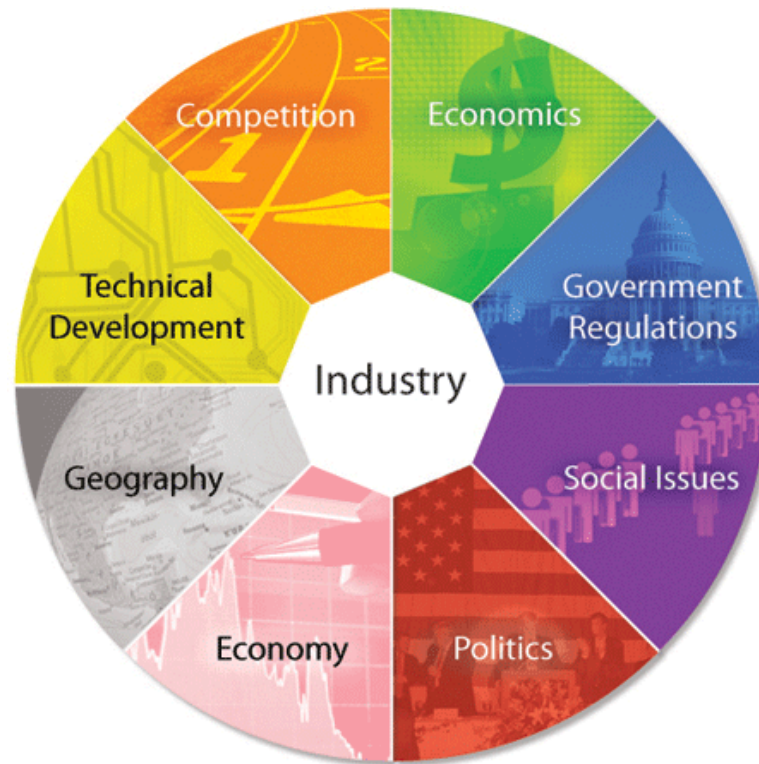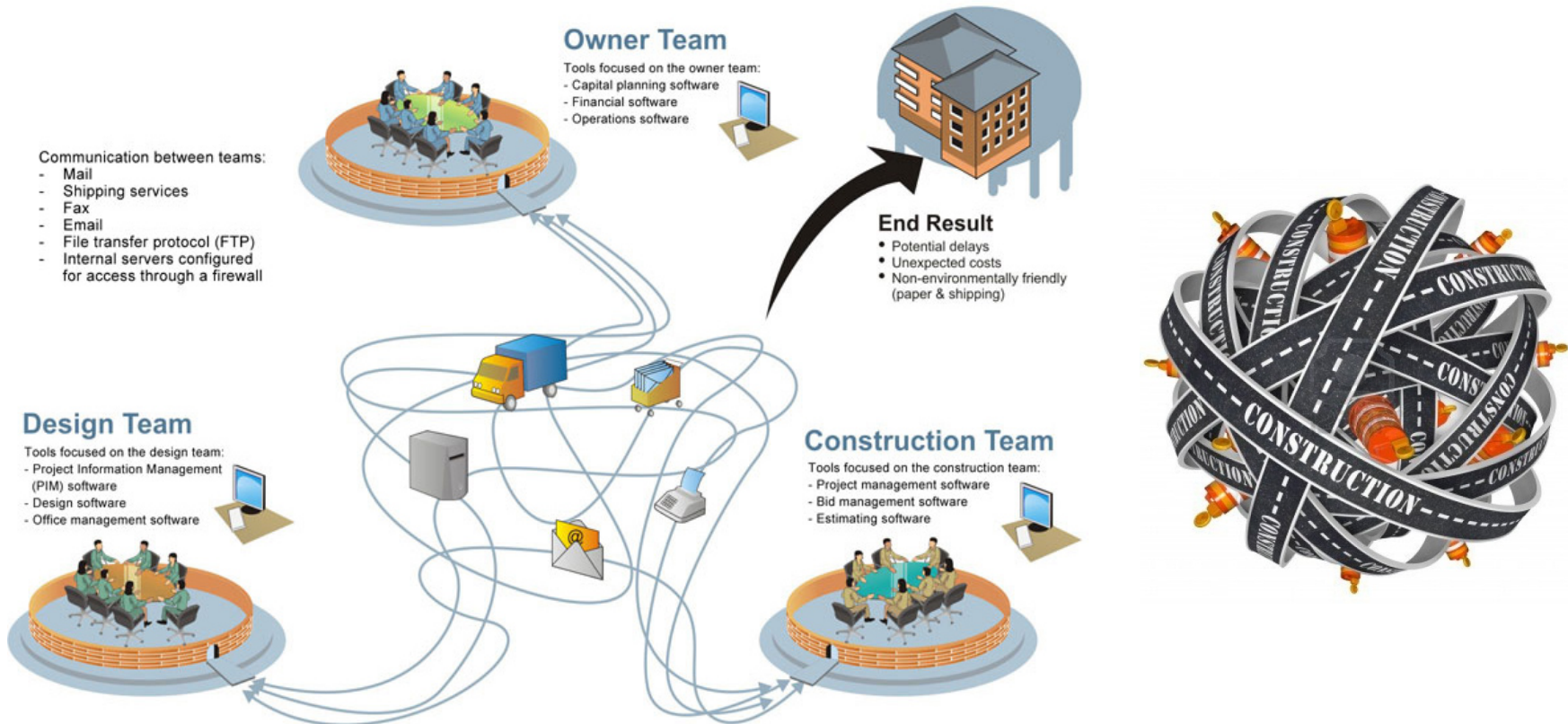# Standardization: The Success Factor in 5D Estimating

