

Emerging Technology in Construction Management

Gavin Diaz and Darin Muncy



Agenda

- + Introductions
- + What problem are we solving?
- + Movie time!
- + Next steps

Introductions



Gavin Diaz

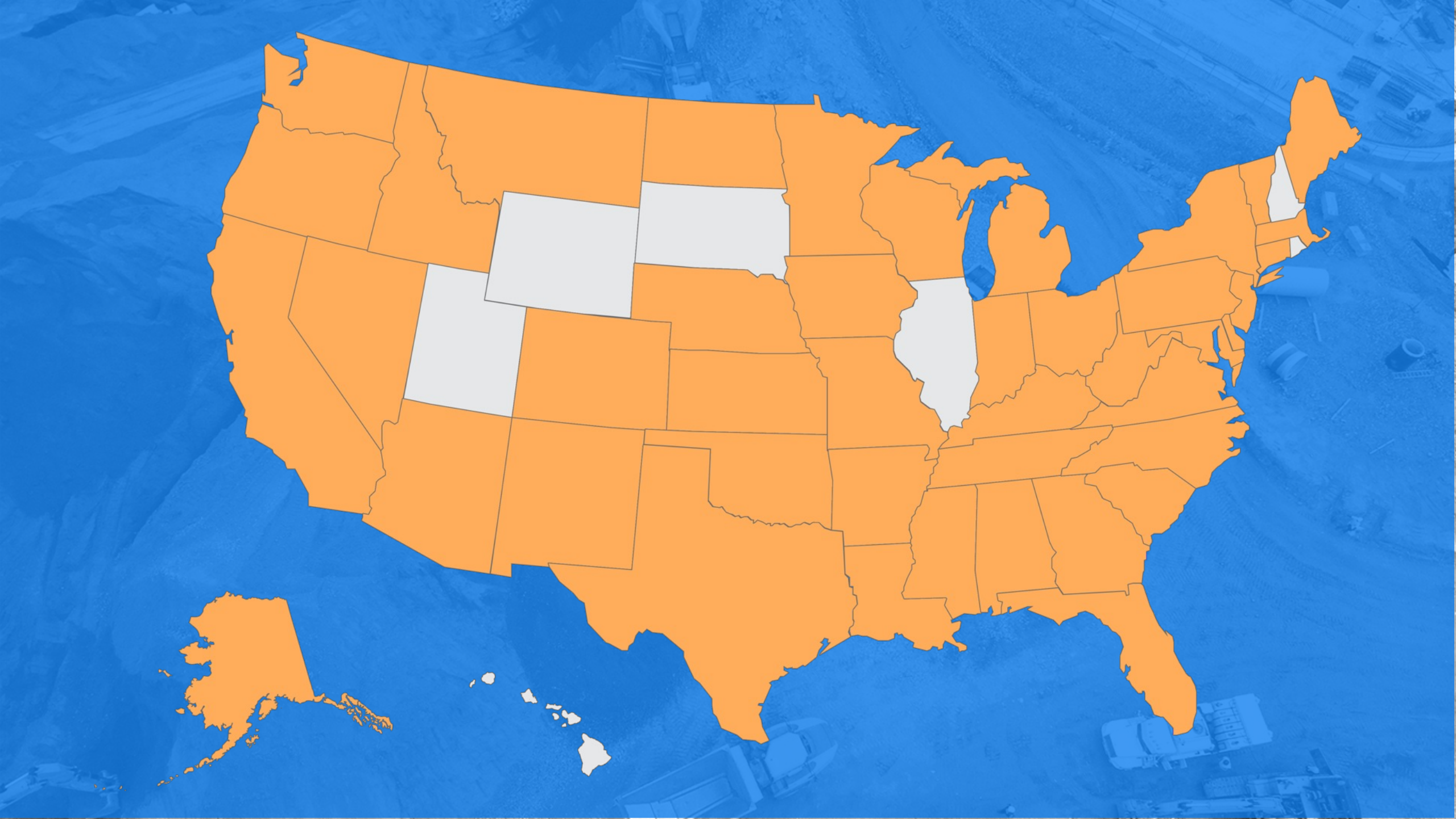


Darin Muncy

Infotech + Trimble

- + Software company founded in 1977 by Two University Professors
- + Contractor for AASHTOWare Project™
- + Owner and developer of Bid Express®, Appia®, Doc Express® and more

- + Began as a GPS company in 1978 by three Hewlett-Packard engineers
- + Has expanded from geospatial to construction, Ag and transportation
- + Connecting the physical and digital worlds through hardware and software



AASHTOWARE PROJECT™

Driving digital project delivery through connected, collaborative software

AASHTOWare Project transforms the way transportation agencies administer projects, track progress, and make decisions. With six integrated modules, mobile apps, and other technical tools at their disposal, AASHTOWare Project helps ensure federal and state specs are adhered to, the contractor gets paid, and taxpayer funds are under good stewardship. Updates to AASHTOWare Project are directed and tested by the user community, resulting in a software that evolves based on agency needs.



