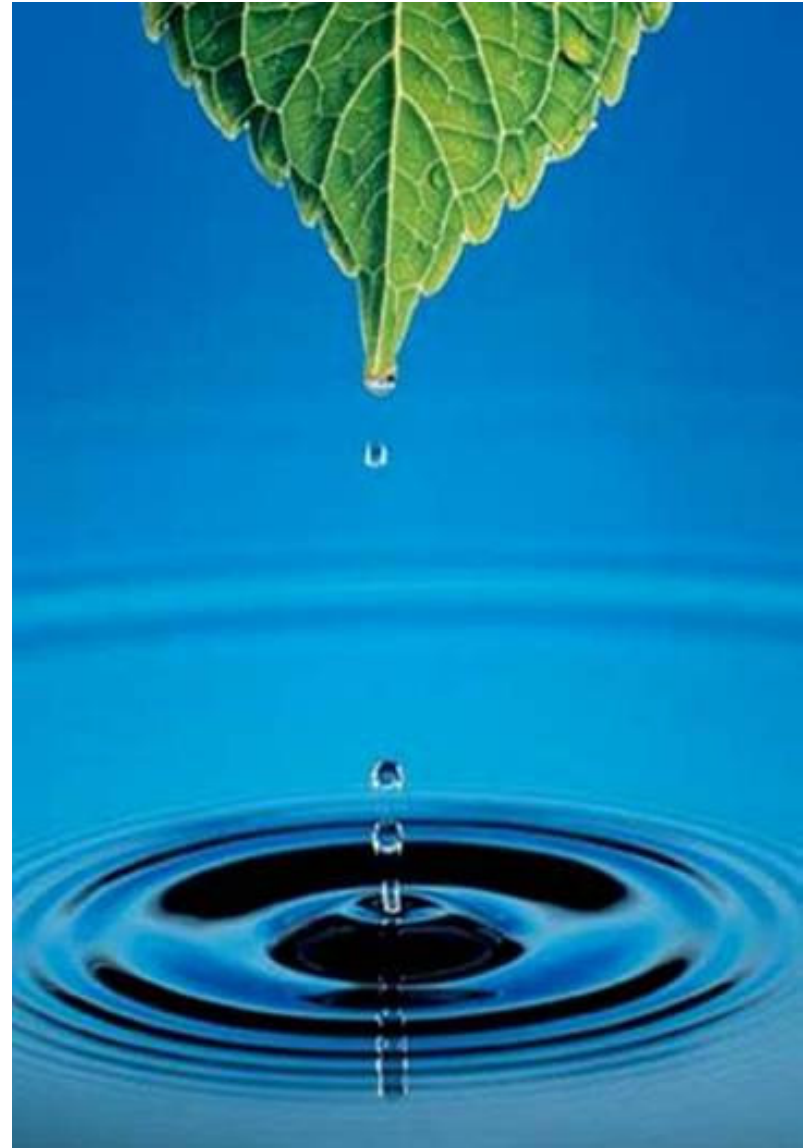


Alternative  
Project  
Delivery

**Salem Oregon  
May 8, 2009**



## Today's Agenda

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Why Consider Alternative Project Delivery  
Alternative Delivery Mechanisms  
Rules Vary By State  
Selecting Delivery Options  
Discussion



## My Experience and Opinions

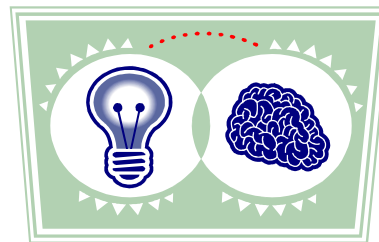
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Most Projects – Traditional Delivery

Completed a Variety of Alternative Delivery Projects

Generally Supportive of Alternative Delivery

Alternative Delivery is not always best option



# Why Consider Alternative Delivery



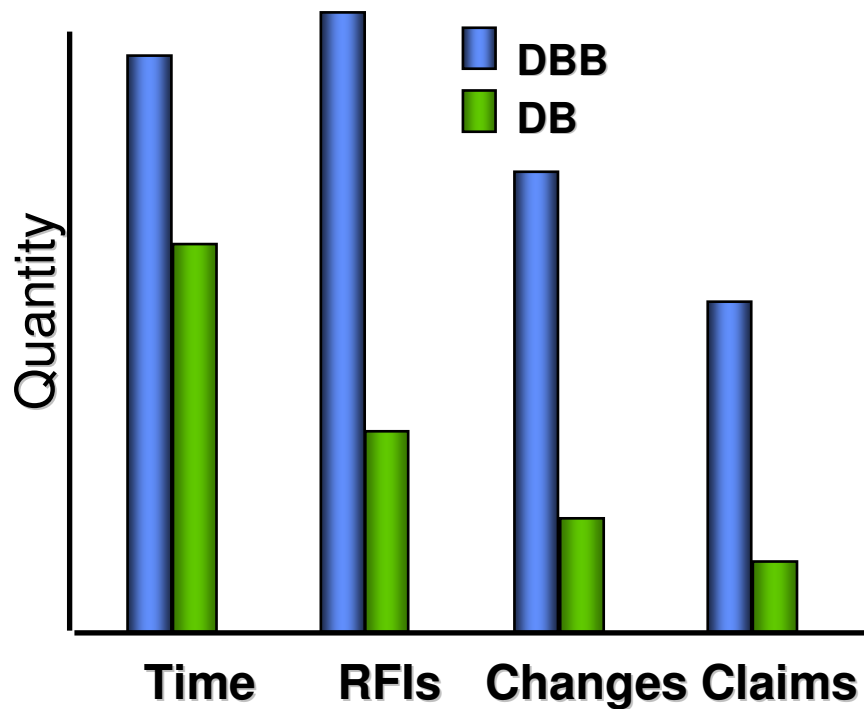
# Reasons Owners Select Alternative Delivery

University of Oklahoma Research Project, March 2004

Reduced Schedule	90%
Early Cost Establishment	74%
Single Entity Responsibility	65%
Innovation	61%
Quals/Past Performance	61%
Builder Involvement	61%
Best Value Selection	61%
Cost Savings	58%
Enhanced Quality	29%



# Alternative Delivery Offers Benefits Not Available With Traditional Project Delivery

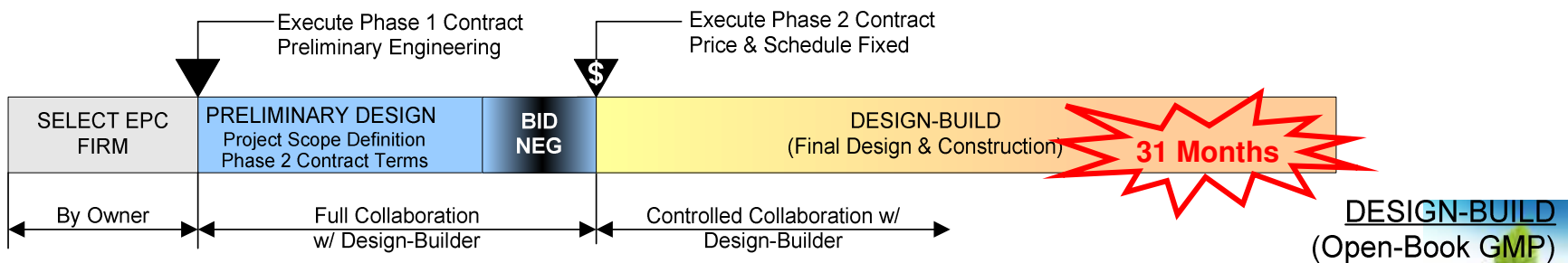
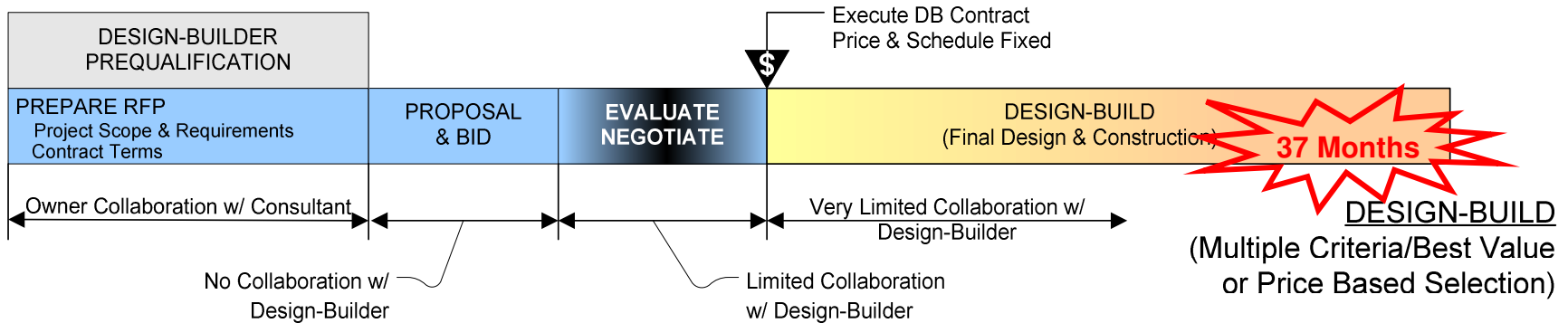
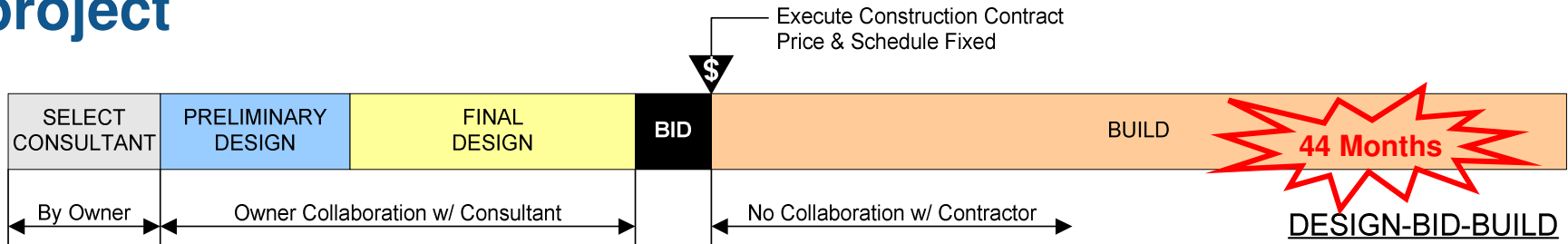


Accelerated Schedule  
Single Source Responsibility  
Improved Risk Management  
Potential Cost Reduction  
Early Identification of Costs  
Incentive to Innovate

