



Litigation Analytics - A Modern Paradigm for Better Resolving Litigation Involving Technical Issues

Introduction – Where is the Client Facing Innovation in Litigation?

Corporate litigation clients and insurers who pay for litigation defense demand innovations to cut the cost of legal services while improving outcomes. Legal firms have responded with innovations such as legal project management and teaming platforms that mainly address transactional and backroom activities and may be transparent to the client. These innovations focus on what the law firm does internally, which led to an opinion piece in the ABA Journal that asked a critically important question - where is the client facing innovation (Anders Spile, November 12, 2019). This opinion piece goes on to point out that “... clients do not care about the internal productivity improvement of law firms if it does not influence the legal products they consume. They want external, client-facing innovation they can take part in and shape according to their specific needs.”

ExpertAnalytics Group and Spotlight Business Consulting have formulated an important client facing innovation, Litigation Analytics. Litigation Analytics provides a modern paradigm for better resolution of litigation involving use of experts. This prospectus describes this modern paradigm and its value to the legal community.

Litigation Analytics – What is it?

Litigation technical investigations powered by science and analytics, which we refer to as *Litigation Analytics*, is a holistic package of innovations that combines legal needs with modern technology and analytics to (1) improve the identification of what experts are needed, (2) offer a modern way to better select experts, (3) provide a reliable approach to resolve cases early that minimizes travel and inspections that are difficult to arrange in the COVID-19 crisis, and (4) supply important training and support on conducting expert investigations for experts to raise their value for the legal community. It takes this holistic approach to truly innovate the utilization of experts in litigation.

Use of Litigation Analytics is valuable across all areas of expertise that are needed in litigation cases. This document uses cases *involving* scientific, engineering, and technical experts to keep the presentation shorter and clear, but the concepts that occur in litigation involving technical issues are easily transferred to other areas of expertise.

Litigation Analytics is of most value in cases that will be won or lost based on the work and testimony of scientific, engineering, and technical expert witnesses and with any of the following characteristics: (1) high stakes and higher loss risk, (2) where there is a strong desire to achieve early resolution through mediation or other means, (3) that involve several possible and/or multidisciplinary scientific, engineering, or technical issues, (4) where the exact scientific, engineering, or technical discipline needed is unclear, or where there is a need for two or more experts in different disciplines, (5) when extensive (synonymous with expensive and time consuming) scientific or engineering testing is thought to be needed, and (6) in cases that may need compelling testimony on scientific, engineering, or technical issues that are not readily understood by untrained people.



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Litigation Analytics is also valuable in intellectual property disputes where a patent has not been reduced to practice.

In addition to providing value to litigators, the data mining and modeling approach inherent in Litigation Analytics offers corporate counsel and insurers a unique and powerful way to consolidate numerous seemingly different cases into far fewer silos that share common bases of key technical issues. The benefits of this are huge as Whirlpool Corporation has shown. [Whirlpool Corporation and Wheeler Trigg O'Donnell LLP, *The Quest for Early Resolution, Lower Costs*, Association of Corporate Counsel Value Challenge, 2012] Defining the silos based on technical key issues means that most of the key issues are defined once and can be researched to develop more insight as to why these failures or accidents happen. New cases start much higher on the learning curve, cutting time, cost, and producing better outcomes. Insight from this approach can be used by designers to reduce the occurrence of the failures and accidents. Litigators who may not be technically versed can focus on and become expert in the few key technical areas that underlie the numerous failures and accidents. Fewer litigation firms may be needed and case management becomes easier. These benefits are also available to insurers since insurers tend to have more presence in defined market segments.

Litigation Analytics Uniquely Identifies What Experts are Needed.

When science and engineering are pervasive in litigation disputes, lawyers find themselves having to decide what expertise they need, and they may lack the insight and experience to make the best decision. Technical issues in litigation run the gamut from straightforward to complex and multi-disciplinary. The realities of a case are not under anyone's control, but the effective discovery of those realities and the framing of their meaning and implications are the foundation of achieving a superior outcome and minimizing costs. Authoritative investigation results and analyses provide attorneys and their clients with reliable insight and the best basis to manage their risks through settlement, or the successful prosecution of their case.

