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Javier Aguilar Aguilar
Claremont Graduate University, javier.aguilar@cgu.edu

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The Regional Data Platform: A Geospatial Solution to Facilitate Data Collection and Informed Decisions

Emergent Research Forum (ERF)

Javier Aguilar

Southern California Association of
Governments
aguilar@scag.ca.gov

Abstract

How do we address congested urban centers, pandemics, pollution, human-induced climate change, water crisis, racial inequities, affordable housing, severe drought, and other complex problems¹, as well as smaller interconnected ones like too many liquor stores in community?” These challenges threaten our collective future and require informed and thoughtful insights to properly tackle them. This paper introduces the Regional Data Platform (RDP), a geospatial solution for holistic planning across scales and jurisdictions to facilitate data collection, analyses, and informed decisions to address major problems, as well as day-to-day ones. The RDP utilizes “space” and “place”² constructs through Geographic Information System (GIS) to enable a geographic approach and provide useful tools and its framework to collect, examine, and then recommend measures to mitigate and help resolve these major challenges (and not so major problems) that impact not only Southern California, but many parts of our world. For the Southern California Association of Governments (SCAG) region, this paper highlights the symbiotic relationship between local and regional planning, and the role of better data, tools, and government-to-government collaboration in addressing complicated problems and smaller ones under a common vision.

Keywords

Data and Workflow Collaboration, Decision Support System, Spatial Intelligence, Southern California, Wicked Problems.

Introduction

The Southern California Association of Governments (SCAG) is a Metropolitan Planning Organization (MPO) comprised of six counties and one hundred and ninety-one cities, the largest in the United States. It’s a government organization that abides to federal and state mandates, as well as local jurisdiction needs through several roles. These roles include:

1. Develop a long-range Regional Transportation Plan (RTP) including a Sustainable Communities Strategy (SCS) to meet GHG reduction targets,
2. Develop a short-range Transportation Improvement Program,
3. Develop transportation strategies for the Air Quality Management Plan,
4. Develop long-term regional growth forecast,
5. Develop Regional Housing Needs Assessment,
6. Review projects of regional significance for consistency with RTP/SCS,
7. Provide forums to address issues of regional significance, and
8. Serve as a regional data & information center.

¹ First coined by Horst Rittel in “Dilemmas in a General Theory of Planning”, “wicked problems” are social or cultural problems that are difficult or seemingly impossible to solve, because of their complex and interconnected nature. Some examples are climate change, poverty, racial inequities, sustainability, and homelessness.

² Space helps understand the extent where phenomena happen and place where things exist.

Background

The SCAG region encompasses Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. It is 38,000 square miles that approximates the state of Ohio in geographic size. In terms of population size, SCAG has 19 million residents, almost half of California's or approximately the population size between the states of New York and Florida. The region's economic prowess makes it the 16th largest economy of world with its major seaports, airports, diverse industries, and world class labor force (at all levels). Truly, the SCAG region is complex and faces many challenges³ that require a systems approach and an agile implementation.

