BIMing the City of Angels
The City of LA’s Path to a BIM Specification and What Happened Next
Speakers

Daniel Sistrunk
VDC Manager - SoCal

Pablo Medina
VDC Manager - San Diego
The Future of Cities
Background – What It Was

• Proposition Q
  • $600 million city of Los Angeles bond measure
  • Public safety facility improvements, renovations, expansions and additions
  • Construct two new police stations

• Northeast Community Police Station selected as BIM pilot project
Background – Who Was Involved

• City of Los Angeles
  • Allan Kawaguchi, Program Manager
  • Nassef Eskander, Architect/Project Manager
  • Ingrid Reyes, Architect Associate II

• BIM Consultant - Turner

• Architect - Gruen Associates

• Contractor - Bernards
Background – What Was Expected

• City of Los Angeles wanted to explore the value of BIM
• Originally planned for the design phase only
• Key BIM uses
  • Design authoring
  • Design coordination
What Happened – What We Proposed

• Staff Augmentation @ 40% FTE
• Create BIM Execution Plan
• Manage BIM Execution Plan
  • Design model authoring
  • Model progression planning and checking
  • Design coordination
• We did not create BIM guidelines
• Focused on developing processes to derive value from BIM
What Happened – How We Began

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Model Manager – Design</th>
<th>Model Manager – Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria Design / SD</td>
<td>Define Modeling Guidelines</td>
<td>Set up Collaboration Framework</td>
</tr>
<tr>
<td>Detailed Design / DD</td>
<td>Set up Model Sharing and Collaboration</td>
<td>Lead Design Phase Coordination</td>
</tr>
<tr>
<td>Implementation Documents / CD</td>
<td>Validate LOD</td>
<td>Manage Coordination Resolution</td>
</tr>
</tbody>
</table>

Prep Q 4: NE Police Station

DRAFT

- [Image]

- [Image]

- [Image]
What Happened – How We Tracked

**Prop Q – NE Police Station 100% CD Final Report – April 8, 2013**

**Project Image/Summary**

**Level of Development (LOD) Summary**

The level of development (LOD) level for this report is based on the level of development reached by building system as described by assembly code. In this 100% CD initial report, internal design progress toward the final level of LOD 300 has been assessed. Overall, model development has reached LOD 300. Levels 1 and 2 have been updated to LOD 300.

**Lockhead Schedule**

**NE Police Station Open Clashes**

- The Master coordination model has been updated based on the models that served as the basis for the report and all issues have been updated.
- All team members were involved in the coordination process and coordination sessions were held before LOD 300.
- No further coordination meetings were scheduled after LOD 300. All team members were involved in the coordination process before the issues were escalated in the next coordination meeting.

- The Clash Chart below reflects the results of the coordination process, with all issues now resolved.
What Happened – How It Evolved

SECTION 013130
VIRTUAL DESIGN AND CONSTRUCTION (VDC), DIGITAL BUILDING INFORMATION MODEL (BIM)
What Happened – How It Evolved
What Happened In The End

Design

Construction

@turner_talk
What Happened In The End

• Continuous Improvement

“...the spec had good balance. Sometimes BIM specifications are convoluted and give no value to the owner... It was good because it was realistic. ..It showed that the City of LA, as an owner, sees the value and supports the technology.” – Darren Roos

“Clearer understanding of City BIM requirements for the design. Impact of BIM on the A/E work plan. What are the clients expectations?” – Debra Gerod
What Happened Next

• Turner contracted to do design model assessment
What Happens Next  Bringing in feedback

Client concerns:
• Does the specification impact who bids? Yes! How so?
• Impact of Prequalification
  • What happens when you increase contractors/vendor qualifications for
    Staffing requirements, detailed schedule, and BIM experience?

Nobody shows up to bid....
Currently the City of LA is rebidding a project that had no bidder response.

Other Challenges
What Happens Next

Bringing in feedback

Client concerns:
• How can we entice more use of BIM on city projects?
• Enticements:
  • Front-of-the-line (fast track permitting)
  • Discounted submittal review
  • Fast tracking review
What’s Next

• Cities that have BIM Guidelines/Spec
  • New York, NY
  • Los Angeles, CA
  • San Antonio, TX
  • Nashville, TN
  • State of OH, WI

• City of Los Angeles
  • BIM managements training for staff
  • Research about other cities
  • Create their own guidelines and learn from the private industry
    • Airport guidelines
What's next? The sky is the limit...

• Airports – setting up their current and future projects to capture valuable information that will be used to better construct, analyze and operate their assets.
• Turner currently working on
  • $2.4 Billion locally in aviation projects including
    • LAX
    • SAN
    • DEN
  • AECOM Guidelines...comprehensive!
• What is the future of airports?
  • Mark Hughes
What do we do with our data?

"The cost of data is approaching zero". Trimble CEO Steve Berglund

I think what we see today are a lot of companies have data, but they don’t know what to do with it – they don’t understand that data is nothing without the insights.” Shelly Gramer, CEO V3+Broadsuite
Is machine learning the answer?

High technical automation potential here

<table>
<thead>
<tr>
<th>Time spent in all US occupations %</th>
<th>Manage¹</th>
<th>Expertise²</th>
<th>Interface³</th>
<th>Unpredictable physical⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total wages in US, 2014 $ billion</td>
<td>596</td>
<td>1,190</td>
<td>896</td>
<td>504</td>
</tr>
<tr>
<td>Collect data</td>
<td>17</td>
<td>16</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Process data</td>
<td>64</td>
<td>69</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Predictable physical⁵</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Time spent on activities that can be automate by adapting currently demonstrated technology

1 Managing and developing people.
2 Applying expertise to decision making, planning, and creative tasks.
3 Interfacing with stakeholders.
4 Performing physical activities and operating machinery in unpredictable environments.
5 Performing physical activities and operating machinery in predictable environments.

NOTE: Numbers may not sum due to rounding.

US bureau of labor and statistics

Most susceptible activities 51% of total employment $2.7 trillion in wages

@turner_talk
What's next? Collecting Data can lead to...

- Asset information
- Location Based Service
- Performance evaluation
- Conditions Assessment
What's next? Process data and real-time optimization

- Parking availability in parking structures.
- Ticketing & Security check point cue time
- Travel, transport, and logistics: optimize routing in real time (airlines, logistics, and last mile routing for delivery)
- Energy: Optimize power plants based on energy pricing, weather, and other real-time data.
- Building System Management – Location Detection via Wifi, Lighting / Air-conditioning auto adjustment by crowd condition
Predictive Analytics

- Triage customer service calls
- Wayfinding
- Maximum social gain?
  - Planning and developing cities
  - A connected city
  - BIG data and analytics
Airports & BIM

#BIMForumED @turner_talk
What's next? Maximum social gain in how we live through how we build, one city at a time.