**Project definition must be established in preliminary stage**



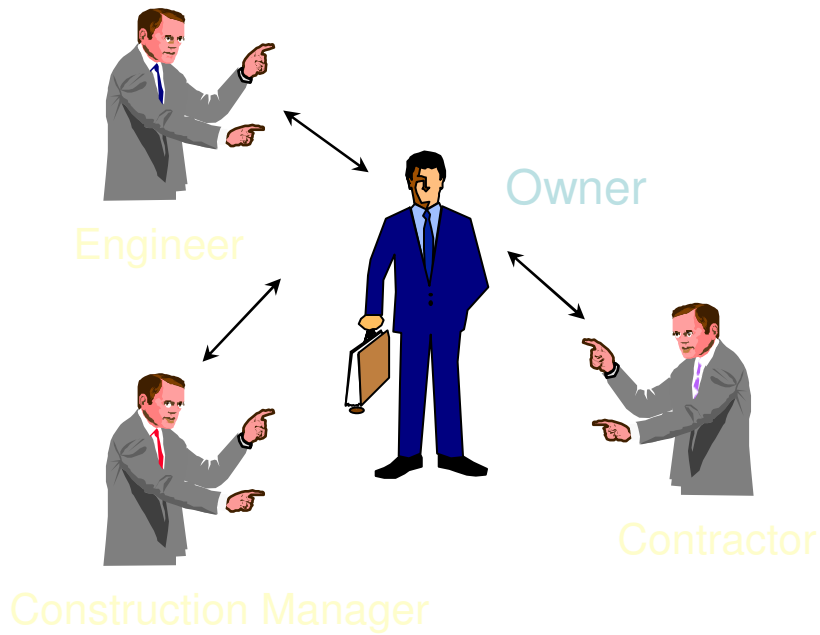
# Comparison of different delivery models for an \$80M project



# Less Administration cost

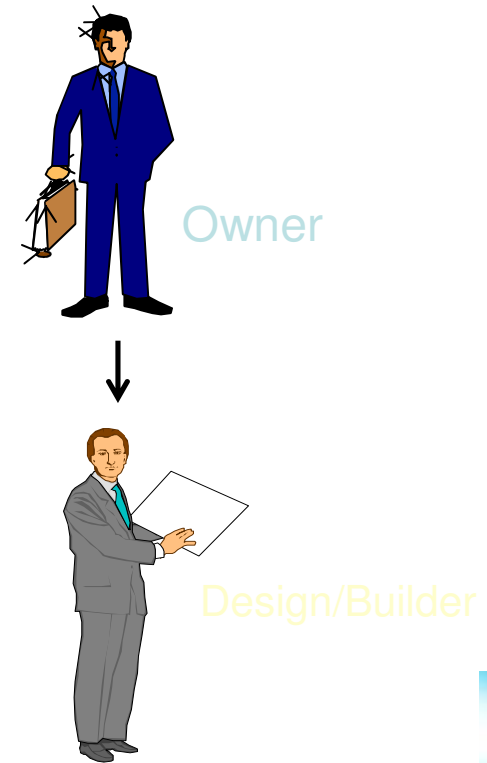
## DBB Project

Owner is Caught in Middle



## DB Project

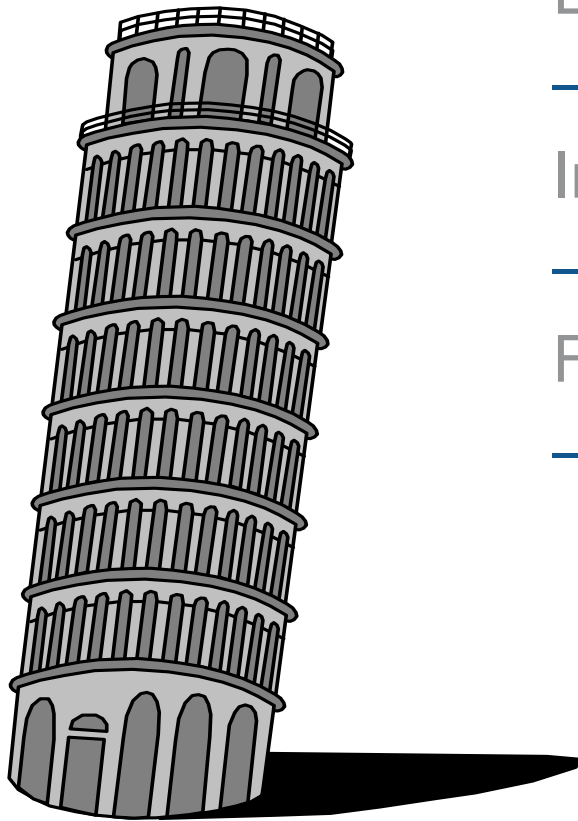
Owner is on Top





# Alternative Delivery Improves Risk Management

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Errors & omissions

- Not Owner's concern

Inter-prime claims

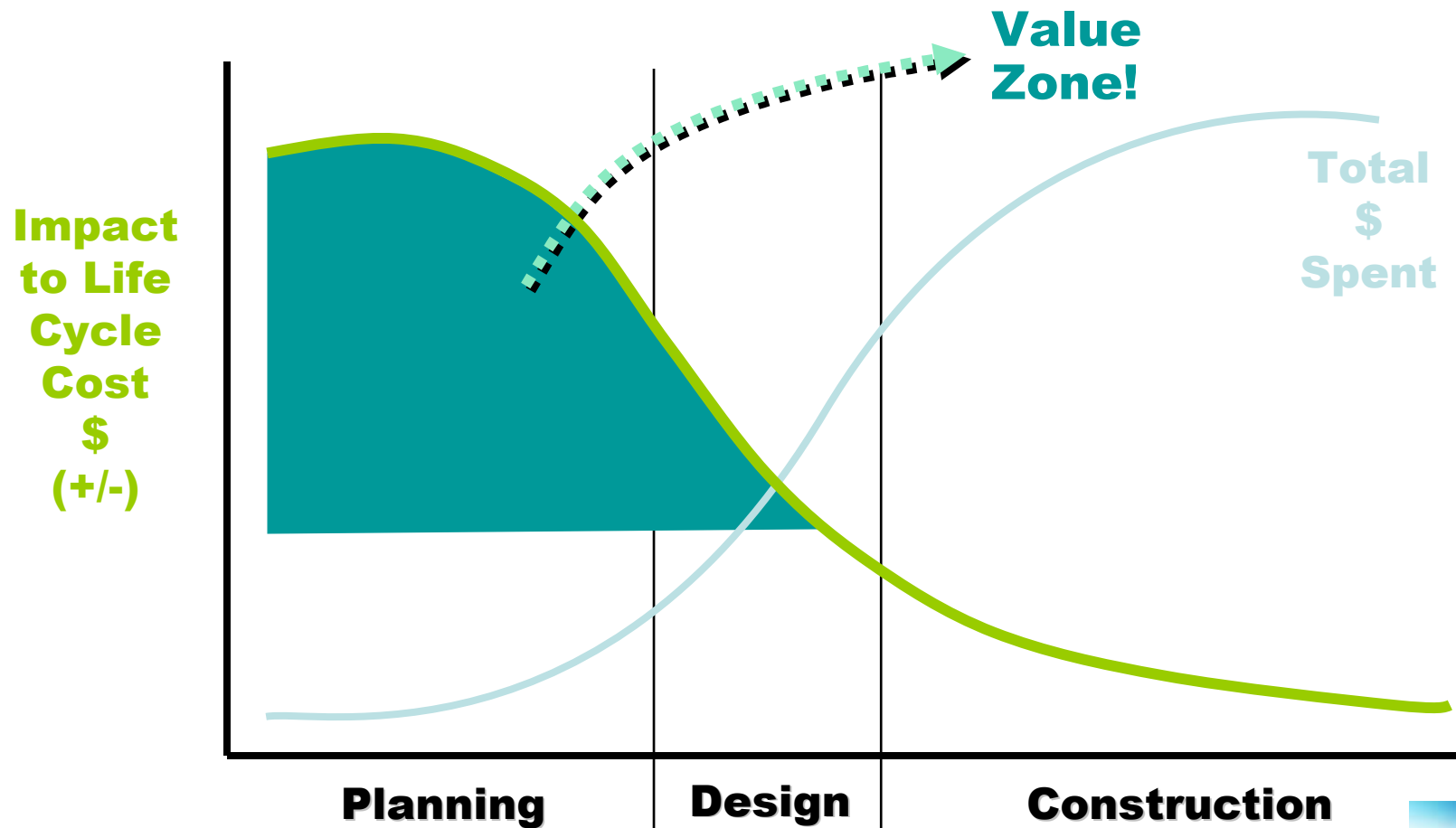
- Not Owner's concern

Fewer contracts

- Fewer problems



## Most Value Can be Added to the Project during the Planning Stage



## Suitable Projects for Alternative Delivery

- **Medium to Large Complex project >\$5 Million**
- **Schedule and Cost Challenged Projects**
- **Typically Treatment, Pump-stations, Pipelines**



# Alternative Delivery Mechanisms

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CM-AR

# DBO-F

*Design Build*

*Design Build*

*DBO*

*GC/CM CM/GC*

**Design-Bid-Build**



## NW Utilities Have Used Many Options

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Design Bid Build

Construction Management/General Contractor (CM/GC)

Design Build – Engineer as Contractor

Design Build – Joint Venture

Design Build Operate

***Water Industry is starting to accept that Alternative Project Delivery brings many benefits to implement projects.***



# Process Varies by State

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Oregon

Board Approval

Finding From Governing Body

“In the Public Interest”



# Process Varies by State

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## Washington

CPARB = Capital Projects Advisory Review Board

CM/GC – Set Guaranteed Maximum Price at 90% Design

CM/GC – Any Size Projects

Design Build - >\$10MM Projects



# Process Varies by State

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## Idaho

Some Private DB

Current Bill for Highways



Don't Forget the Health Department





## Design-Bid-Build (Traditional Delivery)

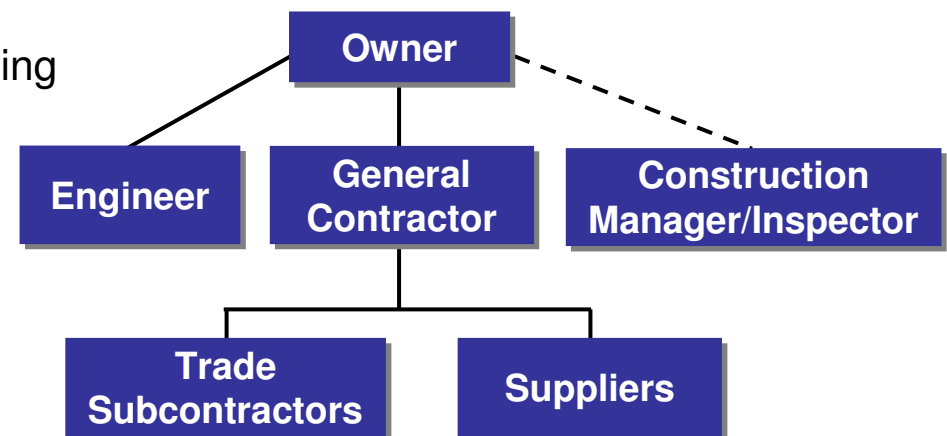
### Advantages

- Management Simplicity
- Cost Security
- Owner Control of Design
- No Legal Barriers in Procurement or Licensing

### Disadvantages

- Linear and Sequential Process
- Cost Determined After Design
- Selection Based on Low Bid – Quality Control
- Limited Construction Professional's Input Into Planning and Design
- Owner Warrants Design and is responsible for delivery of the total project

### Design-Bid-Build



# EWEB 10 MGD Water Treatment Plant Expansion

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Traditional Design/Construction

