Welcome to Today’s Webinar

Phil Keeney, Manager
Information Technology and
Client Relations

Stambaugh Ness Business Solutions
SNBS Technology Solutions

- Managed Services Provider
- Help Desk Support
- Wireless Infrastructure Deployment
- Server Replacement and Maintenance
- Cloud Solutions and Storage
- Exchange and Other Server Software Upgrades
- Disaster Recovery Planning
- IT Strategic Planning

- Computer Forensics
- CLEAN Audit Services
- CIO Services
- Network Security Auditing
- Awareness Training
- SQL Report Writing
- Business Technology Assessment
- SaaS (Software as a Service)
Solutions for Better Project Collaboration

What’s in Your Collaboration Toolkit?

John Ade, AIA – Director AE Technology Group | Applied Software
Matt Dillon – AETG Western Team Leader | Applied Software
John R. Ade, AIA
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- Director of AE Technology Group, Applied Software
- Sr. Applied Technology Specialist | AEC/BIM
- 30+ Years AEC Industry Experience
- 13 Years IT / CAD / BIM Management
- Autodesk Revit Certified Professional
- Registered Architect in Georgia
- Experience: Corporate Interiors, High Rise Multi-Family, Transportation, Corporate Office (Low to High Rise), Corporate Campus, Multi-Use, Hospitality
- Using / Implementing Revit for 10+ years
Matt Dillon
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- AE Technology Group Team Leader West (San Antonio)
- Sr. Applied Technology Specialist | AEC/BIM
- 30+ Years AEC Industry\Autodesk Experience
- Autodesk Certified Instructor
- Autodesk Revit Certified Professional
- Highly rated Autodesk University Speaker since 2000
- General All Around Bon-Vivant
Collaboration

Definition:
• to work with another person or group in order to achieve or do something

• to give help to an enemy who has invaded your country during a war
  or

• Traitorous cooperation with an enemy
THE CLOUD CHANGES EVERYTHING
Agenda

• Market Trends
• Need for Collaboration
• Document Management
• Collaboration Methods
  • Project Collaboration
  • BIM Collaboration
  • Cloud Storage
• Q&A
BIM Success Factors

- About half of respondents report at least:
  - $\downarrow 5\%$ reduction in final construction cost
  - $+5\%$ acceleration of completion
  - $+25\%$ improvement in labor productivity
  - $-25\%$ reduction in site labor due to more offsite fabrication

- Almost all of respondents report at least:
  - $-25\%$ reduction in site labor due to more offsite fabrication

OBSTACLES
- Lack of interest and support for BIM
- Lack of collaboration on project teams

SUCCESS FACTORS
- Having a BIM Plan
- Applying BIM standards
- Actively leveraging models for project meetings

Information Mobility

DYNAMICS OF USE
Percent high usage now, and in two years (predicted)

Highest growth
70% 85%
Online meetings
Cloud storage devices

Greatest decline
63% 60%
FTP sites
Handwritten documents/notes

PROJECT BENEFITS FROM IMPROVEMENT
Over half included these in their top 3 benefits

91% included Improved collaboration on project teams
60% included Reduced reliance on paper documents
54% included Reduced unanticipated problems

MOST DEMANDED IMPROVEMENTS

76% demanded Improved devices for use at project sites
75% demanded More reliable or ubiquitous connectivity and bandwidth
71% demanded More standardization and interoperability of data platforms

Improved Info Mobility Top Benefit

**ARCHITECTS**
Architects put more emphasis on **Improved Team Member Collaboration** than their counterparts. This may be because of the internal collaboration required during the design phase, and the growing acceptance among architects of the value of collaboration with contractors in preconstruction and construction.

**ENGINEERS**
Engineers cite **Reduced Reliance on Paper Documents** as the largest improvement after implementation. This may be because of the technical aspect of their work, as the increasingly reliance on computational power and therefore more effective communication and distributed electronically.

**CONTRACTORS**
Almost all companies contractors name **Reduced Unanticipated Problems** as the top benefit of improved information mobility in architecture or engineering. This may occur because, even though the severity of problems can impact everyone, contractors often face the task of often having to deal with them alone or outside when they occur.

Why Collaboration?
The Chaos of File Exchange
Vision for Project Delivery and Collaboration

Deliver complete, accurate, connected, digital information across the project lifecycle for whoever needs it, whenever they need it, wherever they are.
Connecting the Entire Team

DESIGN
ENGINEERING
VENDORS
MAINTENANCE
OWNERS
OCCUPANTS

EMAIL
PHONE
TASKS
MEETINGS
MARK-UP
ISSUES
e tc.

