

Process Atomism: Is the World (so) Simple?

Atomicity became famous through works on mathematical logic and philosophy by Bertrand Russell, Alfred North Whitehead and Ludwig Wittgenstein, who argue for the existence of “simple” undividable facts (atoms), out of which more complex statements are built. Yet, as Russel adds: “‘simple’ must not be taken in an absolute sense; ‘simpler’ would be a better word. Of course, I should be glad to reach the absolutely simple, but I do not believe that that is within human capacity” (Russel 1922). The same view is also brought by Wittgenstein, who opposes the idea of an ultimate metaphysical “simple level” as either nonsensical (Unsinnig) or senseless (Sinnlos), since this level would fall beyond the limits of our language, and could thus neither be expressed nor comprehended (Wittgenstein 1922).

In the course of previous research on process visualisation and simulation for hospital planning (Wurzer 2011), we have been criticising that work processes can hardly be described if their basic constituents are not clearly understood. Architecturally, a process is given as a sequence of functions to be visited (see Fig. 1). Yet the term “function” is misleading (Michel 1995), being both used in the sense of “purpose of a space” (given by an architect), or by derivation from occurring activities being observed. We have therefore split the term (Wurzer 2010) into two orthogonal concepts, capabilities of a space and actions being invocation of these (see Fig. 2).

In our concept, capabilities are to be exact terms – non-ambiguous, non-decomposable (and therefore, atomic - in contrast to functions, which are not disjoint). We further argue that atomicity applies only at one spatial level and in relation to the processes planned there:

- (:1:) Space is a hierarchical concept; we may talk of site level, building level or room level (but not of a mixture!) – in order to achieve a uniform granularity of the planned concept.
 - (:2:) Capabilities form the terminology that can be used in a specific level. Their definition follows the expected activities.
 - (:3:) Processes are sequences of actions, ordered temporally and causally. They are non-atomic, complex statements of usage scenarios.
- The true value of our contribution lies in the comparability of process definitions, which is yet lacking. This also means that the usual practice of transferring sets of processes from one building to another is wrong without proper thought on the level of detail involved.
- Summing up, we argue that every process simulation (see Fig. 3, 4) has to concern itself with the basic vocabulary and scale at which it applies. These can be seen semantically (Alexander 1977) or simply spatially.

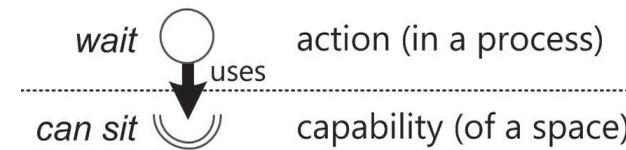


Fig. 1: “Process” as sequence of visited functions

Fig. 2: “Function” split into actions using capabilities of a space.

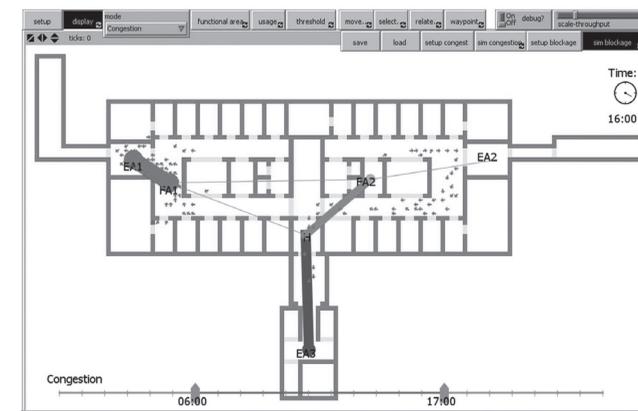
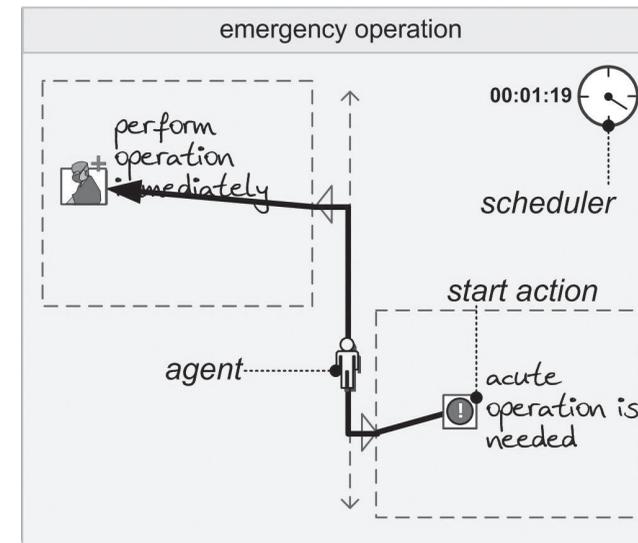
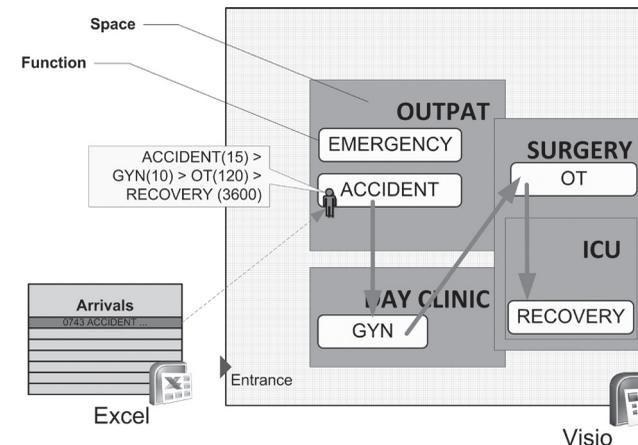


Fig. 3: Process visualization and -simulation using agents.

Fig. 4: Usage patterns from processes



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