

Finding Common Ground Through GIS

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Chronic Disease and Injury Control
California Department of Public Health**

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Scottsdale, AZ October 7-10, 2007**



Robert Wood Johnson Foundation



Common Ground: Transforming Public Health Information Systems

- More effective and efficient business processes that support essential public health services and functions
- Increased awareness about informatics principles and collaborative requirements
- Informed stakeholders at all levels of government

Chronic Disease Grantees



Grantees represent breadth of public health organizations

- California Health and Human Services Agency (CA)
- State of Minnesota Department of Health (MN)
- State of Missouri Department of Health and Senior Services (MO)
- State of Rhode Island Department of Health (RI)
- State of South Carolina Department of Health and Environmental Control (SC)
- State of Wisconsin Department of Health and Family Services (WI)
- Coconino County Health Department (AZ)
- Kitsap County Health District (WA)
- Public Health Authority of Cabarrus County (NC)
- Louisiana Public Health Institute (LA)

Common Ground Steps



Year 1

**What do we
do now?**

Business
Process
Analysis

Year 2

**What should
we do?**

Business
Process
Redesign

Year 3

**How do we
do this?**

Requirements
Definitions

Common Ground Expectations



- Training and Planning for Public Health Informatics and Business Processes
- Create roadmap (requirements) to help define functionality needed from a chronic disease information system
(Independent of disease)

California Vision



*To ensure broad systematic access
to standards-compliant, secure,
geographically-referenced
information about Californians
affected by chronic disease.*

CHHSA Desired Outcomes



- 1) Define the **business processes** required to address information needs for chronic disease prevention, control, and evaluation
- 2) Describe **current data systems** for chronic disease and how well they support the above business processes
- 3) Create a means for providing **informatics training** for the CDHS and all other CHHSA departments

CHHSA – Year 1



Work with the CDHS Data Resource Inventory conducted last year to:

- **Work toward the data**

(Data fields collected, documentation, definitions, use restrictions, associated policies, etc.)

- **Work toward the business case**

(How do we use the data, what data do we use, what data do we wish we had, can we find and obtain the data we have)

- **Expand to include data throughout Agency**

(Build on California Healthcare Information Inventory conducted as part of CHIPP funded by RWJF)

Year 1 Continued...



DOMAINS of INTEREST

1. Data Sources
2. Data Uses-Essential Functions
3. Data Architecture/Systems
4. Methods for Obtaining Data
5. Methods for Disseminating Data
6. Data managers/owners/stewards/security
7. Stakeholders
8. Data Linkages
9. Data Policy/Standards

