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# M2M, Internet of Things Innovations Pioneering Information Frontiers (Part 1) February 19, 2014



By [Carl Ford](#)  
[Partner, Crossfire Media](#)



**Carl Ford: Welcome, Hugh Donahue. You come to Crossfire Media and the Internet of Things through innovative communications and energy applications. Can you please tell us a little about your work?**

Hugh Donahue: Thanks so much Carl, it's really great to speak with you. The breadth of topics and depth of speakers' domain competencies at the M2M Evolution Conference in Miami really impressed me. The conference's concentrations on cognitive computing, standards setting for machine to machine connectivity, sensors, points of sale and supply chains, user-authorized data sharing, [remote monitoring and control](#), medical monitoring, distributing real-time and near real-time intelligence across distributed networks to mobile users and manufacturing productivity all confirm big data as the crucial innovation of the 21st century. From all the momentum, capture, storage, search, sharing, transfer, analysis and visualization in their various iterations and applications will emerge comparably to steam in the 19th century and oil in the 20th, it certainly seems.

All these communications capabilities, applications and visions address ongoing work on communications and energy applications. Communications applications focus on monetizing data and information in financial markets; think also of such applications as financial asset tracking and metering, clarifying the net present value of risk in real time and near real-time.

Energy applications develop energy dispersing and absorbing technologies and energy generating technologies; think of them as both horizontal technologies reshaping specific industry segments,

say coated fabrics, as well as vertical technologies redefining garments, interior design, the built environment and industries from security to architecture.

**CF: Can you please elaborate on the subject of communications application? For instance, what do you mean by “financial asset tracking”? Also, how do you see these applications contributing to machine to machine adoption and deployment?**

HD: Absolutely, I am advising [Marketcore](#), an intellectual property (IP) firm, whose robust suite of IP equips information technology developers and engineers with untapped, new capabilities to employ and deploy big data to make generational contributions to finance through machine to machine connectivity. These reach to the consumer, a capability exceeding many financial data services providers.

Marketcore’s transformative IP brings transparency to largely opaque financial markets. Marketcore IP promotes liquidity and increases volumes of trades of bonds, contracts, insurance policies, lines of credit, loans or securities. Equipped with Marketcore IP, software developers and engineers will be able to systematize and modularize big data across many sectors at multiple points of intermediation in these multi-trillion dollar financial markets, either by leveraging existing relational data base and structured query language or by innovating with parallelization and search to create brand new big data functionalities.

With this IP, essentially, IT developers and engineers get both a sword and a shield: A sword to penetrate new markets, and the shield of patent protection to maximize first mover advantage. IT developers and engineers simply employ the IP in software to capture risk events and to present wide varieties of valuable information in real-time and near real-time through applications and programs across wireline and wireless networks to wireline and wireless displays, monitors, portable digital assistants and phones.

Smart electric metering is already deployed for electricity billing; asset tracking addresses physical products. Think of Marketcore as vastly more robust and orders of magnitude more dynamic.

**CF: And what specifically is the Marketcore IP?**

HD: Data repositories and transaction credit, which is Marketcore’s trademark term for incentives for risk-detailing revelations. All of its work focuses on risk assessment.

Data repositories comprehensively and dynamically framework risk detection by tracking valuation over the life of risk instruments and financial contracts from pre-trade inquiry through maturity or ultimate disposition with real-time and near real-time information and data. Data repositories essentially open up price discovery for software developers and engineers to add value with fresh information like pricing data, pending orders and executed trades in the value cycle of a financial

contract. IT developers can create software that reveals and tracks the net present value of risks. Data repositories aggregate transaction credits, the second pillar of the IP.

Transaction credits generate risk information that does not currently exist -- creating phenomenal opportunities for IT engineers and developers -- by incenting information revelations. For instance, a market participant grants an incentive to other market participants to contribute updated information. Participants receive credits from the grantors of the credits to offset the cost of future transactions and/or to access system-generated analytics and other data to execute trades quicker and with vastly clearer risk due to the granular information that's being revealed and shared for appropriate risk matching. Apply this to consumers (critical participants in consumer finance products, such as mortgages, auto loans, credit cards and peer-to-peer lending) and you can see the unique advantage: This inventive method has an optional and voluntary full market reach. Consumers can receive benefits for updating their intentions.

