IST BASIC RESEARCH PROJECT
SHARED COST RTD PROJECT
THEME: FET DISAPPEARING COMPUTER
COMMISSION OF THE EUROPEAN COMMUNITIES
DIRECTORATE GENERAL INFSO
PROJECT OFFICER: THOMAS SKORDAS

Gloss°

Global Smart Spaces

Analysis of Experiences

(Analysis of Experiences)

D10

10/11/03/ USTRAT /WP5/VFɪɴᴀʟ

A. MUNRO

NOVEMBER 2003
FINAL VERSION

IST Project Number	IST-2000-26070		**Acronym**	GLOSS
Full title	Global Smart Spaces			
EU Project officer	Thomas Skordas			

Deliverable	**Number**	D 10	**Name**	Analysis of Experiences		
Task	**Number**	T	**Name**	(n/a)		
Work Package	**Number**	WP 5	**Name**	Physical Infrastructure		
Date of delivery	**Contractual**	PM 27		**Actual**		November 2003
Code name	<codename>			**Version** 1.0 draft☐ final ☑		
Nature	Prototype ☐ Report ☑ Specification ☐ Tool ☐ Other:					
Distribution Type	Public ☑ Restricted ☐ to: <partners>					
Authors (Partner)	(Former)Starlab, USTRAT					
Contact Person	Dr. A Munro (USTRAT)					
	Email	Alanm@cis.strath.ac.uk	**Phone**	+44 141 548 4525	**Fax**	+44 141 548
Abstract (for dissemination)	This document reflects on the GLOSS Scenario in the light of extensive fieldwork.					
Keywords	Scenarios, fieldwork, smart spaces					

We have created an industrial order geared to automatism, where feeble-mindedness, native or acquired, is necessary for docile productivity in the factory; and where a pervasive neurosis is the final gift of the meaningless life that issues forth at the other end.

Lewis Mumford

Drift. Allow yourself to wander aimlessly. Explore adjacencies. Lack judgement.

Bruce Mau

1 CONTENTS

1 GENERAL INTRODUCTION TO THE DELIVERABLE

Early in the GLOSS project, a scenario was generated with two purposes:

1. The scenario proved a useful first step in envisioning how smart spaces could be used

2. The scenario could help with the development of a number of demonstrators for smart spaces- and the underlying infrastructure of smart spaces.

This scenario is presented in two documents. It comprises an appendix to GLOSS deliverable D4 "Interaction Archetypes". It is also presented as a visual document in a GLOSS internal document that is enclosed here. This document was created by the GLOSS partners at Starlab and UJF in Grenoble.

The scenario concerns a businessman's trip from Brussels to Paris, and the various opportunities for action which a set of Global smart spaces (GLOSSs), devices, applications and services might offer to this user. As such the scenario is a visionary document, not based on current realities. For example, the technology mentioned in the document generally does not exist at present, and further it is unclear sometimes how the capabilities envisioned might be put into use. Sometimes this is because these are research questions to be answered by the project, other times because they are beyond the scope of the current project.

The fieldwork takes the scenario as a *point of departure*. The scenario is useful as a 'first step' in a number of ways. It is useful because it *delimits the focus* of the GLOSS smart space and user experience, in this case it delimits the possible space of use to travelling, perambulating round a city, and visiting a museum. This is probably a good thing. In a project concerning "*Global* smart spaces" it is useful to have some limit to the territory one might want to investigate.

The focus of this project is rather different from the norm. Because it concerns the possibility of moving seamlessly through physical space and picking up contextually appropriate information, it does not have the natural limits more readily present, say, in a CSCW application such as video conferencing, or software to plan meetings, or to support air traffic controllers.

There the focus is much more obvious: the work which might be supported by video conferencing or in a CVE and the study of the work and encounters within these environments. Global smart spaces by their nature might cover and support a whole range of activities and a whole range of modes of activity, both indoors, and out, work, domestic, leisure, whatever. Therefore these devices and spaces are going to be malleable and flexible, able to be adapted in many different ways to incorporate many different types of devices.

It would seem, however, that there is most likely a subset of capabilities which will be of most use in these devices, and this would be concerned with *mobility* as a shorthand. Moving around, whether in buildings or outside them, moving thorugh physical space whether streets, airports, stations, transport hubs in general. We see this in general in the deliverable, where the system is portrayed supporting in different ways the businessman in his interactions with space, showing him routes, and where to go in space.

However, there might be some other uses of the system. The system is shown in the scenario document helping the businessman when he is still in space; in front of sculpatures, in a park bench, and in the restaurant working. Generally in these examples, it is when a mobile device can be useful to provide capabilities which might not be available, or which might only be available when in the office, at the workplace. It does not seem, for example, as if the businessman does a lot of his architectural work with salt and pepper and other condiment holders, but rather that these things might do in certain constrained situations.

As it was pointed out in the document D6, fieldwork of every aspect of the lived everyday world is perhaps a little ambitious to focus on at first. It is useful to limit the fieldwork to a representative and useful subset of the activities that the devices and infrastructures might support. The scenario suggests some possibilities.

The scenario helps to map out a set of activities and environments to explore, as bounded parts of everyday experience. This scenario also outlines activities that include both work, travel and free time. Thus it gives a first early idea of some useful activities to focus on in the fieldwork. In return, the fieldwork also serves as somewhat of a *reality check* to the scenario. It has the potential to provide questions and raise issues which the scenario, by its nature, will not. It can get into the 'grit' of the environment or activity, get beyond people's accounts of what they do and get a fine grain idea of activities and competencies which might be interesting.

Global smart spaces and the devices which are incorporated under this rubric have to exist in an everyday world, of such things as traffic jams, muggers, lousy transport infrastructures (such as in most of the UK) and the like. It is useful for some 'grit' to enter the project's focus. A more realistic scenario or set of scenarios can be very beneficial to the project, providing inspiration and design opportunities which may not have been conceived outside the fieldwork.

Reflecting on the fieldwork in this case is useful as a critiquing device for the scenario. In looking at the grit of lived work, play and sociality (not for one minute thinking that these are either sufficient or exclusive categories) one can see the idealised, often unrealistic parts of the scenario, the ways in which *scenario builders themselves* 'gloss' over real life and forget the minutae of particular experiences. I will briefly explan the term '*glossing'* in this context. A large body of both psychological and sociological literature has looked at the ways in which we explain our actions, and it turns out that a lot of the time, our actions are explained by us in ways which often overlook key elements, information acted on, stimuli seen, etc. A number of researchers coming from different backgrounds have gone further to suggest that what we are *actually doing* when answering questions about, say, the way we work or live is 'glossing'; suggesting our *own theory or account* for what we do. This theory may be privileged, because it is us that the theory is about, but it is still a *theory.*

So, in the same way, scenario builders, imagining situations in which their technology may be used, also *gloss* the interactions, gloss over key moments, stimuli, data, information acted on. Scenario building is often done in a vacuum, with an idealised set of conditions thought of. Thus scenarios do not usually encompass anything like a realistic experience. Scenarios may be thought of and argued to be 'idealised' experiences. If this is so, and they are not meant to be realistic, then they can be useful devices for uniting all parties around the scenario in terms of their own aspects of the system design. However, if this is true that the scenarios are not meant to be realistic, then they cannot provide anything like a test for if the system is effective. Thus

for the scenarios to be regarded in any way as useful, they have to embody some sort of realism. Systems have to be robust after all, and should encompass the grit of real life and the means to deal with the issues which real life throws up.

Using anthropologists and sociologists who work closely with people and study them in the different activities in which they take part, can be very useful here. A fieldworker who has experience develops an eye for human activity, and especially an eye for the 'stuff' of life which is often overlooked. This might include all sorts of things often forgotten:- the post-it notes around the computer screen, the scrawled notes on top of typed sheets, the locally-organised ways in which we implement 'formalised' things such as agendae, laws, medical care plans. The experienced fieldworker sees the *ad-hoc* ways in which people achieve their activities dealing with local difficulties, negotiating a path though many different types of restriction and opportunity. It is just this 'grit' which is often absent in scenarios.

Scenarios can be unrealistic, then. Some are very unrealistic and offer no clue as to how the system may actually be used. Others can be extremely useful, going into greater and greater depth in their detail, and can be made more realistic by using the experience of those with experience.

