BIM

improving efficiency through an advanced technology
ECA represents more than 1,000 professional contractors

The headquarters are located in Westchester, IL

The organization is for the benefit of electrical contractors involved in it

Representing the best in electrical engineering and building services
Objective

- Assist the ECA electrical contractors to understand BIM and its implementation process.
- Create a user guide that will focus on the following items:
  - background information of BIM
  - benefits of using BIM
  - methods of implementing BIM into one’s company
At a glance

- What is BIM?
- Cost of BIM
  - Hardware
  - Software
- Benefits to:
  - Industry
  - Electrical Contractors
- BIM Training
- BIM on Job
- Regulations
BIM is not a software, but an ideology.

Building Information Modeling (BIM) is a building design methodology characterized by the creation and use of coordinated, internally consistent computable information about a building project in design and construction.
## Cost of Software

<table>
<thead>
<tr>
<th>BIM Software</th>
<th>Software Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autodesk® Revit® Architecture 2010</td>
<td>$5,495.00</td>
</tr>
<tr>
<td>Autodesk® Navisworks® Manage 2011</td>
<td>$9,995.00</td>
</tr>
<tr>
<td>Autodesk® Navisworks® Simulate 2011</td>
<td>$2,495.00</td>
</tr>
<tr>
<td>AutoCAD® MEP 2011</td>
<td>$4,995.00</td>
</tr>
<tr>
<td>AutoCAD® Revit® MEP Suite 2010</td>
<td>$5,995.00</td>
</tr>
<tr>
<td>Autodesk® Revit® Structure 2010</td>
<td>$5,495.00</td>
</tr>
</tbody>
</table>
Cost of Hardware

- High-end workstation
  - Multi-core 64 bit Processor
  - RAM 8GB min
  - Graphics accelerator 1GB
  - Two 24” monitors
- Total Cost = $5,000-$6,000
Benefits to Industry

- Model-to-Design integration
  - Increases cost efficiency

- Automates tasks
  - reduced work for design and construction professionals

- 3D visualization, construction and geometry
  - reduced rework, labor costs, RFI’s and Change Orders
  - high quality work and accelerated schedules

- 4D models
  - optimize project phasing and construction sequencings

- Teamwork and coordination
Increased Productivity

**Construction & Non-Farm Labor Productivity Index (1964-2003)**

Constant $ of contracts/workhours of hourly workers

Sources: US Dept. of Commerce, Bureau of Labor Statistics

![Graph showing the productivity index over time.](image-url)
Benefits to Electrical Contractors

- Times saving
- Detection of design problems easily found
- Prefabrication
  - controlled environment
  - specialized tools
  - safety at work
Autodesk Authorize Training Centers, IL
Avatech Solutions Inc.
Chicago, IL

Hagerman & Company, Inc.
Mt. Zion, IL

IMAGiNiT Technologies Inc.
Schaumburg, IL

IMAGiNiT Technologies Inc.
Schaumburg, IL

MasterGraphics
Rolling Meadows, IL

Moraine Valley Community College
Palos Hills, IL
Project designed and engineering for the owner
- Implementation into a 3D model
- Approval of building by engineers
- BIM process really begins.
- Project contracts
- BIM team consists of subcontractor working on the project
  - team reviews the model daily
  - team works together (MEP coordination) for the various areas of the project
  - Each MEP contractor designs their needs in the area.
  - MEP contractors implement design into the model for clashes detection
- Clashes resolved virtually until the model is clash free.
- Scheduling implementation
- Workers begin installation
- The goal is to have an area completely modeled before any trade begins working in the area.
Regulations

- The American Recovery and Reinvest Act
- GSA
- California’s Energy Efficiency Standards for Residential and Nonresidential Buildings
- LEED standards and certification
- Professional Service Provider Guidelines and Standards created by Texas Facilities Commission
Why use BIM?

- BIM empowers design and construction professionals to focus their energy on higher order functions such as creativity and problem solving while computers perform the tedious tasks of counting and checking.

- BIM brings subcontractors onto project collaboration at an earlier stage than standard construction.

- 4D models allow customers to visualize and optimize project phasing and construction sequencings.