The Four C's of Digitizing Construction Workflows

PRESENTED BY

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#ConstructionDork for Rhumbix

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rhumbix.com

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Today's Agenda

01. The Digital Revolution

02. The Digital Journey

03. The Digital Process

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Part 1

The Digital Revolution

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THE DIGITAL REVOLUTION

In 2014…

The case for apps and mobile devices

#AppAlchemy

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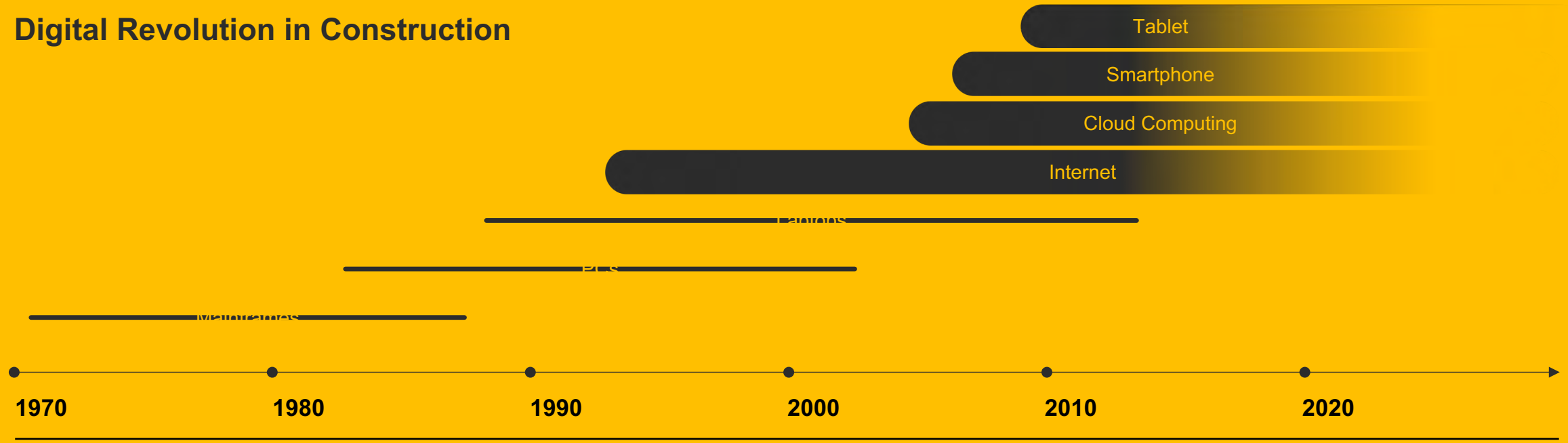
THE DIGITAL REVOLUTION

We have been part of a digital revolution!

Digital Revolution in Construction



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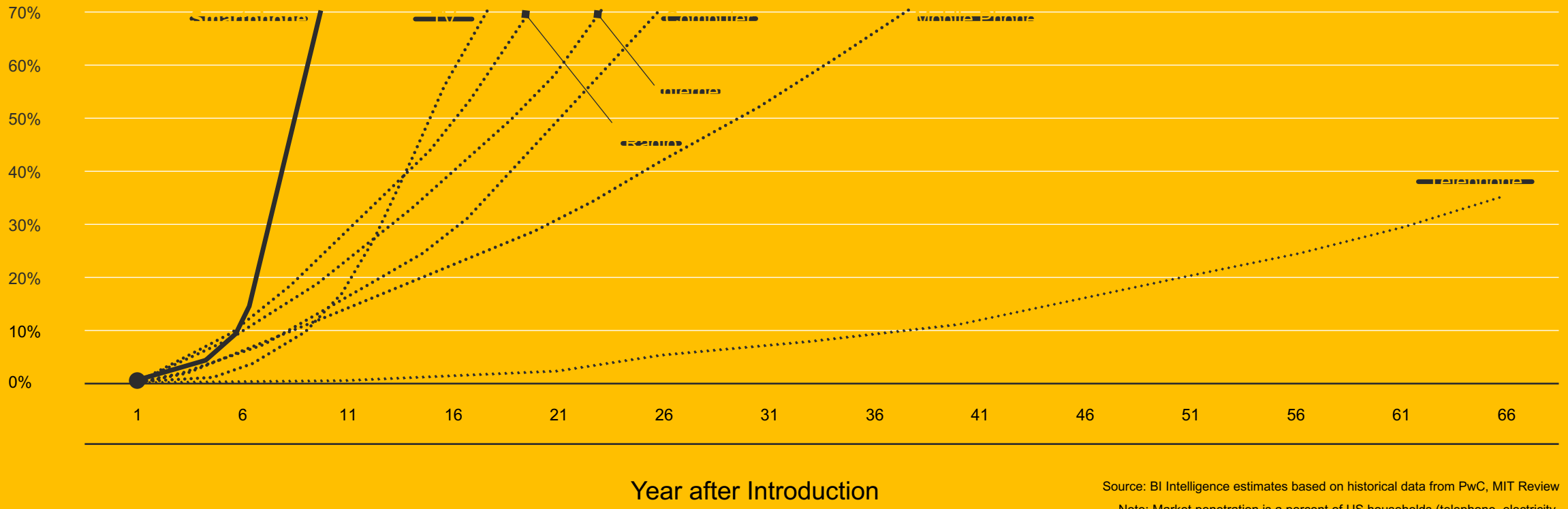
The Smartphone is the fastest adopted tech…

