

## Core Principles

- Most familiar/traditional delivery model. Most owners have experience utilizing it.
- Competitive cost to build; low initial cost.
- Success relies on owner/design clarity.
- Tends to have most certainty and definition in project scope, risk and quality prior to construction.
- Design and construction documents are complete prior to bidding phase.
- Needs strong communication throughout the project to be most successful
- Involves three sequential project phases: Design, procurement, construction.
- Owner has significant amount of control and involvement.
- Allows for design sophistication (quality/functionality) when you have a experienced owner and direct line for the architect.
- Lowest cost for what is in the design at that point in time.
- Perception that DBB will get the lowest cost.

## Considerations & Challenges

- Owner holds the biggest risk for cost.
- No 'fast-track' process; can be a schedule killer.
- Consider hiring a construction advisor.
- By nature, it can be confrontational.
- Bias is given because it is the most familiar model.
- Can become a 'siloes' approach.
- Demonstration 'value' vs. competitive cost.
- Perception is that you have more time.
- Owner may have no control or input on subcontractors.
- Sub-optimal collaboration; too linear and too hierarchical. if used in its 'pure form'.
- Timelines may be insufficient to optimize outcomes in design and for contractors to respond with a fully informed/costed bid.
- Consultant needs time to design and budget to design to effect good outcomes.
- Needs strong client involvement (bi-weekly check-ins are probably not enough).
- Owner indecision will have a downstream cost.
- DBB tends to be a linear process where each next player follows what has been set in place.
- Value engineering doesn't always happen.
- Designers cannot optimize costs as they aren't linked to materials construction (ex. heat pumps vs fan coils).
- High degree of control but prevents innovation.
- Transparency around scoring on fee needs to be indicated.
- Usual approach assumes that the design is set and good; then the contractor builds to the lowest price.
- DBB drives contractors to seek problems, not solutions.
- Scope changes defined and priced in a transparent manner.

## When To Use

- When project is narrow in focus.
- Suited for predictable/repetitive builds; projects that do not require a high level of customization.
- Great when innovation is not a driver.
- Projects that are low in complexity; low risk builds.
- "Class 1 projects".
- When project can be clearly defined.
- When used correctly this model is LEAN.
- Schools, roads, interchanges, bridges, underground utility projects.
- When an owner wants to advance a project to 'shovel ready' without construction funding in place/available.

## Benefits

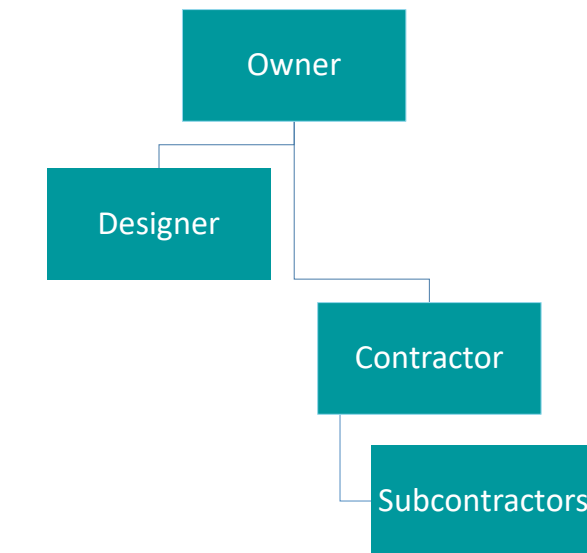
- Best utilized on repetitive projects.
- In lower risk scenarios.
- Allows owner to advance a project even if full funding is not in place.

## Prime Consultant's Perspective

- Usually led by an architectural firm.
- Bridging consultant selection is key with clear role and articulation of owners outcome.

## Architect's Perspective

- General contractor chosen primarily on price, secondarily on qualifications - lowest price does not always mean the most qualified.
- General Contractor is not on board early in the process to give feedback during the design process, to get acquainted with the design team and their intentions, and begin establishing trust as a team member.
- This model is particularly susceptible to Change Orders (i.e. cost increases) during the construction process due to the GC not being available to collaborate with the design team earlier in the process. If change orders become contentious during construction, finger-pointing often results, and the design team's documents will be heavily scrutinized.



- Not having a contractor on board early in the process may be partially compensated for by hiring a professional cost estimator to conduct milestone price checks to confirm whether the project is on target.
- The delay in selecting a general contractor until construction documents are 100% complete almost always poses an elongated transition of the project from design to start of construction.
- Delays impact the architect as often a fixed fee is established for what is reasonably expected to be the construction timeline. By the time a project is clearly going to be over schedule architect has expended most of their fees.

