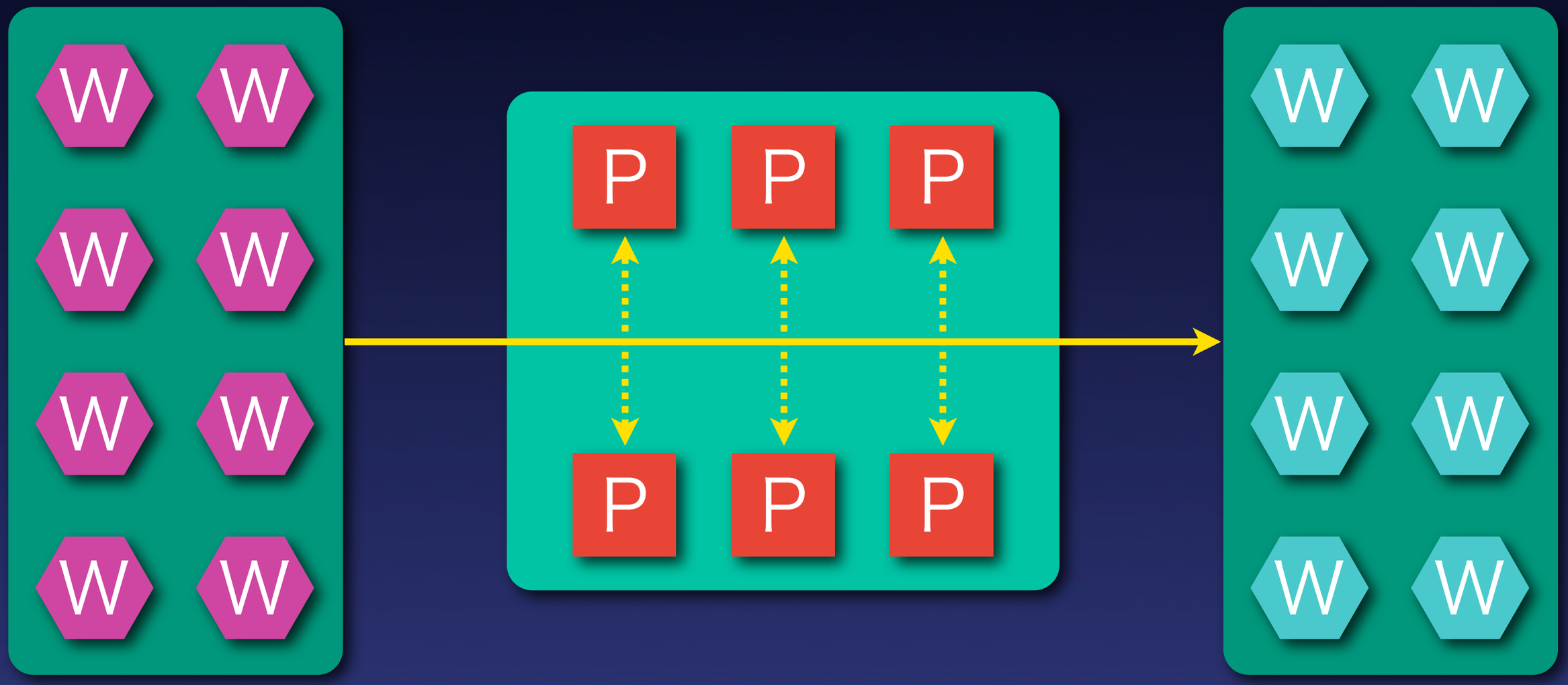
Smalltalks 2008 Coding Contest

Andrés Valloud

The problem

The problem



Work to do

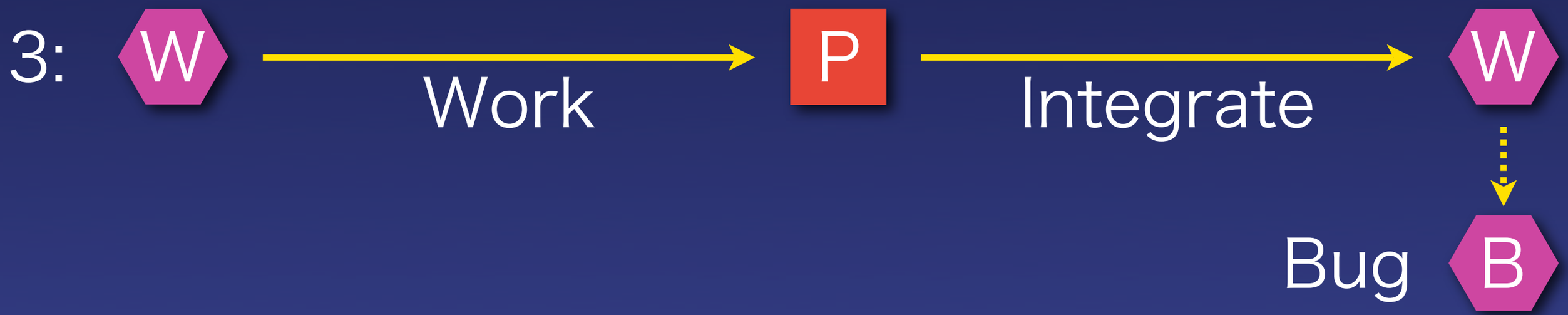
Programmers

Product

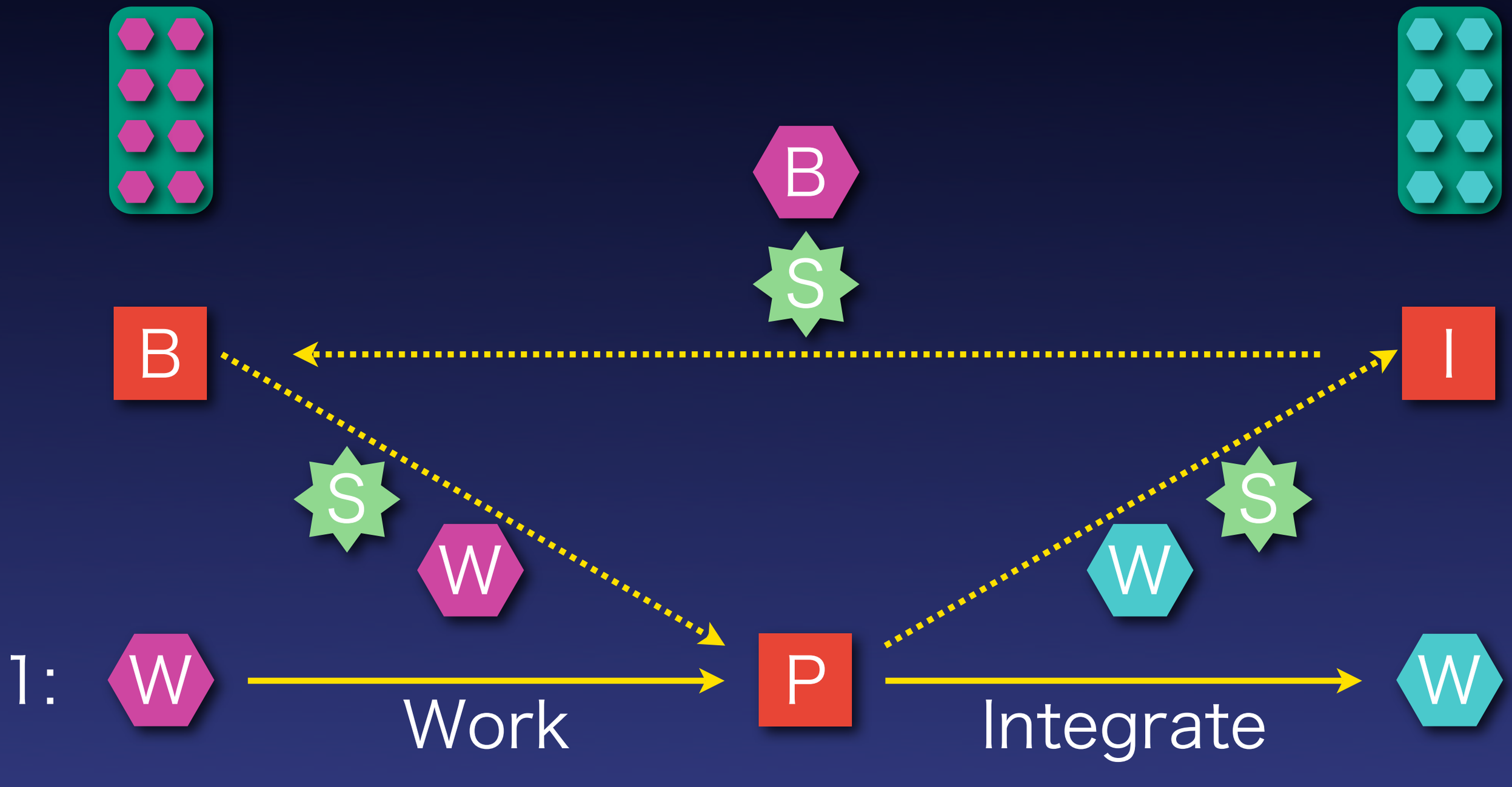
Work mechanics

Work mechanics

Work mechanics



Signal mechanics



Programmers

W W B W

Active

P

Programmers

Active

Passive

Programmers

W W B W — Active

W W W — Passive

P

S S S S S — Signals

Programmers

W W B W — Active

W W W — Passive

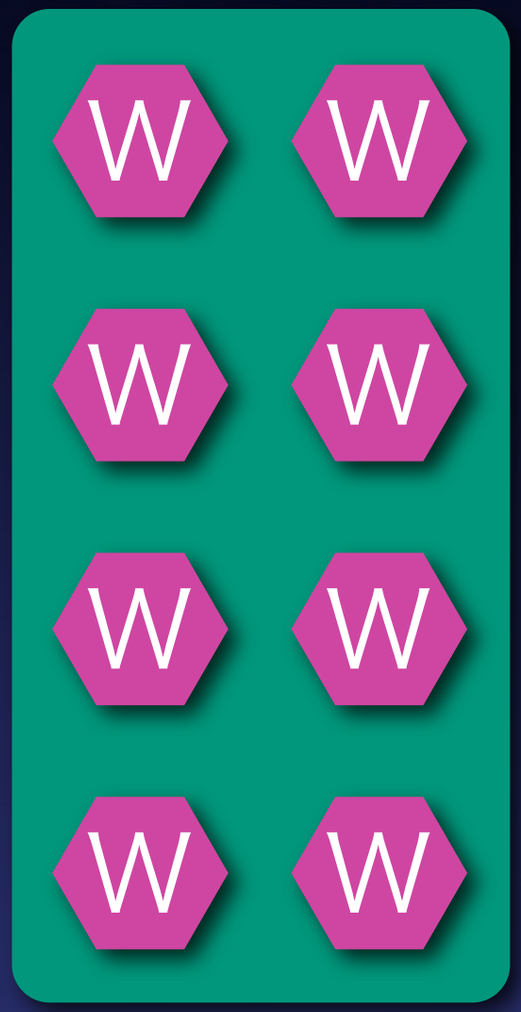
P

