Ambient Aware Information Delivery

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Problem field

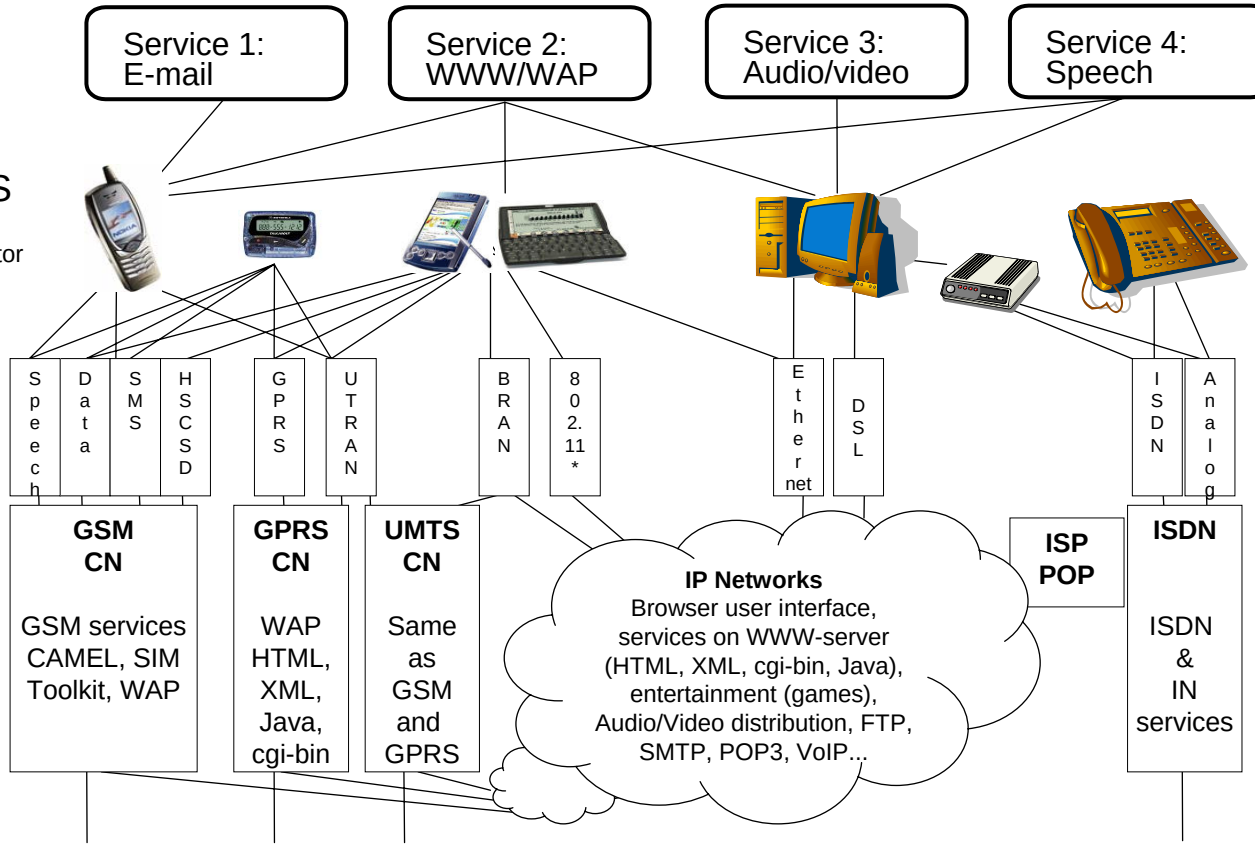
SERVICES

TERMINALS
- Mobile phone
- PDA/communicator
- Laptop computer
- Workstation
- Telephone set

