Estimating Customer Demand for Electricity Storage Technologies

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Abstract

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Why customers won't always buy a new technology even when it makes financial sense

Manufacturers of new products with value proposition that are different from the incumbent technologies available in the market need to understand the barriers to entry and switching costs associated with creating customer demand for the alternatives. Some of these costs are real, quantifiable and relatively easy to model in a spreadsheet. Others barriers and switching costs are sometimes described as "soft", "subjective," or even "irrational." This presentation will focus on these latter factors and will describe issues that must be addressed besides those found in the pure economic case---the issues that can spell the difference between commercial success and failure. The presentation will briefly cover various strategies for finding lessons from lead users and early adopters in other industries or other application contexts where the hurdles on the path to commercialization have been overcome. Ultimately, the presentation will show various methods available for understanding whether there really is a customer segment willing to pay for the new (disruptive) technology product.

Agenda

- Lead Users
- Sustaining v. Disruptive Technologies
- Electricity Value Chain
- Barriers and Solutions

Definitions

Technology

The processes by which an organization transforms labor, capital, materials and information into products and services of greater value

Sustaining Technology

Technologies which improve the performance of established products, along the dimensions of performance that mainstream customers in major markets have historically valued

Disruptive Technology

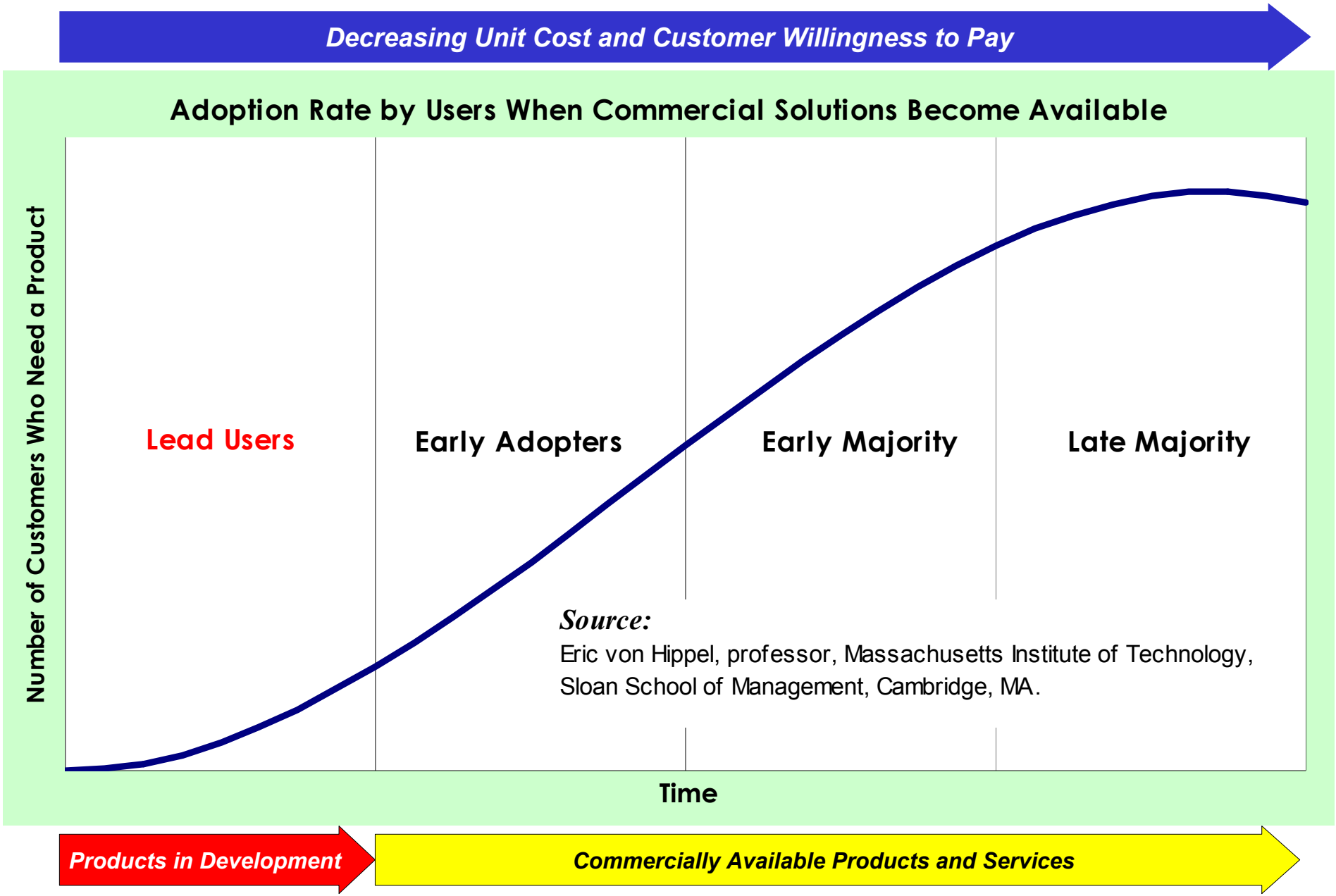
Technologies which under-perform established products in mainstream markets, but possessing features that a few fringe (and generally new) customers value; typically such products are cheaper, simpler, smaller,and, frequently, more convenient to use

