

# HOX, mathematics for smart meals

## Creation of healthy individualized meals

H2020 SOCIETAL CHALLENGES: Health, demographic change and well-being  
PRODUCTIVE SECTOR: Food

### PROBLEM DESCRIPTION

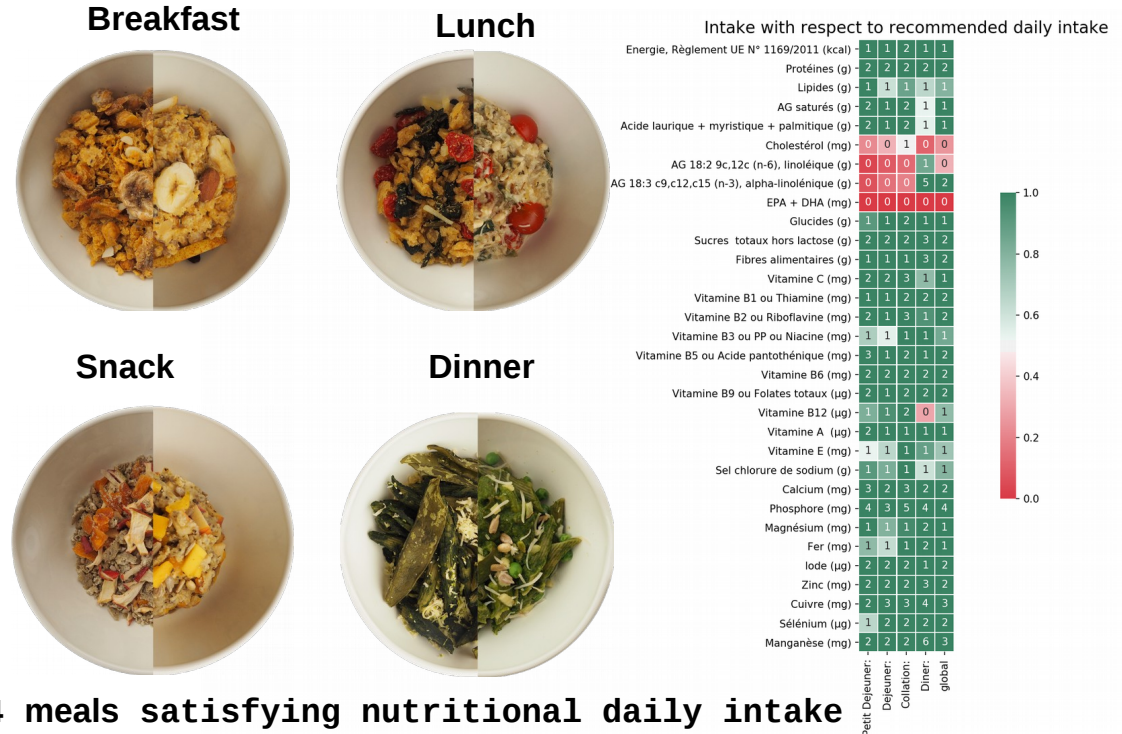
WUJI & CO aims to conceive and produce (nutrient preserving) dehydrated tasty prepared meals. Set of meals are composed to satisfy individual specific nutritional needs.

### CHALLENGES AND GOALS

- Maximize the satisfaction of heterogeneous nutritional targets during many days.
- Satisfies meals composition's rules: diversity, taste constraints, minimizing ingredients used.

### MATHEMATICAL AND COMPUTATIONAL METHODS

The challenge is a multi-objective optimisation task with many nutritional constraints, as well as taste and sustainability of the production as additional constraints. Data are analysed and integrated. Several solutions for each specific nutritional profile are expected.



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## Results and Benefits

A modelling and technical framework based on stochastic algorithms was conceived and implemented as a prototype code able to design the expected recipes. Nutritional data were analysed and food-pairing networks were constituted. This work was jointly done with B. Coupier (post-doc) and E. Behar (intern, EFREI/d.school) supervised by P.-Y. Louis (LMA Poitiers).



Personalized healthy recipes

**Innovative  
framework and  
software for  
smart recipes  
formulation  
thanks to  
artificial  
intelligence  
methods and  
mathematical  
modelling.**