Fieldwork, then, can bring into much more clarity the ways in which one can improve the scenarios to be more realistic. Sometimes also what we have learned from the fieldwork can be turned critically toward the scenario in a more global way. The fieldwork can become a useful device in critiquing the basis for a visualised capability, helping us to see not just why a particular *way of doing something* is misconceived, but also, in some cases, why that particular *approach* is misconceived.

2 THE SCENARIOS

The scenarios were created early in the project by the GLOSS consortium and were elaborated by UJF and Starlab (as was) who collaborated with an artist to give a pictorial representation of them. This document has been constantly referred to in the course of the project. The project has derived a number of demonstrators from various elements of the scenario document, e.g. the use of Radar, and the use of the Café table to create electronic postcards (both in the DC Jamboree in Gothenburg).

This deliverable reports on some aspects of the fieldwork, already elaborated to some extent in an earlier deliverables, D6/24 *(Raw Observation in the strict sense of the word/Early interaction design concepts from fieldwork).* It is necessarily selective. It would be impossible for a project of this length to go into much more detail in these scenarios, as they are extremely wide-ranging and work in a number of domains. Thus the document will look at certain particularly promising or interesting aspects of the scenarios. By 'promising and interesting', we do not necessarily mean that the scenarios turn out to be useful or well founded. Rather, they can, as cases in point, be useful in highlighting both their useful aspects, but also misconceptions, and problematic issues. Of course, a scenario, whether particularly realistic, or extremely misconceived, can be equally heuristic for either the design process, or to highlight interesting issues in this still young field.

In the next section below is the original GLOSS scenario. Particular pieces have been focussed on and discussed in this document. These are italicised.

2.1 THE GLOSS SCENARIO

This is the original Scenario document produced in the first year of the project.

2.1.1 *EXPECTATION OF THE DAY*

Bob lives in Brussels. He drives to the train station to take the train to Paris for a business lunch with his colleague Jane. While Bob is in Paris, he hopes to see a bit of the city since he has never been there before. In the afternoon, Bob will take the train back to Brussels.

2.1.2 *LEAVING BRUSSELS*

Bob gets directions to a free parking space outside the train station. The parking space is activated by his arrival and connects to Bob's PDA to request his parking requirements and profile. The PDA specifies parking for 10 hours with travel to Paris (the PDA has this information because the PDA acts as Bob's train ticket.)

The profile allows the parking space to debit Bob's bank account for payment of the parking and to obtain other information. Bob's PDA refuses to provide some of the requested information in order to protect his personnel privacy: The parking space does not need to know that he is travelling first class.

Once Bob has parked, he is informed that the train is on time, and will leave from platform B, and that he should use the red entrance and that he should follow the red pathway to get to his platform. Because BOB is not listening to the radio, the PDA decides to communicate this information by vocal command using the car stereo

speakers. Other possible communication channels include a personal headset (sown into his jacket) and a heads-up display on his car window. The heads up display tends to make Bob ill, so he has instructed the PDA not to use it.

The red route is not busy this morning. As Bob is walking close to an active wall, he is presented a message relevant to his trip in Paris (e.g., weather forecast , strikes in the public transportation along with alternate trip recommendations). On the way, his PDA vibrates to tell him that he has received a message from his mother's automated house manager. The message tells him that his mother has left the stove on, that she forgot to put the alarm on when she went out and that she forgot take her PDA and her cell phone. The house has no way to contact her. For security reasons, the house informs Bob that it has been able to turn the oven off, but needs Bob's advice about the alarm system. Bob has privileged access to his mother's house and so he is able to turn the alarm on. Bob leaves a message for his mother saying that she should contact him when she comes back home. Further along the red route, Bob can see a large display actively communicating that the trains to London are cancelled due to the weather in the U.K. Bob is not directly concerned by this message but it does explain why there are so few people on the red route.

2.1.3 ARRIVING IN PARIS

Once in Paris, Bob tries to locate the public map that can tell him where he is. Being in Paris is a new experience for Bob. It is now only 10h00 and Bob has a couple of hours on his own before he meets Jane for lunch.

Bob thinks about what he would like to do with his morning. He is very interested in modern architecture and has always wanted too see the Pompidou Centre. *There is a large green floor space close to the public map. It's an active area within which Bob's PDA can communicate with the public map and download the information that Bob is interested in.* This includes very local maps, subway routes and schedules, travel recommendations, and travel delays. The PDA uses this information to estimate travel times to the station to the Pompidou center and from the Pompidou center to the lunch engagement.

2.1.4 TRAILS (ANYWHERE IN ASYNCHRONOUS TIME)

With art and architecture in mind, Bob logs on to the trail of his architect friend who lives in Paris. When Bob last spoke to him, he gave Bob access to his art and architecture profile in case that Bob ever has a chance to come to Paris. His friend has been building this trail over the years that he has been living in Paris. The trail now contains all the influences from the modernists. Bob is set for a busy day in Paris.

The trail starts with following the flat escalator that takes Bob to the correct exit. While travelling, Bob tries to contact his architect friend. Bob leaves a message for him.

2.1.5 HEARSAY (GEOGRAPHIC LOCATION IN ASYNCHRONOUS TIME)

Having the right direction Bob starts to move towards the Pompidou Centre. After Bob has walked a block he feels a vibration in his clothes. Bob's PDA tells him there is a café coming up around the corner that his friend in Denmark recommended last time he saw her. "L'Olympic, a café with the right Paris feel to it", were his exact words. Bob doesn't want to miss this, so he turns off the trail to the left at the next crossing. It's time for a coffee anyway and Bob sees that they have freshly baked croissants. When

Bob sits down in the café, the active surface on the table informs him with of the local history of the café: Bob's profile knows that he is very much interested in being informed as much as possible about Paris. The piece of history Bob receives is that this was the hangout place for Le Corbusier when he was in Paris. There is a story about Maison Roche. This venue is something Bob adds to his agenda of the day. On the tabletop there are several trails being suggested to Bob by the local tourist office. Bob notes a trail that tells him a visual story about how a street crossing his trail looked before they built all the new buildings in that area. This is a part of a pooled service, accessible without wearable access, offered by the city.

Bob has coffee and is sitting, scribbling on the table. He accesses the picture bank of the café and sends a postcard to his Danish friend. He then receives a message from Jane. She is stuck in traffic and her PDA estimates that she is going to be an hour late for the meeting (the metro system is on strikes). Bob tells her that he has just done some sketches of some ideas for their city planning, she can have a look at them in the car before she comes to the meeting. Bob now has some extra time to look around. Excellent! His mother phones to say that everything is all right. She is having tea with her friend in the kitchen. Bob waves to Mrs Robertson over the videophone.

2.1.6 RADAR (REMOTE GEOGRAPHIC LOCATION IN SYNCHRONOUS TIME)

Out on the street again. With his radar tool, Bob is looking for a quiet place where he can prepare for the business meeting. Bob gets the information that there is a park nearby with several quiet areas. Bob gets directions to the park. When Bob get there he has time to go through the feedback Jane has sent. The space in front of Bob's bench is active and Bob can view his ideas on a larger scale. Bob appends some comments and sends it back to her.

After the park, Bob heads towards the Pompidou Centre. Bob doesn't want to be disturbed for an hour or two so he puts his receiver on a low mood that screens his calls so that only the really important ones come through.

Pompidou is a fantastic building with all the different pipes exposed on the outside. Outside is a large display with all the exhibitions in the centre. It gets activated when Bob enters a sculpture area within the interactive plaza, located outside the Centre. There is a Giacometti exhibition that Bob are interested in. He must make a decision on whether to see the exhibition or to continue on his friend's architectural trail (which, according to his PDA, is less crowded). His PDA reminds him that he does not have time for both. Bob chooses to stay on the trail so that he can visit the Institute Du Monde, the Arabic library and the Maison Roche.

