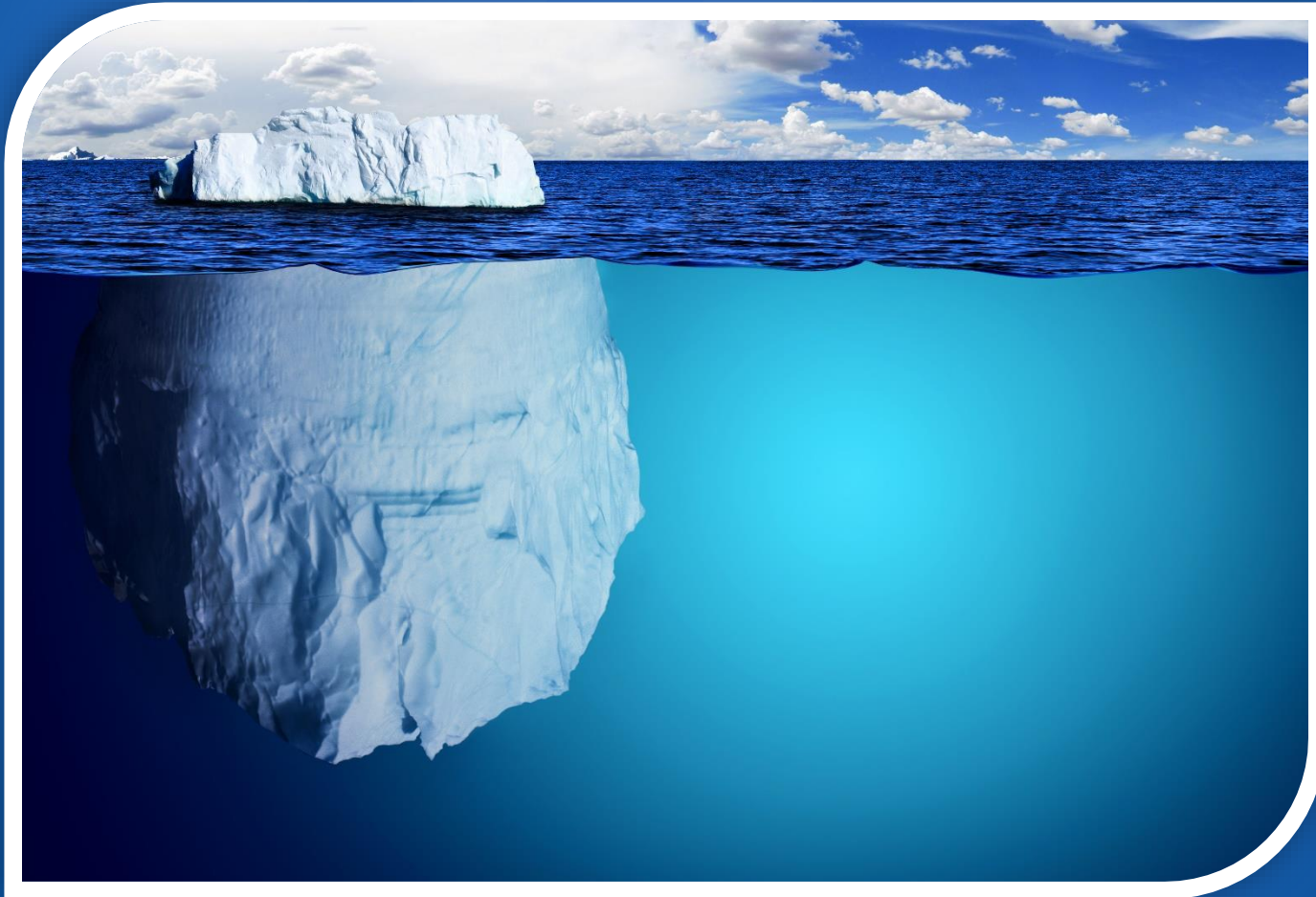


Maximizing ROI on Utility Work Management Systems

A look at a low total cost of ownership WMS
by SSP Innovations

Why we're here

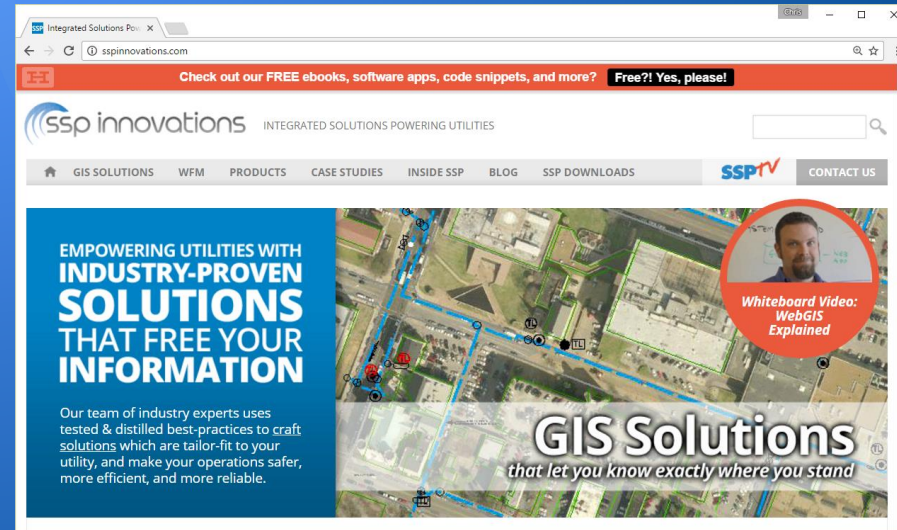


About me

- Over 10 years in Utility Enterprise Systems
- Consultant / Solution Architect
- SSP Innovations
- Previous: Schneider Electric / Telvent / GeoFields
- GIS and Work Management
- Many large projects for utilities and energy companies

About SSP Innovations

- Utility Work Management Product: WFM aka Workforce Management
- 12-year old **Utility technology consulting** company (GIS and WMS)
- Work **exclusively** in the U.S. utility/telecom/pipeline industries
- Began as a services company – now perform services and offer a line of software products



Clients – Referral Network Started with 2 Clients ... Now with 80+, Still 100% Reference-able

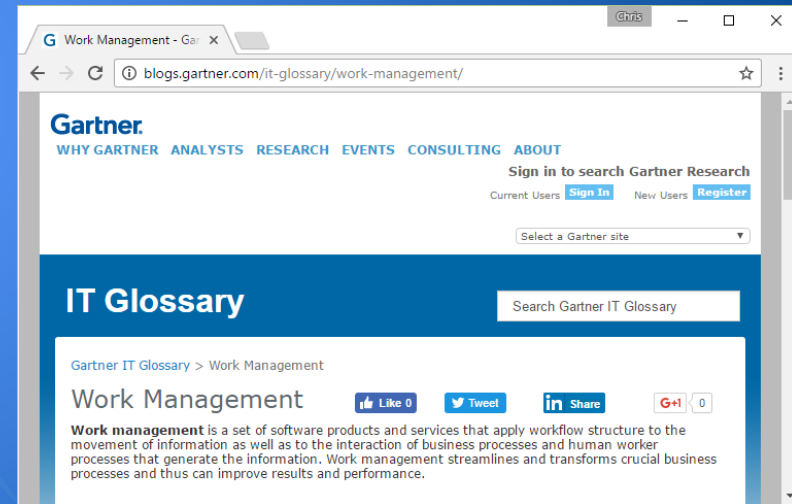
Alabama Power (Southern Co)	Denton Municipal Energy	Kissimmee Utility Authority	PLA Detroit
Alliant Energy	Digital Globe	Lansing Board of Waster and Light	Portland General Electric
Ameren	Digital West Networks	City of Leesburg, FL	POWER Engineers
Belmont Light	Douglas County PUD	Lincoln Electric System	Public Services of New Mexico
Benton PUD	Energy United	City of Longmont, CO	Redding Electric Utility
City of Beverly Hills, CA	Town of Estes Park, CO	Memphis Light Gas & Water	City of Roseville, CA
Black & Veatch	Eugene Water & Electric Board	Midcontinent Communications	Sam Houston Electric
Black Hills Corporation	Fayetteville PWC	Middle Tennessee Electric	SCANA