Technical investigations in litigation are similar to industrial R&D in their challenges and Litigation Analytics enables litigators to use what industry has learned to improve selection of technical experts for litigation-related investigations.

Forming preconceived ideas is natural if one is untrained in a subject. If a metallic part breaks or corrodes, I must need a metallurgist. If a building leaks, I must need a structural engineer. If wood flooring warps, I must need a mechanical engineer. This almost has to be the depth of thinking when someone who is not technically trained or experienced selects an expert, and sometimes the technical issues are straightforward, and this depth of thought is adequate. The real challenge in these types of situations is to know "what we do not know."

Industry faces the same problem in evaluating the numerous sources of technical insights, innovations, and developments. Industry does not immediately turn to domain experts as



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litigators tend to do, but rather uses gatekeepers. Domain experts have deep, but narrow knowledge. A practicing metallurgical expert for example is typically a domain expert. Gatekeepers in contrast have broad, multidisciplinary knowledge and use different analysis methodologies. Gatekeepers are better at seeing the forest. They are better at appreciating the context and diagnosing the nature of the problem. They are the scientific equivalent of a family practice physician or internist and are best positioned to conduct the investigation and convey the results within the societal, business, and technical context of a case.

Gatekeepers are both capable of taking a broad view of a failure or accident while being sufficiently knowledgeable and skilled to apply the requisite domain knowledge. Gatekeepers also differ from typical experts in several other important ways. Gatekeepers have to be far more experienced with searching for and identifying relevant scientific and engineering studies, which is a skill in itself and one in which many experts lack sufficient depth. The challenge is not so much finding sources of data, but rather to be able to recognize that data is relevant because most available data was not developed for establishing the cause and origin of failures and accidents, nor was this data developed for the situation under investigation.

Nonetheless, industry publishes much technical data for marketing and regulatory purposes and academia publishes much applied research. Although initially appearing to be irrelevant or unusable, gatekeepers have skills and experience to use advanced statistics and artificial intelligence to analyze (or mine) this data to extract the insight it holds for the specific situation under investigation, and to combine this data with well-established, fundamental scientific and engineering principles to adapt this data to the situation under investigation and to use this data in applicable models to fill in gaps in the data that exists. Using this approach, gatekeepers estimate properties that define a box, usually a very small box, that establishes the range of possibilities for the cause and origin of a failure or accident. This data and its analysis also establish estimates of what results testing should produce and significantly limits unsupported creative interpretation of testing and the events surrounding the failure or accident.

This phase of an investigation should occur as early as possible, certainly before testing so that the insight developed can be used to resolve cases early and to properly guide detailed inspections and testing if the case proceeds through discovery. In reality, this phase of the investigation and the extent to which it should be conducted does not occur in too many cases.

How Does a Litigator Adopt the Industry Model of Gatekeepers?

Litigation poses challenges and limitations not encountered in industry. Litigators have a concern with multiple experts possibly creating confusion. Also, no one is looking to increase costs. Ultimately, how are gatekeepers found? A further challenge to litigators in selecting an expert is that accidents, product failures, and medical malpractice can (and increasingly do) present multidisciplinary issues, but this may not be recognized by someone not trained in the sciences.



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Accidents and product failures happen not because engineering procedures, codes, and standards are violated but because the underlying scientific principles are violated, and it is exactly these cases that Litigation Analytics benefits in establishing the cause and origin. The required underlying scientific principles come from chemistry and physics, which provide the basis for materials science, corrosion, materials compatibility, the strength of materials, friction and wear, materials processing, chemical processing, electric power generation, water treatment, natural gas processing and transmission, and many other areas. Gatekeepers that are suitable for litigation situations will have a sufficient depth of technical knowledge and experience in the in the underlying sciences so that they can conduct the investigation. Gatekeepers will also use the assistance of specialized resources to meet the specific needs for “domain” expertise, but this assistance will be under the direction of the gatekeeper and the gatekeeper will be able to provide all of the testimony. This avoids confusion and reduces costs. Given these demands, gatekeepers are a rare breed and extremely valuable.

