# Lab49's Innovation Contest Gives Top Prize to 'Stock Information Boids'

How can Microsoft's Windows Presentation Foundation (WPF) technology be harnessed for interesting visualizations of financial data? In Lab49, Inc.'s first ever WPF in Finance Innovation Contest, grand prize winner Szymon Skobalczyk applied "Boids," a classic algorithm from the world of artificial intelligence (AI), to the visualization of stock prices.

A resident of Cracow, Poland, Skobalczyk traveled to New York City for Lab49 award ceremonies that also honored three other WPF developers during the Sixth Annual Microsoft Financial Services Developer Conference in mid-March.

Skobalczyk first learned .NET development as a student at Jagiellonian University in Cracow, where he wrote a thesis on "Extracting Rules from Artificial Neural Networks" before graduating in 2002.

Last year, as part of his work with the international development team at InterKnowledgy, Skobalczyk got his first taste of WPF, a graphical Windows subsystem that provides a consistent programming model with a clear separation between the user interface (UI) and underlying business logic.

In using WPF to produce a biomedical

# Joe Pimbley on Physics and Risk

*Joseph Pimbley knows better than most the challenging environment facing financial services firms. ACA Capital Holding's former executive vice president of institutional risk management though is used to stepping back and taking a look at the fundamentals. It comes with his years as a physicist. WFS spoke with Dr. Pimbley about his take on the industry and what he sees as the possibilities for the future.*

**WFS: You are a physicist who chose Wall Street. Are you still glad you made the switch?**

**Pimbley:** Yes, I am, but it's a tough question. I have paid a high price since I "lost" many years in which I would have considered and solved physics, engineering, and applied math problems. Physics is the quest to understand nature as deeply as possible. In moving to finance, I deliberately shifted my goal to that of understanding the financial world. With this move I learned a great deal about markets, people and the economy that would have remained outside my awareness had I not made the career shift. But I've never lost my physicist's appreciation for the beauty and elegance of nature.

**WFS: What lessons have you learned?**

**Pimbley:** There are many terrific lessons. First, all of finance is comprehensible. Unlike nature, there are no mysteries we cannot unravel. Second, good risk managers and investors know that every transaction or investment should be as simple as possible. Don't make anything more complicated than it needs to be. But most players in the financial world add complexity deliberately. Scientists and engineers know that "simple is better" in theories, computer code or machines. Non-technical people often have the opposite view and will usually favor the trade or investment that is most difficult to understand. That's the allure of the hedge fund.

Though simplicity is best, another lesson is that businesses remain complex entities. We absolutely need diverse people with diverse skills to make an organization run. The marketer, risk manager, and accountant are three very different people and we need all of them. Milton and Rose Friedman made a related point famously in *Free to Choose* 30 years ago.

Finally, a company's financial statements are very important beyond the reasons most believe. Every public company has a sizable finance department to produce financial statements in the approved GAAP format. Too many firms think of this practice as merely an obligation of a public company that brings large penalties if there are mistakes. But there is true power in financial statements because they do measure some aspects of the performance of the firm.

What these statements don't measure, however, is as important as what they do. Financial statements do not recognize risk of assets, uncertainty of income or quality of products. What I've learned, then, is that there is tremendous potential for improved corporate leadership by merging the function of measurement (current finance departments) with the core competencies of the chief risk officer (CRO) and the product groups. Tear down that wall that separates finance from

***"The market is now more likely to understand that a firm's 'expected time to failure' decreases as leverage increases,"*** says Joe Pimbley, former executive vice president of Institutional Risk Management at ACA Capital Holdings.

## JOE PIMBLEY ON PHYSICS AND RISK *continued*

the rest of the company!

**WFS: How has your background in physics influenced your approach to enterprise risk management?**
**Pimbley:** Physicists begin with fundamental principles ("postulates") and derive everything rigorously from these principles. Also, we're skeptical! We don't believe what we're told until we derive the result (or otherwise "figure it out") for ourselves. Both of these attributes are critical to enterprise risk management (ERM).