Burbank Water & Power	Garland Power & Light	Midwest Energy	Schneider Electric
Burlington Electric Dept	Georgia Power (Southern Co)	Navajo Tribal Utility Authority	SMECO
CenterPoint Energy	Glendale Water & Power	New Braunfels Utilities	Swova
Central Lincoln PUD	Green Mountain Power	NIPSCO	Texas-New Mexico Power
Town of Chapel Hill, NC	Greenville Utilities Commission	NiSource	TOA Technologies
Clallam County PUD	Hart EMC	Northwest Natural Gas	Tri-County Electric
Colorado DOT	Holyoke Gas & Electric	Norwich Public Utilities	Tri-State G&T
Connexus Energy	City of Houston, TX	Nsight Telecom	UniSource
Consolidated Electric	Hydro One	NSTAR	Utility Data Contractors
CoServ Electric	Intermountain REA	Oconee County, SC	Vectren
Cowlitz County PUD	Jackson Energy Authority	Pacific Gas & Electric	Verizon
CPS Energy	Kissimmee Utility Authority	Pasadena Water & Power	Westar Energy
CSpire Telecom	Lansing Board of Water and Light	Pend Oreille PUD	Zia Natural Gas

Agenda

- Utility Work Management Systems
- Evaluation Points for Acquisition:
 - Initial considerations
 - Functional characteristics of low cost WMS
 - Implementation considerations
- Summary
- Questions

Work Management Systems

“**Work management** is a set of software products and services that apply **workflow structure** to the movement of information as well as to **the interaction of business processes** and human worker processes that generate the information. Work management **streamlines** and transforms crucial business processes and thus **can improve results and performance.**”



Utility Work Management Systems?