Years it takes Technology to be adopted by X% of US Population



Source: BI Intelligence estimates based on historical data from PwC, MIT Review

Note: Market penetration is a percent of US households (telephone, electricity, radio, TV, internet) or percent of US consumers (smartphone, tablet)

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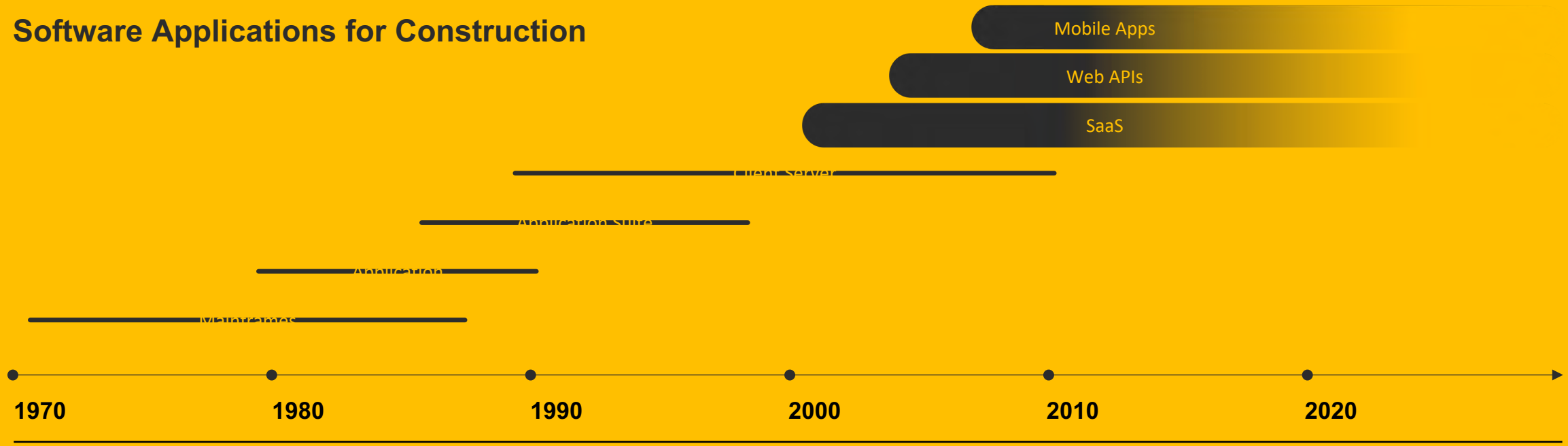
THE DIGITAL REVOLUTION

This revolution has created opportunities…

Software Applications for Construction



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The Challenge for Construction in 2019

Who will make the most of this digital revolution?

What is the smartphone's impact on construction?

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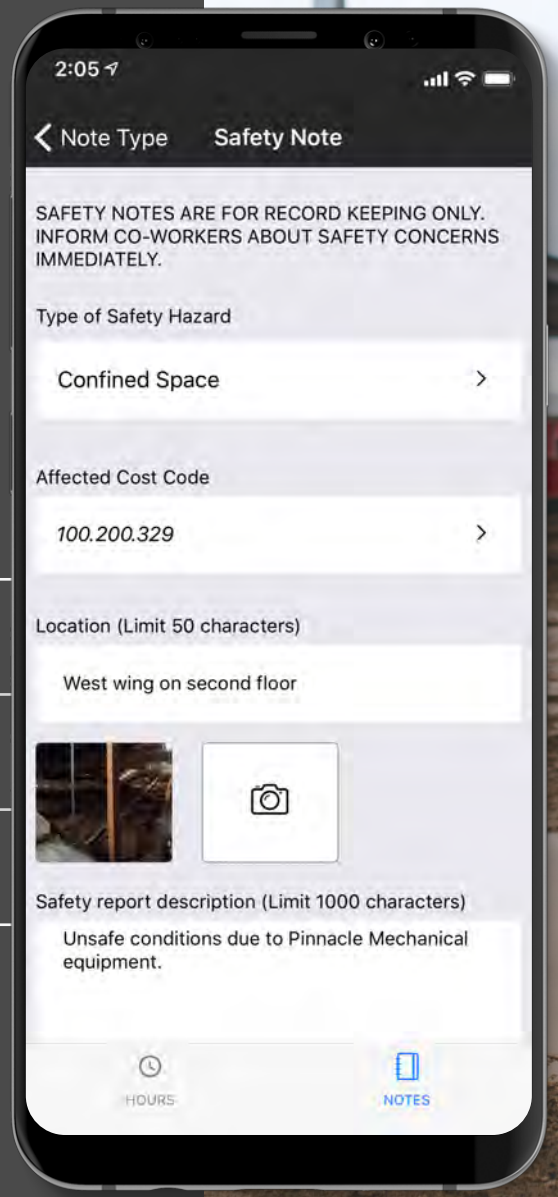
The Power of the Smartphone

Digitally-Based

- Calls / Video Conferencing
- Text Messages
- Photos / Videos / AR
- Apps (productivity)



