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BMW AG: The Digital Car Project (B)

Late in October 1997, BMW senior management announced to all managers and engineers that its flagship 7-Series platform would be developed using the new Digital Car process. The development clock, however, would not start ticking until two years later since the firm could not reasonably expect to go overnight to a 50% shorter cycle. These two years would be required to build the requisite new capabilities.

If computerization was the key for achieving BMW's product development strategy, then design would prove no exception. After all, while design accounted for less than one percent of development budgets it affected nearly half of total development time. But could the current computer-aided-styling (CAS) technology meet the demands of BMW's design needs? These were the questions Chris Bangle, director of worldwide design, grappled with as he prepared to confer with his staff.

With CAS, designers could start with a virtual "package" and gradually overlay it with the car's "skin while visualize virtual models from a variety of angles, with the possibility of making modifications at any point. One such loop could take about one week, allowing for ten or more iterations in the amount of time it traditionally took for only one iteration. Thus, CAS could open up new realms of experimentation with alternative designs (see **Exhibit 1**). Because of these and other advantages, Chris Bangle faced much pressure to switch to computers. Already, BMW managers were talking in terms of "product data management" or "software-driven development." Some even referred to computer-aided processes as becoming the new "backbone of product development" or simply the "new master." On the other hand, CAS, unlike the computer-aided design (CAD) systems used in engineering, was still in its infancy. Good CAS operators were still hard to find. And it was still not possible to make global changes in a design by altering just one parameter. With only two companies holding a monopolistic-like grip on the 1000-1500 licenses worldwide, some designers saw little prospect for innovation in the next five years.

It was no wonder that BMW's designers, all of whom had trained traditionally, believed that the myriad subtleties and complexities of design that placed BMW a notch above the competition could not be fully captured through CAS. While computers might capture at best perhaps 95% of a car's surface qualities, the last ineffable five percent might elude even the most sophisticated of CAS programs. Other car manufacturers might get away with using only computers throughout the entire design cycle, but not BMW.

Professor Stefan Thomke and Research Associate Ashok Ningade prepared this case as the basis for class discussion. 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.

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Just a few years ago, in fact, a group of designers had made a pilot attempt at designing a new 3-Series model using only CAS. Achieving the first 80% of design definition proved easy, but getting up to 90% required many more design iterations. Getting up to BMW's traditional level of design quality, on the other hand, had required laborious hand-specified revisions that raised serious questions about the role of CAS at BMW. After all, BMW's design objectives were usually well above its competitors. In fact the current 5-Series and 7-Series models, which had both come out within the last few years, were done with minimal involvement of CAS—and it proved its success not only by winning numerous design awards but also in sales.

On the other hand, the design department also understood the importance of their work to the company's success. Unless they fully participated in the new Digital Car project, the dream of reducing development time by half would remain just that . . . a dream. But would going digital in order to cut time instead cut BMW off from its traditional product positioning? Bangle was reflecting on his options.

