

Supporting Ethnographic Studies of Ubiquitous Computing in the Wild

Andy Crabtree, Steve Benford, Chris Greenhalgh, Paul Tennent,
Matthew Chalmers and Barry Brown

Paper under review for CHI 2006

Ethnography and UbiComp

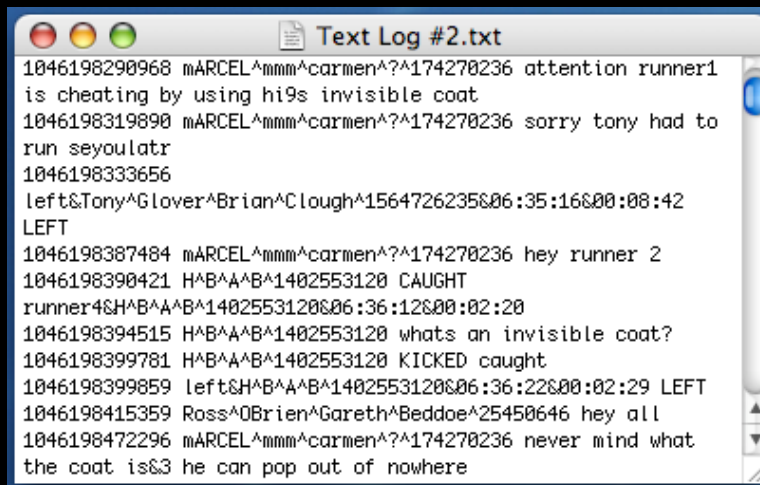
- UbiComp Environments
 - Are characterized by ‘fragmented’ interaction
 - I.e., interaction is distributed across an array of devices and online environments that exploit invisible sensing systems
 - The challenge of understanding interaction is one of **reconciling the fragments** to develop coherent descriptions for analysis
 - ‘Record and replay’ provides a means of doing this

Ethnography and UbiComp

- Four Experiences of RnR
 - Can You See Me Now? (basic text logs)
 - Uncle Roy All Around You (text logs, audio files, and video)
 - Savannah (video and virtual environment)
 - Treasure (video, audio, mobile devices, virtual environment)

Ethnography and UbiComp

- Can You See Me Now?

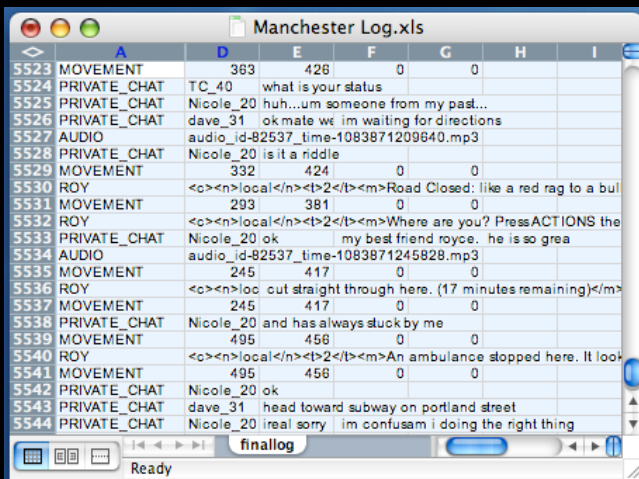


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1046198290968 mARCEL^mmm^carmen^?^174270236 attention runner1
is cheating by using hi9s invisible coat
1046198319890 mARCEL^mmm^carmen^?^174270236 sorry tony had to
run seyoulatr
1046198333656
left&Tony^Glover^Brian^Clough^1564726235&06:35:16&00:08:42
LEFT
1046198387484 mARCEL^mmm^carmen^?^174270236 hey runner 2
1046198390421 H^B^A^A^B^1402553120 CAUGHT
runner4&H^B^A^A^B^1402553120&06:36:12&00:02:20
1046198394515 H^B^A^A^B^1402553120 whats an invisible coat?
1046198399781 H^B^A^A^B^1402553120 KICKED caught
1046198399859 left&H^B^A^A^B^1402553120&06:36:22&00:02:29 LEFT
1046198415359 Ross^OBrien^Gareth^Beddoe^25450646 hey all
1046198472296 mARCEL^mmm^carmen^?^174270236 never mind what
the coat is&3 he can pop out of nowhere
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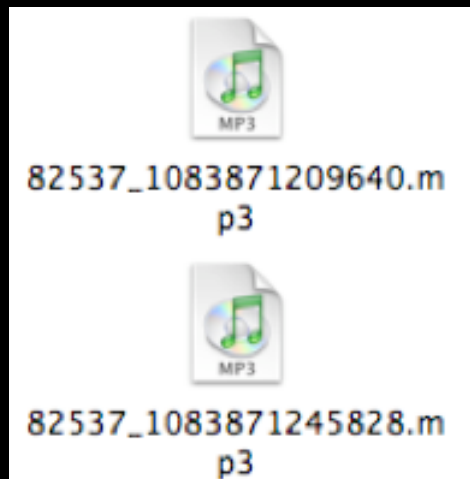
- Log allowed is to examine arrangements of collaboration between players
- But not moment-by-moment interaction between runners and players

