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1.040 Project Management
Spring 2009

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Public – Private Partnerships
in Financing of Infrastructure

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Historical Background

- Participation of private sector in provision of infrastructure dates back to the 19th century in the U.S. (turnpikes, tolled facilities)
- Public financing, especially in transportation systems, became the norm in the second half of the 20th century.
- Shift to public financing
 1. Highway Trust Fund;
 2. Interstate Highway System;
 3. Procurement reforms (leading to design-bid-build).

These three factors were primarily responsible to shift from private to public financing

- Re-entry of private sector
 - The late 20th century demand outpaced the resources:
 - Federal Highway Trust Fund failed to keep up with the growth; thus solicitation of private sector involvement.

Definition and Types of Public-Private Partnerships

- Public - Private Partnerships are defined by the US DOT as follows:

“A public-private partnership is a contractual agreement formed between public and private sector partners, which allows more private sector participation than is traditional. The agreements usually involve a government agency contracting with a private company to renovate, construct, operate, maintain, and/or manage a facility or system. While the public sector usually retains ownership in the facility or system, the private party will be given additional decision rights in determining how the project or task will be completed.”

Source: US DOT. *Report to Congress on Public-Private Partnerships*, December 2004.

<http://www.fhwa.dot.gov/reports/pppdec2004/pppdec2004.pdf>

- This implies shared responsibility for the delivery of the project and/or its services and shared risks and rewards.

- Argument for private sector involvement
 - Leverage scarce public resources
 - Expedite project delivery
 - Improve cost-effectiveness of project development
- Increased access to capital markets through applications of alternative approaches to project:
 - Funding
 - Financing
 - Contract delivery
 - Preservation

Major Types of PPP

1. Private Contract Fee Services

- Most common form; this category includes:
 - Contract Planning
 - Environmental Studies
 - Facility and Right Of Way Maintenance
 - Operation

2. Alternative Project Delivery

- Design-Build:
 - Saves Time
 - Saves Cost
 - Innovative Technologies
 - Reduced Risk

3. Multimodal Partnership

- Park and Ride
- High Occupancy Lanes or Tolled Lanes (HOT)
- Bus Rapid Transit (BRT)
- Airport Transit Extension
- Truck/Rail Transfer Facilities

PPP cont.

4. Joint development

- Transit-oriented development
- Economic development-based partnerships: these provide access to additional capital and operating revenues through:
 - Receipt of tax increment financing
 - Special assessment or business improvement
 - Access fees

5. Long-term lease or concession agreements

- Long-term lease of publicly financed facilities
 - Toll roads
 - Air rights
 - Parking garages

Major Types of Transportation PPP

Asset Sale

Full-Service, Long-Term Concession or Lease

Multimodal Agreement (Public-Private Partnership)

Joint Development Agreement (JDA – Pre-development)

Transit Oriented Development (TOD – post-development)

Build-Own-Operate (BOO)

Build-Transfer-Operate (BTO)

Build-Operate-Transfer (BOT)

Design-Build-Finance-Operate (DBFO)

Design-Build-Operate-Maintain (DBOM)

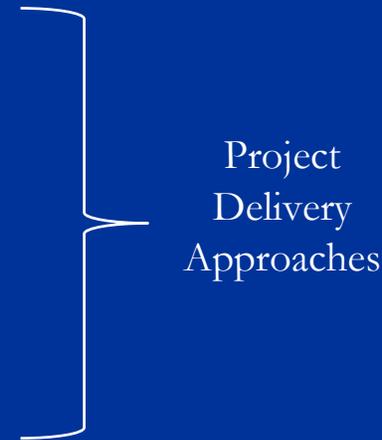
Design-Build with Warranty (DB-W)

Design-Build (DB)

Construction Manager at Risk (CM@Risk)

