

Learning Networks for Lifelong Learning

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Learning Networks for Lifelong Learning

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EADTU conference

Oct 22, 2004

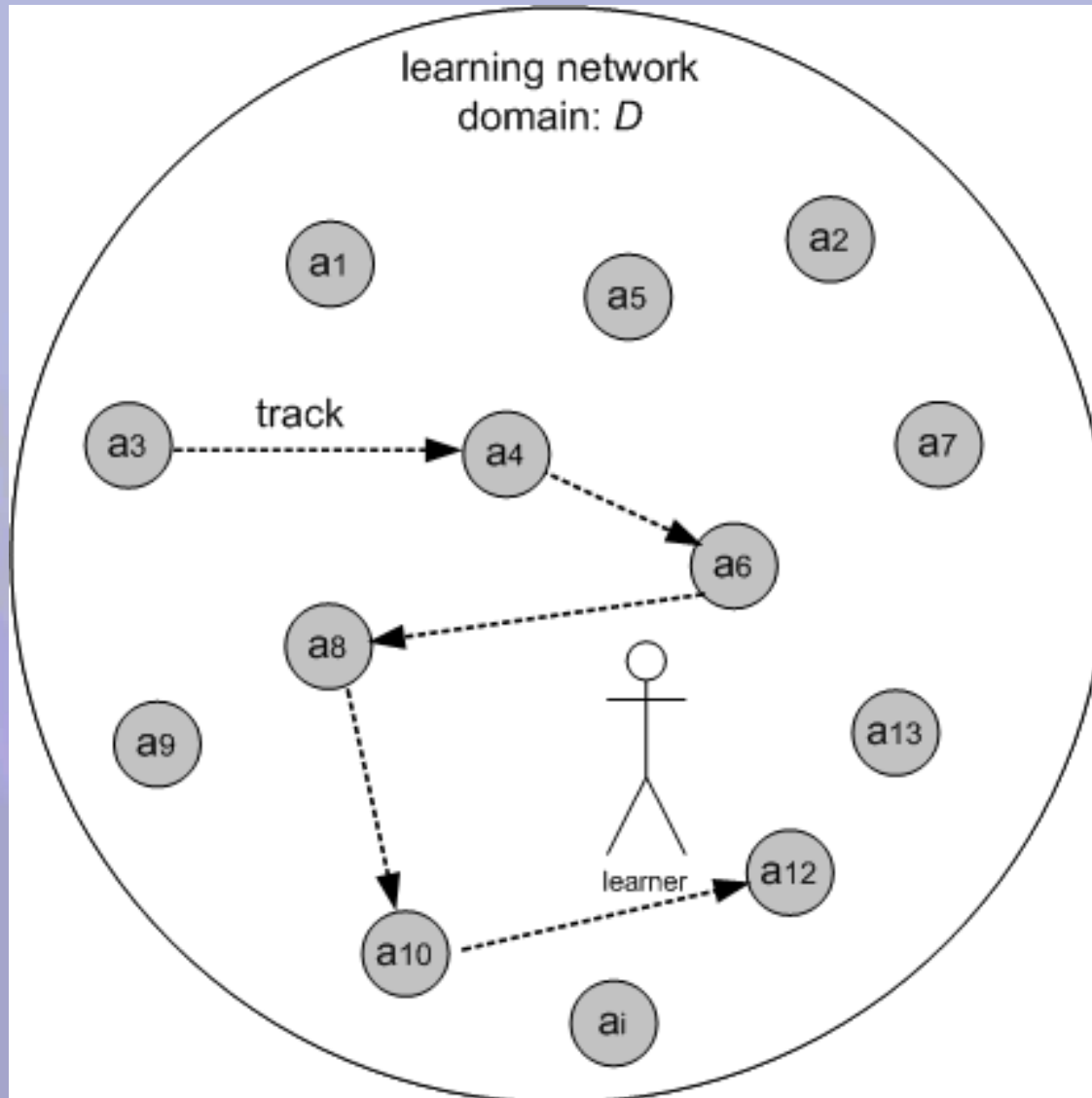
Content

Model and Simulation of a LN:
preventing dropout by using indirect social
interaction (see handout)