\$10M Construction Project

Schedule is a Key Driver



# Construction Management/General Contactor (CM/GC)

## Description

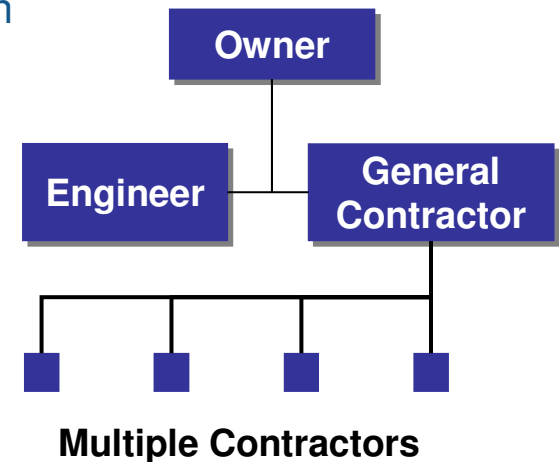
- Construction Manager Develops Price & Schedule for Project with Owner and Engineer
- Qualification Based Selection of CM/GC Contractor
- Construction Professionals Input Early in Planning and Design

## Advantages

- Owner's has input into project with Engineer and CM/GC Contractor
- Optimizes schedule, Reduces Cost
- Owner's Flexibility on selection of equipment, operation etc
- Contractor Selection Based on Qualifications, Experience & Fee

## Disadvantages

- Owner still has two contracts to coordinate
- Longer project schedule than DB
- Contractor doesn't take process guarantee
- Owner exposed to more potential change orders



## Portland Water Open Reservoir Improvements

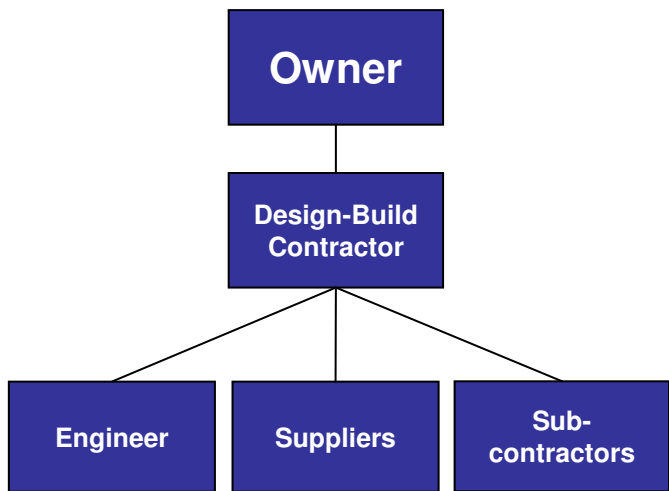
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Findings – Schedule, Contractor Qualifications, Security  
Contractor Brought on at 60% Design Phase

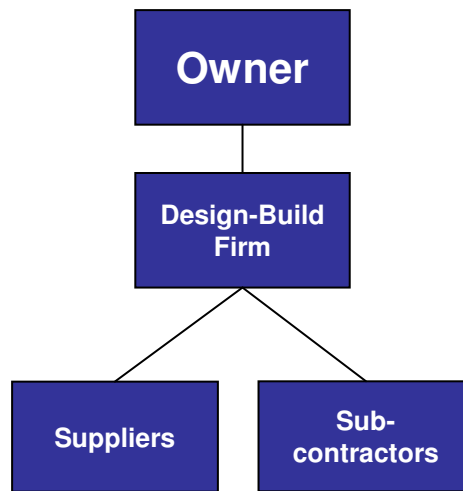
GMP - \$24M



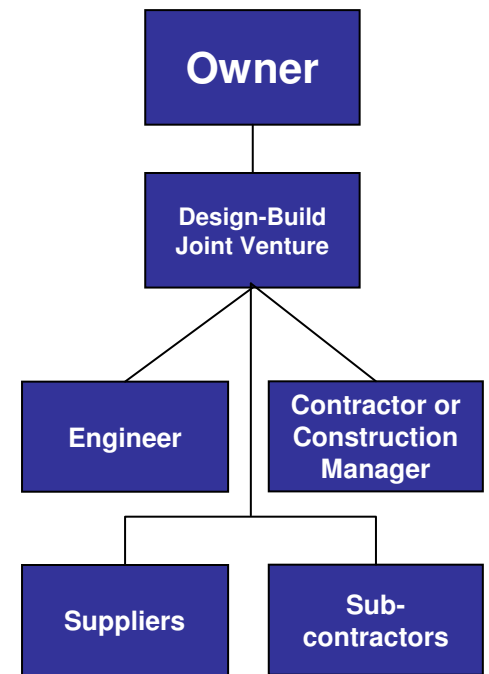
# Different Team Structures will vary based on Cost based or Price based Procurement Method and nature of the Project



Contractor Led Team



Engineering Lead Team  
Umpqua Basin



Joint Venture Team  
Cottage Grove



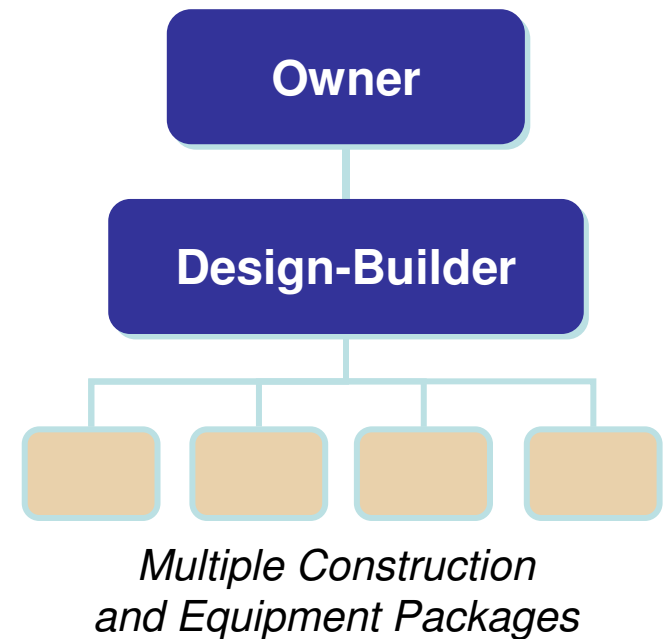
## Qualification Based Selection with Cost-Based Contracting

Competitive Process to Select Best Qualified Team Based on Qualifications and Project Approach (and Fees)

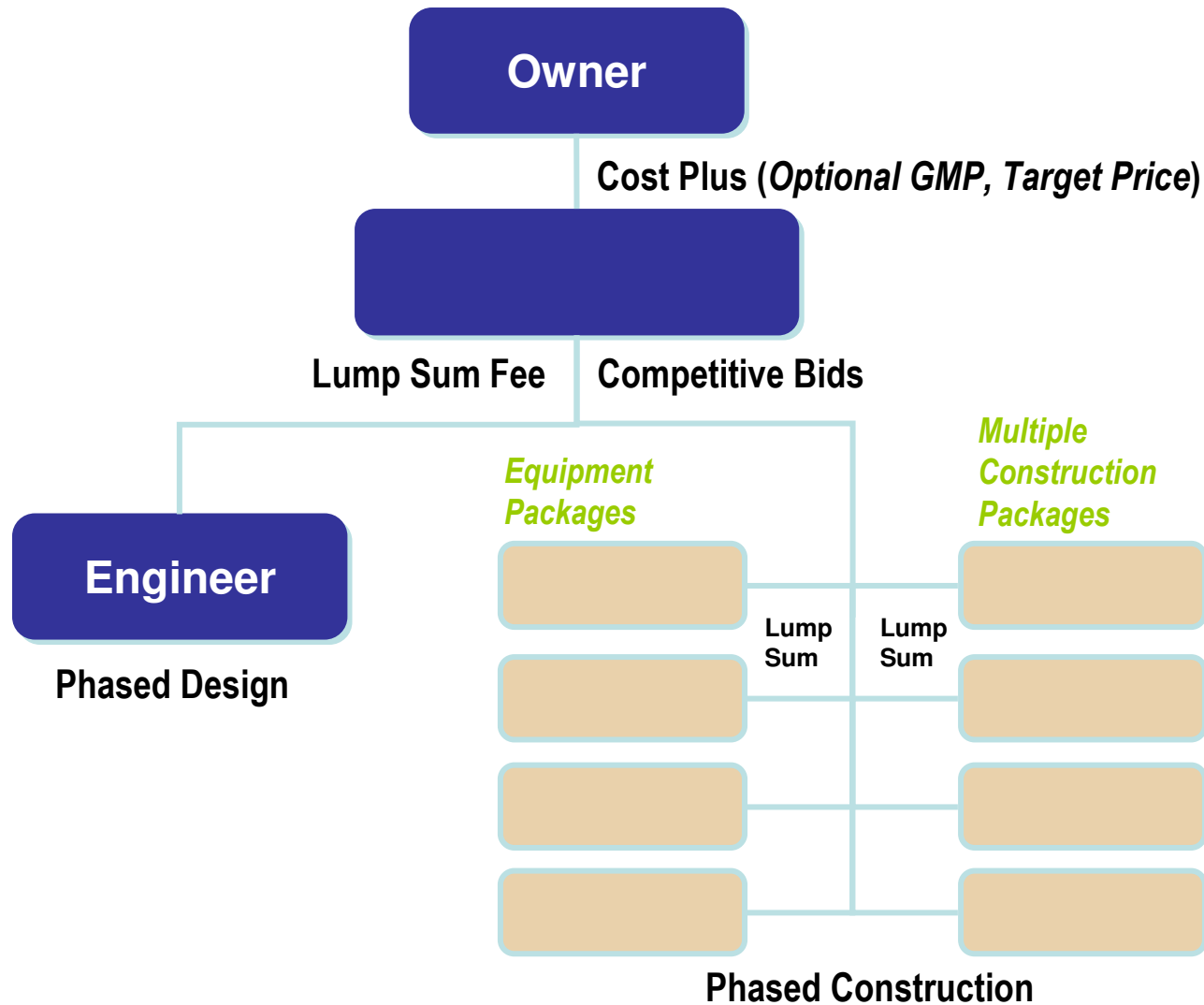
Commence with Professional Services to Establish Project Scope, Budget, and Schedule – Design-Build Team and Owner Work Together

Normally Implemented with “Cost Based” Contract Format Options – GMP, Target Price – Can Be Converted to Lump Sum

Cost of Work Substantiated



# Engineer Procure Construct (EPC) Contracting



## EPC – Umpqua Basin

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Findings – Board Decision

6 MGD Membrane Water Treatment Plant

Guaranteed Maximum Price (GMP) - \$9.2M

GMP Based Upon 30% Design

Schedule – Completed 25 Months

Open Book Process

Owner Involvement was Key

– Miox for On Site Generation





# Design Build – Joint Venture

## Description

- Design & Constructor Under One Contract
- Compensation Based on Cost-Based Formats (Cost Plus, GMP, Target Price, etc.) or Price Based Selection (Lump Sum Cost)
- DB Contractor Holds Contracts
- Early VE and Construction input

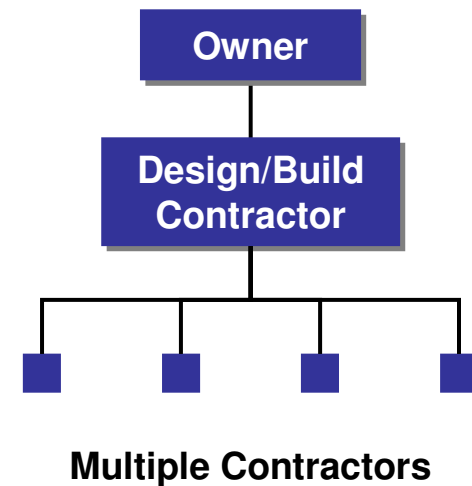
## Advantages

- Single Entity Responsibility – Less Dispute Potential
- Cost surety
- One Contract to Administrate
- Early establishment of cost compared to Design –bid- Build and CMAR
- Owners Control of Time, Technology, Cost through an open book cost build-up
- Schedule Shorter than D-B-B and CMAR
- DB contractor gives owner a guarantee for cost, schedule and process performance.