## Engineer's Perspective

- Relationship between engineer and Architect/Owner is primary and key in establishing scope budget and schedule.
- Success is through a clearly defined scope and a succinct design and the ability for the Owner to make decisions.
- Reducing re-work is key to making project successful.

- Engineers need to assume certain constructibility methods that pose a risk once the project goes for Tender.
- Direct relationship/dialog between designer and owner will be better able to tailor the design to end user's needs.
- Less need for changes that can be a result of fast tracking.

i.e. at times there is pressure to get deliverables out in advance of scope decisions and budget checks from the ownership group.

## General Contractor's Perspective

- Does not allow for early input from GC's or sub-trade experts for constructibility, or scheduling consultation.
- Creates a potentially litigious relationship as contractor and trade partners bid 'plans and specs'.
- Less collaboration. Can create a "triangle" where the Owner, Contractor and Consultant each back into a corner, protecting the financial interests as fees are fixed and lower.
- Owner gets what is 'drawn', but limits the ability to incorporate additional scope wants, or allow for easy changes to documents after the job has tendered. Insufficient "contingency" budget is usually carried and it becomes an issue as Consultants rely on "Design Intent".

- Longer procurement times and access to market.
- You may not get a GC's best team or most qualified team.
- As a commodity based procurement, you get commodity based service and do not necessarily get the complete service offering of a GC's, which includes the supporting cast within the office.
- If the drawings are complete, well laid out, clear and concise and there was a prequalification process to limit the number of GCs with relevant experience, it can work reasonably well.
- The model doesn't work well in very weak economies where frugality is a priority.
- It can work well if the GC's are prequalified and are all of comparable levels of experience in the product, etc. In addition if the major sub-trade scopes are prequalified to a limited number of competent trades it alleviates some concerns.

## Owner Perspective

- Ability for owner to advance the project and determine scope based on available funds prior to moving forward.
- With appointment of a constructibility advisor prior to award of design, ability to collaborate early and drive the optimal outcome.
- Where funding is uncertain, it allows projects to be sufficiently mature to access 'one-off' pools of public funding and complete projects within tight.
- Very good when detailed programming needs to be worked through and developed.
- Good when used for facilities with high technical difficulty as it allows for reviews of options on design solutions.
- Can have communication difficulties if prime consultant shields subs from Owner.
- Has good ability to deal with project close out and follow up on warranty.

## Key Procurement + Contracting Considerations

- Allows for better understanding of costs earlier.
- More suited to well understood and less risky projects.
- Tender documents need to be clear on desired outcome in order to inform design team composition and costs.

## Advantages

- Familiar delivery method.
- Defined roles/responsibilities for team.
- Allows more firms to bid.
- Initially presents the lowest potential cost for the project.

## Disadvantages

- No "fast-tracking" process available.
- Budgets may or may not be met...Architects are not always current on pricing market(s).
- Low bidder may not understand project goals, objectives and criteria.
- Owner has no control or input on subcontractors.
- Process puts Owner as issue resolution agent if architectural documents and construction conflict.
- High potential for change orders and conflict.
- Owner control over GC's staff is limited.
- No cost savings sharing.
- Relationships can be adversarial.

## Core Principles

- Owner hires a design build team. Owner must be clear about end goals and place trust in the design build team as has less influence in the design than a DBB.
- Consultant and contractor must be clear on who will lead the project.
- Implied perception of non-interference, but may not be the case.
- Greater cost certainty but only if owner has clarity in outcome.
- Enhanced design constructibility opportunity owing to the opportunity for early collaboration between design and construction teams.
- Owner must seize opportunity to engage with the project team during the procurement phase. They must ensure their end goals are clearly understood.
- Requires a robust statement of requirements and clear specification demands.
- Single contract between Owner and DB team (before design is complete).
- Has strong potential for innovation when used effectively.
- Early firm price before design is complete.

## Considerations & Challenges

- Consultants often see a drive to reduce quality.
- Implied bias - consultants feel beholden to the general contractor.
- May not bring the best designer and best builder together.
- May be difficult to establish criteria for design build team.
- Includes the use of multiple bid packages produced by the design team.
- Right team to start is important to build and foster trust.
- Relationship between GC and Design Team is key.
- Alignment on project scope objectives and clear statement of requirements/specifications is essential.
- Early engagement of all key stakeholders is also impactful.
- Can have a bad rap on the quality side.
- Can be perceived as removing the relationship between design team and owner.
- Two models of DB: Low Price and Set Price. Latter can be very transparent and work well.
- Design schedule can be compressed (or over compressed). Available versus realistic time/schedule needs to be properly considered.
- Ultimately DB is the most customizable model.
- Owner flexibility, but owner must be engaged and clear with their intentions.
- Not necessarily faster to build (but often perceived as being).
- Owner has a fundamental role.
- Owner should be committed to maintain the scope and specifications of initial statement of requirements throughout the project.
- Statement of Requirements must accurately and completely reflect intended use and occupancy of the facility, functional programme, quality.