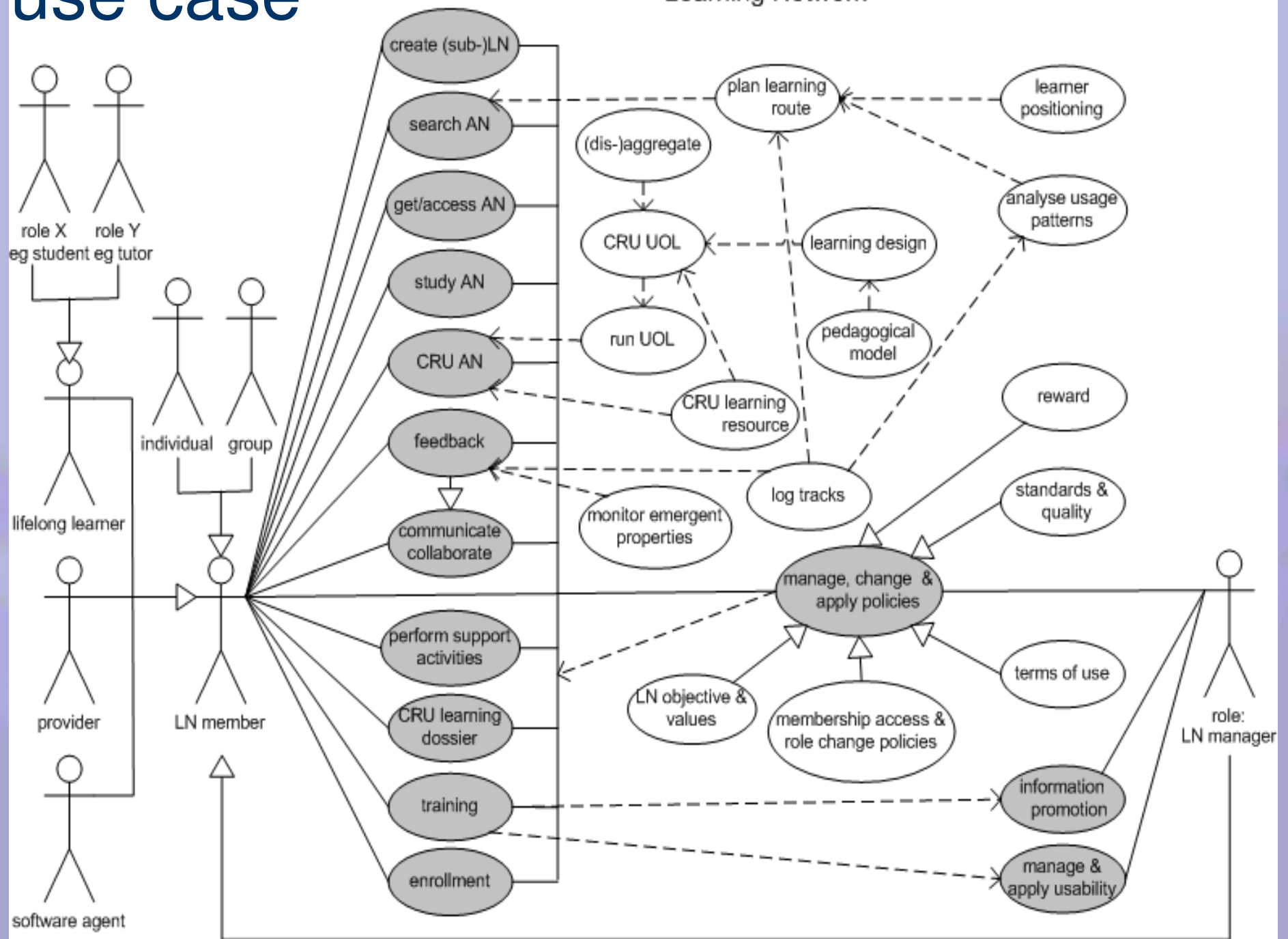
Learning Networks for Lifelong Learning

A learning network is a *group of persons* who *create, share, support* and *study* learning resources ('*units of learning*') in a specific knowledge *domain*.