Data & Information

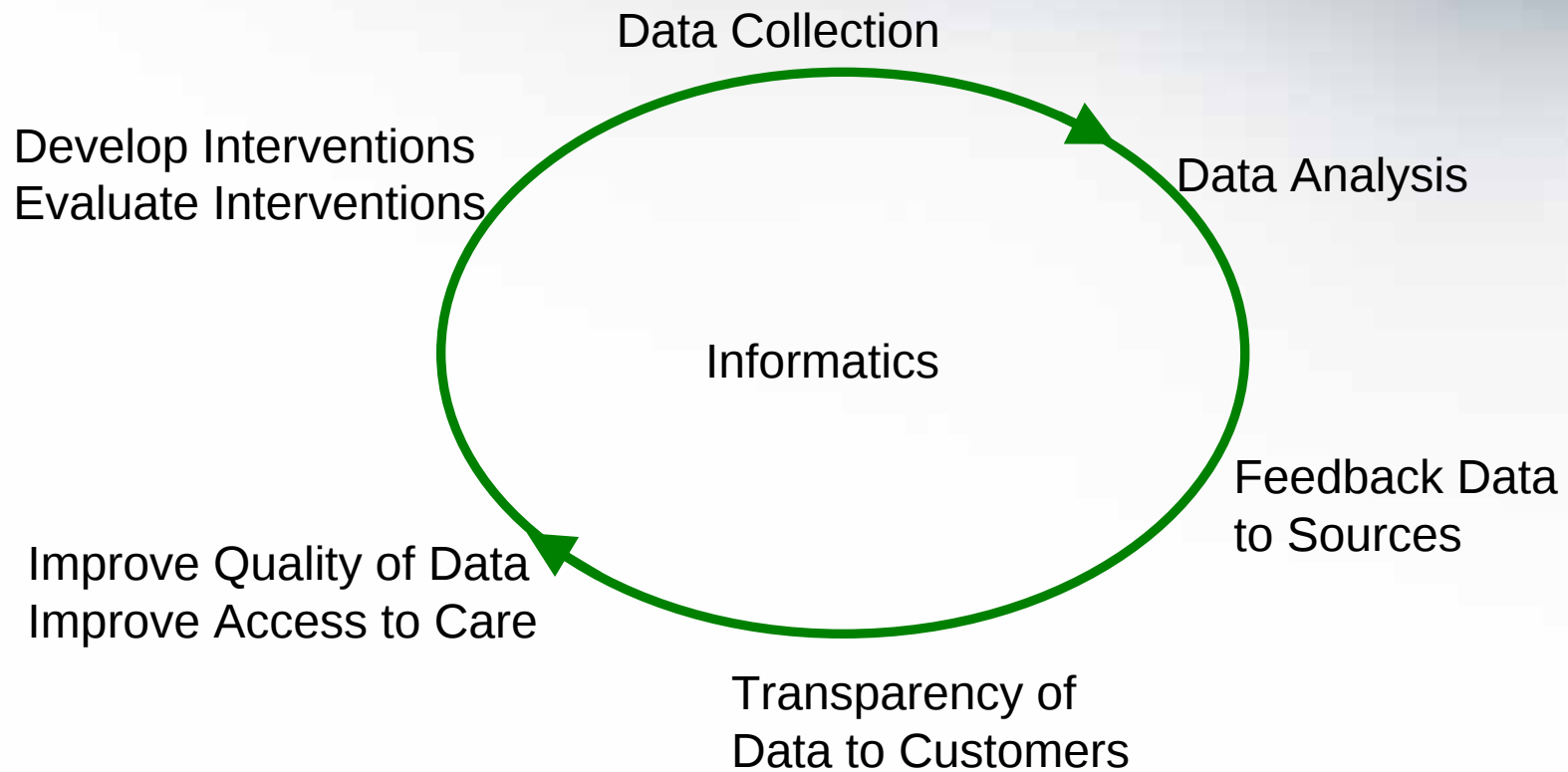


Data - A measurement or characteristic of the person or the thing that is the focus of an information system

Information - Data placed in context with analysis

- Data Sources – Collection
- Data Systems – Transferring & Delivering
- Business Needs – Using & Deciding

Data Circle



Why Focus on Data ...



Evidence-Based Decisions

Program Placement

Improve Quality through Increased Transparency

Do you have the Data and Information you need?

Public Health Informatics



Systematic application of information and computer science and technology to public health practice, research, and learning

Public health professions need be able to effectively:

- Use Information
- Use Information technology
- Manage information technology projects
- Re-engineer elements of public health practice

GIS – An Informatics Tool



- Geographic Information Systems (GIS) are one example of information technology being used in public health
- GIS is a standard course in Public Health Informatics programs

Public Health



Geographic data is integral for assessing:

- Access to health services
- Disease patterns and distributions
- Emergency response and preparedness
- Environmental hazards
- Health service delivery
- Health status and outcomes
- Resource allocation and management

GIS brings to Public Health ...



- Powerful tool – the technology of our day
 - For analysis
 - For management of resources
 - For documentation and presentation
- Collaboration with other disciplines
- Collaboration within health services
- Data standards

Federated Approach for GIS



- Leverage limited public health resources
- Reduce redundancies and improve public health program efficiency
- Enhance interoperability between programs

CDHS GIS Survey



- Responses from 19 CDHS Divisions and Offices
- Over 70% of respondents with data sets containing spatial elements
- Of all respondents interested in GIS, 78% expressed specific need for or current use of geocoding
- ESRI products are the “de facto” GIS software standard:
78% of respondents specifying a particular software
- Programs using older software versions emphasized need to update and receive additional training
- Need for resolution and accuracy at the level of street segment data or point data
- Estimated 352,500 records per month represented by respondents for geocoding

Proposed Centralized GIS Tools



As part of the Federated Approach, three core centralized GIS Tools were initially identified:

- 1) Enterprise geocoding service
- 2) Geospatial library for shared data sources
- 3) Simple mapping solution for casual users

Cohesive strategy for Federated GIS



- Assess needs for Centralized Tools
- Create network of users for mutual support
- Provide training in GIS
- Pilot initial Centralized GIS Tools

GIS Users Email List



Provides information about GIS in CDHS and LHDs, including training and other opportunities

- *DHS GIS Users Email List*
(>150 people)
- *LHD GIS Users Email List*
(>50 people)
- *Partners GIS Users Email List*
(>30 people)

GIS Intranet/Extranet Sites



- Sites provides information about GIS in Public Health
- Reference for GIS Activities & Presentations within CDHS and LHDs
- Intranet: Available within the CDHS
- Extranet: Available through password



[CDHS Internet](#) [California Home](#) [Governor's Home](#) Monday, June 26, 2006

CDHS IntrAnet



[Printer Friendly Version](#)

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[LHD GIS Information](#)
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[GIS Success Stories](#)
[Data Sources And Metadata](#)
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CDHS Intranet

My CA This Site

Geographic Information Systems (GIS)

Welcome to the GIS Intranet site for DHS

The purpose of this site is to provide a resource for those using and those interested in GIS to learn more about how GIS is being used in public health.

