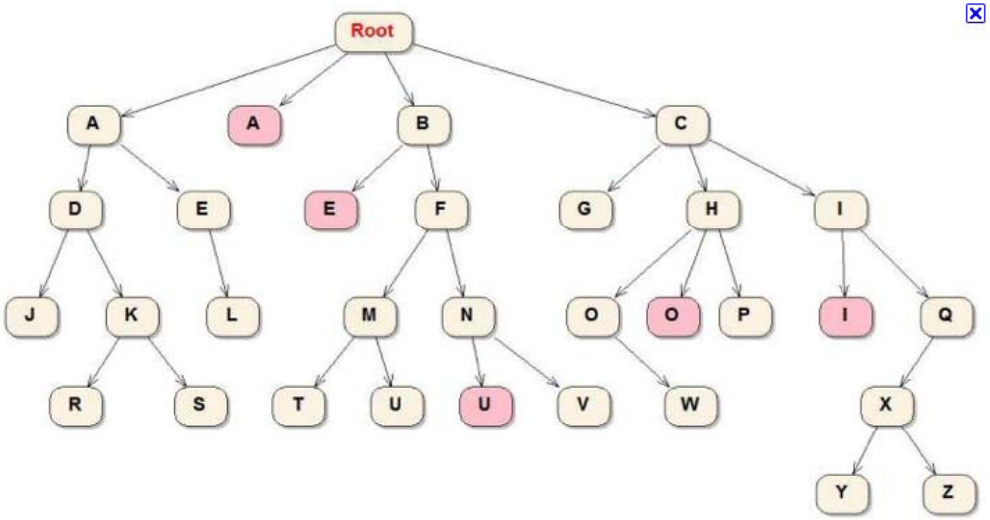
# ADIOS3 POSSIBLE PROGRAM STRUCTURE



- ADIOS3 SHOULD NOT BE MORE COMPLEX THAN JUSTIFIED BY THE DATA QUALITY AND USER NEEDS

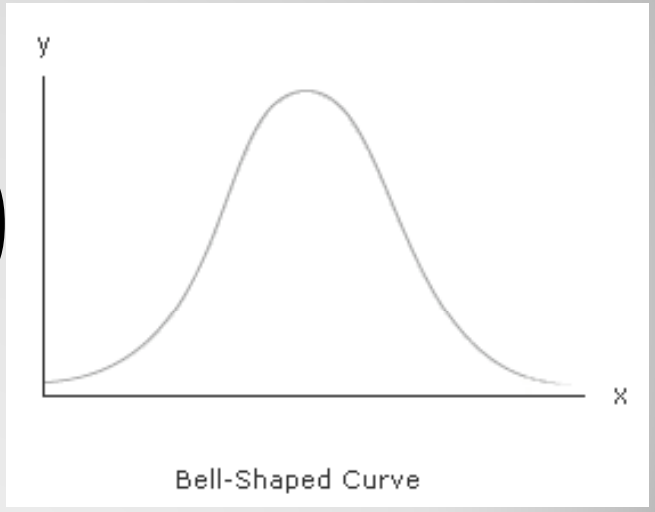
# Method of Development

- Algorithm selection and interface design
- MATLAB proto-typing
- Code construction
- Testing

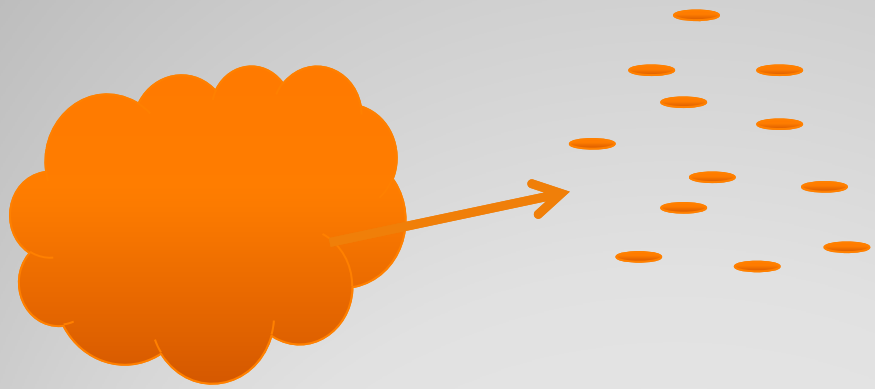
- INDIVIDUAL PROCESSES AND INPUT PARAMETERS HAVE TO INCLUDE THEIR OWN UNCERTAINTIES