LN Graph with a learner track



use case



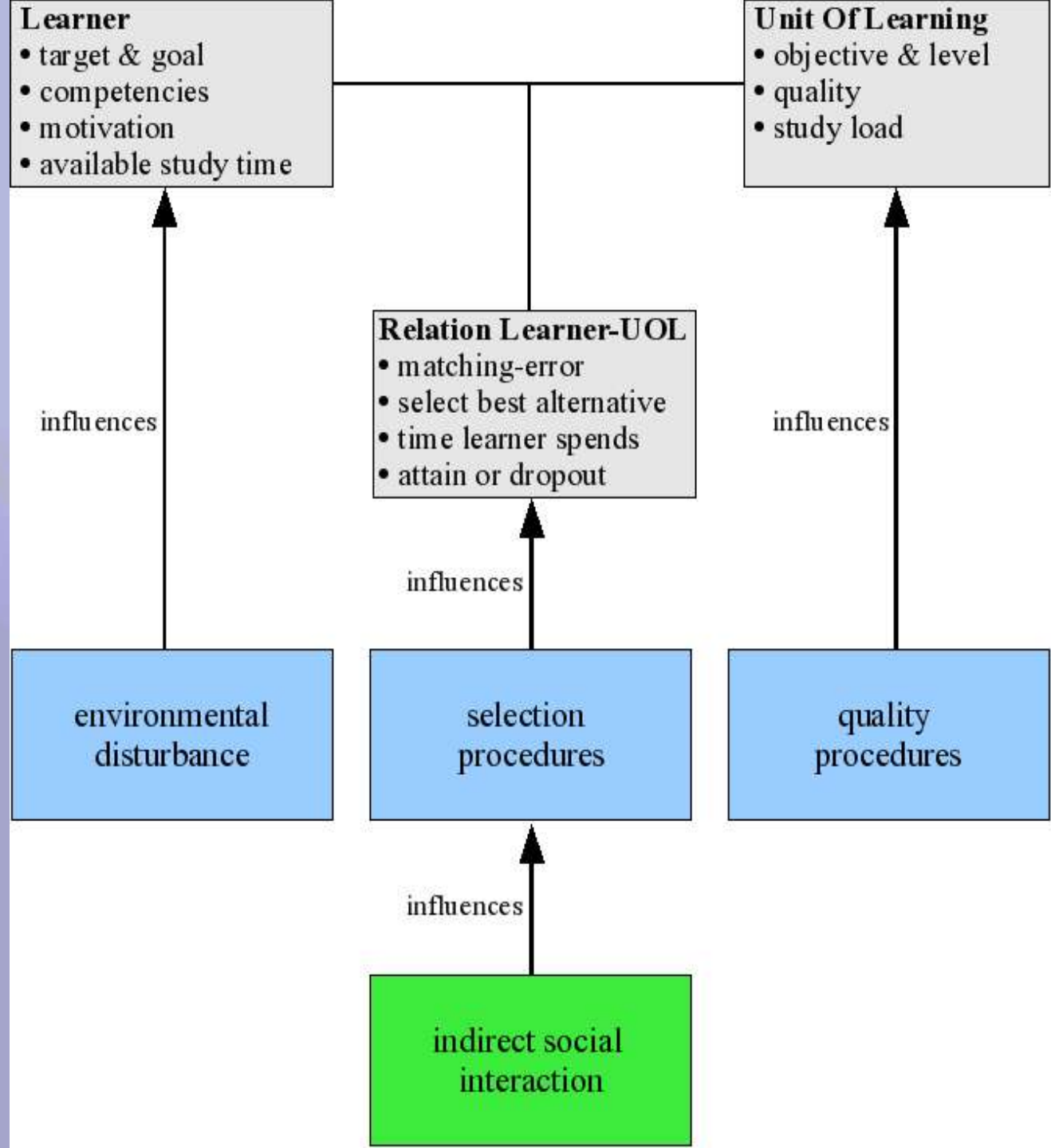
Three Core Issues in a Learning Network

1. How to **make & use** pedagogical well designed, interoperable and reusable units of learning in the LN?
2. How to **position** learners in a LN?
3. How to help learners to **navigate** in the LN?