James McKenzie

Director - Center for Excellence - Swinerton Incorporated

**Constance, Germany- October 26th, 2013**

Introduction

AEC Industry has a poor track record of reliable estimates

- Owner risk exposure
- Lack of transparency
- Artificially high project costs
- Contingencies on top of contingencies
- Inefficient project delivery
- Potential for conflicts

The Goal of 5D BIM: Accurate and Timely Estimates

- Verifiable and quantifiable nature of BIM provides accurate and timely estimates
- Risk reduction
- Best in class pre-construction services
- Construction phase change management
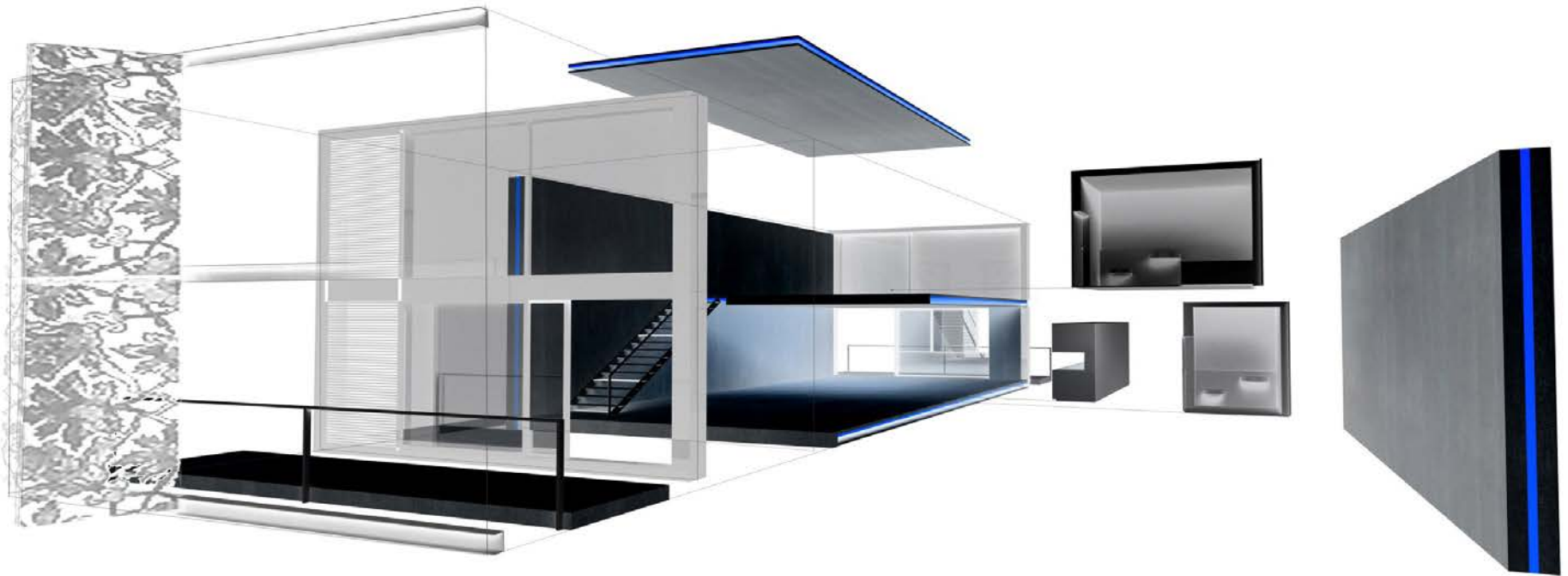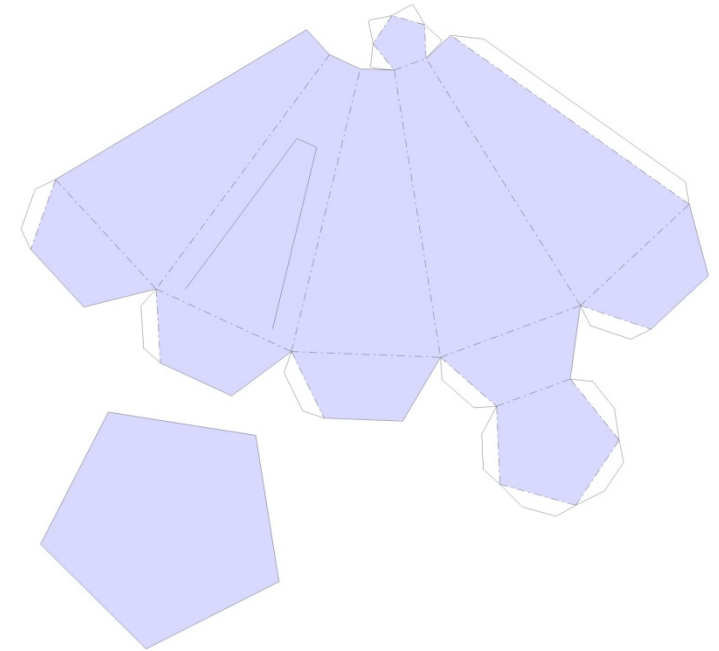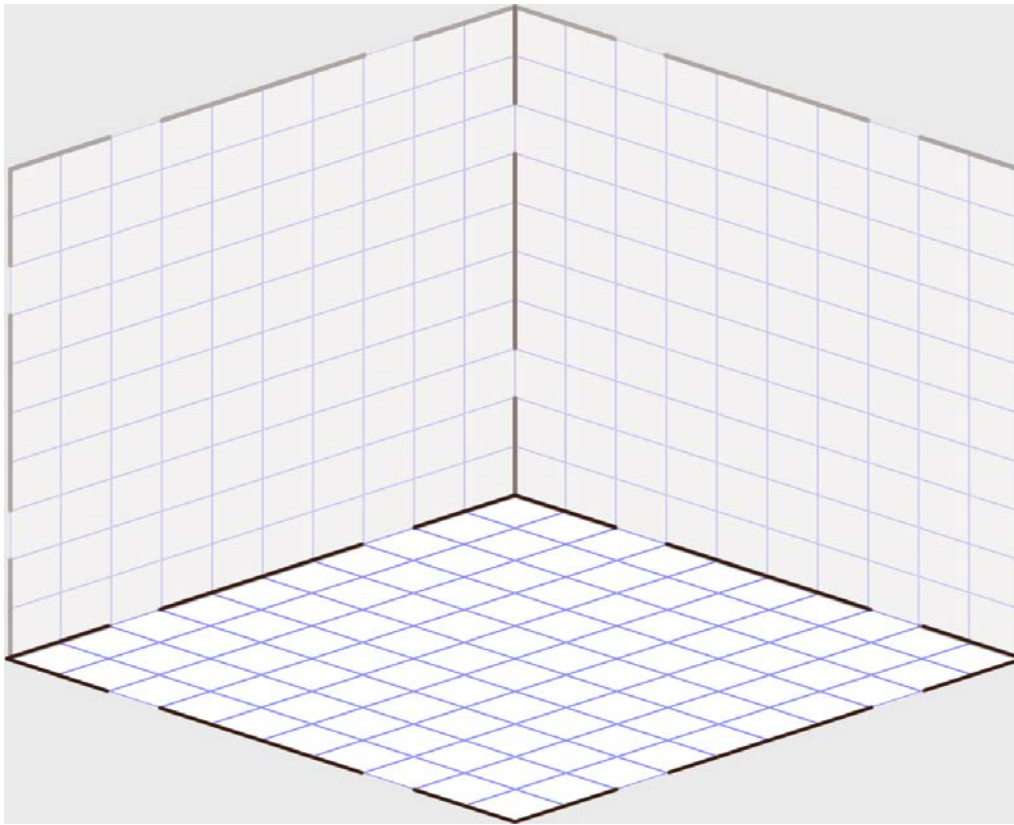
Power of 5D at Project Outset