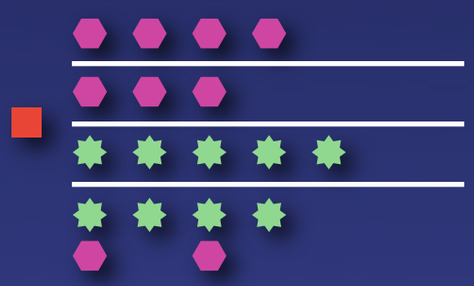
S S S S S — Signals

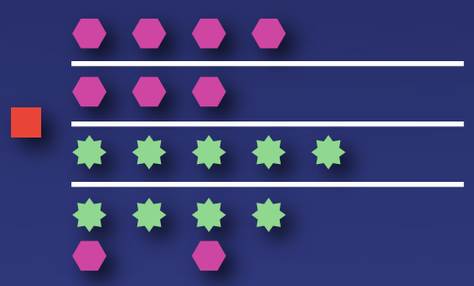
S S S S — Inbox

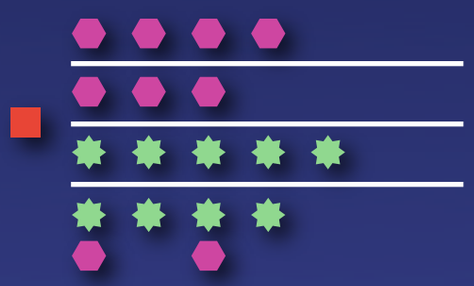
W B

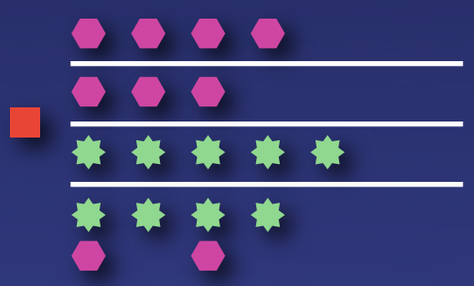
Context











Quantum laws of  :

- Any  can be stored in no more than one state.
- Any  not stored in a work list experiences bit rot.
- No  can drop from its context.

Programmer signals

- Work request
- Work assistance request
- Work review request
- Work rejection
- Work integration request

Administrative signals