Navigation questions within LNs

I want to know something more about topic X, is there an adequate unit of learning available?

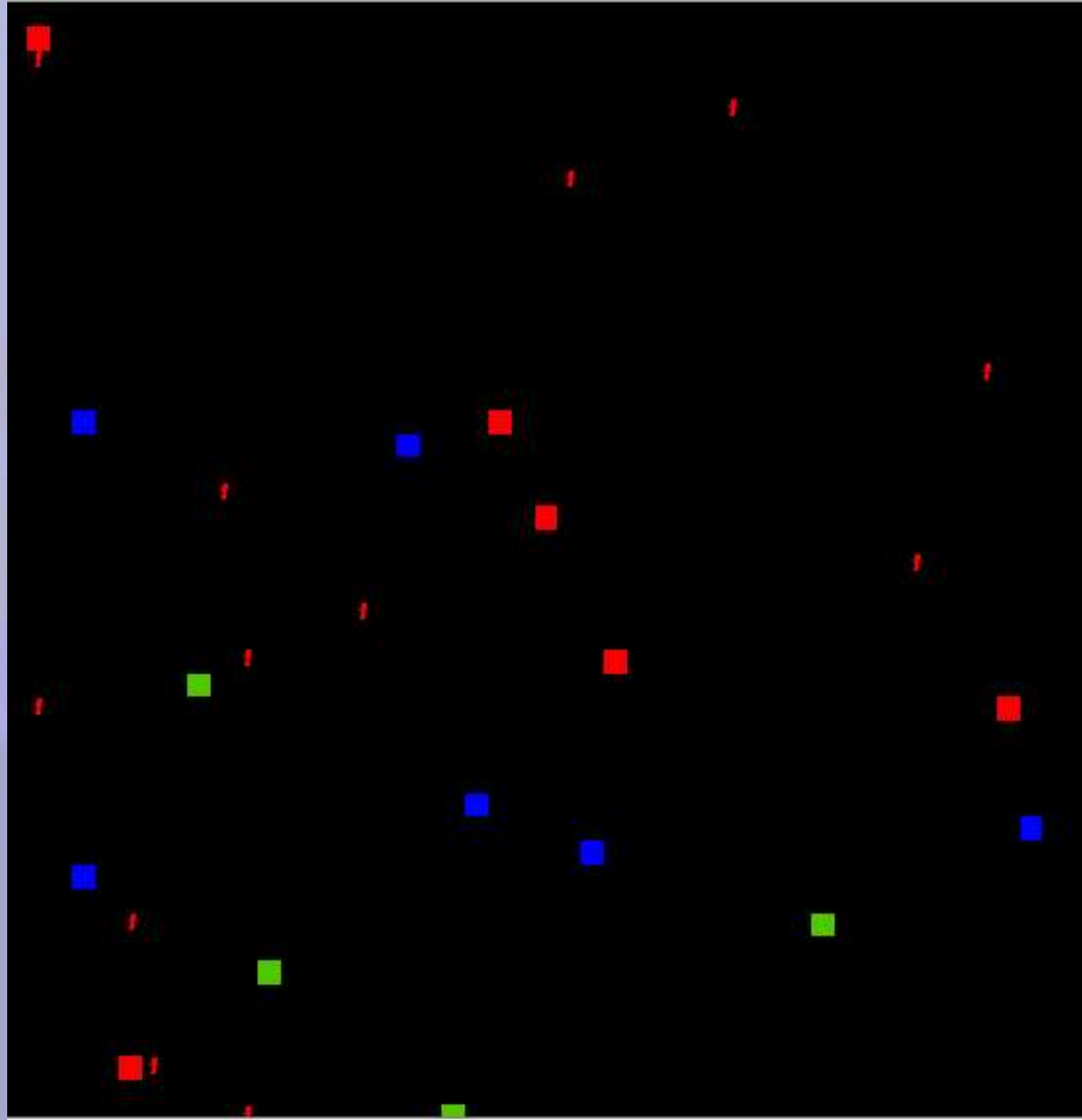