## Disadvantages

- Owner may have more admin burden to administer a cost sharing based contract.

## Design Build



## Joint Venture – City of Cottage Grove

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Findings – Schedule (Regulatory Compliance), Contractor Qualifications

4 MGD Membrane Water Treatment Plant



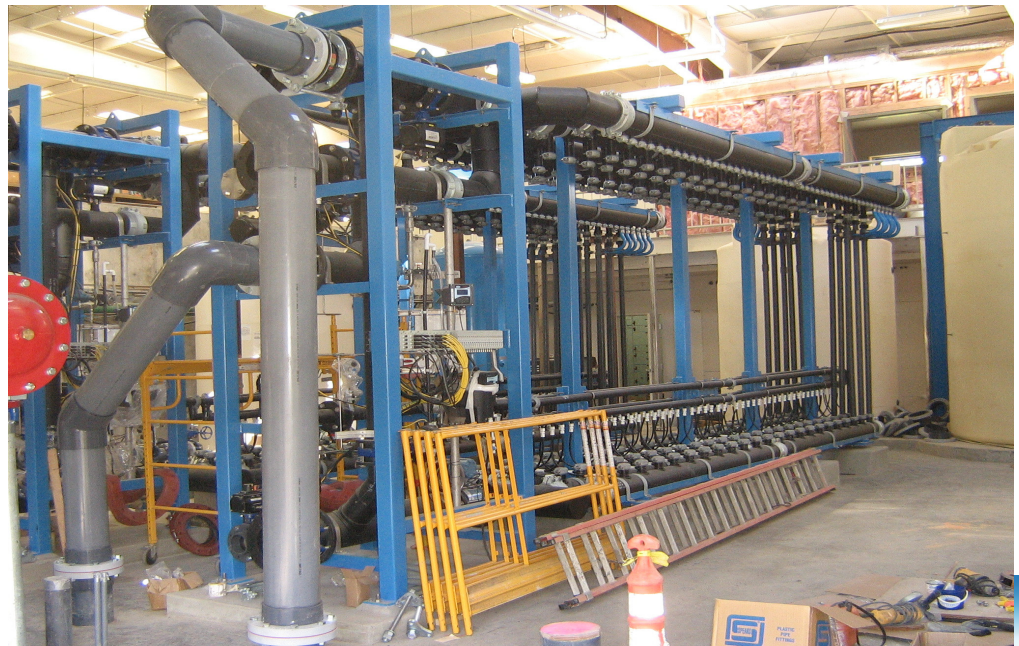
## Joint Venture – City of Cottage Grove

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GMP - \$9.4M

Schedule - 21 Months

Operational June 30, 2008



# Design-Build-Operate

## Design-Build-Operate

### Description

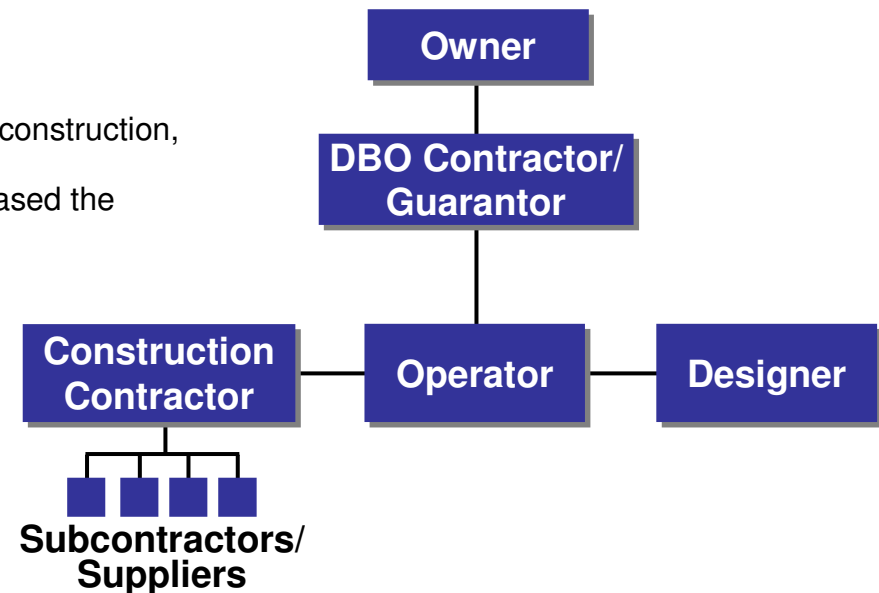
- Involves a single point of responsibility for design, procurement, construction, and short, medium and long-term operation
- Owner has wide discretion in how prescriptive or performance-based the contract will be for this procurement method.

### Advantages

- Allows collaborative and integrated project approach
- Operator input on new technologies and design saves money
- DBO contractor has a built-in incentive to assure quality.
- Single point of responsibility
- Allows owner to assign more risk to private sector.
- Potential Economies of scale for operations
- Potential cost saving through long-term contract and appropriate risk allocation.
- Defines long-term expenses for rate case hearing
- Supplements experience of owners operation staff.

### Disadvantages

- Reduces owner involvement in operational decision of its facility
- High cost to procure and competition maybe limited.
- Requires a long term trust between owner and operator.



## Key Points

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Alternative Delivery - Another Tool in the Tool Box  
Will Save Time  
May Save Money  
Become More Common in Water Industry



# Questions/Discussion

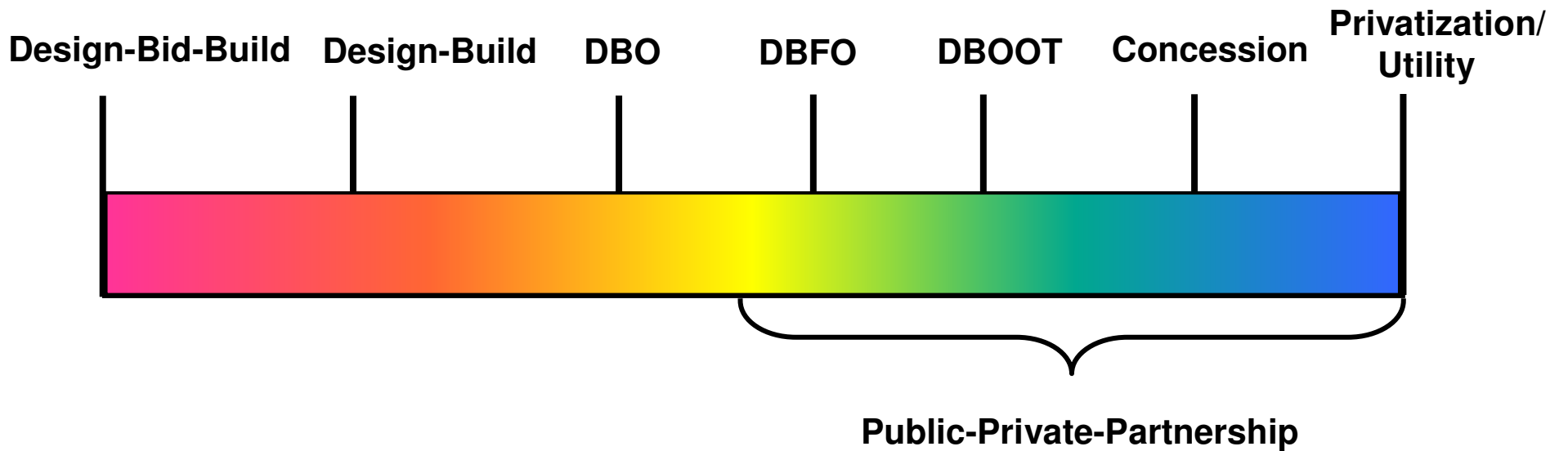
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**Next Steps:**

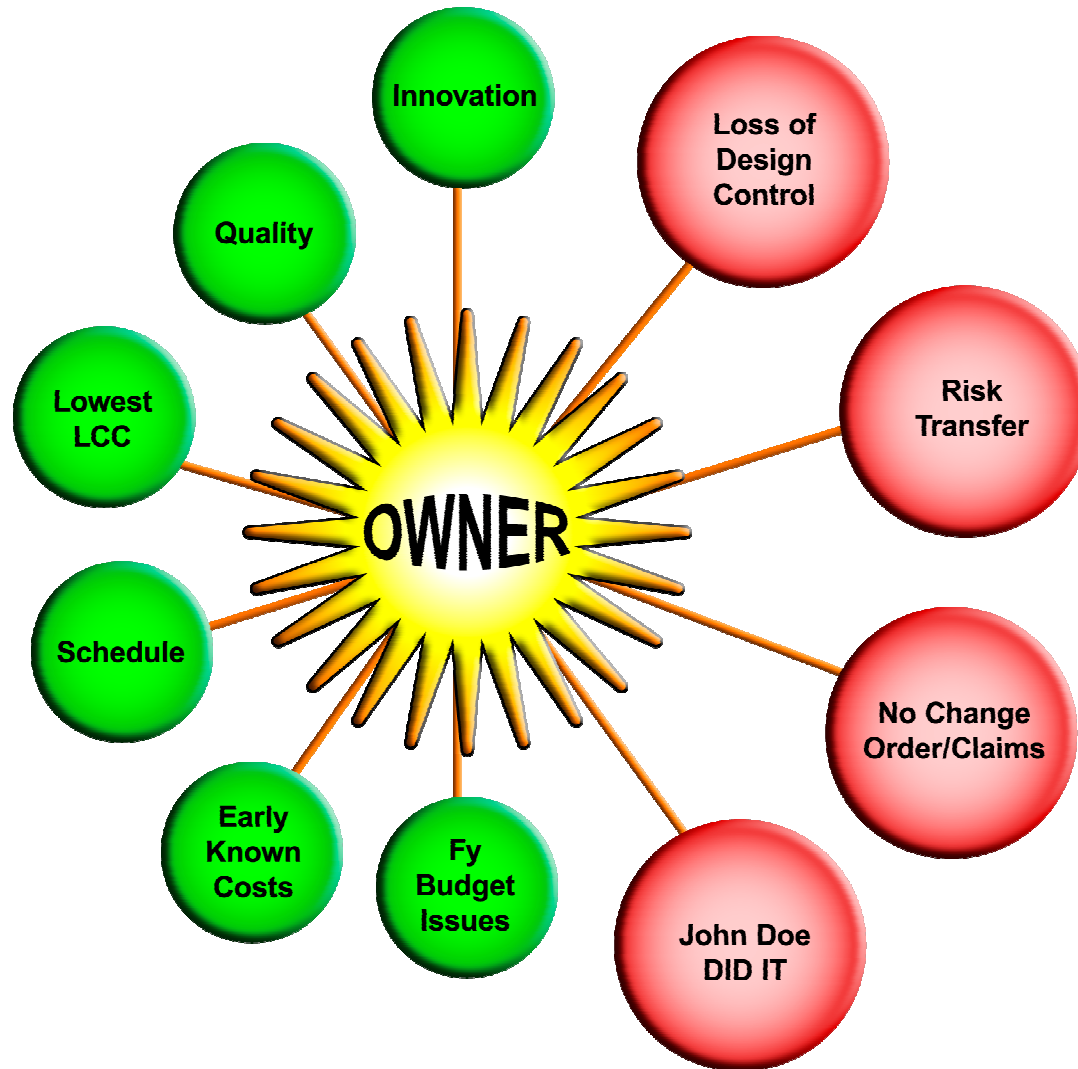
**Best of the Northwest Water Taste Test  
Water for People Champagne Reception**



