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Interview with Salim Jabbour, CEO of Abacus Solutions Inc.

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Recently, I caught up with Salim Jabbour of Abacus Solutions Inc. Under his leadership, Abacus has developed and gone to market with a new product, SATURN, an integrated enterprise risk management solution with broad functionality and deep analytics. SATURN is described as a “next generation ETRM system with breakthrough real time full simulation portfolio optimization.” I was interested in getting an update about the product since my initial review prior to its commercial launch. The following is an interview with Dr. Jabbour.

Dr. Gary M. Vasey: *Since we last spoke over 3 years ago, SATURN seems to be gaining market penetration momentum. How do you explain your ability to compete with large well established ETRM vendors?*

Dr. Salim Jabbour: We are very pleased that the market has recognized SATURN's unique capabilities and that several key market participants are now realizing significant operational benefits and competitive advantages by using our system. The success of SATURN can be attributed to four differentiating features:

First, it is a fully integrated system that offers broad applications including trade capture and valuation, market simulation and calibration, generation optimization, credit management, business intelligence, financial analysis, risk management, and portfolio optimization.

Second, it has a set of full simulation and optimization capabilities that enable superior and rigorous solutions including advanced Efficient Frontier portfolio management and optimization.

Third, it is based on a modern architecture that makes it easy to deploy, easy to maintain, and an easy to use system in addition to providing on command vertical and horizontal scalability.

Fourth, it delivers superior performance that enables the processing of large amounts of data very quickly and facilitates key applications in real time or near real time.

Dr. Vasey: *What are advanced Efficient Frontier portfolio management capabilities?*

Dr. Jabbour: Portfolio Management is a process through which a company estimates risks and returns of corporate assets and evaluates alternative decisions to improve the existing risk/reward position. Most portfolio management applications are limited to closed form financial engineering solutions that provide commonly used metrics such as MTM, Greeks, and various forms of VAR. Advanced portfolio management techniques allow risk managers to find a set of alternatives that offer the best achievable return for a given level of risk (called Efficient Frontier). An Efficient Frontier portfolio is one where no added diversification can lower portfolio risk for a given return expectation (and no additional expected return can be gained without increasing portfolio risk). Efficient Frontier solutions require advanced full simulation techniques that can be difficult to implement.

Dr. Vasey: *What are the implementation challenges of advanced Efficient Frontier portfolio optimization?*

Dr. Jabbour: A number of practical issues have limited the effective application of portfolio optimization to date in the energy industry. Implementing an Efficient Frontier portfolio optimization capability requires several challenging capabilities including:

- Market simulation to simulate forward and spot prices and market values for interrelated markets and commodities over an extended time period.
- Parameterization/calibration to estimate the simulation parameters needed by the stochastic simulation process.
- Generation optimization to simulate the operations of a fleet of power plants under different market prices and various unit, plant, and portfolio operating limits and availability scenarios.
- Credit risk management to evaluate the credit rating of counterparties and estimate the impacts of potential credit changes including counterparty, collateral, contract, and exposure risks.
- Load analysis to estimate gas and electric loads for a set of customer classes in one or multiple locations for a specific time frame.
- Financial analysis to estimate revenues, costs, profits, and various key financial measures for different scenarios.
- Trade and asset valuation tools to assess alternative return and risk metrics for generation units, trades, loads, and other assets.
- Optimization tools to identify realistic and practical changes that can increase portfolio return and/or reduce its risk.
- A computational infrastructure to enable the performance of needed simulations and analysis within a reasonable time.

Dr. Vasey: *What are the computational challenges of full simulation portfolio management?*

Dr. Jabbour: Computational issues are the most significant challenge facing the implementation of portfolio management in the energy industry due to two main reasons: First, stochastic simulation is by itself a major challenge given the complexity associated with simulating physical assets, a process that can be quite difficult to accomplish within a reasonable runtime (particularly for a reasonable number of scenarios). Second, the stochastic simulation of a number of alternative portfolios, a process that builds on the stochastic simulation of the existing portfolio, creates additional computational challenges that include

both runtime and data management issues. Identifying a reasonable set of portfolio changes that have the potential of reducing estimated portfolio risk and/or improving estimated portfolio returns is another related key challenge.

Dr. Vasey: *How does SATURN address these challenges?*

Dr. Jabbour: First of all, SATURN uses very efficient optimization techniques that enable finding solutions extremely fast; according to several benchmarks, SATURN is 50-100 times faster than competing tools. Second, SATURN uses a 64-bit architecture that enables holding over 100 times more data in system memory and then retrieving it extremely fast for real time processing.

