

Part IV
Appendix

Glossary

This glossary was prepared from material and comments contributed by Luca Cardelli, Gianpaolo Cugola, Carlo Ghezzi, Gian Pietro Picco, Christian Tschudin, Giovanni Vigna and Jan Vitek.

- Anchored resource** A resource which may not be moved to another host, these usually include the like of devices, user interface elements, or files.
- Checkpointing** Checkpointing, in this context refers to the operation of saving the execution state of a running computation.
- Code closure** A code closure is the collection of code fragments required for the successful execution a routine, thread or computation. A code closure is exact if it includes only the code fragments that will be executed. It is approximate if it includes code fragments that will not be executed.
- Code fragment** — A code fragment is a syntactically valid sequence of instructions.
- Code Mobility** — In the context of *mobile code languages*, the term mobility refers to mechanisms to move code among different *computational environments*.
- Code On Demand paradigm (COD)** — It is a paradigm to develop *mobile code applications*. MCAs developed using this paradigm can download and link on-the-fly part of their code from a different (remote) component that acts as a code server.
- Component** — Components are *resources* or *computations*.
- Computation** — A computation denotes an executing program composed of one or more active *threads*. Each computation consists of a *code closure* which specifies its behaviour, an *execution state* which stores all control information related to the execution the computation and a *data space* that includes all the *resources* accessible by the computation.
- Computational Environment (CE)** — The computational environment is a container for *components*. It provides some low level services and controls access to underlying resources of the host. The CE's implementation may be a run-time system on top of a standard operating system or an operating system in its own right.
- Data space** — The data space of an *computation* is composed of all the *resources* accessible from all the active routines of that computation.
- Data closure** — The data closure of an *execution unit* is the set of all local and non-local *resources* that are accessible by the currently executing routine. This *data space* constituent allows the computation to proceed, possibly calling other routines, but does not necessarily include the resources of the routine's caller.
- Execution state** — The execution state holds all the control information related to a computation. For example, the instruction pointer is part of the execution state.
- External resources** — Resources that are outside of the *computational environment*, e.g. a window in the host's windowing system.
- Location** — A location is a named *computational environment*. Locations names may be globally unique or relative to the current computational environment.

Mobile Agent — The term *Mobile Agent* lacks a widely recognized definition. In this context, we assume that a mobile agent is a synonym of *mobile computation*.

Mobile Code Applications (MCA) — Mobile Code Applications are software systems that exploit some form of *code mobility*.

Mobile Code Language (MCL) — A programming language supporting *code mobility*.

Mobile Object System — A mobile object system is an *object system* which can move autonomously from a CE to another CE in order carry out a computation.

Mobile Computation — It is a computation which is able to migrate autonomously to a different *computational environment*. Mobile computations imply code mobility.

Mobile Software Agent — see *Mobile Agent*.

Object System — An object system is a computation whose data space is composed of objects and whose code closure contains the code that specifies the behaviour of the objects.

Remote Evaluation paradigm (REV) — It is a paradigm to develop *mobile code applications*. Any *component* of an MCA developed using this paradigm can invoke services provided by other components (located on different *computational environments* by providing not only the input data needed to perform the service (like in a remote procedure call scheme) but also providing the code that describes how to perform the service.

Remote reference — A network reference allows a *computation* to access *components* that are located on a *computational environment* other than the one where the computation is being executed.

Resource — Resources are passive entities representing data.

State distribution — The use of network references enables an *execution unit* to own a *data space* that is composed of components spread on different *computational environments*. We refer to this situation with the term “state distribution”, because a relevant portion of the state of a computation (the *data space*) is actually distributed on different CEs.

Thread — A sequential flow of control.

Ubiquitous resources — *Resources* guaranteed to be present in all the *computational environments*.

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