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Imaginative Engineering Leads to Innovation in Health Care Apparatus

When inventor-entrepreneur Craig Cariston came to Paramount's Definitive Design, he knew the features he needed in an innovative new-generation walker, but he required equally innovative engineering to achieve the design objective—and also meet the stringent price limits to qualify for Medicare reimbursement.

Paramount's team of design engineers first engaged in independent product and market research, together with consultations with physical therapists to determine the mobility needs of patients using walkers.

This led to concept sketches which reflected out-of-the-box thinking in the design of the walker, including the introduction of new lightweight materials and a variety of attachable accessories never before available in an integrated mobile unit.

Working in concert with the client every step of the way, the Definitive Design team then moved on to form study models, including 3D CAD engineering and finite element analysis to validate product safety criteria and rating qualification.

The next step was design optimization—fine tuning the design for maximum efficiency and economy in off-shore manufacturing, which in itself conveys particular challenges for product development specialists and their clients.

Then, physical prototype models were created and analyzed to verify functionality—the critical determinant of success for an innovative new product unlike anything else on the market. Among the novel functional materials introduced in the new walker were thin-wall aluminum tubing and soft over molding of handles. Prototypes were created using both stereolithography (SLA) and laser sintering (SLS).

The prototype walker was then subjected to stringent testing, including a second round of finite element analysis, center of gravity and tipping tests and evaluation of

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load-bearing capacity on handles and seats. Testing focused on meeting both domestic and international standards.

Attesting to the uniqueness of the design, a total of five patents were issued and assigned to Full Life Products.

After the completion of all aspects of product design and testing the engineers at Definitive Design continued to provide support to Full Life Products through tooling and production. Indeed, when problems were encountered, Definitive Design applied advanced diagnostics to detect the source of materials failure in the coloration of glass-filled nylon through off-shore sources. The flawed process was corrected and production proceeded.

Today, the innovative Full Life Pilot Walker is in widespread use, offering physically impaired individuals new convenience and independence. Paramount's Definitive Design team has completed two additional Full Life products—a rolling cane and step-up cane, and is working with the company's leaders on additional new product concepts.

It's an inspiring case of teamwork and mutual dedication to product excellence leading to innovative solutions in key areas of human need. Definitive Design's engineering excellence, aided by Paramount's vast experience in prototyping, tooling and manufacturing supervision, met and exceeded client expectations, leading to achievement and a long-term partnership.

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