

# Revaluing Property in St Vincent and the Grenadines using GIS



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- St Vincent and The Grenadines
- Background
- Initial Stages
- GIS Data Work Flow
- Field work
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- Web GIS
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- Conclusions



# St Vincent and the Grenadines



# St Vincent and the Grenadines

- St Vincent and the Grenadines are in the Eastern Caribbean
- Population of 120,000 scattered across 30 islands

## St Vincent

## Grenadines

- Bequia
- Mustique
- Canouan
- Mayreau
- Union Island
- Palm Island
- Petit St. Vincent



# St Vincent and the Grenadines



*A beach in Tobago Cays*

- St Vincent and The Grenadines
- **Background**
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# Background

- SVG Government wanted to revalue property
- Across the whole of St Vincent & the Grenadines
- To implement a fairer tax system
- Required on Market Value (MV) basis
- Last national property re-valuations done in 1992 on ARV (Annual Rental Value) basis



# Background

- Property revaluation survey required on Market Value basis
- Implement a fairer tax system
- Capture all Property
- **Brown & Co LLP** have been contracted to design, implement and undertake the re-valuation
- Over 35,000 properties
- Halcrow provide GIS and data management support
- 2 previous projects
  - St Lucia 2004
  - St Vincent 2006





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# Initial Stages

- Define revaluation strategy
- Define GIS project plan
- Purchase of hardware and software
- Set-up of system
- Training of office and field staff in GIS and GPS data collection



# Initial Stages

- Gathering comparable sales data
- GIS data processing
- Existing dataset discovery
  - Recent property sales data
  - Electricity
  - Water supply records
  - Street names?
  - Existing maps (DOS)
  - Aerial imagery - Blom Simmons
  - Building outlines



# Initial Stages



*A Department of Overseas Surveys Map*

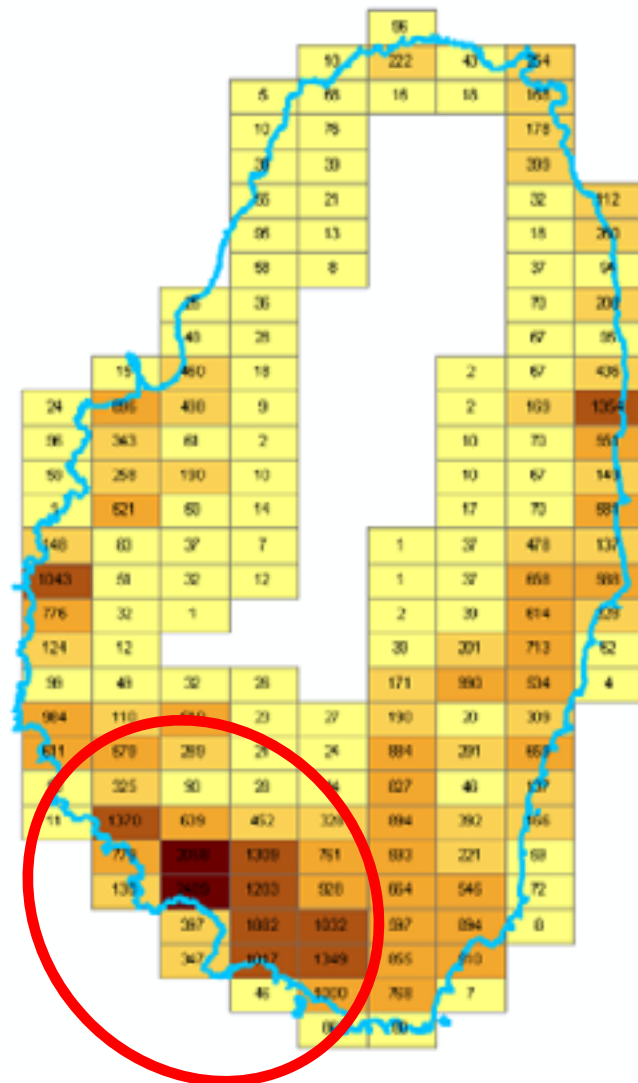


*Buildings digitised from Blom Aerofilms Aerial Imagery*

# Initial Stages

- GIS used in project planning stage
- Used to assess building density (number of buildings per map tile)