## When To Use

- Something an owner builds often/repetitive builds.
- Design build is often seen as low complexity, but it can be used in high complexity builds when the project is repetitive and well understood.

## Benefits

- Early input from suppliers.
- Carbon input and sustainability.
- Drive best value for the project/budget through collaboration and trust.
- Has a strong potential for innovation.
- Great budget certainty earlier on.

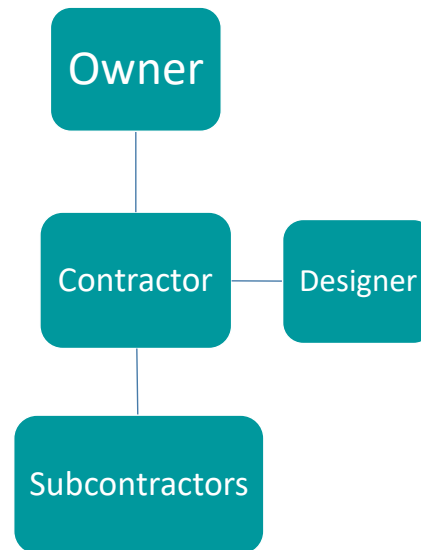
## Prime Consultant's Perspective

- Right team to start-> build/foster trust.
- Terms of reference/goals from the owner must be clearly articulated.
- Be respectful of time.

## Architect's Perspective

- Architect and design team should control/maintain the vision.
- General Contractors typically insist on the use of their own format of agreement with design teams on design build work rather than using the industry standard CCDC 15 form of agreement. These forms of agreement typically contain uninsurable clauses and are in contravention of the AAA's Practice Advisory. These terms assign liability to the design team for the project schedule and the difference between the bid price prepared on preliminary drawings without full compensation and the final construction cost.

- When control from an Owners perspective is not important.
- Design changes can be vetted and executed faster in this type of delivery method.



- Design build work requires design teams to work for partial compensation to prepare partially complete preliminary drawings which are then used by the GC to submit a fixed construction cost. The risk created by pricing based on incomplete information is carried by the GC and the design team and is ultimately transferred to the Owner.
- Requires a significantly higher fee structure and longer schedule as multiple firms must be hired to take the design to bid cost certainty, plus the Owner must pay for and allow the added time to prepare bridging/reference design and monitor the work of the successful team on public sector projects.

On private sector projects DB is usually more successful as a form of procurement.

- Private sector D-B projects typically do not have bridging consultants and benefit more fully from the architect's involvement at an early stage.

## Engineer's Perspective

- Relationship between engineer and design builder is key in establishing scope and design assist.
- Success is through collaboration.
- Engineers feel like they are often dropped during the process at times and their designs are value engineered throughout the process.
- Depending on the quality of DB outline specifications the end result may miss the clients expectations
- Engineering design often results in code minimum's and do not take future requirements into consideration.
- DB's are more successful when the DB team, including consultants and sub-contractors, have the opportunity to collaborate during the RFP response. There can be potential scope/budget problems if the teams are brought together afterwards.
- Success is through collaboration but collaboration -this requires a good level of trust between the subconsultant and the sub-trade. Being partnered up with the construction team can really help streamline the design.
- Some DB teams have been caught with the new codes and the additional effort or costs that may impact the projects. With the new energy code coming out, the teams with a better understanding on the impacts will likely be more successful.
- DBs at times can put engineers in situations where concessions need to be made to satisfy budgets. This may lead to non-ideal designs and long-term operating impacts.
- General Contractors typically insist on the use of their own format of agreement with design teams on design build work rather than using the industry standard CCDC 15 form of agreement. These forms of agreement typically contain uninsurable clauses and are in conflict with APEGA. These terms assign liability to the entire design team for the project schedule and the difference between the bid price prepared on preliminary drawings without full compensation and the final construction cost.

## General Contractor's Perspective

- Early engagement of key subtrades and suppliers and earlier construction start.
- Standard documents benefit the project.
- Consistency, design, collaboration.
- Standard documents benefit the project.
- Collaboration/teamwork.
- Legal risk balance.
- Constructability/schedule/design/budget coordination.
- Limits the cost escalation risk to the client. However, you need to ensure a strong statement of requirements.
- Allows the most flexibility for a GC to drive design and innovate as they are financially rewarded for innovation.