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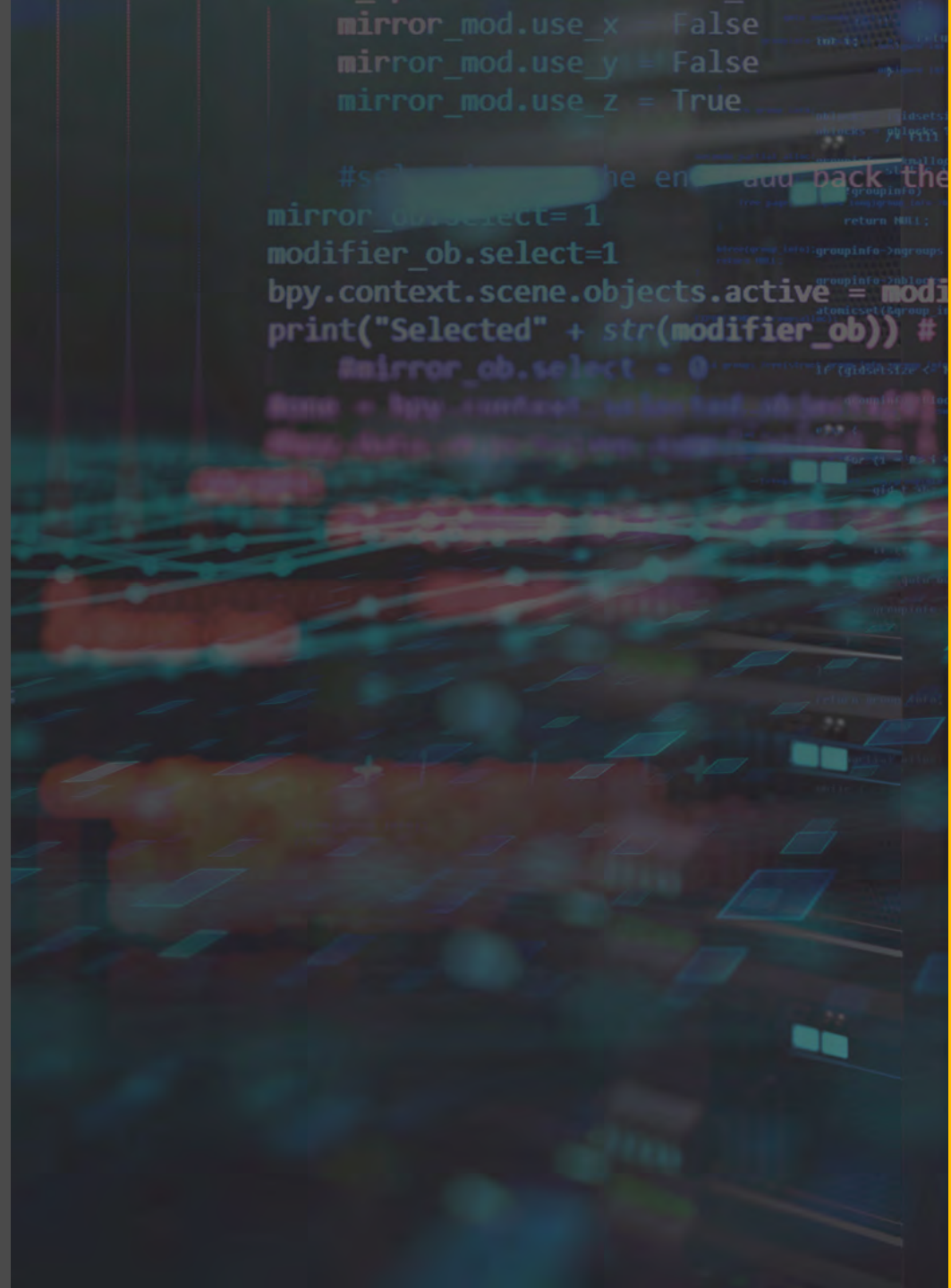
THE DIGITAL REVOLUTION

“The global app economy will be worth $6.3 trillion by 2021, up from $1.3 trillion last year, according to a new report this morning from app analytics firm App Annie.
During that same time frame, the user base will almost double from 3.4 billion people using apps to 6.3 billion, while the time spent in apps will grow to 3.5 trillion hours in 2021, up from 1.6 trillion in 2016”

App Annie ——— App Analytics & Market Trend Firm



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The Traditional Toolbelt

Craft workers have carried hand tools for decades.

Tools meant for driving nails, turning screws or cutting material.

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THE DIGITAL REVOLUTION

The Digital Toolbelt

Foreman now need digital tools and a collection of construction field applications that capture data to share **real time jobsite conditions**.

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Part 2

The Digital Journey

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Your Contech Journey

INDIVIDUAL IMPROVEMENTS

01.

Digitize Field Paperwork

Make your field personnel more efficient

PROJECT IMPROVEMENTS

02.

Improve Process Efficiency

Use data to be more productive and efficient

BUSINESS IMPROVEMENTS

03.