**CF: That is quite interesting. So why do you think now is the time for machine to machine implementation by IT developers and engineers?**

HD: The time is now for machine to machine because the technology is really coming out now, the M2M Internet, [Internet of Things](#), etc. And as it so happens, development of the various applications of Marketcore's IP express generational opportunities for M2M IT developers and engineers to exert meaningful, transformative impacts.

Marketcore IP creates an ontology for handling information. The suite of IP describes a "protected" space for those interested in capturing a control position of any aspect of the following: A risk matching machine that enables all sorts of financial transactions by looking at even the most complex risks; it creates a risk assessment platform for every type of "risk shedder" and "risk taker" in an enterprise through which risks are identified and aligned for transfer (i.e. matching), using incentives for disclosure; the incentives "buy" better pricing on either other transactions or information access; across the entire product life cycle, risks are determined, valued, scored, updated, revalued; the result is expressed and seen as a continuous near real-time revaluation of contracts for any level of risk management; iterations of the process create individualized "risk lenses" that facilitate analysis of individual (or grouped) risk components.

Think about it. Data repositories dynamically aggregate and sort all pertinent market data. Transaction credits not only make for appropriate risk matching between buyers and sellers, they also create new information, made possible by big data, indicating the causes for market moving decisions.

For instance, one market participant grants a transaction credit to another, and the second market participant reveals that he or she is transferring risk from one risk vehicle A for risk vehicle B at such and such a price point. Each transaction credit clarifies each risk transfer. All the transaction credits

together combine to reveal risk tolerance, sensitivity and, crucially, marketplace preferences for risk vehicles. In this way, transaction credits become grounded, verifiable, real time indicators of market moving conduct and behavior.

The distinguishing values of the IP: IT developers and engineers will be able to manage relevant data and decision rights, which clarify causation, not simply correlation, in one place or in as many distinct places as they choose throughout value cycles by writing “protected” software that embody Marketcore IP.

Marketcore’s distinct strengths are especially timely due to the projected deployment of cognitive computing, as Erik Brynjolffson and Andrew McAfee chart so cogently noted in [The Second Machine Age](#), and potentially disruptive developments in financial data markets as Aaron Tims discusses in the [Institutional Investor](#).

Marketcore IP uniquely incorporates numerous opportunities for consumers across risk instruments and vehicles at many points in time, a crucial value-add for IT developers and programmers and their enterprises in financial data lines of business. There’s a [demo](#) of the system as it relates both to its architecture and to systemic risk detection.

The IP’s twice licensed, a significant litmus of value that occurs for less than 2 percent of patents.

**CF: That is all huge. Hugh, can we assume that it can all be extended to other opportunities?**

HD: Great question.

### ***Device adoption***

Any IT engineer or developer building applications with the Marketcore IP will inflect adoption of all kinds of displays, digital assistants, phones and sensors to convey and to alert users about the time-sensitive, potentially market-moving intelligence that appears likely to occur in huge cloud and network volumes.

### ***Web Services***

Marketcore IP enables big data Web services, said Ernest Tedesco, president of Web services firm [Webesco](#). “Essentially, Marketcore enables IT developers and engineers to hybridize transaction platforms and risk assessment frameworks. If you think about it, before big data, broker dealers handled transacting and rating agencies managed risk assessment. Now, with big data, Marketcore IP positions web developers to offer web services that combine both capabilities in one place and to enable their users to continuously reevaluate contracts. Marketcore outpaces current Bloomberg and earlier Cantor machines; it’s big data on steroids. Totally transformative for Web services.”

## ***Data Scientists***

Any organization adopting Marketcore IP will enjoy competitive advantage hiring and retaining data scientists. The most talented data scientists will flock to it because the innovative challenges of developing big data to parse causation from correlation for trillions of dollars of assets in play are actually stimulating the brightest data scientists for the largest financial interests jump to launch or join an organization working the IP.

