

Modeling-Notation Source:

Bric

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1 Introduction

BRIC (Block-like Representation of Interactive Components) is a high-level language for a modular approach to MAS. A BRIC system is composed of components associated via communication links. The only source that I can find for this approach is [Ferber, 1999].

2 Notation Overview

The BRIC notation consists of two elements: components and a coloured Petri-Net processing representation.

2.1 Components

The notion of components in BRIC is basically equivalent to the used by the programming world and UML. *Composite components* can be defined assemblies of sub-components; whereas *elementary components* can have Petri-Net specification. Both forms have the ability to express input and output (Fig 1(a)).

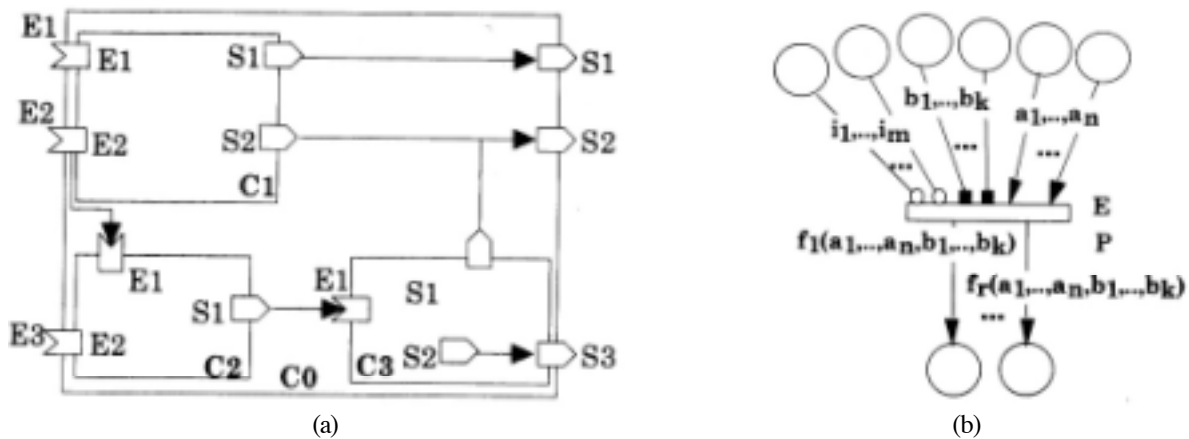


Figure 1: Composite components examples and Petri net syntax

2.2 Petri Nets

The general form is illustrated in Fig. 1(b). It includes *standard arcs* that consume the token if the preconditions (a_1, \dots, a_n) are validated. It also includes *inhibitor arcs* which inhibit triggering if preconditions (i_1, \dots, i_m) are validated; and *non-consumer arcs* are standard arcs that do not delete the tokens.

2.3 Components and Petri Nets together

Figure 2(a) illustrates how Petri nets can be used to express the internal behavior of an elementary component. Figure 2(b) suggest a way of representing the Petri-net behavior of the composite component in Fig. 1(a) with its sub-components.

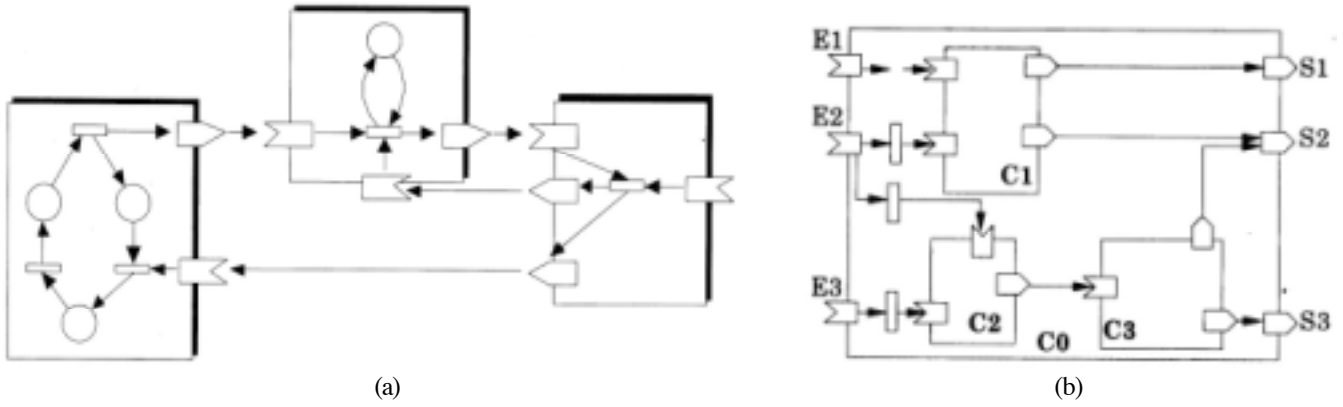


Figure 2: Examples of composite components and Petri net together

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3 Possible Unification Options

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UML 2.0 components contain all the graphical elements required for BRIC components. UML 2.0 Activity Diagrams can also express the required semantics of Petri nets, as well. However, activity diagrams do not differentiate between “standard” and “inhibitor” arcs. Instead there are “guards” that provide a general-purpose precondition. We need to decide how important that is for unification.

4 References

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[Ferber 2001] Ferber, J., *Multi-Agent Systems: An Introduction to Distributed Artificial Intelligence*. 1999, Harlow, UK: Addison Wesley Longman.