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The Status and Prospect of International CM Market

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The Challenge To International CM



- The global construction market is enormous and growing nearly 5% per year
- Projects are bigger and more complex
- Construction industry is generally inefficient, antiquated, and unsafe
- Global demands for resources, sustainability, efficiencies, and transparency will continue

The industry needs our help, but the CM profession must step up and provide the leadership.

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AGENDA

1. Status of International CM Market
2. Trends in International CM
3. Issues Facing the CM Industry
4. Recommendations For Industry Action

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ABOUT CMAA



- North America's only organization dedicated solely to the interests of professional program and construction management
- Mission
 - *To promote and enhance leadership, professionalism and excellence in managing the development and construction of projects and programs*
- Started 1982
- 4,700 members – Owners, firms, individuals, academics
- Conferences, industry summits, certification, standards of practice, professional development, research, scholarships
- Agreements with international PgM/CM associations

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Status of International CM Market

- Global construction is more than \$5 trillion per year
 - GLOBAL INSIGHT, FEBRUARY 2008
- It is forecasted to grow 4.5% per year to \$8 trillion in 2011
 - Growth will be strongest in Asia (10.2%), Eastern Europe (8.5%) and South America (7.0%).
 - Europe will grow 3.3%; North America 0.9%
 - Growth strong in all sectors (residential, infrastructure, structures) except North America housing.
- Following tables show the size and shape of the market

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Largest Construction Markets

Table 2
The 20 Largest Construction Markets

Country	Total Construction Spending, 2006, Billions of US\$	Real 2000 U.S. Dollar CAGR* 2006-2011	Cost Inflation CAGR* 2006-11	5-Year Construction Risk Score (1=lowest risk)
United States	964.7	0.0%	2.1%	14.9
Japan	712.7	1.6%	0.9%	16.8
China	504.6	13.7%	3.6%	40.1
United Kingdom	307.2	4.5%	2.7%	20.4
France	200.5	3.1%	2.1%	22.4
Spain	197.5	3.5%	2.6%	24.9
Germany	178.5	2.9%	1.3%	22.1
Italy	166.4	0.9%	2.0%	23.6
Brazil	156.6	5.0%	4.1%	37.4
India	144.8	10.5%	5.2%	31.4
South Korea	140.7	3.5%	2.5%	19.8
Canada	134.1	2.9%	1.4%	20.4
Mexico	105.8	6.7%	3.9%	30.6
Russia	105.5	9.8%	9.5%	39.4
Turkey	91.8	5.7%	7.8%	33.9
Venezuela	90.9	11.9%	16.2%	63.7
Australia	89.2	4.8%	4.0%	20.4
Saudi Arabia	79.1	6.3%	1.4%	21.3
Indonesia	75.1	7.1%	5.6%	48.0
Netherlands	70.2	1.9%	1.8%	21.4
Total 69 Countries	5343.7	4.5%	3.4%	28.8

*Compound average annual growth rate.

Source from "Global Insight" Executive Overview Feb. 2008

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GLOBAL CONSTRUCTION BY SECTOR

Table 1
Global Construction Segment Detail

Construction Segment	Market Size 2006 (Billions of US\$)	Real 2000 U.S. Dollar Growth 2007	Real 2000 U.S. Dollar Growth 2008	Real 2000 U.S. Dollar CAGR* 2006-11	Real 2000 U.S. Dollar CAGR* 2006-16
Total	5343.7	3.8%	3.6%	4.5%	5.1%
Residential	2111.2	-1.5%	-0.6%	2.7%	3.9%
Infrastructure	1555.9	6.8%	6.1%	5.6%	5.9%
Transportation	605.1	6.6%	6.0%	5.5%	5.9%
Public Health	622.3	6.9%	6.0%	5.4%	6.0%
Energy	328.6	7.1%	6.3%	5.9%	5.7%
Nonresidential Structures	1676.6	8.0%	6.3%	5.7%	6.0%
Office	297.1	7.1%	5.0%	4.9%	4.8%
Commercial	352.1	7.1%	4.6%	5.1%	5.0%
Institutional	368.5	5.4%	4.1%	4.1%	4.0%
Industrial	658.9	10.5%	9.0%	7.2%	7.8%
Chemicals	74.3	10.5%	9.1%	7.4%	8.0%
Electrical and Electronic Products	88.6	15.8%	12.7%	10.2%	10.9%
Communications	55.7	9.8%	7.9%	7.4%	7.2%
Utilities	38.0	8.7%	6.7%	6.0%	6.4%
Other	236.3	10.1%	9.1%	6.9%	7.7%
Food Processing	80.7	9.9%	8.6%	6.8%	7.3%
Transportation Equipment	60.2	8.0%	6.4%	5.6%	5.7%
Petroleum Refining	25.1	5.9%	5.2%	4.6%	5.2%