For example, it is not trivial to ask "what is risk?" The CRO must consult the basic principles of finance to decide how his/her firm's ERM project will define risk and the associated concept of "return on risk." The methodology must apply uniformly to all risk positions across the firm. This consistency requirement can be challenging, but the physicist-turned-CRO loves the challenge of finding the elegant solution.

**WFS: How will the liquidity crisis affect how risk is managed?**
**Pimbley:** To address this question, let's first define what happened. Though this explanation is too short and too simple, investors borrowed money to buy complicated assets that were difficult to value. (We use the word "leverage" to describe borrowing money to buy an asset.) But the terms of the borrowing depended strongly on the value of the asset as well as on the desire of the lender to keep the loan outstanding. What happens if the asset value behaves in a manner the borrower didn't expect or if the lender chooses not to continue the loan? (Most of these loans have maturities of a month or less.)

There's a saying on Wall Street that applies to leveraged investors: "the market can stay irrational longer than you can stay solvent." What that means is that you can lose money buying what seems like a very safe investment if you must use borrowed money. When times are good, leverage is your friend. In bad times leverage will kill you.

Will this crisis have a long-term effect on how risk is managed? I think so. This time, risk managers and debt investors will not be so sanguine on the ability to sell complex collateral at a "reasonable" price. The market is now more likely to understand that a firm's "expected time to failure" decreases as leverage increases. The Long Term Capital Management fiasco of 1998 was, in part, a smaller enactment of this leverage story. But the market didn't get that lesson at the time.

**WFS: You are reportedly a big fan of Microsoft technologies. How so? How are they helping companies manage risk?**
**Pimbley:** First, I love Microsoft Excel. I had never seen Excel or even the Microsoft Windows environment until I started my first Wall Street job in 1993. My mentor – a physics PhD himself – demonstrated Excel to me by creating a column of numbers and saying "look, now you can add all the numbers" by writing the appropriate sum-formula. I thought to myself: "I made a big mistake in changing careers." In other words, I wondered if this is what Wall Street people really do.

Then I started playing with Excel and quickly proved to myself that the stock market data really does show market efficiency. Excel gave an enormous boost to one's ability to take a time series of stock market data, for example, and run some quick analytical tests. For example, does a large market drop on one business day make it more likely – or less likely – for the market to rebound the next day? If so, the market is not efficient.

What's amazing about Excel is that experts can write very sophisticated applications in Visual Basic code that sits beneath the visible screens. Users themselves need have very little technical competence to run these applications. "Everybody" can use Excel which means "everybody" is comfortable with the user interface that a good programmer can exploit.

Unfortunately, the great strength of Excel is also its weakness. Too many firms rely on Excel too strongly. Excel is so convenient with such low "barriers to entry" that it engenders cultural resistance to firm-wide database solutions that ERM requires. People don't want to let go of their spreadsheets!

The good news is that the Microsoft .NET environment is an excellent platform for ERM. A firm can build a Web application – immediately and simultaneously available to all staff – that interfaces well with a secure database. We treat Excel spreadsheets as the "prototype" for permanent capabilities that our developers build into .NET code.

**WFS: What does a good integrated enterprise risk management program look like?**
**Pimbley:** In my description, there are three principles of ERM: one, understand every risk position; two, create, maintain, and deploy for all reporting purposes a single, robust IT database for all risk positions across the firm; and three, build the appropriate mathematical models to calculate risk measures. While these three points may seem straightforward, I don't believe there's any firm in the world that "has arrived" at this destination. Each of these tasks is deeper or more challenging than it seems.

Let's take just the last. A good mathematical model tells you what the risk position data means in terms of aggregate risk to the firm. But this is not the primary purpose of the model. Rather, the model exercises the data within the database to measure the integrity of the data itself. Data integrity and completeness are tremendous obstacles to ERM.

Information technology is essential and critical to ERM. Thus, the IT function should report to the CRO.

**WFS: What are your thoughts on what we should expect in the coming months and years?**
**Pimbley:** Some areas of the financial industry will not recover. There's nothing wrong with this outcome to the extent that the market punishes bad ideas. Investment banks, rating agencies, and bond insurers, in particular, will have less profitability and viability going forward. The world can live with that.

