

MULTIPLE NON FUNCTIONAL CONCERN MGT

Contrasting strategies $\left\{ \begin{array}{l} \text{CONCERN}_A = \text{POWER MGT} \\ \text{CONCERN}_B = \text{PERFORMANCE MGT} \end{array} \right.$

Strategy B \longleftrightarrow vs. \longleftrightarrow Strategy A
 increase the parallelism degree (frequency) \longleftrightarrow decrease the parallelism degree (frequency)



-) coordination \rightarrow force co-decisions
-) FORCES separate of concerns \rightarrow have separate experts for policies

History

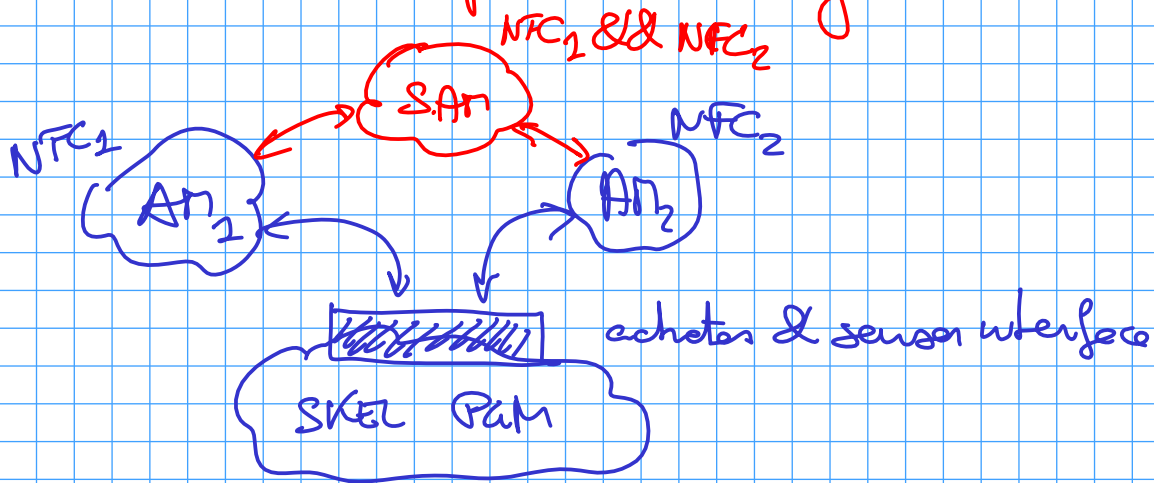
\rightarrow linear combination approach

$\left. \begin{array}{l} \text{pow}(\text{conf}) \rightarrow \underline{\mathbb{R}} \\ \text{perf}(\text{conf}) \rightarrow \underline{\mathbb{R}} \end{array} \right\}$ policies "the lighter the better" normalized in a range

$$\max \left\{ a(\text{pow}(\text{conf})) + b(\text{perf}(\text{conf})) \dots \right\}$$

SUPER MANAGER

↳ coordinate policies only



MINIMUM "COMMON KNOWLEDGE" between AMs is CONFIGURATIONS

In the AMs we use a two phase rule mechanism:

$R_i :: \text{conf}(\dots) \rightarrow \text{actions}(x_i)$

1) $\text{conf}(\dots) \rightarrow$ rather than implementing x
we compute the new conf's
implied by actions x
 $= \text{newConf}$

2) communicate to the SAM (newConf)

3) SAM \rightarrow broadcasts the newConf to the AMs \neq AM originating the newConf

4) the other AMs ($\neq \dots$) send $\begin{cases} \text{ok} \\ \text{NACK} \end{cases}$ depending(y)

5) SAM "summarizes" the answers and tells the AM originating the request whether or not it could "fire" the rule

↳ if OKs \Rightarrow OK

* } \exists NOK \Rightarrow NOK

* } \exists DEPENDING \Rightarrow DEPENDING(...)

