

Planning with uPlan

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Role of Analyst

One of the frustrations of any technical analyst is the lack of attention given to details. Analysts consider expansive data but must translate that data into short and understandable sound bites for others who are not as deeply familiar with the data to understand. The process of converting data to information and eventually to a call to action is a challenge for any analyst.

Data → *Information* → *Call to Action*

Decades ago, data was hidden in file folders and boxes that were not easy to reproduce or access. Within the past few decades, data has been stored electronically allowing a wide range of people to use and share data. Unfortunately, more data has become more noise and good technical analysis continues to fall on a select group of people who can fight through the mounds of data, sifting to find the useful and meaningful data from the confusing and poor quality data.

Compounding this problem of converting data into information is the decision making process of our American democracy. Thomas Jefferson understood that the success of our democracy depends on an informed electorate but perhaps could not imagine the challenges raised by television or the internet, while focusing his thoughts at the time on the mass production of print media. While these various forms of media offer opportunities for sharing information, they often eliminate the transparency between data and information and result in biased efforts to shape policy without really communicating information or knowledge. In America, all people are equal and all people can serve as a decision maker in an elected (or appointed) position, but an observation is that all political parties share some guilt in advancing people to leadership positions that appear to legislate more by emotion and desire than by fact or knowledge.

The conversion of data to knowledge is vitally important but must be transparent and absent of bias. Scientists and analysts are not an elite group chosen to legislate. While analysts understand data and have gained knowledge, they do not necessarily represent the range of values that a democratic process will bring forward to lead. Many of the decisions facing transportation planning issues are complex and cannot be simplified into a spreadsheet, no matter how advanced the calculations, such that the diversity of values and range of perspectives that a wide spectrum of people use to review the information results in decisions and actions which offer the highest benefits to the most people. Good transportation planning does not mean that there is one right or one wrong answer, but that the answers are derived from a broad spectrum of people with varying values and have good access to information. It becomes the job of the analyst to translate data into information which resonates with a wide range of audiences.

Transportation Planning Analysis Challenges

Beyond the broader and largely theoretical issue of creating an informed electorate in the age of the internet are the specific challenges and mandates facing transportation planning. Beginning around the 1960s and 1970s, various federal agencies were given responsibility to collect data,

share information, and create decision making steps related toward specific issues such as transportation, housing and urban development, environmental protection, etc. These “stove pipe” agencies with a single focus were overseen by Congressional action which provided ongoing legislation to further direct these agencies and generally push for greater transparency and public involvement but were largely left alone to develop specific tools and generally do what they needed to do to advance their mission.

Transportation planning, as a science, developed formalized sets of econometric models used to predict the need for more transportation. Travel demand models have a successful track record in showing that more people and more jobs results in more travel and the need for more roads and transit facilities. Beyond this general agreement, there is some “noise” in whether the data points to a compelling need for highways versus transit or whether various “smart growth” actions (as opposed to the “dumb” things that our free market might do) can mitigate the need for extensive transportation infrastructure (beyond good shoes). Recent transportation planning legislation (SAFETEA-LU) has further strengthened the planning process and created links from planning to project development.

Transportation planning legislation has continually pushed for greater levels of public involvement in the transportation planning process through requirements of Metropolitan Planning Organizations (MPOs) as well as State Departments of Transportation (DOTs). The need for public involvement was often at odds with the technical need to advance models and data collection and most agencies became good at one or the other but rarely both. The best examples of integrating technical analysis and public involvement has been for transportation planners to parade summary boards at transportation open houses that tell a compelling story about how past data trends and future data projections reveal a need for a desired action, usually to build a road or a transit facility. These compelling stories typically showed how past trends like increasing travel per person will continue while simultaneously showing a future with more people to help draw a conclusion that some “build” action is needed.

Unfortunately, the future that can be considered in these single purpose agencies and conveyed in this static format is always incomplete. Controversy is only stirred but rarely settled with inert display boards. These boards cannot tell the full story of the data and models leaving proponents feeling like the audience did not fully understand the issues leading to the compelling need. Opponents are equally frustrated that the display boards only tell half the story, either a biased future or the omission of some important feature or detail. Opponents often feel like adding their information to the story might create a different call to action. Because the format did not allow all participants to bring data and information, we create contention around the decisions.