## ***Bond Markets***

There's a huge demand for the transparency and information symmetry across financial markets, which IT developers and engineers can create with Marketcore IP. That's because volatility is back and illiquidity in secondary markets is widespread. Investors are jittery that the Federal Reserve is stepping back from buying residential mortgage backed securities on the scale that has existed, roughly \$100B/year for each of the five largest banks. That concern throws off investment in emerging markets, because there may be better bets in the U.S. If interest rates rise here in conjunction with the tapering of FED RMBS purchasing, investors will continue to pull out of emerging markets. Volatility expresses one feature of investor quandaries gaming these risks.

Just take a look at bonds. David M. Walker, honorary chairman of Marketcore and former comptroller general for Presidents Clinton and Bush, "Cracking the Risk Code: A Trifecta Win Is Finally Possible," has a [brilliant essay](#) that describes what may result from deployment.

Walker's an absolute genius, totally ethical, completely top shelf guy; had to be, running the Government Accountability Office all that time for two such different presidents.

Anyway, Walker points out that "despite record-setting volume in new issues in the primary market for corporate bonds only an estimated 2 percent of all outstanding issues trade annually. The Federal Reserve has bought in excess of \$3 trillion in bonds since the start of the quantitative easing policy, creating holdings of more than \$4 trillion. By comparison, the Fed owned less than \$900 billion in bonds when the crisis began. In the very thin market of today, prices are not readily available for trades in excess of \$500,000. Average bond volumes in the corporate bond market have dropped from a pre-crisis average of \$700,000 to about \$400,000 now, according to published reports last November. An important measure of secondary market liquidity has fallen much more. ....[B]lock trades, a focus of institutional holders, have fallen from 4 percent of outstanding U.S. corporate bonds to less than 0.5 percent. At the same time, the dollar volume of mortgages guaranteed by FNMA and FHLMC, numbering into the multiple trillions of dollars, represents roughly half of all mortgages outstanding. This is an obligation that the government would like to privatize if only there were a viable market."

IT developers and engineers, followed by any kind of market maker, can directly stimulate liquidity across all these bond markets and instruments with the Marketcore IP -- ditto for the consumer loan markets.

### ***Search and Parallelization***

Search and parallelization technologies are the ways to go. As IT folks know, parallelization is the computational technique of breaking a task up into many thousands of independent parts and executing the pieces simultaneously followed by gathering the results after the fact. This is largely the technique that allows Google to search a terabyte-sized data file in less than a second by spreading the calculation over 5,000 or 10,000 processors.

Adoption paths and opportunities migrating to parallelization and search from relational data bases and structured query language are all manageable. Existing relational data base and structured query language operations can export key information (e.g. trade terms and conditions) into self-describing documents with thoroughly documented semantic structure. That structure can be standardized with something like Financial Products Markup Language – FpML -- so routines will exist to read the documents and extract the data needed to perform a specific task on the underlying entity (e.g. a specific trade.) And, “binders” come into play to perform this extraction and send the results to an appropriate process for execution if formats remain with no standard translation.

Most relational databases are designed to support this data export process. Third parties could participate and relational data base customers can write them as well often without the permission of the database vendor.

IT developers and engineers interested in big data would wisely check out risk analyst David M. Rowe, the top guy on all aspects of risk management and markets. David discusses parallelization and search innovations in [“Beyond Relational Databases,”](#) his current column Risk Magazine column.

### ***Scalable, Extensible IP***

As an extensible and scalable body of IP, Marketcore allows IT developers and players to play with incumbent relational databases and structured query language systems as well as new entrants deploying parallelization and search. Rowe has a [great roadmap essay](#) about it.

# February 19, 2014 Interactive Finance & Energetic Textiles: M2M, Internet of Things Innovations Pioneering Information Frontiers (Part 2)

**Carl Ford: One pet peeve I have is the lack of a buy-side in the smart meter / smart grid market. I recognize that battery distribution would have to be better and significantly larger to serve a consumer market, however it strikes me that Marketcore could well enable a truly dynamic energy market. Can you offer any thoughts on that?**

Hugh Donahue: Great insight!

Conceptually, yes, absolutely.