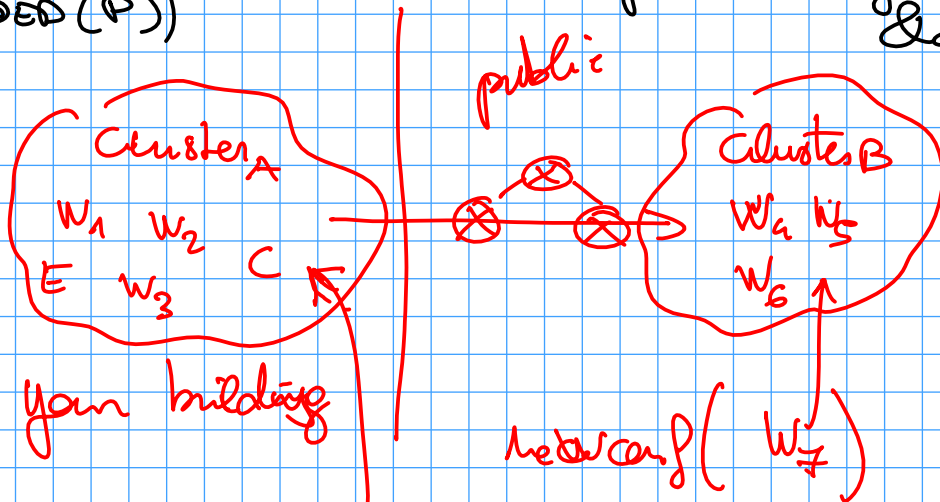
NOK ? \Rightarrow

about the current decision

↳ should lower the priority of the rule that led to the decision

DEPENDING ? \Rightarrow implies a reduction of the separation of concerns

(PROVIDED(P))



your building

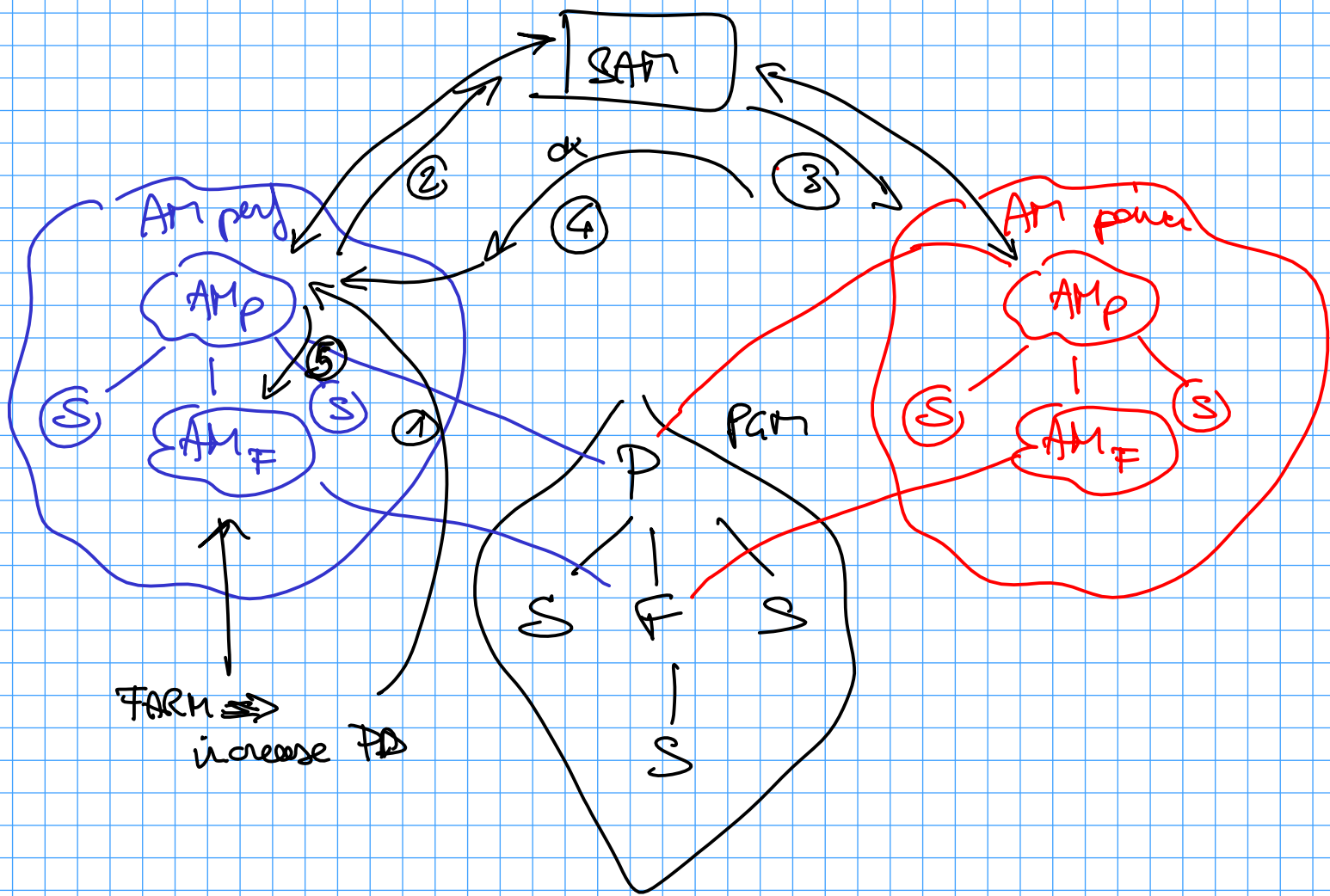
newconf (W7)