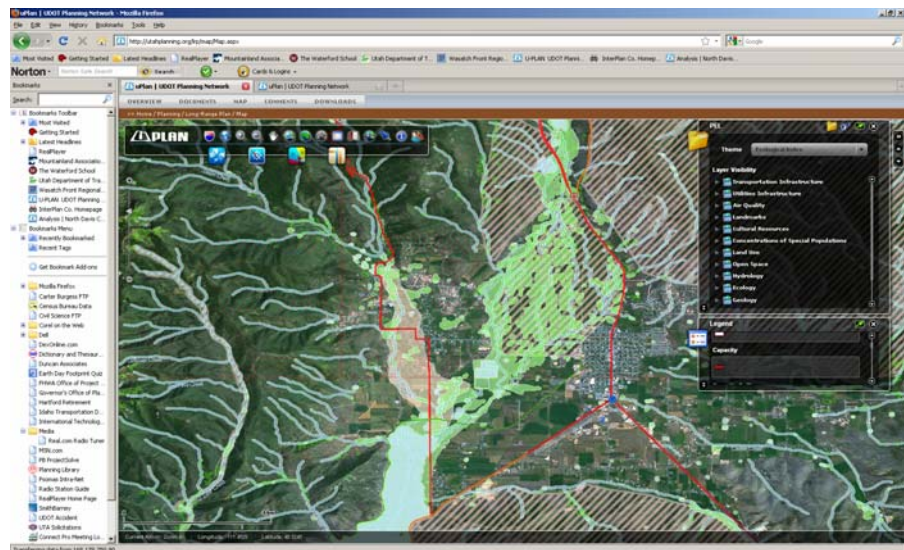
Cynical transportation planners dismiss these conflicts as the messy part of transportation planning, the point where planning ends and politics begins. Engaged transportation planners respect the planning and democratic process and see the continual challenge of presenting complete, unbiased, and uncensored knowledge to the public and to decision makers. Astute planners recognize that today’s public includes tomorrow’s decision makers and it is a planner’s job to inform both groups equally well. Given this backdrop, the UDOT Planning Division attempted to create a tool that would better display planning related data and information.

Development of uPlan

In July 2007, the UDOT Planning Division issued a request for qualifications for the “Development of a Planning Data Management and Presentation Tool.” UDOT selected a multi-disciplinary team of engineers, planners, environmental scientists, GIS professionals, public relations professionals, and strategic communications staff to understand what this unstructured request entailed. With limited guidance beyond a strategic vision and a “we’ll know it when we see it” mutual agreement between UDOT and private contractors, the product proved difficult to scope and created frustrations between UDOT and several consultants.¹ The term uPlan was developed during one of several minor restructuring attempts and, at the time, referred only to a project website that could be used to test the display of planning related information in a series of one page summary sheets called U-Pages.

Largely through the efforts of BIO-WEST, Inc. uPlan is now a tangible product that people can access in meetings or at a private desktop. uPlan is now a GIS data base that is beginning to acquire data at an exponential rate. Despite this advancement and the status of something real, uPlan is presently only a place (website) where planning related data associated with the development of the UDOT 2011 Long Range Transportation Plan is being stored and accessed.² uPlan itself is evolving and changing based on need and use as well as software and hardware advances of various users and potential users. In this sense, uPlan presented in this paper is still a concept. However, this concept now presents an example and starting point.

This uPlan starting point has begun to change the dialogue from an accusation based “you don’t understand our issues” to a “let me show you what I mean by...” Data layers are constantly being added to uPlan both from within UDOT, related to highway attributes, as well as outside UDOT. Outside data layers emerge through a “let me show you” cooperative attitude. The attitude of UDOT



uPlan can display critical environmental attributes such as streams, wetlands, rare plant habitat, and other attributes on top of planned roadway capacity needs for any location in Utah.

¹ InterPlan was aware of but did not pursue this RFQ as either a sub-consultant or prime contractor. InterPlan was brought on as an addition to the team in approximately mid-2008. InterPlan is presently working with several other firms, some part of the original team but all hired independently by UDOT Planning, to pursue various tasks of UDOT Planning using uPlan as tool.

² Various other efforts of UDOT Planning are also using uPlan, but InterPlan’s primary involvement is with the development of the Long Range Transportation Plan update.

planners is that if the data that we have is not communicating the issues that we need to understand, please help us see your data and understand your issues. Because the data collection started at the planning process, crayon level accuracy was sufficient to get started and the continuing attitude is that relative accuracy is better than nothing but that accuracy improvements should be incorporated when available.

Outside data layers initially (largely through the expertise of BIO-WEST) focused on environmental attributes capable of scoping and initiating National Environmental Policy Act documents. Work is ongoing to ensure that data is displayed as accurately as possible while addressing individual concerns of each agency. Because the tool ultimately relies on good data from all participants, the dialogue is less likely to jump towards contentious results and is able to emerge from a cooperative, data collection platform. People with decades of experience in various stovepipe agencies are expressing a deeper understanding of issues presented by other agencies. “What if” questions are replacing “why not” questions through the ability to look at and query various issues that make up the complex decisions that must be faced.

