

# HEEP

**Construction Management Automation for  
the Public Sector**

**SPEAKER: KEVIN KOENIG**

# Syllabus

## **Project management Automation:**

Discussion on emerging trends in automation for the AEC industry. Attendees will be introduced to new trends in digital project management, including field inspection automation, digital signatures processing, approval automation, Web based collaboration.

This will be followed by 5 case studies of complete automated project management solutions

# Course Details

- ▣ Industry Overview (10 Minutes)
- ▣ Current Practices (15 Minutes)
- ▣ Best Practices in a Digital World (15 Minutes)
- ▣ New Drivers / Key Technologies (15 minutes)
  - Paperless Office
  - Digital Signatures
  - Automated Processing
  - Digital Field Data
  - New Media Types
  - WEB Collaboration
- ▣ Case Studies (20 Minutes)
- ▣ Q&A (15 Minutes)

# Bio

- ▣ Kevin Koenig
- ▣ Vice President Product Management Aurigo Software Technologies
- ▣ 20 Years Process Consulting and Building Next Generation Applications
- ▣ 2 Years Managing Construction Management Application for Real Estate, Construction and Public Sector environments

# Current Practices

# Current Practices

- ▣ Estimate Creation
  - Manual using Excel or Standalone tools
- ▣ Scheduling using standalone tools
- ▣ Field Data Capture Manual
- ▣ Rekeying of information into Forms

# Current Practices (Cont...)

- ▣ Limited use of New Digital Media
  - Cameras
  - Video
  - Voice
- ▣ Manual consolidation of Information
- ▣ Limited Reporting Capabilities
- ▣ Time Consuming Pay Estimate Generation

# Current Practices (Cont...)

- ▣ Books of Paper comprising project documentation
  
- ▣ Disjointed Information
  
- ▣ Manual Approval Processes
  - Documents requiring signatures must be printed and mailed
  - Email approvals hard to document



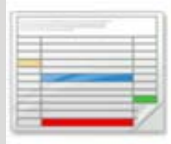
# Current State

Pre-construction

Construction

Post-construction

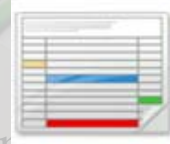
Land



Microsoft Project



Manual Tendering



Microsoft Project



Paper clipboards for Inspection

Facility Inspection

Inefficiency, Delays and Cost Overruns

Estimate



Manual Excel Reports

DYNAMIC

Upgrades

# Best Practices

In the new era

# New Drivers for AEC Industry

## ▣ Industry Drivers

- Increased Accuracy of initial estimation
- Increased Cost Control during execution
- Increased Documentation Requirements
- Increased Visibility to Project Progress
- Increased Turnaround time / Efficiency
- Potential New Government Regulations for reporting

# Key Technologies for AEC

- ▣ Paperless Office
- ▣ Digital Signatures
- ▣ Automated Approvals Processes
- ▣ Digital Field Data Capture
- ▣ New Media Types
- ▣ Centralized WEB Collaboration

# Paperless Office

## ▣ Benefits

- Decreased dependency on printed documentation
- Increased Data Retrieval Speed
- Environmentally Friendly
- Enables Automated Approvals
- On Demand Reporting Capabilities
- Project Visibility
- Green

## ▣ Key Enablers

- Web based Project Management
- Digital Forms Management
- Digital Signatures

# Digital Signatures

- ▣ Many Companies including the Public Sector now accept digitally signed files
- ▣ Key Benefits
  - A digital signature is equivalent to a signed paper
  - Significantly reduces manual processes and mailing of paper
  - Improves Efficiency
  - Not necessary to keep project books with signed paperwork
  - Key signed documents can not be Searched
  - Documents can maintain other attachments including New Media Types.
- ▣ Key Enablers
  - Industry Standard Security Technology (Digital Keys)
  - Centralized Repositories to get user keys.
  - Web Based Applications.

