

KEBN-DN

Knowledge Engineering with Bayesian Networks and Decision Networks

Tali Boneh

Ann Nicholson

ABNMS-09

November 26 & 27, 2009

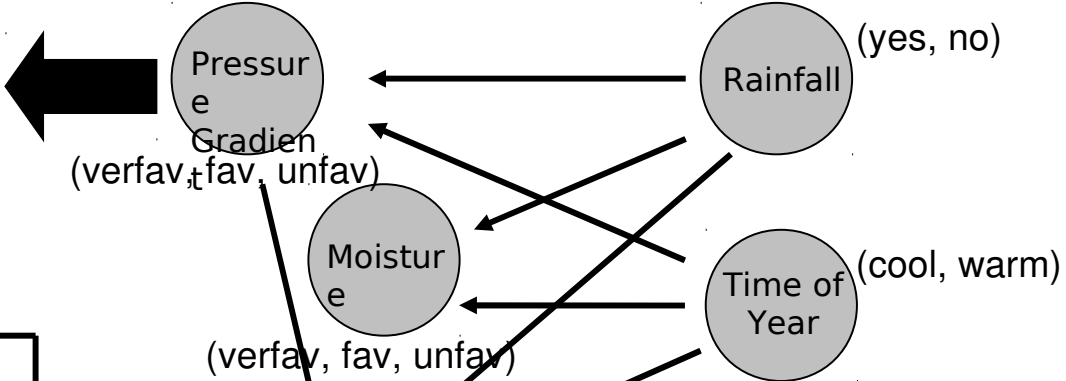
University of Melbourne, Melbourne, Australia

This work is part of a PhD Thesis (Monash University)

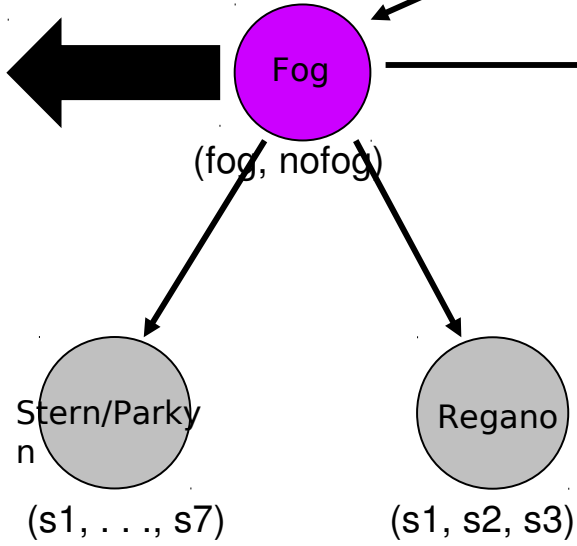
under the supervision of Ann Nicholson, Kevin Korb, John Bally, Gary Weymouth

BDN

TY	R	vf	f	un
T	T			
T	F			
F	T			
F	F			



M	PG	R	TY		
vf	vf	y	c		
vf	vf	y	w		
vf	vf	n	c		
vf	vf	n	w		
vf	f	y	c		
vf	f	y	w		
vf	f	n	c		
vf	f	n	w		
●					
●					
●					



Fog Decision

Say No Fog,
Say Code Grey 10,
Say Code Grey 20,
Say TAF – Prob Fog

Decision	Fog	util
Say No Fog	Fog	
Say Code Grey 10	Fog	
Say Code Grey - 20	Fog	
Say TAF – Prob Fog	Fog	
Say No Fog	No Fog	
Say Code Grey - 10	No Fog	
Say Code Grey - 20	No Fog	
Say TAF – Prob Fog	No Fog	

