

Open Title: a Low Cost Tool for Inventorying Property Rights - Experiences from Ghana

Nigel EDMead, USA

Key words: Open Title, Paralegal Title, Ghana, ESRI

SUMMARY

As part of an ongoing program to formalize land rights of the urban poor in Ashaiman, Accra, Ghana, undertaken by Opportunity International, Corporate Initiatives Development Group, ESRI, Trimble, ILS and Sambus, an innovative program that uses low cost GIS software and a procedural methodology framed within the existing land law and prevailing regulations has been developed to issue schools with paralegal title as part of a loan product offered by the Opportunity International, a micro finance lender. The pilot project which commenced in 2007 has proved that sustainable GIS based technology can be used as part of the process of formalizing land rights for the urban poor. Open Title is an ESRI ArcGIS OEM offering which has been designed to support the capture and recordation of land rights and for the generation of paralegal titles. As part of the pilot program all 30 schools targeted have had their properties identified and mapped, through use of high resolution satellite imagery, GPS and field measurements supported by field investigation and neighbor testimonials. Data from the program is stored in Open Title. By developing a workflow driven approach to data collection, field surveyors can use Open Title to ingest GPS coordinates, use forms to record key parcel details and capture neighbor testimonials and generate a paralegal certificate of title all by selecting an appropriate workflow task. Installing a base station, which delivers 10 centimeter accuracy real time, has ensured that the Survey Department has been able to accept GPS technology as a viable tool for parcel mapping and meant a reduction in the time required to conduct a field survey from up to a day to 15 minutes.

Open Title: a Low Cost Tool for Inventorying Property Rights - Experiences from Ghana

Nigel EDMEAD, USA

1. INTRODUCTION

A GIS-Based pilot Title Registration and Microfinance Project in Ashaiman Ghana seeks to demonstrate the vital role that formalization of landownership can play in helping the poor take a crucial first step away from poverty. Focused on the Ashaiman area of Accra, the pilot is leveraging the latest low cost geospatial technologies to create a land titling process and GIS-based land records system where neither existed in the past.

The impetus for the pilot came from the Clinton Global Initiative (CGI) and is being implemented by Corporate Initiatives Development Group (CIDG), International Land Systems, Inc. (ILS), Opportunity International, Trimble Navigation, and ESRI/Sambus Ltd with each firm providing specialist expertise in microfinance, GPS and GIS and land registration and land recordation software. ILS is providing Open Title an ESRI OEM product based on its cadastral data management software MultiCadastre and its document management system ILS DSS to capture field testimonials as part of the field exercise.

Despite the benefits formalizing land ownership and the recognition that of land rights that accrue (and which are articulated in Hernando DeSoto's 'The Mystery of Capital') land titling and registration are often out of reach for most of the urban poor. The process itself may be too daunting for governments to implement in poverty-stricken areas where no property mapping has ever occurred. As a result, the capital remains locked in the land, the local economy suffers, and the poor have no way out of their poverty. As part of the Ashaiman pilot tools and procedures were implemented with the aim of lowering the overall costs of land rights recordation, expediting the production of titles (called paralegal titles) and unlocking capital as part of a micro loan offering to schools in the Ashaiman area.

The stated goal of the pilot was for ILS to deliver this land titling capability in the form of a fully functional and scalable GIS-based land recording and registration system that could ultimately be used by the Ghana government to award official titles. As a provider of international land registration solutions, ILS recognized the immediate need for an accurate parcel cadastre to serve as the foundation to which all landownership information would be linked in a digital environment. To build this foundation, ILS used its low cost MultiCadastre offering 'Open Title'. Open Title includes a variety of tools to perform tasks such as data collection; in addition a simple workflow which enables the stages and steps of the recordation process to be sequenced in an intuitive and logical manner. Open Title allows the capture and storage of documents, photographs and video as part of the recordation process and representing important documentary evidence of land rights collected in the field. ILS MultiCadastre Open Title system which is based on ESRI technology will drive the government's appreciation of the economies of scale now possible to make formal land registration truly accessible to the poor.

