

Efficiency through Automation

An Attempt to Save Time



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Introduction

- Research & GIS Division at the Office of Planning and Zoning provides regular updates on Sub-Division and Site Development activities in the County.
- County regularly receives new Sub Division requests, which requires adding new Sub Division polygons to the existing GIS layer
- Based on the approval process in the County the status of Sub Divisions also changes regularly.
- New updates of the layer are published (Maps and Tables) and used by other Departments and Citizens.

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Business Need:

- Update County's sub-division layer with the new activities (new submission, approval status etc.) every month

Process involved:

- Querying multiple databases, checking/updating GIS data and creating reports
- Being a routine responsibility - this process if automated, would make sense both in terms of efficiency and reduced staff hours.
- Development of an "Add-in" for Desktop seemed to be the answer

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Work Flow:

- Execute queries in the County's Main Frame Database environment to find the project numbers from the recently added/updated records for new or approved Sub Divisions
- Execute queries to find tax account information for the project numbers
- Find the property ID(s) for those project numbers
- Find the properties related to the projects
- Edit the parcels (if needed) and add them to the Sub Division layer
- Make necessary updates to the attribute table
- Update Sub Division maps and publish them

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Work Flow:

QMF for Windows - [Production Database: submit_Nov2014]

File Edit Query Results View Window Help

Run command: at server: Production Database

@Arial Unicode MS 10 Western B I A As is 2

1	2	3	4	5	6	7	8
SUBDIV NBR	PROJECT NBR	SUBDIV NAME	PROCESS TYPE	PHASE	ACTVTY STATUS	APRVD DTE	SUB D1
1	C20140050	STAPELS CORNER / HIGH'S (MODIFICATION PROCESS)	NC	NEW	ACTIVE		2014-11
2	C20140049	ZNAMIROWSKI FAMILY HOLDINGS, LLC PROPERTY	PP	NEW	ACTIVE		2014-11
3	C20140019	FORTY EAST ORDNANCE ROAD	PP	NEW	ACTIVE		2014-11
4	C20140017	GODDARD SCHOOL, PHASE 2	NC	NEW	ACTIVE		2014-11
5	C20140053	ANNAPOLIS PLAZA, LOT 3R	PP	NEW	ACTIVE		2014-11
6	C20140052	BRIGHTVIEW ANNAPOLIS (MODIFICATION)	NC	NEW	ACTIVE		2014-11
7	C20140051	AAA CAR CARE CENTER - GAMBRILLS	PP	NEW	ACTIVE		2014-11
8	S1980025	P20140105 WILSON COMMERCIAL INDUSTRIAL COMPLEX, LOT 3 (AMENDED)	NF	NEW	ACTIVE		2014-11
9	S1987341	P20140099 THOMPSON FARMS, LOTS 43-44 & 51-52	NS	NEW	ACTIVE		2014-11
10	S1987367	P20140006 STROMBERG PROPERTY - RESUBDIVISION OF RESIDUE LOT	NF	NEW	ACTIVE		2014-11
11	S1991270	P20140108 O'NEILL, MABEL/SPRINGER-RESIDUE, LOTS 8+9 REV (AMENDED)	NF	NEW	ACTIVE		2014-11
12	S1994054	P20140100 LONGSHOREMANS LOCAL, LOTS 1RR & OS, BLK D (AMENDED PLAT)	NF	NEW	ACTIVE		2014-11
13	S1997029	P20140107 WALLACE MANOR, LOT G-2BR (AMENDED PLAT)	NF	NEW	ACTIVE		2014-11
14	S2004064	P20140072 FERRY POINT O/T MAGOTHY, LOT 9	NM	NEW	ACTIVE		2014-11
15	S2006002	P20140103 TWO RIVERS, THE HIGHLANDS AT (AGE RESTR) (AMENDED PLAT)	NF	NEW	ACTIVE		2014-11
16	S2007020	P20140102 CEDAR POINT (AMENDED PLAT)	NF	NEW	ACTIVE		2014-11
17	S2007023	P20140101 WEDGEWOOD FOREST, PL. 1. RESUB. 735 AC	NS	NEW	ACTIVE		2014-11
18	S2014022	P20140083 MEYER ESTATE, LOT 5	NF	NEW	ACTIVE		2014-11
19	S2014028	P20140104 HOPKINS, JAMES F. PROPERTY	NS	NEW	ACTIVE		2014-11
20	S2014029	P20140106 EIGHTY FOUR (84) HOYLE LANE	NS	NEW	ACTIVE		2014-11