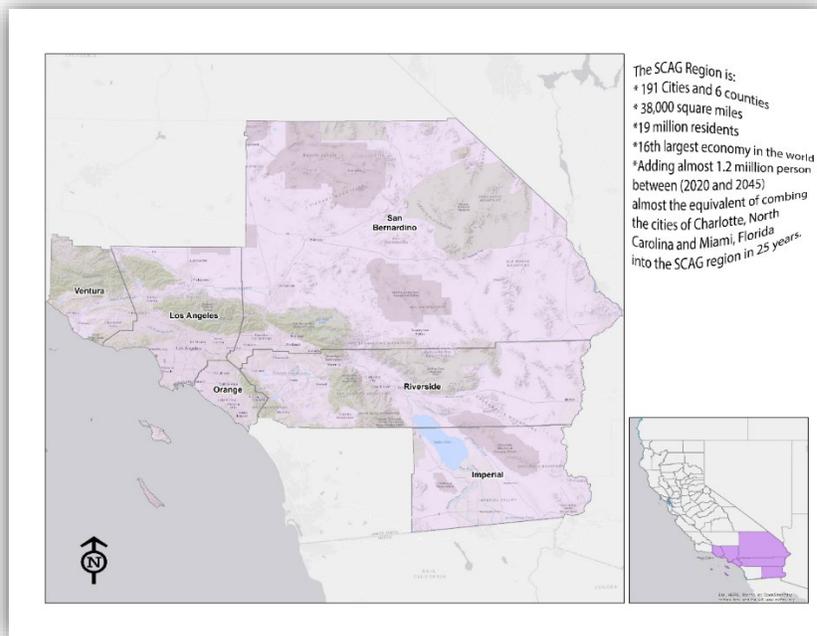


Figure 1. SCAG Region

Problem and Approach

SCAG has created a regional GIS, a system of systems to facilitate insightful planning strategies at all levels to better collect data, understand local and regional phenomena, address issues, and mitigate these issues. A regional issue of significance is henceforth referred as complicated problem. SCAG's regional GIS is a platform for data sharing and management that has modern tools for planning, public engagement, and collaboration. The RDP, a geospatial solution for holistic planning across scales and jurisdictions that is built on symbiotic relationship between local and regional planning, and the role of better data, tools, and government-to-government collaboration in addressing small day-to-day problems to "wicked problems" under a common vision.

As mentioned above, SCAG is mandated to develop a long-range Regional Transportation Plan that includes a Sustainable Communities Strategy to meet Green House Gas (GHG) emission standards. To comply, SCAG needs accurate, complete, and current local data sets for its inputs to regional forecasting and other planning models required for these analyses in the federal and state plans. On the other hand, the region's cities and counties struggle to update their local plans and data related workflows, because of lack of good

³ According to projections from the California Department of Finance (DOF), the SCAG region is anticipated to add 1.2 million persons between the years of 2020 and 2045. It is the population equivalent of combing the cities of Charlotte, North Carolina and Miami, Florida into the region within twenty-five years.

data, tools, resources, and support. As result, SCAG built the RDP based on symbiotic relationship between local and regional planning, to collect better data, create useful tools, and government-to-government collaboration in addressing small day-to-day problems to “wicked problems” under a common vision. This system of systems was engineered from insights and feedback of ten representative SCAG local jurisdictions⁴ from across the SCAG region, which also tested the platform tools. Together, this collaborative effort supports regionally aware local planning while providing locally informed regional planning. It is guided by four RDP program goals:

1. Facilitate stronger regional and local planning by providing modern tools and best practices to assist with planning at all levels with information-based decision making.
2. Streamline the process of collecting and integrating data from member agencies to SCAG, while providing useful information products and data sets to everyone.
3. Provide a mechanism for data consistency and standardization, as well as procedures to SCAG for GIS related work and then spillover to our regional partners (if they wish to participate in the RDP).
4. Build a community around the RDP for long-term maintenance and growth.

System of Systems

The RDP is a system of systems consisting of several tools that collect data, explore data (with descriptive statistics and maps across topics and geographies), and collaborative workspaces to inform analyses and decisions. Current tools include:

1. **Regional Hub:** A one-stop access to data, tools, and information as well as a platform for two-way engagement. Features and capabilities include:
 - Rich content catalogue with data, maps, apps, policy resources, and more
 - “Planner’s Corner” full of planning-specific resources
 - Public and private access
 - Collaboration workspace for regional programs and initiatives (coming soon)
 - Ability to request one-on-one technical assistance from SCAG
2. **SoCal Atlas:** A web-based experience allowing member agencies, other regional stakeholders, and the general public to explore data, statistics, and maps across topics and geographies.
3. **HELPR:** A tool providing the ability to evaluate parcels within a jurisdiction may have potential for residential development based on parcel attribute information and recommended filters.
4. **Parcel Locator:** A self-service resource for planners, residents, or other stakeholders (such as developers) to find and discover rich information about specific parcels.
5. **Local General Plan Update Site (template):** A ready-to-use template for web-based General Plans for use by SCAG Member Agencies to communicate and engage with residents around their General Plan update.
6. **Commercial Off-the-Shelf (COTS) Planning and Engagement Tools:** These tools include Business Analyst Web, ArcGIS On-line, ArcGIS Pro, and ArcGIS Urban which provide power software applications for further visualization, analyses, and modeling. In addition, the platform has numerous other resources, templates, and best practices to support a broad range of common planning and resident engagement workflows.