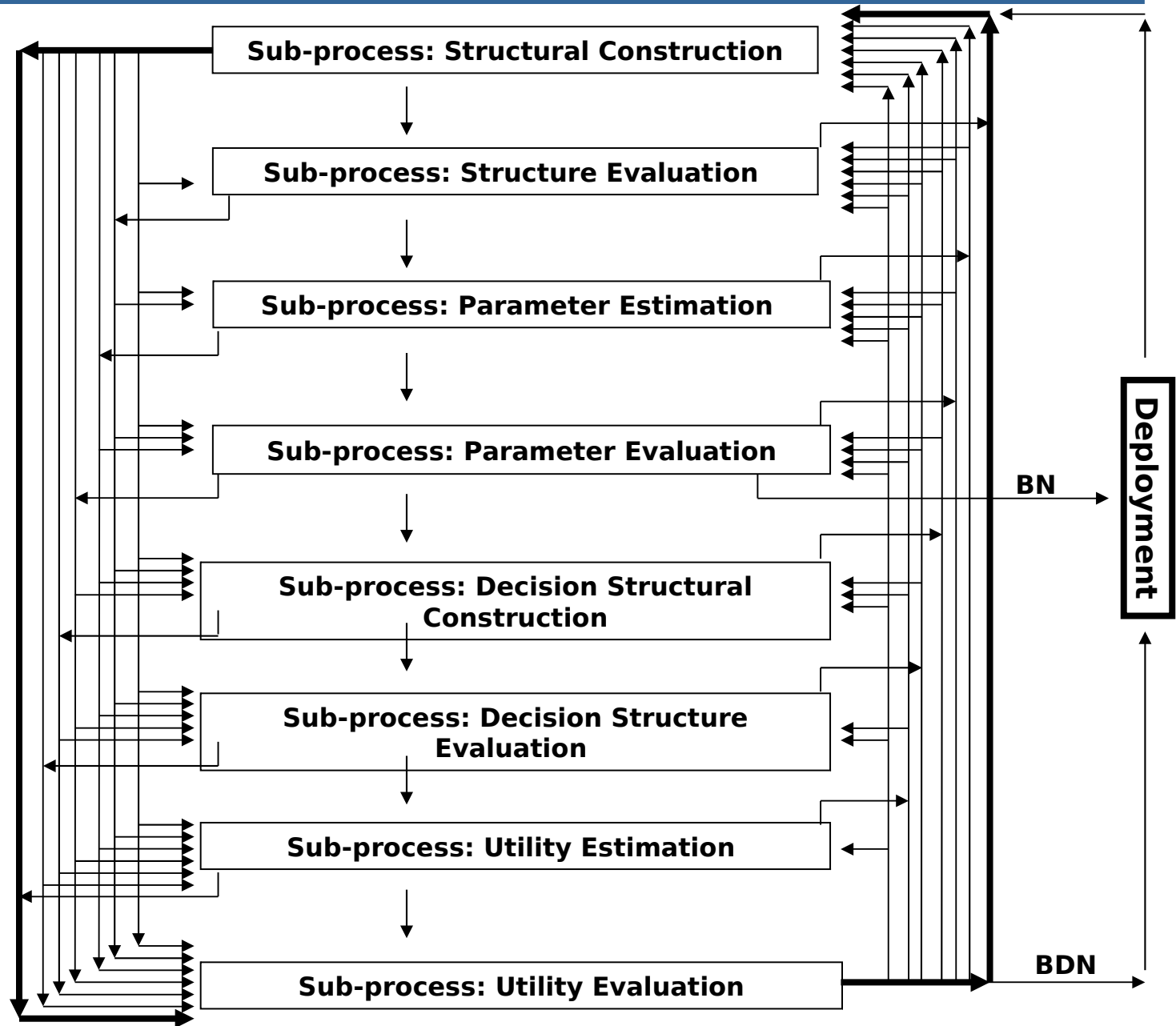
level 1 of abstraction: stages and sub-processes

Stage 1
Bayesian
Network
Structure

Stage 2
Probability
Parameter
s

Stage 3
Decisions
Structure

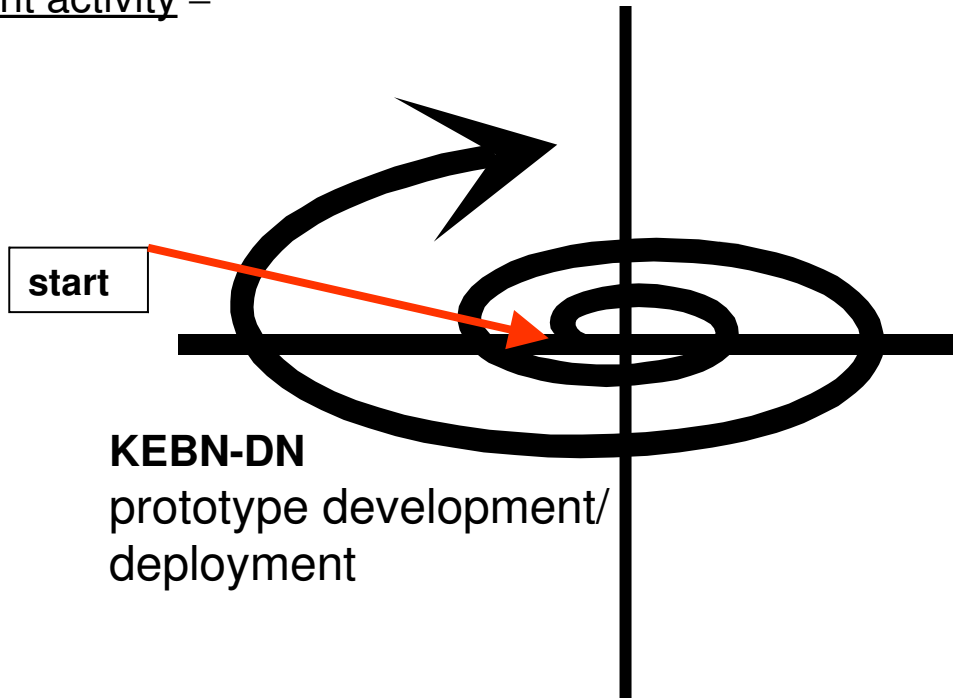
Stage 4
Utilities
(Preference
s)



