

Weight +
An intelligent food support system
for underweight adult

Introduction to underweight

What is underweight?

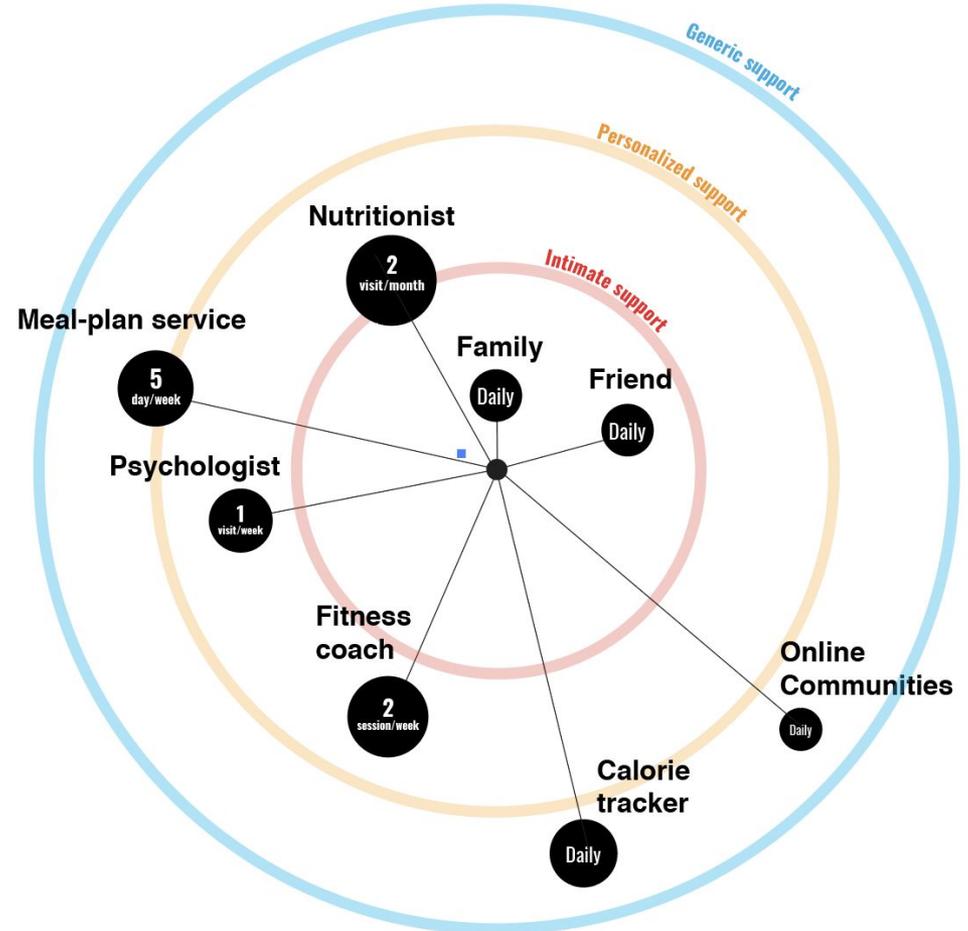
- BMI<18

What is the problem of underweight?

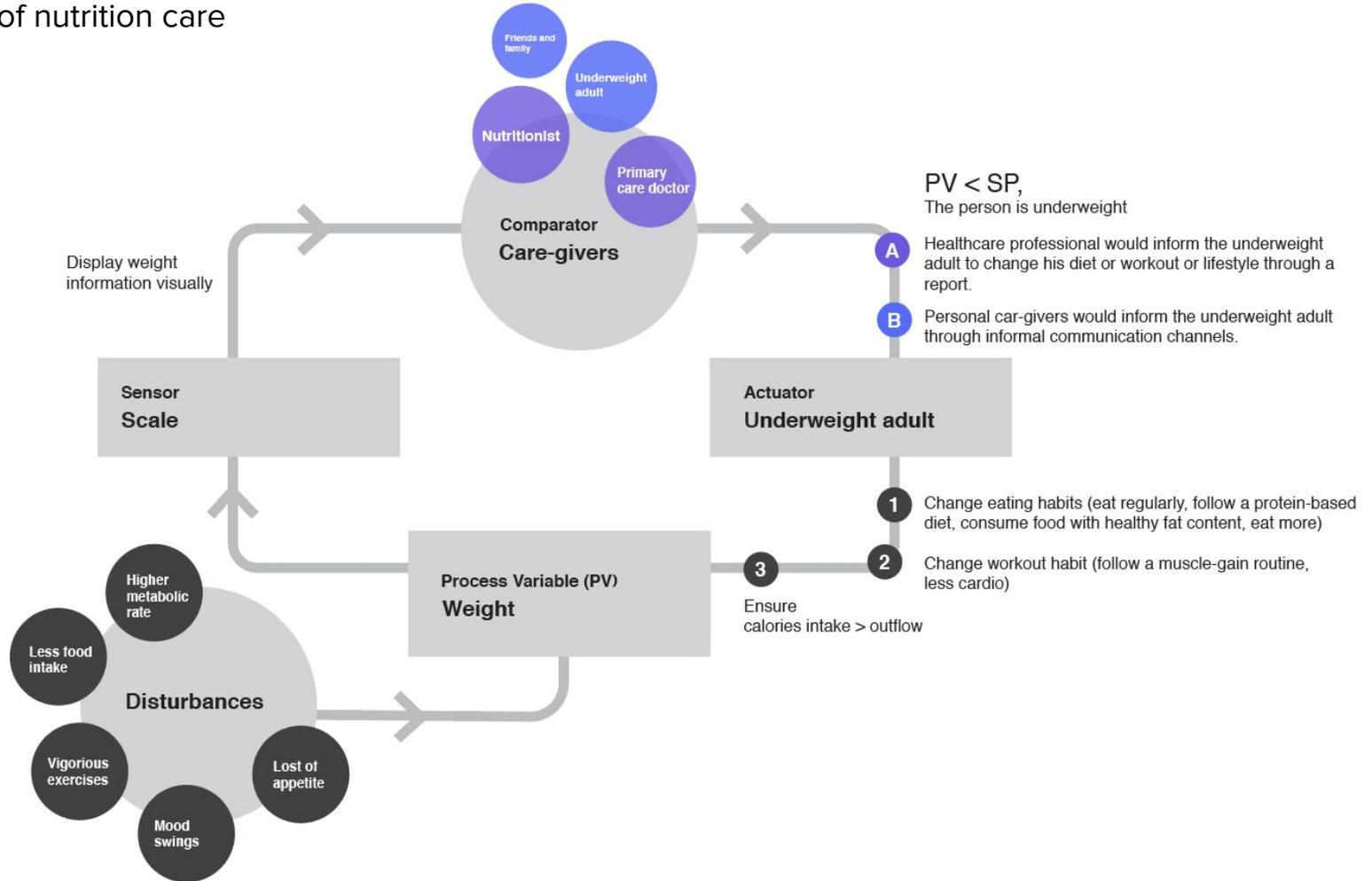
- Malnutrition
- Weak immune system
- Difficulty to recover from diseases

Who are the most susceptible?

