Leaving the third-floor conference room in the soaring headquarters of BMV Group in central Mexico City, Jaime Villaseñor and his colleagues from the Indeval management team couldn’t help thinking that the meeting could have gone better. It was less than a year earlier that Villaseñor had taken the job of Chief Risk Officer for Indeval, which, as Mexico’s central securities depository, plays an invaluable – though largely invisible – role in that country’s financial sector through the reliable settlement of securities transactions. Not long after taking the job, Villaseñor and his fellow managers had been asked by the Indeval board of directors to come up with options on how to improve the company’s settlement capabilities, and in doing so, position Indeval for the future.

Today’s meeting had given the Indeval team their first chance to lay out their vision. While advocates for change, most of its board members were also its banking and brokerage customers and their instincts were toward a more gradual, incremental approach, fueled by technological enhancements. What they heard was a vision of how Indeval would make a quantum leap in its settlement capability.

Leadership Spotlight
BMV Group operates Mexico’s only stock market. Indeval, a unit of BMV Group, is Mexico’s central security depository, with responsibility for the timely and reliable settlement of securities trades. Jaime Villaseñor, its Chief Risk Officer, and a group of his colleagues at Indeval drove an effort to enable near real-time settlement by leveraging prescriptive analytics.

How Indeval got smarter
The Indeval board provided the impetus to improve the efficiency of its settlement processes and supporting systems. It helped that they were encouraged by the Mexican Central Bank to propose—and ultimately implement—a quantum leap in settlement capability. Incorporating advanced “matching” algorithms gave Indeval the means to put into place what had been a hard-to-attain industry ideal—Model 3 settlement practices. Perhaps by design, the Indeval Dali system has raised Mexico’s prestige in financial circles. Most importantly, its customers have reduced their risk and financing costs through efficient net near real-time settlement.

Let’s Build a Smarter Planet
Support for big thinking

From the beginning of the initiative, Mexico’s Central Bank – whose ties to Indeval are tight under Mexico’s institutional structure – had weighed in with strong support for a more comprehensive plan, representing, in effect, a “blank slate” for Villaseñor and his team. Within that mandate, the end result had to reflect worldwide best practices for securities settlement systems and the processes and technologies that underpinned them. Adding intellectual horsepower to the process was the inclusion of the Instituto Tecnológico Autónomo de México (ITAM), the country’s top technological university, in the effort to frame the solution.

The central motivating factor for Indeval efforts was to update settlement procedures within the process, reducing the length of the settlement cycle, and with it the risks and costs – borne by investors and financial institutions – that are associated with the existing settlement cycle. If it sounds like dry theory, it isn’t. From the time a trade is initiated to the time it settles on a net basis – typically the next day under prevailing practices, but sometimes more – a lot can happen. Prices can fall precipitously in the interim, hurting buyers. Or even worse, as the Lehman Brothers episode exemplifies, a buyer can go bankrupt before the seller receives payment. Given the fact that Indeval settles an average of US$250 billion in trades per day, the potential monetary costs are huge.

The other source of cost relates to the requirement that buyers and sellers hold enough cash and securities on hand to settle or “clear” each of their transactions; what they don’t have, they need to borrow – and borrowing costs money. Under the traditional settlement guidelines designated by the International Bank for Settlements as “Model 1,” each trade is cleared individually (on a gross basis), one at a time. Now imagine each trade as an arrow from one institution to another. Scale that to one day’s worth of trading volume and you’re left with a dense and dizzying array of crisscrossing lines, in many cases to and from the same institutions.

Making the leap

The leap advocated by the Indeval team and ITAM was that Indeval move to a new and far more efficient transaction settlement standard known as “Model 3.” It’s predicated on the straightforward idea that many security purchases and sales within specific accounts essentially cancel each other out, resulting in a net positive or negative balance of securities and cash. There is an additional benefit on allowing partial settlement. Both netting and the possibility of partial settlement require banks and other financial institutions – acting as the agents of buyers and sellers – to hold only a fraction of their overall transaction volume to completely clear their trades. The effect is to reduce not only processing time, but also the amount of cash and securities these banks and financial institutions need to keep on hand or borrow to settle the transactions.

While the virtues of Model 3 settlement were widely acknowledged across the global financial marketplace, the challenge of implementing it kept it in the future for most depository service providers. That’s because the netting and partial settlement process requires the speed and algorithmic intelligence to match thousands of transactions simultaneously, and embed that capability – known as prescriptive analytics – directly into the settlement process flow. A key part of the team’s due diligence was finding an industrial-grade solution that could perform prescriptive analytics based on optimization technology for what Indeval was trying to achieve. Six months after their first meeting with the board, they would have the chance to make their recommendations, and to flesh out and strengthen their case.

