

# Produce Food Safety

Challenges in Implementing  
Improved Practices

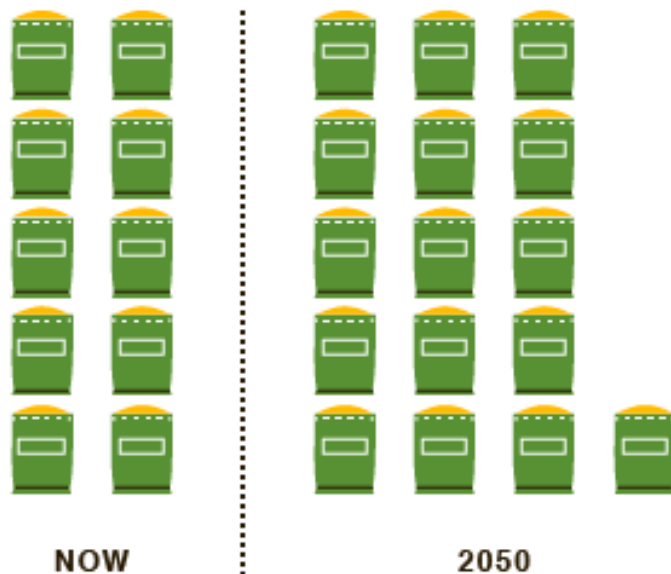
# Food Security

“when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”

World Food Summit, 1996

# Addressing Food Sufficiency

With current global trends in diets and population, **60% MORE FOOD** will be needed in 2050.



- Increase food production
- Decrease food losses

Source: Alexandratos and Bruinsma, 2012

# Food Losses

**ALMOST A BILLION PEOPLE**  
are going hungry, while we waste  
**1/3 OF THE FOOD WE PRODUCE.**



Source: FAO, 2013

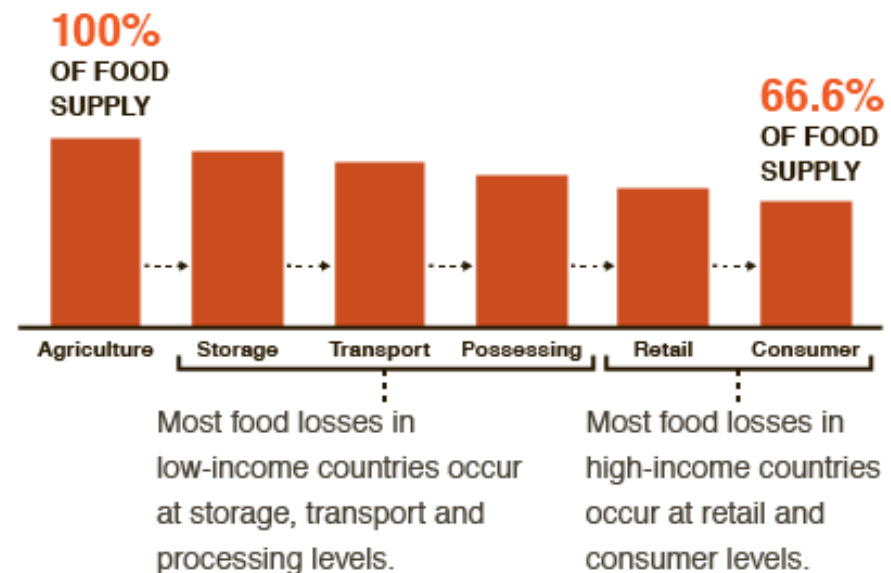
**Big Facts**  
[ccafs.cgiar.org/bigfacts](http://ccafs.cgiar.org/bigfacts)



RESEARCH PROGRAM ON  
Climate Change,  
Agriculture and  
Food Security



About a third of all food produced is lost in the food supply chain.



Source: FAO, 2013

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# Pathogens, spoilage, and toxins

Challenge	Estimated Burden (annual)
Tomato Spotted Wilt	\$1.4 billion (US only)
Post-harvest degradation	50% loss in some crops
Mycotoxins	
Crop losses	\$2.6/\$23 million (aflatoxins in peanuts, US)
Product losses	\$1.5-\$5 billion (North America)
Human health	40% of all disability-adjusted life years (DALYs)
Noroviruses	50% of vegetable-related illnesses (USA)

# Burden of Foodborne Illnesses

Scale	Illnesses	Hospitalizations	Deaths
Global	4 Billion		2.2 Million
US	48 Million	128,000	3000

