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"If we don't decide soon, Paula, your people won't have time to make changes in the software and to write the documentation for the student version, and my people won't have time to publicize the software at colleges and with professors. It's already Thanksgiving; any further delay, and we won't be ready for the next academic year." Tony Atkinson, the new product manager at Cambridge Software Corporation (CSC) was meeting with Paula Stewards, vice president, Software Development, and Chuck Kennedy, CSC's president and chairman, in November 2008 to decide whether to offer multiple versions of *Modeler*, a new modeling software product.

Stewards responded to Atkinson's appeal. "It's easy for you to push for several versions of *Modeler*. After all, in your previous job, you were responsible for a line of different "GPS" navigation devices. Before that, it was a line of mobile phones. And, before that, laptop computers. But, for us, multiple product versions is a new concept. As it is, my people have enough trouble developing, documenting, and supporting one version of a cross-operating system software product (*Modeler* would be compatible with Microsoft Windows, Mac OS, and Linux operating systems). And you are pushing for three versions of a software product of which we don't have even one version ready!"

Kennedy knew both Atkinson and Stewards were right in their own ways. He had hired Atkinson to help move CSC from individual products to multi-version product lines. On the other hand, Stewards also had a point. Kennedy could not argue with Atkinson on one thing: the beginning of the next school year was only nine months away. In any case, because of another product CSC was developing, the market window for *Modeler* was at most two years. It was now or never.

Background

Cambridge Software Corporation was founded in 1993 by Chuck Kennedy and Doug Hansen, graduate students in the Massachusetts Institute of Technology's Computer Science department. CSC's first "headquarters" were located in Kennedy's ramshackle attic apartment near Kendall Square in east Cambridge, Massachusetts. Its first product was a computer program to study the dynamics of hydraulic flows in open channels.

That was fifteen years, many products, an initial public offering, four stock splits, and a dot.com surge-and-bust ago. By 2008, CSC had grown to a $100-million, 250-person company with corporate headquarters in a new building in a technology park in Hopkinton, Massachusetts, and Kennedy had exchanged his tattered jeans and shaggy beard for the attire of president and chairman of a successful company. Hansen, uncomfortable with the growth and concomitant change, had left the corporation and started a dairy farm in Vermont.

Professor Anirudh Dhebar prepared this case. The company mentioned in the case is fictional. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

CSC's initial products were customized for the scientific and academic communities and ran on supercomputers. The corporation's big break came in 1999, when it converted software for analyzing subterranean flows into a commercial product and successfully marketed it to a number of oil- and gas-exploration companies. Taking heart from this success, CSC dedicated itself to developing software that, while specialized in application, was generic enough to be of wide appeal to the engineering community. At the same time, Kennedy hired Paula Stewards, a 20-year old college dropout who loved to develop computer-based analytical models, to convert CSC's best-selling commercial software—a program to test a structure's resilience against high winds—for use on personal computers.

Stewards was highly successful in her effort: she completed the conversion on her own, in less than four months, and CSC sold six times as many copies of the new product as the old supercomputer-based version. Flush with this success, Stewards led the charge for a total transformation of CSC: Until the year 2000, over 70% of the company's revenues came from the academic market; Stewards went after the commercial market instead, and with the same dedication she put into developing computer software. By 2008, 95% of CSC's revenues and almost all its profits came from the commercial market.

One thing did not change, however: CSC developed and marketed only one version of any software product.

Modeler, the Product and the Market

In early 2008, Kennedy decided that CSC had to be open to multi-version product lines. But convincing Stewards (who now headed a 200-strong software-development organization) that such a change might be necessary was difficult. She adamantly argued programming talent was scarce and she would rather use her people to develop new products than work on multiple versions of the same product. Kennedy appreciated Stewards's argument, but CSC was no longer the small company that Stewards had joined back in 1999. Kennedy had to pay attention to the revenue and profit expectations of CSC's shareholders and of stock analysts, and they were asking him to broaden the customer base and increase the market potential of CSC's products.

