# Early Contractor Involvement (ECI)

## WG 194 – A Framework for ECI in Infrastructure Projects

Presented by John Lally, Kenneth Willems, Matt Trowbridge

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# Agenda

Submit questions throughout, to be addressed at the conclusion of the presentation.

- Background
- Overview and Need
- Working Group 194
- Guidance Framework
- Case Studies
- Procurement Alternatives (if cannot use ECI)

# Speaker Introductions

## Working Group 194 Members

**Kenneth Willems, MSc.**

- ✓Managing Director / Vuentica
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- ✓Marine and Offshore Projects
- ✓Risk and Contracts Expert
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**John Lally, PE**

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- ✓Sediment Remediation Expert
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**Matt Trowbridge, PE, SE, PEng**

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- ✓Marine Structural Engineer
- ✓Port Infrastructure Expert
- ✓Offshore Wind Ports
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# Background

What is Early Contractor Involvement (ECI)?

ECI is a strategy

*initiated by infrastructure owners (clients) towards contractors*

to *optimize values in project delivery and objectives*,

through *contractor participation and knowledge-sharing*

in stages of project planning and design, *prior to contract award*.

# Background

What is needed for Early Contractor Involvement (ECI)?

- Good faith
- Trust
- Transparency
- Equal treatment of all engaged contractors
- Clarity through clear rules of engagement
- Protection of intellectual property
- Fairness

# Global Marine Infrastructure Market

High Value Projects with complex disputes and years of litigation before claims are resolved.

- Panama Canal Expansion
- Macau Bridge, Hong Kong
- Afsluitdijk, The Netherlands

McKinsey 2017 report. Review of 500 global infrastructure projects above US $1 Billion.

Performance of large capital projects has been historically poor and prone to overruns.

Only 5% of projects were completed within their original budget and schedule.


Afsluitdijk, The Netherlands

# Arcadis 2023 Global Construction Disputes Report

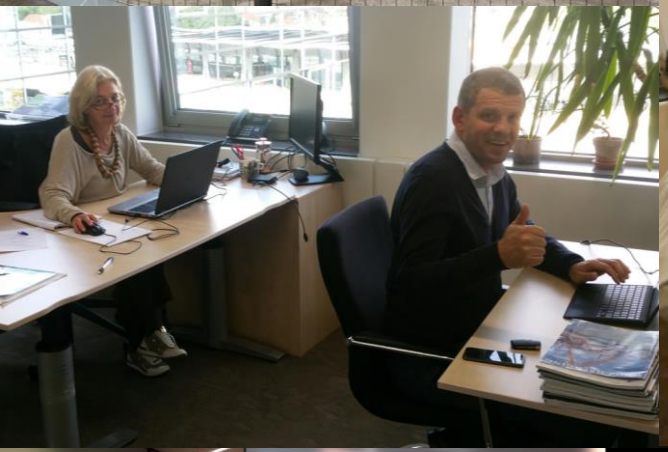
| 2022 rank | Most effective claims avoidance techniques *(2021 rank)* | Most important factors in the mitigation/early resolution of disputes *(2021 rank)* |
|---|---|---|
| 1 | Risk management *(2)* | Owner/contractor willingness to compromise *(1)* |
| 2 | Contract and specification reviews *(1)* | Contractor transparency of cost data in support of claimed damages *(3)* |
| 3 | Constructability reviews *(3)* | Accurate and timely schedules and reviews by project staff or third parties *(2)* |

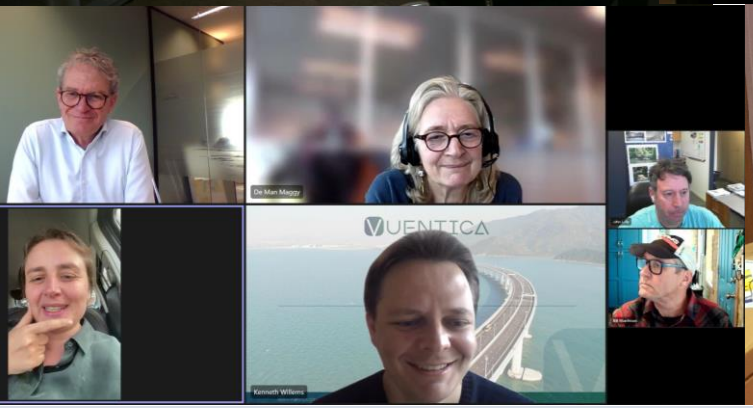
# Overview and Need

- Obtaining early contractor feedback is not a new concept
- Critical for marine projects that rely heavily on construction methods and equipment
- However, results are mixed – therefore the need for a framework was identified to provide best practices to maximize value and outcomes of ECI
- Working Group 194 was established to develop a framework for ECI best practices

# PIANC MarCom Working Group 194

## A Framework for Early Contractor Involvement (ECI) in Infrastructure Projects




# Working Group Members

## WG Members

### Client

- Luc Van Damme (OZConsult)
- Annemieke Sietses (Rijkswaterstaat)
- Wesley Veekman (Rijkswaterstaat)
- Esa Sirkiä (Finnish Transport Infrastructure Agency)
- Takahiko Kishimoto (Central Consultant Inc.)
- Taishi Yamamoto (Ports & Harbours Bureau, Ministry of Land, Infrastructure, Transport and Tourism of Japan)
- Niels Kiersgaard (Lindo Port of Odense)
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- John Barber (King's College London)
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- John Lally (Lally Consulting)
- Matt Trowbridge (Moffatt & Nichol)
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## Supporting Members

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- Marie Volatier
- Mona Mahabadi
- Marnix Vandenberghe
- David Ball
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WG 194 consists of 22 members & 6 supporting members (legal)

