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>
> – Jim Reed, Director R&D

RockWare®
Earth Science and GIS Software

Delphi®

Introduction

Over the past three decades, Golden, Colorado-based RockWare, Inc. has established itself as a leader in the highly specialized geological mapping and modeling sector. For two of those decades, RockWare has been using Embarcadero products for its application development needs. Its flagship product, RockWorks, creates 3-dimensional geological models of the earth's subsurface for customers in environmental (toxic cleanup, contamination audits), hydrogeology (surface and sub-surface water), and industrial minerals (e.g. gypsum, sand gravel) segments. In addition to software development and sales, RockWare has expanded its services to include consulting.

Challenge

When RockWare began developing its RockWorks modeling software for geological applications, the company was mainly focused on smaller niche markets, says Jim Reed, Director R&D and Lead Developer. Although it started out on a small scale, demand for its product grew well beyond smaller-scale projects.

After the first 10 years, RockWorks had evolved into 22 different software products, Reed notes. "That's when we realized we needed to consolidate everything into one product to reduce costs and improve efficiencies for our customers. That would require a tool that would allow us to do this effectively."

By way of explanation, RockWorks software gathers surface and subsurface data to create 3D diagrams for analysis. Reed likens it to CT or MRI scans in which data sets are used to create a 3D picture. Today RockWorks is comprised of two million lines of code and is being managed by a small development team that includes three dedicated programmers and three designer/testers.

Solution

The decision to consolidate led RockWare to choose Delphi, Reed explains. "Since then we have never looked back. Delphi allowed us to develop tools that show complex geological concepts and subsurface data in a format that can be easily understood by non-technical audiences."

The RockWare team is working with Embarcadero® Delphi, a complete software development solution for rapidly designing, coding, and extending connected apps across Windows, OS X, iOS, Android, and IoT from a single codebase.

One of the key benefits of Delphi is that "It allows us to put in millions of lines of code and do it in an efficient way without maxing out memory," Reed says. "Because of that, we can have a monster program that does 50 zillion different things, but can be downloaded comfortably in a reasonable amount of time. Given that 65% of our business is outside of North America, executable files have to be small enough so that someone in Sudan can download data over a lousy connection."

He attributes this capability to the overlay features in Delphi, which allow

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ORGANIZATION

RockWare, Inc.

APPLICATIONS

RockWorks surface and sub-surface data management, visualization and modeling tool for geological applications

TOOLS USED

Delphi

CHALLENGES

Growing demand from large-scale customers

Fragmented product offerings

Huge data requirements

RESULTS

A fully integrated product offering capable of delivering high level, complex modeling programs

Expanded market reach to include large-scale projects for government, military and other sectors

Solid modeling functions reduced from 15 days to 26 seconds

for exceptional memory management. "Delphi allows you to easily load and unload things in memory so our software can run on any basic machine. In fact with a low-end PC you could have our application up and running in an hour. We couldn't live without that."

Reed also praises the graphic capabilities they can create with Delphi. "It allows us to make really stunning graphics and animation. We have over 200 videos on our YouTube site that show some pretty dazzling stuff."

The multithreading capabilities are also valuable in working with new multicore machines. "Now with i7 Quad core processors, we can do eight threads simultaneously."

When RockWare started out doing solid modeling it could take 15 days. "Today we do the same type of operation in 26 seconds. Delphi's multithreading has been a tremendous breakthrough for us. We have one customer that uses 64 processors on big projects. Our application can automatically scale to take advantage of processers, which takes the burden off us. We don't have to manage it – it's all automatic."

Results

With Delphi, RockWare has been able to develop a highly sophisticated software product that is a fraction of the cost of larger programs ($5,000 per seat versus $70,000). "We couldn't do that without Delphi," Reed says.

In describing Delphi's role, Reed cites three key features. "The first two legs of the stool are the multithreading and 64-bit support. These have given us the capacity to work on bigger models, even on a global level, and allow us to run with the big boys."

A third equally important leg is connectivity to databases through the FireDAC feature. FireDAC provides easy-to-use, high performance, multi-device enterprise database connectivity for Delphi, C++Builder and RAD Studio.

"Taking advantage of the FireDAC technology allows us to connect to all different database options. We can go to clients with existing in-house databases and say, you don't need to switch to our stuff. We'll switch to yours. That's been the most dramatic change for us because it means we can do monster data sets for huge

agencies. The fact is, we used to shy away from monster projects. We don't any more thanks to Embarcadero."

Reed says the newest project is writing a new version of RockWorks that will involve an additional 1 million lines of code. "Embarcadero has grown with us to provide the platforms we need as our customer requirements expanded. All of Delphi's wonderful tools got us over the fear of flying so we could start offering high level, complex, big modeling programs for large organizations that came with bigger requirements. That's been a cool thing."

Reed comments that over the 20 years that RockWorks has used Delphi, "It has definitely helped us put a lot of our kids through college. It's been very good for us. We couldn't live without it. Every day I still look forward to using Delphi."