*Compound average annual growth rate.

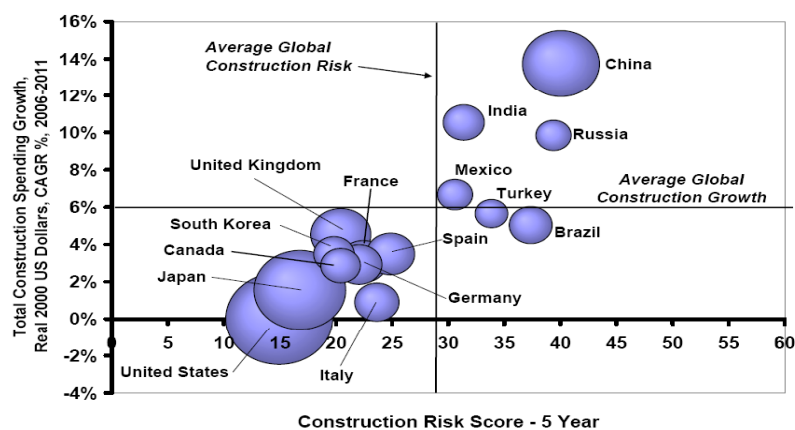
*All CAGRs and growth rates are measured in constant 2000 U.S. dollars unless otherwise noted.

Source from "Global Insight" Executive Overview Feb. 2008

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MARKETS VARY IN SIZE, GROWTH, RISK

Figure 2
The 15 Largest Construction Markets: Size, Forecasted Growth, and Risk

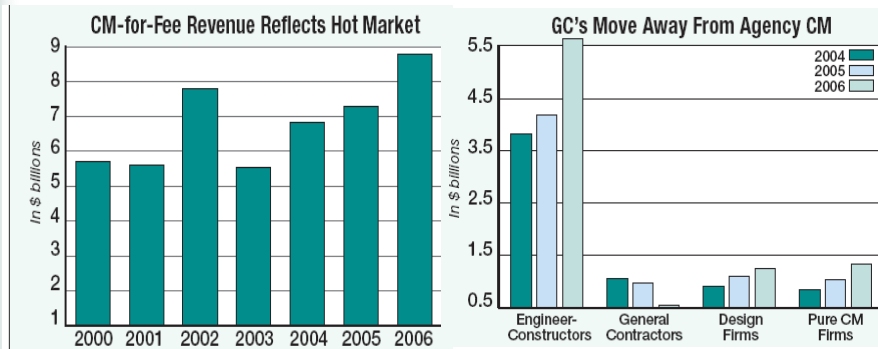


Circle Size = Total Construction Spending (Nominal U.S. Dollars) in 2006

Source from "Global Insight" Executive Overview Feb. 2008

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Program and CM Also Growing



Source from "ENR" June 11, 2007

- Table is for US PgM/CM firms
- Most of growth is program management, not CM.