# Working Group External Reviewers

## WG Reviewers

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- Daniel Farina Melian
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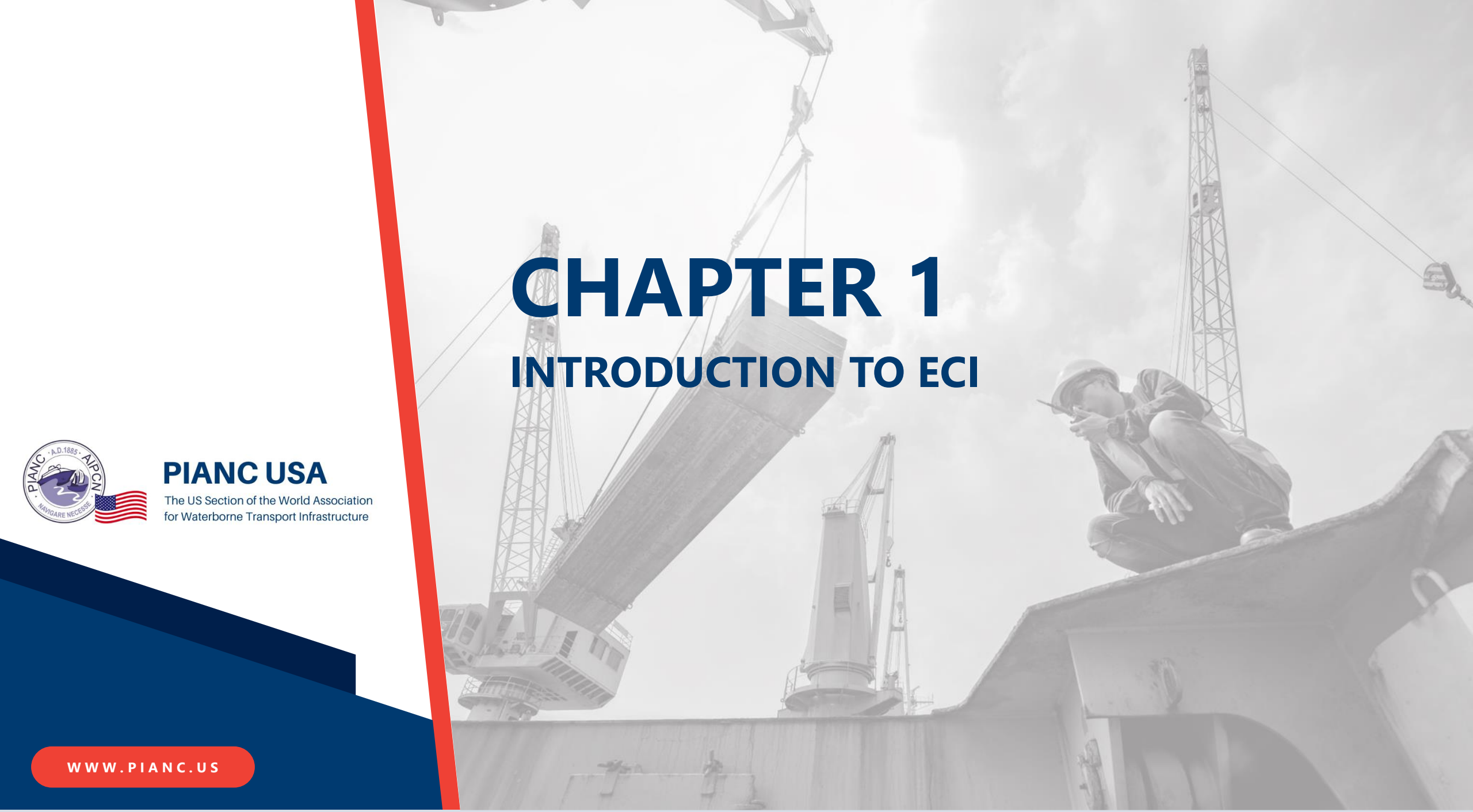
WG 194 worked with 36 reviewers



# CHAPTER 1

## INTRODUCTION TO ECI

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# Introduction to ECI - Definition

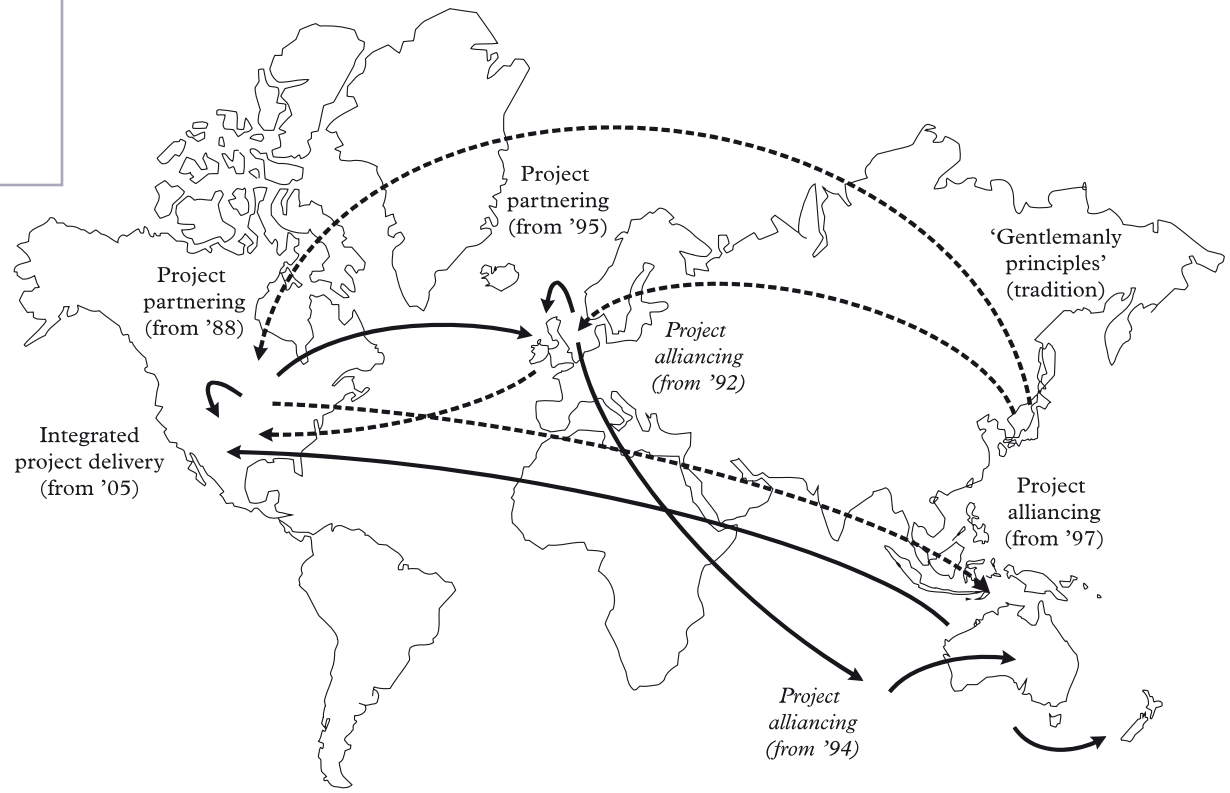
"Any strategy initiated by infrastructure owners towards contractors, key supply chain members and stakeholders with the purpose of optimizing values in project delivery and objectives through their participation and knowledge sharing in stages of project planning and design prior to execution contract award."

