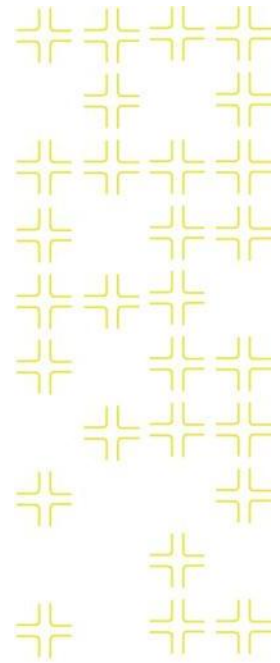


# The Poseidon Adventure: Custom Meter Set Workflow with Lucity Water



Don Kurtz DSRSD  
kurtz@dsrsd.com

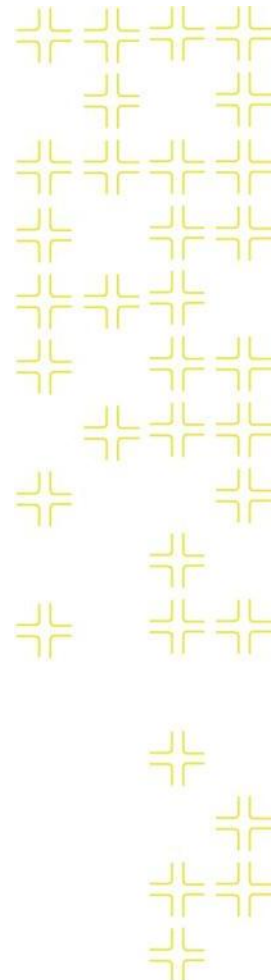
# Introductions



# Dublin San Ramon Services District

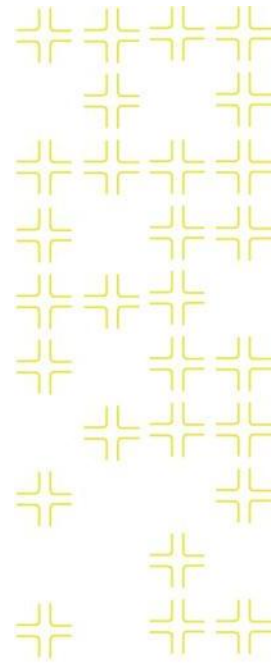
## Who we are:

- Potable water for 62,000 people
- Recycled water for 250 sites
- Wastewater collection and treatment for 141,000 people
- Edge of suburbia – growing rapidly



# Who am I?

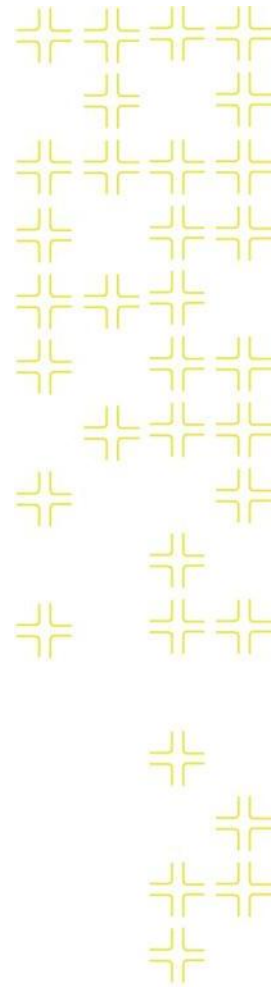
- + Database administrator for 30+ applications
- + Web developer / Technical Writer
- + Systems analyst / Project Manager
- + Graduate school adjunct faculty (Info Sys)
- + Programming since the days of IBM minicomputers running RPGII
- + SME: financials, sales & marketing, transportation, manufacturing, telecommunications, analytics, utilities



Meeting

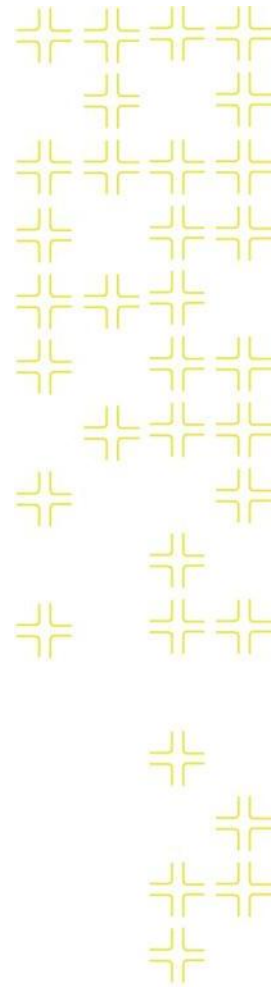
# Who are you?

- + Please provide job role so I can tune the presentation details
- + Tell us how your organization currently handles setting new meters...Paper? Lucity? Other?



# Meter set process overview

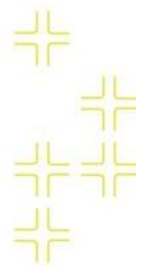
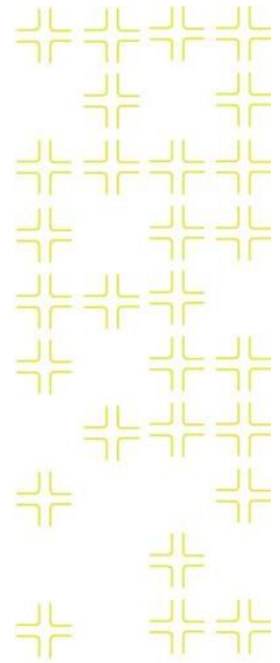
- + Developer installs meter box
- + Developer contacts agency to set meter
- + Construction inspector begins set meter
- + Engineer checks development fees paid
- + Field operations team sets meter
- + Customer service team initiates billing



Meeting

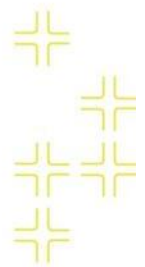
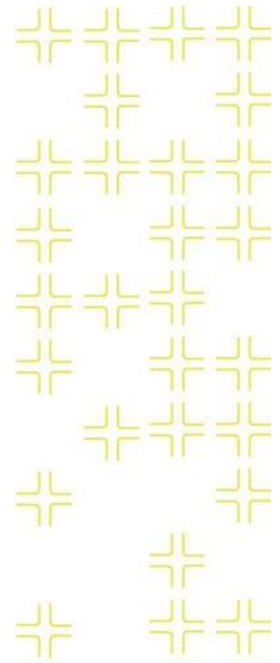
# Starting point

Initial focus on commercial and irrigation meters



Meeting

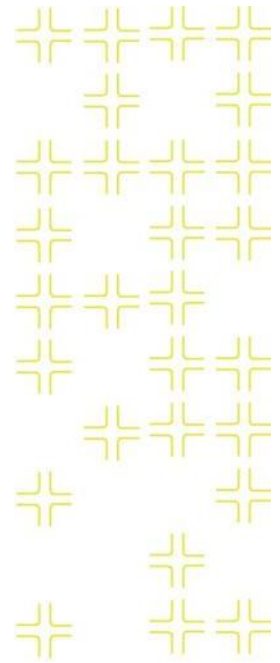
# Revenue flow



Meeting

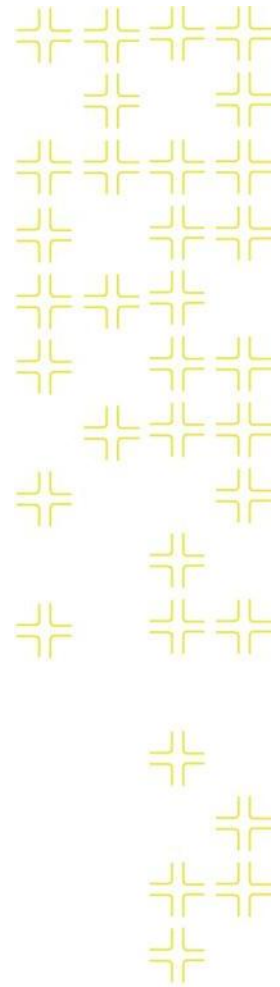


# The problem



# The problem - parameters

- + Performance
- + Information
- + Economy
- + Control
- + Efficiency
- + Security



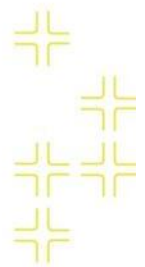
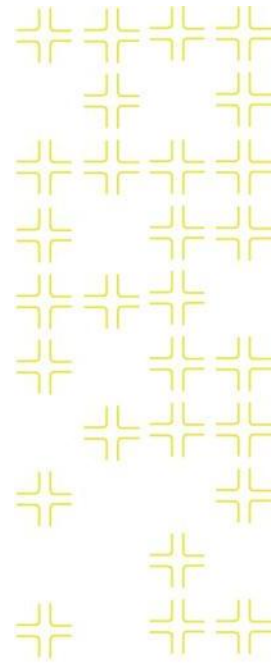
# How we used to set meters - paper based

REQUEST FOR WATER METER INSTALLATION						
Date	Zone 7 Fees Paid		Sewer Connection Permit No.			
Developer	Check by: _____ (Initial) Builder		Tract No.			
Total No. of Units	No. of Units Occupied		% of Units Occupied			
Remarks						
The following lots have been approved for water meter installation. All appropriate fees have been paid and meter boxes and services have been set to grade. (List one meter per line.)						
Meter Size	Lot No.	Address / Location Description	Meter No.	Initial Meter Reading	Sewer Classification	No. of Units
Signature - Construction Inspector						

White = Engineering Backflow Program    Canary = Customer Service    Pink = Field Ops    Goldenrod = Engineering Construction Inspector

%Gennev Tr'\_L\_250\Work A-FID\Util-Sen Ramon Services\NCR\REQES-1.DOC

# Starting point

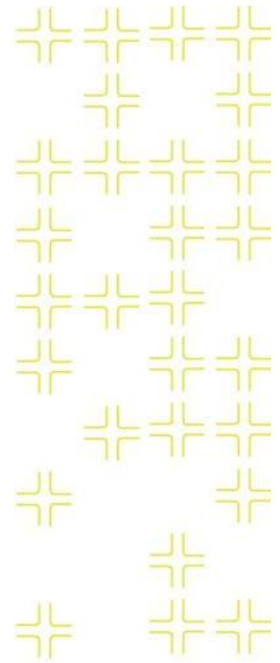


Meeting

# Problems with paper-based systems

- + Slow data transfer
- + Rekeying of form data in computer systems
- + Forms lost during routing
- + Difficult to audit/track meter set thru process
- + Reporting difficult if not impossible
- + Process breakdowns cause finger pointing

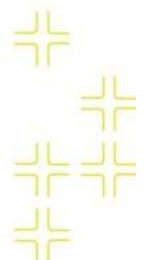
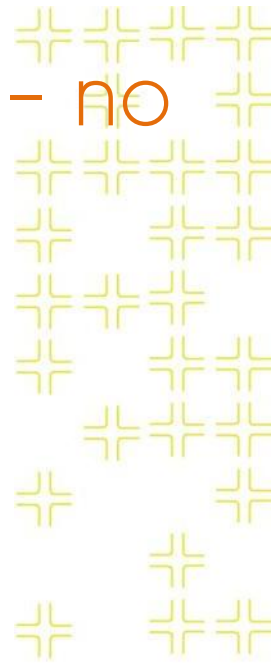
Desired end state



# Goal: web application with workflow - no paper




The screenshot shows a web browser window titled 'Poseidon - Windows Internet Explorer'. The address bar displays 'http://localhost:50726/Default'. The page content includes a search icon and the title 'Meter Set Request Form'. Below this, there is a form with the following fields and controls:

- Meter Set Request ID:
- User: kurtz
- Role: Label
- Construction Inspectors** (Section Header)
- Developer:
- Contact:  Phone:
- Address:
- Project:
- Service Type:
- Meter Size/Type:  Pressure Zone:
- Location:
- Lot:  Description:
- Address:
- Latitude(y):  Longitude(x):



Meeting

# Goal: email routing

 donotreply@dsrcsd.c... MSR ID: 201208131250 ready for processing	Wed 8/22/2012 10:14 AM
 donotreply@dsrcsd.c... MSR ID: 201208131250 ready for processing	Wed 8/22/2012 10:14 AM
 donotreply@dsrcsd.c... MSR ID: 201208131250 ready for processing	Wed 8/22/2012 10:10 AM

## **MSR ID: 201208131250 ready for processing**

donotreply@dsrcsd.com

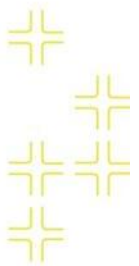
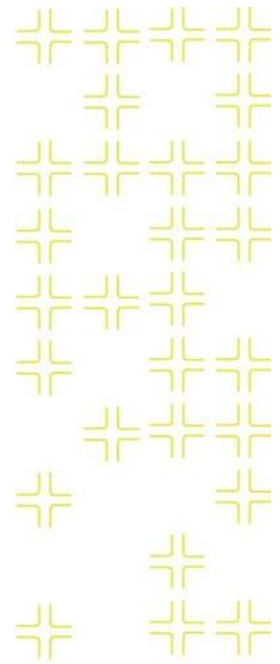
Sent: Wed 8/22/2012 10:14 AM

To: **Poseidon Customer Service**

MSR ID: 201208131250 ready for step: 'Account Setup Requested'. Click on [this link](#) to take you to the MSR.