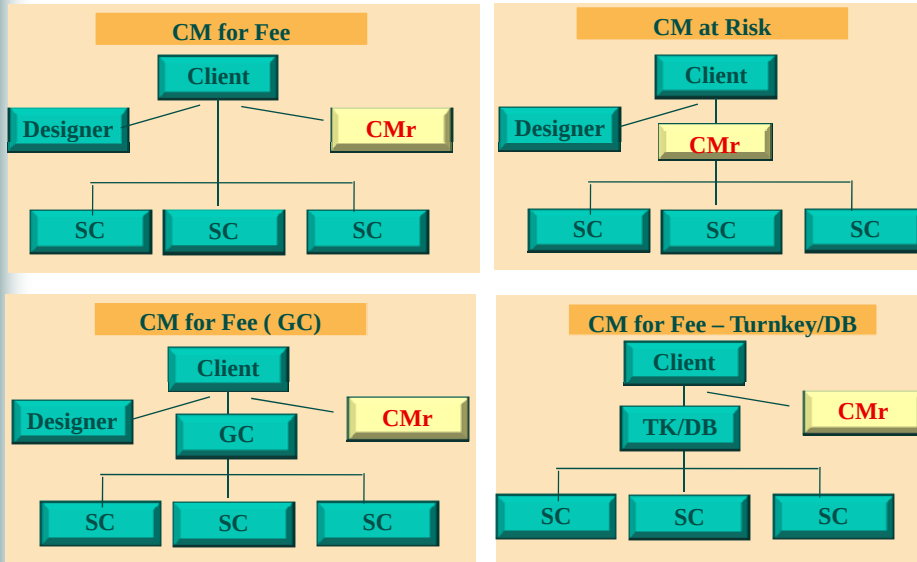
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Where is PgM/CM Used?

- While CMAA does not have complete data on the international PgM/CM market, our observations are:
 - PgM/CM is actively used in US, Western Europe, Arab Gulf
 - PgM/CM moderately used in Asia
 - Significant use in Australia
 - S. Korea – construction supervision more than CM
 - China – some use in EPCM
 - PgM/CM only limited use in developing countries
 - Generally only on projects funded by major aid donors – e.g. World Bank, EBRD, USAID, Asian Development Bank

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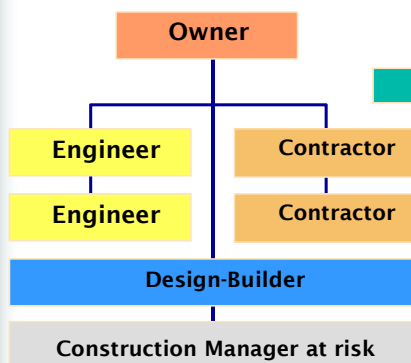
Construction Management Models



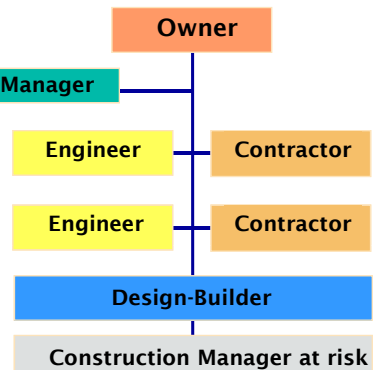
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Program Management Models

Owner Management Model



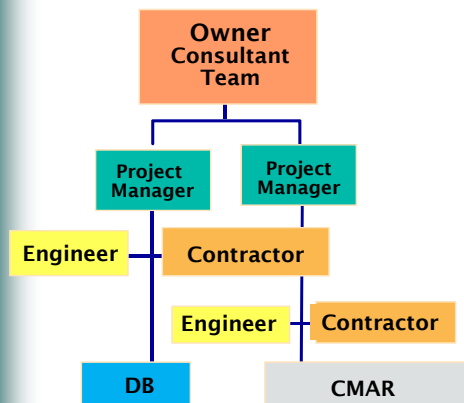
Consultant Management Model



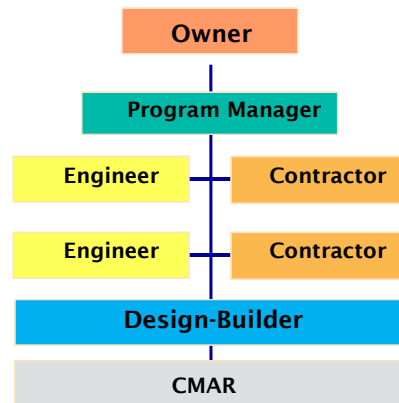
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Program Management Models

