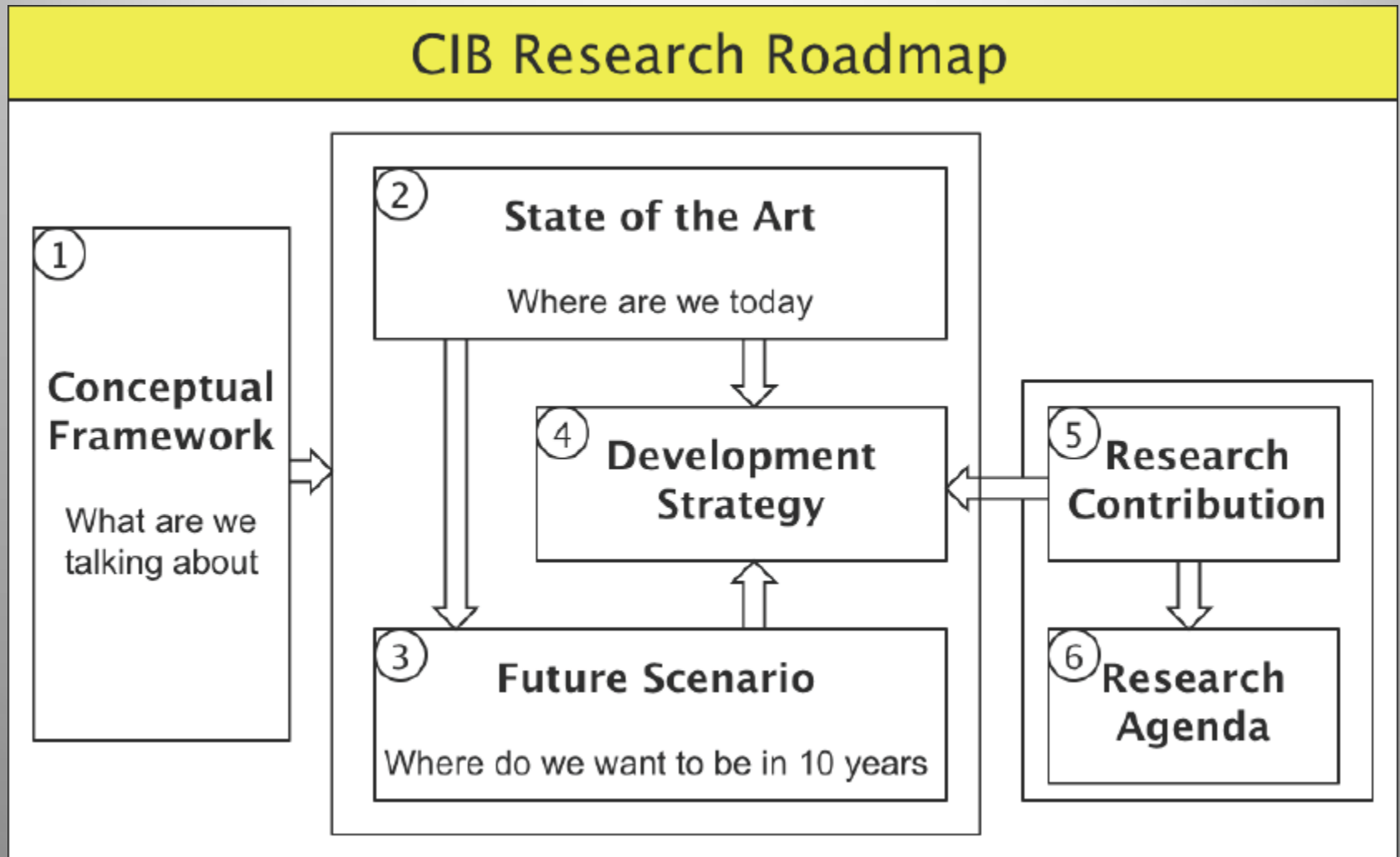# FM Research
Meeting the needs of industry?

Keith Jones

Anglia Ruskin University

Introduction

- Personal reflections on FM research
- Introduce the CIB Research Roadmap exercise
- Relationship between Research & Industry
  - ➤ Why do we do FM research?
- Review of FM research in past 6 years
- The DELPHI Project
  - ➤ Results so far
- Workshop
  - ➤ What is missing?
  - ➤ What do these things mean?
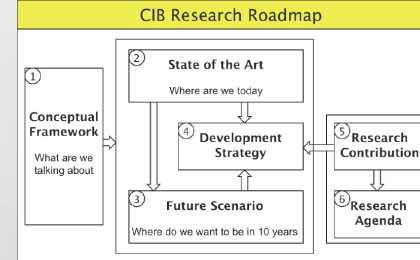
CIB W70 Research Roadmap

CIB W70 Roadmap

- Conceptual Framework
  - ➢ What do we consider research to be, how do we characterise it?
  - ➢ What are the key issues, how do these interrelate?
  - ➢ What influences research?
  - ➢ Who are the stakeholders?
 - ➢ What are the relevant areas of expertise (disciplines)?
- State of the Art
  - ➢ Where are we today?
    - ▪ Technology,
    - ▪ Best practice,
    - ▪ International variations,
    - ▪ Perceived problems,
    - ▪ Challenges,
    - ▪ Areas for improvement,
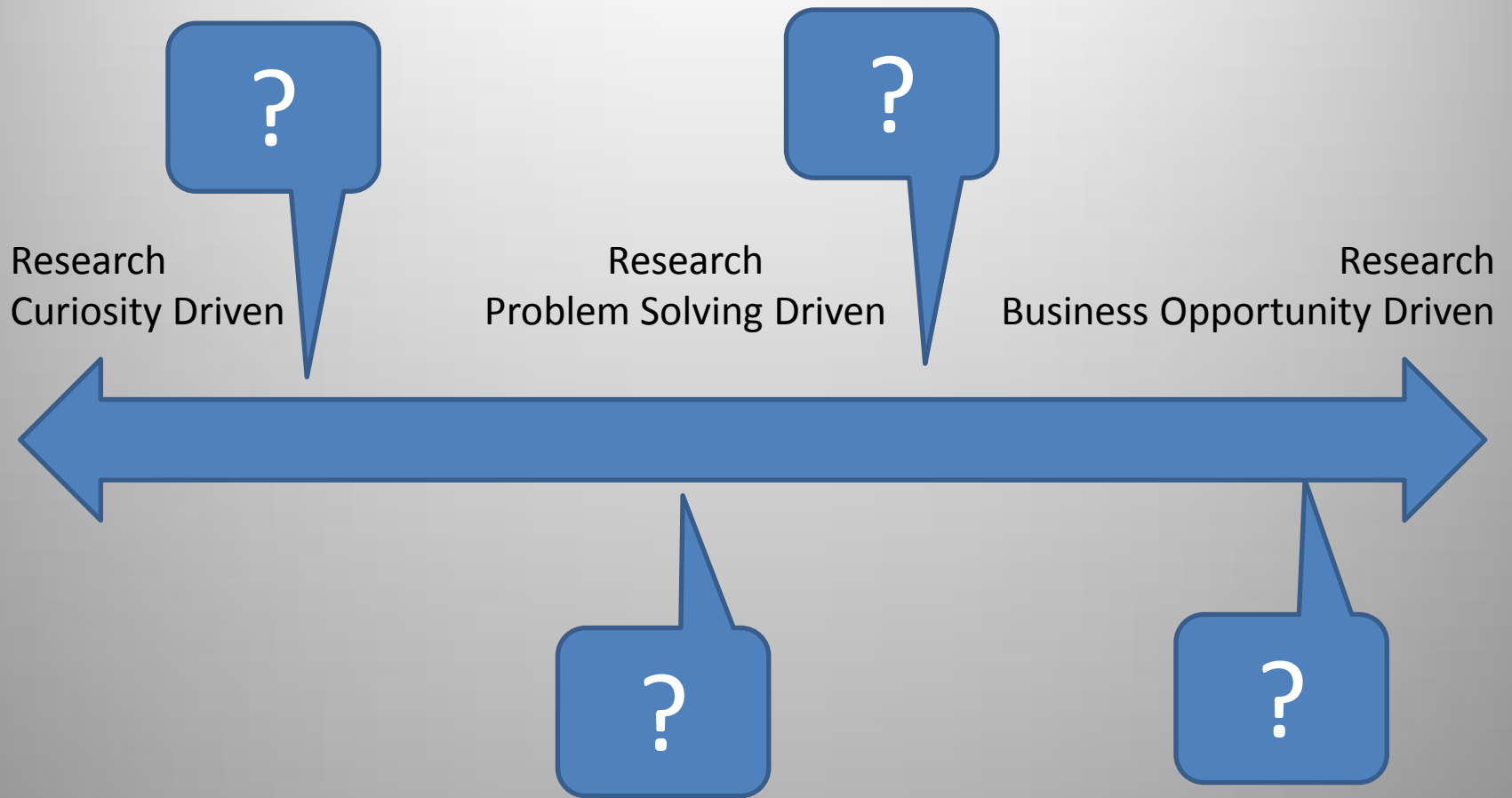   - ▪ Centres of excellence

CIB W70 Roadmap

- **Future Scenarios**
  - ➤ Where do we want to be in 10 years?
  - ➤ Do all stakeholders agree about the future scenarios?

- **Development Strategy**
  - ➤ What new technologies, systems, processes, tools etc will we need in 10 years time?

- **Research Contribution**
  - ➤ How can research contribute?
  - ➤ What does research require to be able to provide this contribution?

- **Research Agenda**
  - ➤ What are the areas for development?
  - ➤ How should priorities be set?
  - ➤ What should the relationship be between research and practice?