Ethnography and UbiComp

- Uncle Roy All Around You



	A	D	E	F	G	H	I
5523	MOVEMENT	383	426	0	0		
5524	PRIVATE_CHAT	TC_40	what is your status				
5525	PRIVATE_CHAT	Nicole_20	huh...um someone from my past...				
5526	PRIVATE_CHAT	dave_31	ok mate we im waiting for directions				
5527	AUDIO	audio_id-82537_time-1083871209640.mp3					
5528	PRIVATE_CHAT	Nicole_20	is it a riddle				
5529	MOVEMENT	332	424	0	0		
5530	ROY	<c><n>local</n><t>2</t><m>Road Closed: like a red rag to a bul					
5531	MOVEMENT	293	381	0	0		
5532	ROY	<c><n>local</n><t>2</t><m>Where are you? PressACTIONS the					
5533	PRIVATE_CHAT	Nicole_20	ok my best friend royce. he is so grea				
5534	AUDIO	audio_id-82537_time-1083871245828.mp3					
5535	MOVEMENT	245	417	0	0		
5536	ROY	<c><n>loc out straight through here. (17 minutes remaining)</m>					
5537	MOVEMENT	245	417	0	0		
5538	PRIVATE_CHAT	Nicole_20	and has always stuck by me				
5539	MOVEMENT	495	456	0	0		
5540	ROY	<c><n>local</n><t>2</t><m>An ambulance stopped here. It look					
5541	MOVEMENT	495	456	0	0		
5542	PRIVATE_CHAT	Nicole_20	ok				
5543	PRIVATE_CHAT	dave_31	head toward subway on portland street				
5544	PRIVATE_CHAT	Nicole_20	ireal sorry im confusam i doing the right thing				



- Allowed us to examine moment-by-moment nature of collaboration between street players and online players
- But very labour intensive ... all manual

Ethnography and UbiComp

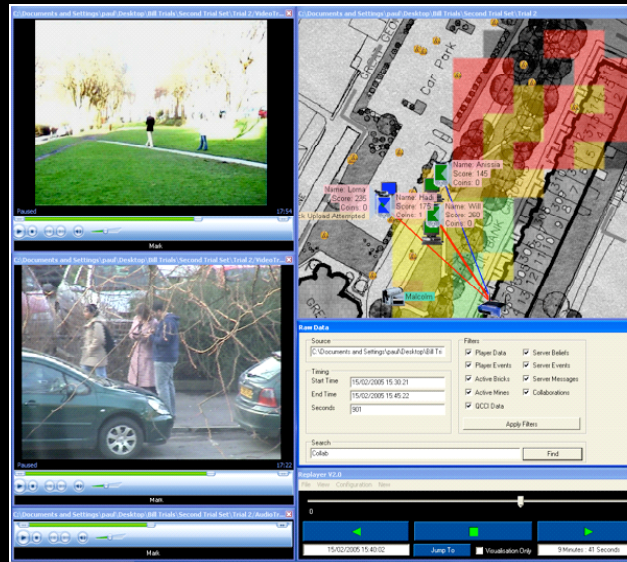
- Savannah



- Aligned virtual model with video
- Allowed us to understand moment-by-moment character of interaction
- But synchronization still manual

Ethnography and UbiComp

- Treasure



- Allows data from multiple sources (PDAs and video) to be synchronized and viewed in relation to gameplay map

Ethnography and UbiComp

- Increasingly sophisticated tools that enable us understand interaction in situations where
 - Users are mobile
 - Interact via small displays
 - Interactions are mediated by invisible sensing systems
 - And are distributed across other applications, such as virtual environments
 - Already of benefit to analysis