Model



Netlogo Simulation of a LN

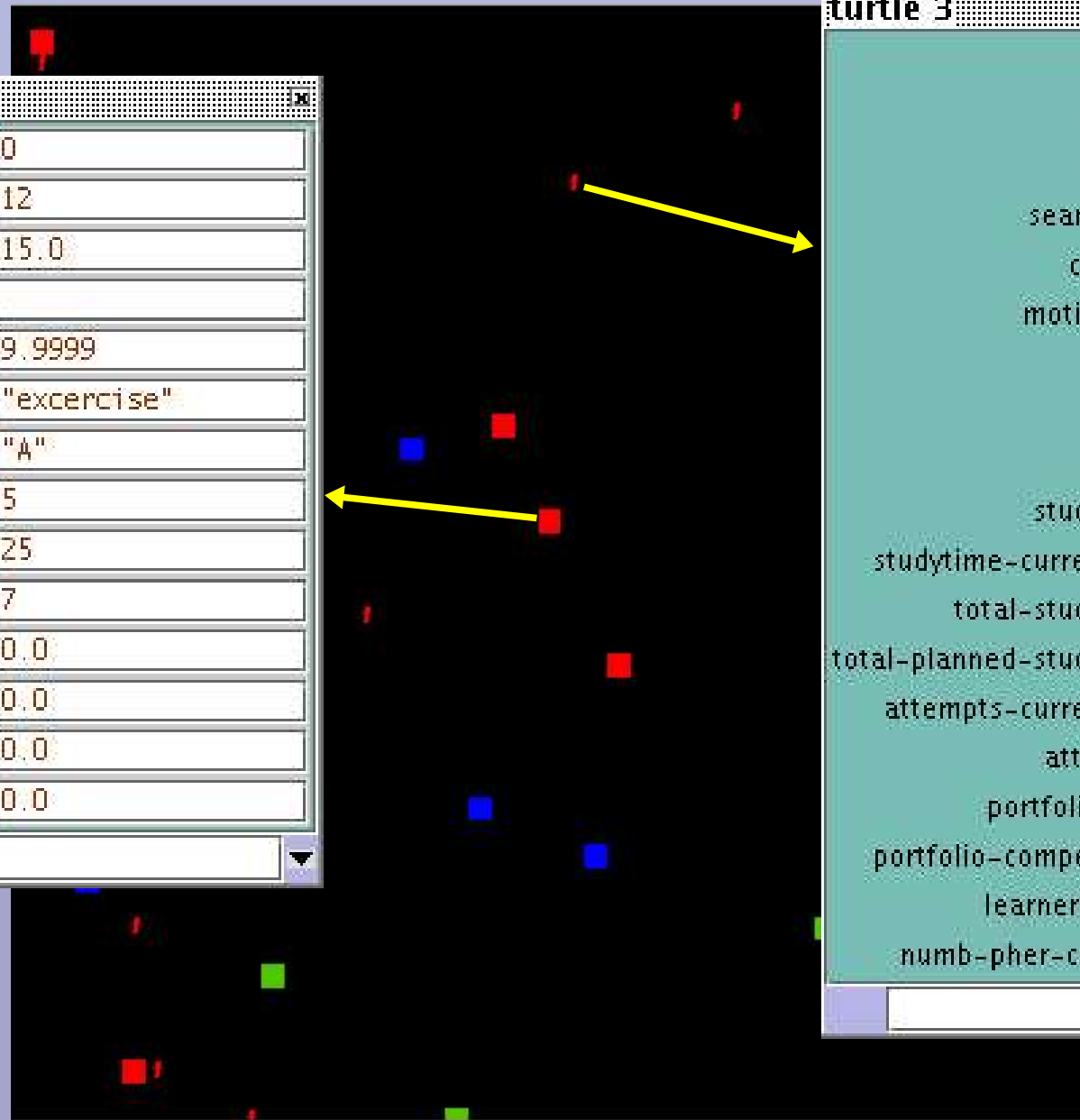
- Multi-agent simulation environment for research
- See Draft publication in handouts