Public Version of the California Healthcare Atlas from the Office of Statewide Health Planning and Development is now available:

The [California Healthcare Atlas](#) is an interactive, Internet GIS mapping application that enables users to find and query hospitals and other healthcare facilities for OSHPD data and related information. The application allows users to retrieve detailed information regarding hospitals, including quarterly financial reports and several patient summary reports. Patient origin and market share maps can also be created dynamically.

GIS Grand Rounds

GIS Grand Rounds is a speaker series at CDHS which will highlight Geographic Information Systems (GIS) uses within Public Health. This will be an opportunity to share and learn more about how DHS Programs are using geospatial analysis and GIS. Presentations are open to all interested. No previous experience is necessary. Location is Training Rooms A&D for all dates. Proposed topics below are tentative, however the dates are reserved.



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GIS

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CDHS Intranet

My CA This Site

Geographic Information Systems (GIS) > CDHS GIS Information

CDHS has created a GIS Steering Council that is working to advance the use of GIS within the department.

GIS uses geospatial data in many ways. Geospatial data are data that include a geographic component, such as a street address. A database that includes the locations of hospitals or medical facilities within the state is an example of geospatial data.

Congratulations!

In October, 2005 at the 2005 ESRI Health GIS Conference, the California Department of Health Services received the following award:

Advancing Health and Human Services with Spatial Information Vision Award

DHS GIS Users Group Email List

This Email list has been reactivated and will notify participants of updates and information related to GIS use within the California Department of Health Services and Local Health Departments.

DHS Geographic Information Systems Survey: Summary of Results

In June of 2005, the Department of Health Services (DHS) has formed a GIS (Geographic Information Systems) Steering Committee in order to better understand the Department's GIS strengths, requirements, and current infrastructure. To provide a starting point in understanding our departmental geospatial needs and resources, the GIS Steering Committee surveyed DHS program managers and experts about their GIS needs and capacities. The results from this survey are important to understanding how the DHS can develop an adequate GIS infrastructure and capacities that can serve all DHS programs. View a summary of the results from the DHS GIS Survey [here](#).

GIS Use, Opportunities, and Challenges

Within the California Health and Human Services Agency

This report provides an overview of geographic data and geographic information system (GIS) activities within the departments of the California Health and Human Services Agency (CHHSA).

[Final Report](#) 6/30/2000



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CDHS Intranet

My CA

This Site

Geographic Information Systems (GIS) > LHD GIS Information

Local Health Departments (LHDs) can now access this site through the password protected Extranet.

LHD GIS Users Group Email List

This Email list is currently being created. It will be used to notify participants of updates and information related to GIS use within the California Department of Health Services and Local Health Departments. It will also provide a means of increasing communication and support among GIS Users in the Local Health Departments. To add someone to this list, please send their name, title, address, phone number, and email to [Linette Scott](#).

Geographic Information Systems Survey of Local Health Departments: Summary of Results

This survey was sent to the California Conference of Local Health Officers and to the California Conference for Local Health Data Management in August, 2005. Survey Monkey was used to gather the information. We received 41 responses from 20 Local Health Departments with 36 respondents indicating the use of GIS software. The results from this survey are important for beginning to understand who is using GIS throughout the state public health system and how we can find additional ways to collaborate. [View](#) a summary of the results.

Federated GIS for the California Department of Health Services

This presentation was given by Linette Scott, MD, MPH at the California Conference for Local Health Data Management Annual Conference, October 18, 2005. [View](#) presentation.



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▶ [GIS Presentations](#)

▼ [ESRI Sac Users Group](#)

▼ [Spring GIS Forum 2005](#)

[GIS Success Stories](#)

[Data Sources And
Metadata](#)

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CDHS Intranet

My CA

This Site

Geographic Information Systems (GIS) > GIS Presentations

The presentations provided here are for informational purposes. If you would like additional information about any of the presentations, please contact the author. These examples are for use within the California Department of Health Services. Use outside of the CDHS requires approval from the author.

GIS Grand Rounds: May 9, 2006

Medical Service Study Areas (MSSA) –

How were MSSAs created, how are they being used, and how might you use them for subcounty analysis [View Slides](#)

Presented by:

Scott Christman from the California Office of Statewide Health Planning and Development

Centralized GIS Services for the California Department of Health Services –

An update on efforts of the GIS Steering Committee to bring basic GIS resources to the Department [View Slides](#)

Presented by:

Linette Scott, MD, MPH from the California Department of Health Services, Health Information and Strategic Planning-Center for Health Statistics

This presentation has been archived and the audio and slides may be viewed in combination at the following link: [GIS Grand Rounds: May 9, 2006](#)

Training & Educational Opportunities



- GIS Grand Rounds
- Webcasts in partnership with ESRI
- ESRI Sacramento Users Group
- Introductory ArcView training from outside consultants
- Other conferences and meetings