# Automated Work Processes

## ▣ Key Benefits

- Improved Efficiency
- Approval generated automatically
- Manager Approval is achieved electronically
- Centralized tracking of Process Flows such as approvals
  - ▣ Not via email trails
- No more searching for signed paper, or email trail, guaranteed security

## ▣ Key Enablers

- Ubiquitous Email access
- Digital Signatures
- Web Based Systems
- Industry Standard Process Automation Tools (WorkFlow)

# Digital Field Data Capture

## ▣ Key Benefits

- Reduced rekeying of information
- Access to project data in the field
  - ▣ Contract Items (BOM)
  - ▣ Completion Postings
  - ▣ Previous Daily Work Reports
- Eliminated Paper Forms
- Automatic Synchronization into centralized repository
- Contributes to Eliminating the “Project Book”
- Easy capture and Classification of New Media Types

## ▣ Key Enablers

- Cheap PDAs with cameras, GPS, and processing power
- Digital Cameras
- Laptops / tablet PCs in the field
- Web Based Collaboration Systems



# Possibilities for Remote Devices

## ▣ Benefits

- Very Portable / Easy to Carry
- Integrated Cameras on some Models
- Possible integration with GPS if required



## ▣ Drawbacks

- Yet another device, a PC is still typically required
- Costly for the capability provided
- Writing Recognition via pen Input can be slow and error prone.

# Possibilities for Remote Devices (Cont)...



- ▣ Benefits
  - Doubles as every day computer
  - Full Form factor for easy data input
  - Can be configured as tablet or slate computer
  - Can use other general purpose applications in field
- ▣ Drawbacks
  - Can be cumbersome at field
  - Batter life if not using inverters

# New Media Types

- ▣ Types of New Media
  - Pictures
  - Videos
  - Voice Capture
  - Designs
  
- ▣ Key Benefits
  - Increased documentation of the Construction Site
    - ▣ Important for Change Orders
  - Contractor Interviews can be Captured
  - A Picture is worth a thousand words!
  
- ▣ Key Issues and Requirements
  - With so much data organization and Retrieval of data is an issue
  - Must be stored Centrally and indexed to field documents
  - Must be easily tagged with keywords
  - Must be easily searchable for lifetime of project

# Media Types



- ▣ Pictures
  - Help document jobsite issues
    - ▣ Things found during excavation
    - ▣ Collapse of walls
    - ▣ Installation irregularities
  - Should be associated with
    - ▣ Change Orders
    - ▣ Daily Inspection Reports
    - ▣ NCRs, QSRs, etc
- ▣ Videos can help document ongoing issues not easily captured by static images
- ▣ Audio can be used to document conversations if required.

# Centralized WEB Collaboration

## ▣ Key Benefits

- All project members have access to information
- All project documents stored under single container
- Every project record searchable
  - Change Orders, Pay Estimates, Quality Reports, Non Conformance Reports, Daily Progress Reports, etc
- Rapid Information Retrieval
- One copy of the “real” document
- Limited use of Email to disseminate information
- No installation requirements

