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Pedorthic Art - Pedorthics

Title

Pedorthic information modeling

Coauthors

None

Summary

The current work is presenting the core of the concept of Pedorthic Information Modeling respectively parametric thinking and parametric design of pedorthic devices seen as an integral and unique product.

Introduction/ basics

Pedorthic devices are medical devices used in the conservative treatment of foot pathomechanics. Numerous medical evidence highlight the problems of acceptance by the patient because of their aesthetic appearance. In many countries, the traditional design process is based mainly on the manual skills of the pedorthist. Even if the “hand-made” process is a landmark and a valuable quality of the pedorthic profession it doesn’t mean it offers efficient management of the large variations of the design options. More than that, some processes such as the last manufacturing or last’s modification based on the manual skills of the pedorthist seem to be in decline while digital solutions are used only for the design of specific footwear parts as lasts, 2D patterns, or foot orthosis. On the other hand, other industries like AEC (Architecture, Engineering, Constructions) rely on modern design processes based on parametric thinking and parametric design.

Material method; implementation/ process

The parametric design is the core of Pedorthic Information Modeling allowing the propagation of any modification of the input parameters (prescription variables, technical and esthetical parameters) with an instant updating of the outputs (final product). The traditional shoe designing and manufacturing process can be described as an "art of producing a three-dimensional, dynamic article from two-dimensional material'. The parametric design approach brings a totally different philosophy of thinking, designing, and manufacturing pedorthic devices.

Results

The concept of Pedorthic Information Modeling is defined as it follows: “Pedorthic Information Modeling is the environment for the digital representation and manipulation of the aesthetic, physical and functional characteristics of the information model of the pedorthic devices relying on the parametric design approach and leading to the efficient management of multiple variations of the designing, manufacturing and evaluation processes required to fulfill the patient needs, the objectives of foot pathomechanics’ conservative treatment, economic viability and legal requirements over its life cycle”.

Discussion/ conclusion; conclusion for the practice

Pedorthic Information Modeling represents a logical evolution of a profession from mainly a hand-made design to a data-driven design in the actual context of the evolution of design concepts from other industries. A “digital pedorthics educational agenda” is desirable to be introduced as it happens in fields like AEC industry, where the building information modeling (BIM) concept is part of curricula, allowing the architects and engineers to have the knowledge and competencies to build their own applications for the design of the projects.

References

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Image: Pedorthic Information Modeling environment_63.png