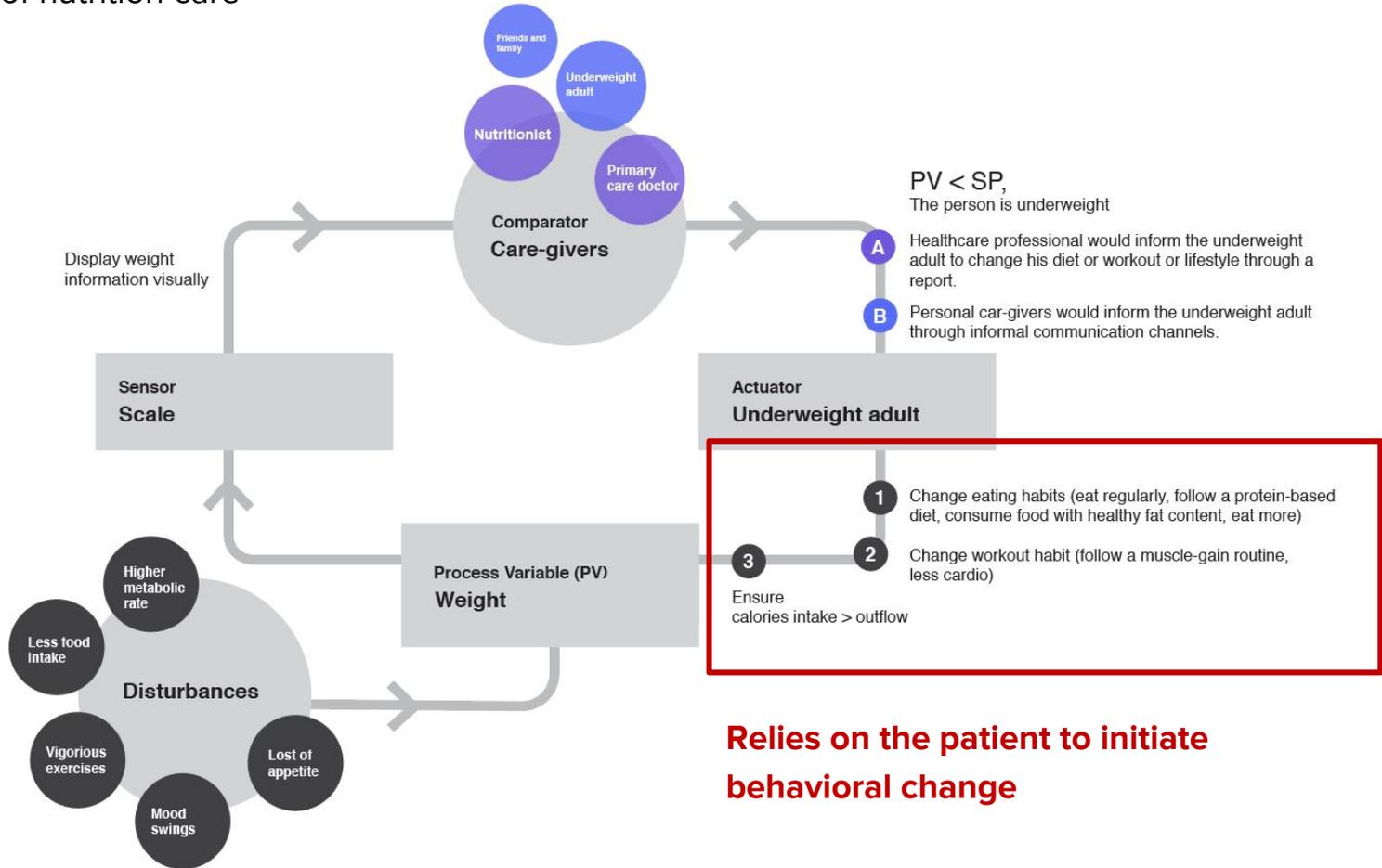
- Patient recovered from surgery
- Patient recovered from eating disorder



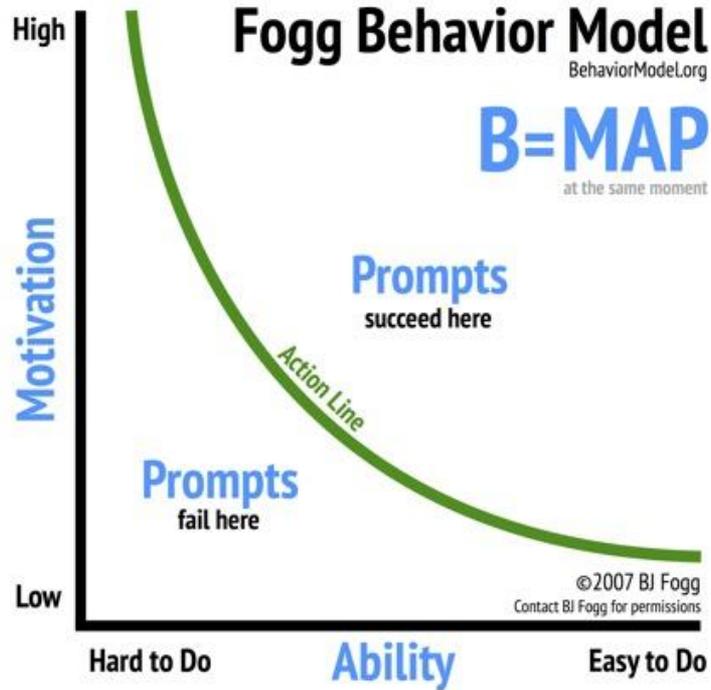
Current model of nutrition care



Current model of nutrition care



Problem with behavioral change



Why aren't they motivated?

What's currently hard to do for them?

Persona

Jim, 48 years old

- History teacher at a local high school
- Fully recovered from nasal cancer 7 years ago
- During treatment, his weight significantly reduced due to difficulty in eating
- He brings his own lunch, and mostly have dinner at home with his family (wife and a daughter)



The current behavior

**Pre-
contemplation**

**Not concerned
about their
weight condition**

Contemplation

**Got sick
Realize there's a
problem
Seek help from
care givers**

Preparation

**Plan meals
according to
nutritionist advice
Grocery shopping
Cook his own
meal
His wife
continues to cook
for the kids**