- These are issues that we have started to address.
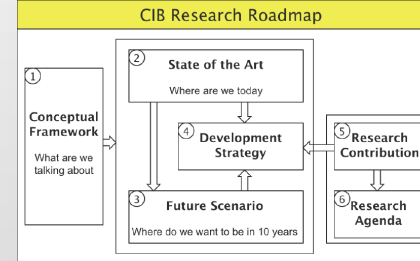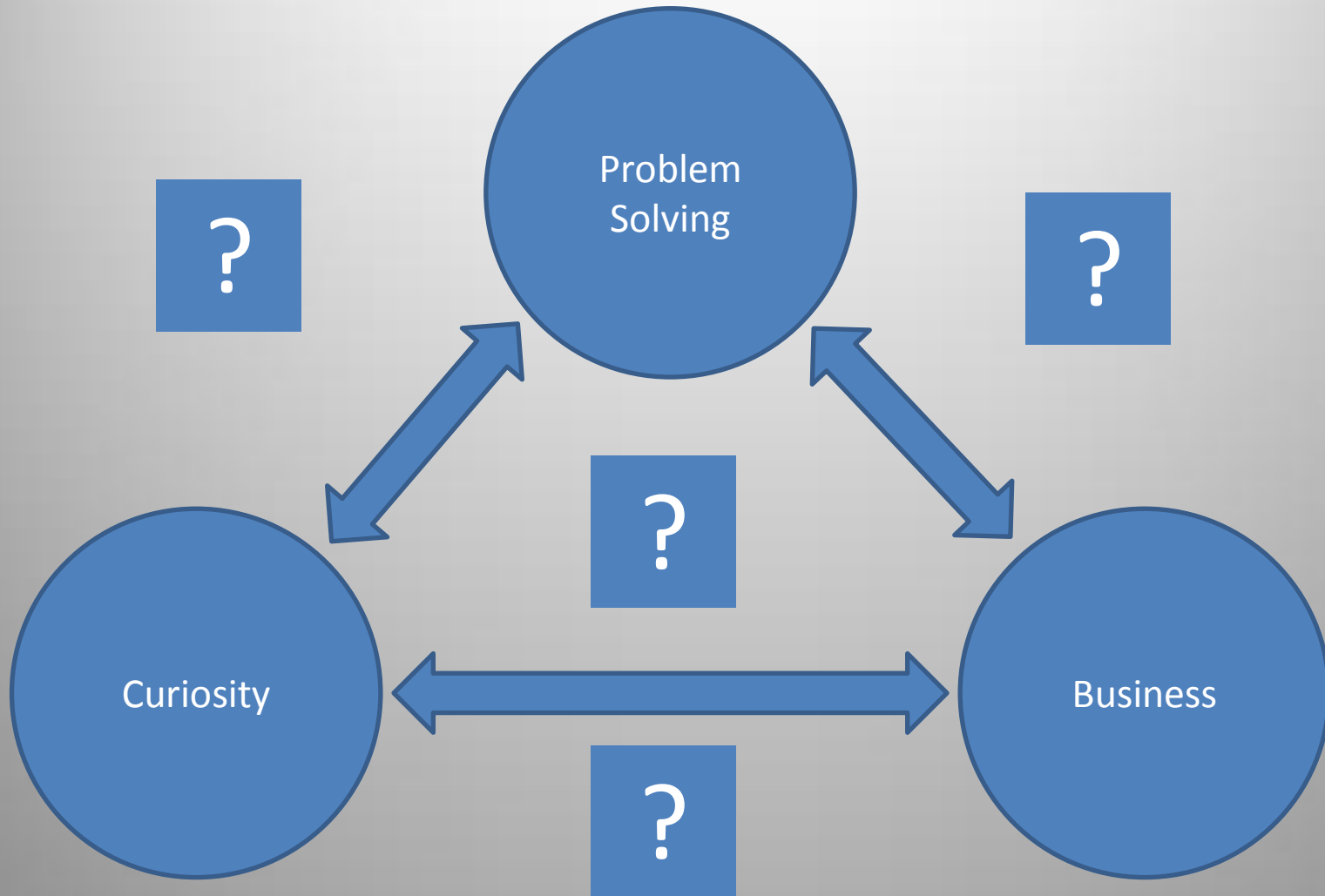
CIB W70 Research Roadmap
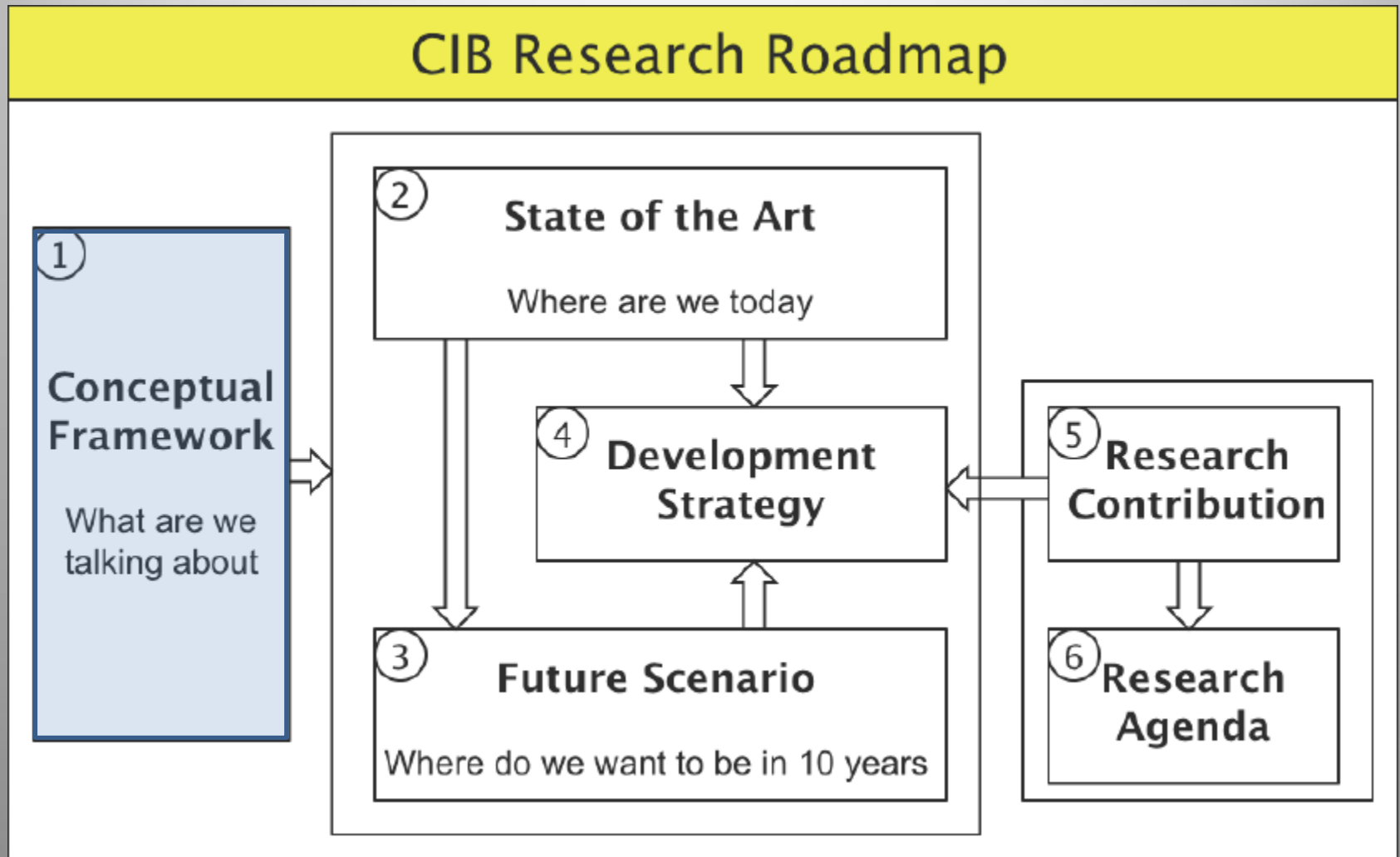
Conceptual Framework: What is FM Research?

Problem Solving

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Curiosity

Business

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Do we have a profession wide view?

Conceptual Framework: Stakeholders?

Problem Solving

Curiosity
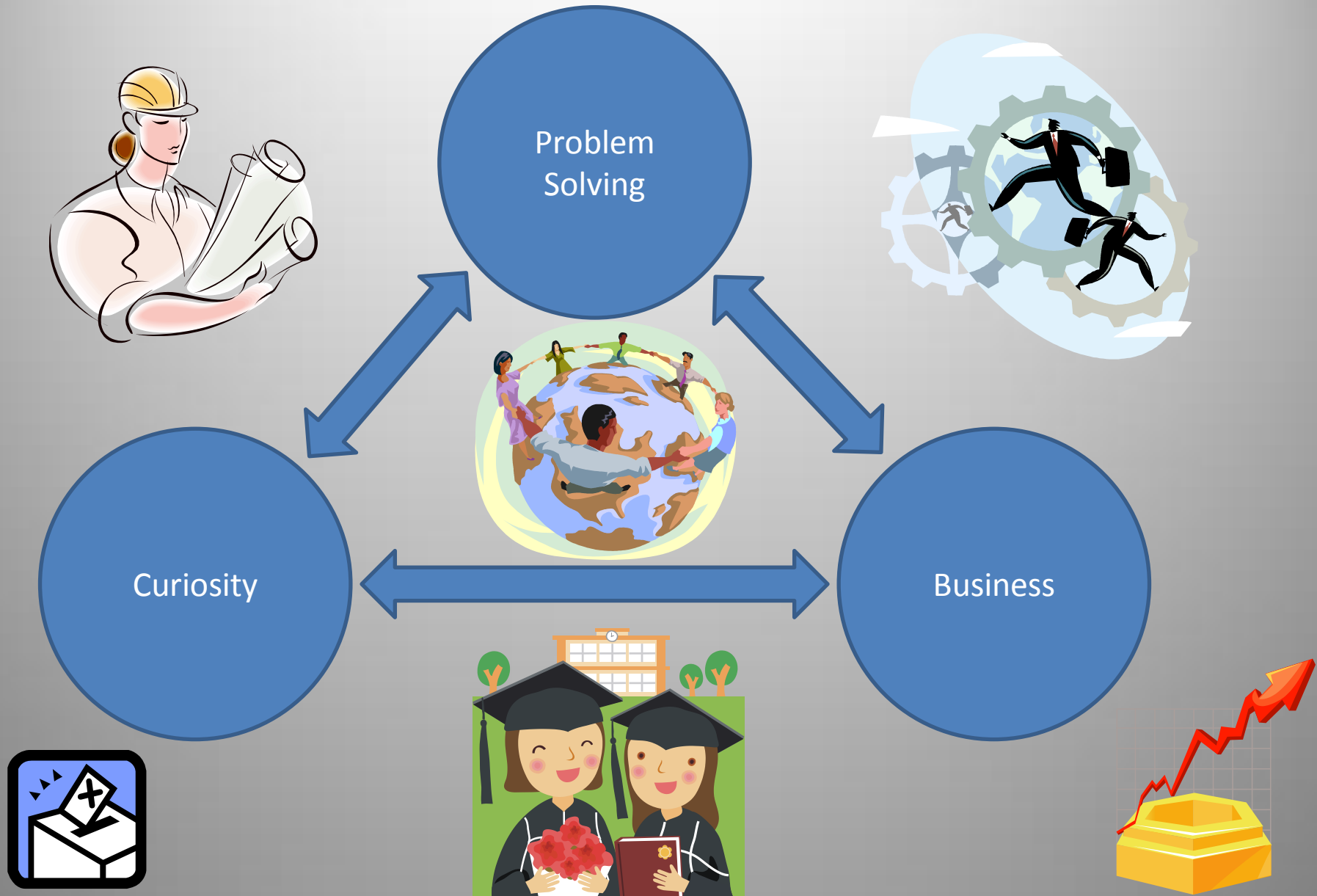
Business

Conceptual Framework: Disciplines?

Problem Solving

Sociology

Economics and Finance

Psychology

Multi-disciplinary?

Curiosity

Business

Physical Sciences

Business

Geography

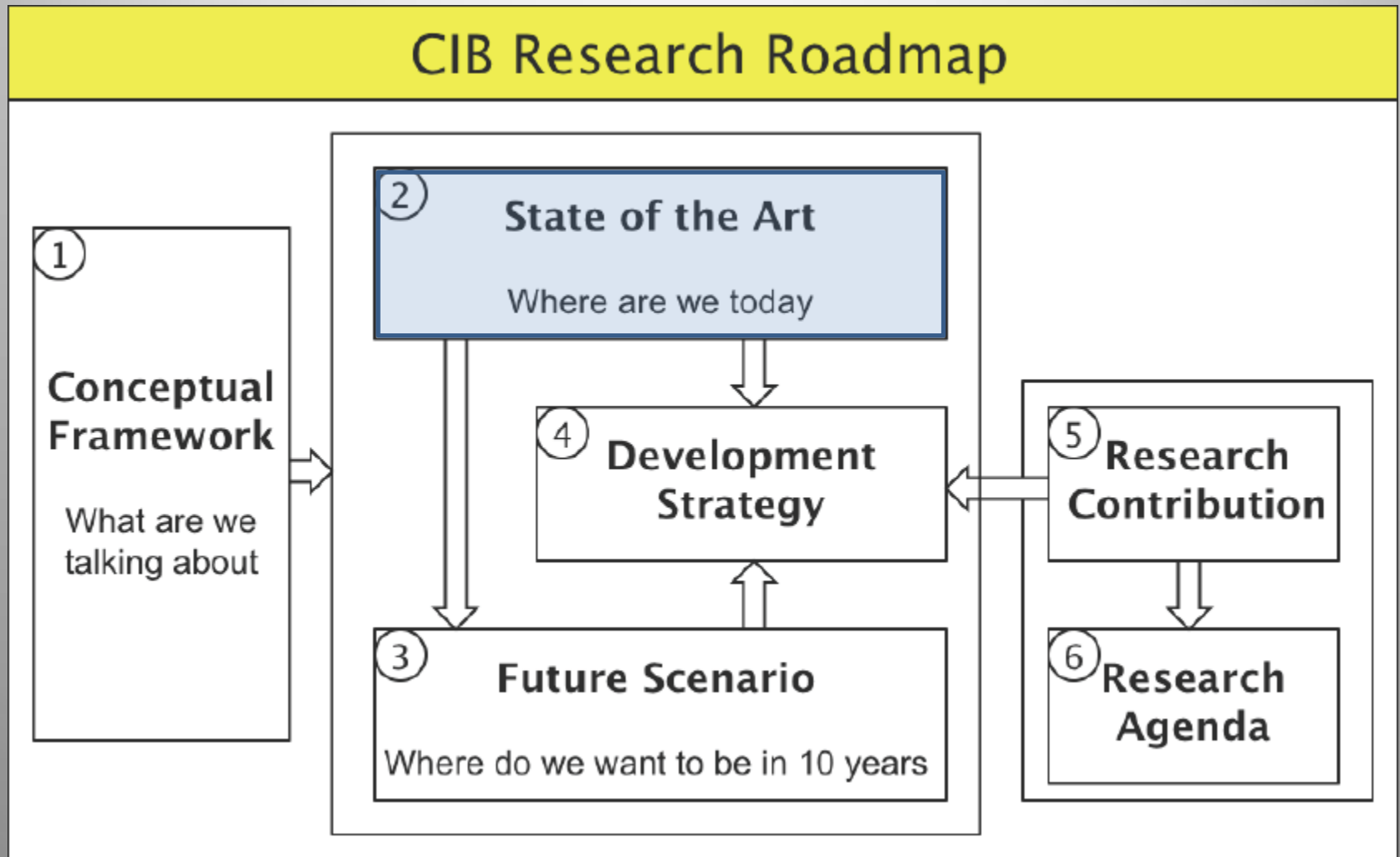Engineering
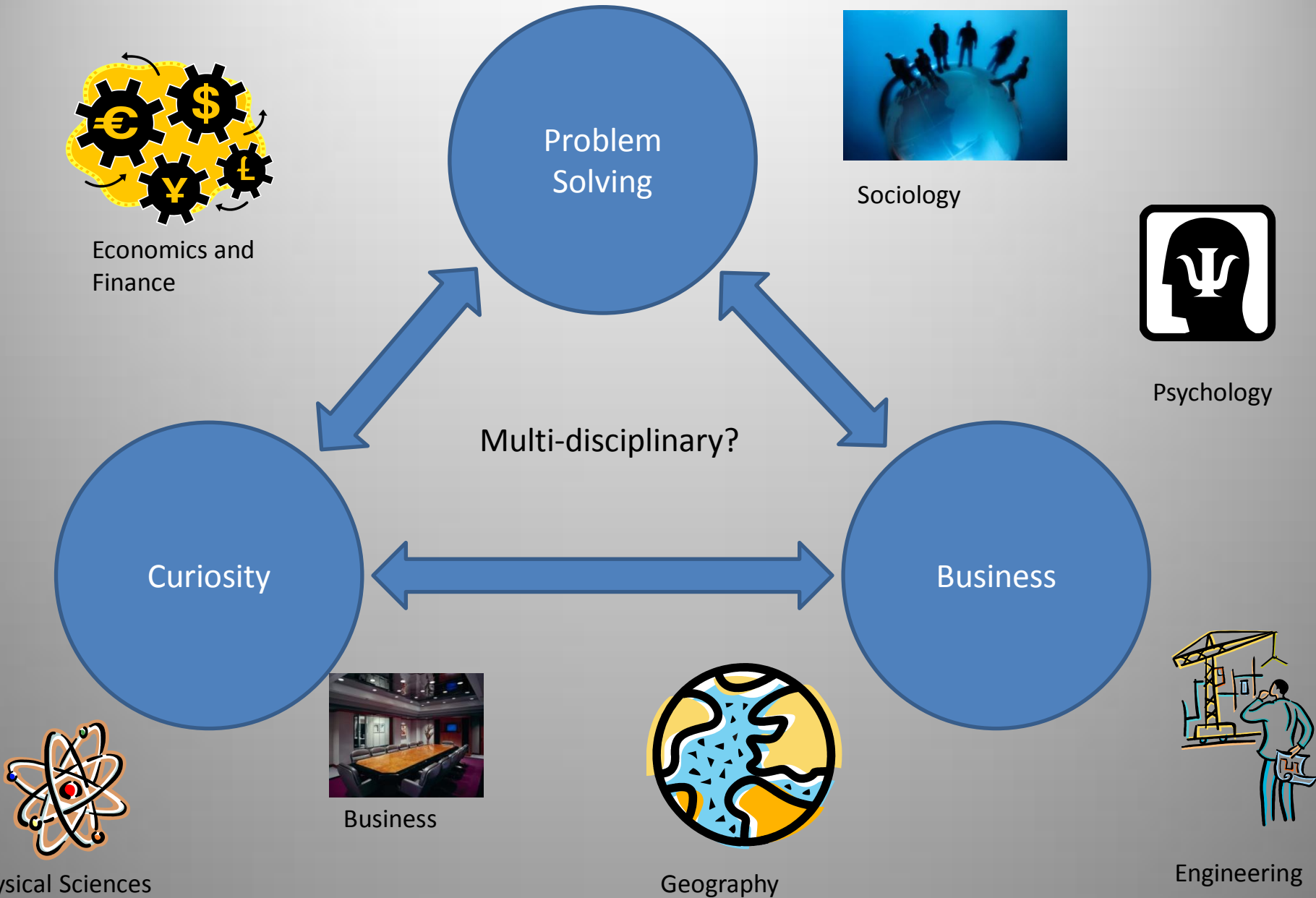
Conceptual Framework