After visiting these venues, Bob meets up with Jane. *As he sits down, the menu appears on the tabletop. Jane recommends the fish. The table proposes a wine based on Bob's and Jane's profiles. As they are in hurry, they ask the table to order the meal. When they have eaten, they bring out the work that they had started earlier and continue to work on it. Bob and Jane use the objects on the table to illustrate their ideas for the layout of the site they are planning together. Bob names each object as he manipulates it. For example, the cup denotes a square, a spoon represents a street, lumps of sugar correspond to buildings. As he configures the physical objects, their virtual counterparts are configured in the shared electronic work-space displayed on the table.*

Bob's PDA claims his attention. It is a message from his architect friend. He suggests meeting up for a drink at the Café de Paris before Bob takes the train back to Brussels. His plan was an earlier train but by changing his agenda, the PDA automatically reschedules the train. Bob accepts his invitation and adds the café to his agenda. His business lunch ends earlier than he had planned thanks to the exchange of ideas while Jane was stuck in traffic. Bob has time to catch the Giacometti exhibit before he meet s up with his architect friend. After being in the exhibition for a half an hour, Bob gets a communal message telling that the exhibition is closing in ten minutes.

This is a bit earlier than Bob anticipated. Bob uses his radar tool to look for a crowded area to mingle amongst the Parisians. While Bob is walking, he changes his accessibility profile on his PDA to fully accessible. His PDA notifies him when it is time to start walking to Cafe de Paris. To avoid arriving late, the PDA stops providing new suggestions of things to see or do.

2.1.7 BACK TO BRUSSELS

When Bob returns to Brussels, he notes that his parking authorisation has been automatically extended. His change in schedule also automatically reschedules the delivery of groceries. His family has been notified of his new arrival time. After dinner Bob displays a picture of Giacometti's sculptures on one of his interactive walls. The picture is one of the five that Bob downloaded at the Pompidou Centre.

2.2   SCRITTI POLITTI: GRAFFITI, CONTEXT AND BROADCASTING
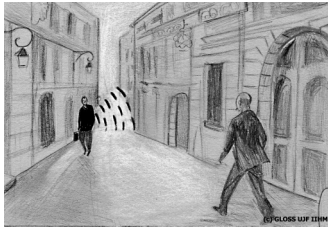
Having the right direction Bob starts to move towards the Pompidou Centre. After Bob has walked a block he feels a vibration in his clothes

Bob's PDA tells him there is a café coming up around the corner that his friend in Denmark recommended last time he saw her.

2.2.1   FREQUENTLY ASKED QUESTIONS

This can be linked back to various phenomena mentioned in deliverable D6, especially the observations of small appropriations such as graffiti. It was noted how there were different appropriations, from the semi-official in Brussels and Amsterdam stations, giving 'frequently asked questions'

In both cases, the most frequent questions have been answered from the sign. In the case of the Brussels sign, we see directions of how to get to the most popular tourist attractions by the Metro. To the right can be seen a sign of this type giving directions to the Atomium, a popular Brussels tourist destination. In the case of the train stations Amsterdam Schipol Airport, every ticket booth has a printed piece of A4 laser-printed paper either sellotaped by itself or put in a clear plastic envelope with the legend "Amsterdam Centraal- trains every 10 minutes from Platform 3".

In both cases they serve as an 'FAQ' service, giving answers to the most obvious questions that one might want to ask. The staff *know* these are the most frequently asked questions because these are the questions they used to spend great deal of time answering. Also in Amsterdam Schipol, when one buys a ticket to Centraal, it is common for the person in the booth to say "Platform three" or "Platform three, every ten minutes", anticipating the possibility of that question.

2.2.2   UNOFFICIAL APPROPRIATIONS

However, it was also noted in D6 that there is a further, rather interesting example of an appropriation. In this case it seems there to fulfil a personal need of the ticket collector. But what does it 'do' in doing this? Perhaps our experience becomes a different one, as the ticket collector has appropriated this official space for personal uses. To an extent, this is true of the examples above, but in this case the ticket collector has perhaps crossed the boundary of his job, and is acting outside any official role.

Here we see the 'official' space of the ticket booth appropriated for personal uses. One could argue that it does some work in 'humanising' the ticket collector, showing that they are an active agent or player in the city as well as an official functionary. They have opinions and can interact outside their official spheres.

More along this line is 'fly postering', where a club for example, might advertise themselves. There is a whole genre of these kinds of fly posters, and a history of them not only appropriating space, but slyly appropriating other *genres,* sometimes looking like an engineering diagram, a public service announcement, cigarette advert, etc.

2.2.3 *HEARSAY, CONTEXT AND BROADCASTING*

The GLOSS scenario shows Bob wandering along to the Pompidou Centre and feeling a vibration in his clothes. This vibration is because of a Hearsay message. Hearsay is outlined in D4 as follows:-

Hearsay is an intimate, sensitive tool that will be there to allow the user to pick up small notes in the environment left for them. It will make sure that only that user will find the message left for them if the context is right. Some messages you will never find. We suggest a new form of "snail mail" that will give you the same experience the sender had when the message was composed. Posted or left in the global environment the message waits at the same place to be delivered at the right time for whom it's left for. A mail where time is not an option but the context is.

This is interesting but it now seems incomplete. Why does the message have to be so radically contextual? Maybe the message is meant for one person. However, there are numerous examples in the real world of things which are left in the environment and are meant for a subgroup, individuals who are in the know, etc. This, as said in D6, might be of a 'gang' or a subcommunity of gangs. They know that the graffiti is about territory and incursions, for instance (c.f. Patrick, 1973; Armstrong, 1998)

Let us go back to the scenario. For Anna to leave a message, she must know that there is a way to pick up that message. It suggests that the message is perhaps broadcasting a little identifier- it is saying that it is at this location in the city. That suggests perhaps that there is an interaction between a message, its location etc, and a 'radar' device which looks out for messages in a vicinity.

As we have seen above, messages can be for one other but this is quite rare in terms of the kinds of things that are left in the environment. There are 'real world' examples: when a gym closed unexpectedly in Glasgow in the last year, there were a number of messages. One was from one group who were berating the gym organisation for closing so quickly, especially as they had paid a years' membership. In the terms above this was very much a message for all of the other gym-goers. Others had added to this. Similarly in the streets of Bologna in Italy around the university district there, there are advertisements for flats and rooms that are constituted by the advert and then a series of strips which have a name and phone number which can be torn off and taken away.

Another type of message seen on the Gym door was of that much rarer type: of a single person aiming to contact a particular other. In this example it asked if *Mary who goes to the gym on Tuesdays and Thursdays reads this she can be contacted on…* and leaves a mobile number. In the experience of this fieldwork this is a much rarer thing. Most exchanges, as we have seen are one-to many or many to many.

Perhaps this is because technology might make this more amenable. The message might be 'noticed' more easily if there were an active element incorporated in it. However, the overwhealming evidence points to the need for people to be able to contact groups, and the message genre and style helps the readers self-select themselves into if that message were 'appropriate' for them.

To summarise for the moment: generally, where there are those 'annotations' or appropriations of official areas in physical space, they are generally from one to many or many to many. Very rarely are they from one to one. Technological mediation may change this, but the lessons of extant 'technologies' and practices, be they paper, paint, pen, paper, whatever, points toward one or a group to many. We have noted that these annotations can be rich and varied, sometimes mimicking genres. Below we will look at some other rich examples and what they might suggest for development.

2.2.4 WHAT IS THAT? HEARSAY, PLAYFULNESS AND URBAN MYSTERIES

A number of other observations and findings from the fieldwork suggest some related themes to the one above. In the example above, we see Bob going in a particular route and being side-tracked by a Hearsay message. A general experience in the fieldwork is the 'tourist' or 'visitor' experience of not only going in a definite direction and finding a particular place (such as the Pompidou etc) but simply the art of wandering and finding where it takes one. The wanderer finds interesting streets, perhaps a square or piazza takes his attention, or a building might be particularly memorable. It is not entirely disconnected to the Situationist experience of the 'derive' for very good reasons.

One element of the derive comprises the ability of the individual to be drawn away from the commonplace elements of the city that they know from their everyday lives and discover parts or views of the city that they might not otherwise discover. This helps them 'discover' themselves to elements of the city to which they are currently ignorant. Some people, in the 'Dot.walk' community, have taken a formal approach to the derive and set up algorithms for the individual to use in walking around and 'exploring' a city, formally determining where the individual might go. This algorithmic determination of the derive arguably assures that the individual maximises the exploratory experience of it. An amusing example of this, written by students of the author at a summer school in Mixed Reality run by the Convivio network in Rome in September 2003, is shown.

```
public main() {
  walkTowardsSun(10);
  while (_time > 16.30 && _time < 18.30) {
      doRome();
  }
  eatGelati();
}


public doRome() {
  dir = rnd(3)

  switch (dir) {
      case 1: goLeft();
      case 2: goRight();
      case else: goStraight();
  }
  if proximity(ROMAN, 5) {
      a = politelyAskForTheTime() }
  if (a != NULL) {
      takePicture(a);
  }
}
```

An interesting issue for a GLOSS system is the kind of question they might ask when on one of these wanders.