Marketcore IP enables IT developers and engineers crafting operating systems and applications. Convergences, overlaps, synergies would have to align around the ways in which buy side activities over smart grids and through meters implicate wealth in bonds, contracts, insurance policies, lines of credit, loans or securities to evaluate feasibilities.

The domain competencies of IT engineers and developers in Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs) are absolutely crucial here due to their indispensable grid roles. IT engineers and developers in those organizations are definitely the “go-to” grid guys, to generate applications yielding value, say, for instance, in terms of contracts.

Similarly, IT engineers and developers at utility retailers may see opportunities with metering data, say, for instance, hard numbers on billings and more granular information regarding incoming revenue and the ways in which that information could provide other arrows in retailer quivers in bond markets. That metering information may not affect buy-side in the ways we routinely think of buy-side, and I could imagine it as an ideal body of data for a transaction credit, which retailers could employ to offset the cost of future transactions and/or to access system-generated analytics informing appropriate risk matching.

Innovation and inertia regarding net metering and distributed generation set contexts for smart meters and grids. Incumbent utilities loathe surrendering discretion over distributed generation and net metering. This has been and yet remains the great rub on renewable energies quite aside from crystalline silicon efficiencies and negative externalities of wind. Both the [Solar Energy Industries](#)

[Association](#) and the [Solar Electric Power Association](#) do lots of thought leadership on distributed generation and net metering as they concern solar power.

You may be onto something here, Carl, that's wholly new. There may well be robust opportunities for IT developers and engineers to team up with cloud services to aggregate and organize individuals and institutions generating power on their own to sell more distributed generation back into grids. Candidly, lots and lots of people with solar panels would jump for joy for applications along these lines, I'd think. Any number of them tell me they feel all but suffocated by incumbent generation and transmission companies. And, candidly, I would contemplate a jostling regulatory scrum. [National Association of Regulatory Utility Commissioners](#) meetings would be good starting points to get a quick sense of regulatory openings and barriers to entry. Those NARUC folks are terribly serious, and many are animated by public service in the public interest. And, the big utilities tend to hold lots of sway with state regulators, so anyone keen on turning a nickel promoting distributed generation and net metering better be gimlet-eyed about what he's getting into. The solar power groups have state by state information, too. And, don't forget the [Federal Energy Regulatory Commission](#), a crucial leader.

**CF: Hugh, you are describing very dynamic opportunities that in essence work at the speed of computing. What implications for oversight and government regulation do you see?**

HD: Carl, what a great question.

Big data can potentially emerge to define efficient and reform inefficient markets during the 21st century. Machine to machine connectivity and communications operationalize the different functionalities I explained earlier, and those are key reasons why Crossfire Media is so consequential. You have your finger on the pulse of the times and bring together institutions, firms and individuals with applied capabilities and skills to implement these transformative changes.

Marketcore IP supports architectures for transparency, liquidity and risk assessing. Through Marketcore's IP, IT engineers and developers have a suite of tools to effect marketplace corrections. This transparency-generating, liquidity-providing, risk-assessing architecture might just restore confidence in equity and bond markets. The architecture goes a long, long way toward creating efficient markets and efficient market administration.

It's all a very big deal about how the United States administers markets and promotes investment dating back to John Quincy Adams and Andrew Jackson.

The reality in 2014 is that big data now makes it possible to address shortcomings in inefficient market administration of inefficient markets that Americans have adopted with government, industry and finance dating from 1828.

One big opportunity is deploying operating systems and applications empowered by Marketcore IP to supersede regulatory costs associated with contemporary market administration and to stimulate efficient markets.

For instance, enforcement no longer deters, many thoughtful observers contend. Nowadays, enforcement is little more than a regulatory cost with negligible betterment to and for the public interest. The big banks, great pharma companies and massive healthcare systems settle, pay their fines, go on with business and investors pretty much sign-off, powerless to change management.

Look at Steven Cohen, head of SAC Capital, who's pretty much an enforcement poster boy just now compared with Jamie Dimon at JP Morgan Chase. Cohen had \$15B in his hedge fund in January, 2013. He now controls \$7B according to news reports and is in agreements with the U.S. Attorney to no longer manage other people's money.