- FM research address all aspects of the traditional research paradigm, from curiosity driven, through problem solving to business development.

- FM research is influenced by a very wide range of stakeholders BUT I believe that its principle stakeholder (or beneficiary) should be society.

- FM research draws on a very wide range of disciplines AND (should) contribute knowledge to a very wide range of disciplines.

- I would describe the FM Conceptual Framework as INCLUSIVE – do you agree?

CIB W70 Research Roadmap

CIB Research Roadmap

1. Conceptual Framework — What are we talking about
2. State of the Art — Where are we today
3. Future Scenario — Where do we want to be in 10 years
4. Development Strategy
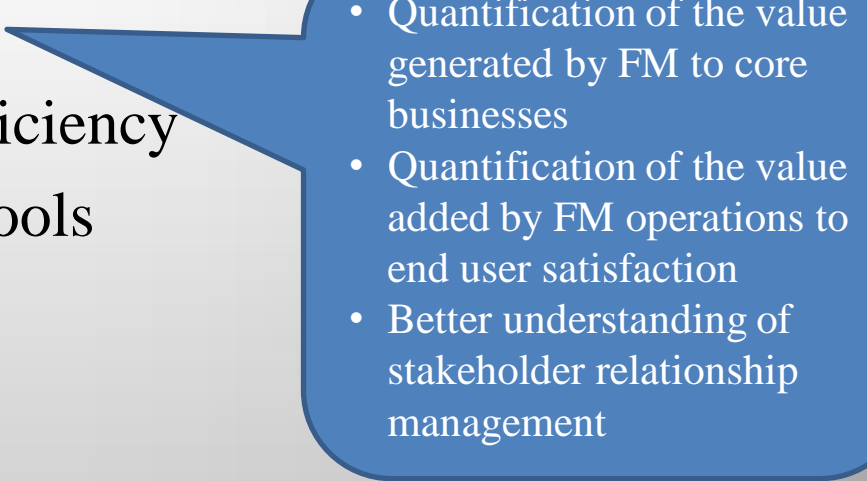5. Research Contribution
6. Research Agenda

State of the Art

- Content Analysis of 309 academic papers published in:
  - Facilities, Journal of Facilities Management between 2010 and 2014
  - CIB W70 Conferences 2008 - 2012
  - EUROFM Conferences 2012 - 2013
- Supplemented these with a review of the work of
  - Per Anker Jensen and Susanne Balslev Nielsen
  - Zurich - CRE & FM Futures Forum
- Produced a list of 24 generic research topics and issues.
- Reduced these to 11 'hot topics'.
- These formed the basis of the Delphi Study.

Research Topics

- Adding value to core business
- Climate change and energy efficiency
- FM performance models and tools
- FM in the public sector
- FM for heritage buildings
- Global markets
- ICT and BIM
- Maintenance management
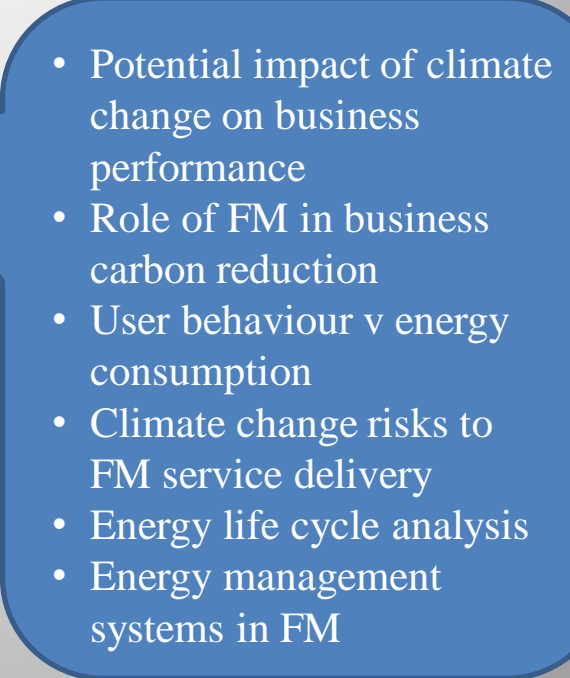- Skills and training
- Sustainability
- Workplace management

Research Areas

- Adding value to core business
- Climate change and energy efficiency
- FM performance models and tools
- FM in the public sector
- FM for heritage buildings
- Global markets
- ICT and BIM
- Maintenance management
- Skills and training
- Sustainability
- Workplace management

- Quantification of the value generated by FM to core businesses
- Quantification of the value added by FM operations to end user satisfaction
- Better understanding of stakeholder relationship management

Research Areas

- Adding value to core business
- Climate change and energy efficiency
- FM performance models and tools
- FM in the public sector
- FM for heritage buildings
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- Maintenance management
- Skills and training
- Sustainability
- Workplace management

- Potential impact of climate change on business performance
- Role of FM in business carbon reduction
- User behaviour v energy consumption
- Climate change risks to FM service delivery
- Energy life cycle analysis
- Energy management systems in FM

Research Areas

- Adding value to core business
- Climate change and energy efficiency
- FM performance models and tools
- FM in the public sector
- FM for heritage buildings
- Global markets
- ICT and BIM
- Maintenance management
- Skills and training
- Sustainability
- Workplace management

- Quantifying the level of FM service performance
- FM supply chain management v FM service performance
- FM contract management v FM service performance
- Alternative approaches to service procurement
- Building performance life cycle
- The application of project management tools in FM
- Out sourcing v FM performance
- Strategic partnering v FM performance
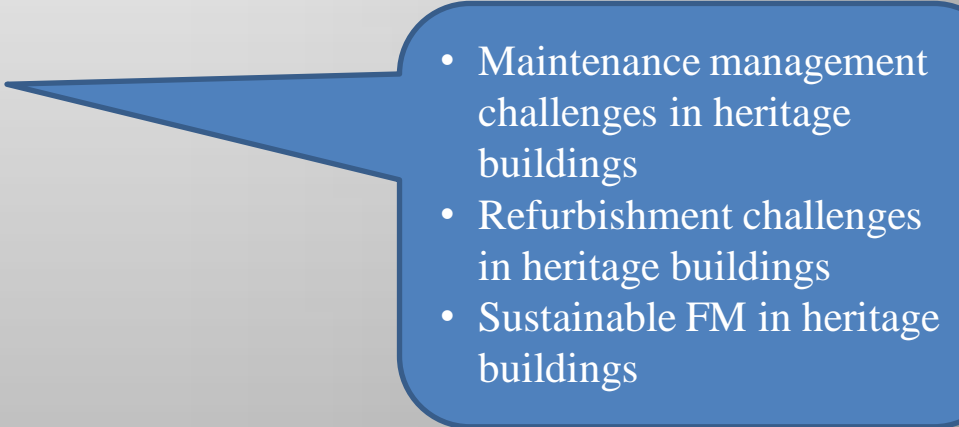- SLA v output service level

Research Areas

- Adding value to core business
- Climate change and energy efficiency
- FM performance models and tools
- FM in the public sector
- FM for heritage buildings
- Global markets
- ICT and BIM
- Maintenance management
- Skills and training
- Sustainability
- Workplace management

- Contribution made by FM to public sector built and real estate management
- Contribution made by FM to public sector service delivery
- Benchmarking in delivering public sector FM services

Research Areas

- Adding value to core business
- Climate change and energy efficiency
- FM performance models and tools
- FM in the public sector
- FM for heritage buildings
- Global markets
- ICT and BIM
- Maintenance management
- Skills and training
- Sustainability
- Workplace management

- Maintenance management challenges in heritage buildings
- Refurbishment challenges in heritage buildings
- Sustainable FM in heritage buildings

Research Areas

- Adding value to core business
- Climate change and energy efficiency
- FM performance models and tools
- FM in the public sector
- FM for heritage buildings
- Global markets
- ICT and BIM
- Maintenance management
- Skills and training
- Sustainability
- Workplace management

- Challenges to FM in a global market
- Opportunities for FM in a global market

Research Areas

- Adding value to core business
- Climate change and energy efficiency
- FM performance models and tools
- FM in the public sector
- FM for heritage buildings
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- ICT and BIM
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- Skills and training
- Sustainability
- Workplace management

- The role of ICT in maintenance planning
- The role of ICT in building performance modelling
- ICT in engineering facilities performance
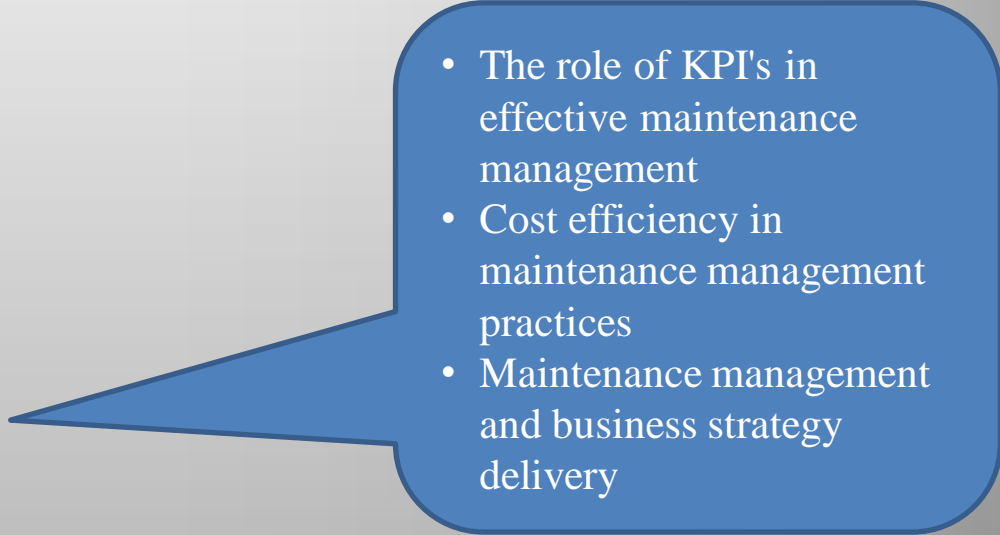- ICT in FM decision making
- BIM in FM service delivery