Result Set

- SUBDIV_NBR
- PROJECT_NBR
- SUBDIV_NAME
- PROCESS_TYPE
- PHASE
- ACTVTY_STATUS
- APRVD_DTE
- SUBMIT_DTE
- TAX_MAP
- TAX_BLOCK
- TAX_PARCEL
- TERMINATE_DTE
- APRVL_WTHLD_DTE

Layout

- Top Groups
- Side Groups
- Data Columns
 - SUBDIV_NBR
 - PROJECT_NBR
 - SUBDIV_NAME
 - PROCESS_TYPE
 - PHASE
 - ACTVTY_STATUS
 - APRVD_DTE
 - SUBMIT_DTE
 - TAX_MAP
 - TAX_BLOCK
 - TAX_PARCEL
 - TERMINATE_DTE
 - APRVL_WTHLD_DTE

Find all the new Sub Division projects for the previous month from the Mainframe

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Work Flow:

```
1 - Default 3270 (aaco_prod_lpar)
File Edit Transfer Fonts Options Tools View Window Help
MST033C SITE PLAN TAX ACCOUNT INFORMATION SCREEN 12/01/2014

SITE# C2014-0049 00 PP
BLOCK TAX-ACCOUNT-# SITE NAME ZNAMIROWSKI FAMILY HOLDINGS,
NUMBER OF ACCOUNTS MAP BLK PARCEL
TAX-ACCOUNT-# MAP BLK PARCELS TAX-ACCOUNT-# MAP BLK PARCELS
5000-0212-9400 01 20 185

CLR-MENU PF1-PRIM PF3-ACTIVITY PF4-COMM PF5-CNTR
PF8-DEVT PF9-FEE PF10-WVR PF11-FW PF12-BK
```

Find the tax account(s) related to new Sub Division project

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Work Flow:

Table

sde.OPZ.ICPF_M

OBJECTID *	ACCOUNT_NO	PIN	PROP_DESC1	PROP_DESC2	PROP
1	800090229633	810010099000000000000003A	LT 3A	6343 JOHNS LN	KASULKE PRO
2	266790014147	440180260000000001004REC00	4.7225 ACS SC 1 PL 4	RECREATION AREA	ROLLING HILL
3	266790015758	440180262000000001006FP000	1.2823 ACS SC 1 PL 6	FLOOD PLAINS	ROLLING HILL
4	267103917950	44024024900000000001000206	IMPSLT 206 PL 10	619 WAYWARD DR	ROLLING KNO
5	297790052942	44014027500000000000000004	IMPSPT LT 4 OR 5.826 ACS	985 BRAMLEIGH LN	WORTHINGTC
6	287790102006	44011030800000000000000018	IMPSLT 18	1212 MANSION WOODS RD	THE VINEYARI
7	267102888511	44024024900000000001000200	IMPSLT 200 PL 10	2196 THOREAU CT	ROLLING KNO
8	285290058968	44021008200000000000300018	IMPSLT 18 PL 3	1912 MACKIEBETH CT	TWIN HILLS
9	242506587705	44006019600000000000000002	IMPSLT 2	1762 DUNTON RD	DUNTONS ADI
10	200009133751	44022009200000000000000004	IMPSLT A OR 1.27 ACRES	1913 CROWNSVILLE RD	GAMBRILLS
11	263490093163	44019013300000000200000025	IMPSLT 25 SC 2	2008 HAVERFORD DR	ANNAPOLIS PF
12	234790077414	44022028000000000200000005	IMPSLT 5 SC 2	109 YELLOWTWIG LN	GREENWOOD
13	256190026687	44020027200000000300200045	IMPSLT 45 SC 3 PL 2	599 PINEDALE DR	NORTH RIVER
14	267190009553	44018025200000000001200001	IMPSLT 1 PL 12	616 MARTI LN	ROLLING KNO
15	285290058970	44021008200000000000300020	IMPSLT 20 PL 3	1916 MACKIEBETH CT	TWIN HILLS
16	267109367450	4401802130000000000600127	IMPSLT 127 PL 6	1978 GLENCREST LN	ROLLING KNO
17	212790109611	44022029600000000000000005	0.9795 ACRE	OPEN SPACE	BROAD OAK E
18	266790014143	44018026000000000100400012	IMPSLT 12 SC 1 PL 4	520 CORBIN PKWY	ROLLING HILL
19	515190061000	05014011000000000100100000	IMPSU 302 SC1 BLD1 PH 20	6701 WHITE WATER CT	CROMWELL F
20	264690035178	44020006700000000300000067	IMPSLT 67 SC 3	1921 CHAPARRALL CT	THE RIDGES
21	256190026367	44020026900000000200200026	IMPSLT 26 SC 2 PL 2	2001 TUNDRA CT	NORTH RIVER
22	287790102014	44011030800000000000000008	0.227 AC	PRIVATE R/W "B"	THE VINEYARI
23	267109938660	44018021400000000000700135	IMPSLT 135 PL 7	570 WAYWARD DR	ROLLING KNO
24	297790052945	44014027500000000000000002	IMPSLT 2	973 BRAMLEIGH LN	WORTHINGTC
25	263490093204	44019013300000000200000066	IMPSLT 66 SC 2	1510 CHELTENHAM CT E	ANNAPOLIS PF
26	212790109607	44022029600000000000000005	IMPSLT 5	100 NEEDLE PINE LN	BROAD OAK E
27	857990227964	81021000800330000000600005	LT 5 BK 33	7003 MYRTLE AVE	NORTH BEACH
28	285290058969	44021008200000000000300019	IMPSLT 19 PL 3	1914 MACKIEBETH CT	TWIN HILLS
29	267109195875	44018024800000000000900157	IMPSLT 157 PL 9	608 WAYWARD DR	ROLLING KNO

