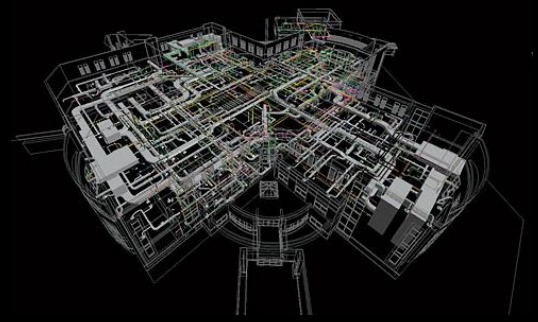
2017 CERC Conference

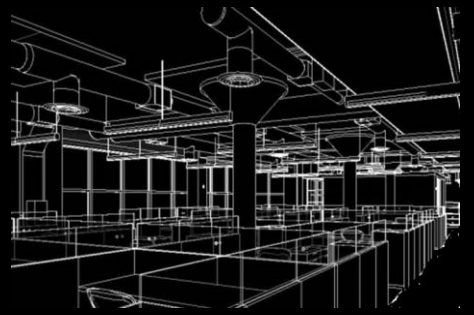
University of Washington

Record Modeling Process and Specification



Presenter : Bita Astaneh Asl

Supervisor : Dr. Carrie Dossick



What is a Record Model?

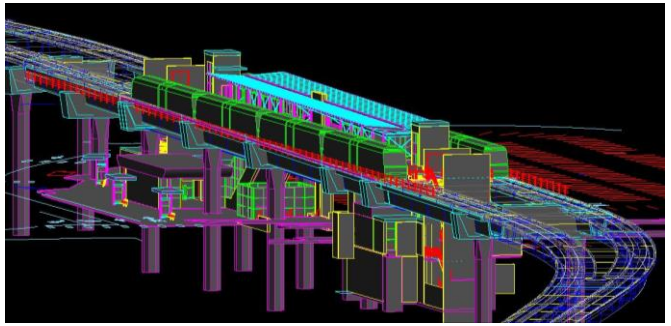
Record Model:

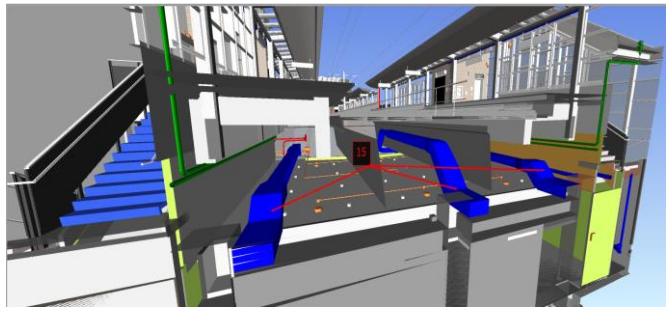
- Accurate representation of the physical conditions, environment, and assets of a facility
- At least include main architectural, structural, and MEP elements information
- Combination of different models created during the design and construction process

Application:

- Used for facility management
- Aid in permitting process
- Aid in future renovation
- Minimize the building turnover information and dispute

UW CERC Record Modeling Research





Source: Sound Transit

UW CERC Record Modeling research activities:

1) Sound Transit Partnership with UW CERC

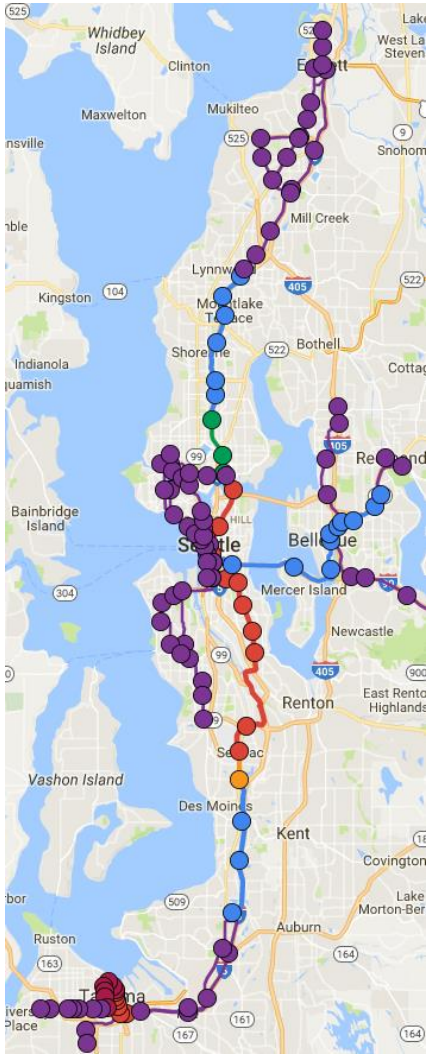
- Task 4: Record Modeling Template Language

