Building a Smarter Food Ecosystem: The Role of IoT and Adaptive Systems

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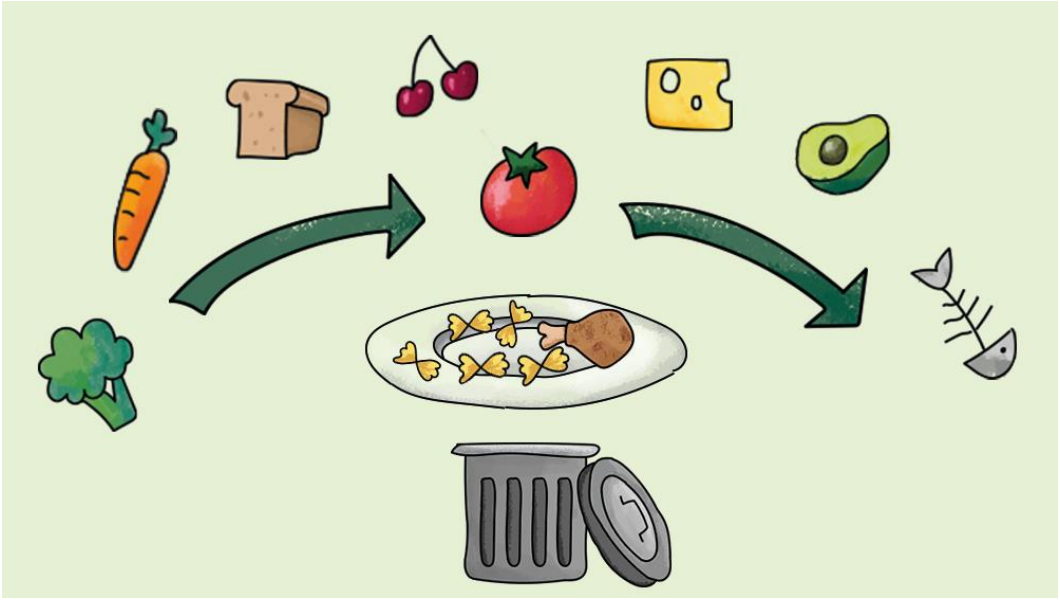
Introduction

Why we need to care about food waste?



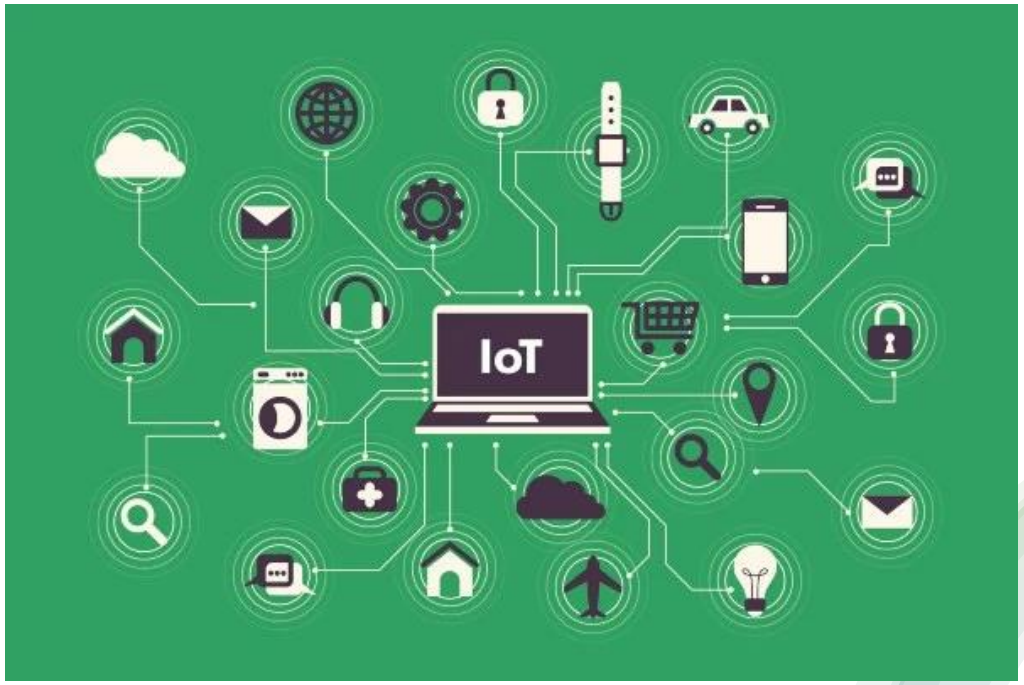
Introduction

The conseguences of food waste are:

- Environmental Impact
- Resource Depletion
- Hunger and Food Insecurity
- Ethical Concerns
- And many others …