- Allows contractors to partner with consultants that have the expertise and competencies for the specific project.
- Allows Owner and Contractor/Design team to work out any issues and provide clarity to the Owners intent/outcome in the early stages of the project.
- Requires a strong/clear Statement of Requirements from the Owner.
- Requires the Contractor and Consultant to be experienced in DB. There is more experience required in understanding conceptual construction.
- A team strong in producing quick turn around on design is required.
- Owner needs to understand that construction materials are typically provided and built more to performance requirements unless clearly identified.
- Allows more flexibility in the design for the General Contractor. Owner has to be aware of this.

## Owner Perspective

- Consistency of PM throughout the project is helpful.
- Needs to be alignment on scope and project objectives.
- Depending on approach, opportunity to maximize solution as long as additional scope vs operating cost/quality is not traded.
- Real potential to drive innovation as long as 'price' is not the driving factor.
- Needs a skilled PM that can work with unknowns.
- Needs clear definition by owner up front on quality as quality can suffer in this model. Best model for adding variety of options depending on project - ie Best Value, make the team and then deliver an IPD style model without the IPD contract (DCC model).

## Key Procurement + Contracting Considerations

- Opportunity for collaboration is greater than more rigid delivery models.
- Early engagement of key suppliers/subtrades/modular systems.

## Advantages

- Owner has a single contract for design and construction.
- GMP is established early and owner risk is controlled.
- Except for Owner changes, no change orders.
- Project schedule can be accelerated/ "fast-tracked" if necessary.
- Owner involvement in the process is limited.
- Construction budget control.
- Owner is not issue resolution agent.
- Opportunity for cost sharing.





## Disadvantages

- Owner has limited involvement.
- Difficult to establish criteria for selection of D/B team.
- Design is complete at GMP.
- Process may not bring best designer and best builder together for owner.
- Quality control is responsibility of D/B team, no checks and balances.

## Core Principles

- Not hard tendered upfront; done in phases.
- Provisions in place to change over to a stipulated sum contract.
- In public owner experiences, CM is good for relating to city councils.
- Helps owners find a value in the planning (discovery) phases of the project.
- Allows for pooling of similar projects into a portfolio.
- Brings constructability and real time costing into the process.
- Collaborative model by definition.
- Allows for testing of the market and understanding pressures.
- Cost certainty and faster completion.
- Forces decision making early in the process.
- Allows for sequential tendering of trade contractors before overall project design is finalized.
- Opportunity for extensive Owner participation.

## Considerations & Challenges

- Must have clarity of the end results/goals early in the process.
- Schedule is the main driving force.
- Needs to be made clear by the owner that there is to be a collaborative approach between Design team and CM and/or constructability advisor during design phase.
- Perception that price competition is limited.
- CM passing on change orders from subs directly to owner without proper vetting.
- Sometimes negotiations take a long time at the start of the project.
- Fees paid to CM's are perhaps currently too low; owners are setting themselves up for later problems.
- Need more clarity and transparency around what scopes will be self-performed.
- Fees can be misaligned.
- Some uncertainty on final cost at the start of construction, but with flexibility in controlling cost during the construction process.
- Enhanced design constructability owing to the opportunity for early collaboration between design and construction teams.
- Effective time and cost planning and control processes and methods.
- Single source for warranty obligations.
- Less onerous administration required of Owner.

## When To Use

- Good in an environment where full project outcomes are not fully understood
- Good for conservation work, renovations and complex projects with many variables.
- U of A uses CM in projects under 2.5M; prequalifies 3 contractors= quick deployment.

## Benefits

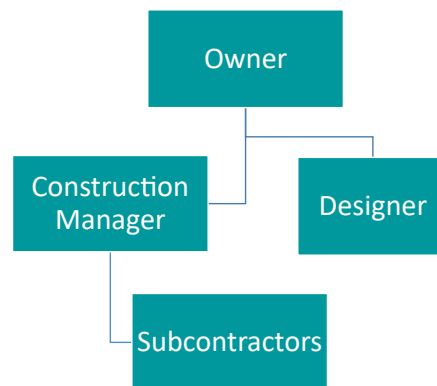
- Can select CM on qualifications basis, trust/relationship.
- Deals well with complex and unknowns.
- Early CM involvement for design and costing input (real time), aware of potential challenges and costs.
- Collaboration.
- Schedule certainty.

## Prime Consultant's Perspective

- Variables; demolition; renovation; uncertainty;
- Select GC based on quality.

## Architect's Perspective

- Having GC on early assists in constructability and costs as GC brings current market experience.
- To ensure a competitive bidding process, require multiple bids from subcontractors for all the major disciplines/trades.
- Tendency to default to design-bid-build mentality and not bring true benefits of constructability.
- To ensure transparent accounting of project cost, require an open-book policy so that you can see line items for overhead costs, markups, and various contingencies.



