Data, Cost Predictions, and International Standards—Case of International Construction Measurements Standards (ICMS)

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Session WE2A: Working Smarter: Metrics for Project Delivery

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Our industry is global; our standards are not
Major project delivery is increasingly multi-national and multi-disciplinary
Collectively, our profession can deliver the solution...
COALITION ORGANISATIONS

The ICMS Coalition is a rapidly growing partnership of leading organisations from every continent in the world, committed to producing and supporting one shared standard for construction measurement. Starting with meetings at the International Monetary Fund in May 2015, the Coalition created an independent standard setting committee and committed to the vision of one shared and international standard.

STANDARDS SETTING COMMITTEE

The Standards Setting Committee comprises of 27 independent experts, from 17 different countries. They’ve been appointed by the coalition to draft and consult on the new International Construction Measurement Standards.
International Construction Measurement Standards: Global Consistency in Presenting Construction Costs

International Construction Measurement Standards Coalition
What are the aims of ICMS?

• Construction cost to be consistently and transparently benchmarked
• Causes of difference in costs between projects can be identified
• Properly informed decisions on the design and location of construction projects to be made
• Data to be used with confidence for project financing & investment, programme and decision-making and related purposes
Who will benefit from ICMS?

• Any party that has a direct or indirect interest in construction projects

• Those investing in or managing construction projects will benefit significantly

• Financial institutions will have a consistent basis for assessment of project funding requirements

• The public will benefit through enhanced, prudent assessments of public projects
Core Classification in ICMS

- **Simple Project or Complex Project or Mega Project**
  - **Level 1**: Project
  - **Level 2**: Sub-Projects
  - **Level 3**: Cost Categories
  - **Level 4**: Cost Groups

- **Optional**:
  - Project Attributes

- **One-to-many**
  - International
  - Local
ICMS Mapping

• Australian and New Zealand Standard Method of Measurement (ANZSMM)
• Network Rail’s Rail Method of Measurement (RMM)
• ICE Civil Engineering Standard Method of Measurement – CESMM
• CSI MasterFormat
• UniFormat
• CIQS Elemental Cost Classification
• Manual of Contract Documents for Highway Works, Volume 4 - Bills of Quantities for Highway Works, Section 1 Method of Measurement for Highway Works (MMHW)
What do the standards cover?

- High-level cost classification
- Buildings and civil engineering
- Definitions, inclusions and exclusions
- Four level taxonomy
- Key cost drivers
ICMS Taxonomy
ICMS Level 1

<table>
<thead>
<tr>
<th>LEVEL 1: PROJECT AND SUB-PROJECTS</th>
<th>Project Types in ICMS</th>
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</thead>
<tbody>
<tr>
<td>Buildings</td>
<td>Roads and motorways</td>
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<tr>
<td>Pipelines</td>
<td>Railways</td>
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<tr>
<td>Wells and boreholes</td>
<td>Power-generating plants</td>
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<td></td>
<td>Bridges</td>
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<td></td>
<td>Tunnels</td>
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<td></td>
<td>Waste water treatment works</td>
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<td></td>
<td>Water treatment works</td>
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<td></td>
<td>Chemical plants</td>
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<td></td>
<td>Refineries</td>
</tr>
<tr>
<td></td>
<td>Dams and reservoirs</td>
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<td>Mines and quarries</td>
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ICMS Level 2

- CAPITAL CONSTRUCTION COSTS
- ASSOCIATED CAPITAL COSTS
- SITE ACQUISITION AND CLIENT’S OTHER COSTS
How will it be used?

- Cost reporting and data collection
- Investment and risk analysis
- Benchmarking global costs
- Informing ‘should cost’
- Procurement evaluation
- Auditing
- Dispute resolution
ICMS Partners will help to lead market adoption of ICMS
Governments and clients demand ICMS
ICMS Explained

- User guide
  
  To provide a brief guide of the background, structure, content and potential use for ICMS, together with various appendices, which provide further and more detailed guidance and worked examples.
ICMS Data Standards

► Use XML to produce an XSD schema that defines the architecture and format of the data as defined by the ICMS Standards

► RICS will provide support to help stakeholders understand and implement the standard at a commercial and technical level
Application of Data Standards in ICMS

- Both have Metadata elements:
  - ‘Data about the data’
  - Provides trust by capturing who, how, why and when the data was collected and measured.
ICMS then provides support for all the various project types e.g. Building with elements for works, quantities...
Application of Data Standards in ICMS
ICMS Data Platform

Global Benchmarking Database

Customer Data

Structured (ICMS maps)

Structured (No ICMS maps)

Un-structured

Machine Based Learning

Mapping Engine

DATA
Projects (P₁ to Pₙ)

Identify and Specify Requirements

Initiate Project

Acquire/Construct

Asset (A₁ to Aₙ)

Utilise/Operate

Maintain

Dispose/Renew

Project Information

Asset Information

Project Characteristics

Capital Cost Information

Schedule Information

Operating Cost Information

Performance Information

• Location
• Sector
• Site Conditions
• Climatic zone
• Seismic zone
• Procurement characteristics
• Currency information
• Other information

Elemental Classification

Trade-based Classification

Work Package-based Classification

INTERNATIONAL STANDARDS BASED IMPLEMENTATION

ICMS Data Standard

Mapping of Detailed Information to ICMS

Mapping of Detailed Information to ICMI

Project and Asset Benchmarking
Cost Predictions

- Data and Information
- Metrics
- Project Attributes
- Market Factors
- Competencies and Knowledge
- Normalization
Next steps

• RICS Global Professional Statement in Cost Prediction
• NRM adaptation
• ICMS 2nd Edition
ICMS 2 Basis of Classification

ISO 15686-5:2017
Buildings and constructed assets -- Service life planning -- Part 5: Life-cycle costing
Application of the International Construction Measurement Standards (ICMS)

ICMS establish a single, globally-agreed approach that sets out how to report, group and classify construction project costs in a structured and logical form. This course will delve deeper into the structure of ICMS, and explore how to apply the ICMS User Guide to your projects.

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