Lead Users

Companies, organizations, and individuals that are well ahead of market trends with needs that go well beyond those of the average user, and as a result, develop and prototype their own products; the products are not conceived of for commercial purposes----they are created to solve a problem

Technology definitions are from Clayton Christensen
Lead user definition is from Eric von Hippel

Lead Users and the Product Adoption Curve

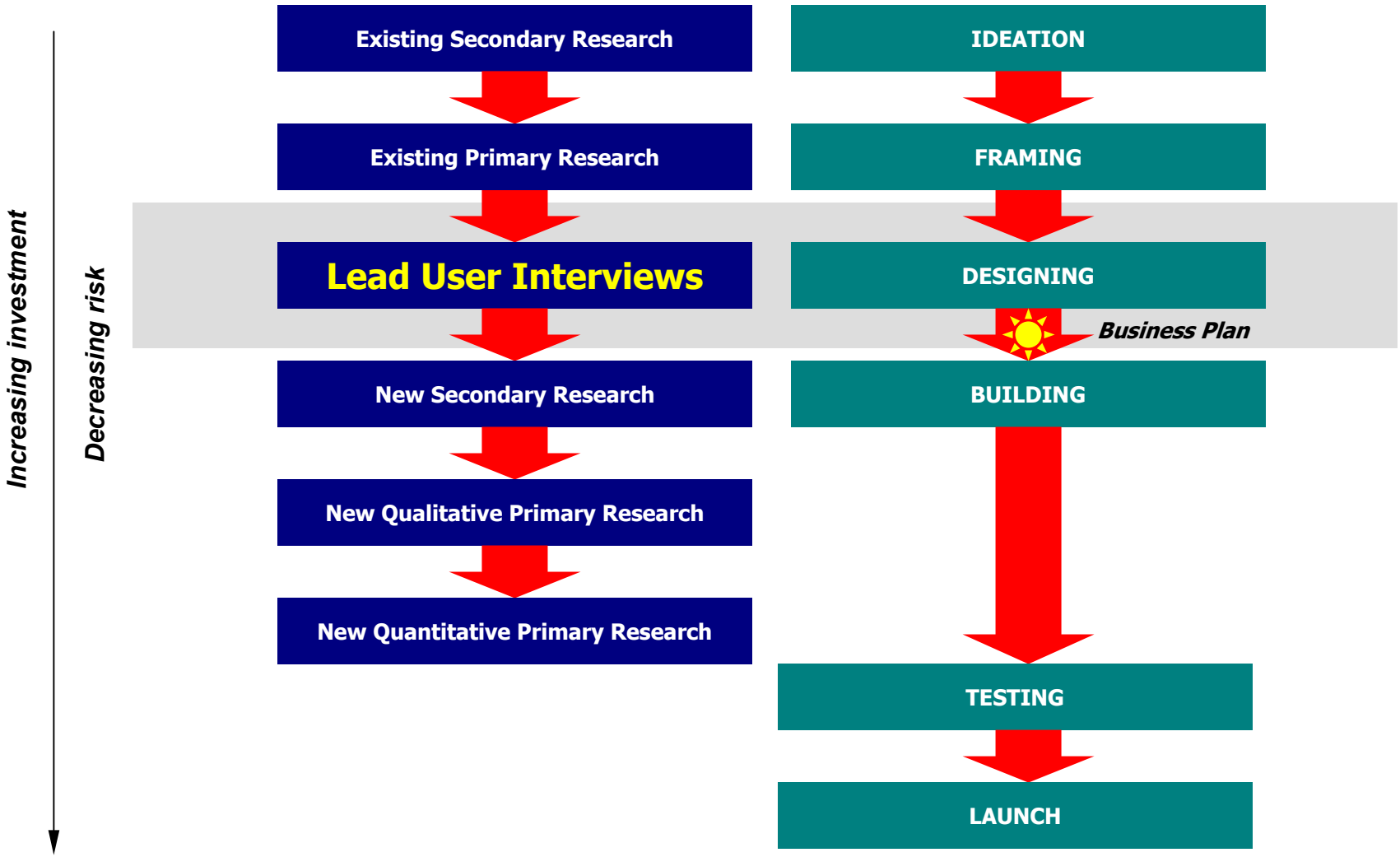


Disruptive Technology Market Analysis

"Markets that do not exist cannot be analyzed; Suppliers and customers must discover them together. Not only are the market applications for disruptive technologies *unknown* at the time of their development, they are *unknowable*. The strategies and plans that managers formulate for confronting disruptive technological change, therefore, should be plans for learning and discovery rather than plans for execution."

