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WHY CERTAIN INDUSTRIES ARE RIPE FOR DISRUPTION

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Since first coined by Harvard Business School Professor Clayton Christensen in his 1997 book *The Innovator's Dilemma*, the term "disruptive technology" has become extremely popular. Disruptive Technologies (DT), as defined by Christensen, are "simple, convenient-to-use innovations that initially are used only by the unsophisticated customers at the low end of markets." Unfortunately we have seen the original meaning distorted and the special insights of "disruptive technology," more often than not, misunderstood.

There are reasons for such misperceptions. First, today's rapidly changing technologies and markets result in many unpleasant surprises that seem "disruptive" to the status quo. Second, in our experience, there is a systematic tendency for engineering-based firms to mistake one of their new innovations for a disruptive technology. In large part, this tendency stems from the view that technologies that are not "disruptive" must be "boring" sustaining innovations.

Fortunately, there is a set of four questions that can be used to help clarify whether a technology represents a *sustaining innovation*, an *opportunity for a new market* or a *disruptive technology* (see figure 1). Let's address each of them in turn.

1. Is there a market (somewhere) that values the technology as it stands today?

You improve disruptive technologies in the market, not in the lab. If there is not a market that values the technology as it stands today (i.e., embodied in a product that can be quickly brought to market), then we have left the realm of disruptive technology firms and entered that of applied R&D laboratories. So the question, "Is there a market for the technology as it stands today?" is a crucial one. Experience shows that firms are apt to incorrectly answer this question, but in two very different ways: either by narrowly defining the market or by stretching the technology.

Incumbent firms tend to consider only their current markets when asking if "a market" values the technology. Identifying disruptive threats and exploiting disruptive opportunities requires having a broad understanding of peripheral, and even seemingly unrelated, markets. For example, General Electric, as the leading manufacturer of MRI scanners, might incorrectly ask the question in terms of radiology departments rather than general practitioners, or erroneously define the "market" to include only medicine and not alternatives such as non-intrusive testing of manufactured goods for quality-control.

The other erroneous tendency for would-be disruptors is to gloss over the important qualifier "as it stands today." As a result, they try to stretch the technology's current capabilities to meet a large, high-margin target market. The pressure to do this can come from the financiers, including venture capitalists with a relatively short time horizon. It can also come from purely internal decisions that drive feature creep. Even if the initial strategy is to target a potentially disruptive customer segment, once the development process begins, the product manager and engineers begin "improving" the technology in a number of ways to suit the needs of the mainstream customers with whom they are familiar. The result is feature creep, more development time in the lab rather than in the market, and lack of market focus on the disruptive opportunity.

2. Is this a mainstream or an alternative market?

This question is usually easy when the alternative market is an unfamiliar one. In the General Electric MRI example, a cheap ultrasound product team is clearly targeting an alternative market when it aims at manufacturing quality assurance or even veterinarians (where the risks of misdiagnosis are so much smaller that the cost/accuracy tradeoff is entirely different).