ACCESS

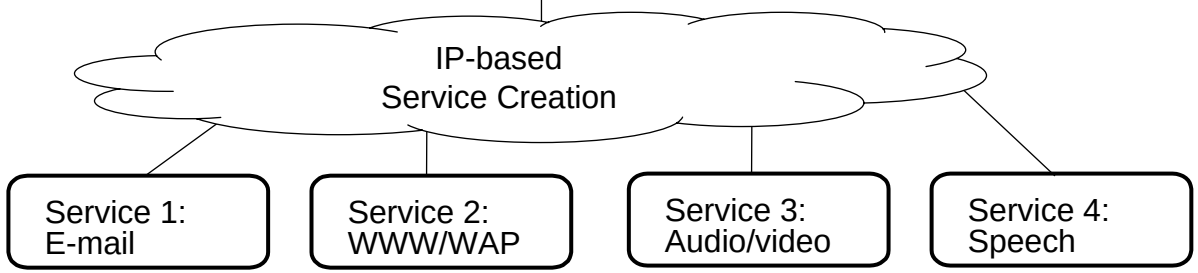
Core Network

Current Service Creation



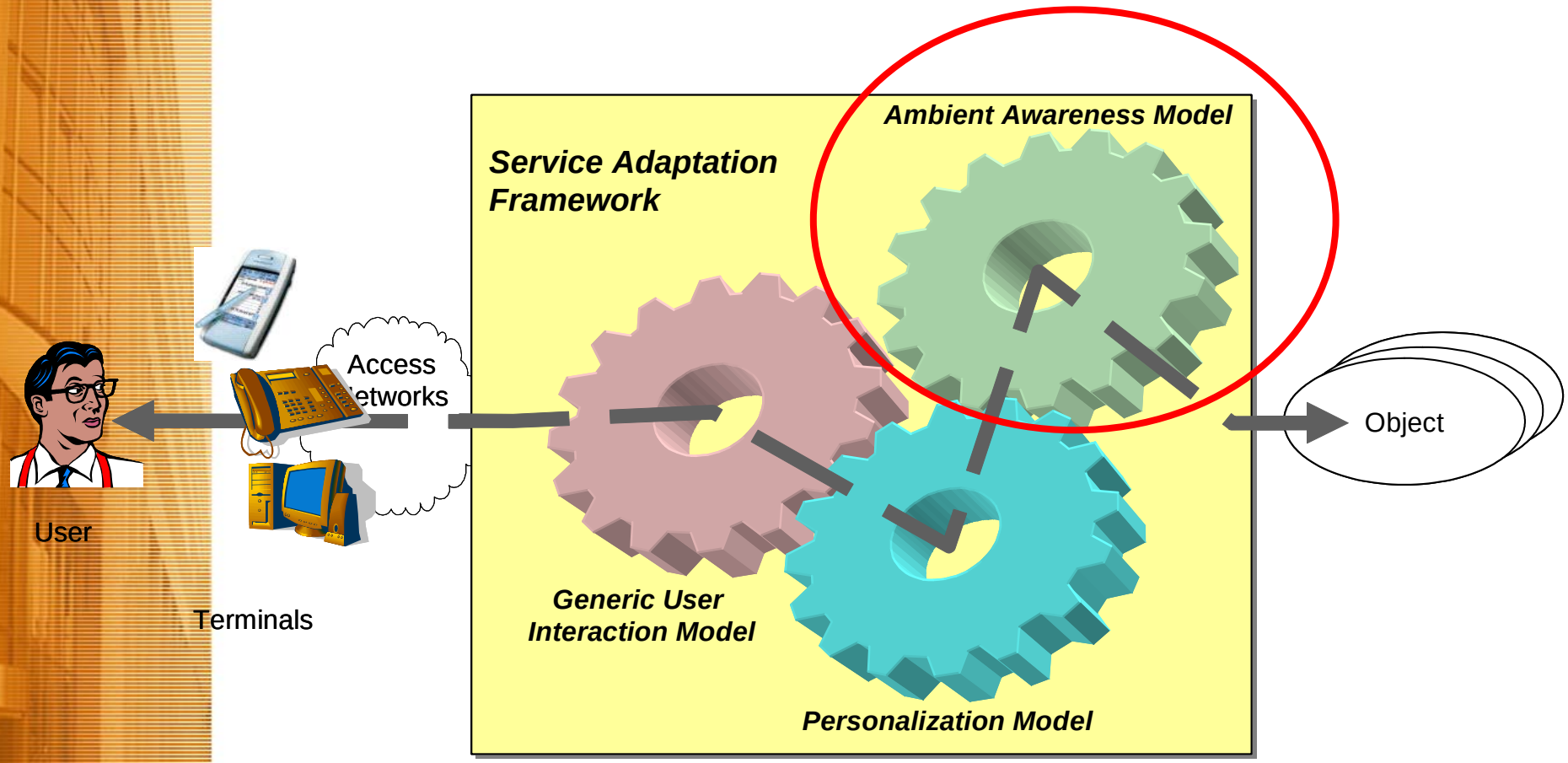
Service adaptation to the terminal and access capabilities. Hide access technology and personal/terminal mobility. Provide: user identification, authentication, charging (content, service, access and transport), billing, location information, terminal capabilities, access/transports available,..

VHE Service Creation



Flexible service creation. Fast service introduction and easy online management. Service personalisation, customisation (service profile)…

User-centric information delivery



Ambient-awareness?

- **Ambient information** describes the environment of the user at a certain moment in time. This includes physical measurable data, but also relevant items residing in the environment, such as devices and other objects.

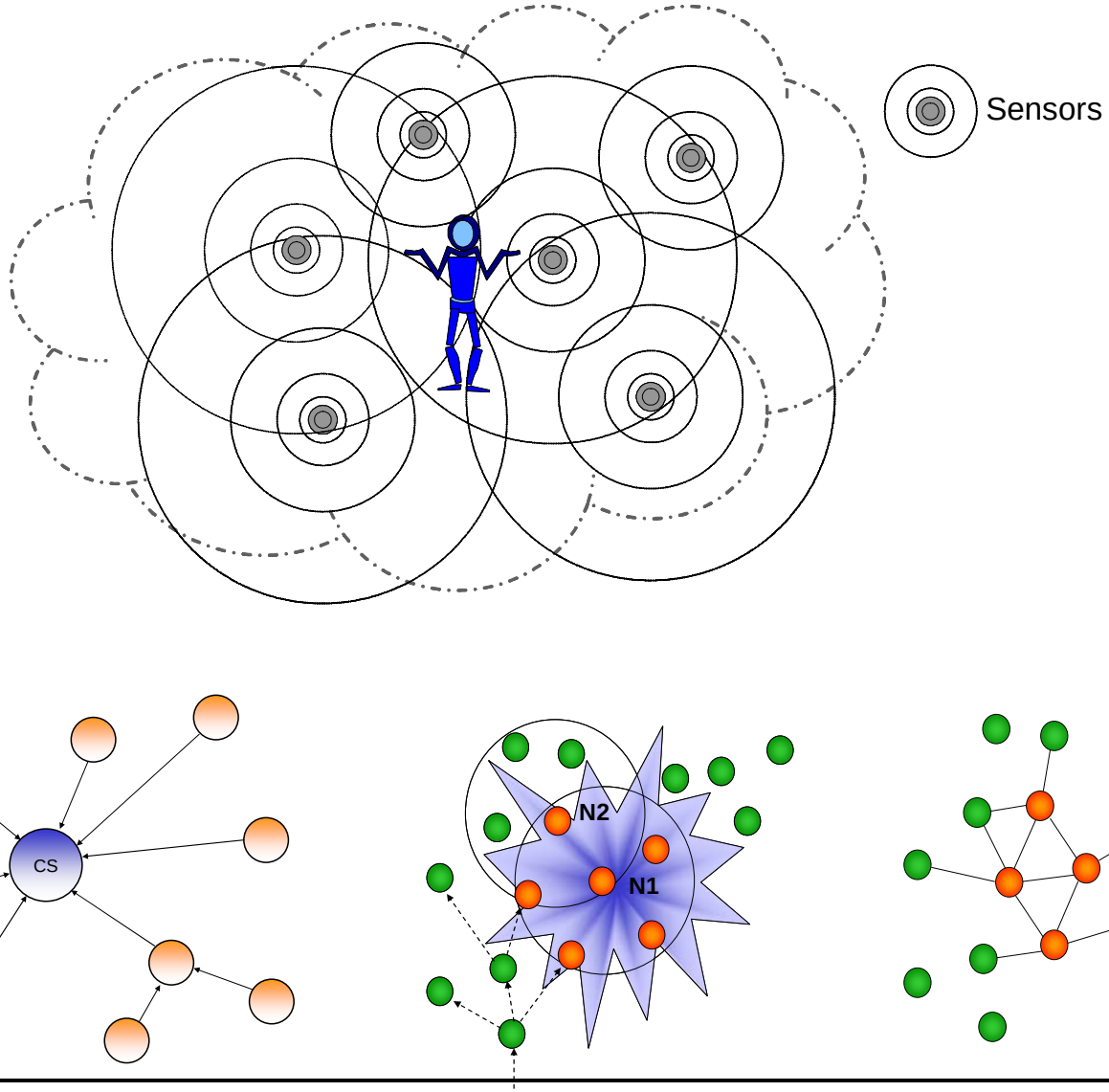
- **Multi-context indicators**:
  - Physical contextual indicators, e.g. levels of brightness, noise, humidity, and temperature.
  - Computing context indicators, e.g. network connectivity characteristics, nearby devices.
  - User context indicators, e.g. user's location, social conditions, user's history.
  - Temporal context indicators, e.g. time of day, day of week, time before or after a specific event.