*WG 194 Definition of ECI*

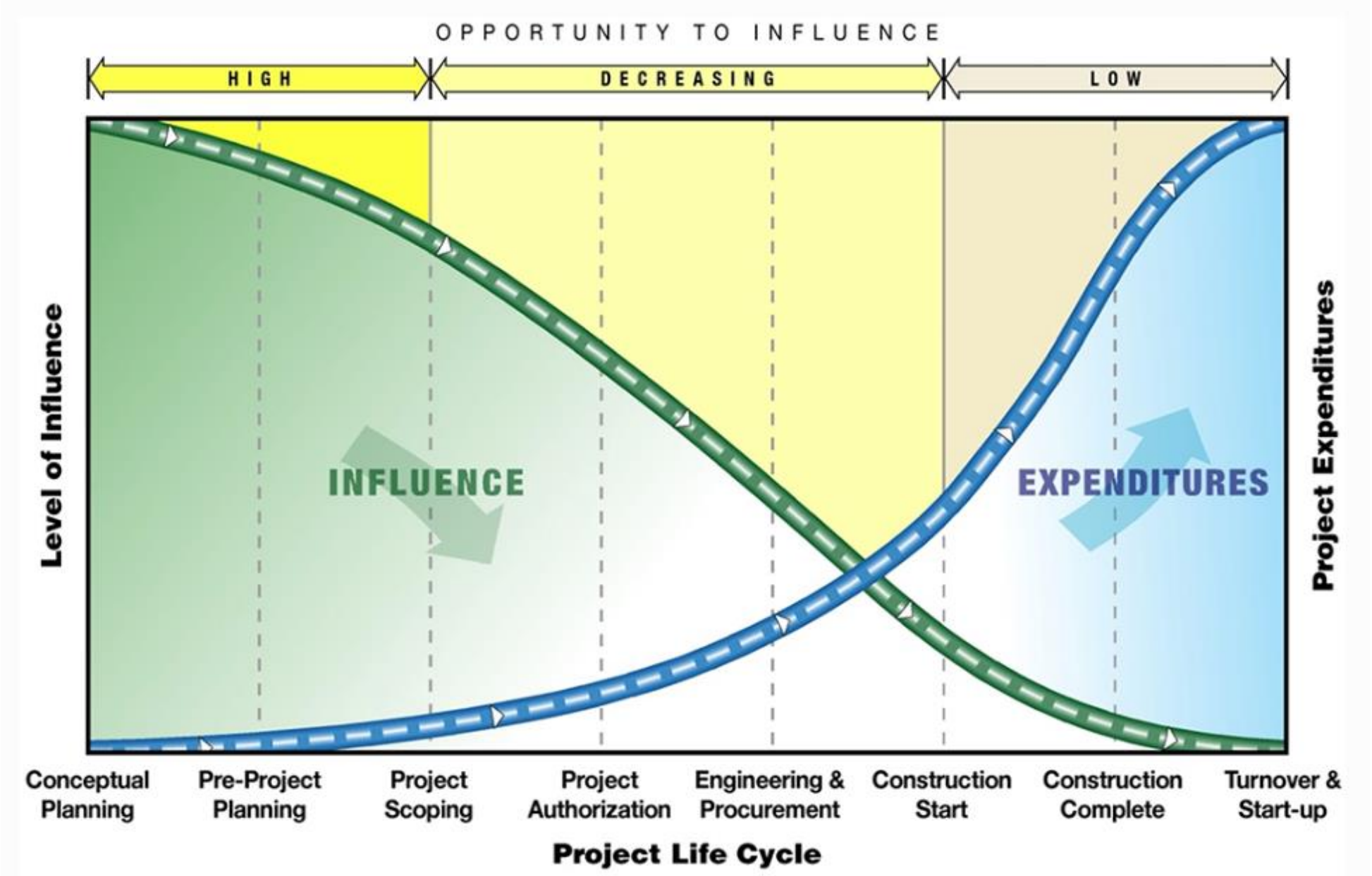
# Introduction to ECI - Content

## Introduction to ECI

1.1 Background: History & Context
1.2 What is Early Contractor Involvement?
1.3 Objectives & Structure of the Report




From Lahdenpera (2012)




Adapted from: Gibson and Hamilton (1994)

# CHAPTER 2

## FACTORS INFLUENCING ECI CHOICE & SETUP

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# ECI Choice & Setup - Content

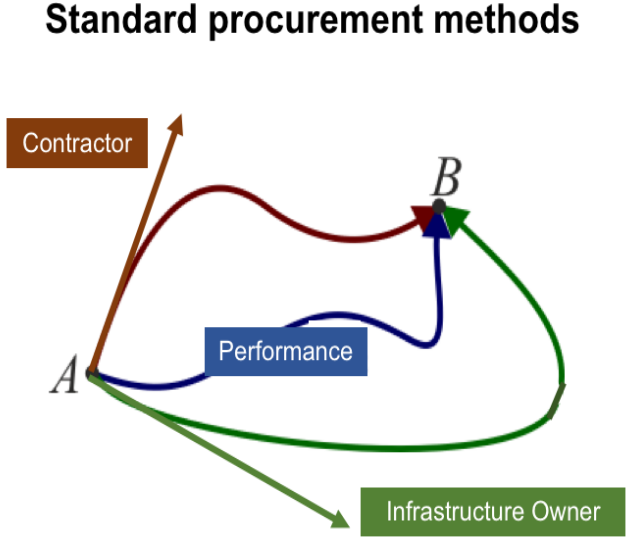
## ECI Choice & Setup Factors

2.1 Influencing Factors
- 2.1.1 Principal Benefits
- 2.1.2 Recurring Barriers
- 2.1.3 Project-specific Factors

2.2 Selection & Setup
- 2.2.1 Differing Formats
- 2.2.2 Setup Choices

## Traditional Transactional vs Relational Contracting

*Getting away from an adversarial approach*




Culture of confrontation, balance of forces, separate goals

# ECI Benefits

| | Performance-related | Cost-related | |
|---|---|---|---|
| Main Direct Benefits | **Costs and schedules** better defined early on | **Construction methodology** better defined early on | **Construction risk** better identified & risk better allocated early on |
| Other Direct Benefits | Design with improved **constructability** & innovative techniques | Greater **trust** & understanding between client & contractor | **Increased value for money** |
| Indirect Benefits | **Sustainability** included in design, construction & permitting | **More reliable & accurate business cases** | Relational contracting to avoid **disputes** |

# ECI Barriers

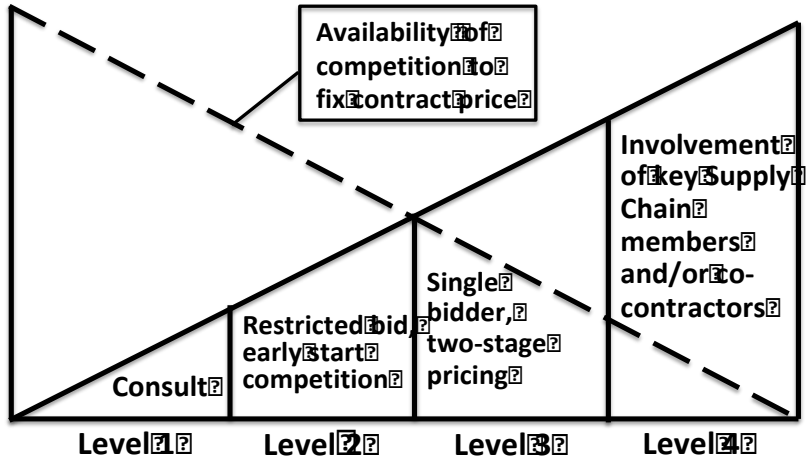
Recurring challenges for clients & contractors when applying Early Contractor Involvement