Research Areas

- Adding value to core business
- Climate change and energy efficiency
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- FM in the public sector
- FM for heritage buildings
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- Maintenance management
- Skills and training
- Sustainability
- Workplace management

- The role of KPI's in effective maintenance management
- Cost efficiency in maintenance management practices
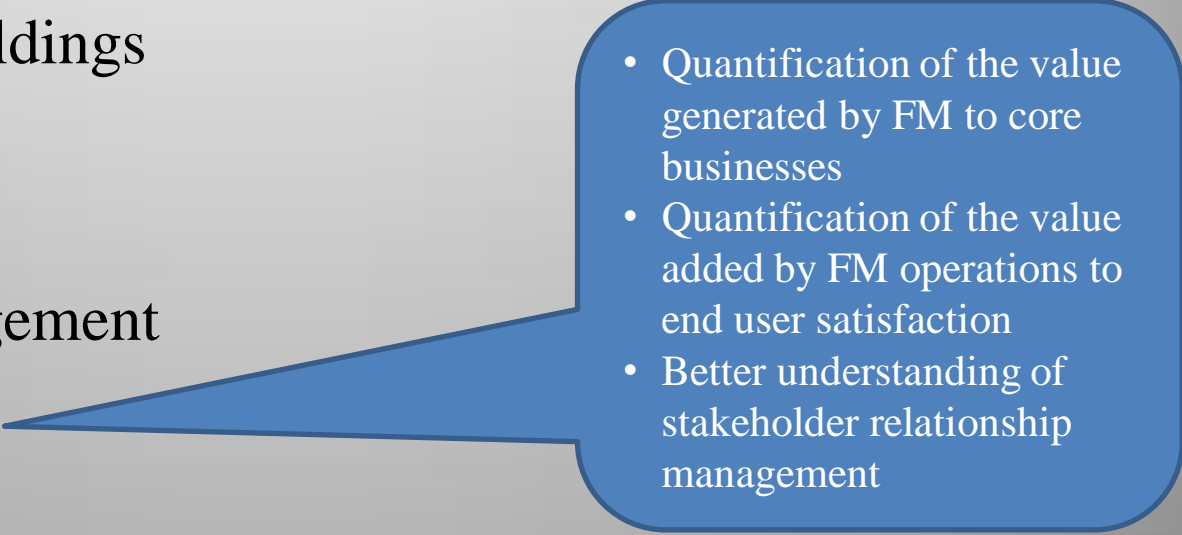- Maintenance management and business strategy delivery

Research Areas

- Adding value to core business
- Climate change and energy efficiency
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- FM in the public sector
- FM for heritage buildings
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- Workplace management

- Quantification of the value generated by FM to core businesses
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Research Areas

- Adding value to core business
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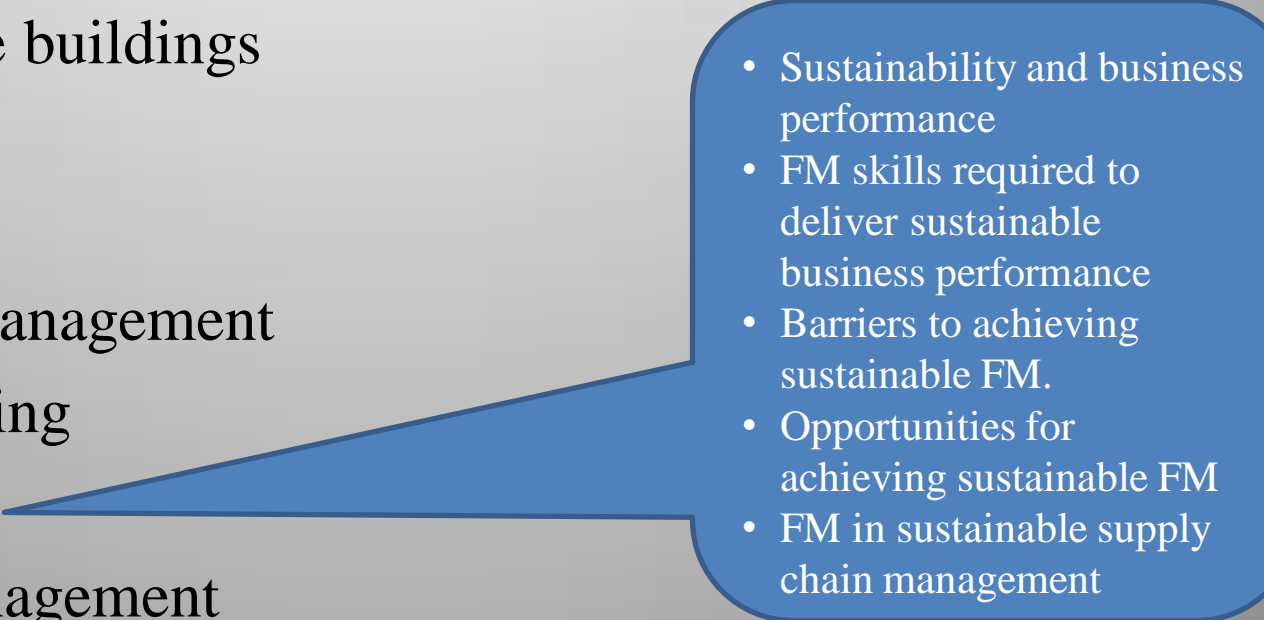- Skills and training
- Sustainability
- Workplace management

- Sustainability and business performance
- FM skills required to deliver sustainable business performance
- Barriers to achieving sustainable FM.
- Opportunities for achieving sustainable FM
- FM in sustainable supply chain management

Research Areas

- Adding value to core business
- Climate change and energy efficiency
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- FM in the public sector
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- Maintenance management
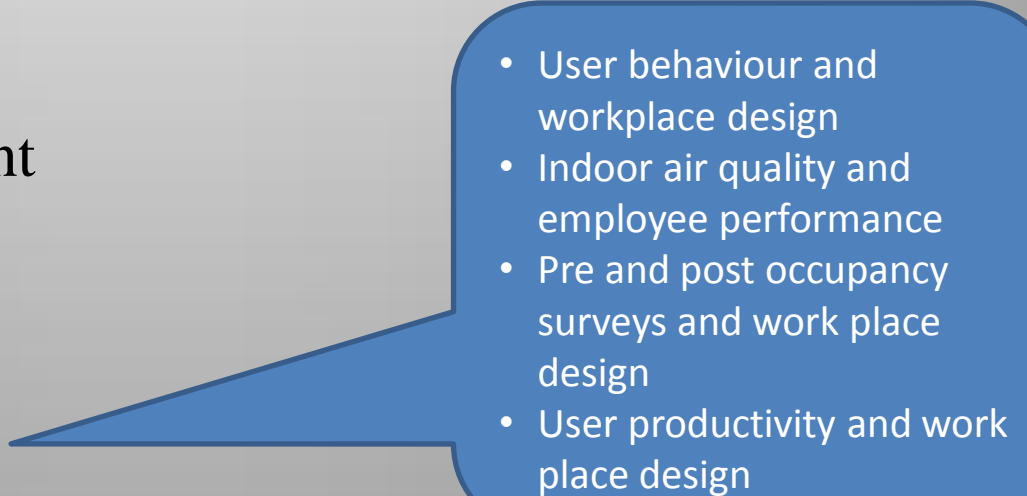- Skills and training
- Sustainability
- Workplace management

- User behaviour and workplace design
- Indoor air quality and employee performance
- Pre and post occupancy surveys and work place design
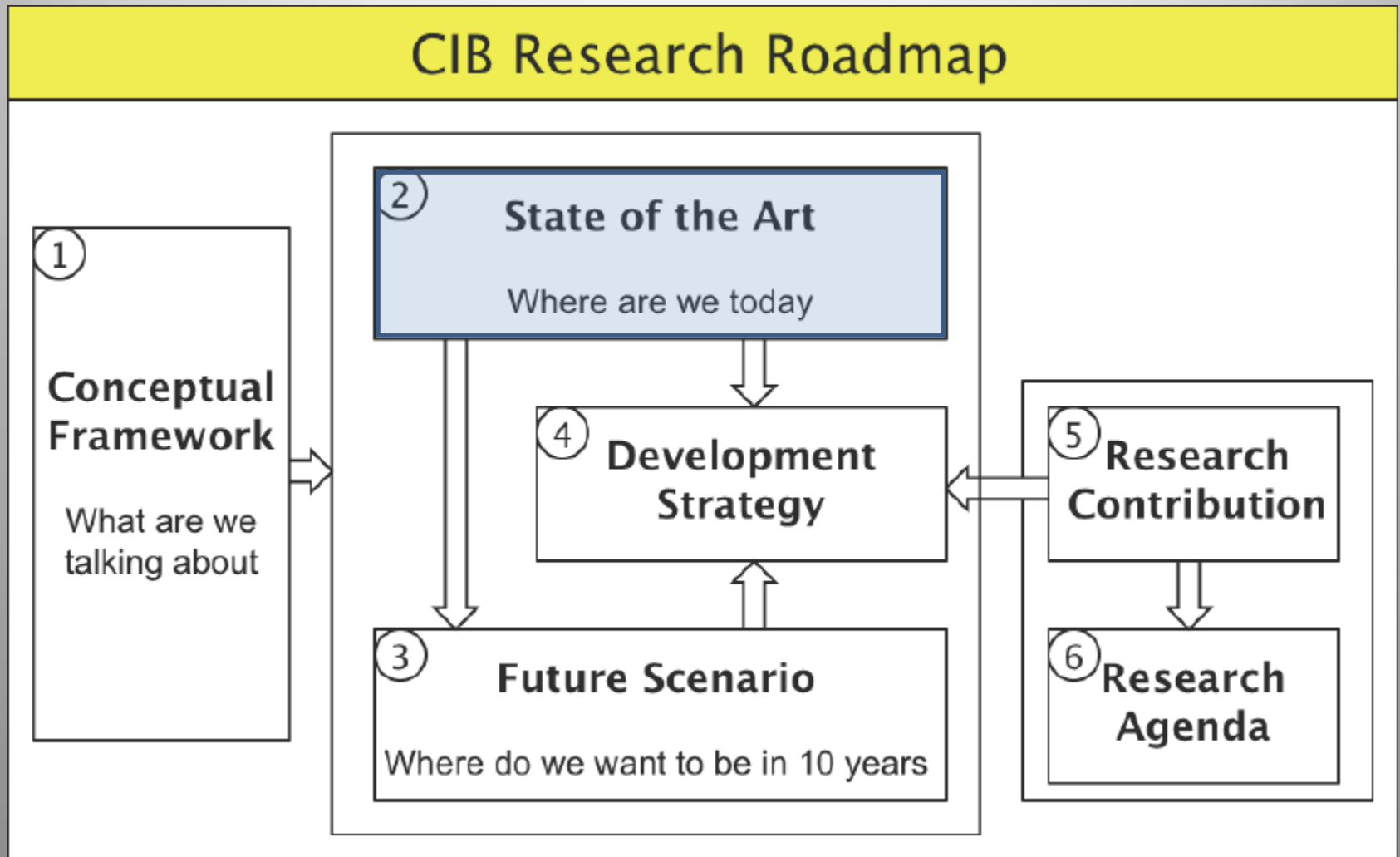- User productivity and work place design

Research Areas

- Adding value to core business
- Climate change and energy efficiency
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- FM for heritage buildings
- Global markets
- ICT and BIM
- Maintenance management
- Skills and training
- Sustainability
- Workplace management

But, do these form the State of the Art or are they just the disjointed views of a small number of individuals?

CIB W70 Research Roadmap

CIB Research Roadmap

1 Conceptual Framework — What are we talking about

2 State of the Art — Where are we today

3 Future Scenario — Where do we want to be in 10 years

4 Development Strategy

5 Research Contribution

6 Research Agenda

The Delphi Process

- The Delphi technique is a structured group communication process that seeks to find consensus amongst a panel of experts on a complex problem or future scenarios without the risk that group dynamics influence any individual's contribution to the discussion.

- The original Delphi project was undertaken by the Rand Corporation in the 1950s to try and establish consensus of opinion amongst a group of 'experts' about how Soviet military planners might target the US industrial system in an attack and how many atomic bombs would be needed to have a specified level of impact on US military capability.

