

**Workshop on Relationally Integrated Value Networks (RIVANS)
for Total Asset Management (TAM)**
- 3 November 2012, HKU -

RIVANS for TAM: A Game Changer for the Industry?

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OUTLINE

1. **State of Play** and needed **Game Change**
2. RIVANS – in IPM
3. Extending RIVANS to IAM
4. Hong Kong based study on ‘RIVANS for TAM’
(Research Activities and Interim Findings)
5. **Game Plan** for Moving Forward

Background – State of Play

- **Infrastructure Project Management (IPM)** teams (i.e. on planning, design and construction, up to delivery of the built asset), **often work independently** from **Infrastructure Asset Management (IAM)** teams (i.e. on operation, maintenance, usage facilitation and possibly demolition and materials recycling)
- Interaction and communication between the IPM and IAM teams are usually limited

Needed - **GAME CHANGE**

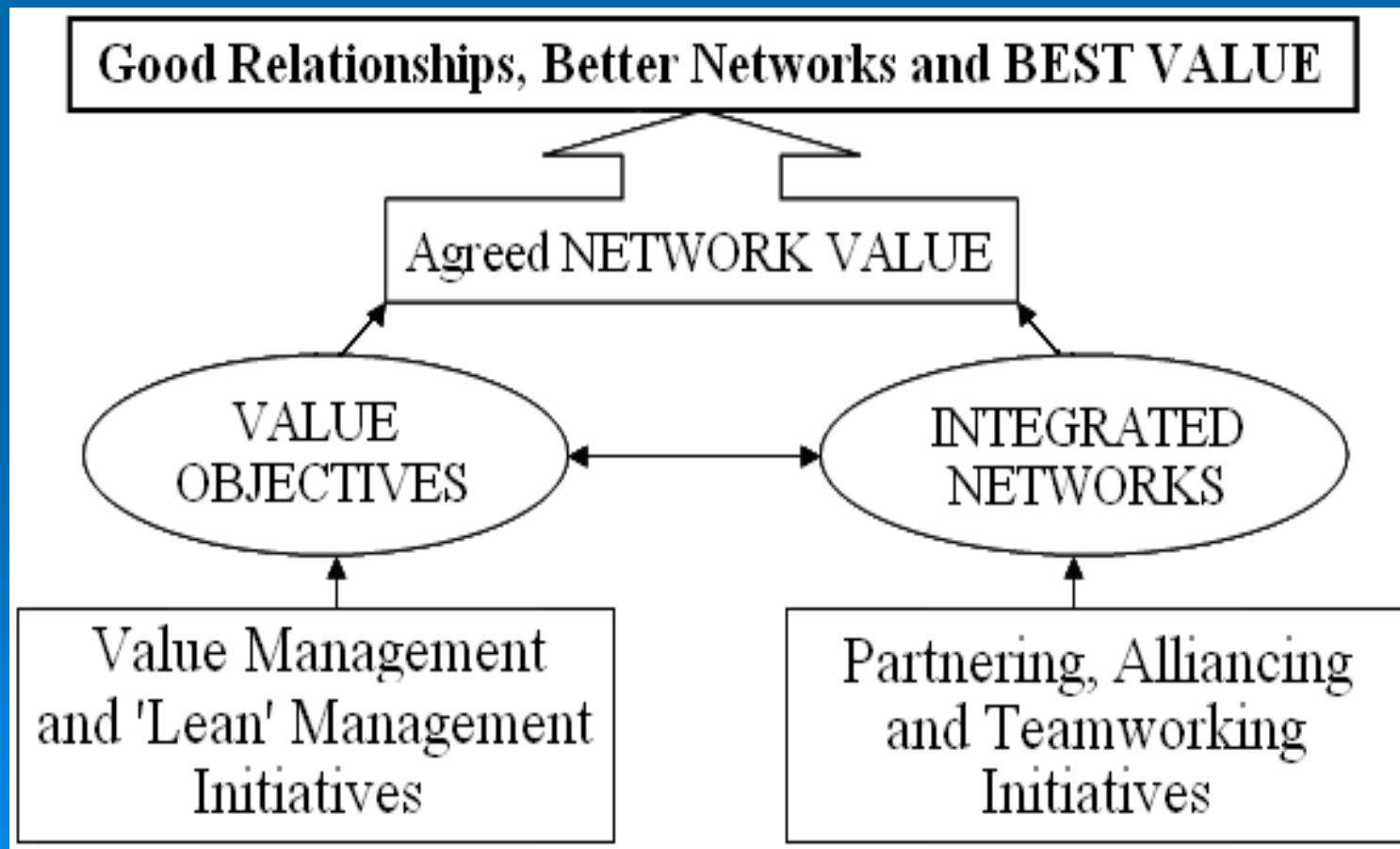
- End-user satisfaction, sustainable buildings, lifecycle costs, durable designs, designing and constructing for maintainability and deconstruction are **becoming more dominant drivers** in built infrastructure
- **Working relationships** between IPM and IAM will also become increasingly important
- **Synergies, mutual benefits and enhanced value** through closer supply chain integration and collaboration between IPM and IAM seem possible through better **knowledge exchange** and?