Ethnography and UbiComp

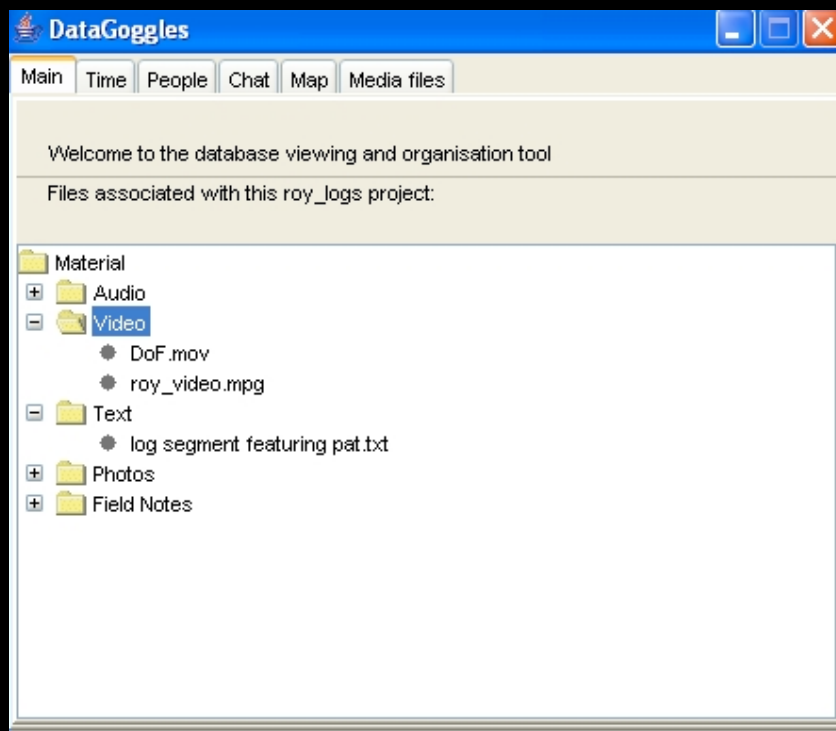
- Problems
 - Still a lot of technical challenges to address - e.g., representing delays and disconnections
 - Not usable by ethnographers yet
 - And don't support ethnographic practice

Ethnography and UbiComp

- Working out solutions (not in paper)
 - Current work focuses on developing tools to support ethnographic practice
 - In particular a Replay Tool that enables ethnographers to extract salient features of logs and combine them with other resources