Action

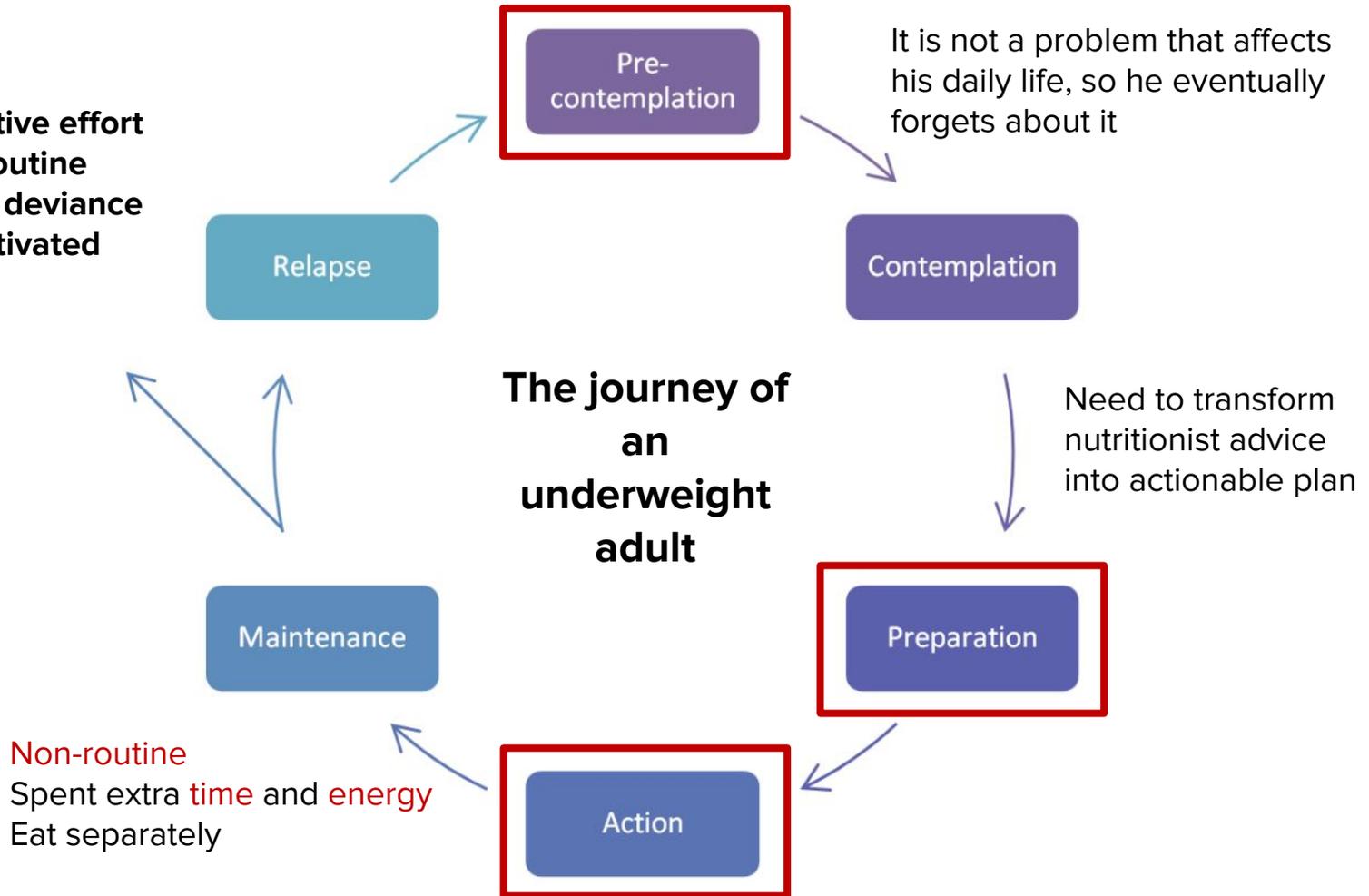
**Follow meal plan
Drink milk formula
Monitor weight**