The benefits of the Indeval Dali settlement solution

- 52 percent reduction in the amount of cash its banking customers need to carry on hand to cover trade settlements
- 26 percent reduction in the amount of the security requirements related to trades
- US$240 million reduction in the interest costs associated with settlement liquidity requirements in the first 18 months of operation
- Substantial reduction in settlement risk by virtue of near real-time intraday settlement capability
- Increased level of trust among key market participants
- Global prestige associated with being a world leader in innovative settlements capabilities
Getting the message across

Though it was the same conference room, the same players, and the same subject, Villaseñor sensed a very positive feeling this time around. “It was clear that [the board] grasped the extent of what we were trying to do, that they were very serious about it, and that the support of the Central Bank had a lot to do with it,” Villaseñor explains. “On a human level, we were happy that the [new settlement system] project wasn’t going to be watered down.”

Leadership is...

Uniting for a mission

“In the early days of the Dali project, the incoming CEO needed to defuse the typical factionalism and resistance that often threatens a project’s success. One of the keys to success was to behave as a team, to get beyond the personal and the territorial.”

— Jaime Villaseñor,
Chief Risk Officer, Indeval

In the course of the meeting, the Indeval team laid out a compelling business case, one that drew heavily on the best-practice insights he had gleaned from discussions with other settlement officials around the world. “Above all, we made it a point to stay clear of the technology stuff and always put it into a business context, with the main point being the vast increase in efficiency the new system would make possible,” says Villaseñor. “What ultimately resonated most was how the system’s inherent flexibility meant we wouldn’t have to re-engineer it for the next 10 or 15 years.” The strength of that narrative—combined with a ringing endorsement from the Mexican Central Bank—proved enough for the Indeval board to give the official go-ahead for the project.

During the Indeval implementation effort, its biggest challenge wasn’t technical, but cultural. The fact that half of employees had been with the company for more than a decade—some for as long as 20 years—naturally stiffened resistance to change. An important change was the ability to “agree to disagree,” and that came with some difficulty. “We needed to behave as a team, to get beyond the personal and the territorial,” says Villaseñor.

Lessons learned...

Know your limits

While Indeval was central to reshaping the settlement process, success depended on collaboration across all key industry stakeholders.

“There has to be a concerted effort between the Central Bank, the central security depository [i.e., Indeval] and the industry. Given the interdependencies required in settling trades, a CSD can’t do it on its own.”

— Jaime Villaseñor
Team building in action

Two developments helped change that climate. The first was the arrival of a charismatic new CEO who put his proven team-building skills to work selling the merits of the new system, his key message being that the only losers under the new system would be those who chose not to come on board. Complementing this top-down message was a bottom-up – indeed grassroots – initiative by academic experts from ITAM to engage every affected Indeval employee over the span of nine months. The aim was to give each and every employee a sense of where they fit in the larger settlements scheme that Indeval was moving toward, while channeling their feedback on how to make it even better. “By the time it was over,” explains Villaseñor, “everyone was talking about the project as if it were their own.”

The best thing you can say about a processing system whose importance to the Mexican financial system can’t be overstated is that it does exactly what it’s supposed to do. After running parallel simulation tests for months, Indeval introduced a new settlement system it calls “Dali,” named after the Spanish artist whose most recognizable work depicts melting pocket watches. The tie-in is indeed time, for Dali reduces the settlement cycle from 24 hours to near real time.

The heart of the solution is an optimization engine that employs IBM ILOG® CPLEX®. Every two minutes, Dali runs tens of thousands of trade instructions and real-time account information through sophisticated optimization algorithms to determine the best selection of which trades should be settled and in what order. One result is that trades are settled faster, greatly reducing capital risks inherent to longer settlement cycles. Another is a vast reduction in the liquidity requirements of Indeval bank customers made possible by settlement optimization. In the first 18 months of Dali’s operation, banks were able to reduce the cash they needed to cover trades by 52 percent, saving them US$240 million in interest costs.

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Indeval: The parameters of smarter security trade settlement

- **Instrumented**
  Customer account transactions are automatically sent to the Indeval Dali system for near real-time processing.

- **Interconnected**
  The Dali system is integrated directly with its customers trading systems.

- **Intelligent**
  Every two minutes, Dali runs tens of thousands of trade instructions and real-time account information through sophisticated optimization algorithms to determine the best selection of which trades should be settled and in what order.
In financial markets, the intangible quality of trust—in reliability, integrity and stability—is the real gold standard.

Trust is everything

In financial markets, the intangible quality of trust—in reliability, integrity and stability—is the real gold standard. By putting in place a settlement system for the future, BMV Group has strengthened that trust among its customers, board members and other stakeholder groups. Its influence extends outside the borders of Mexico. Once eager to learn global settlement best practices, Indeval—a first depository company to provide near real-time intraday settlement and recipient of the 2010 Franz Edelman Award for Achievement in Operations Research and the Management Sciences—is now a beacon for others around the world, including many in Latin America.

To Villaseñor, the biggest dividend of BMV Group’s investment in Dali is the added trust and confidence it has engendered in its customers and in the Mexican financial markets in general. “Redesigning our settlement practices around optimization and analytics has proven to be a game changer for us as a company,” says Villaseñor. “It also enables us to show the rest of the world the kind of change that’s possible when you’re willing to commit to it.”