Define steps and resources needed for:
- On site construction
- Prefabrication
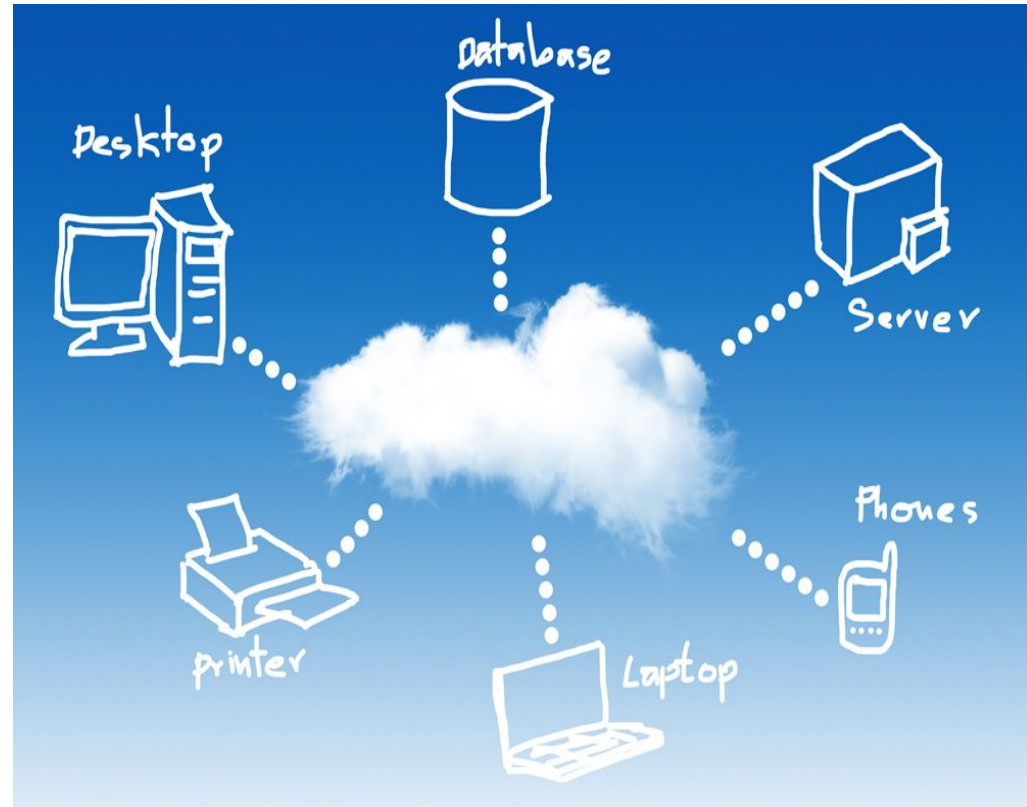- Continuous estimating and collaboration with builder