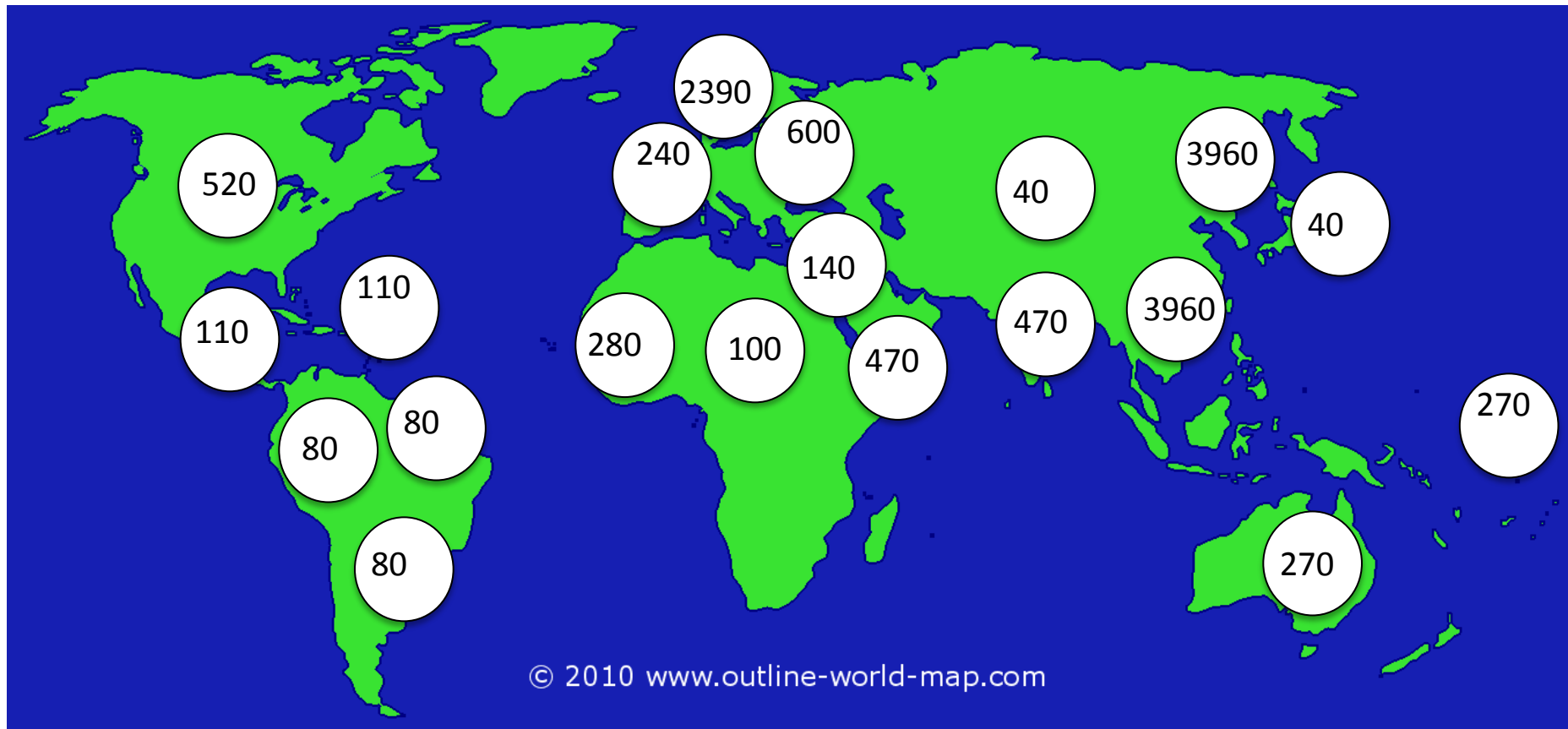


# Disability Adjusted Life-years Diarrheal Disease Ranks



# Salmonellosis Estimates

cases per 100,000 pop / year



- 93.8 million cases annually/globally, 80.3 million foodborne
- 155,000 deaths

# Food Safety Capacity Building

1. Food Safety Assessment
  1. Needs
  2. Capacity
  3. Prioritization
2. Communications-Outreach
3. Evaluation

# Food Safety Specific Projects

- Hort IL
  - Nigeria
  - Central and South America
  - Central America
- Subsequent
  - Africa Rising-Tanzania
  - FDA-Guatemala
  - Global Food Safety Partnership ([gfsp.org](http://gfsp.org))
  - Low-mechanization Amish farmer studies

# Needs

- What are the primary food safety concerns?
  - In-country public health monitoring
  - Third party assessments
    - Foreign Ag Services
    - WHO/FAO
    - NGOs
  - Research
    - Public Health
    - Food Contamination

# Capacity

- What can realistically be achieved given the availability of resources and human capital available?

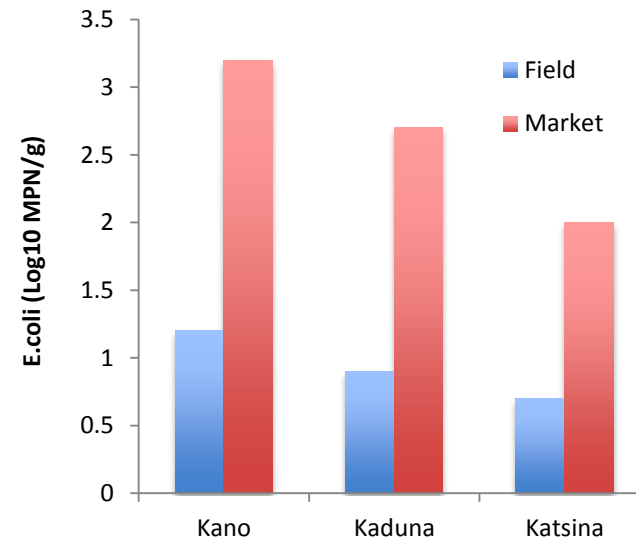
# Prioritization

- Which interventions are predicted to:
  - Be most likely to be adopted
  - Sustainable
  - What is the impact on contamination?
  - What is the impact on health?