SEE HOW AASHTOWARE PROJECT CAN HELP YOUR TEAM THRIVE:

Use Modules Built for Agency Requirements

AASHTOWARE PROJECT BIDS™

Accept bids, prepare bid files, and manage lettings through a streamlined, secure electronic bidding process.

AASHTOWARE PROJECT ESTIMATION™

Prepare accurate, cradle to grave estimates through varied estimation methods.

AASHTOWARE PROJECT PRECONSTRUCTION™

Develop proposals electronically and supports alternative contracting methods.

AASHTOWARE PROJECT CONSTRUCTION & MATERIALS™

Streamline the construction and material management process, ensuring proper usage of funding, capturing digital as-built data, and timely contractor payments.

AASHTOWARE PROJECT CIVIL RIGHTS & LABOR™

Improve equity by managing civil rights and labor requirements and DBE reporting.

AASHTOWARE PROJECT DATA ANALYTICS™

Analyze project data, find patterns, and make data-driven decisions through analytics dashboards.

Interoperability and Collaboration

Integrating with other key systems and capturing data from external sources is a top priority for AASHTO. AASHTOWare Project's OpenAPI supports full lifecycle management by integrating with other key systems and capturing data from rovers, e-ticketing providers, and more.

Stay Involved in Software Development

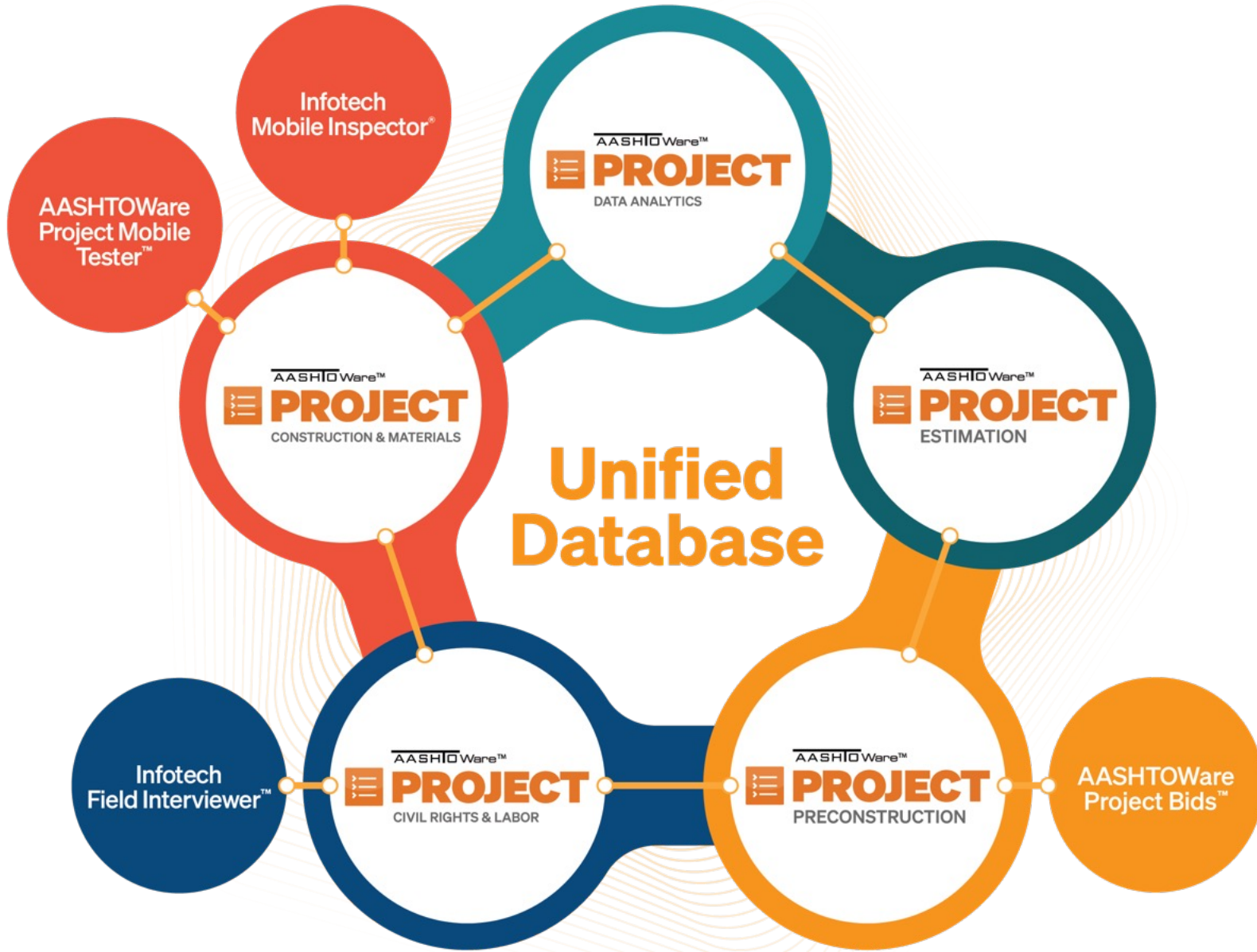
AASHTOWare Project is driven by a collaborative development process, so the software is developed and funded by transportation professionals, for transportation professionals. DOTs routinely work together to find common points of interest and fund improvements to the software through a joint development process.