# Project Delivery Methods

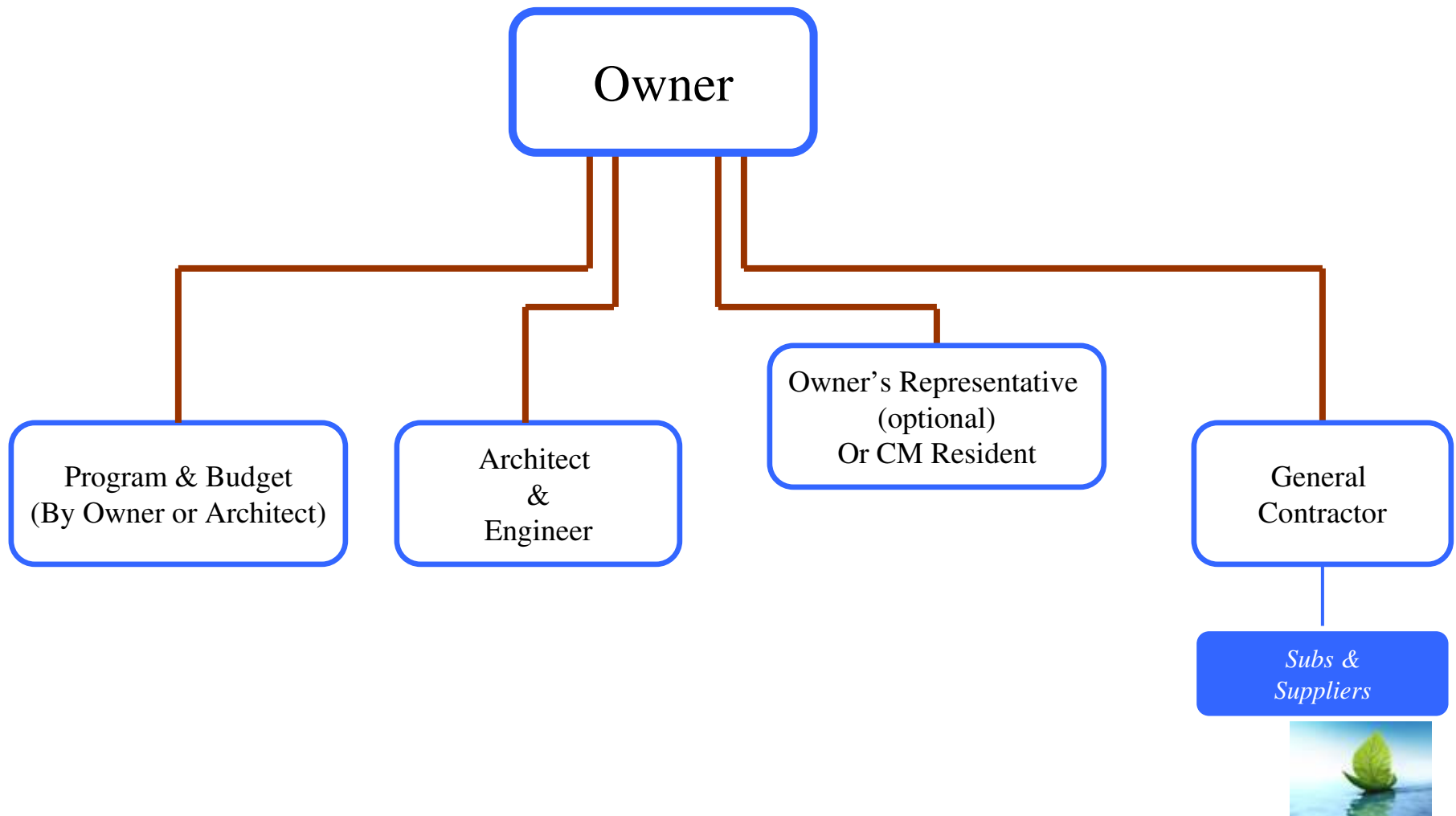


# Owner Internal Factors: Design-Build Delivery

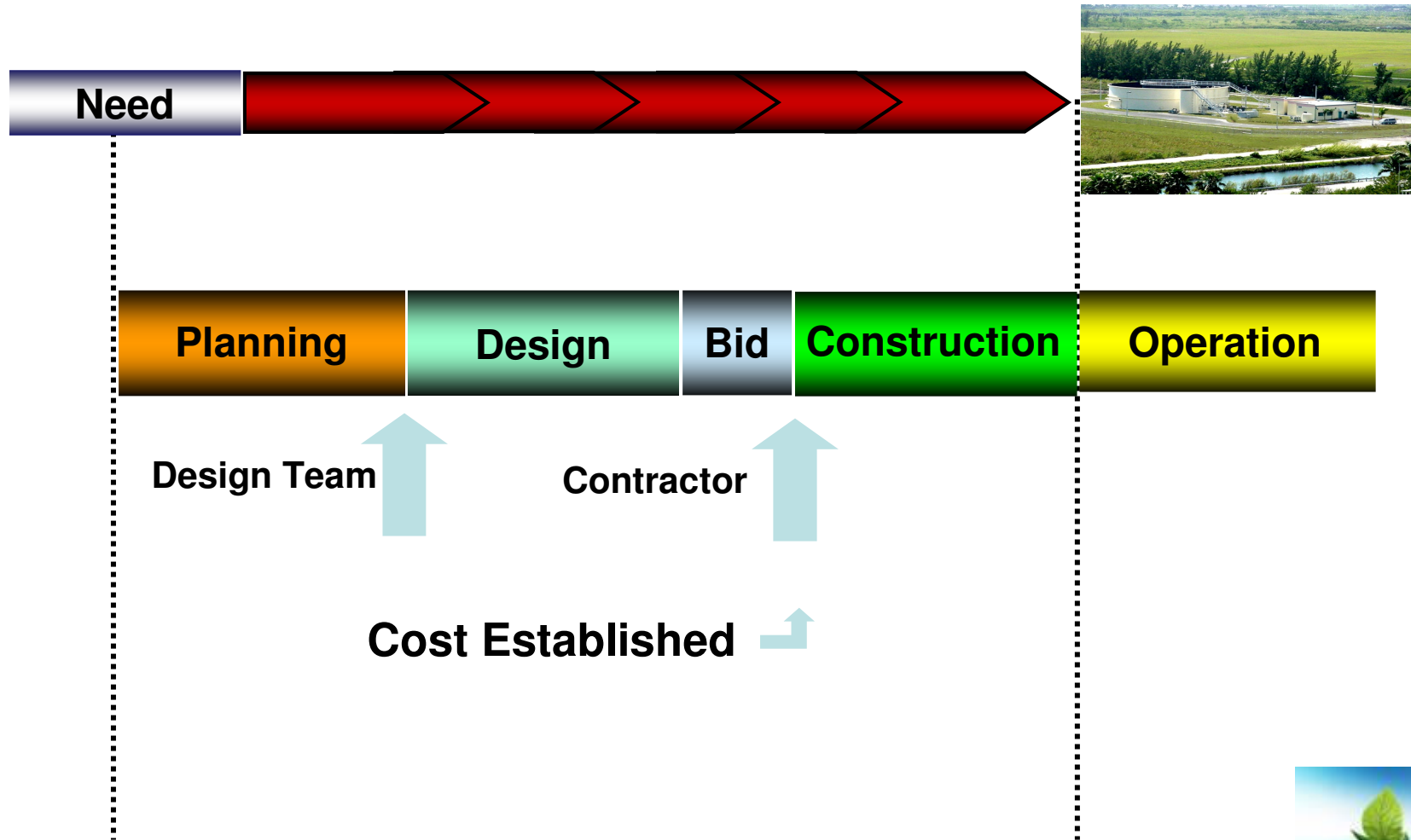




# Conventional Design-Bid-Build Approach

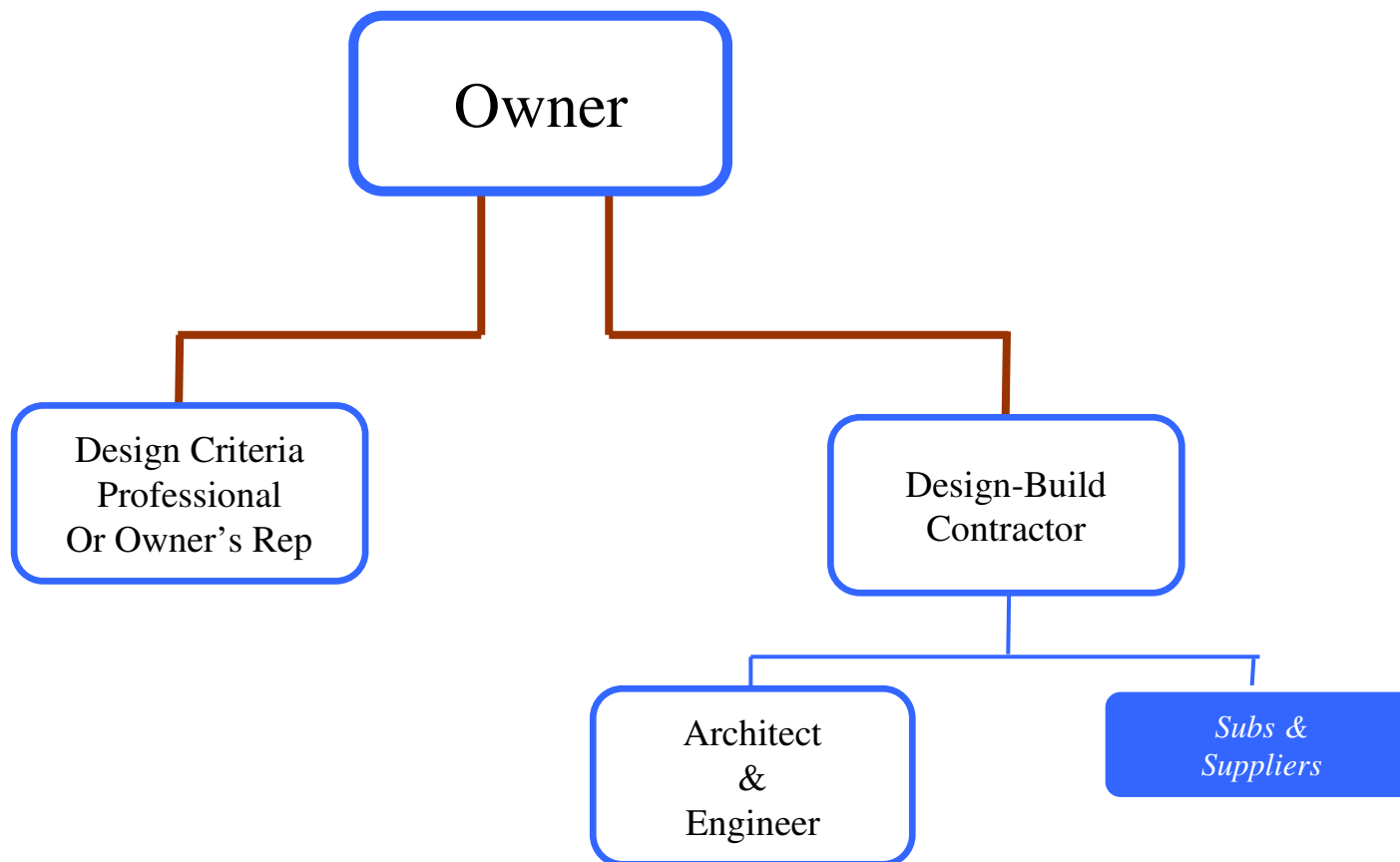


# Design - Bid – Build (DBB)

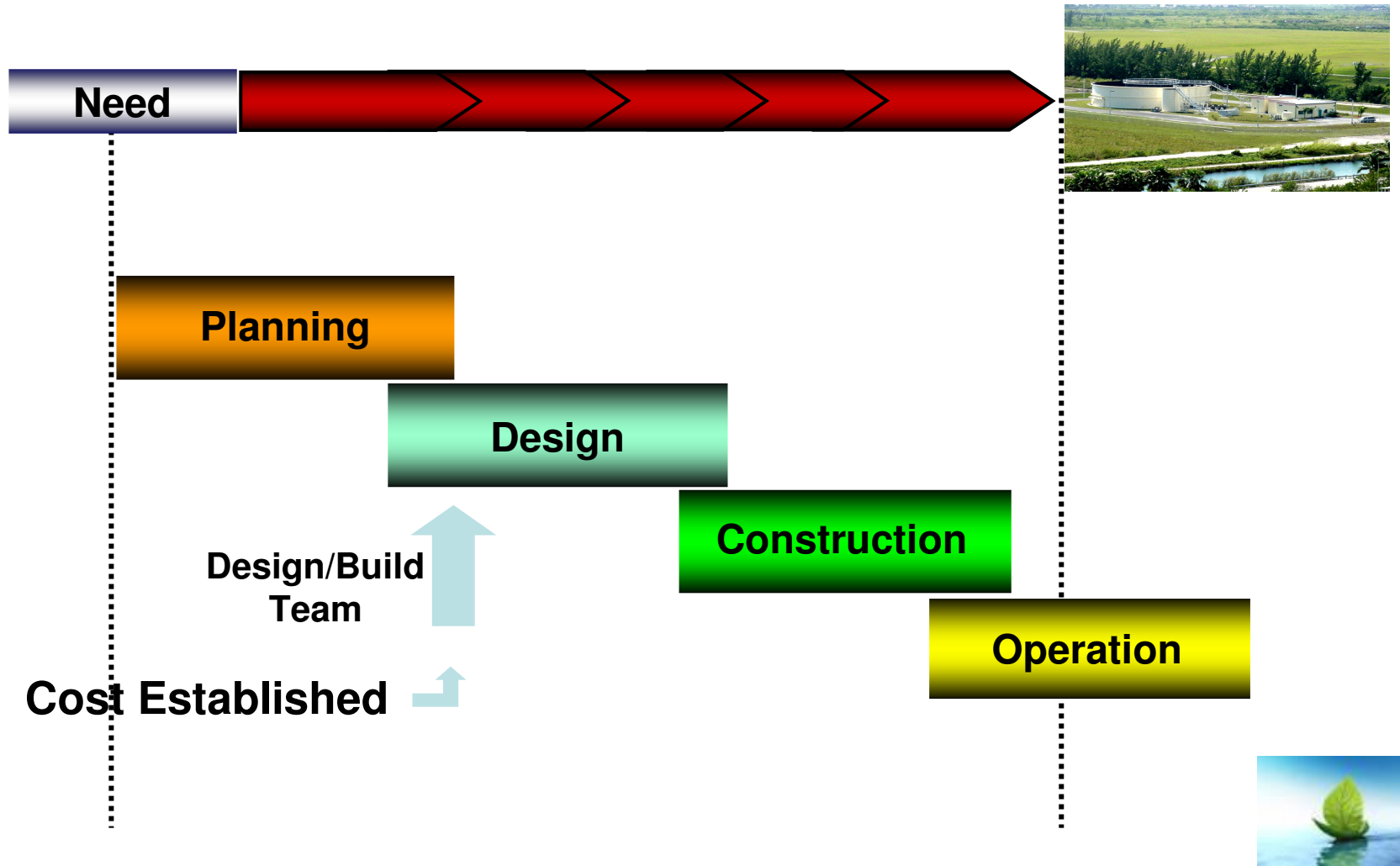


# Design-Build

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# Design-Build Process



## Design-Build Advantages

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Single source responsibility for complete project delivery

Clear, streamlined communications with Owner

Early identification of project costs