# Nigeria

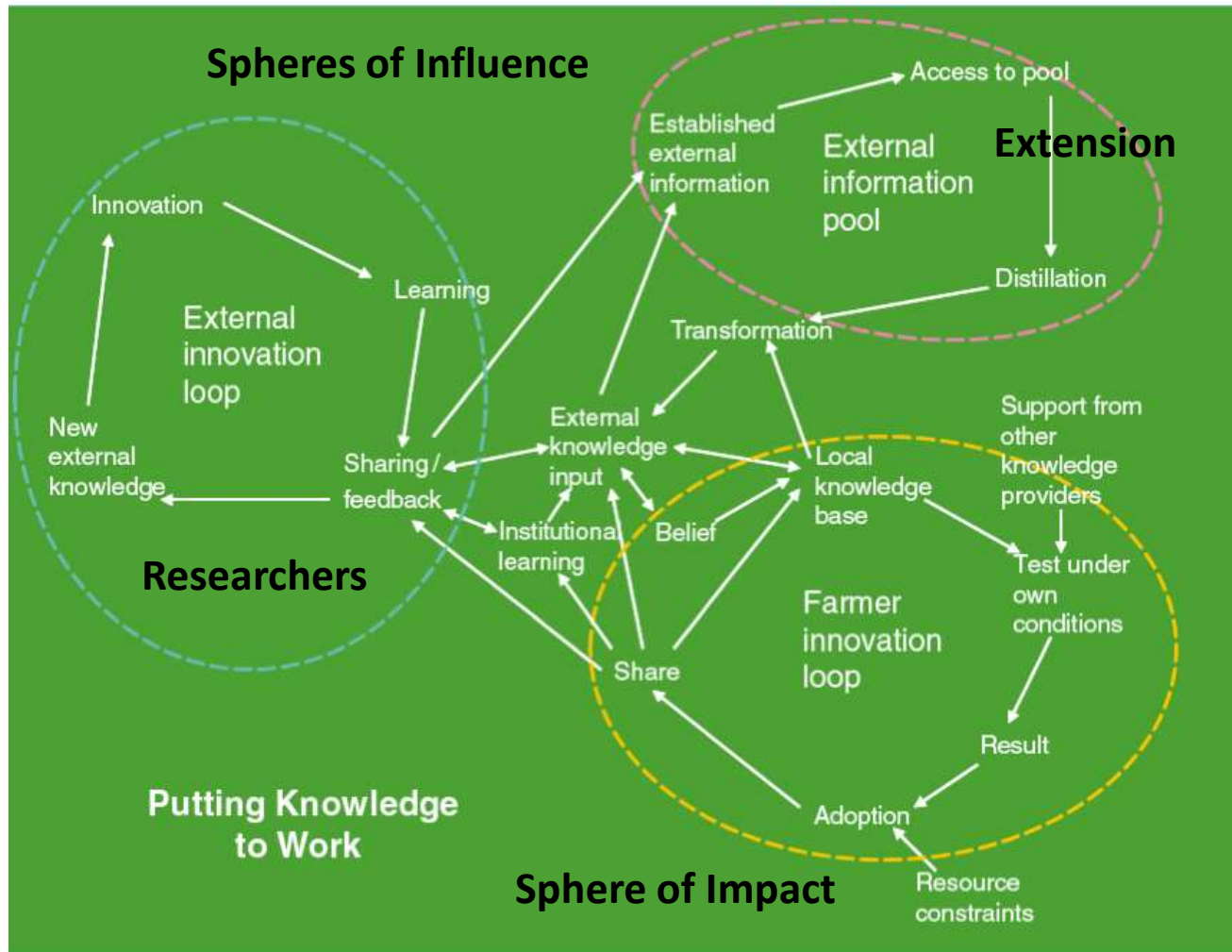


*E. coli* on tomatoes





# Putting Knowledge to Work



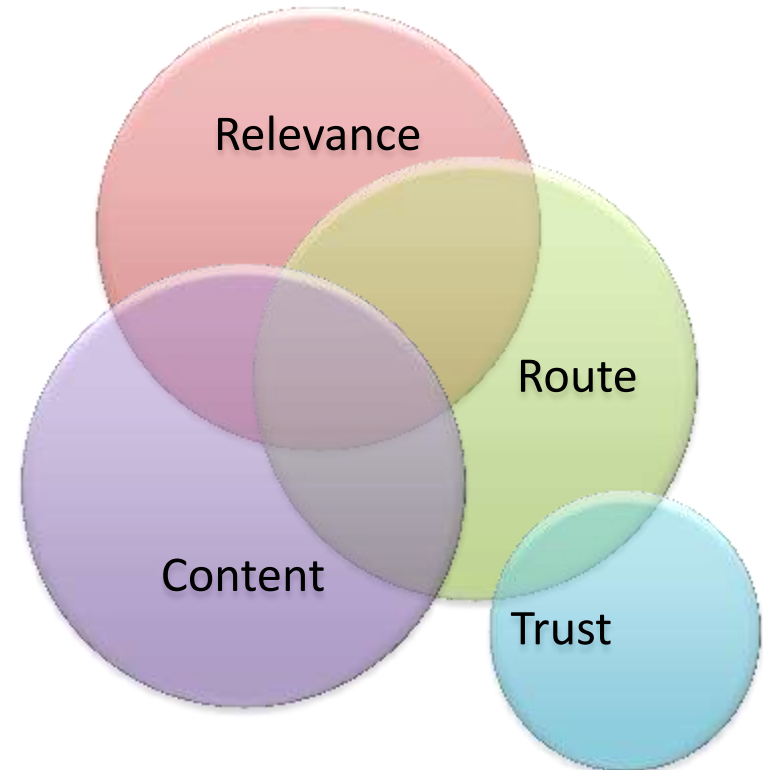
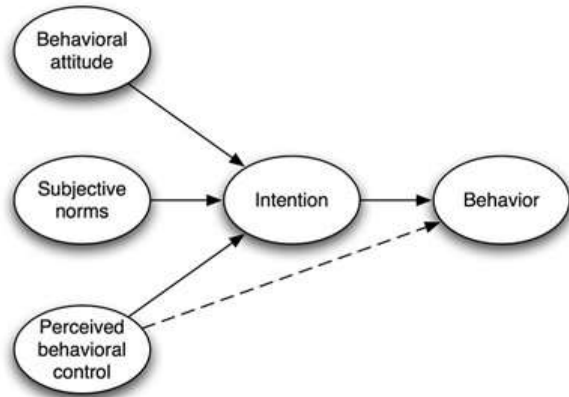
# Un jeune homme et sa blonde



