

OMG Telecom Wireless RFP

Kimmo Raatikainen

Nokia Research Center

(Department of Computer Science, University of Helsinki)

OMG Timetable

- Wireless Access and Mobility RFI in summer 98 (telecom/98-06-06)
- Wireless Access and Terminal Mobility White Paper autumn 98 (telecom/98-11-09)
- RFP issues spring 99 (telecom/99-05-05)
- LOIs from HighComm, HP, Inprise, Nokia, Vertel
- Two initial submissions:
 - Nokia and Vertel (HP): telecom/00-05-01 and telecom/00-06-03
 - HighComm and Inprise: telecom/00-05-05
- Revised submissions due to November 20, 2000
- OMG documents available from www.omg.org

Proposal by Nokia and Vertel

RFP Requirements - 1/2

- Architectural framework
- GIOP mapping onto Internet transport protocol (TCP or UDP) over wireless links
- Mechanism that hides from CORBA clients the mobility of terminals on which CORBA servers are running
- Mechanism for initial access to a new mobility domain
- Mechanism for finding the necessary basic set of CORBA services in mobility domain
- Mechanism for advertising CORBA services available on a mobile terminal
- Mechanism for handoff between mobility domain

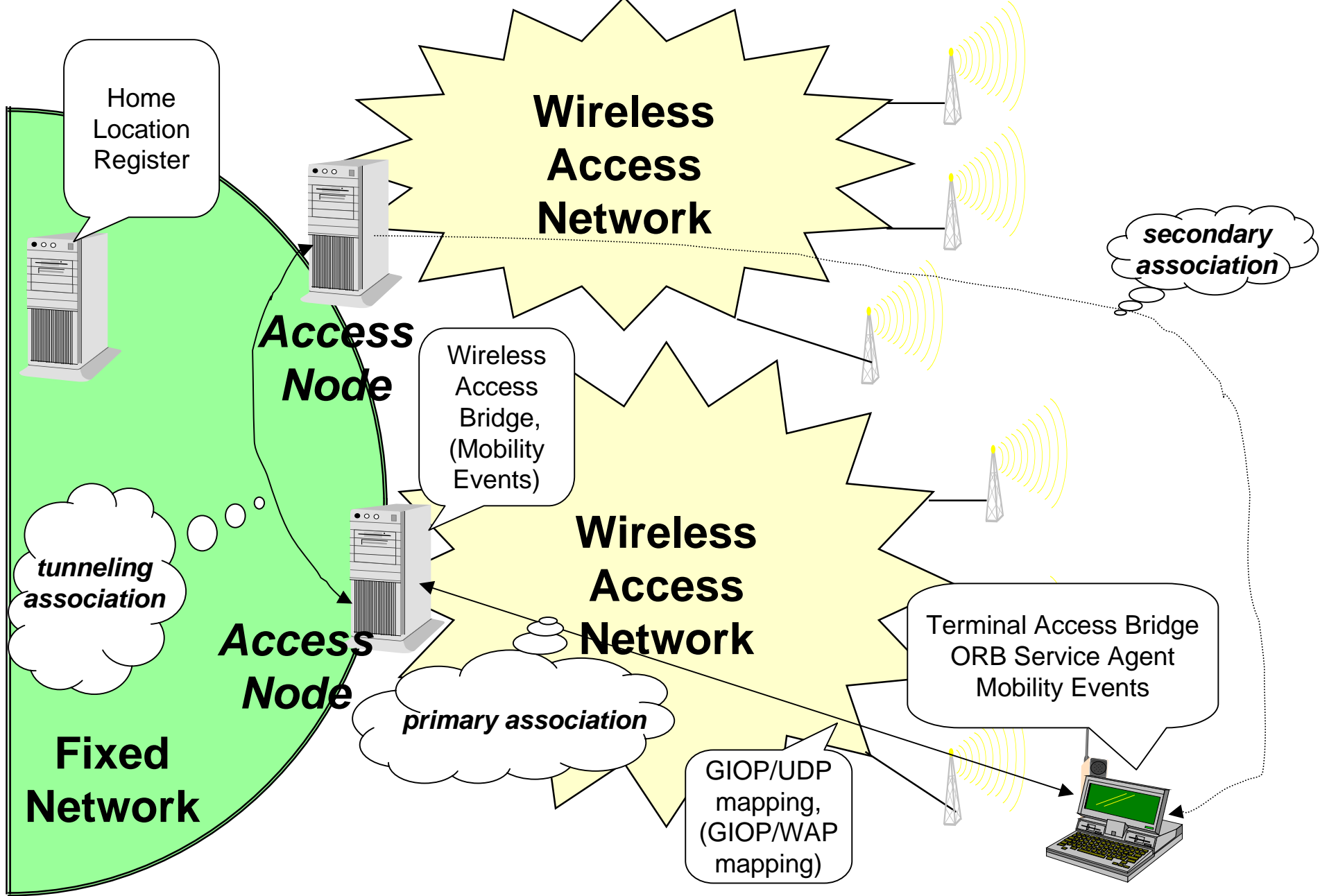
All these requirements are addressed.

