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Building Information Modeling - BIM

Looking Back

+ Looking Forward

Centre for Computer-assisted Construction Technologies

Institute for Research in Construction

National Research Council Canada

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Meaning of BIM

- For the Architect:

  BIM - Building Information **Modeling**.

- The Engineer:

  BIM - Building Information **Management**.

- The Owner:

  BIM - Building Information **Maintenance**.

- The Idealist:

  BIM - Building Information **Masterpiece**.

- For the rest of us:

  BIM - Building Information **Migraine**.

Bring In Money

Text adapted from an article on Revit MEP in AUGIWorld , image source: http://chaitanya1.files.wordpress.com/2008/04/elephant.png

Users of BIM

- Architecture
- Civil and Structural
- Mechanical, Electrical and Plumbing
- Plant Design (Oil and Gas, offshore)
- Buried Utilities (water, communication, gas ..)
- Power Utilities
- Geospatial
- Facility Management
- Others (transport, roads, bridges, …)

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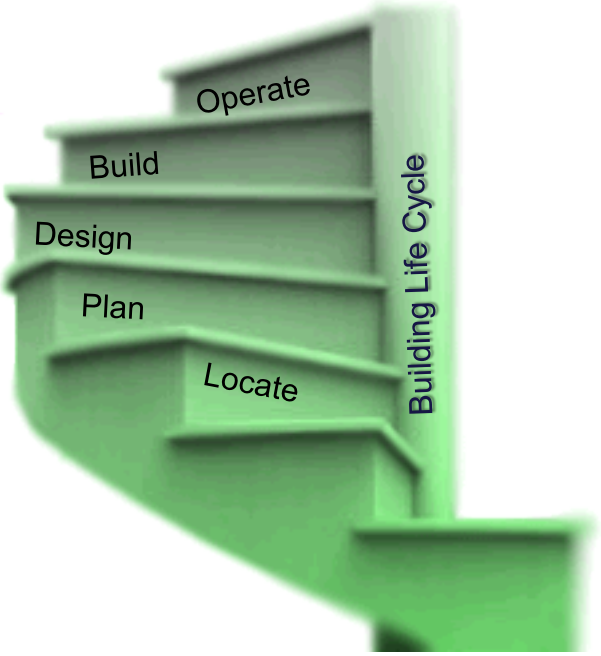
What is BIM?



Foresight

Building Information Modeling/Management is the process of generating and managing building data during its life cycle

AEC Users

BIM is a single integrated model representation from which all drawings & reports are generated

Vendors

BIM covers geometry, spatial relationships, geographic information, quantities and properties of building components