Lends itself to fast-track delivery

Early team selection - continuity

Construction input into design

Reduced project execution burden to the owner

Eliminates change orders due to design error, omission or interpretation disputes



## Design-Build Disadvantages

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Must select total project team as a package - rather than picking and choosing

Traditional A/E “watchdog” role must be performed by Owner or Owner’s representative

Critical design decisions must be finalized early in the project

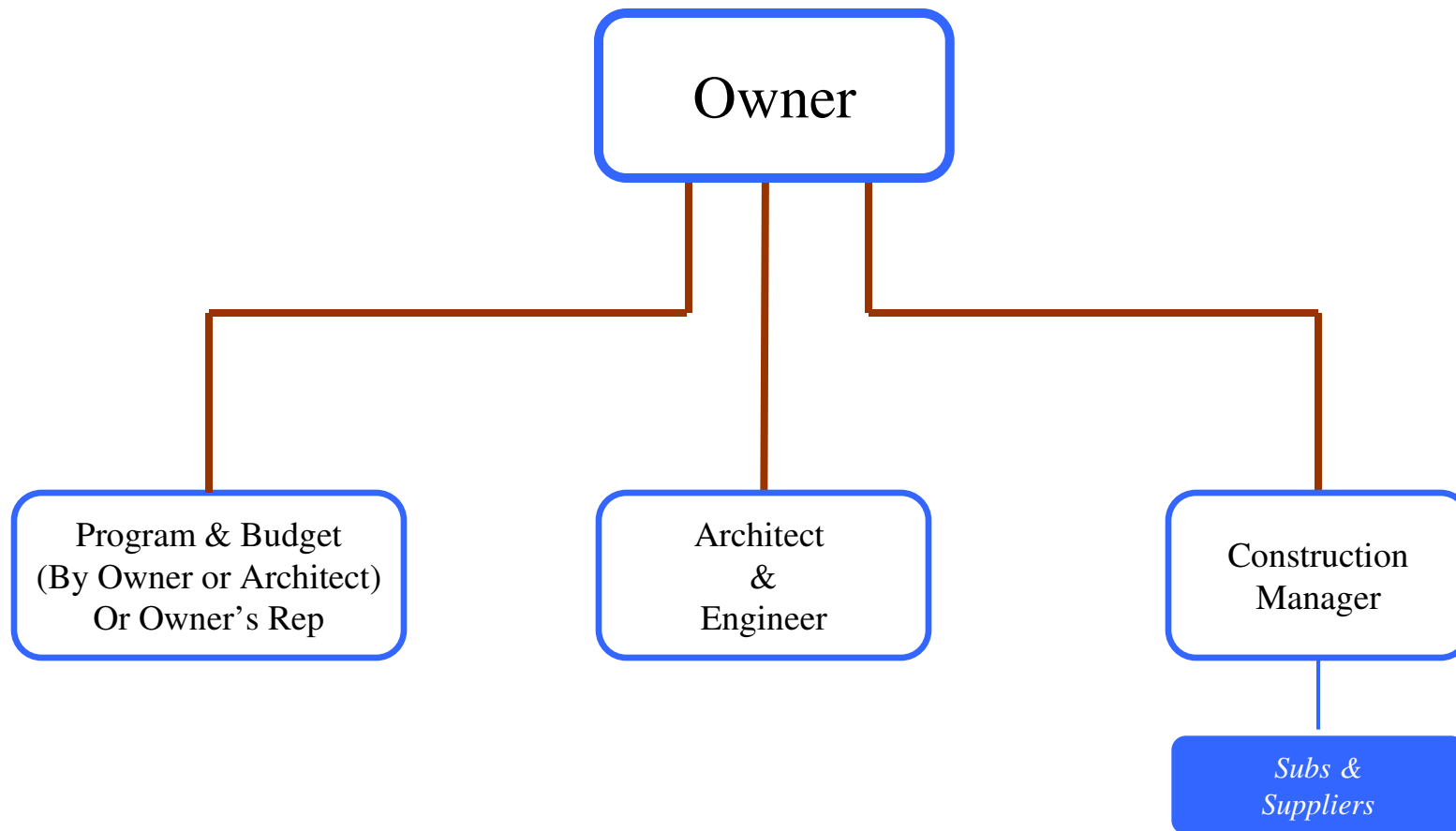
Design can be driven by special interests or capabilities of the design-builders