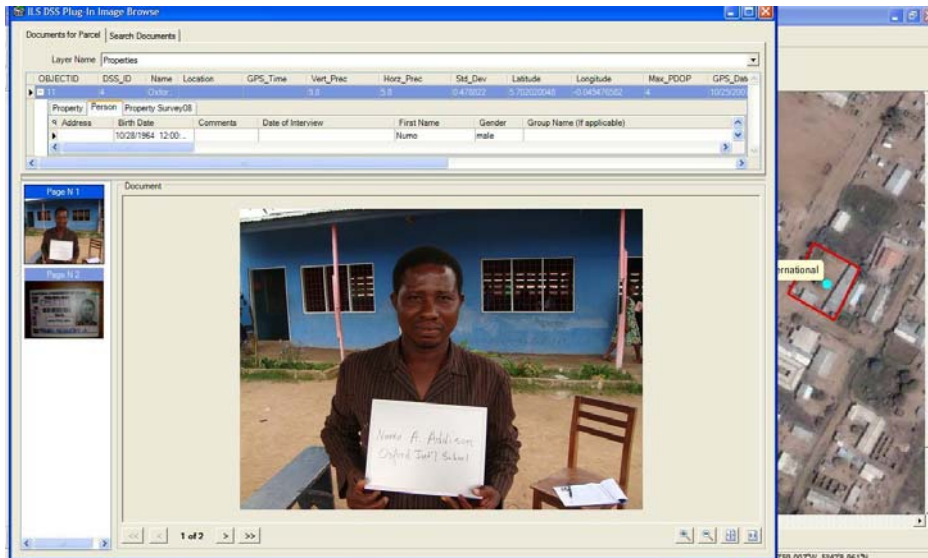


Figure 1: Open Title showing documentary evidence for a school in Ashaiman

Importantly the Ashaiman pilot has been conducted with the approval of the Ministry of Lands who agreed to ILS performing professional land surveys of the school properties, which is a key requirement for receiving an official land title. Having conducted property registration projects in numerous countries, we realized the quality of the parcel survey will be a make-or-break aspect of overall project success in the eyes of the government. As part of the field work SAMBUS teams used Trimble GeoExplorer ProXH devices for field work and Trimble Navigation, a key partner in the land title team, provided a range of both GPS and survey grade equipment for testing in the field. Hand held GPS units were used for the actual survey to quickly and accurately (within 30 cm), identify the exact coordinates of the property. While the boundaries were marked using the GPS, the surveyor worked quickly to measure out both the parcel and the building. Because most of the sites visited were in urban or semi-urban area, the surveys went quickly as boundaries are generally marked by a fence, adjacent building or drainage ditch:



Figure 2: Conducting a property survey using handheld GPS

Survey grade Trimble equipment, including a Continually Operating Reference Station (CORS) base station from which real time corrections can be made was used for the cadastral surveys and meets all Ghanaian survey regulations. The use of the donated Continually Operating Reference Station (CORS) base station substantially reduced the time needed to complete a survey in the field. Initially, we were finding that the a cadastral survey cost us \$250 per parcel (based on a reduced cost due to the volume of surveys to be done) and that the four man survey team could complete two to four surveys per day on average. After installation of the CORS station and training of the survey team, the cost came down to \$90 per survey and a two man team could complete an average of 8 surveys day provided the parcels were close to one another and in some cases as little as 15 minutes.

In addition to rapid GPS surveys a ‘Provisional Real Property Questionnaire’ was used to record occupier details, neighbor testimonials and other documentary evidence in support land rights which also included documentation received from the Tema Development Corporation (TDC) whose support was critical to the success of the pilot. The language of the questionnaire was framed within the text of the prevailing land law; combined the GPS survey and ownership details were used to issue paralegal title the pilot schools:

| Provisional Real Property Questionnaire | | | | |
|--|------------------------------------|--|-----------------------------------|-------------------------------------|
| Date of Interview: | | Interview Completed By: | | |
| OISL File Number: | | OISL Client Name: | | |
| Section A - Occupant Information | | | | |
| 1. Name of Respondent #1: | | 2. Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female | | |
| 3. Mobile Phone Number: | | 4. Age: | | |
| 5. ID presented for Respondent #1? <input type="checkbox"/> Yes <input type="checkbox"/> No | | 6. Were copies of the ID made? <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 7. If so, what ID? <input type="checkbox"/> Passport <input type="checkbox"/> License <input type="checkbox"/> Other (Please define): | | | | |
| 8. Name of Respondent #2: | | 9. Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female | | |
| 10. Mobile Phone Number: | | 11. Age: | | |
| 12. ID presented for Respondent #1? <input type="checkbox"/> Yes <input type="checkbox"/> No | | 13. Were copies of the ID made? <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 14. If so, what ID? <input type="checkbox"/> Passport <input type="checkbox"/> License <input type="checkbox"/> Other (Please define): | | | | |
| 15. Head of Household: | | | | |
| 16. Property Owner Name: | 17. Relation to Head of Household: | 18. Age: | 19. Male <input type="checkbox"/> | 20. Female <input type="checkbox"/> |