An Innovative Approach to Using Experts to Resolve Cases Early.

Mediation and other early resolutions processes cannot be treated as deals to be made

Why Analytics?

- *Logistics issues caused by COVID-19 and legal clients' demands requires quick and less expensive resolution of cases, but Supreme court rulings demand a reliable bases for the resolution of cases.*
- *Analytics uses data mining and modeling based on fundamental scientific principles to reliably establish the relevant key technical issues and everything that is known about them.*
- *Use of analytics meets U.S. Supreme Court tenants for expert testimony and empowers decision makers to decide how to proceed knowing what it will take to prevail and what it will really cost.*

because U.S. Supreme Court rulings cite the reliability of expert investigations as a central tenant for admissibility of expert testimony, so this should also be a central tenant of early resolution processes. Since a large portion of costs and the time involved in litigation is in the discovery phase, achieving early resolution and substantially reducing costs requires short-circuiting the discovery phase. This presents a critical challenge without a new innovative approach to discovery because settling a case requires establishing a reasonable basis for understanding the key technical issues involved, who is likely to prevail, and what it will take and cost to prevail, which is what the discovery phase does. This is why the discovery phase cannot be ignored but rather has to be short-circuited and use of analytics as

explained below offers an innovative and reliable way to do this.

Analytics, which involves data mining and modeling, is likely not thought of as part of a litigation-related investigation, but it should be as indicated by Virginia Tech's College of Science having made analytics an overarching theme of its graduate degree programs. Accidents and product/structure failures do not happen in a lab under controlled conditions and the watchful eye of measurement instrumentation, and although there is often data, it is limited in its scope and amount, and limited in its applicability since it is often contaminated



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with uncertainty and unrelated factors. Also, experts are often not involved until well after an incident when the site or equipment may no longer exist. Data mining uses specialized, sophisticated software to visualize and identify patterns in the data that is available, and advanced statistical and artificial intelligence techniques to identify relationships and differences in the data and to test their significance. Although data mining is powerful in the insight it can produce, it is common for significant gaps to exist in the data. Modeling addresses this issue by using scientific principles and the known properties of materials to estimate the data needed to fill the gaps. These estimates are tested by also estimating data that exists.

Some attorneys and even some experts may not appreciate the importance of analytics in litigation-related technical investigations and using analytics is challenging. Analytics requires a deep knowledge of scientific principles so that they can be applied in the unusual situations that accidents and failures often present. Analytics also requires extensive knowledge of statistics, data modeling, and increasingly of artificial intelligence methods, with which one has to be sufficiently experienced to apply in a practical way. Analytics also requires comprehensive searching for relevant data and the experience to select meaningful subsets of data during the exploratory screening phase so as to make the time required practical. This is a demanding combination of skills and experience that some experts may lack. Nonetheless, the importance and value of using analytics in some litigation investigations, especially ones that are more complex and multidisciplinary, cannot be overstated.

A message from the Dean of Virginia Tech's College of Science stated "At the Virginia Tech College of Science, we have reimagined scientific research.... We are focused not on data itself, but amplifying the relevance of that data with analysis, modeling, and interpretation." (Va. Tech Science, Fall 2019) Combining empirical trends in the data uncovered by data mining in litigation-related technical investigations with estimates made from modeling based on fundamental scientific principles using data generated by academia and industry not only fills gaps in the limited data available from the accident or failure but is also uniquely able to provide insight as to what scientific principles were violated and why they were violated, resulting in the accident or product failure. Testing the hypotheses made in an investigation is inherent in this approach, which is extremely valuable since testing hypotheses is an essential aspect of the scientific method that guides the normal conduct of scientific investigations and that is also fundamental in litigation-related technical investigation to meeting the rules of evidence.