Gain Competitive Advantage

Use your data to make better decisions

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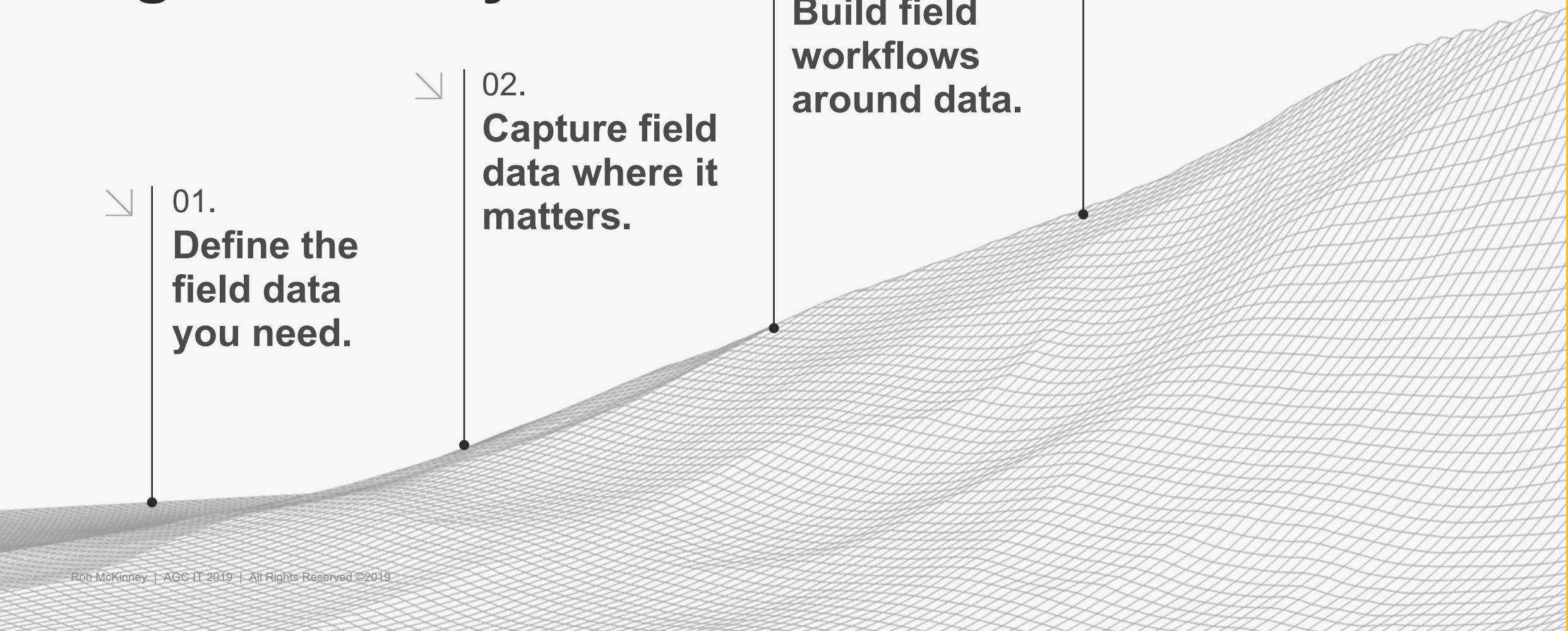
Building Your Digital Journey

01.
Define the field data you need.

02.
Capture field data where it matters.

03.
Build field workflows around data.

04.
Gain stronger insights from real time field data



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The Case for Digitizing Paper Workflows

Information Only (nothing to analyze)

Inefficient (easy to loose)

No details (photos or videos)

Labor intensive (double and triple entry)

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Paper Forms

Info

The Carbon Locker

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Ways of Capturing Field Data

Written

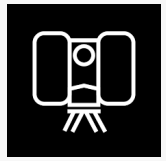
Crews create notes on forms or apps to document site conditions, issues and changes.

Spoken

Crews can record voice notes using apps to document site conditions, changes and issues.

Photos

Crews can take photos of project areas to document current field conditions or non-conformance issues.



Scan

Crews can scan project areas to generate a point cloud to use in 3D software.

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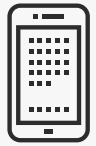
Common Forms of Field Data

Spreadsheet

Spreadsheet can help people with computational work like project budgets, takeoff lists and even schedules. However, it is difficult to utilize separate spreadsheets across a company.

PDF

PDF forms are better than paper, as they can be stored on a computer drive or a local server so easier to find. Fillable forms are easy to fill out and view on mobile devices.



Apps

Mobile based apps allow users to generate data at the source of work in the field. Structured data is organized on a web based platform and allows users to filter, sort and analyze.

Software/ Platform

Web based software allow users to better access data in one central platform. Company data is organized on a platform and allows users to compare project data and develop overall trends for a company as a whole.

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Goals of Field Level Data Capture

Visibility

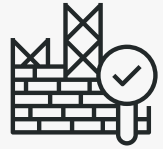
Need better ways to understand production rates in the field. How to get dashboard view in real time on product metrics.

Schedule

Tracking progress is necessary to validate the agreed up schedule and any deviations or delays to it.

Weather

When storms or rainy condition create delays or issues, project data can help determine best course of action moving forward.



Inspection

Once materials have been installed they must be inspected for quality and conformance.

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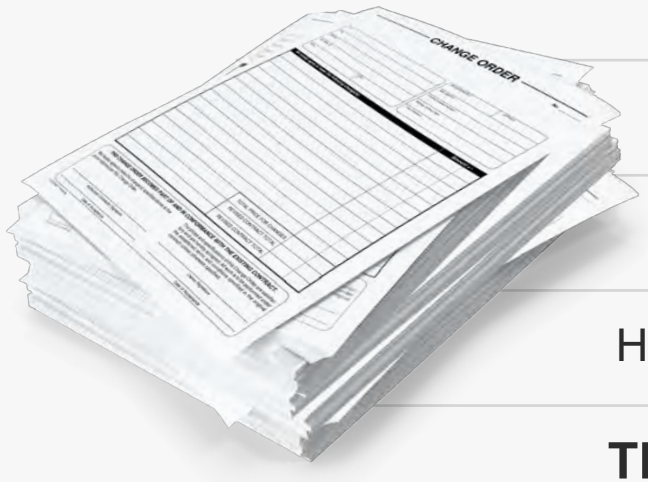
Freeing Your Data from the Carbon Locker

