



**Poseidon House
Castle Park
Cambridge CB3 0RD
United Kingdom**

TELEPHONE:
INTERNATIONAL:
FAX:
E-MAIL:

**Cambridge (01223) 515010
+44 1223 515010
+44 1223 359779
apm@ansa.co.uk**

ANSA Phase III

A Brochure for Reflective Java

Zhixue Wu

Abstract

This is a brief introduction for reflective Java for marketing purpose.

APM.1966.00.01

Draft

20th February 1997

Marketing and Contracts

Distribution:

Supersedes:

Superseded by:

Copyright © 1997 Architecture Projects Management Limited
The copyright is held on behalf of the sponsors for the time being of the ANSA Workprogramme.

A Brochure for Reflective Java



A Brochure for Reflective Java

Zhixue Wu

APM.1966.00.01

20th February 1997

The material in this Report has been developed as part of the ANSA Architecture for Open Distributed Systems. ANSA is a collaborative initiative, managed by APM Limited on behalf of the companies sponsoring the ANSA Workprogramme.

The ANSA initiative is open to all companies and organisations. Further information on the ANSA Workprogramme, the material in this report, and on other reports can be obtained from the address below.

The authors acknowledge the help and assistance of their colleagues, in sponsoring companies and the ANSA team in Cambridge in the preparation of this report.

APM Limited

Poseidon House
Castle Park
CAMBRIDGE
CB3 0RD
United Kingdom

TELEPHONE UK
INTERNATIONAL
FAX
E-MAIL

(01223) 515010
+44 1223 515010
+44 1223 359779
apm@ansa.co.uk

**Copyright „ 1997 Architecture Projects Management Limited
The copyright is held on behalf of the sponsors for the time being of the ANSA
Workprogramme.**

APM Limited takes no responsibility for the consequences of errors or omissions in this Report, nor for any damages resulting from the application of the ideas expressed herein.

Contents

Reflective Java

a powerful tool to produce flexible and adaptable system software

Java has become popular as a programming language for the Internet because of its ability to simplify the development of flexible, portable applications with graphical interfaces. Using Java, a user can write code once and run it in any platform. However, Java lacks a good mechanism to support integration of system software. By making Java reflective, the *Reflective Java* system implemented by APM Ltd. in the ANSA programme enables Java-powered system to be customised dynamically, flexibly and transparently to cater for the particular requirements of an application, or changes in its run-time environment. Reflective Java enables metalevel programming of systems functions as wrappers around method calls. Using metalevel programming, a clear separation can be made between those parts of an application that are concerned with implementing its basic functionality and those parts that are concerned with addressing system issues. Thus, it becomes possible to change the quality of application delivery through alternative infrastructures without disturbing the application components.

Applications

Mobile Computing: The challenge of mobile computing is that many attributes of the application environment vary as the computer is moved from place to place. Moreover, the degree of variability is enormous. Adapting to this variability should be done transparently and flexibly. The use of Reflective Java can make the problem tractable and also provide a framework for separating an application from the concerns of its environment.

Transaction Systems: The concept of transactions is an important programming paradigm for simplifying the construction of reliable and available applications, especially those that require concurrent access to shared data. However, an application may require different concurrency and recovery policies in different run-time environments. By using Reflective Java, an application can change concurrency policy dynamically according to the run-time environment.

Flexible Networks: By using Reflective Java, it becomes easier to build a constantly evolving network, which allows to update any component at any time according to a particular application.

Benefits

- Easy to upgrade product in order to adapt to changes; either in hardware or application requirements
- Flexibility to customise policies dynamically to suit run-time environment
- High-level transparency to applications
- Write an application once, run it anytime, anywhere, in any environment, with any “-ability”
- Free choice of components
- Flexible configuration

Contacts

Zhixue Wu zw@ansa.co.uk Scarlet Schwiderski ss@ansa.co.uk

References

[LINDEN 93]

van der Linden R. J., *An Overview of ANSA*; **AR.000.00**, APM Ltd., Cambridge U.K., May 1993.