-Focusing firstly on IPM: A Tale of Two Targets - RIVANS

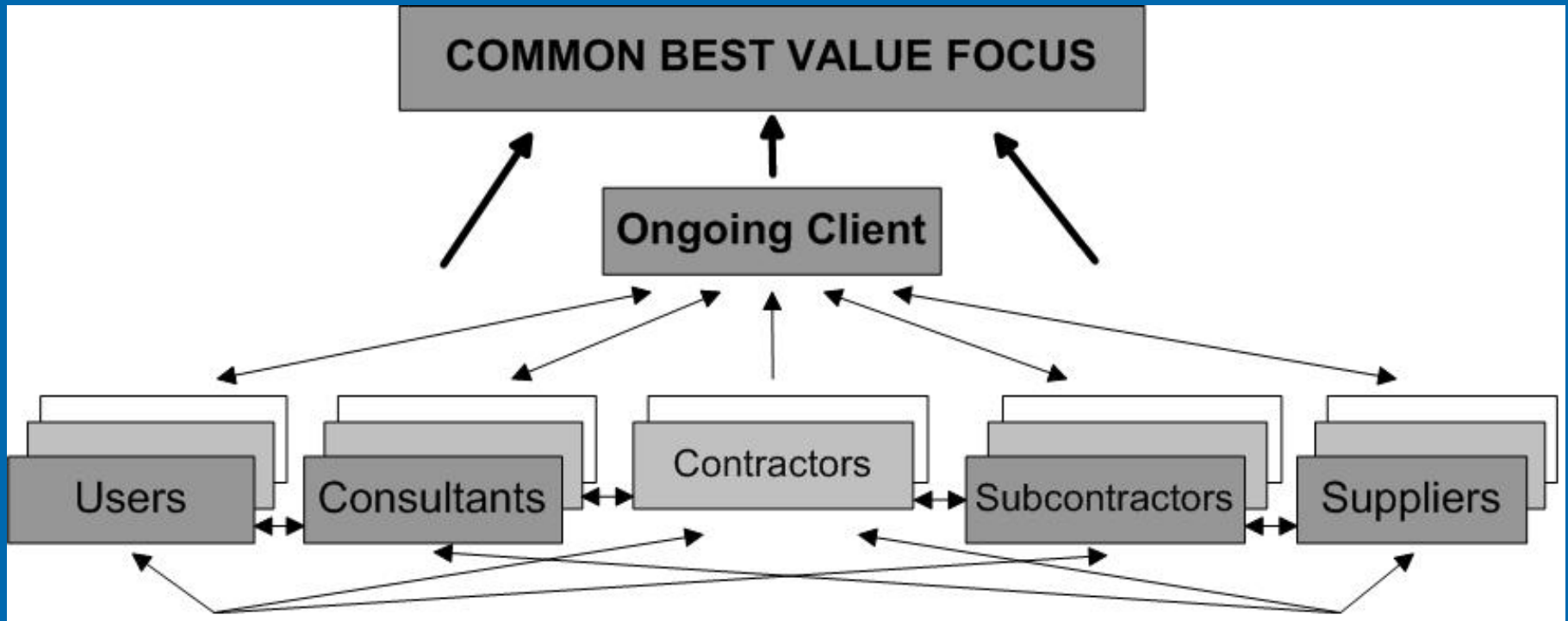
- Targeted: (1) **Integrated Teams** from 1990's and (2) **Value** from 1950's
- Relationally Integrated Value Networks (**RIVANS**)
 - proposed from HK from mid- 2000's as a holistic framework for 'relational' integration aimed at higher **overall value**
- Project participants engaged in **cross-linked value networks** with **common value objectives**
- **Relational Integration** extends *beyond* typical **structural integration** approaches such as **Design-Build (DB)** or **Design-Build-Operate (DBO)**
- **Added Incentive to 'integration' through 'focus on VALUE'**
 - so transcends Partnering, Alliancing, Framework Agreements and Integrated Project Delivery
 - but can overlap on some basics

