

Setting the Standard for Automation™



Efficiency Alert: Utilizing Tablet Technologies in Traditional Engineering Projects

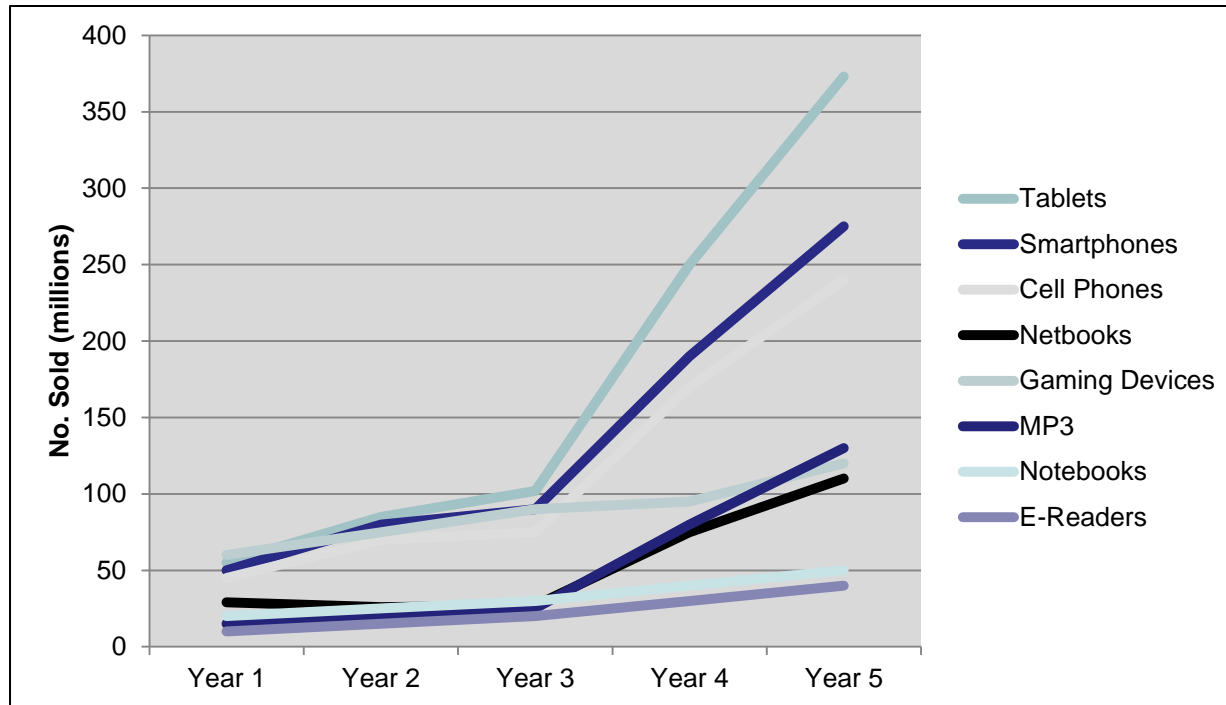
**Timothy Lemoine P.E. and
Scott Byrne P.E.
Matrix Technologies, Inc.**

Standards
Certification
Education & Training
Publishing
Conferences & Exhibits

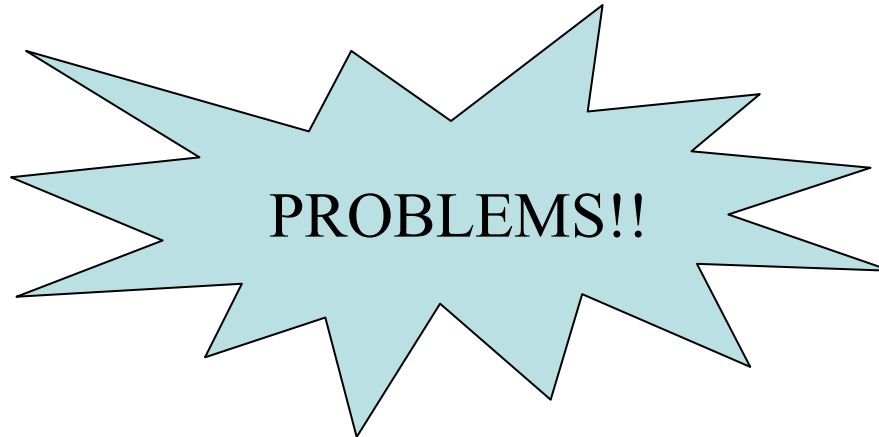
- Tim is a Sr. Manager in the engineering division and has direct responsibility for the Power, Instrumentation and Controls departments at Matrix Technologies, Inc.
- Scott is a Manager in the engineering division and has direct responsibility for the Instrumentation Department at Matrix Technologies, Inc.