Pursuit costs for practitioners can be significant

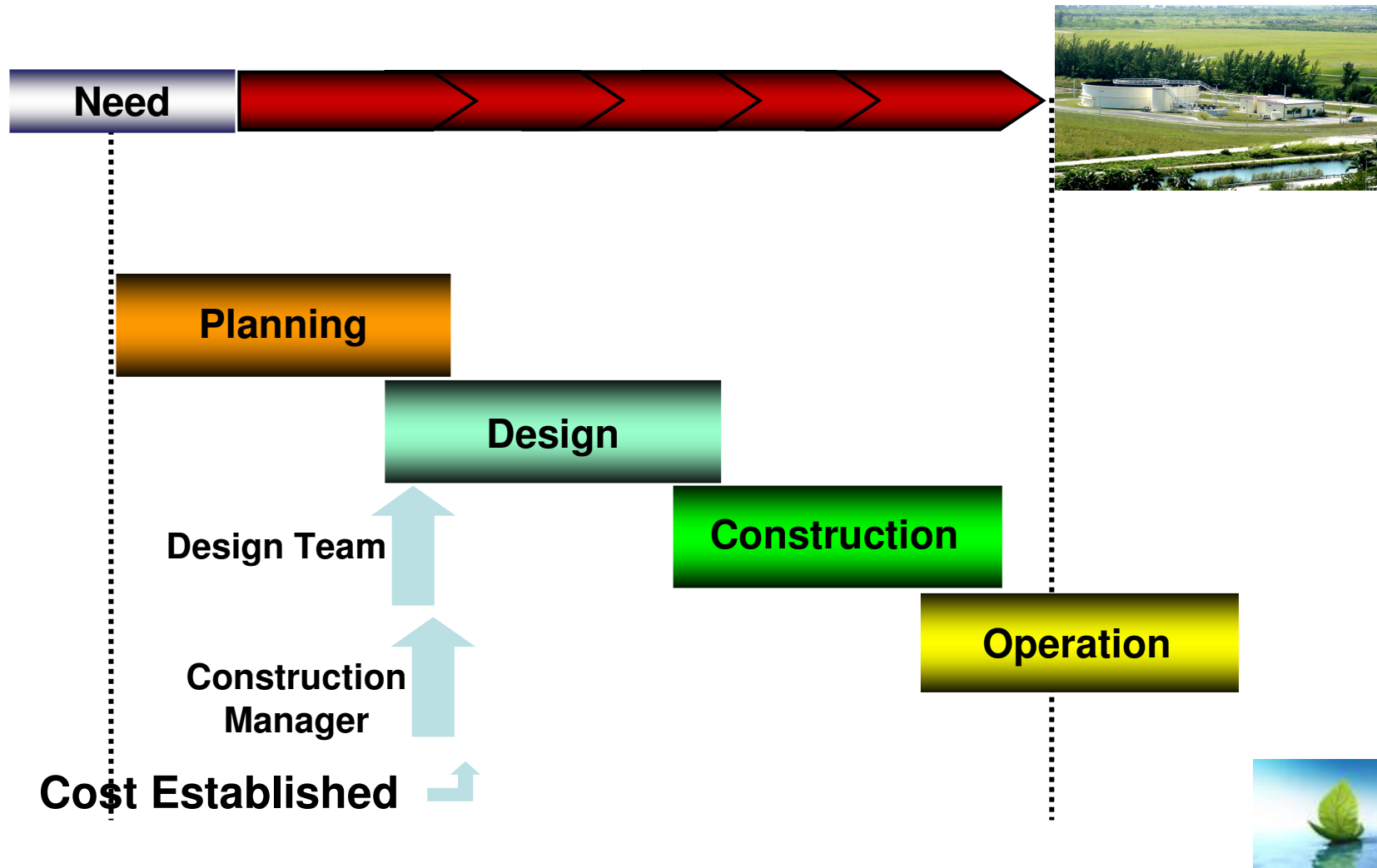


# Construction Mgt At Risk (CMAR)

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# CMAR





## CMAR Advantages

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Qualified management and technical support

Early guarantee of project costs

Early selection of the overall project team - the architect and construction manager

Early construction input and value engineering of design can achieve cost savings

Early construction start and completion - well suited for fast-track delivery

Opportunity for local subcontractors, trades, suppliers, while retaining competitive bidding of construction work

Opportunity to keep project dollars in the local economy



## CMAR Disadvantages

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Owner remains directly involved in project management and contract disputes

Guaranteed price must include design and bidding contingencies

Fewer qualified firms are experienced with this delivery method

Owner guarantees the design to the contractor



## General Lessons Learned

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Have you done Design-Build Projects before

Who is your internal Design-Build champion

Project Funding Challenges and Fast Track

How rigid is your Prime Agreement and Legal Counsel

Is Value Based Selection possible

Selection Committee and Selection Process

Mandatory Involvement by Owner



## Do's for Owners: Design-Build

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Use the right drivers

Legal Mechanism is critical

Use a fair/reasonable selection process

– **Clear Path to Victory**

Engage the Industry early in the RFQ/RFP process

Develop a fair Risk Matrix for risk assignments

Use Owner's Rep for first few projects

OR selection and DB selection are critical

Foster a Teaming / Open Interaction Environment



## Owner's Perspectives: Don'ts

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Change scope significantly during Bid Phase

Use Shot Gun Weddings for teaming arrangements

Use of Innovative Ideas without consent

Unreasonable Level Of Effort from Bidders

Don't use Stipends for Use of Ideas

Focus of Low Initial Bid for DB projects is playing Russian Roulette



## Weighted Criteria

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<b>Proposer</b>	<b>Qualitative Score (60 Max)</b>	<b>Price Proposal</b>	<b>Price Score (40 Max)</b>	<b>Total Score (100 Max)</b>
<b>Firm A</b>	<b>51</b>	<b>\$1,629,000</b>	<b>37</b>	<b>88</b>
<b>Firm B</b>	<b>53</b>	<b>\$1,546,000</b>	<b>39</b>	<b>92*</b>
<b>Firm C</b>	<b>44</b>	<b>\$1,510,000</b>	<b>40</b>	<b>84</b>

*\*Award to Firm with the highest total score.*



## Adjusted Low Bid

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<b>Proposer</b>	<b>Qualitative Score (100 Max)</b>	<b>Price Proposal</b>	<b>Adjusted Price</b>
<b>Firm A</b>	<b>85</b>	<b>\$1,000,000</b>	<b>\$11,764.71</b>
<b>Firm B</b>	<b>95</b>	<b>\$1,300,000</b>	<b>\$13,684.21</b>
<b>Firm C</b>	<b>50</b>	<b>\$800,000</b>	<b>\$16,000.00</b>

*Note: The adjustment to the bid is for selection only.*



# Project Examples





## West Basin Ph IV DB Expansion

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Client: **West Basin MWD, El Segundo CA**

Job Value: **\$ 52 Million Lump Sum**

Project Duration: **32 Months**

Job: **Expansion of 24/7 reclamation plant with barrier injection water and boiler feed water upto 40 mgd**

DB Type: **Draw-Build and Performance**

Existing / New: **Expanding existing facility**



LDs: **Upto \$10,000 per day DCP: Yes**



## Lessons Learned – West Basin

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Operations is key at an existing plant

Owner Changed Priorities in the middle of the job

Use of Bridging Document for DB leads to Low Bid mindset

Partnering was important for a complex job



## SDCWA Twin Oaks DBO

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Client: **SDCWA, San Diego CA**

Job: **100 mgd green-field WTP**

Project Value: **\$260 Million DBO Lump Sum**

Project Duration: **30 Months DB; 15 years Op's**

Type of DBO: **Performance based DBO**

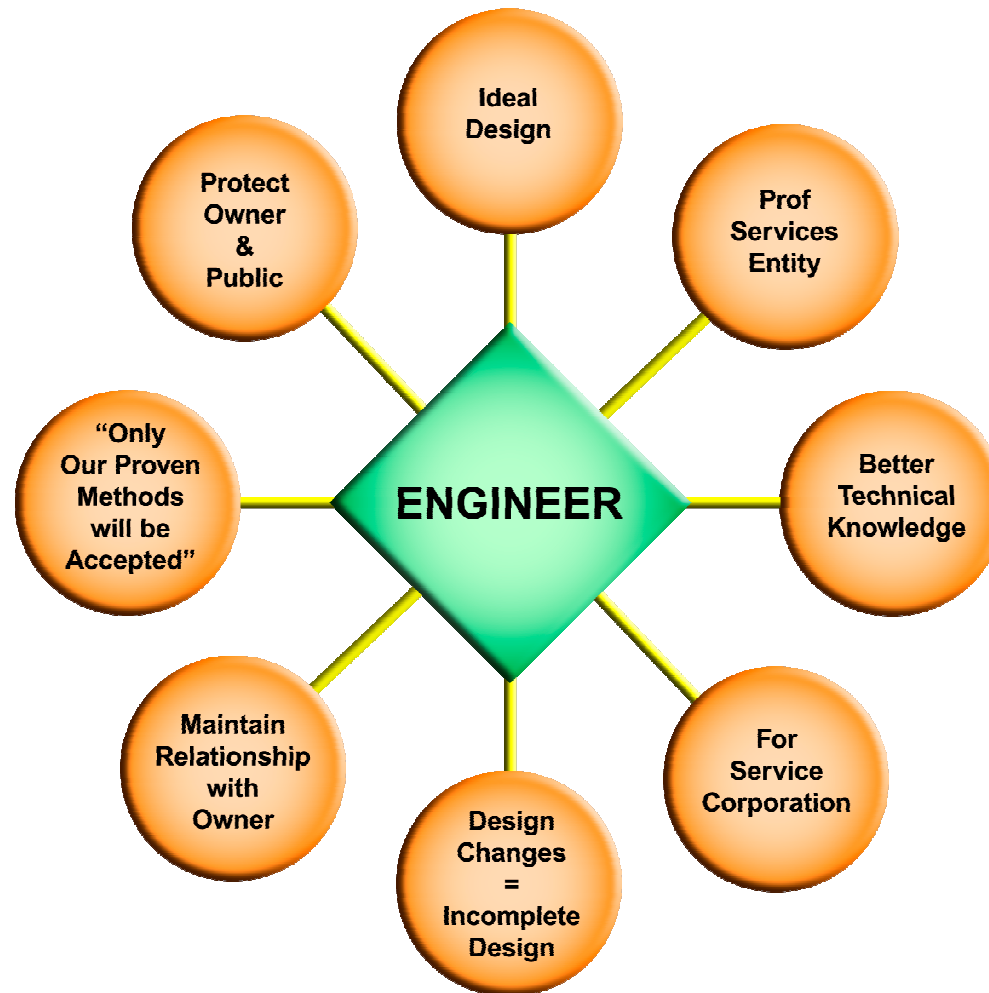
Existing / New: **New Greenfield Facility**

