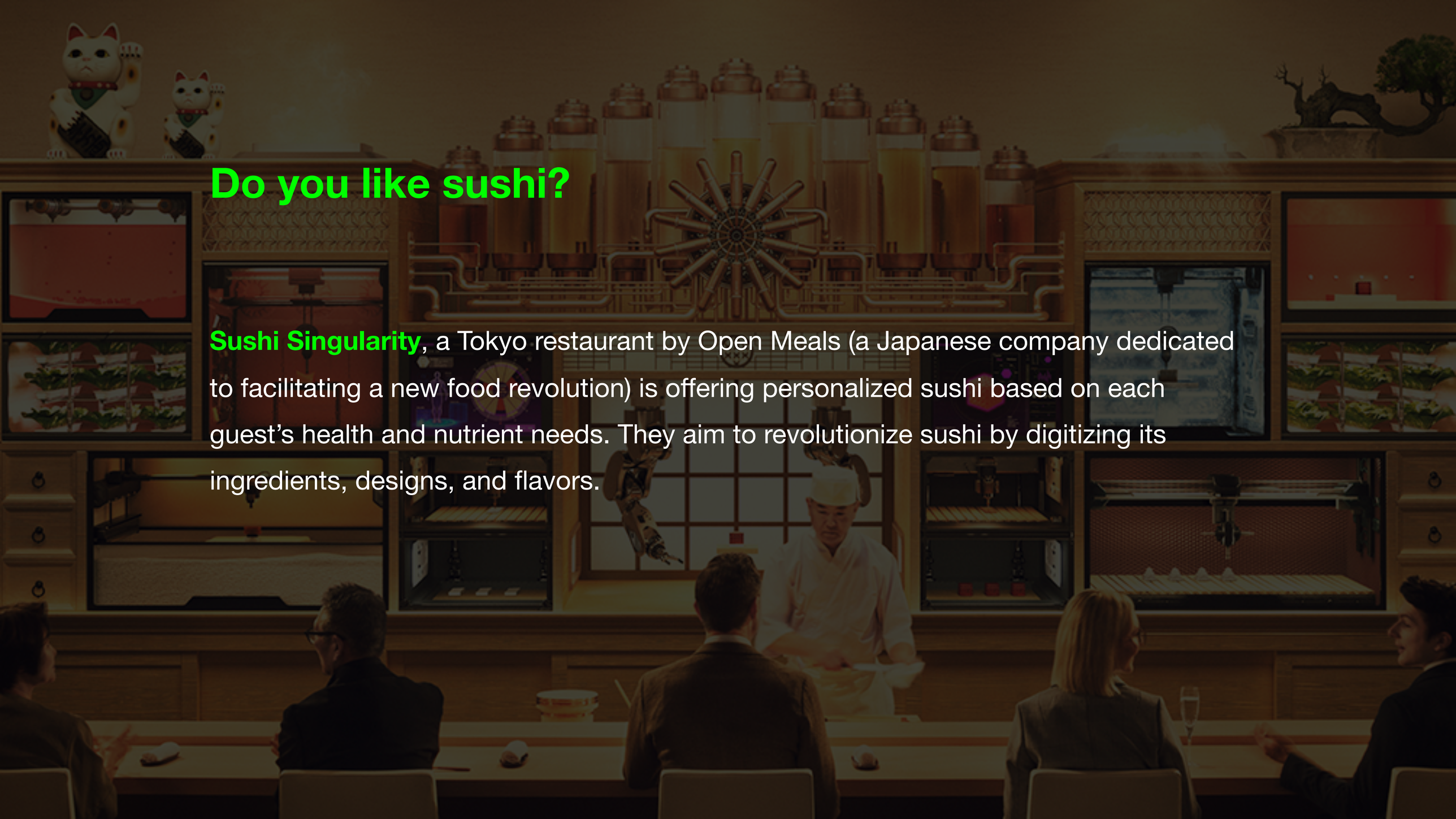
Printable Food

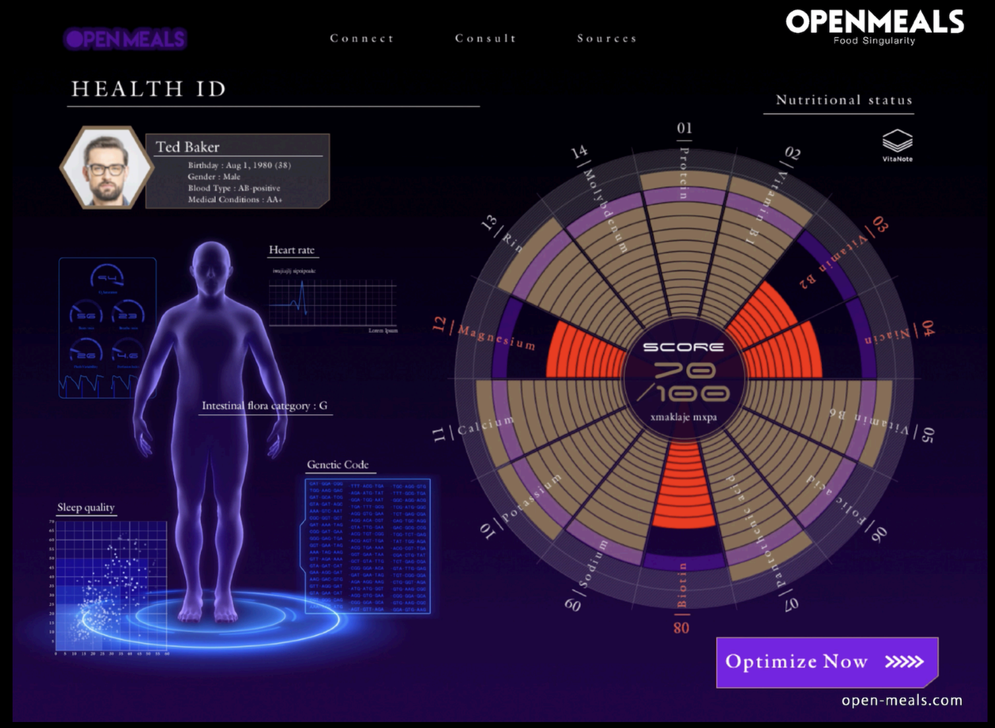
3D-Printed Sushi



Do you like sushi?

Sushi Singularity, a Tokyo restaurant by Open Meals (a Japanese company dedicated to facilitating a new food revolution) is offering personalized sushi based on each guest's health and nutrient needs. They aim to revolutionize sushi by digitizing its ingredients, designs, and flavors.