Pilot Centralized GIS Tools



Goals

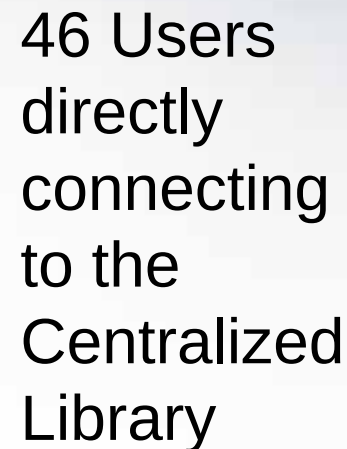
- Creation/Implementation of a Centralized GIS library (intranet and extranet) for CDPH and partners
- Creation/Implementation of a standards-based metadata service for the centralized GIS library
- Establishment of a geocoding service for CDPH/DHCS which may be incorporated into standards
- Development of standardized web-based geocoding service for use across the Health and Human Services Agency
- Development of standard for web-based interface between chronic disease applications and the standardized geocoding service

Centralized Geospatial Library



Library of spatial data, including

- boundary maps (county, zip, etc)
- transportation maps (roads, airports, etc)
- facility maps (hospitals, schools, etc)
- metadata about spatial datasets
(a card catalog of data sets that include geographic locations)



Centralized Library-Current Holdings



ArcCatalog - ArcInfo - Database Connections\Connection to SPSSACSQL32.sde

File Edit View Geo Tools Window Help

Conversion Tools

Location: Database Connections\Connection to SPSSACSQL32.sde

Stylesheet: FGDCESRI

Contents | **Preview** | **Metadata**

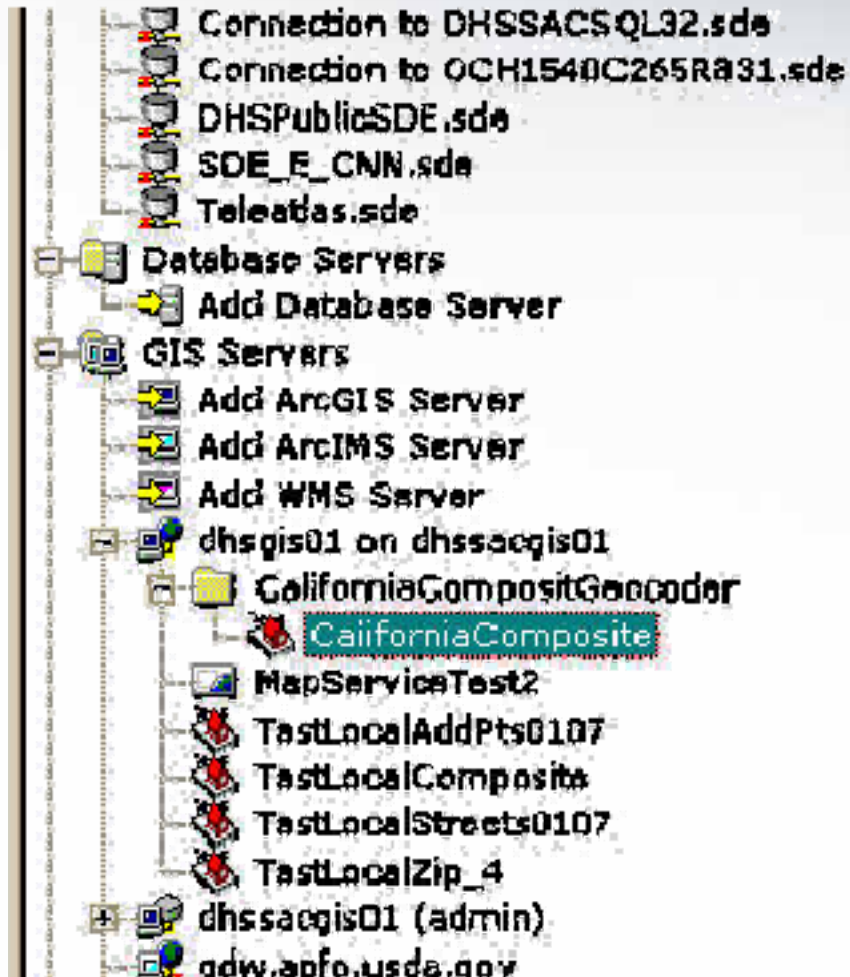
Name	Type
SPSSACSQL32_0000	Workspace
SPSSACSQL32_0001	Workspace
SPSSACSQL32_0002	Workspace
SPSSACSQL32_0003	Feature Dataset
SPSSACSQL32_0004	Feature Dataset
SPSSACSQL32_0005	Feature Dataset
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SPSSACSQL32_0099	Feature Dataset
SPSSACSQL32_0100	Feature Dataset