- Capital Work Management
- Work Order Management
- Workforce Management
- Work Management
- Work Order Asset Management
- Service Request Management
- Asset Management

Utility Work Management Systems

- Construction Jobs for Assets
- Engineering Department

Asset Construction (and Maintenance)



WMS History: Construction jobs managed with paper



WMS History: Construction jobs in Excel

Master of Cost Estimate Spreadsheet w_worksheet (Rev Feb 12, 2015).xslm - Excel

10	Plastic Materials						
11	Plastic (D)	Steel/Serv	Trans	Item ID	Material	Group	Description
25					Pipe	13	Sub-Total
26	6			23808	Plastic	Cap	CAP PLASTIC PE 24
27	7			23809	Plastic	Cap	CAP PLASTIC PE 24
28	10			29492	Plastic	Cap	CAP PLASTIC PE 24
29				23810	Plastic	Cap	CAP PLASTIC PE 24
30	0			23811	Plastic	Cap	CAP PLASTIC PE 24
31				28335	Plastic	Cap	CAP PLASTIC PE 24
32	0			25326	Plastic	Cap	CAP PLASTIC PE 24
33				23850	Plastic	Cap	CAP PLASTIC PLEX
34				18476	Plastic	Cap	CAP PLASTIC TAP T
35				38014	Plastic	Cap	CAP PLASTIC TAP T
36				38013	Plastic	Cap	CAP PLASTIC TAP T
37					Cap	11	Sub-Total
38				23821	Plastic	Tee	TEE PLASTIC PE 240
39	0			23822	Plastic	Tee	TEE PLASTIC PE 240
40	4			29494	Plastic	Tee	TEE PLASTIC PE 240
41	5			23823	Plastic	Tee	TEE PLASTIC PE 240
42	0			23824	Plastic	Tee	TEE PLASTIC PE 240
43				28028	Plastic	Tee	TEE PLASTIC PE 240
44	0			25331	Plastic	Tee	TEE PLASTIC PE 240
45				38533	Plastic	Tee	TEE PLASTIC STAB 1
46				38534	Plastic	Tee	TEE PLASTIC STAB 3
47				38535	Plastic	Tee	TEE PLASTIC STAB 3
48					Tee	10	Sub-Total
81					Tap Tee	32	Sub-Total
90					Coupling	8	Sub-Total
100					Fl	9	Sub-Total

PLASTIC WORKSHEET | Materials | Contractor Labor | TDW Tapping & Stopping | JT Labor | Misc

WOEST_149406.xlsx - Excel

WORK ORDER ESTIMATE - 04/22/2015					
149406					
Region	METRO COLUMBIA	Designer Name	CRAWFORD, BRENDAN		
Work Area	METRO COLUMBIA CREW HDQR	Coordinator	SINKLER, GREGORY		
Work Request Nm	149406	Work Type	SYSTEM IMPROVMNT MAJOR OH		
Work Order	607795	Drawing #:	80886		
Start Date					
Project Title	GILLS CREEK CONVERSION				
Funding Project	CKT RECONDUCTOR METRO COLUMBIA				
Nature of Request	ROSEWOOD TO GILLS CREEK CONVERSION				
	<i>Capital</i>	<i>Retirement</i>	<i>Lighting</i>	<i>Assoc. Capital</i>	<i>O/M Costs</i>
Material	\$92,887	(\$321)	\$11	\$56,790	\$0
Stores Overhead	\$7,431	\$26	\$1	\$7,539	\$0
Company Labor	\$0	\$0	\$0	\$0	\$0
Payroll Overhead	\$0	\$0	\$0	\$0	\$0
Contract Labor	\$294,716	\$46,620	\$1,016	\$47,065	\$0
Transportation	\$0	\$0	\$0	\$0	\$0
Voucher Amount	\$0	\$0	\$0	\$0	\$0
Credit/Debit	\$0	\$0	\$0	\$0	\$0
Line Salvage	\$0	\$0	\$0	\$0	\$0
R/W Clearing	\$110,000				
Sub Total	\$505,034	\$46,325	\$1,028	\$111,394	\$0
Admin and Engr	\$123,077	\$11,289	\$251	\$27,147	\$0
CIAC Tax	\$0	\$0	\$0	\$0	\$0
AFUDC	\$1,894				
Total	\$630,005	\$57,614	\$1,279	\$138,541	\$0
Project Cost	\$826,160		\$1,279		
Est Ann Rev			\$0		
Revenue Ratio	0				
Contribution Req					
Approval Routing	Initial	Date			
41 DESIGNER: CRAWFORD, BRENDAN	_____	_____			
42 SHANNON, D.	_____	_____			
43 PEEPLES, ROBIN	_____	_____			
44 TURNER III, WILLIAM	_____	_____			
45 PLANT ACCOUNTING APPROVAL:	_____	_____			