- **Ambient awareness** means to consider and to adapt to information about the user's environment (ambient information) in the service provisioning.

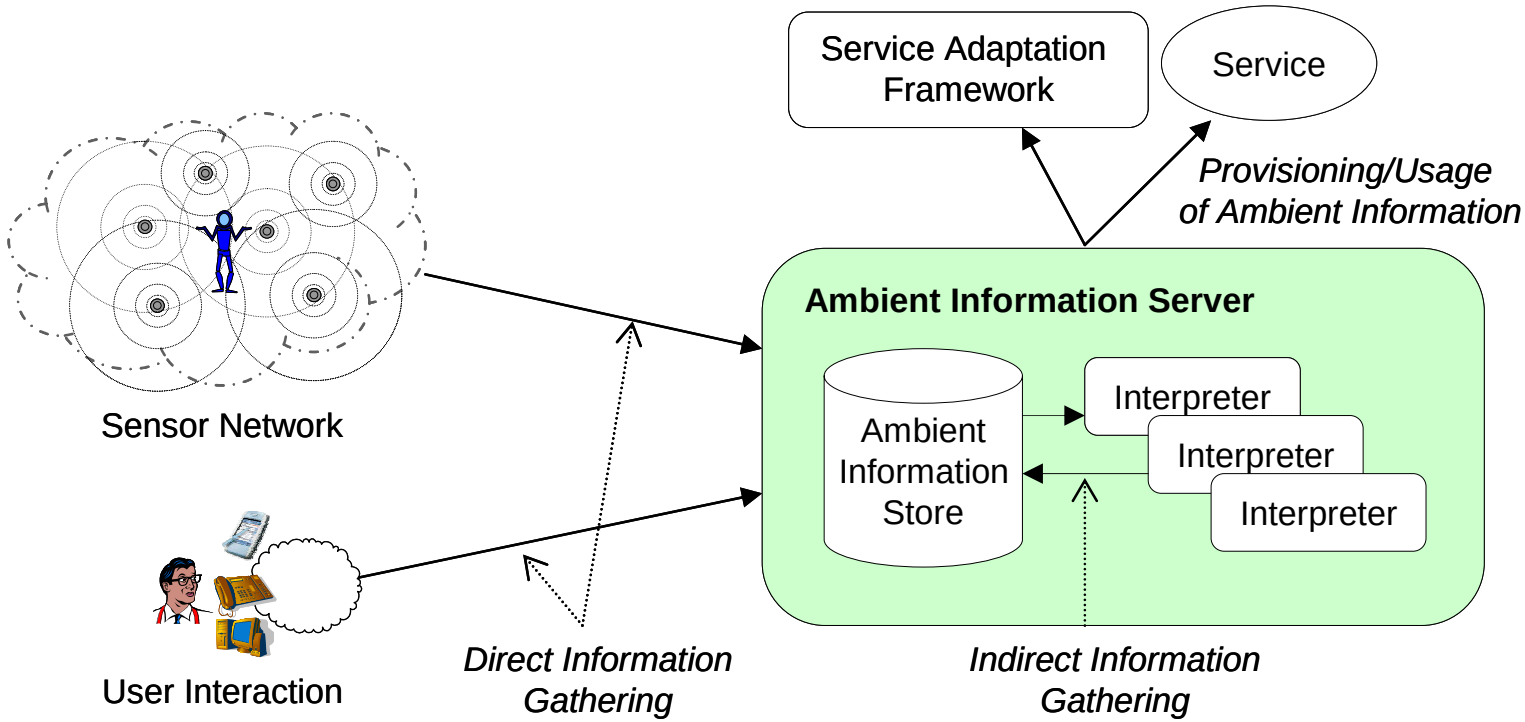
Obtaining ambient info

- Directly
  - From sensor devices, which measure and provide physical values.
  - From explicit user statements, by which the user himself describes the environment, e.g. specifying the current location.
- Indirectly:
  - By interpreting available data in order to process/revaluate more information. For example, if the location of an active user terminal is known, the location of the user can be derived accordingly.

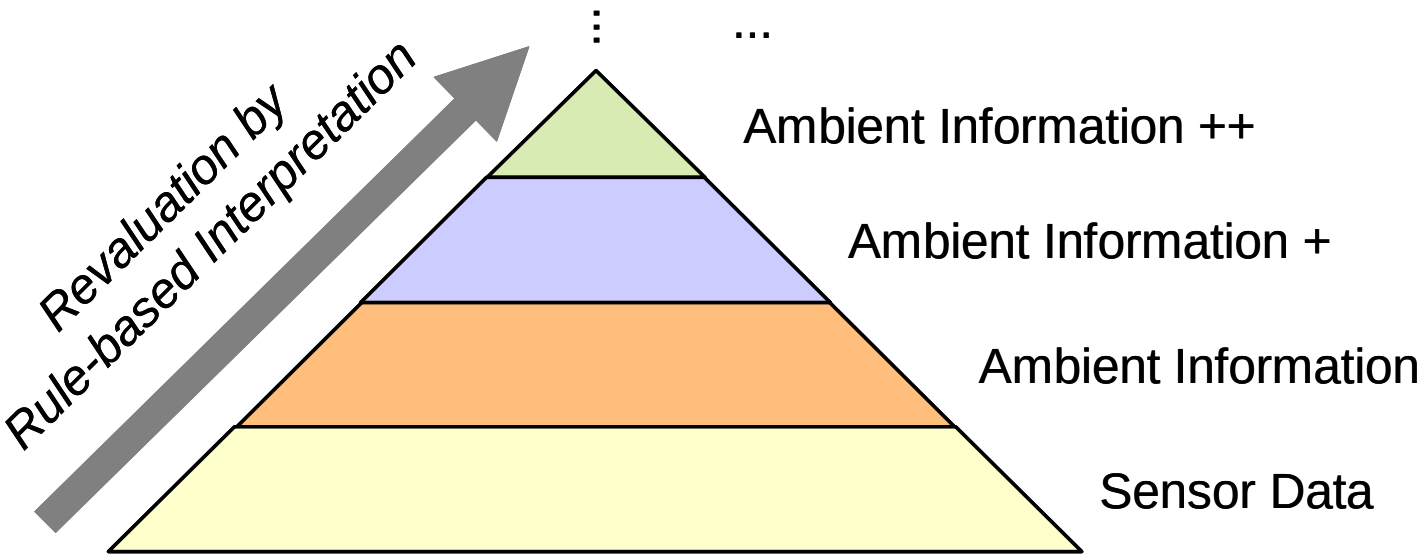
Network of sensors gathering ambient information