- Work assignment
- Behavior complaint
  (3rd quantum law of W)

Signalling

P

S

+1

Q

S

from: P

to: Q

re: W or nil

from: P

to: Q

re: W or nil

Programmer work

Active work

0%　　+1　　3%

Passive work

0%　　+?　　85%

Programmer stress

Active work

W

W

0%

+1

3%

0

[0..100]

Passive work

W

W

0%

+?

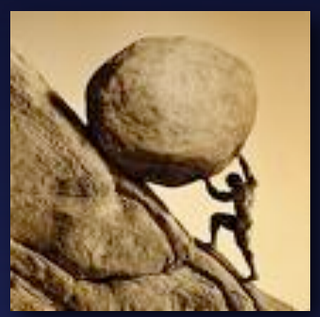
85%

Programmer stress

Active work

W

W



0%

+1

0.7%

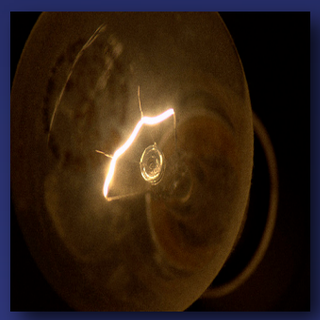
50

[0..100]

Passive work

W

W



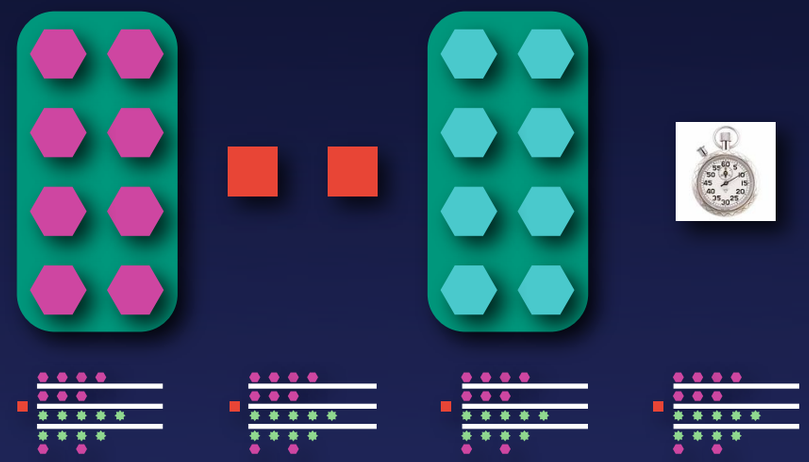
0%

+?

