

# *FollowMe*

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# *Goals*

- Understand Agents
  - Mobility
  - Location
  - Autonomy
  - Negotiation
  - Scalability
  - Security



# *Scale of the project*

- Time

- 18 months
- started October 1997

- Funding

- 50% from European Commission (ESPRIT project)
- 50% of APM's funding from ANSA consortium

- Other partners

- FAST - German, Research & Consultancy
  - Bavaria Online - Internet Service Provider
- INRIA - French, Research
  - TC-Multimedia - newspaper
- UWE - British, Academic - esp. intelligent systems

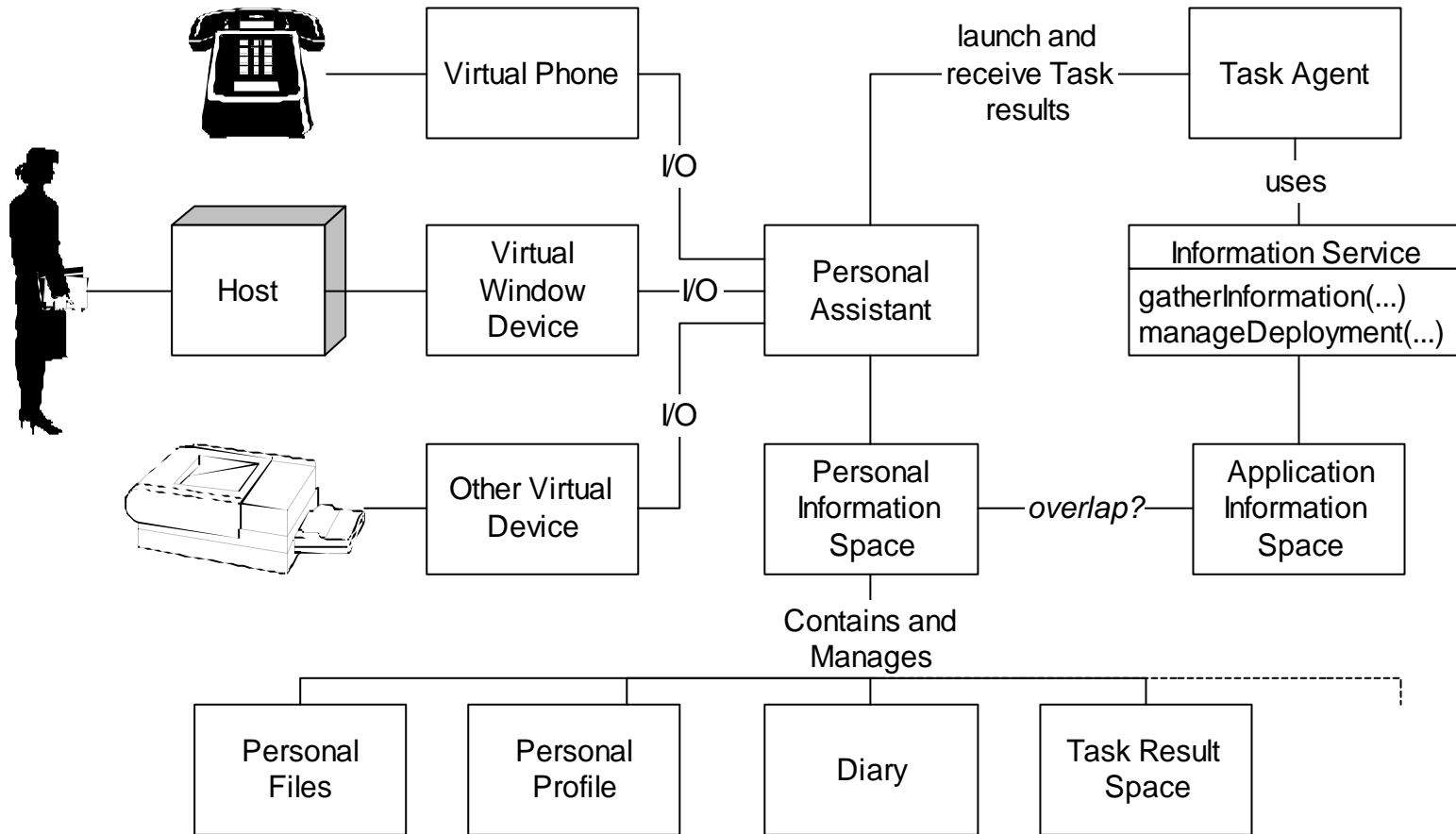


# *Benefits to ANSA*

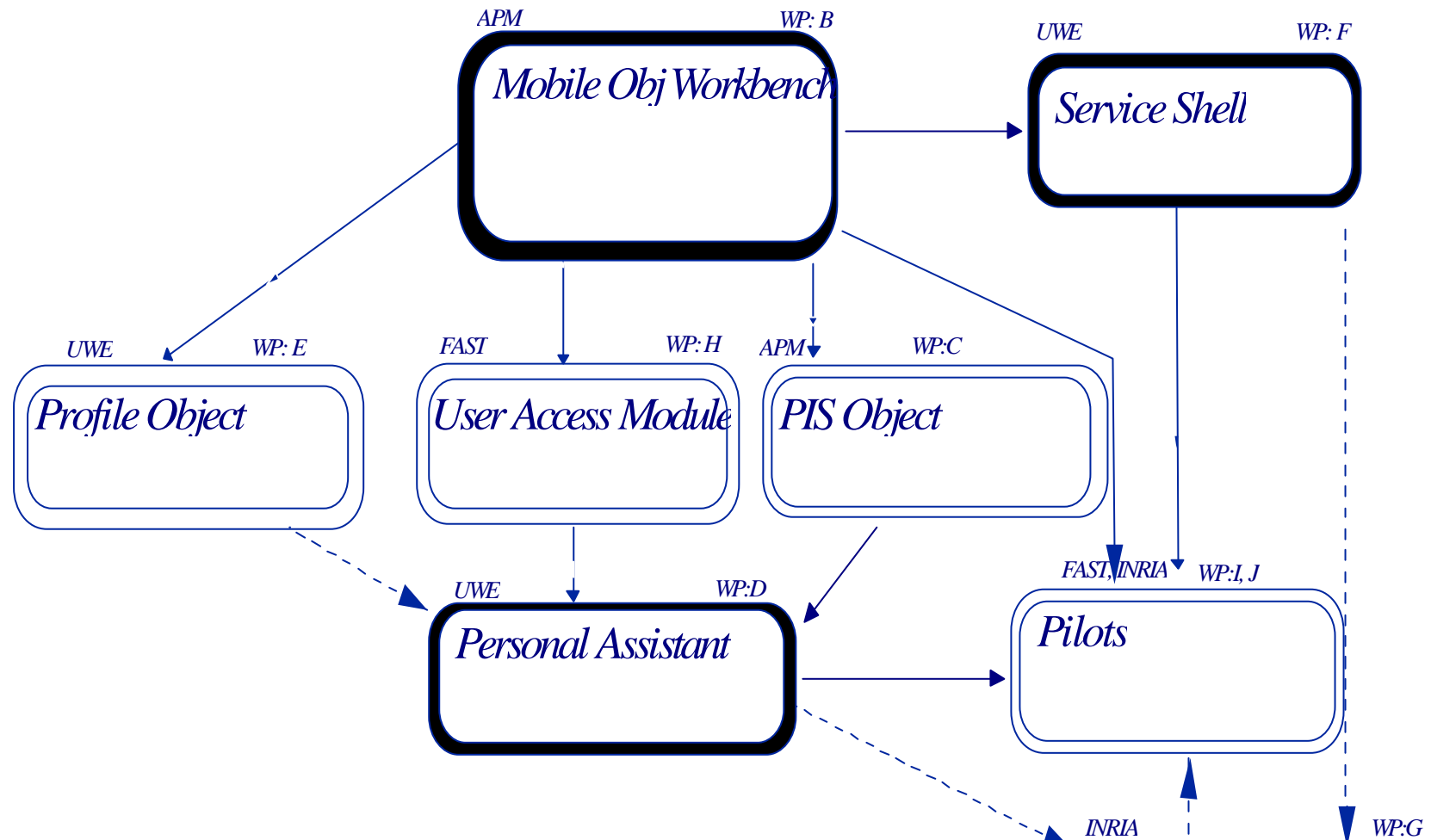
- Are agents a useful Internet applications model?
- What are the system needs of agent applications?
  - distributed, mobile objects and information spaces
  - migration of agents
  - security of agent code, agent data, places, services
  - directories
  - trading and request broking between agents and services
- Working with real world applications
- Short time scale



# FollowMe in action



# Overall Structure



# *APM's involvement*

- Work package A - Architecture
  - maintain conceptual consistency
- Work package B - Mobile Object Workbench
  - provides mobility at the object level
    - not agents
  - provides concept of 'place' - an environment for objects
- Work package C - (Personal) Information Space
  - a single and consistent (i.e. logical) view of an information space
    - designed for mobile users



## *Other work packages*

- Work package D - Autonomous Agents
- Work package E - Personal Profiles
- Work package F - Service Interaction
- Work package G - Service Deployment
- Work package H - User Access
- Work package I - Pilot Application 1
- Work package J - Pilot Application 2 (ETEL++)