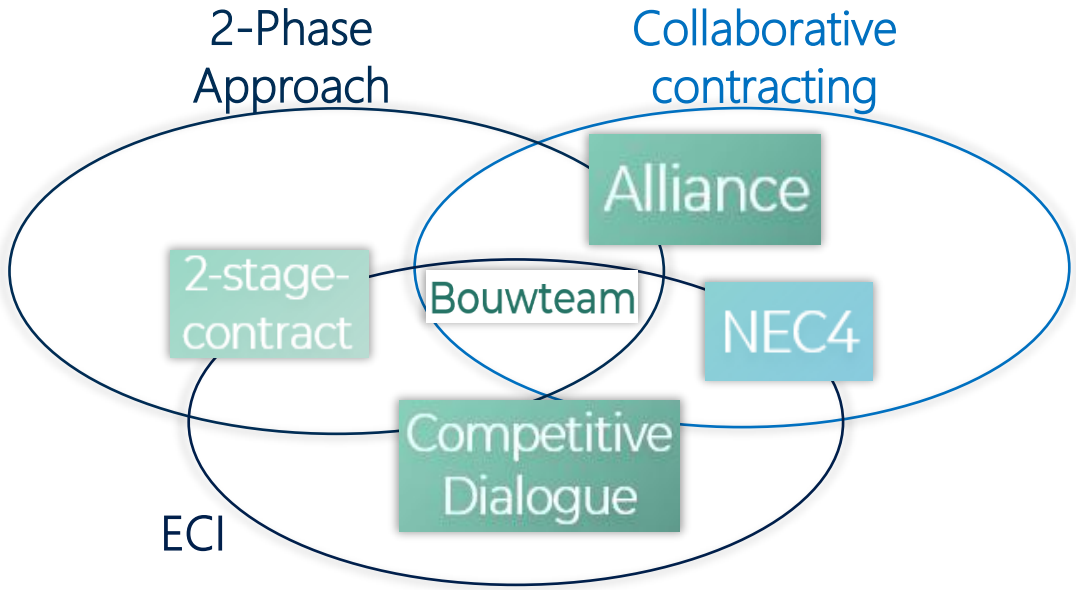
| | | | |
|---|---|---|---|
| Cultural | Accepted practice to **choose contractor** & **fix price** on basis of lowest price via competitive tender | Accepted practice not to pay contractors for **early efforts** & contractors to minimize divulgation | Accepted practice to opt for **'control' approach** leaving little room for creative activities |
| Client Capture | Procurement rules (**public** owners) and/or corporate governance (**private** owners) | Unclear / misaligned **liability** concerns | Assess **price reasonableness** without comfort of competition |
| Commitments | **Organizational commitment:** transparency, investing in different skills | **Financial commitment:** costs of early collaboration phase | **Offloading** of all **design risks** down contractual chain |

# ECI Choice & Setup - Selection

ECI can be related to collaborative contracting or 2-phase approach.
These methodologies can be defined by:

- Competitiveness (single / multiple contractors)
- Procurement process vs. contractual relationship
- Cut-off between phases
- Level of Client involvement
  - Team setup & coordination
  - Design collaboration
  - Key supply chain
- Level of Client participation in risk



# CHAPTER 3

## GUIDANCE ON ECI IMPLEMENTATION

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# Guidance on ECI Implementation - Content

## Guidance on ECI Implementation

- 3.1 Testing feasibility / Appropriateness
- 3.2 Selection of ECI Contractor(s)
- 3.3 Transparency, trust and confidentiality
- 3.4 Defining objectives & scope
- 3.5 Financial aspects
- 3.6 ECI at work / ECI in action / How to reap the benefits
  - 3.6.1 Performance specs vs. technical specs
  - 3.6.2 Risk management
  - 3.6.3 ECI as facilitator for innovative & sustainable solutions
  - 3.6.4 Environmental regulatory regime/permits
  - 3.6.5 Supply chain as ECI partners
  - 3.6.6 Stakeholders
  - 3.6.7 Role of consultants

How to **design** the ECI process.

How to let ECI **create value for the project.**

# Appropriateness

## ECI demands effort and commitment!

Complexity / uniqueness of the project

Focus on innovative methods

Competitors with right capabilities & attitude

Cultural context

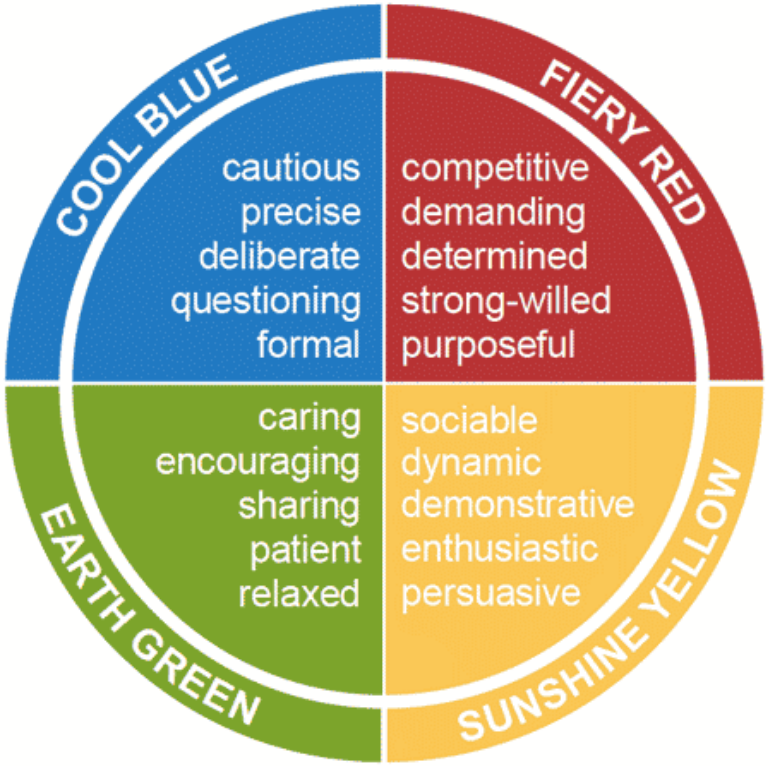
# Appropriateness

Ask yourself:


# Selecting Contractor(s)

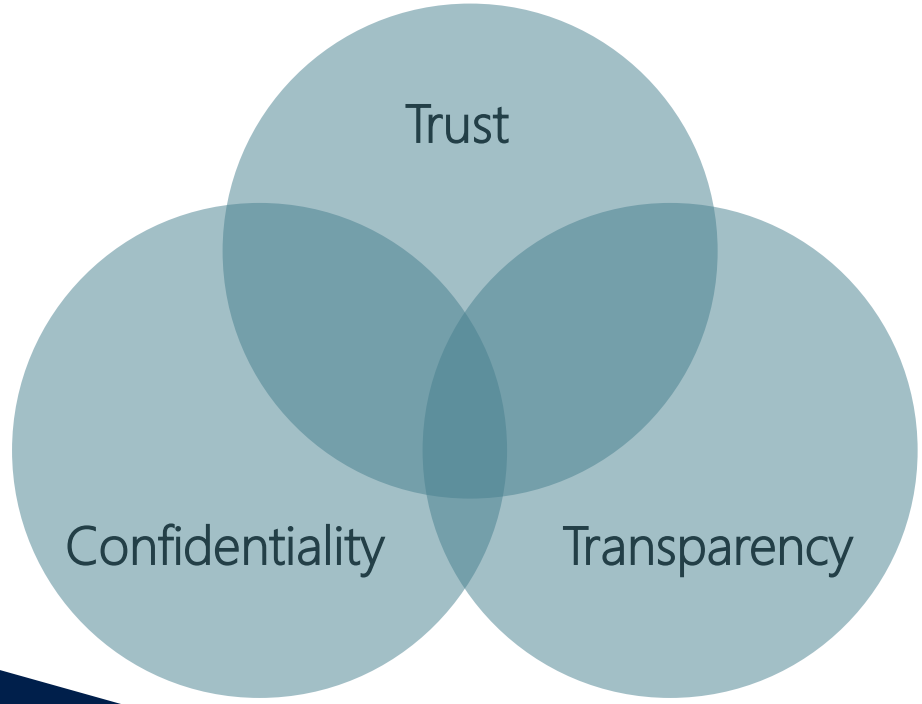
## To tender or to tinder?

- ✓ Right resources & competences
- ✓ Team analysis: team profile insights discovery, team roles Belbin…
- ✓ Award criteria: Price & quality component – MEAT/EMVI
  - Price component mandatory for public clients
  - Quality:
    - Collaboration
    - Setup ECI phase
    - Achieving project objectives
    - Project controls



# Transparency in Practice

# Guidance on ECI implementation - Trust

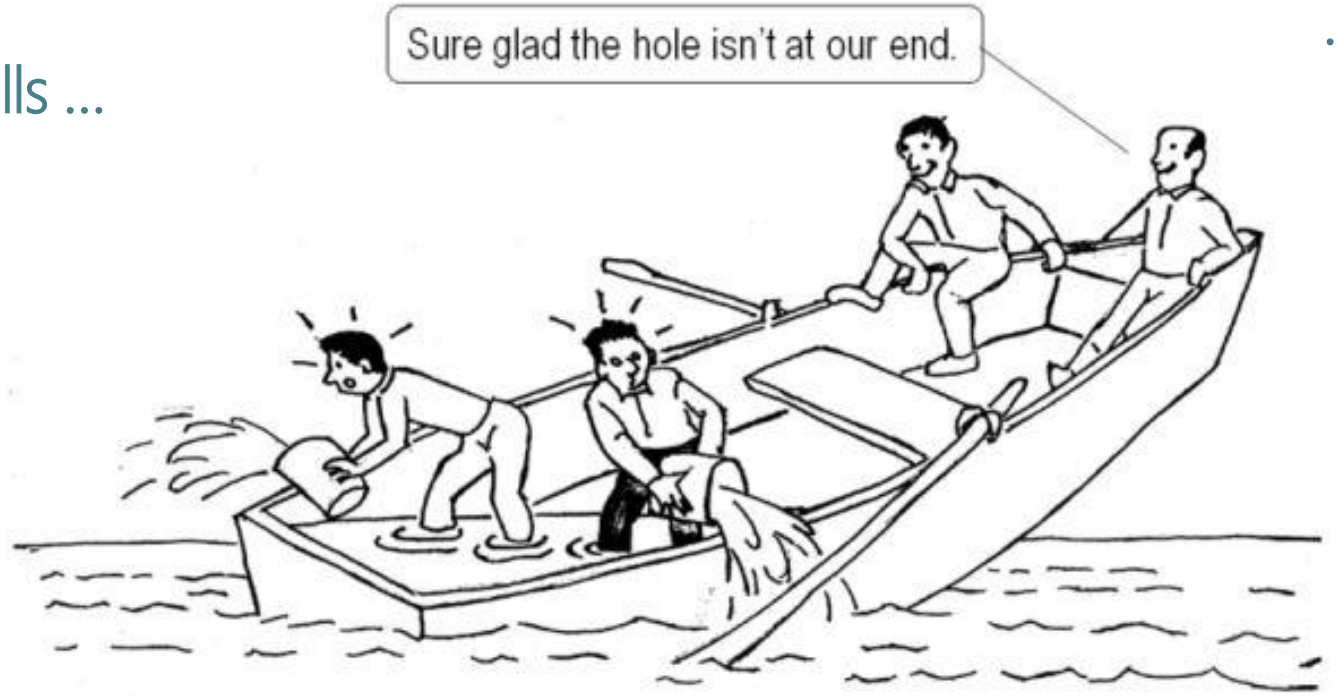



"Trust comes on foot but leaves on horseback".