RIVANS in IPM – Integrating the Two Targets

- RIVANS helps to **integrate teams** by **incentivizing** and **aligning participant value streams** that may **otherwise diverge** due to **conflicting value objectives and agendas**

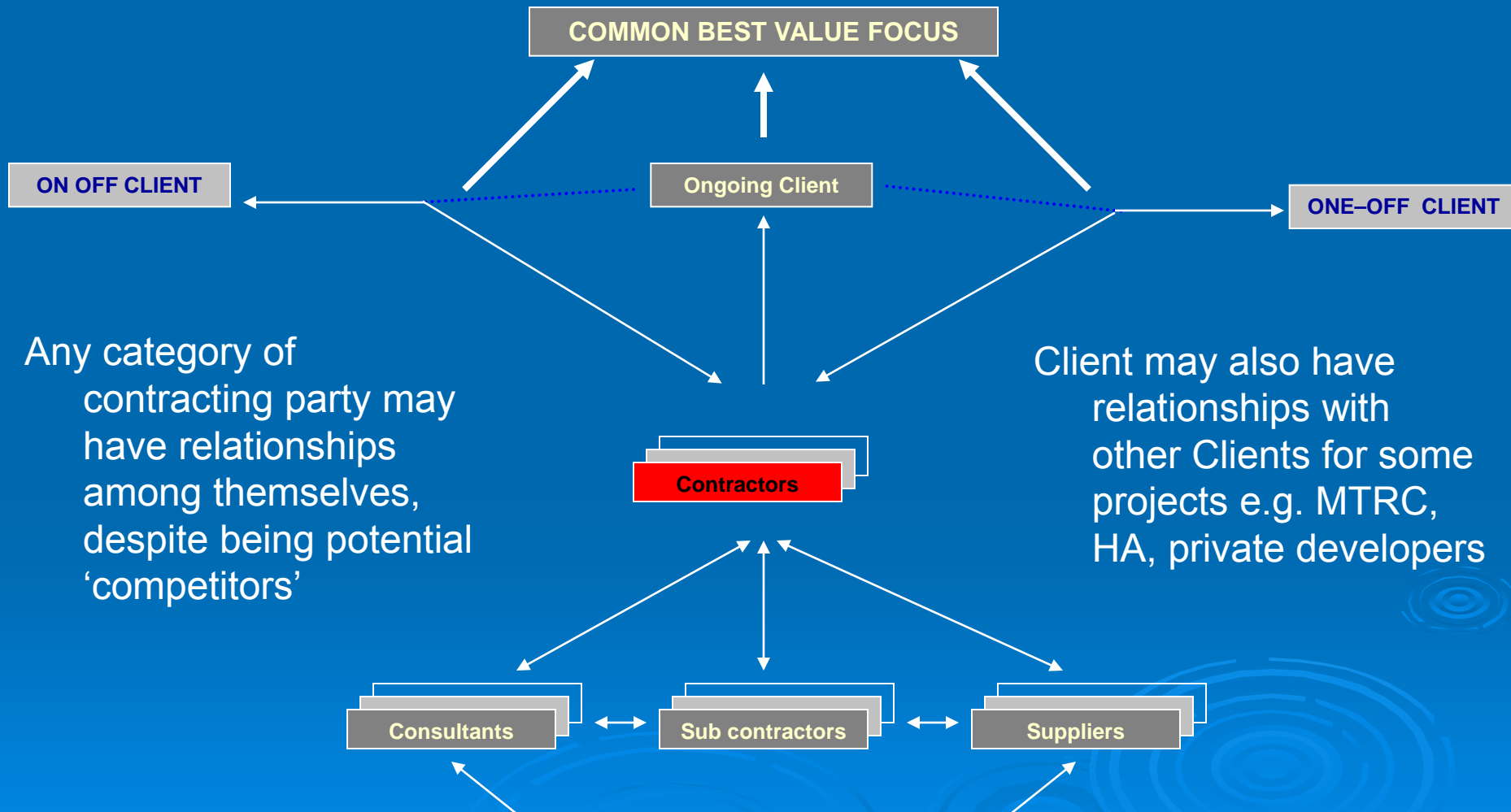


RIVANS of an 'Ongoing' Client - in IPM only