Gathering of ambient information

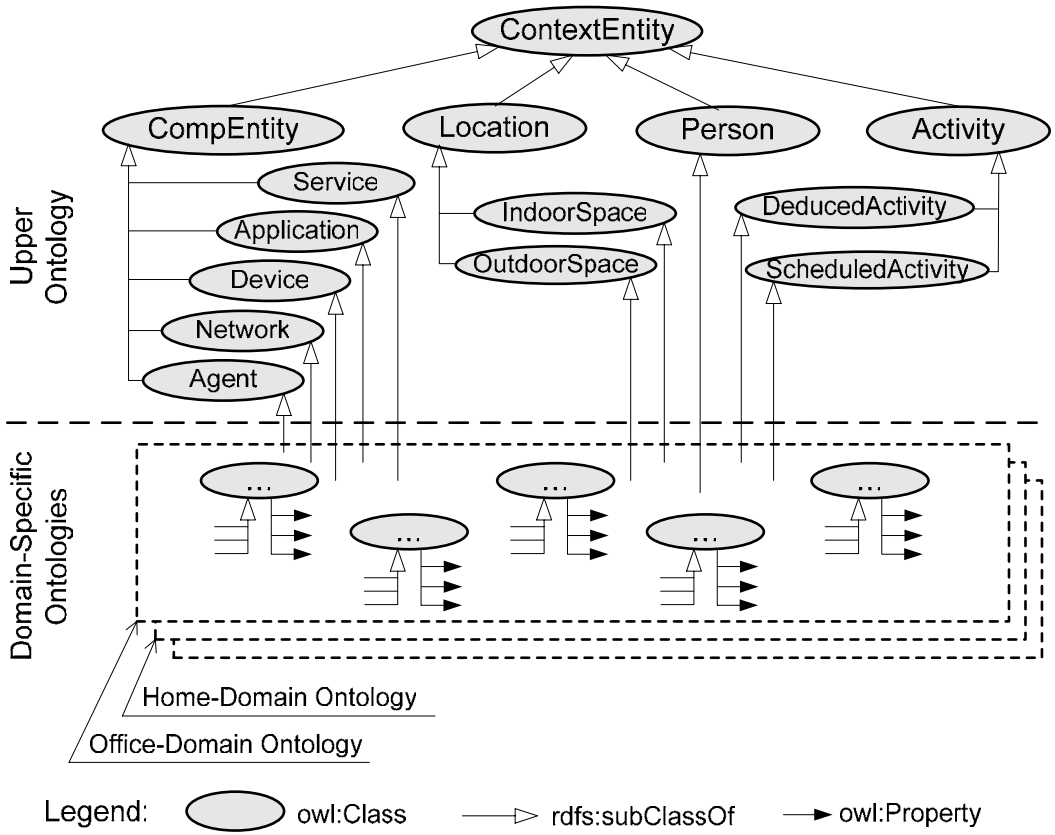


Revaluation of ambient information

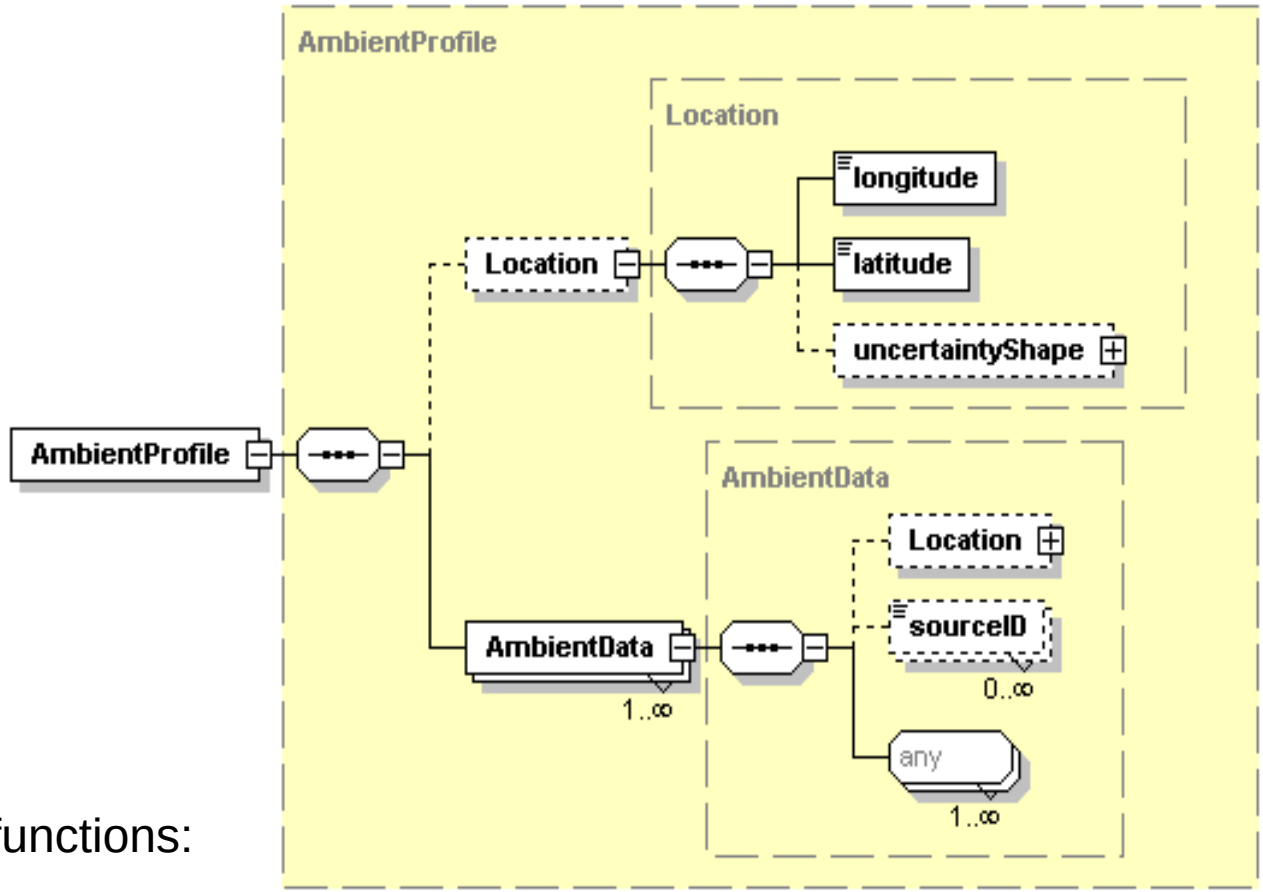


Context Modeling

- Resource Description Framework (RDF) provides data model specifications and XML-based serialization syntax
- Web Ontology Language (OWL) enables the definition of domain ontologies and sharing of domain vocabularies