$$Y(X) = F(X, \alpha_1, \alpha_2 \ldots)$$

$$P(\alpha)$$



- ADIOS3 uses the Lagrangian element approach



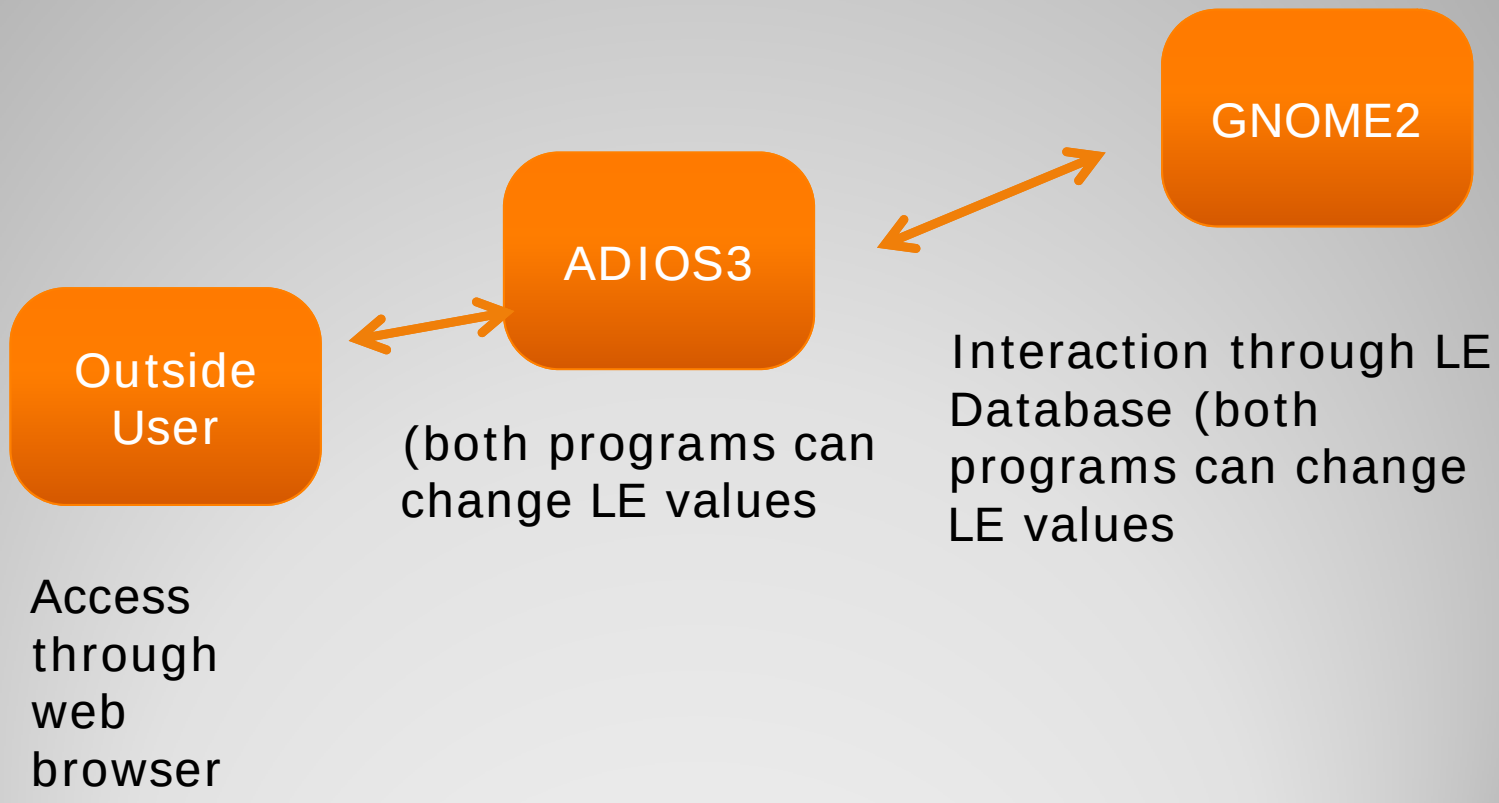
Each LE is intelligent, i.e. has several properties associated with it. Oil spreading will follow the ‘spillet’ model