CAVEAT – retain 'competitive elements while co-operating:
CO-OPETITION

Conceptual Structure of a **Contractor's** Relationally Integrated Value Network (RIVAN)

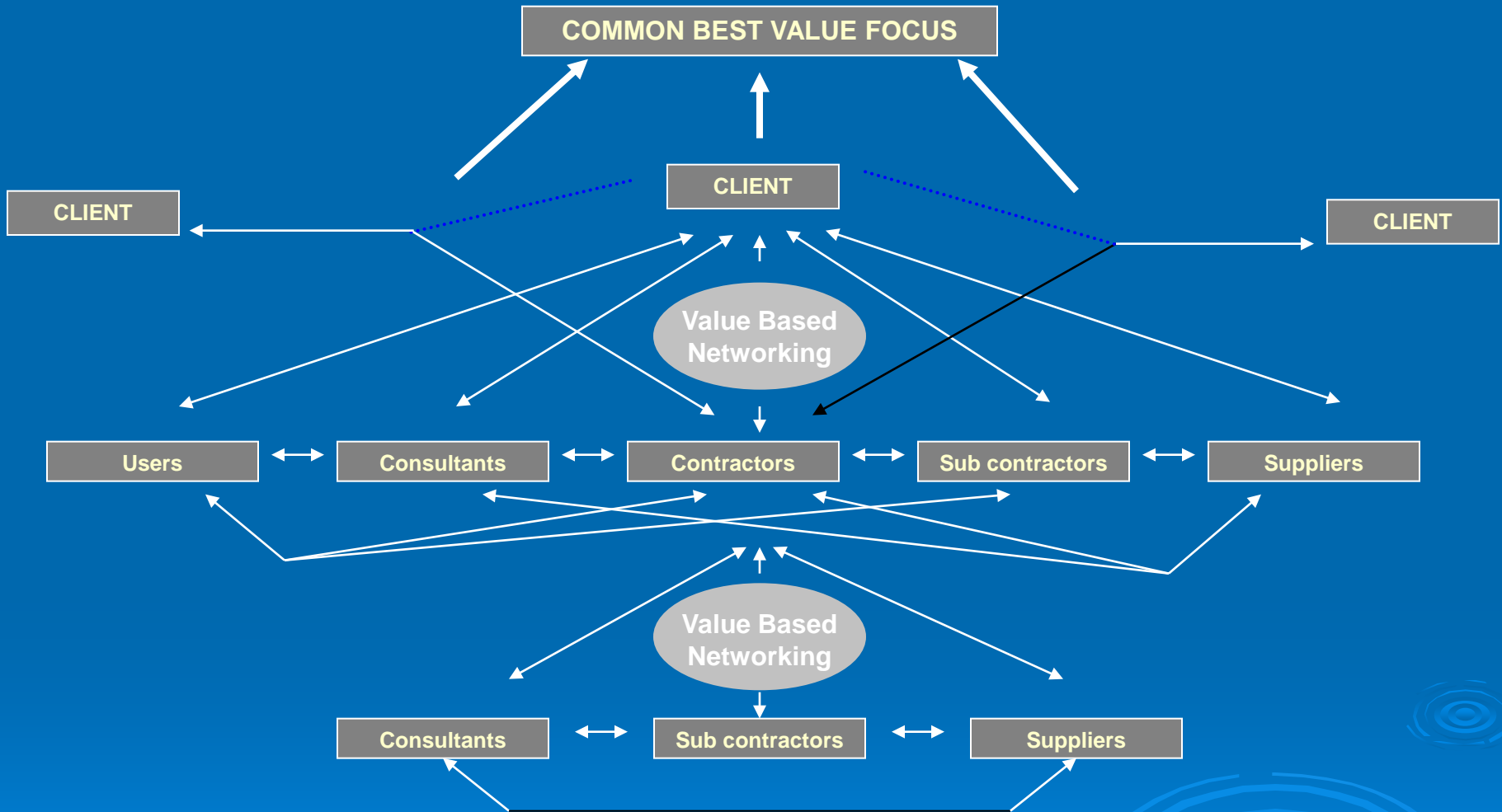


RIVANS Workshop I - Dec. '07

- Enhancing Performance and Overall Value through RIVANS (01 Dec 2007)