Tablet Market Penetration



- Instrument Survey of 3,000 Instruments
 - Confirm the field location
 - Confirm representation on P&IDs
 - Gather several data points relating to the instrument
 - Place identification tags on the instrument
 - Take several photos



Creation of the Tablet Solution



- Database and Web User Interface (WUI)
 - Eliminate multiple spreadsheets with repetitive data
 - Eliminated stale or incomplete data
 - Eliminated reliance on voicemail or email communications

The screenshot shows a web browser window with the URL 'matrixti.com/WebAccess'. The page displays a form titled 'Instrument Field Survey Data' for tag '14TT0018'. The form includes various input fields and a table of related tags.

Instrument Field Survey Data Tagname: 14TT0018

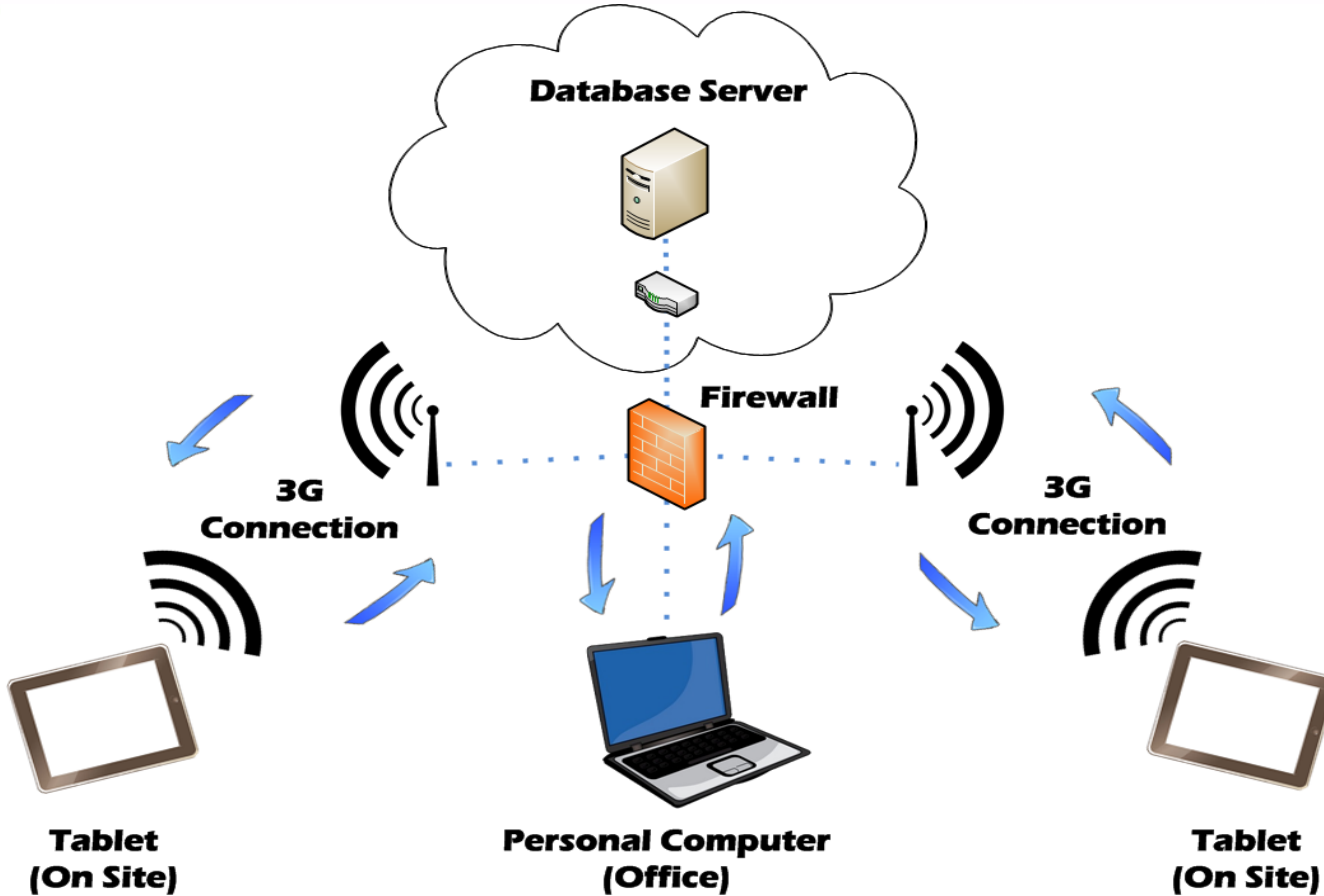
Equipment Type: Hardware
Complex: 4
Unit: 14
InstType: -ALL-
Phase: -ALL-
Tagname: 14TT0018
Find Clear Group