# Suggested LE properties

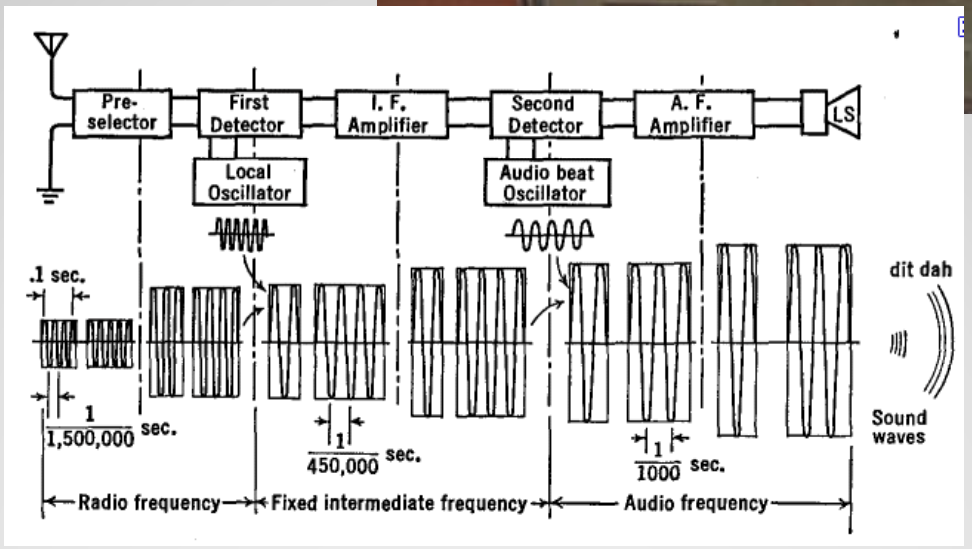
- release time
- age
- vapor pressure (per pseudo-component)
- molar volume (per pseudo-component)
- x,y z coordinates
- area
- volume
- thickness (surface oil)
- water fraction
- fraction evaporated((per pseudo-component)
- kinematic viscosity
- Density
- wind drift factor
- Fay diffusion coefficient
- adhesion
- surface fractional coverage
- oil-water interfacial tension
- sediment load (sub-surface oil)
- droplet size distribution (sub-surface oil)
- emulsion stability
- biodegrability
- floating/beached/bottom determination
- benzene fraction
- PAH fraction
- ingested (yes/no)
- solubility (per pseudo-component)
- toxicity (per pseudo-component)
- gas fraction (subsurface release)

- Property
- name
- unit of measure
- value (average, lower, upper)
- generating function ( if we use classes, and not just structures)
- lower limit
- upper limit
- status flag
- trial number