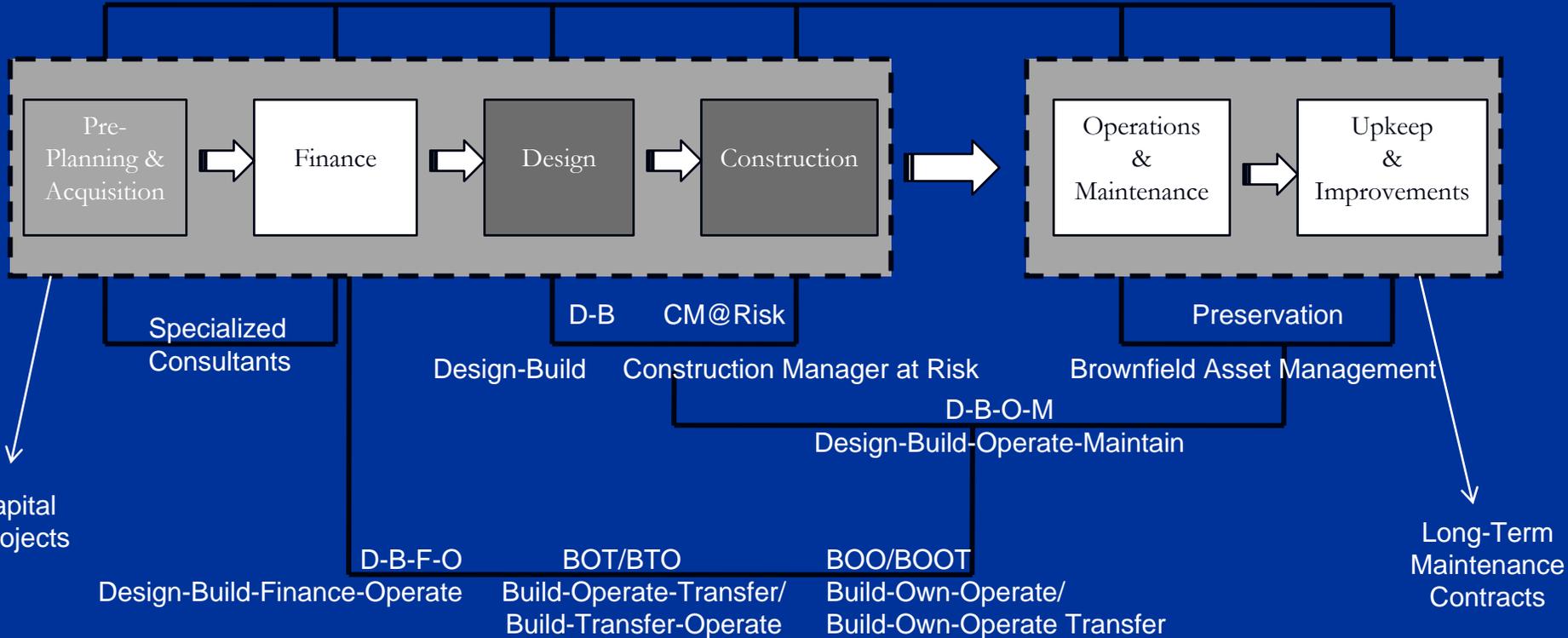
Contract Maintenance

Fee-Based Contract Services



Major Phases of Infrastructure Project Development and Delivery

Greenfield Life-Cycle Asset Development/Preservation Long-Term Concession Development/Lease Project Management



Alternative PPP Arrangements

1. Fee-Based contract and contract maintenance
 - Reduced work load
 - Potential reduced costs
 - Opportunities for innovative technologies and efficiencies
2. Alternative project delivery approaches
 - Design-Bid-Build
 - Division of work by specialization of effort
 - Reduced potential for collusion between design and construction
 - Increased participation by local firms
3. Construction Manager-at-risk (CM@Risk)
 - CM@Risk enters the project development process under separate contract
 - Client selects CM@Risk based on qualifications, not price
 - CM@Risk becomes the design-build contractor with a guaranteed maximum price

Advantages: Collaboration of client, designer and construction manager; advancement of the project driving price negotiated.