Maintenance

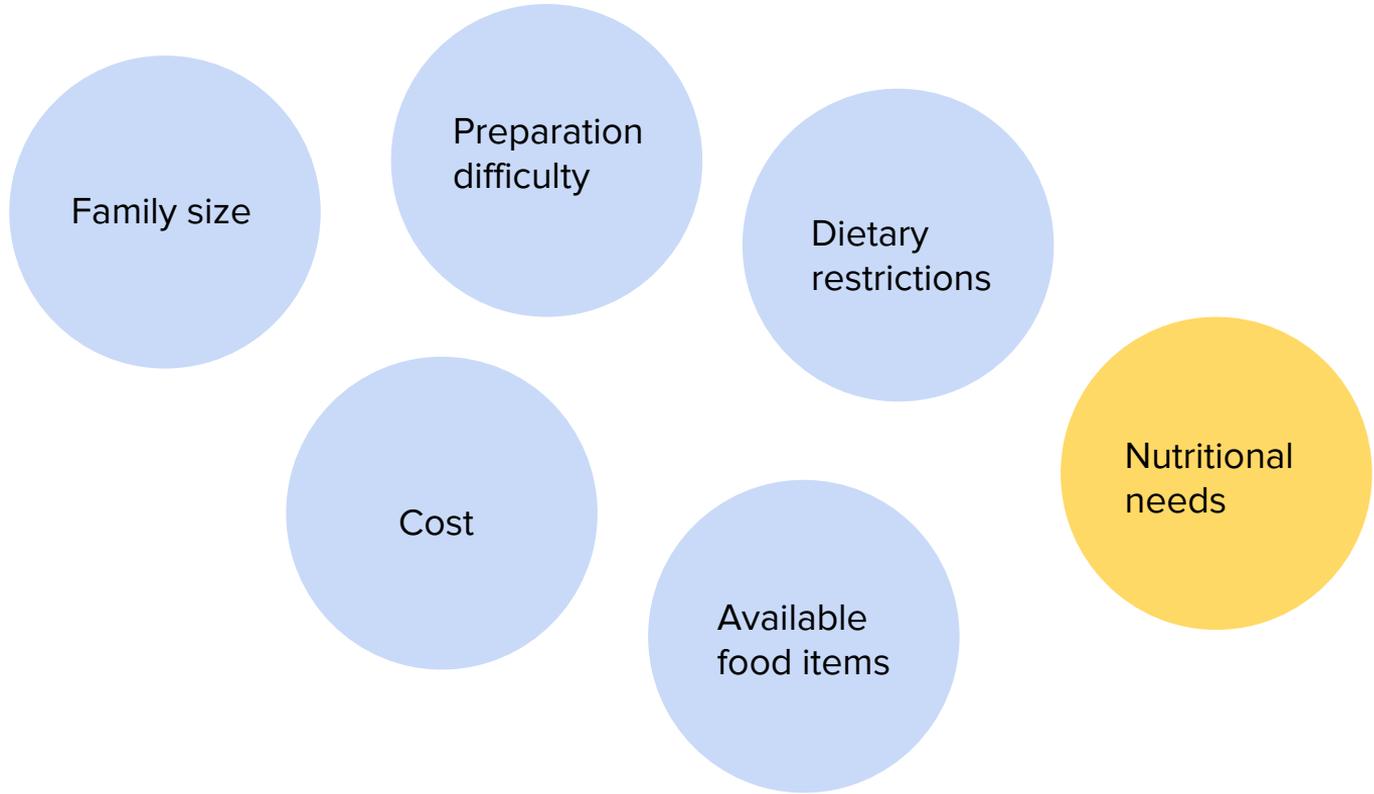
Relapse

Pain points

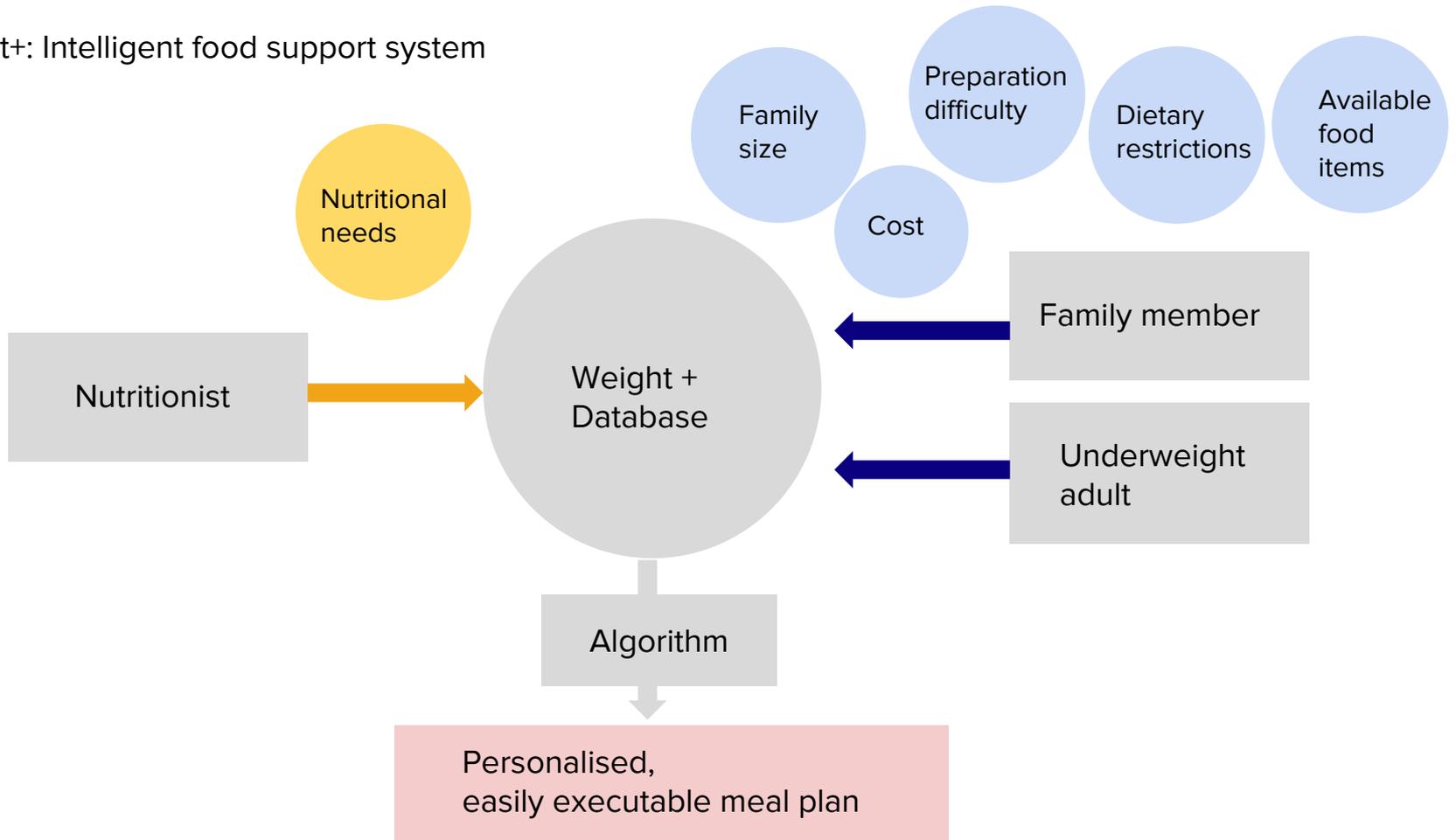
- **Cognitive effort**
- **Non-routine**
- **Social deviance**
- **Demotivated**



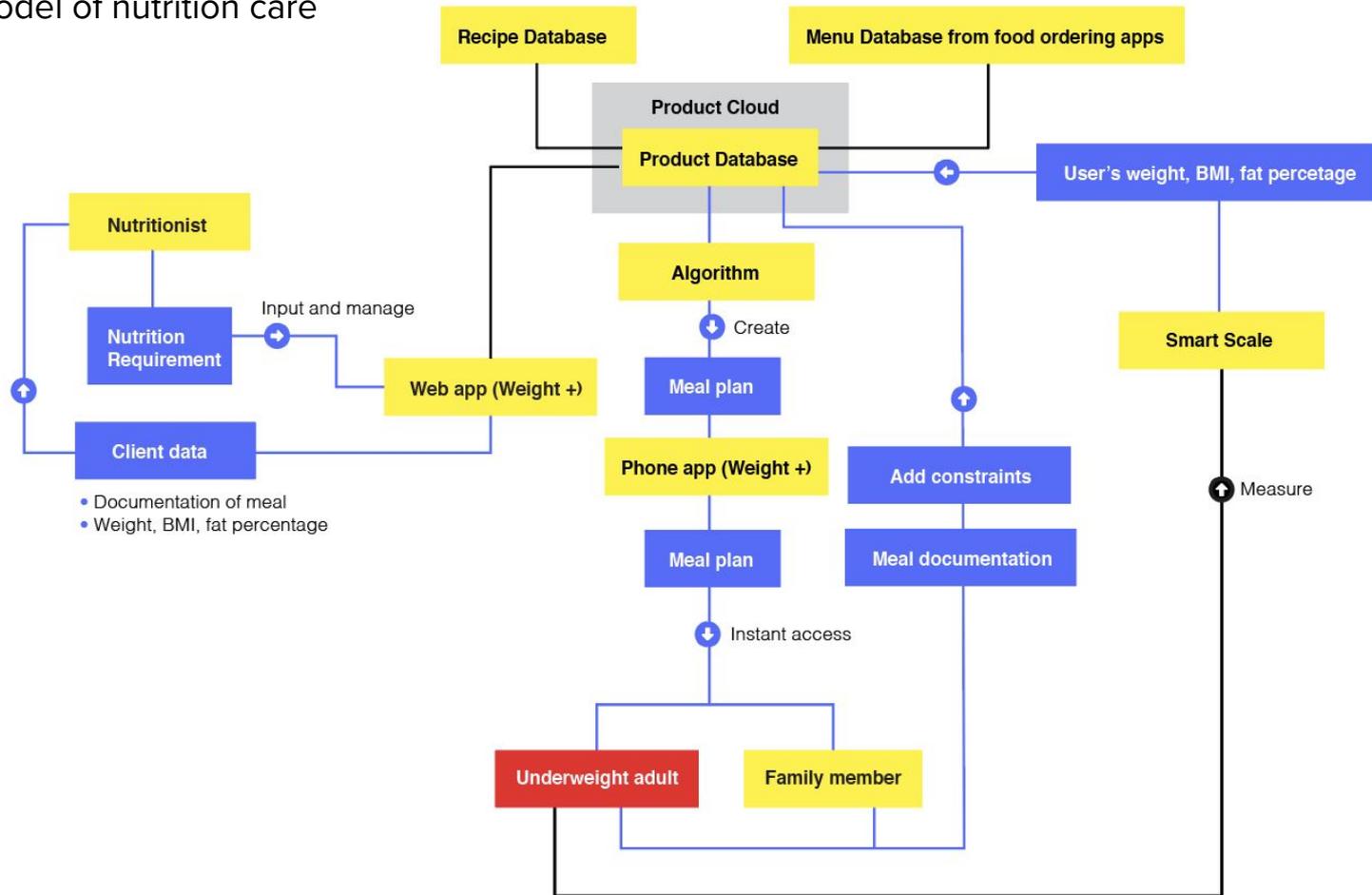
Cognitive effort and disconnection with family routine



Weight+: Intelligent food support system



New model of nutrition care



System component: Web application

The screenshot shows a web application interface for a client nutrition profile. On the left is a dark sidebar with a user profile icon and the name "Dr. Stella Kim". Below the name are menu items: "Profile", "Messages", "Client profile", "Manage nutrition profile", and "Dashboard". The main content area is light gray and titled "Client nutrition profile". Under the title is the section "Input nutrition need" with five input fields: "Calories needed/day", "Protein needed/day", "Fat needed/day", and "Additional Vitamins needed" (a dropdown menu). Below these is a dashed box with a plus sign icon. On the right is a white box containing client information: "Name: Jim Smith", "Age: 48", "Dietary restrictions: Nil.", "Medical history: NPC", "Exercise: Moderate", "BMI: 16.3 (120 lb/ 6ft)", and "Body fat percentage: 0.07". To the right of this information is the "Current weight" section, showing "125 lb" in large text with a green upward arrow and "4.17%" below it. Below the white box are two dropdown menus labeled "Food recommendation" and "Amount", and a dashed box with a plus sign icon.