Building Count Per Map Sheet



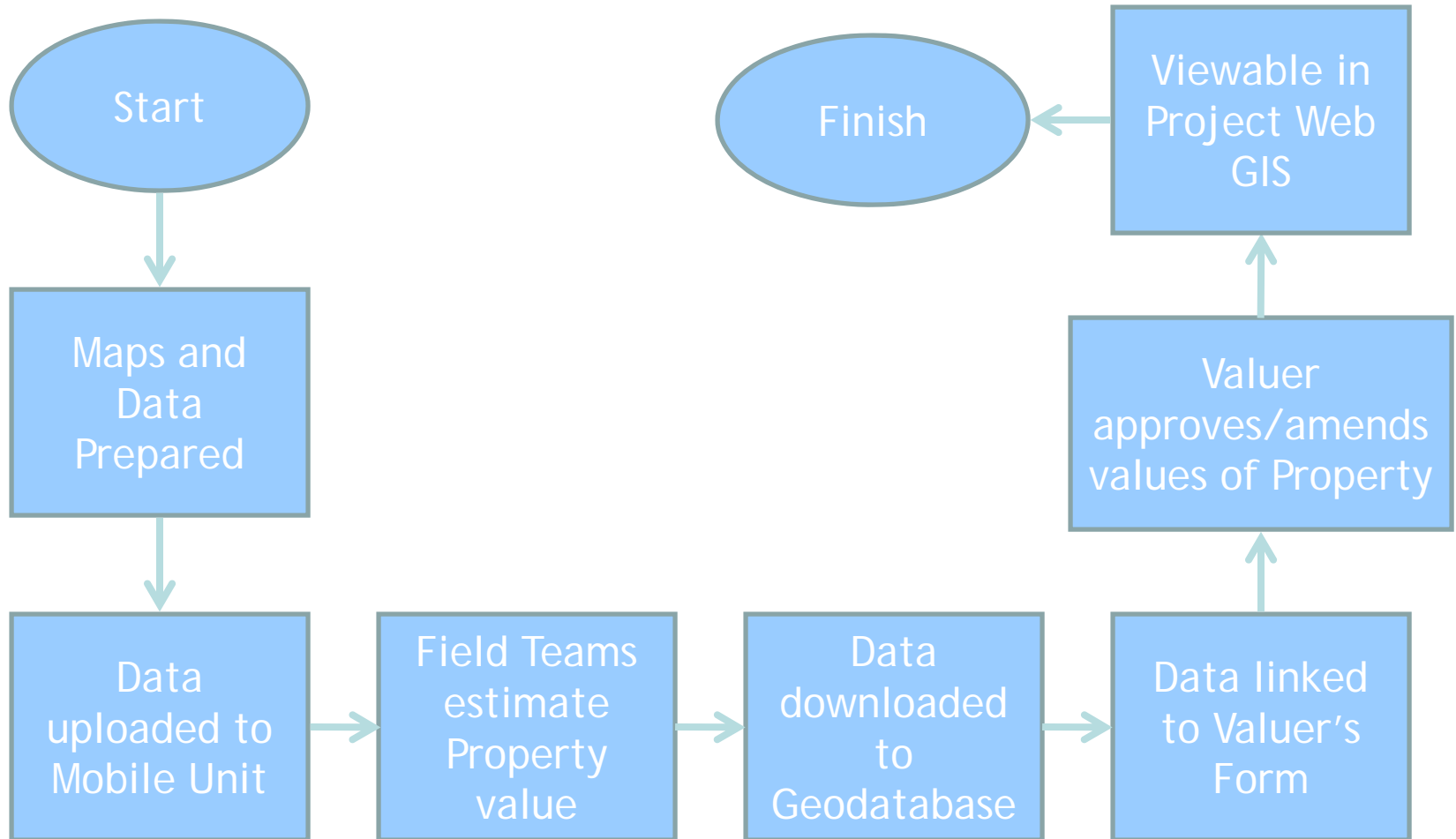