Johan Thorbecke, Dutch politician 1848

# Requirements of the Parties Involved

Collaboration
requires soft skills …



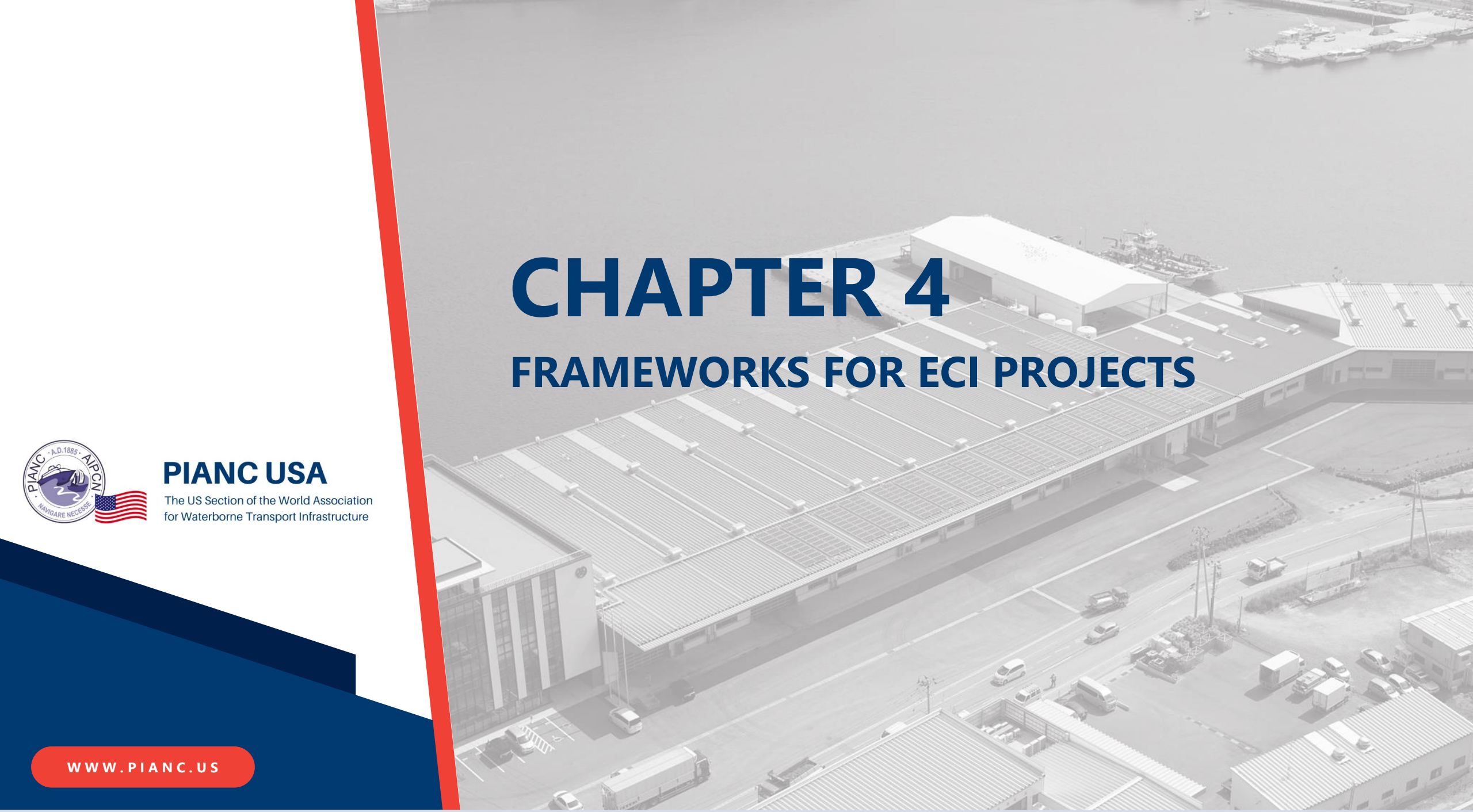

… and willingness to invest
in relationship building

# Guidance on ECI implementation - Feasibility

## Checklist: When is Early Contractor Involvement appropriate?

| Description | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Company culture, at which level are the characteristics below present?** | | | | | |
| **Client** | | | | | |
| Probity | | | | | |
| Transparency | | | | | |
| Equal Treatment of all engaged contractors | | | | | |
| Fairness | | | | | |
| Open communication | | | | | |
| Clarity through clear rules of engagement | | | | | |
| Protection of intellectual property | | | | | |
| **Consultant** | | | | | |
| Probity | | | | | |
| Transparency | | | | | |
| Equal Treatment of all engaged contractors | | | | | |
| Fairness | | | | | |
| Open communication | | | | | |
| Clarity through clear rules of engagement | | | | | |
| Protection of intellectual property | | | | | |
| **Contractors** | | | | | |
| Are ECI suitable contractors available to execute the project? | | | | | |
| **Design** | | | | | |
| The functional requirements are difficult to realise within the given budget | | | | | |
| Sustainability requirements are strongly involved | | | | | |
| The design should be innovative | | | | | |

| Description | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Budget** | | | | | |
| There is pressure on the budget | | | | | |
| Not all costs have been identified | | | | | |
| There is uncertainty with regard to specific costs | | | | | |
| **Construction** | | | | | |
| The construction methodology has been poorly defined | | | | | |
| The construction conditions are challenging | | | | | |
| Construction risk is unclear and badly allocated | | | | | |
| The transport situation is challenging | | | | | |
| **General** | | | | | |
| All parties involved are open for the ECI way of working | | | | | |
| There is a lot of uncertainty and risk in the project | | | | | |
| There is a financial solid business case for the project | | | | | |
| There is time pressure on the project | | | | | |
| There are a lot of different stakeholders involved | | | | | |
| The legal situation facilitates ECI | | | | | |
| A situation of 'client capture'[1] will not arise | | | | | |
| **Contractor selection** | | | | | |
| The assessment method for selection of the contractor is well defined | | | | | |
| The assessment method for selection of the contractor is clear to all parties | | | | | |
| Compensation for the losing contractor(s) has been included in the budget | | | | | |



# CHAPTER 4

## FRAMEWORKS FOR ECI PROJECTS

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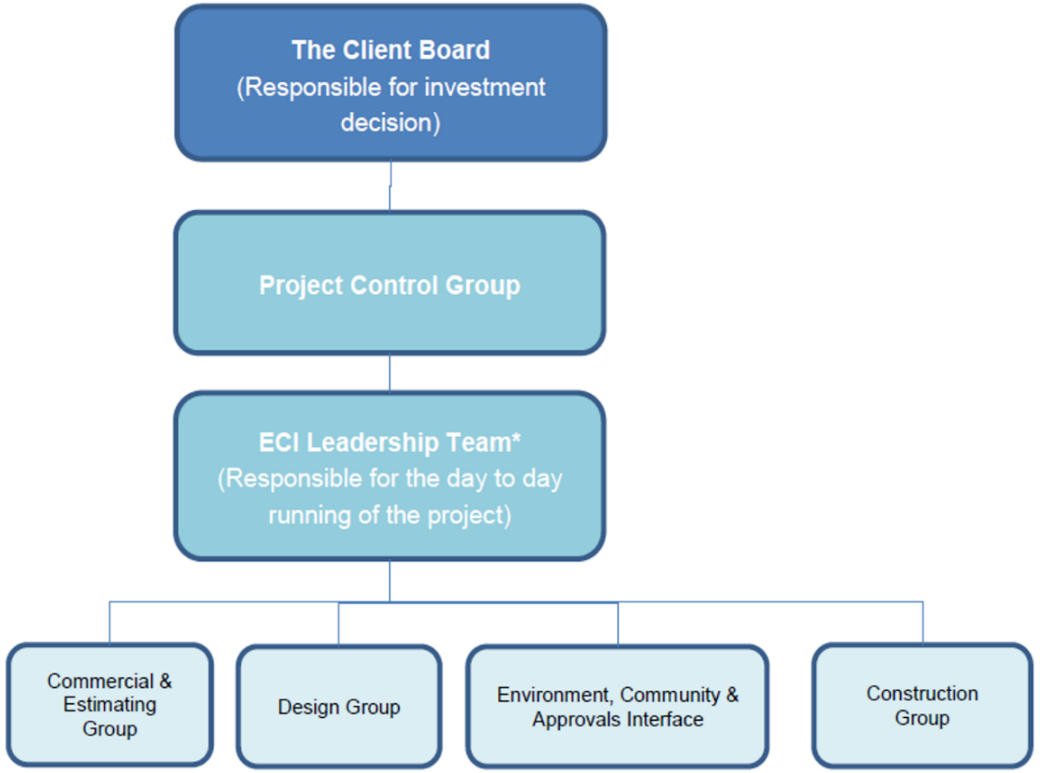
# Framework for an ECI - Content

## Framework for an ECI

4.1 Procurement Framework
- 4.1.1 Procurement Regulation – General Guidance
- 4.1.2 Compliance with procurement regulations
- 4.1.3 Incentivization

4.2 ECI Agreement
- 4.2.1 Analysis of relevant current Standard Forms

4.3 Management
- 4.3.1 Conduct
- 4.3.2 Approvals, Consents & Decision-Making
- 4.3.3 Knowledge & Information Sharing




*During the ECI phase, this team would be replicated for each shortlisted contractor.