Integrated PM Model



At Risk Program Manager



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Trends in International CM

1. Growth in Program Management
2. Building Information Modeling
3. Collaboration
4. Alternative Project Delivery Models

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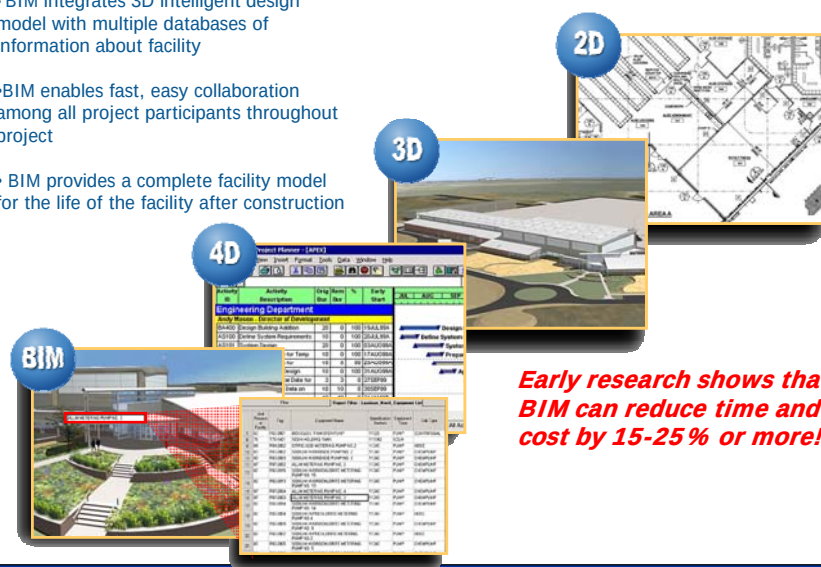
Growth in Program Management

- ENR reported that in 2006 that Program Management grew by 36% while CM for Fee grew only 1.3%
- Multi-Billion US Dollar Programs are increasingly common:
 - Masdar Sustainable City - \$23 billion
 - London 2012 Olympic Games - \$16 billion
 - Panama Canal Expansion - \$5.3 billion
 - Yongsan Redevelopment - \$20 billion
- Program Management driven by:
 - Larger projects but smaller Owner staff
 - Focus on life cycle costs and not just design and construction
 - Better Program Management practices and tools

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Building Information Modeling (BIM)

- BIM integrates 3D intelligent design model with multiple databases of information about facility
- BIM enables fast, easy collaboration among all project participants throughout project
- BIM provides a complete facility model for the life of the facility after construction



Early research shows that BIM can reduce time and cost by 15-25% or more!

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Collaboration

- Collaboration is seen by many as key to improving project delivery and creating more value to Owners
- Collaboration requires:
 - Full, open information sharing among all project parties
 - Bringing project parties into the project as early as possible
 - Bringing subcontractors and supply chain in early
 - Better risk allocation and sharing – not all on the contractor
 - Contracts that promote collaboration and early issue resolution

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Major US Owners Promote Collaboration

- Construction Users Roundtable (CURT), composed of some of largest US Owners, cites collaboration and integrated teams as critical to optimizing projects.
 - *Optimizing the Construction Process: An Implementation Strategy, 2005*
- CURT identified key elements to achieve optimized projects:
 - Focusing beyond "Cost"
 - Technology and BIM
 - Information Sharing
 - Compensation tied to desired outcomes
 - Incentives that reward performance
 - Pre-planning – A Critical Step
 - Contracts that promote collaboration
 - Shared contingency and its management

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International Owners Promote Collaboration