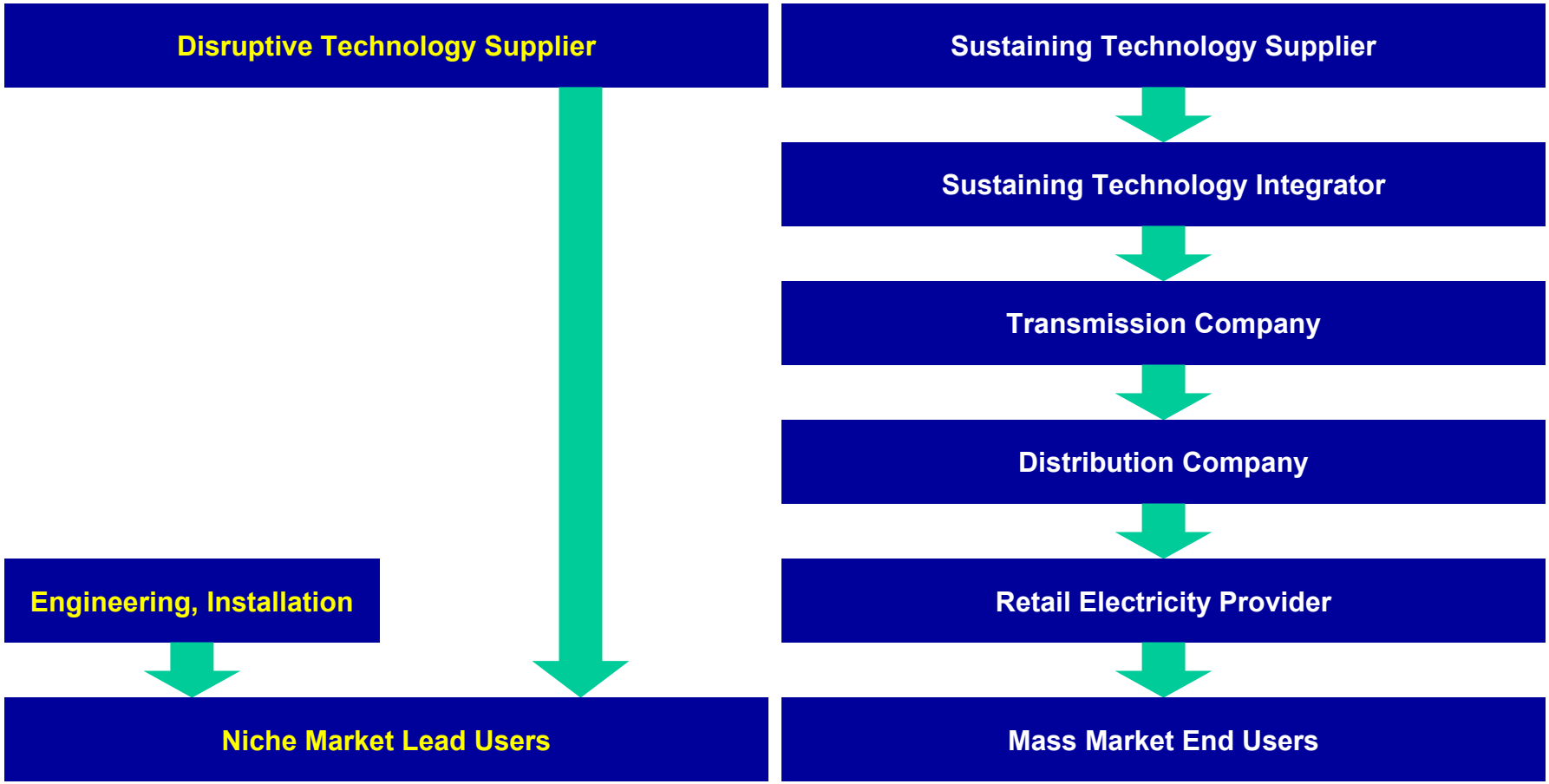
Clayton M. Christensen, The Innovator's Dilemma, 1997