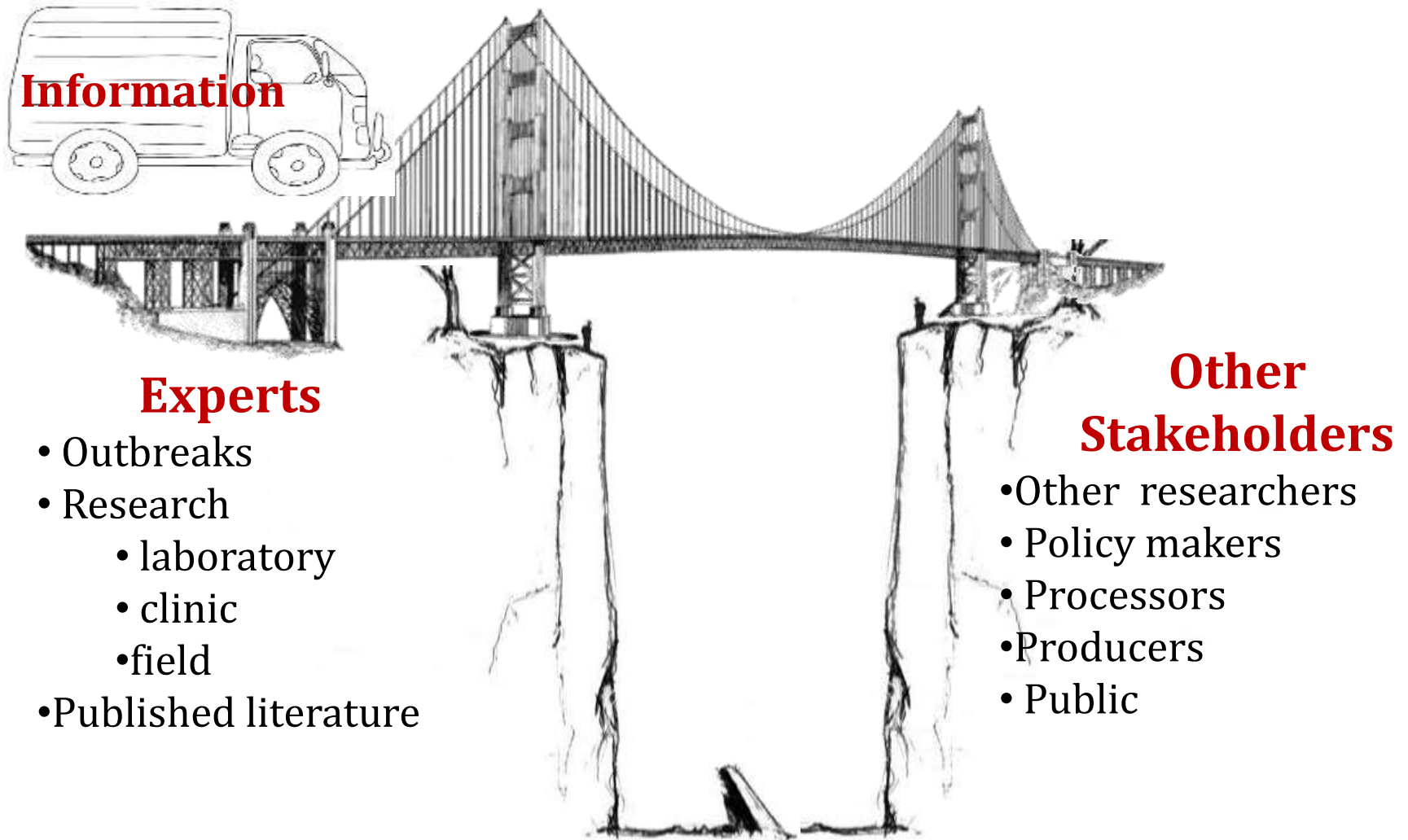
- Relevance
- Understandable
- From trusted source
- Preferred medium

# Communication Keys

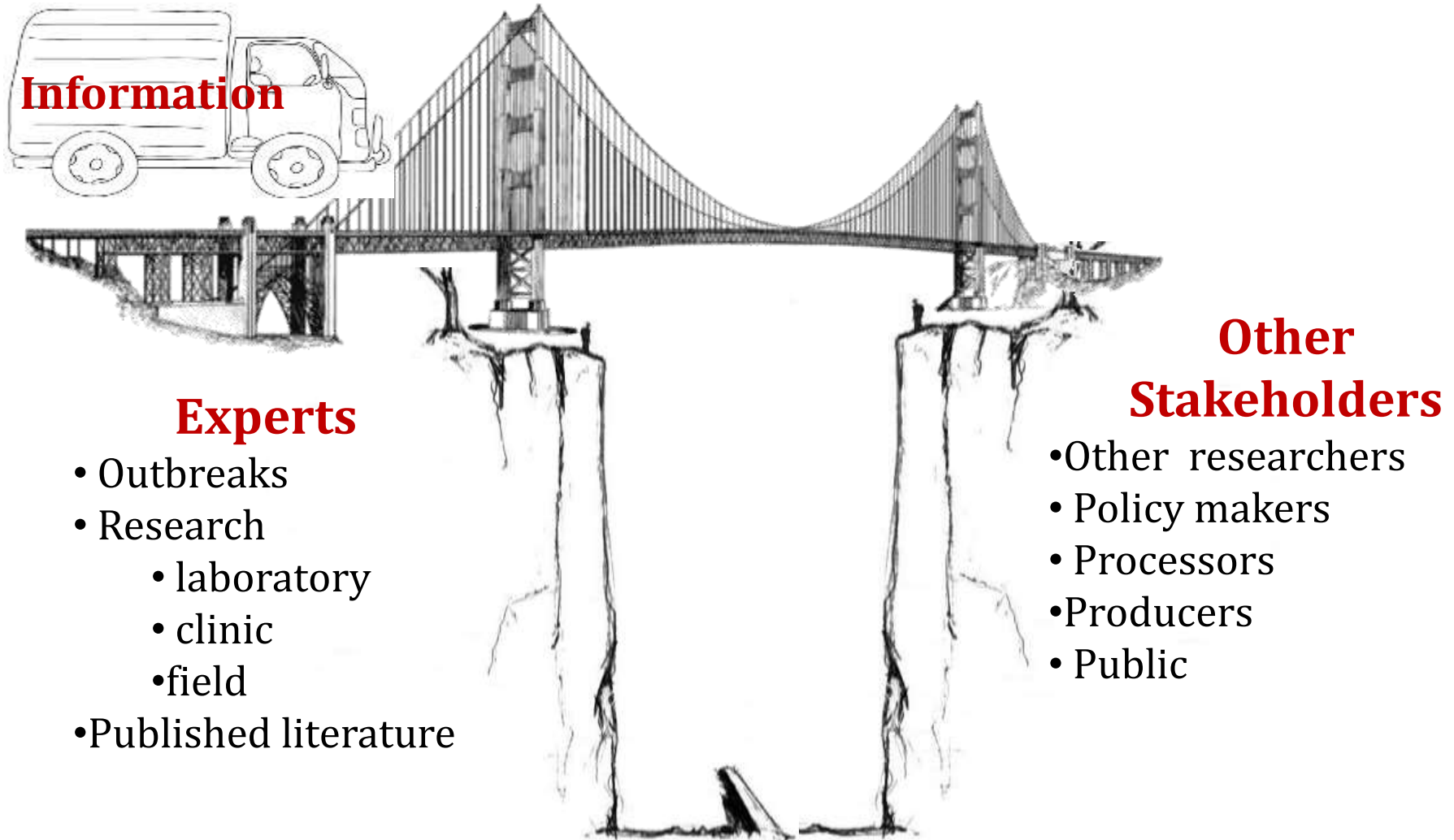
- Goal to change behavior
- Theory of planned behavior