Goal: field hardware support

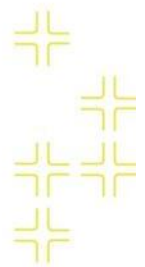
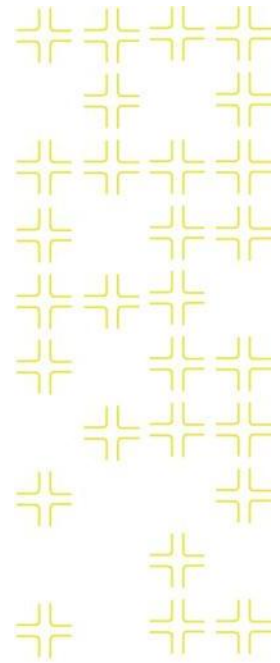


Meeting

 **lucity**<sup>™</sup> Regional User Group

Poseidon

# *DEMO UI*



# Construction inspector III

Browser: http://localhost:56922/Default.aspx | Poseidon

File Edit View Favorites Tools Help

**New** Meter Set Request Form

Meter Set Request ID:  User: kurtz Role: Construction Inspectors

**Construction Inspectors**

Builder:

Contact:  Phone:

Address:

Project:

Service Type:  Recycled Water License No:

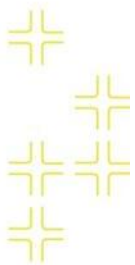
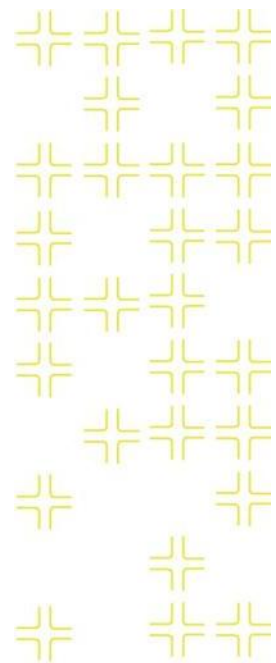
Meter Size/Type:  Pressure Zone:

Location:

Lot:  Description:

Address:

Latitude(y):  Longitude(x):



Meeting

# Construction inspector UI

---

Primary Backflow:

Mfg:  Size:

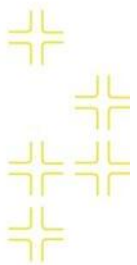
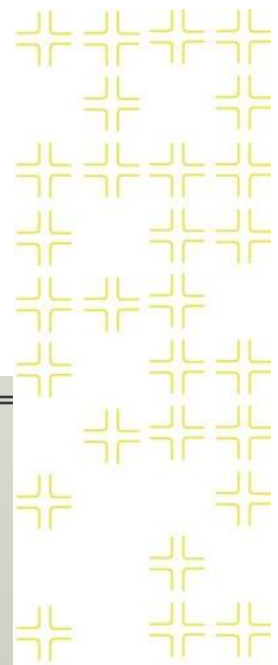
Type:  Model:  Serial No:

---

Bypass Backflow:

Mfg:  Size:

Type:  Model:  Serial No:



Meeting

# Engineering/field operations UI

**Engineering**

Fees Paid Certificate of Capacity Rights:

**Field Operations**

Meter Information:

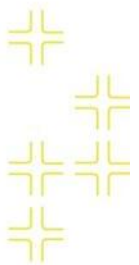
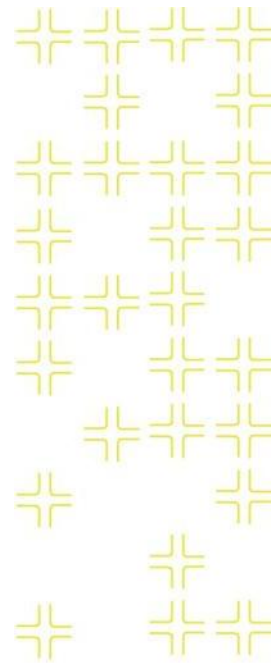
Make: **Select**  Size:

Meter No:  Firefly No:  Initial Reading:

Latitude(y):  Longitude(x):

Date Meter Set

August 2013						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7



Meeting

# Customer service UI

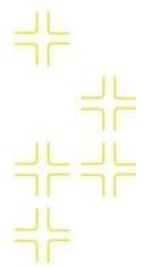
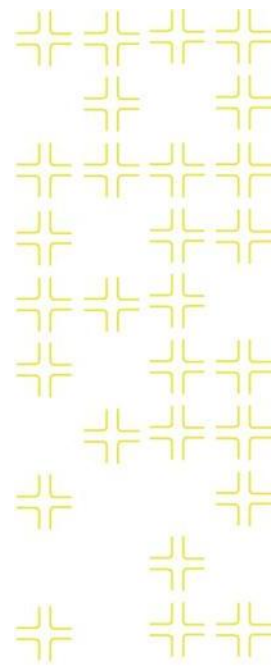
**CustomerService**

Account No:  Elevation Zone:

Comments:  
  Active

Status:

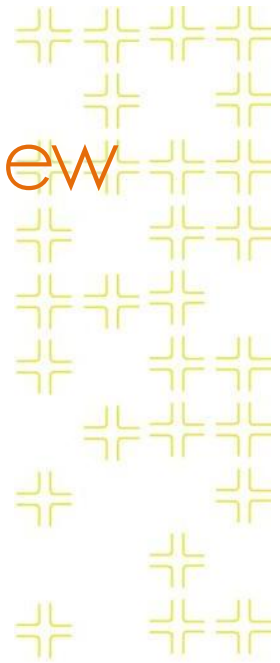
<



# Lucity client water module data overview

NO EDITS IN POSEIDON – APPLICATION MOVE FORWARD ONLY

USE LUCITY CLIENT TO FIX UPSTREAM DATA ERRORS



Meeting

# Lucity client water module components 1

**Meter Set Location - No Filter**

Meter Loc Rec # 1346    MSR\_ID 201307241649    Property ID Tag

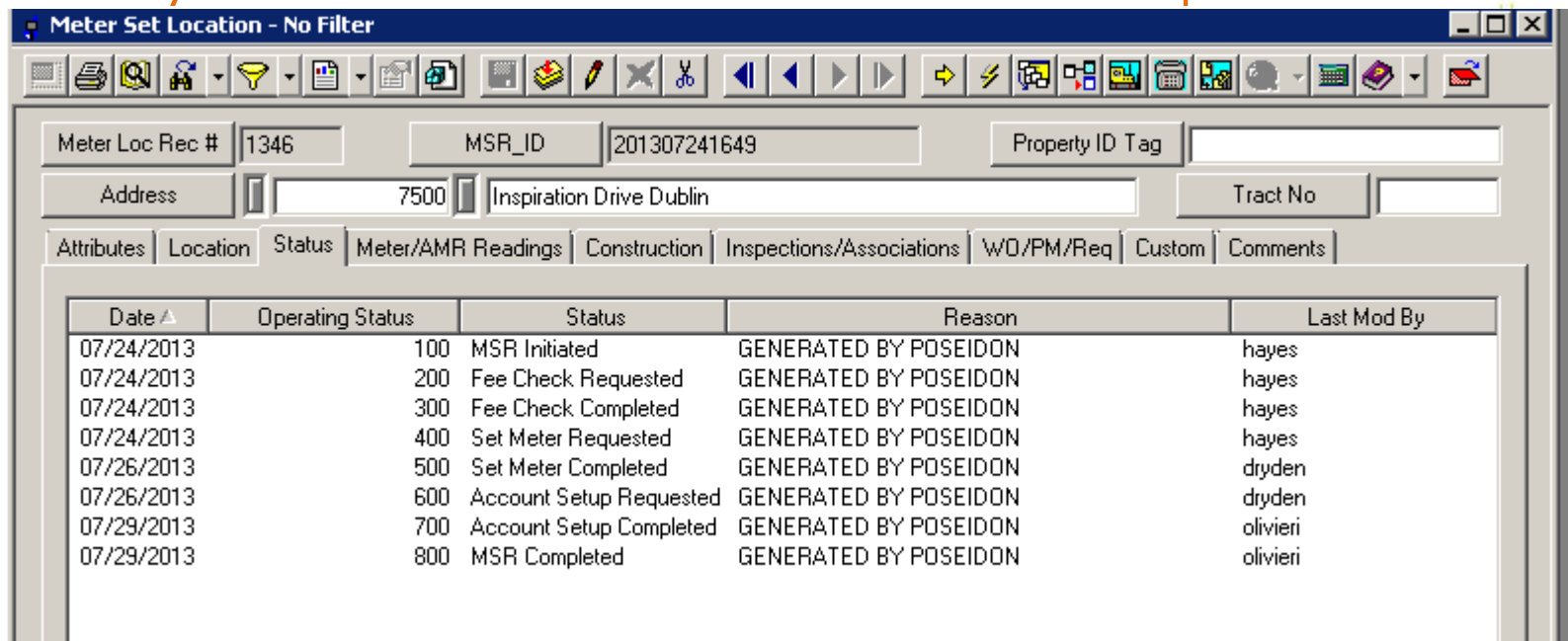
Address 7500 Inspiration Drive Dublin    Tract No

Attributes | Location | Status | Meter/AMR Readings | Construction | Inspections/Associations | WO/PM/Req | Custom | Comments

Operating Status	800	MSR Completed	Active	<input type="checkbox"/>	Fixed Asset ID	
Service Type	4	Fireline	Critical Customer	<input type="checkbox"/>		
Installation Date	/ /		Bypass	<input type="checkbox"/>		
Installation			Project Number			
Type			Pressure Zone	3	3	
Metered Area			Project Name	16	Valley Christian Center	



# Lucity client water module components 2



The screenshot displays the 'Meter Set Location - No Filter' window. It features a toolbar at the top with various icons for navigation and editing. Below the toolbar, there are input fields for 'Meter Loc Rec #' (1346), 'MSR\_ID' (201307241649), 'Property ID Tag', 'Address' (7500 Inspiration Drive Dublin), and 'Tract No'. A tabbed interface below these fields includes 'Attributes', 'Location', 'Status', 'Meter/AMR Readings', 'Construction', 'Inspections/Associations', 'WO/PM/Req', 'Custom', and 'Comments'. The 'Status' tab is active, showing a table with the following data:

Date ▲	Operating Status	Status	Reason	Last Mod By
07/24/2013	100	MSR Initiated	GENERATED BY POSEIDON	hayes
07/24/2013	200	Fee Check Requested	GENERATED BY POSEIDON	hayes
07/24/2013	300	Fee Check Completed	GENERATED BY POSEIDON	hayes
07/24/2013	400	Set Meter Requested	GENERATED BY POSEIDON	hayes
07/26/2013	500	Set Meter Completed	GENERATED BY POSEIDON	dryden
07/26/2013	600	Account Setup Requested	GENERATED BY POSEIDON	dryden
07/29/2013	700	Account Setup Completed	GENERATED BY POSEIDON	olivieri
07/29/2013	800	MSR Completed	GENERATED BY POSEIDON	olivieri

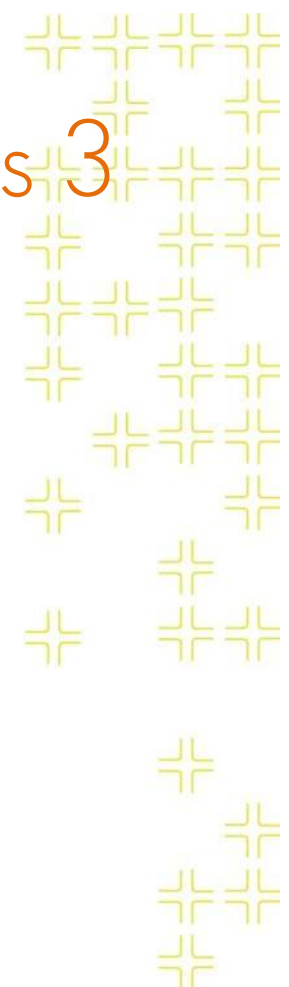
# Lucity client water module components 3