## ▣ Key Enablers

- Web Based Application Technology
- WEB 2.0

# Centralized WEB Collaboration (Cont...)

## Key System Requirements

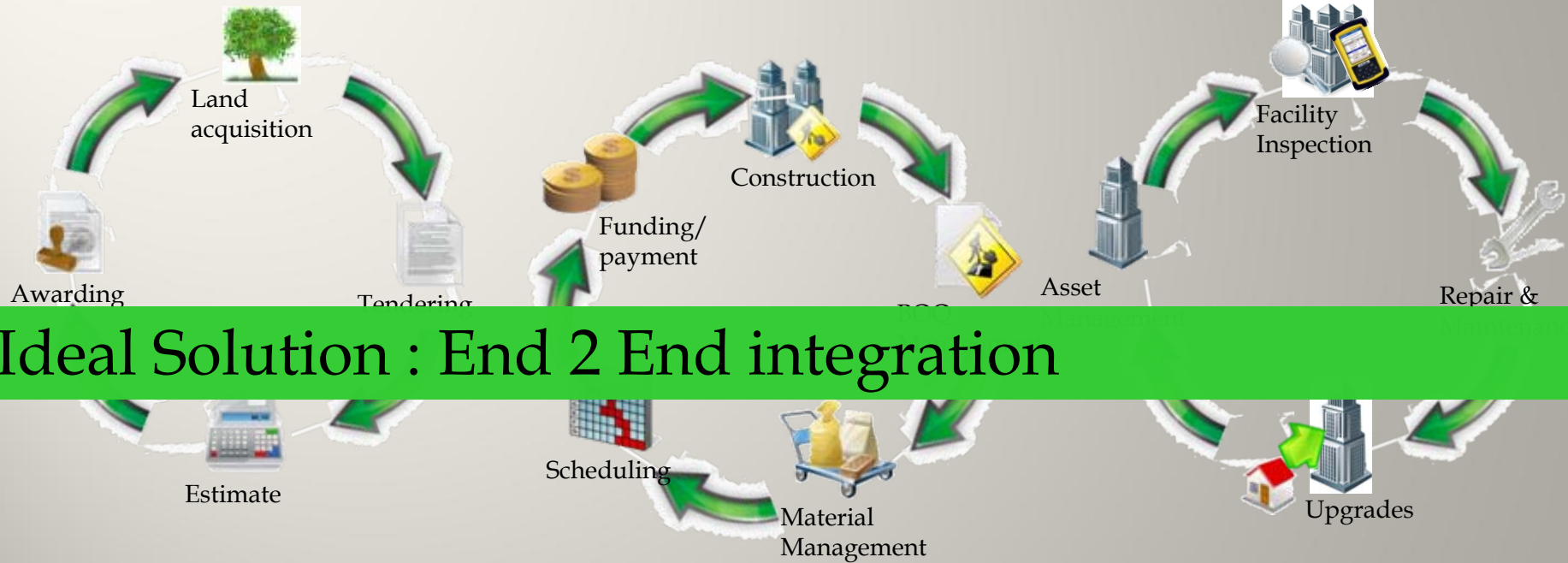
- ▣ Key Requirements
  - Should not require installation of software on desktops
  - Should provide Centralized Document Attachments
  - Should provide for all general capabilities
    - ▣ Estimate creation
    - ▣ Bid Letting
    - ▣ Bid Analysis and Award
    - ▣ Contract Creation
    - ▣ Change Orders
    - ▣ Work Orders
    - ▣ Contract and Estimate Items
    - ▣ Pay Estimate Generation
  - Should allow customization of all forms and creation of new forms
  - Should allow for centralized searching
  - Should allow tracking of approvals
  - Should support Digital Signatures

# Business Process - Ideal State

Pre-construction

Construction

Post-construction



# Digital Forms an Example

From This...

To This...

Contract ID:	6859
Contract Name:	ASH
Location:	INTE
Prime Contractor:	8470
Tel:	(425)
Fax:	(425)

DWR Date:	09/06/2006
Weather :	AM CC
	PM WA
Temperature :	Low 55

**Contractors**

Contractor	Co
MOWAT CONSTRUCTION CO	
CEDAR CONSTRUCTION CO	
CLARKSON CONSTRUCTION	

**Equipment**

Contractor	Co
CLARKSON CONSTRUCTION	
MOWAT CONSTRUCTION CO	
MOWAT CONSTRUCTION CO	

**Workforce**

Contractor	Co
CEDAR CONSTRUCTION CO	
CLARKSON CONSTRUCTION	
CLARKSON CONSTRUCTION	
MOWAT CONSTRUCTION CO	
MOWAT CONSTRUCTION CO	
MOWAT CONSTRUCTION CO	

**Field Representative**

From	07:00	To	
------	-------	----	--

Generated on: 12/05/2006

*CLARKSON AND BEE  
R130 to 9 or 10  
for 12 x 2000*

Daily Work Report - Diary	
Contract ID:	6859
Contract Name:	ASHWAY PARK AND RICE
DWR Date:	09/06

**Daily Work Report**

7:00 AM - Mowat begins Gary and Cary from the day.