Client nutrition profile

Input nutrition need

Calories needed/day

Protein needed/day

Fat needed/day

Additional Vitamins needed

+

Name: Jim Smith Current weight

Age: 48 **125 lb**

Dietary restrictions: Nil. ↑ 4.17%

Medical history: NPC

Exercise: Moderate

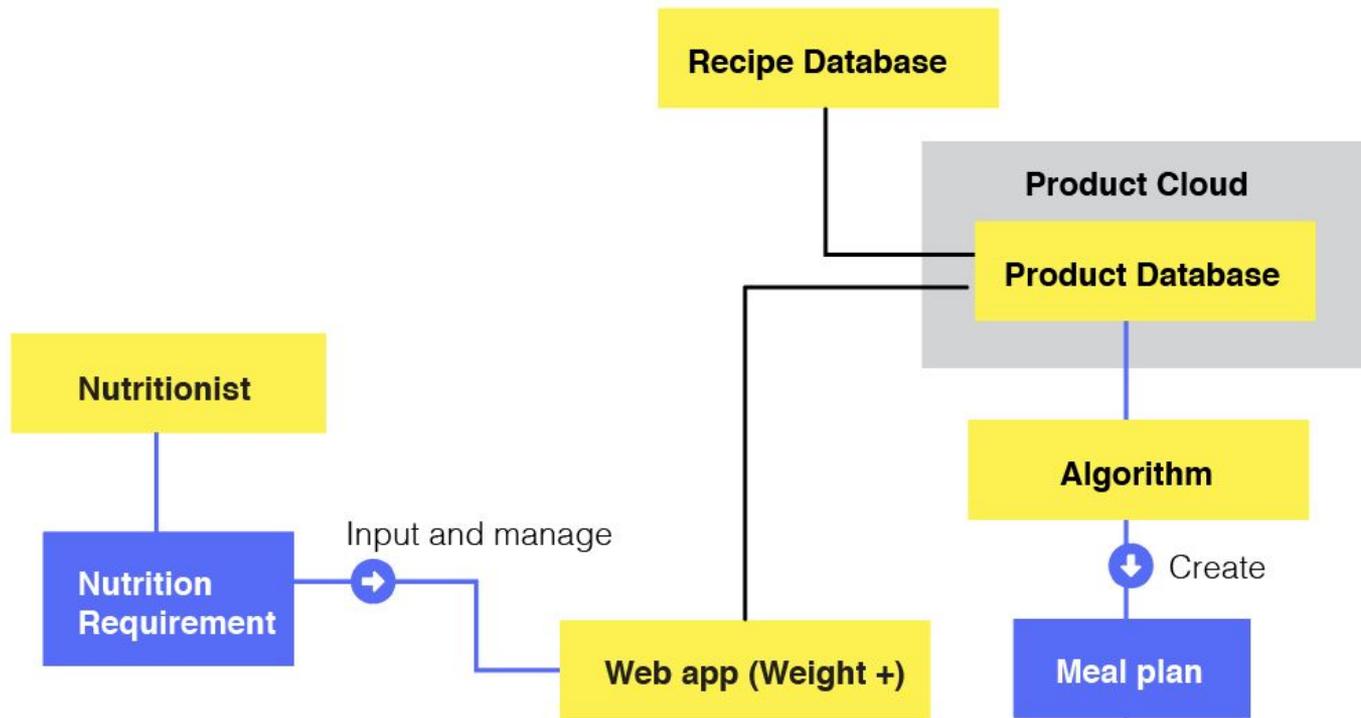
BMI: 16.3 (120 lb/ 6ft)