Learners + Units of Learning in a LN



Properties

patch 0 12	
pxcor	0
pycor	12
pcolor	15.0
plabel	
plabel-color	9.9999
an-type	"exercice"
an-objective	"A"
an-level	5
an-studytime	25
an-quality	7
an-student-contribution	0.0
an-number-started	0.0
an-number-succeeded	0.0
an-avg-studytime	0.0

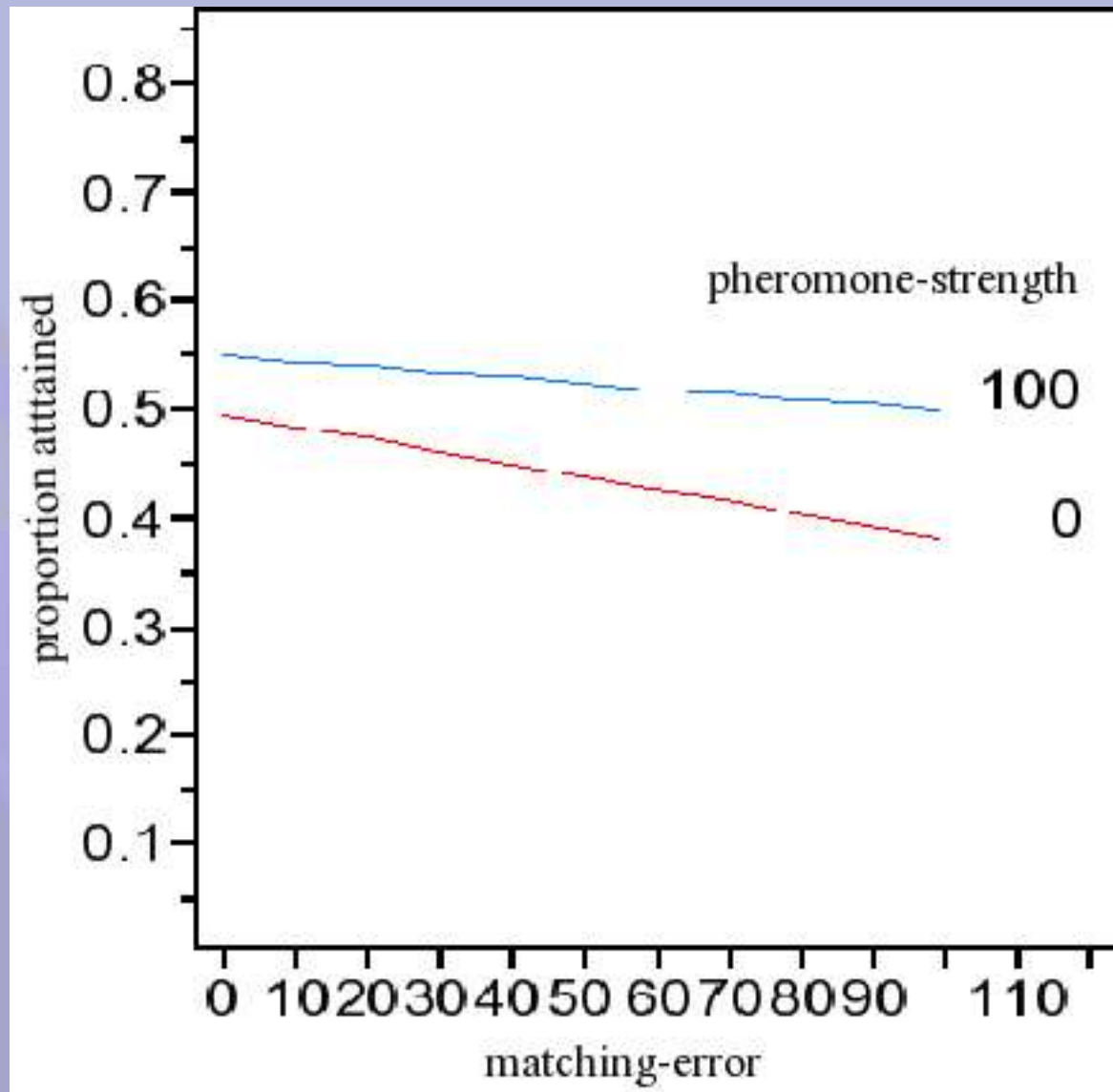


turtle 3	
goal	[["B" 2]]
target	["B" 2]
to-do	0.0
search-an	["B" 2]
