

International Collaboration

International collaboration in research and transborder regional planning is an integral part of the KINDRED project. To ensure the efficacy of this collaboration, we have formed Binational Research Steering Group made up of the project's international partners, namely: the *Instituto Municipal de Planeación de Tijuana* (Municipal Institute of Planning in Tijuana, IMPLAN), the *Centro de Investigación Científica y de Educación Superior de Ensenada* (The Center for Scientific Research and Graduate Education of Ensenada, CICESE), UCSD's Center for U.S.-Mexican Studies, and the San Diego Association of Governments (SANDAG). The Group will meet quarterly and will provide guidance to the project. In particular it will establish a process to evaluate the progress and usability of the information technology research. Please see letters of support from IMPLAN, SANDAG and CICESE in the Supplementary Documents section.

IMPLAN is our principal public sector partner in Mexico. Recent federal legislation in Mexico mandated the creation of IMPLAN (a quasi-independent municipal agency) to oversee long-term urban and regional planning. As a part of our Regional Workbench initiative, the PIs of this proposal are in the process of establishing a formal Memorandum of Understanding (MOU) with IMPLAN. Our aim is to facilitate cross-border data sharing and to jointly develop planning and decision-support tools. Along these lines, we have prioritized two strategic tasks—both of which lay a crucial foundation for the IT research in this proposal:

1. Support transborder natural resource planning and management. The international border creates a suboptimal use of natural resources as well as potential transborder conflicts;
2. Develop transborder land use, transportation and infrastructure studies that consider the impact of growth from one side of the border to the other. These studies will integrate separate existing land use plans and lead to the development of a transborder comprehensive plan that would be the basis for a multi-year capital improvement program that would avoid the possible duplication of infrastructure and services (airports, roads, etc).

One of the collaborative projects that the co-PIs of this proposal have already completed with IMPLAN is a plan for the redevelopment of the *Colonia 10 de Mayo*, a low-income settlement in Tijuana located on the U.S.-Mexico border. The *10 de Mayo* team developed a very detailed land use database and comprehensive set of housing and community development profiles for this community. UCSD's Civic Collaborative provided some of the funding [**Graizbord, Pezzoli and Zaslavsky 2000**]. Significantly, the *10 de Mayo* community is embedded in a much larger transborder regional planning initiative. The focus of this larger project, already underway, is on the Alamar River and its drainage basin. The Alamar River originates on the U.S. side of the international border and first enters Mexico in the vicinity of *10 de Mayo*. The Alamar project is developing a transborder regional plan to deal with rapid urban-industrial growth, land use and disturbance of the area's watershed and aquifer [**Michel 2001**]. The *10 de Mayo* project can thus play an important role as a test bed for each of three land-use based semantic integration scenarios we spelled out in this proposal, namely: transborder natural resource conservation, hazardous waste management, and community development. The counterpart to IMPLAN on the U.S. side of the border is SANDAG.

SANDAG's expertise in land use, regional information systems, and transborder issues makes it an exceptionally valuable collaborator in our effort to develop the KINDRED SPIRIT (Spatially Integrated Regional Information Testbed). SANDAG is a leader in the promotion of transborder planning; the agency regularly convenes a "Committee on Binational Regional Opportunities (COBRO). During the tenure of the NSF-ITR grant we will hold regular meetings with research staff at SANDAG, and, as noted in the body of this proposal, SANDAG will be a site for placing our research interns. Michael McLaughlin (Director of SANDAG's Department of Regional Planning and Land Use) and Jeffrey Tayman (Director of Research and Information Systems) are our main contacts. Like IMPLAN, SANDAG has agreed to provide us with access to land use and other data. And, more importantly, they

have agreed to jointly work with us in sorting out the kinds of conflicting semantic definitions and procedures that pervade the border region's variegated land use ontologies. Additionally, one internship position in the Land Use department is provided by SANDAG to aide in project data integration at no costs to the project.

