



A view on uncertainty

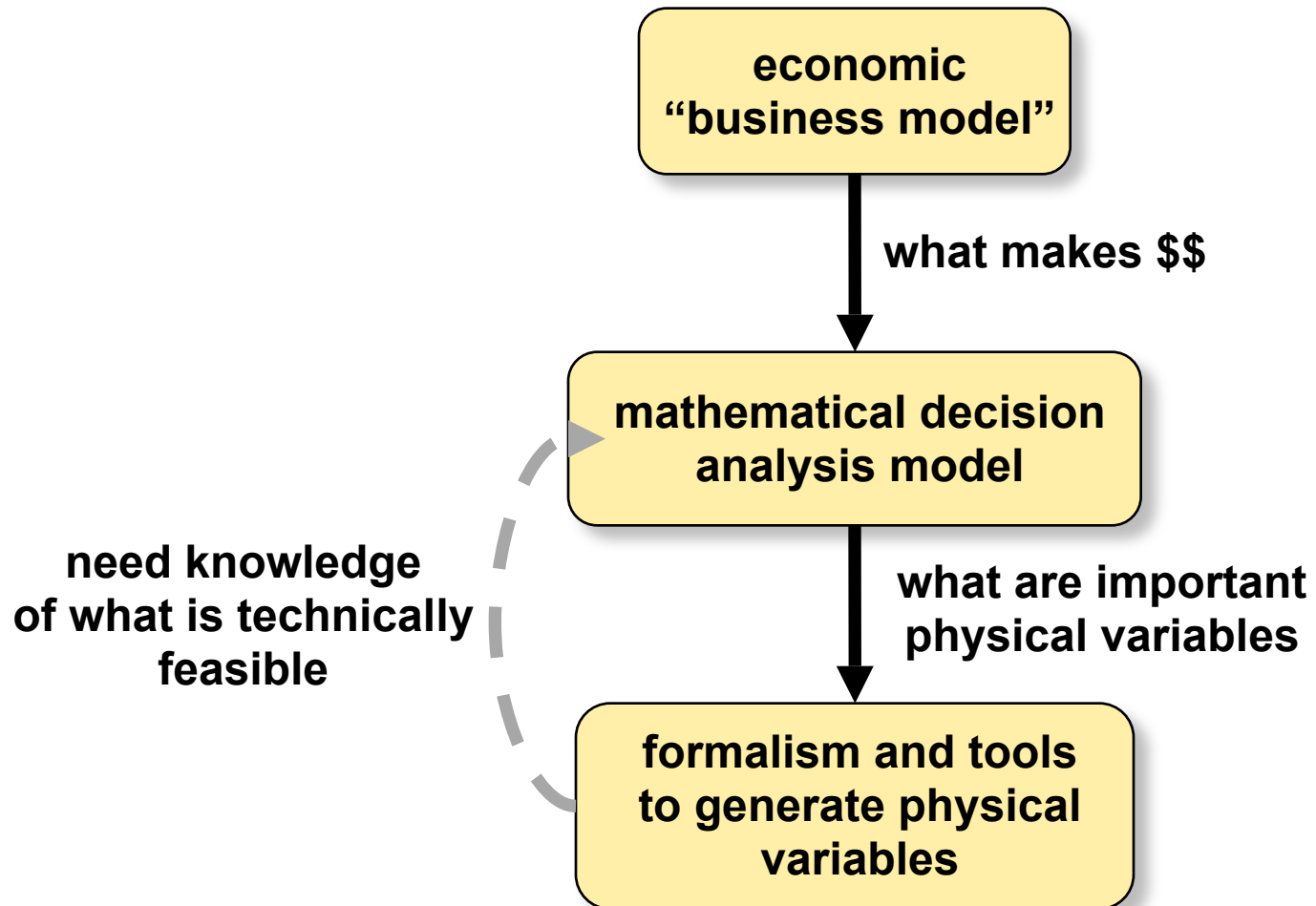
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Vistas of this view



- **high level look**
 - 3rd generation (research size = business impact)
- ***bourgeois perspective***
 - DepSim switchyard
 - role of probabilistic inversion