7:30 AM - Clarkson shut existing asphalt out to the preparation for Cedar to p

Mowat will finish installi

8:00 AM - Just finished b south bound lanes at Polis

Power sweeper broom on and Schedule C.

Rain let up for about an h not going to try to install


12:30 PM finished with p temporary traffic candles

1:30 PM - Mowat off the

2:30 - Disk (Clarkson) on 3:30.

Off site 3:00 PM.

Generated on: 12/05/2006



Junction box 0015

Signature

Title

Page 1 of 1



# Case Studies



SEDAC Inspectors routinely check stations for a wide variety of issues, using over 200 paper forms to document and correct deficiencies.  
Implemented SEDAC to automate entire process

### *Customer Business Challenge*

- Cumbersome paper based inspection system
- Delayed corrective actions affecting safety
- Redundant entry of data into multiple systems
- Poor audit trail due to missing records

### *Solution*

- Remote Data Collection via PDA's
- Secure Synchronization to a Central Server
- Intuitive user interface for administration
- Robust User Management
- Digital Forms Creation

### *Customer Results/Benefits*

- Reduction of duplicate data entry
- Significant work flow improvements
- Centralization of critical data Advanced reporting, monitoring and tracking tools Enhanced communication

# Improving the Process

MTA New York City Transit  
Division of Stations

**SUPERVISOR LEVEL I  
ACTIVITY REPORT**

PAGE \_\_\_\_\_ OF \_\_\_\_\_

NAME (PRINT) \_\_\_\_\_

PASS # \_\_\_\_\_ DATE \_\_\_\_\_

RESPONSIBILITY CENTER \_\_\_\_\_ ZONE # \_\_\_\_\_

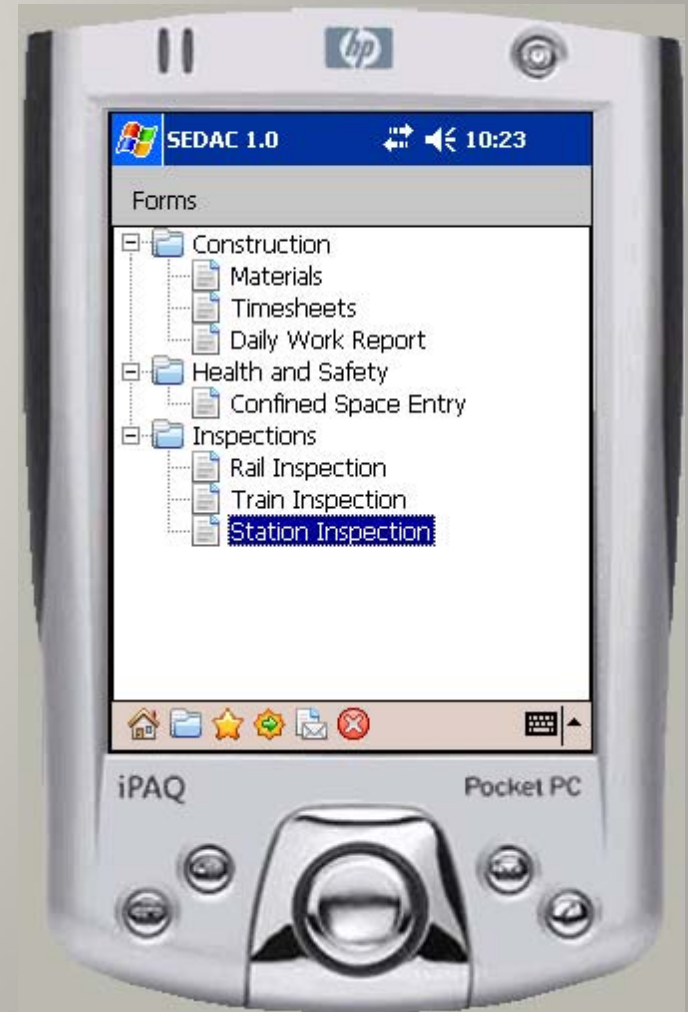
JOB # \_\_\_\_\_ WEATHER \_\_\_\_\_

TIME ON \_\_\_\_\_ LOCATION \_\_\_\_\_

TIME OFF \_\_\_\_\_ LOCATION \_\_\_\_\_