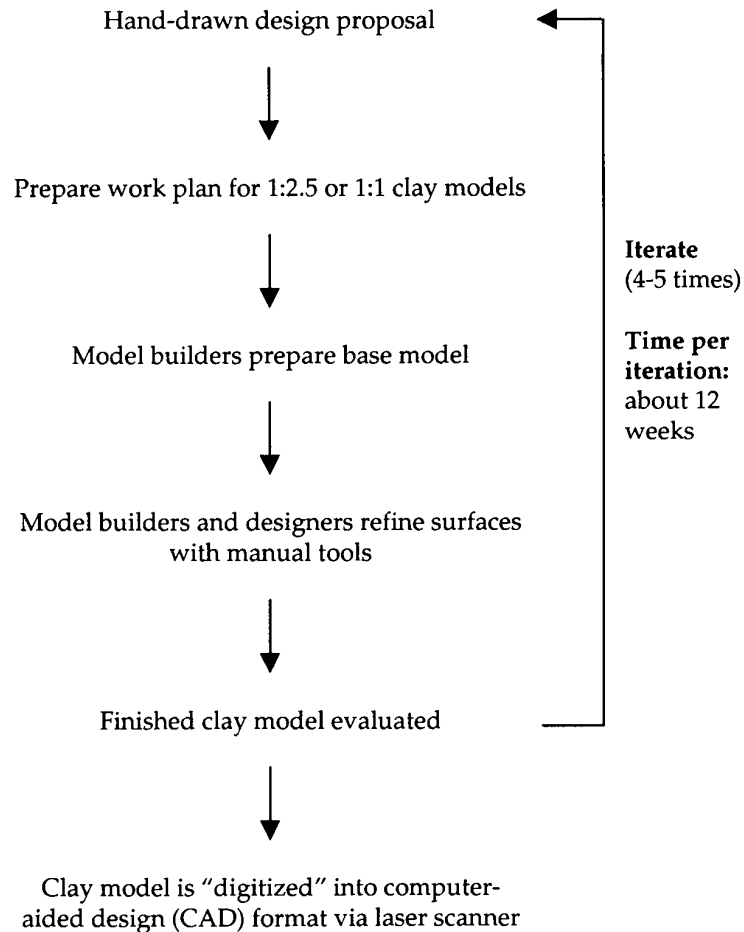
One proposal called for significantly reducing the number of physical clay models available to designers, thus forcing them to switch to computers. Undoubtedly this would get the designers' immediate attention but Bangle was concerned that the quality of their ideas and car concepts might also be affected—an outcome that would not be acceptable to BMW and its customers.

An alternative proposal left the decision to use computers to designers. The design of new car concepts was already a very competitive process and if CAS gave designers an edge over their colleagues, they would surely embrace it. However, other managers feared that designers were as likely to choose CAS over traditional clay models as a Brauhaus patron picking water over beer.

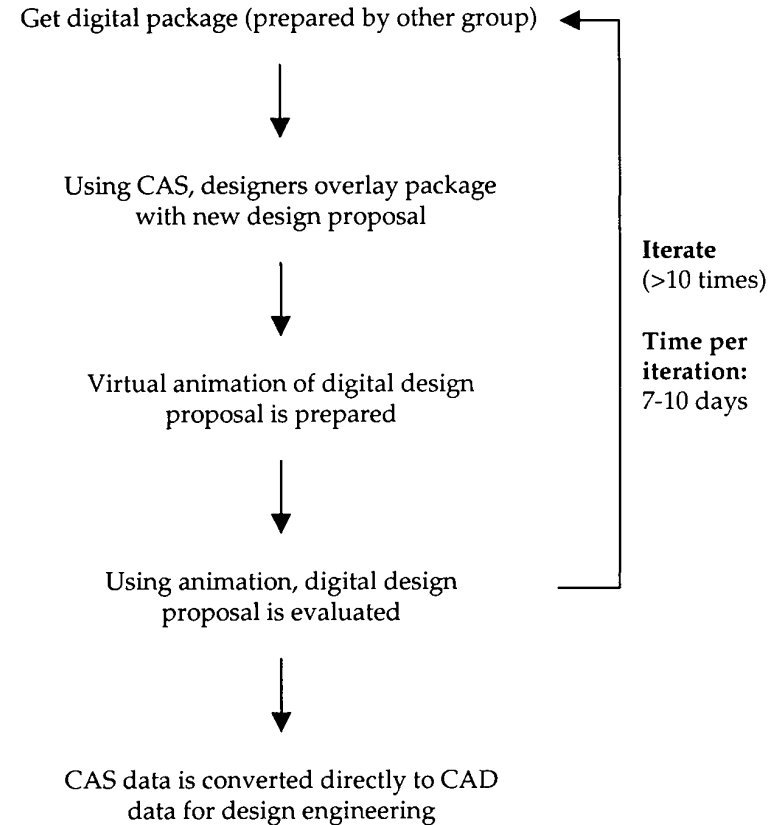
With these thoughts in mind, Bangle was ready to start the meeting.

Exhibit 1 Traditional Design versus 100% Computer-Aided Styling (CAS) Process

(a) Traditional Design Process



(b) 100% CAS-Driven Process



Source: BMW AG