Outline

- Introduction
- Development of “BIM Track” application
  - Supportive applications for BIM Track
  - "BIM Track" Interface
- Usage of “BIM Track”
- Case study
- Limitations
- Conclusion
Introduction

- Construction progress requires a significant amount of manual work.
- Major developments in Mobile hand-held devices is in development.
- Portability and accessibility granted the Mobile hand-held devices a great advantage.
- Recent studies attempt to automate the process of construction site monitoring.
Development of "BIM Track"

- Supportive applications for BIM Track

- Primavera P6 R8.3
- Revit 2014
- MITapp Inventor
- Fusion Tables
- Autodesk 360
- Navisworks 2015
- Matlab 2014a
“BIM Track” interface

- Home Screen

This App is under development of Eng. Mohamed Zaher

- Project Info
- 5D simulation
- Update Database

- Project General Information
  - Project Location
  - Project Description
  - Project Stakeholders
  - Project Perspectives
  - Project estimated cost

- Google Maps
“BIM Track” interface

- 5D simulation

Day=342  Week=49
BCWS=79972310.82
BCWP=76543066.00
ACWP=72715912.70
“BIM Track” interface

Updating and Tracking

- Login Name
- Username
- Password
- OK

Kindly choose your update method
- Autodesk 360
- Fusion Table

Activity Name
Progress
Format: 0.8
Actual Start
Example: 25/12/2014
Pick a date
Actual Finish
Example: 25/12/2014
Pick a date
“BIM Track” interface

- Updating and Tracking
Usage of “BIM Track”

1. Gathering projects' essential data.

2. Viewing the Project in 5D simulation.

3. Updating and Tracking the project through:
   a) Updating time schedule using fusion tables
   b) Image Analysis using Matlab
Case Study

- **Project:** Etisalat Misr HQ building
- **Location:** Smart Village, Giza, Egypt
- **Area:** 13,000 m²
Case Study “Image Analysis”

- Transform RGB to Grey Scale image
Case Study “Image Analysis”

• Convert Grey Scale to Binary Image
Case Study “Image Analysis”

- Thresholding image on each colors’ plane

red plane

green plane

blue plane

Sum of all planes
Case Study “Image Analysis”

• Reducing Image Noise

Complementing the Image  

Filling Holes
Case Study “Image Analysis”

- Results

There are 3 slabs in the image
Case Study “Fusion Tables”
## Case Study “Fusion Tables”

### Fusion Tables

<table>
<thead>
<tr>
<th>WBS Code</th>
<th>Activity Name</th>
<th>Actual Start</th>
<th>Actual Finish</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.M2.B1.2ND.C</td>
<td>Steel Reinforcement For Slab - Upper Layer</td>
<td>5/8/2014</td>
<td>4/23/2014</td>
<td>0.2</td>
</tr>
<tr>
<td>C.M3.B3.2ND.C</td>
<td>Steel Reinforcement For Slab - Post Tension</td>
<td>4/16/2014</td>
<td></td>
<td>0.56</td>
</tr>
<tr>
<td>C.M2.B1.1ST.C</td>
<td>Steel Reinforcement For Slab - Post Tension</td>
<td>3/14/2014</td>
<td>3/20/2014</td>
<td>0.6</td>
</tr>
<tr>
<td>C.M3.B2.2ND.C</td>
<td>Shuttering For Slab</td>
<td>5/1/2014</td>
<td></td>
<td>0.6</td>
</tr>
<tr>
<td>C.M3.B2.2ND.C</td>
<td>Concrete Pouring For Columns</td>
<td>5/12/2014</td>
<td></td>
<td>0.7</td>
</tr>
<tr>
<td>C.M3.C3.2ND.C</td>
<td>Steel Reinforcement For Slab - Upper Layer</td>
<td>5/14/2014</td>
<td></td>
<td>0.78</td>
</tr>
<tr>
<td>C.M2.C2.3RD.C</td>
<td>Shuttering For Slab</td>
<td>5/8/2014</td>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td>C.M2.C2.2ND.C</td>
<td>Steel Reinforcement For Slab - Upper Layer</td>
<td>4/24/2014</td>
<td>4/28/2014</td>
<td>1</td>
</tr>
<tr>
<td>C.M2.C2.2ND.C</td>
<td>Steel Reinforcement For Columns</td>
<td>4/7/2014</td>
<td>4/10/2014</td>
<td>1</td>
</tr>
<tr>
<td>C.M2.C2.2ND.C</td>
<td>Shutter Completion And Bracing For Columns</td>
<td>4/10/2014</td>
<td>4/12/2014</td>
<td>1</td>
</tr>
</tbody>
</table>
Limitations

- **Image Analysis:**
  1. Capturing position shall be fixed (e.g. Tower Crane).
  2. Capturing time is preferred to be the same.

- **Fusion Tables:**
  1. Time Schedule Activities shall be well coded.
  2. Internet Access for updating
Mobile hand-held devices can provide a powerful system for tracking construction projects.

The objective of this study was to develop an android mobile application to aid in tracking projects.

The application enables project to be:
- Monitored and tracked
- Ease the access to project’s information,
- Facilitates the visualization interaction through the 3D model

Conclusion
Thank You