# Framework for an ECI - Contract Forms

| Pre-Project ECI Only | Two Stage (ECI) Project | Project Partnering |
|---|---|---|
| • FIDIC White Book 2017 | • AIA A134 2019 | • NEC4 Alliance |
| • JCT PSCA 2016 | • NEC4 ECC X22 | • PPC 2000 |
| | • CCDC 30 – IPD | • PAA |
| | • Bouwteam DG 2020 | |
| | • AIA IPD | |

# Framework for an ECI - Contract Form Model

## AIA - IPD

- Project Type
- Origin/History
- Area of Usage
- Scope of Usage
- Parties
- Contract Documents
- Subcontracting / Early Supply Chain Involvement
- ECI Provisions
- Project Scope
- Budgeting method
- Pricing Mechanism
- Gain/Pain Scheme
- Decision Making Procedures
- Risk Management Approach
- Early Warning Register
- Insurance
- Collaborative Provisions
- Responsibilities
- IP Provisions
- No claims
- Liability
- Termination
- Resolution Disputes
- Resource
- Summary

| AIA – Document C191 – 2009 – Standard Form Multi-Party Agreement for Integrated Project Delivery – 2009 | |
|---|---|
| **Project type** | **Project Partnering type** |
| **Origin/History** | USA. Published by The American Institute of Architects (AIA). The AIA offers a wide range of standard form contract documents |
| **Area of usage** | USA with reported use in Canada. |
| **Scope of Usage** | Building |
| **Parties** | Client, Contractor, Architect, multiparty partner collaboration is provided for. |
| **Contract Documents** | Standard Form Multi-Party Agreement, General Conditions, Owner's Criteria, Target Criteria Amendment, Target Cost Breakdown, Project Definition, Project Goals, Integrated Scope of Services, Project Schedule, Digital Data Protocol (BIM). |
| **Subcontracting/ Early Supply Chain Involvement** | The Parties shall identify key Project participants such as separate contractors, Subcontractors, Consultants and suppliers critical to the definition and accomplishment of Project Goals and involve them at appropriate times for the benefit of the Project. |
| **ECI Provisions** | The initial phases are Conceptualisation and Criteria Design (§ 3.1.2). These are delivered under multiparty collaboration. As a minimum the preliminary evaluation shall include alternative approaches to design and construction & take into consideration cost information, constructability and procurement and scheduling issues. |
| **Project Scope** | The Project work plan shall set forth the process by which the Project Management Team proposes to develop a Project Definition consistent with the Owner's Criteria. The Owner's Criteria is set by the Client (Exhibit C). |
| **Budgeting method** | Exhibit AA provides the Target Cost Breakdown, a detailed itemization of the various elements of the Target Cost. At the conclusion of the Criteria Design phase, the Parties other than the Owner shall agree upon a Target Criteria Proposal, making all such adjustments to the Project Definition and Project Schedule as necessary. If the Owner accepts the Target Criteria Proposal, the agreed-to Target Criteria, including the Target Cost, shall be set forth in the Target Criteria Amendment (§ 3.2.1) |
| **Pricing Mechanism** | Target Cost. The Parties jointly develop a Target Criteria Proposal for the Client's final review and acceptance (§ 5.1). Set in a Target Criteria Amendment. In the event the Parties are unable to arrive at a mutually agreeable Target Cost or are otherwise unable to execute the Target Criteria Amendment, the Agreement shall terminate (§ 5.2). |
| **Gain/Pain scheme** | Upon final completion of the Project, if the Actual Costs are less than the Target Cost, then the Owner shall pay to the other Parties, as Incentive Compensation, a portion of the difference between the Actual Costs and the Target Cost. (§ 3.2.1) When Actual Costs for the Project exceed the Target Cost the Owner can specify whether or not it is required to reimburse the other Parties for any further labour costs incurred. |
| **Decision Making/ Project Management Procedures** | The Parties manage and direct the Project through their representatives on the Project Executive Team (PET), comprised of one representative from each Party. (§ 2.2.2) Decisions by the PMT shall be unanimous. If the team representatives are unable to reach a unanimous decision on a matter, any Party's PMT representative may refer the matter to the Project Executive Team (PET) for decision. Issues that are not resolved by the PET may be referred by any Party's PET representative for resolution under Dispute Resolution. (§ 2.2.3). |
| **Risk Management Approach** | The Project shall be delivered in a collaborative environment and shall endeavour to align individual interests with those of the Project. (§ 1.1.1) |

# Executing an ECI

## Setup & Process

Define expected level of detail & ambition

Define clear stage gates

- Reviews of pre-defined deliverables
- Especially in early stages supported by trade-offs
- Uncertainties to be gradually reduced

Define opt-out moments

Client to assess “key decisions” to be made and time to decide

Possible approach: sprints (**scrum methodology**), formal versus informal

## Flexibility

Contractual & organizational setup to allow room for

- Iterative development
- New insights

# Clear decision-taking

- ✓ **Governance** : project board / ECI leadership team
- ✓ Decision **criteria**
  - ✓ Transparent: communicated in advance
  - ✓ Weighing determined by Employer
- ✓ Decision process: clear & **timely**

## Objectives towards next phase

- ✓ **Dispute resolution board**
- ✓ **Protocols**: review process, escalation process, contractual communication system with early warnings

# Actively managing the collaboration

- ✓ Project Start-Ups & Project Follow-Ups
  - ❑ What do you keep / start / stop?
  - ❑ Collaboration assessment
  - ❑ Teambuilding events
  - ❑ Reporting & measuring progress in a collaborative approach: avoid complexity
- ✓ Game rules / Charter / Code of conduct
- ✓ Incentives

