Better Together: Using Data to Get Field Connectivity Right

Modern cloud platforms create an unprecedented opportunity for information availability in the field. The challenge can become how to best structure your approach to using these platforms that ensures the right information is available to support the field worker without overwhelming and isolating them in an information storm.
Moderator

Cody Austin
Named Account Sales Executive
Autodesk, Inc.

Speakers

Jeremy Ashford
Vice President Business Services
Primoris Services Corporation

Kim Arrant
Vice President, Business Transformation
APTIM
Conference App Live Demo
Log In

On the Conference WiFi network, open the (CVENT) app.
Live Q&A

Once the Conference App (CVENT) is opened:

1 Navigate. Go to the session you are attending.

2 Click for Q&A. “Live Q&A” options for sessions that include them.

3 Type. Type your question in the text box and click “submit”
Live Polling

Once the Conference App (CVENT) is opened:

1 Navigate Go to the session you are attending.

2 Click Polls Click “Polls” option which will open up the questions for that session

3 Answer. One question will be available to answer at a time * a moderator or AV tech will open and close questions during the session as needed for sessions with more than one live poll question.
Are you excited to attend the ECC PerspeECCTives conference this year?

A. Yes
B. No
C. Not Sure
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Cody Austin, Autodesk

Welcome, Problem Statement and Forum Overview
Founded 1982

Headquarters San Francisco, CA

Employees (2022) 12,600+ worldwide

In FY23

6.74M Total subscribers (up 11% year on year)

$5.01B Total revenue (up 14% year on year)

$1.2B R&D investment (24% of net revenue)

NASDAQ ADSK

Market Capitalization ~42 Billion

Total revenue (up 14% year on year)

R&D investment (24% of net revenue)
Problem Statement

- Modern Engineering processes are highly digitized and managed using information-centric platforms.
- However, most of the output from these processes remains paper documents transmitted to the field for execution leading to risk in the area of data currency – Am I working on the correct version?
- Additionally, many processes in the field remain paper-based creating additional risk and limiting the opportunity to use the information available in the field for insight.
What is your New Possible?
Making Data Accessible in the Field

- Digitize
- Integrate
- Optimize
Two High Value Use Cases

Common Data Environment

Connecting the Field
Organize and share files confidently
Reliably track and securely deliver files to stakeholders.

Work flexibly on a cloud-based platform
Empower multidisciplinary teams to access centralized information anytime, anywhere.

Boost your team’s agility
Stay ahead of changing project conditions and issues.
Connecting the Field
Improve Decision Making and Productivity

- Access project documents, drawings and 3D models on tablets and phones
- Eliminate the time wasted walking back to the construction trailer
- Keep field supervisors in the field with their crew making them safer and more productive
Jeremy Ashford, Primoris Services Corporation

Primoris’ journey to create a more connected environment for the field worker and the resulting improvement in communication
Primoris at a Glance

- Established in 1960
- Headquartered in Dallas, TX
- Publicly traded on NYSE (PRIM)
- 12,700+ employees

→ A premier specialty contracting and engineering company with operations in the U.S. and Canada
→ Extensive company-owned fleet and equipment
→ Full Engineer-Procure-Construct (EPC) capabilities
→ Strong self-perform construction capabilities
The Primoris Journey

Background

- Traditional Beginning
  - 25 years ago
  - All paper-based processes
  - This was before computers were popular
  - “No way we will ever use a computer”

- Enter the Computer
  - The computer became our repository for information
    - Checklists
    - Timecards
    - Schedules
    - Other project information
  - But…..these were all paper forms that were then entered into a computer
The Primoris Journey

The Need for a Better Way

- Identifying the need for change
  - Was not just about being digital
  - Connecting disparate systems
    - Checklists, Timecards, Punch Lists, Document Control
    - Nothing talked to each other

- Still paper in the Field
  - Foreman checks the cubby every day for changes

- Project closeout
  - Spent weeks scanning and indexing

- Passion – How do we minimize the touch points
The Primoris Journey

An interesting beginning

- Existing relationship with Autodesk
  - Knew Autodesk as AutoCAD and Navisworks
  - Did not understand the company’s breadth