The Delphi Process

- In a Delphi study an anonymous panel (to each other) are asked to score a series of statements provided to them in the form of a questionnaire survey.

- Once completed, the panel responses are analysed and the mean (and SD) score for each statement is calculated.

- The mean score is then integrated into the questionnaire which is re-circulated to each panel member for them to review their score in light of the mean score (feedback).

- This process is repeated until consensus is obtained or mean scores and SD's stop converging.

- At this point the final score for each statement is calculated and this represents the 'best' forecast of the situation under investigation.

The W70 Delphi Project

- Two expert panels have been established
  - Research Panel (27 members)
    - W70 Members and other Internationally recognised FM Researchers
  - Practitioner Panel (20 members)
    - Through a series of LinkedIn FM groups
- A questionnaire has been developed based on the research areas shown previously.
- This has been sent independently to both panels
  - Research Panel are in Round 2
  - Practitioner Panel are in Round 1
- For each research topic panel members have been asked to score
  - The current level of knowledge (very low – very high)
  - The current level of importance (very low – very high)
- The following slides present a comparison of the Round 1 results

Importance (Topic): Researcher - Practitioner
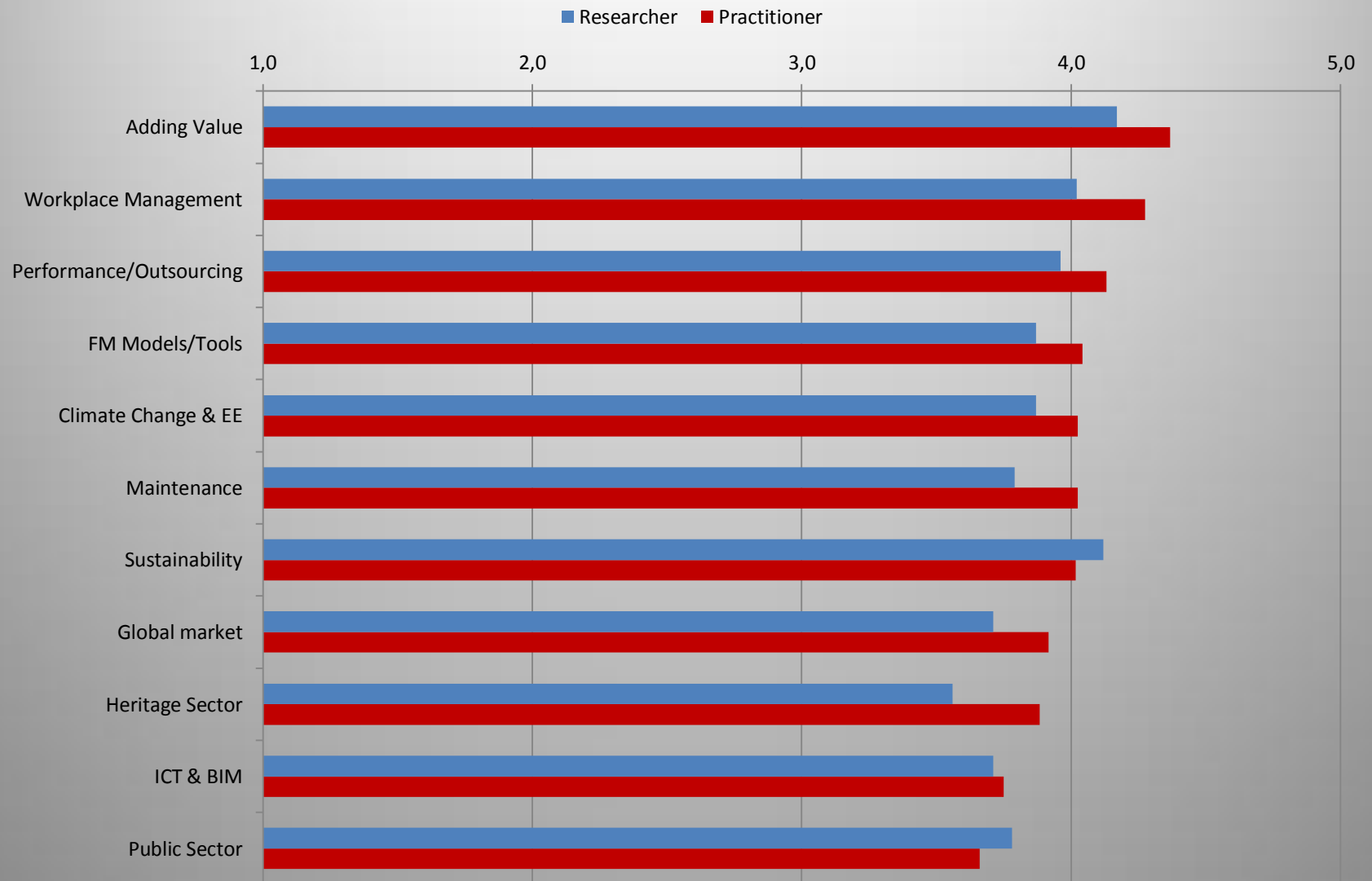
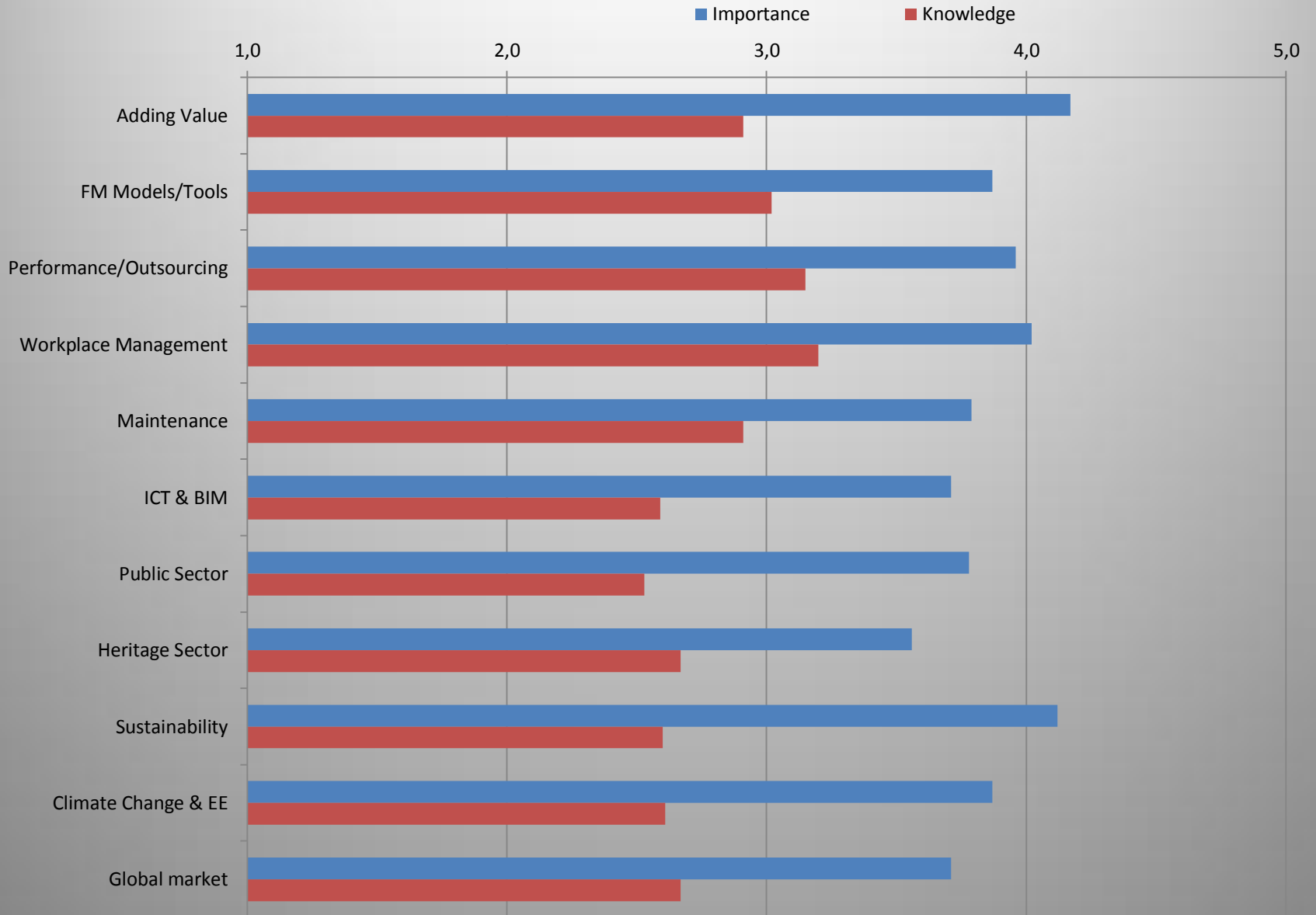General agreement between researcher's and practitioner's