**TRUST**

# Pricing & Value for Money

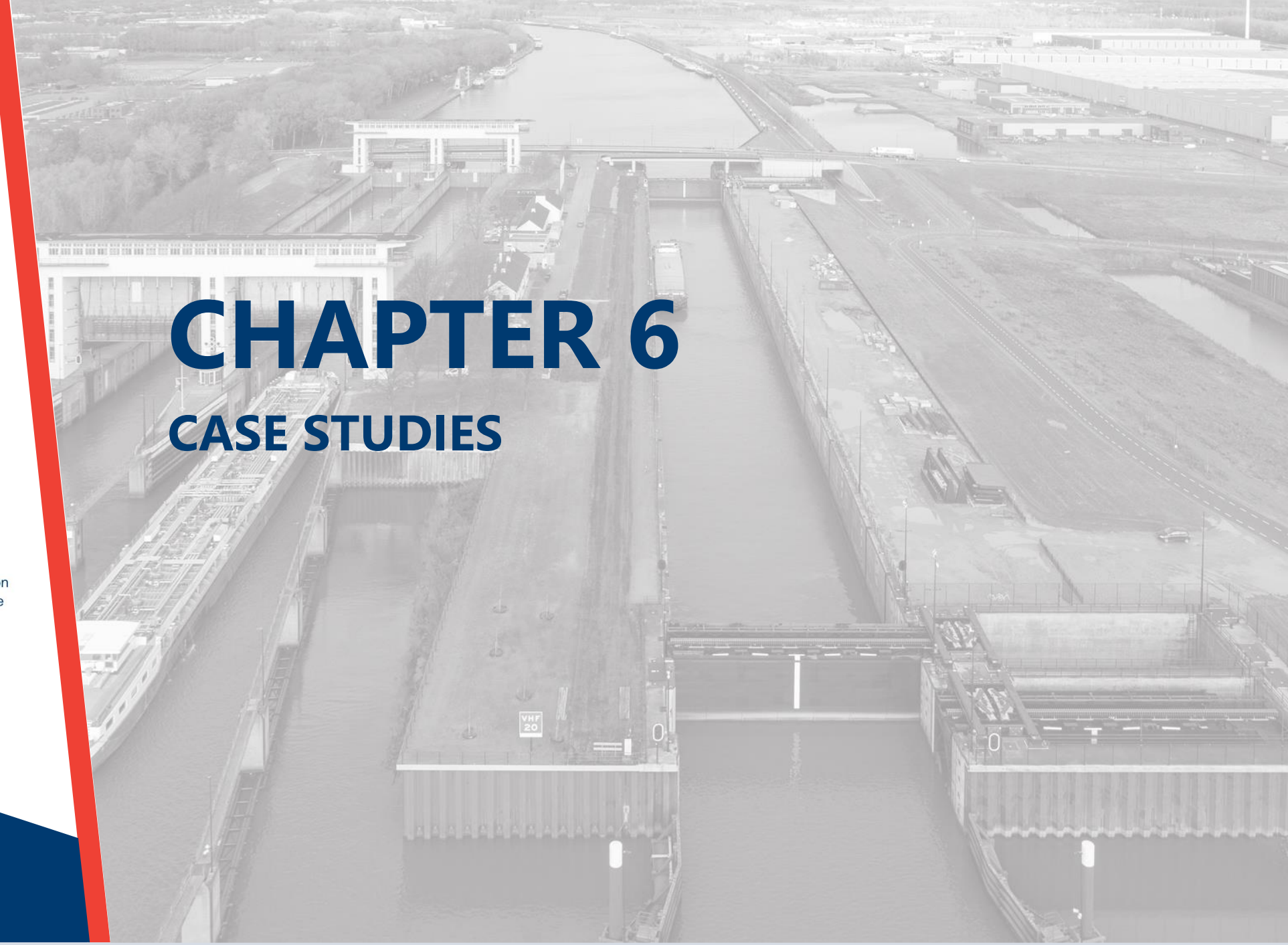
## Competitive versus non-competitive ECI

### Client's Effort & Commitment

- Willingness to improve (Functional) Employer's Requirements & ITT package
- Honest & transparent communication regarding budgetary constraints.
- Option: cost consultant, not only for final pricing but also to create trust on valuation of trade-off decisions linked to the ECI objectives.

### Pricing Setup towards VfM

- Open book, possibly target cost
- Clear & acceptable instruction how to evolve from ROM to detailed BOQ: level of detail expected in pricing input.
- Frequent feedback on pricing feasibility versus client budget.
- PQ/tender of ECI award: benchmarks and price indications
- Predefine indirect costs & certain mark-ups.



# CHAPTER 6

## CASE STUDIES

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# Case Studies

A2 Maastricht, NL

Odense Port, DK

Space for the River, NL

Melbourne Port, AU

Onagawa Fish Market, JP

# Procurement Alternatives

(If cannot use ECI)

- Some infrastructure owners cannot implement a formal ECI process as described in WG 194
  - Limited by procurement rules or funding requirements
  - Legal hurdles to draft new agreements
  - Staff not organized or experienced to deliver projects using alternative methods
  - Design Consultants not organized or experienced to deliver using alternative methods
  - Etc.
- Not a unique challenge for US infrastructure owners, however there is no "one size fits all" solution
- Will require organizational motivation / effort / momentum to overcome
- Are there ways to implement ECI best practices into projects to maximize value and improve project outcomes?
  - Trust / Good Faith / Transparency / Fairness
  - Formal or informal process to engage contractors early in project development and design phases
  - Evaluate alternative project delivery methods that may be allowed to identify an approach that maximizes ECI benefits (e.g. CMAR, CM/GC, etc.)

# Questions and Open Discussion

Report available at:

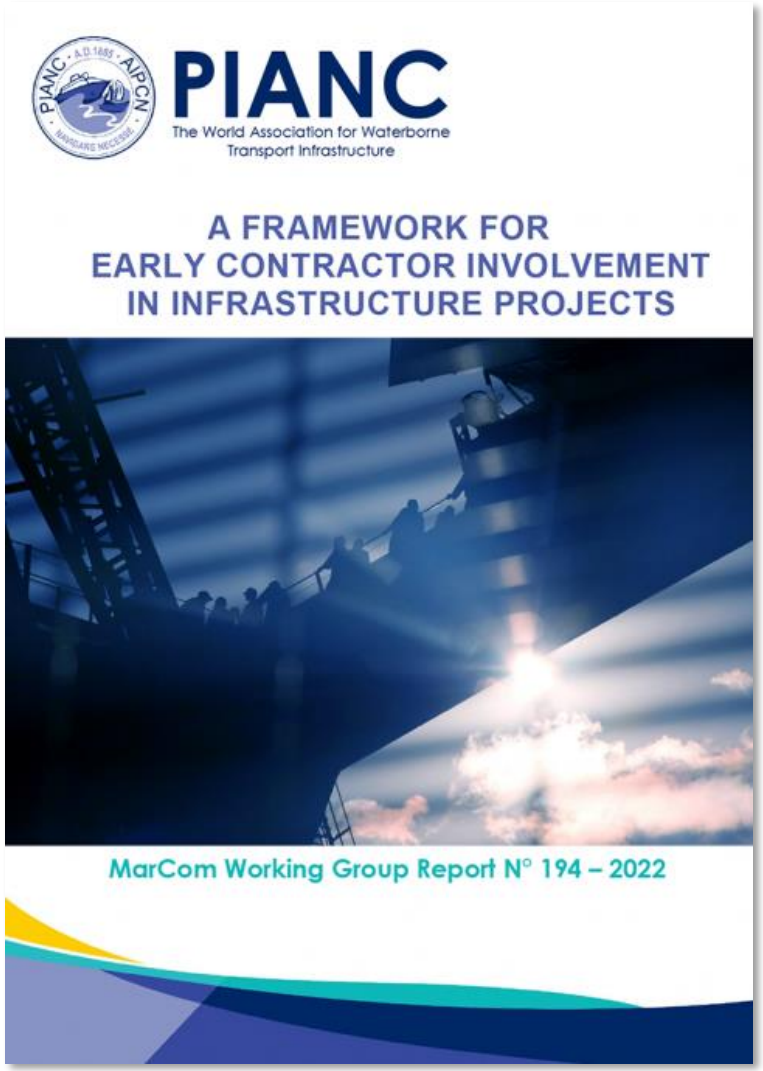
www.pianc.org/publication/a-framework-for-early-contractor-involvement-in-infrastructure-projects

*FREE for PIANC USA members*

*Available for purchase by non-members*

ECI LinkedIn Group:

www.linkedin.com/groups/12124474



# Thank You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