- Had a recordable incident on a project
  - Needed a way to simulate / document the incident
  - Found out that through our agreement with Autodesk we had access to Maya, a tool used for Movies
  - Successfully used Maya in documenting the incident

- This made us look at Autodesk differently
  - Broad toolset, many markets

- Found the Autodesk Construction Cloud
Enter the Cloud
Starting simply with the Cloud Platform

- Looked first at Document control
  - Still using shared folders

- Step 1 – All field-related documentation to the Cloud
  - Field documentation was transitioned first
  - Fairly seamless transition, minimal interruption
  - But, we are an EPC, really needs to start at the RFP

- Step 2 – Transition other functions for documents
  - Started using the Cloud for Engineering, Business Development and other forms of documentation
  - Brings everyone together, using the correct document
Expanding the use of the Cloud

Benefits extended to Construction Execution

- **Step 3 – Construction Execution**
  - Using the platform for construction execution was a natural extension
    - Issues, RFI’s, Markups, Version Control, etc.
  - Impact on Field Teams
    - Access to near real-time information
      - Design information, IFC documents
      - Inspections
    - Information back from the field also
  - Example Metrics
    | Before The Cloud               | With The Cloud              |
    |-------------------------------|----------------------------|
    | 1200 Folders                  | Single Common Cloud         |
    | 30,000 Documents              | Similar numbers of documents|
    | 12,000 were duplicated        | No duplication              |
  - Has nearly eliminated version issues
    - Example – estimating from the wrong version of a document
Impact and Benefits

What are we seeing in this early stage

- Predictable Project Completion
  - Previously the last 5% took 20% of the time
    - Lacked data and information to progress
  - Now project information is readily available
    - Progress is tracked in real time until signed off

- Real-Time Turnover
  - Project information collected in a single location
  - “The client just has it as a part of the process”

- Consideration – Visibility
  - The client now sees the information and can more easily hold you accountable
  - Makes us better!
Kim Arrant, APTIM

Aptim’s results from their program to create a connected field worker for the purposes of enhancing information exchange and the effective use of data
APTIM Overview

- APTIM specializes in
  - Critical Infrastructure
  - Technical and Data Solutions
  - Environmental
  - Program Management
  - Resiliency
  - Sustainability and Energy Solutions

- Markets
  - Government
  - Commercial
  - Industrial
  - Energy
APTIM’s Technology Journey

Digital Foreman

Construction Toolkit

Service Line Toolkits
Objectives:

Push: Keep the crews in the field, at the workface, informed and successfully completing tasks
• Stats - Industry published statistic – implementation of mobile data collection can increase productivity (time on tools) as much as 35%. Can we realize that?

Pull: Transparency of data and real time comms and issue resolution. Reduce administrative level of effort and increase effectiveness.
The Digital foreman

Results:

**Push:** Keep the Crews in the field, at the workface, informed and successfully completing tasks
- Stats - Industry published statistic – implementation of mobile data collection can increase productivity (time on tools) as much as 35%. Can we realize that?
  Increased our time on tools from industry 40% to 80% (3rd party assessment)

**Pull:** Transparency of data and real time comms and issue resolution. Reduce administrative level of effort and increase effectiveness.
- Decrease # of field engineers and oversight onsite
- Reimagined the role of the General Foreman.

Brought meaningful change to how we work.
Operational Transparency

- Tool Selection - Best In Class Solutions that align with and facilitate “how we work”.
- Renders a Data Rich Environment - Fueled by field focused processes and solutions
  - Collect the data as we work, as it is generated
  - Real Time Decision Making, Issue Resolution
  - Optimizing Accuracy
- Enables Powerful, Integrated Data Analytics and Performance Management
Our Key selection criteria