PAPER-BASED		DIGITAL-BASED
Information only	→	Rich Data
Text only	→	Photo and Videos
Hard to find	→	Easy to locate, leverage
Hard to share (folders)	→	Easy to share (cloud)
The Carbon Locker	→	**The Virtual Gold Mine**



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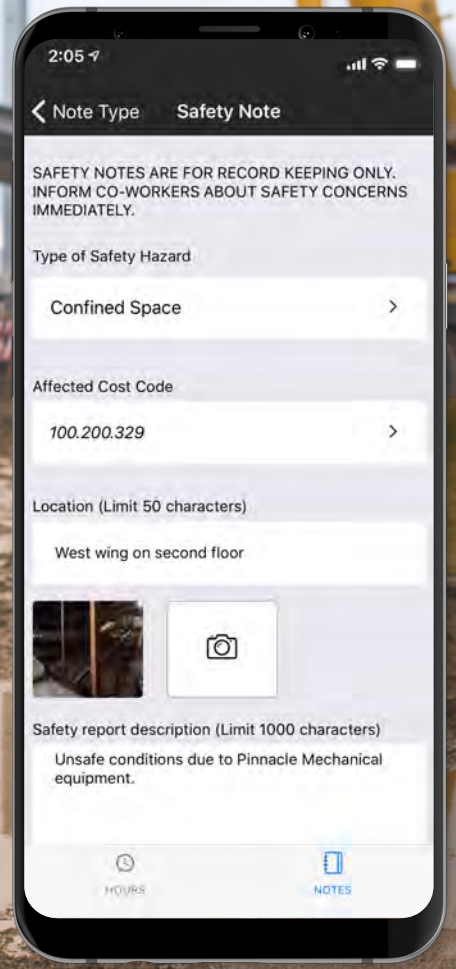
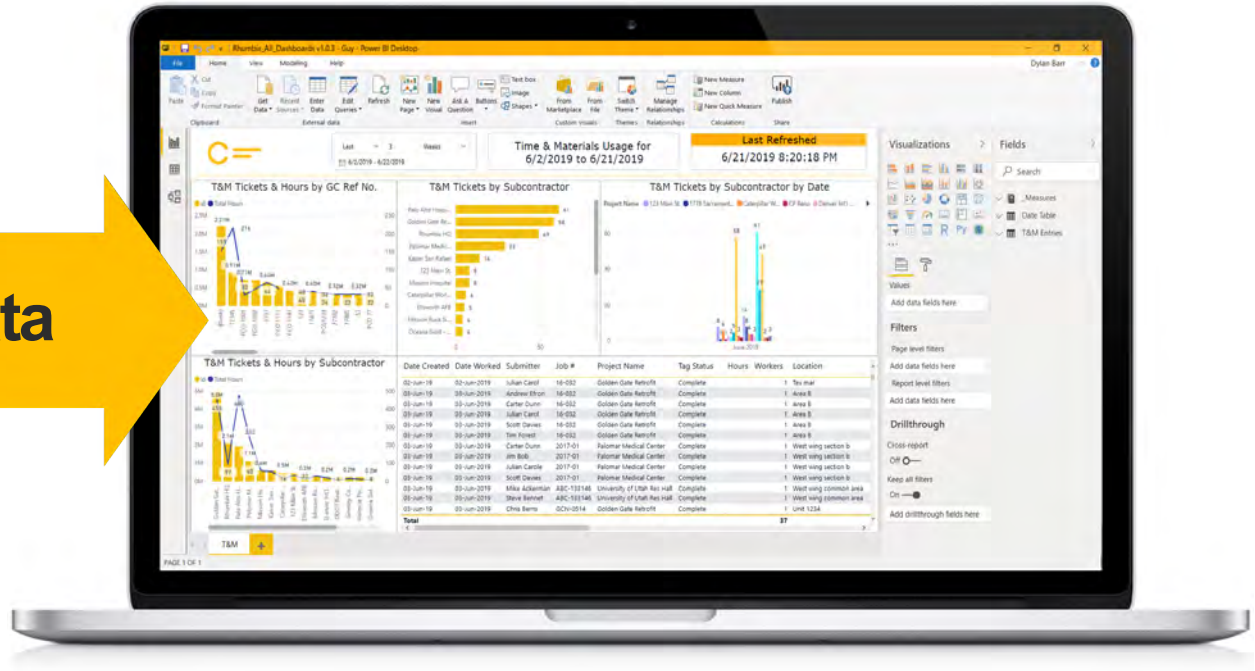


Field Data

Virtual Gold Mine



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Part 3

The Digital Process

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The Four C's to Digitize Construction Workflows

01. **Collaborate**
02. **Convert**
03. **Communicate**
04. **Coordinate**

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01. **Collaborate**

Form a Technology Committee

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01. **Collaborate**

Create Consensus by Committee

1. Organize a group of like minded technology enthusiast.
2. Have an **odd number** of people: need a tie breaker.
3. Agree to **regular meeting** dates, times and durations.
4. Empower your **tech champions**.
5. **Set aside a budget** for new technology purchases.