27%

Score

vs



+

The implementation

Score certificates

Evaluation

BOSS

65% better compression

Byte reorder

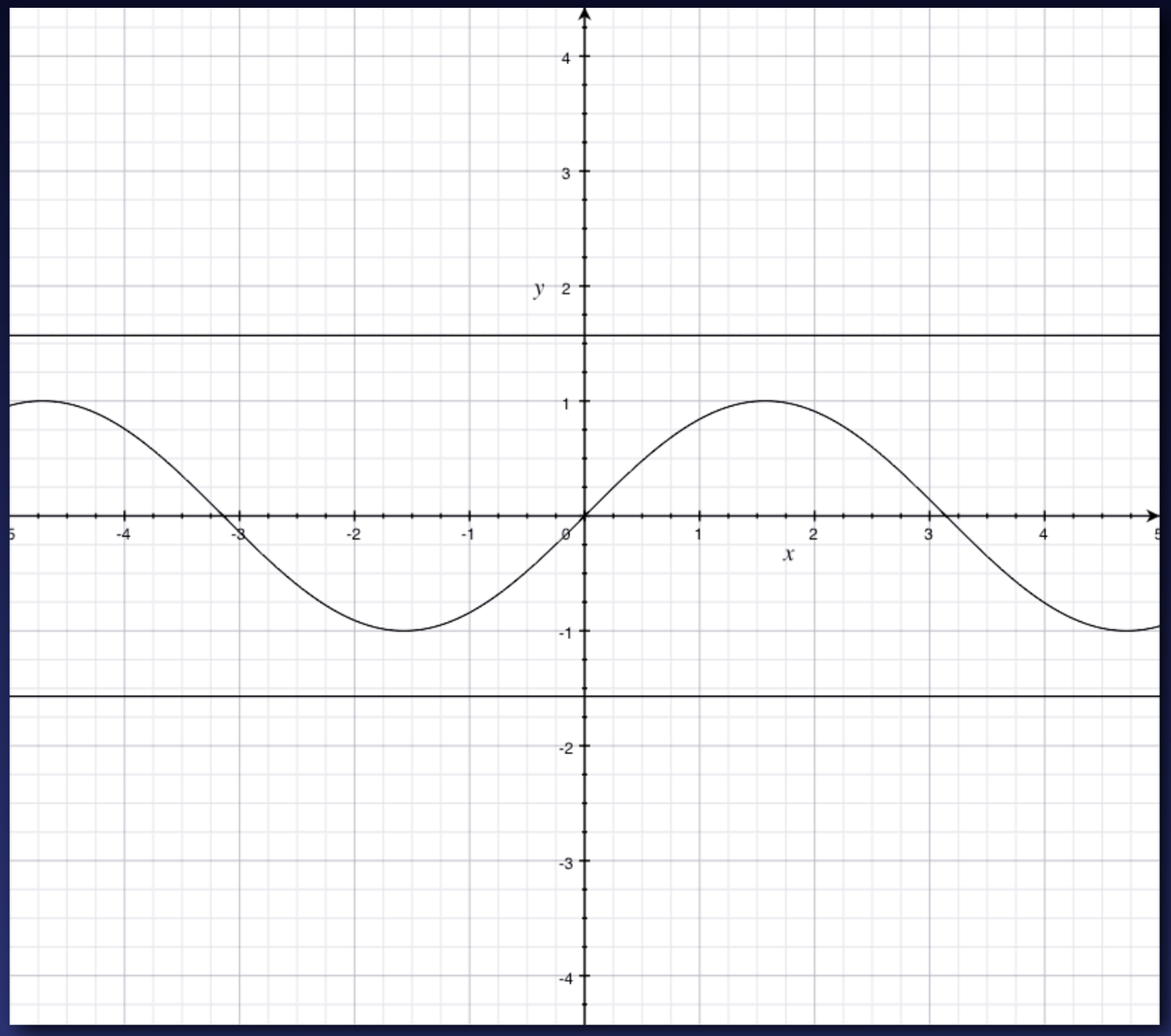
ZLib

One time pad