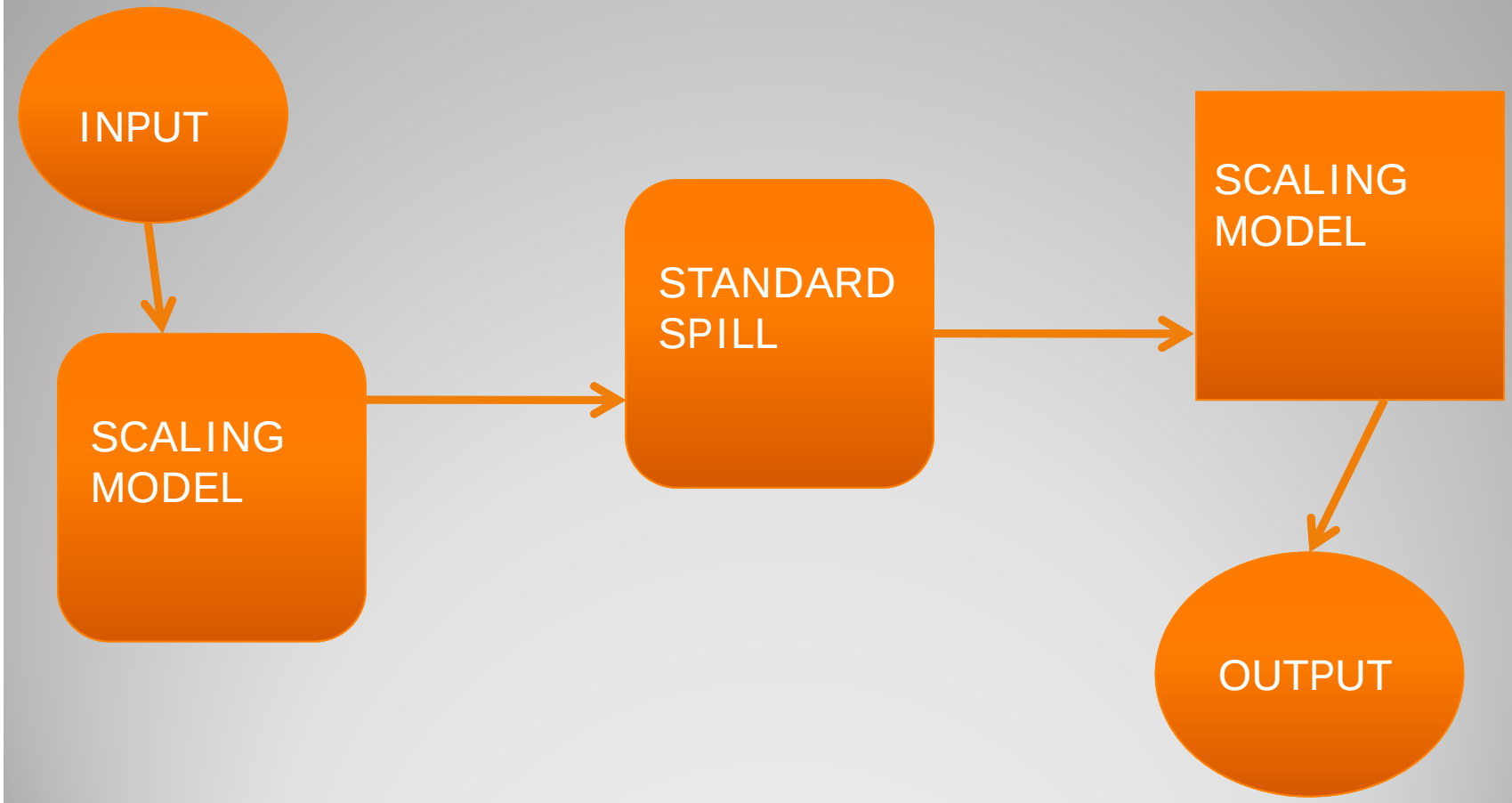
- Project ‘SNOWY PLOVER’, building ADIOS3



