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TOWARDS A HOLISTIC FRAMEWORK FOR COSMETIC FORMULATION 4.0

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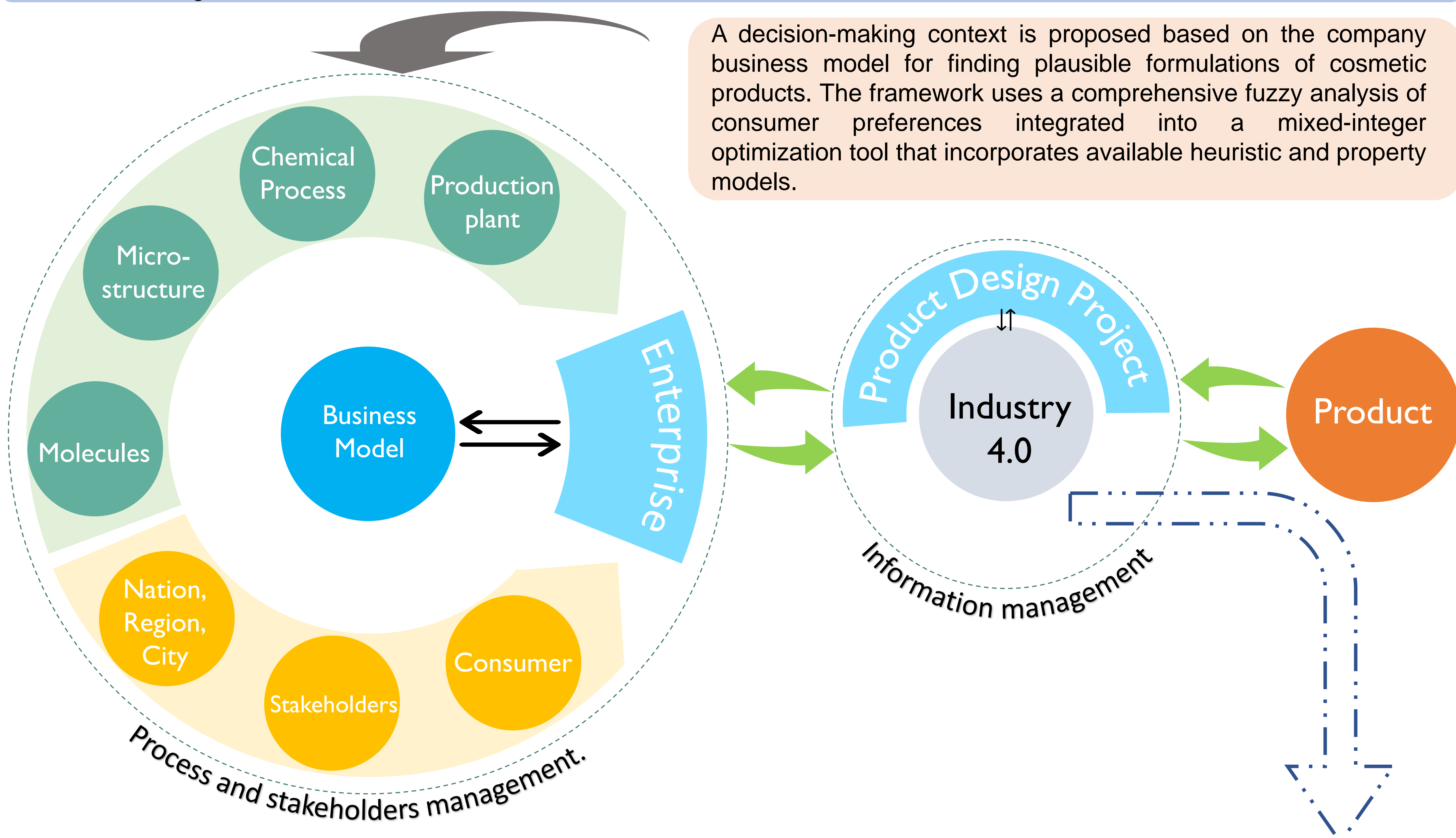