BIM Data Extraction Remains a Challenge

- Wealth of rich data
- Types of data:
  - Geometry
  - Object properties
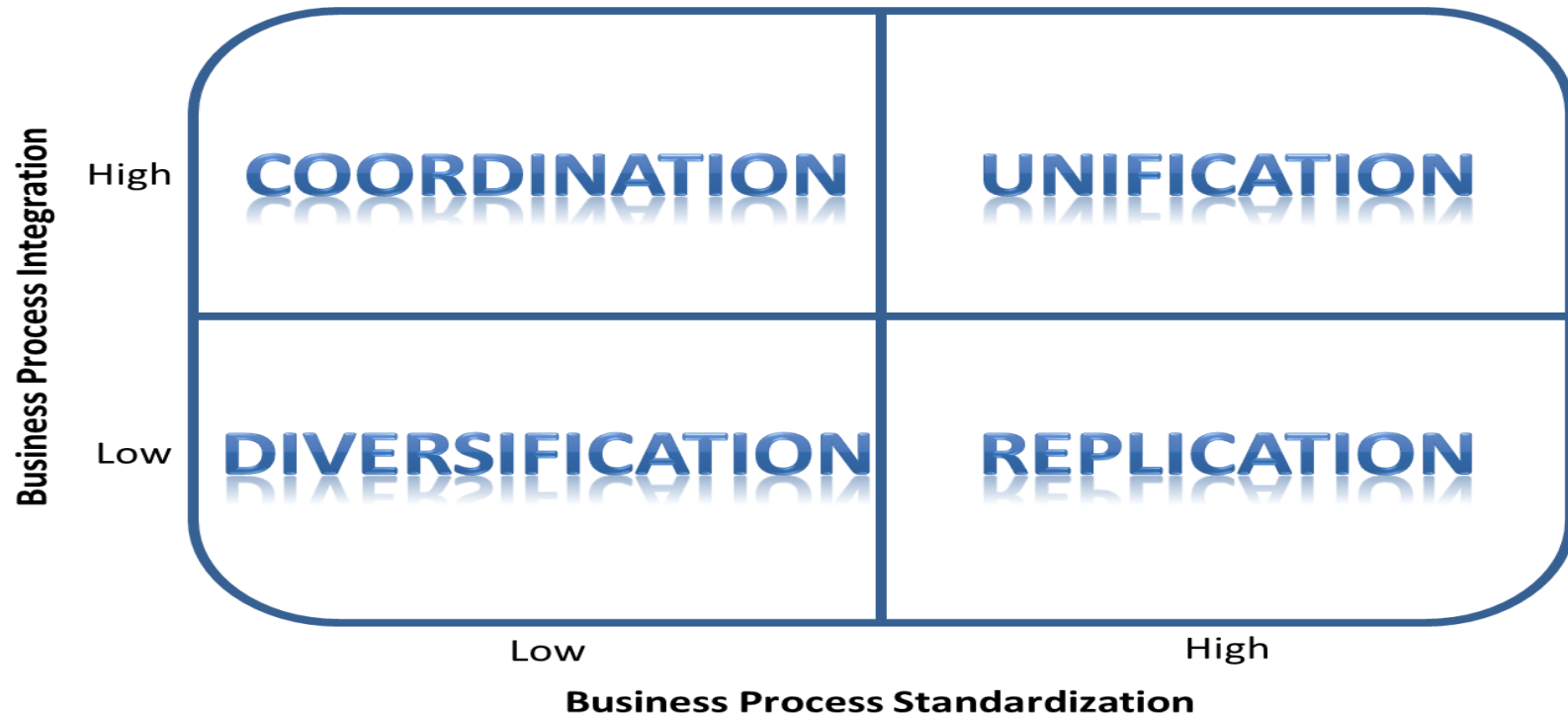 - Custom parameters
  - Model's unique structure