# *Work so far - WP A*

## Work package A - Architecture APM

- Architectural backbone
  - RM-ODP based OMT models
  - shared concepts, terms
  - issues to be resolved
  - dependencies
- Strata
  - represent work from each work package
  - status, scope, issues, OMT models, “components”, function, API, requirements on other strata



## *Work so far - WP A (cont.)*

- Status
  - delivered 28 Nov. 1997
  - available to sponsors
- Will evolve as the project progresses
  - deliverables March 1998, September 1998
- Input received from all partners
  - different levels of detail
    - as expected
    - allowed us to agree on important concepts



# *Work so far - WP B*

## Work package B - Mobile Object Workbench **APM**

- Models
- Function now well defined
- API (in architecture) and published
  - initial implementation released (update due Jan. 1998)
- Initial thoughts on security
- Built on FlexiNet
- Events service to be provided
  - not central to MOW, but important to partners



## *Work so far - WP C*

### Work package C - (Personal) Information Space **APM**

- Early work (only officially started December 1997)
- Space to maintain and access information
- Single and consistent (i.e. logical) view of an information space irrespective of where users are located
- For use by agents and users
- Mobility important
- JavaBeans a possible technology
- Requirements have changed since architecture published



# *A view on WP D*

## Work package D - Autonomous Agents

### University of the West of England (UWE)

- Framework for agents acting to complete tasks, allows
  - selection of agents
  - dispatch & return of agents
- Built on top of MOW
- Allows off-line completion and mediation of tasks
  - but not AI!
- Requires an interaction model



## *WP D - Key points*

- Two basic types of agent
  - personal assistants
  - task agents
- Agent profile
  - defines components, helps with extensibility
- Agent description (scripting) language
  - glues components together

UWE seem to be proceeding well, and we are working closely to provide the framework they require



# *A view on WP E*

## Work package E - Personal Profiles UWE

- Representation of personal information
- Diary information to allow agents to find users
- XML likely to be used for description



Although requirements on what should be in the profile are sparse, the work on parsing and description is going well.



# *A view on WP F*

## Work package F - Service Interaction UWE

- Define a pattern to make services available to FollowMe agents
  - allow new services without rebuilding all server and client code
- To be provided
  - service description language and tools
- Required
  - interface syntax, semantics (service model) and pragmatics (service contract)

Likely to use XML again - early days, and it's not yet clear how ambitious we should be.





# *A view on WP G*

## Work package G - Service Deployment INRIA

- For load-balancing, creation of new services, tuning of existing services
  - application-level resource management via mobility
- To provide
  - tools for performance measurement and prediction
  - ETEL++ dedicated service deployer

There are no requirements on this work package except from INRIA. However, the measurement and prediction services should prove useful for other distrib. services.



# *A view on WP H*

## Work package H - User Access **FAST**

- To allow users to contact and interact with Personal Assistants (and vice versa)
- Java-enabled devices for input-output
- Telephone & fax output should be available
- Working with a 'virtual devices' metaphor

This is proceeding slowly, and sometimes fitfully. We have done quite a lot of hand-holding, and think they're now getting on track. APM will be keeping a close eye on this.



# *A view on WP I*

## Work package I - Pilot Application 1 FAST

- FAST are currently exploring possible knowledge domains with users (2 to be implemented)
  - regional event announcing service
  - stock information systems
  - real estate information systems
- Interaction model seems quite well defined now
  - but seem rather locked into a WWW paradigm, rather than fully distributed world
- Security issues a concern for FAST

More definition of services required - prototyping should help.



# *A view on WP J*

## Work package J - Pilot Application 2 INRIA

- Development of ETEL project
  - currently over proprietary ISDN network
  - want to move to Java, use mobility - ETEL++
- Serve different agents different data; exploring
  - benefits of mobility
  - impact of geography & user preferences
  - QoS for good response - data follows the user
- Well-defined requirements

INRIA seem very committed to this - possibly *over*-defined?



# *Other issues*

- Security
  - we are investigating this at the Mobile Object level
  - other strata should be able to use these mechanisms
- Object Naming and Trading
  - basic naming service needed for MOW - what others?
- Profiling Hosts
  - what information should be available about a host?
- Profiling Places
  - how does this differ from a host profile?



# *Summary*

- Project fully started, proceeding well
- Architecture guiding work packages
- ANSA-related work (MOW, PIS) well scoped
- Importance of security identified
- Agents
  - challenge: avoid AI tarpit, but do something useful
- User Access
  - lack of Java-enabled devices causes problems
- Pilot applications
  - chicken and egg, as per usual