Dr. Vasey: *You say that SATURN offers these sophisticated full simulation portfolio optimization solutions in real time. This seems like a significant breakthrough and is potentially a game changer.*

Dr. Jabbour: It is indeed a major and significant accomplishment. SATURN embodies proprietary methods that blend theoretic techniques and practical insights which enable finding optimized solutions very efficiently and therefore quickly. And to your point, this is a game changer. SATURN users can perform real time on the fly portfolio optimization using a full simulation solution, a process that typically takes many hours (even days) and requires many powerful computers; we can do it using a single computer box! Finding these solutions very quickly enables making improved trading decisions that improve portfolio returns and/or reduce portfolio risks.

As we all know, we live in a time where people want instantaneous information—on command. It is a time of “now” with no patience for delay. SATURN brings this service and this capability to energy trading and risk management.

Dr. Vasey: *How long did it take Abacus to develop these solutions?*

Dr. Jabbour: We spent over three years to develop the solutions and we have an on-going performance optimization process through which we continue to refine and improve our techniques.

Dr. Vasey: *You coined the term Integrated Enterprise Risk Management (IERM) and you emphasize the importance of seamless and full “Integration”—why is it so important?*

Dr. Jabbour: Because the lack of integration is very risky and very costly! As CommodityPoint research indicates, the energy trading and risk management space continues to rely on too many applications that are often poorly integrated. Lack of integration can lead to costly inefficiencies, risky inconsistencies, and very difficult situations. Most efforts to integrate disparate systems often face insurmountable challenges and fail to achieve needed objectives; resulting outcomes range from “flawed integration” where inconsistent data is meshed into an illogical non-sensical and unrealistic perspective to “spreadsheet integration” where a set of tools (often spreadsheets) are used to consolidate and reconcile different solutions from different tools and applications. None of these approaches solve the integration challenge and

most are prone to serious errors and mistakes. A truly and seamless integrated solution avoids all of these challenges by offering multiple applications with consistent data structures, reconciled analytics, rigorous solutions, and logical interoperability on a single platform.

Dr. Vasey: *What exactly do you mean by “rigorous solutions” and why are they so important?*

Dr. Jabbour: Rigorous solutions are extremely important in risk management. While lack of rigor can simply imply a lack of accuracy or precision in many cases, the case is unfortunately quite different in risk management where inadequate attention to analytical rigor can create misinformation and misleading answers. As we discussed earlier, risk and portfolio management is a process that capitalizes on correlations and diversification; poor representation and handling of this core concept can lead to wrong solutions and bad outcomes. The challenge is to find a delicate balance that avoids the rather common and notorious trap of paralysis by analysis.

Dr. Vasey: *Where do you generally see risk management headed for commodity trading in the near future?*

Dr. Jabbour: Senior management and corporate directors are raising the bar on risk managers. Recent market turbulence and on-going market volatility have heightened the importance of efficient and effective risk management practices, a situation that requires and necessitates the use of improved tools and techniques. We expect increased and expedited trends in three core areas: Full simulation risk management, real time portfolio management, and integrated solutions. Management expects solid well founded solutions and they expect them when they ask for them—real time.

Dr. Vasey: *How do you see risk metrics evolving?*

Dr. Jabbour: Risk metrics are multi-dimensional and vary significantly based on user needs and perspectives. They include financial and volumetric measures and cover short and long term horizons; they span many functional areas including generation, finance, trading, credit, and finance to name a few. Different users can have significantly different metric needs and preferences such as expected returns, volatility, probability of meeting a target or exceeding a limit, and so on. ETRM systems should be totally configurable and should allow users to select their metrics and get their reports on command—real time.



About Dr. Salim Jabbour

Dr. Salim J. Jabbour is the founder and CEO of Abacus Solutions Inc, developer of SATURN, a modern highly integrated ETRM software system that offers broad solutions including trade capture and valuation, market simulation, generation optimization, credit management, business intelligence, and advanced full simulation risk management and portfolio optimization. Previously, he was the founder and CEO of BMC, a software firm he sold in a transaction noted in the Wall Street Journal in 2001. Dr. Jabbour is the author of a published book and several papers, and is a regular speaker at conferences. Dr. Jabbour holds an MBA from the American University of Beirut and a Ph.D. in Mechanical Engineering from Stanford University.

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