Testing may be needed for cases that go to trial, but Litigation Analytics can provide a reliable and compelling basis by itself for mediation and other means to resolve a case early. When cases are not resolved early and proceed to trial, testing is often challenging and can produce confusing results because it is hard to accurately include all aspects of a situation in a simulated test and testing under field conditions may require an unpractical number of tests to achieve sufficient variation and replication for accurate statistical analysis. When testing is needed, Litigation Analytics provides estimates of what the test results should be,



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which helps to validate the test results. Test results by themselves do not provide insight into what scientific principle controlled the result that was achieved, but Litigation Analytics provides exactly this insight, which makes testing far more insightful, far less confusing, and far easier to understand and compelling for people not trained in science and technology.

Training and Support to Offer Better Experts to the Legal Community.

Scientists, engineers, and lawyers search for truth, but in very different ways. Scientists and engineers follow the scientific method. Lawyers follow an adversarial method. Scientists and engineers are (and have to be) independent of the proceedings, unbiased, and objective. Lawyers are (and are expected to be) advocates, having a stake in the outcome of the proceedings. Scientists and engineers collect information about an issue, draw conclusions, and conduct tests to verify the conclusions. Lawyers know the desired outcome at the outset and advance arguments to support that outcome, with the expectation that the arguments by both sides will illuminate the truth. It would be unethical for scientists and engineers to not disclose all of their relevant findings on an equal footing. As advocates, lawyers are expected to highlight only the findings that support their case.

These distinctions and their implications are typically not known by scientists and engineers who work outside of litigation investigations. Failure to appreciate these distinctions can lead to an expert not framing the results of their investigation in a manner that conveys its soundness, and it can lead to confusion and offer the other side an opportunity to create uncertainty where in reality there is none. This makes many highly knowledgeable and experienced technical professionals poor experts. Academic professionals for example are used to writing papers that discuss several or many alternative explanations even though one is far more likely to be correct than the others. Academic professionals are also taught that no outcome of an investigation is certain and they tend to write in this context. This places judges and juries in the position of having to make decision about scientific soundness that only a trained professional can make.

Attorneys sometimes try to draw distinctions between engineers and scientists, but the U.S. Supreme Court did not do so. Justice Breyer in his Introduction to the *Reference Manual on Scientific Evidence*, 3rd. Edition, National Academies Press, writes “All of the justices of the Supreme Court, in an opinion by Justice Breyer, held that the trial court’s gatekeeping obligation extends to all expert testimony,³⁷ and unanimously rejected the Eleventh Circuit’s dichotomy between the expert who “relies on the application of scientific principles” and the expert who relies on “skill- or experience-based observation. 38.” The National Academy of Engineering (NAE) noted in its Amicus Curiae brief to the U.S. Supreme Court in the Kumho Tire Case that science focuses on understanding nature and engineering focuses on modifying nature. Engineering modifies nature through the application of scientific principles guided by codes, standards, and design procedures. This is seen in the NAE’s Brief, which noted that “...science provides the foundation for the engineer’s work.”



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Accidents and failures happen because scientific principles are violated. Whether or not an expert is an engineer or scientist is not as important in establishing the cause and origin of an accident or failure as is their understanding of the underlying scientific principles. The U.S. Supreme Court mandated that expert investigations are to be conducted by the scientific method, and their guidance to lower courts in acting as gatekeepers on the admissibility of scientific and engineering evidence is to assess the process used in an investigation rather than the correctness of the scientific methods and results. This means that scientific, engineering, and technical experts should follow the scientific method, and they should be prepared to demonstrate that they have followed the scientific method if their reports do not adequately demonstrate this.

The Outcomes That Can be Expect From Use of Litigation Analytics.

Examples of the kinds of outcomes you can expect come from actual cases where Litigation Analytics has been use.