(CM@Risk continued)

- Potential for more optimal team
- Direct client involvement
- Reduced risk due to identification of design errors or omissions

4. Design-Build

- Combines design and construction into one phase with fixed-fee contract
- Design-Build team assumes the risk
- Benefits
 - Time savings
 - Cost savings
 - Shared risk
 - Public sector better at managing risks associated with environmental clearance, permitting, right-of-way acquisition
 - Private sector better at managing the risks associated with:
 - Design quality
 - Construction costs
 - Delivery schedule
 - Improved quality

5. Design-Build with a Warranty

- Guaranty of materials, workmanship, performance measures for a limited time (typically 5-20 years)

6. Design-Build-Operate-Maintain (DBOM)

- Increased incentives to provide high quality (e.g., JFK Airtrain)

7. Design-Build-Finance-Operate (DBFO)

- Contractor responsible for financing, in addition to all commitment under DBOM
- Financial risk is borne by contractor

8. Build-Operate-Transfer (BOT)

- Same as DBFO except the contractor retains
 - Ownership of the facility
 - The operating revenue risk
 - Any surplus

9. Build-Own-Operate (BOO)

- Ownership remains with contractor increased

- In Transit Sector
 - Transit-oriented development (TOD)
 - Joint Development
 - Business Improvement District
 - Tax Increment Financing (TIF)
- Joint Development
 - Ground lease
 - Air-rights lease
 - Operations cost sharing
 - Ventilation
 - Utilities
 - Parking
 - Construction cost sharing
 - Station connection fee

Public and Private-Sector Benefits and Risks of Transit-Oriented Development

Public Sector - Primary Benefits/Risks	Private Sector - Primary Benefits/Risks
Increased ridership and fare revenues	Higher land values
Joint sharing of costs for mixed-use stations	Higher rental/lease rates and sales prices
Potential for dedicated property/sales tax revenue	More affordable housing opportunities
Potential for lease payments or other development-related revenues	Risk of development market decline negating value of developer investment in transit project
Risk that private development revenues fail to accrue due to delays in development activity	Risk of commercial development delays caused by transit project delays
Public Sector - Secondary Benefits/Risks	Private Sector - Secondary Benefits/Risks
Revitalized neighborhoods and commercial zones	Higher retail sales from greater customer exposure
Reduced traffic congestion and suburban sprawl	Increased access to labor
Reduced need for roads and other infrastructure	Reduced parking costs in suburban locations
Reduced crime and increased safety resulting from rejuvenated urban landscape	Risk that transit service levels do not match needs of development lessees, patrons, or residents.
Risk of development requirements requiring costly changes to transit facility designs and operations	Risk of mismatch between transit patrons and retail or residential customers of related development

- **Benefit Assessment District**
 - Those who benefit from the presence of a station pay a certain amount of additional tax.
- **Equity Partnership**
 - Land sale to private partner
- **Business Improvement Districts**
 - Properties within the districts pay additional tax due to the enhanced transport services.
- **Tax Increment Financing (TIF)**
 - Tax increment provides funds for rehabilitation and redevelopment of depressed area(s) within a community.
- **Multimodal Partnership**
 - Multimodal projects provide opportunities to combine development, financing and/or operation of facilities that serve more than one transport mode (e.g., Portland Oregon, Max Airport Extension).

Types of Risks Associated with Transportation Project PPPs

• Demand/Volume	• Compensation and termination clauses
• Revenue	• Changes of law
• Environmental/archeological	• Economic shifts
• Regulatory/contractual	• Currency/foreign exchange
• Payment structure/mechanism	• Taxation constraints
• Transaction cost	• Moral hazard
• Construction cost	• Loss of control of assets
• Maintenance cost	• Political stability
• Life-cycle cost	• Protectionism
• Liability/latent defects	• Public acceptance