Security MGR \Rightarrow OK

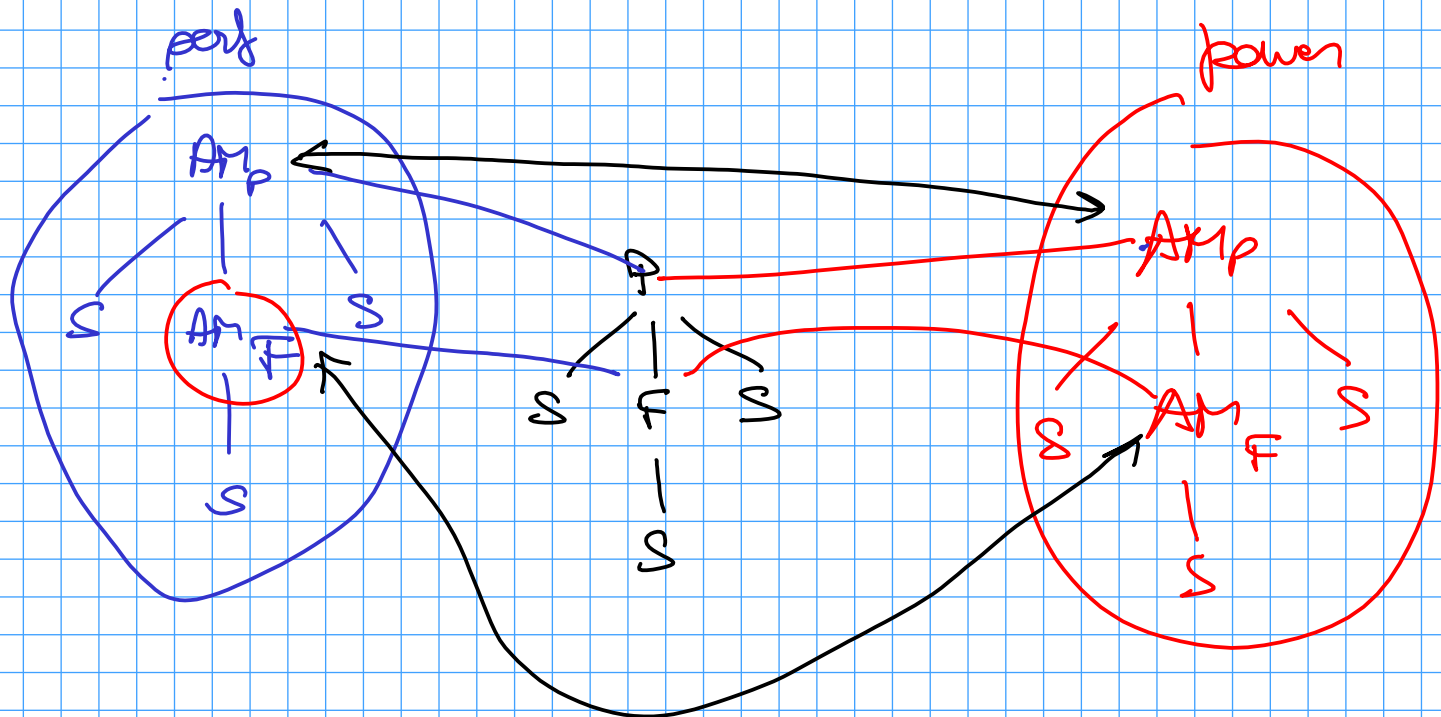
newconf (W7)