LDs: **Detailed Formula based on capacity/water quality and schedule**

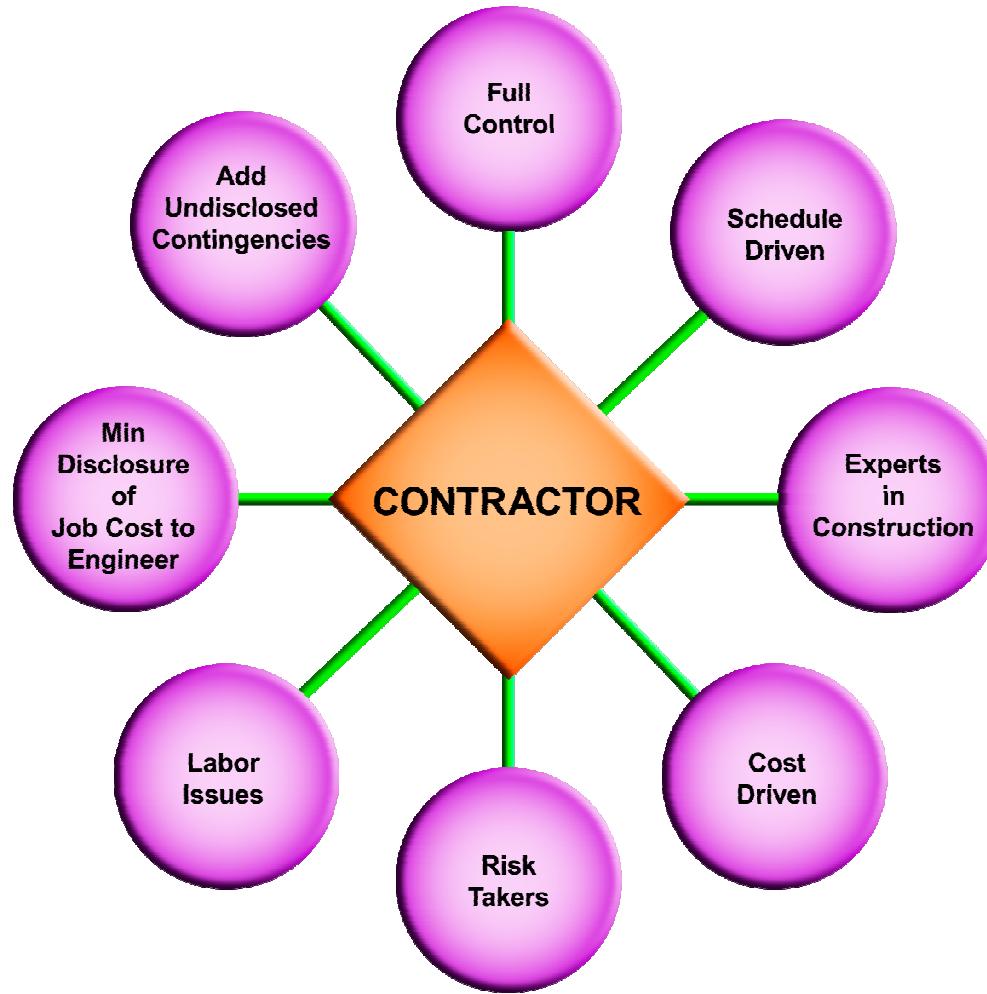
DCP: **Yes**



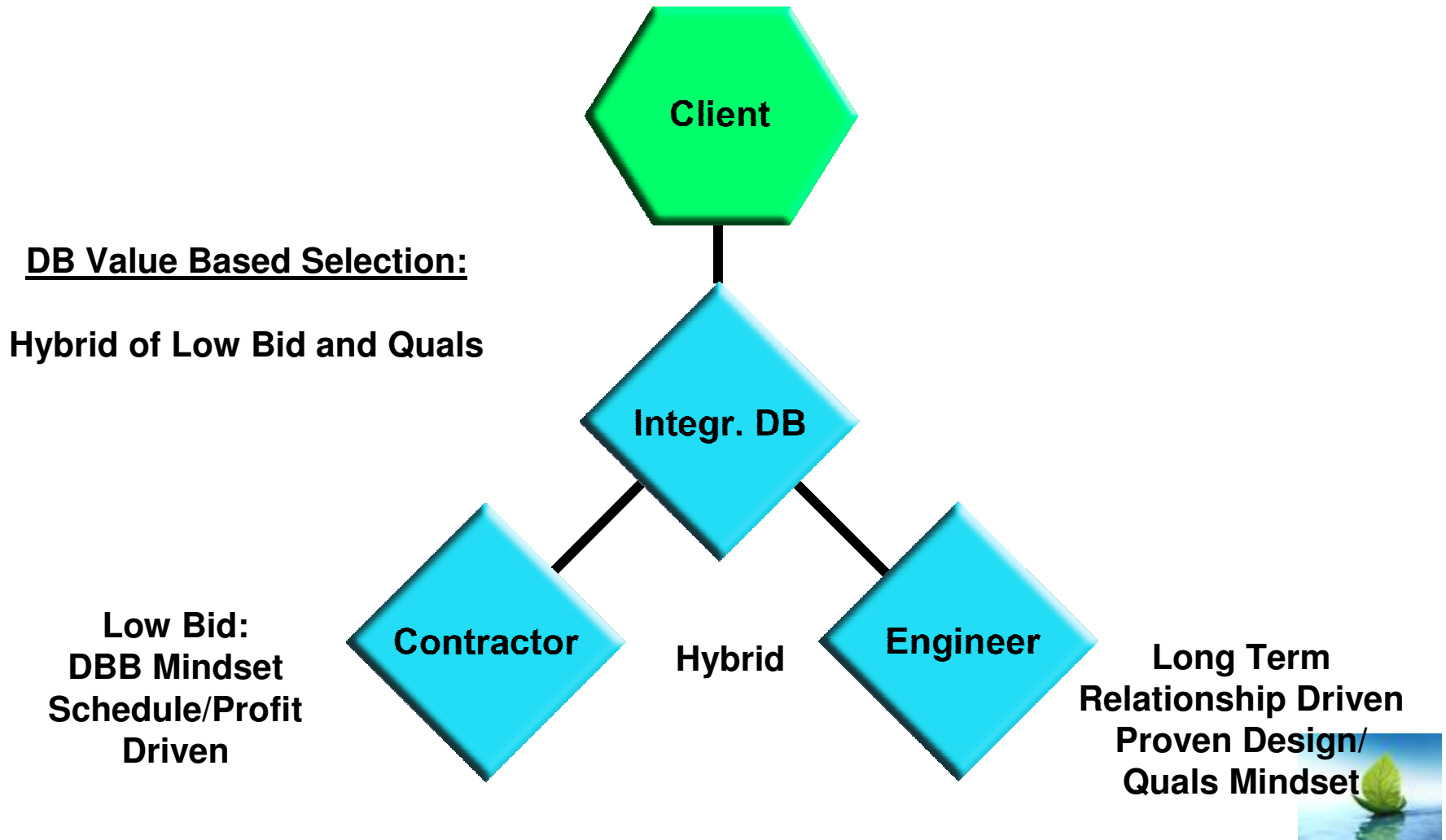
# Engineering Culture



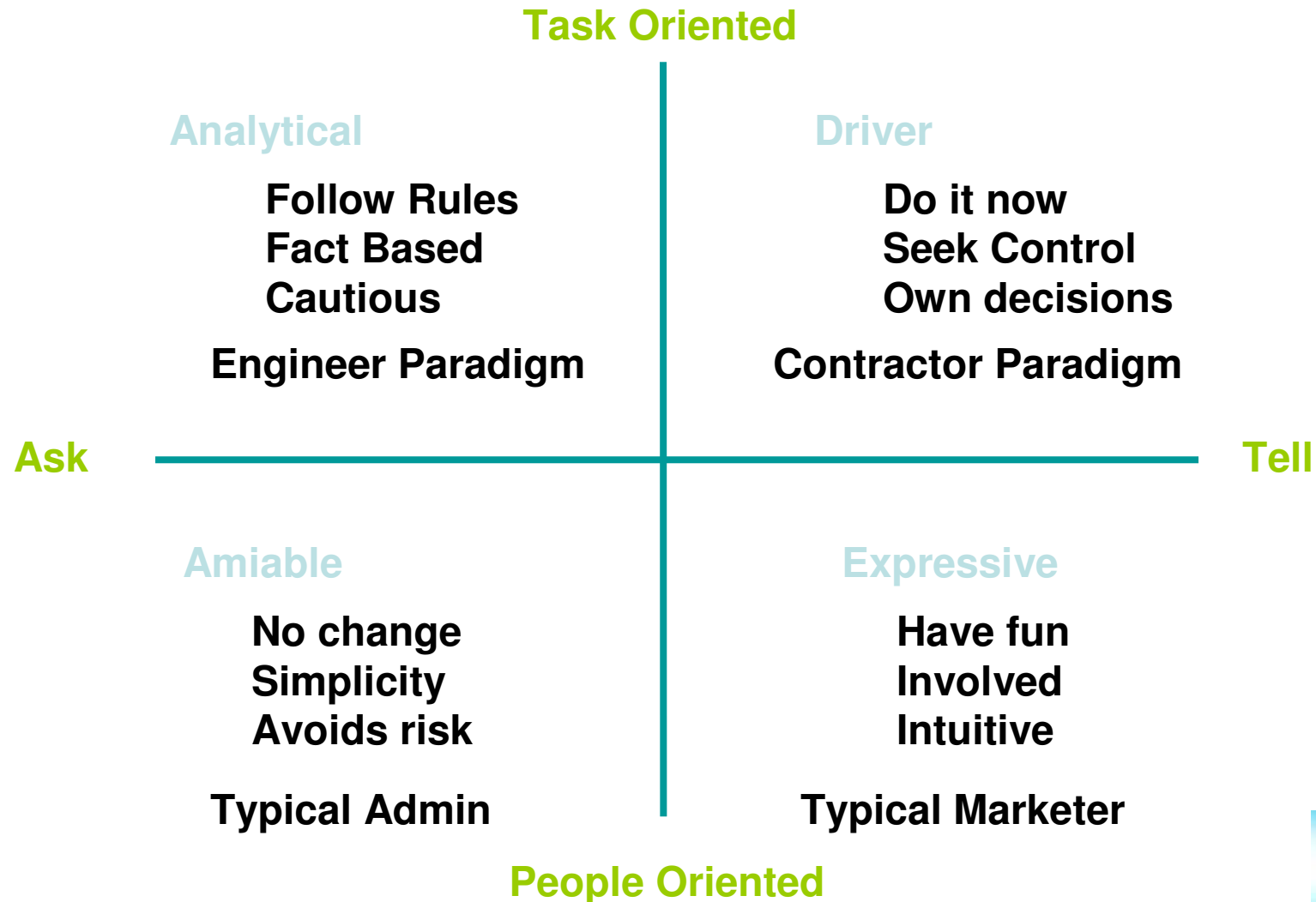
# Construction Culture



# Different Cultures /Paradigms



# Personalities and Project Leadership



## Selection Process

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Value Based Selection

Two-Step Process (Minimum Quals vs  
Highest Qual. Teams)

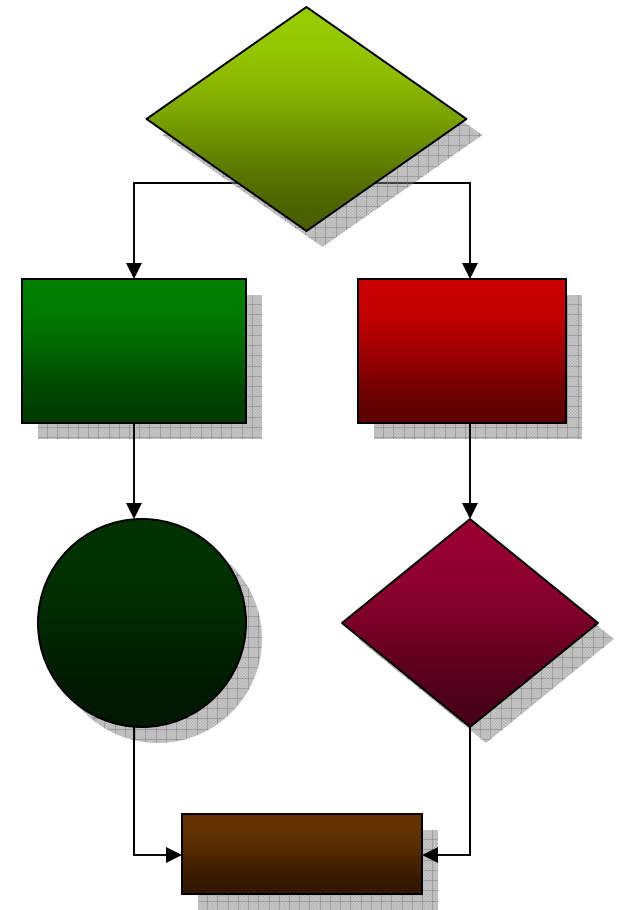
Performance vs Prescriptive Specs

Level of Effort & Number of Bidders

Risk Transfer and Contingency

BAFOs

Cone of Silence for Selection Committee





## List of Some Recent Design-Build Projects

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### San Diego County Water Authority

- Twin Oaks 100 mgd \$ 260 Million DBO

### West Basin MWD

- Phases II, III, IV MF-RO-UV \$ 50 Million + DB

### Casitas MWD

- 64 mgd Pressure Filtration Plant \$ 8 Million DB

### SFPUC

- 300 mgd UV Disinfection Tesla Facility \$ 90 Million DB

### City of Seattle PUC

- Tolt River WTP DBO \$ 120 Mill
- Cedar River WTP DBO

### City of Phoenix

- Lake Pleasant DBO \$ 250 Mill + Pima County AZ

- Roger Road CMAR \$ 250 Mill +

### City of Fillmore CA

- Water Recycling DBO \$ 42 Mill +