Approach to uncertainty - top down

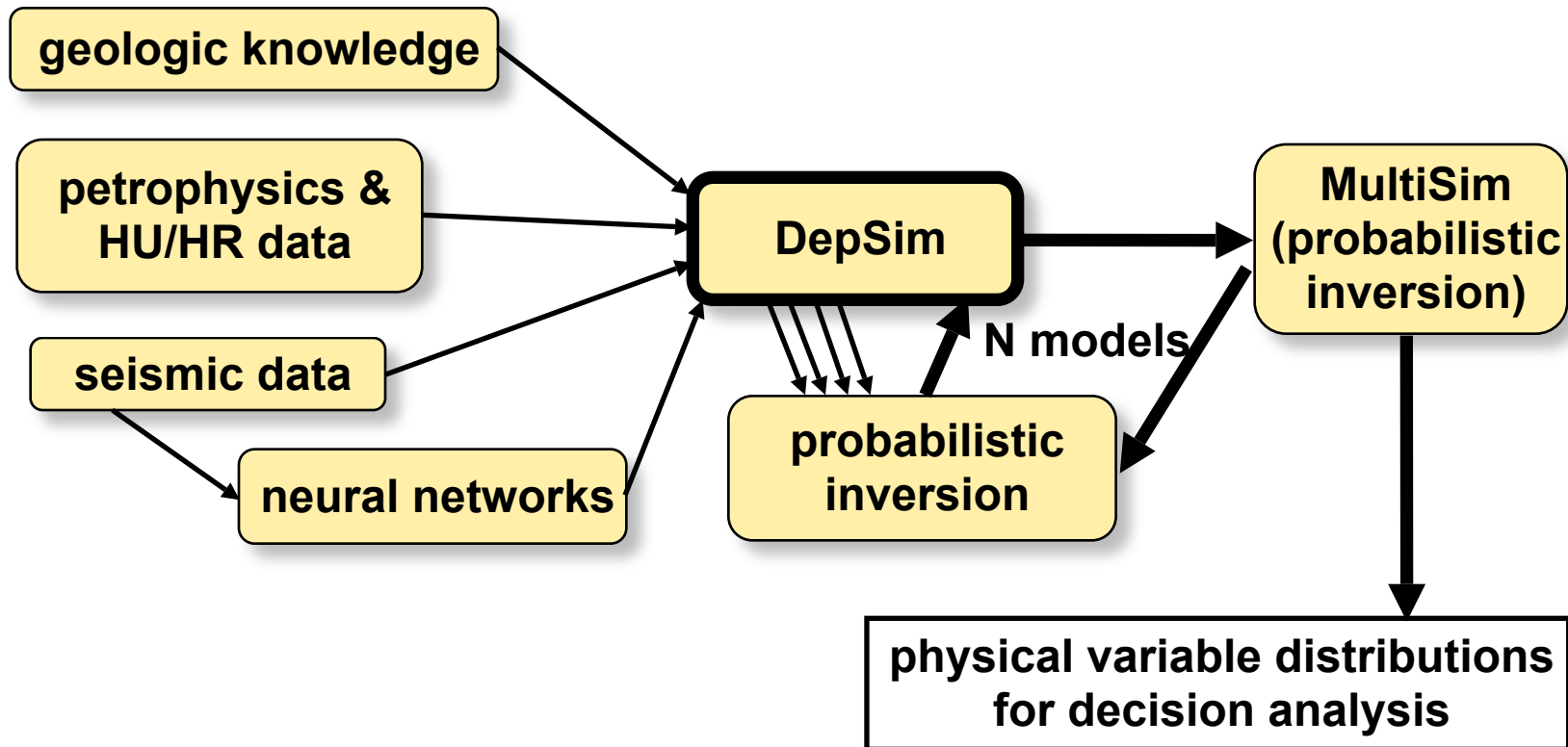


Approach to uncertainty - components



- **mathematical decision “option” analysis model**
 - simple analytic
 - Monte Carlo simulation
 - gaussian or non-gaussian distributions
 - others
- **tools and formalism**
 - PROMISE
 - AVO inversion
 - AVF inversion
 - 4D inversion
 - scenario testing
 - HU/HR database for priors
 - neural nets
 - others