- Few contractors fully understand the role of CM. Tendency to default to design-bid-build mentality vs. truly collaborative.
- Cost certainty comes with the cost of paying for the risk of fixing a price based on very preliminary drawings.
- Owners need to understand the range of accuracy only improves as more detail is provided. Cannot achieve 100% cost certainty on 5% definition of scope.

## Engineer's Perspective

- Constructability and design assist is key.
- 'Real-time' costing.
- Scheduling/phasing.
- Assisting on CM and sub trades selection; providing feedback.
- Large number of overlapping tender packages can lead to misalignment resulting in changes and additional costs for both design and construction team.
- Late or last minute changes can result in additional design costs.
- Constructability input is usually beneficial in meeting budgets and schedule while minimizing rework.
- Depending on the scope split of Tender Packages - they can result in several M&E trades on site and subsequent miscoordination of complex systems. (can be avoided by using Sub-CM).
- ideal for more complex projects where scope isn't clearly defined or a tight project timeline or a project where long lead delivery items are required to be procured earlier in the design and construction sequence.
- CM is a way to get into the building sooner as they can potentially break ground and start construction prior to the rest of project getting designed. This at times can cause consultants to carry larger safety factors to ensure that there is enough "slush" to accommodate any changes or nuances in the design.
- The negative impact of this is that there are likely associated cost impacts and are conducive to more change orders on projects.
- From a design production perspective, having multiple tender packages can really impact the design process as there is now a chance of specifications and drawings overlapping as well as resulting in larger design time and associated costs. Document control can really be very complex especially when handling documentation from several tender packages at once.

## General Contractor's Perspective

- Guaranteed money with little risk.
- Potentially pay more but high quality.
- Quality/qualification based selection to be clear on outcomes.
- Self perform generally at a higher quality.
- Value of CM.
- Risk allocation tool.
- QBS for team.
- Smaller vs. larger firms.
- Self performed cost recovery mechanism.
- Incentive to self perform.
- Successful CM's are not heavily weighted towards costing, but strength of team members.
- Allows for collaboration and early involvement of trade partners.
- Allows for creativity and innovation, but often without a cost incentive for the CM, which may limit motivation. A clear expectation at time of tender balanced against a reasonable fee/procurement scoring may alleviate any complacency.
- Important to pick strong and experienced CM partners. Many smaller GC's see it as no risk, guaranteed money and don't provide the anticipated level of service.
- There are considerations or incorporations that can be included into contracts to better explain expectation and the role of the CM.

- If the right CM isn't selected it will not bring value to the project.
- Contractors can treat these projects like cash cows -over inflate resources to charge back.
- Owners typically still award based on LOW percentage fee rather than competencies and experience - therefore it is still a race to the bottom.
- Owners often do not get the "A" team as these projects can be deemed less risky.
- Typical CM contracts are now being written like Stipulated Price. Fixed GC's and Fixed OH costs therefore pushing more risk to the GC.

## Owner Perspective

- Very good for unknowns, renovations or where outcome is not clear.
- Not necessarily used correctly by public owners.
- Having consultant input during selection is helpful.
- Having consistency with CM throughout all phases is effective.
- Needs to be clarity by both the owner and the contractor over the role of the CM.
- Can pose the most risk for warranty and cost management if CM's do not offer new ideas/innovation to make the project more cost effective.

## Key Procurement + Contracting Considerations

- Qualifications based method.
- Potentially unknown of what end goal is.
- Phasing depends on complexity of project.
- Collaboration and trust needs to occur.
- Consultants can assist in selection of QBS.

## Advantages

- CM and Architect selection based upon qualifications.
- Projects can be delivered at accelerated/"fast-tracked" schedule.
- CM involved in budget development.
- Owner can select sub-contractor.
- CM responsible to deliver the project on budget and on schedule.

## Disadvantages

- CM has no contractual responsibility/control with sub-contractors.
- Final price not established until bids are received.
- Owner must manage multiple contracts.
- High level of Owner involvement.
- Higher Owner risk since the Owner holds contracts.

## Core Principles

- 'Ramped up' construction management; Comes from lessons learned on a CM project.
- Collaboration depends on the attitudes of those participating in it (need mutual respect, trust and open communication).
- Need to develop a sound and complete business case with clear outcome and specifications.
- The right IPD contract can enhance positive behaviour. Key decision is who is included in signing and the "rewards/risk" pool.
- Entire team establishes project goals, objectives and solves issues - Collaborative decision making.
- Financial transparency among parties.
- Ultimate "team approach." Requires all parties to the contract to dedicate the appropriate resources and staff throughout the project - potential for shorter project schedule.
- Requires a very engaged owner with a collaborative team.