What is it? I want to know something about it.

Perhaps this is about a building, statue or sign which one has come across. This may be something 'official' or an 'unofficial' incursion.

Perhaps one is lucky enough to have a tourist guide at hand or some other sort of information, such as one's guidebook or a map where one might check against that street. Perhaps though, like all the more interesting things, the guidebook does not have this information. It may be because this is not the information that 'official' guides want to dwell on, or perhaps because this is not regarded by the guides, reflexively, to be of 'interest' to the visitor. It may even be that the true identity of the building has been actively hidden (as in the case of fall out shelter entrances in the UK which were disguised as semi-detached homes and subject of a large research campaign by the British Campaign for Nuclear Disarmament). Suffice to say at this point that the building, place or thing is not part of one's information about the city as encapsulated in guides etc.

Let us say that we have access to a GLOSS system. One might be able to consult one's awareness device. The device may be able to take the exact location and then query a number of databases or the web and come back with that information.

Perhaps also, in terms of Hearsay, one might be able to consult the hearsay notes or a system such as 'Geonotes' to see what 'notes' have been left on that building. To go back again to the description of Hearsay:

Hearsay is an intimate, sensitive tool that will be there to allow the user to pick up small notes in the environment left for them. It will make sure that only that user will find the message left for them if the context is right. Some messages you will never find. We suggest a new form of "snail mail" that will give you the same experience the sender had when the message was composed. Posted or left in the global environment the message waits at the same place to be delivered at the right time for whom it's left for. A mail where time is not an option but the context is.

As we have said above, this definition now seems rather restrictive. However, it does seem to implicitly acknowledge a problem with all these devices: what happens if there are many thousands or millions of these messages? How do we narrow them down? However, leaving this to some vague definition of 'context', as in the definition, is unhelpful.

To take the example of the person asking "What is this place" they might well find out something from some kind of location-based searching. However, further, they might want to know a little something different. It might be patently obvious about what the building is. In this case, we see a Hotel called Aalders in Jan Luykenstraat in Amsterdam. So it is quite obvious what the building is- there is a sign. However what is interesting in this case is the *flags* which are outside the hotel. Oddly, there are a number of flags which one will note include Swedish, Danish, Norwegian and Icelandic, as well as Dutch. There is another flag that is a mystery. Imagine the person wandering is curious about the presence of these flags on that building. There are many 'urban mysteries' of this kind that it might be nice to solve. Just because these things might be whimsical does not mean that they are not worthy of investigation and do not point to deeper issues.

This may be where they actually want to look at other, less structured information about the hotel. They may do this in a number of ways. They can as usual do a web search on this hotel. This will give a great number of sites where the hotel is mentioned

in terms of it offering accommodation in Amsterdam. Another, more localised way, might be to see what has been left in the Hearsay. The original definition of Hearsay marks out its context dependence. But this may not be useful for finding the information one needs about the hotel in this circumstance. Perhaps there *are* radically context-dependent messages which are not available on the grounds of being private. For example, one might want to leave a message for a lover reminding them of what went on in one of the rooms the year before, etc. However we might imagine the majority of messages being quite open for reading should one want. Perhaps the wanderer consults the messages which have been left on that building- 'seeing' the ones which are quite open. Perhaps one says how the flags are interesting and that they asked the receptionist about them, and the reason why they are there is …. [1].

Therefore, this example raises some interesting points:-

1. The Hearsay as it stands is a little restrictive, imagining only messages from one person to another. It has been noted above that this seems restrictive when looking at the ways in which annotation on physical space is done now.

2. With all these technological possibilities, there are possibilities, as with the history of other technologies such as SMS, where different groups may adopt the technology and 'misuse' them in interesting ways.

Perhaps in this case, there may be a community of people who adopt the 'hearsay' possibilities of the GLOSS system for their own playful or serious ends. Perhaps it might be in the form some types of annotations of buildings to solve for others these 'urban mysteries'. Perhaps it will be in the form of a puzzle for a new urban sport such as 'Geocaching'.

They may be some sort of 'memorials' to a good time, a group of friends, or something similar. There are a few examples of this kind of memorial, and it has been actively experimented on by a group of performance artists, called the Icelandic Love Corporation, who do small conceptual pieces that are often site-specific. The picture shows the traces of one of their pieces, as they describe it:-

…they were supposed to be memorial plaques for feelings and memories…like tagging but very formal…but still monumental- hard steel plates, which we bolted onto the walls. (NIFCA, 2002)

We see a picture of a particular plaque in Waermostraat in Amsterdam (left). Here we see a rather novel use of physical space and annotation to memorialize the intersection of a particular physical space and the 'feelings felt' there. It could as well memorialise a particular good time or people. The interesting thing is that this is beyond how our original conceptions of this technology lead. The Icelandic Love Corporation have actually taken the physical forms of the plaque which might usually be affixed to a building to announce where a lawyer or doctor lives, and appropriated them for new and novel ends. This gives us

---

[1] I won't spoil the reader's fun by telling them.

some indication of the ways in which Hearsay may well be appropriated, if enough flexibility is built into the ways in which the technology can be configured by its users.

Previous work done by the author and students in the i3 Summerschool in Ivrea, 2001, noted the ways that the physical space is annotated not only with Graffiti, but can be annotated in particularly cultural-specific ways. They noted the presence of memorial signs in Italy which are posted on walls in walking streets. These memorialise a particular person and give the time of their funeral.

Therefore in these examples, rather than '*time not being an option and context is*' we see that of course time is part of the context of the message, as is its location etc. The important thing is not context per se, but the relevance of the message to the individual. This seems to imply a 'double fitting' between the person, and the message content, not just to do with the message and a mechanistic model of 'context'. 'Context' can be too easily reified into a 'thing' where it is actually a relationship, and a changeable one at that. Removing the intelligence of the individual from the interaction might well have serious ramifications in the usability, conviviality and hence adoption of such systems.

2.3   OF ROUTES AND TRAILS

The red route is not busy this morning. As Bob is walking close to an active wall, he is presented a message relevant to his trip in Paris


There is a large floor space close to the public map. It's an active area within which Bob's PDA can communicate with the public map and download the information that Bob is interested in.

2.3.1   BURDENS AND TEMPORARY DISABILITY

The red route seems to be a dedicated route for the particular use of some passangers: The scenario is not clear about this. One thing which has become glaring from the fieldwork, is the idea of 'temporary disabilities' when one is, for example, carrying a heavy case. Suddenly stairs become a burden, even a major obstacle. The picture to the left shows a typical set of stairs in the Paris metro. This metro system seems particularly short of escalators and lifts to get on to the platform.
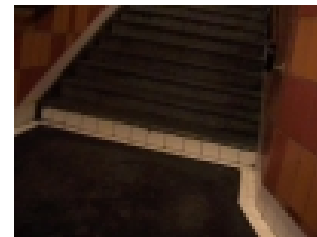
Here we have a case of a 'temporary disability' which focuses the mind on things which normally do not have any impact, such as stairs, lifts, slopes. It can bring the physical into sharp relief as the *affordances* of the world for the the particular individual change.

This reminds us how affordances are a dynamic relationship between the capabilities of the individual organism and the physical state of the world, and that these affordances can dynamically change with the state of the individual organism at that time.

Now this is generally OK for a fit businessman of the type who normally inhabits these scenario documents, but it ignores a vast population of people who are disabled and permanently unable to negotiate such obstacles. Stairs become as much of a barrier as walls, never mind those people with small children, prams and the like.

However, even the fit businessman may sometimes be the victim of such 'temporary disability' such as having a heavy case and a laptop bag. Suddenly he (as it seems to be always a he) may empathise with the disabled, after a few underground stops dragging a heavy case in one hand and an over-filled laptop bag in the other.