2) "Record Model Deliverables" Consortia

- A consortia of owners and contractors
- Hosted by UW CERC in December 2016

UW CERC Record Modeling Research Team:

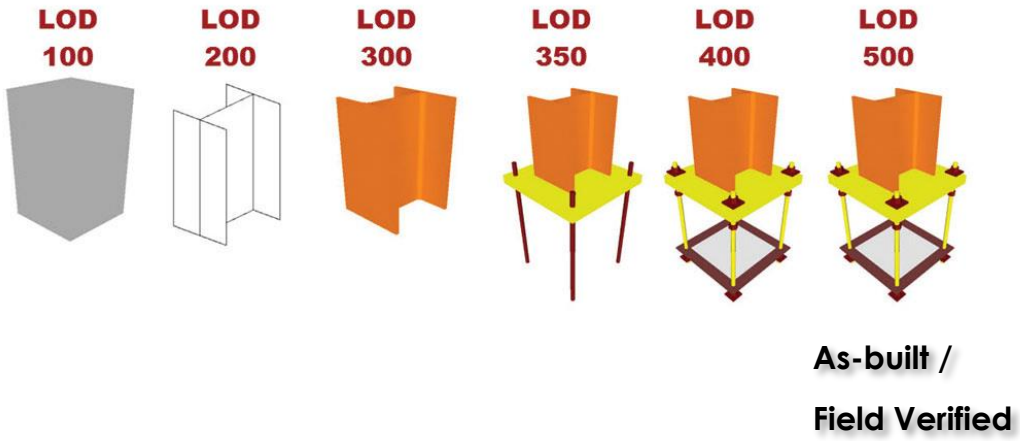
Dr. Carrie Dossick – Professor at CM department, UW
Dr. Laura Osburn – Research Scientist at CM department, UW
Bita Astaneh Asl – Research Assistant at CM department, UW
Julie Angeley – UW CERC Assistant Director of Operations



Key Factors for Record Modeling Specification & Process

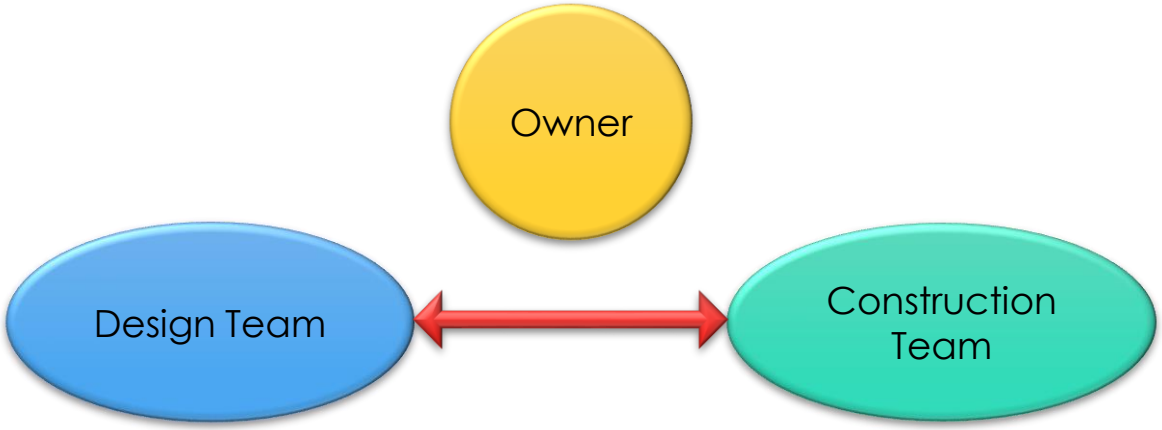
1) Record Model Intent
   - Design-Intent
   - As-built Construction

2) Level of Development (LOD)



3) Responsible Party for Record Modeling Delivery
   - Design Team
   - Construction Team

4) Information Exchange & QA Process



Discussion Areas:

1) **Model Requirements**
   - One or multiple models
   - Level of Development
   - Responsible Party
   - Model uses for current and future projects

2) **Mark-ups & Quality Assurance (QA) Process**
   - Roles & responsibilities
   - 3D Mark-ups

3) **Record Model Process**
   - Challenges of information exchange
   - Level of estimated effort

Model Requirements

Two typical types of modeling in current industry practices:

1) As-built Construction Record Model

- High LOD for the Record Model
- Construction Team delivers the Record Model

2) Design Intent Record Model

- An As-built Construction Model for archival is also required
- Low LOD for Design-Intent Record Model
- High LOD for As-built Construction Model
- Design team delivers Design-Intent Record Model
- Construction team delivers As-built Construction Model