⁴ City of Barstow, City of Fullerton, City of Long Beach, City of Los Angeles, City of Pico Rivera, City of Ventura, City of Yorba Linda, County of Imperial, and County of San Bernardino. Thirty-five local jurisdiction staff tested the platform and thirty-three SCAG staff.

7. Local Data Exchange (LDX) Tools: Are data collection tools with workflows to assist with accuracy and completeness of the current local data.
 - LDX Website: A central location for member agencies and other stakeholders to access data sharing tools and related LXD Website: Local Data Exchange resources, view information and statistics on the state of data in the region and request technical assistance from SCAG.
 - Data Editor: A web-based application for jurisdictions and other key stakeholders to explore, review, and update/comment on data shared with SCAG through the Local Data Exchange process for their jurisdiction.
 - Data Sharing: Additional mechanisms for member agencies to provide data to SCAG as part of the Local Data Exchange process, including GIS data file upload and sharing an approved plan in ArcGIS Urban.
 - Data Reviewer: A workflow allowing member agencies to review and approve edits to data within their jurisdiction before edits are sent to SCAG and incorporated to the regional layers.

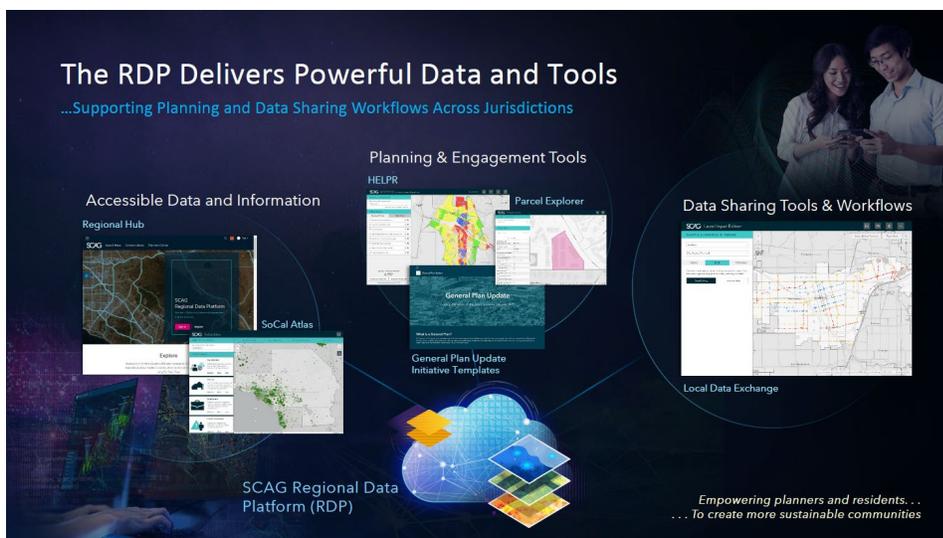


Figure 2. Regional Data Platform Tools

Conclusion

This paper introduces the RDP, a geospatial solution for holistic planning across scales and jurisdictions. It is a system consisting of several tools that collect data, explore data (with descriptive statistics and maps across topics and geographies), and create collaborative workspaces to inform analyses and decisions. These decisions are with the end (of action) to recommend measures to mitigate and help resolve these major challenges (and not so major problems) that impact not only Southern California, but many parts of our world. For the SCAG region, this paper highlights the symbiotic relationship between local and regional planning, and the role of better data, tools, and government-to-government collaboration in addressing complicated problems and smaller ones under a common vision. Albeit this geospatial solution’s model, framework, and workflows may not produce the correct solution for many parts of the world, it may still be useful with lessons in what to do and not to do, as the RDP continues to be revised and refined its approaches with our evolving world.

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