Inspections/Associations | WO/PM/Req | Custom | Comments

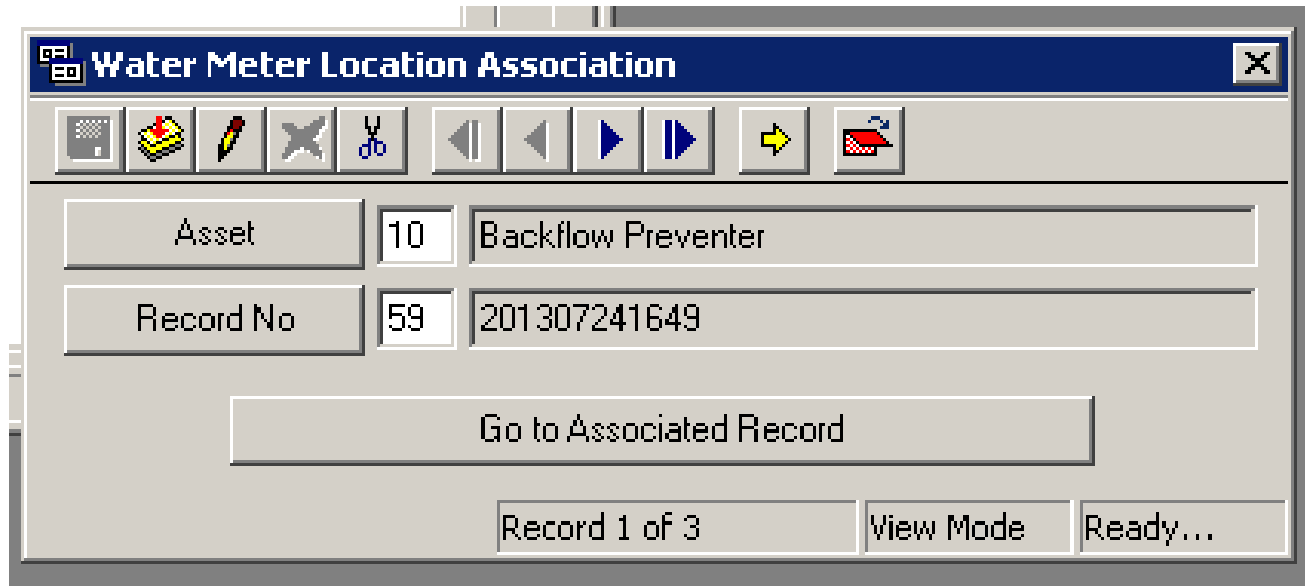
Inspection Date: //      Next Insp Date: //

Associations

Created By	Action Text	Location	Asset Text	Record No	Unique ID
			Backflow Preventer	59	201307241649
			Backflow Preventer	60	201307241649
			Water Meter Device	1347	201307241649



# Lucity client water module components 4



# Lucity client water module components 5

Meter Set Location - No Filter

Meter Loc Rec # 1346    MSR\_ID 201307241649    Property ID Tag

Address 7500 Inspiration Drive Dublin    Tract No

Attributes | Location | Status | Meter/AMR Readings | Construction | Inspections/Associations | WD/PM/Req | Custom | Comments

User 1	<input type="checkbox"/>		User 7	<input type="checkbox"/>	
User 2	<input type="checkbox"/>		User 8	<input type="checkbox"/>	
User 3	<input type="checkbox"/>		User 9	<input type="checkbox"/>	
User 4	<input type="checkbox"/>		User 10	<input type="checkbox"/>	//
EDEN Acct No	<input type="checkbox"/>	03-31-353259-000	User 11	<input type="checkbox"/>	//
Cert of Cap Rights	<input type="checkbox"/>		User 12	<input type="checkbox"/>	//
User 13	<input type="checkbox"/>		User 14	<input type="checkbox"/>	
User 15	<input type="checkbox"/>				

WD Comment

Last Modified By olivieri    Last Modified Date 07/29/2013

# Lucity client water module components 6

**Backflow Inventory - Unnamed Filter Set**

Backflow Rec # 59    MSR\_ID 201307241649    Library Code    Inactive

Attributes | Owner Info | Mailing Info | Location Details | Construction | Testing | Notices | Tracking | WO/PM/Req | Custom | Comments

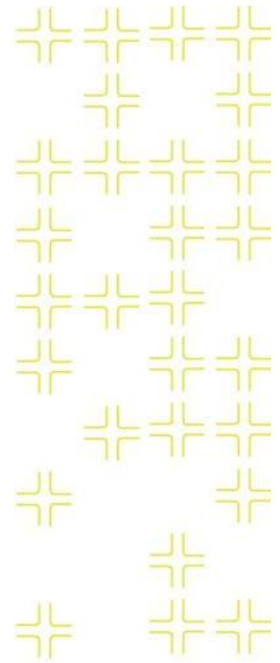
Size (in)	3.00	Device Type	300 DCDA
Manufacturer	28 WILKINS	Installation Type	
Model Number	350 ADA	Service Type	
Serial Number	V28237	Installation Date	/ /
Size (in)			

Backflow Preventer Location

Business Name		Loc Property ID	
Address		Apt Number	
City		State	
Zip Code			
General Location			
Name		Service Tap No	
Home Phone		Account Number	
Work Phone			

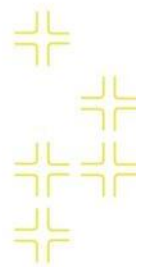
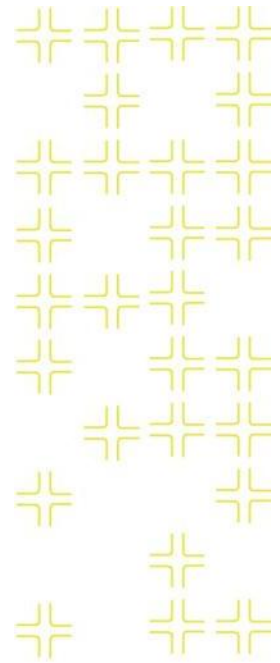
Record 1 of 1    View Mode    Ready...

# Project fly over



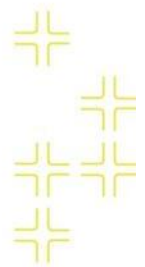
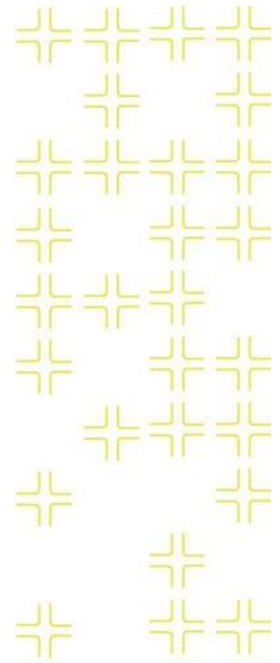
# 3 Types of Feasibility

- + Organizational
- + Economic
- + Technical



# Iterative development

- + Quick turnaround requirements to code
- + Stay close to the customer
- + Create models that are just good enough

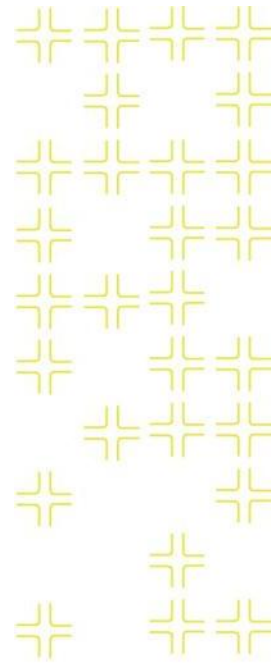


Meeting

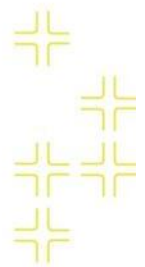
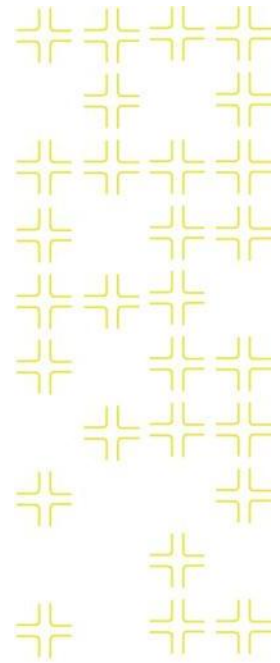
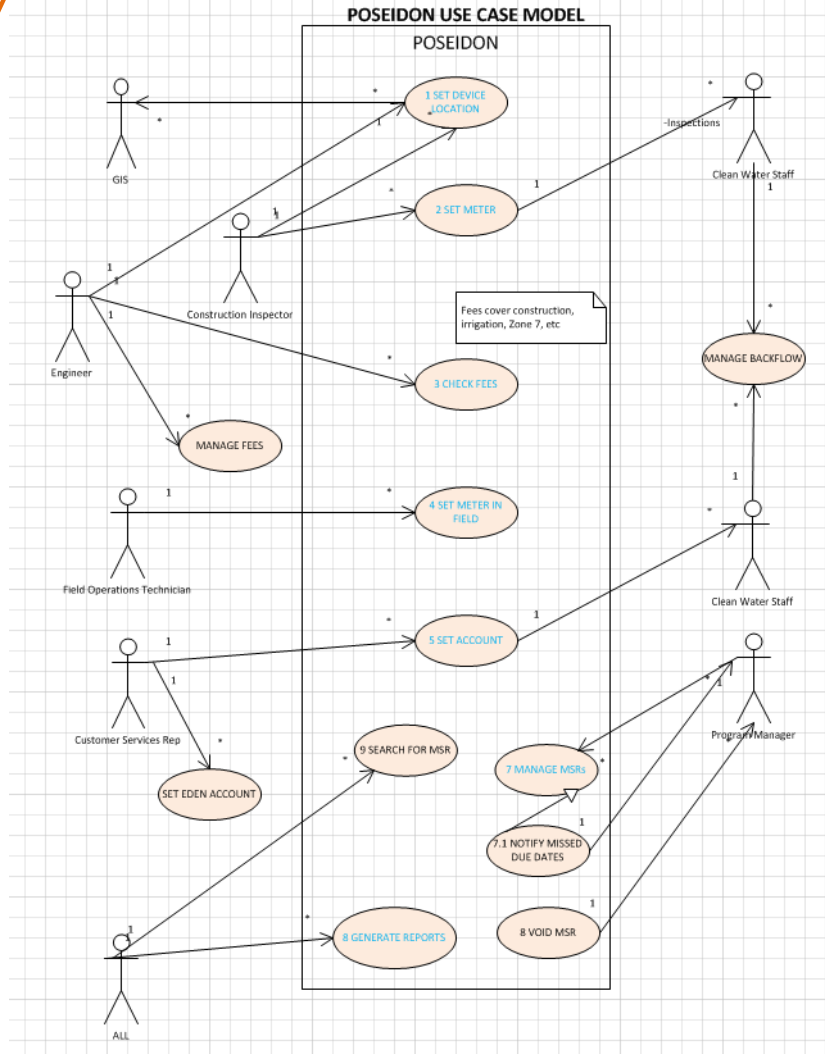


# Development techniques

- + How do you analyze current business processes?
- + Look at “what” not “how”
- + Make the back end complex so the UI can be simple