AASHTOWare
Project Agencies

40+ DOTs WITH BILLIONS IN FUNDS
PROCESSED EVERY YEAR

AMERICAN ASSOCIATION OF
STATE HIGHWAY AND
TRANSPORTATION OFFICIALS
AASHTO

555 12th Street, NW, Suite 1000
Washington, DC 20004
(202) 624-3697
www.aashtoware.org



Infotech
Mobile Inspector®

AASHTOWare
Project Mobile
Tester™

AASHIOWare™
PROJECT
DATA ANALYTICS

AASHIOWare™
PROJECT
CONSTRUCTION & MATERIALS

AASHIOWare™
PROJECT
ESTIMATION

Unified Database

Infotech
Field Interviewer™

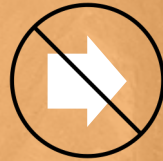
AASHIOWare™
PROJECT
CIVIL RIGHTS & LABOR

AASHIOWare™
PROJECT
PRECONSTRUCTION

AASHTOWare
Project Bids™

What problem are we solving ?

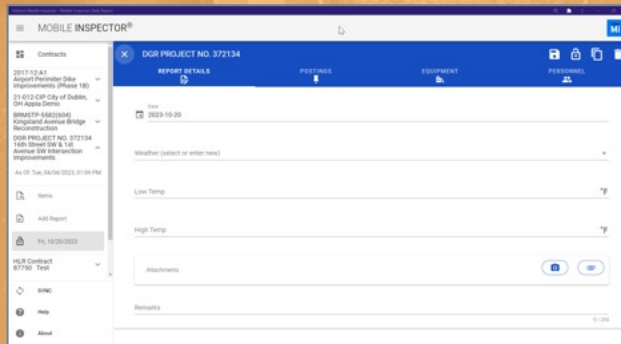
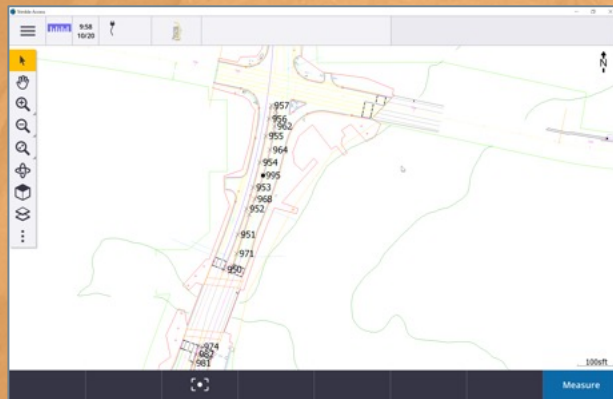
Trimble®
Access™