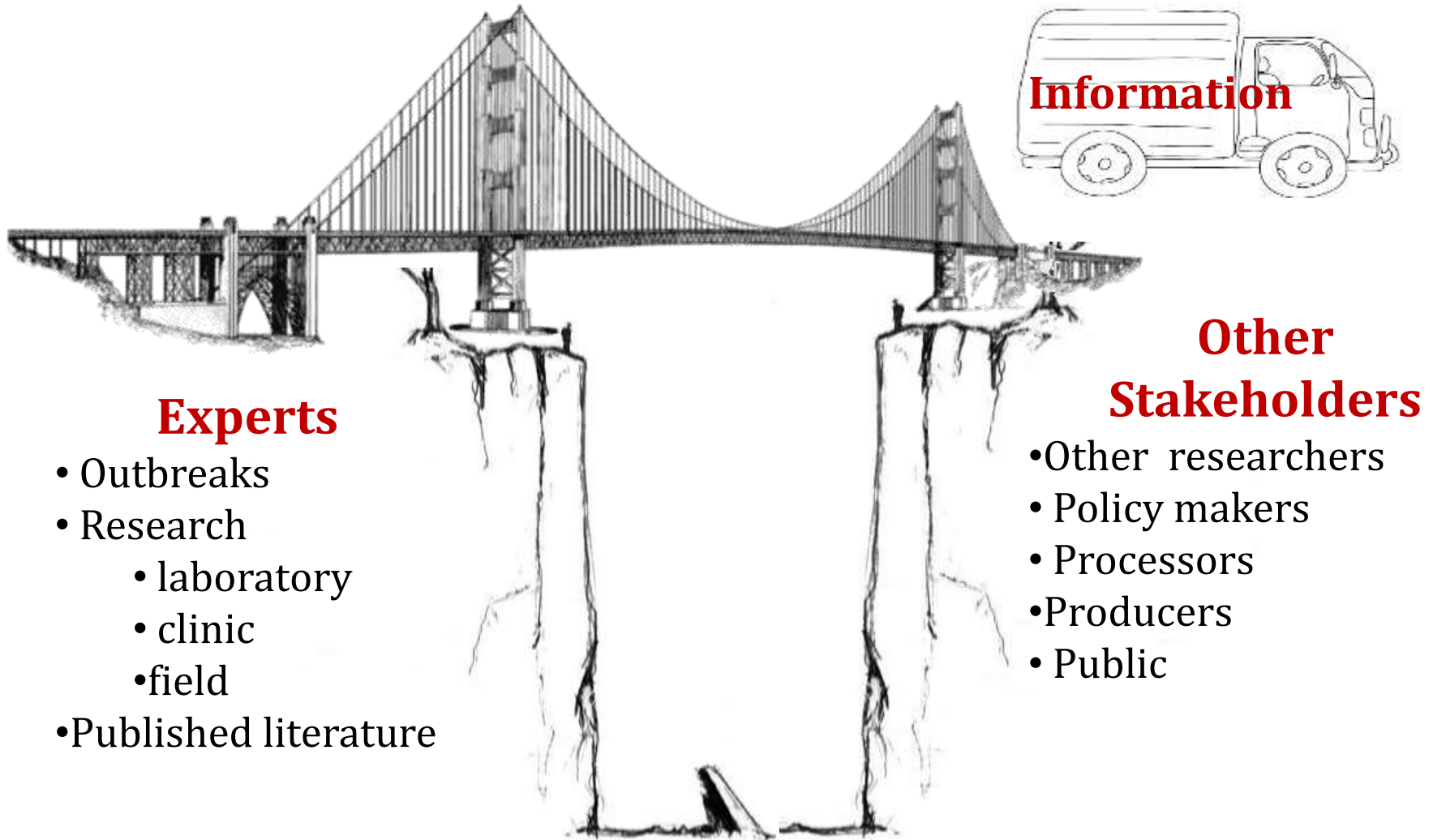
# Knowledge Transfer Pathway

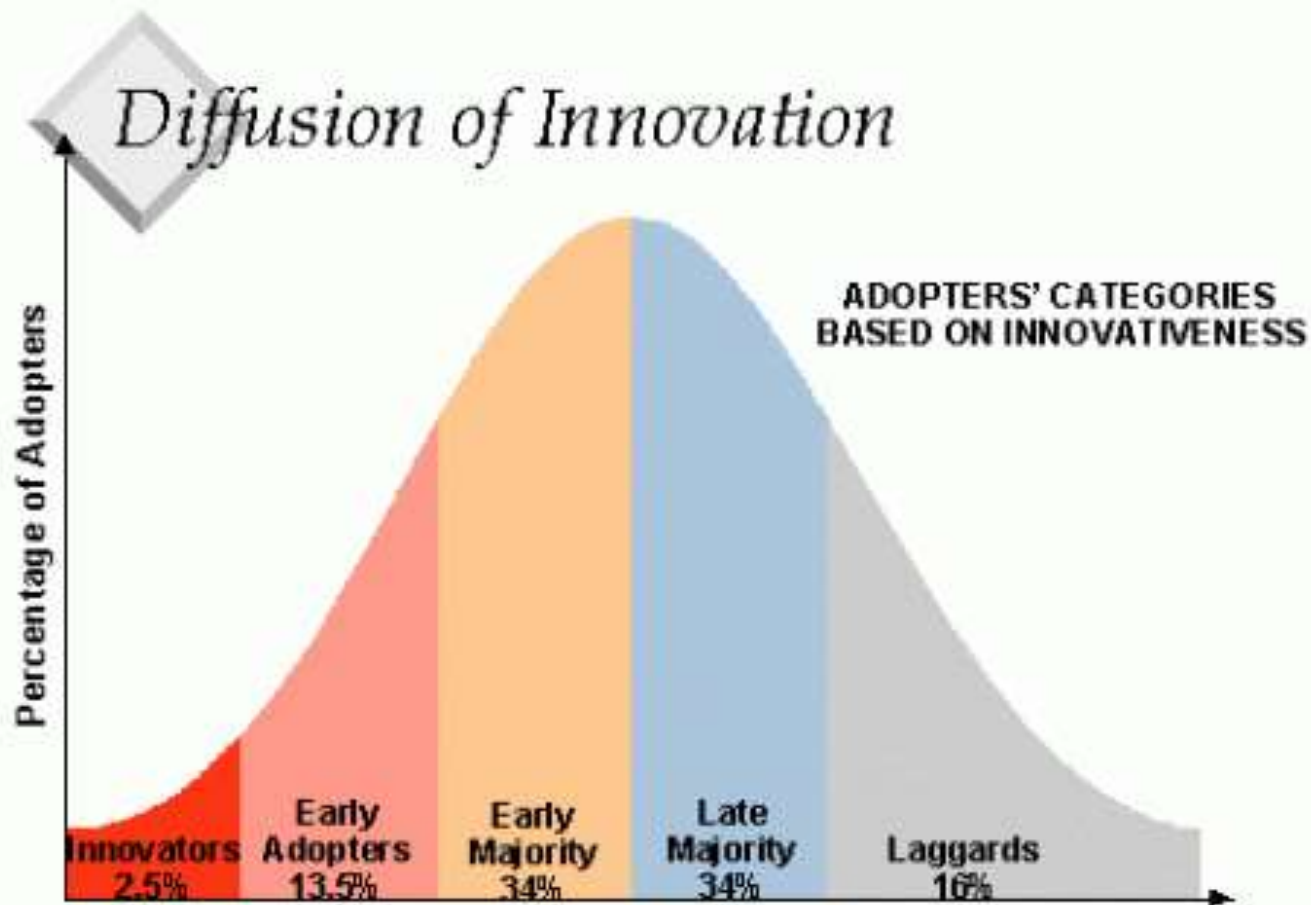