Internally within UDOT, raw data is being converted to cost saving information. Pavement and bridge reconstruction plans are being coordinated with long range capacity needs to synchronize the timing of various projects. Identified safety concerns can be coordinated with critical freight corridors to adjust the priority and timing of various highway improvements. UDOT Planning is working with each UDOT Region to assist in gathering and coordinating multiple smaller highway improvements into coordinated larger improvements in an effort to create the lowest construction impact to the traveling public. Similarly, larger transportation plans are being segmented into programmable projects that provide the highest benefit/cost in these difficult economic times.

As uPlan grows as a comprehensive planning database, efforts are beginning to transition from data collection and display to the ability to summarize data that may resonate with various user groups into information and knowledge. A delicate balance is still required to allow planners to summarize data in a way that is meaningful and easy to understand but is not processed into a conclusion. Performance measures have been tested in a prototype project and are being advanced to display easy to understand comparisons of UDOT’s Strategic Goals as well incorporate and measure the goals of other partner agencies.³

uPlan Next Steps

The future of uPlan is a work in progress. A direction is firmly established and a path is beginning. Geographic Information Systems (GIS) have long emerged from cartography to data storage and analysis and uPlan is firmly anchored in a GIS environment. Yet, the winding of the uPlan trail can lead to a number of places that are not constrained. uPlan presently uses an ArcGIS feature called FlexViewer. The data is housed and supported by the Utah Automated

³ UDOT’s four strategic goals include:

- take care of what we have
- make the system work better
- improve safety,
- increase capacity.

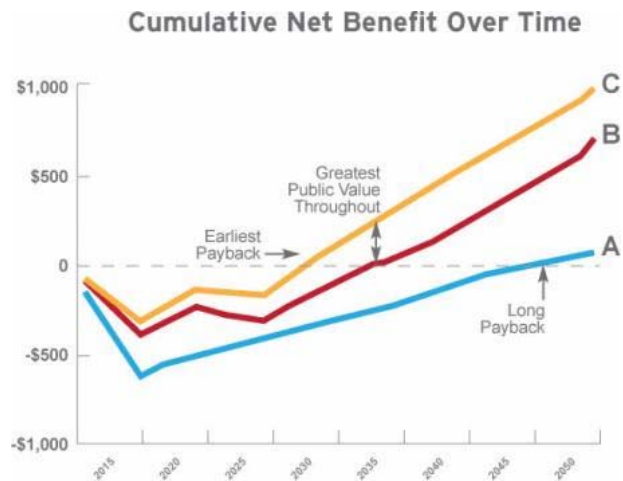
Asset management, safety, and capacity are easily measured, compared and communicated. Efficiency is more subjective but various mobility measures are used in the industry and are being evaluated.

Geographic Referencing Center (AGRC) and is organized with the assistance and oversight of the Utah Department of Technology Services (DTS). Software and hardware will likely continue to change and various efforts are underway to streamline the process of adding data so that it is automatic with each agency as opposed to an upload step that is presently required.

uPlan has proven to be a useful tool for the UDOT Planning Division and is beginning to gain relevance as a source for comprehensive data at the UDOT Regions, generally where planning transitions to project development. Project fact sheets and environmental screening reports have been developed to summarize various data sources and provide print ready copies that can be reviewed. Efforts are underway to streamline these print ready copies into needed products such as Project Concept Reports, the first step towards project scoping and programming. Coordination with UDOT partners is revealing interesting win-win uses for other agencies.

Utility companies such as Rocky Mountain Power can anticipate advantages in planning the alignment of future major transmission lines. Continued cost and user savings can be gained by better coordinating transportation improvements with utility improvements and a first steps seems to be to put transportation and utility plans in the same database, particularly one that includes land terrain and various environmental features. Similarly, recognized system gaps which have emerged through uPlan have become a catalyst for additional planning partnerships. Mapping freight rail corridors and major activity centers has spurred a dialogue for using uPlan to begin the process of planning for interstate High Speed Passenger Rail.

As planning users and accompanying spatial data continue to grow, efforts are underway to create customized data “themes” which quickly turn on the most useful data of a particular audience but allow other data to be added and queried. The capability to use various prediction models is also being incorporated in uPlan as data layers. Users can presently look at future estimates of congested corridors based on the results of the Utah Statewide Travel Model (USTM) as well as future estimates of pavement deficiencies through UDOT’s dTIMS software. Overtime, other estimates of alternative futures will be added and there is a desire to allow users to customize their consideration of which future estimates to consider.



Ultimately, users will be able to consider alternative future scenarios and will be able to compare the performance of these scenarios across various useful indicators.

Ideally, users will be able to mix and match future projections to create different scenarios for the future, such as different (transportation) project scheduling. While perhaps utopian to anticipate that decision makers will become so thirsty for knowledge that they become the analysts, it remains a useful goal to be able to question various assumptions on the fly and allow decision makers instant access to knowledge. UDOT Planning has taken a first step in this direction. InterPlan is proud to be a partner in the future of uPlan.