RFP Requirements -2/2

- This response proposes a GIOP mapping onto WAP Wireless Transaction Protocol [WTP]
- This response discusses usage of Notification Service, Interoperable Naming Service, and Messaging Service.
- The response also discusses usage of other ORB Services.

Design rationale

- Design is based on the results from the EC/ACTS project DOLMEN
- DOLMEN specified and implemented a prototype based on CORBA 2.0
- This response takes advantage of CORBA 2.3 features
- Target is a general framework for mobility - not only terminal mobility but an object group mobility
 - some of the complexity may be removed if only terminal mobility would be addressed (one object group in a terminal)
- Wireless access without (ORB-level) mobility as a well-defined subset [serves also for UDP-mapping in WANs]
- Reuse of IETF defined "session" protocol



Assumptions - 1/2

- In order to exploit all features specified in this proposal CORBA *applications* (or generic ORB application libraries) *on mobile terminals need to be aware of mobility.*
- Each terminal is an ORB domain of its own.
- Terminals attach to other ORB domains through an access node that implements a low-level interoperability bridge called Wireless Access Bridge (WAB)

A Wireless Access Bridge may support ES-IOPs for mobile terminals.

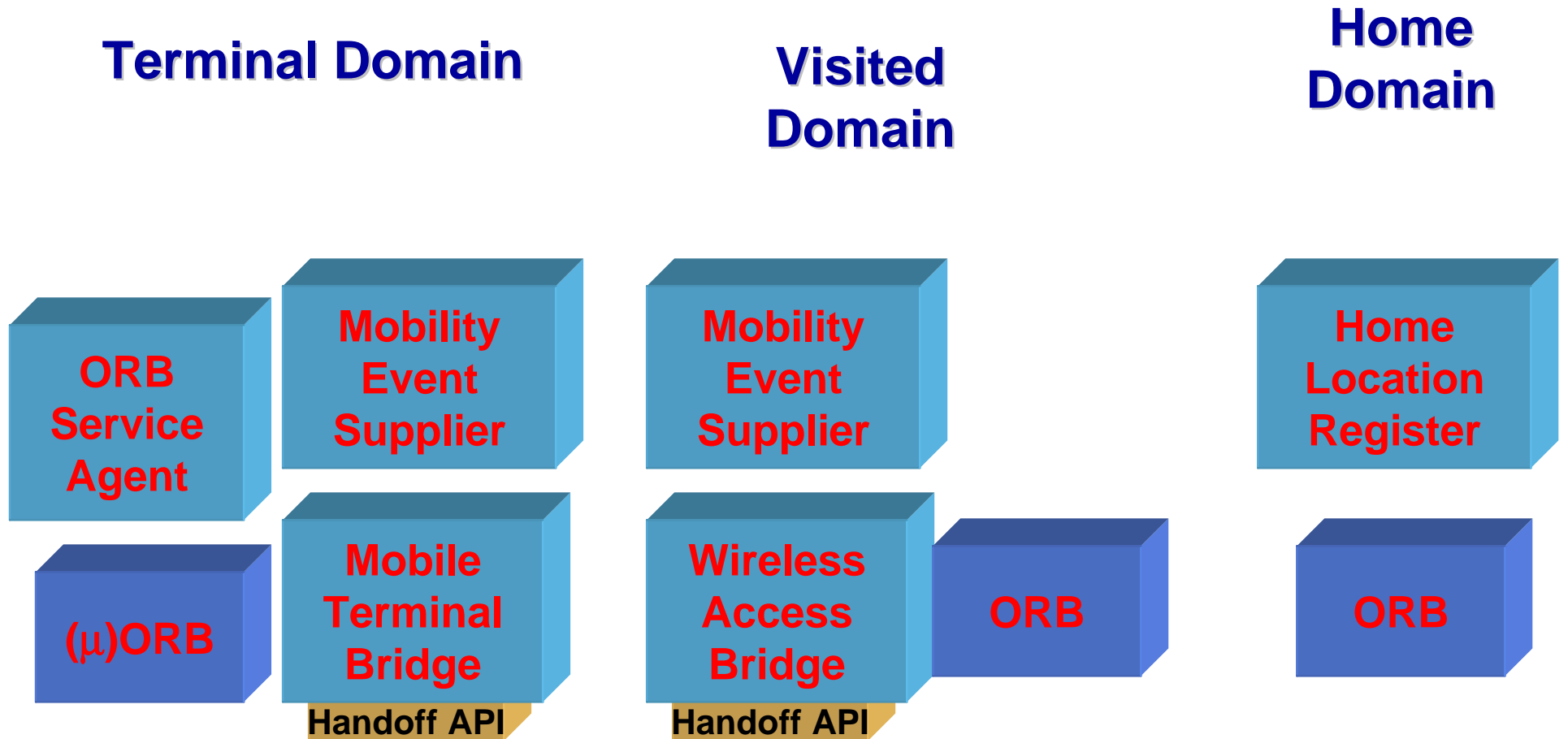
Assumptions - 2/2

- A terminal may have a home domain, in which a Home Location Register interface is implemented.

