Towards Pervasive Smart Spaces:
A Tale of Two Projects

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Telecom Italia Lab*), Ioanna ROUSSAKI (*nanario@telecom.ntua.gr - National Technical University of Athens*) , Korbinian FRANK (*Korbinian.Frank@dlr.de - German Aerospace Center*)

In the real world being aware of context and communicating context is a key part of human interaction. Context is a rich and powerful concept particularly for mobile users and can make network services more personalised and useful. Location and presence are examples of context based services widely deployed today. Harvesting of context to reason and learn about user behaviour will enhance the "internet of services" or "cloud computing" vision allowing services to be composed and customised according to user context.

Context awareness refers to the capability of an application, service or even an artefact being aware of its physical environment or situation and responding proactively and intelligently based on such awareness.

Although PERSIST and C-CAST have different specific objectives they do share a common goal of making use of context and advancing knowledge in building pervasive smart spaces.

Future Internet
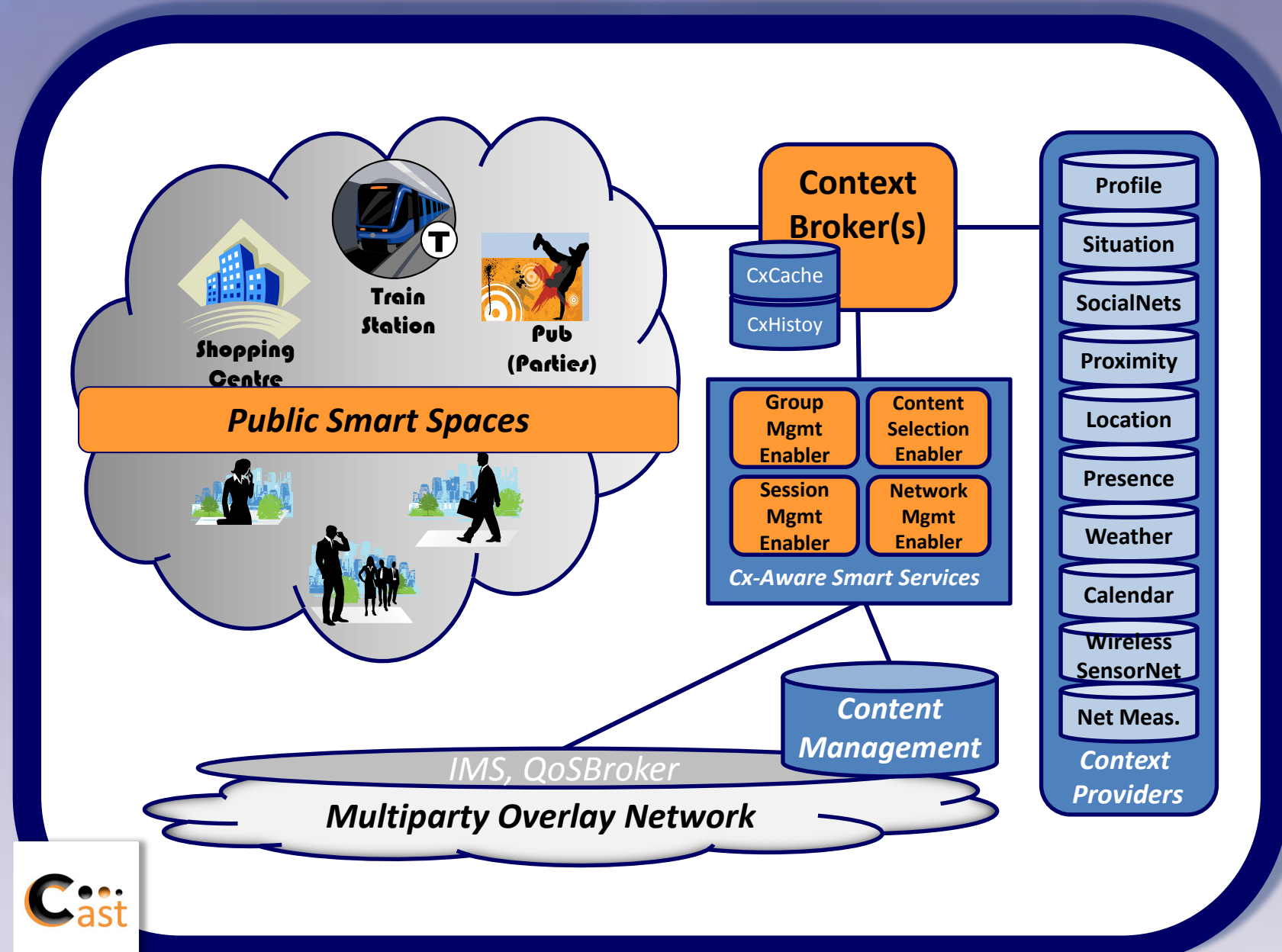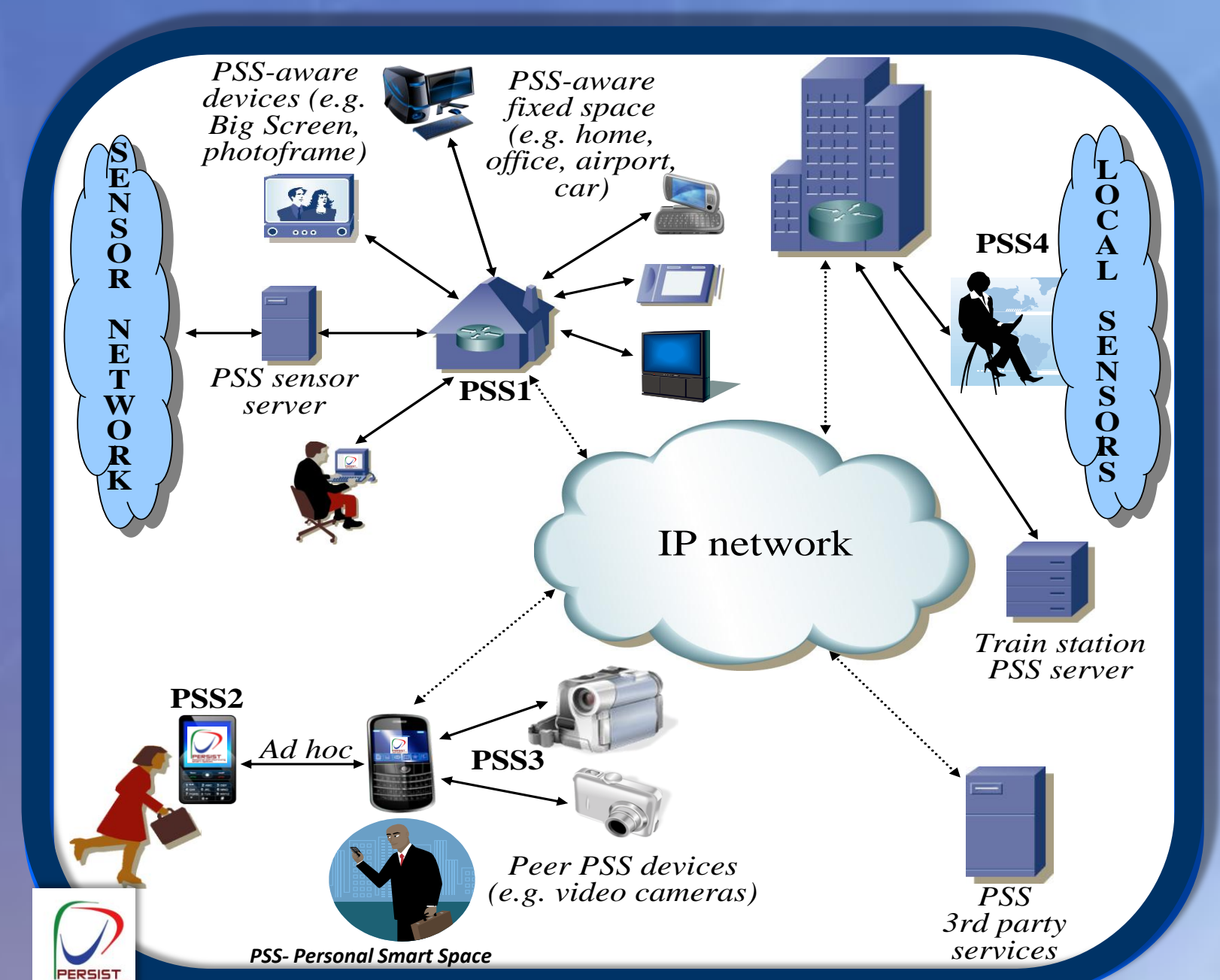**smart services**
awareness
Internet of Services