Mobile
Inspector®



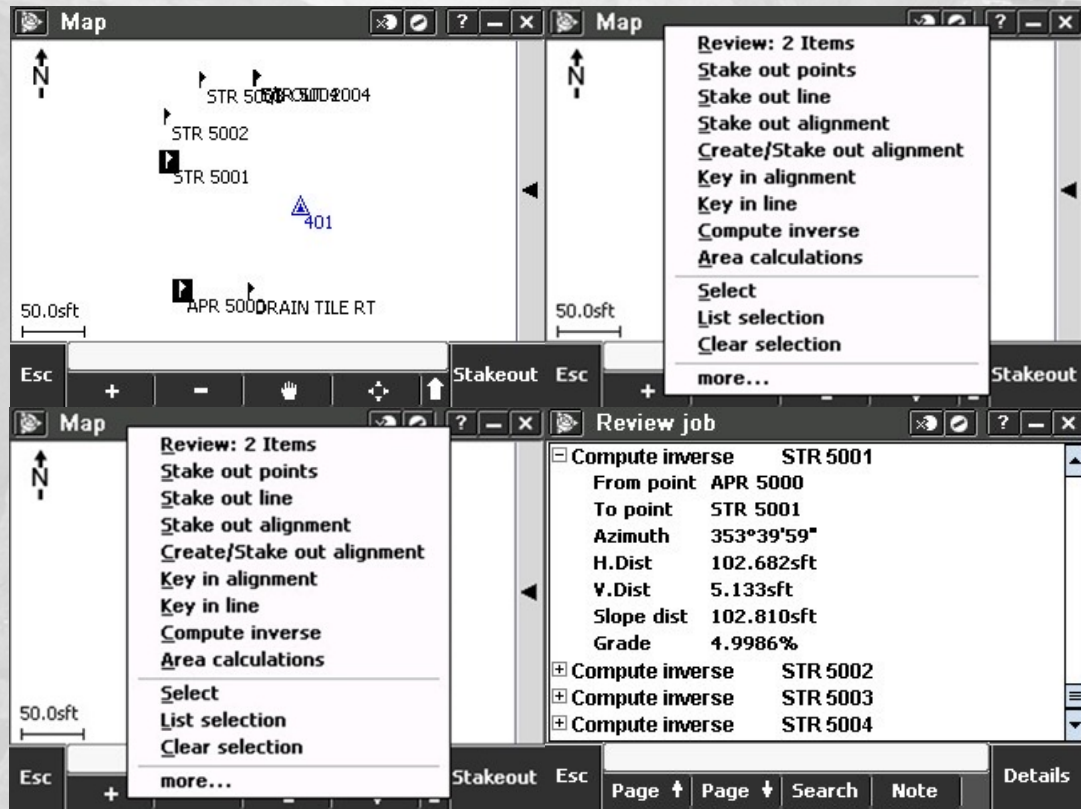
AASHTOWa
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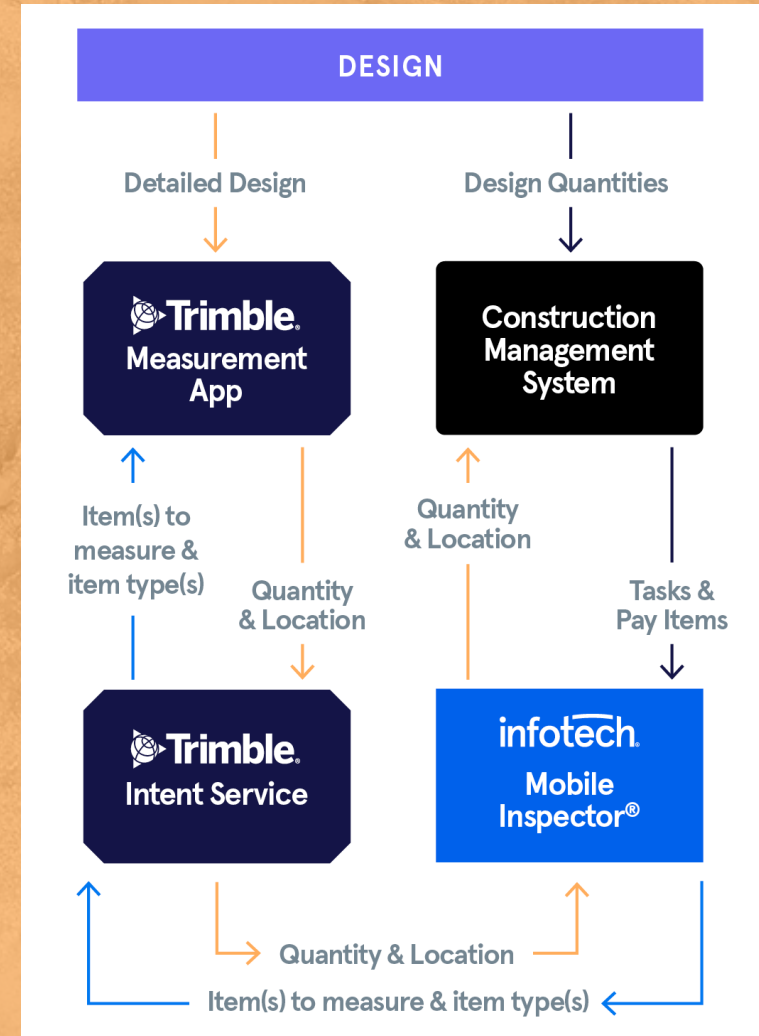
AASHTOWare™
PROJECT

Old Workflow

Old Workflow



New Workflow



What are the results two years into the successful integration ?