Pre	TagName	Field
re	14FT0059	Field
re	14FY0059	Field
re	14PT0123	Field
re	14PY0123	Field
re	14TE0018	Field
re	14TT0018	Field

Loop Name: 14T0018
Equipment Name:
Line Number:
Location Plan: D50-0384 SHT 56
P&ID:
Original Manufacturer: SANDELIUS
Original Model Number:
Serial Number:
Requires Power Supply?
Power Supply: N/A
Service: Intrhr 1A Outlet Te

Terminal Numbers: 1, 2
Wire Colors: WHT, RED
Separate TE Connected?
TE Name: 14TE0018
Thermocouple Type: J

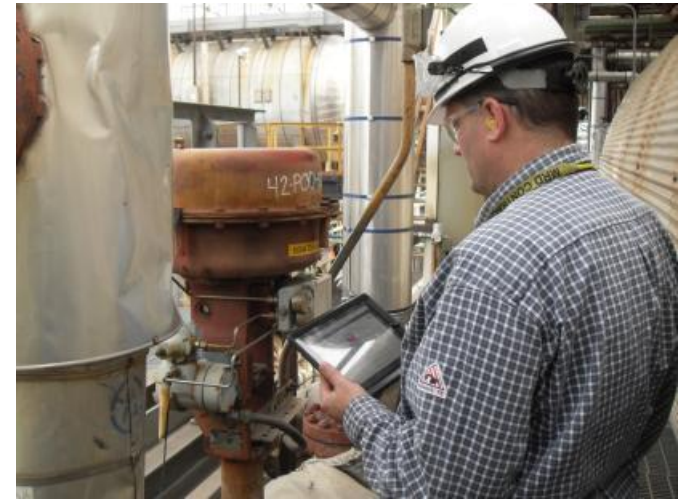
Solution Architecture



Decision Criteria for Input Device



- Portability
- Inherent “instant-on” capability
- Adequate viewing area
- Long battery life
- Relative low cost
- Available accessories
- Custom or user ready apps
- Built-in security features
- Instant communications between team members