Industry Wide RIVANS



In the long term, there could be a **centralized Databank** maintained by a central body and/or large clients. May gradually introduce & increase (a) **shared information**, and (b) **performance benchmarking**

RIVANS Workshop II - May '08

- Boosting value by building RIVANS (31 May 2008)



Extending RIVANS to IAM

- aiming further (longer-term) at ‘Ultimate Target’?

*Next, extending the RIVANS concepts from IPM alone
..... to bridge across to IAM:*

- **Transactional forces** between IPM and IAM are **very limited** in traditional procurement modes - weak collaborative supply chain networks
- **Relational forces** may exist (such as with preferred sub-contractors), but they remain **fragmented and limited**, lacking well-defined common goals and values amongst all stakeholders → leading to **loosely-structured or improvised approaches** to managing stakeholders and supply chains in a given project

RIVANS for TAM

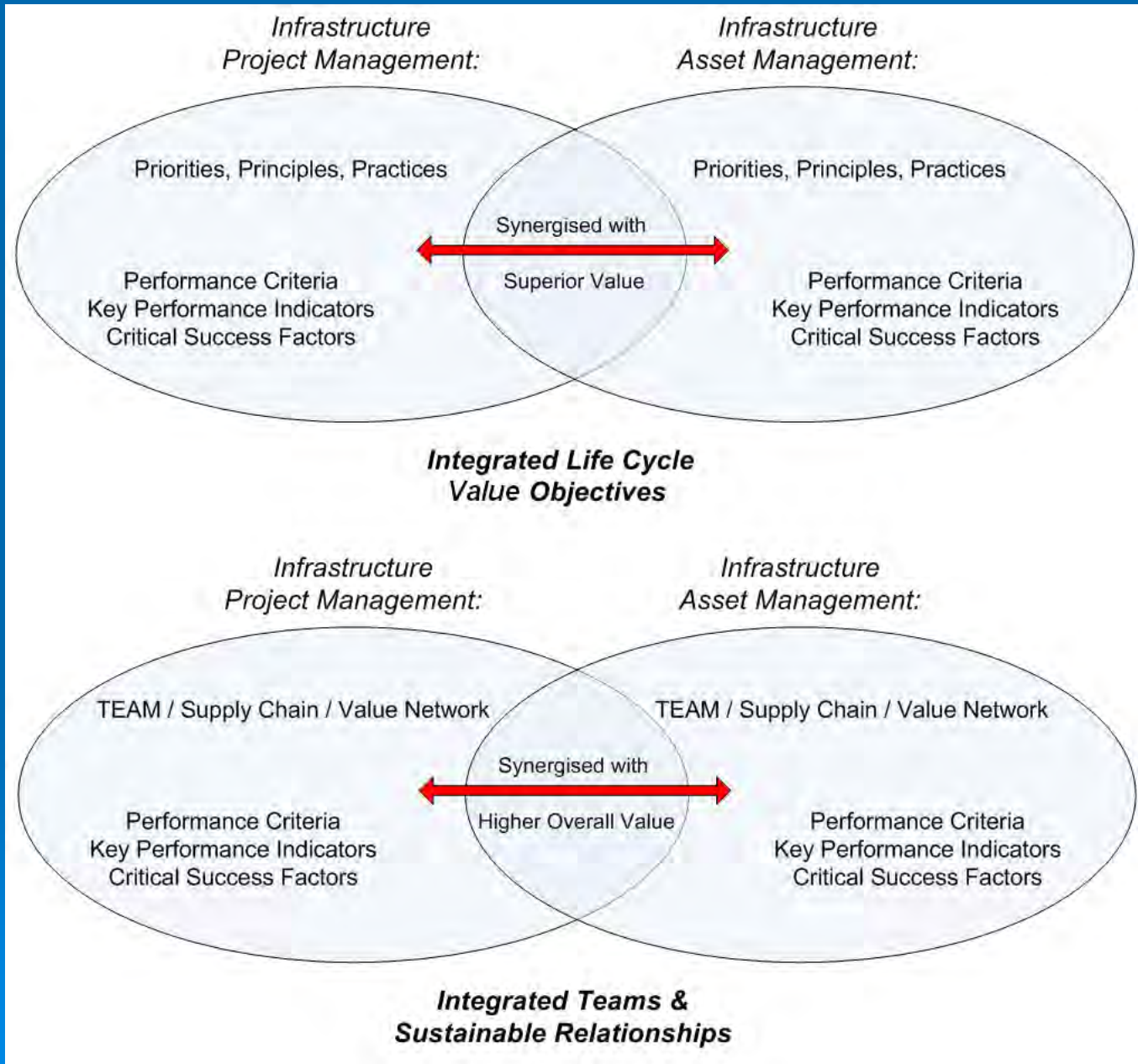
➤ *On-going research project:*

Relationally Integrated Value Networks (RIVANS)
for Total Asset Management (TAM)

➤ *Main aims:*

- (A) identify synergies and added value that can be achieved through well-structured and focused collaboration between those engaged in IPM and IAM;
and
- (B) develop concepts and working arrangements for RIVANS for TAM

Establishing Synergies between IPM and IAM



RIVANS for TAM – Research Progress in HK

- Research activities to date in HK:
 - i) **Questionnaire** to construction industry practitioners engaged in Design and Construction (D&C) as well as Operations and Maintenance (O&M) work
 - ii) Interviews with experienced professionals at organizations engaged in **both** D&C and O&M works
 - iii) **General interviews** with experienced professionals in the industry to comment on proposed concept, present situation, industry trends and potential barriers for the integration of IPM and IAM

Research Activities (i)

Q. 1) To seek expert views on: the level to which they agree that **better value/ synergies** can arise from the **integration of some specific activities/ items between D&C and O&M**

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree

1. Better Value/Synergies arise from sharing relevant information (e.g. building specs, as-built drawings, construction records, O&M (Operation & Maintenance) performance data, etc.) - between 'D & C' (Design & Construction) and 'O&M' teams