# Knowledge Transfer Pathway



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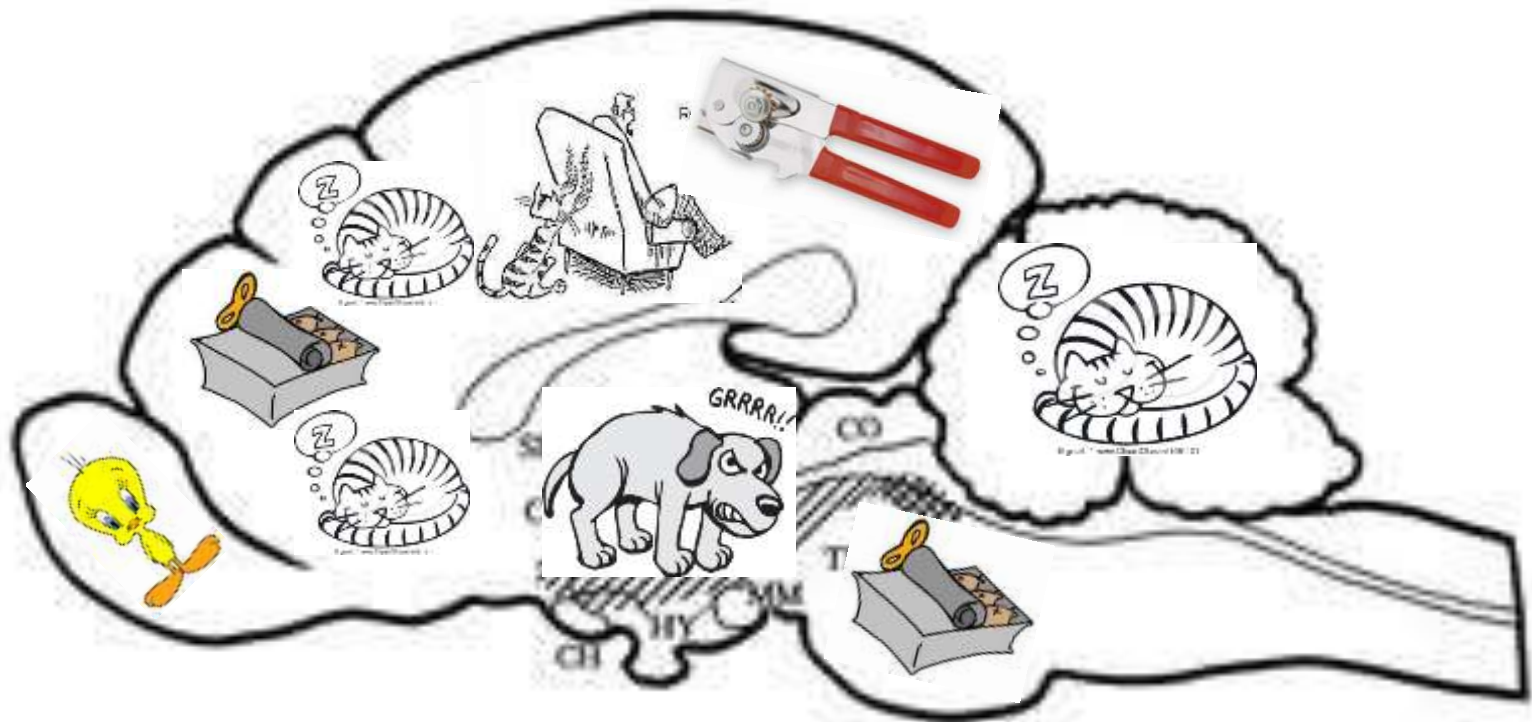