DepSim switchyard with seamless flow to decision analysis

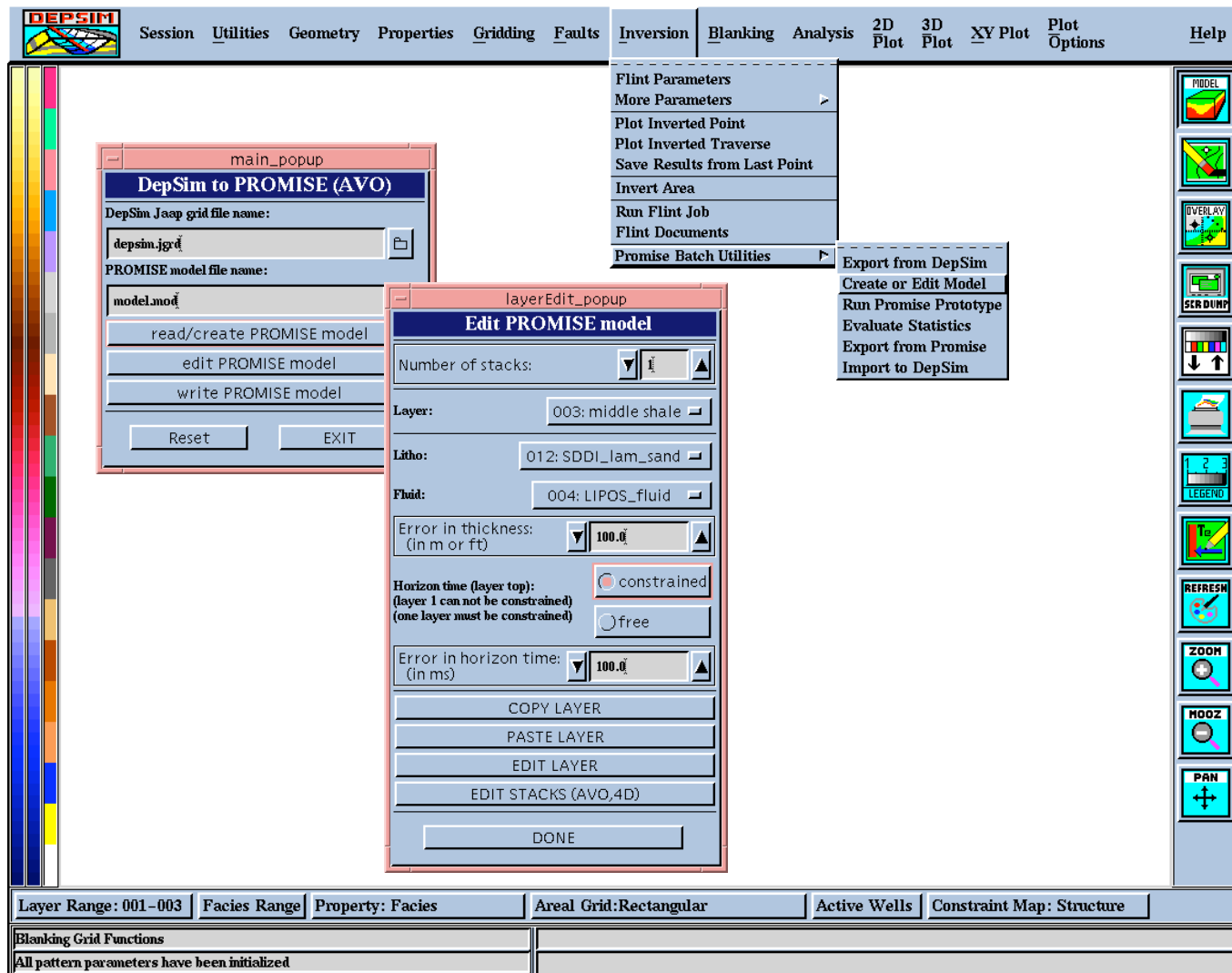


Possible role of probabilistic inversion



- **generate equally probable models (distributions) according to**
 - seismic data
 - AVO (shear)
 - AVF (scale)
 - production history (including 4D seismic)
 - geologic knowledge (prior)
 - petrophysics (prior)
 - neural networks (prior)
- **evaluate the probability of different scenarios**
 - i.e., shingled or not
- **reduce variable distribution to gaussian?**
 - mean value
 - error

AVO PROMISE est arrivé



AVO stack specification (with 4D)



stack_popup

Edit stacks

Veff:	7000.0	L factor: (dB)	0.0
Dip: (deg)	0.0	L error: (dB)	1.5
Time: (ms) *** FROM DEPSIM ***	3000.0	M factor: (dB)	0.0
		M error: (dB)	0.5

stack: 001

Time of stack: ☒ base survey ☐ monitor survey

Sipmap file name: data.sip Wavelet file name: wavelet.wav

x_min:	0.0	x_mute_start_1:	0.0
x_max:	0.0	x_mute_start_2:	0.0
t_mute_1: (ms)	0.0	x_mute_end_1:	1.0
t_mute_2: (ms)	0.0	x_mute_end_2:	1.0

Noise:

snr: (dB)	10.0	f_low: (Hz)	1.0
refl_coeff:	0.0376	f_high: (Hz)	1000.0

Ok