2. Better Value/Synergies arise from addressing Sustainability issues more effectively through above sharing of relevant information

3. Better Value/Synergies arise from similar procurement protocols between 'D&C' and 'O&M'

4. Better Value/Synergies arise from better (integrated) 'life cycle optimization' options/opportunities e.g. when Designers have more knowledge of O&M issues and Asset Managers have better understanding of design intent and material/ equipment choices

5. Better Value/Synergies arise from overlapping Supply Chain Networks delivering 'D&C' and 'O&M'

6. Better Value/Synergies arise from arranging for some common/linked resource pools and requirements (e.g. in material types, human resources) between 'D&C' & 'O&M'

7. Better Value/Synergies arise from expanded long term business opportunities

8. Better Value/Synergies arise from integrated team building (Human resource capacity improvement)

9. Better Value/Synergies arise from joint use of ICT tools (e.g. in BIM – Building Information Modeling)

10. Better Value/Synergies arise from integrated 'business continuity management' opportunities

Research Activities (i)

Q. 2a) Which **type of integration** (functional, relational or transactional) can potentially best achieve better value from the **specific activities / items between D&C and O&M** as listed in Question 1. (“Better value” implies better overall project whole life cycle value for all stakeholders)

Q. 2b) The **degree of importance** of the following **common goals** in achieving better value through synergies from the activities / items from Questions 1 and 2a

1. Common project goals such as cost, quality, time, safety	7. Long term network building
2. Effective and efficient information sharing	8. Relationship building and management
3. Lifecycle oriented project drivers, including overall sustainability concerns	9. Dispute minimization, management & resolution
4. Lifecycle oriented project outcomes, including life cycle benefit-cost profiles	10. Organisational capacity building
5. Efficient resource utilization & management	11. Shared corporate social responsibility
6. Expanded business opportunities	

1 = Not Important At All, 2 = Not So Important, 3 = Neutral, 4 = Important, and 5 = Very Important

Research Activities (i)