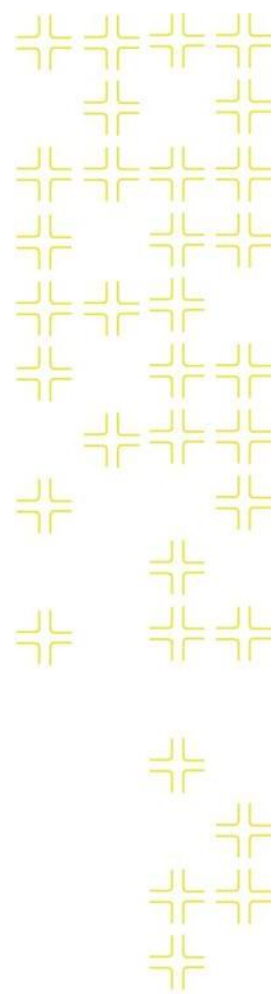
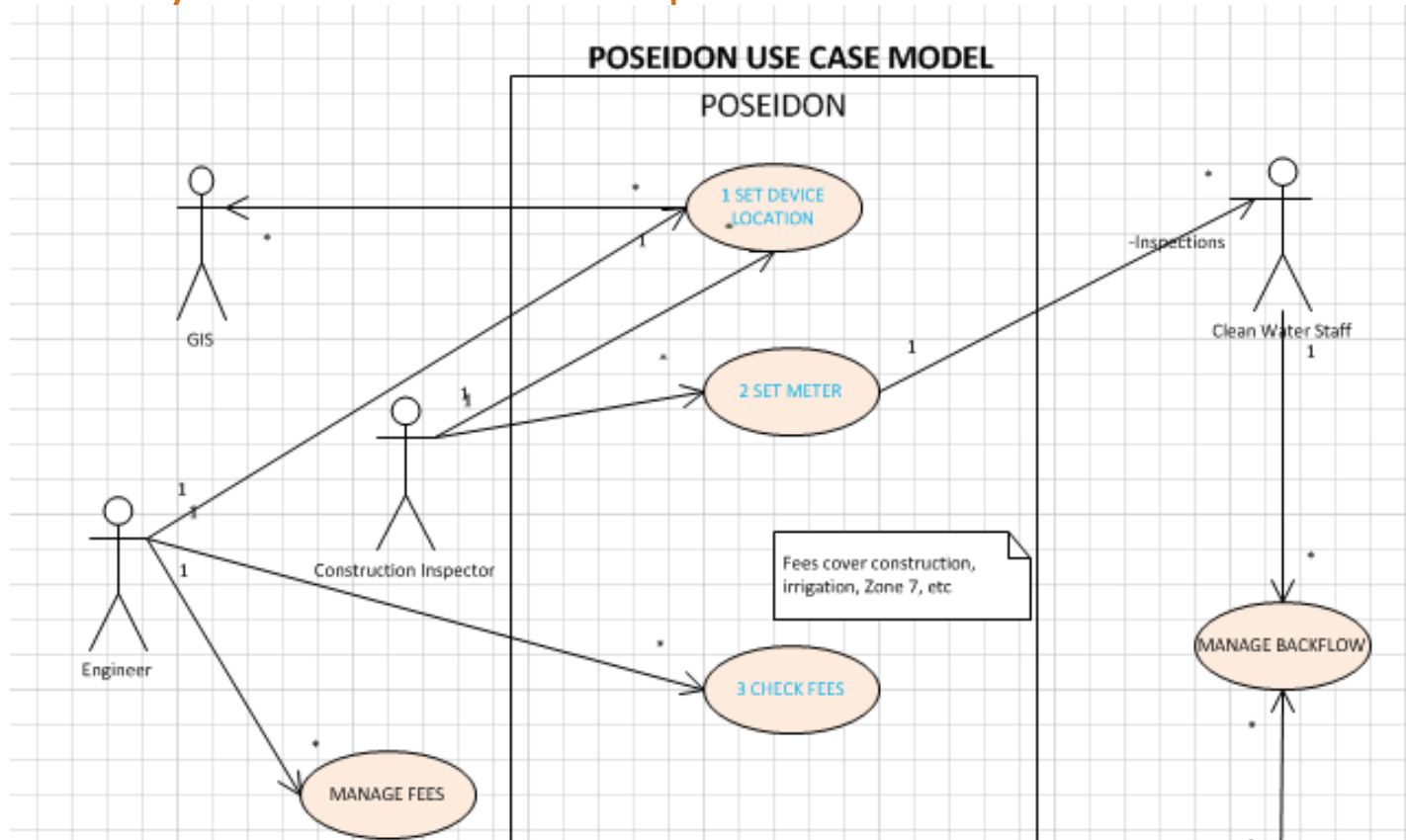


# Analyze business processes 1

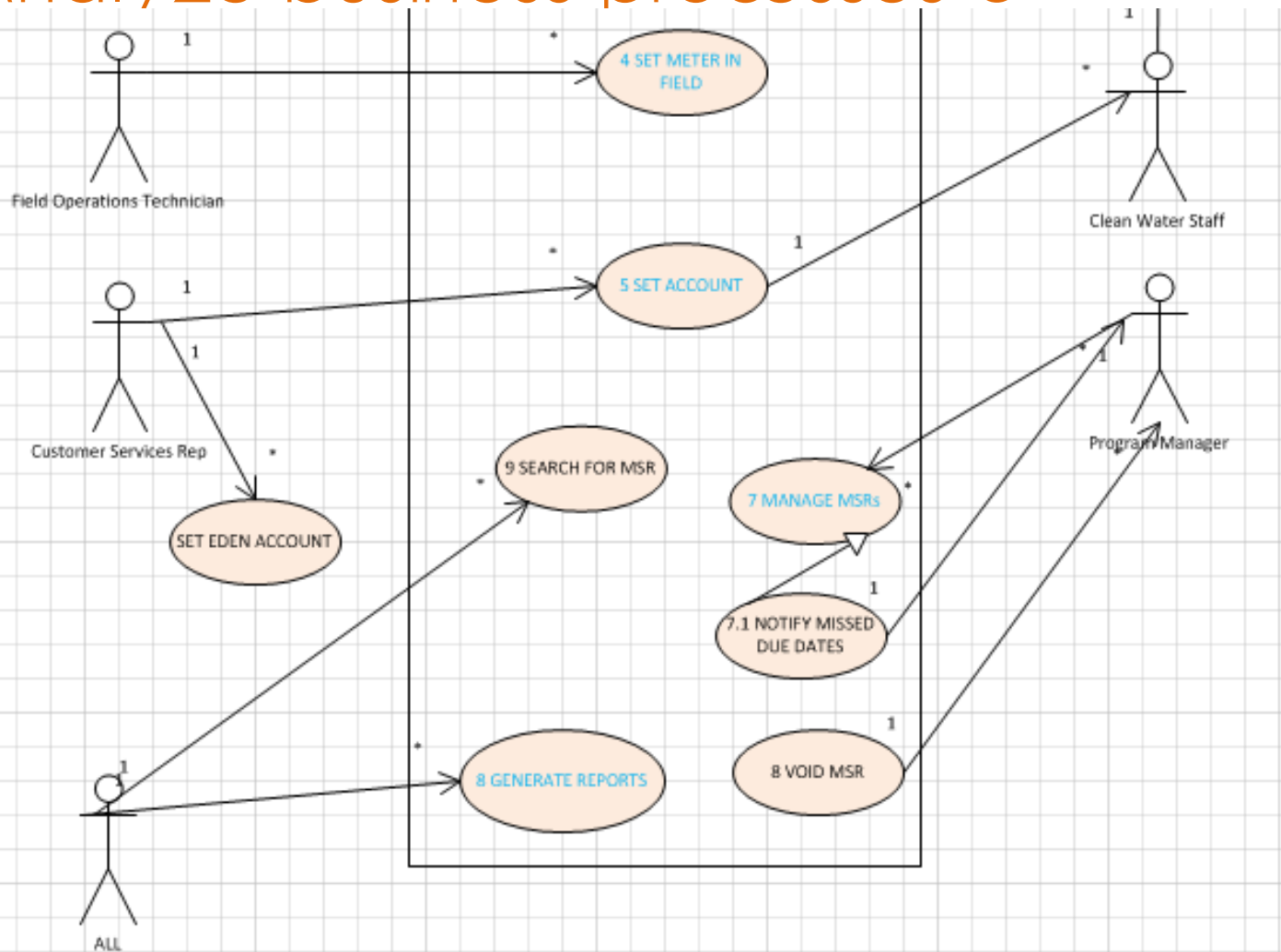
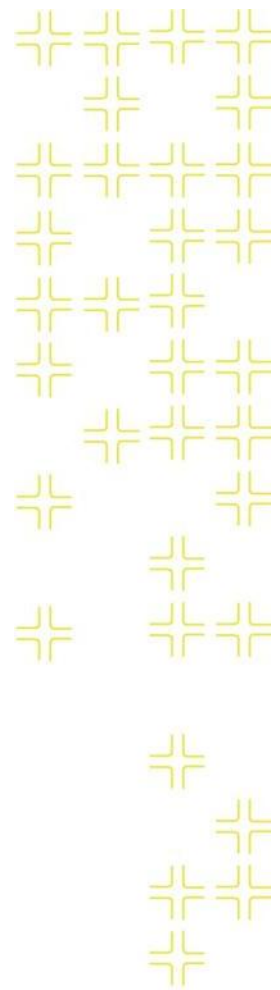


Meeting

# Analyze business processes 2



# Analyze business processes 3

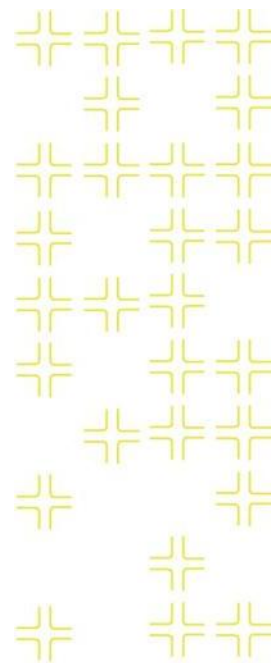


Meeting

# Sample Use Case

<b>Use Case</b>	<b>02 Set Meter</b>
<b>Description</b>	Before actual meters can be installed, Construction Inspector has to set the meter and backflow properties for each of the 4 types of meters covered: 02.1 Commercial 02.2 Fireline 02.3 Recycled 02.4 Residential
<b>Actors</b>	Construction Inspector (CI) - primary Engineer (EN) - secondary
<b>Assumptions</b>	Customer has contacted CI to begin meter set process and customer has paid all requisite fees.  High level steps. Focus on adding new request
<b>Steps</b>	<ol style="list-style-type: none"> <li>1. System provides Meter Set Request ID and today's date.</li> <li>2. CI selects type of meter</li> <li>3. CI selects Developer</li> <li>4. Using QBE, CI searches device location list for meter device or fireline device (parameters: project name, pressure zone, tract no., lot no., street address, meter type)</li> <li>5. CI determines backflow requirement</li> <li>6. CI enters comments, if any</li> <li>7. CI clicks Check Fees button</li> <li>8. System sends email notification to Planning/Permitting and Clean Water.</li> </ol>
<b>Variations</b>	<p>4A. EN may have updated data that CI was not aware of, therefore, EN may override any of CI entries.</p> <p>6A. Depending on type of meter, backflow requirement differs. Each variation has a separate Use Case.</p> <p>7A. For Fireline meter: there's no Zone 7 fee and inspection fees are assumed to have been with Permit issuance. Developer installs fireline meter when the backflow device is installed. However, Jackie/Jojo should still do the steps in Check Fees regardless, as this will also force them to enter permit number for the record.</p>

<p>Focus on adding new request</p> <ol style="list-style-type: none"> <li>1. System provides Meter Set Request ID and today's date.</li> <li>2. CI selects type of meter</li> <li>3. CI selects Developer</li> <li>4. Using QBE, CI searches device location list for meter device or fireline device (parameters: project name, pressure zone, tract no., lot no., street address, meter type)</li> <li>5. CI determines backflow requirement</li> <li>6. CI enters comments, if any</li> </ol>
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Meeting

# Extensive use of Sharepoint doc libs/lists

Customer Service | Engineering | Environmental Services | Executive | Human Resources

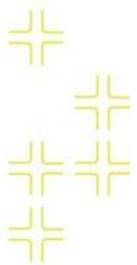
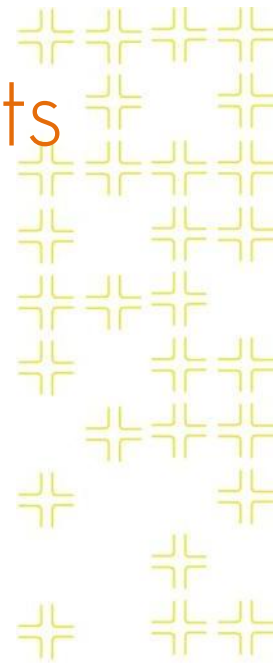
DSRSD > Poseidon > Shared Documents > Requirements > Use Cases

## Shared Documents

Share a document with the team by adding it to this document library.