By contrast, Jamie Dimon, head of JP Morgan Chase, received a 74-percent raise after JP Morgan Chase settled somewhere between \$10 to \$14.6B fines, depending how one counts and how much JP Morgan parks with regulators, in connection with securities and residential mortgage back securities wrongdoing, on a 16-percent profit loss and 33-percent share price appreciation.

It's easy to see why. Dimon struck a phenomenal deal with DOJ protecting the bank from judicial scrutiny in its settlement deal. Notice Better Markets litigation against the Department of Justice alleging that "the DOJ violated the Constitution and laws of the United States by using a mere contractual agreement to resolve claims of historic importance without subjecting the Agreement to independent judicial review."

DOJ is tantamount to a Palatine Court, "A ruler with royal privileges and judicial authority reigning within the territory," abusing its discretion by toadying to the wealthy bank, [Better Markets](#) contends.

"The agreement fails to identify or explain:

THE LOSSES: How much did JP Morgan Chase's clients, customers, counterparties, investors, and others lose as a result of its fraudulent conduct? \$100 billion? \$200 billion? More?

THE PROFITS: How much revenue, profits, and other benefits did JP Morgan Chase receive as a result of its fraudulent conduct, and was it all disgorged? \$10 billion? \$20 billion? More?

THE BONUSES: Who received what amount of bonuses for the illegal conduct?

THE INVESTIGATION: What was the scope and thoroughness of the investigation that provided the basis for the agreement?

THE FRAUD: What are the material facts of the illegal conduct by JP Morgan Chase and the specific violations of law that were committed?

THE CULPRITS: What exactly did the individual executives, officers, managers, and employees involved in the illegal conduct actually do to carry out the fraud, and do any of them still work for the bank?

THE CORRECTIVE ACTION: Why did the contract fail to impose on JP Morgan Chase any obligation to change any of its business or compliance practices, which are standard conduct remedies that regulators routinely require? And how can the sanctions effectively punish and deter JP Morgan Chase, given its wealth and its extensive history of lawless conduct?

THE LACK OF ADMISSIONS: Why are there no admissions of fact or law by JP Morgan Chase, and what, if any, are the concrete legal implications of their so-called 'acknowledgment'?

By entering the agreement without seeking any judicial review and approval, the DOJ violated the Constitution and laws of the United States.

The Executive Branch, acting through the DOJ, violated the separation of powers doctrine by unilaterally striking a bargain with JP Morgan Chase to resolve unprecedented matters of historic importance, without seeking any judicial review and approval of the agreement.

The DOJ violated the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) by failing to commence a civil action in federal court so that the court could, among other things, assess the civil penalty. The DOJ acted arbitrarily and capriciously by, among other things, entering the agreement without seeking judicial review and approval." ([www.bettermarkets.com](http://www.bettermarkets.com))

All of this may be salutary in the long run; e.g., DOJ may be vindicated or vilified in courts of law and public opinion striking the deal, Dimon may enter the pantheon of bankers celebrated or derided for exercising market power comparable to J.P. Morgan's in the 1907, but it is expensive, time consuming and hard to foresee tangible benefits inuring to investors.

Shameless as DOJ decision making may be to many, who like Better Markets, are demanding stronger enforcement, it's nonetheless important to note regulators' bind. If regulators were to actually police wrongdoings, the offending institutions could tip into bankruptcies. Investors and shareholders could and likely would litigate allegedly corrupt management, the shenanigans would be exposed through due process in courts of law and out goes the giant firm along with the soiled senior executives, the baby along with the bathwater.

If regulators don't enforce as forcefully as they can and should, the offending firm agrees to stop breaking the law and defrauding the public and the system can self-correct through monitoring, or so the logic runs.

Separately, this is why whistle-blowers are so important, because regulators have much more difficult challenges getting facts if whistle-blowers do not come forward.

The Department of Justice and Securities and Exchange Commission rely on non-prosecution agreements to enforce wrongdoing.

How oxymoronic is that?

[Judge Jed Rakoff](#) engages enforcement thoughtfully in a recent New York Review of Books.