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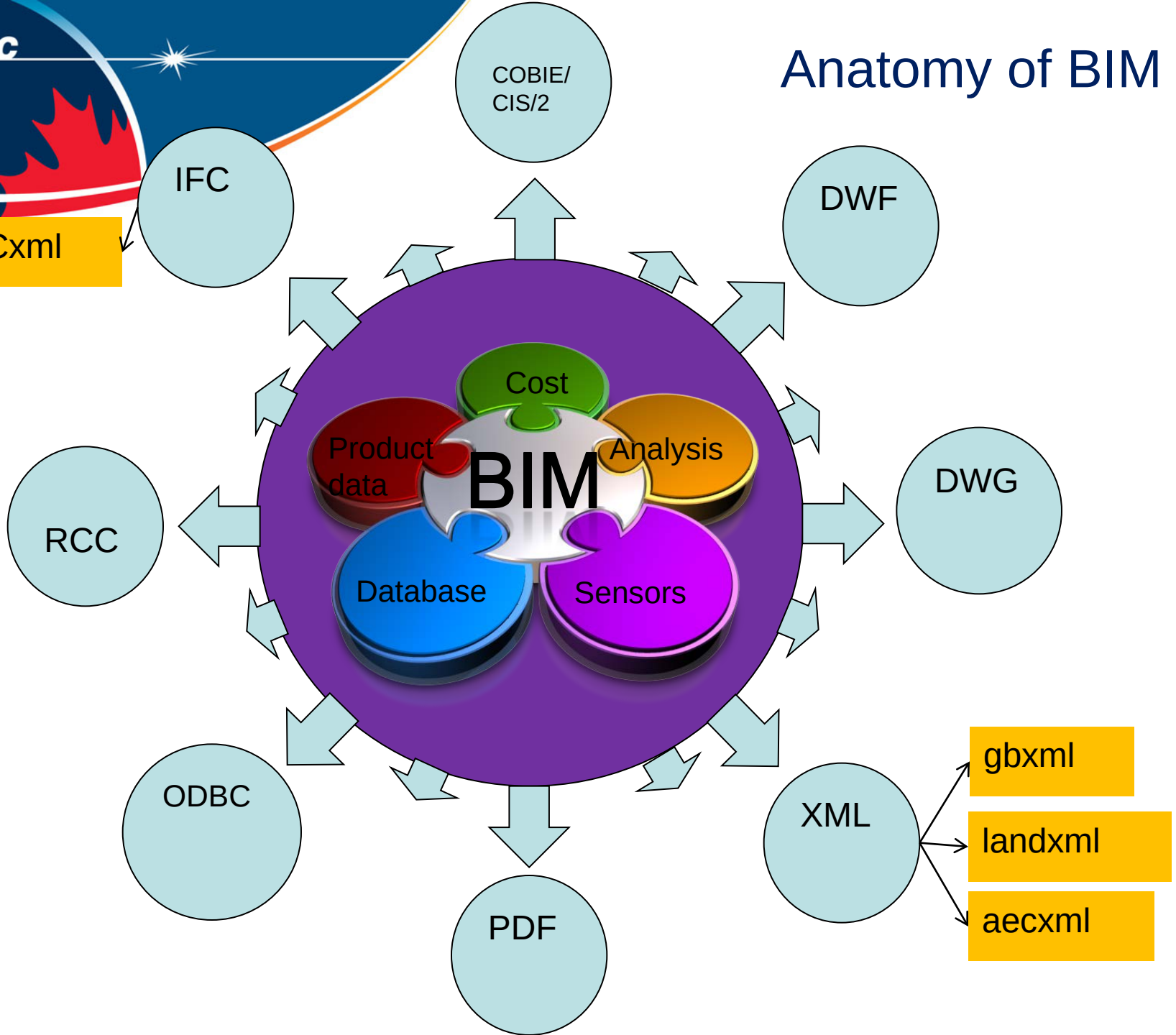
Anatomy of BIM



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Swiss-army knife syndrome

The condition of needing to be equipped with the most possible tools for the maximum number of undefined situations.

Tools or software that have a superfluous amount of functions but that are not overly good at any of them.

BIM represent the Information related to a building, not what you do with the information.

http://www.leisuregeek.com/images/wenger_giant_swiss_army_knife_2.jpg

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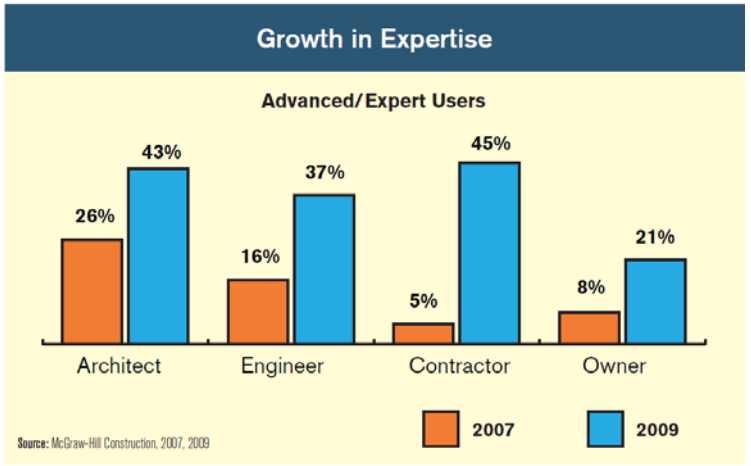
BIM applications

- Visualization
- Energy analysis
- Pre fabrication
- Structural analysis
- Asset management
- Compliance Checking
- Air flow
- Lighting
- Generation of construction specifications
- Manage building data dynamically



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Dynamic Building Information Modeling