Consequences and Mitigation Strategies for Major Types of PPP Project Risks

Risk Category	Description	Consequences	Mitigation
Site Conditions	<ul style="list-style-type: none"> Existing structures may be inadequate. Contamination of site. Necessary approvals may not be obtained. 	<ul style="list-style-type: none"> Additional construction costs and time delays. Clean up costs. 	<ul style="list-style-type: none"> Commission studies to investigate suitability of site and structures Private sector to incorporate risk through refurbishment during construction phase.
Design, Construction and Implementation Risk	<ul style="list-style-type: none"> Facility incapable of delivering at the anticipated costs. Physical or operational implementation tests cannot be completed. 	<ul style="list-style-type: none"> Increase in recurrent costs, delays. Delayed/lost revenue. 	<ul style="list-style-type: none"> Seek reputable constructors with strong financial credentials. Private party may pass risk to builder/architects while maintaining primary liability. Link payments to progress.
Financial	<ul style="list-style-type: none"> Interest rate risk. Financing unavailable. Contingent funding requirements. 	<ul style="list-style-type: none"> Increased project cost. 	<ul style="list-style-type: none"> Interest rate hedging. Financial due diligence. Bank/capital guarantees from companies and directors.
Operating	<ul style="list-style-type: none"> Inputs, maintenance may yield higher costs. Changes to government with respect to facility operations. 	<ul style="list-style-type: none"> Increase in operating costs. Adverse effects on quality and service delivery. 	<ul style="list-style-type: none"> Long-term supply contracts where quality/quantity can be assured. Upfront specification by public sponsoring agency.

Consequences and Mitigation Strategies for Major Types of PPP Project Risks (Continued)

Risk Category	Description	Consequences	Mitigation
Market	<ul style="list-style-type: none"> • Fluctuations in economic activity or demand • Competition, demographic change and inflation. 	<ul style="list-style-type: none"> • Lower revenues. • Diminution in real returns to the private party. 	<ul style="list-style-type: none"> • Private operator to seek an availability payment element to minimize impact on risk premium. • Review likely competition for service and barriers to entry.
Legislative	<ul style="list-style-type: none"> • Additional approvals required during the course of the project cannot be obtained. • Changes in laws and regulation. 	<ul style="list-style-type: none"> • Further development or change in business operation may be prevented. • Increase in operating costs with regards to complying with new laws. 	<ul style="list-style-type: none"> • Private sector to anticipate requirements. • Public sponsor may mitigate such change by monitoring and limiting changes which may yield adverse consequences.
Asset Ownership	<ul style="list-style-type: none"> • Loss of the facility upon premature termination of lease or other project contracts upon breach and without adequate payment. 	<ul style="list-style-type: none"> • Loss of investment by private party • Possible service disruption as additional capital costs are incurred to upgrade the asset to the agreed value and useful life. 	<ul style="list-style-type: none"> • Private party will be given cure rights to remedy defaults. • Public sector sponsor may make payment for value in the project on a cost-to-complete basis if termination occurs pre-completion. • Impose on the private party maintenance and refurbishment obligations. • Secure services of a reputable maintenance contractor with strong financial credentials.

Benefits of PPPs

1. Stronger working relations
2. Reduction of financial constraints
3. Faster delivery
4. Innovation and expertise
5. Greater cost efficiency and productivity
6. Integration of various stages of development
7. Increased competition
8. Risk management

Concerns of/about PPPs

- Potential higher life-cycle costs -- private sector may demand higher rate of return than public sector.
- No concerns for externalities & social benefits
- Taxation constraints
 - Federal government does not allow accelerated depreciation
 - Concession uses only taxable debt and equity (no tax-exempt debt financing)
- Moral hazard
- Loss of control over assets