MODELS
DRAWINGS
PLANS
SCHEMATICS
SIMULATIONS
VIDEOS
RENDERINGS
SPECIFICATIONS
DOCUMENTS

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Industry trends

- BIM momentum and mandates
- Project complexity
- Explosion of data
- Information mobility
File Management
The cost of inefficiency

28

Time spent (hours) each week by knowledge workers writing emails, searching for information, and collaborating internally
Customer Challenges

- Dozens of models and hundreds or thousands of drawings—per project
- Storing and finding all of the “other” project information
- Information mobility between remote office or jobsite
- Secure, trackable external team member collaboration
- Data management “startup” for new projects
  - Collaborating Across an Extended Team
  - Leveraging Models for Business Processes
Impact on Business

- Project delivery
  - Multiple iteration of files
  - Coming from multiple locations
  - Leading to incorrect versions
  - Delay delivery or increase material costs

- Unbilled time
  - Searching for files
  - Moving files
  - Opening files
  - Remote access
Information Drivers

“Big Data”

Business Complexity

Productivity Pressures
Collaborative design

**Challenges**

- Manage a large volume of design data
- Multiple users simultaneously working on the same project or file
- Maintain all related project data

**Solution**

**Easily create, organize, and share project information by:**

- Enabling collaborative and concurrent design workflows
- Centrally managing all project data in any file format
- Sharing model objects and content
- Easily revert to previous versions at any time
Accessibility

Challenges

- Sharing data outside of the design group
- Providing secure access to project information
- Quickly finding relevant project data

Solution

Automatically track evolution and important milestones

- Track design and project history
- Manage and track project emails using integrated Microsoft® Office and Outlook® functionality
- Flexible security for users and groups
- Capture important milestones for a complete and accurate record

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BIM 360 DOCS

- PUBLISH
- SHARE
- VIEW
- MARKUP
BIM 360 DOCS - PUBLISH

• Special Purpose Folders – Automated Behaviours
• Customize Templates
• Title Block Extraction – View / Modify Data Prior to Publish
• Sheet Extraction – Automatic Sheet Extraction or Separation
• Custom Attributes - Defined at Folder Level
• Edit Document Attributes in List View
### Publish – Sheet extraction

- **Drop model, drawing or multi-page PDF to special purpose folder**
- **Automatic sheet extraction or separation**
- **Naming and organization based on title block**

![Autodesk BIM 360 Docs interface](image)

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BIM 360 DOCS - SHARE

• Project or Folder level Permissions and Roles
• 5 Permissions Levels
• Track and Maintain Versions of Documents
• Mark Versions as Current
• Easily Identify Versions
• Navigate Between Versions without Leaving Viewer
• View Differences Between Versions
Share – Version control

- Easily identify versions
- Navigate between versions without leaving viewer
- View differences between versions
BIM 360 DOCS - VIEW

- Organize and Manager All Project Folders
- Define Attributes
- Move, Copy, and Rename Documents
- Delete and Restore Documents from Recycle Bin
- View Drawings and Models
- Large Model Viewer
- Access Object Properties
- Mobile Access – Apps for iPhone and iPad
View – Mobile access

- Viewer optimized for iOS phones and tablets
- Sync for offline access
- Fast zoom and pan
BIM 360 DOCS - MARKUP

• Create and Manage 2D Markups
• Support for Design Review and Communication Workflows
• Limit Markup Visibility
• Issue Creation & Assignment
• Sheet Compare – Coloration
• Sheet Compare - Slider & Stack Sheets
- Versions can be colored and compared using either the stacking option or vertical slider

- The vertical slider exposes differences in sheet versions as the slider is moved

- Stacking sheets exposes sheet differences by color as they show through one another
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<tr>
<th>Design/Pre-construction</th>
<th>Construction Execution</th>
<th>Commissioning/Handover</th>
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<tr>
<td>Docs</td>
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<tr>
<td>Glue</td>
<td>Layout</td>
<td>Building Ops</td>
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<tr>
<td>Plan</td>
<td></td>
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<tr>
<td>Field</td>
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</table>
Collaboration Methods
Mobility and Software Agnostic Workflow
# A360 Products Comparison

<table>
<thead>
<tr>
<th>Version</th>
<th>Product Description</th>
<th>Projects</th>
<th>Team Members</th>
<th>Project Contributors</th>
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</thead>
<tbody>
<tr>
<td>A360 DRIVE (Free version)</td>
<td>Improve communication, view 2D and 3D files from a browser, and access projects from the cloud virtually anytime, anywhere.</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>A360 Team</td>
<td>A360 project collaboration software helps design, engineering, and project teams work together efficiently on a centralized platform. View, search, and share data, and use cloud collaboration tools to keep everyone informed and involved. Access project information using desktop, web, and mobile devices.</td>
<td>Unlimited</td>
<td>Unlimited</td>
<td>Unlimited</td>
</tr>
<tr>
<td>A360 Collaboration for Revit</td>
<td>Cloud Subscription service that works with Revit® software to connect building project teams with centralized access to BIM project data in the cloud. Teams stay connected in real time using the Communicator chat tool within models.</td>
<td>Unlimited</td>
<td>Unlimited (each member needs paid entitlement)</td>
<td>Unlimited</td>
</tr>
</tbody>
</table>

[Applied Software](http://asti.com)
Team Collaboration Needs

SHARE

VIEW

SEARCH

asti.com
BIM360 Team Hub & Projects
ProjectDashboard

1. See what has happened in all my projects

2. Search anything

3. Upload or Create
Project Data

1. Navigate Project Data
2. Folders
3. Familiar Controls
4. Basic File Operations

asti.com
Model Viewer for Everyone
Cloud Worksharing | Key Value

✓ Multi-firm concurrent authoring
✓ No additional hardware expense
✓ No IT setup required
✓ BIM directly accessible to other Cloud Services
Cloud Worksharing | Intelligent Data Caching

- Delta transfers
- Changes Pre-Fetched
- Only Working Data Cached

A360 Collaboration for Revit

Master Models

RVT

Delta Cache

Local Cache

Accelerator

Revit

Cloud Worksharing

.asti.com
Communicator | Key Value

- Multi-firm synchronous communication
- Contextual awareness
- Integrated Revit Worksharing activity feed
FormIt 360 - The World Has Changed!