Architectural Design | Structural Design | Mechanical Design | ... Design

Building Design & Building Information Management

Sensor Data | Environmental Data | Comfort Data | ... Data

Data & Information Models

Building Models & Data Models

KPI Sustainability & Life Cycle | KPI Accessibility & Evacuation | KPI Cost & Productivity | Physic Based Modeling Performance, Status & Prediction

nD Driven Decision Support System & Key Performance Indicator

Maintenance
Operation
Optimization
Retrofitting

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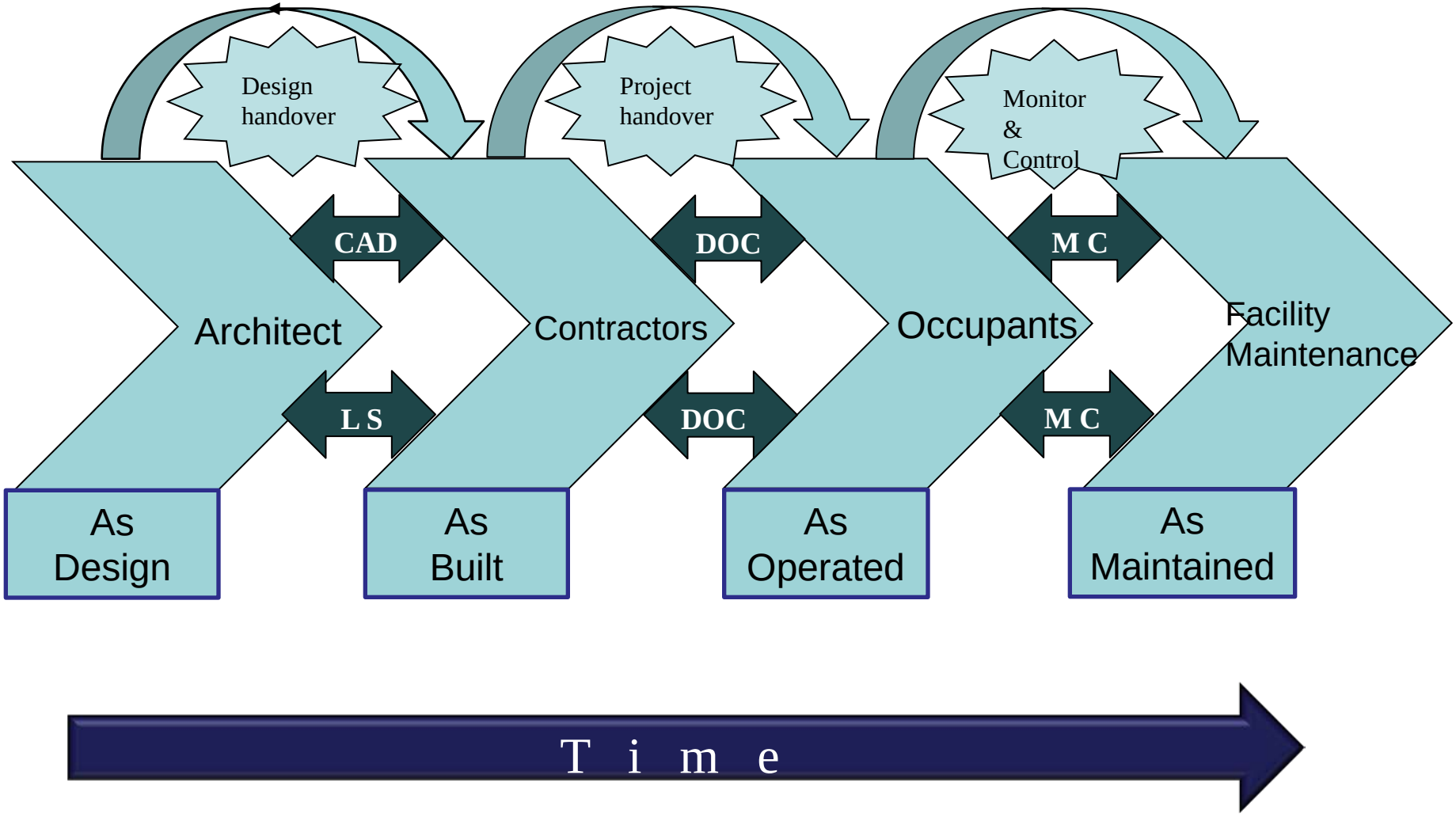
BIM & Lifecycle Management