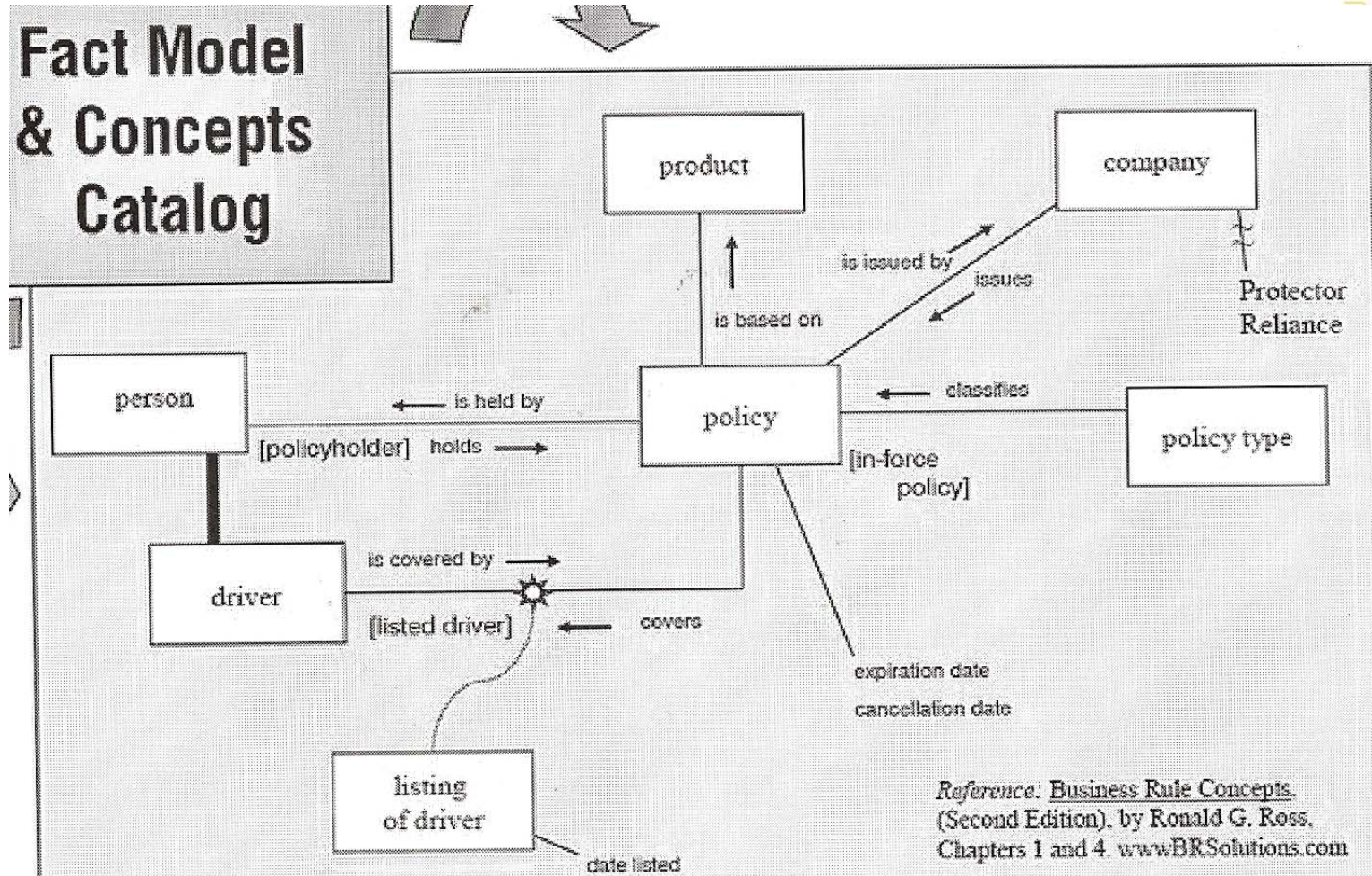
New | Upload | Actions | Settings

Type	Name
	01 Set device location
	02 Set Meter
	02.1 Set commercial meter with backflow device
	02.2 Set fireline meter with backflow device
	02.3 Set recycled meter
	02.4 Set residential meter
	03 check fees
	04 set meter in field
	05 set account
	07 Manage MSRs
	08 Generate reports
	08.1 Generate metrics reports
	08.2 Generate MSR status reports
	08.3 sample reports
	09 Secure access to application and data
	10 Edit MSR
	11 Delete MSR
	20 Capture missing BFD data
	21 Field personnel work disconnected
	meet to review add use cases 2012 06 19 10 30 am
	rn create use case diagram
	Use Case Diagram
	Use case template



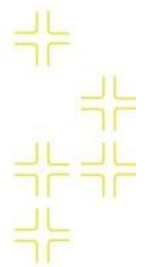
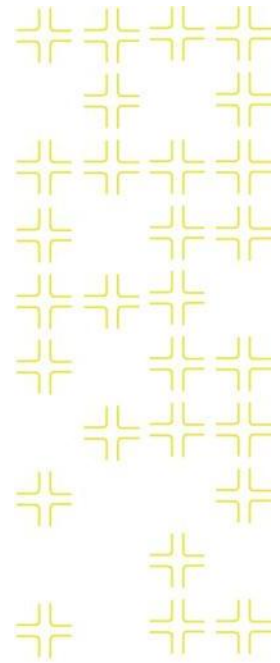
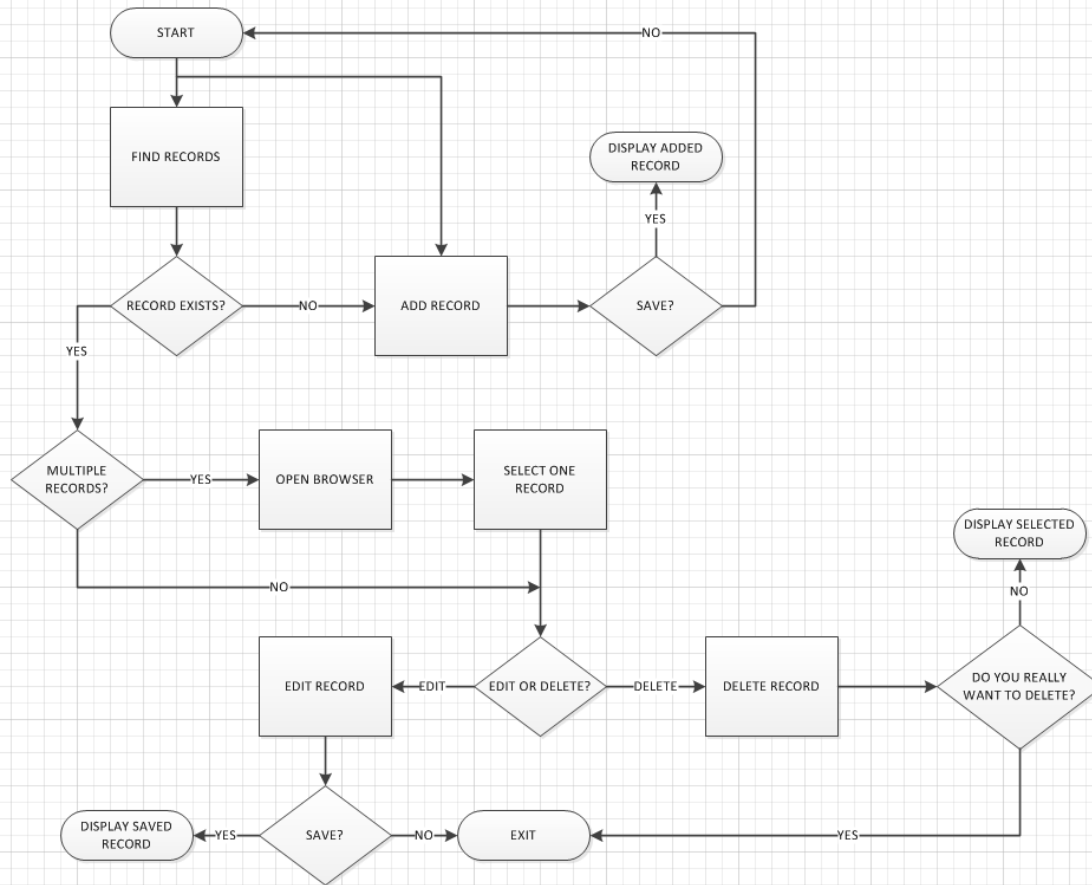
Meeting

# Sample fact model / business rules



# UI flow

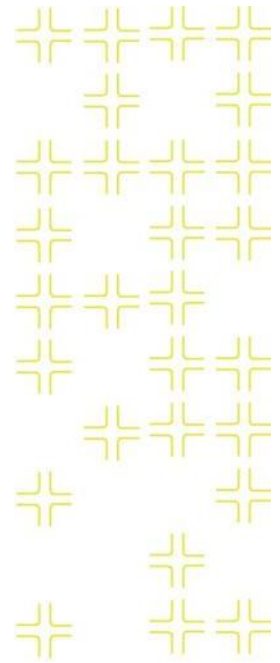
## CRUD FOR RECORDS CREATE // RETRIEVE // UPDATE // DELETE



Meeting



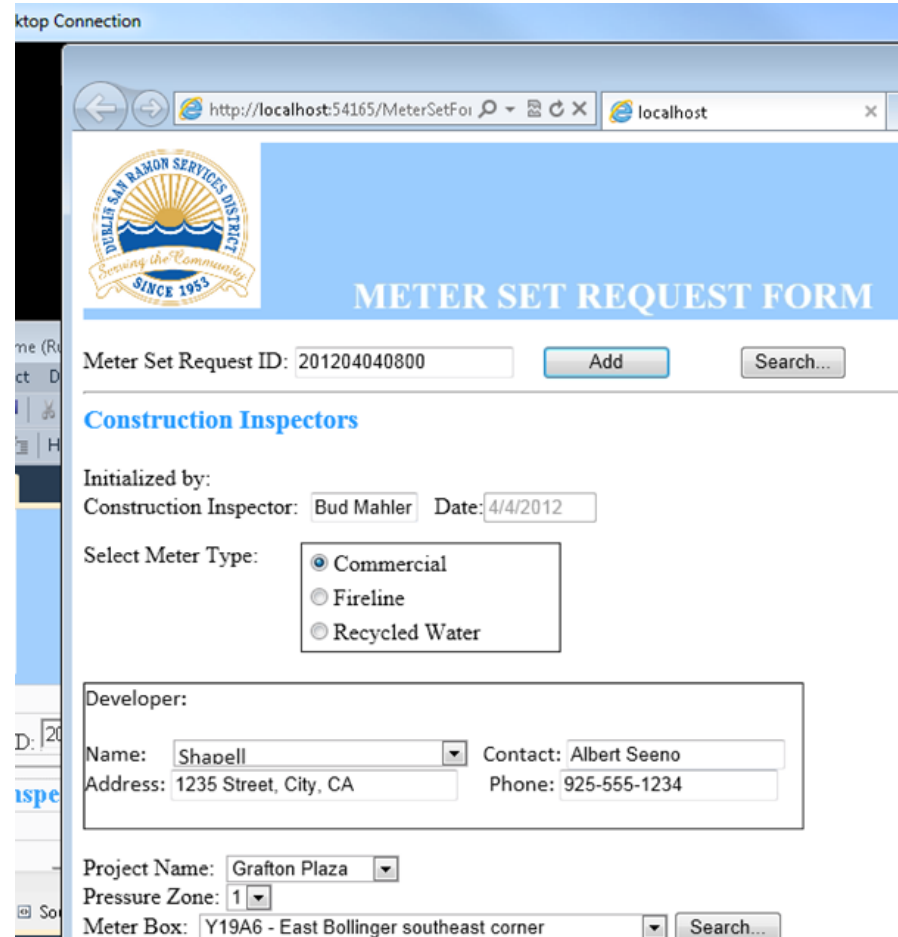
Buy or build?



# Lucity Client/Web UI and Lucity Database


- + Understanding requirements aids in discussions with contractor/in-house dev
- + Conferred with Lucity Implementation Consultant with Use Cases as basis for discussions
- + Decided to use core Lucity databases with custom UI
- + Decided to use Outlook as workflow engine rather than Lucity work order engine

# Proof of concept prototype- UI only - no data



ktop Connection

http://localhost:54165/MeterSetFor localhost

 **METER SET REQUEST FORM**

Meter Set Request ID:   

**Construction Inspectors**

Initialized by:  
Construction Inspector:  Date:

Select Meter Type:

- Commercial
- Fireline
- Recycled Water

Developer:

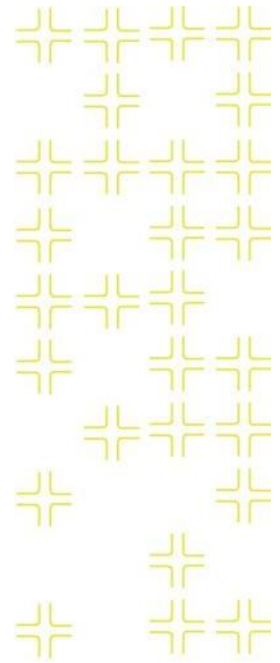
Name:  Contact:   
Address:  Phone:

Project Name:

Pressure Zone:

Meter Box:

# Development resources



# DataFunctionary Sharepoint list 1

form	ui seq	Title	screen label	lucity ui label	db table source	db data source
Main	1	add button	plus sign icon		n/a	
Main	2	search msr button	spyglass icon		n/a	
Main	3	msr_id	Meter Set Request ID		n/a	javascript datatype functions
Main	4	logged on user	user		n/a	Request.ServerVariables ["LOGON_USER"]
Main	5	role	role		poseidon.groupauth	vwGetRoleForLogin
Main	6	developername	developer		gbacomm.cmcontact	DSRSD_vwAllDevelopers
Main	7	add developer button	add	multiple screens	gbacomm.cmcontact	
Main	8	ct_name2	contact		gbacomm.cmcontact	DSRSD_vwDeveloperDetails
Main	9	ct_hm_phn	phone		gbacomm.cmcontact	DSRSD_vwDeveloperDetails
Main	10	adr	address		gbacomm.cmcontact	DSRSD_vwDeveloperDetails
Main	11	project	project	project name	gbawater.wtfieldsdesc	DSRSD_vwGetAllProjects
Main	12	servicetype	service type	service type	gbawater.wtfieldsdesc	DSRSD_vwGetAllMeterTypes
Main	13	metersize	meter size	meter size	poseidon.infolist	vwGetAllmetersizes
Main	14	pressurezone	pressure zone	pressure zone	gbawater.wtmeter	DSRSD_vwGetAllElevationZones
Main	15	location search	search		gbawater.wtmeter	DSRSD_vwOpenMeterSet
Main	16	lot	lot	lot no	gbawater.wtmeter	mt_lid_des
Main	17	locdesc	description	general location	gbawater.wtmeter	mt_locate