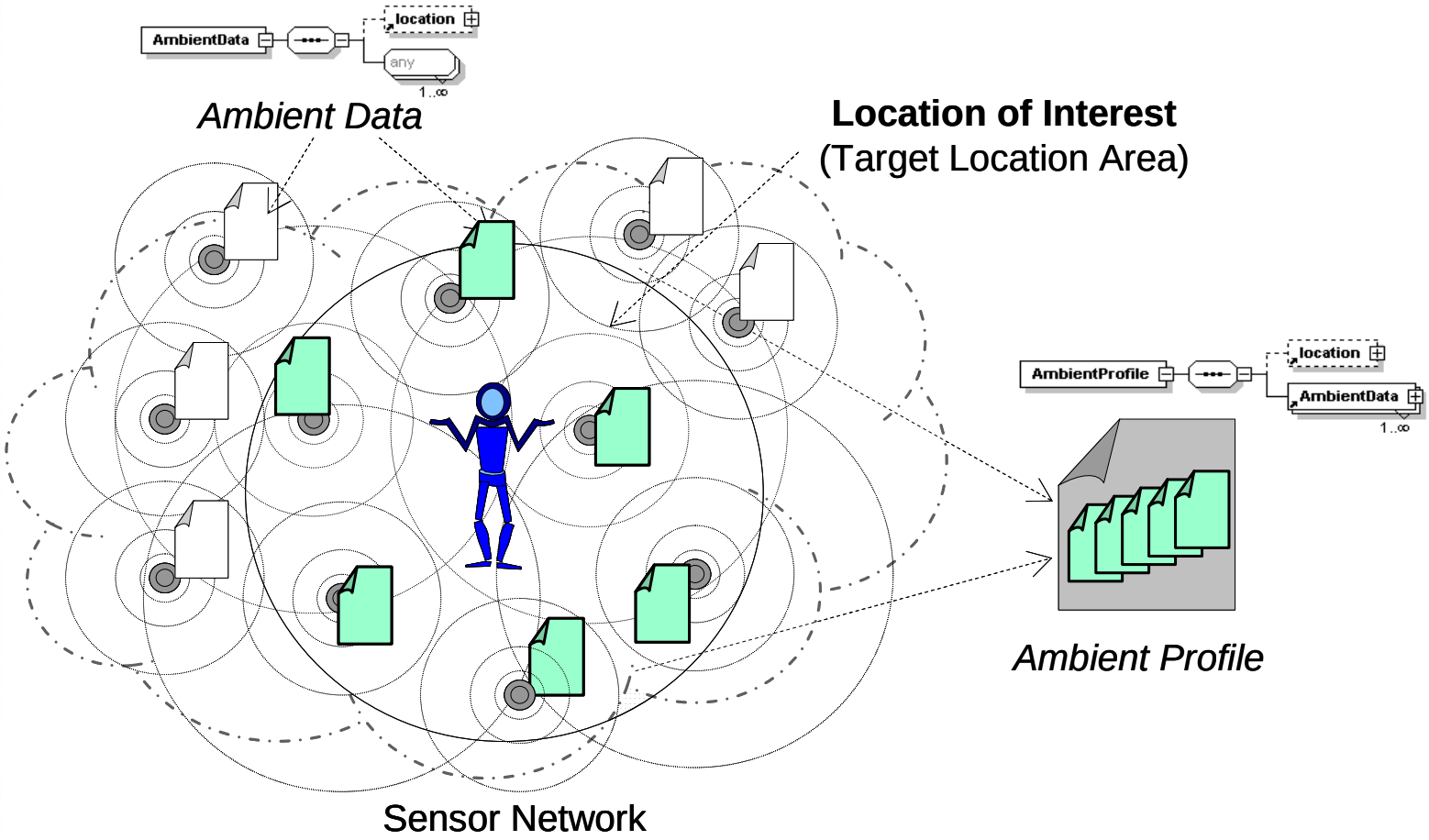


Ambient profile data structure

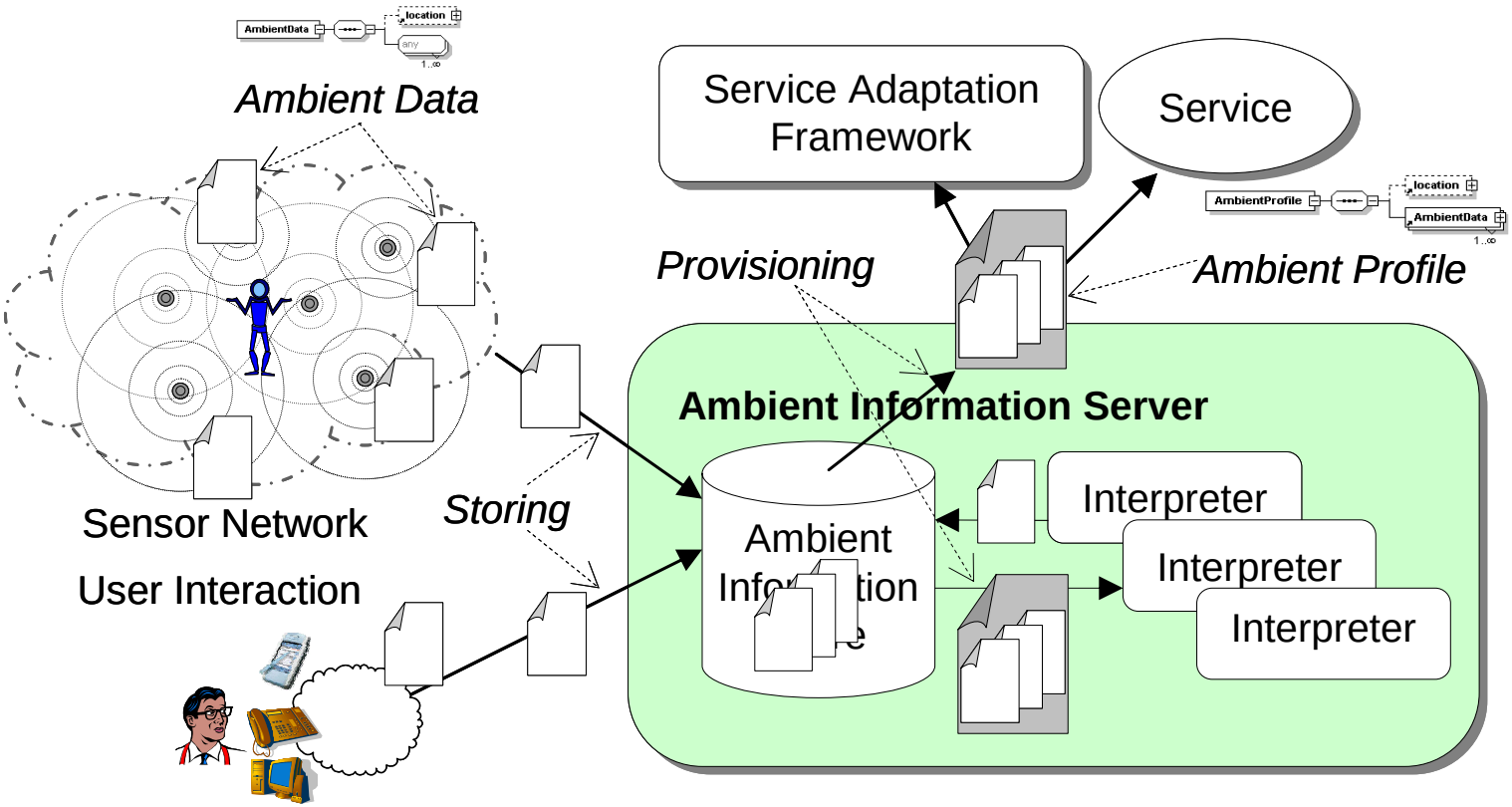


- Ambient functions:
  - Store