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02. **Convert**

Develop your Requirements Matrix

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02. Convert

Develop a Requirements Checklist

1. Big Picture (All Projects)
2. Configurability of Fields (what is locked or required)
3. Push and pull data between other platforms
4. Set Specific Parameters (ex. attach a photo)
5. Reporting (Dashboards) specific to your Company
6. Feedback from multiple users

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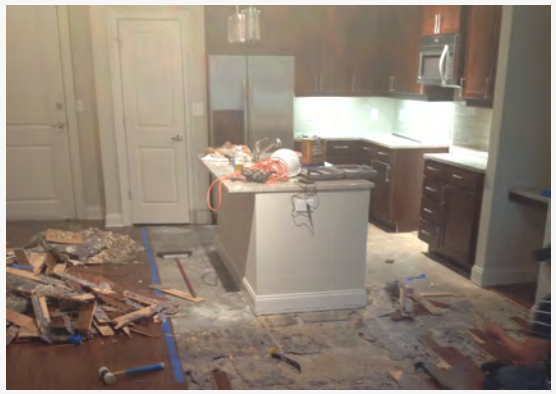
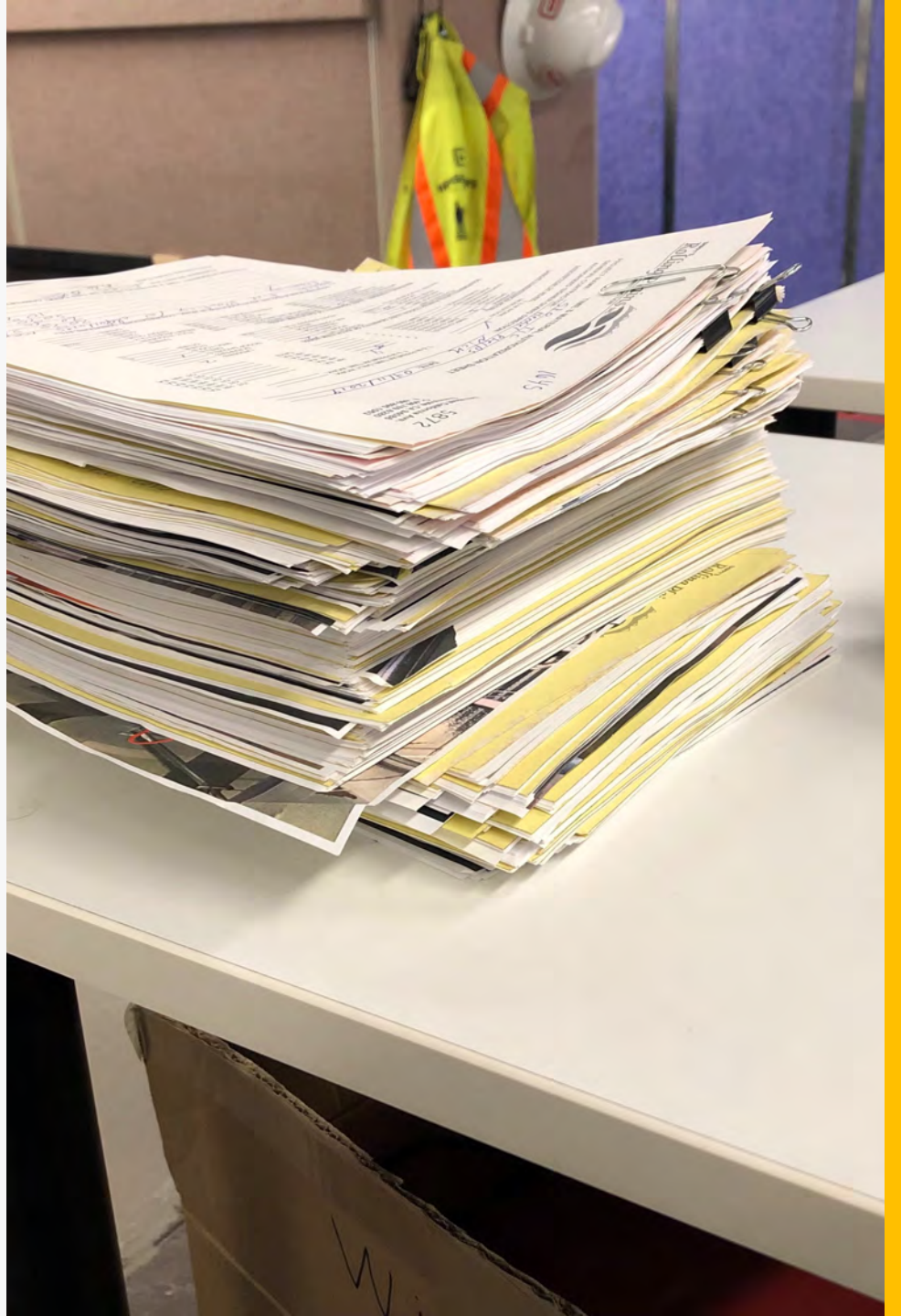
02. **Convert**

Example 1: **Rework Issues in the Field (T&M)**





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02. Convert

Example 1: **T&M Requirements Checklist**

Feature	Product 1	Product 2	Product 3
Labor	✓	✓	✓
Material Cost			
Equipment Cost			
Add Photos	✓	✗	✗
Add Signature			
Outside Approval		✗	✗
Web Dashboard			✗