Step 1: Health identification



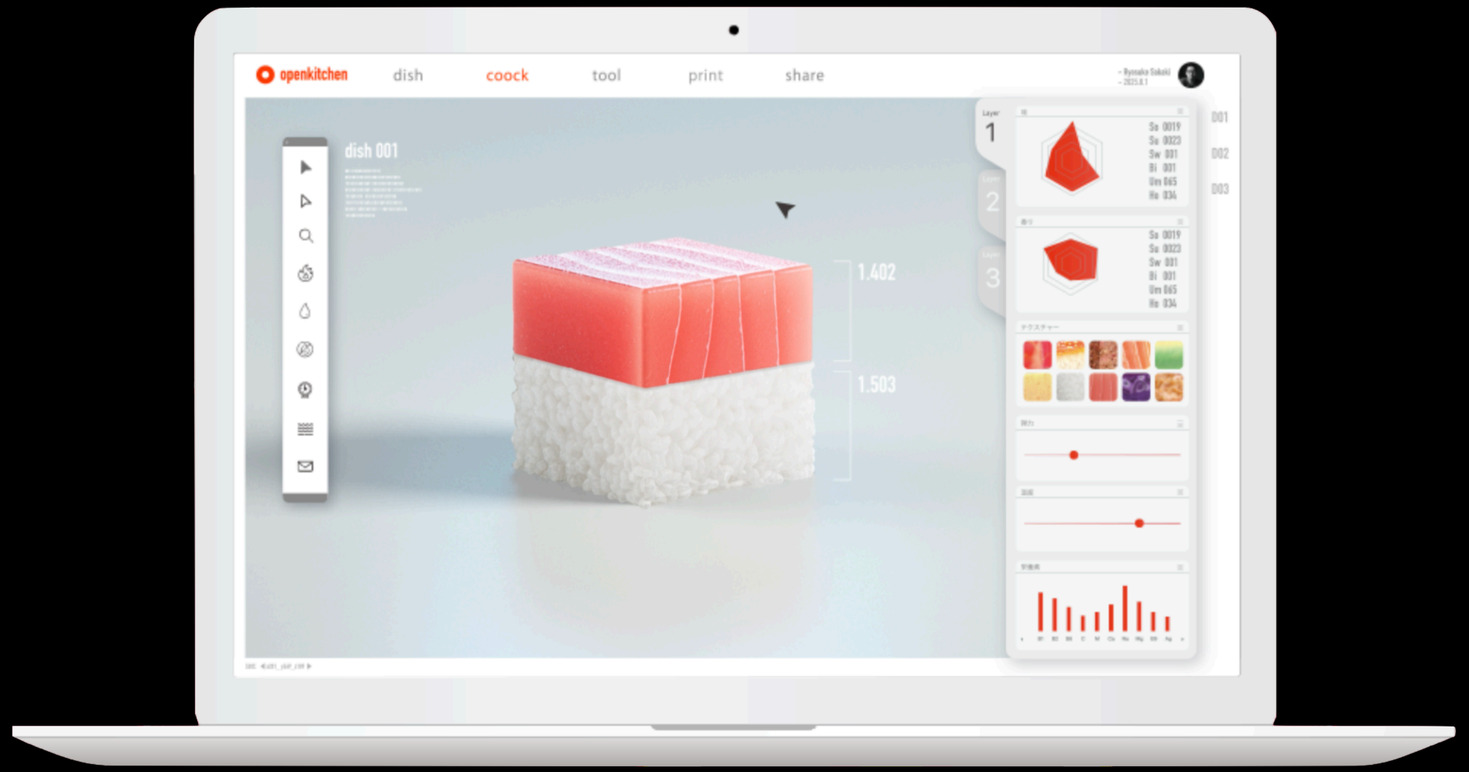
Health test kit

- Collecting saliva, urine, and intestine tests

Health ID

- Analyze health data to optimize the nutrient

Step 2: Food Operation System- [.cube] format



- Nutrition
- Flavors
- Texture
- Fragrance
- Temperature
- Ingredients
- Ratio
- Order
- Stacking method

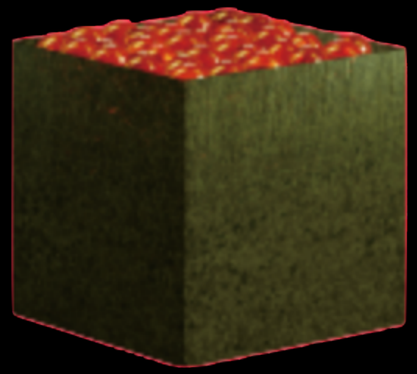
[.cube] by OpenMeals

- the world’s first standardized digital food system
- decomposes the ingredients that make up the dish and reconstructs them in a cube form of 3cm square
- data of the food can be shared via SFNS (Social Food Network Service)

3 main ways to construct a ‘food cube’