Figure 3: Content of the Provisional Real Property Questionnaire which records neighbour testimonials

Using the “best evidence” method on the ground during the field interviews has shown that varying amounts of proprietor evidence are available depending upon the property. Some proprietors have offer letters from the TDC and acceptance letters. Some of the schools have documents where a prior leaseholder from the TDC has executed a transfer declaration voluntarily vacating and relinquishing the tenancy giving the TDC the authority to reallocate the parcel to the transferee. Other tenants have receipts for years, even decades, of payment of the ground rents from the TDC. All of the proprietors visited had evidence, including

testimony of the neighbors, of long possession of the property, which in all countries worldwide confers title on the person(s) in possession. Relying on “best evidence”, paralegal titles can be prepared in a form analogous to the land certificates currently issued by the land registry and kept in a private database maintained by microfinance institution and paralegal titles should be viewed as sufficient security of tenure for the purpose of issuing loans.

The recognition of land rights was extremely important to the school owners giving them confidence in unlocking the value of asset that had been privately formalized and peace of mind in the inheritance process. As part of the pilot project 30 schools have had their properties identified through mapping from high-resolution satellite imagery supplemented by GPS "walk-arounds," and the owners/tenants have received the paralegal title to the land under their buildings. Open Title has provided an important tool in the overall process and a rich database created for formal titling and client management.

2. OPEN TITLE

Open Title is a low cost offering of ILS MultiCadastré, an ESRI ArcGIS OEM product and which includes ILS DSS an integrated document management system for the capture and maintenance of land and property information (e.g. documents, videos, etc). ILS MultiCadastré is designed specifically for the management and administration of cadastral data, providing tools for common tasks such as digitizing to advanced functions including parcel capture and maintenance, COGO processing and raster catalog creation:

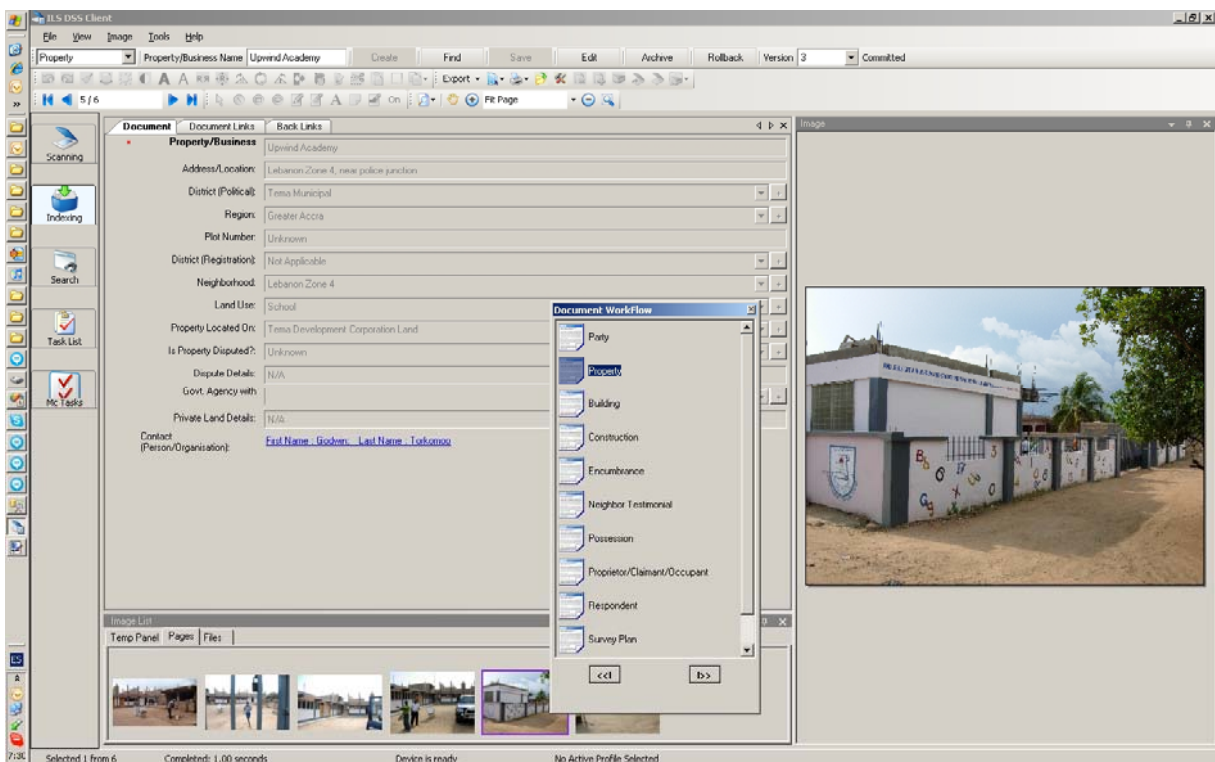


Figure 4: Property Details and supporting documents are captured using ILS DSS. Workflows are delivered as part of ILS DSS to speed up the field data capture process

Open Title is able to auto generate registration documents, in the case of Ghana the paralegal title, and adheres to the LADM data model. Open Title delivers the paralegal titling process as a series tasks, these tasks are fully configurable for other jurisdictions:

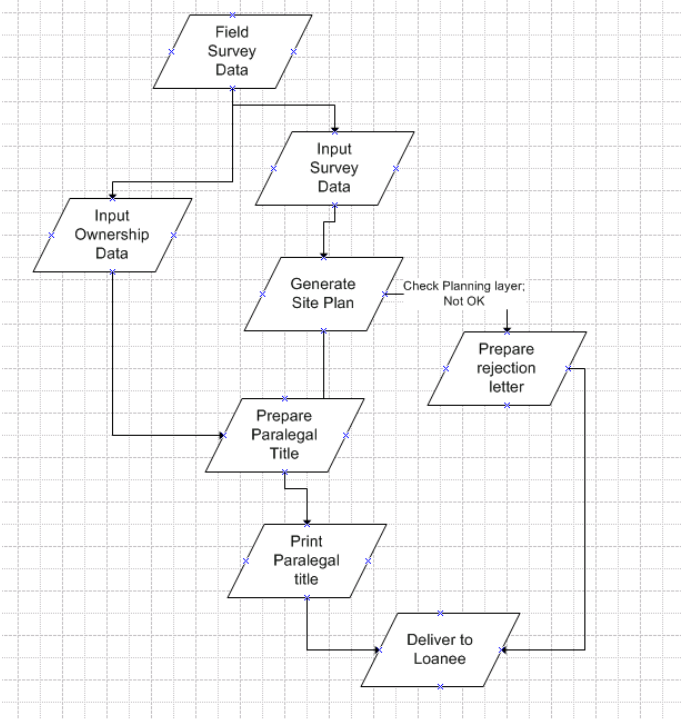


Figure 5: Simplified paralegal title workflow implemented in Open Title

When a task is initiated in Open Title, a series of icons representing the steps it comprises are presented to the user under a ‘Tasks’ tab in the ArcMap Table of Contents. These tasks visually depict the steps to be completed (e.g. encoding information from the provisional real property questionnaire, scanning supporting documents, uploading GPS data, generating a paralegal title) and simplify the workload placed on the user.

Clicking on a step under the Task tab activates the step, sets the required environment parameters (selection environment, snapping, editing parameters, etc.) and activates the required tool or brings up context tools in the task step toolbar. When a step is complete, the next step can be selected, or the wizard “Next>” button can be selected. At any time the wizard can be reversed by selecting a previous step or the wizard “<Back” button:

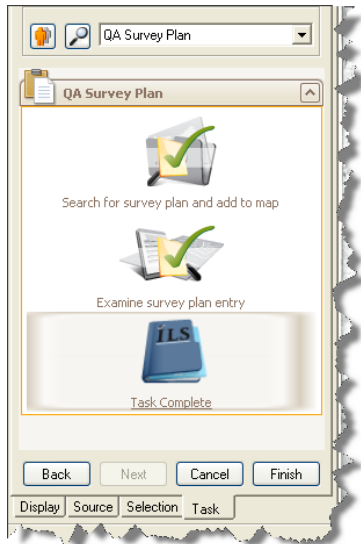


Figure 6: Tasks and Steps under the Task tab, check marks indicate steps completed

