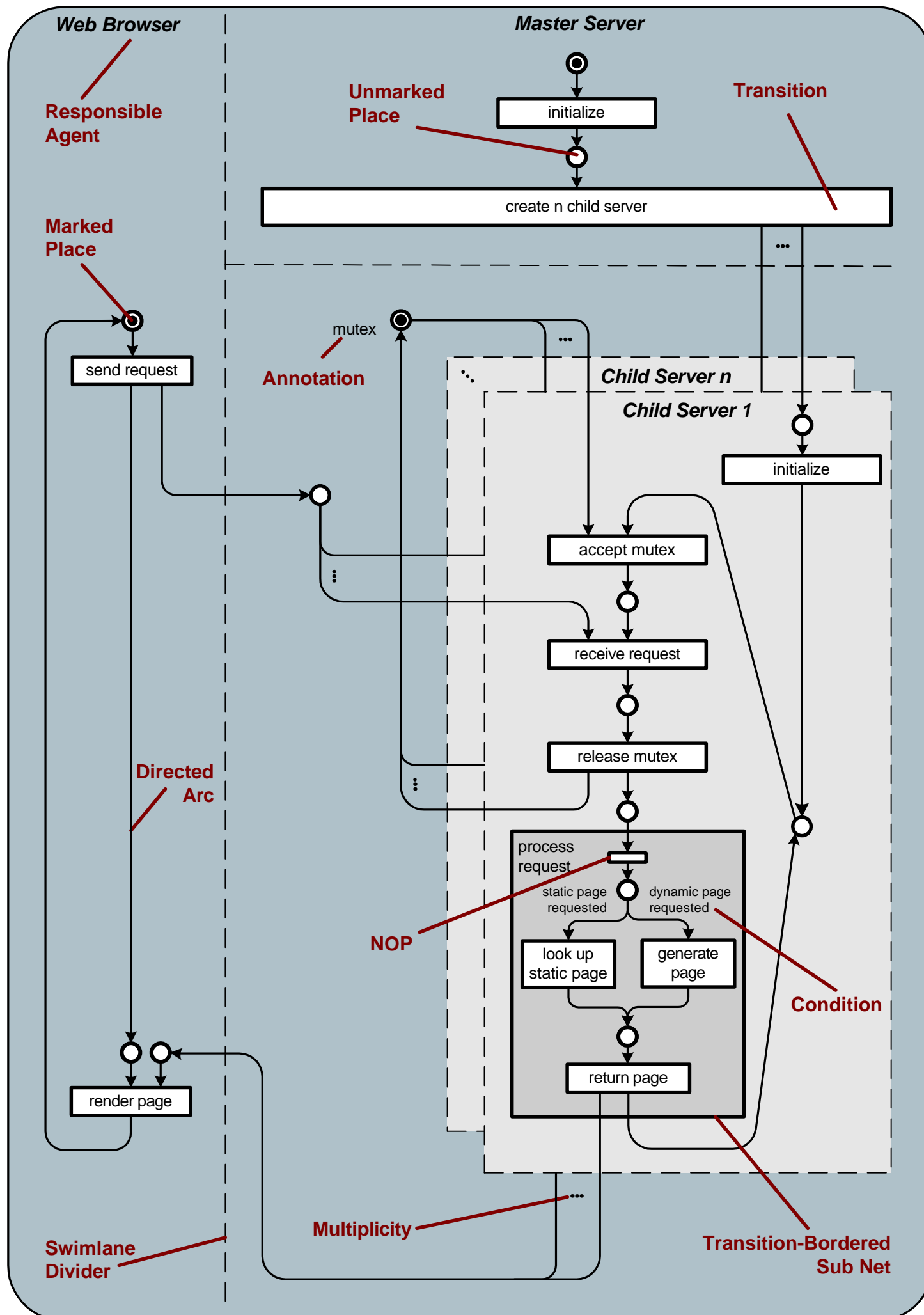


Dynamic Structures

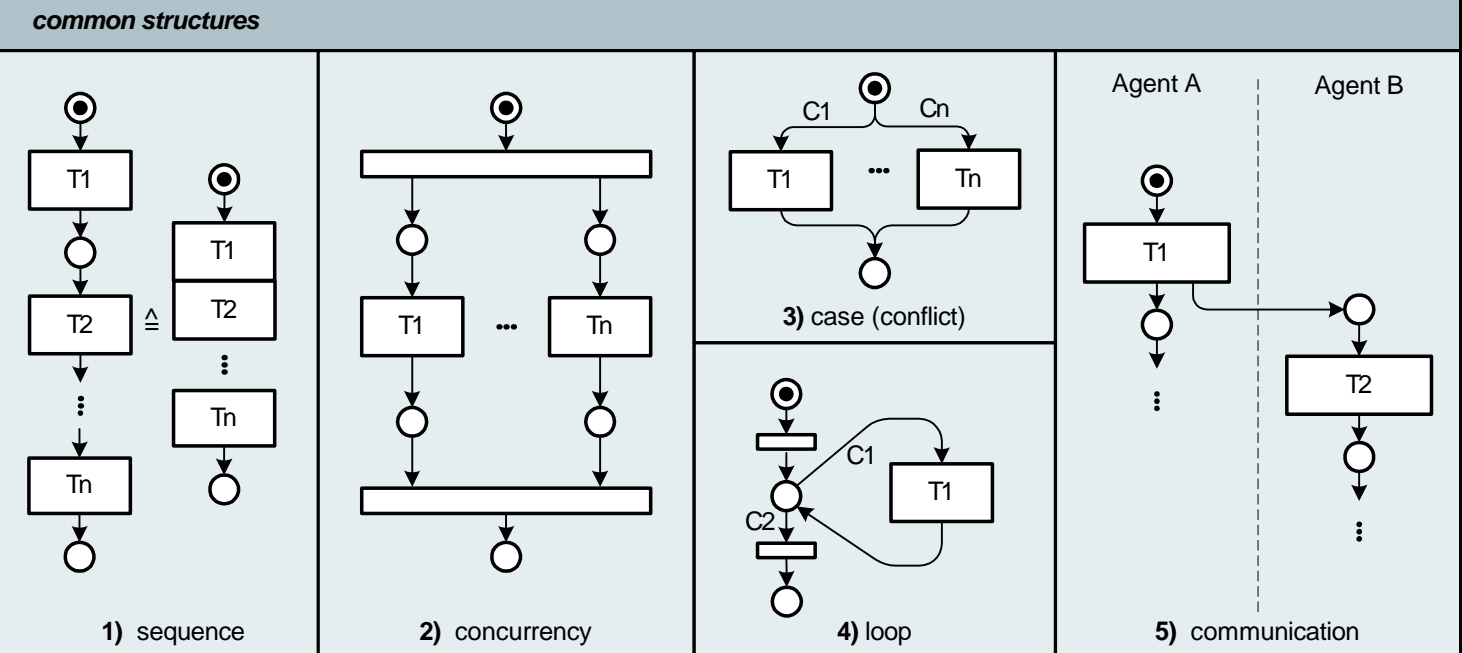
Petri nets (1/2) - Basic Reference Sheet



FMC diagrams for dynamic structures are based on transition-place Petri nets. They are used to express system behavior over time, depicting the actions performed by the agents. So they clarify how a system is working and how communication takes place between different agents.

Here only the basic notational elements are covered whereas the rest is located on another - more advanced - reference sheet (2/2).

| basic elements | | |
|------------------|------------------|---|
| | transition | Stands for an operation, an event or an activity. (Note: verb should be used for identifier "T") |
| | place | Represents a control state or an additional condition. (Note: capacity = 1) |
| | directed arc | Connects a place and a transition. |
| further elements | | |
| | NOP | A transition meaning No Operation. (Note: often used to keep the bipartiteness) |
| | swimlane divider | Distinguishes competences of agents. |



- 1) Defines that transition T1 fires first, followed by transition T2, followed by transition T3 ...
- 2) Means that transitions have no causal ordering. The transitions T1, ..., Tn are concurrent, the firing of T1, ..., Tn has no special order.
- 3) Is used to choose one transition among others. Only one of the transitions T1, ..., Tn will fire, depending on the conditions C1, ..., Cn associated to the arcs.
- 4) Is used to repeat the firing. Transition T1 will be repeated as long as condition C1 is fulfilled. Often C2 is not mentioned as it is assumed to be "else".
- 5) Whenever a swimlane divider is crossed communication takes place. Upon this structure all possible communication types can be expressed (synchronous, asynchronous etc.).