Standardized Geocoding Service



- Geocoding service provides longitude and latitude coordinates for street addresses or other geographic areas
- The longitude and latitude are the basis for mapping different types of data for presentation and analysis
- Geocoding services may charge by the address or be purchased with an enterprise license allowing unlimited use
- Goal: one, high quality, consistent service, to improve quality and consistency of our data

DPH GIS SERVER: Holdings



DPH GIS SERVER: Test Base Map Service



Base Administrative Layers

Base Transportation Layers

Can be consumed in ArcGIS ArcMAP or viewed on the Web

Geocoding Tasks using our TeleAtlas Data

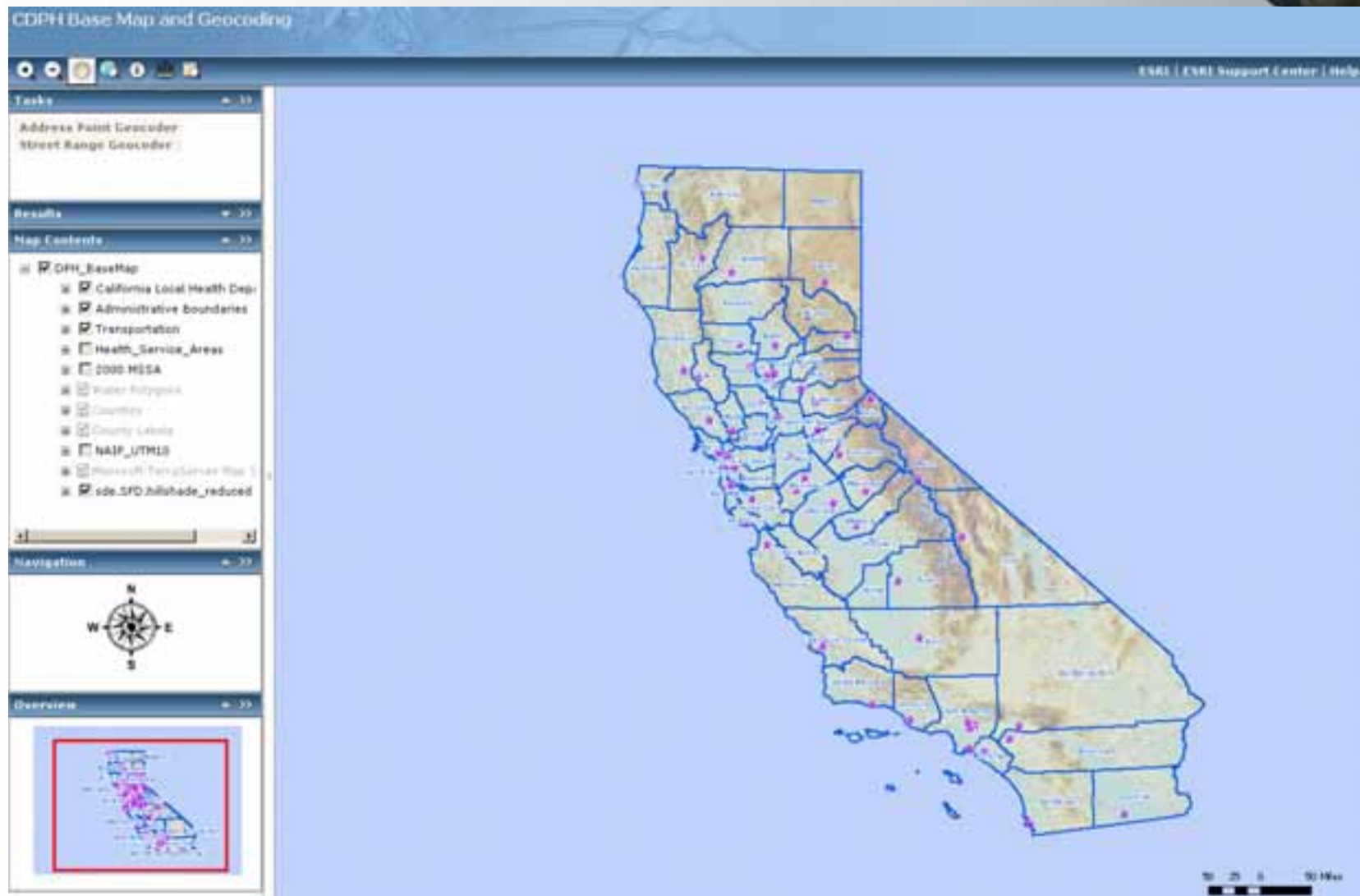
***Embedded Map Services from Microsoft Terraserver
and USDA NAIP imagery Map Service***