Organization	LOD
NASA	500
George Washington University	Per LOD Matrix (400)
University of South Florida	500
Western Michigan University	500
Naval Facilities Engineering Command	Per eOMSI Facility Data Workbook
Cleveland Clinic	LOD Matrix to be provided in BEP

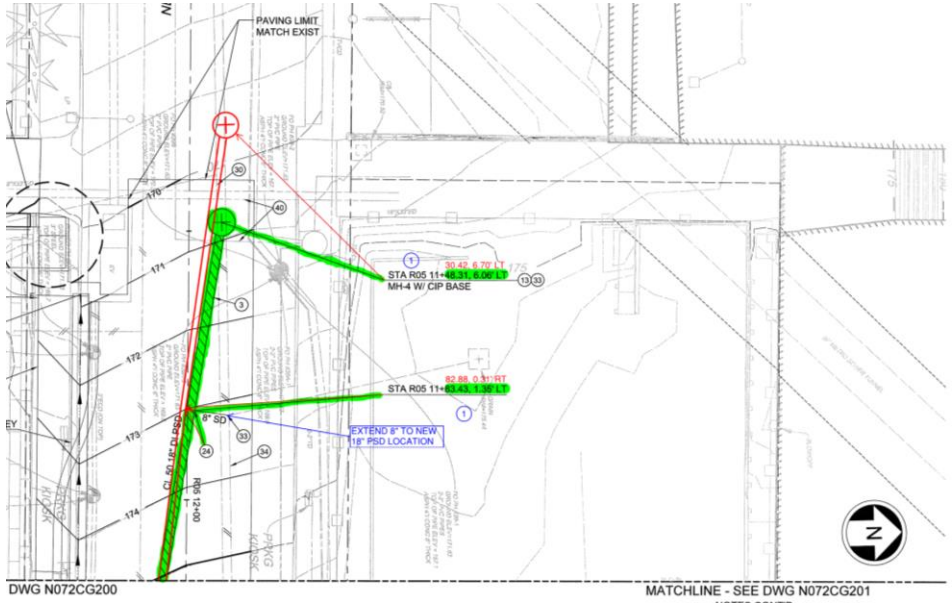
Organization	LOD
Pennsylvania State University	Owner Specifies
Florida International University	300 for Record Model, 500 As-built Construction Model
The Ohio State University	300 for Record Model & 400 for As-built Construction Models
Virginia Commonwealth University	Per VCU LOD Matrix (300)
Princeton University	Per LOD Matrix
Department of Veteran Affairs	Per VA Object Element Matrix
Smithsonian Institute	350 is suggested for Record Model
Massachusetts Port Authority	300 for Record Model, and 350 for As-built Construction Model

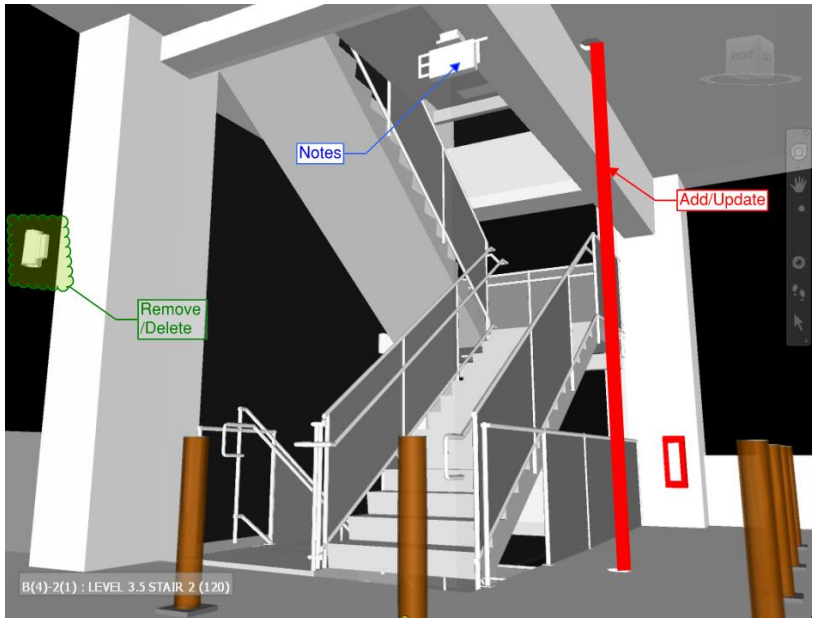
Model Requirements

Recommendations:

- Model deliverables should reflect current owner needs
- Use two models today due to legal, organizational and technological limitations
- Specify different LODs:
  - Low LOD for Design-Intent Record Model (300 was suggested)
  - High LOD for As-built Construction Model (500 was suggested)
- Plan for one model in future
- Owners should specify disciplinary scopes and models
- Bring subcontractors in during design phase to clarify model needs
- Consider project delivery methods when determining modeling roles and responsibilities