DEPARTMENT OF TRANSPORTATION



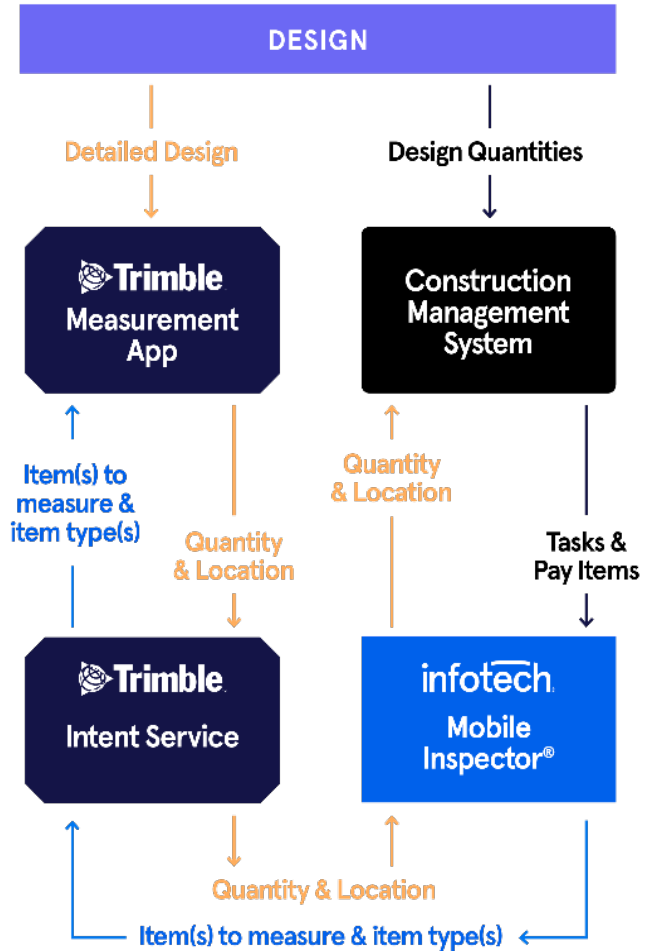
Trimble® Access™



Infotech® Mobile Inspector®



AASHTOWare Project™



The Solution

On the job site



Trimble R12i



Trimble R780



Trimble R580



Trimble R2

Windows Based data collection platforms



Trimble TSC7



Trimble T100




Trimble T10x

Infotech Mobile Inspector direct connection to Trimble Mobile Inspector



Mobile Inspector[®]
infotech.

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Mobile
Inspector

Trimble Access running on TSC7

Trimble Access

9:14
1/10

630+00.0sft
628+15.4sft (VCS)
626+50.0sft
624+78.7sft (PT)
622+50.0sft
619+77.4sft (PC)
615+34.8sft (PT)
613+50.0sft
611+27.4sft (PC)
608+67.8sft (VPI)
607+00.0sft
605+00.0sft
602+97.0sft (S,VPI)

• TNZBASE

• 131

• 2101

• 2100

• 132

Choose application

General Survey

Roads

Tunnels

Mobile Inspector

Back

Accept

Measure

500sft

Trimble Maps

220117



- REPORT DETAILS
- DWR NOTES
- CONTRACT TIME
- CONTRACTORS ON SITE
- POSTINGS**
- EQUIPMENT
- PERSONNEL
- AGENCY STAFF
- CONTRACTOR STAFF
- ACCEPTANCE RECORDS

Filter Postings...



+ ADD POSTING

Posting



Item
 2104504/00110 - REMOVE BITUMINOUS DRIVEWAY PAVEMENT

Contractor
 0000197565 - The Mathiowetz Construction Co. (Prime)

Qty SY Measured

MEASURE SERVICE

Authorized 8505 S Y
 Total Posted 2434.32 S Y

Material Set

ACCEPTANCE RECORDS

Trimble Access

The screenshot shows the Trimble Access interface with a map of a site. A pink hatched area represents the measurement area. A table on the right lists the points used for the measurement.