Certificate

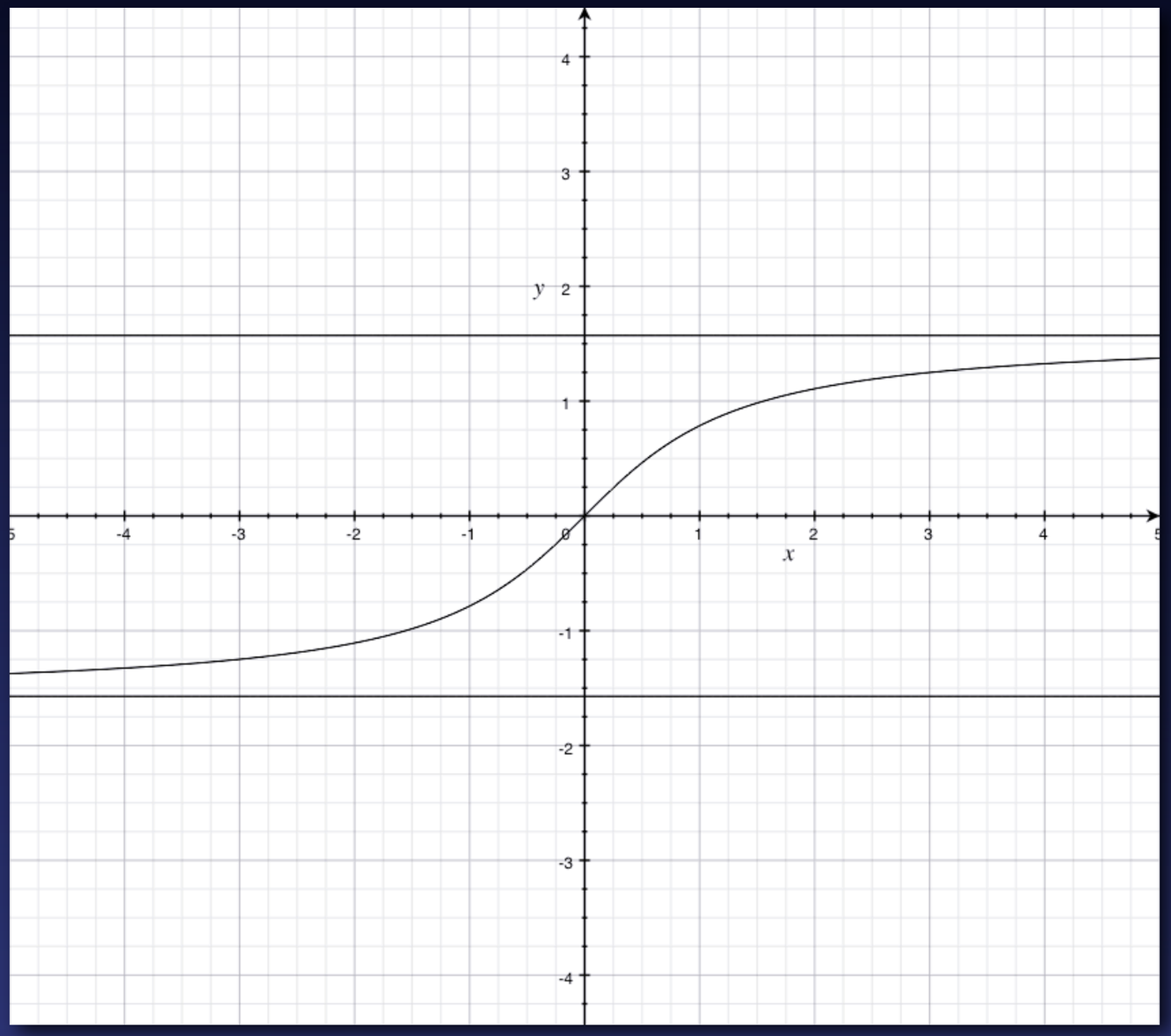
Numerical model

Numerical model



$$y = \sin x$$

Numerical model



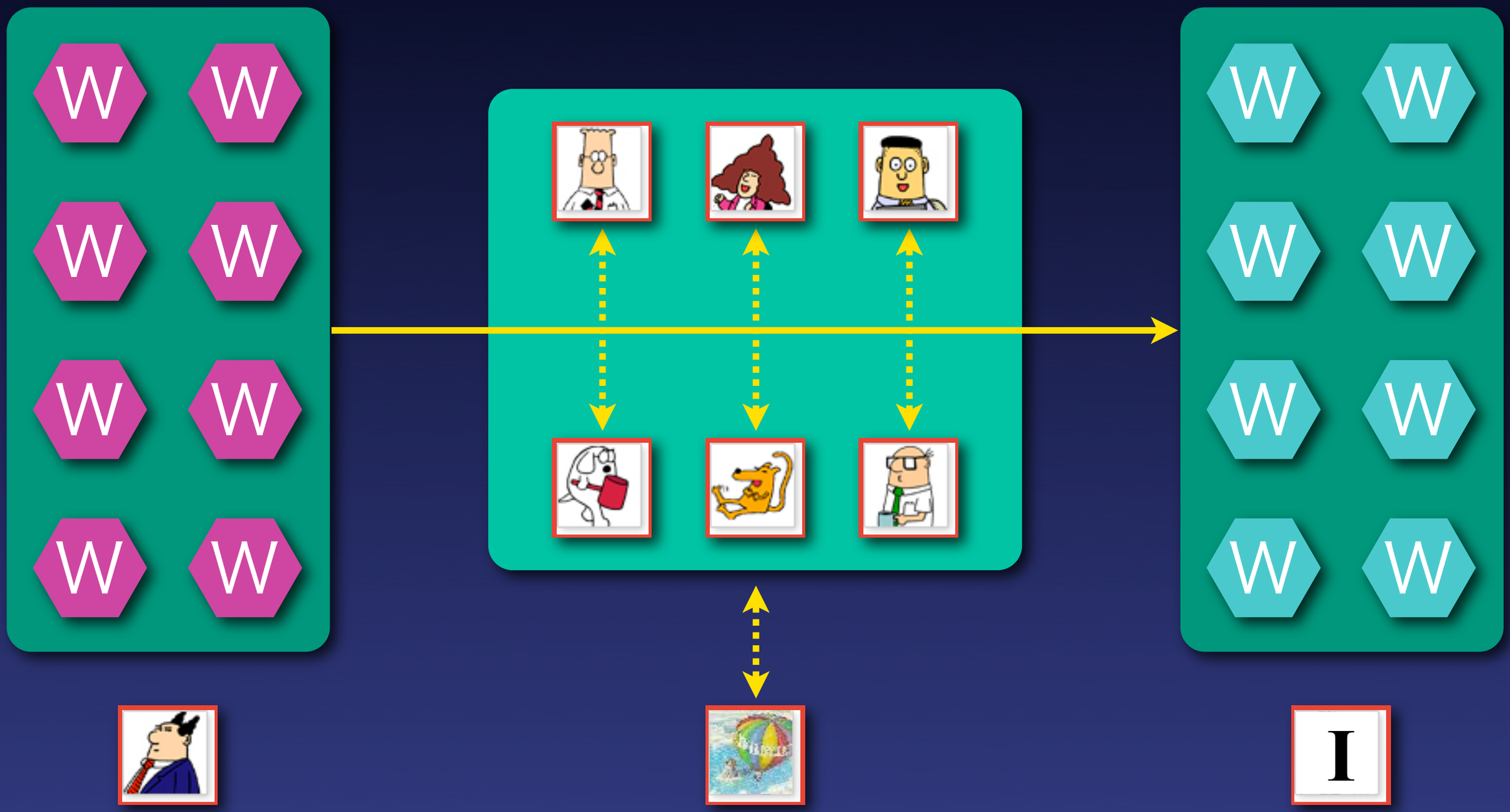
$$y = \arctan x$$