current	"searching"
motivation	.4727094179075353
cl-a	0
cl-b	1
cl-c	1
studytime	15
studytime-current-an	0
total-studytime	4.681044239829234
total-planned-studytime	45.0
attempts-current-an	0
attempts	1.0
portfolio-ans	[[-12 -7]]
portfolio-competence	[["B" 1]]
learner-costs	209.0
numb-pher-choices	0.0

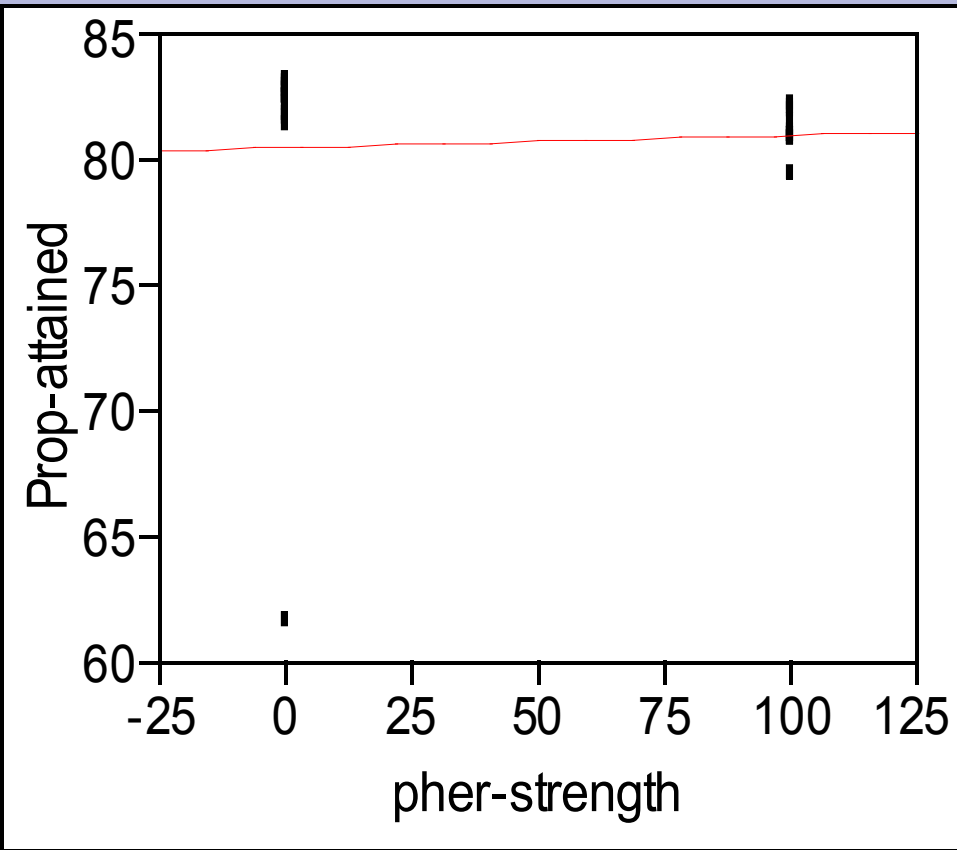
One of the Experiments with the Simulation