CICESE is our principal research partner in Mexico. It is a graduate-level educational and research institution funded by the Mexican government. CICESE's mission is to develop and disseminate new technologies in basic and applied sciences and to develop highly skilled human resources capable of resolving regional and national problems. CICESE is located in Ensenada, on the Pacific coast of Baja California, 60 miles south of the border. It has supercomputer capabilities and it is Mexico's Northwest node to Internet 2 (a joint U.S.-Mexico project to build capacity for high bandwidth data exchange and communication among research institutions across the border). The co-PIs of this proposal, together with colleagues from the Scripps Institution of Oceanography (SIO), already have a close working relationship with researchers from CICESE. We are collaborating in the development on an integrated transborder database that will include topography, coastal bathymetry and GIS layers including land cover and land use. Our main contact at CICESE is Alejandro Hinojosa. He is head of the remote sensing and geographic information systems (GIS) lab and a Professor of graduate courses in Earth Sciences and Computer Sciences. We anticipate that UCSD and CICESE 's collaboration around spatial database design and implementation (with internet interfaces) will be especially productive.

In January 2003, Alejandro Hinojosa will begin a six-month residential fellowship on the UCSD campus at the Center for U.S.-Mexican Studies. In collaboration with the co-PIs of this project, and as part of our collaborative effort to build the Regional Workbench, Hinojosa's project will explore methods for harmonizing and integrating spatial information across the border. The resources he brings to this partnership include knowledge and expertise gained from the Baja California Coastal Wetlands Inventory (BCCWI), a database of existing information on ecological conditions, land use, land ownership, and hydrology for all the major coastal wetlands on the west coast of Baja California from the U.S. border to San Ignacio Lagoon. Hinojosa will collaborate with us in the collection of Mexican land use and land tenure data from a range of sources including the Urban Development Offices of the three municipal counties in the border area (Tijuana, Playas de Rosarito, and Ensenada), Baja California government agencies (e.g., SAHOPE), Universidad Autonoma de Baja California (UABC), Registro Agrario Nacional (RAN), Instituto Nacional de Estadística, Geografía e Informática (INEGI), among others sources.

The Center for U.S.-Mexican Studies' decision to grant Alejandro Hinojosa a research fellowship is indicative of the Center's new policy to award proposals that promise collaborative regional research. The Center is an eager partner in our Regional Workbench network and as such it will serve as an important resource to help us convene of IT specialists, scientists, policy-makers, and public officials. The co-PIs of this proposal already have experience collaborating with the Center along these lines. In June 2000, we organized a major Binational Conference to show how a strategic coalition of academicians, scientists, industry leaders, community-based organizations, and policy-makers in federal and local agencies with binational and border interests could be organized to pursue common problems. More than 150 scientists and policy-makers attended this event, including 26 scientists from Mexico [**Pezzoli 2000b**]

The last, but not the least, element of a successful cross-border collaboration is having a multinational and multi-lingual team of researchers attentive to semantic differences across languages (In addition to English, Pezzoli speaks Spanish, Marciano speaks Spanish and French).



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February 5, 2002

Keith Pezzoli, Ph.D.
 Ilya Zaslavsky, Ph.D.
 Richard Marciano, Ph.D.
 University of California, San Diego
 9500 Gilman Drive
 La Jolla, CA 92093-0517

Dear Drs. Pezzoli, Zaslavsky, and Marciano:

MEMBER AGENCIES

- Cities of*
- Carlsbad*
- Chula Vista*
- Coronado*
- Del Mar*
- El Cajon*
- Encinitas*
- Escondido*
- Imperial Beach*
- La Mesa*
- Lemon Grove*
- National City*
- Oceanside*
- Poway*
- San Diego*
- San Marcos*
- Santee*
- Solana Beach*
- Vista*
- and*
- County of San Diego*

ADVISORY MEMBERS

- California Department of Transportation*
- Metropolitan Transit Development Board*
- North San Diego County Transit Development Board*
- United States Department of Defense*
- San Diego Unified Port District*
- San Diego County Water Authority*
- Tijuana/Baja California/Mexico*

The San Diego Association of Governments (SANDAG) is pleased to collaborate with you and support your proposal on ITR/PE (Information Technology Research/People and Social Groups Interacting with Computers and Infrastructure): Knowledge-based Integration and Navigation of Distributed Regional Environmental Data, which is being submitted to the National Science Foundation's (NSF) Information Technology Research Program.