## Considerations & Challenges

- Can be difficult when council and public want cost certainty.
- If not understood, owners can feel like they are giving something away.
- Profit pool can be mismanaged, which can cause distrust. Need a clear understanding how profit pool is used/distributed.
- Corporate memory and/or lack of sophistication/experience can hold owners back from utilizing.
- Requires a very involved owner.
- Newer delivery method, therefore not everyone is familiar with it.
- Some contractual issues to be addressed.
- Need right partners with the correct financial risk and reward.
- Requires shift in perspective; front end loading happens for a reason.
- Who to involve and when can be challenging.
- Need strong facilitator to move project forward.
- Risky to all parties involved when we do not know who our team will be when project is being procured.
- Sticking to first principles, outcomes and drivers requires discipline.

## When To Use

- A number of GC's now have experience utilizing IPD.
- Large enough scale - ~>\$10M?
- Publicly prominent projects.

## Benefits

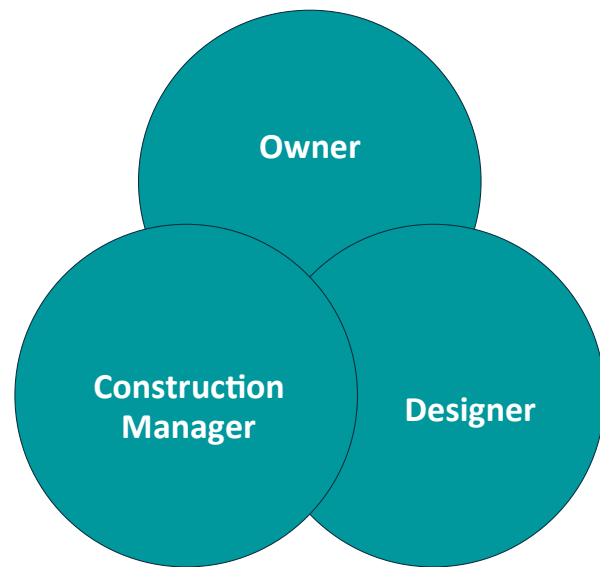
- Innovation; lean practice; high functioning teams; earlier cost surety through risk allocation;
- Can establish a strong group early on.
- Open dialogue early on.

## Prime Consultant's Perspective

- Enhanced opportunity to drive innovation and efficiency.

## Architect's Perspective

- More in driver's seat.
- Better access to information to make decisions.
- Requires a very heavy investment in facilitation, agreements, meetings and administration. Big Room has become big cost.
- Very few standards on how to establish chargeable costs and calculate overhead. Profit being buried in charges -need to align more with prevailing standards for calculating chargeable costs from other countries.
- Lack of understanding of role of architect towards the public good, making unilateral design changes that are costly and now owned ("pain") by all in the IPD pool.
- Proponent profit tied to project schedule means that do not get their profit till long after construction is completed. By the time construction starts 70 - 80% of architects and engineers scope is completed and 100% is used for the basis of budget validation.



## Engineer's Perspective

- Phasing tied to scope. Scope is clearly defined throughout the process which limits the risk.
- Involving the right people at the right time to allow for sharing of ideas and collaborative approach to design and construction.
- Better integration between design team and construction team.
- Need LEAN understanding for design and shift in mentality. TRUST is key amongst all team members.
- Need to solicit all options and innovations during design phase.

## General Contractor's Perspective

- Relinquishes some of the control.
- CM2 (squared).
- Stronger and healthier budget.
- More influence early. Design to detailed budget vs. budget detailed design.
- Hard to entrust profitability to others.
- Get a lot of the benefit of a CM, with a financial incentive for the project team to push and leverage innovation.
- Typically start with a higher budget. The end cost may be a misnomer, as it was a cost arrived at by 'flushing out' a conservative budget.
- Teams cannot be hired in isolation of one another – don't force a marriage.
- IPD does allow for selection of teams based on people and individual experience, rather than ability of the firm. You have a strong chance of getting the right people in the room.
- If set up well, and timelines of individual parties are respected (ie. not everyone in the big room every time), you can keep the attention and motivation of the team and find a collaborative approach to problem solving and design advancement. Mitigate risk of too many participants in decision making process bogging down insignificant items.
- Need a knowledgeable client to be able to understand budget iterations, and hold teams cost accountable.
- Client involvement is much more involved than other models. Need to ensure the right client representative, not necessarily person appointed by committee.
- Delivery method is still quite new and not as understood as more traditional methods.
- Typically less fee for the General Contractor and Consultant.
- Fees are at risk for all parties so may not be a priority for all consultants or trades.
- Can stretch out planning and Precon too far. Finding a balance is important.
- CCDC has a contract now available but seeing too many hybrid/amended versions which adds complexity and potentially cost.