2.3.2   COUNTER- INTUITIVE AND 'ODD WAYS TO GO': THE CASE OF THE METRO

As pointed out in D6, in the Metro the situation may be more involved- which way for the right line? How many changes does one need? There may be many different possibilities for reaching the same destination using the different lines of the underground system. Even in a particular station, there may be a number of different ways of getting to a particular platform. For example, if one is fit and healthy, a shortcut via stairs may be fine. A person who is less ambulant or burdened with a heavy case might well like to know about other routes, maybe one which features an escalator or lift. The accrual of different walkways and tunnels is a trademark of the older

underground systems and London in particular can be mazelike. In fact, it is used in that way, with different routes being closed at different times of day. Further, certain stations are closed after the main 'commuting' time'.

Further, the routes one can use on the underground network may be straightforward or may be complex. Examples of straightforward systems might be Glasgow, where there is a loop with 'inner circles' and 'outer circles' simply travelling in the different directions, or Roma where there are two lines which meet in a cross. Examples of more complex lines may be London, where there are 12 lines, not including lines linked but run by different companies (the ex British Rail Silverlink, Thameslink, for example). Some of these lines use the same tracks in central London for part but break off to out of the centre (e.g. Metropolitan, Circle, Hammersmith and City). Also the Brussels Metro system is complex with a number of 'Metro' and 'PreMetro' lines which can overlap. Both these and numerous other systems can lead to the ability for the traveller to take a number of routes to get to a particular destination. They may take these routes with regard to a number of different criteria, for example, perceived reliability of the lines in different routes. Until an accident this year, the Central line was regarded as one of the fastest, though most crowded, other people liked the new Jubilee and would make a detour 'doubling back' their journey to get on to it if it could be used for the majority of their journey.

Further concerning the London Underground, not only are not all *lines* the same, not all stations are the same. It may be much more straight-forward to change at one station and not the other. One station may have steps only, others may be equipped with elevators, lifts etc. Some stations demand only a walk across the platform to change lines (as in the case of the Central and District lines at Mile End, for example), whereas other lines might require a walk between lines of as much as a quarter of a mile.

Therefore with both the route and the station being a possible issue, we see seasoned users doing things which seem non commonsensical- such as going in the opposite direction to the one in which one is travelling in order to get onto a 'better' line', to avoid certain stations, to avoid crowded bits, to avoid steps, to go on newer routes. One respondent also designed her travel to avoid the deep-cut lines but would only travel on the shallower lines. Whatever the reason, people have a number of priorities for why they want to go by a particular route.

The scenario as it currently stands is rather shallow itself. The concept of trails has much more of a possibility than as it currently stands. However, as we have shown above, the concept of very radically customised trails is a distinct possibility, with very individual and customisable criteria.

2.4   AUTOMATIC FOR THE PEOPLE: HAVING A SMART MEAL

As he sits down, the menu appears on the tabletop. Jane recommends the fish. The table proposes a wine based on Bob's and Jane's profiles. As they are in hurry, they ask the table to order the meal.

We see Bob and his friend at the restaurant and using the GLOSS system to decide on and order their meal, using also intelligent surfaces rather like that used in the Café scene earlier in the scenario document. I will go through a number of issues which this scenario brings to light.

2.4.1   THE DISAPPEARING WAITER

The first thing to think about is: *what happens to the waiter?* Does he now not exist? Waiters do a number of things rather than just wait tables. They are present in the restaurant, keep order, show that the restaurant is good by behaving and being dressed in a particular way, help guide people to the right choices. If this restaurant is not McDonalds, then surely it would still have waiters. This vision of the technology seems largely redundant, and a vision of an Expert System approach which has been defunct for many years. Even an average restaurant has some sort of waiting staff and usually they are knowledgeable about wine, or can refer to someone who is. Often a more expensive restaurant has a sommelier.

There is a lot of intelligence encapsulated in the sommelier:- in ordering and buying wine, to know about what is good, to taste it, to help recommend good wine for different dishes, to lead the customer away from hackneyed choices (as well as more dear wines, sometimes).

Part of going to a restaruant is to the ritualistic aspect, to enjoy the food and to be in good hands. The ramification of this visualisation of the ordering turns this restaurant into a 'McRestaurant', fast food kind of place where service is perfunctory. Further, the profiling here is useful only in the extent that it knows what you have ordered and what you say you like. It does not help to lead beyond those choices. This may not be right for the food or might not lead you to go for new things. Further, the profiling seems largely redundant energy. Why profile when the intelligence of the person can be easily used to read the menu and go to their choices? The matter of a few micro-seconds saved does not seem to justify the immense effort involved.

The section 'As they are in a hurry' is not at all helpful. It makes it unclear what is going on, if there is a sommelier in the place that they are simply not using or what. That this system is there but is not replacing it.

2.4.2   SOCIAL NAVIGATION AND AUGMENTATION

What might be useful is for the menu to work with their intelligent spaces and devices in a *social navigational way.* That is, to use technology to see what *others are doing and have done* and learn from them. Their active menues may dynamically order the menu into what people have ordered and show how popular dishes are. This may tell

one about the specialities of the house, of what is in season, etc. This is not a *replacement* of skills but an *augmentation* of them.

Further, one can relate this to the wines. If one picks a particular dish, it might show the popularity of wines people have ordered with that dish, allowing the diners to think about what they might order and negotiate (if they only want to share one bottle of wine). A system may have access to things on the web about the particular wines, with some more independent recommendations of wines, and foods that are good in that restaurant.

The main point here is that the augmentation helps *frame* an interaction that can then take place, with the waiters with the sommelier. It helps the diners have an informed attitude toward the restaurant and *get more out of their interaction* with the staff of the restaurant. It does not so much take us to a state of *replacing* an experience (such as interacting with a waiter), but taking us *beyond* it. We augment the experience to intensify it, to go beyond being there, to use a phrase of Hollan et al (1992).

2.4.3 *PHYSICAL INSTANSIATION OF THE SMARTNESS*

Another small issue has to be raised about the physical instantiation of the menu intelligence into an active table. This seems misconceived. Tables are extremely good for putting things on and this is of course one of their main purposes. This leaves very little space on the average restaurant table for anything else. Restaurant tables are miracles of achievement of getting just enough of a feeling of spaciousness, while achieving the goal of getting as much as is needed on the table (condiments, flowers, napkins, cutlery, plates, side-plates, even a tablecloth) while also optimising the number of tables in a given space. There is little room for anything else. Menus are generally laid on top of the table to be handled by the diners and taken away by the waiter, or, in a café, propped up by the condiments or on a little stand. Both of these methods achieves the saving of space.

As the scenario stands there is a large area taken over for the active table area. There are two possibilities available:

1. the table's active nature is only there temporarily. Therefore the table can be covered with tablecloth, plates, cutlery etc.

2. the active part is always uncovered and available. Space will have to be made for the active area, which will have other effects.

It turns out however that it does not solve matters if the table is only *temporarily active*. When we look at the ritual and 'scripts' of a restaurant, we find that the ordering is not done in one piece, i.e. we can not do our ordering then cover the table with the plates, cutlery and the like. Usually, two courses are ordered, and maybe wine for those. A dessert is ordered later, perhaps with a dessert wine. Therefore the table will need to be made available again for the 'active' area, plates and cutlery moved, etc.

If the table is active *permanently*, then it will take up space on the table. This has the knock-on effect of requiring the table surface to be bigger, or the settings will be so cramped as to be uncomfortable. If the tables are bigger, the restaurant is going to sacrifice the number of tables it can have (and so the amount of 'covers'-diners- it can have) lessening the profit it can have per day it is open. We reach a situation where replacing a menu with an 'active' menu in this instantiation has the potential to detract from the profitability of the restaurant.

At the end of the day it seems that an 'active table' is perhaps not the best approach for emerging as an interface surface for the GLOSS technology. It might be better to take an approach using a more 'active' menu in the usual form, which may be located in the usual way on the table. Perhaps the menu employs some thin screen technology and be more like a very thin 'pad' device. This device could then appropriate an approach already used in at least some restaurants in Paris- that of the menus being hung through a slot in the table. In this way they take up the minimum of space when not used. If the 'pad' technology was eventually so thin as to be indistinguishable from paper, they could even be propped in the conventional way between the salt and pepper.

2.4.4 SUMMARY AND REVISED SCENARIO

The restaurant scenario has been looked at in the light of the extensive fieldwork, which has informed a number of questions about the expectations, design and instantiation of the technology. I have started with some seemingly small aspects of the technology and, digging deeper, have shown these to have some quite major ramifications in a number of different directions.

I will now go back to the original scenario and suggest a re-framing of it in the light of the fieldwork and the criticisms of some of the aspects of the scenario.