Body fat percentage: 0.07

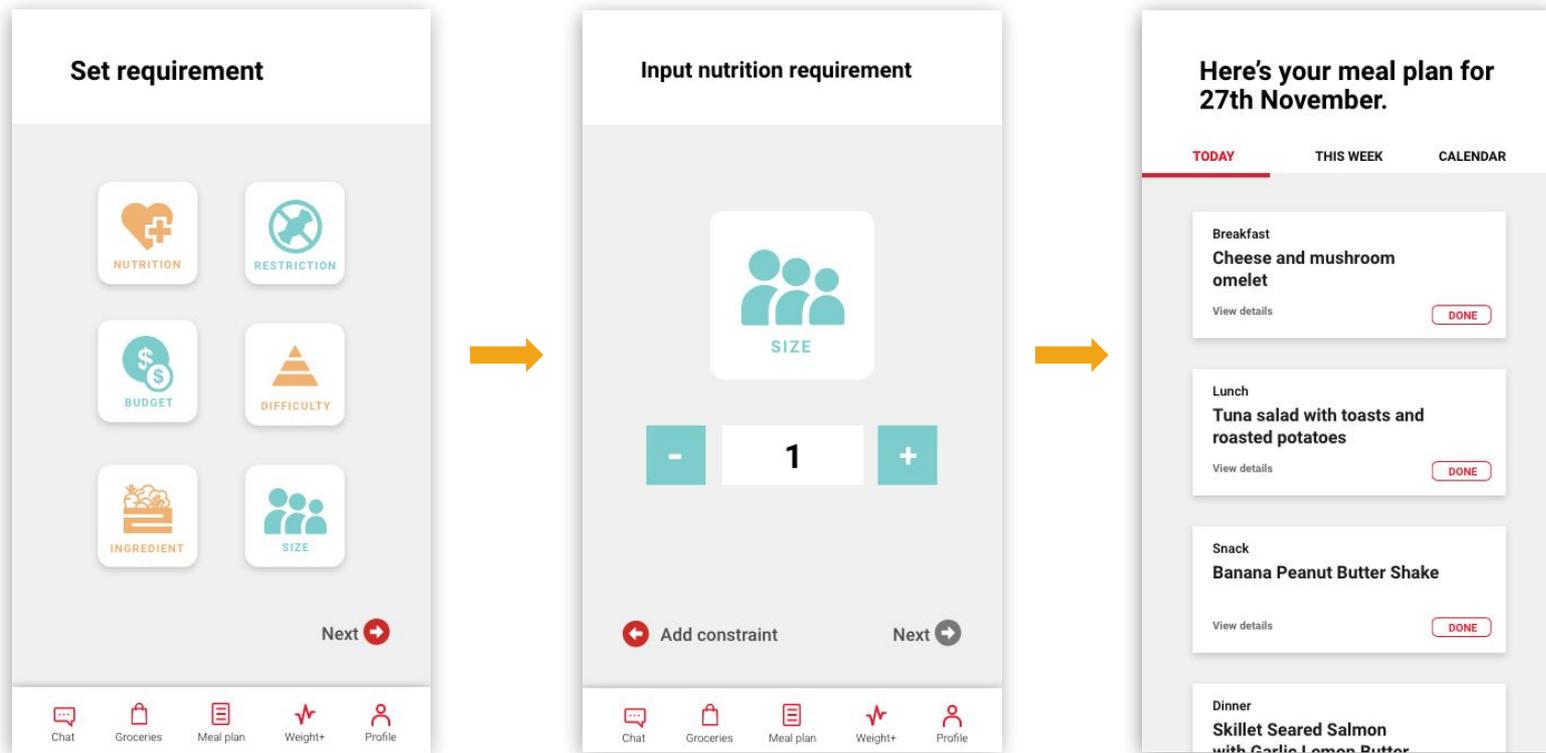
Food recommendation **Amount**

+

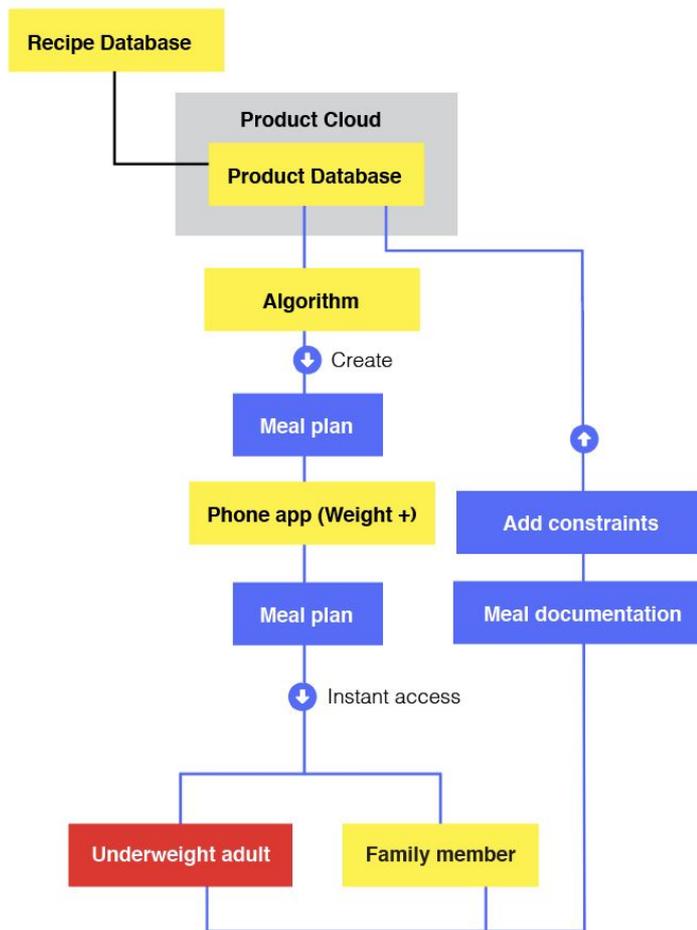
New model of nutrition care



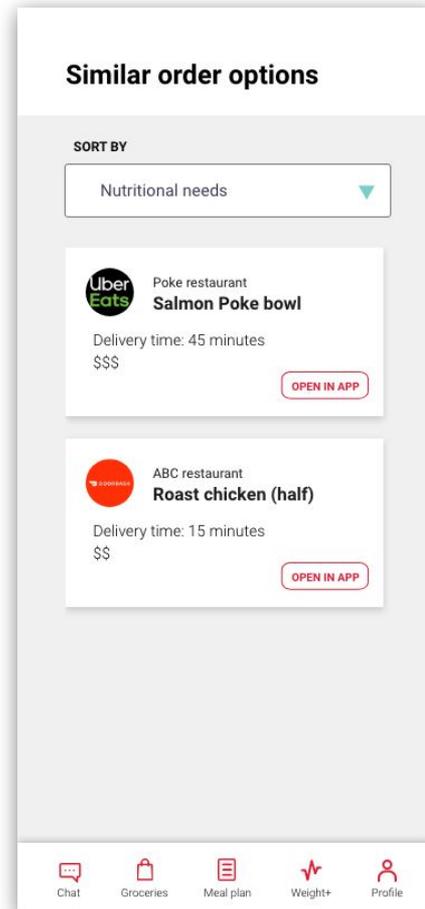
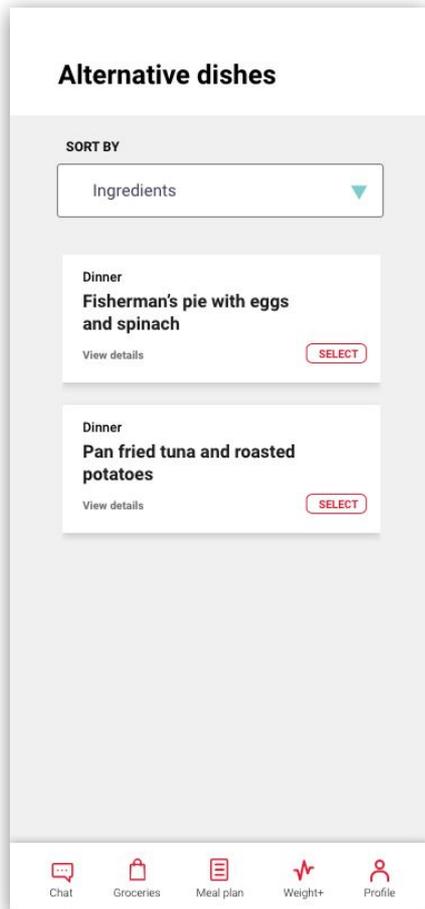
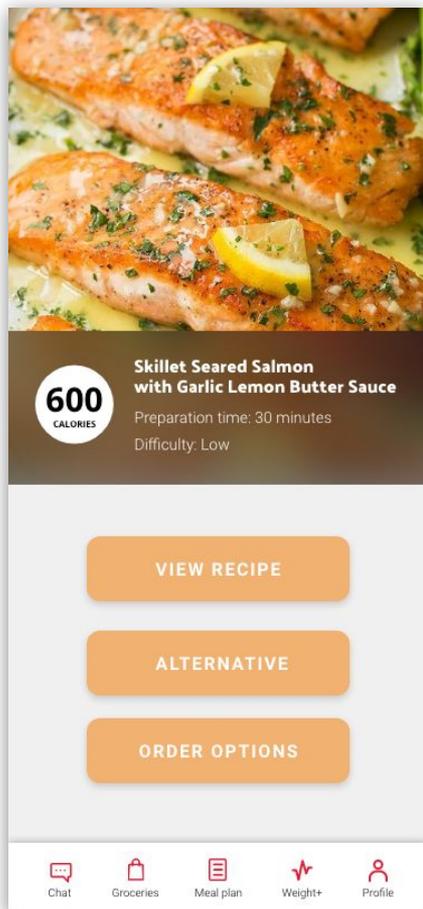
System component: Mobile application