## Owner Perspective

- Ability to fix cost early.
- Challenged by lack of standard contract format.
- Clearly defined expectations and outcomes are a must.
- Opportunity to innovate and improve outcomes based on collaboration.
- Critical that the owners team are clear on their roles and are willing to be collaborative and be open. Must ensure operational user is engaged and included early.
- Problems after the project is complete can be an issue to get team buy in --- what happens with poor owner direction -- should the designer overrule?

## Key Procurement + Contracting Considerations

- Changing current public dialogue: "Lowest cost=best value."
- QBS for team members; less emphasis on fees.
- Qualification based submission.

## Advantages

- CM and Architect selection based upon qualifications.
- High efficiency delivery method.
- "Fast-track" process.
- Ultimate "team" project approach.
- Early involvement of not only CM & A/E but subcontractors for major trades.
- Owner risk is limited by team approach to risk/reward incentives.
- Success of team members is measured against success of project.
- Opportunity for cost sharing.
- Increased ability to deliver project within budget and schedule.

## Disadvantages

- Newer delivery method.
- Requires very involved and experienced owner.
- Some contractual issues to be addressed.
- Not well understood in Public sector - some challenges with respect to risk, particularly from legal teams.

## Core Principles

- Alternative approach to traditional methods.
- Encourages private investment in public infrastructure.
- Encourages a 'life-cycle- approach" to planning and budgeting.
- Partnerships are generally long term in nature (20-30 years).
- Increases industry collaboration.
- Potential for construction cost savings and faster implementation.
- Payments based upon contractor performance.
- Potential for preserved/improved levels of service.
- Drives innovation.
- Financial model is key.
- Owner needs to be clear up front with standards for building and life cycle post hand-over at end of term.

## Considerations & Challenges

- Potential for disagreements between parties.
- Potential for confused lines of accountability.
- Potential for bias in the selection process.
- Private partner may be motivated to reduce costs at the expense of the service quality.
- Why P3? 1) Need (School, road, hospital, etc.), 2) Money (don't have enough up front), 3) Risk Transfer.
- In the public setting, the client receives back a maintained building.
- In the healthcare segment, often buildings are not built to last past the contract term.
- Client can be too far removed from the design team.
- From an owners perspective, there is incentive to deliver the best project possible.
- P3s drive innovation at hyper speed.
- Public owner may be able to borrow money cheaper.
- Facility could be re-purposed at end of term.
- If physical changes may be required during life of the agreement, need to ensure the contract terms allow. Particularly challenging when extensive technology will be involved.

## When To Use

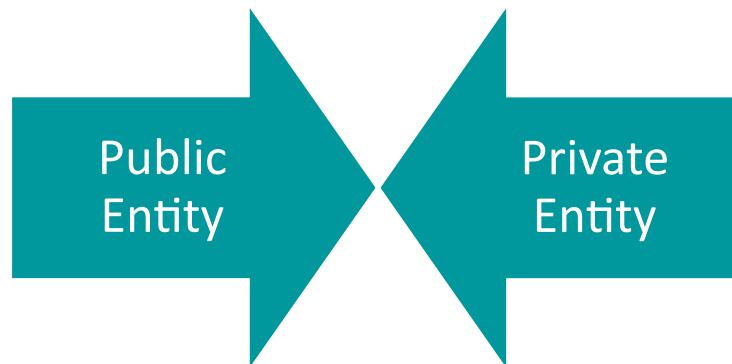
- GoC may use on projects over \$100M. City of Edmonton may use on projects over \$30M.
- Not the best model to use when the need exists for flexibility to cost effectively change/reconfigure the space/use within the building over time sheet.
- Better for fixed use facilities, not excellent for changing technology.
- Owners may want to move off capital balance

## Benefits

- Life cycle costing considered.
- Building will be maintained for the life of the term as defined in the contract.

## Prime Consultant's Perspective

- Usually led by a GC or the financier.
- Opportunity to drive innovation and efficiency if clear outcome and standards are articulated.



## Architect's Perspective

- Architect has less control; does the risk out way the reward?
- Architects get stuck in the middle of delay claims.
- Contractor and/or Owner typically insist on the use of their own format of agreement with design teams on design build work rather than using the industry standard forms of agreement. These forms of agreement typically contain uninsurable clauses and are in contravention of the AAA's Practice Advisory. These terms assign liability to the design team for the project schedule and the difference between the bid price prepared on preliminary drawings without full compensation and the final construction cost.
- P3 work requires design teams to work for partial compensation to prepare partially complete preliminary drawings which are then used by the GC to submit a fixed construction cost. The risk created by pricing based on incomplete information is carried by the GC and the design team and is ultimately transferred to the P3 owner.
- Requires a significantly higher fee structure and longer schedule as multiple firms must be hired to take the design to bid cost certainty.
- All the issues with DB can be found within a P3.