Layered

Express food by overlapping layers with different texture and flavors



Wall

Build a wall for soft ingredients to be created within

Cell

Confine the liquid by covering the whole surface with a think film

Step 3: Food Fabrication Machine

1. Food Ingredient Cartridges
- Contain sustainable food ingredients
- Mixed with water, fiber, and enzymes for output

2. Nutrient Cylinder
- 14 types of nutrition ingredients in cylindrical cartridges

3. Alginate Fermenter
- Produces spherical food through a chemical reaction between sodium alginate and liquid calcium

4. Artificial light farm
- Cultivates fresh vegetables in enclosed spaces

5. Hot water FDM
- Items that cannot be formed at room temperature or in air can be realized by outputting them in hot water

Step 3: Food Fabrication Machine

6. SLS (Selective Laser Sintering)
- Powder-based raw materials are baked into specific shapes using lasers.

7. FFM Control Interface
- The brain of the entire machine, which combines various data to design and hyper-personalize food

8. Laser FDM (Thermolysis Laminated 3D Printer)
- The raw material is melted by heat and formed by stacking layers

9. Robot arm
- Equipped with ultra-high precision arm to assemble food

10. Chilled FDM

- Outputs at ultra-low temperatures to realize shapes impossible at room temperature

11. 6-axis CNC router

- Cuts the material with a multi-axis router, enabling precise, elaborate modeling