They take up the menu cards that are intelligent. These are A4 size, about the thickness of a piece of corrugated cardboard. They are hung in a slot at the centre of the table. At first they show the menu as the restaurant has originally set it out. But they decide that they want to see what have been the most popular dishes. As it is lunchtime, they would rather see what was the most popular in the last few days (more representative, they feel) [2]. *They could also see if there were any reviews of this place by doing a wider search on their personal devices* [3]. *They think, though, that they can trust the other diners and see what has been more popular. Bistecca Fiorentina is very popular. Shortly below on the list is a lamb dish with rosemary, which Jane says she usually loves. They share the one menu and highlight the two dishes to remind themselves.* [4]

They go to the wine section and place them in order by what wine has been chosen with these meals, again by popularity. A selection of wines comes up.

The waiter comes and they ask about the bistecca and the lamb. Yes, they are fine today. They also ask about wine. "I'll get the wine waiter to come over". The waiter leaves and they chat some more and in a minute the wine waiter comes over. Bob takes the menu sheet and shows the wine waiter their choices and the highlighted wines. The wine waiter says the yes, this wine should be fine for both the bistecca and the lamb.

---

[2] C.F. the 'cold start' issue about recommendation searches with too small data set. It is far better to look for the aggregated results of a few days than over one day. Perhaps the technology might take it into account or make the whole process of searching over a wider time period relatively straightforward and interactionally naturalistic.

[3] These could be linked to their location, but be able to look at different informational resources such as newspaper articles, reviews, etc.

[4] A moot point is how a table works if each person has separate intelligent menus. This revised scenario has of course 'glossed over' this small issue!

Bob says that he has noticed another wine, not so popular, but some at least are ordering it.

"Yes, it's lovely, but I do not know- it is quite heavy, lots of tanins, do you like that kind of thing?"

"Oh yes, love it myself but…"

His voice trails off as he looks at Jane enquiringly.

Jane nods enthusiastically after again looking at the menu

"Yeah, it's an acquired taste I know but I'm definitely a fan! Sure! Let's go for it"

The wine waiter smiles and leaves.

2.5 PLAYING WITH YOUR FOOD: ARCHITECTS IN THE CAFE

When they have eaten, they bring out the work that they had started earlier and continue to work on it. Bob and Jane use the objects on the table to illustrate their ideas for the layout of the site they are planning together.

Bob names each object as he manipulates it. For example, the cup denotes a square, a spoon represents a street, lumps of sugar correspond to buildings. As he configures the physical objects, their virtual counterparts are configured in the shared electronic work-space displayed on the table.

Again, there is the question of why use the table, and why do it in this way. One would normally use either paper or a laptop and bring that. Why is this not happening? What does this interaction *bring* that was not available before?

Let us say that the work has not been brought on a device and that somehow the data is able to be accessed in the smart space, as per the GLOSS system. Let's say that the table can be projected upon, and that the surface can become active. Note that there are still objections to the table example presented earlier. However the dishes etc have now been cleared. Further, they have the facility of either making the table 'live' or of utilising some sort of very thin technology that works as a screen, or some kind of projective technology.

There is still the problem of the icons. It is odd that one signifies all these different objects to represent different things, such as forks, spoons, sugar cubes, etc. This ignores the very basic principles of the WIMP interface conventions, to which these people would surely be more used to. If things are being projected, it is rather odd that so many objects should be required to be on the projective surface. A more interesting and realistic interaction might occur with the following:

1. The salt shaker or whatever is designated as a 'mouse' object, through some action or some interaction with the smart surface. This might be done by actually interacting with some kind of keypad or mouse area to designate the object. However, one might not even need to even interact with anything physical. One could perform a gesture that the system recognises and use this when one wants, say, one's hand to be a 'mouse'. Then one goes to an object and performs another gesture to click, and another one to 'unclick'. In either way, one only needs one or two objects (perhaps one per person) to act as a mouse.

2. The architects may use some other physical thing to work as a writing or annotation implement. One might interact with the system to designate ones' pen as a writing implement.

It is worth remembering the context of these meetings. The main thing will not be the work as is normally done- that surely in the architectural example might well be performed far better with dedicated technology, whether computer with big screen, laptop, or paper plans. However both parties are meeting up to discuss their work and chat about 'what if' scenarios. A more realistic thing here would be the facility to save and annotate various scenarios. Annotation of plans is a big way in which architects and

engineers are able to communicate about the projects in which they work. The communication here is grounded in the plans, and these are the context for the interaction.

It is important to remember that the sketches were done earlier in the scenario. It is important to ask:- are they discussing these particular sketches? If so, how do they become suddenly 3D models? Or if they are still sketches it is a simple model of using them as one would use scanned images in photoshop- with the aid of a mouse and a pallet of specialized tools.

2.6 PUBLIC DISPLAYS AND MORE

Pompidou is a fantastic building with all the different pipes exposed on the outside. Outside is a large display with all the exhibitions in the centre.

It gets activated when Bob enters a sculpture area within the interactive plaza, located outside the Centre.
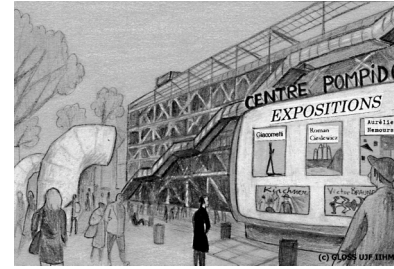
This is unclear. We must ask the question: Why have a display that is interactive outside the Pompidou? What is the *point* of this interactivity? It is gathered [Slide 29] that when one stands on a particular section the display changes to give information (presumably more detailed) about a particular exhibition, for instance, one of the six or so available. Each section of the ground is dedicated to displaying a particular artist- and we see Bob standing on a particular section devoted to Giacometti. We do not know if the areas are actually hard-wired. That is, is there might be a dedicated physical space which is the sculpture area with dedicated sensor system embedded? Or is it the case that any available area in a delineated space such as the 'sculpture area' in the square of the Pompidou is able to be made 'live'? This would mean that either each section has certain amount of 'smartness' embedded in the form of sensors, or the 'smartness' is an overlay using other remote sensing capabilities. These capabilities would , of course, need to be fine-grain enough to sense movement in a delineated area which is very small, and do this in an area which may be crowded, offering very little in the way of line of site. These technical issues could well affect the functionality of the system and how it might be used.

Beyond such more 'technical' issues, we need to go on to ask, in the style of 'Occam's razor':- what is the point of a display is utilised in this way. Further, what is the point of a public display which responds to peoples' behaviour per se?

Surely the purpose of the display here is to give an overview of all the things on at the Pompidou? Why change at all? Why not just display details of everything which is available in the Pompidou?

Actual user testing of this type of scenario might find out how such a system might be used in practice. There are some questions which might be particularly relevant:-

1. How does the system cope with large groups of people in the 'active sculpture area'? If there is more than one person in each of the active areas, can the system use some kind of voting technology to decide what to display?

2. Does a display with any sort of interactivity actually make that display better? What does the interactive display add to the experience? Might it not just get in the way? What does the display do for the museum-goer? Is it an overview of what is in the museum?

3. How does the display interact with other awareness devices that the person may have?

A general issue here and in other scenario areas is that the interactivity or smartness must pass muster after a detailed investigation into just how they might work in real life. They must show that there is a practical use for the functionality, and avoid the charge of 'smartness for the sake of it'.

It is worthwhile remembering that Bob has a PDA (this is something which seems to be forgotten in these sections). It is perhaps more appropriate for Bob to be able to access further information on his PDA or even daresay on some printed notes in the foyer of the exhibition giving further information. A large display, continually flipping from one section to another seems rather odd. Surely the purpose of such a large display is different from that of a smaller one. One can get an overview with a large display that one can then take forward. It is noted that the multiple browsing strategies such as browsing with a friend or a group are not very popular- there have been numerous systems which might allow some kinds of group-browsing and these have not been particularly high-profile after they came out.

Even if we take the interactive element at its face value, there are particular concerns. As we have asked above, What happens if one person is on Giacometti and another on Kirchener? Is there some kind of voting system that comes on board?

