KOMEGA REQUIREMENTS:
Interactive Simulations
*

Gerd Doeben-Henisch (gerd@doeben-henisch)

November 12, 2020

Abstract

Introducing the *interactive* mode of simulation besides the existing *passive* mode.

1   Simulation

Passive Simulation: Until now only a *passive* mode of simulation is possible. This is that what usually is understood by *Simulation*.

In a general understanding a *simulation* is a sequence of *states*, where every follow-up state S_i is the outcome of some preceding state S_{i-1} to which an operation ξ has been applied, written as $\xi(S_{i-1}) = S_i$, or in a more general fashion: $\Xi : S \longmapsto S$.

To call such a simulation a *passive* simulation results from the fact that it is possible to define an additional mode of simulation which is called here *interactive* simulation.

Interactive Simulation: In an interactive simulation the transfer from one state S_{i-1} to a possible follow-up state S_i is not determined only by a *set of given change rules* X but there is the additional option that a finite list of before *registered actors* A_{reg} will be ask by the *simulator* σ which of the predefined and *applicable change rules* $X^* \subseteq X$ they want to apply (or not) and whether they would change some parameters in these rules. Deletion or introduction of a change rule is only possible before the simulation starts.

---

2   Learning By Doing

To 'see' something from a distance or 'being active part of it' makes for learning a great difference, especially in situations where a process depends from real actors. The behavior of actors are associated with many *inner states* of the actor which is a mix of different kinds of knowledge and emotions. The same actor can act in the real world in a situation in different ways despite some rules or agreements which are expected to be followed. And the situation itself as well as the need to decide can have some effect feeding back to the actor, causing changes in his/ her/ x inner states. Therefore if one wants to investigate the *quality* of a process with regard to some defined vision (goal) one should do not run a *passive* simulation alone but also repeat the simulation several times in an *interactive* mode. The *difference of passive and interactive* mode can reveal some unrealistic assumptions of the given change rules.