• People today are mobile.
• Outdated methods.
• Revit users can over detail conceptual design.
• FormIt 360 is cloud-based.
• FormIt 360 promotes a more collaborative workflow.
What are users doing with FormIt 360?

Iterative Design

credit: Meia Dois Nove
What are users doing with FormIt 360?

Integrated Solar and Energy Analysis
FormIt in Action
Cloud Storage
Enterprise Cloud Storage

- Amazon Web Services (AWS)
- Google Cloud Storage
- Microsoft Azure
- AT&T’s Synaptic
- HP Cloud Storage
- IBM SmartCloud
Features and Benefits

• Reduce or Eliminate need for File Server(s) and Backup
• Scalable / Unlimited storage
• Scalable / Unlimited backups and Snapshots
• Low monthly cost (around $0.02/GB/Month or $20/TB/Month)
• Accessibility
• Centralization / Consolidation
• Deduplication of Data
Evolution of Apps/Working Together

Single User

Single Office

Multiple Offices

DIRECT ATTACHED

LAN ATTACHED

WAN ATTACHED
Why cross-site collaboration?

- Put office close to customer
- Unique expertise
- Lower-cost resources
- Follow the sun
- Fully utilize team members
Two types of collaboration

File Sync & Share

- Collaborative app
- Cross-site using “Office” applications
- File versions
- Multiple copies of files – no authoritative copy
- Additional workflow step(s)
- Large file transfer

Global File System

Collaboration within apps

- Cross-site using technical applications
- File locking
- Single authoritative copy of file
- No workflow changes
- Large file collaboration
Two “Legitimate” approaches

- Replicate files between sites
  - Great performance for remote users
  - Hard to manage

- Centralize files at one site
  - Poor performance for remote users
  - Simple to manage
The problem is NOT bandwidth...

• It’s time...
  - Opening, Closing, and Saving Projects: The “File Open Problem”
  - Reduces productivity and increases costs

... and latency is the culprit

• File system operations (opens, closes and saves) require direct contact to the central storage

• Enhancing bandwidth does not address the file system challenges
Panzura – Cloud Backed Solutions

- Global File Locking
- Smartsync
- Global Deduplication
- Compression
- Encryption / FIPS 140-2
- Snapshots
- Backup / DR

Millions of Files

PUBLIC OR PRIVATE CLOUD

AUTHORITATIVE STORAGE

\CloudFS

Project 1

Project 2

Project n

WAN

asti.com
AUTHORITATIVE STORAGE

Millions of Files

Global Locking
Reads And Writes Local

PUBLIC OR PRIVATE CLOUD

80x

SMARTSYNC

while collaborating during high activity

PUBLIC OR PRIVATE CLOUD

AUTHORITATIVE STORAGE

Global Locking
Reads And Writes Local
Since data is de-duped and compressed before transmitted, companies benefit from **LOWER NETWORK COSTS** by replacing or reducing MPLS with regular Internet connections.

**ENABLES:**

*Work efficiently without MPLS and point-to-point VPN connections between offices.*
Files used by each location are de-duped, compressed before transmission and cached locally at each location, giving you **WAN OPTIMIZATION** as a free feature as part of a Global File System.

**ENABLES:**
Simplified infrastructure by eliminating the need for costly standalone WAN optimization at most sites.
## Customer examples

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<th>Category</th>
<th>Companies</th>
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<td>C&amp;S Companies, Gensler, FLUOR, Mead &amp; Hunt, Graef, KPF</td>
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<tr>
<td>Mfg.</td>
<td>Milwaukee, Chevron, Motorola, NIST, National Instruments, Lockheed Martin</td>
</tr>
<tr>
<td>Fin. &amp; Law</td>
<td>ACLU, Credit Suisse, Essex Property Trust, Morgan Stanley</td>
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<td>Media &amp; Ent.</td>
<td>NBC, Warner Bros, Fox Sports, EA, DreamWorks, TVS</td>
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<td>Healthcare</td>
<td>Molina Healthcare, Jazz Pharmaceuticals, NYU Medical Center, inVentiv Health, Bristol-Myers Squibb</td>
</tr>
<tr>
<td>Research</td>
<td>NASA, JPL, USC, University of Notre Dame, University of Northridge, Autodesk</td>
</tr>
</tbody>
</table>
Summary

• Market Trends
• Need for Collaboration
• Document Management
• Collaboration Methods
  • Project Collaboration
  • BIM Collaboration
  • Cloud Storage
• Q&A
Thank You!

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