  - Retrieve
    - Poll
    - Subscribe

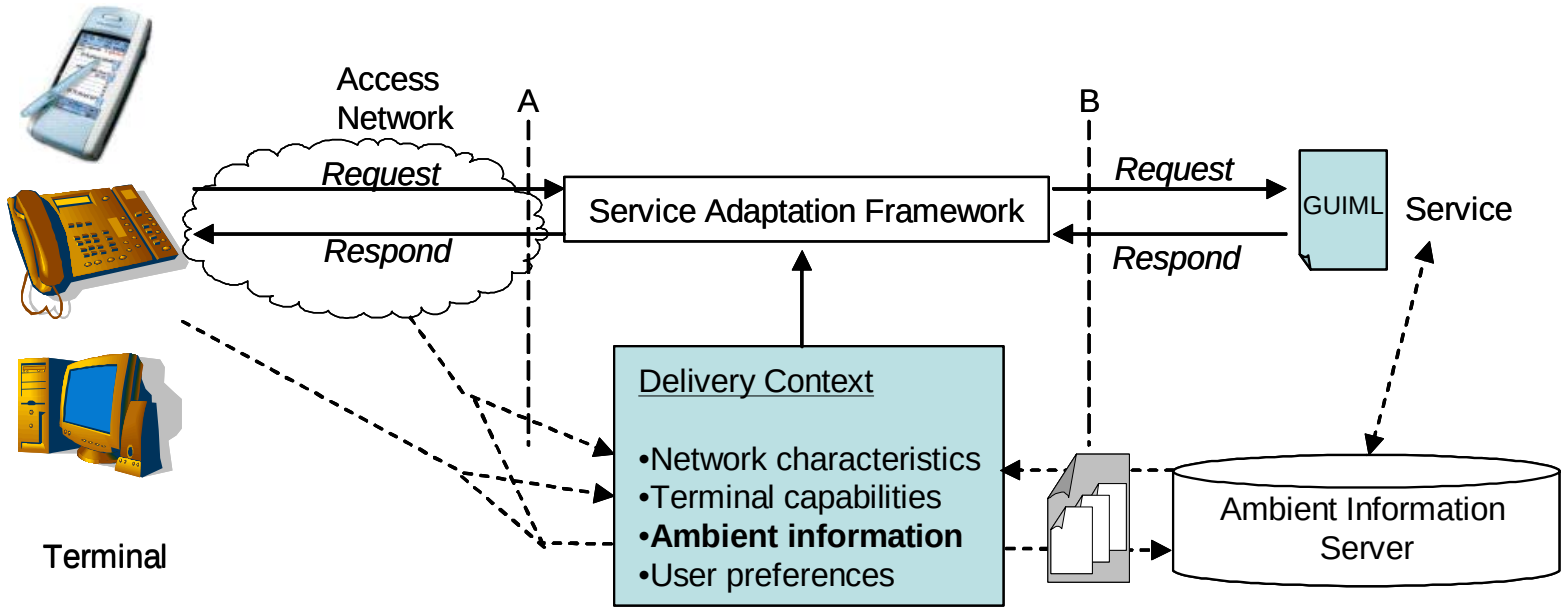
Ambient profile according to a specific target location area