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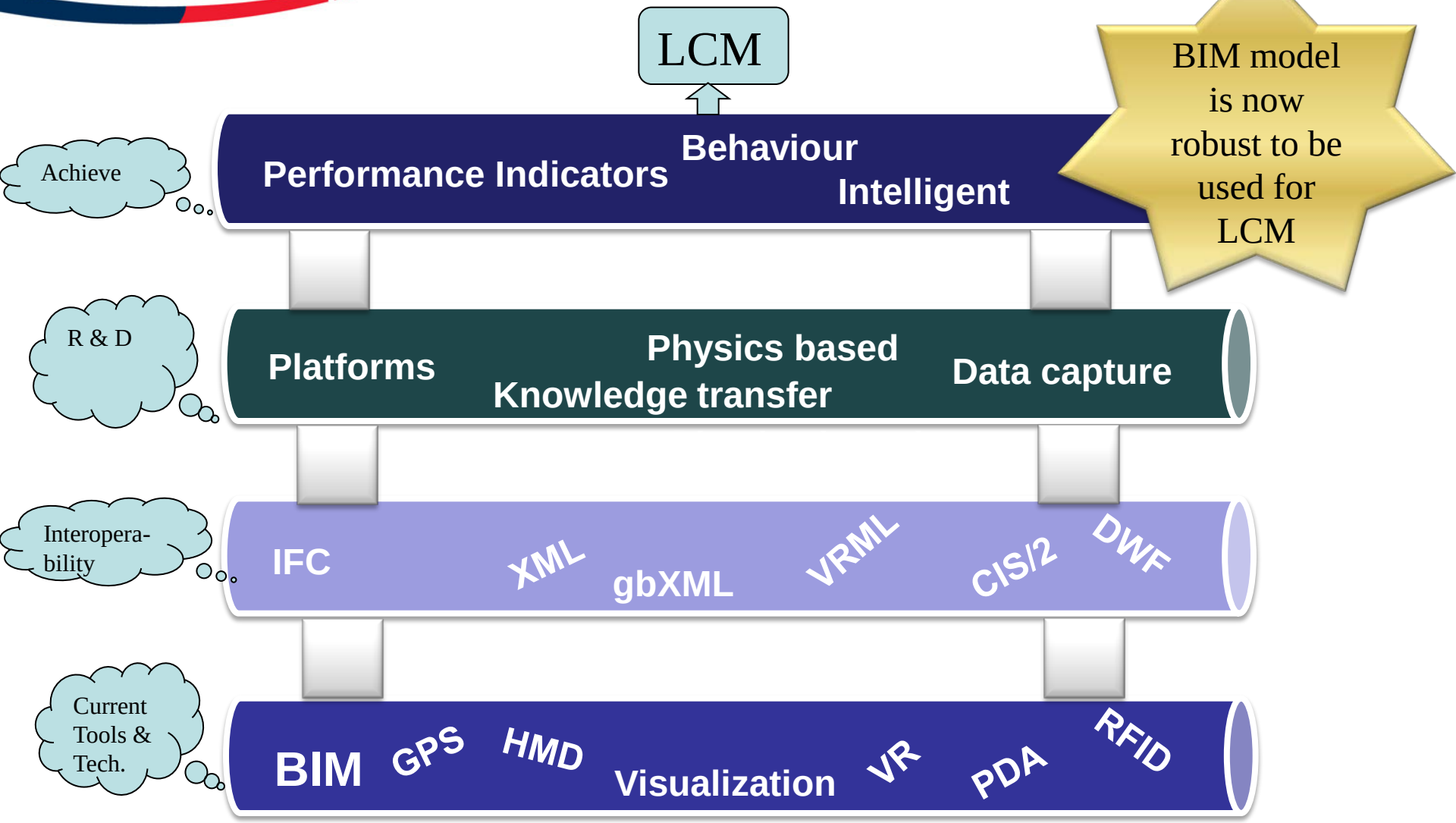
BIM & Lifecycle Management