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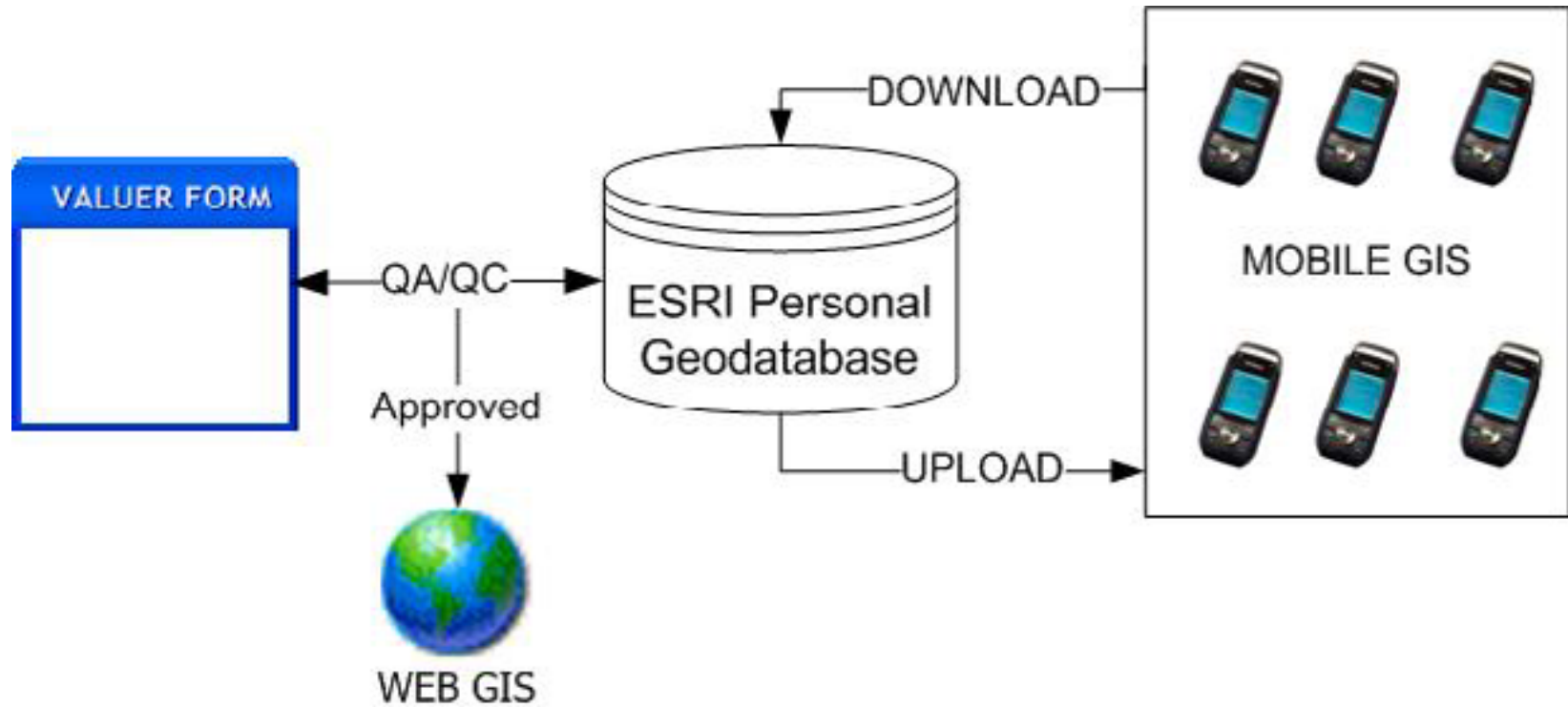