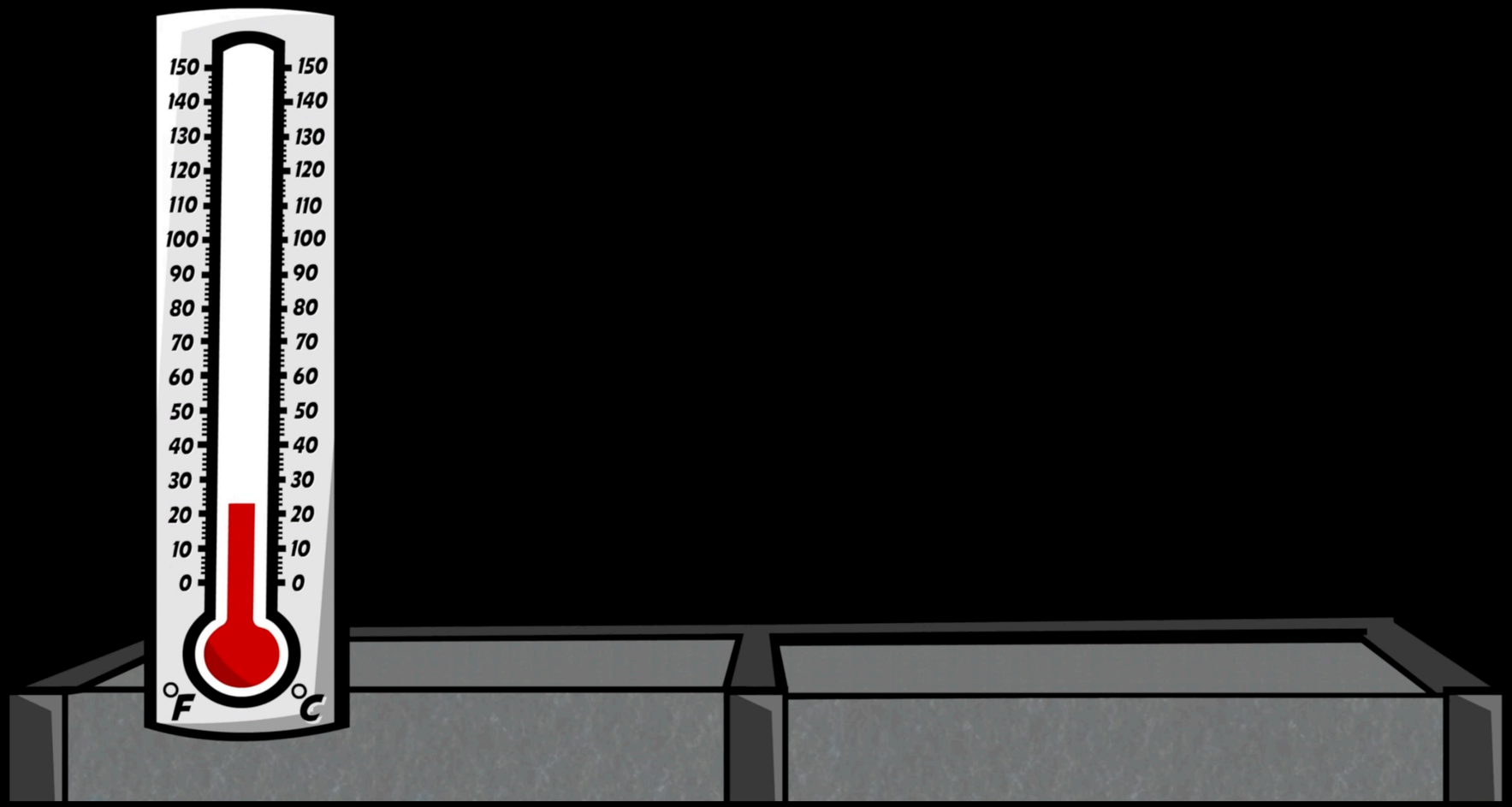
12. Fermenter

- Cultivates food ingredients in real time through precise management of water temperature and nutrients

13. Light Scattering Analysis [Patented]

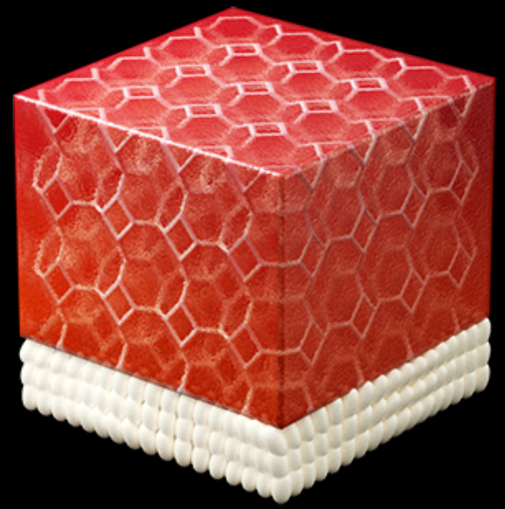
- Analyze the shaped object at the nano-level in a non-destructive and non-contact manner during output, to ensure consistent quality

SLS (Selective Laser Sintering)