Implementation Issues



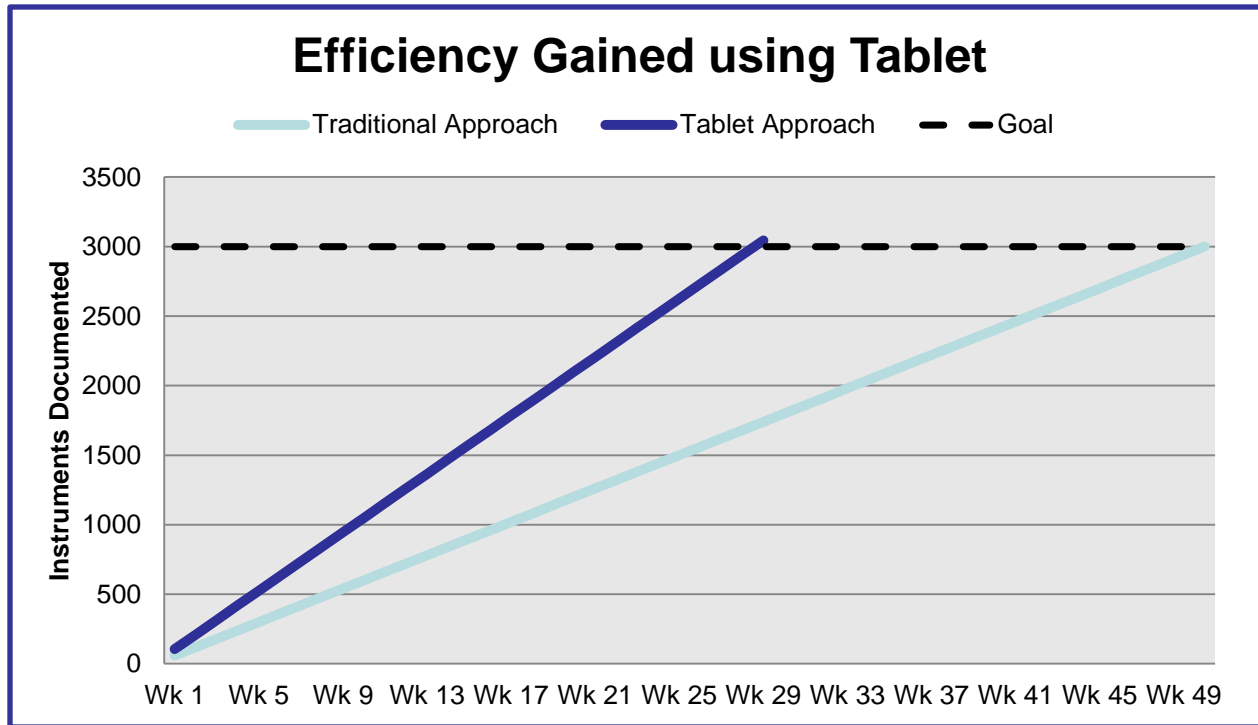
- Safety Department approval
- Reliable Internet access
- Tablet environmental protection

Instrument Survey – Tablet Method



Major Issues	Traditional Method	Tablet Method
Progress Tracking	Manually counting each day's progress	Instant reporting
Communication between Field and Office Teams	Voicemails	Email and Instant Messaging
Logistics of Drawing Management	Clipboards filled with drawings	Pdfs retrieved from the cloud
Environmental	blowing, stained, soaked documents	No papers required, hardened case protects against weather
Drawing editing	Hand marked redline	Electronic redline overlay app
Transfer of data	Hand delivered at prolonged intervals	Instant delivery via database reporting over internet connection
Data Entry	All twice, on paper then into spreadsheet - prone to errors	One time via tablet
Lost or Illegible Data	High probability	Near zero probability
Safe Working Conditions	Multiple drawings, documents, pencils carried.	Tablet strapped over the shoulder, hands free climbing

Data Comparison – Traditional vs. Tablet



- Physical Layer (1): Remote wipe of tablet
- Network Layer (3): Server hardware behind the firewall
- Session Layer (5): Strong password
- Presentation Layer (6): TLS encryption
- Application Layer (7): User access levels

- Commissioning

matrixl.com/WebAccess

Migration Form

Close Menu

gType: Hardware

Complex: 4

Unit: 14

Category: -ALL-

Output: 7

tagname: 14TT0018

re	TagName	Field
re	14FT0059	Field
re	14FY0059	Field
re	14PT0123	Field
re	14PY0123	Field
re	14TE0018	Field
re	14TT0018	Field

Pre-Migration Testing Actions (Conventional)

Loop Number	Description	Location Plan	Segment #	Tagname
14TT0018	Intrhr 1A Outlet Temp	D50-0384 SHT 056-E0	14L01_A09_S2	14TT0018

Each instrument that was installed and tested will be highlighted on the segment overview drawings and configured on segment overview screens to show the current status for the device(s).

- 1) The instrument technicians will locate the coiled cable at the tie-in point and dress out as required to expose the individual conductors for testing.
- 2) The instrument technicians will temporarily connect a signal generator to simulate the desired signal.
- 3) Once connected the instrument tech will coordinate with the Controls personnel to ensure the device has been properly connected to the FFB control system on the correct convertor address.
- 4) The controls representative will validate the readings are within limits, and record the value
25% Value: 50% Value: 100% Value:
- 5) The instrument technician will disconnect the test device and cap and store the cables.
- 6) The instrument will be highlighted in yellow on the segment overview drawing.

NOTES

- Operations/Maintenance data logging

Summary



- Budget
- Schedule
- Quality

Questions?