Uses of arctan model

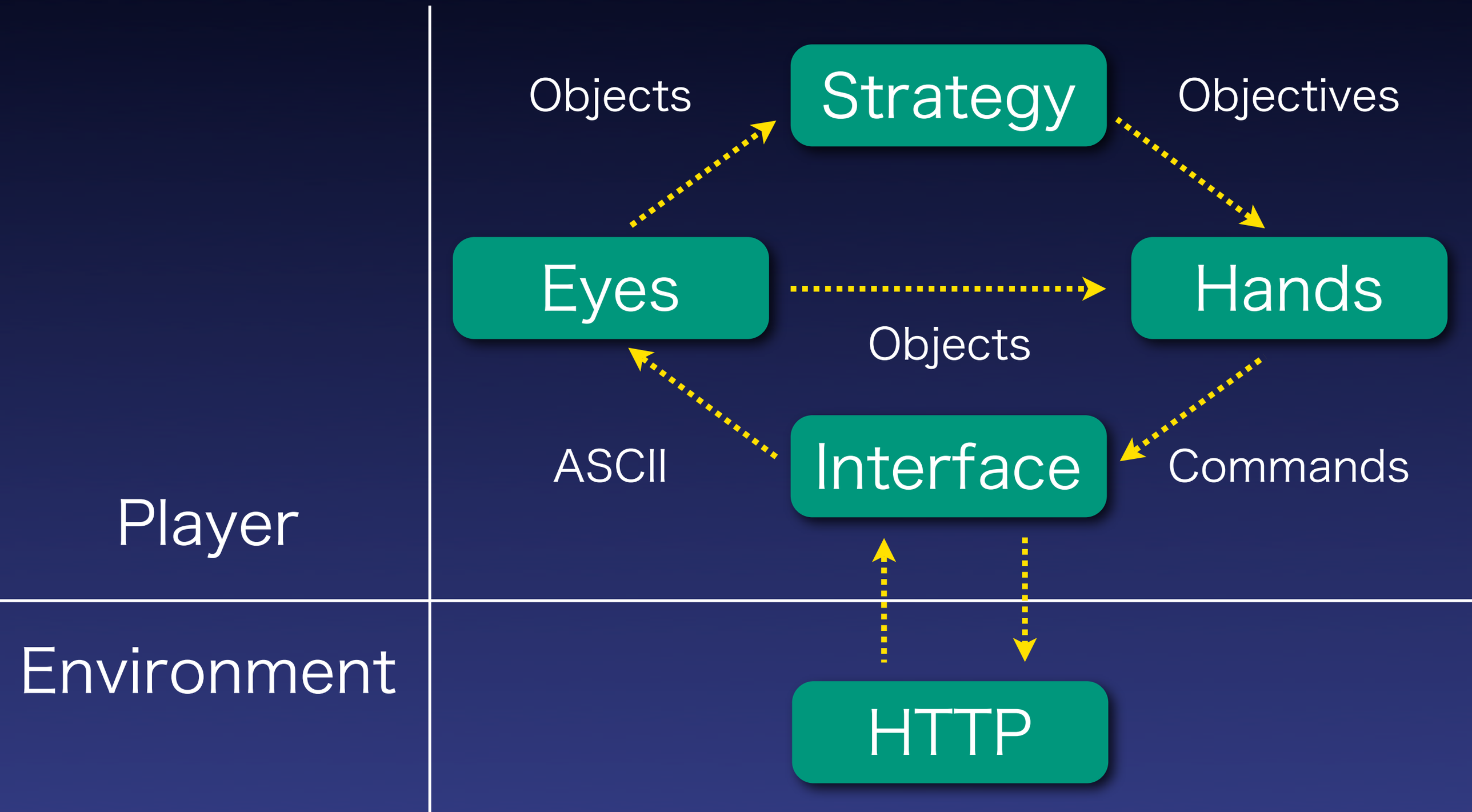
- Work progress / regress.
- Perception accuracy.
- Inspiration for passive work.
- Stress.
- Irritation.