The interactive display, if it is reasonably sized for such a space, would surely be big enough to present information for *all* the exhibitions rather than a particular one. Perhaps, further, the display could be divided into subsections. This would enable the 'main' sections to give an 'overview' of all the things which are happening in the Pompidou and a subsection that could give a dedicated area to the person standing near it- or using the 'active space' which triggers it. This section, like a video window in a web page, has static information around it but is itself dynamic. This might allow some of the things that seem to be desired.

1. There is an overview of all the exhibitions. Everyone can see what is on.

2. There is a targeted dynamic area where one can influence what particular information one wants to see. Maybe, like the café example, there is a way of browsing or linking to other information through some kind of input. This might comprise either different parts of the 'Giacometti space' being able to be used for fine-grain moving, or gesture recognition is used to enable, for example, a hand to become a mouse. Another possibility is that the browsable space in the interactive display is simply a mirror to what is going on in a selected PDA.

This gives the possibility of browsing in public, where other people in the square get to see information that they might not normally look at, and so get a vicarious experience of different subject areas. This might lead to them becoming interested in exhibitions that they might not be interested in normally.

2.6.1   *AN EXAMPLE FROM THE FIELDWORK: 'T SERCLAES MEMORIAL, BRUSSELS*

There is a good example from the fieldwork. There is a statue embedded in a building in Brussels which memorialises a certain Everard 't Serclaes.

This is one of the main attractions in one of the side roads of the Grand Place/Grote Markt, and the statue portrays him (depending on whom one talks to) either wounded, or lying down. 't Serclaes is regarded as the liberator of Brussels, as he gained Brussels back from the Duke of Flanders in 1356. Unfortunately a few years later, 't Serclaes was trapped in an ambush. Although his tongue was cut out and his right foot cut off, 't Serclaes lived long enough to be found by a

priest, and to de dragged in to the Grand Place, where he revealed the identity of his killers before he died. The angry Brussels inhabitants began an attack on the castle of Gaasbeek (just outside Brussels). They brought along a lot of food, mostly chickens, because they thought the siege would last for a long time. However the castle was soon overcome and destroyed. It is from this event, and the chickens they took along to sustain them, that the Brussels inhabitants are said to have obtained their name of "Kiekefretters" (chicken-eaters).

This potted history shows us a number of things. It gives a clue some of the historic resonance of the statue. But this is not the only resonance that the statue has. A myth has grown up that if one rubs the arm of the statue of 't Serclaes one is supposed to achieve everlasting luck and happiness. Although only one century old, it has been rubbed so much that the metal has worn through in some places.

We can see in some of the clips to the left that the statue is a centre of conversation for many people. They stop, they chat about the statue, and then they touch it, running their hands, either one or both, over the statue, principally the arm, which is worn shiny by the wear of all the hands that touch it.
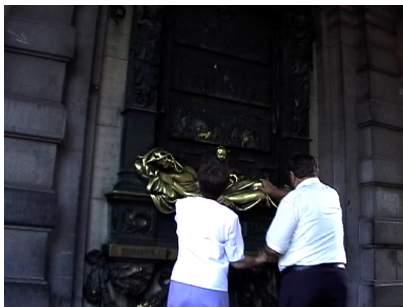
People also observe others manipulating it and watch on. It is in this way that they find out the importance and centrality of the statue in the minds of those who manipulate it. It is through others' manipulation of the statue that people notice it and stop.

Here we see much public performance round an artefact, performed by some and watched on by others. This kind of thing is part of the theatre of the street. Not all seem to actually know why to touch the statue. One sees one or two people who watch others touch it, and do so themselves, running their fingers around the points were the statue has worn thin and holes have appeared.

The statue, then, is a 'talking point', where there is a tendency for people to slow down and touch the statue, or to stand and watch this spectacle. Some touch the statue and feel the smooth metal of the arm, sometimes looking to their friends observing and smiling as they do it, as if they are on 'stage'. Others watch and point things out, talking about it.

The effect of this on the movement of the crowds coming out of Grand Place is interesting: it creates 'eddies' rather like the eddies one finds in a stream around a rock. Pedestrians have to slow down and stop, or walk around what ends up being a constant, slowly moving 'eddy' in the flow of people.

This example is interesting. We see the public performance of people round an artefact. We see others being drawn in and vicariously learning something of the import

of the artefact through the 'performance' of those who interact with it. Perhaps we can apply this to the scenario of the square to make it a little richer.

An important point to take from this is the nature of the interaction. It is public, and open, and involves others. If we look back at the scenario document after seeing such a display, we begin to see 'Bob' as a figure in a 'bubble' almost, detached a lot of the time from the world around him, even when interacting with a public display. Perhaps we can take what has been learned from some of these elements and apply it.

2.6.2 BACK TO THE SQUARE

We can take some of the lessons of the fieldwork and apply them to the example of the square. We have seen the way, in social navigational terms, that *people attract people*. We have also seen the way in which others vicariously learn that something is important, how to behave around it etc. Learning from others, they then go on and perform and others watch them.

We can go back and look at the scenario and the possibilities we might have for a richer set of interactions, where the individual does not just perform only with himself, but performs with other people.

One possibility, might be where Bob has his PDA, and his browsing is 'mirrored' in the interactive display to produce a *vicarious* browsing experience, is particularly interesting. Perhaps when someone goes onto the 'Giacometti space', one can download selected information from there- or perhaps show a screen from a shared information resource. Further, if one is on it, and is browsing that information, one gives some kind of permission for that browsing to be displayed in the relevant area of the interactive display.

In this relationship, we have the possibility for an interesting set of interactive relationships.

1. The space itself: A subset of this space has a number of 'interactive areas' such as the 'Giacometti space'.

2. The interactive public display: As well as areas that give an overview, there are portions which respond to what is happening in the square (i.e. who is doing what in the 'interactive areas'.

3. The interaction between the 'private space' of the PDA and the physical 'interactive area' of the 'Giacometti space'. It is in the 'Giacometti space' that one accesses the information about Giacometti in the PDA- an overlay of informational and physical spaces.

4. The interaction between the 'private area' of the PDA (the personal elements which are not avialable for the general public) and the 'public area' on the PDA which is the downloaded or shared window which one browses on the PDA, and which is mirrored on the giant screen.

5. The interaction between this browsed area and the other areas. One is able, as another member of the public, to see a little of someone elses' searching.

Therefore there are a number of interesting relationships and interactive possibilities that might be explored.

2.6.3   A REVISED SCENARIO FOR THE SQUARE

We might rewrite the above scenario in line with this.

Pompidou is a fantastic building with all the different pipes exposed on the outside. Outside is a large display with all the exhibitions in the centre. The display shows an overview of the various exhibitions, giving their main details. Under each particular section is a browsing area, and Bob watches a young woman take out her PDA and move into an area which lights up as Kirchner. He sees her looking and doing something with her PDA and notices that the area on the screen under the Kirchner overview is active, and he can see someone browsing to the biography section. Bob reads a bit and is fascinated. He takes out his PDA and wanders over where he sees an area on the ground highlighted with the word 'Giacometti'. He looks closely at his PDA and moves onto it. Amazingly, a window has appeared on his PDA.

> Welcome to the Pompidou interactive space! Please note: as you browse this information this window will be visible on the communal wall above. We guarantee that no other information on any other window of your PDA will be visible. If you do not want to participate, simply move out of the 'Giacometti space'. Thank you.

There is a tick or an x to go ahead. Bob smiles and thinks for a second. He moves back slowly and the window moves. He slows and the window slows too. He can watch it disappear off the screen of his PDA when he slows right down. Cool!

He moves back onto the space and starts looking at the window. The dialogue box comes again. He taps the 'tick' box. The contents list appears. He is interested in Giacometti and his contemporaries and starts looking at that. This is mirrored, he sees on the large screen. With a bit of care, he can actually use the large screen rather than his PDA to watch his interactions. Other people are watching as both of them browse. One stops. "Didn't know that about Giacometti. Incredible." Bob smiles, and scrolls down.

The girl in the Kirchner space looks across and smiles.

"Quite fun, isn't it?"

A group of tourists stand around Bob and watch him and the girl. They look at the way they are using the PDAs and one says to her husband:

"Ah, they are working what is happening up there- look, you see? Do you have your PDA?"

2.7 RADAR AND MINGLING

This is a bit earlier than Bob anticipated. Bob uses his radar tool to look for a crowded area to mingle amongst the Parisians.