WOEST

Historical Problems

- Disparate data scattered across the organization
- No enforcement of business process (silos)
- No standardization of estimation
- No opportunities for integrations with other departments / systems
- Difficulty understanding what was estimated vs. what was actually constructed

Construction Jobs in an Enterprise WMS

Service Request

localhost/ServiceRequestMain/Index?SRId=582042#/tab0

WFM

Chris Sanders
Administrator

SR Dashboard
Create New SR
View/Edit SR
Aging Report

Search

SR Number
Finance WO
Assigned To
Created By
Proj. Name
Street #
Street Name
Department
Customer
Facility ID
Pole #
Switch #

Advanced Search

WFM Configuration

Projects & Tasks
Macro Units
Construction Standards
Resources
Requirements
Extension Attributes
Parts Replacement

Service Request Status - Released to Construction

Service Request [Estimate Worksheet](#) [Checklist](#)

Available Tasks [➔](#) Reports [🖨](#)

SR Number: 97339 Active Estimate: New Estimate
Department: Electric Job Type: 12-Distribution - Commercial (00111)
Creator: Chris Sanders Creation Date: 10/14/2016 11:32:48 AM
Assignee: Chris Sanders Assigned Date: 10/14/2016 12:49:55 PM

Project Name:
Priority: Billable:
Charge Code: 1-001-2 Budget Classification: 1A1
Schedule Reminder Date: [📅](#) Requested Completion Date: [📅](#)
Customer Name: Customer Phone #:

Work Information Street Address Intersection

Address #: -
Pre-dir: Street: Suffix: Post-dir:
City: State: Zip:
Facility ID:
Remarks:

Customer Description of Work Wanted and Other Remarks

[Save Service Request](#)

Benefits of Enterprise WMS

- One central system of record
- Streamline business processes
- Improved project oversight
- Regulatory compliance
- Standardize design and estimation
- Audit tracking

Evaluation Points: Initial Considerations

- The 'Fit'
- Configuration vs. Customizations vs. Product Enhancements/Modifications
- Technology Framework
 - Web
 - Mobile Support
- Integrations and Integration consciousness

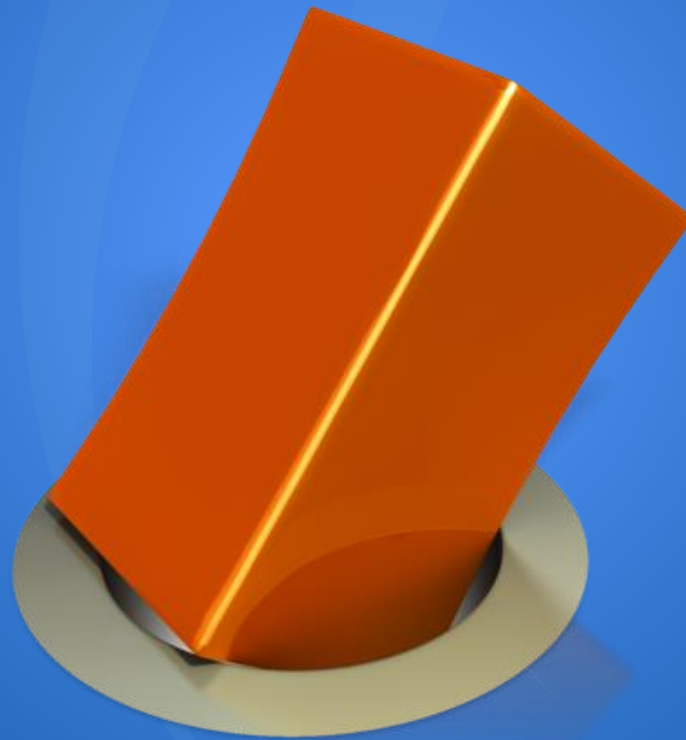
Identify areas of need (WMS)



Identify areas of need (External)



Not all WMS are created equally



Configuration vs. Customization vs. Product Modifications

- Configuration: No coding required! Use out of the box tools / database values / updates to files to achieve desired outcome.
- Customizations: Required a code change to achieve desired results. Intentionally extensible aspect of the core product framework. Does not require a change to the core product. Less costly!
- Product Enhancement / Modifications – Requires a code change and a release. Impacts many customers.
 - Even longer testing cycles
 - May have to wait to prioritize functionality with the market

Priorities!