Simple Web-based Mapping Solution

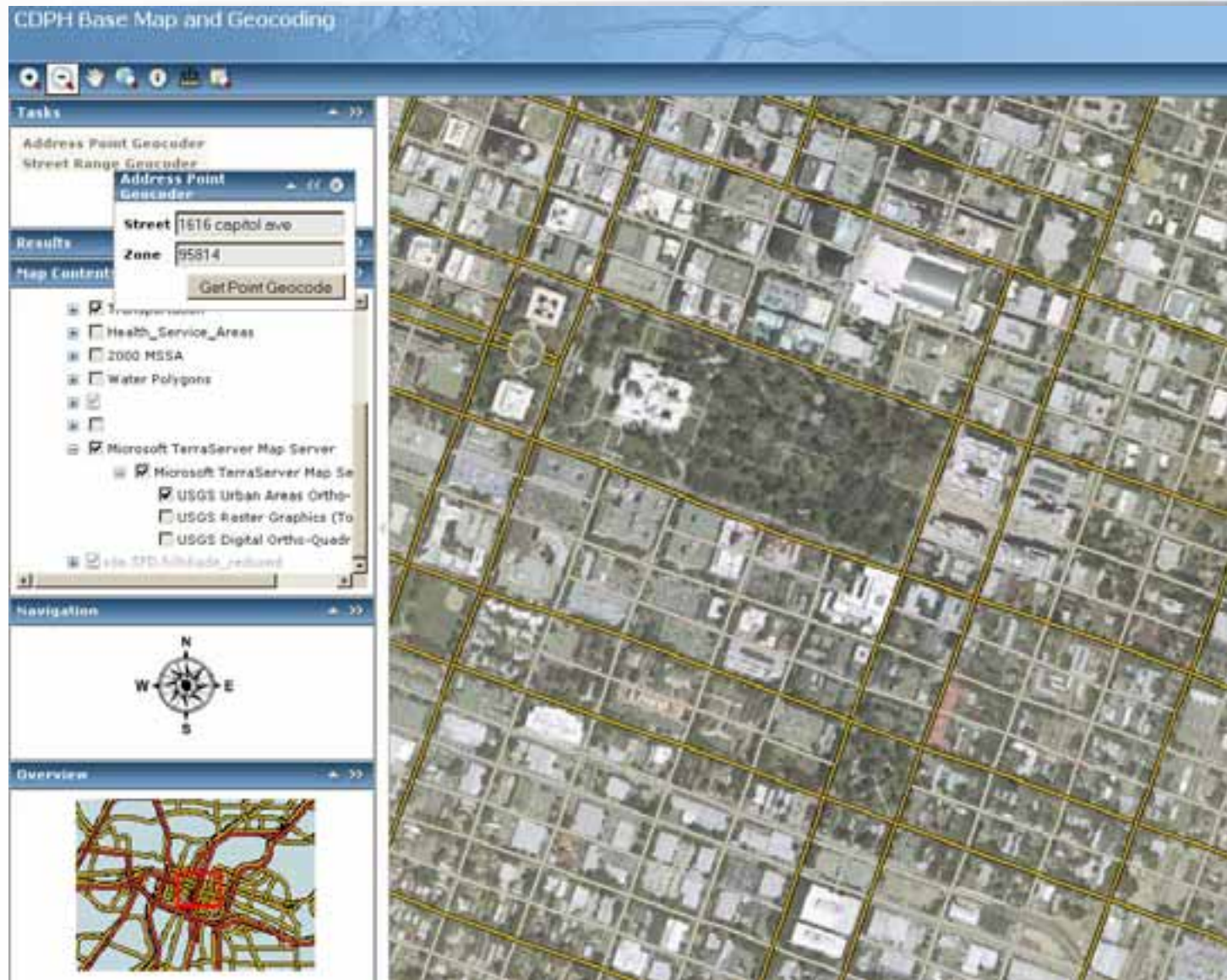


- Web-based tool focused on simplicity and ease of use
- No installation on desktop required
Does not replace sophisticated desktop GIS products
- Rapid mapping of data for visualization and evaluation without requiring specialized skills
- Maps may be pin-point or thematic and may be saved and shared
- Tool can be used for Decision Support in Emergencies

DPH GIS SERVER: Test Base Map Service



DPH GIS SERVER: Test Base Map Service



DPH GIS SERVER: Test Base Map Service



CDPH Base Map and Geocoding

Tasks

- Address Point Geocoder
- Street Range Geocoder

Address Point Geocoder

Street: 1616 capitol ave

Zone: 95814

Get Point Geocode

Results

- 1616 capitol ave, 95814 (15)
- 1700 CAPITOL AVE, 95814
- 1709 CAPITOL AVE, 95814
- 1714 CAPITOL AVE, 95814
- 1715 CAPITOL AVE, 95814
- 1716 CAPITOL AVE, 95814
- 1717 CAPITOL AVE, 95814
- 1718 CAPITOL AVE, 95814