Name	Feature code
1 Median 1	INP71
2 Median 2	INP71
3 Median 3	INP71
4 Median 4	"4"-CONCRETE-WA...
5 Median 5	INP71
6 Median 6	INP71
7 Median 7	INP71
8 Median 8	INP71
9 Median 9	INP71
10 Median ...	INP71
11 Median ...	INP71

Buttons at the bottom: Esc, None, Measure, Calc

Measure or select the points

The screenshot shows the same Trimble Access interface, but now displaying the results of the measurement. The table on the right shows the calculated area and perimeter.

Measurement request result	
Selection Median 1,Median 2,Median 3,Median	
Sloped Area 672.618S F	
Plan Area 672.618S F	
Perimeter 124.254sft	

Buttons at the bottom: Esc, Share

Select "Calc" and "Share" for payment

220117



- REPORT DETAILS
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- CONTRACTORS ON SITE
- POSTINGS**
- EQUIPMENT
- PERSONNEL
- AGENCY STAFF
- CONTRACTOR STAFF
- ACCEPTANCE RECORDS

Filter Postings...



+ ADD POSTING

Posting 2104504/00110 - REMOVE BITUMINOUS DRIVEWAY PAVEMENT



Contract Line 0305
 Project 69863
 Category 0001
 Proj Line 0610
 Source Original

Qty 104.698 S Y
 Measured No
 Unit Price \$3.30

Authorized 8505 S Y
 Total Posted 2434.32 S Y

Contractor 0000197565 - The Mathiowetz Construction Co. (Prime)
 Geolocation Latitude: 45°18'56.59797N, Longitude: 94°53'55.53104W, Accuracy: 0 m

Station From 2199 + 50.422sft
 Station From Offset Distance 246.698

Station To 2199 + 83.218sft
 Station To Offset Distance 282.561

Attention No



220117



REPORT DETAILS



DWR NOTES



CONTRACT TIME



CONTRACTORS ON SITE



POSTINGS



EQUIPMENT



PERSONNEL



AGENCY STAFF



CONTRACTOR STAFF



ACCEPTANCE RECORDS



Filter Postings...



+ ADD POSTING

- In the mobile Inspector app assign the "Excavation – Muck" item
- Assign the contractor doing the work
- Click "Measure Service"

Posting



Item

2106507/00030 - EXCAVATION - MUCK

Contractor

0000197565 - The Mathiowetz Construction Co. (Prime)