Models have 5 calibration parameters.

Autonomous players



Autonomous player



Strategy

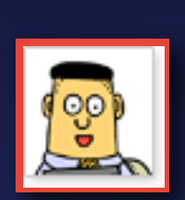
Statistics

Strategy ⟷ Personality

17 tuning parameters

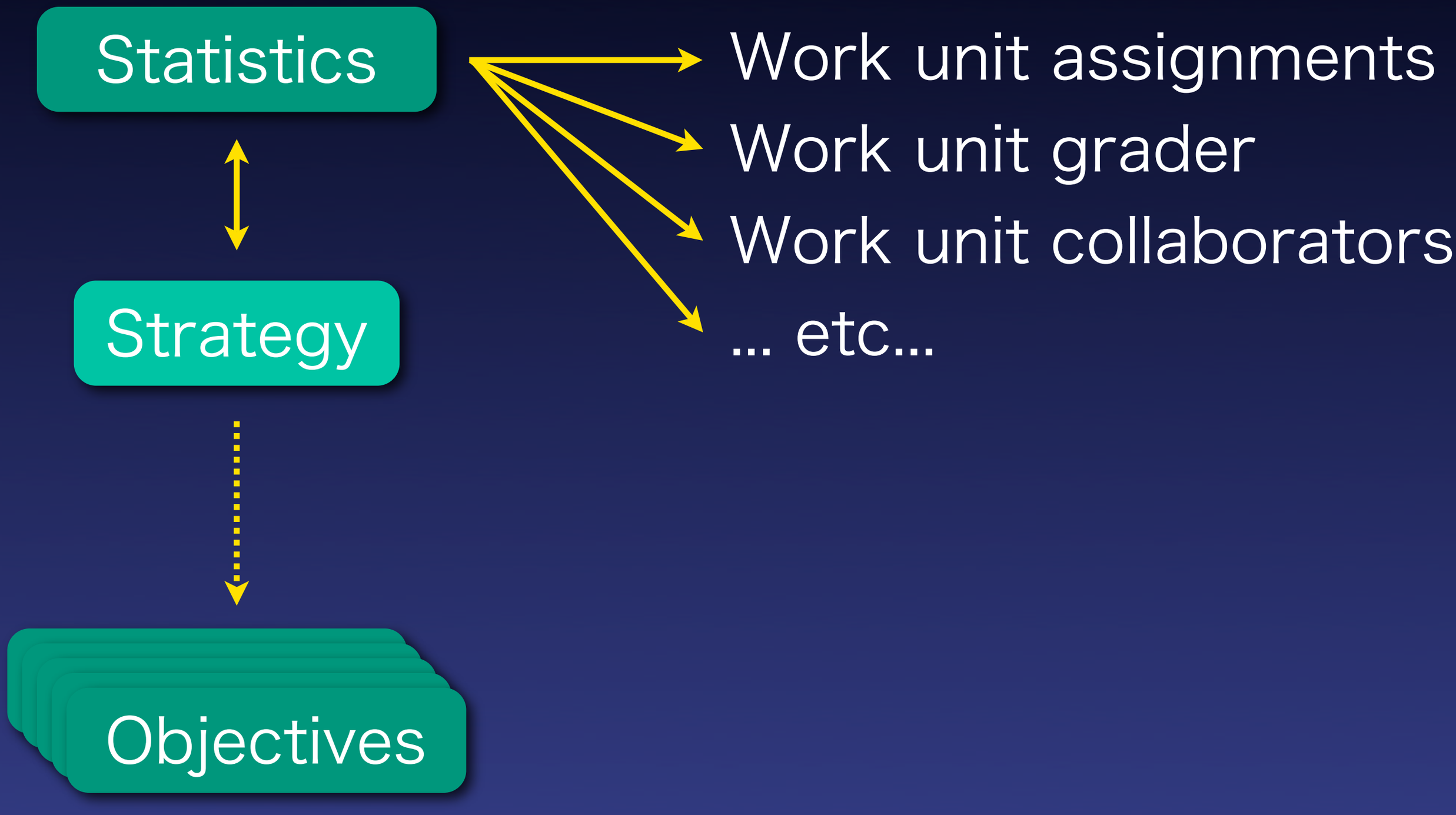
Objectives







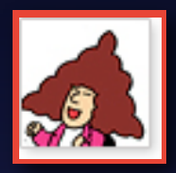
Statistics


Statistics
Strategy
Objectives
Work unit assignments
Work unit grader
Work unit collaborators
... etc...

