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FOR ENGINEERING AND SCIENCE

# New Technology - Who Is the Designer?

## Year

1998

## Description

This case illustrates a commonly blurred area between the right to ownership of one's ideas and the right to exclude others from making, using, or selling an invention.

## Body

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## Part 1

Edgar Engineer is a licensed civil engineer and principal investigator on a university project researching environmental contamination problems. His work involves the sampling of groundwater and soil to determine the nature and extent of contamination at a local commercial site. As a result of his research at the site, Edgar identified a need for improvements in commercially available sampling technologies; essentially, Edgar wanted to provide more samples for improved analysis without any negative impact to the project in terms of cost or sample integrity. He sketched out a sampling concept that he believed would save

significant labor and cost, and shared the idea informally with Doris, the manager of the site, who encouraged Edgar to explore construction strategies.

Edgar contacted Fabio Fabricator, a vendor who supplies sampling equipment, to discuss a sampling system that would do what Edgar wanted. Edgar's concept included general design requirements and performance specifications in the written request for cost proposal. Fabio responded to the request, discussed the sampling idea with Edgar, and agreed to build a prototype that would meet Edgar's sampling performance needs.

Doris agreed to split the initial costs with Edgar, provided that this technology would be proven and ultimately used first on her site, and that her site would benefit directly from eventual cost savings. Over the next few months, Edgar and Fabio met occasionally to review Fabio's drawings and refine the performance specifications. Fabio customized a hand-operated sampling machine (which he had been selling and was currently patenting) to meet Edgar's requirement that it be remotely operated. Fabio built a system that incorporated other existing technologies into the unique design that would meet Edgar's sampling requirements. Some of these technology ideas were suggested by Edgar. Upon completion, the prototype was delivered to Edgar, who began conducting field tests of the design and performing sampling tests to determine its effectiveness.

During this period of testing, Edgar led a research project comparing samples from the new technology with traditional sampling techniques. Edgar assigned the field development and machine testing to Mac, a mechanical engineering post-doc, who made field improvements to some parts of the system and also directed Fabio to redesign certain components to improve reliability. Upon completion of the comparability study, the new technology's sample quality was shown to be as good as the other, more time-consuming sampling protocols.

In her company's annual report and advertising, Doris enthusiastically publicized this successful time- and cost-saving innovation that she had helped support and develop, claiming it was designed by Fabio for Edgar's institution. Edgar's main interest was in the faster, improved protocol that this device enabled, and he published several conference and journal papers discussing the advantages of the innovative sampling approach, the technology's field development, and the research comparing it with older methods. Edgar co-authored these papers with the Mac, and Doris, who were integral to proving the technology in the research project.

Meanwhile, Fabio developed improved models of the sampling machine for industry and began marketing the technology. Everyone seemed happy: Edgar's research project (and Doris's site cleanup) progressed more rapidly with renewed funding, and Fabio printed up some new catalogs including the new product.

A year later, Edgar discovered that Fabio had applied for a new patent covering the overall sampling system. Edgar complained to colleague at the university, "I met with Fabio at a conference last week and saw the new sampling machine. Fabio is pursuing a patent on it, and we got into a bit of a discussion. Most of the ideas that went into it were mine, with changes to their existing equipment. I told him that I wanted to be listed on the patent, and he said that he'd 'keep me informed of the status.' I don't think that's good enough, and I would like some advice on how to proceed."

## **Discussion Questions**

1. Whose idea (intellectual property) is this technology? Who designed the technology? Are these the same questions? Support your position, identifying additional information that, if available, would support your view.
2. Suppose Fabio is not an engineer, but instead has good mechanical skills that make him an experienced fabricator. He asks Edgar to review and comment on the technical drawings and size specifications to ensure the system will have proper capacity when operated. Is Edgar performing technical peer review of a vendor's product, or is he acting as a licensed engineer "in responsible charge" of design approval?
3. Should Fabio have been included as a co-author in Edgar's research papers? Why or why not?
4. Should Fabio have included Edgar in the patent application? Why or why not?
5. What about the roles of Mac and Doris in the prototype design modifications and funding? Should they have been included in the patent application as well? Why or why not?

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## Part 2

Fabio sees this situation differently. Edgar approached him with performance requirements, just like any other buyer of his products. Although these performance requirements related to Edgar's good idea, Fabio designed the specific technology that merited the new patent. Fabio believed that Edgar - a civil engineer - did not have the mechanical background to design the machine; he only had the knowledge to define the problem. Modifications to the sampler retrieval unit that Fabio was already selling and patenting were a central part of the sampling machine; these were modifications within the scope of Fabio's original product design.

Moreover, Edgar's performance specifications conformed to Fabio's patent, simply allowing Fabio to apply his design in a new way, coupling it with existing technologies. In fact, Edgar provided no more than rough cartoon sketches and written criteria that the technology had to meet; the cartoon sketch Edgar provided was hardly a design, Fabio believed, but more like an outline of the sampling problem. It was Fabio who independently produced all technical drawings used to construct the technology - the same drawings that were included in his application for the additional patent describing the unique features of the sampling machine. The studies that Edgar's institution published significantly boosted Fabio's status as product vendor, but Fabio did not believe they directly contributed to the design.

Edgar's colleague responded to his complaint with the following advice on the patent: "If you have your ideas documented and signed in your notebook, the university could strongly recommend that your name be on the patent application. If Fabio does not put your name on the application, it would put his whole patent in jeopardy."

Edgar explained, "I have several files on the design of the vehicle, although nothing is really signed or in a notebook. My notes document the study we did with the technology, focusing on the modification of accepted protocols. I was going to draft a letter to Fabio laying out my thoughts. Would you be interested in reviewing it?"

### Discussion Questions

6. Does this additional information alter your judgment about who designed the technology? Why or why not?

7. If you were Edgar's colleague, how would you respond to him?
8. Do the facts that Fabio is not an engineer but an experienced mechanic, while Edgar holds an engineering degree and a professional license, make a difference in your assessment?
9. Suppose that Edgar and Fabio worked for the same firm or research institution, with Edgar as the principal investigator and Fabio as the technician; does your assessment change?

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## Epilogue

Ultimately, Fabio received patents for the hand-operated sampler and for the automated sampling machine. Edgar was upset that he was not named in the patent, but neither he nor the university pursued the issue with Fabio. The university did recognize Edgar's efforts and publications with a favorable promotion review, and Edgar's work remained highly respected. Fabio remained a vendor of this new sampling machine and other equipment.

### Discussion Questions

10. How many points can you identify in the story where Edgar could have acted to change the outcome? Identify at least two alternative actions Edgar could have taken at each stage of the story that might have provided a more satisfactory outcome.
11. Was the outcome fair? Why or why not?

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### Notes

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