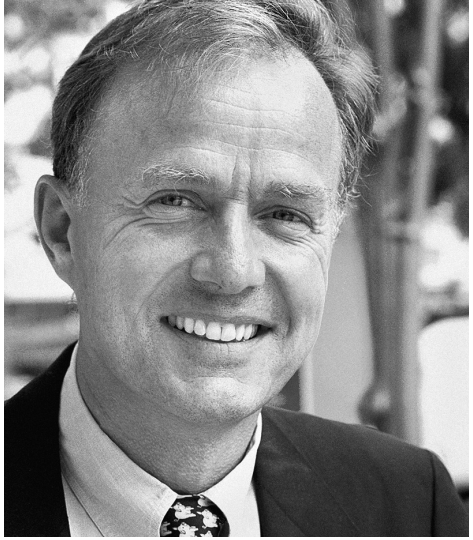
Insideview

Algorithmic Operations

INTERVIEW WITH TILL GULDIMANN



Till Guldimann,
Vice Chairman,
SunGard Data Systems

Over the past 20 years, business process management focused primarily on straight-through-processing (STP). Recently, a novel concept referred to as Algorithmic Operations (Algo Ops) has entered the picture. What is the difference between STP and Algo Ops?
STP is about organizing business operations into well-defined sequences of steps with a standardized transmission of data between them. The principal goal is to have business units transmit data between themselves without human intervention and translation. Algo Ops represent the next step in automation: repetitive human decision-making is replaced by algorithms programmed into computers. STP designs take a long time, but once implemented usually last years without major modifications. In contrast, algorithms replacing human decisions need to be fine-tuned and adapted to new circumstances and conditions all the time.

Can you please give us examples of where Algo Ops are being used?
Auctions on Ebay, the placement of advertising on websites or the detection and blocking of spam in e-mail are the most obvious examples. Interestingly, none of these businesses would exist today without algorithms because human decision-making would make the operations far too slow and too expensive.

And where in the financial services industry can Algo Ops be found?
The best known examples are around trading: order routing and high-frequency or algorithmic trading in equities which now represent close to 70% of all equity trading volume in the U.S. Another example is market making in foreign exchange, which for major currencies is today 100% algorithmic. Algorithms are also increasingly used in reconciliation of payment instructions, identification of fraud in credit cards, post trade processing and other operational tasks.

What are the challenges resulting from Algo Ops in terms of IT infrastructures on the one hand and workflow management on the other hand?
Algo Ops, which require continuous fine-tuning, reside within an STP environment, which is relatively stable. Furthermore, algorithms and their continuous improvements need to be tested in live parallel environments before they can get deployed. This is like changing the jet engines in a flying airplane.

Will human decisions be replaced by algorithms some day? Which job will humans perform in this "new world"?
Not exactly, remember it's humans who design and optimize the algorithms in the first place and its humans again who deploy them. But once deployed, they replace humans who made repetitive decisions. In this new world humans are tasked with constantly improving the algorithms instead of wasting their time making the same operational decisions over and over again.

The now famous "Flash Crash" of May 6th, 2010, when the Dow Jones Index dropped nearly 10% within minutes, is blamed on algorithms spinning out of control. What measures are taken to prevent Algo Ops to get out of hand?
Academic and official reviews of the events indicate that it was probably the complex interaction of different trading algorithms deployed by many market participants coupled with perhaps outdated trading rules and regulations which caused the crash. The U.S. equity trading system as a whole had become unstable. The obvious first reaction was to blame it on the new kids on the block: the trading algorithms. The first proposed solution was to ban them or to make high-frequency trading uneconomical by introducing transaction taxes. With a little more time the market realized that adapting the trading rules to the new environment and reintroducing circuit breakers may be a better solution. With even more time most participants improved their algorithms so that next time they could benefit from the distortion by stepping in and take the opposite position, i.e. make the market function properly. The lessons are: First, we need more market transparency coupled with diversity of algorithms – open competition is the best panacea against market distortions. Second, we need more sophisticated circuit breakers which automatically contain and prevent a local instability from spreading and bringing down entire systems. Others have solved a similar challenge before when they made national high voltage power nets more resilient.

Thank you for this interesting conversation.