DOJ deals with JP Morgan Chase and HSBC ride the non-prosecution chassis. They are virtually identical: Big, headline-generating news reporting seemingly stunning fines/settlements, small armies of surveyors dispatched to monitor current and yet hired big bank executives and staffers with the assurances of senior bank managers that current and to be hired executives and staffers will not behave as shamelessly as mentors and predecessors, the institutions write off the fine as a cost of business, shareholders either breathe sighs of relief the clouds of prosecution in federal courts are finally lifted or weep at their impotence to police the management of the corporations in which they have invested, or both.

A non-prosecution agreement template is in place for [Foreign Corrupt Practices Act](#) litigation according to Hogan Lovells' report.

So, when enforcement is tantamount to a non-deterrent crap shoot -- that is, one set of outcomes for a new money guy and another set of outcomes for storied bank -- investors are in really lousy positions, for the federal government is essentially conceding the reach of its enforcement powers before dominant firms.

To be sure, a great show is made of enforcement.

It does matter.

It is a tool.

All true.

And, journalists do fine jobs. Among many others, [Morgenson](#) on finance and [Walsh](#) on pensions and municipals in the Times, [Moyers](#) and [MacNeil Lehrer Productions Newshour](#), the [Nightly](#)

[Business Report](#), and [Matt Taibbi](#), who refreshes muckraking for Rolling Stone, all create informed readers and citizens.

But, capable journalism can at best beam the [spotlight of publicity](#).

Now, big data gives us a chance to try something new, which machine to machine communications and the Internet of Things make transformatively possible.

### **CF: What about IT engineers and developers who are pioneering the Internet of Things?**

HD: That's where the energy applications are timely. Together with an immensely gifted textile scientist, I am developing energy absorption and energy generating yarns, fabrics and textiles.

[Advanced Fabric Technologies](#), our energy absorption technology innovator, brings functionalities for high-performance yarns, textiles, fabrics and garments in sports, medicine, first responder and soldering, ballistic protection for energy, mining, security and national security, interior design, industrial textiles and specialty fabrics.

In each and every application, our energy absorption technology partner can enable real-time monitoring, protect workers and equipment during catastrophic events and the underlying gypsum in institutional structures from routine bumps and bangings inflicted by gurneys and other mobile equipment. It can boost the translucency and increase the durability and strength of tensile membrane canopies and roofing systems, and provide superior abrasion resistance across all fabrics and textiles.

Just now, we're addressing coated fabrics, ballistics, translucency in tensile membrane canopies and roofing systems and abrasion resistance in interior fabrics and wall coverings.

When an industrial partner integrates sensors and radio frequency capabilities, any of these capabilities becomes intelligent.

When an industrial partner adds either motion or ambient light energy generating technologies, the intelligent yarn, textile, fabric or garment can function as renewable materials or machines operating in an Internet of Things free from standard electrical inputs from the grid.

We're very pumped up about Advanced Fabric Technologies energy absorption innovations and see those technologies as original equipment manufacturer components for machine to machine connectivity and the Internet of Things.

One of our energy-generating partners employs motion-to-power sensors that can report any number of factors from a fabric with available sensor and radio frequency technologies.

Think about it.

Our energy absorption partner will certainly transform the coated fabrics industry as a horizontal technology applicable for defined markets like tarps, booms, and bouncers.

Its energy absorption technology could well emerge as a vertical technology, transforming whole industries particularly as renewable power from ambient light and motion energizes functionalities.

**CF: Hugh, thank you for your insight and for being so forthcoming.**

HD: You're welcome, Carl. I really appreciate this opportunity. Hope to connect in Las Vegas for platform conference.

Interactive Finance & Energetic Textiles: M2M, Internet of Things Innovations  
Pioneering Information Frontiers (Part 1)  
<http://www.m2mevolution.com/topics/m2mevolution/articles/371282-interactive-finance-energetic-textiles-m2m-internet-things-innovations.htm>

Interactive Finance & Energetic Textiles: M2M, Internet of Things Innovations  
Pioneering Information Frontiers (Part 2)  
<http://www.m2mevolution.com/topics/m2mevolution/articles/371283-interactive-finance-energetic-textiles-m2m-internet-things-innovations.htm>

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