## Engineer's Perspective

- Due to the very formal relationships especially during the RFP phase, it is difficult to gauge what the end user really needs/wants.
- Engineers often work for the sub-contractors, and are further removed from the end users. Solutions are dictated by budget, not necessarily best practice.
- Life Cycle costing is a major consideration in the design and will benefit the owner.
- Life cycles costs are usually calculated as close as possible to the end of the contract. IE: for a 25 year project, a solution will be specified that lasts 26 years, while a 40 year solution would not cost much more.
- Unless a very tight outline specification is created, can lead to major disconnections between owner expectations and the final product as well as minimum code design.
- Too loose of an outline spec and the owner does not get even close to what they actually expected, even if the engineers advise against a contractor solution.
- Extremely fast paced, difficult to resource projects, especially in the RFP and early design stages.
- Outline specifications are often very prescriptive for the engineering world and do not encourage as much innovation as is sometimes thought. Often includes technical requirements more than performance requirements and functional requirements
- General, electrical and facility maintenance are all at the same table during the design process.
- No artificial separation between capital and maintenance budget. Much easier to use different technologies or installation practices that will reduce cost for the facility.
- In theory money is easier to allocate or flow between maintenance and capital cost budgets.
- Typically a more comprehensive review of the drawings by Facility Managers (FM).
- In a P3 with "open" statement of requirement or functional statements of need, innovation thinking and solutions are possible (see also cons for strict SOR).
- FM acts as a check or balance when compared to a pure design build.
- Cost of project split over 20 or thirty year concession.
- Architects and engineers work for the contractors. Best and brightest now focus efforts on meeting the statement of requirements in the most cost effective manner to maximize profit for their clients, (the client means the contractors and the concessionaire).
- Efforts are not focused on designing best buildings or best system. Arch and Eng spend effort to find holes and omissions in the documents and are basically trying to short the Owners.
- Statement of requirements are written years before construction. Does not allow for incorporation of new technologies and practices. SOR freezes the thinking that was prevalent at time of writing.

- In a P3 with tight or prescriptive statement of requirement or functional statements of need, innovation is stifled. The SOR becomes a check list and the end users get their check lists. Nothing more nothing less.
- Quantity of user group meetings are capped. SOR severely limits what can be incorporated onto drawings.
- Contractors are trying to maximize profit by reducing construction cost. Limitation is SOR. Quality is reduced to minimum code or minimum SOR.
- further pressure on the contractor to cut cost.

## General Contractor's Perspective

- The P3 model limits the number of GCs that can participate in the bid process due to the financial investment required.
- Allows for a thorough competitive design process (usually coupled with an honorarium), where the teams present costing as well as budgets during tender, so a complete adjudication can be completed.
- Typically larger more sophisticated subcontractors who can participate due to expertise and financial rating.
- An alternative to upfront spending for a capital project, with structured payback.
- Needs a strong set of bridging documents to ensure the owner gets what they intended.
- Does not necessarily shorten time to market as bridging documents are a significant undertaking.
- The delivery model works well in a variety of circumstances in particular large value projects.
- Supports owners/users who do not have or want responsibility for maintenance.
- Demonstrating compliance is an onerous process.
- Consulting Fees are lower. To ensure a minimal profit, design recycling is almost certainly required. New technologies that require more research or implementation will likely be rejected.
- Some design responsibilities are passed over to the contractor.
- Flow of money from capital to maintenance is never as easy or fluid as it is supposed to be. A \$100K addition than could save \$500K in maintenance will not always result in \$100K being transferred to the construction side. This puts

## Owner Perspective

- Project scope needs to be defined early and a clear functional program or requirements is required.
- Clarity over operations and maintenance elements (if applicable) need to be clear in the tender scope with end users/operator having input.
- Opportunity for a "value-add" component during design.

## Key Procurement + Contracting Considerations

- Price still influences decisions and design/construction quality.
- Need to be clear on operating and maintenance standards up front.
- If physical changes may be required during the life of the P3, care needs to be taken with the contract terms.

## Advantages

- Owner has a single contract for financing, design, construction, maintenance and potentially operation for a fixed period.
- Except for Owner changes, no change orders.
- Project schedule can be accelerated/ "Fast-tracked" if necessary.
- Owner involvement in the process is limited after selection and design.
- Budget control.
- No requirement for full capital budget at outset.

## Disadvantages

- Limited owner involvement.
- Difficult to establish criteria for selection of team.
- Process may not bring best designer, engineer and builder together for owner.
- Quality control is responsibility of P3 team, no checks and balances.
- If contract is not well developed, ability to make physical changes and upgrades over contracted life can be difficult and costly.