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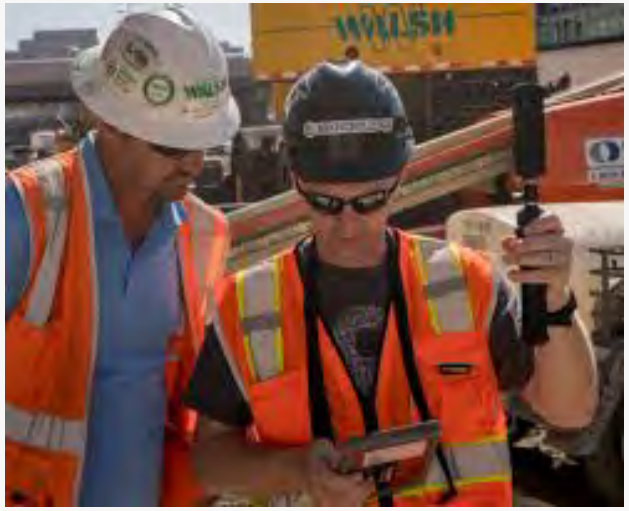
02. **Convert**

Example 1: **360 Cameras**



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02. **Convert**

Example 1: **360 Camera Requirements Checklist**

Feature	Product 1	Product 2	Product 3
Long battery life	✓	✓	✓
Onboard Memory	✓		
Megapixels			
Video	✓	✗	✗
Waterproof			
Mountable		✗	✗
Platform use / files			✗

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02. **Convert**

Example 1: **Time Cards**

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02. **Convert**

Example 1: **Time Cards Checklist**

Feature	Product 1	Product 2	Product 3
Multiple Crew Entry	✓	✓	✓
Phase Codes			
Equipment Codes			
Material Codes	✓	✗	✗
Shift Extras			
Signatures		✗	✗
Integrations	✗		✗

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03. Communicate

Develop a Program

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03. Communicate

Develop a Written Program

1. Decide what software will use.
2. Decide what hardware will use.
3. Decide how much data will provide.
4. Develop policies for security.
5. Train employees on program.
6. Update annually as needed.

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04. Coordinate

Develop a Full Digital Process

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04. Coordinate

Set Up a Test Project

1. Pick a small project.
2. Must has at least one Tech Savy team member
3. Look for an easy WIN – ex. convert a form!
4. Document the current workflow (# steps).
5. Document the new workflow.
6. Compare the number of steps and quality.

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04. Coordinate

Get Help with Implementation

1. Ask your software provider for training.
2. In person is the best!
3. Webinars or Video Calls will work.
4. Phone calls…. not so much…
5. Use buddy system for learning.
6. Share best practices.

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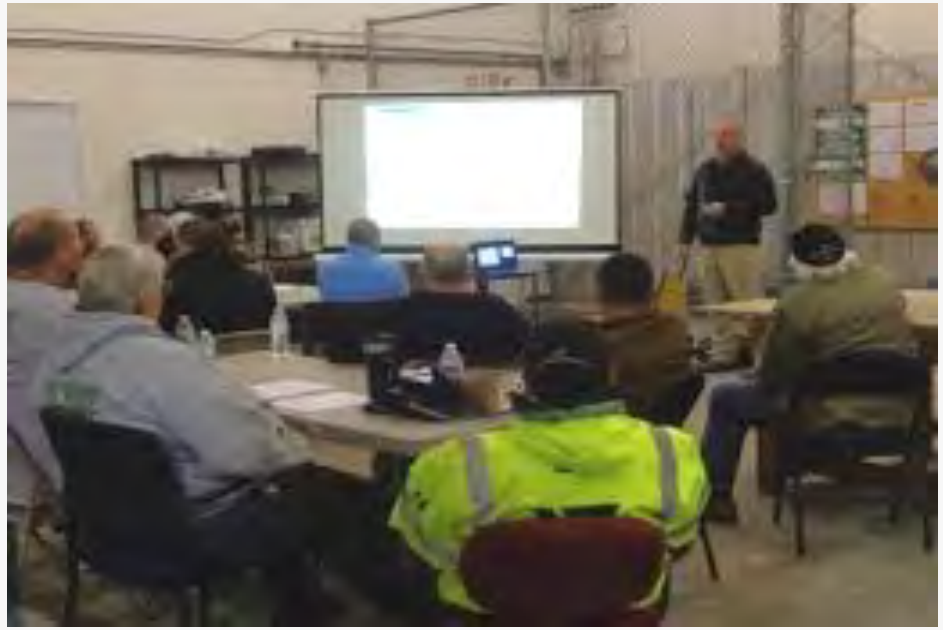
04. Coordinate

Train Your Employees

1. Use unexpected downtime (rain days or delays).
2. Use mentor system (tech savy help others).
3. Explain the workflow through the digital tool.
4. Document the training.
5. Update materials quarterly.



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Collect Field Data…not Documents.

Documents

vs.

Structured Data

- Inefficient, manual process
- Prone to mistakes and loss
- Data and insights are unavailable to project stakeholders

- Fast and easy mobile forms
- Accurate data collected in real time
- Project performance data and insights are available to office and execs

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Thank you!

Questions?

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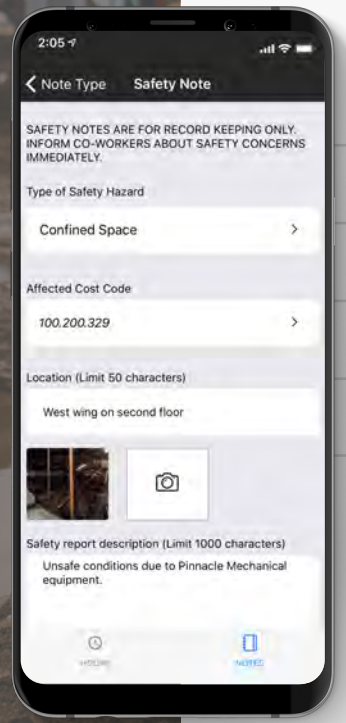
High Level Workflows

Mobile Field App

Easy to use Mobile App that is designed for fast data collection and rapid adoption on the jobsite.