Qty

C Y Measured

MEASURE SERVICE

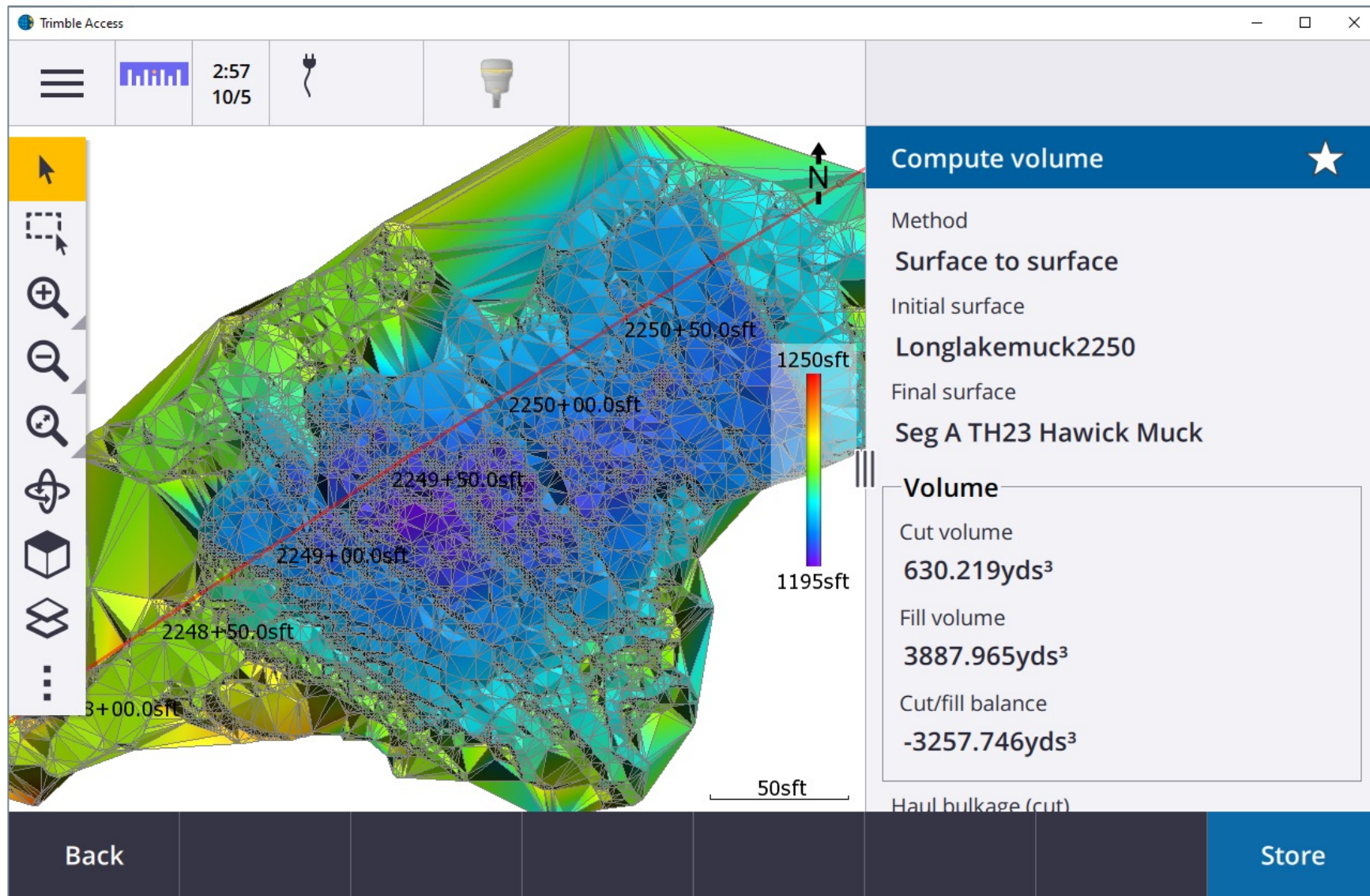
Authorized 55677 C Y

Total Posted 55334.501 C Y

Material Set

⇒ ACCEPTANCE RECORDS

Current method of Cubic Yard payment with the field model compared to the design model



Using the measure request for a compute volume call out the design surface as the initial surface and the field surface as the final surface gives you the difference between the 2 models. Click on "Store" and "Share" and the quantity is sent back to the mobile inspector app for payment.

Current method of Cubic Yard payment with the field model compared to the design model



220117



- REPORT DETAILS
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- CONTRACTOR STAFF
- ACCEPTANCE RECORDS

Filter Postings...



+ ADD POSTING

Posting 2106507/00030 - EXCAVATION - MUCK



Contract Line 0350

Project 69863

Category 0001

Proj Line 0700

Source Original

Qty 3887.987 C Y

Authorized 55677 C Y

Measured No

Total Posted 55334.501 C Y

Unit Price \$4.80

Contractor 0000197565 - The Mathiowetz Construction Co. (Prime)

Geolocation Latitude: 45°19'30.76198N, Longitude: 94°53'18.54760W, Accuracy: 0 m

Station From 2244 + 71.274sft

Station To 2252 + 05.384sft

Station From Offset Distance 99.43

Station To Offset Distance -4.559

Attention No

Current method of Cubic Yard payment with the field model compared to the design model

Home Previous My Pages 4.8.3 Production Environment Current Role: MNCONST

Attachments Overview

Attachments For DWR Item Posting

Type search criteria or press Enter Advanced Showing 2 of 2

Select File...

> LandXML.xml.xml

> Filename
measurement.csv.csv

Description

Data attached to the DWR in AWP once shared. This is it final location and can be pulled out and used in other areas.

Each item record

AutoSave Off

File Home Insert Draw Page Layout

Cut Copy Paste Format Painter

Clipboard Font

M13

	A	B	C	D	E
1	name	northing	easting	elevation	code
2	rcp 39 001	261131.2	469273.7	1238.959	
3					
4					

Area Measurement

	A	B	C	D	E
1	name	northing	easting	elevation	code
2	rbdp 1011	261152.3	469269.2	1241.359	Area1
3	rbdp 1011	261145.4	469277.3	1241.433	Area1
4	rbdp 1011	261140.3	469284.5	1241.481	Area1
5	rbdp 1011	261149.3	469300.6	1241.526	Area1
6	rbdp 1011	261164.7	469307.4	1241.249	Area1
7	rbdp 1011	261175.3	469310.2	1241.603	Area1
8					

DWR Attachments

AN INFOTECH PARTNER

Mobile Inspector[®] + Trimble

Power up your survey-grade inspections through our integration with Trimble[®] Access[™] field software. Via the Mobile Inspector[®] Measure Service, your team can capture high-accuracy positioning and measurement data from Trimble rovers on your mobile device.