When the last step is complete the “Finish” button is activated and the user can select the next task and include a message to be sent to the next task (useful if multiple users are involved in data processing). At any time during a task the task can be canceled with the “Cancel” button. Icons and text provide the visual interface to the wizard and guide the user through the tasks to be completed. When a step is complete, the icon marked as complete with a green tick mark (as show in Figure 6). Tasks are configured as XML file which are stored on the file system in an Open Title Configurations file:

```
<?xml version="1.0" encoding="utf-8" ?>
- <documentClasses>
  <class name="Party" description="Party" imagePath="P_text.png" />
  <class name="Property" description="Property" imagePath="P_text.png" />
  <class name="Construction" description="Construction" imagePath="P_text.png" />
  <class name="Building" description="Building" imagePath="P_text.png" />
  <class name="Encumbrance" description="Encumbrance" imagePath="P_text.png" />
  <class name="Possession" description="Possession" imagePath="P_text.png" />
  <class name="Proprietor/Claimant/Occupant" description="Proprietor/Claimant/Occupant" imagePath="P_text.png" />
  <class name="Respondent" description="Respondent" imagePath="P_text.png" />
  <class name="Survey Plan" description="Survey Plan" imagePath="P_text.png" />
  <class name="Water Utilities" description="Water Utilities" imagePath="P_text.png" />
</documentClasses>
```

Figure 7: XML file content describing task steps in the field data collection process

There are three types of steps in Open Title, each invoking a different action as required by the workflow process:

- Execute function – The step executes a particular command or function (e.g., search for property details in ILS DSS, load field data from GPS)
- Apply function – The step applies a particular command or function (e.g. selection tool)
- Load toolbar – The step loads the task assistant toolbar with the desired tools and icons for a step, but do not activate the function.

And each step is described by a set of parameters:

- Icon and description – The visible representation of the step in the task tab in the Table of Contents
- Selectable layers – List of selectable layers Visible layers
- Snapping – List of snap-able layers Target layer and subtype (for editing)
- Current edit task (if applicable)
- Commands for Task toolbar (out of the box ArcGIS tools are added to toolbars for ease of use, thereby minimizing clutter and delivering the right tools for the job, this is especially important for the target audience for Open Title, users are looking for simplicity and ease of use.

Each parameter is fully configurable ensuring Open Title can be customized for other jurisdictions where tasks and steps may be different:

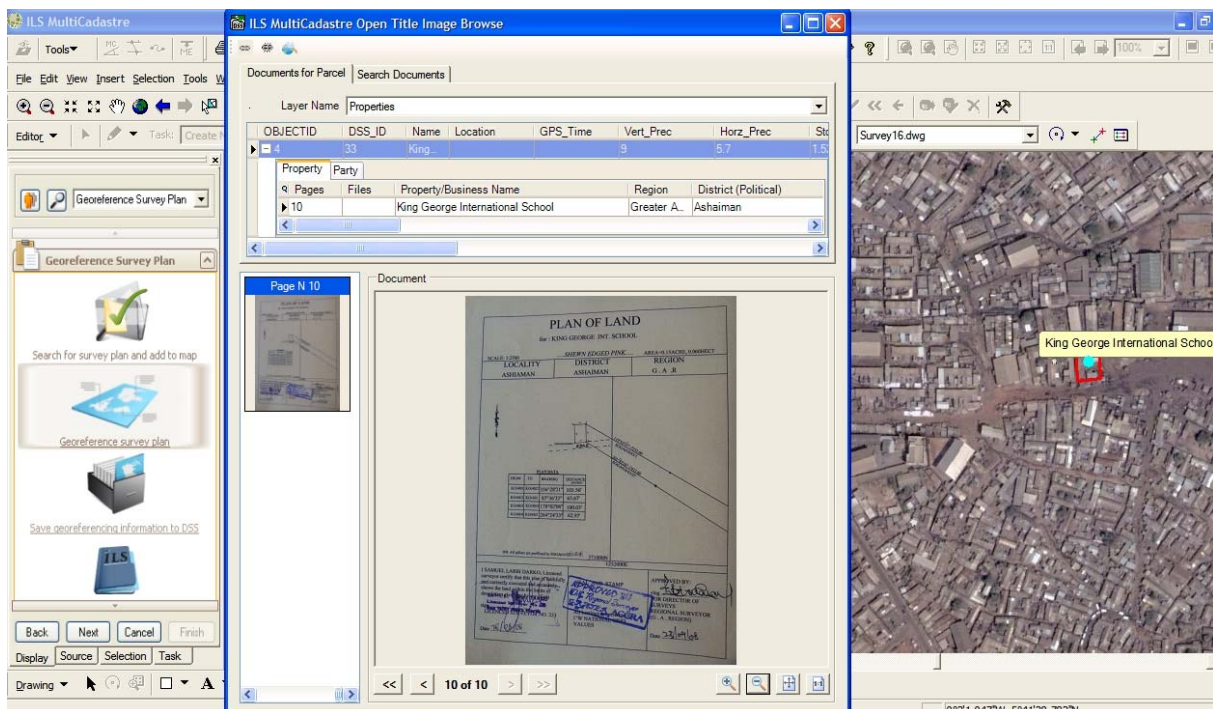


Figure 8: Open Title tasks and steps, in this graphic invoking ILS DSS with site plan for school

3. CONCLUSIONS

The goal of the project was to establish and refine a methodology based on low cost technology for providing land title services through a microfinance institution and to issue paralegal title schools involved with the Opportunity International Savings and Loans (OISL) school loan program in Ashaiman, this was achieved using a combination of GPS and low cost off the shelf commercial software customized for the paralegal titling process reducing costs and driving time data collection times. We have also established a rich database of ownership information with supporting documentary evidence using Open Title.

In addition, it was important to identify that there was in fact a demand for assistance with property registration and to test the feasibility of business model in which an organization can assist the general public with registration. Through our interviews, it became abundantly clear that there is a demand for assistance with property registration. Citizens are fed up with trying to register assets under the existing system, citing problems with lost documents, unclear procedures, delays that stretch to years and prohibitive costs. During our interview, gratitude to the team for assisting with a seemingly impossible task was expressed profusely. When interviewing neighbors regarding a parcel, the interview session inevitably ended with a question from the interviewee: *“When can you do my property?”* Under the project we were able to refine a clear and scalable methodology for providing land title services and we’ve since issued the first 30 paralegal titles along with surveys approved by the Ghana Survey Department.

REFERENCES

- Rabley, P. *Ghana Project Leverages GIS-Based Title Registration and Microfinance to Alleviate Poverty*, ArcNews, Fall 2008.
- Rabley, P. and DeRoy, C. *Ghana Project Leverages GIS-Based Title Registration and Microfinance to Alleviate Poverty—Part 2*, ArcNews, Winter 2008/2009.
- Rabley, P. and DeRoy, C. *GIS Brings Commercial Viability to Recognizing the Land Interests of the World's Poor Evaluating Ghana Pilot Project Results—Part 3*, ArcNews, Summer 2009.
- Rabley, P., Derouy, C., Aboah, S., and Edmead N., *A PARADIGM SHIFT: Leveraging Paralegal Title for the Benefit of the Developing World and the Surveyors Who Map It*, FIG Working Week 2008, Stockholm, 14-19 June 2008.

BIOGRAPHICAL NOTES

An information technology (IT) training specialist with over 20 years of experience in Land Information Systems (LIS) and Geographic Information Systems (GIS) systems applications in the urban and environmental sectors. Mr. Edmead is Director of Training and Documentation for ILS's registry and cadastre solutions and in charge of systems documentation and training development services to support the effective leverage of land information for ILS clients worldwide. Mr. Edmead acts as technical project manager for a number of ILS projects, identifying client needs in relation to deploying LIS IT systems and managing ILS software developers ensuring the timely delivery of registry and cadastral products.

CONTACTS

Nigel Edmead
International Land Systems (ILS) Inc.,
8401 Colesville Road, Suite #630
Silver Spring, 20910
USA
Tel. + 1 301 587 7531
Fax + 301 587 2796
Email: nedmead@landsystems.com
Web site: www.landsystems.com