

IST-FET proactive initiative on “SITUATED AND AUTONOMIC COMMUNICATIONS”



IST-FET project proposal:
Situated Immersive
Communications for 2020
SICOM2020
(working title)

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THE SICOM2020 VISION

- ◆ **A world pervaded by ubiquitous communication and networking facilities self-organizing their functionalities without any need for direct human intervention**

PARADIGMS ADDRESSED IN SICOM2020 PROPOSAL

- ◆ ***Self-Organizing Networks***
 - Peer-to-peer
 - Self-repair
 - Network growth capability
 - Scalability
 - Plug & play features
 - Autonomous operation
- ◆ ***Cognitive Situated Networks***
 - Answer to ambient stimuli
 - Self-awareness and context-awareness
 - Network distributed intelligence
- ◆ ***User-centric Networks***
 - Security and trust
 - Privacy and individual control
 - Service tailoring
 - Social, economic, psychological effects

Leveraging on the VICOM expertise

- ◆ **Virtual Immersive Communications (VICOM)**
 - Ongoing Italian national project (2003-2005)
 - Main goal : realize an architecture able to support “immersive service” for the nomadic user operating in a wireless service area
 - “Immersive” = context awareness + plug&play + Multimodal interfaces for service presentation
- ◆ **What VICOM offers to SICOM2020**
 - A System Architecture that copes with context awareness and plug&play topics
 - Test-Bed Applications that use Multimodal interface based on Avatar & Augmented Reality and that complete the immersive concept.

The VICOM system architecture

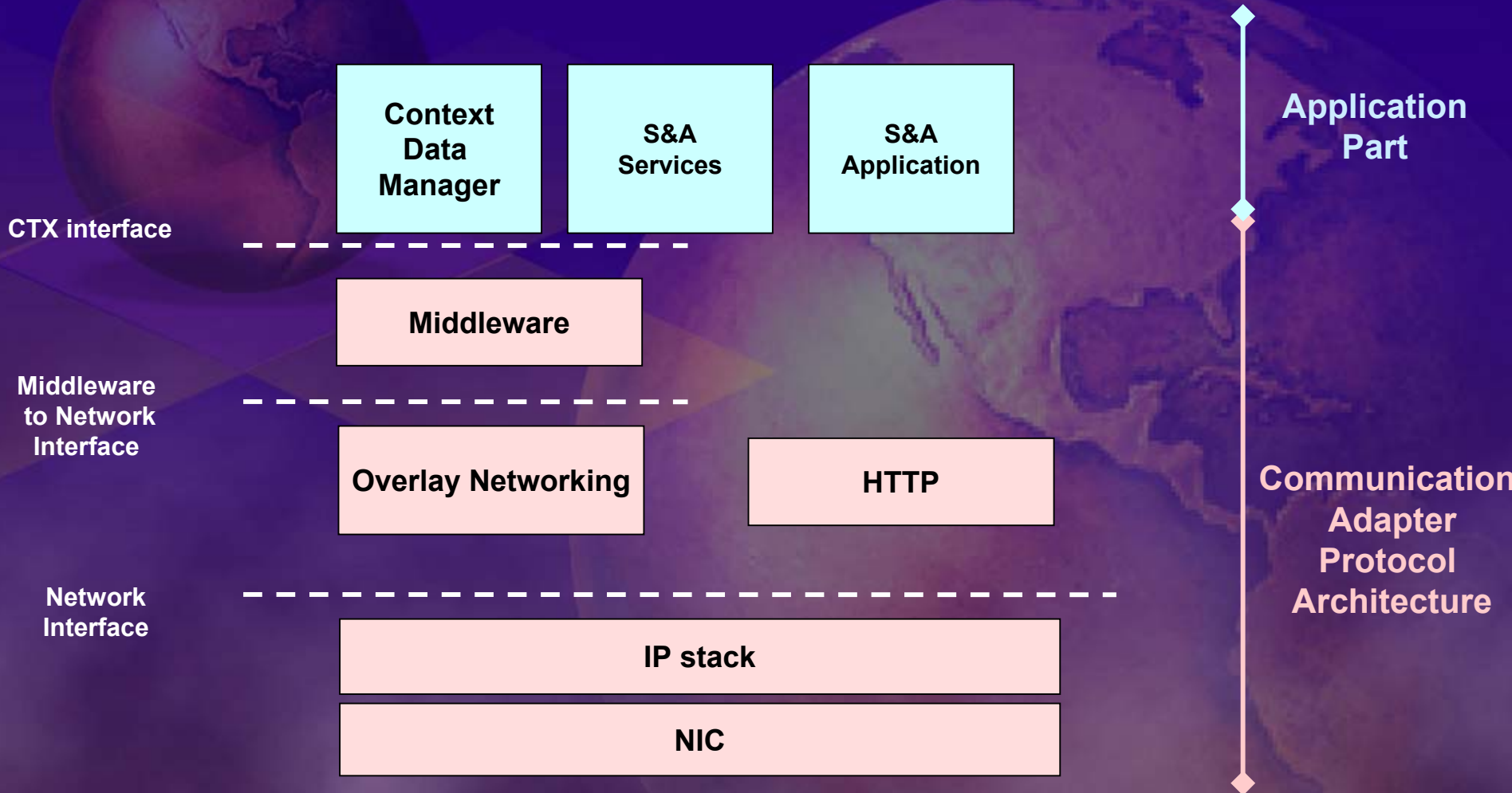
- ◆ **Context data management**
- ◆ **Plug & Play capability**
 - **No cable, no infrastructure (wireless/mobile networking)**
 - **Zero configuration for network stack**
 - **Automatic download and presentation of applications (mobile code)**
 - **User transparent deployment of new “service device”**
 - **Service integration through context**
 - **All service information are on the context**
 - **All user information are on the context**
 - **The application logic through the context is able to adapt the service request to user’s surrounding condition**