- In UK, several major construction industry studies between 1994 and 2001 concluded that keys to solving industry problems included:
 - 1) Early partnering with entire supply chain
 - 2) Collaborative contracts that accept that contractors need to make a profit
 - 3) Long term relationships with contractors and key suppliers
 - 4) Learning and continuous improvement
- US Department of Transportation study of Canadian and European transportation projects found that:
 - “a more spirited effort of long term partnership and collaboration between the public and private sectors” was a better model for delivering public transportation projects.
 - Construction Management Practices in Canada and Europe, May 2005

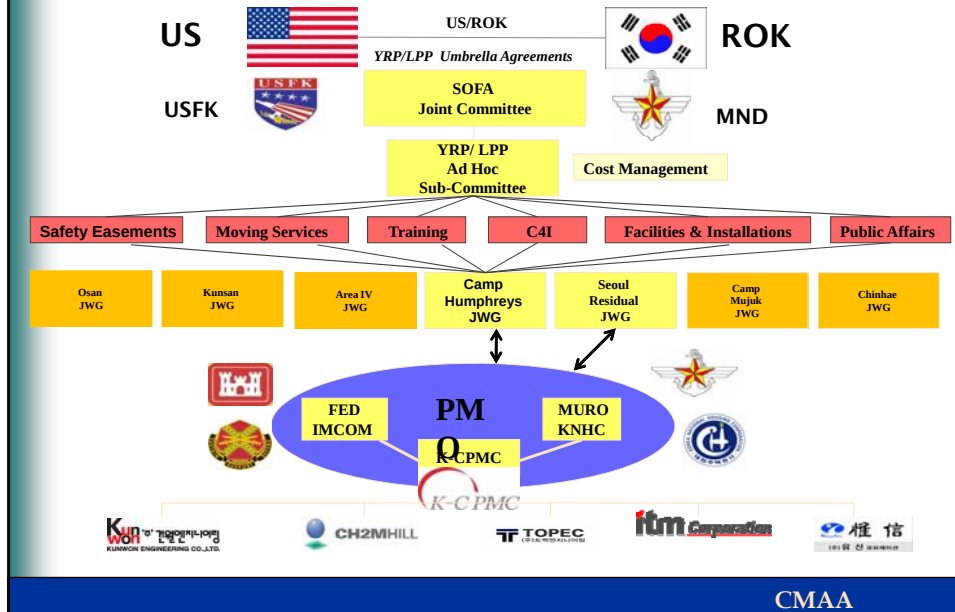
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Alternative Project Delivery Models

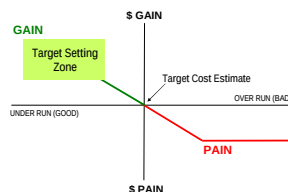
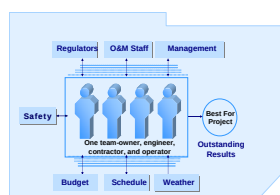
- More types of project delivery models in use today
- Some key trends we are seeing:
 - More integration of Owner with delivery team
 - More focus on risk – identification, allocation, sharing
 - More focus on best value rather than lowest bid
- CURT, UK, US DOT studies all support these trends:
 - CURT: need Owner Leadership and Integrated Project Structure
 - UK: early supply chain involvement and long-term relationships
 - US DOT: more integrated risk analysis techniques, more risk/incentive contracts, more “best value” contractor selection.

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USFK Relocation Program – Highly Integrated



The Alliance Model Fully Integrated, Complete Risk Sharing



- **What is Alliance Delivery?**
 - A delivery mechanism where the Owner and Commercial Participants are working together in a partnership
 - A contracting mechanism where risk is shared appropriately between the participants
 - An environment where decisions, solutions to problems and behaviours are driven by a shared set of objectives
 - A commercial arrangement where risk and reward incentives are put in place to drive the behaviours that result in exceptional performance
- **Typical Alliance Contractual Agreement**
 - Between a group of participants, including the Owner, rather than Owner and Contractor
 - Usually does not have a firm scope of work and performance criteria – that is developed by the alliance and embodied in the performance targets
 - There is no allocation of risk between parties – it is all about shared risk
 - Usually no mechanism for dispute resolution – left to arbitration by the Alliance Leadership Team (ALT)
 - ALT has largely unfettered ability to modify the agreement
- **Typical Alliance Commercial Framework**
 - Owner reimburses all direct costs
 - Commercial Participants receive a Fee for corporate overheads and margin
 - Risk/reward incentives for performance by Participants