# GIS Data Workflow



# GIS Data Workflow



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# Field Work

- 18 months
- 9 teams of 2 persons
- 4 valuers/managers
- 35,000 properties plus
- Magellan Mobile Mapper 6 GPS
- ArcPad 7.1.1.12



# Field Work

- 20 properties per day per team = 4000 + per month
- Interview of house owner  
.....if available
- 60 data fields to collect
- Digital photographs captured  
and geo-referenced in the  
field
- Unique ID assigned to every  
property on capture



# Field Work

- Customised ArcPad Form
- VB Script customisation
- Drop-down lists used where possible
- Photograph tagged to the point



9156PP033340\_PHOTO\_LNK3\_20090925\_141212.jpg

**Property Plots**

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General Information...

Unit ID: SVGNRP

Team: AD ZC

Date of Survey: 26/09/2009

X: 491033.71 Y: 1456340.59

Building Type: Main

Property ID: 9156PP033340

Formal Notice Required?

ok X



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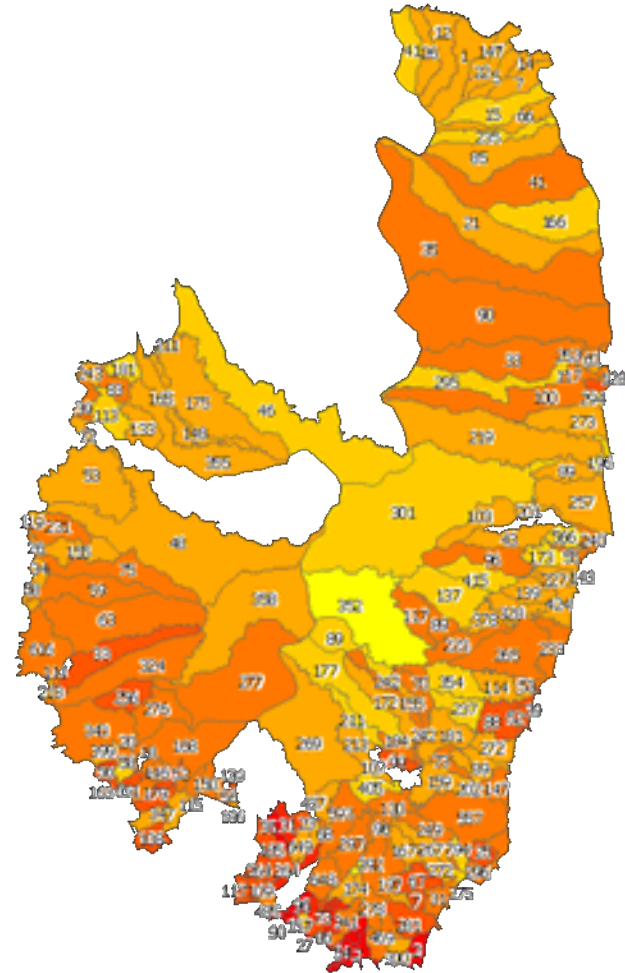
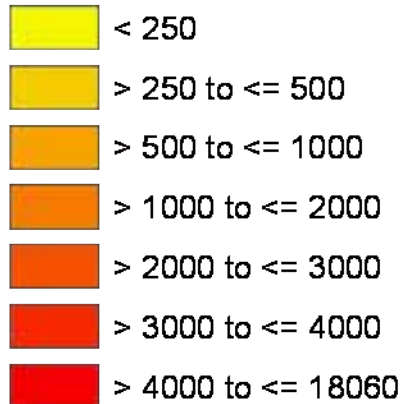
# Office Support