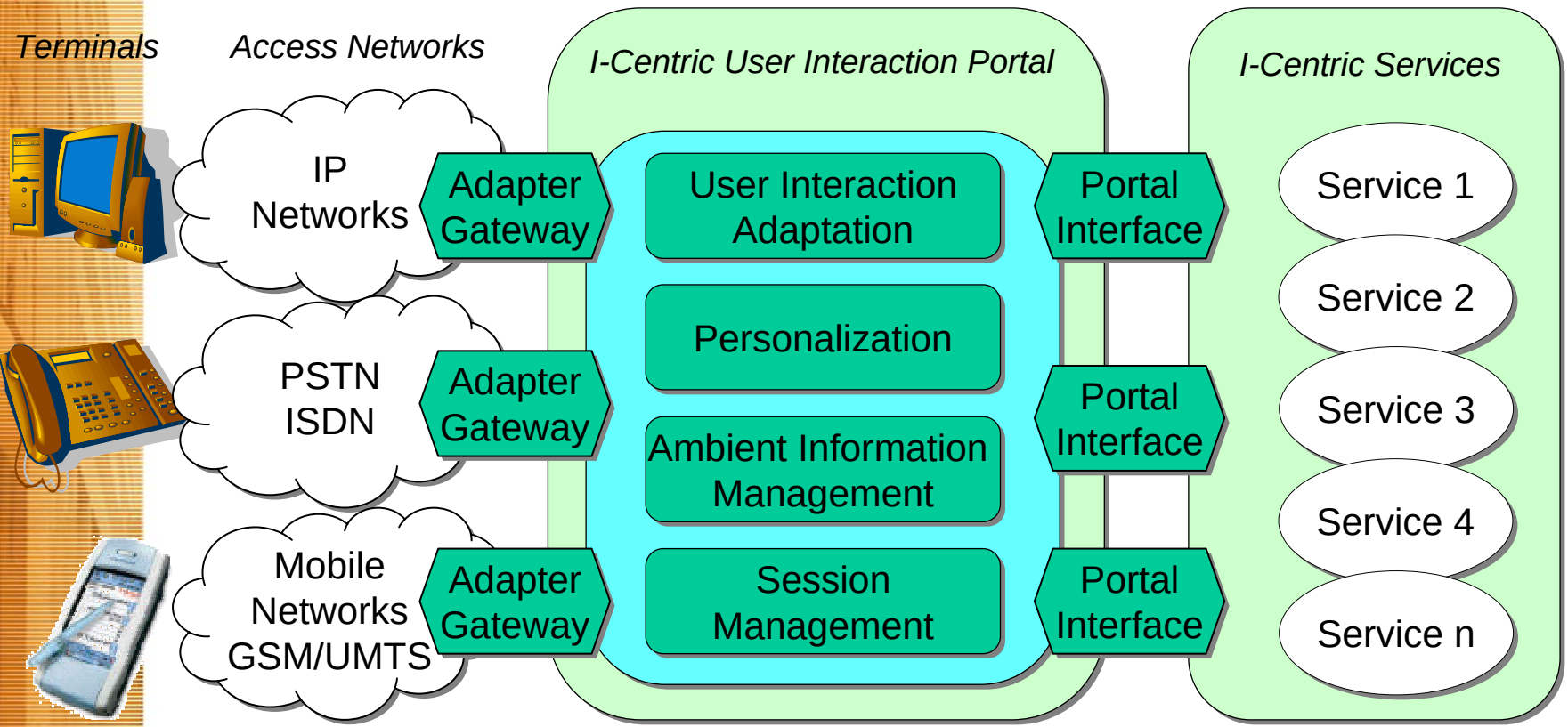
Storage and provisioning of ambient data



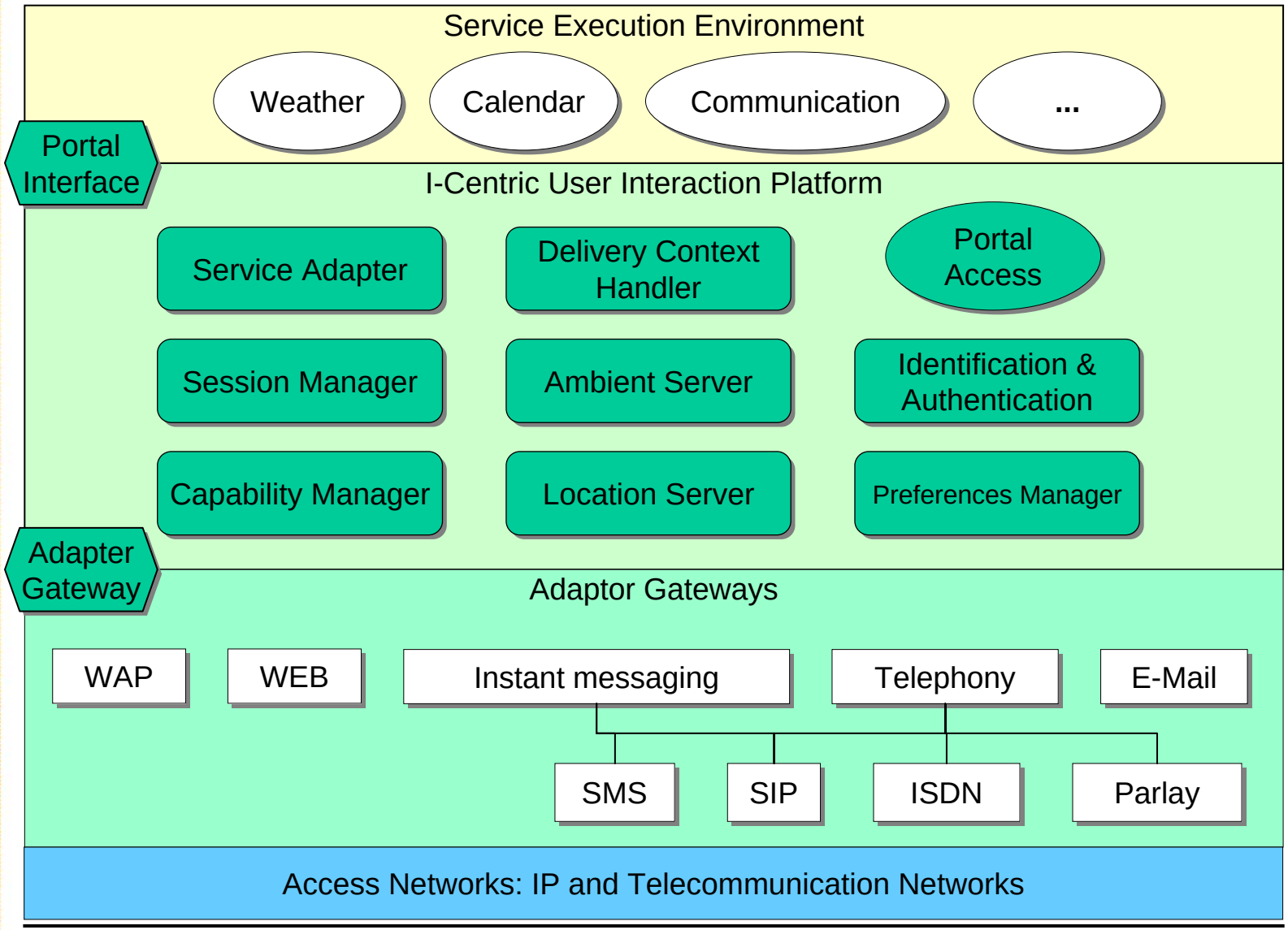
Ambient information in the delivery context



