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A formal approach to the engineering of domain-specific distributed systems. (English)

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Summary: We review some results regarding specification, programming and verification of different classes of distributed systems which stemmed from the research of the Concurrency and Mobility Group at University of Firenze. More specifically, we examine the distinguishing features of network-aware programming, service-oriented computing, autonomic computing, and collective adaptive systems programming. We then present an overview of four different languages, namely KLAIM, COWS, SCEL and AC. For each language, we discuss design choices, present syntax and semantics, show how the different formalisms can be used to model and program a travel booking scenario, and describe programming environments and verification techniques.

MSC:

68 Computer science

Keywords:

coordination; distributed systems; domain-specific languages

Software:

2APL; AgentSpeak; COWS; Erlang; Jason; KLAIM; Klava; Linda; Maude; MetaKlaim; MultiVeStA; Pirlo; SCEL ; SCELlight; SPIN

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