- Timekeeping
- Special Pay
- Production Tracking
- Mobile Analytics
- T&M Tickets
- Custom Forms

RMBX

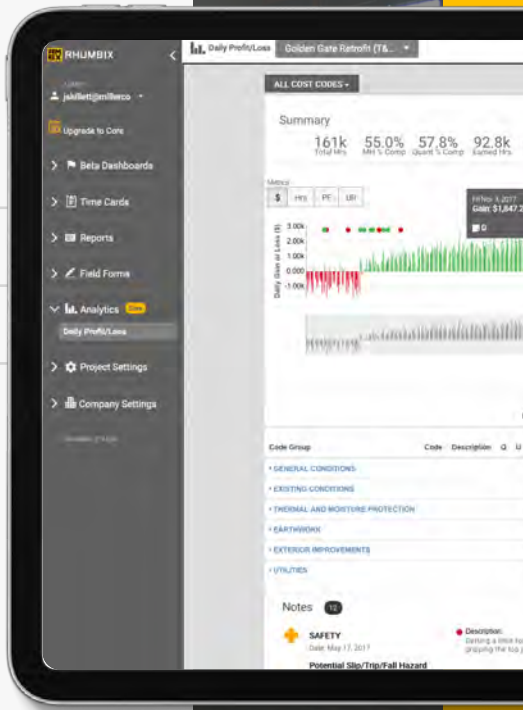
Payroll / ERP
Excel (CSV) / BI

CMiC · VIEWPOINT · AUTODESK® BIM 360™ · Power BI

Office (Cloud) Workflows

Web App provides access to a single source of real time data for all stake-holders to make informed decisions.

- Frontline Supervision
- Project Management
- Admin & Payroll
- Exec Management



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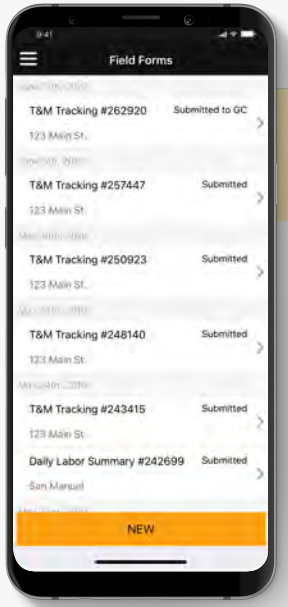
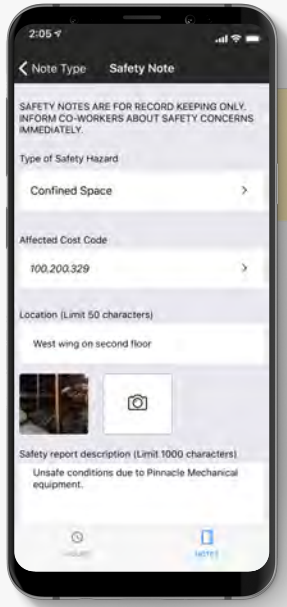
Digitized Time & Material Tags

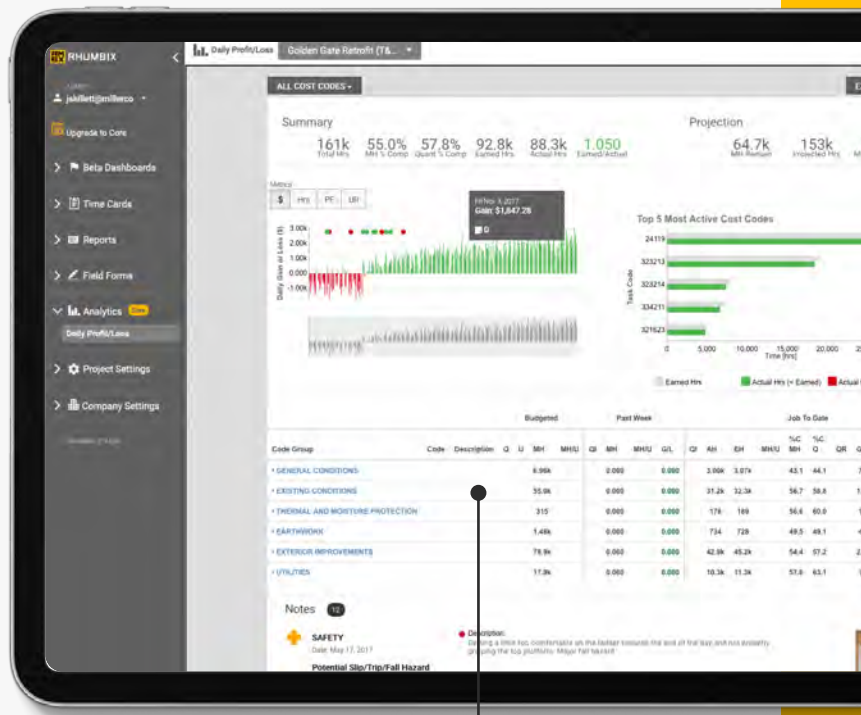
Increase process efficiency and transparency to get paid faster.



Foremen capture Field Data and obtain field verification and approvals



Data is pushed to the web immediately for automated pricing and retention



A Dashboard to Leverage with GC'S so you can get paid quicker and in full.

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