1. Configuration
2. Customization
3. Product Modification / Enhancement

Integration Consciousness of a WMS



Integration Consciousness

- Integration: Configuration vs. Customization vs. Product Modification
- Application Design
- Open data model

Integration Consciousness

- Potentially costly (but important!) integrations
 - GIS – Most expensive integration
 - Work area organization (i.e. points, spans, area)
 - Accounting
 - Materials Management
- 2 WFM Examples:
 - WFM Estimates and GWD Designs
 - WFM Estimates and Property Accounting

WMS Estimates and Graphic Work Design / GIS

- Service/Work, Request/Order
- Workflow – Status, Transitions, and Tasks
- Estimate/Design
- Work Locations
- Compatible Units / GWD objects or features
 - Resources: Material, Labor and Equipment
- As Builts

WMS Estimates and Property Accounting

The screenshot displays the WMS Work Request interface. The browser address bar shows the URL: `testscana-scg/ServiceRequestMain/Index?SrlId=183#/tab1`. The user is logged in as Chris Sanders, Administrator.

Work Request Summary:

- Available Estimates:** New Estimate 6/20/2016 4:46:45 PM
- Name:** New Estimate 6/20/2016 4:46:45 PM
- Scope of Work:** 50 houses. steel main
- Utility Account:** 4800 - Gas Service Distribution
- Status:** Initiated
- Date Refreshed:** 06/20/2016
- Buttons:** Active Estimate, Delete Estimate

Raw Total: \$30,018.09 (Materials: \$29,071.31, Equipment: \$0.00, Labor: \$946.78, Extra Costs: \$0.00)

Compatible Units - \$30,018.09

Name	Type	Utility Account	Cost	Action
WL1	Point	4800 - Gas Service Distribution	\$15,482.44	+ ☒ ☒