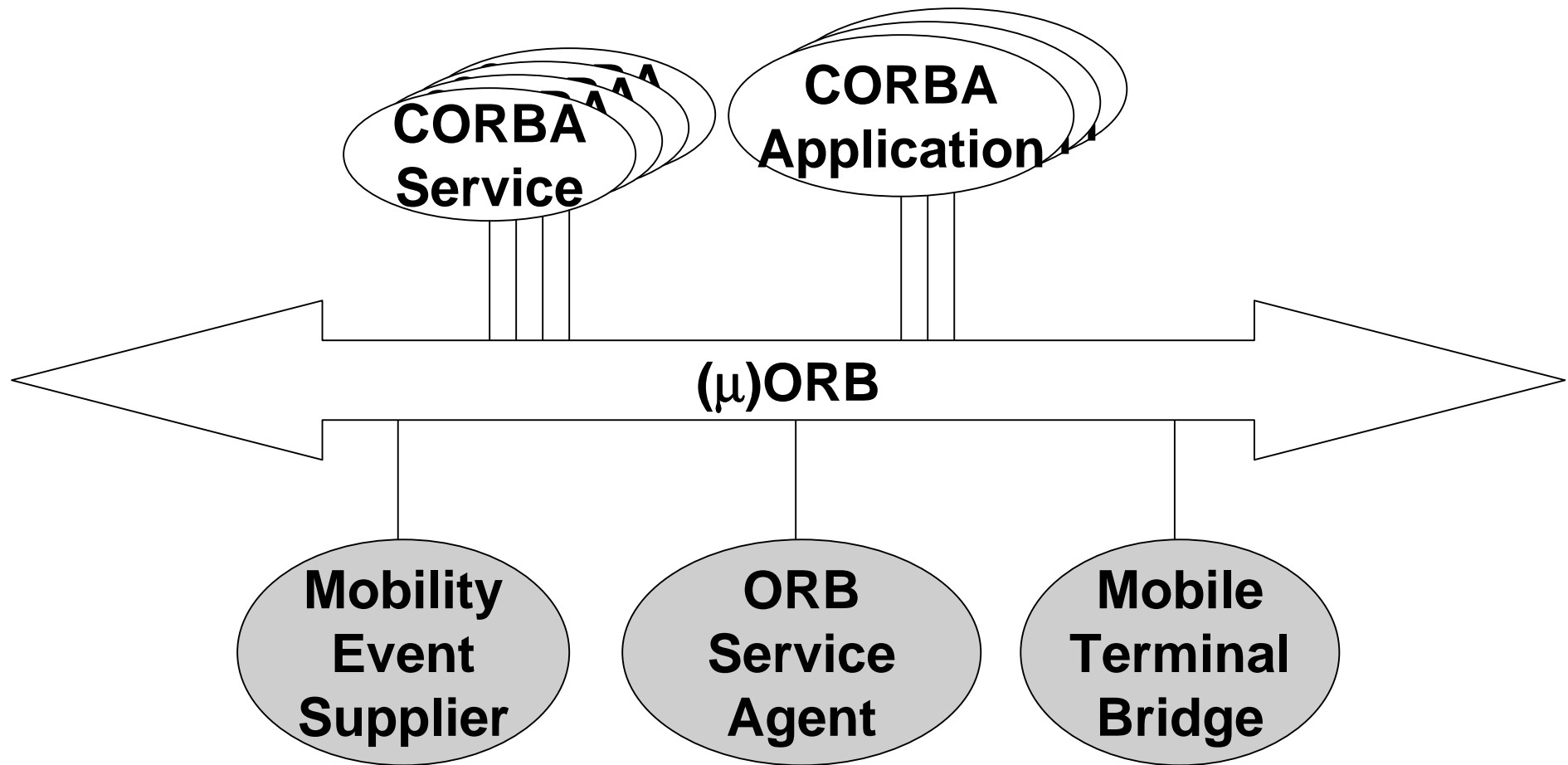
The Home Location Register provides the means to find the Wireless Access Bridge to which the terminal is currently attached.

- A Wireless Access Bridge may provide a temporary HLR for "homeless" terminals

Wireless CORBA Extensions



Terminal domain



Mobile Terminal Bridge

- terminal bootstrap
- initial access
- handoff
- access recovery
- GIOP/UDP mapping
- optionally the GIOP/WAP mapping