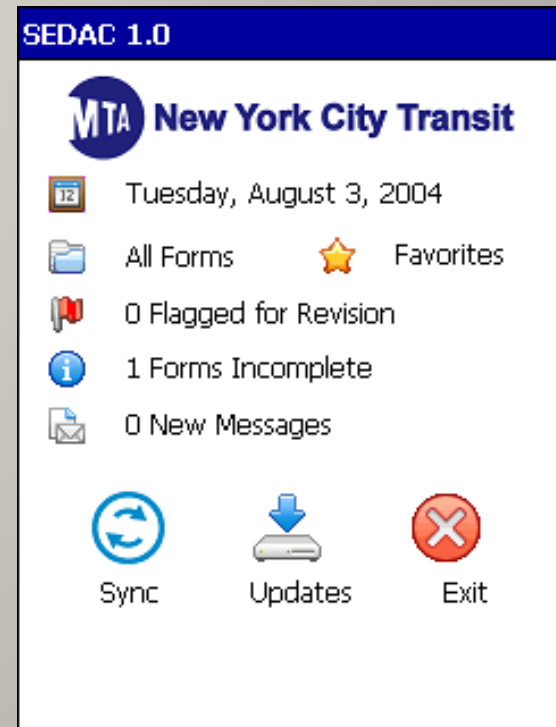
STATION \_\_\_\_\_ TIME FROM \_\_\_\_\_ TO \_\_\_\_\_

STATION \_\_\_\_\_ FROM \_\_\_\_\_ TO \_\_\_\_\_



# Field Reporter: The Today screen

- Snapshot view of Important Activities
- Intuitive navigation
- Revision control
- Form validations
- Message System




# Dashboard: Form Manager


InSite Dashboard - Microsoft Internet Explorer


File Edit View Favorites Tools Help


Address [http://192.168.1.10/mvantage/dashboard/AMP\\_Form\\_Manager.asp](http://192.168.1.10/mvantage/dashboard/AMP_Form_Manager.asp)


 **New York City Transit**  
Division of Stations


Logout

 HOME








 FORMS

 REPORTS

 MESSAGES

 ADMINISTRATION

**FORM MANAGER**

			Project Name	Form Name	Created Date
1	<a href="#">View</a>		Construction	Daily Work Report	08/24/2004
2	<a href="#">View</a>		Construction	Timesheets	08/24/2004
3	<a href="#">View</a>		Construction	Materials	08/24/2004
4	<a href="#">View</a>		Inspections	Station Inspection	08/24/2004
5	<a href="#">View</a>		Inspections	Train Inspection	08/24/2004
6	<a href="#">View</a>		Inspections	Rail Inspection	08/24/2004
7	<a href="#">View</a>		Health and Safety	Confined Space Entry	08/24/2004

# Dashboard: Report Viewer

**REPORT VIEWER**

		<b>Project Name</b>	<b>Form Name</b>	<b>Created Date</b>
1	<a href="#">View</a>	Construction	Daily Work Report	08/24/2004
2	<a href="#">View</a>	Construction	Timesheets	08/24/2004
3	<a href="#">View</a>	Construction	Materials	08/24/2004
4	<a href="#">View</a>	Inspections	Station Inspection	08/24/2004
5	<a href="#">View</a>	Inspections	Train Inspection	08/24/2004
6	<a href="#">View</a>	Inspections	Rail Inspection	08/24/2004
7	<a href="#">View</a>	Health and Safety	Confined Space Entry	08/24/2004

