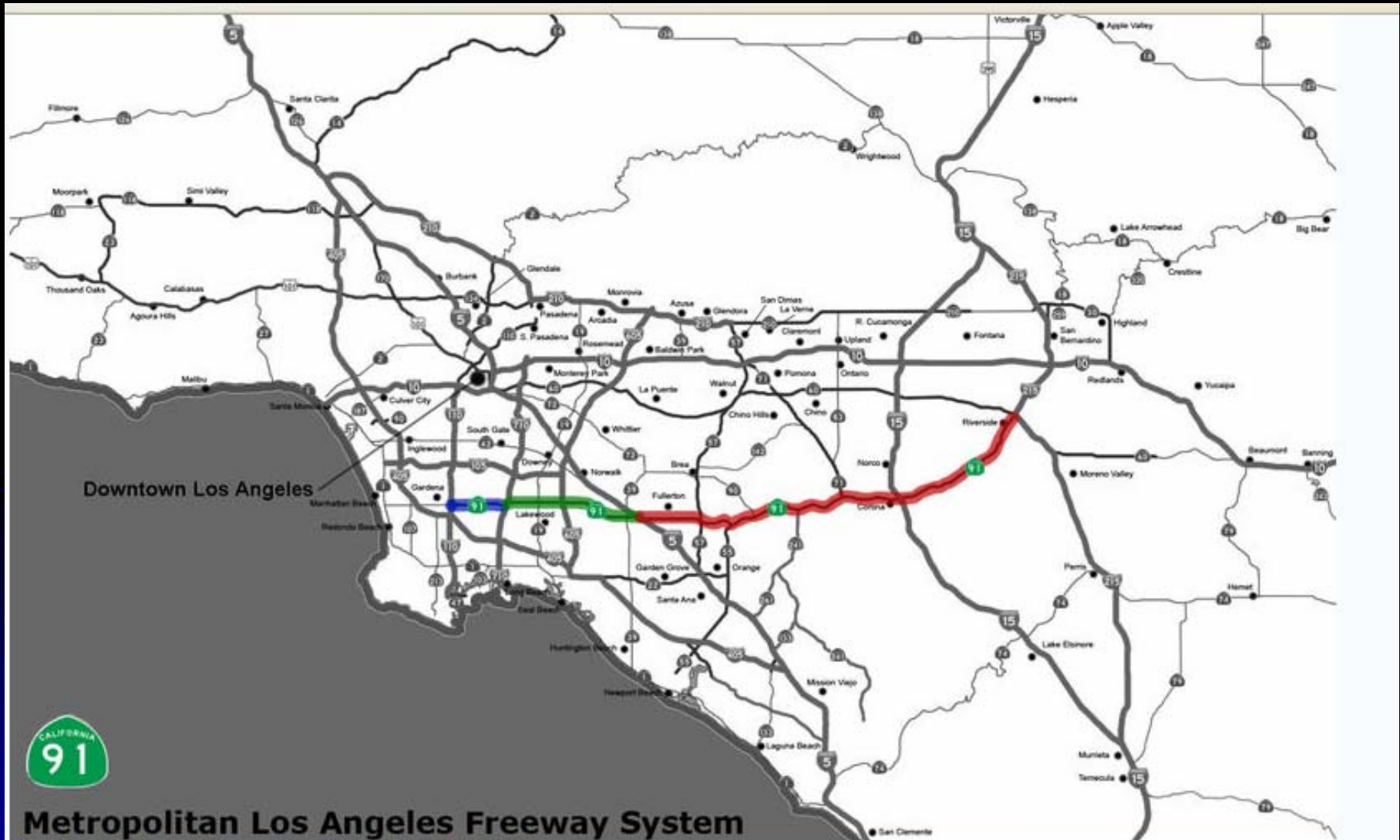
There are 62 PPP road projects in the U.S. representing \$41.5 billion

In terms of project costs, the largest type of PPP road project is toll highway, representing 62% of total cost

- DBOM projects represent 16% of the total number of PPP projects in the U.S., but amount to 37% of the total costs