Let us go back to the definition of Radar:-

This tool gives the user an overview beyond the immediate environment. With this tool you will be able to locate low and high densities, crowds and groups in a larger area. Radar, then, helps one see aggregates of human activity. This can help you find the special gap of freedom, the emptiness, one sometimes lacks in a public environment. This instrument can search the streets and spaces for one on a hunt for either noise or silence.

However, in the light of the fieldwork, even here it is rather unconvincing. 'Mingling with the Parisians' seems rather naïve- if one were in London, Amsterdam or wherever, mingling with them could involve the possibility of mingling with a vast variety of people, such as Milwall Supporters, protesters, police, academics, drug addicts, whatever. The concept of Radar seems to prove wanting here.

Broad aggregates may be very useful. In certain circumstances, it is very useful to be able to see simple aggregates of people. Perhaps simply one wants a quiet street to walk down, or wants a quiet place to sit. Absence is quite easily dealt with by the system. However, when we are thinking of such concepts as 'Parisians', the definitions seem to break down. How can we tell that they are Parisians? Oddly, the system concept seems at the moment more useful in the negative than positive, absence rather than presence of people.

A further question is how the system *finds* these people. Are we to assume that some type of 'tagging' or whatever is responsible. This begs a number of questions about privacy and security. One interesting issue raised in deliverable D24 (*Early interaction design concepts from fieldwork*) was about visibility and invisibility. Let us go back to that concept.

2.7.1 INFORMATION GIVEN OUT TO THE WORLD

As pointed out in D24 we suggest that we might want to be visible and impinge on anothers' conciousness. However, as D24 suggests, there are levels of visibility or invisibility which can be very useful in being able to navigate around the city and look for 'others like you' say, *without the need for identities to be known.*

D24 posited that the user the user can choose different levels of visibility in certain times:

Total invisibility: Device does not give out any information. Not for general radar services, or anything.

Visibility as a "**member of the public**": I can be seen, people know that there is someone there and walking about. However, that is all people know. They do not know my identity, or the person's preferences etc. We see this in traditional Muslim countries

with the veil- one cannot readily identify the woman beneath the veil- only that she is a woman.

Visibility as a **member of a community**: You might not know my name but you can tell that I'm a Goth, a skateboarder or Gay- In the street, we would bo by signifiers of dress, signifiers of makeup, of place one is in. I may not wish people to know my identity (such as let people know I am in a particular place where members of , say, a sexual minority congregate, but I might want my identity as 'member of that group' to be given out.

Visibility as a **particular person**: With one's identity, preferences, roles, and other information. With this full visibility all the tailored services for me are available, my device can be used for tickets or as a pass (see scenario) etc.

This of course intersects with the other concept from D24; that of the *Radar Attenuator,* where one looks in terms of granularity of different areas. So one capability is in terms of what information one gives out to the world, where another is in terms of what information one wants from the world. These two intersect in the Radar device.

2.7.2 *INFORMATION ONE WANTS FROM THE WORLD*

The attenuation of the Radar device would make searches of many different kinds quite useful. D 24 posited that one might want to search in a number of different ways:

Area (large to small)

Relatedness (people/ people of a particular type/ friends)

Time (weeks/ hours/ now)

We will look at this through looking at someone searching different granularities of area as outlined in D24- and how this may apply.

Granularity of Region

I'm in Europe- in Amsterdam- are any of my friends touring Europe? For a backpacker, those first blips might be interesting and can lead to travelling to a different European country to meet friends. Europe-wide journeys are small compared to the distance from Australia, or North America.

Granularity of Country

I'm in Amsterdam- anyone else in the Netherlands that I know?

City

"I've arrived in Brussels. Are any of my friends around? Goodness, what's she doing here? She turns out to be here for a meeting with Digital Libraries people. I'm here for a meeting of a network of excellence."

Section

"Anyone in this group of streets?"

This could be a delimited section like de Pijp or Jordaan in Amsterdam, the Marais or Left Bank in Paris. Actually, it might be synonymous with the Parisian concept of Arrondissement. Further work might look at delineated areas and look further at urban geography ideas of territory etc.

Street

"I'm in Buchanan Street- are you there yet?" "Anyone around?"

This might be a quick check when one arrives in an area.

Place (pub, club, store etc)

"I don't think she's here- I'll check."

The interesting thing about such searches are that generally the wider the searches in any sphere (is anyone around?) (who is around in Europe?) the narrower the other areas have to be to avoid swamping of the system. Thus we might have:

Who of these people is around in Europe?

Is anybody around at this place?

Was anybody around at this precise time?

Such an attenuator idea is obviously connected with the concept of visibility/invisibility. We might suggest that some people are visible fully only to certain others and there is some sort of link in place where one is invisible to everyone else but fully visible to one or two other radar devices.

In summary, such concepts as the attenuator and the ideas of visibility and invisibility can be overlaid with the basic concept of the Radar and make it possibly much more powerful. As it stands, the Radar is, logically, good at finding *absences* where no people whatever their type and identity are. It seems to be problematic unless very delineated in terms of finding presences. The ideas that are suggested above and in D24 seem to bring much more power to the concept. It also offers the possibility of being instantiated in a way that does not necessarily need one to divulge ones' identity. As we have shown, we do not need to know people's names to know what types and groups they might belong with (however fluid and changing such category systems of course are). Of course, this typology is more of a design concept than a solution, however it does seem to add a tremendous power to the user in terms of what they might actually look for and the intelligent deductions they can make from what they see. This makes the possibilities of the original concept more open and able to be adapted in interesting and unexpected ways.

3 SUMMARY AND CONCLUSIONS

This deliverable has studied a number of parts of the original GLOSS scenario in the light of fieldwork done in a number of European cities, reported first in GLOSS deliverable D6. It has gone on to provide detailed and thorough comment on and discussion of these scenario vignettes.

It is hoped that this exercise has been shown to be of some value to this kind of work. It is hoped that the deliverable has shown that while a rigorous analysis in the light of the fieldwork may sometimes show the scenarios to be found wanting, this work has shown its potential to refocus and enhance the scenarios in ways which give scope for much further work. Often this work raises questions rather than answers them. It is hoped that this document has shown that this is all to the good, if the questions it raises are interesting ones.

4 REFERENCES

.walk: http://www.socialfiction.org/dotwalk/index.html

Armstrong, G. (1998): *Football Hooligans: Knowing the Score.* Oxford: Berg.

Benjamin, W. (1997): *Charles Baudelaire.* London, Verso.

Benjamin, W. (1999): *Das Passagen-Werk* translated as *The Arcades Project.* Cambridge, Mass.: Belknap Press of Harvard University Press.

Dourish, P. and Chalmers, M. (1994): Running Out of Space: Models of Information Navigation. in *HCI'94*, Glasgow, UK.

Garfinkel, H. (1967) *Studies in Ethnomethodology.* Englewood Cliffs, NJ: Prentice-Hall.

Geonotes: http:://geonotes.sics.se

Galloway, A., Sundholm, H., Ludvigsen, M. and Munro, A. (forthcoming) *From Bovine Horde to Urban Players: Multidisciplinary Interaction Design for Alternative City Tourisms.*

Goffman E. (1975): *Frame analysis : an essay on the organization of experience.* Boston:Northeastern University Press.

Hollan, J. and Stornetta, S. (1992). *Beyond being there*. In Proceedings of ACM Conference on Human Factors in Computing Systems (CHI'92), pages 119-125, Monterey, ACM Press.

Munro, A.J., Höök, K., and Benyon, D. (eds) (1999): *Social Navigation of Information Space.* London: Springer.

Munro, A.J, Welen, P., and Wilson, A. *Interaction Archetypes.* GLOSS Project Deliverable D4.

Munro, A.J. Raw Observation in the Strict Sense of the Word. GLOSS Project Deliverable D6.

Munro A.J. Early Inteaction Design Concepts from Fieldwork. GLOSS Project Deliverable D24 (additional deliverable).

Munro, A.J. (2000): *Place: Space, Esoterica, Inhabitance.* Invited talk for the *Workshop on Physical Versus Cognitive Disappearance* at *i3 Spring Days,* Oporto, Portugal.

Nordic Institute for Contemporary Art (2002): *Gjörningaklúbburinn: The Icelandic Love Corporation*. Helsinki: Nordic Institute for Contemporary Art.

Patrick, J. (1973): *A Glasgow Gang Observed.* London: Eyre Methuen.