Knowledge (Topic): Researcher - Practitioner

Legend: ■ Researcher ■ Practitioner
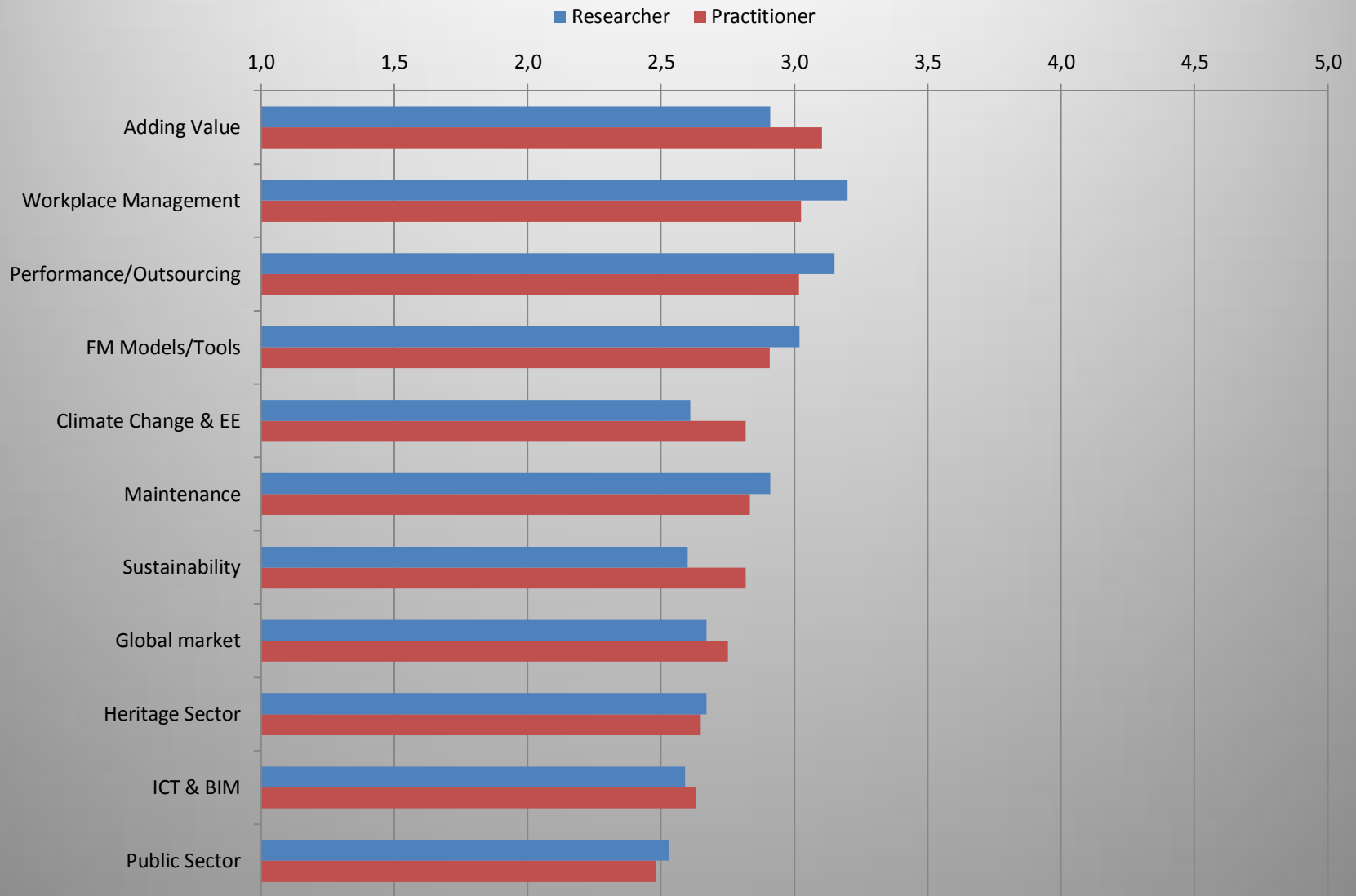
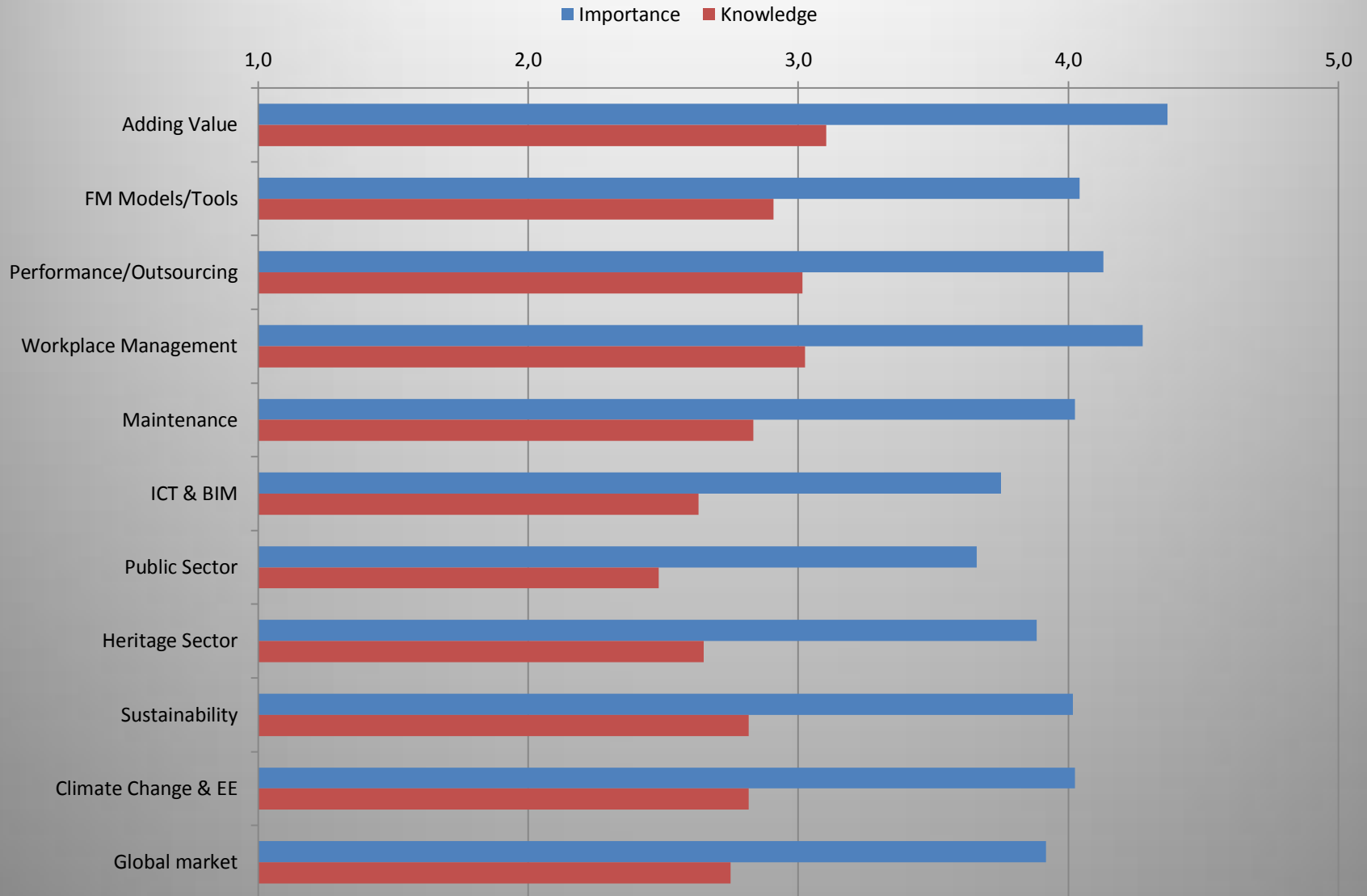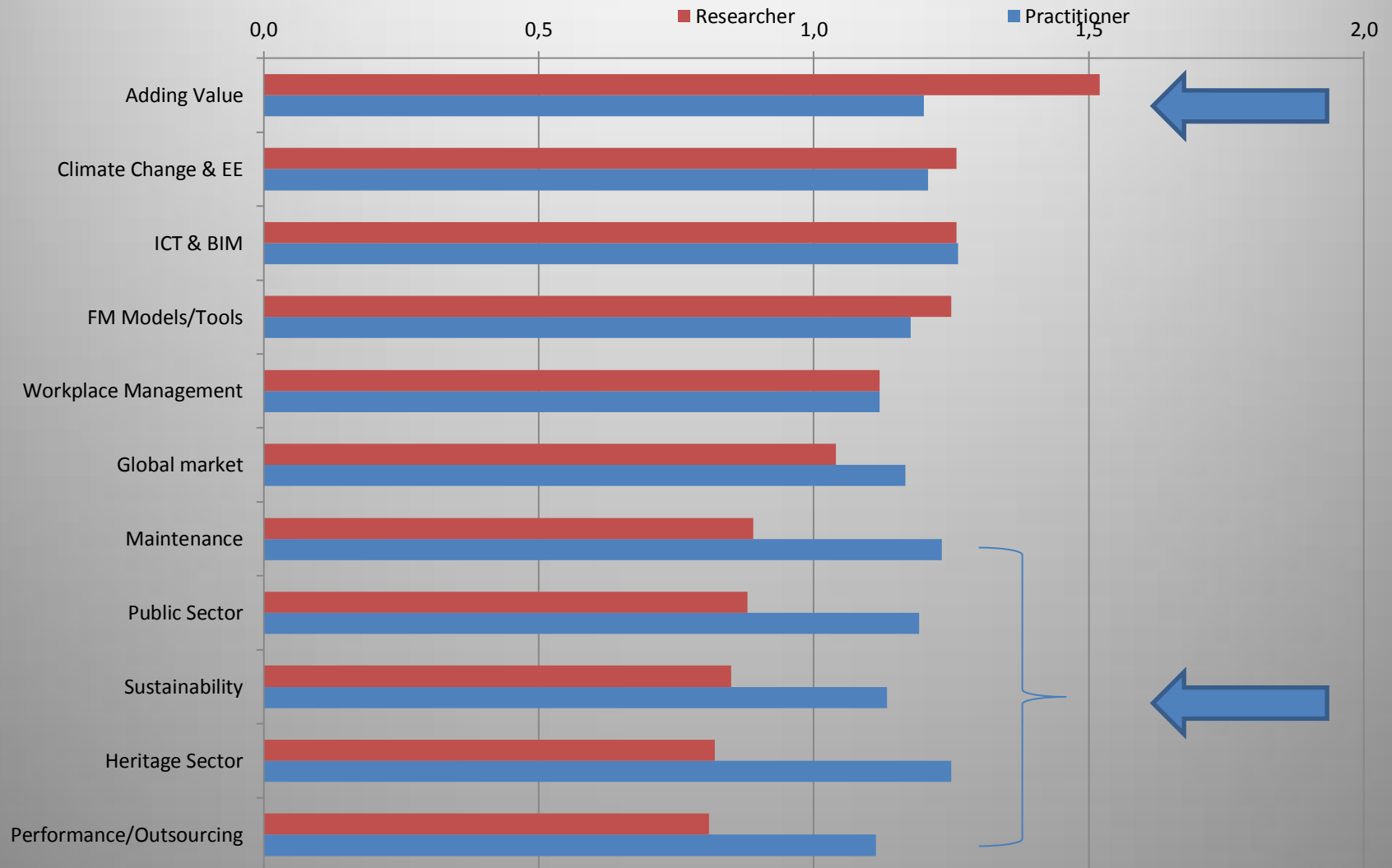General agreement between researcher's and practitioner's

Research Panel Topic: Importance - Knowledge

Practitioner Panel Topic: Importance - Knowledge

Knowledge – Importance Gap (Topic)

Divergence between researcher's and practitioner's

Importance (most important to least important)

| Ranking	Academic Ranking	Practitioner Ranking
1	User behaviour - WPD	User Behaviour - WPD
2	Value to CB	Value to User Satisfaction
3	Sustainable Business Performance	Stakeholder Management
4	Value to User Satisfaction	FM Service Perofrmance
5	Skill to Deliver SBP	Contract man - FM Performance
6	User Behaviour - EE	Energy Management
7	Opportunities for SFM	KPI - Maintenance Management
8	Strategic Partnering - FM Performance	FM Skills - SBP
9	User Productivity - WPD	User behaviour - Energy Consumption
10	FM Service Perofrmance	Sustainable Business Performance
11	Barriers to SFM	Cost Efficiency - Maintenance Management
12	Contract man - FM Performance	User Productivity - WPD
13	Carbon Reduction	Opportunities for SFM
14	Public Sector REM	Value to CB
15	Energy Management	Building Performance Life Cycle
16	Building Performance Life Cycle	IAQ - Employee Performance
17	Outsourcing - FM Performance	User Behaviour - WPD
18	Stakeholder Management	Strategic Partnering - FM Performance
19	Sustainable SCM	Sustainable Waste Management
20	Benchmarking Public Sector	Global market Challenges

Knowledge (least known to most known)

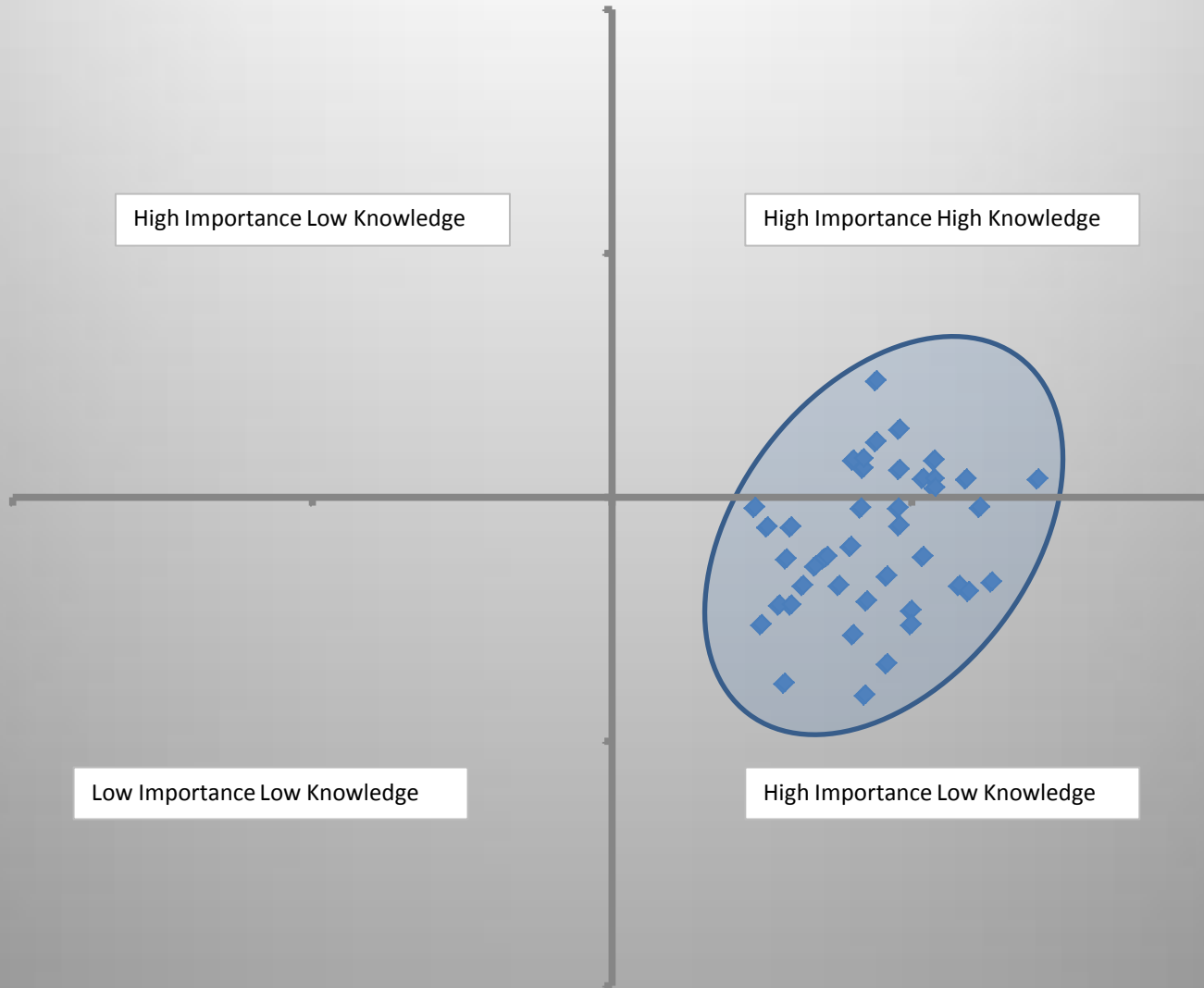| Ranking	Academic Ranking	Practitioner Ranking
1	BIM	ICT FM Decision Making
2	Climate Change - FM Service Delivery	ICT Engineering Facilities Performance
3	SFM - Supply Chain Management	SFM - Supply Chain Management
4	Climate Change - Business Performance	PM Tools in FM
5	Benchmarking Public Sector FM	ICT Builing Performance Modellinr
6	FM - Business Carbon Reduction	Climate Change - Business Performance
7	Public Sector REM	Maintenance Management - Business Strategy
8	FM Global Market - Challenges	BIM
9	FM Global Market - Opportunities	Outsourcing - FM Performance
10	Public Sector Service Delivery	Maintenance Management - Heritage Buildings
11	Skills for Sustainable Building Performance	Refurbishment - Heritage Buildings
12	ICT Building Performance Modelling	SFM - Heritage Buildings
13	ICT FM Decision Making	Post Occupancy Surveys - WPD
14	SFM - Opportunities	ICT in Maintenance Planning
15	Sustainability and Business Performance	Supply Chain Management - Service Performance
16	Maintenance Management - Business Strategy	Public Sector REM
17	SFM - Heritage Buildinsg	Energy Life Cycle Analysis
18	ICT Engineering Facilities Performance	Alternative Approaches to Service Procurement
19	ICT in Maintenance Planning	Public Sector Service Delivery
20	FM Service Performance	Benchmarking Public Sector FM