(0 out of *2000 Selected)

sde.OPZ.ICPF_M

sde.OPZ.DOCUMENTS_M

sde.OPZ.ICPF_M

Find the Property ID for each tax account from a stand alone table in SDE

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Work Flow:

Method: Create a new selection

OBJECTID
PIN
STATE_MAP_NO
STATE_MAP_SUF
STATE_BLOCK

Is Get Unique Values Go To:

SELECT * FROM sde.OPZ_PARCEL_M WHERE:
PIN like '%440180260%'

OBJECTID *	PIN	STATE_MAP_NO	STATE_MAP_SUF	STATE_BLOCK	STA
2123	440180260000000100400009	44	0	18	0261
4585	440180260000000100400008	44	0	18	0261
6390	440180260000000100400012	44	0	18	0261
6418	440180260000000100400017	44	0	18	0261
218924	440180260000000100400010	44	0	18	0261
218978	440180260000000100400013	44	0	18	0261
218979	44018026000000010040014A	44	0	18	0261
218980	4401802600000001004REC00	44	0	18	0261
219753	4401802600000001004PS000	44	0	18	0261
215121	4401802600000001004014BR	44	0	18	0261
215122	4401802600000001004PS001	44	0	18	0261

Query Parcel layer with the property ID (PIN) to find the parcel(s) for new Sub Divisions

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Need of Automation:

- A routine task
- Involves simple but tedious processes
- Repetitive work that does NOT need smart analysis
- Time consuming
- Would save staff hours if automated

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All we needed:

- A mechanism to have the table containing all the new Sub Divisions (submitted within the previous month) to be added to the editing environment (.mxd)
- Detect the selected new Sub Division records
- Find the relevant tax information and property ID
- Zoom to the related property for a Sub Division which could be added directly or after some edits to the Sub Division Layer

Considerations:

- Can be done in house without a lot of programming
- Can be done quickly and easily shared

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Creating Add-in

- The ArcGIS desktop Add-in provided it all:
 - Easy to build and share
 - Simple Framework – no installation program, no registration, do not require administrative rights
 - Optimized for common scenarios i.e. Buttons, Menus, Combo Boxes etc. can easily be implemented in ArcGIS environment.
 - ESRI provides integrated development environment (IDE) templates for building and deploying these custom UI elements

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Programming:

- Stored Procedure in SQL Server to get the records from Mainframe database
- An extension, a Button, and a dockable window were created
- Function to execute the stored procedure, which would be called during the loading of the extension
- A few functions to make the necessary queries to find the selected new records, project numbers, relevant tax and property IDs
- An Interface that shows the selected project, a button to load new selections and a button that zooms to the parcel(s) when clicked.