*“One cannot seek knowledge about an innovation until he or she knows it exists.”* Everett Rogers, 1963



# Mental Models: the feline brain

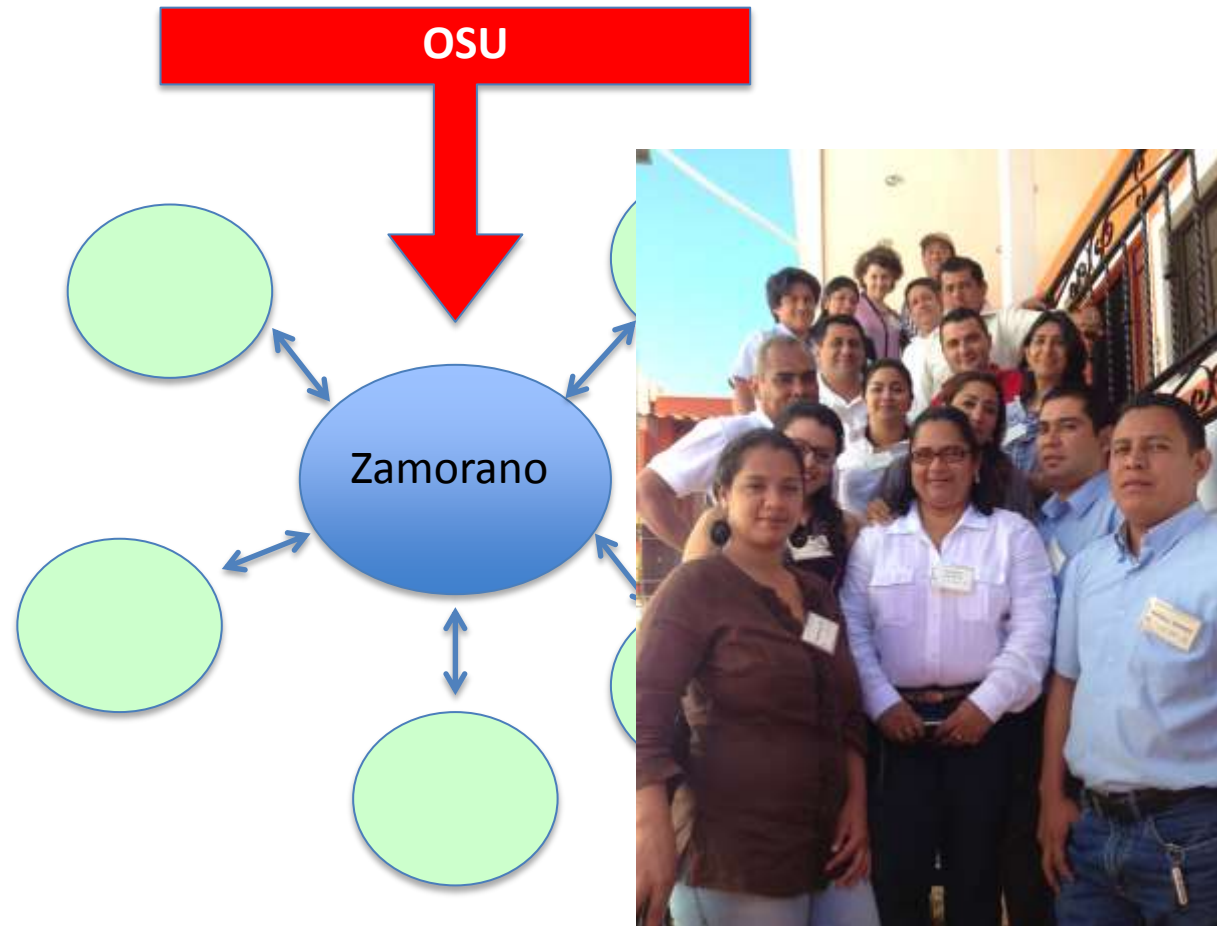




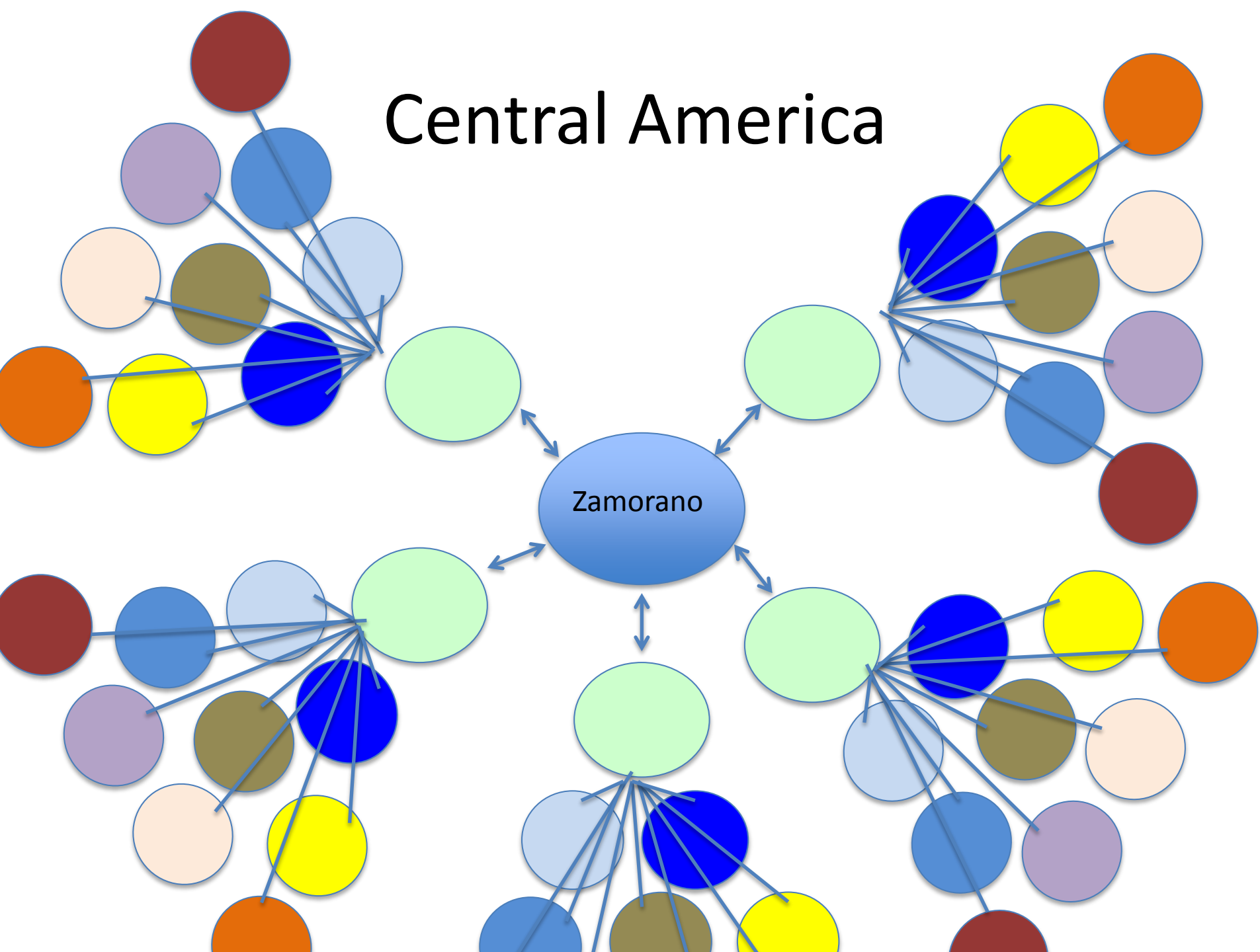
# Farmers Mental Models

- Interview 40 small-stakeholder farmers in Latin America
  - Awareness of chemical residues
  - Ignorance of microbial threats
  - Information sources
    - Friends and family
    - Chemical representatives