Info delivery – functional overview



Portal Architecture



Ubiquitous Portal Access

Mobile ↔ Car ↔ Desktop ↔ Public Terminals ↔ on TV at Home

- Long living service sessions → user aware portal keeps access state

- Seamless comm. (multimodal) → various devices – various services

- Home access & control (e.g.: mobile home access via DSL)
  - Set-top Boxes, HAVI, Smart-IP

Mobile Personal Assistant Services

Personal Environment Control
(Smart-IP: TV, VCR, fridge, curtain, light)

Personalized Information Services
(e.g. maps, cinema, hotel, shops, flights)

Personal secretary
(cares about all appointments & incoming information, PAM)

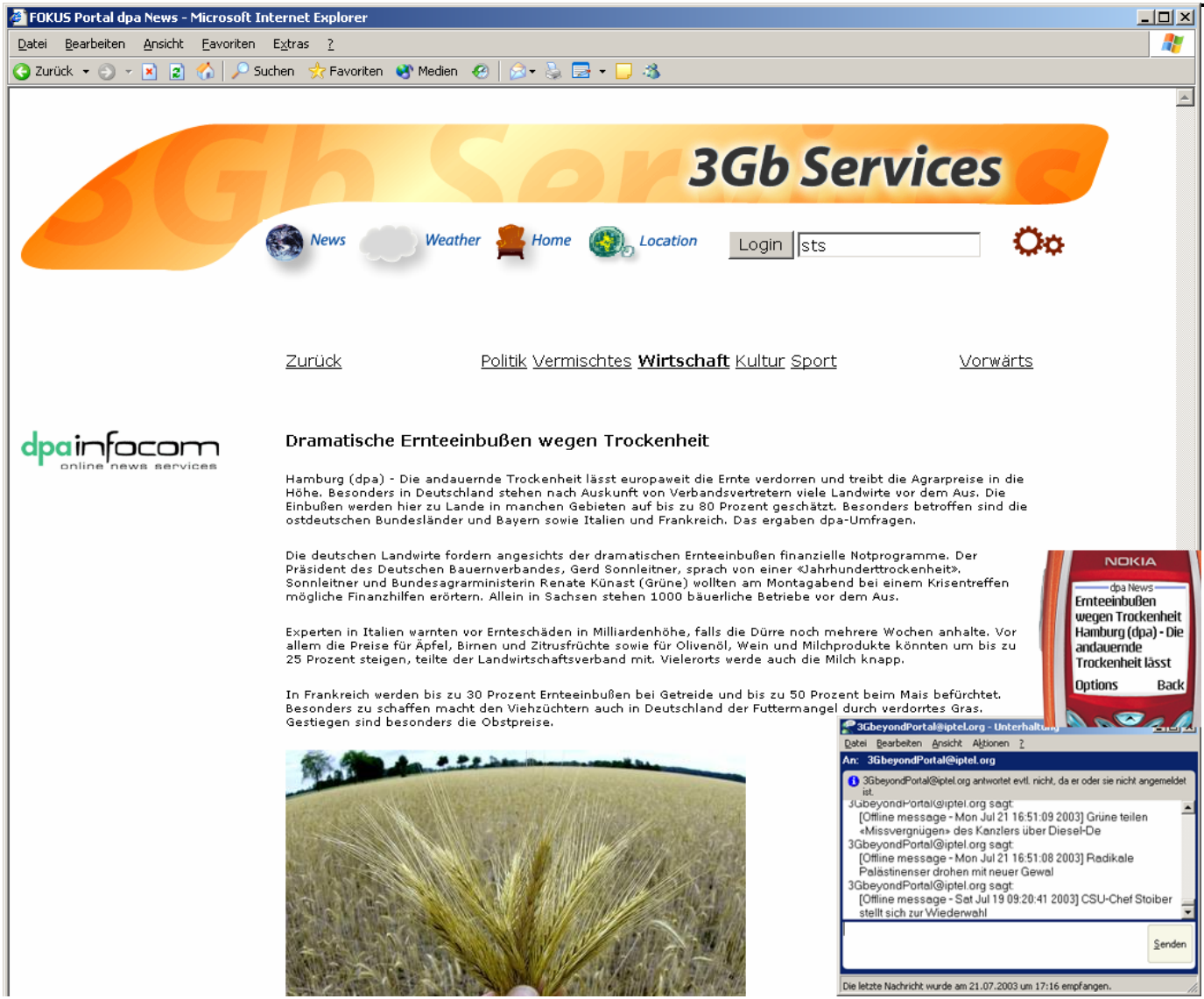
Personal Information Management
(Calendar, documents, contacts, notes, messages)

e-Government
(e.g. taxes, passports, real estate)

- Ubiquitous access & delivery of information → **one device – various services**
- Integrated solution (one-stop-shopping) → one portal
- Context aware personalized usage of **integrated** services

Screenshot: Portal Welcome Page

Screenshot: News Service



Screenshot: Weather Service

Screenshot: Location-based Service

1 Restaurante: China-Imbiß Chekiang, KAISERIN-AUGUSTA-ALLEE, 41 - 10589 Charlottenburg Tel: 49-030-3441004.
2 Restaurante: Hexenküche Gaststätten CoKG, ILSENBURGER STRAßE, 13 - 10589 Charlottenburg Tel: 49-030-34651730.
3 Restaurante: Zum Isenburger, KAISERIN-AUGUSTA-ALLEE, 42 - 10589 Charlottenburg Tel: 49-030-34902315.
4 Restaurante: Huttenklause, HUTTENSTRAßE, 23 - 10553 Tiergarten Tel: 49-030-3452166.
5 Restaurante: König-Pilsener-Stübchen, KAISERIN-AUGUSTA-ALLEE, 43 - 10589 Charlottenburg Tel: 49-030-3445937.
6 Restaurante: Zum neuen Ufer, SICKINGENSTRAßE, 53 - 10553 Tiergarten Tel: 49-030-3452448.
7 Restaurante: Pizzeria Lucania, QUEDLINBURGER STRAßE, 45 - 10589 Charlottenburg Tel: 49-030-3456824.
8 Restaurante: Ambrosius, SÖMMERINGSTRAßE, 35 - 10589 Charlottenburg Tel: 49-030-34503645.

Screenshot Ambient Control Service

- Thank you, any question?