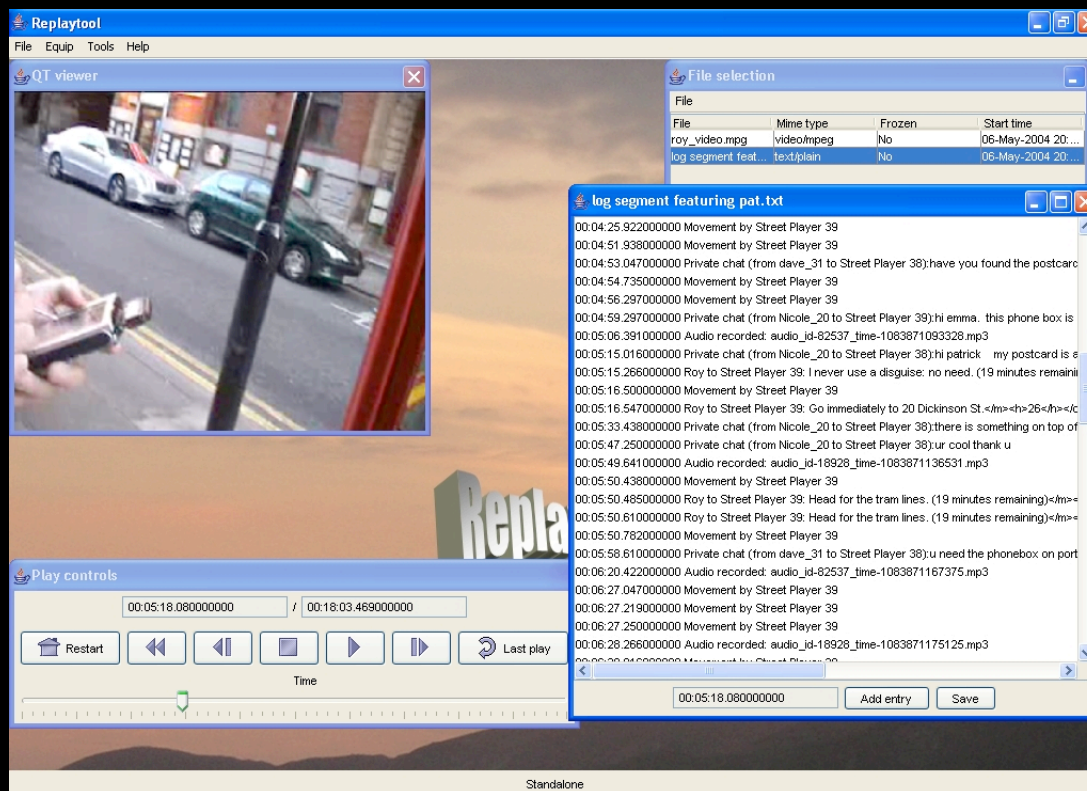
Ethnography and UbiComp

- Replay Tool: Data Goggles



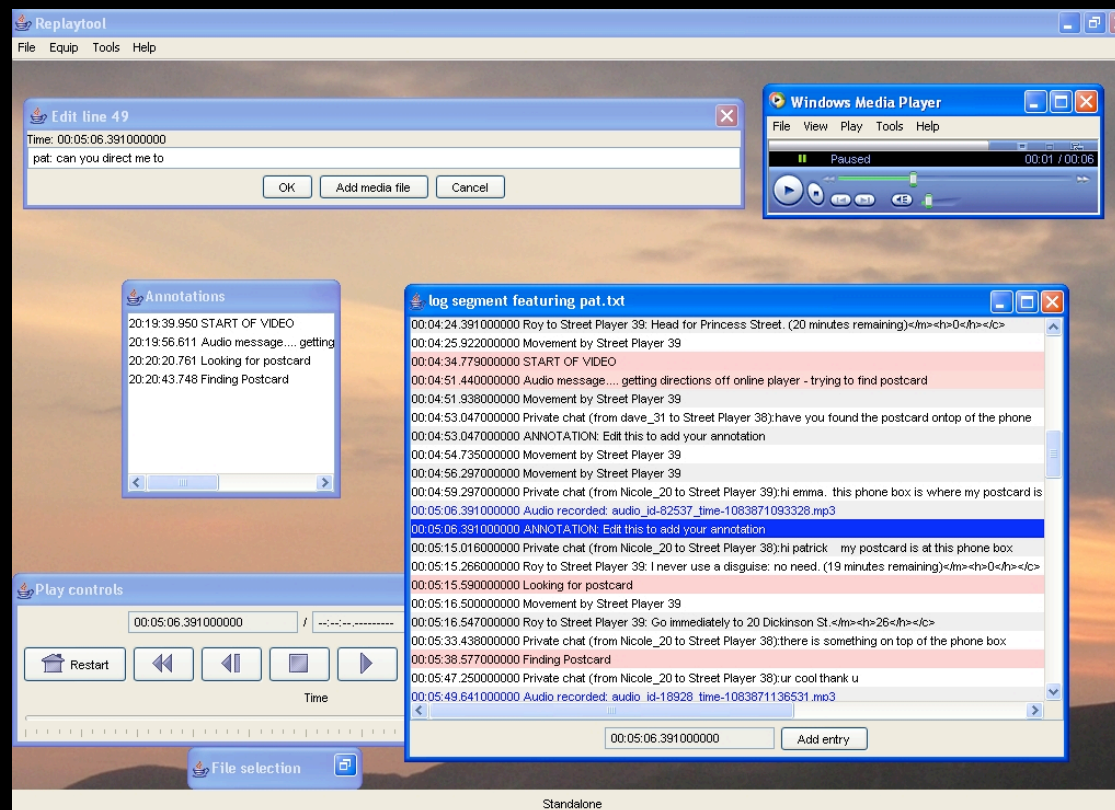
Ethnography and UbiComp

- Replay Tool: Synchronization



Ethnography and UbiComp

- Replay Tool: Annotation & Description



Ethnography and UbiComp

- Extending RnR
 - Need to support coding and statistical transformations of qualitative datasets to support a broad range of research practices that exploit ethnography
- Work being explored in conjunction with e-Social Science Research Node at Nottingham

Ethnography and UbiComp

- CfP Journal of CSCW, Special Issue on e-Research
 - Deadline 1st December
 - Submit to Marina Jirotka
marina.jirotka@comlab.ox.ac.uk