- Intuitive and Easy to Use – UI (User Interface)
- Best in Class Tech and Functionality; opportunity for differentiation
- Cloud-based, SaaS or PaaS model
- Open APIs, access to our data
- Technology Partner
  - Support
    - Not just as a support ticket but in thought, implementation and strategic growth and engagement
  - Visibility and a voice – Product Strategy
Project EXAMPLE

- Scope of Work: 200+ Structures Assessed for Repair < 30 days
- Objective: Establish Scope and Cost of Construction
- Pre-RFP – Project Execution Strategy
  - Talk through your operational approach
  - Align systems and data
  - Renders your Data and Operational Strategy
**Results**

- **Schedule/Productivity**
  - RFP required a **30 day** completion.
  - We bid **23 days** based on Execution Strategy.
  - We finished in **18 days**.

- Awarded the construction scope for repair.

### Assessments
1. Repair Items
2. Materials
3. CSI Division
4. Special Instructions
5. RFIs
6. Submittals

### Construction Management
1. Progress Against Repair Items
2. RFIs
3. Change
4. Submittals
5. Inspections
6. Completion and Acceptance

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**Material Management**

- Tools & Equipment
  1. Needs
  2. Receipt
  3. Availability
  4. Issuing

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**Resources**

1. Staffing
2. Schedule

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Dashboarding: Project EXAMPLE

- What the Data Tells Me:
  - Progress
  - Status
    - By Building
    - By Repair Item
    - By Division
  - Completion Rate Curves
  - Productivity by Discipline
  - Materials Needed
    - By Building
    - By Repair Item
  - Rework
  - Punchlist Items
  - Work Accepted
  - Submittal Review/Approval Status
  - RFI
    - By Status – Ball in Court
    - Avg No Days to Closure
Construction & Construction Management

- (Anchor) Drawings, Specifications, Markups, Redlines, RFIs, Submittals, Issue Management, Quality
- Material Management, Equipment & Tool Tracking, Logistics powered by SiteSense
- BIM for Construction, Clash Detection, Work Management powered by NavisWorks and iConstruct
- Reality Capture Solutions: Drones, 3D Scanning, Mobile Mapping powered by SiteScan & NavVis
- Crew Management (Time, Equipment, Quantities, Productivity, T&M) powered by Riskcast
- Design, QC, Inventory powered by Avontus
- Project Management powered by InEight Estimates, Primavera P6 and Autodesk Cost Management
- Project Management and Performance KPIs Reporting and Dashboards powered by PowerBI
Service Line Toolkits Dashboard

- ASAP: Emergency Management & Disaster Services
- Environmental Consulting
- Energy & Sustainability
- Construction & Construction Management
- Grant and Program Management
- Engineering
- DDR
- Operations & Maintenance
Lessons Learned / Key Take Aways

- Address Change Management… Head On
  - Give your stakeholders/end users a voice
  - Ownership and Responsibility
  - Don’t underestimate the power of “the frozen middle”
  - Solutions should solve problems

- Plan, Plan, Plan
  - Engage Stakeholders for Planning
  - Develop Your Execution Strategy
    - Key Metrics, KPIs
    - Managed Elements
    - Risk Points
  - THEN Overlay Your Data Needs
  - All before you step foot in the field.
Lessons Learned / Key Take Aways

- If you THINK you might need the data, include it.
  - Very difficult to add data when you’re in progress.

- Ownership is Imperative
  - Roles & Responsibilities
  - Requires Commitment & Accountability

- Systems but be Central to the Process and Workflow
  - No external or secondary data sources
  - PowerBI is ONLY for viewing your data
Panel Discussion
Open Question and Answer
Session Logistics

- ECC Slide here about the session Logistics, how to ask questions, etc.
Closing Thoughts
Key Takeaways

- Cloud platforms provide a catalyst to change the information supplied to and received back from the field worker.

- Begin with an area of meaningful impact like using a cloud repository to make sure the information in the field is current and lacking duplication.

- It is possible to see significant gains in time on tools with accurate and available information in the field.

- Available information provides a platform for re-imagining field supervisory roles, making them more available to their teams!

- All of the above points provide an opportunity for increased safety.
What is your New Possible?
Thank You!