Map Contents

- Transportation
- Health_Service_Areas
- 2000 MSSA
- Water Polygons
- Microsoft TerraServer Map Server
 - Microsoft TerraServer Map Se
 - USGS Urban Areas Ortho-
 - USGS Raster Graphics (To
 - USGS Digital Ortho-Quadr

DPH GIS SERVER: Test Base Map Service



CDPH Base Map and Geocoding

Results

1616 capitol ave, 95814 (7)

☒ 1616 CAPITOL AVE, 95814

Score: 100
Side: R
X: -129328.822839
Y: 63054.32190371
Ref_ID: 2680873
LeftFrom:
LeftTo:
RightFrom: 1616
RightTo: 1698
FwdDir:
FwdType:
StreamName: CAPITOL
StreetType: AVE
SufDir:
LeftZone: 95814
RightZone: 95814
Match_addr: 1616 CAPITOL AVE, 95814

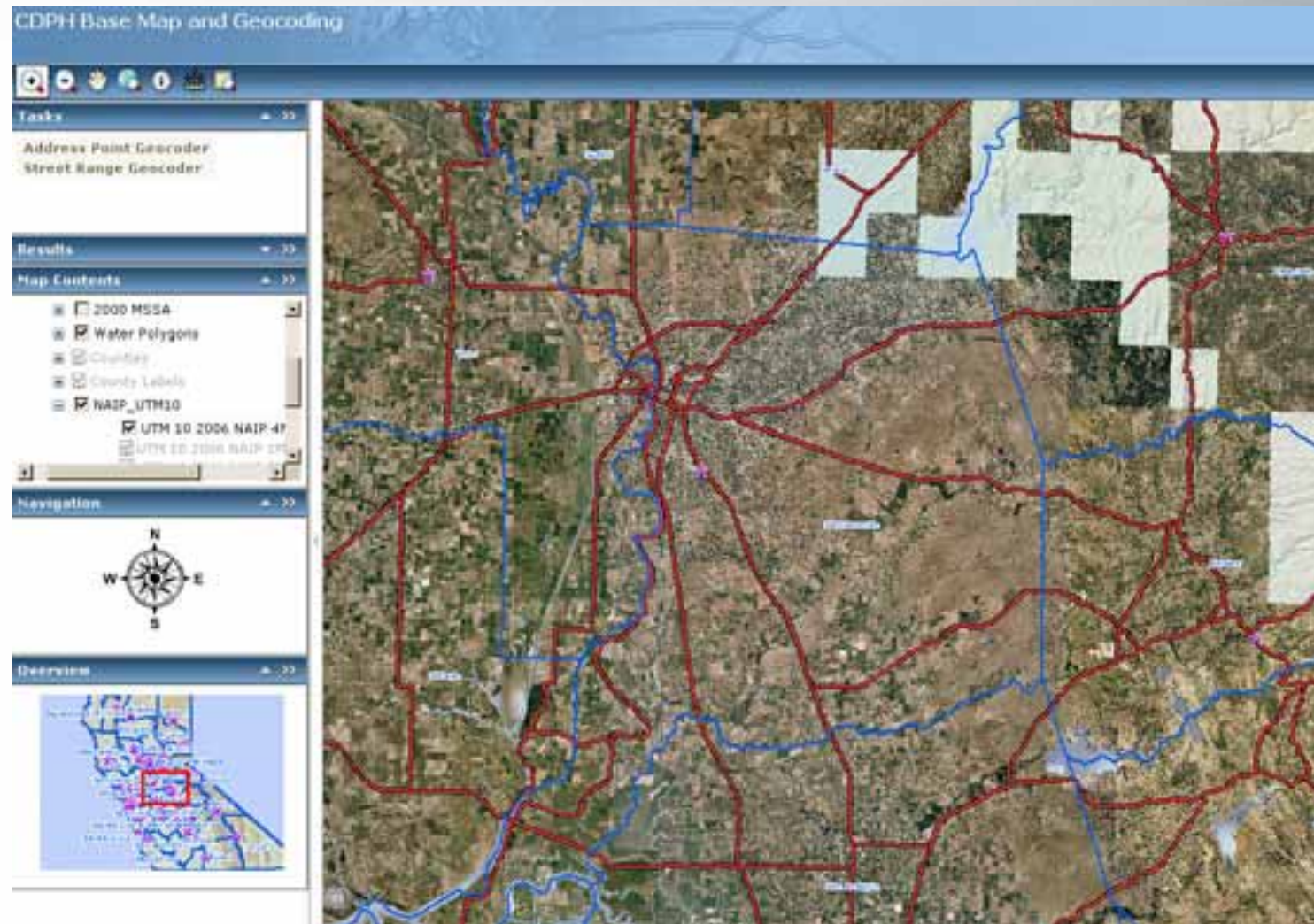
Street or Intersection: 1616 capitol ave
Zone: 95814
Geocode Street Address