Estimating Customer Demand, Sustaining Technologies



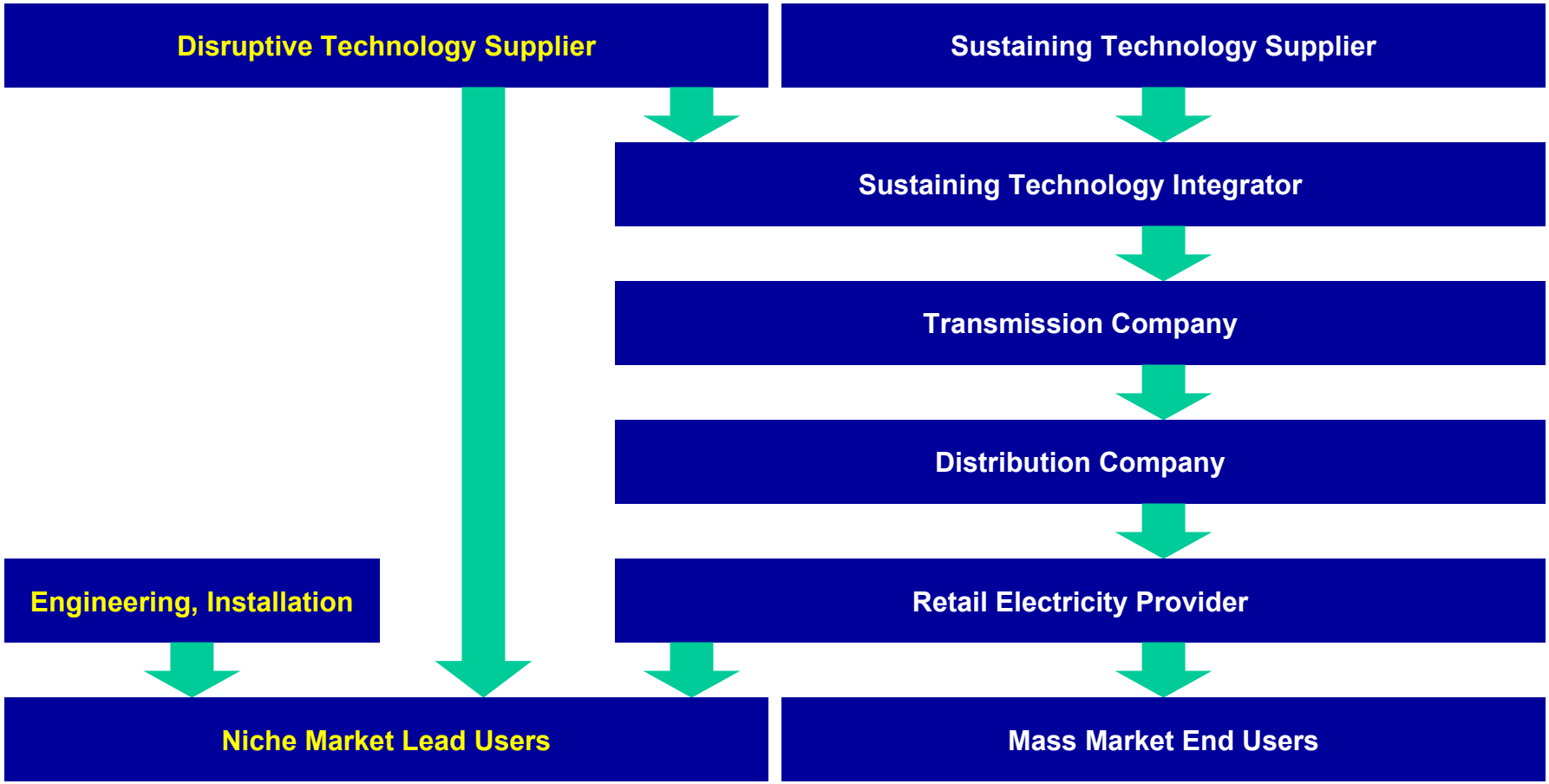
Traditional "voice of the customer" process for sustaining technologies new product development
This approach is largely ineffective for disruptive technologies, especially willingness-to-pay studies

The Value Chain, Disruptive Technologies, and Lead Users



Lead Users adopting advanced electricity technology solutions often act as the integrator performing the services that will one day in the future be offered by a service provider

Disruptive Technology Choices for Lead Users



Using established value chains and channels to market optimized for both sustaining technologies and disruptive technologies will introduce barriers that will slow development and hinder adoption

Barriers to New Electricity Product Adoption

- Internal processes aligned towards familiar sustaining technologies
- Financial dependence on sustaining technologies and incremental technology improvement
- DCF-based Capital budgeting process not suited for comparing competing projects with different risk profiles
- Product champion(s) must be willing to sell the idea to a large set of stakeholders during a commercialization cycle that can last for many years
- The absence of channel intermediaries with sufficient incentives to market, sell, or apply or act as integrators for new technologies; difficulty in negotiating equitable splits of risk and reward with channel partners
- The complexities associated with coordinating sustaining and disruptive technologies in the same value chain
- Shifting strategies – operational innovation vs. customer product and service innovation

Solutions

- Find and interview lead users to understand the bundle of benefits already providing value
- Undertake demonstration projects to learn about customer demand, not just technical issues
- Involve customers in your new product development process and not just your own customers
- Don’t use sustaining technology channels alone for disruptive technology evaluations
- Evaluate disruptive technology business cases independently from sustaining technology business cases—don’t make projects with different risk profiles compete for the same capital