

Significant technology redesign has characterized instances when components of ERIP technologies have been used in whole new systems. A typical example involves microprocessor-controlled technologies. For instance, ERIP supported the development of a lightweight frame and tension form to ease production of parabolic solar reflectors. The technology included a microprocessor that allowed remote monitoring of the device's performance. The solar collector device proved difficult to sell, but the microprocessor control technology has been successfully used in building security systems. Another ERIP project focused on the development of a temperature control system for buildings. This technology and line of business failed for the ERIP participant, but as a result of ERIP funding, the inventor's start-up company gained expertise with microprocessors and was able to move into a new product area — the design and construction of microcomputers for specialized laboratory and corporate uses.

In contrast, some alternative market applications of ERIP technologies have required limited redesign, but because of their new market focus have necessitated a new business venture. This situation tends to occur when the new application involves a clear market disjuncture, requiring new sales and marketing approaches. For example, one ERIP-supported inventor developed an apparatus for mixing and deaerating drilling mud for injection into oil wells. Subsequently, the inventor experienced a leak in his basement and used the technology to mix a sealant. A new basement sealing business grew out of this experience, employing the same technology that had been developed for oil well use.

Typically, one would expect the amount of redevelopment to increase with market newness, but there are exceptions to this rule. One ERIP inventor developed a portable space heater and gas burner to prevent frost damage to orange groves. The heater draws a large volume of warm air through a duct from above the crops by means of a large blade fan; the warm air is then directed across a propane-fired flame heater where it is heated and then directed out of the apparatus at ground level into the crops to be protected. The heating system was developed (with funding from a DOE/ERIP grant) and successfully used in orchards. A subsequent use of the technology was to prevent frost damage to exotic greenhouse plants (i.e., a new "market niche"). More recently, the technology was used to heat football players at a Superbowl. Although this is an entirely new "market" for the invention, only minor redesign work was required. Figure 4.1 illustrates the development of these market application spinoffs in terms of the dimensions of market and technological newness.

Alternative market applications may emerge from technologies regardless of whether or not they were successfully applied to their originally intended use. Of course, with success comes the resources needed to explore alternative markets and to support any technical or business investments required to exploit spinoff opportunities. This case of success-breeding-success has typified the alternative market applications that have spun off from ERIP projects.