Map Contents

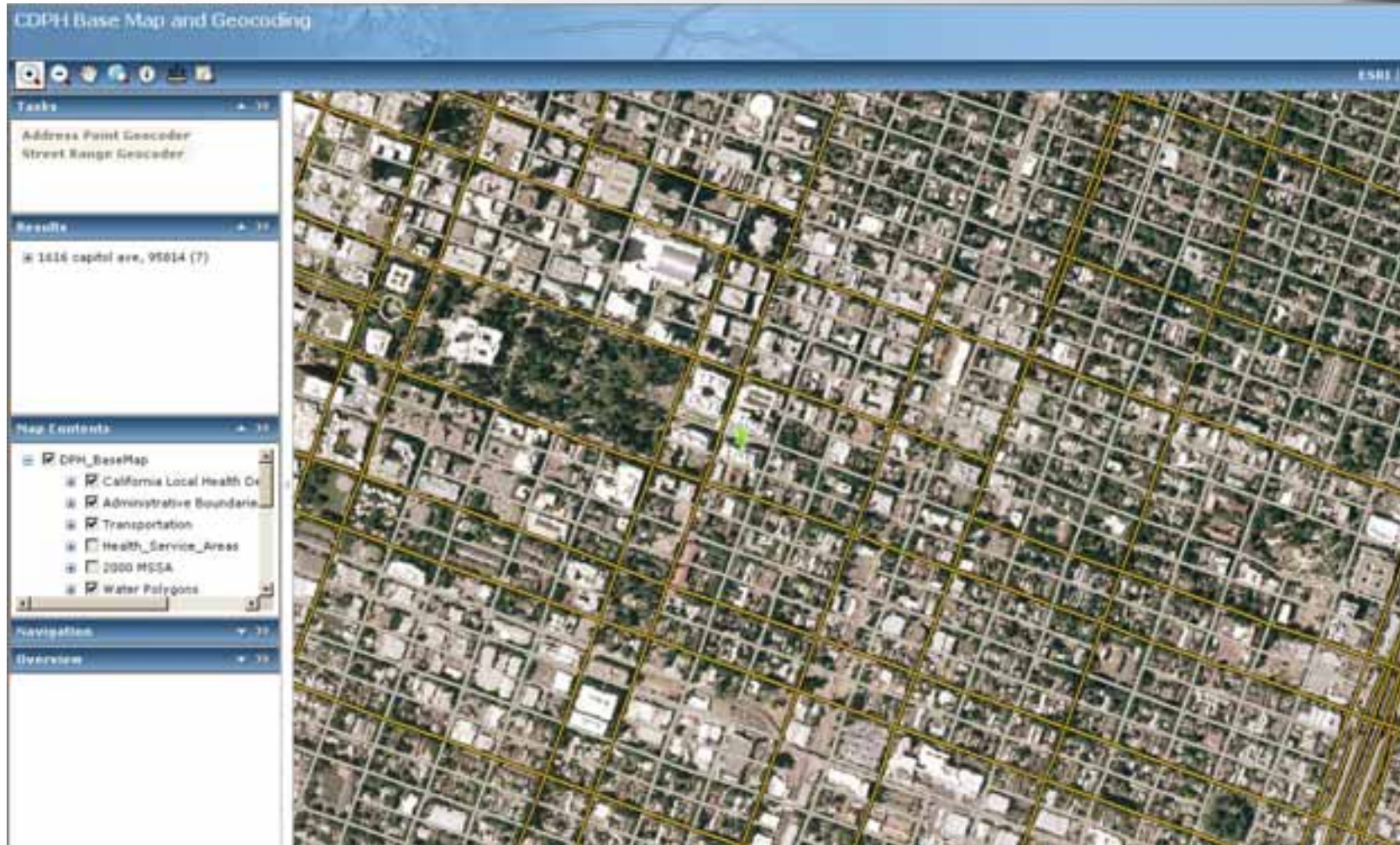
- ☒ Transportation
- ☐ Health_Service_Areas
- ☐ 2000 MSA
- ☐ Water Polygons
- ☐ Microsoft TerraServer Map Server
 - ☒ Microsoft TerraServer Map Se
 - ☒ USGS Urban Areas Ortho
 - ☐ USGS Raster Graphics (To
 - ☐ USGS Digital Ortho-Quadr
- ☐ side 3D/ hillshade, reduced

Navigation

DPH GIS SERVER: Test Base Map Service



DPH GIS SERVER: Test Base Map Service



GIS & Common Ground



GIS – Core Public Health Informatics Tool

- Federated Approach to key centralized components of GIS
- Geography provides opportunity to analyze different data in common ways
- Common Ground Grant provides tools to analyze Business Process
- Core Business Processes provide opportunity for shared services and improved efficiencies

Thank you!



Questions?

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