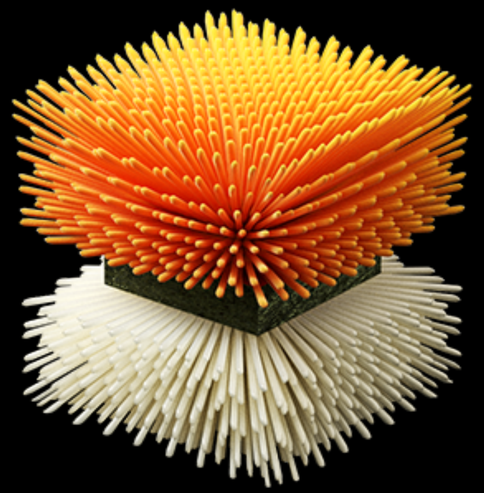
Thermolysis Laminated 3D Printer

Concept Models



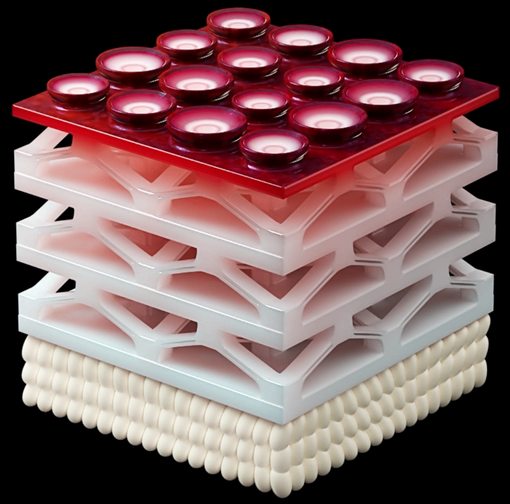
Cell Cultured Tuna

Fabrication method: 3D printing + cultivation



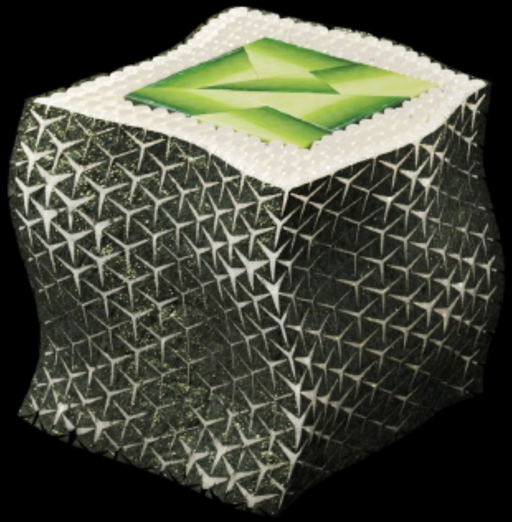
Powder Sintered Uni

Fabrication method: Selective 3D Sintering



Negative Stiffness Honeycomb Octopus

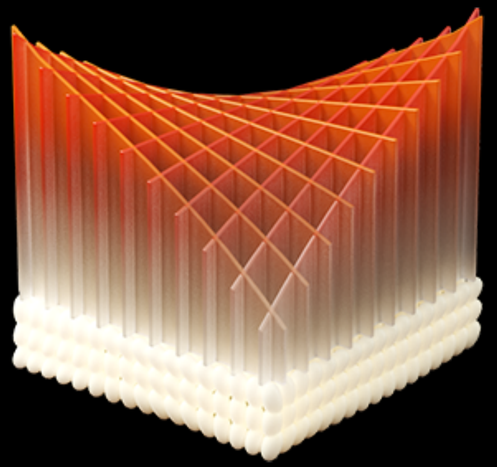
Fabrication method: Selective 3D Sintering