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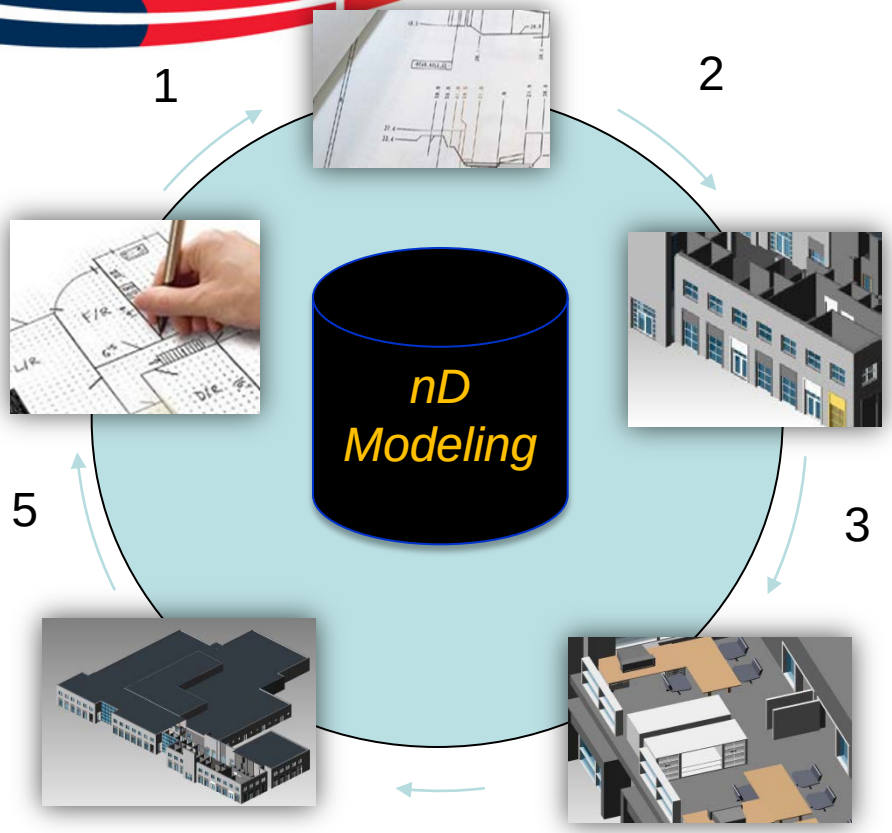
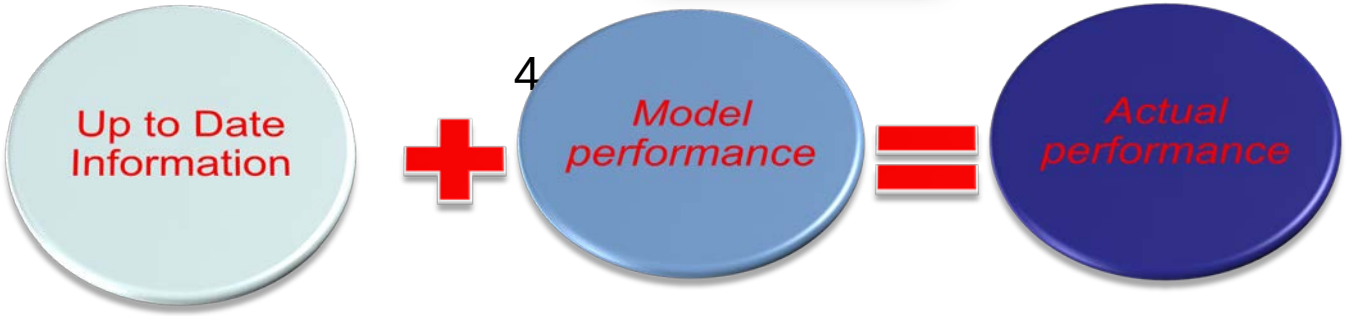
Automated Retrieval of Information



- Construction Documents
- Modeling & Simulation
- Visualization
- Performance Analysis
- Maintenance
- Benchmarks