The proposed exploration of using the Knowledge Map methodology and XML (eXtended Markup Language)-based information mediation systems to better integrate and assimilate varied semantic views is of importance to our agency. Advancements in Information Technology are critical to SANDAG, as the regional decision making forum for this area's 18 cities and county government. SANDAG maintains an extensive Geographic Information System inventory of various types of land use and transportation information which is utilized to aide local decision-making and to provide information on a broad range of topics pertinent to the region's quality of life.

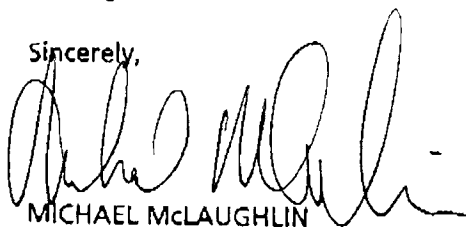
Since SANDAG represents all the local jurisdictions of the San Diego region, we have the need to integrate multiple data sources across various agencies. In addition, we actively pursue cross-border planning with our counterparts in Tijuana and other areas of Baja California, and regularly encounter many difficulties in data integration across the border. SANDAG would value an automated method that would allow the integration of similar geographic data that has different classification systems into a single portrayal of the entire binational region. Challenges in mediating across such sources makes this project especially ambitious and worthwhile given the implications for improvements in cross-border planning activities. We will provide consultation and lend our expertise on the data sources to help in the design and implementation of a system that allows such integrated access. Overall, our contribution to this project will include providing:

- technical consultation to help integrate similar data sets from both countries, in particular, integrating SANDAG GIS information related to transportation, land use, and environment with similar information from Tijuana;

- relevant SANDAG databases for integration;
- appropriate consultation with senior management of SANDAG;
- representation on a project advisory board to conduct project evaluation and assure usability of the end product;
- one internship position in the SANDAG Land Use department to aide in project data integration.

Since we are located in San Diego, we expect to have frequent and close interaction with project personnel at the University of California San Diego and the San Diego Super Computer. We are very enthusiastic about participating in this project which is investigating exciting new technologies for creating a more synergetic and coordinated approach to land use planning across our international border. We believe that this project holds much promise for meeting this region's needs.

Sincerely,



MICHAEL McLAUGHLIN
Director, Regional Planning

MM/ce



Centro de Investigación Científica y de Educación Superior de Ensenada, B. C.

ORGANISMO DESCENTRALIZADO DE INTERES PUBLICO

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Ensenada, Baja California January 31st 2002.

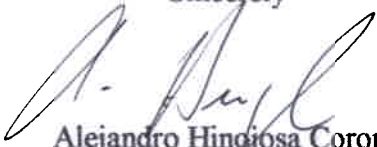
Drs. Keith Pezzoli, Richard Marciano and Ilya Zaslavsky ,
PI's on KINDRED Project
Proposal to NSF-ITR

Dear Colleagues,

This letter gives my most enthusiastic support to the Knowledge-based Integration and Navigation of Distributed Regional Environmental Data (KINDRED) project you are submitting to the NSF-ITR call. Common environmental problems and health hazards along the U.S.-Mexico Border need to bring together border universities for the long term regional planning. A multidisciplinary research approach is needed in order to have a broader perspective of the transformation taking place at the transborder region. Policy makers must support their decisions on sound scientific knowledge emerged from universities from both sides of the border, and enabled by telematics and advanced information technologies. A knowledge integration that bridges disciplinary and international boundaries will be an important tool to support the decision making process.