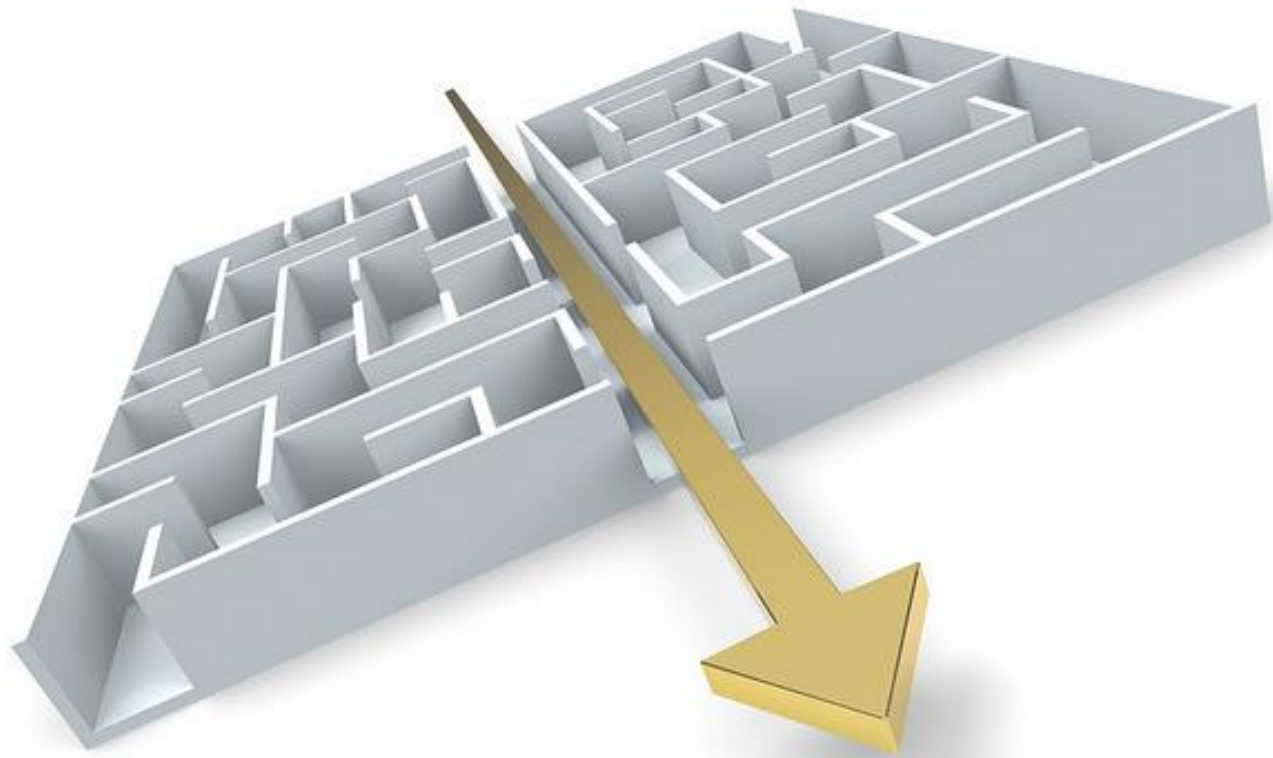
WL1 - Costs

Action	Name	Description	Qty	Utility Account	Cost
Install	Labor1	L-1 2" STEEL PIPE MAIN, FIRST 150'	1	4800 - Gas Service Distribution	\$946.78
Install	12723	SLEEVE REINF STY 220 14 ID 3/8 X 21-3/4	1	4800 - Gas Service Distribution	\$610.09
Install	12597	VALVE BALL NORDSTROM FIG 69-1/2 W EXT 1	1	4800 - Gas Service Distribution	\$8,990.00
Install	101	VALVE PLUG NORD F-2245 4	1	4800 - Gas Service Distribution	\$2,372.85
Install	1211	VALVE PLUG NORD F-525 4	1	4800 - Gas Service Distribution	\$624.00
Install	12233	VALVE RELIEF A/G SER 930203 HP 2X3	1	4800 - Gas Service Distribution	\$0.00
Install	12527	VALVE RELIEF A/G SER 930304FA LP 3X4	1	4800 - Gas Service Distribution	\$1,938.62

No WL - Costs

Action	Name	Description	Qty	Utility Account	Cost
	No WL	Point		4800 - Gas Service Distribution	\$1,535.66