Over the Memorial Day weekend in May 2008, Kennedy, Stewards, and CSC's senior managers met to work out a strategy to explore the possibility of multi-version product lines with *Modeler*, a new cross-operating system computer-modeling software product that Stewards and her team were in the process of developing. Seeing a large market for the new product in business, education, consulting organizations, and research laboratories, Kennedy hired Atkinson, who had considerable experience managing product lines of a range of computer and consumer-electronic products, to head a new product line management function and, in this capacity, look into the possibility of marketing several versions of *Modeler*.

When Atkinson saw the alpha version of *Modeler,* he said to Stewards: "Your programmers have gone mad! Who in the world needs all these features? I don't know a soul who builds such complex models." Stewards's reply was prompt and somewhat acerbic: "Well I do. There are hundreds of such people out there who build sophisticated models. I know them personally. What's more, they are not all cooped up in colleges and universities. We did ask our customers; they want all these features."

Atkinson realized he had to do his homework before confronting Stewards again. He hired Software Market Research Group (SMRG), a Lexington, Massachusetts based market-research firm

specializing in computer software, to study the demand for *Modeler*. After a round of meetings with members of the *Modeler* project team, focus-group sessions with samples of personal-computer users, and a conjoint-analysis exercise with a sample of potential *Modeler* users, SMRG identified five market segments for the product. The segments were distinguished by their modeling needs: at one extreme were multidivisional organizations that used complex analytical models to help in multi-plant scheduling and corporate and university laboratories that used sophisticated models to help with experimental data analysis; in the middle were consultants, professional, and small businesses that used modeling to help with production scheduling, budgeting, and financial reporting; and at the other extreme were college students who built elementary models in the course of their studies.

Next, SMRG estimated the size of each market segment, taking into account price, competition, and the possibility of substitute products. As for price, CSC was new to this market and had yet to make a decision. Accordingly, Atkinson asked SMRG to determine the maximum customers in each segment would be willing to pay for different versions of *Modeler*. For this purpose, Atkinson and SMRG met with Stewards and members of the *Modeler* team to "spec out" a high-end "industrial" version, a mid-range "commercial" version, and a low-end "student" version. A recent development with the *Modeler* project added a wrinkle to the exercise: in a couple of years, CSC would be able to develop a revolutionary product that would render *Modeler* and all competing products obsolete.

Exhibit 1 summarizes the market research data collected by SMRG. The exhibit identifies the five market segments, the anticipated size of each segment, and each segment's willingness-to-pay for the proposed versions of *Modeler*.

The Decision: How Many Versions of *Modeler*?

By November 2008, the *Modeler* team had developed a beta version of the software and a crucial point had been reached in the product development effort: if CSC wanted to offer multiple product versions, it had to decide now; any postponement would result in a delay in the launch of the product and unnecessary additional costs. Even if a decision were soon made, additional software development would be required before the product would be ready for shipment. **Exhibit 1** gives the estimated cost of completing the three versions of the product. The exhibit also gives the variable cost of reproducing and packaging each version of the software.

In association with SMRG, Atkinson developed a marketing plan that targeted the five market segments identified in SMRG's analysis. **Exhibit 1** gives the estimated expenditure for developing each market segment. Atkinson planned to sell *Modeler* directly to buyers in the first four market segments; for the "Student" segment, CSC would sell through college bookstores, with the bookstore getting a 40% commission (and CSC netting 60% of the selling price).

Kennedy, Stewards, and Atkinson had the data in **Exhibit 1** in front of them. All three realized they had to come to a decision: Should CSC offer one version of *Modeler*? Which one? Or two? Which two? Or all three?

Exhibit 1 Cost, Demand, and Willingness-to-Pay Estimates

			"Student"	"Commercial"	"Industrial"
Estimated product completion cost			$100,000	$200,000	$500,000
Variable cost (per unit)			$15	$25	$35
Market Segment	**Size**	**Segment Dev. Cost**	**Willingness-to-Pay (per unit)**		
Large, multidivisional corporations	5,000	$150,000	$150	$1,200	$2,500
Corporate R&D and university laboratories	2,000	$100,000	$100	$1,000	$2,000
Consultants and professional companies	20,000	$200,000	$200	$300	$600
Small businesses	15,000	$200,000	$175	$225	$300
Students	500,000	$300,000	$50	$60	$100