Standardized 3D model templates

- Importance
- Model QA/QC
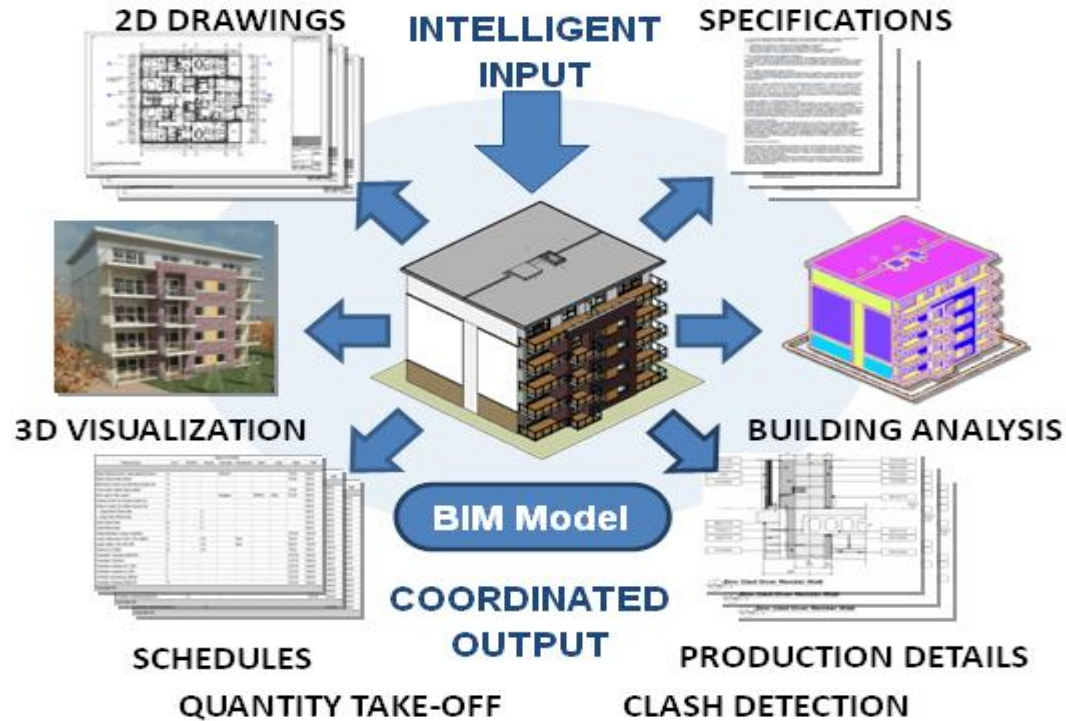- Structure
- Examples

Standardized Estimating databases

- Importance
- Structure
- Examples

Standardized data extraction tools and processes

- Integrated model
- Middleware concept
  - Data mapping

Critical Success Factors in 5D Estimating

2D DRAWINGS   INTELLIGENT INPUT   SPECIFICATIONS

3D VISUALIZATION   BIM Model   BUILDING ANALYSIS

COORDINATED OUTPUT

SCHEDULES   PRODUCTION DETAILS
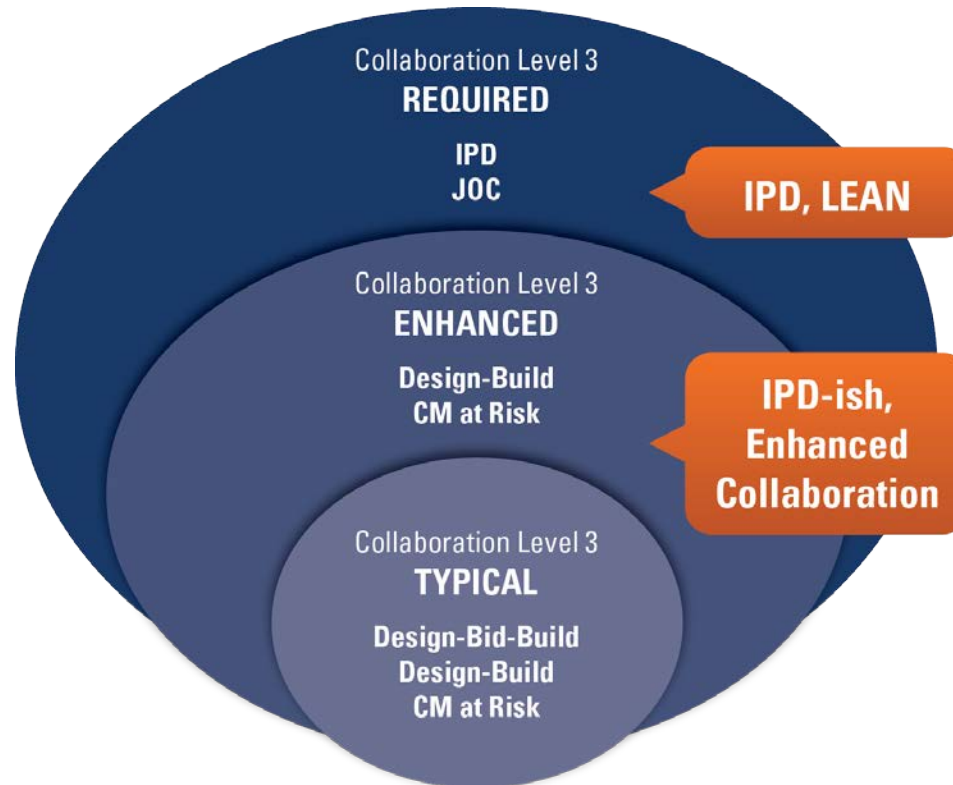
QUANTITY TAKE-OFF   CLASH DETECTION

Data Coding Standardization

- Data intensive process
- Data accuracy
- Work Breakdown Structures
- Data from other sources