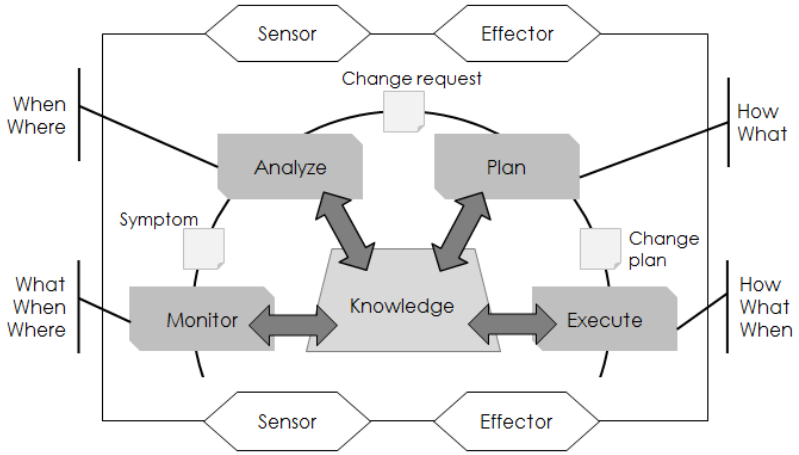
Monitoring The World: IoT Devices

IoT devices have revolutionized the way we interact with the external world.



Monitoring The World: SA Systems

Self Adaptive Systems are able to change their behavior at runtime as a response to changes in their environment or in the system itself.

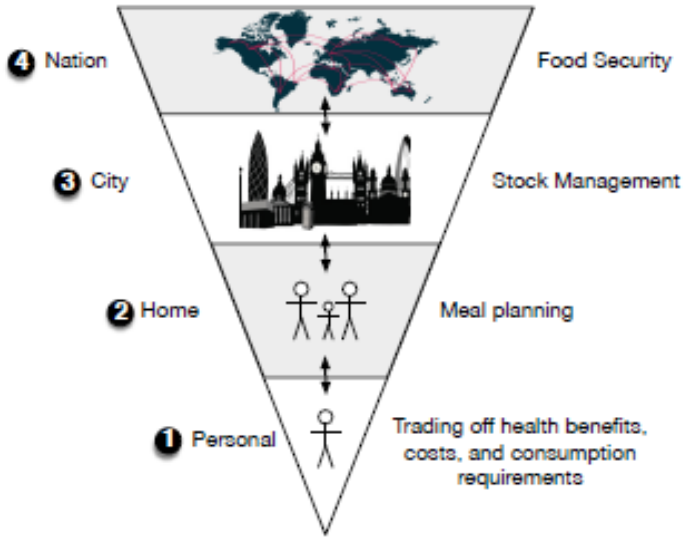


System Model: The MAPE-K loop

The iterative process of monitoring, analyzing, planning, executing, and incorporating knowledge enables effective management and optimization of complex systems.

Practical Example: Feed me, Feed me

Feed me, Feed me is an IoT based ecosystem to support food security; that is to ensure sufficient, safe, and nutritious food to the global population.



Practical Example: Feed me, Feed me

The project can be described at four levels of granularity:

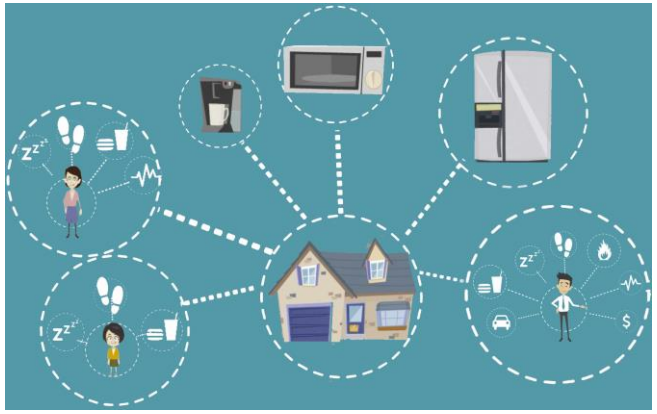
- Personal
- Family
- Community
- Nation

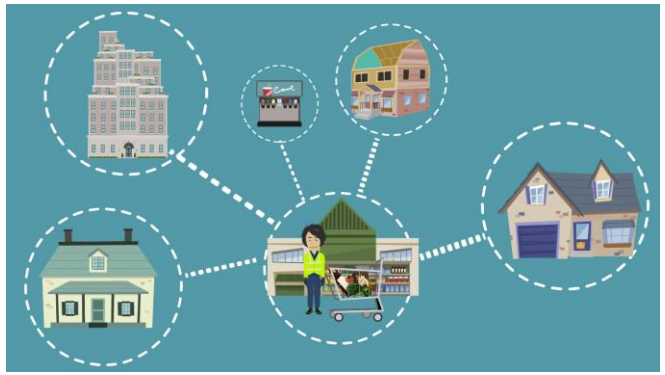
Practical Example: Feed me, Feed me

The project has many challenges:

- Security & Privacy
- Interoperability
- Adaptation

Some Scenarios





Conclusion

- **Problem**: Food Waste
- **Tools**: IoT and SA Systems
- **Possible Solution**: Feed me, Feed me

References

1. **An Overview of Design Patterns for Self-Adaptive Systems in the Context of the Internet of Things:** Christian Krupitzer, Timur Temizer, Thomas Prantl and Claudia Raibulet.
2. **Feed me, Feed me: An Exemplar for Engineering Adaptive Software:** Amel Bennaceur, Ciaran Mccormick, Jesús García Galán, Charith Perera, Andrew Smith, Andrea Zisman and Bashar Nuseibeh.