Within finance, I expect the number of employees to decline and to become more quantitative. People with backgrounds in engineering, math, and science will displace those with soft undergraduate degrees topped by an MBA. This trend has been evident for years and will accelerate with the current market crash.


*Double clicking on the boid opens price charts for this symbol.*

research application for the Scripps Institute, Skobalczyk and other InterKnowledgy team members built features such as 3D annotation markers, integrated SharePoint discussions, a project desktop, and a tabbed user interface.

Lab49 asked contest participants to create a WPF application that visualizes a set of provided data in some interesting way. "Writing the application in WPF was a simple thing for me," he recalls.

Skobalczyk ran across a larger challenge, though, in determining how to present the data. In starting to work on his contest entry, he initially produced a control that displayed the line and candlestick plot of stock prices. "But I really wanted to do something more than just an ordinary datagrid or a listbox," he explains.

Skobalczyk thought about doing a heatmap, using color gradients to show changes in stock prices relative to the previous day. Yet in the sample heatmaps he viewed, the stock price symbols on the grid didn't seem to correspond with the data in any specific way.

The 30-year-old developer then harkened back to his college days, deciding to adapt the "Boids" algorithm – first developed by researcher Craig Reynolds back in 1988 – for enhancing the WPF project at hand.

Skobalczyk's final contest entry, "Stock Information Boids," is designed to graphically depict the changes in stock market data by dynamically "flocking" – or grouping together – the symbols of stocks undergoing similar pricing changes.

Other winners in Lab49's WPF contest included Jacob Carpenter and Jobi Joy, who each took home a finalist award, and Paul Hounshell, who earned an honorable mention.

**www.lab49.com**

## SAP, Microsoft Team to Help Banks With SOA

A new milestone has been reached to help banks establish a service-oriented architecture (SOA) for their business operations. Microsoft and SAP have joined forces with leading banks and vendors to establish the Banking Industry Architecture Network (BIAN), an industry association to promote and support the implementation of SOA.

*Koen Van den Brande, worldwide industry manager for core banking at Microsoft, says that openness will be key to the success of BIAN.*

Based on the foundation of the Industry Value Network (IVN) for Banks created by SAP, 17 founding members have launched BIAN: AXON, Callataÿ & Wouters, Credit Suisse, Deutsche Bank, Finanz IT, ifb group, ING, Microsoft, Deutsche Postbank, SAP, Standard Bank, Steria, SunGard, SWIFT, Syskoplan, Temenos and Zürcher Kantonalbank.

BIAN is now an association according to German law and has an open intellectual property policy to ensure that the specifications that emerge can be implemented on various technology platforms. Koen Van den Brande, worldwide industry manager for core banking at Microsoft, says that this openness will be key to the success of the association.

But while it would be beneficial for the association and the industry to have IBM and Oracle – the other big players in banking software and SOA – involved, he believes this is unlikely as they tend to take a "more proprietary approach."

Misys is another notable omission from the list of founding members. It already has a partnership with SAP to deliver an integrated banking system based on its BankFusion technology, which will run on the SAP NetWeaver platform.

"Through the success of the IVN, its members and SAP have turned their goal of forming a new industry association into a reality," says Thomas Balgheim, senior vice president of the global banking line of business for SAP. "This will enable members to create a truly open community."

SAP says outdated and incompatible legacy systems are

hindering banks in the tightly linked global financial markets. The association will work to create a blueprint to enable banks to more flexibly use software to run core banking processes and achieve better interoperability among IT systems, allowing them to reduce risk and costs while improving overall operations.

By collaborating on the development and implementation of standardized services SAP says banks will achieve operational efficiencies, enabling them to concentrate on growth, time-to-market and customer demands.

Van den Brande says that the core system vendors involved in the association stand to benefit as they tap into the growing requirement for core system upgrades at large tier-1 banks that have traditionally developed software in-house. By working with commonly agreed SOA specifications, they can help the banks take a "buy and build" approach with SOA components that ease the pain of core system replacement.

The most recent large banking group core system replacement deal to be announced is Commonwealth Bank of Australia's four-year deal with SAP. Van den Brande says there has been interest in the BIAN from Asia Pacific banks, and while the BIAN is initially focused in Europe, where its founding members are based, it is planning to put together regional sub-groups to share and develop the association's work worldwide.