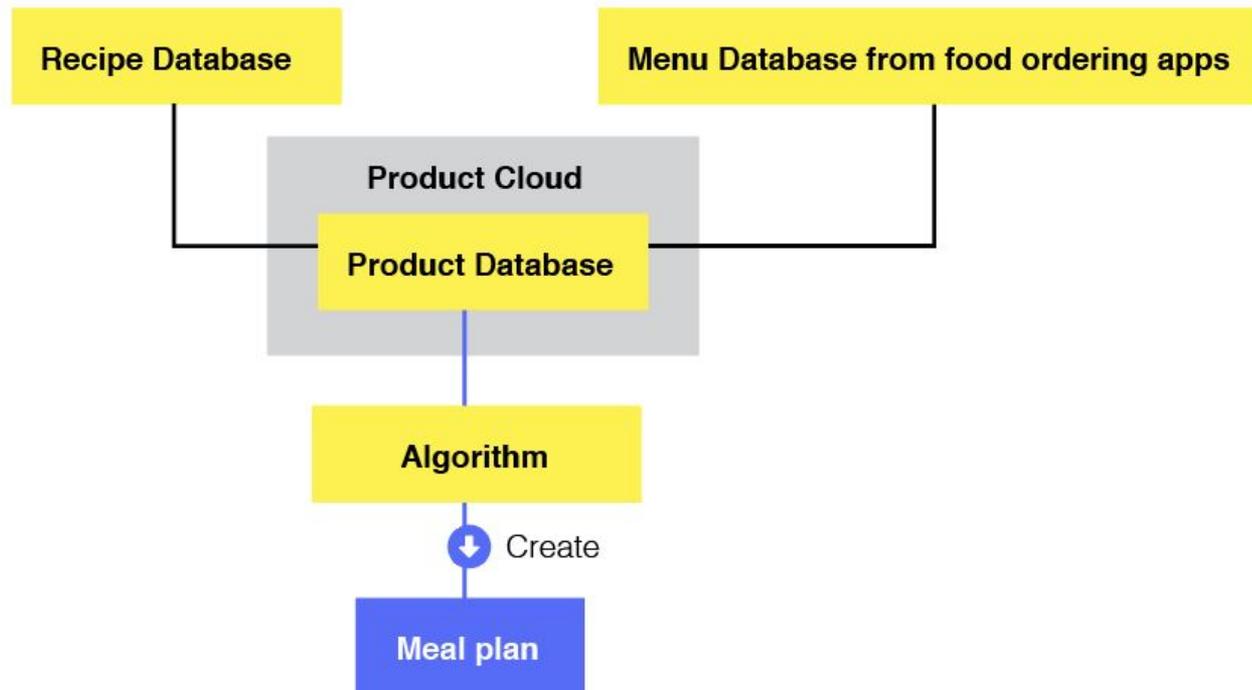
New model of nutrition care



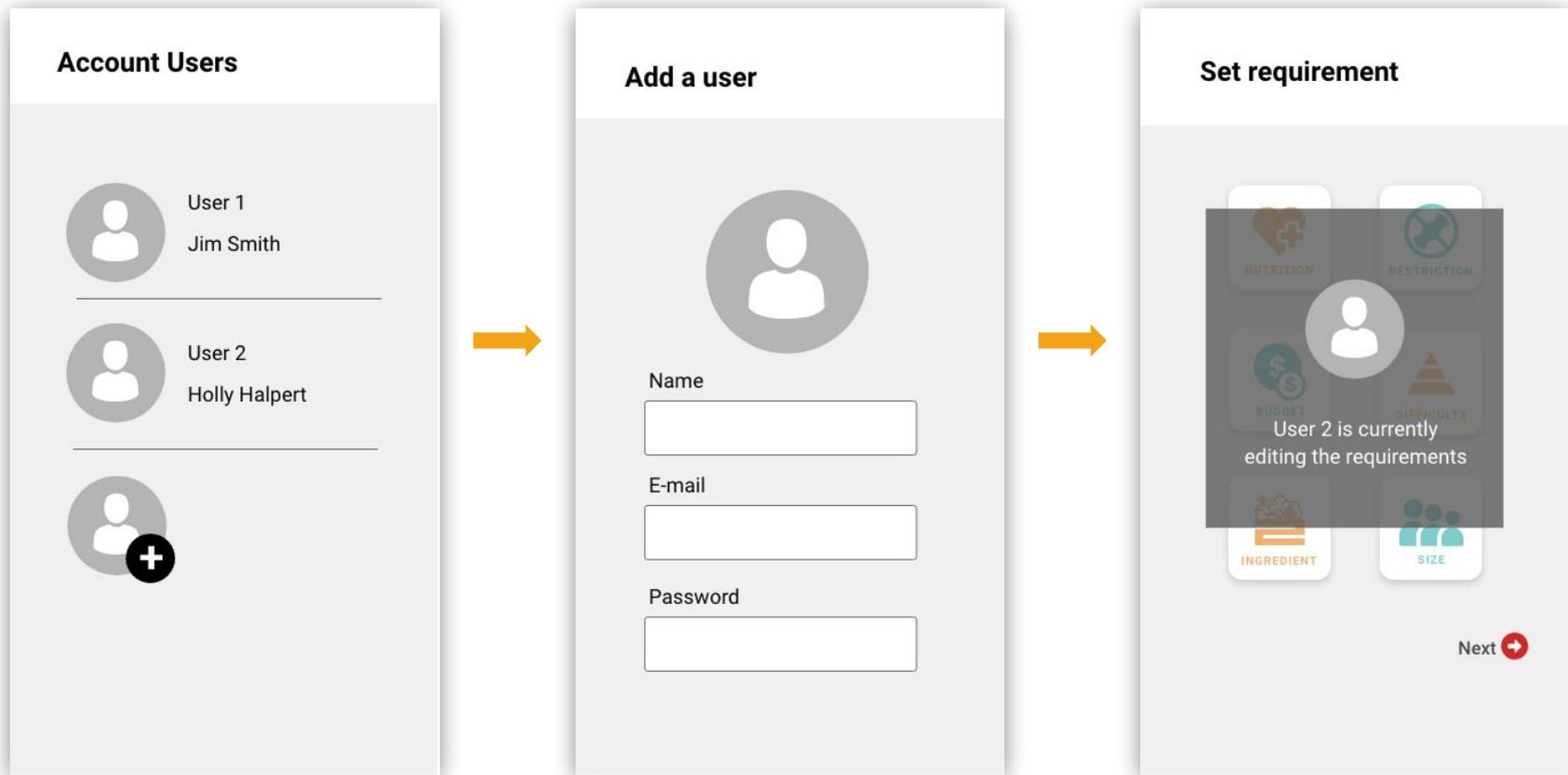
System component: Mobile application



New model of nutrition care



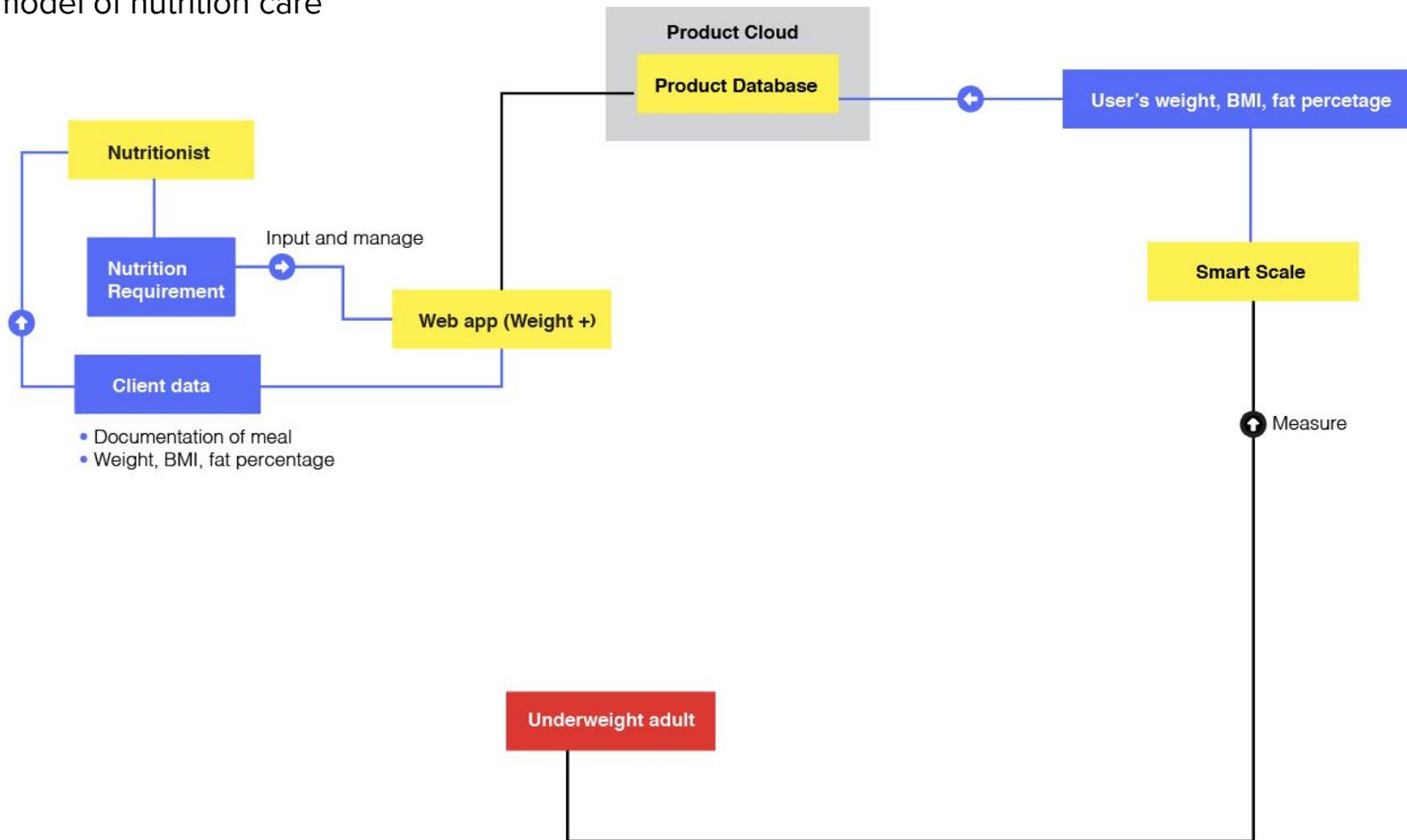
System component: Mobile application



System component: Smart scale

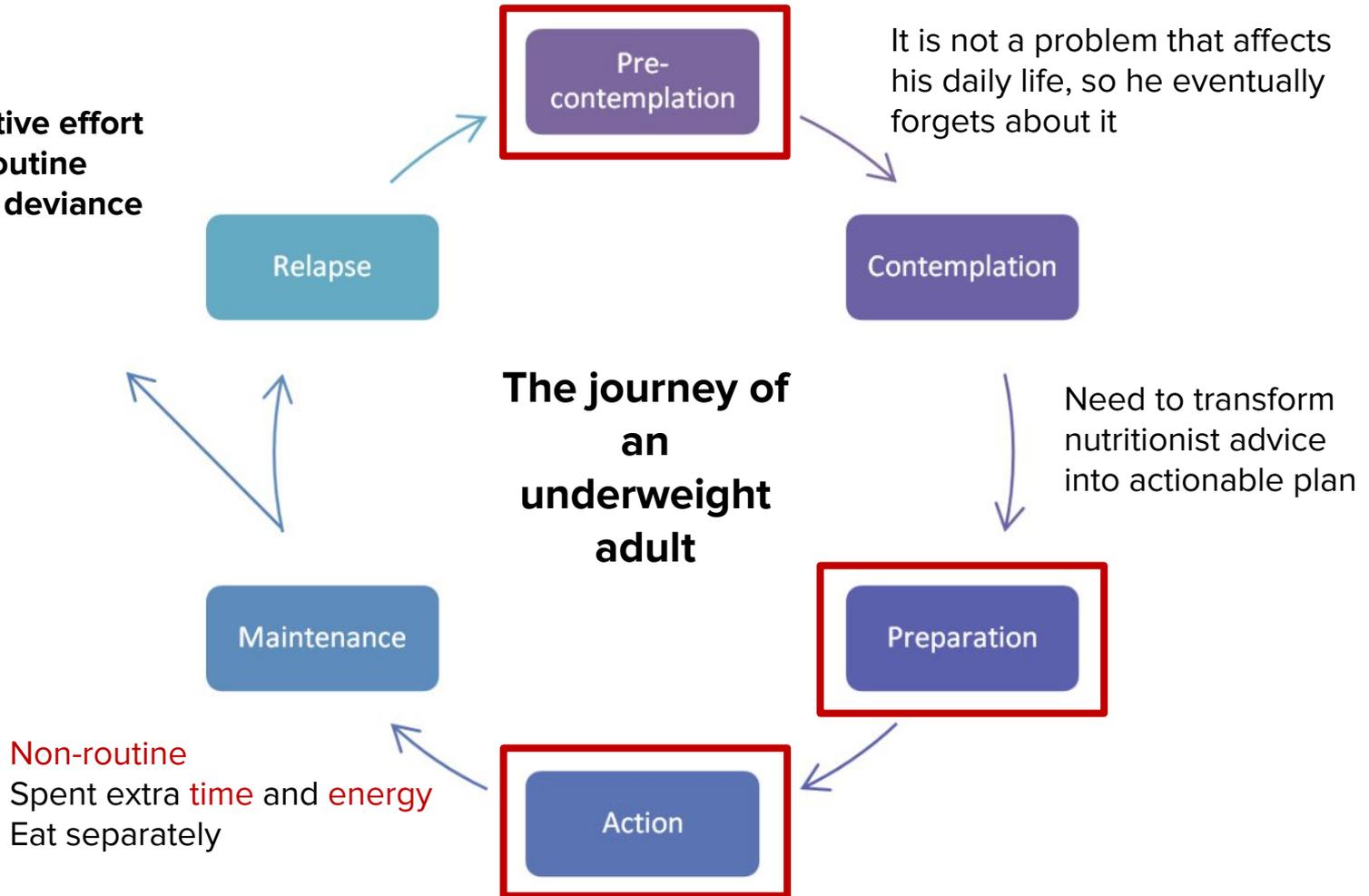


New model of nutrition care



Pain points

- **Cognitive effort**
- **Non-routine**
- **Social deviance**



The new behavior

- **Effortless planning**
- **Merge into routine**
- **Support from family**

Combine into current routine

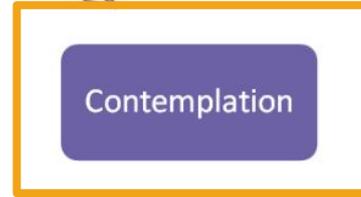
Develop new food consumption habit



**Weight +
Intelligent
food support
system**



Motivation from
family support



Thank you!

Q&A

- *Time*: The user has the time to perform the target behavior or the time taken is very low.
- *Money*: The user has enough financial resources for pursuing the behavior. In some cases money can buy time.
- *Physical effort*: Target behaviors that require of physical effort may not be simple enough to be performed.
- *Brain cycles*: Target behaviors that require of high cognitive resources may not be simple hence undesirable for behavior change.
- *Social deviance*: These comprehend behaviors that make the user socially deviant. These kind of behaviors are not simple
- *Non-routine*: Any behavior that incurs disrupting a routine is considered not simple. Simple behaviors are usually part of routines and hence easy to follow.

Changing habits of food consumption is known to be difficult, and may require continual supervision and education

Thus, as an aid to changing food-consumption behaviour we propose an intelligent food support system, to be used by the elderly person in his or her home, capable of providing informed and individualised suggestions about what to eat. The system takes several important variables into account in the suggestions, such as **taste, cost, preparation difficulty, dietary diversity, dietary restrictions, nutritional needs and properties, and available food items.**