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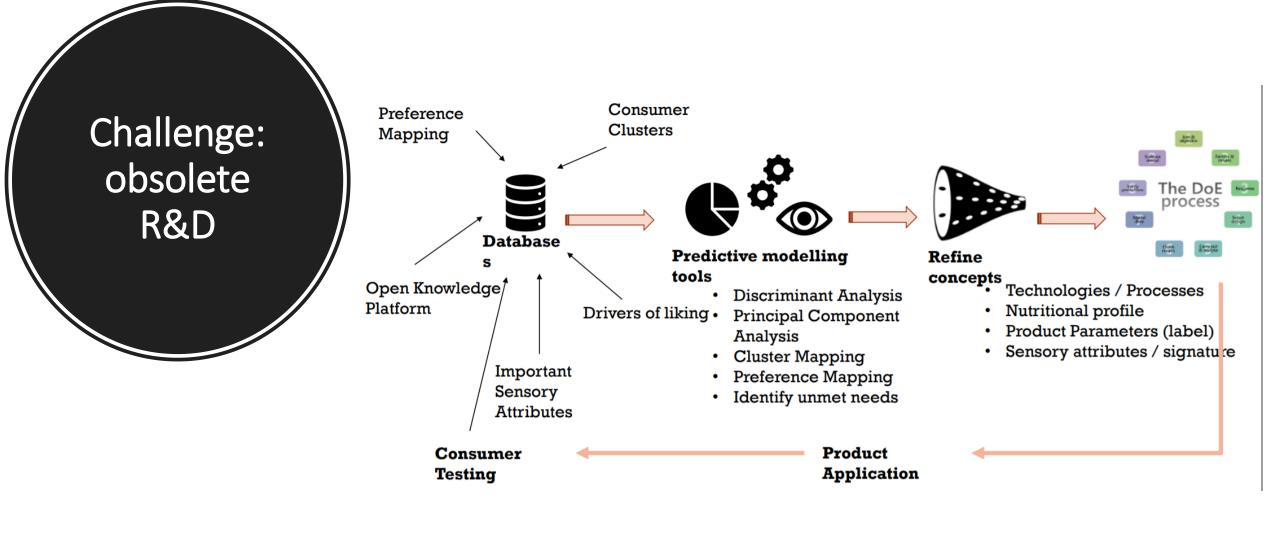
FOOD SCIENCE EXPERTISE

Food Innovation using Data Science

Raphaëlle O'Connor & Sapna Negi

Proposal for 2019 POV Entrepreneurial Scientist & Engineer Fellowship

29/08/2019



Solution: **Simulation** followed by **focused experimentation** leads to rapid **product development**

Differentiation





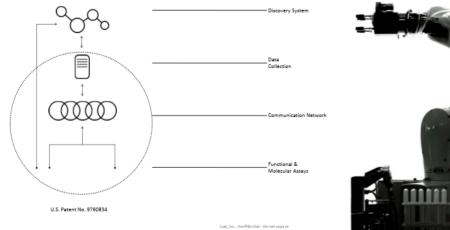


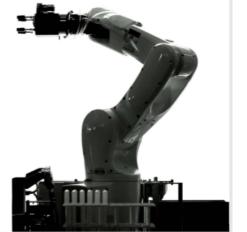
Commercial available ingredients vs. isolation of functional (Shiru) or bioactive compounds

The first-ever patent covering machine learning methods and systems for food ingredient discovery.















