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SMART, FUNCTIONAL CLOTHING FOR CHILDREN WITH SPECIAL NEEDS

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Introduction. These vulnerable infants in neonatal or home intensive care require continuous monitoring of vital signs and physiological parameters that are important for physicians and parents to know the exact health status of patients.

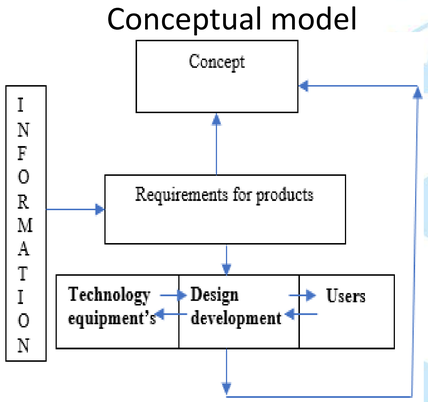
Premature or critically ill children admitted to therapy need sustained monitoring for various dangerous conditions, which may include apnoea, hypoglycaemia, sepsis or sepsis-like infection, convulsions, hypotonia, bradycardia, hypoxia, hypothermia, acidosis etc. [15].

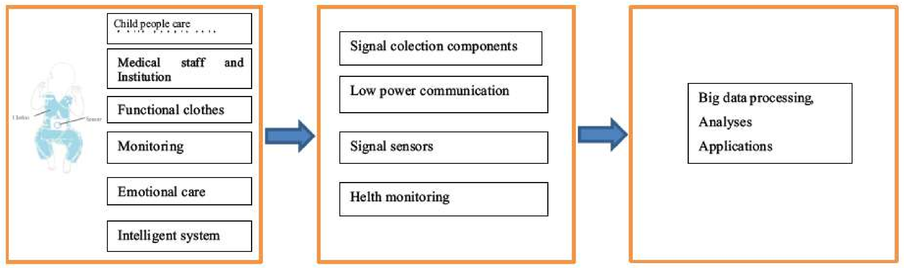
Keywords: intelligent clothing, system, vital parameters

Purpose. As a clinical tool in the monitoring of physiological parameters applied to children, sensor systems for baby clothes are capable of transmitting information from the body of a child during by nurses or parents. Moreover, such clothes with integrated sensors are designed to be able to perceive external threats, such as the child's condition at this time and immediately warn of the child's condition.

Material and methods. The design methodology focused on the use of certain anthropomorphic data and on the general characteristics of the shape of the finished product, as well as on the technical and compositional requirements for children's clothing.

Conceptual model





System Architecture of Smart Clothing based Health Monitoring

Results.
In order to identify vital parameters, we have designed smart products that can fulfil many functions and meet the needs of the wearers.

Conclusions

Given both the user aspects and the design of the elaborated products, they must meet some requirements:

- supporting the vital functions of monitoring children's health;
- be safe to use in the NICU environment;
- be scalable to include more monitoring functions such as wireless communication and signal;
- supports continuous monitoring when the child is inside the incubator or during other care;
- friendly, playful and familiar look.