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Improving Selection of Technical Experts in Litigation: Part 1 of 2

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 this paper discusses how to use what industry has learned to improve selection of technical experts for litigation-related investigations.

Is It Engineering or Science and Does It Matter?

Litigation is an adversarial process in which 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." 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. Deciding if expertise with codes, standards, and the practice of engineering is sufficient, or if a deeper exploration of the underlying scientific principles is needed will be a decision that could determine the outcome of a case. Making this decision can require substantial technical knowledge as is demonstrated by the case study presented in the righthand column.

This case study demonstrates that selecting an expert requires determining the expertise that is needed and this is a task that requires technical knowledge and experience. Sometimes the technical issues in a case are obvious and straightforward, in which case selection of an expert does not require much technical knowledge, but sometimes the technical issues are multidisciplinary and/or not easily seen and appreciated, in which case they are not likely to be recognized by the inexperienced. Industry also faces this challenge in meeting its need for innovation and R&D and understanding industry's approach has value for litigators.

Case Study

This case study shows the problem with the conventional approach to expert investigations. Heating equipment used in a chemical process failed due to corrosion. This was seen as a metallurgical issue, so metallurgical experts were used, and it became a metallurgical investigation, but the real problem was something very different.

Dr. John Fildes was brought-in after several metallurgical experts had produced their reports. John applied a broader multidisciplinary approach based on chemistry and electrochemistry, which underlies corrosion science, and collected information that was known about the behavior of the metal in several other chemical processes where similar conditions would exist and concluded that the material should not have corroded, an aspect that none of the metallurgical experts had considered. John also collected information that was known about the nature of conditions in the chemical process in which the equipment was used and concluded that the type of corrosion that occurred should not have happened under these conditions.

These insights, which had been unrecognized, resulted in a request for documents and information about the way in which this specific chemical process was operated. This produced materials that showed the process was operated with non-typical conditions that would cause corrosion, but that could not have been anticipated by the maker of the supplied equipment.

This took the supplier of the equipment from a difficult defense based on not being responsible for the selection of the material to a far easier to understand issue of the equipment being used in a way that was never specified for its use. A favorable settlement resulted in a case that was headed to trial.

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Domain Experts and Gate Keepers

Forming preconceived ideas is natural if one is untrained in a subject. If a metallic part breaks or corrodes, I need a metallurgist. If a building leaks, I need a structural engineer. If wood flooring warps, I 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 litigators tend to do, but rather uses gatekeepers. Domain experts have deep, but narrow knowledge. A practicing metallurgical expert 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.

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? Gatekeepers that are suitable for litigation situations will have a sufficient depth of technical knowledge and experience that they can conduct the investigation, but they will also use the assistance of technicians and specialized facilities such as testing laboratories to meet the specific needs for "domain" expertise. This avoids confusion and reduces costs because utilizing resources that specialize in their core competencies is usually less expensive and more effective.

Domain experts will typically have very extensive credentials and experience in their specific area of expertise. Gatekeepers that are suitable for litigation situations will in contrast typically have a grounding in a broader base of the sciences that will allow them to conduct the sophisticated technical analyses that are needed, but that will also allow them to recognize the need for, find, adapt, and apply relevant technical insight and data from other disciplines as is demonstrated by the case study on the previous page. Gatekeepers are essential for investigating multidisciplinary issues, which is discussed further in a companion white paper in this series. Gatekeepers will also be more adept with applying analytics in litigation-related investigations, which is a source of tools that are extremely powerful for uncovering critically needed insight from limited data that is contaminated with uncertainty and unrelated factors. The use of analytics in litigation-related technical investigations is also discussed further in another whiter paper in this series.

Our gatekeeper approach provides:

- ✓ *The quickest and best possible outcome.*
- ✓ *A unique opportunity for early resolution based on knowing 60% to 80% of what might ultimately be uncovered.*
- ✓ *Superior technical insight for even complex and multidisciplinary issues.*
- ✓ *A reliable basis for expert testimony that meets rules for admissibility established by the Supreme Court.*
- ✓ *A strategic advantage with corporate clients since they already appreciate that this approach improves outcomes and lowers costs through use of all existing knowledge and elimination of duplication.*

Our gatekeeper approach uses information research and analytics early in technically related cases and *establishes the* key *MAKE OR BREAK technical issues and everything that is known about them.* This approach requires someone who has the extensive experience with both contemporary R&D methods and litigation-related expert witness investigations so as to adapt the corporate R&D technical investigation process to the unique aspects of litigation expert witness investigations. Our experience to do this is reflected in our process to bring litigators the R&D technical investigation techniques that have revolutionized industrial R&D, providing litigators with the better outcomes and lower costs that industry has achieved in overcoming similar investigation challenges.

1. Define the Technical Issues – Inspections, insight from litigation parties, and broad literature searching are conducted to gather information from prior related cases, trade association publications, patents, manufacturer's marketing materials and reports, and Internet forums to establish the key technical issues.

2. Use Analytics to Establish What is Known About the Technical Issues – The data gathered above is analyzed using contemporary tools for data mining and modeling to adapt the available data and fill the gaps that always exist in litigation investigations.

(3) Reliably Define the Testing Needed – The data that has been collected and analysis that has been done ensures that: existing knowledge is not recreated, the remaining work is properly focused, and all involved parties understand the challenges, methods, and progress.

(4) Coordinate, Oversee, and Effectively Communicate – This approach ensures that the overarching technical concepts are effectively framed and communicated, and it eases report preparation. The results are well supported, clear, and compelling even to people not knowledgeable of science and engineering.