Security MGR \Rightarrow Depend (SSL connection)

proper mechanism to be used in AM originating the request



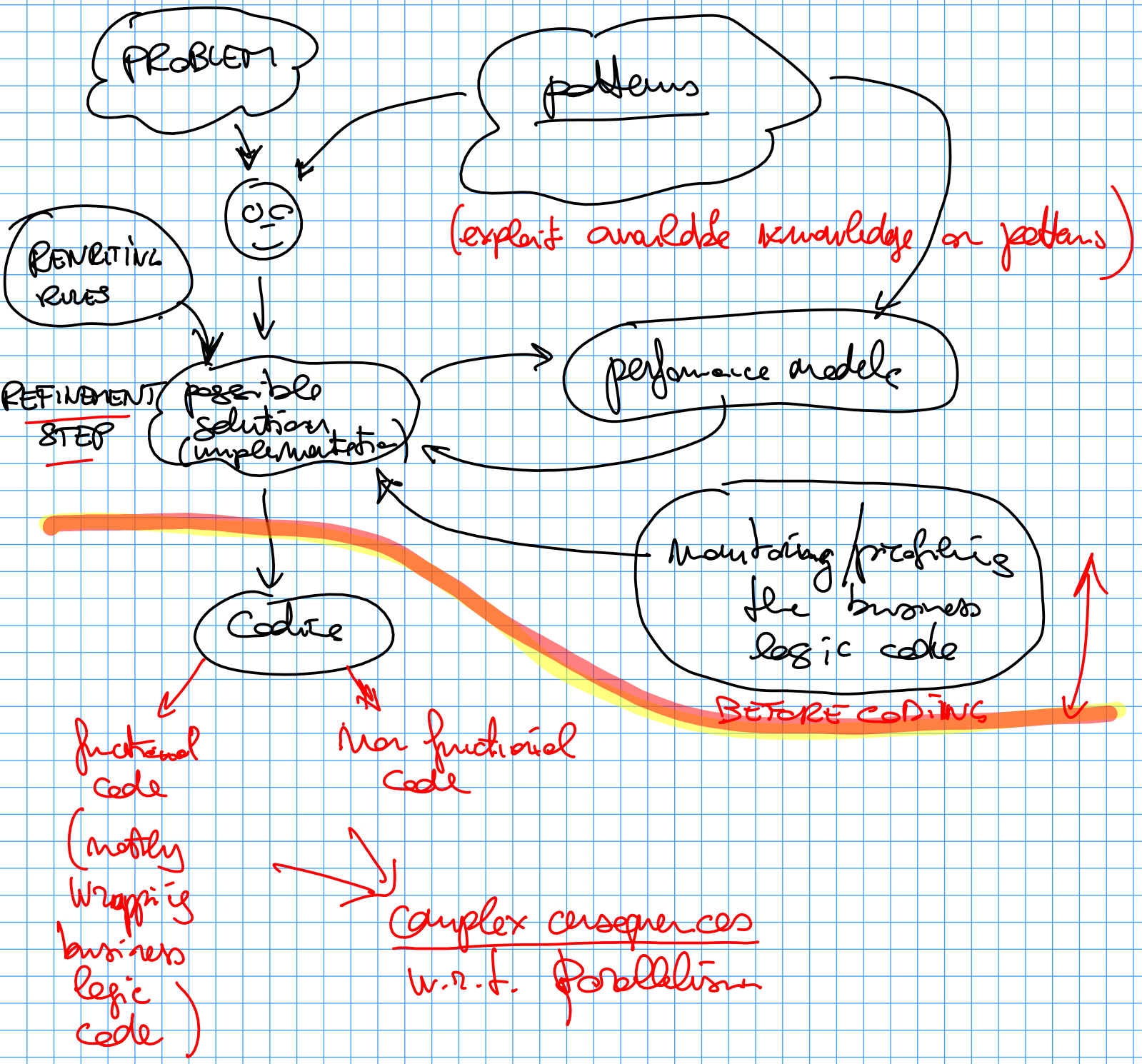
ALTERNATIVE SCHEMA



1) No super manager

2) The AM originating a request interacts & agrees with the corresponding AMs of the other clusters

same level
in the
SKSL TREE



PLEASE* take into account all what's from Design Patterns