Q. 3) the level of importance of stakeholders for deriving better value by mobilizing/ exploiting synergies between D&C and O&M supply chains / value networks

List of stakeholders:

- | | |
|--|---|
| 1) Clients | 7) Users |
| 2) Main Contractors | 8) General Public |
| 3) Sub-Contractors | 9) Relevant Non-government organizations |
| 4) Designers and Principal Consultants | 10) Relevant Statutory bodies |
| 5) Other (Specialist / Sub-) Consultants | 11) Other relevant Government organizations |
| 6) Suppliers | 12) Project financiers |

1 = Not Important At All, 2 = Not So Important, 3 = Neutral,
4 = Important, and 5 = Very Important

Interim Findings (i)

- 104 responses received, with an average of 18.8 years of experience in the industry
- 46.2% predominantly experienced in D&C, 26.0% in O&M, rest are either listed as “others” or not specified
- Clients (32.7%); Consultants (23.1%); Contractors (12.5%); Sub-contractors (3.8%); Academia (6.7%); rest are either listed as “others” or not specified

Interim Findings (i)

- **Q1. Top three aspects** for highest levels of agreement that **better value/ synergies can arise** from, were:
 - 1) life-cycle optimization options and opportunities (4.6)
 - 2) sharing relevant information, e.g. building specs, as-built drawings and construction records (4.6)
 - 3) addressing sustainability issues (4.3)

- **Q2a. Top three aspects** that can **best achieve** better value for **each type of integration**:

Functional: Items 1 (60.9%), 4 (58.7%) and 9 (46.2%)
Relational: Items 7 (56.2%), 8 (52.7%) and 10 (52.2%)
Transactional: Items 3 (22.0%), 7 (25.8%) and 10 (23.9%)

Interim Findings (i)

- **Q2b. Top three common goals** in achieving better value with **highest degree of importance**:
 - 1) Common proj. goals - e.g. cost, quality, time, safety (4.6)
 - 2) Effective and efficient information sharing (4.4)
 - 3) Efficient resource utilization & management (4.2)
- **Q3. Top three stakeholders** considered **most important** for deriving better value by mobilizing/ exploiting synergies between D&C and O&M supply chains:

D&C: 1) Clients (4.7); 2) Designers and Principal Consultants (4.5); 3) Main Contractors (4.4)

O&M: 1) Clients (4.6); 2) Users (4.3); and 3) Main Contractors (4.1)

Research Activities (ii)

- The Research Team looked into organizations that were engaged in **both** D&C and O&M works to gain a deeper understanding of the communication channels and interaction between the D&C and O&M teams in such an **'in-house'** setting
- One was a **public transportation company**, while the other engaged in **public housing development**
- Specific research tasks performed in this focus area:
 - a) semi-structured interviews with experienced personnel from both the D&C and O&M teams
 - b) review of project documents
 - c) observations at an inter-departmental meeting

Interim Findings (ii)

Org. engaged in both D&C and O&M works (Org. A):

- Operations team is involved in nearly every stage of the project development process to provide design input from the beginning of a project
- Design Reviews conducted by the Operations team to ensure their inputs are sufficiently reflected in the designs
- Exchange of ideas, working arrangements and communication between the Projects and Operations Divisions done through various high and mid-level management meetings

Interim Findings (ii)

- **Organization Level: Monthly Technical Management Steering Committee (TMSC) Meeting:** serves as a bridge between the two divisions
- New technologies, technical feasibility, and previous experiences/successful trials are shared here
- Technical issues related to new/future projects and application of new technologies for upgrading existing projects are also covered in this meeting
- Working papers submitted to the TMSC for review and approval to decide if they will be employed when industry reviews are conducted by the two divisions and potential suitable new technologies are found

Interim Findings (ii)

- **Project level: stakeholder engagement meetings** held weekly for discussing issues raised during interaction with broader community stakeholders (e.g. district councilors, police, fire services, highways department, drainage services, and the general public)
- Participants: reps. from Project team, Project Headquarters team, Projects Controls Group, and the Corporate Relations unit
- Issues discussed: soil transport to the project site (traffic management), drainage blockage near the project sit after heavy rainfall, and comments on the exhibition tour (part of public engagement plan)

Interim Findings (ii)