- 2 permanent Brown and Co staff; 1 consultant manager, Halcrow provide support from UK and St Vincent
- GIS data management
  - Daily field team data upload and download
  - Digitisation of other data sources
- Spatial analysis of data and map production using ArcGIS ArcMap
- Management of progress
- Valuation of properties

# Office Support

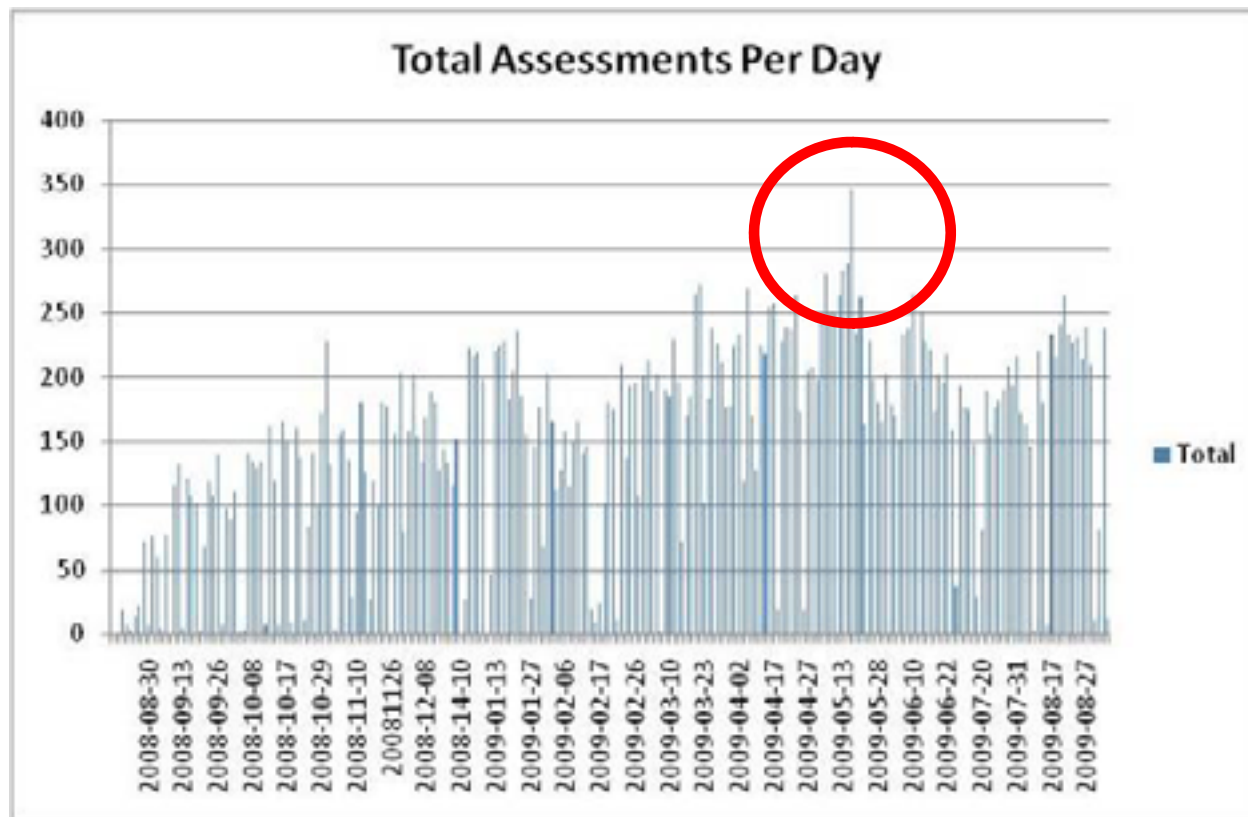
- Analysis of former ARV data
- Split by Tax Reference Boundaries

## Annual Rental Value Average (EC\$)



# Office Support

- Analysis of progress



# Valuation

- Valuations approved/signed off using MS Access Forms
- Linked directly to the personal Geodatabase
- Map and photographs linked together
- Enables the valuer to quality check the work before approving the value