LEARN MORE →

infotech[®]

[VIDEO](#)

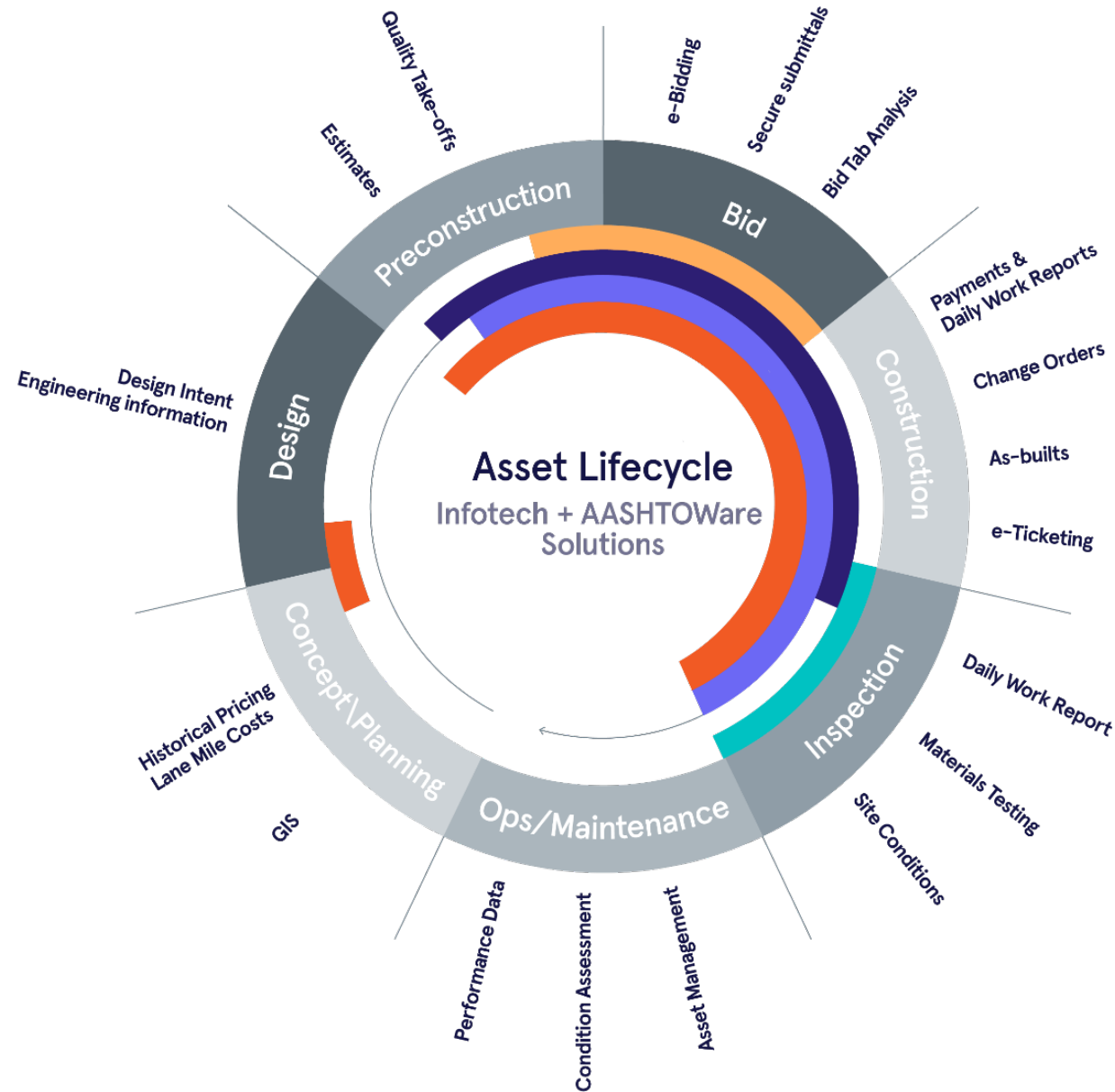
 Trimble[®]

Efficiency and Opportunity

- + **Near 90%** reduction in time saved in contract closeout
- + Items are being measured faster, and more accurately.
 - + Record retention is improved.

- + Contractors are being paid faster
- + Construction As-Built Pay Item (last 5 years)
 - + **445** Contracts
 - + **\$4,765,503.47** Total Spent

What's Next ?



Bid Express®

Doc Express®

Appia®

Mobile Inspector®

AASHTOWare Project™