I am convinced that your project will promote the development, assimilation and spreading on new technologies towards the solution of regional problems. An integrated view on land use, hazardous waste and natural resource conservation will serve as a key input for binational decision-making and conflict resolution. A productive collaboration between UCSD and CICESE will enhance the results.

Sincerely



Alejandro Hinojosa Corona
Director Remote Sensing GIS Lab.
Earth Sciences Division



DEPENDENCIA: Instituto Municipal de Planeación

SECCION: Dirección

NUMERO DE OFICIO: DR/002/2001

EXPEDIENTE:

ASUNTO: El que se indica

"DEDICADOS A TIJUANA"

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We are very interested and enthusiastic to collaborate with your KINDRED proposal for the National Science Foundation.

The project will result in innovative ways of developing IT, will benefit us and improve the ways we are operating with our GIS. The project integrates efforts from the university, public sector and community groups.

IMPlan is the planning organization for the municipality of Tijuana, it makes comprehensive and community plans and provides information to the public using its GIS technology.

Since Tijuana is conurbating with Tacate, Rosarito and San Diego we need to integrate regional information.

We do many projects with our GIS, especially applications in regional land use planning. For your proposal we can provide several case studies, staff time, our facilities and our GIS databases.

We are very excited in participating with you in this project. We believe that by collaborating with you we will enforce our team for future work and strongly promote transborder planning in this region.

Irma Nava and myself will be the point of contact for this project. Please do not hesitate to contact us at (011-52-66) 86-62-50, fax (011-52-66) 86-62-45, e-mail: implan.tijuana@cablemas.com


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ITR (SBE): The KINDRED Project: Knowledge-based Integration and Navigation of Distributed Regional Environmental Data

Supplementary – List of Personnel

<p>Ilya Zaslavsky Principal Investigator San Diego Supercomputer Center University of California, San Diego</p>	<p>Richard Marciano Co-Principal Investigator San Diego Supercomputer Center University of California, San Diego</p>
<p>Keith Pezzoli Co-Principal Investigator Urban Studies and Planning University of California, San Diego</p>	<p>Jeff Tayman Director, Research and Information Systems San Diego Association of Governments 401 B Street, Suite 800 San Diego, CA 92101-4231</p>
<p>Carlos Graizbord Director, IMPlan Blvd. Agua Caliente #2340 Col. Revolución CP 22440 Tijuana, Baja California, México.</p>	<p>Mike McLaughlin Director, Land Use and Public Facilities Planning San Diego Association of Governments 401 B Street, Suite 800 San Diego, CA 92101-4231</p>
<p>Alejandro Hinojosa Head of Remote Sensing and GIS Lab, Professor, Geology Department/ Earth Sciences Division, CICESE Ensenada, Baja California, México.</p>	<p>Millicent Cox Principal Economist, MillicentCox, LLC 7770 Regents Rd. #113-172, San Diego CA 92122</p>

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Professional Preparation

1976 Ph.D. Urban Studies and Economics, University of Southern California, *Impact of Equalizing School Finance in California*
1968 M.A. Economics, Claremont Graduate School
1966 B.A. Economics, with Honors, New York University

Appointments

1990-present Principal Economist, MillicentCox, LLC
1996-1998 Senior Economist, San Diego Dialogue, UCSD, San Diego
1975-1981 Associate Social Scientist, The Rand Corporation, Santa Monica
1970-1975 Project Director, Public Systems Research Institute, University of Southern California,

Related Publications

“Mexicali and Imperial Valleys are One Metropolitan Area,” *Indicadores económicos de Mexicali*, July 1999.

“The 1999 Big Mac Index for the Baja California/California Border,” *Indicadores económicos de Mexicali*, May 1999.