Research Panel Area: Importance - Knowledge
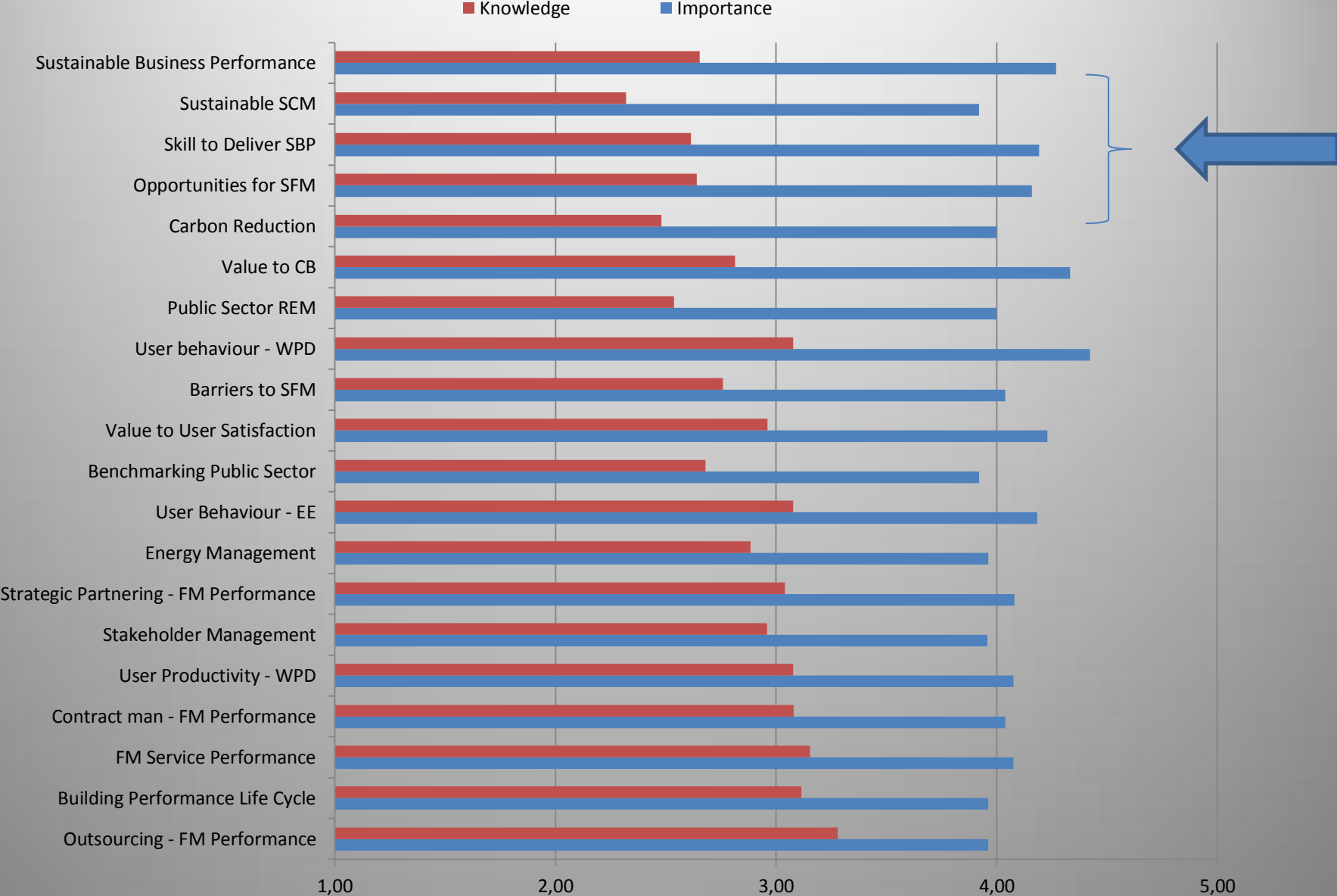
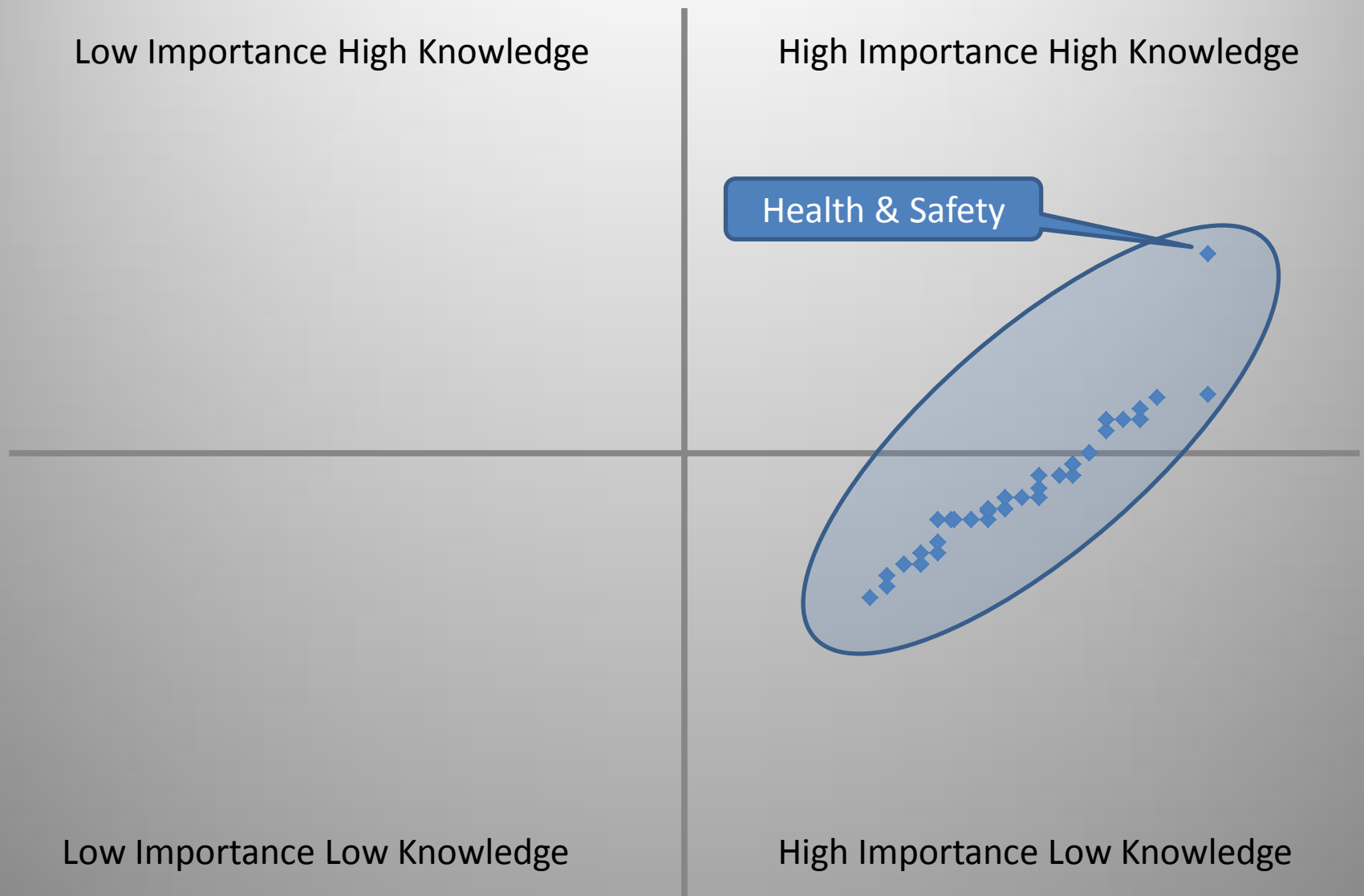# Practitioner Panel Area: Importance - Knowledge

■ Importance   ■ Knowledge
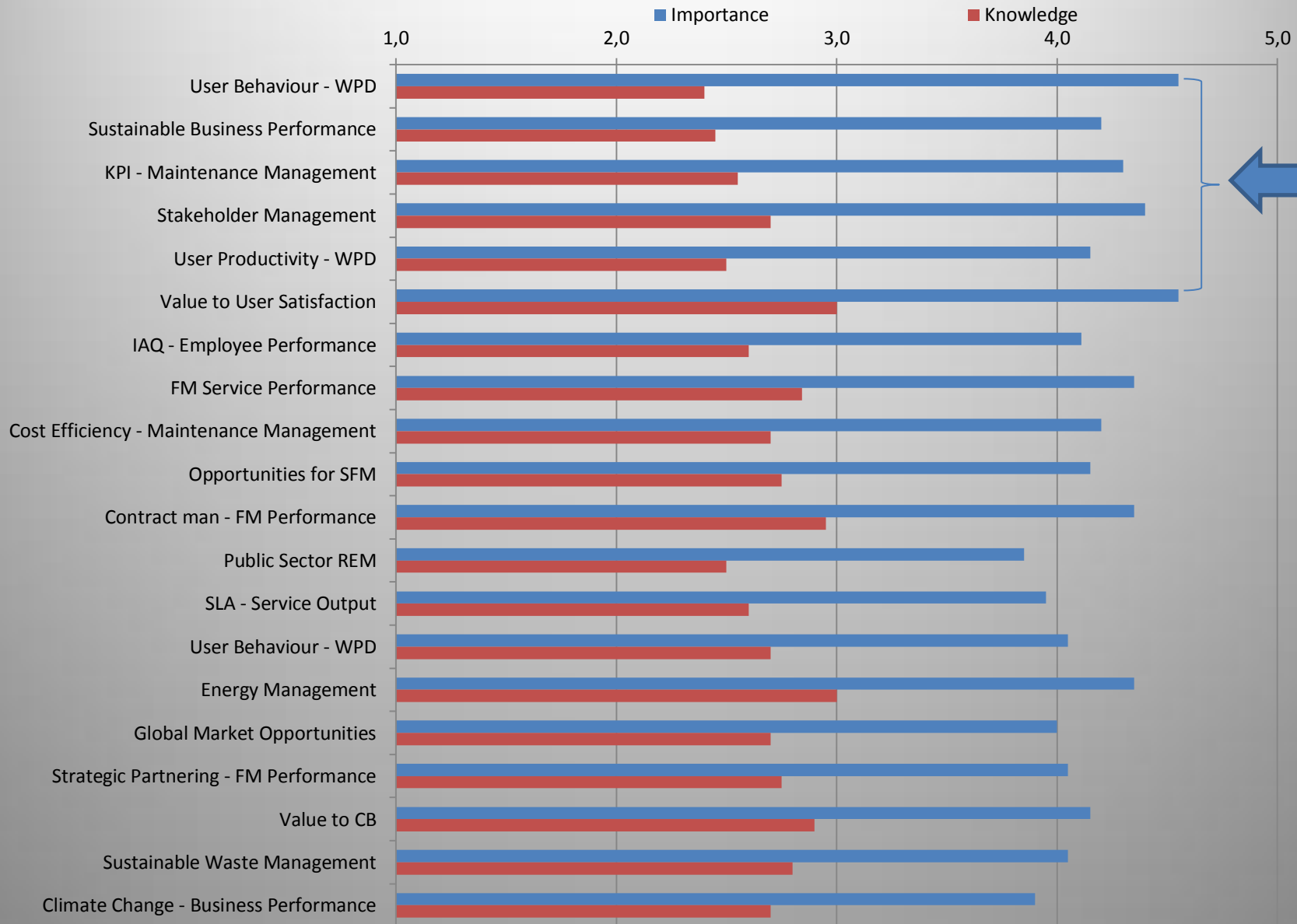
Research Panel Importance – Knowledge Matrix

Practitioner Panel Importance – Knowledge Matrix

Low Importance High Knowledge

High Importance High Knowledge

Health & Safety

Low Importance Low Knowledge

High Importance Low Knowledge

The Next Steps

- From phase 1 of the Delphi project it would appear that the research and practitioner communities are in broad agreement as to current levels of importance and knowledge across a wide range of FM issues.