proactivity
reasoning
pervasiveness

context
personal smart spaces

Context Casting

PERSIST
personal self-improving
smart spaces

Smart Enablers
Context-Awareness

A **PERSIST** smart space surrounds a user and the design concept is that of interacting personal spaces. The role of learning user preferences and user context is foremost in triggering context-aware services. Context and preferences are handled locally on many devices. This approach is good for delivering personalised services. By concentrating on the personal behaviour of one user it is possible to build up useful activity and preference profiles. Generation of these data sets is crucial for activity recognition in pervasive environments.

personalisation
Smart Spaces

PSS-aware devices (e.g. Big Screen, photoframe)
PSS-aware fixed space (e.g. home, office, airport, car)
SENSOR NETWORK
PSS sensor server
PSS1
IP network
PSS4
LOCAL SENSORS
Train station PSS server
PSS2
Ad hoc
PSS3
Peer PSS devices (e.g. video cameras)
PSS 3rd party services
PSS- Personal Smart Space

Train Station
Shopping Centre
Pub (Parties)
Public Smart Spaces
Context Broker(s)
CxCache
CxHistoy
Group Mgmt Enabler
Content Selection Enabler
Session Mgmt Enabler
Network Mgmt Enabler
Cx-Aware Smart Services
Content Management
IMS, QoSBroker
Multiparty Overlay Network
Profile
Situation
SocialNets
Proximity
Location
Presence
Weather
Calendar
Wireless SensorNet
Net Meas.
Context Providers

In contrast, **C-CAST** concept is of a smart place which encompasses everything inside it, including users. Hence the approach is to plug into the context broker architecture many context providers that provide context pertaining to the place. Context is then used to deliver context-aware place based services. The vision is to locate brokers at places making them smart. Eventually all brokers will be located in operators and federated and coverage become more complete as in wireless communication.

Public Smart Spaces
context

C-CAST Consortium

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PERSIST Consortium

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