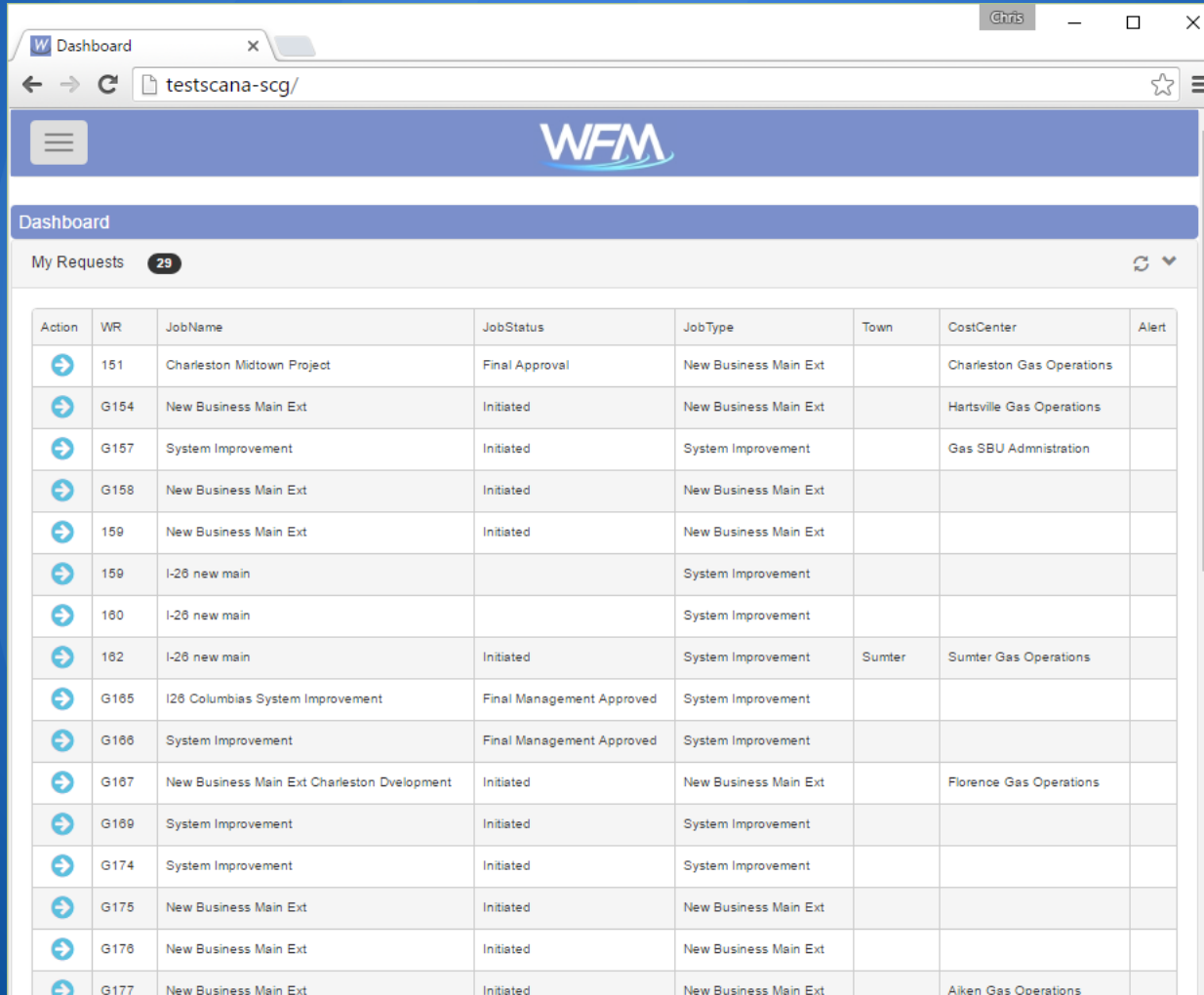
Integration Design



Technology Framework

- Web-based: Why?
- Are all web-based systems the same?
- Mobile considerations

Device Responsiveness UI / UX



Dashboard

My Requests **29**

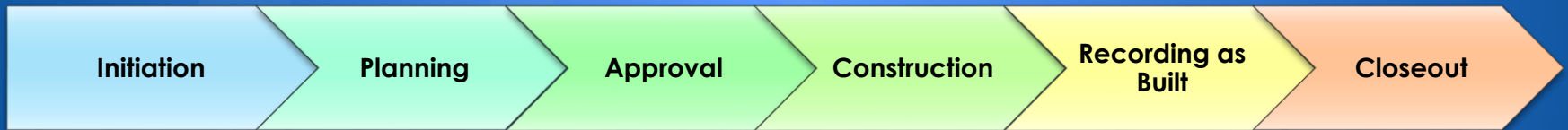
Action	WR	JobName	JobStatus	JobType	Town	CostCenter	Alert
→	151	Charleston Midtown Project	Final Approval	New Business Main Ext		Charleston Gas Operations	
→	G154	New Business Main Ext	Initiated	New Business Main Ext		Hartsville Gas Operations	
→	G157	System Improvement	Initiated	System Improvement		Gas SBU Administration	
→	G158	New Business Main Ext	Initiated	New Business Main Ext			
→	159	New Business Main Ext	Initiated	New Business Main Ext			
→	159	I-26 new main		System Improvement			
→	160	I-26 new main		System Improvement			
→	162	I-26 new main	Initiated	System Improvement	Sumter	Sumter Gas Operations	
→	G165	I26 Columbias System Improvement	Final Management Approved	System Improvement			
→	G166	System Improvement	Final Management Approved	System Improvement			
→	G167	New Business Main Ext Charleston Dvelopment	Initiated	New Business Main Ext		Florence Gas Operations	
→	G169	System Improvement	Initiated	System Improvement			
→	G174	System Improvement	Initiated	System Improvement			
→	G175	New Business Main Ext	Initiated	New Business Main Ext			
→	G176	New Business Main Ext	Initiated	New Business Main Ext			
→	G177	New Business Main Ext	Initiated	New Business Main Ext		Aiken Gas Operations	

Evaluation Points: Functional characteristics of low cost systems

- Adaptability to utility business processes
 - Handle job types / common tasks
 - What should be configurable?
- Efficiency of common data entry (Estimates!)

Adaptability to utility business process

➤ Lifecycle Management



Adaptability to utility business process

- Job Scalability
- Out of the box can you?
 - Define Job Types
 - Define the project's job requirements (checklist) by Job Type
 - Define statuses by Job Types
 - Define available tasks by status
 - Define available tasks by user roles/permissions

Important Configurations: adapability

- Resources
- Compatible Units
- Macro Units

+	Additions		Regulator Station		\$10129.26		EST QTY=1
+	<i>Material</i>						
			3207		CU QTY=1 EA		EST QTY=1 EA
			12233		CU QTY=1 EA		EST QTY=1 EA
			18230		CU QTY=50 FT		EST QTY=50 FT
+	<i>Labor</i>						
			L-1 2" STEEL P...	:	1 EA		
+	<i>Equipment</i>						
			Truck and Valve...	:	1 EA		

Data input efficiency

- Estimates! Estimates! Estimates!

Data Input: A WMS CU / MU Selector

Unit Selector

Add to Work Location: **WL1**

Name/Description
3 characters minimum

Type Work Function

Category Subcategory

329 results found

<input type="checkbox"/>	Name/Description	Description	Category	Subcategory
<input type="checkbox"/>	101	VALVE PLUG NORD F-2245 4	Valve & Parts	Sub Cat 3-1
<input type="checkbox"/>	1211	VALVE PLUG NORD F-525 4	Valve & Parts	Sub Cat 3-1
<input type="checkbox"/>	12233	VALVE RELIEF A/G SER 930203 HP 2X3	Valve & Parts	Sub Cat 3-1
<input type="checkbox"/>	12527	VALVE RELIEF A/G SER 930304FA LP 3X4	Valve & Parts	Sub Cat 3-1
<input checked="" type="checkbox"/>	12597	VALVE BALL NORDSTROM FIG 69-1/2 W EXT 12	Valve & Parts	Sub Cat 3-1
<input type="checkbox"/>	1284	VALVE MUELLER BLK #H-11175 1	Valve & Parts	Sub Cat 3-1
<input checked="" type="checkbox"/>	13097	VALVE PLUG NORD F-2245-1/4 6	Valve & Parts	Sub Cat 3-1
<input checked="" type="checkbox"/>	13238	VALVE PLUG NORD F-1585 8	Valve & Parts	Sub Cat 3-1