- **Weekly design workshops:** to extend the team working environment with consultants and contractors
- Consultants and contractors for a particular project invited to attend - to discuss issues such as constructability, design details, etc. in order to better meet the client's needs
- While there are many more different types of meetings within the organization, those described above highlight the close interaction between IPM and IAM to enhance delivery of the built asset in a far more 'asset management friendly' form

Interim Findings (ii)

Orgs. engaged in **both** D&C and O&M works (Org. B):

- Two main divisions: i) Development and Construction; ii) Estate Management
- Both divisions understand and work with the **same budget** and **same goals** (targeting the **same user group**)
 - Both sides '**know**' they are on the **same team**
- Various committees and panels in set up for: strategic planning, buildings, **detailed design review**, project design review, pre-handover process, post completion review where Estate Management team can provide input

Interim Findings (ii)

- Workshops held at professional level, where the two divisions can share knowledge and ideas
- Project Seminars (Committee Vetting) – held monthly (depending on availability) in a lecture hall - open to all staff to join
 - reports uploaded to intranet
 - chief architects and senior staff to channel information to subordinates
- Informal communications and working relationships important – designers understand what maintenance workers like and dislike (e.g. grass tiles)

Interim Findings (ii)

Challenges for these Organizations:

- Promoting greater inter-departmental knowledge sharing has only taken place in recent years and it is still at an early stage – knowledge management becoming increasingly important (amount of info, ease of use, etc.)
- Knowledge sharing not always a priority amongst the staff, especially those engaged in project-specific work
- Staff continuity - project-specific personnel are reallocated to other projects soon after completing tasks on one project
- Up to individual department heads to encourage subordinates to engage in knowledge sharing, rather than a clear top management mandate

Interim Findings (iii)

The Industry in General – where D&C and O&M teams mostly work independently:

- Objectives and goals of consultants, contractors (e.g. profit-driven only?) and facilities managers are different, each with **limited** knowledge of the needs, working relationships and appreciation of the priorities of the others
- Different mindset & lack of motivation for each to share knowledge and work more closely with others parties
- Trend towards outsourcing O&M works (e.g. cost efficient, risk transfer) – but communication and design input / feedback from outsourced O&M team to D&C team is more limited

Interim Findings (iii)

- Common problems – lost drawings or unable to find latest version of drawings, too much information making it difficult to retrieve or make use of information effectively (knowledge management)
- Protection / safeguarding benefits for end users becoming more important – greater involvement from clients, more end user / public engagement
- Level of O&M involvement in design largely dependent client's requirement – earlier O&M involvement = more resources required – is it worth it? How to justify value?

Overall Interim Findings

- Interim findings show good potential for applying RIVANS in TAM
- **Questionnaire & interview** findings demonstrate potential focus areas & elements needed for successful implementation of RIVANS for TAM concepts
 - Initiatives, good practices, challenges and barriers uncovered through this case study can be building blocks for a RIVANS for TAM framework and for identifying potential best practices
- **This Workshop** (at HKU on 03 Nov. 2012) brings together (A) **parallel findings** from UK & Singapore and (B) **industry practitioners** to brainstorm and formulate strategies for the industry to probe deeper, promote and facilitate the integration of IPM and IAM teams – where it delivers overall value

Game Plan for Moving Forward

- Integrate Workshop Findings
- More industry interviews in HK to:
 - seek HK industry perceptions and acceptance of these concepts
 - find any similar arrangements to those in the case study organization, in other companies that promote a culture of knowledge sharing and collaboration between IPM and IAM
- More in-depth analysis (ongoing) of data from Questionnaire:
 - Comparison of responses between those involved with D&C works and O&M works
 - Correlation tests to identify any patterns or relationships amongst different groups (clients, consultants and contractors)
- Parallel studies in Singapore, the UK and Sri Lanka with findings being compared
- CAVEATS: (A) Co-opetition is needed in any RIVANS; (B) some jurisdictions/ scenarios are more vulnerable to abuse/ misuse of relational advantages, so safeguards, checks/balances are also needed

*So can RIVANS can move forward
with more Teams and Players?*

*RIVANS for TAM -
a new Game Plan ?*

Should we press 'Play' or 'Fast Forward'? or 'pause'
while other 'groups'/ networks may overtake
us with a 'Game Changer'
towards more sustainable Built Assets