Food
Provenance -
Identifying the
Sources of
Ingredients in
our Food

• With global supply chains and production facilities, how can we keep track of where our food has been?
• Can we stay in control of what we eat?
• Can we make sure our food is safely sourced?
• How can we find out what processing was done to the food?
• Are there any health threats associated with the ingredients in the food we are consuming?
• Working mother of 2
• Want to make sure she is serving the right food to her children
• Doesn’t want too much processing or added sugar
• Not a ton of time for research

While she is shopping:
- Enters in barcodes from food she buys
- Gets data on ingredients
  - Processing
  - Health facts
  - Sources
- Gets data on manufacturing
- Gets info on any recent associated disease outbreaks.

Use Case: Anna
Use Case: Market Sourcing

- Monitor food
- Ensure requirements are met
- Health
- Organic
- Meet customer demand
- Needs regular updates

- Enters any new products being considered
- Can easily compare
- Get red flags
- Check for disease outbreaks
- Set up regular checks of chosen goods
Challenges

- Sourcing information
  - Who makes the product?

- Ingredients
  - Sources of raw goods, how far back should we go?
  - Can we pinpoint the specific one that manufacturers use?
  - Where the goods were processed?

- Information parsing
  - Brand name vs generic
  - Different names for same items
  - Relative health & impact of items
Competency Questions

• What company makes this product?
• Where is this product packaged?
• What is the complete list of ingredients in this product?
• Which ingredients are considered harmful, linked to diseases?
• Where are the ingredients for this product farmed?
• Are there GMOS in this product?
• Who produces Tostito’s Tortilla chips?

• What are the ingredients and their sources?

• What is the nutritional information?

• Are there warnings about products from these regions?

• Should answer with:
  ● Frito Lay
    7701 Legacy Dr Plano, TX 75024
    United States

  ● Yellow corn (enriched with thiamine, riboflavin, niacin, iron, folic acid) - Source: Iowa, US
  ● Vegetable oil - Source: Iowa, US
  ● Salt - Source: New Mexico, US

  ● Serving Size: 1 oz
  ● Servings Per Container: 10
  ● calories: 160
  ● ...

• No
How the Ontology is Used

- When parsing the ingredients list of the chips, the listed names are parsed and matched with their identities in the food ontology
- Each ingredients would have locations they are grown & production methods in the ontology
- Also the health/nutritional information of ingredients is encoded in the ontology
- The locations can then be searched for current news & warnings about the food product
Ontologies

- Encode relationships between ingredients, production methods, and regions
- Help decipher relationships between different versions of ingredients
- Encode health & labor hazards to provide ratings
- Provide relative levels of contamination risk