evolutionary prototyping within the spiral life cycle model

management activity –
review

management activity –
analysis of risks

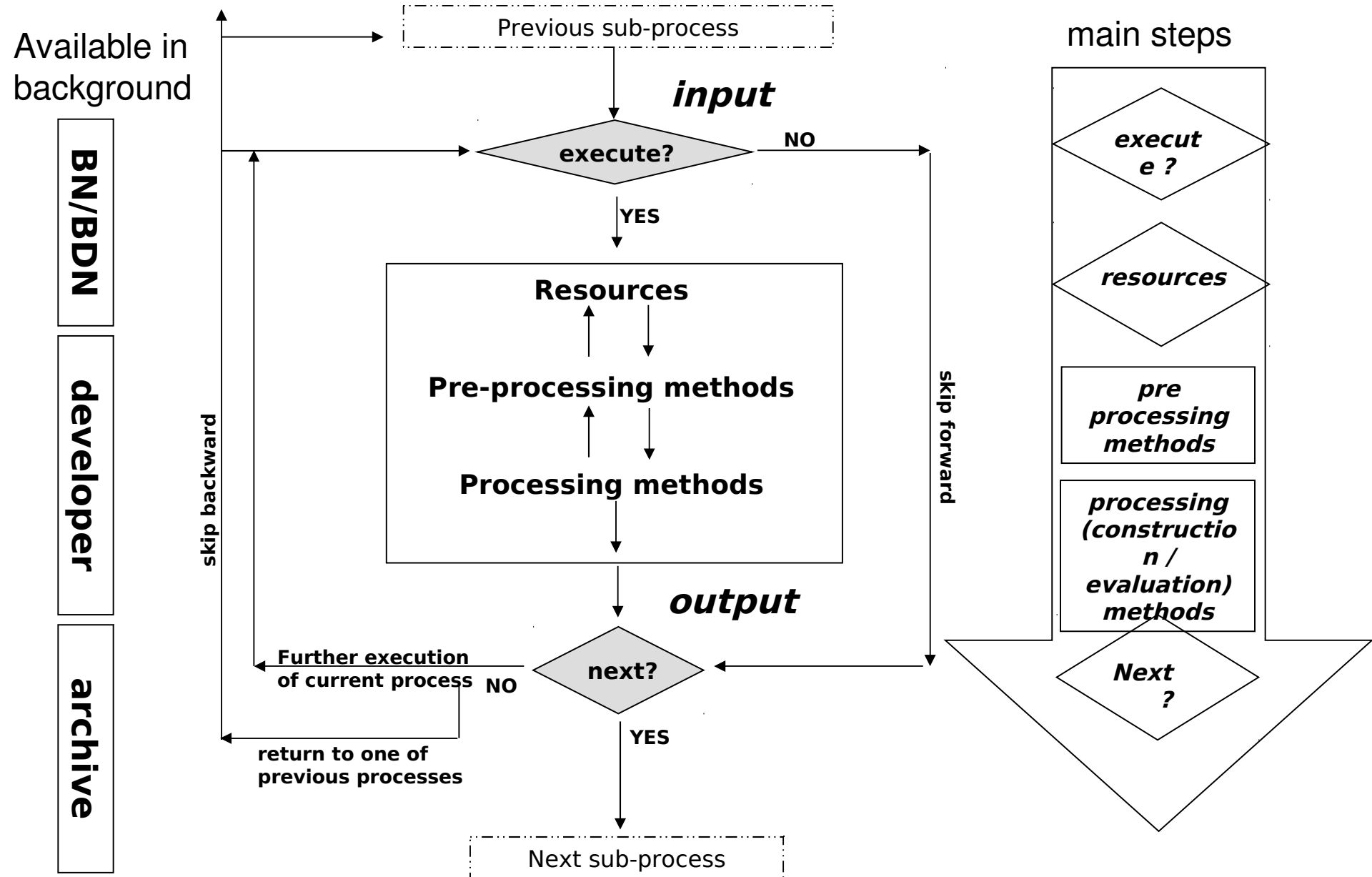


KEBN-DN
prototype development/
deployment

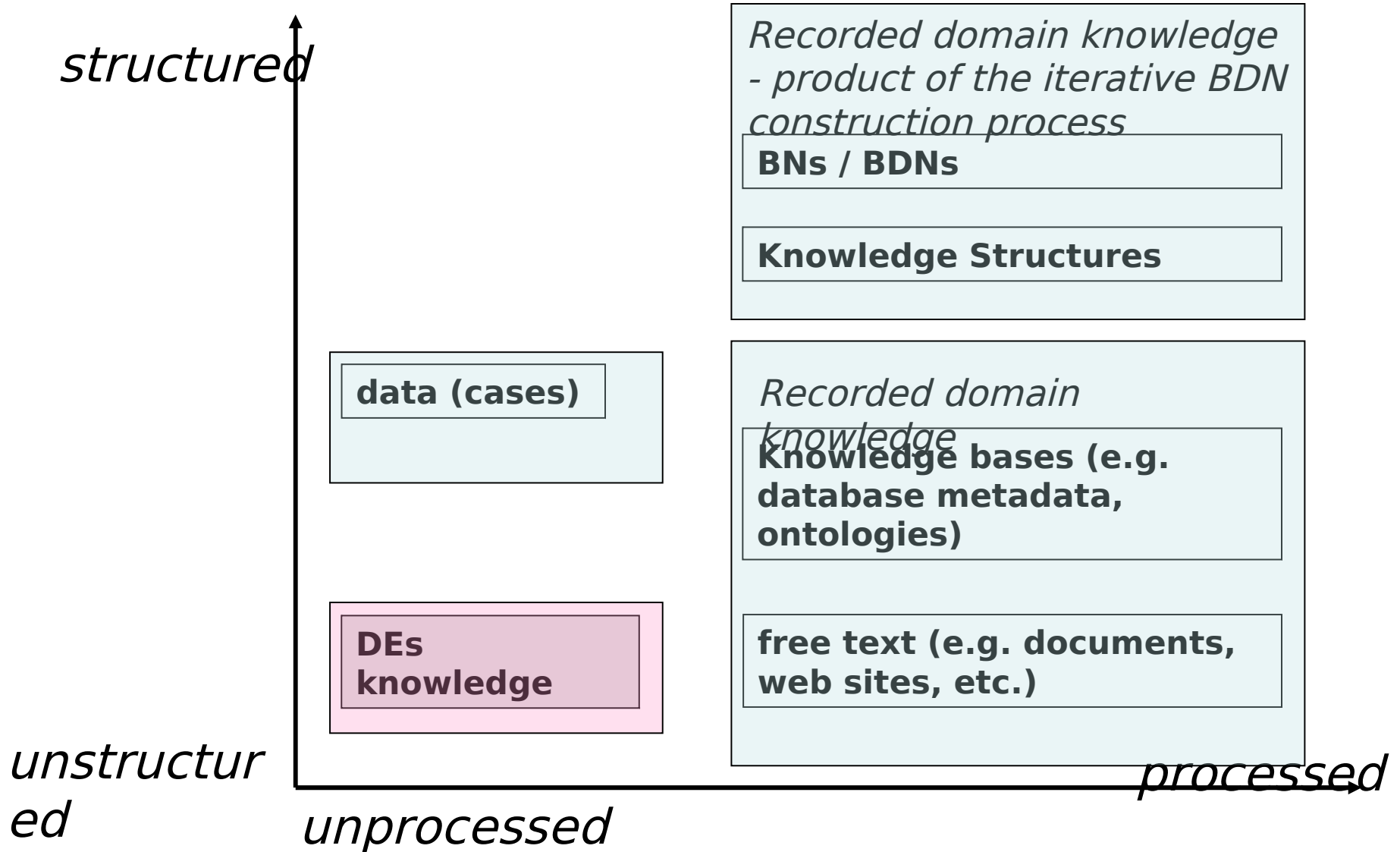
management activity –