Critical Success Factors for PPPs

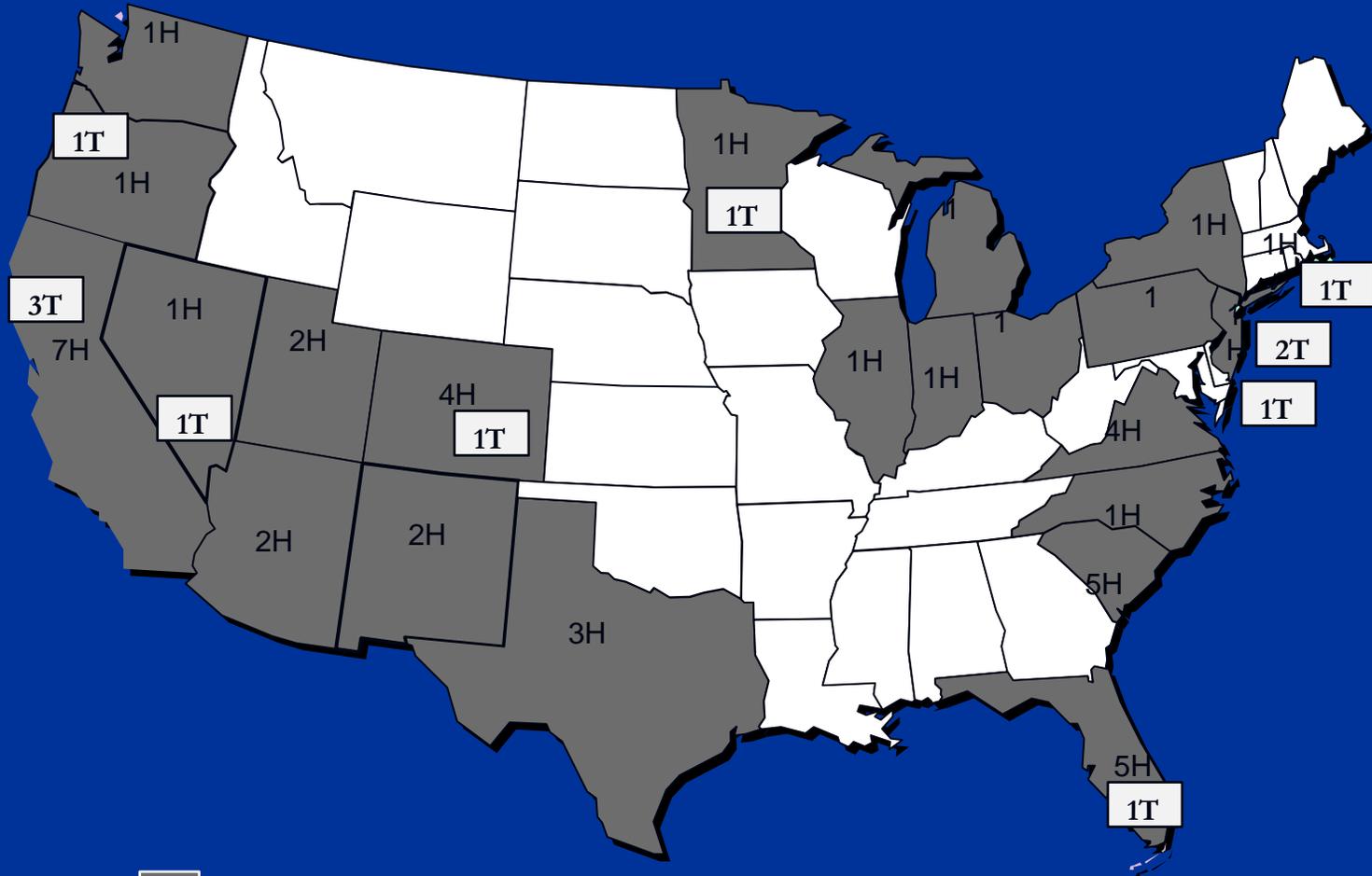
PPP has to:

- Improve “service quality”
- Promote socio-economic development
- Success factors
 - Consultation with and support of stakeholders
 - Public sector’s active involvement
 - Political leadership
 - Secure public control
 - Limited complexity
 - Appropriate risk sharing and rewards
 - Effective working relationships among partners during and after contract negotiations
 - Legal authority