- Problem: what is the effect of indirect navigational feedback on study success (number of students that attained objective)?
- 2^4 factorial design:
 - pheromone (feedback) strength (0 or 100%)
 - matching error (0 or 100%)
 - disturbance in learner environment (0 or 100%)
 - quality of the unit of learning (0-100% or 100%)
- N=12 replications in every condition
- Every replication runs 260 simulation weeks (5 years). In total 49920 week cycles (runs about 10 hours on fast computer)

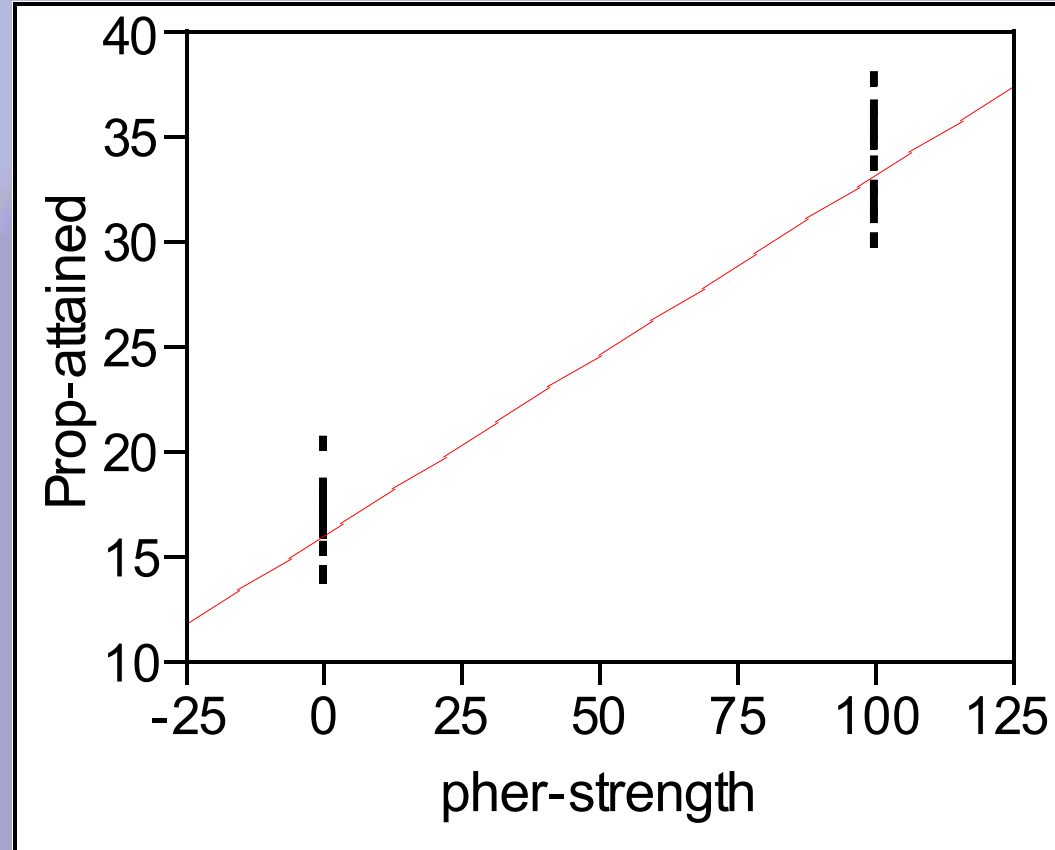
Interaction Pher * Matching-error



best versus worst case



no matching error, 100% quality
and no disturbance ($F = 0.7816$)



100% matching error, 0% quality
and 100% disturbance ($F = <.0001$)

Outcome

- Overall influence Pheromones: 9% increase in proportion of students who attained their objective
- Matching-errors are compensated by pheromones
- Some quality variance is compensated by pheromones

Publication

- see: <http://dspace.ou.nl>

Title:

Increasing Learner Retention Using Indirect Social Interaction in a Simulated Learning Network