monitoring

management activity –
plan

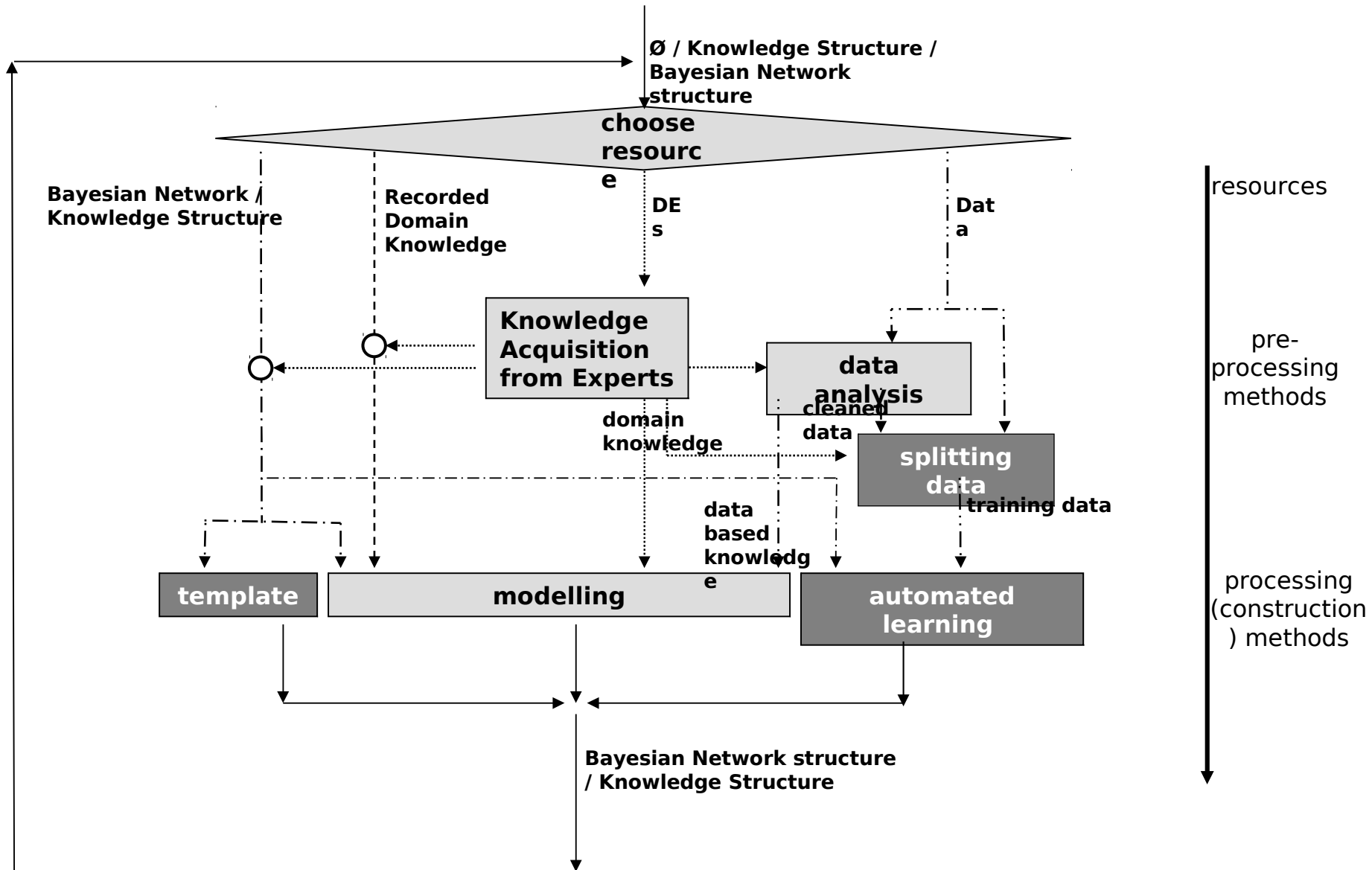
level 2 of abstraction: sub-process structure



types of resources



sub-process: structural construction



Conclusions

- We have developed a comprehensive methodology for the development of BDN to support and guide developers in the process
- This is a step towards a quality assurance of the development process and its product, the BDN. It is part of the BDN "accreditation"
- Automated tools to support the methodology and the development process need to be further developed