- There are some differences in the perceived gap between knowledge and importance with researcher's believing that the biggest gap is associated with strategic issues whilst practitioner's believe it is associated with operational issues.

- The second phase of the project has just begun and hopefully we will obtain convergence to the point that we can effectively produce a 'State of the Art Report' of FM research.

CIB W70 Research Roadmap
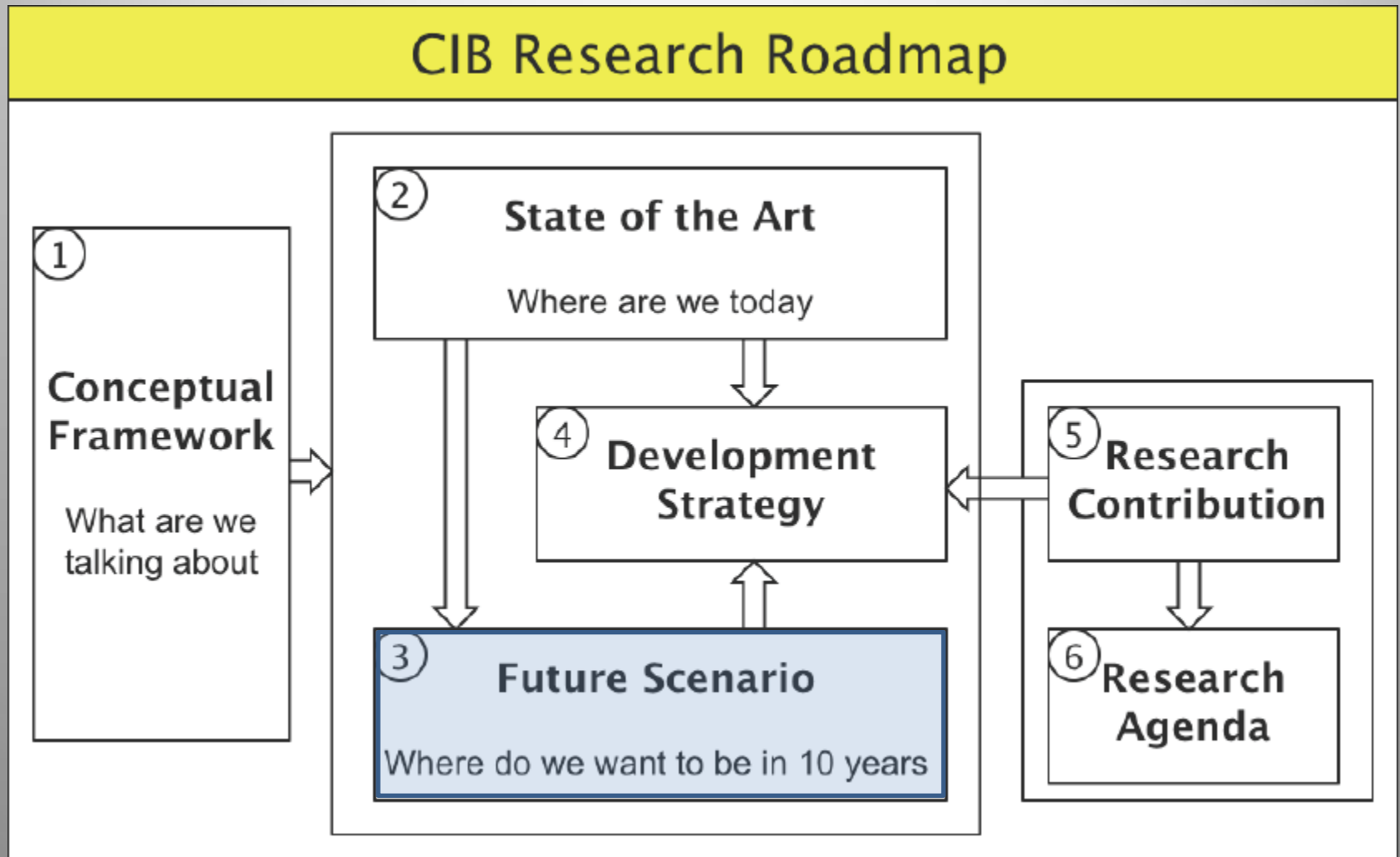
Workshop

- This is where we would like your help.

- Consider how the profession might change over the next 10 years?

- Want you to spend the next 5-10 minutes in groups of 2-3 thinking about this questions and to give us feedback by completing the forms that you should have found on your seat.

- Please consider the following questions
  - ➢ What are the emerging issues that are likely to become more important over the next 10 years?
  - ➢ What current issues are likely to become less important over the next 10 years?
  - ➢ What new tools, models, technologies, systems etc are likely to be needed over the next 10 years?
  - ➢ What is the greatest threat to researchers being able to support the research needs of the profession over the next 10 years.

FM Research – Meeting the needs of Industry?

Problem Solving

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Curiosity

Business

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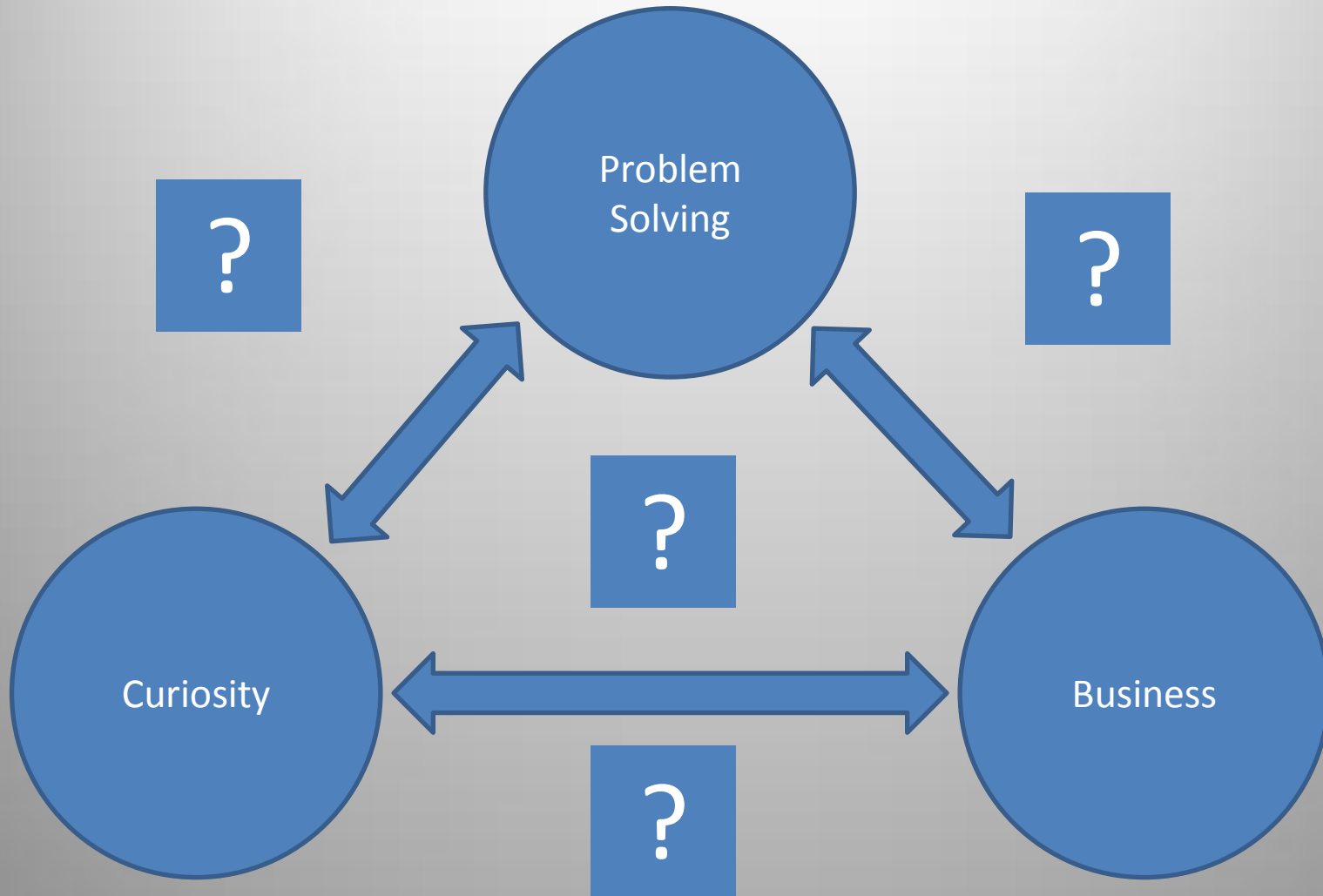
Do we have a profession wide view?

FM Research – Meeting the needs of Industry?
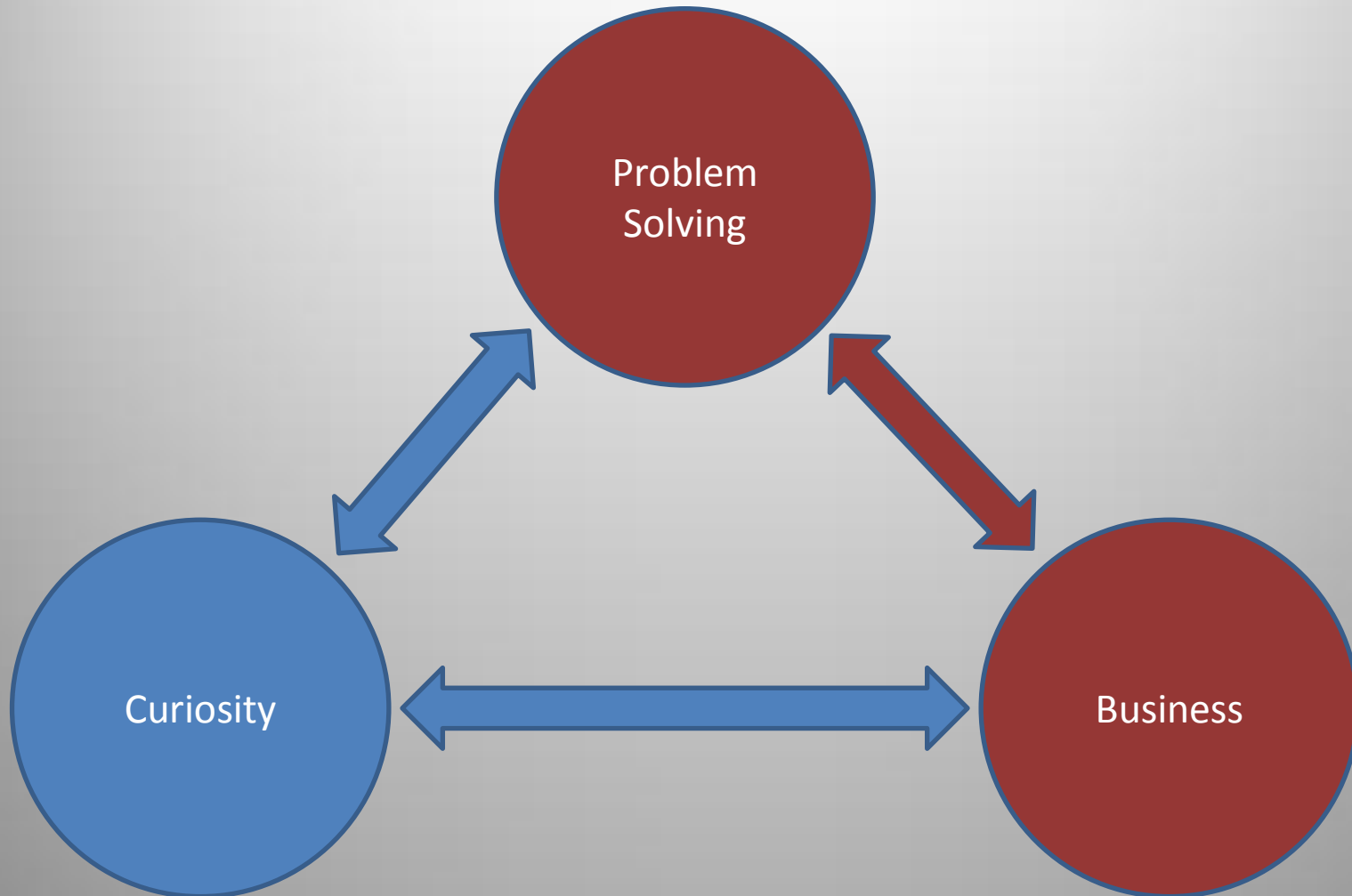
BUT is this what WE want?

Thank you for your attention.

Questions?