Public demand towards the grocery business:
- Beverages & Food
  available every day and under all circumstances

Definition of trade:
Trade balances demand and supply of goods in respect to:
- space
- time
- amount

Is our food-supply vulnerable?
YES!
Why and how?

Because the grocery-business depends on many economic sectors:
- Agriculture and food-industry
- Transport
- IT and Communication
- Finances
- Energy

Because the grocery-business uses a highly complex logistic-system:
- Few logistic centers for many outlets
- Sales data are transmitted „online“ from the outlet to the headquarter
- Exchange of information and transport substitute stocks

By nature:
- atmospheric events
  - storm
  - rain / snow
- geological events
  - earthquake
- cosmic events
  - solar flare / radiation

By human factors:
- human failure
  - accident
  - handling errors
  - with malice aforethought
  - criminal act
- terrorism including cyber terrorism

Possible effects:
- blackout
- disruption of transport
- disruption of telecommunication
- inaccessibility of data
- ...

Effects to food supply:
- without electricity
  - shops cannot open
  - logistic centers cannot operate
- IT-networks cannot operate
- no orders without IT-networks
- no supply with disrupted transport systems
- no sales without supply and orders

Effects of a hazard
- are not limited to the affected region
- extend into neighbour region by networking
- are amplified by interaction

Survey results

Supply-chain safety increases with:
- redundant systems
- electricity independent data storage (print out)
- high number in staff for manual work
- high stocks on all levels
but costs increase too!!

Cost efficient measures:
- develop concepts to cope with possible hazards
- warn the public and relevant institutions as early as possible
- estimate and publish possible damages and their interactions for all relevant economic sectors
- prepare the actors for the upcoming event and damage

Survey
Vulnerability of logistic structures in grocery business