Player behavior

Work capacity	M
Work quality	M
Stress tolerance	M
Irritability	M
Asks for work	Y
Drops peers' work	N

Player behavior

Work capacity	M	H
Work quality	M	H
Stress tolerance	M	H
Irritability	M	H
Asks for work	Y	Y
Drops peers' work	N	N

Player behavior



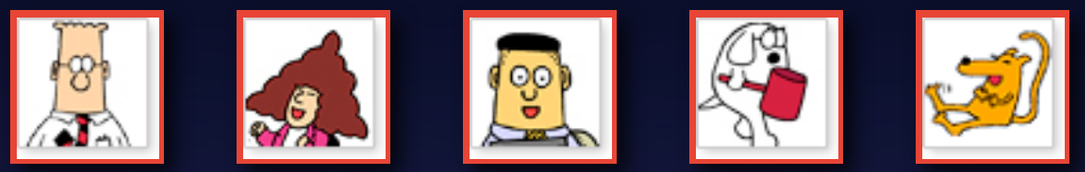
Work capacity	M	H	H
Work quality	M	H	H
Stress tolerance	M	H	L
Irritability	M	H	L
Asks for work	Y	Y	Y
Drops peers' work	N	N	N

Player behavior



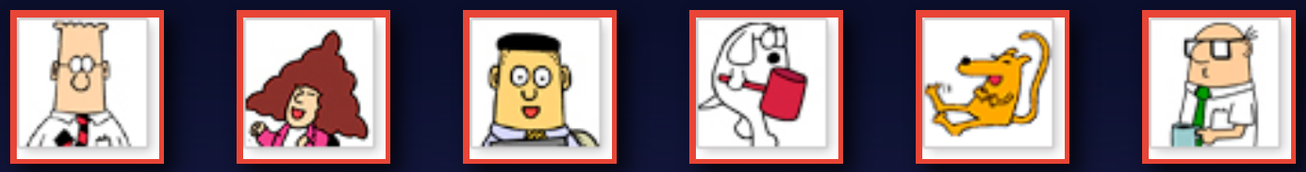

Work capacity	M	H	H	M
Work quality	M	H	H	L
Stress tolerance	M	H	L	Z
Irritability	M	H	L	H
Asks for work	Y	Y	Y	Y
Drops peers' work	N	N	N	Y

Player behavior



Work capacity	M	H	H	M	H
Work quality	M	H	H	L	L
Stress tolerance	M	H	L	Z	H
Irritability	M	H	L	H	L
Asks for work	Y	Y	Y	Y	Y
Drops peers' work	N	N	N	Y	N

Player behavior



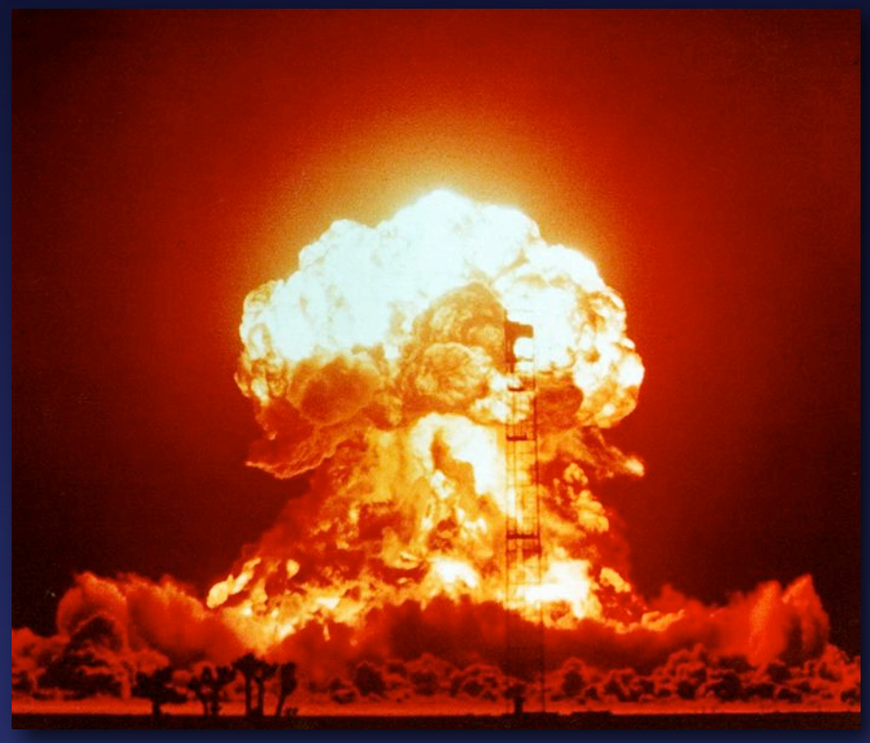
Work capacity	M	H	H	M	H	L
Work quality	M	H	H	L	L	L
Stress tolerance	M	H	L	Z	H	L
Irritability	M	H	L	H	L	L
Asks for work	Y	Y	Y	Y	Y	N
Drops peers' work	N	N	N	Y	N	N

Lessons learned

Lessons learned

Lessons learned

Lessons learned



Lessons learned

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Lessons learned

Lessons learned

/dev/null

Questions?