# Printable Reports

## MTA New York City Transit

Division of Stations

### Supervisory Log and Station Inspection Report

		OUTSIDE AREA, STARWAYS, RAILINGS	MEZZANINES, PLATFORMS	BOOTHES, TURNSTILES, PLATFORMS	TOILETS, ROOMS, OFFICES	SIGNS, WINDOWS, TILE, WALLS	REFUSE AREAS, SOLAR CANS, CANNISTERS	LIGHTS, CONCESSIONARIES	ELEVATORS, ESCALATORS	PERSONNEL ON DUTY
STATION		1	2	3	4	5	6	7	8	
A	Pacific Street--4th Avenue--40	00:09	S	S	U	U	S	S	S	S
		01:09								
B	Park Place--Franklin Shuttle--20	02:13	S	S	S	S	S	S	S	S
		02:20								
C	Parkchester-E.177 St--Pelham--12	03:14	NI	NI	NI	U	S	NI	NI	NI
		03:20								
Date Begin 07/01/04		Name Edw								
Date End 07/01/04		Employee ID.								
		h No. 000								



“Aurigo was able to streamline our entire inspection processes that previously involved manual data collection on over 250 paper forms across the state of Oregon.”

-Chris Haney

## Management of construction and inspection processes of \$3 Billion Bridge reconstruction at Oregon

### Customer Business Challenge

- Automation of construction and inspection processes of a \$3Billion bridge reconstruction initiative across the state of Oregon
- Digitization of 250 paper forms
- Integration of digital forms into IBM FileNet

### Solution


- Implementation of Aurigo BRIX with specific custom workflows
- 36 digital forms replaced 250 paper Forms
- Integration into IBM FileNet DMS

### Customer Results/Benefits

- 40% boost in productivity, efficient information management
- Enhanced reporting
- Savings of over \$10M annually



# The OBDP Enterprise Screen



Welcome, Administrator | Role: Administrator

oregon bridge delivery partners™

Enterprise
Projects
Library
Administration

Enterprise
🔍 Enterprise Search

**Applications**

🔍 Enterprise Search

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**Shortcuts**

- ★ User Accounts
- ★ Application Settings
- ★ Module Management

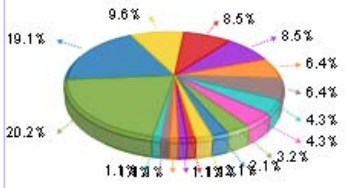
**Recently Viewed Projects**

- 📄 Bundle 206 - I-84: Irrigon Junction -
- 📄 Bundle 225 - I-84: Hood River - Mos
- 📄 Bundle 101 - Mt. Hood to Chemult (D
- 📄 \*\*\*\*\* TEST PROJECT \*\*\*\*\*
- 📄 Bundle A02 - I-5: Clarks Branch to T

**Project Status**

- 1st Notice Issued ( 19 )
- Project Closeout ( 18 )
- Bundle Development ( 9 )
- Construction Start ( 8 )
- 2nd Notice Issued ( 8 )
- 3rd Notice Issued ( 6 )
- Design Acceptance Package (DAP) ( 6 )
- Design ( 4 )

More...



**Open Item Status Report Summary**

**NONCONFORMANCE REPORTS**

🔴	NCR's Open Over 30 Days (Dispositioned)	69	(433)
🟢	NCR's Closed in Last 30 Days	23	
🟡	New NCR's Open in Last 30 Days	11	
🟣	Total Number of Open NCR's	80	

**OBDP SURVEILLANCE FINDINGS**

🔴	Surveillance Findings Open Over 30 Days	36
🟢	Surveillance Findings Closed in Last 30 Days	65
🟡	NEW Surveillance Findings Opened in Last 30 Days	36
🟣	Total Number of Open Surveillance Findings	72

📄 View PDF

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# Assessment of Learning

- ▣ What are the top Three key Drivers for the Industry?
- ▣ What are the Drawback to the current practices?
- ▣ What are the benefits of a Paperless Office?
- ▣ What are the top new technologies for Digital Project Management?
- ▣ How Does using Remote Field Capture improve efficiency?
- ▣ What are some of the Benefits of Web Based Project Management?
- ▣ How can New Media Types be used to improve Project Documentation?

Q & A