Mark-Ups & QA Process

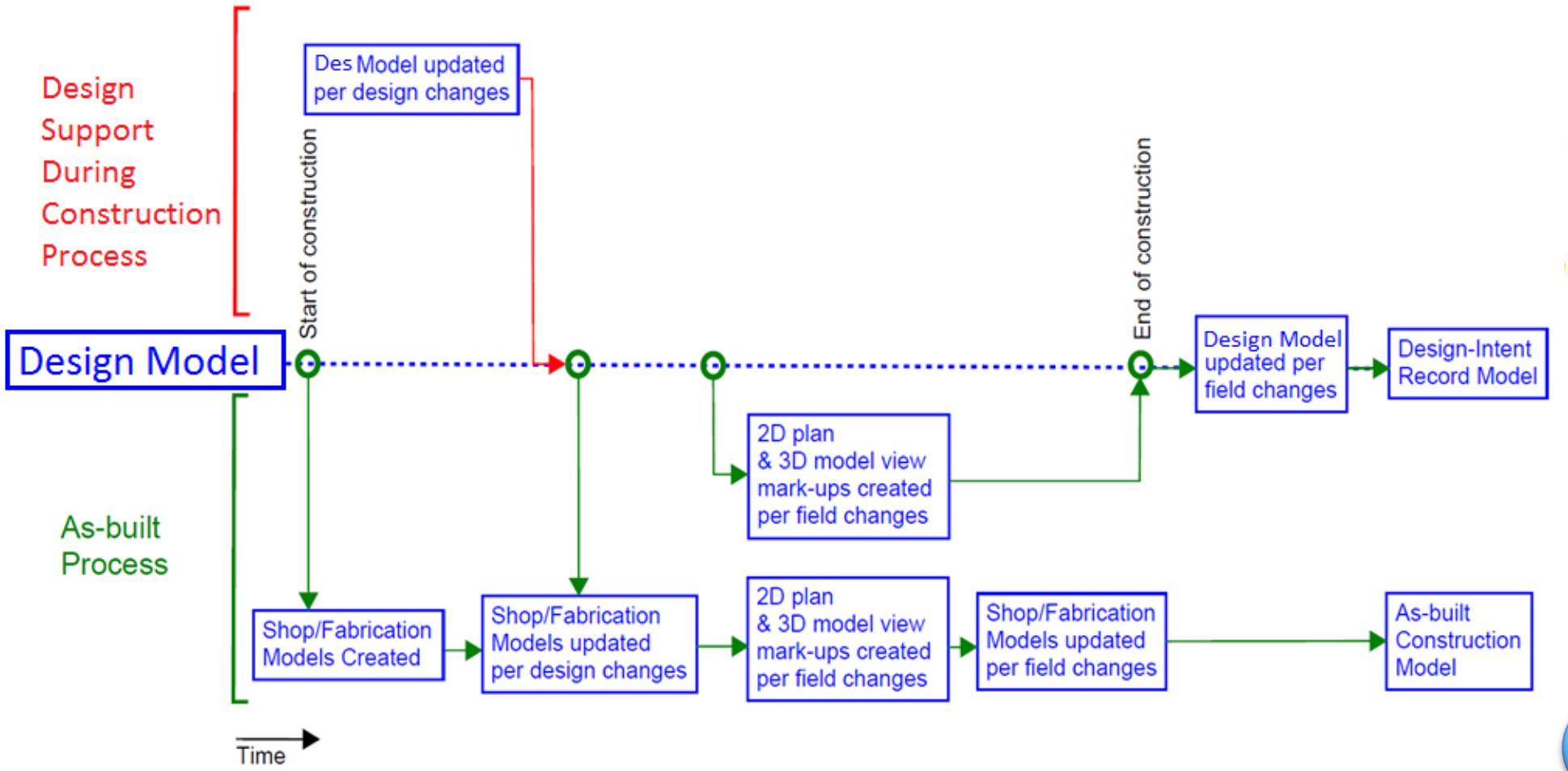




Recommendations:

- Use the latest technological tools and methods for creating 3D mark-up views
- Consider Master Mark-up Model
- Explore connections between the QA mark-up processes
- The contract should clarify QA roles and responsibilities

Record Modeling Process



Archived

As-built Construction Model

2D plan & 3D View Mark-ups

Keep Updated

Design-Intent Record Model

Recommendations:

- Use clear contract language to set expectations
- Set milestones in the BIM PxP
- Anticipate the estimated effort for architect and contractor
  - For design team, adding interim data exchange milestones will add to their estimated effort
  - For contractors, these interim exchanges will not add as much work, but can be added into their fees


ANY
QUESTIONS
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