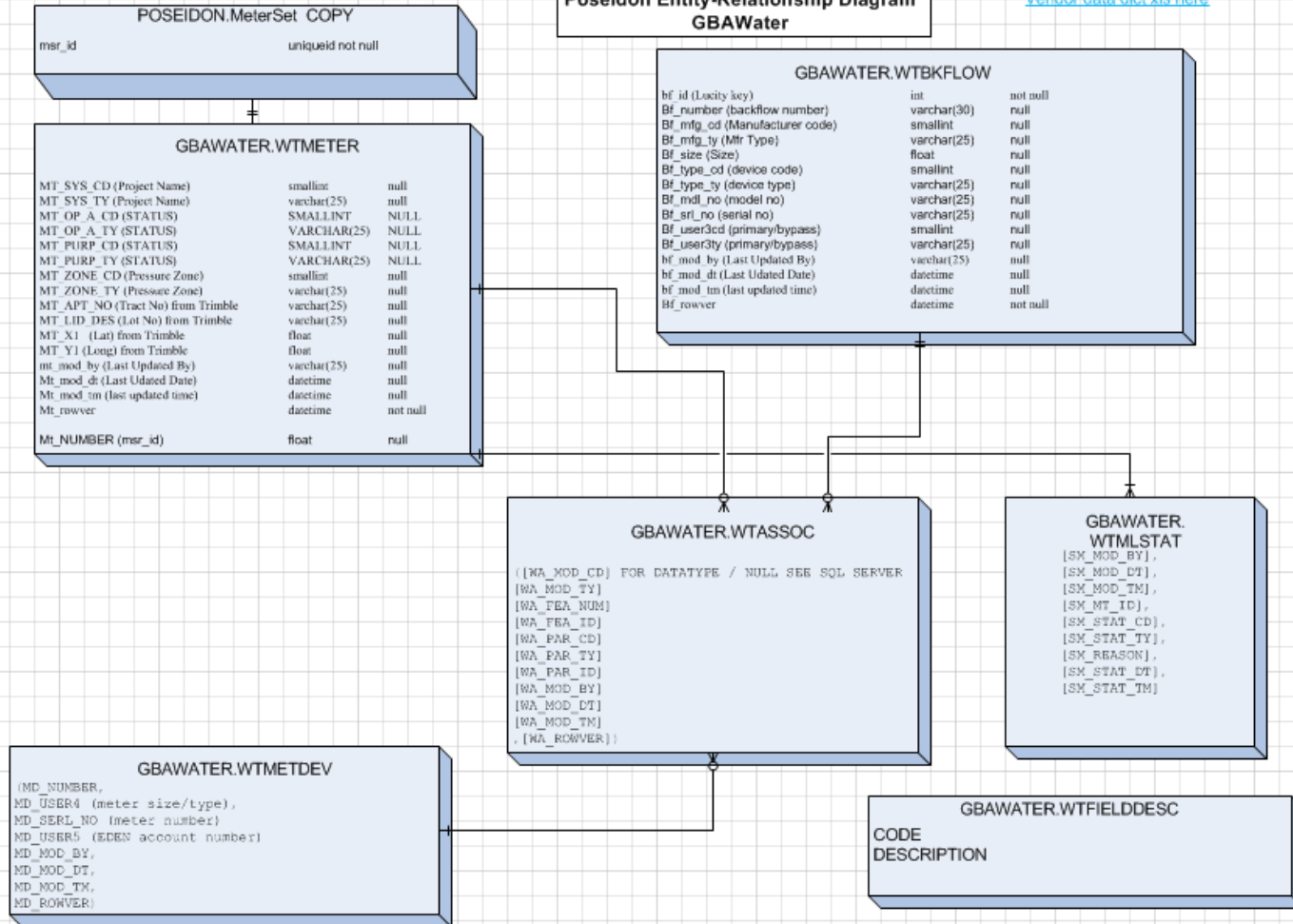
# DataFunctionary Sharepoint list 2

db table target	db data target	Required	Validation	notes with unit test cases	comments
gbacomm.cmcontact		Yes			
gbacomm.cmcontact		Yes			
gbacomm.cmcontact		Yes			
gbacomm.cmaddr		Yes			
gbacomm.cmaddr		Yes			
gbacomm.cmaddr		Yes			
gbacomm.cmaddr		Yes			
		Yes			
		Yes			
		No		<a href="#">add mode</a>	only shows for Construction Inspector role
		No		<a href="#">link</a>	
poseidon.meterset	msr_id	Yes		<a href="#">msr id</a>	
gbacomm.cmcontact		Yes	25 max len	<a href="#">logged in user</a>	
n/a		Yes		<a href="#">link</a>	
poseidon.meterset	contact_id	Yes			
gbacomm.cmcontact		Yes		<a href="#">link</a>	writing to cmaddr, streetlist, cmcontact
n/a		Yes			only contact_id is stored
n/a		Yes			only contact_id is stored
n/a		Yes			only contact_id is stored

# Data diaaram

Poseidon Entity-Relationship Diagram  
GBAWater

[Vendor data dict xls here](#)



Last updated 6/26/2012

# Each field/function has design document

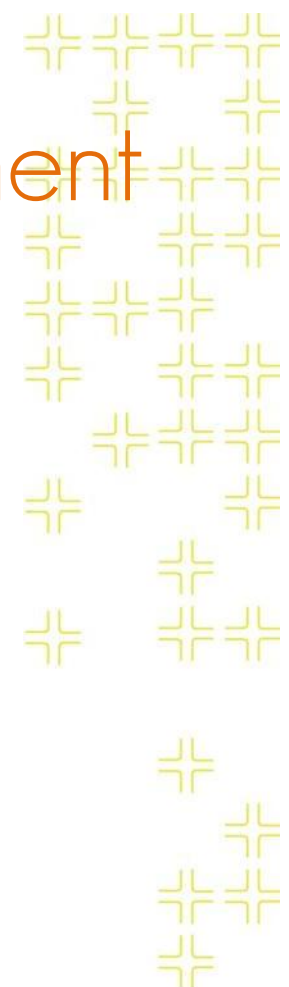
DSRSD > Poseidon > Shared Documents > Build

## Shared Documents

Share a document with the team by adding it to this document library.

New ▾ Upload ▾ Actions ▾ Settings ▾

Type	Name
Folder	diff
Folder	fields
Document	address screen fields
Document	Build Overview
Document	how to create Poseidon email distribution list
Document	rn add developer
Document	rn alternate browser support
Document	rn apply themes to UI and beautify UI
Document	rn automate testing
Document	rn brett assistance required
Document	rn build search function
Document	rn build ssrs reports
Document	rn bulk load wtmeter from wtmeterg
Document	rn clear fields after add
Document	rn code irr meters
Document	rn customize grid on lucity client form for WTMLSTAT
Document	rn db connection strings
Document	rn debug trace
Document	rn disable back button
Document	rn dynamically enable validators

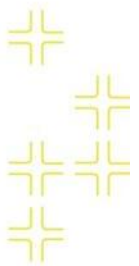
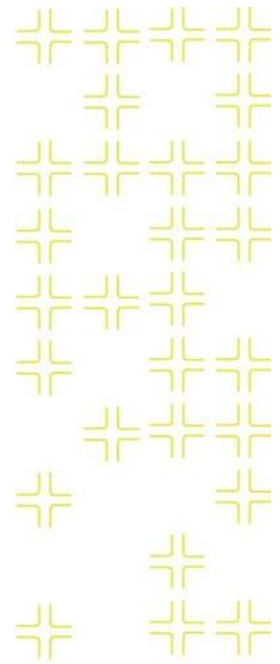




# In-house graphic designer chose font, colors, layout

The screenshot shows a web browser window with the address bar displaying 'http://localhost:56922/Default.aspx'. The browser title is 'Poseidon'. The page content includes a 'New' button and the title 'Meter Set Request Form'. Below this, there is a form with the following fields and controls:

- Meter Set Request ID:
- User: kurtz Role: Construction Inspectors
- Construction Inspectors (collapsible section)
- Builder:
- Contact:  Phone:
- Address:
- Project:
- Service Type:  Recycled Water License No:
- Meter Size/Type:  Pressure Zone:
- Location:
- Lot:  Description:
- Address:
- Latitude(y):  Longitude(x):

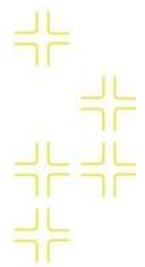
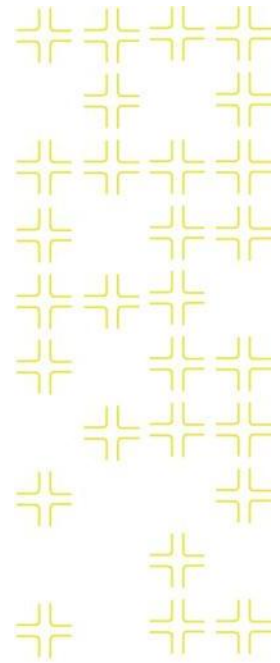


Meeting



Regional User Group

How does it work?

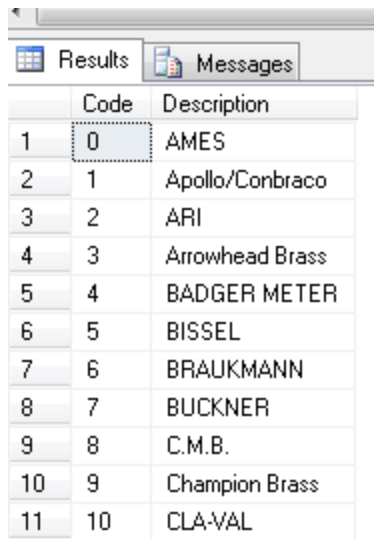


Meeting

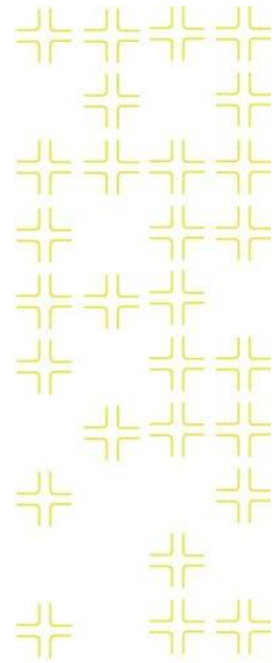
# Back to front - database to UI 1

How do you move data from the database to the screen?

- + CREATE VIEW [dbo].[**DSRSD\_vwGetAllBackflowManufacturers**]
- + AS
- + --SELECT info\_key, description FROM INFOLIST I WHERE I.INFO\_TYPE = 'pn'
- + SELECT Code, Description FROM WTFIELDSDESC WHERE id = 3298



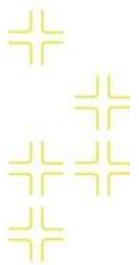
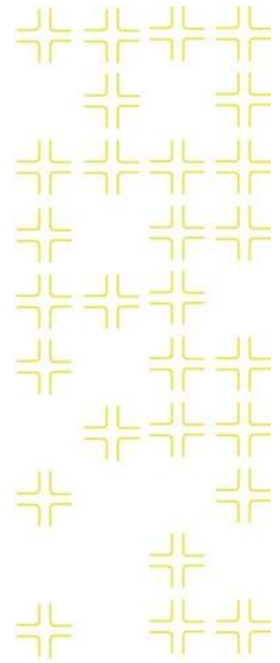
	Code	Description
1	0	AMES
2	1	Apollo/Conbraco
3	2	ARI
4	3	Arrowhead Brass
5	4	BADGER METER
6	5	BISSEL
7	6	BRAUKMANN
8	7	BUCKNER
9	8	C.M.B.
10	9	Champion Brass
11	10	CLA-VAL



# Back to front - database to UI 2

```
<td>
  <asp:SqlDataSource ID="dsbypbfdfmfg" runat="server"
    ConnectionString="<%"$
ConnectionStrings:connGBAWaterproject %>"
    SelectCommand="SELECT [Description] FROM
[DSRSD_vwGetAllBackflowManufacturers]
ORDER BY [Description]">
  </asp:SqlDataSource>
</td>
```

```
<td>
  <asp:DropDownList ID="bypbfdfmfg" runat="server"
DataSourceID="dsbypbfdfmfg"
  DataTextField="Description" DataValueField="Description"
  AppendDataBoundItems="True" AutoPostBack="True"
onselectedindexchanged="bypbfdfmfg_SelectedIndexChanged">
  <asp:ListItem Value="0" Text="Select"></asp:ListItem>
  <asp:ListItem Value="1" Text="New"></asp:ListItem>
</asp:DropDownList>
</td>
```



Meeting

# Back to front - database to UI 3

Bypass Backflow:

Mfg:  Size:

Type:  Model:  Serial No:

Bypass Backflow:

Mfg:

Type:

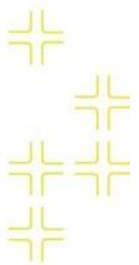
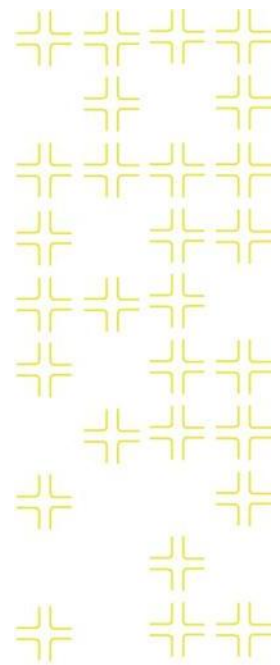
**+** Engine

**+** Field

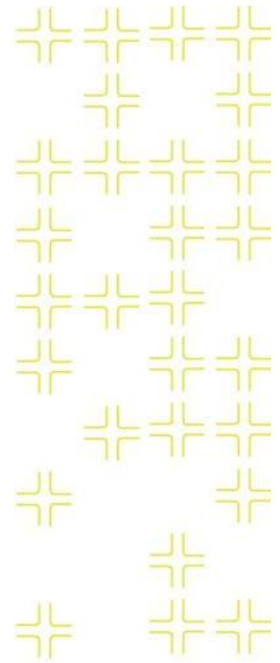
**+** Custo

Comments

- Select
- New
- aaa
- AMES
- Apollo/Conbraco
- ARI
- Arrowhead Brass
- BADGER METER
- bbb
- bbbb
- BISSEL
- BRAUKMANN
- BUCKNER
- byp bfd mfg 2
- C.M.B.
- ccc
- Champion Brass

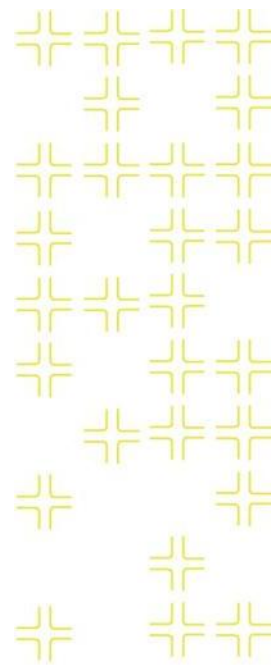


# Lucity custom database internals



# Custom views in GRΔWater database

- dbo.DSRSD\_vwAccountNumber
- dbo.DSRSD\_vwFindMeterSetRequestsOlderThan48Hours
- dbo.DSRSD\_vwGetAllBackflowManufacturers
- dbo.DSRSD\_vwGetAllElevationZones
- dbo.DSRSD\_vwGetAllMeterMakes
- dbo.DSRSD\_vwGetAllMeterTypes
- dbo.DSRSD\_vwGetAllProjects
- dbo.DSRSD\_vwGetBypBFD
- dbo.DSRSD\_vwGetMeterSet
- dbo.DSRSD\_vwGetPriBFD
- dbo.DSRSD\_vwMeterDeviceDetail
- dbo.DSRSD\_vwMSRDetail
- dbo.DSRSD\_vwOpenMeterSet
- dbo.DSRSD\_vwSearchBackflowDevices
- ...

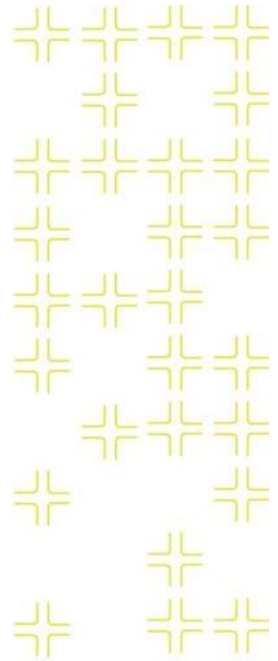


Meeting

# Sample view

```
+ CREATE view [dbo].[DSRSD_vwOpenMeterSet]
+ as

+ SELECT MT_ID
+ ,mt_number AS number
+ ,isnull(mt_lid_des,") AS lot
+ ,isnull(convert(VARCHAR(12),MT_ADR_BDG)," + '' +
+ isnull(MT_ADR_DIR,") + '' +
+ isnull(MT_ADR_STR,")+ '' +
+ isnull(MT_ADR_TY, ") + '' +
+ isnull(mt_adr_sfx , ") AS address
+ ,MT_LOCATE AS location
+ ,MT_Y1 AS latitude
+ ,MT_X1 AS longitude
+ FROM WTMETER
+ WHERE mt_op_a_cd = 0
```















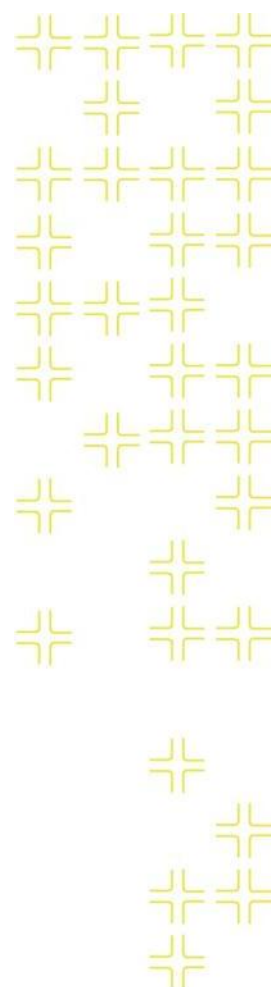
# Custom stored procedures

PRO: Lucity comes with many pre-defined stored procedures

CON: Lucity comes with many pre-defined stored procedures

## Stored Procedures

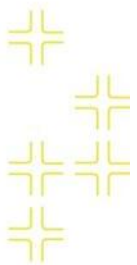
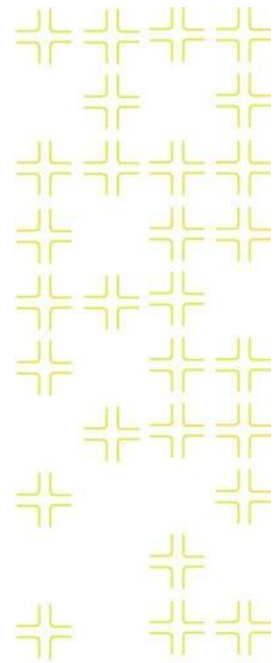
- 1  System Stored Procedures
- 1  `dbo.DSRSD_SPADDBACKFLOWMANUFACTURER`
- 1  `dbo.DSRSD_SPAddLocBkfAssocPairs`
- 1  `dbo.DSRSD_SPAddLocDevAssocPairs`
- 1  `dbo.DSRSD_SPADDMETERLOCATION`
- 1  `dbo.DSRSD_SPADDMSR`
- 1  `dbo.DSRSD_SPADDWTBKFLOW`
- 1  `dbo.DSRSD_SPADDWTMLSTAT`
- 1  `dbo.DSRSD_SPUUpdateMeterDevice`
- 1  `dbo.DSRSD_SPUUpdateMeterLocation`



# Sample stored procedure

```
CREATE PROCEDURE [dbo].[DSRSD_SPADDBACKFLOWMANUFACTURER]
    @DESC
    VARCHAR(50)
    --,@NEWDEVELOPERID      INT OUTPUT
AS
BEGIN
    SET NOCOUNT ON;
    DECLARE @MAXCODE INT = 0
    set @MAXCODE = (select MAX(Code) from WTFIELDSDESC WHERE id = 3298)
    set @MAXCODE = @MAXCODE + 1

    INSERT INTO [Gbawater].[dbo].[WTFIELDSDESC]
        ([ID]
        ,[Code]
        ,[Description]
        ,[UserDefined])
    VALUES
        (3298
        ,@MAXCODE
        ,@DESC
        ,1)
```















Meeting

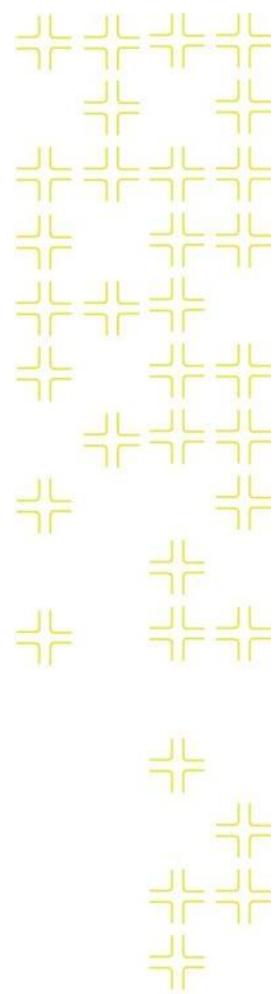
# Custom Functions

## | Functions

Folder Table-valued Functions

Folder Scalar-valued Functions

- +   dbo.DSRSD\_udfFODREQDATEDIFF
- +   dbo.GetBkfDevIDForNumber
- +   **dbo.GetCodeForDesc**
- +   dbo.GetMeterDevIDForNumber
- +   dbo.GetMeterLocIDForNumber
- +   dbo.GetMDSMDevStatus



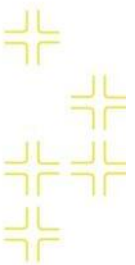
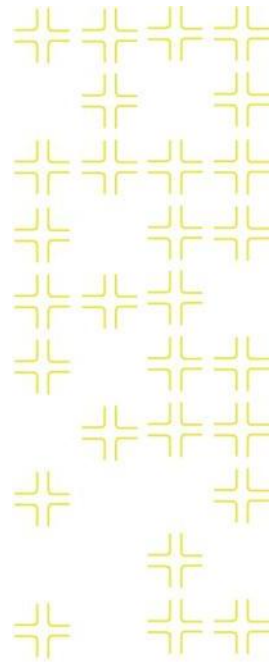
# Sample function

Goal: for a string “Highland Homes” -- give back the numeric code for the drop down list entry – AKA – magic decoder ring

```
CREATE FUNCTION [dbo].[GetCodeForDesc] (@description
VARCHAR(50), @id int)
RETURNS SMALLINT
WITH EXECUTE AS CALLER
AS
BEGIN
    declare @Tempvalue float;

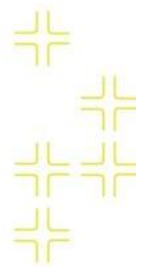
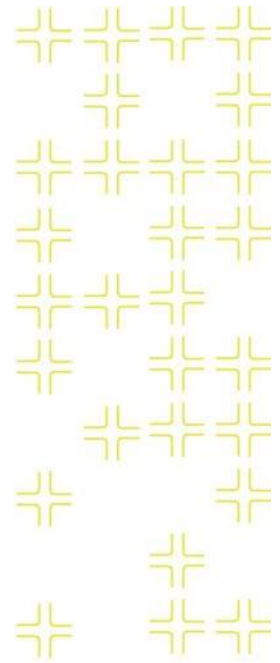
    Set @Tempvalue =
    (
        SELECT code FROM WTFIELDSDESC W
WHERE ltrim(rtrim(DESCRIPTION)) = ltrim(rtrim(@description)) AND
ID = @id
    )

return (@Tempvalue);
End;
```



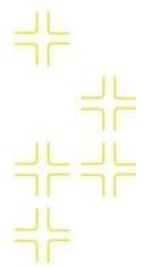
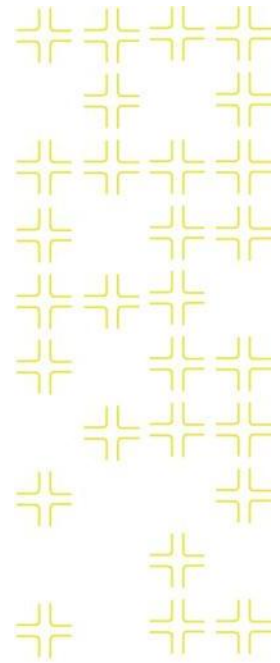
Meeting

# Reports - demo and detail



Poseidon

# *DEMO Reports*



Meeting

# Meter set request status

Programming tasks Suggested Sites Get more Add-ons

1 of 2 ? 100% Find | Next

## Meter Set Request Status

MSR ID	STATUS	FEES PD	BUILDER	PROJECT	SERVICE TYPE	METER SIZE	PRESSURE ZONE
201304041430	MSR Completed	True	Whiting Turner	Dicks Sporting Goods	Commercial	1.5" PD	1
201304090849	MSR Completed	True	Essex Property Trust	Winstar Essex	Commercial	3" Omni C2	1
201304090853	MSR Completed	True	Essex Property Trust	Winstar Essex	Commercial	2" Omni C2	1
201304160955	MSR Completed	True	KB Home Bay Area	Arroyo Vista	Commercial	1.5" PD	1
201304161004	MSR Completed	True	KB Home Bay Area	Arroyo Vista	Commercial	5/8"	1
201304240907	MSR Completed	True	Dublin Unified School District	Central Dublin RW project	Irrigation Recycled	3" Omni C2	1
201304250810	MSR Completed	True	D. R. Horton	Sorrento East	Irrigation Potable	1"	20
201304250833	MSR Completed	True	Standard Pacific Homes - East	Sorrento East	Fireline	5/8" Detector	20