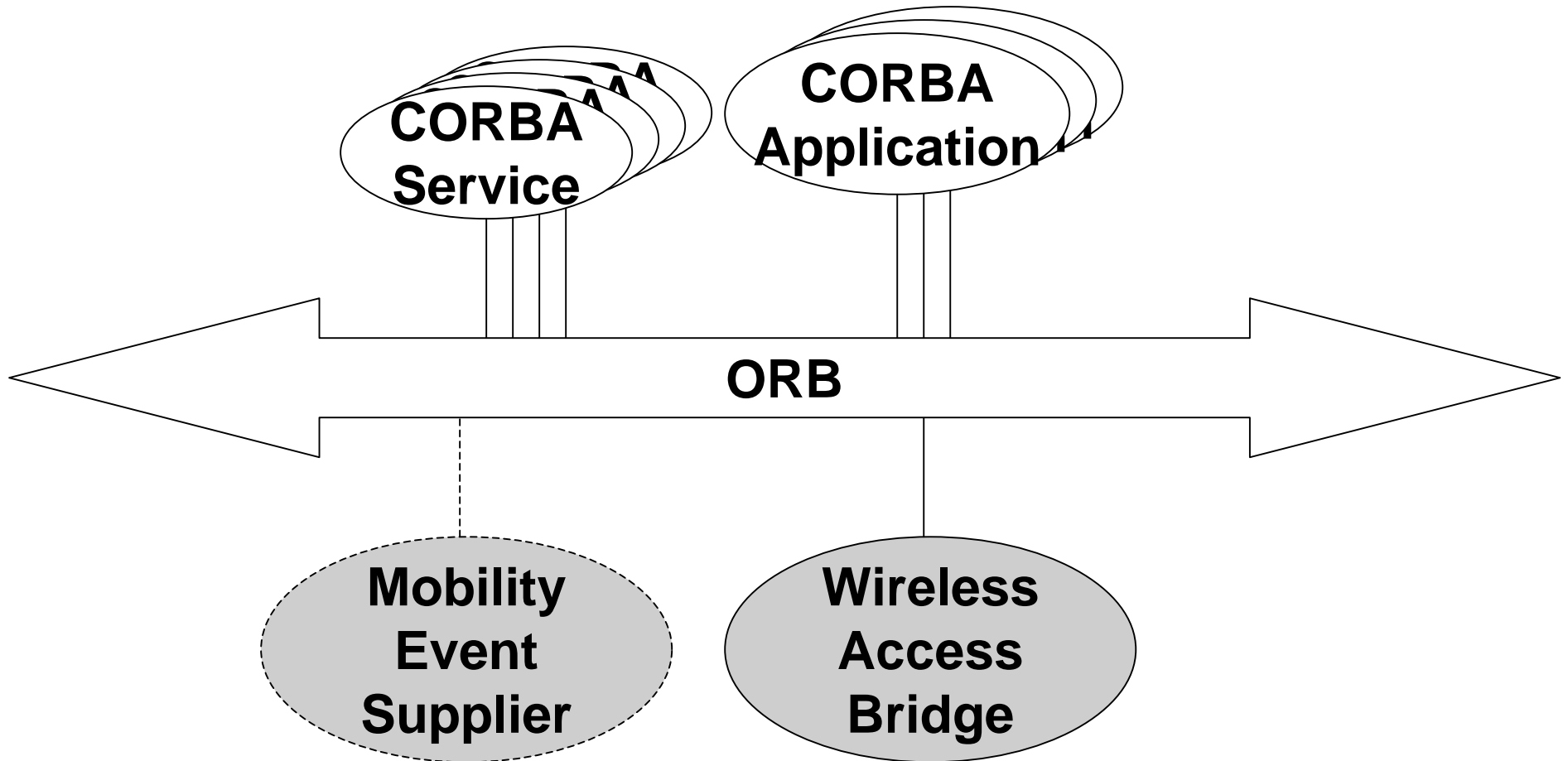
ORB Service Agent

- provides the means of transparently accessing Naming Service and other ORB services in the visited domain.
- The binding of names into the Naming Service in the visited domain that are automatically rebind to the Naming Service in the new visited domain after a handoff.
- The binding of names into the Naming Service in the home domain the IORs of which are automatically updated domain after a handoff.
- For the other ORB services the handoff is only semi-automatic.
The old references are stalled but new references need explicit involvement of the application.

Mobility Event Supplier

- mandatory part of the proposed technology in the terminal domain
- generates notifications of handoffs, connectivity drops, and connectivity recoveries.
- an optional feature in the visited domains