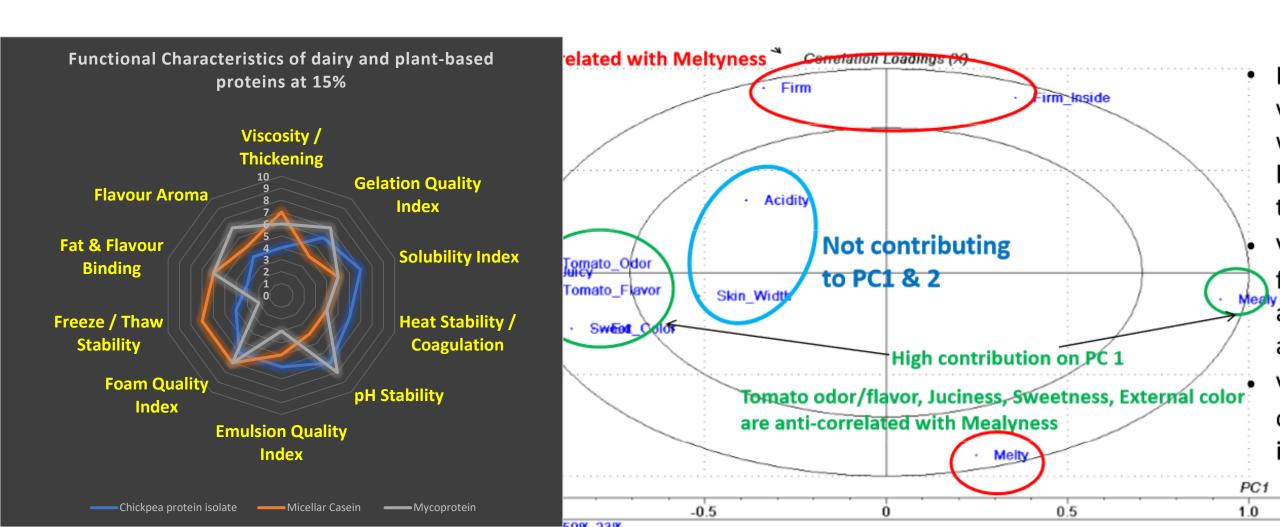
Business model & value proposition

- B2B
- Software/data science platform for food innovation
- Ingredients prediction and (possibly) market insights
- Formulation by design model using non-animal nutrient profiling system database
- Multi-dimensional database of functional & nutritional ingredients that are commercially viable
- Collection and synergies of functional & nutritional ingredients & suppliers to develop plant-based foods and beverages.
- Plant-based culinary solutions
- Innovative ingredients solutions

Deliverables, Phases

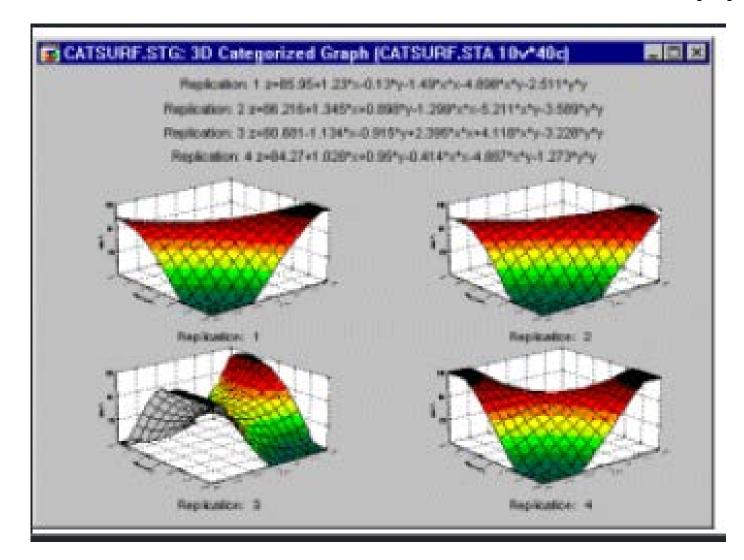
- Review state of the art of data science in food innovation and technology. Leverage research papers, collect existing open/paid data sets
- 2. Datasets preparation, additional proprietary data
- 3. Prediction algorithms
- 4. Prototype of data science platform
- 5. Evaluation/validation of algorithms, lab testing of the predictions
- 6. Incorporating feedback in the algorithm/data science platform

Multidimensional Mapping



Multidimensional Mapping

3D Texture Modelling in Food



Data modelling & analytics to build predictive models (AI)





- New Product Development
- Product reformulation
- Portfolio management
- Product adaptation



Deep market insights:

- Competitive market
- mapping
- Emergent preference
- prediction



Cognitive marketing:

- Flavor profile preference priming
- Consumer value chain psychology prediction

Draft Timeline

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Selection suppliers												
Selection raw materials												
Selection standardised analysis												
Confirm functionalities of interest												
Confirm product application of interest												
Pre-screen functional ingredienst												
Confirm strategic suppliers												
Review technical data sheet and analysis												
Data analysis: collecting, cleaning, processing, exploring and modelling												
Gather samples and carry out further analysis and application activities												
Consolidate database (new raw materials, new suppliers)												
Statistician/consultant/programmer to deliver on suitable algorithm and model												
Engage with fat, flavour and sweeteners suppliers												
Confirm product application of interest Pre-screen functional ingredienst Confirm strategic suppliers Review technical data sheet and analysis Data analysis: collecting, cleaning, processing, exploring and modelling Gather samples and carry out further analysis and application activities Consolidate database (new raw materials, new suppliers) Statistician/consultant/programmer to deliver on suitable algorithm and me	odel											

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Thank You