Concept of Context Space in VICOM

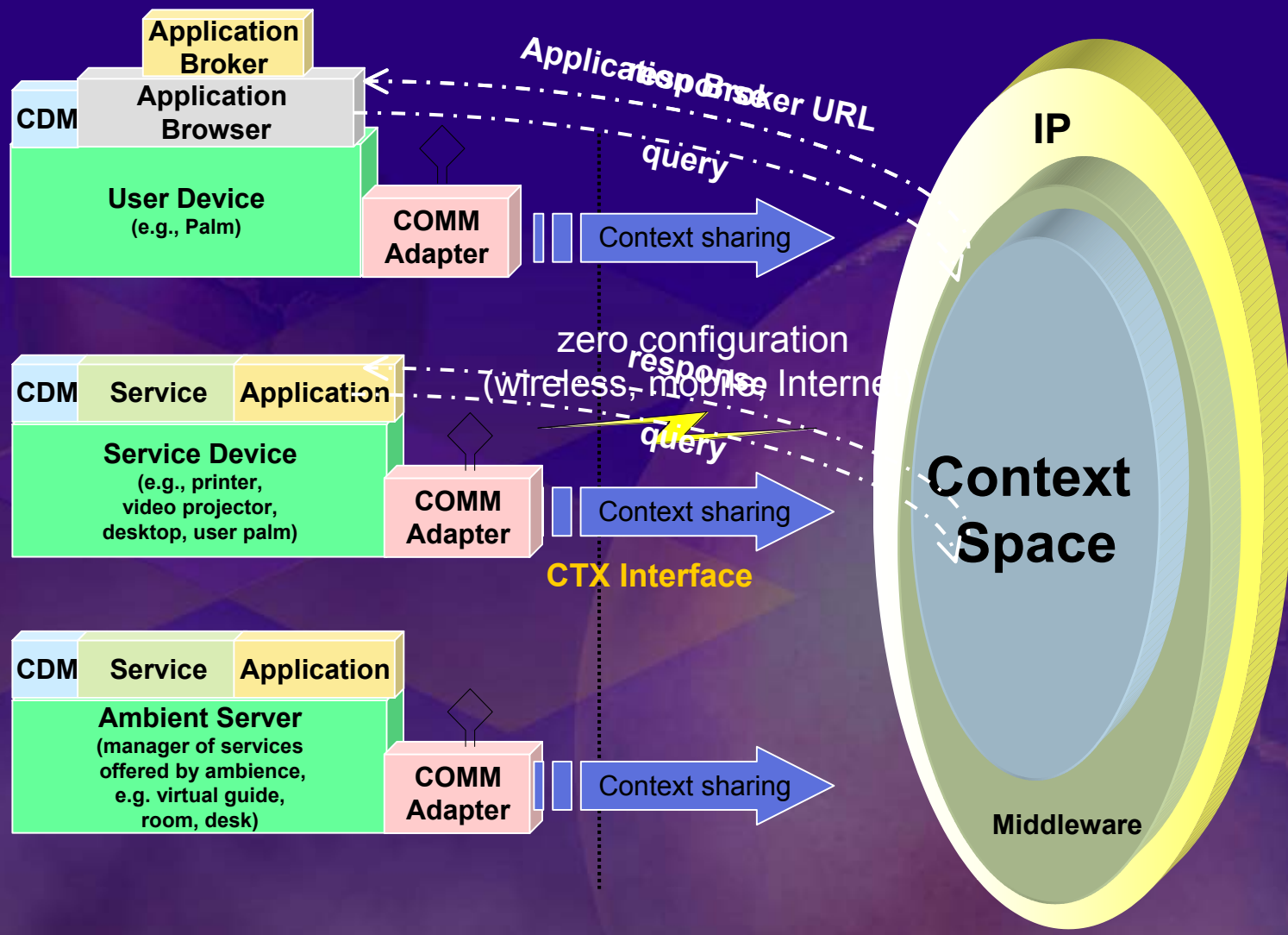
- ◆ The context is a **shared data space**, which represents the digital fusion of dynamic information related to computing facilities, to real ambience and to the users
- ◆ The kind of information the context needs to maintain depends on the final goal of the system architecture
 - In case of *Situated & Autonomic Applications* some examples are: user profile, location info, service info, etc.
- ◆ In order to organize and to give a semantic meaning to context data, **Web Ontology Language** may be used to describe Context Ontology and schema

VICOM Protocol and Application Framework

Applications are “high level services” (i.e., obtained through the coordinated use of services) with GUI based on terminal adaptation technique



VICOM System Architecture



SICOM2020 activity proposal (preliminary)

- ◆ **Definition of SICOM2020 reference scenario, applications and services**
- ◆ **Context Data Management**
 - **Semantic definition for the situated & autonomic context space**
 - **Publishing rules on the middleware interface**
- ◆ **Middleware support for data sharing in a mobile environment**
- ◆ **Sensing technologies**
 - **Dynamic Context data retrieval (e.g., positioning)**
- ◆ **Networking**
 - **Ad-hoc networking wireless**
 - **Infrastructured Wireless**
 - **GPSR/UMTS**
 - **Internet**
 - **Zero configuration**
 - **Overlay networking for middleware adaptation**
- ◆ **Security and privacy issues**
- ◆ **Socio-psychological impacts**

SICOM2020 preliminary time schedule

- ◆ **Draft proposal document (15.12.2004)**
 - Includes main technical guidelines
 - Identifies necessary skills
 - Potential partners expressions of interest
- ◆ **Team formation (15.1.2005)**
 - Selection of partners
 - Preliminary task assignment
 - Selection of coordinating partner
- ◆ **Proposal finalization (15.2.2005)**
 - Collection of contributions from partners, and proposal harmonization
 - Rounds of proposal finalization meetings
- ◆ **Proposal submission (22.3.2005)**

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To probe further see: www.vicom-project.it