Legal Issues Associated with Transportation Infrastructure Project PPPs

- Legal capacity of parties and legal requirements of the sponsor to provide services
- Ability of the private sector to be involved in infrastructure development, particularly foreign companies
- Ability of the private sector to acquire and own public-use infrastructure, especially foreign firms
- Existence and legal basis of cost recovery tolling
- Ability to provide performance guarantees
- Property issues of land acquisition – condemnation, use, and disposal
- Administrative coordination
- Dispute resolution and liability provisions
- Special provisions associated with the use of public funds: Davis-Bacon, Buy American, etc.
- Competition and anti-trust regulations
- Currency and profit repatriation rules
- Public sector borrowing restrictions
- Tax and accounting liabilities
- Adequacy of procurement and selection procedures
- Contract provisions
- Property and intellectual property laws regarding proprietary technologies and transfer of know-how
- Adequacy of oversight and monitoring procedures
- Authority of other public entities over infrastructure assets and access to them
- Authority to regulate services
- Ability for and restrictions on transfer of private sector contract responsibilities to other parties

Major Surface Transportation PPPs in the Continental U.S. since 1991



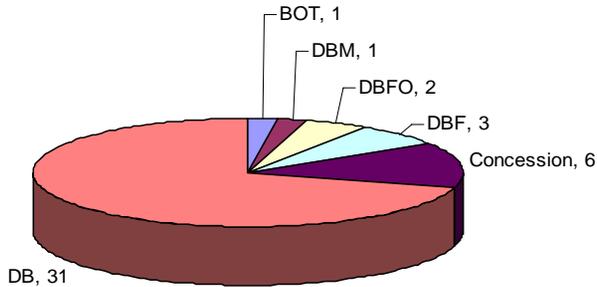
 *States with PPP projects over \$53 million with Notice to Proceed by 1991

#H States with Major PPPs* (number of highway projects)
 Number of major highway capital projects delivered as PPPs by the State

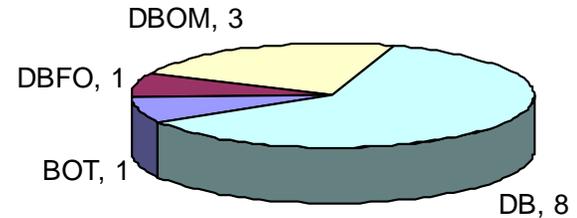
#T States with Major PPPs* (number of highway projects)
 Number of major transit capital projects delivered as PPPs by state

Use of PPPs for Major Highway and Transit Projects since 1991

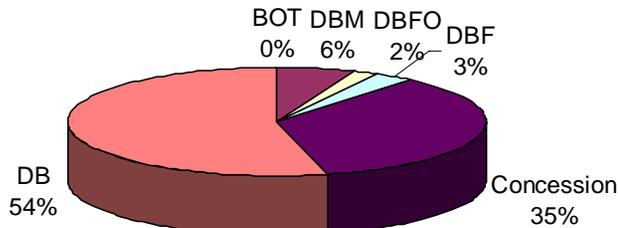
Major Highway PPP Projects Since 1991
(44 Projects)



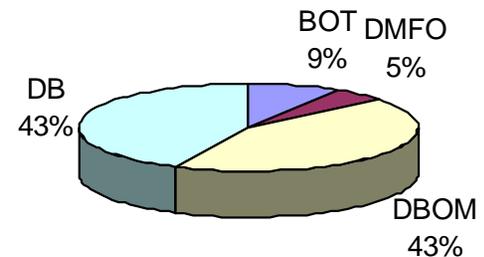
Major Transit PPP Projects Since 1991
(13 Projects)



Major Highway PPP Project Costs Since 1991
(Total: \$22,431 Million)



Major Transit PPP Costs Since 1991
(Total: \$7,384 Million)



(Project costs shown in millions of dollars)

Primary PPP Approaches for Surface Transportation Projects in the Near Future in the U.S.

- DB
 - (medium to large new or reconstruction highway projects; transit new starts)
- DBOM
 - (new tolled or non-tolled roads; transit)
- DBOM-F
 - (primarily new toll roads)
- Concession
 - (primarily existing and new toll roads)
- Joint Development Agreement/Transit-Oriented Development (JDA/TOD)
 - (transit new starts)