ISSUES FACING OUR CM INDUSTRY

Global Construction Industry Issues

1. Low productivity
2. Corruption
3. Resources

Construction Management Industry Issues

1. Defining the Value of CM
2. Defining the Role of CM
3. Standardizing Best Practices

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Global Construction Industry Issues “Low Productivity”

- A New Book, *Broken Buildings, Busted Budgets* (Barry LePatner) states:
 - In 40 years, US worker productivity in all other industries has increased by 125%, while construction productivity has decreased by 25%
 - While US productivity is bad, the rest of world is worse
 - Brazil – 33% of US productivity
 - India – 8% of US productivity
 - Japan – 50% of US productivity
 - South Korea – 70% of US productivity
- Construction waste is enormous (and costly)
 - 30% of all waste in OECD countries

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Global Construction Industry Issues “Corruption”

- *Transparency International*, the leading authority on international corruption, stated:
 - *“Nowhere is corruption more ingrained than in the construction sector” (Global Corruption Report 2005)*
- In 2006, the Chartered Institute of Building (CIOB) surveyed 1400 persons working in construction industry and found
 - *50% thought that corruption was common in UK construction*
 - *70% thought industry and government were not doing enough to combat corruption*

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Global Construction Industry Issues “Resources”

- Well known issues today with materials:
 - High demand/reducing supply for raw materials
 - Increasing prices for steel, copper, other construction materials
- Growing supply shortages for construction industry professionals and skilled labor:
 - In Korea, CERIK forecasts a shortage of 34,500 construction workers in Seoul and 72,000 workers in country by 2011.
 - In US, industry cite growing shortage of professional and trade workers as biggest industry problem
 - *Shortages in engineering, construction, and CM*

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Construction Management Industry Issues “Defining the Value of CM”

- The CM industry has not adequately defined its value:
 - No agreement on definition of CM:
 - *Disagreement on whether it is a delivery method*
 - CMAA View:
 - CM is delivery neutral and applies to any delivery method
 - CM is best practice management
 - *Misunderstanding on whether CM is only for the construction phase*
 - CMAA View:
 - CM manages the entire delivery process
 - The earlier CM is started, the greater its value
 - No one has quantified the benefits and savings that CM brings
 - *CMAA has research ongoing to quantify CM's value*

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Construction Management Industry Issues “Defining the Role of CM”

- CM is about Leadership:
 - Only party focused solely on best interests of project
 - Take charge of the entire project and bring all parties together
 - Anticipate problems and proactively solve them
- Leadership skills vary widely across our global industry
 - Better developed in North America and Europe
 - Less developed in Asia and developing countries

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Construction Management Industry Issues “Standardizing Best Practice”

- There is no one recognized body of knowledge and best practice for CM
 - CM associations compete with PM associations
 - Practices tend to be local
- There are multiple PgM/CM certifications that compete
 - In US, multiple associations offer different certifications in PgM and CM, with different requirements and standards
 - In Korea, I know of 6 different CM certifications by 6 different associations, plus private company/university certifications

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RECOMMENDATIONS FOR INDUSTRY ACTION

1. Promote the Value of Construction Management
 - Particularly to Governments
 - Measure and quantify the benefits of CM
2. Organize, Collaborate, and Share
 - Best practices
 - Build networks of our industry associations
 - Agree on common standards and certifications
3. Develop our CM Talent
 - Build leaders, not just technicians
 - Promote benefits of CM profession to young people

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QUESTIONS?

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