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A Short History of the Policy Simulator and the early years of CommunityViz

Many people were involved in the development of CommunityViz, and even more people contributed ideas that went into what was eventually developed. The following is a history of the development of the Policy Simulator and the early years of what became known as CommunityViz. This summary was first written by Rob Bernard at the request of Noel Fritzingler in November 2008. It was then edited and expanded by George Janes in April 2009. Rob was the lead developer and model designer of the Policy Simulator component of CommunityViz, while George managed that component's development. The following reflects our records and recollections.

Late 1994 - Early 1995

Noel Fritzingler and Lyman Orton of Orton Family Foundation (OFF) asked around about how to create something like SimCity for rural places. They were directed to talk to John Hiles, of ThinkingTools (TT), in Monterey, CA. TT was a spinoff from Maxis (the company that created SimCity). TT designed commercial and business simulations for larger clients.

Fritzingler and Orton asked TT for references, and got the name of Win Farrell (Farrell) a partner from Coopers and Lybrand Consulting (CLC). TT had created the game "TeleSim" under direction from Win Farrell. TeleSim was a simulation that was used to show what might happen with the deregulation of the telecommunications industry. It was used throughout the telecom industry in facilitated training sessions in the mid-1990s.

Eventually, no deal was made between TT and OFF. OFF then came to CLC in the fall of 1995 to explore the possibility of CLC taking on the project. By this point, Farrell had hired Rob Bernard (Bernard) to work in his new group, the Emergent Solution Group (ESG). Farrell hired Bernard in October 2005. Bernard had had experience as an urban planner and a simulation-game designer, with a specialty in complexity theory and agent-based modeling.

Jan 1996

Bernard and Farrell (of CLC) traveled to Weston VT and met with Fritzingler at a restaurant next door to the Vermont Country Store. It was agreed that CLC would host a two day meeting, in Vermont, to discuss plans on how the idea that Fritzingler and Orton had could be implemented.

Feb 1996

There was a meeting in Woodstock, VT, in which Farrell, Bernard, Orton, Al Feldt (a simulation-gaming professor from the University of Michigan), Will Purves (a simulation-gaming graduate student from Michigan), and several other representatives of OFF attended. At the meeting, we discussed gaming-simulations, spent several hours playing the Feldt & Bernard developed game RULUG (Rural Land Use Game -- a variation of Feldt's famous game, CLUG), and discussed ideas for how Fritzingler and Orton's idea could come to fruition.

It was agreed that CLC would develop a proposal for design and development of the product.

Apr 1996

CLC formally proposed a design and scope of work for the project, tentatively entitled the "Vermont Rural Lands Simulation". OFF did not accept the proposal, but neither was there a formal rejection. Discussions continued to fine tune the proposal and the start project's development seemed eminent.

May 1996

CLC hires George Janes (Janes) and adds him to ESG. Bernard and Janes had worked together as planners and modelers at the Detroit Metropolitan Planning Organization. Janes still vividly remembers the description of the project when first described to him: a forecasting tool that will show the physical consequence of land use decisions in 3D. (e.g. "how is growth and change going to affect what you see out your window.")

Jun-Jul 1996

At its own expense, CLC produces, writes, directs, edits, commissions original music and full computer animation for the four-minute video entitled "Treewell". The visionary discussions between Fritzinger, Orton, Bernard, Farrell, and Janes, as well as the meeting in February, contributed to the ideas presented in this video. Ultimately, though, Bernard, Janes, and Farrell integrated and developed the ideas into a coherent whole. Essentially, this video lays out the entire concept of what eventually becomes CommunityViz. It includes the following:

- 3-D Visualizations and fly-throughs
- Integration with spatial data
- Scenario building
- Policy simulation & Agent-based modeling

The so-called "Treewell video" which outlined the earliest (1996) concepts of what became CommunityViz has been posted on YouTube:

<http://www.youtube.com/watch?v=0zWcGRFitOM>

Furthermore, CLC designed and developed the first version of the Vermont Rural Lands project. CLC wrote software and integrated 3-D simulation using a language called VRML (Virtual Reality Modeling Language).

Late July 1996

The video is presented at a conference in New York City called something like "Telecommunications in the 21st Century". Michael Kwartler of the Environmental Simulation Center (ESC) is in attendance at this conference. At that time the ESC was still a part of the New School for Social Research. CLC and ESC meet later that summer at the ESC's offices to discuss collaboration. The video is given to OFF. OFF arranges for CLC to show the video and demonstrate their ideas at the Vermont Design Institute in November 1996.

August - October 1996

CLC designs the first version of the Vermont Rural Lands Project, as a proof-of-concept for OFF. The work is done speculatively, as no agreement between CLC and OFF has been finalized. The work is shown off as CLC's own product and shown at the URISA conference in Salt Lake City. There CLC meets Planning and Development staff from Scottsdale AZ and serious discussions with them to build a similar system for them continue for the rest of 1996. CLC introduces the ESC to OFF.

November 1996

CLC presents the Treewell video at the Vermont Design Institute at Norwich University in Vermont. In addition, CLC takes the first version of the Vermont Rural Lands software written in the summer and integrates with ESRI's software ArcView (the precursor to ArcGIS).

While that version of the software did not have full simulation capacity, the integration of results into ArcView and presentation of the scenarios and demographic and economic changes were eventually incorporated into what became CommunityViz.