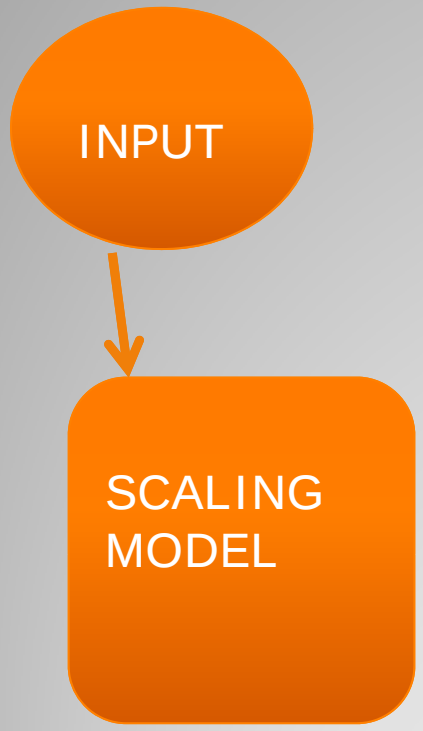
# OIL SPILLS AND OLD RADIOS



- ADIOS3 MODELS A ‘STANDARD SPILL’



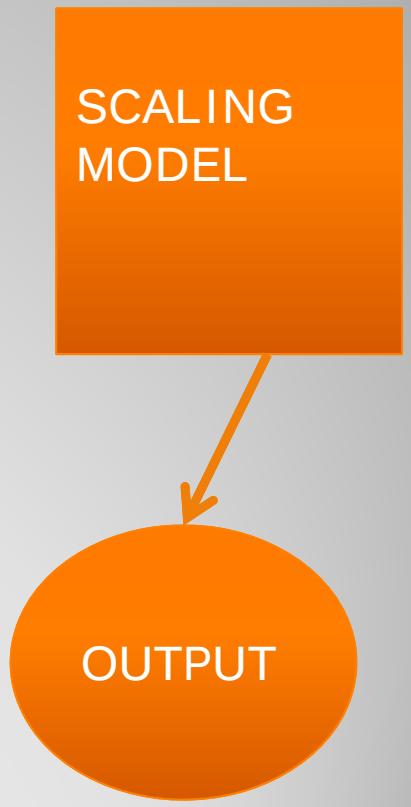
# Input Scaling Model



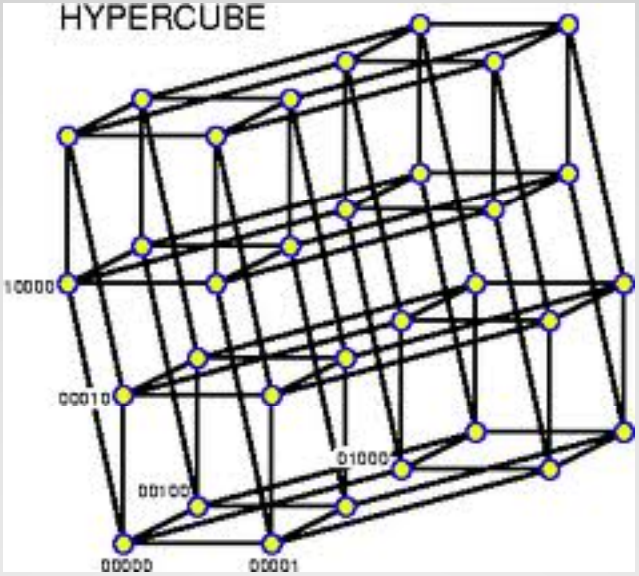

- Sets default time scales
- Adjusts process weight factors (empirical fits?)
- Selection of necessary input parameters
- Choice of statistical scenarios?

- Output scaling factor’

•Re-scales results
•Chooses appropriate default output display



- ADIOS3 runs a statistical sample of scenarios, based upon the probability spaces constructed from the processes and input parameters, and computes a hyperspace of results



# Ensemble of Results

- Provides ‘uncertainty’ bounds
- Allows implementation of the ‘minimum regret’ philosophy