In a corrosion case involving chemical process equipment several metallurgical experts for both sides agreed as to the nature of the corrosion, but none had taken a broader perspective to question if corrosion should have happened under the condition that should have existed if the chemical process was operated as stated. This broader investigation completely changed the outcome of the case to the plaintiff asking for settlement of the case.

In what appeared to be a straightforward environmental case involving particulate matter where the typical investigation would involve air monitoring which can be difficult to conduct without unrelated interferences due to the numerous sources of particulate matter, a broader investigation established that the materials that was claimed to be the source of particulate in this case formed a hard mass under most conditions that could not have produced particulate matter.

A case involving a chemical process was originally approached in the conventional manner by conducting a chemical analysis. A chemical analysis may often be straightforward, but sample collection may not be, and in this case one side raised questions about the representativeness of chemical analysis. A broader investigation modeled the chemical process and predicted what the chemical analysis results should be, which confirmed that the chemical analysis was representative.

In a case involving delamination of a composite structure due to alleged thermal degradation, the conventional approach used a finite element analysis to support a delamination theory. A broader investigation used a combination of thermal measurements and modeling to demonstrate that the temperature could never have been hot enough to degrade the composite because of the thermal mass of the part and the limited heat content of the heat source, which showed that the hypothesis supported by the finite element analysis could not have occurred due to thermal degradation.



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Litigation Analytics is an innovation that empowers you to understand the key technical issues in a case and pick the ideal expert. This provides your clients with:

- ✓ *The quickest and best possible outcome.*
- ✓ *A unique opportunity to pursue early resolution (prior to expensive testing) based on knowing 60% to 80% of what might ultimately be uncovered.*
- ✓ *Superior technical insight for even the most complex and multidisciplinary issues.*
- ✓ *A reliable basis for expert testimony that uniquely meets rules for admissibility established by the Supreme Court.*
- ✓ *A strategic advantage with corporate clients since Litigation Analytics uses the contemporary industrial R&D model that they already appreciate improves outcomes and lowers costs through use of all existing knowledge and elimination of duplication, especially unnecessary and potentially confusing testing.*
- ✓ *Realistic estimates of costs for expert technical investigations.*

(1) Define the Technical Issues – A gatekeeper broadly grounded in physics, chemistry, design, and business operations gathers insightful information prior related cases, trade association publications, patents, manufacturer’s marketing materials and reports, and Internet blogs and forums to establish the key technical issues that will determine the outcome of the case.

(2) Establish What is Known About the Technical Issues - Contemporary analytics is used to apply the information from step 1 to the situation under investigation. Data mining uncovers key trends and relationships, and data modeling fills in missing data. Industry publishes product data and universities conduct applied research, so relevant data likely exists that can provide up to 60% to 80% of the insight as to what happened in an accident or product failure.

Litigation Analytics uses information research coupled with top-notch data mining and data modeling based on sound scientific principles early in cases to establish the key MAKE OR BREAK technical issues and everything known about them. Our Litigation Analytics process brings litigators the techniques that have revolutionized industrial R&D, providing the better outcomes and lower costs that industry has achieved in overcoming similar technical investigation challenges.

The first two steps of the Litigation Analytics Process do not require an inspection and can be sufficient to provide a way to settle a case early because these two steps can provide a reliable identification of the cause and origin of accidents and product failures. These two steps also provide a reliable basis to assess the strength of one’s position in a case and to make good decisions about how to proceed.

(3) Reliably Define Inspection and Testing Needs – If the case is not settled early, this analytics-based process ensures that existing knowledge will not be recreated, and that reliable inspection and test plans are established, which cuts costs, ensures that testing does not produce a confusing outcome, and ensures that the investigation covers all key issues.

(4) Coordinate, Oversee, and Effectively Communicate - *Litigation Analytics* ensures that the overarching technical concepts are effectively framed and communicated, and eases report preparation. The investigation’s outcome and its presentation are clear and compelling.