Another proposal was made from CLC to OFF, soon thereafter. OFF did not accept the proposal from CLC. After nearly two years of talks with OFF, CLC management is starting to lose patience, as OFF is still not a client, just a potential client.

1997 through mid-1998

In part because of this frustration, the management of the pursuit of a contract with OFF was handed to ESC with CLC's blessing. ESC starts to define the project in detail and help assemble a team capable of doing the work. By the end of 1997, OFF and the ESC come to terms on a contract and OFF becomes the only significant source of support for the ESC as it leaves the New School for Social Research to become its own independent not-for-profit organization. Others also got involved at this point including Gary Smith of Green Mountain Geographics, who eventually led the user support team for CommunityViz.

OFF, ESC and others define a development team to build the product. The team consisted of CLC (Bernard, Janes, and ESG), ForeSite Consulting (Brenda and Jim Faber), and Multigen (Jon Zucker and Steve Hanning). The three portions of the project at this time were to be a scenario planning component (ForeSite), a 3D visualization component (Multigen), and the demographic and economic simulation component (CLC). ESC would act as the integrator of the components, help to define overall functionality and provide direction.

July 1998

Coopers and Lybrand merges with Price Waterhouse to become PricewaterhouseCoopers (PwC)

Shortly thereafter, OFF and PwC come to their first agreement on the development of the Policy Simulator. Around this time OFF signs contracts with ForeSite and Multigen to complete the CommunityViz development team. While each organization is responsible for their own designs, ESC advises on functional specs and the integration of the three components.

1999

Overall technical development and timeline management is handled by Nina Seaman and independent technology consultant out of New Hampshire. She is brought into the project in 1999 after development was already started. In June 1999 the PwC group ESG is disbanded and Bernard, Janes and the Policy Simulator project are transferred to PwC's Washington Consulting Practice, which is PwC's government consulting arm.

It was around this time that the project name changed from the Vermont Rural Land Simulation to "CommunityWorks." CommunityWorks trademark was taken by another organization. It was also not liked by Lyman Orton, who personally bestows the name "CommunityViz" to the project

2000

CommunityViz is introduced to the public in a mobile workshop at the 2000 APA national conference in NYC. CommunityViz was installed on many brand new, extremely powerful SGI Windows NT machines. The concept was to show a high profile group of planners the power of CommunityViz, which at that time meant the power of linking real-time visual simulation with GIS data and tools. The mobile workshop setting allowed the target group of planners to actually sit them behind the computer themselves and fly through scenes themselves and moving things around in real-time.

User testing of CommunityViz begins in summer of 2000 and feedback on Policy Simulator informs us that users are having difficulties making it work in the real world of limited and imperfect data.

Starting in late 2000, the ESC's role in the project diminishes to more of a user-testing role, and ForeSite and Brenda Faber's role is elevated.

2001

Informed by user testing, OFF and PwC enter a new agreement to make many improvements to Polsim. By early 2001 OFF trustee Andy Bush takes on a larger role in the project and participates in weekly developer calls. Andy's purpose was largely strategic, though he attempted to get everyone and their products ready for the big week-long developers meeting in Colorado that took place the summer of 2001. This meeting was the last participation of the ESC as a part of the inside CommunityViz team. At this meeting ESC presented an extremely detailed report about functional deficiencies of the product, which was labeled CommunityViz 1.0 beta, though it was later determined that 1.0 was not ready for public use, as

SiteBuilder (the 3D component) often crashed in catastrophic ways, and Policy Simulator was still considered too difficult for most planners to use. Scenario Constructor was proving to be the most stable and usable part of the product. Lyman Orton was in attendance during the first day of the developer's meeting and in his welcoming speech informs everyone that the Foundation spent \$17,000,000 on development of CommunityViz up until that time.

Late 2001 to early 2002

Major development of the Policy Simulator (Polsim) portions of CommunityViz is finished, but it still had usability issues. With help, users could get up and running, and get meaningful results, but all testers needed direct help from Janes with either data process, calibration or both. OFF hires Doug Walker to manage CommunityViz. It was decided that the usability issues required a complete rewrite of the Polsim user interface for the data processing component. PwC develops new modules to replace much of Polsim's user interface, though the simulation engine is unchanged. This new version of Policy Simulator becomes part of CommunityViz 1.3. All development on Polsim ends in early 2002.

June 2002

CommunityViz is first sold as version 1.3 for a cost of approximately \$5,000 a license. Royalties are paid to Multigen and PwC, who retained ownership of their components which keep the cost high. Fourth Quarter 2002 show CommunityViz paid sales of \$84,000 with a royalty paid to PwC of about \$7,000. A small support contract between PwC and OFF is carried through 2002. PwC is purchased by IBM at the end of 2002. Development of the Policy Simulator has cost OFF just short of \$2,000,000 in fee and expenses paid directly to PwC. In late 2002 PwC is purchased by IBM and becomes IBM Business Consulting Services (IBM). Bernard leaves IBM shortly after the purchase is finalized.

Early 2003

Version 1.4 is released. It drops the Policy Simulator component, which has proved to be too difficult for most users to use, even with the new data processing modules, despite showing some excellent results. The cost of the royalty may have also been a factor. Some academic institutions continue to use Polsim as late as 2005. Janes leaves IBM in early 2003 to become the Executive Director of ESC. The ESC has remained active users and promoters of CommunityViz even though there is no formal relationship between OFF and ESC after 2001.

Functionally and conceptually the product shown at the Vermont Design Institute in 1996 turned out to be very similar to the product that was eventually released to the public in 2002.