One Tick Kappa Roll

Fabrication method: Laser Cutting

Concept Models



Anisotropic Stiffness Steamed Shrimp

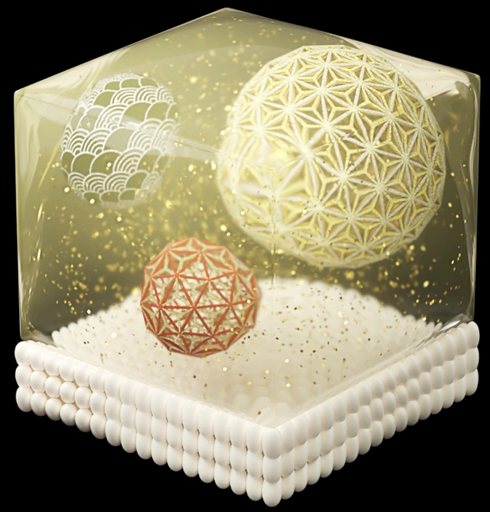
Fabrication method: 3D printing

Squid Hirayama Castle

Fabrication method: 6-axis CNC router cut out

Micro Pillar Saltwater Eel

Fabrication method: Ultrafine 3D printing

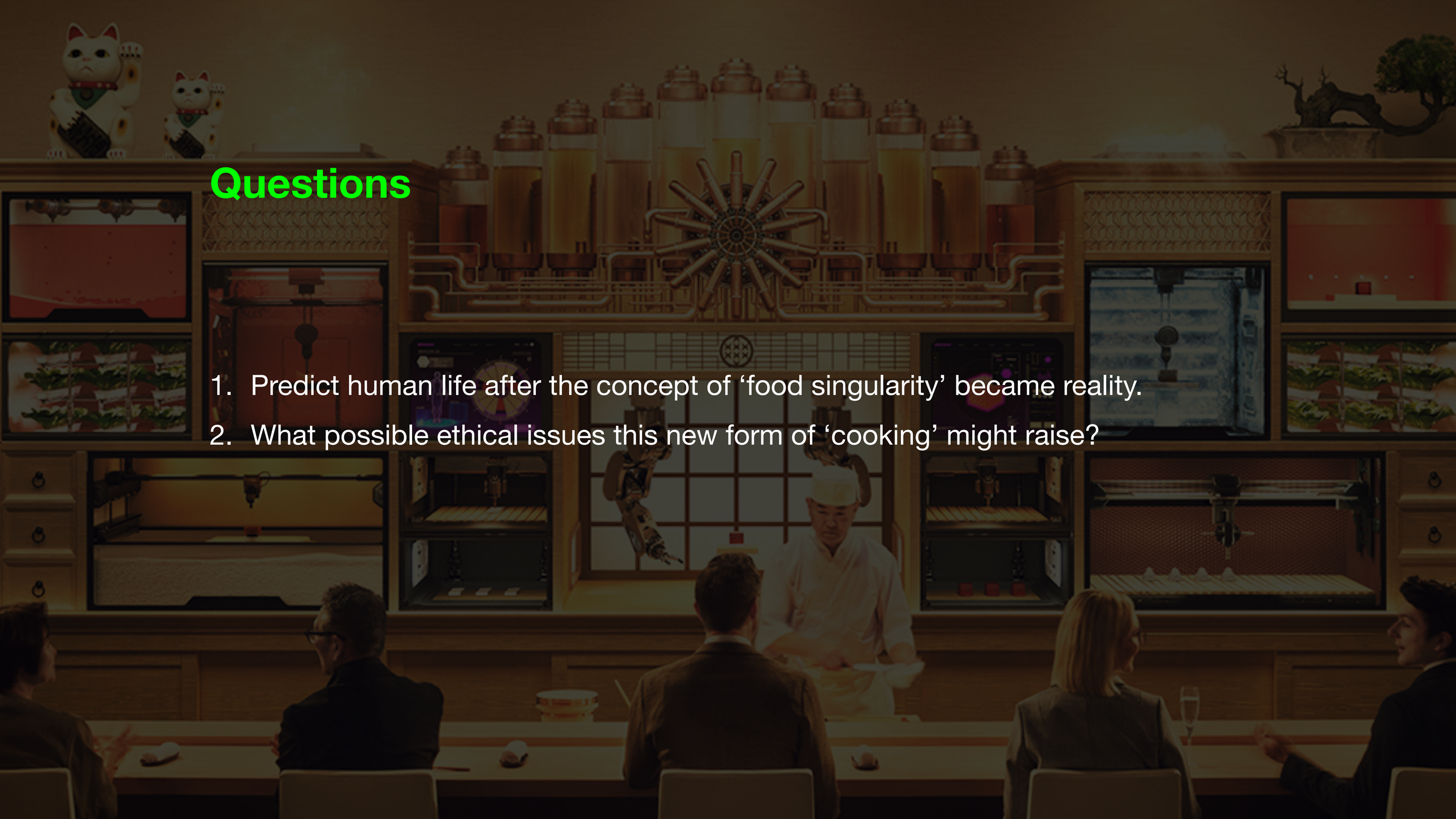


Dashi Soup Universe

Fabrication method: 3D printing + alginate acid coagulation

Sushi Teleportation-2018

Cyber Wagashi-2020



Questions

1. Predict human life after the concept of ‘food singularity’ became reality.
2. What possible ethical issues this new form of ‘cooking’ might raise?

List of Sources

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