The screenshot displays a complex web-based form for property valuation. The form is organized into several sections:

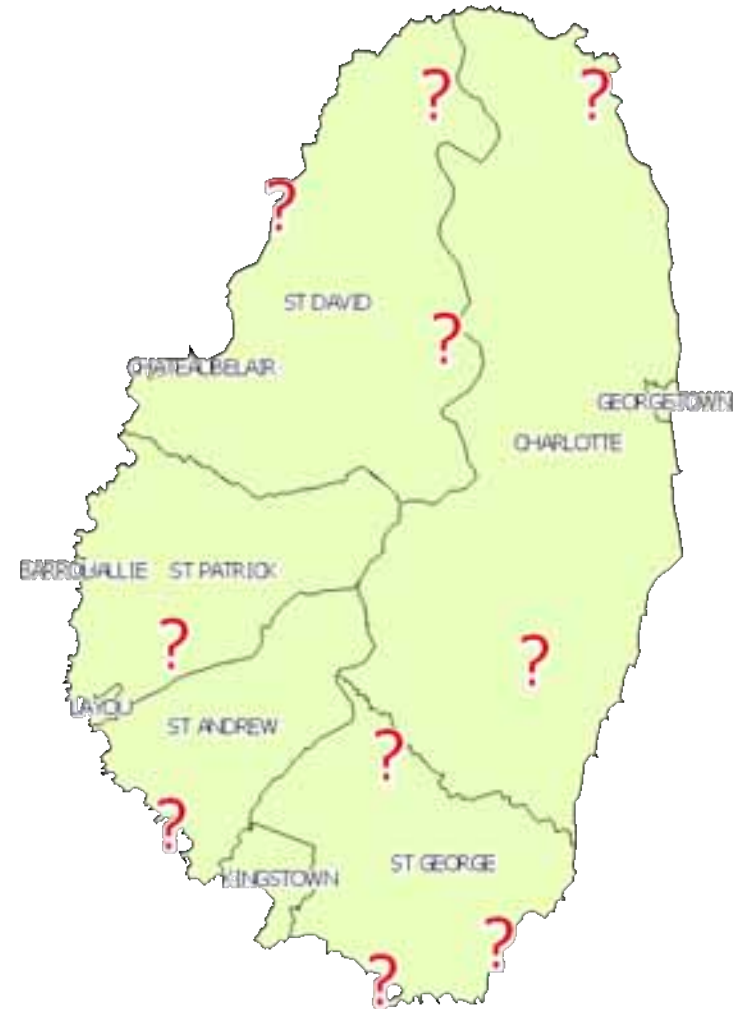
- Header Section:** Includes fields for 'LINKID' (05402016), 'Date/Time' (2004-07-14 02:41), 'Building ID' (100), 'X coord' (492076), 'Unit ID' (1001), 'Y coord' (147038), 'Inspected by' (JB), and 'State of Construction' (checked).
- Property Address Section:** Contains 'House name', 'Settlement' (Queen's Cross), 'District' (Queen's Cross), 'Parish' (St George), 'Tax No.' (33270), 'NRI no.', 'VAD No.', and 'Tenure Status' (Freehold).
- Owner Details Section:** Includes 'Owner' (Alan), 'Address' (Alan's Drive), 'Owner Present?' (checkbox), 'Phone No.' (01234 56789), 'Cell', 'Email', and 'Parish' (Queen's Cross).
- Occupier Details Section:** Includes 'Occupier', 'Occupier present?' (checkbox), 'House name', 'District', 'Parish', 'Phone No.', and 'Email'.
- Media Section:** Features two photo thumbnails labeled 'Photo 1' and 'Photo 2' with file paths like '05402016\_1\_1\NCTO\_LHR2\_200802\_11'. Below the photos is a map showing the property location with red outlines and a green dot.
- Valuation Section:** Includes a table for 'Components of Values' with columns for 'per square foot' and 'Total', and a 'Value's total' field.

