A Research/Teaching Inventory and Monitoring Institute for the State of Jalisco, Mexico

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Abstract—A brief outline is given of what is considered required for a research/teaching Institute for inventory and monitoring in the state of Jalisco, Mexico. An important part of this presentation is to get feedback from the audience on suggestions of how to best implement such an institute.

Vision

The vision of the proposed Institute is to develop the human and physical infrastructure necessary to implement modern technologies in the field of inventory and monitoring. This includes the following fields only as a starting point: classical statistical methods, Bayesian statistical decision making methods, remote sensing and aerial photography, geomatics and modeling to enable individuals, agencies, organizations, communities, governments, and other entities to effectively manage and enrich their ecosystem resources and their social and cultural environment. To implement this vision requires close collaboration between FIPRODEFO, the University of Guadalajara, Industries and Environmental Organizations in Mexico, the Federal Government of Mexico, the Rocky Mountain Research Station of the US Forest Service and the National Resources Conservation Service (NRCS) of the USDA.

Mission

In pursuit of that vision, the Institute mission is to be an instrument which fosters the climate of intellectual discovery, growth and effective dissemination in the subject areas described above as well as new ones still to be developed. Through this mission, the Institute will contribute to:

1. Educating high-quality professionals and technicians with respect to the integrated approach of the above fields through a program of classroom studies and applied and theoretical research with emphasis on people in Latin America.
2. Creating and promoting new information and knowledge through the interaction of such professionals and technicians with researchers and teachers of the Institute involved with environmental, social, and economic issues through research and development projects.

In summary the mission is to educate Latin Americans in the methodology of inventory and monitoring and to conduct research in improved methods to do so.

Goal

The program goal is to fulfill the mission through a strategy that incorporates education, research, training, and infrastructure development to enable a variety of ecosystem resource-related agencies, individuals, organizations, communities, governments, and other entities to make wise managerial and utilization decisions regarding ecosystem resources using the tools and critical thinking associated with the above fields to a diverse cadre of ecosystem resource stakeholders, a physical infrastructure will grow which will allow information and knowledge with high social utility to be delivered in an efficient, visual form to the intended audience.

Objectives

To achieve the desired goals and guide the investments in this program, the following specific objectives will be achieved:

1. Create the next generation of human infrastructure (through graduate education, training, and other outreach) that will have the scientific and technical expertise to use the tools of the above specialties to synthesize the data into scientifically-credible, geospatial information and knowledge that is technically defensible and of high social and economic utility; and visualize and disseminate the results to the user groups.
2. Develop a set of integrated tools from these specialties through a comprehensive program of applied and
theoretical research that for the most part will be associated with education and result in the development of a broad spectrum of application tools.

3. Support the development and organization of a geomatics-based infrastructure (both physical and human) through which scientific and technological expertise can flow on a variety of projects to be conducted under the auspices of this program.

4. Facilitate the formulation and implementation of a digital-based expert system as a training device to structure, manage, and communicate geospatial knowledge and applications for use in decision-making and planning for sustainable ecosystem resource management and utilization.

Organizational structure:

**Director**

Requirements for the position:

1. Both strong demonstrated technical (in inventory and monitoring) and administrative experience with a professional and technician workforce.
2. Fluency in both Spanish and English.
3. Considerable experience throughout the Americas.

This person would be in charge of the Institute with key responsibilities of managing the personnel of the Institute, interaction with key user groups, obtaining additional financing as needed and interacting with important other professionals in equivalent positions in the Americas.

**Professionals**

Required courses for professionals: Basically we are aiming for people finishing with a MS degree in forest inventory. These people would be trained to become the managers of inventory and monitoring efforts in the various states of Mexico or other Latin American countries. The below core courses should consist of a close integration of both theory and field work to make the ideas come alive and crystallize in the student’s mind:

A thorough understanding and knowledge of books like Schreuder, Ernst and Ramirez (2004) for having a solid grasp of the fundamentals of statistical methodology. One year’s course ideally. There should be considerable experience with simulation exercises such are emphasized in Schreuder et al (2004) but also actual field experience working with experienced field people.

A thorough understanding and knowledge of books for having a solid grasp of modeling with special emphasis on spatial data analyses. One year course ideally. There should be considerable experience with simulation exercises and actual field experience working with experienced field people.

1. A thorough understanding and knowledge of the following books for having a solid understanding and knowledge of instrumentation and measuring instruments.
   - Aerial Photography and Image Interpretation, 2nd Ed., by David P. Paine, James D. Kiser, John Wiley & Sons, Inc. NY.
   - One year course ideally.
   - One semester in the office and one semester in the field.
   - Considerable experience with simulation exercises.
   - Actual field experience working with experienced field people.
   - A semester course in human relations and management of humans.

**Technicians**

These people would be trained to become the key crew leaders in inventory and monitoring efforts in the various states of Mexico or other Latin American countries. Core courses would include:

1. The above for professionals covered in one semester at clearly a more superficial level. We are basically talking about training for what would be equivalent to a 2-year junior college degree in the USA.
2. One full semester of field work emphasizing inventory and monitoring methods. Considerable amount of this work could be done doing actual plots in Jalisco under the close supervision of experienced field crew leaders.
3. A short course in quality control and quality assessment methodology.

**Researchers**

These people would be hired directly by the institute to direct research efforts in the field of inventory and monitoring. The initial core group should consist of a PhD researcher in remote sensing, one in statistics and one in modeling and GIS.