LOUISIANA TECHNOLOGY INNOVATIONS FUND

PROGRESS REPORT

February 25, 2000

1. Agency

Laboratory for Information Technology and Spatial Analysis
College of Urban & Public Affairs
University of New Orleans
http://saltese.cupa-math.uno.edu/

2. Project Title
Census TIGER File Verification Via High Resolution Imagery

3. Project Leader

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4. Description of the Project

Accuracy in the 2000 Census is of great importance to Louisiana. Missed residents will cost the state $1,000 per year in lost revenue. The Census' TIGER files are an integral part of Census accuracy. LITSA is employing high-resolution satellite imagery to verify TIGER's completeness in mapping residential areas by matching georeferenced images with current TIGER releases. The lab has identified anomalies and is bringing them to the attention of local authorities thru cooperative agreements with local planning agencies.

5. Project Status

A. Brief Summary

LITSA activities with respect to TIGER verification fall into the categories of training, data acquisition, equipment acquisition, software acquisition, data analysis, and map production.

B. Accomplishments

Training

In the late Fall of 1999 Lab Director John Wildgen completed a series of three courses in remote sensing technology and analysis at the Atlanta headquarters of ERDAS, of the Lab's major software vendors. The specific course content most relevant to Census analysis were sections concerning the geographic alignment of satellite images to various map projections, the statistical characteristics of images, mosaicking of adjacent images, classification of ground cover, resolution enhancement, photogrammetry, and map production. These courses had a major impact on data acquisition and data analysis strategy.

Data Acquisition

The major element in the Lab's data acquisition has been the use of Russian-produced SPIN-2 panchromatic imagery with a spatial resolution of 1.56 meters for each picture element (pixel). This level of resolution is much superior to 10 meter imagery, which presents problems of street and dwelling discrimination in wooded areas, while still being easier to process than 1 meter imagery, and more timely than most aerial photography.

We also acquired, at very low cost, some 1983 and 1988 vintage LANDSAT 30m multispectral data, and are pursuing the acquisition of selected very high (1m) resolution data in problem areas.

Software Acquisition

The next major software acquisition will be ArcInfo Version 8's NT release. The Lab is currently using ArcInfo v. 7.2 on its UNIX-based platforms. Version 8 is a radical departure from the ArcInfo command-line tradition and will have visible effects on the Lab's mapping products.

The Lab will also acquire *Image Alchemy*, which will make it easier to print large format satellite product.

Data Analysis

By employing a technique called "resolution merging" it is possible to blend the black and white Russian imagery with the color US imagery. The resulting product, while extremely bulky, aids visual interpretation of the high resolution Russian data by giving it colorized context. The "colors" are, in effect, land cover classifications – such as swamp or forest. Louisiana DEQ has in the past deployed on its web site resolution merged LANDSAT multispectral and SPOT (10m) panchromatic data. The results were impressive. For our mission resolution merging helps to identify urban sprawl and detect subtle changes in dwelling patterns. It is, as we noted, bulky, since it increases the size of the Russian data by a factor of 7 (the Russian band plus six useful LANDSAT bands). Our next step is to economize the process by employing principal-components techniques

to shrink the LANDSAT data to more manageable proportions without sacrificing crucial information.

C. Problems Encountered

In a project of this nature each day brings its own challenges. But the intractable difficulty the Lab faces is from the College of Urban and Public Affairs' physical layout. In early February the College received a visit from an accreditation team composed of distinguished faculty drawn from a nationwide pool. Their strongest criticism of the College was its inadequate physical layout. I have made, through proper channels, my own feelings on the matter clear.

D. Major Milestones

At this juncture we have our database 100% operational, and a number sample maps on the LITSA website at http://saltese.cupa-math.uno.edu. We have matched TIGER to every Russian image, and have identified problem areas in St. Tammany and East Baton Rouge parishes. Others may appear as we eyeball the data and refine automated techniques. The Lab has also entered into a relationship with the Regional Planning Commission, whereby the Lab will share data with them (subject to license limitations) and they will assist the Lab in locating problem areas. The RPC is also an invaluable networking aid for neighboring parishes.

6. Cost v. Budget

Category	Budgeted	Actual	Projected Surplus
Equipment	$75,700	$70,382	0
Software	$50,000	$40,000	0
Data	$300,000	$283375	0
Professional	NA	NA	NA
Other (Training)	$24,000	$12,000	0
Total	$449,700	$394,957	0

7. Itemized Expenses

361-10-4213 EXPENDITURE DETAIL LEDGER FEB '00 02/25/00 PAGE NO. 1
LA DOA TECHNOLOGY INNOVATION COUNCIL JOHN WILDGEN 05/07/99-05/07/01 DIST CODE: 61

DESCRIPTION	VOUCHER	ORD NO.	OBJ CLS	BUDGET	ORDERS PLACED / ORDERS PAID (CR)	EXPENDITURES	BALANCE
SUM YTD JAN '00			200	8,211.15CR	.00	3,593.00	
OBJ TOTALS			200	8,211.15CR	.00	3,593.00	4,618.15CR
SUM YTD JAN '00			300	300,000.00CR	6,000.00	277,374.92	
ESRI	08808	78007	349	.00	6,000.00CR	.00	
ESRI	08809	78880	349	.00	6,046.45	.00	
GE CAPITAL INFORMATION TEC	08823	78939	349	.00	119.78	.00	
OBJ TOTALS				300,000.00CR	6,166.23	277,374.92	16,458.85CR
SUM YTD JAN '00			400	50,000.00CR	.00	5,419.35	
OBJ TOTALS			400	50,000.00CR	.00	5,419.35	44,580.65CR
SUM YTD JAN '00			600	11,725.00CR	.00	2,855.00	
OBJ TOTALS			600	11,725.00CR	.00	2,855.00	8,870.00CR
SUM YTD JAN '00			710	75,700.00CR	332.58	61,142.99	
COMPUSA	08557	78756	734	.00	332.58CR	332.58	
OBJ TOTALS				75,700.00CR	.00	61,475.57	14,224.43CR
ACCOUNT TOTALS (OBJ 111-800)				445,636.15CR	6,166.23	350,717.84	88,752.08CR