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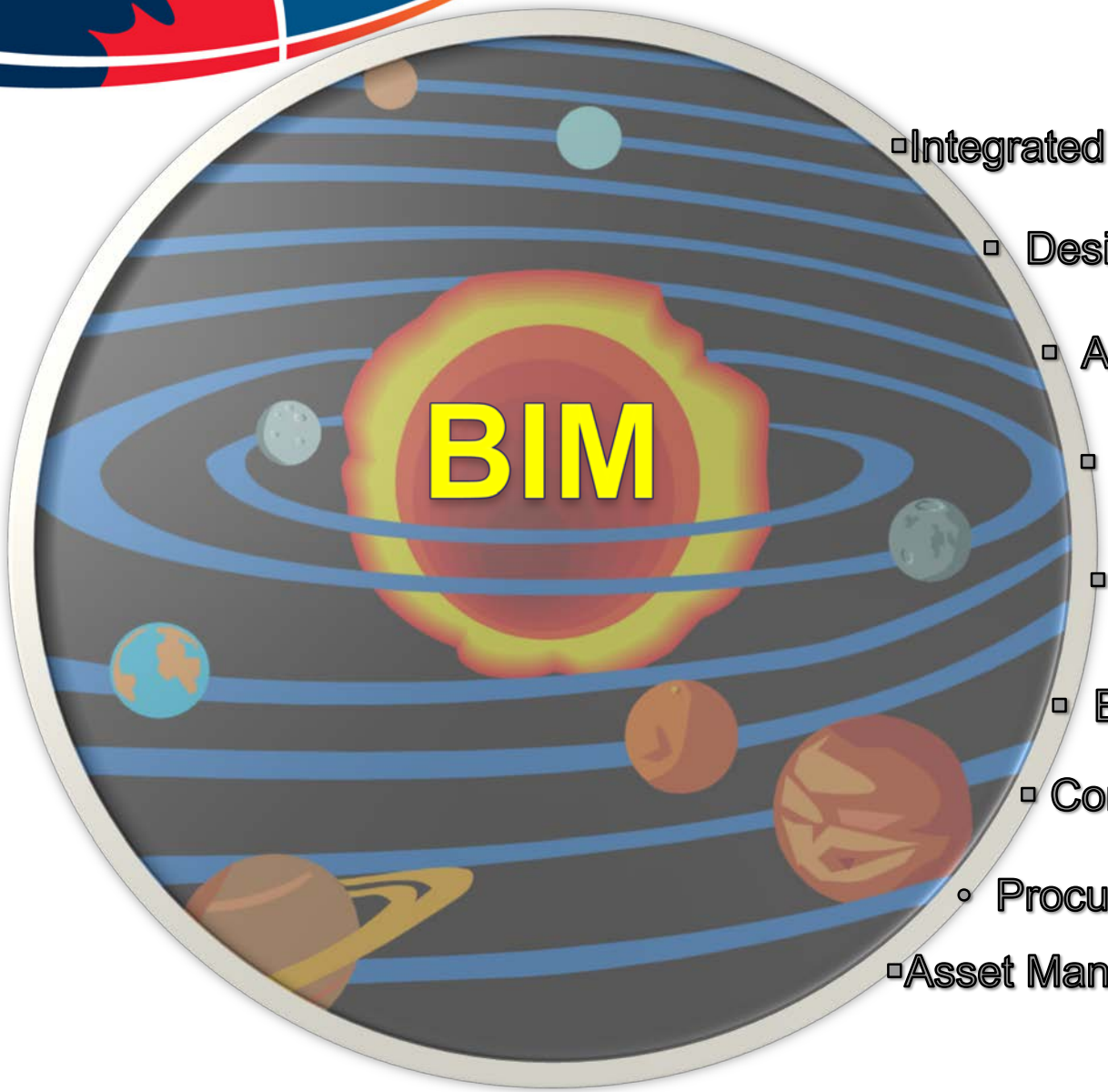
Beyond BIM



- Integrated Design Process
- Design Optimization
- Advanced Visualization
- Scenario-based Training
- Energy Analysis
- Building Performance
- Compliance Checking
- Procurement
- Asset Management & Tracking

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Challenges and Opportunities in BIM

- All AEC sector disciplines not equally represented
- Liability issues – who owns what and who is liable for what?
- Time and steep learning Curve
- Many vendor specific platforms
- Data interoperability but Ontology as well as Semantics
- Many times collaboration is still based on CAD
- Value added Processes
- Data Management through the Lifecycle

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Lessons Learned

- Remember the limitations of people
- People only need to deal with their part of the information
- Manage information overload
- Automated code compliance checking?
- Data Flow though out the process
- Building tools
- Who manages the data?

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Conclusions

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Bringing quality to the built environment

Thank you

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