## 5D BIM Human Factors

- Resistance to change
- Training
- Estimators trust of the data
- Productivity
- Eliminate silo thinking

Collaboration Level 3
REQUIRED

IPD
JOC

IPD, LEAN

Collaboration Level 3
ENHANCED

**Design-Build
CM at Risk**

**IPD-ish,
Enhanced
Collaboration**

Collaboration Level 3
TYPICAL

**Design-Bid-Build
Design-Build
CM at Risk**

5D BIM Usage and Project Delivery Methods

- Optimization requires builder integration
- Design-Bid-Build
- Design Assist
- Design-Build
- IPD and variants
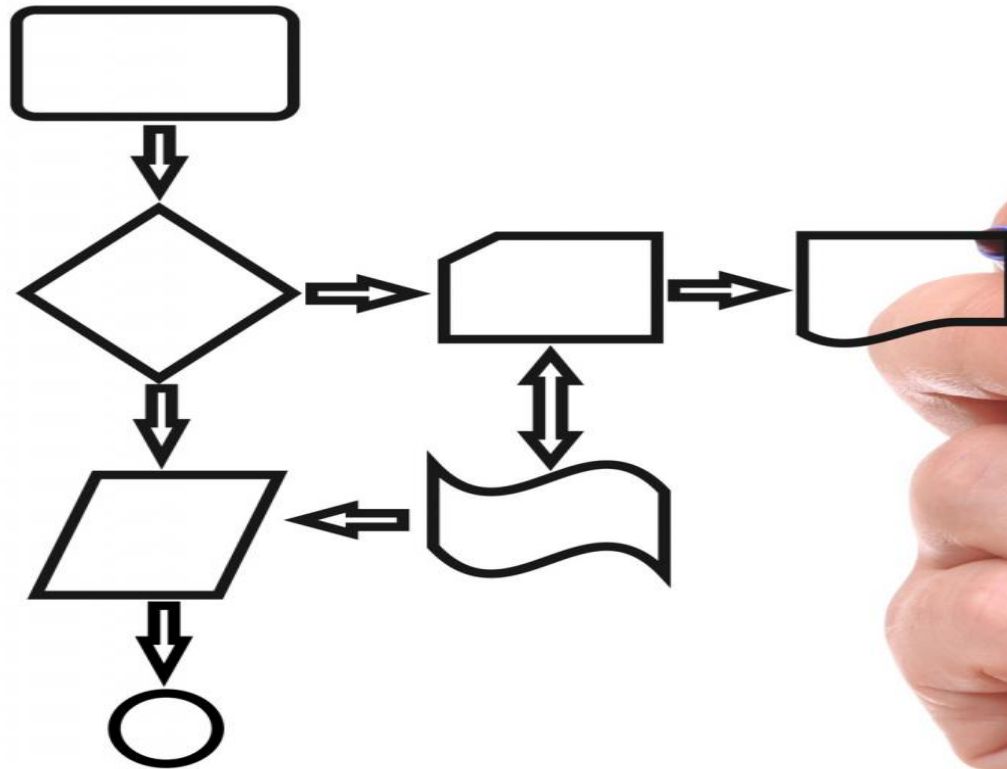
Critical Nature of Planning

- Project Success is determined during the planning stage
- Start with a model
- 5D BIM and Project Pro-forma analysis and feasibility

BIM Specification Plan and Level of Development

Standardized Levels of Estimating

- Range Estimating
- Collaborating Estimating
- Systems Pricing

Connection Between Preconstruction Services and 5D BIM

- Range Estimating
- Collaborating Estimating
- Systems Pricing

5D Estimating and Big Data

- Big Data has arrived to the AEC industry
- Historical cost data
- Leveraging data across the enterprise
- Obtaining business knowledge and wisdom
- Unstructured data

Conclusion and Summary

Questions and Answers

Thank you - Celebrating 125 Years