    - Concern about availability of information

# Central America



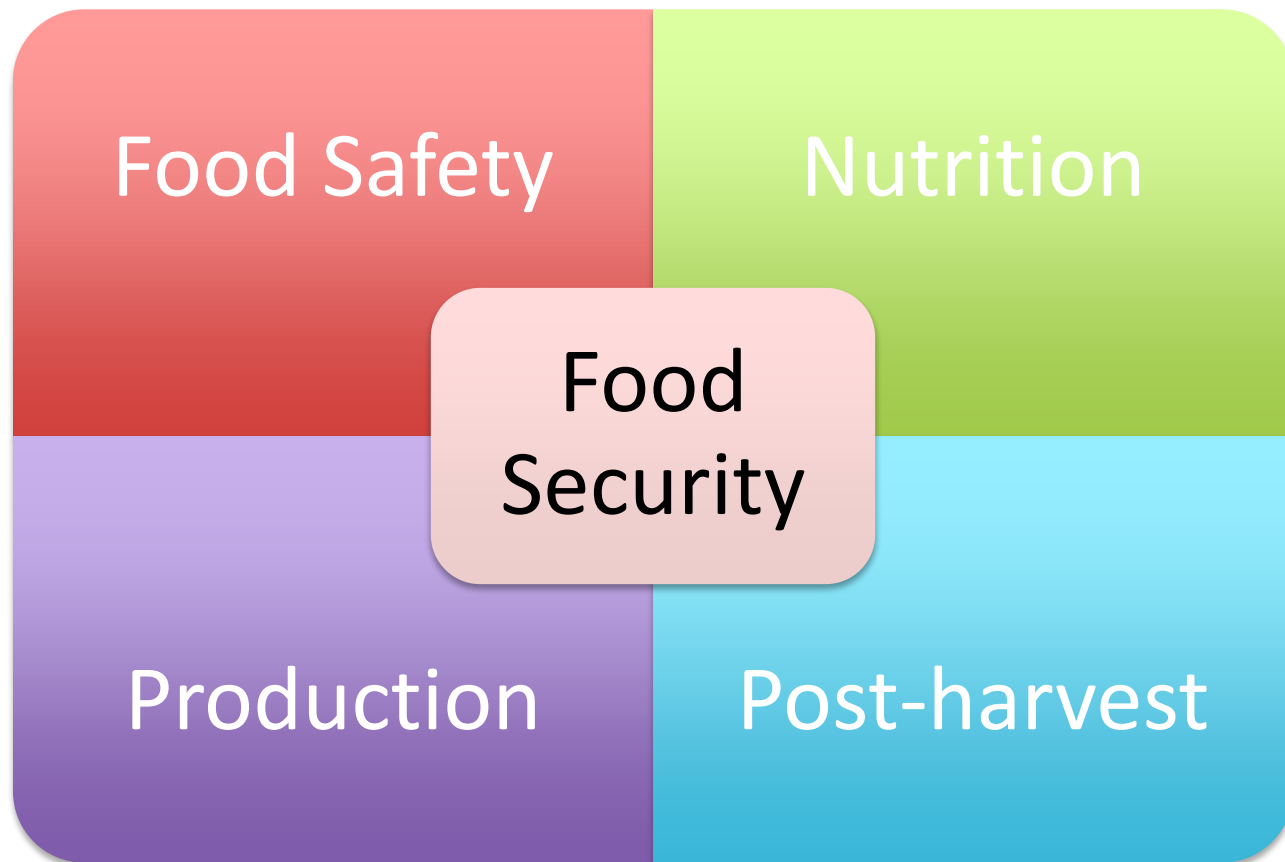
# Central America





# Evaluation

- Knowledge v. behavior change?
- Behavior change v. impact?
- Impact v. influence?
- Sustainability?



# Jeffrey LeJeune

## The Ohio State University

July 24, 2014, Washington D.C.  
Horticulture Innovation Lab Postharvest Forum



HORTICULTURE  
INNOVATION LAB

UCDAVIS  
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