# Meter set request master list - note

Home > Meter Set Request Master List

1 of 2 ? 100% Find | Next

## Meter Set Request Master List

8/21/2013 4:19:50 PM

Page: 1

Meter Set Request ID: [201304041430](#) Status: MSR Completed

### Construction Inspector

---

Builder: Whiting Turner

Project: Dicks Sporting Goods

Service Type: Commercial

Meter Size: 1.5" PD

Pressure Zone: 1

Primary Backflow Size: 1.5

Bypass Backflow Size:

Primary Backflow Type: RPPA

Bypass Backflow Type:

### Engineering

Fees Paid: True

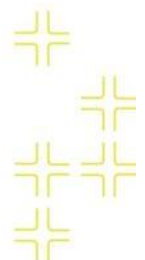
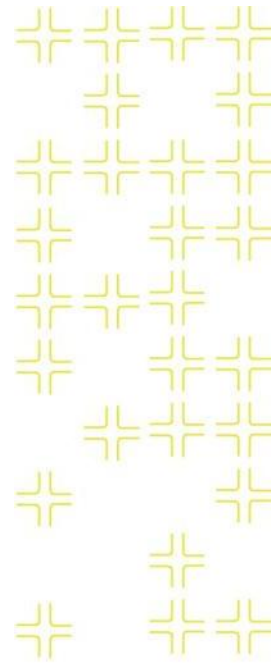
### Field Operations

---

Meter Number: 74687341 Firefly Number: none

### Customer Service

EDEN Account Number:



Meeting



# Service level agreement report – automated email delivery

Field operations team has 48 business hours from the initial request to physically setting the meter in the ground. Field operations supervisory personnel need to know if a request has slipped thru the cracks.

Home > FOD 48 Hour Meter Set Request

1 of 1 100% Find | Next

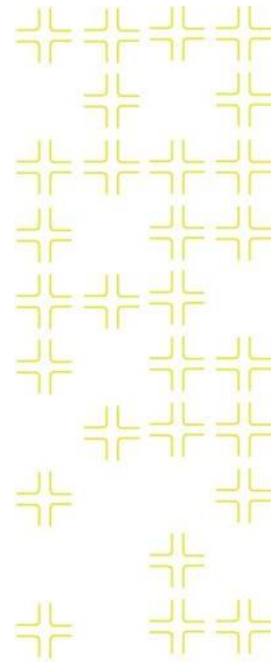
## FOD 48 Hour Meter Set Request

8/21/2013 4:19:50 PM

Page: 1

Meter Set Request ID	Requested Date
----------------------	----------------

These meter set requests have extended beyond the 48 business hour service level agreement between Field Operations and Customer Service.



# Service level agreement report - business rule enforcement function

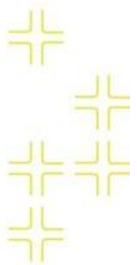
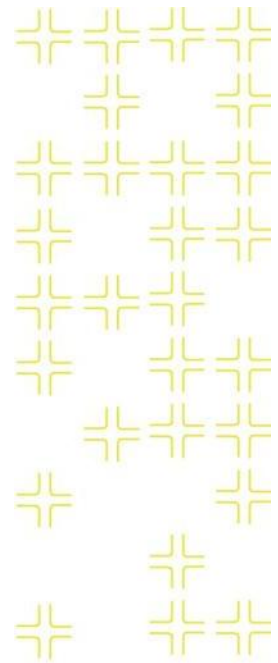
```
dbo.DSRSD_udfFODREQDATEDIFF(MT_MOD_DT, GETDATE())
```

- + If the meter set request begins on Friday, then the request is not overdue until 48 business hours, or the next Wednesday.
- + For any meter request date (Sun/Mon/Tues etc) give back whether the request is currently on schedule or overdue

# Service Level Agreement - function internals 1

```
dbo.DSRSD_udfFODREQDATEDIFF(MT_MOD_DT, GETDATE())
```

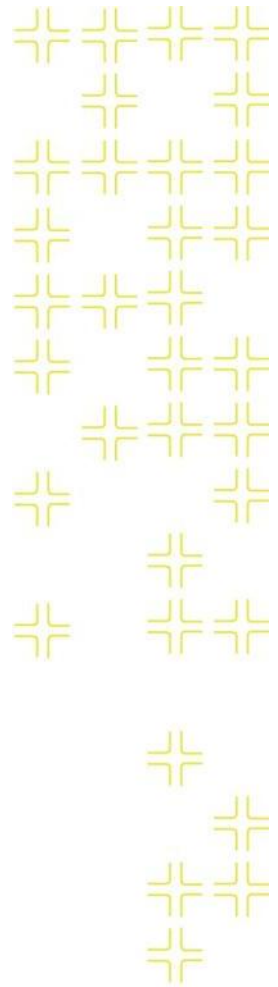
```
+ IF DATEDIFF(dd, @FODReqDate, @CurrentDate ) > 5
+ BEGIN
+ RETURN 'OVERDUE'
+ END
+
+ -- meter set request will NOT occur on saturday or sunday
+ -- but if it does...kick it up by one or two days day
+ -- the the fod
+ IF DATEPART(DW, @FODReqDate) = 7
+ BEGIN
+ SET @FODReqDate = DATEADD(DAY, 2, @FODReqDate)
+ END
+ IF DATEPART(DW, @FODReqDate) = 1
+ BEGIN
+ SET @FODReqDate = DATEADD(DAY, 1, @FODReqDate)
+ END
+
+ DECLARE @CurrentDayOfWeek TINYINT = 0
+ SET @CurrentDayOfWeek = DATEPART(DW, @CurrentDate)
+
+ --fod req will never be sunday due to code just above
+
+ --fod req on mon
+ IF DATEPART(DW, @FODReqDate) = 2 (3,4,5,6.....)
```



Meeting

# Service Level Agreement - function internals 2

```
+ DECLARE @CurrentDayOfWeek          TINYINT = 0
+ SET @CurrentDayOfWeek = DATEPART(DW, @CurrentDate)
+ --fod req on mon
+ IF DATEPART(DW, @FODReqDate) = 2
+ SET @res = CASE @CurrentDayOfWeek
+ WHEN 1 THEN 'OVERDUE' --sun - should never get here
+ WHEN 2 THEN 'OK' --mon
+ WHEN 3 THEN 'OK' --tue
+ WHEN 4 THEN 'OK' --wed
+ WHEN 5 THEN 'OVERDUE' --thur
+ WHEN 6 THEN 'OVERDUE' --fri
+ WHEN 7 THEN 'OVERDUE' --sat
+ ELSE
+ 'OVERDUE' -- negative outcome on default
+ END
```

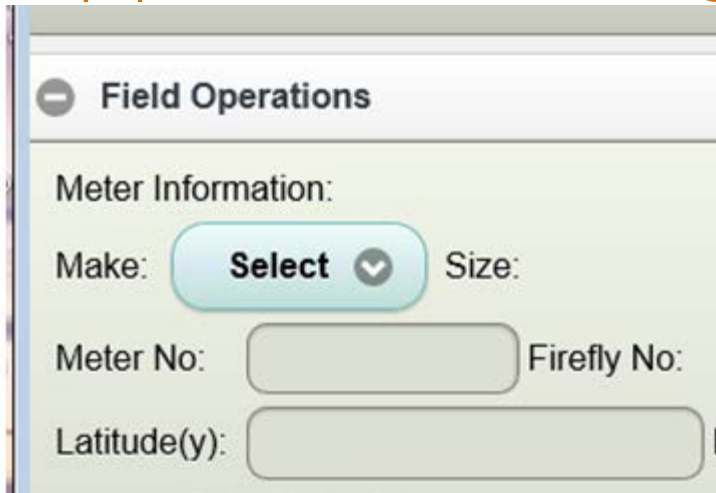


# Coding details - ASP markup

The screenshot shows a web form titled "Field Operations" with a minus sign icon. Under the heading "Meter Information:", there are several input fields. The "Make:" field is a dropdown menu with "Select" and a downward arrow. The "Size:" field is a text input. The "Meter No:" and "Firefly No:" fields are text inputs. The "Latitude(y):" field is a text input with a "L" character to its right.

```
+ <td>
+     <asp:HiddenField ID="saveMT_ID" runat="server" />
+     <asp:Button ID="btnsearchmeterlocation" runat="server"
+ CausesValidation="False"
+     onclick="btnsearchmeterlocation_Click" Text="Search"
+ UseSubmitBehavior="False" />
+ </td>
```

# Web application coding - JQUERY



The screenshot shows a web application interface with a title bar that says "Field Operations" with a minus sign icon. Below the title bar, there is a section labeled "Meter Information:". Under this section, there are several input fields: "Make:" followed by a dropdown menu with "Select" and a downward arrow; "Size:" followed by an empty input field; "Meter No:" followed by an empty input field; "Firefly No:" followed by an empty input field; and "Latitude(y):" followed by an empty input field.

PRO: TRIMS UI ON ANY BROWSER / ANY DEVICE  
CON: LOOKS GOOD BUT AVOID AT ALL COSTS

```
$('#a[id="btnadd"]').attr("data-icon", "plus");  
$('#a[id="btnsearch"]').attr("data-icon", "search");  
$('#a[id="btnsubmit"]').attr("data-icon", "forward");  
$('#a[id="btncancel"]').attr("data-icon", "delete");  
$('#a[id="btnadddevelopersubmit"]').attr("data-icon", "plus");
```

# C# application code behind - ~8K lines of

code

```
// coded sul56 here
{
    if ((meterdevicelongitude.Text.Length > 3) && (meterdevicelongitude.Text.IndexOf('.')
> 0))
    {
        if (meterdevicelongitude.Text.Substring(0, 5) != "-121.")
        {
            WebMsgBox.Show("46 Longitude must start with 37.");
            returncode = false;
        }
        string holdvalue = meterdevicelongitude.Text;
        //string hold6chartorightofdecimal = "";
        //int locationofperiod = holdvalue.IndexOf('.');
        //hold6chartorightofdecimal = holdvalue.Substring(locationofperiod, 6);
        //if (hold6chartorightofdecimal.Length != 6)
        if (holdvalue.Length != 11)
        {
            WebMsgBox.Show("47 Longitude must have 6 decimal positions.");
            returncode = false;
        }
    }
    else
    {
        WebMsgBox.Show("48 Longitude must start with -121 and have a decimal point.");
        returncode = false;
    }
}
```

# C# application code to add record to Lucity DB

```
+      SqlConnection conn = new SqlConnection();
+      conn.ConnectionString = GlobalVar.gbacommwriter;
+      SqlCommand cmd = new SqlCommand();
+      cmd.CommandText = "DSRSD_SPADDDEVELOPER";
+      cmd.CommandType = CommandType.StoredProcedure;

+      SqlParameter parmRetVal = new SqlParameter("@NEWDEVELOPERID", SqlDbType.Int);
+      parmRetVal.Direction = ParameterDirection.Output;
+      cmd.Parameters.Add(parmRetVal);

+      cmd.Connection = conn;
+      conn.Open();
+      try
+      {
+          newdevid = (int)cmd.ExecuteScalar();
+      }
+      catch (SqlException e)
+      {
+          ShowException(e);
+      }
+      conn.Close();
+      SetDebugStatusText("OUT AddDeveloperToDB");
+      return newdevid;
```

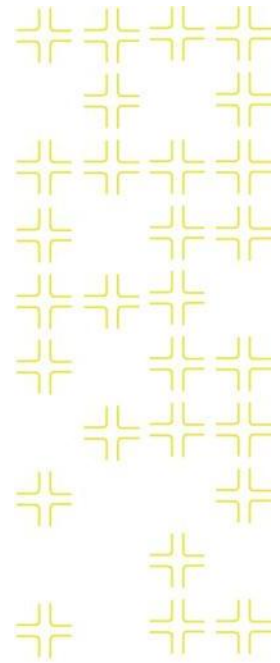


## Summary - what went wrong

- + JQuery technology in early life cycle
- + Dup dropdown list data killed application
- + Confusion on XY for empty meter box
- + Renaming fields on screen – bad
- + Associated record SP took 8 hours
- + Awkward mapping DB to UI
- + Needed more unit/system testing
- + Staff split up on too many other projects
- + Tablets not favored device for all
- + Too many auxiliary MS Access DBs

# Summary – what went right

- + Moved business process from paper to web
- + Provided tablet support to field personnel
- + Provided management reporting
- + Shortened process execution time
- + Improved data integrity / auditing
- + Reduce costs
- + Provided work for IT Analyst



Meeting

# Poseidon project - path forward

+ Adding residential meter sets (batch)