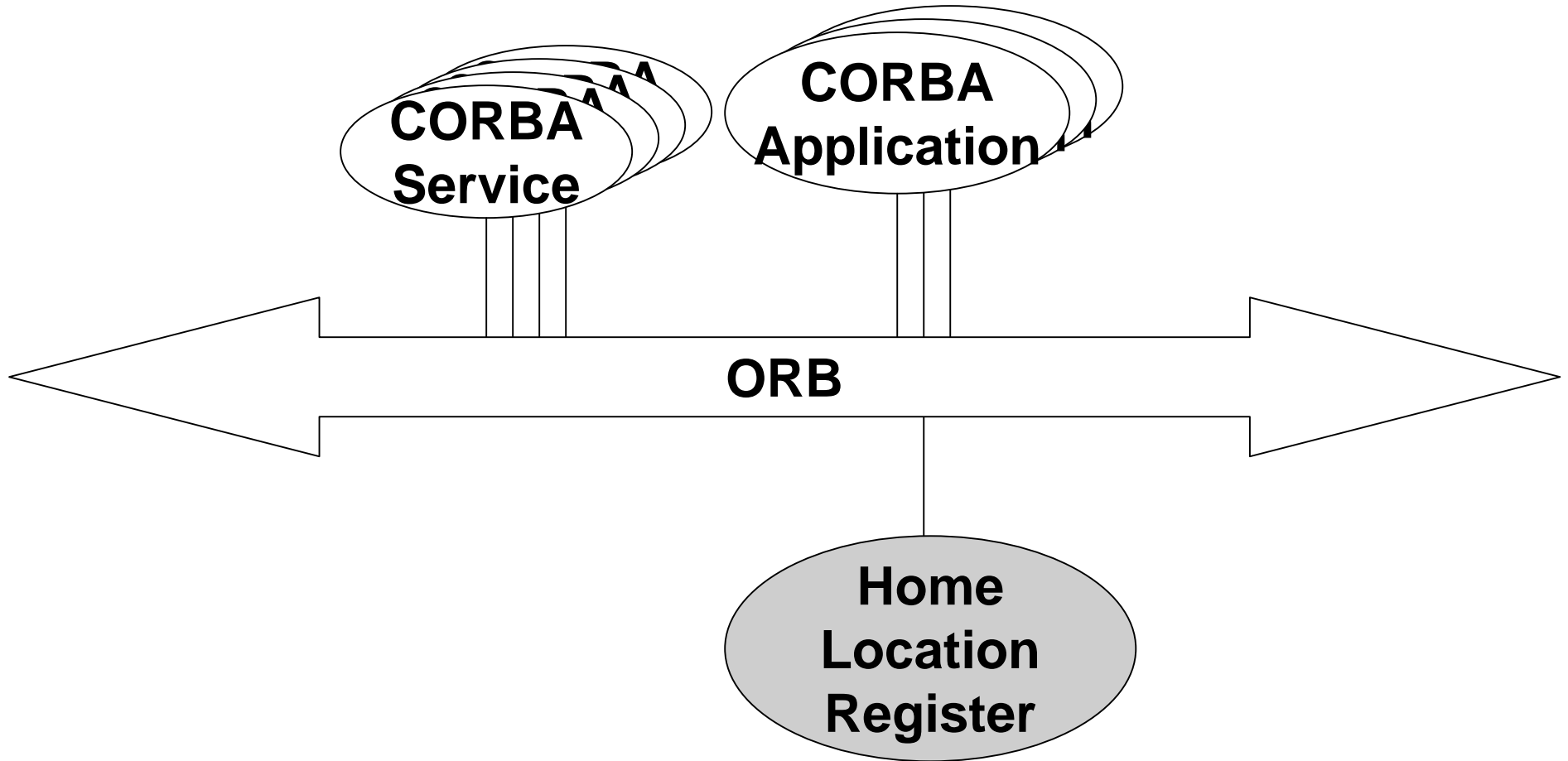
Visited domain



Wireless Access Bridge

- Counterpart of the Mobile Terminal Bridge in the access network domain.
- implements the support of the mandatory parts of the mobile terminal including support
 - initial access,
 - visited domain services,
 - location transparent IORs,
 - ORB Service Agent,
 - handoff and
 - access recovery.

Home domain



Home Location Register

- provides the means of keeping track of the current location the Wireless Access Bridge in current visited domain.
- provides the means of accessing the ORB Services in the home domain, even if the access is through a visited domain.
- The HLR interface also provides the means of updating the references available through the Naming Service in the home domain.
- May support paging:
 - Must have the paging method
 - but it can raise exception PagingNotSupported

Implementation Plans

- Nokia: a prototype based on our internal prototype ORB
Target date December 31, 2000
- University of Helsinki: an Open Source (LGPL) prototype implementation based on Mico (running on Linux)
- Public information available at
<http://www.cs.helsinki.fi/Kimmo.Raatikainen/wCORBA.html>