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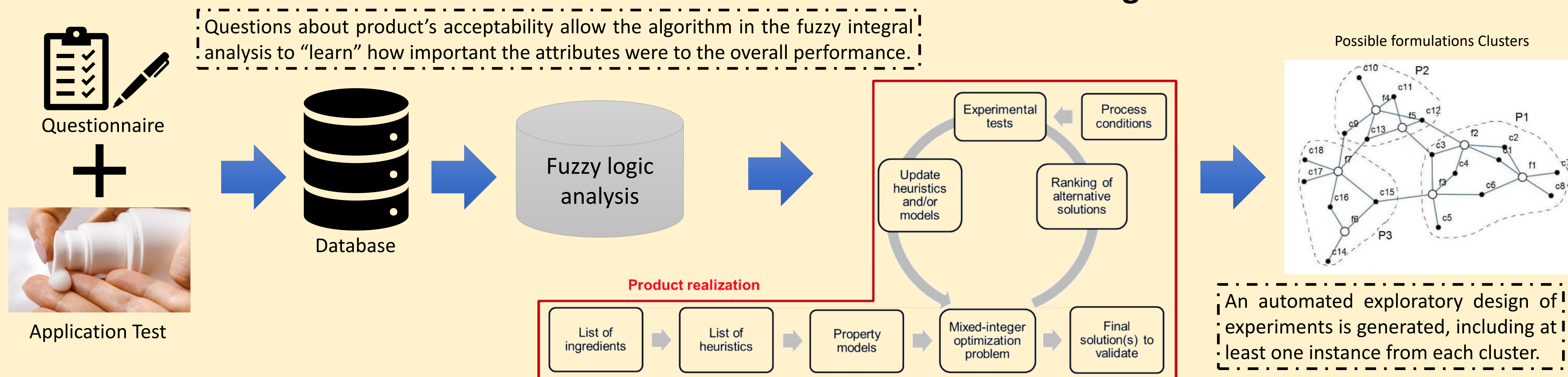
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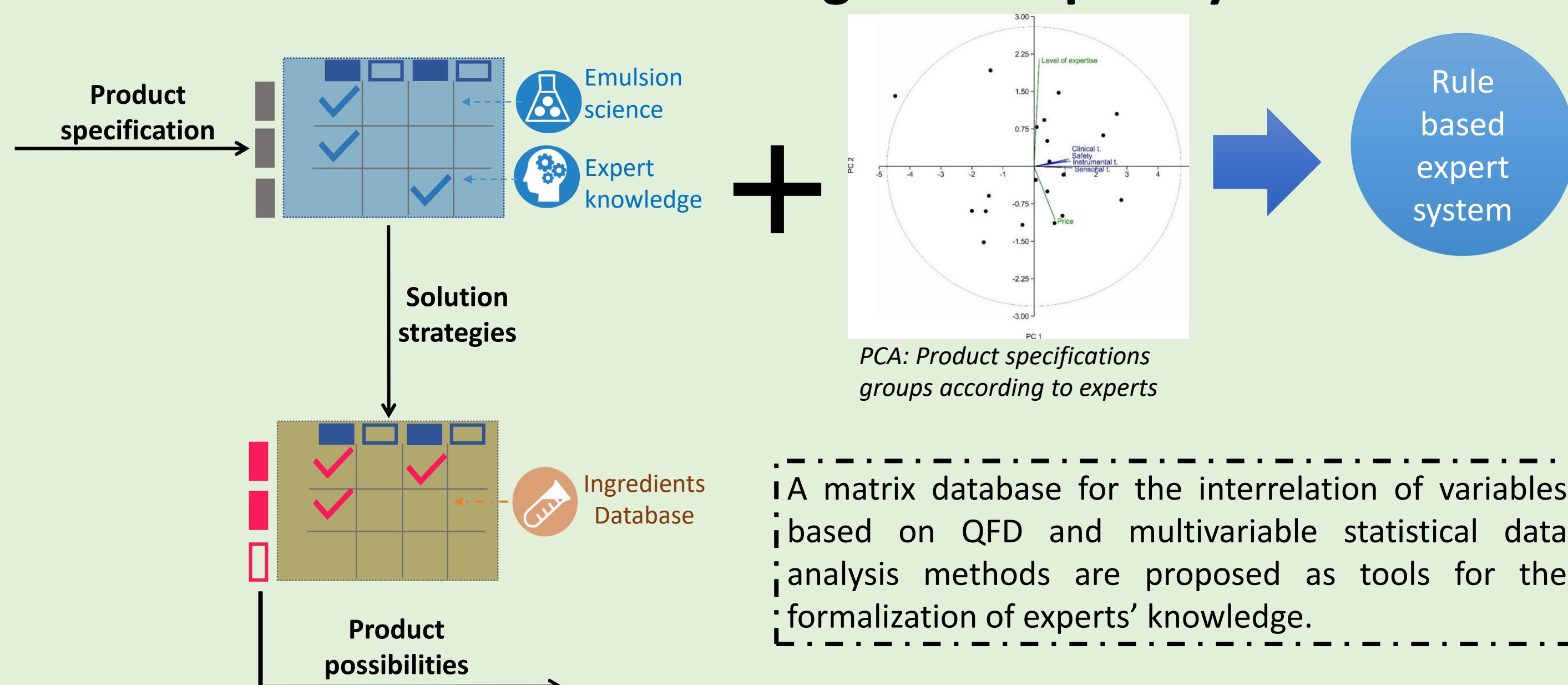
Formulated consumer products design is a major challenge in many industrial sectors. Desired product properties depend on its application and usually are conferred by a synergistic action of ingredients, composition, and production process. Product design projects must manage aspects such as the study of consumer needs and their translation, technical requirements, product conceptualization, selection of suppliers and raw materials, environmental objectives; marketing characteristics; quantitative sales and distribution goals.



Consumer Assessment and Product modelling



Decision making tool - Expert system



Perspectives

In a further development, a similar approach should also be applied to the analysis of the other variables in the new product formulation process considering product sustainability, as well as supply chain analysis, to build a holistic framework for formulation. In this sense this research represents a contribution to Industry 4.0 in the cosmetic sector where the digitalization of product design, should be a major trend in a short term.

References

- Bernardo, F. P., & Arrieta-Escobar, J. A. (2019). Clustering alternative product formulations using graphs. *Computer Aided Chemical Engineering*, 46(i), 511–516. <https://doi.org/10.1016/B978-0-12-818634-3.50086-2>
- Escobar, J. A., Camargo, M., Morel, L., Bernardo, F., Orjuela, A., & Wendling, L. (2020). Integrated Methodology for the Design of Formulated Products Incorporating Consumer Preferences and Heuristic Knowledge. *Authorea Preprints*, 1–19. <https://doi.org/10.22541/au.158879155.54817449>
- Serna Rodas, J., Arrieta Escobar, J. A., Enjolras, M., & Hamdani, F. (2020). Exploring the relationship between customer needs and product target specifications for cosmetic emulsions. *International Association for Management of Technology*.