Type ahead and categorization

Data Input: Estimates: Inline editing for CUs, MUs, and Misc Items

No WL - Costs

Add Unit

Selector

Action	Name	Description	Qty	Utility Account	Cost
Install	valve ball	VALVE PLUG NORD F-525 2	1.00	4800 - Gas Service Distribution	\$0.00
<input type="checkbox"/> Install	12597 == VALVE BALL NORDSTROM	SLEEVE REINF STY 220 14 ID 3/8 X 21-3/4	1	4800 - Gas Service Distribution	\$610.19
<input type="checkbox"/> Install	FIG 69-1/2 W EXT 12	VALVE BALL NORDSTROM FIG 69-1/2 W EXT 12	1	4800 - Gas Service Distribution	\$8,990.00
<input type="checkbox"/> Install	15395 == VALVE BALL GROVE B-5	VALVE PLUG NORD F-2245 4	1	4800 - Gas Service Distribution	\$2,372.85
<input type="checkbox"/> Install	CL600 W/F 6	VALVE PLUG NORD F-525 4	1	4800 - Gas Service Distribution	\$624.00
<input type="checkbox"/> Install	22375 == VALVE BALL GROVE B-4C	VALVE RELIEF A/G SER 930203 HP 2X3	1	4800 - Gas Service Distribution	\$0.00
<input type="checkbox"/> Install	CL600 W/F 4	VALVE RELIEF A/G SER 930304FA LP 3X4	1	4800 - Gas Service Distribution	\$1,938.62

Save

Cancel

Miscellaneous Items - \$10,000.00

Add Item

Action	Category	Cost	Description	Quantity	Unit Cost	UOM
Install	Contract Labor	\$15,000.00	Contractor Installation of services	1.00	15,000.00	EA
<input type="checkbox"/> Install	Company Labor	\$5,000.00	Installation of custom meter	1	\$5,000.00	EA

Save

Cancel

Data Input: Estimate Worksheet - Work Locations and CU Selection Controls

No WL - Costs

+ Add Unit

Selector

Action	Name	Description	Qty	Utility Account	Cost				
<input checked="" type="checkbox"/>	Install	12723	SLEEVE REINF STY 220 14 ID 3/8 X 21-3/4	1	4800 - Gas Service Distribution	\$610.19	+	📄	🗑️
<input checked="" type="checkbox"/>	Install	12597	VALVE BALL NORDSTROM FIG 69-1/2 W EXT 12	1	4800 - Gas Service Distribution	\$8,990.00	+	📄	🗑️
<input checked="" type="checkbox"/>	Install	101	VALVE PLUG NORD F-2245 4	1	4800 - Gas Service Distribution	\$2,372.85	+	📄	🗑️
<input checked="" type="checkbox"/>	Install	1211	VALVE PLUG NORD F-525 4	1	4800 - Gas Service Distribution	\$624.00	+	📄	🗑️
<input checked="" type="checkbox"/>	Install	12233	VALVE RELIEF A/G SER 930203 HP 2X3	1	4800 - Gas Service Distribution	\$0.00	+	📄	🗑️
<input checked="" type="checkbox"/>	Install	12527	VALVE RELIEF A/G SER 930304FA LP 3X4	1	4800 - Gas Service Distribution	\$1,938.62	+	📄	🗑️

+ Move Selected

📄 Copy Selected

🗑️ Delete Selected

Important implementation considerations

- Implementation Project
- Change Management

Implementation Project

- Discovery (for internal and/or external team)!
- System Architecture
- System Integrators and/or Project Team Familiarity with:
 - Affected systems
 - Business processes
 - Technology implemented
 - All!
- Thorough design vetted by Users!

Change Management

- Involve Users, Users, and Users!
 - From start to finish

Indications of Inflexible WMS

- Generic enterprise system that can be used for any purpose
 - Development required to do things you would expect all utilities to do
- Workflows are developed not configured
- No discussion of common hooks or extensibility
- No discussion of an API
- Little or no plans for integrations

Indications of Flexible WMS

- Efficient data entry
- Workflow Engine that can be configured
- Instant recognition for placement (extensible framework) of uncommon (company specific) modules
- 'You can configure the system' to do common things you'd expect utilities to do

Questions?



Thank You!

SSPInnovations.com

Chris Sanders:
Chris.Sanders@SSPInnovations.com