*Form with map and photo of property*

# Without GIS and GPS?

- No overview of progress
- No way of linking information together
- Masses of data - but where?

---	---	---	-	-----	-	---	---
052	02	095	L	05202095L	B	300	602
052	02	096	L	05202096L	B	200	602
052	02	098	L	05202098L	B	300	602
052	02	094	L	05202094L	B	500	602
052	02	093	L	05202093L	B	100	602
052	02	153		05202153	B	400	101
052	02	092	L	05202092L	B	100	602
052	02	155		05202155	B	2400	101
052	02	197	L	05202197L	B	100	602
052	02	166		05202166	B	1000	101
052	02	163		05202163	B	3100	101
052	02	199	L	05202199L	B	100	602
052	02	091	L	05202091L	B	200	602
052	02	090	L	05202090L	B	200	602
052	02	089	L	05202089L	B	100	602
052	02	170		05202170	B	12000	110
052	02	164	L	05202164L	B	100	602
052	02	088	L	05202088L	B	100	602
052	02	087	L	05202087L	B	200	602
052	02	208	L	05202208L	B	100	602
052	02	086	L	05202086L	B	200	602





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# Web GIS

- Secure site - user name / password protected
- Access to data by project staff from anywhere in the world
- Built using ESRI ArcGIS JavaScript API



# Web GIS

- Provides an up-to-date map view of current progress
- Search for a property by owner/occupier name
- View property details and a photo

St Vincent and Grenadines  
National Revaluation Project GIS Viewer

Property Types

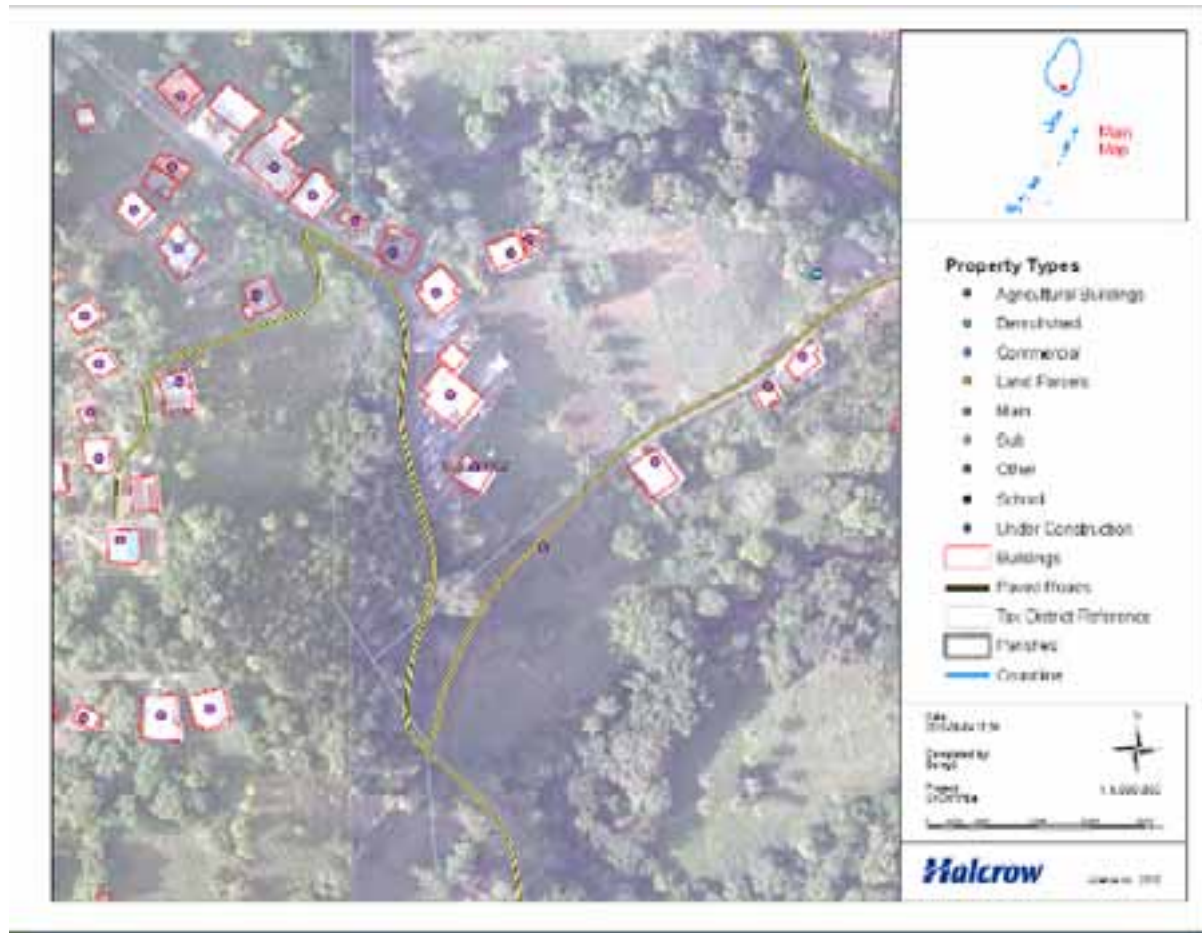
- Agricultural Buildings
- Demolished
- Commercial
- Land Parcel
- Man
- Sub
- Other
- School
- Under Construction
- Building
- Planned Roads
- Sea District Reference
- Parishes
- Coastline