“Drug-Resistant Pulmonary Tuberculosis in the Baja California-San Diego County Border Population,” *The Western Journal of Medicine*, October 1998. (Co-authored).

“Methodology for Estimating Cross-Border Labor Markets: the Baja California/California Experience,” *Proceedings of the Joint Meeting of the International Association of Survey Statisticians and the International Organization for Official Statistics*, Aguascalientes, México, September 1998.

Demographic Atlas San Diego/Tijuana Atlas Demográfico, San Diego Dialogue, April 1995.

“Data Sources and Methodology for School District Analysis,” Urban Information Studies Group Paper, April 1972.

“Census Tract Income Data: A Methodology for Utilizing the IRS Individual Tax Returns,” presented at the Urban and Regional Information Systems Association meeting, August 1971.

“Regional Macroeconomic Forecasting,” Bank of America, 1970.

An Inventory of Regional Input-Output Studies, University of Washington Occasional Paper No. 22, 1970 (co-authored).

Other Significant Publications

The Role of the Mexican Maquiladoras in Global Manufacturing, forthcoming, Greenwood Press [co-authored]

“Las maquiladoras de cara al 2001,” *Comercio Exterior*, Vol. 49, No. 9, September 1999.

San Diego/Tijuana Economic Review, quarterly publication of San Diego Dialogue, 1995-1998.

Who Crosses the Border, San Diego Dialogue, 1994 [co-authored].

Synergistic Activities

- (1) **Panelist, "The U.S.-Mexico Connection,"** Milken Institute 2000 Global Conference, March, 2000.
- (2) **"San Diego and Tijuana are one Metropolitan Area,"** presentation at the Demographics Workshop, El Colegio de la Frontera Norte, October 1999, Tijuana, Baja California.
- (3) **"Tolerance Zones",** a touring art exhibit from January 2000 to April 2002, integrating demographic, economic and historical data) with Rosemarie McKeon, Richard Marciano, Poyin Tse, Carrol Waymon and Lynn Whitehouse.
- (4) **Created a methodology** to compare and analyze employment data for México and the US.
- (5) **Created a long term land use and valuation model** of Mello-Ross bond districts for Riverside County to assist the county analyze the strategies to pay off the bondholders.
- (6) **Created a Demographic Atlas** of San Diego and Tijuana from 1990 U.S. and Mexican Census Data, including maps, charts and tables, published by San Diego Dialogue.
- (7) **Prepared an analysis of demographic and economic regions** of San Diego County for the Regional Governance Project, University of California, San Diego, Division of Extended Studies and Public Service.
- (8) **Participated in a study of school finance** reform in five states, with major responsibilities for collecting and preparing the data files and setting up the analysis of the finance systems in each state.
- (9) **Project Leader on a project which developed a data base describing all school districts in California,** including school district records, census data, welfare data, property tax rolls and I.R.S. income tax returns.
- (10) **Project Leader on a project which developed a school-by-school information system for the County of Los Angeles,** including welfare, county planning data, registrar of voters records, mortgage data from the State Savings and Loan Commissioner, county assessor's roll files, I.R.S. income tax records, and census data.
- (11) **Analysis of the use of inter-island freight waybills** for estimation of inter-island economic relationships for the Department of Planning and Economic Development, State of Hawaii.

Recent Collaborators

Richard Marciano (SDSC/UCSD), Rosemarie McKeon(SDSC/UCSD), Alfonso Mercardo Garcia (Le Colegio de Mexico), Sergio Noreiga Verdugo (Imperial Valley Campus, San Diego State University), Fernando Medina Robles (Universidad Autónoma de Baja California, Mexicali), Charles Nathanson (San Diego Dialogue).

Graduate Advisors

Jerome Milliman, Robert Bish, Robert Warren, Jack Pounders, University of Southern California.
Phillip Bourque, Charles Tiebout, University of Washington
Daniel Vandermeulen, Claremont Graduate School