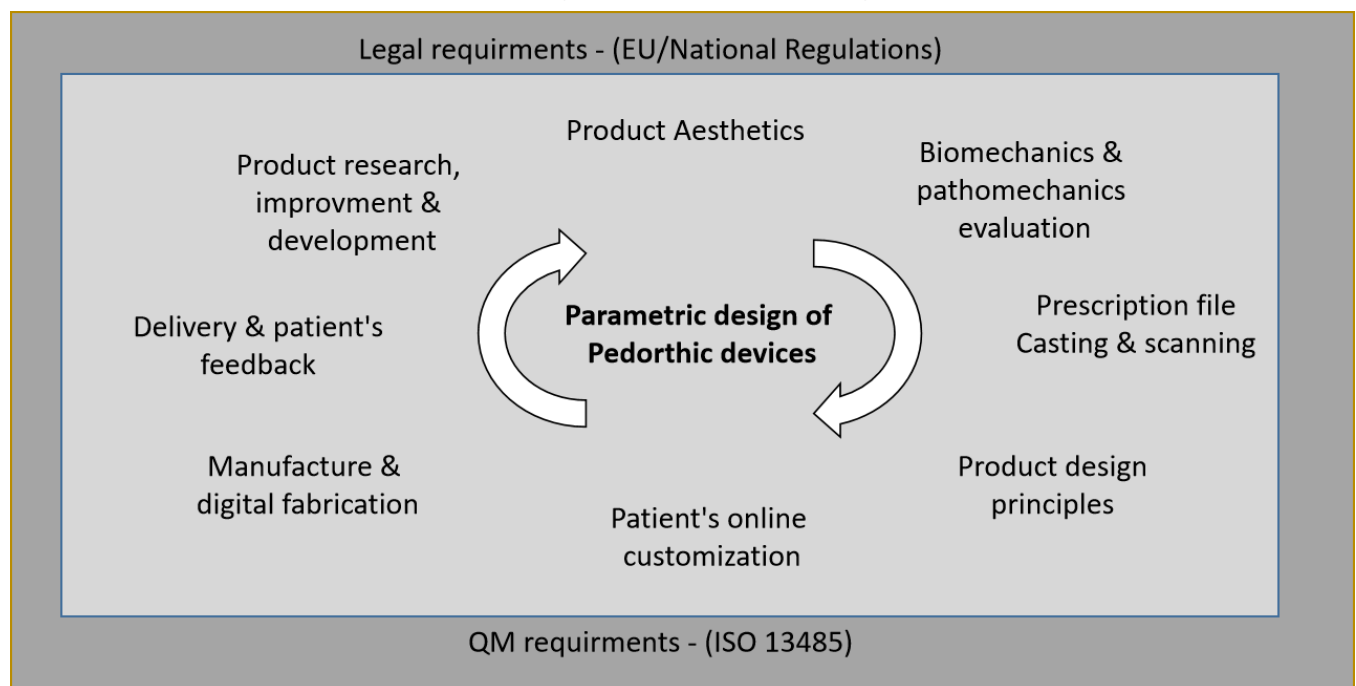


Image: Simplified representation of the parametric design process_64.png

Simplified representation of the parametric design process
 "M" = manufacturing, "ii" = Implementation-Improvement.

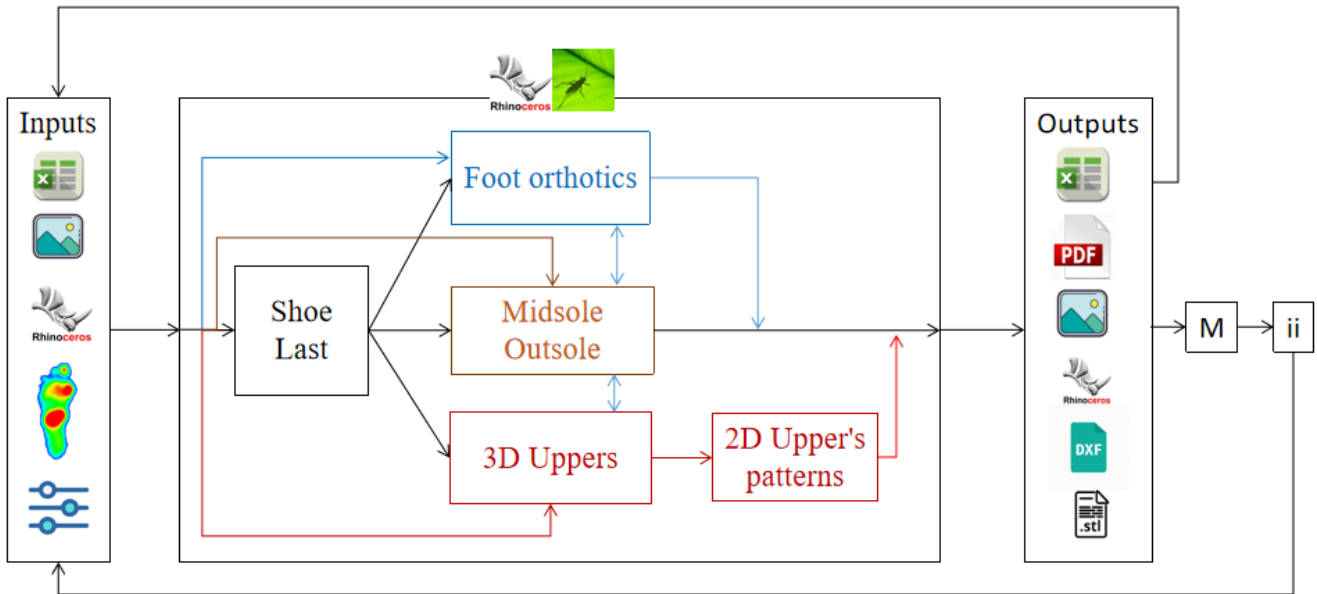


Image: Input-functions-outputs_65.png

INPUTS → FUNCTION → OUTPUTS