Search for name: Henry

Property ID	Date Acq. Date	Plot Number	Value EC\$	Owner First Name	Owner Surname	Occupier First Name	Occupier Surname	Property Use	Photo
015490475	2000-06-27 15-10-00	386-5	70125	Henry	Michals	Vanal	Michals	Residential	
005490492	2000-06-27 14-04-00	386-8	57900	Joseph	Henry			Residential	
005490509	2000-06-29 14-20-00	386-0	60745	Isabelle	Henry			Residential	
005490578	2000-06-29 15-10-00	386-0	240150	Carl	Henry	Sharon	Henry	Residential	
005491079	2000-06-29 15-04-00	386-0	112700	Carl	Henry	Sharon	Henry	Residential	
005491730	2000-06-04 08-27-00	386-2	107630	Patrick	Wojtow	Henry	Cookson	Residential	
005491979	2000-06-13 05-10-02	386-1	63000	Bernard	Henry			Residential	
005491980	2000-06-13 05-05-04	386-1	7100	John	Henry			Residential	

# Web GIS

- The user can create a PDF Map of the area of interest



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# Challenges

- No house numbering and street addressing system
- Lack of up-to-date tax roll data
- Information exists in silos
- Culture of paper-based workflows leads to missing information
- VB Scripts in ArcPad!



# Successes

- The first island wide GIS field data capture project of all built property.
- St Vincent mainland property assessments nearly complete
- Successful training
  - ArcGIS to office staff
  - ArcPad and GPS to field staff.
- ESRI ArcGIS
  - Provides better coordination of data collection
  - Allows more efficient use of resources
  - Prevents duplicate data collection



# Conclusions

- GIS and GPS has allowed rapid data collection - over 25,000 properties visited in less than 12 months.
- Fairer tax system by market value will be achieved thanks to the innovative GIS data capture process
- Digital data capture prevents costly digitisation and allows easier recording and searching for data.
- GIS will enable the Inland Revenue department to manage the collection of property value data much more effectively.
- The Web GIS portal allows staff to quickly view survey progress and easily search for completed surveys

# Questions

- Contact
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  - GIS Analyst
  - Halcrow Group Limited
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- Charles Whitaker
  - Partner
  - Brown & Co LLP
  - caw@brown-co.com
  
- Article in Geo:Connexion Magazine  
October 2009