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Programming:

Extension

- Execute stored procedure on start up, refresh tables

Button

- Open/close the dockable window

Dockable window

- Show the selected projects in a **Text Box** (on load or on click)
- A **button** to load new selections
- A **button** to zoom to a parcel

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Programming:

ArcGIS Add-Ins Wizard

Available Add-in Components


Select an Add-in component to be added to the project and modify its properties.

Add-in Components

- Button
- Tool
- Construction Tool
- Combo Box
- Multi-Item
- Extension
- Editor Extension
- Dockable Window

Class Name:

Caption:

Image: 

Category:

On Demand:

Tooltip:

Description:

Extension, Button and Dockable Window were added using ArcGIS Add-Ins Wizard

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Programming:



A dataset and a TableAdapter were created using built in Visual Studio Functionalities & Tools to communicate with our SQL Server Database and execute the Stored Procedure

```
private void execSP()
{
    LIMSDatasetTableAdapters.QueriesTableAdapter tblAdapter = new LIMSDatasetTableAdapters.QueriesTableAdapter();
    int rowsAffected = tblAdapter.SubmittedSubDiv();
}
```

A function executes the Stored Procedure using the TableAdapter. The Function is called when NewDocument event (ArcMap.Events.NewDocument) is fired, i.e. during the opening of the associated .MXD file. The Event is handled during the when the Extension is loaded (i.e. when OnStartup() method is called) .

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Programming:



The Dockable window is composed of a Text Box and two Buttons

- ITableSelection and Iselectionset Interfaces were used to get selected project numbers from the table with new Sub Division info.
- IQueryFilter, Icursor Interfaces were used to query through different tables to find the tax accounts, Property IDs and finally the Parcel Polygons representing the selected new Sub Divisions.
- Finally a function is called to zoom (by assigning the extent of the selected polygon to map's extent) to the selected parcel when the "Zoom" button is clicked.

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Implementation:

The screenshot displays the ArcGIS desktop environment. The 'Extensions' pane on the left shows the 'Sub Division Extension' selected. The 'Sub Division Window' dialog is open, showing the 'Selected Project No: P20140099'. The 'Table' window displays the following data:

SUBDIV_NB	PROJECT_NB	SUBDIV_NAME	PROJ
C20140050		STAPELS CORNER / HIGH'S (MODIFICATION PROCESS)	NC
C20140049		ZNAMIROWSKI FAMILY HOLDINGS, LLC PROPERTY	PP
C20140019		FORTY EAST ORDNANCE ROAD	PP
C20140017		GODDARD SCHOOL, PHASE 2	NC
C20140053		ANNAPOLIS PLAZA, LOT 3R	PP
C20140052		BRIGHTVIEW ANNAPOLIS (MODIFICATION)	NC
C20140051		AAA CAR CARE CENTER - GAMBRILLS	PP
S1980025	P20140105	WILSON COMMERCIAL INDUSTRIAL COMPLEX, LOT 3 (AMENDED)	NF
S1987341	P20140099	THOMPSON FARMS, LOTS 43-44 & 51-52	NS
S1987367	P20140006	STROMBERG PROPERTY - RESUBDIVISION OF RESIDUE LOT	NF
S1991270	P20140108	O'NEILL, MABEL / SPRINGER-RESIDUE, LOTS 8+9 REV (AMENDED)	NF
S1994054	P20140100	LONGSHOREMANS LOCAL, LOTS 1RR & OS, BLK D (AMENDED PLAT)	NF
S1997029	P20140107	WALLACE MANOR, LOT G-2BR (AMENDED PLAT)	NF
S2004064	P20140072	FERRY POINT O/T MAGOOTHY, LOT 9	NM
S2005002	P20140103	THE BIRCHES, THE WISLANDS AT (ACE REST) (AMENDED PLAT)	NF

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Thank You !!!