DBOM projects at \$1.6 billion each are about three times the size of their DB counterparts

SR-91 – California



[Download high-resolution version \(1572x984, 370 KB\)](#)

FLUOR: *“Top Things We Want When Entering into a PPP”*

- ❖ 10: The PPP exhibits the key attributes of successful PPPs
- ❖ 9: A public sector partner clearly understands all obligations
- ❖ 8: The project addresses a real need
- ❖ 7: The public sector partner clearly understands risks
- ❖ 6: Stakeholders support the project
- ❖ 5: A clear path forward is identifiable
- ❖ 4: Implementing agencies embrace change
- ❖ 3: A transparent procurement process exists
- ❖ 2: Good legislation exists
- ❖ 1: Political will is strongly present

E39 Motorway – Germany



Features of Good PPP Legislation

- ❖ Clear statement of policy
- ❖ Provision to receive unsolicited proposals – a competition of ideas
- ❖ Approval authority delegated to DOT
- ❖ Requirement for clear regulations including evaluation of proposals
- ❖ Involvement of local government defined
- ❖ Clear authority to commit public property
- ❖ Powers of private sector partner delineated
- ❖ Right to toll or set user fees explicitly stated

Chicago Skyway – Illinois

CHICAGO SKYWAY

ABOUT THE SKYWAY

MAPS & ROUTES

TOLLS

NEWS

CUSTOMER SERVICE

FAQ'S

MEDIA

IMPORTANT LINKS

- <http://avoidtheryan.com...>

Current Travel Times:

To Dan Ryan: 10min.

To Indiana border: 10min.



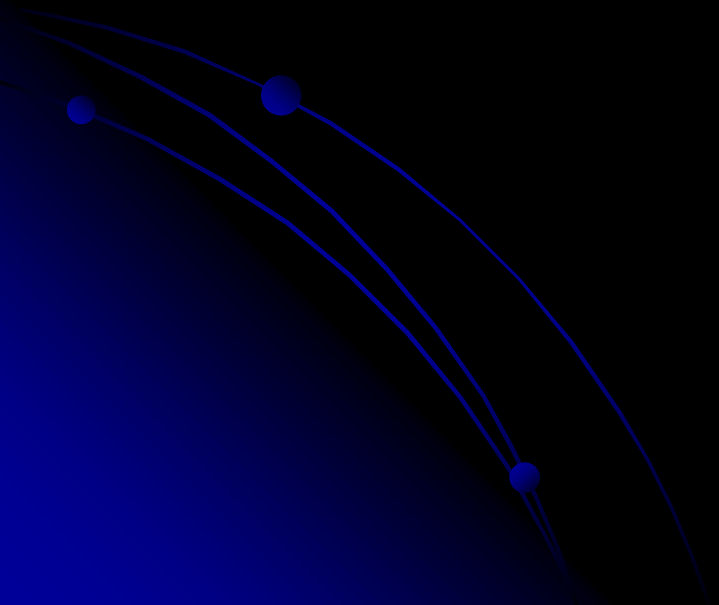
Engineers: Tools to Understand PPPs

PPPs is the mechanism by which the majority of civil infrastructure will happen in the future. In some countries, e.g., UK, the majority of projects already are done with PPPs, including hospitals

The engineer should possess a basic knowledge of these faculties in order to handle PPPs:

- ❖ Contract Law
- ❖ Finance
- ❖ Accounting

Thanks!



FREE ROADS ARE NOT A GOOD THING

Telecom deregulation lead from black boxy phones to cell phones and blackberries.

U.S. government regulated highways don't have a market, or pricing.

We must see traffic jams as the equivalent of bread lines in the Soviet Union. No choice. One supplier.

Most office workers got coffee available in the office. But many stop by Starbucks instead and pay. Because they value quality.

As a culture, we put a heavy premium on consumer choices. Choices to be made in the provision of highway services.

An early mistake was someone named them freeways. This was from free-flow conditions (as opposed to flow interrupted by traffic lights), not free to use.