**www.microsoft.com**
**www.sap.com**

## Wombat, Gissing Bring Low Latency Market Data to Traders' Desktops

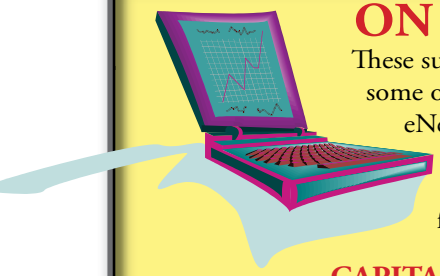
Wombat, the newest addition to NYSE Euronext Advanced Trading Solutions, has signed an OEM agreement with Gissing Software that enables the delivery of market data to desktops via Microsoft Excel.

Through the strategic alliance, Wombat integrated the underlying technology of Gissing RealtimeXL to the Wombat Market Data Platform to create Wombat RealtimeXL – powered by Gissing Software, solution specialists in the routing and transformation of real-time market and trade data. Together, this creates what the firms call an ultra low latency, high capacity and highly stable market data solution for the desktop.

The combination of Wombat's low latency market data platform and Gissing Software's high-performance Microsoft Excel add-in enables users to subscribe to price updates directly via Excel in real-time and handle the ever growing pressures that rising volumes are placing on internal applications. Traders will also benefit from advanced market data manipulation and administrative tools that are part of Wombat RealtimeXL, plus ground-breaking features of the Wombat Market Data Platform including order book and connection level conflation.

Under the terms of the agreement, existing Wombat users will be able to purchase and connect to the integrated Wombat RealtimeXL solution via MAMA (Wombat's Middleware Agnostic Messaging API). The alliance will also give Gissing Software's existing clients the option to subscribe to real-time market data from the Wombat Market Data Platform by licensing MAMA from Wombat.

**www.wombatfs.com**
**www.gissing.com**



## ON THE WEB

These summaries represent an excerpt of some of the news reported in our WFS eNews newsletter. More eNews and the complete version of the stories summarized here can be found at: **www.windowsfs.com.**

### CAPITAL MARKETS

**Crystal Capital Fund Centralizes Data, Cuts Reporting Time**
Crystal Capital Fund, an investment fund that provides debt and equity funding to middle market companies, has adopted Microsoft Dynamics CRM 3.0 to centralize its customer-related data and make it easier for employees to query information and create reports.

**Principal Global Investors Centralizes Security Master Data Management**
Des Moines, IA-based Principal Global Investors, the asset management arm of the Principal Financial Group, has gone live with the Cadis EDM suite from Cadis Software to centralize its security master data. The firm is seeing an immediate return on investment, thanks to improved control.

### INSURANCE

**Nationwide Adopts Technology to Improve VoiceXML Applications**
Nationwide Mutual Insurance Company has implemented new technology aimed at helping the company deliver higher quality VoiceXML applications to better service their customers and improve efficiencies.

**Old Mutual Migrates 15,000 Desktops to Vista To Boost Security and Management**
Old Mutual, the largest life assurance business in southern Africa, will migrate 15,000 desktops to Microsoft Windows Vista to take advantage of Vista's improved security features and other benefits including a step toward the goal of a remotely managed desktop environment.

### BANKING

**HSBC Takes Extra Step to Block Pfishers**
UK banking group HSBC is deploying extended validation secure socket layer (EV) SSL certificates to help its online customers identify fake sites and block pfishers.

**National Bank & Trust Taps Windows Server 2008 for Security and Remote Connectivity**
Wilmington, OH-based National Bank and Trust tapped Microsoft Windows Server 2008 Enterprise for two new servers it deployed to improve the firm's security and remote connectivity.

### EMERGING TECHNOLOGIES

**Data Security Avoidance Could Mean Big Trouble, Personally**

**By Don Canning, Microsoft**

Recent data leakage cases have stirred discussions surrounding personal liability and harsh penalties. While there are currently no criminal laws in place for loss of a client's private data, there is certainly an increase of discussion and movement in this direction in many areas of the world.