

SENSORS AND ACTUATORS RESEARCH PROGRAMME MAP – resulting from the workshop held on 21st June 2004, as part of the EPSRC funded network: *Smart Textiles for Intelligent Consumer Products*, hosted by Central Saint Martins College, UAL

PROPOSED RESEARCH PROGRAMME						
SIGNALS TO BE SENSED	PLATFORM TEXTILES TO BE DEVELOPED	APPLICATION OF TEXTILE SENSORS & ACTUATORS TO CLOTHING & ENVIRONMENTS				
		FUNCTIONAL ASPECT			EMOTIONAL ASPECT	
PHYSICAL SENSORS:	Textile Sensors To Be Developed Project Stream 1	Project Stream 2 Sports Clothing	Project Stream 3 Health Clothing	Project Stream 4 Environment	Project Stream 5 Emotion & Clothing	Project Stream 6 Emotion & Environment
Respiration	Textile mechanical resistance	.	.		.	
Heart rate	Textile electrode	.	.		.	
Pulse rate	Textile electrode	.	.		.	
Movement/gesture	Textile mechanical resistance	.	.		.	.
Pressure	Textile pressure	.	.	.	.
Audio – speech, intonation	Accoustic array				.	.
Visual – facial expression, eye gaze					.	.
Brain activity/waves		.			.	
Micro-tremors in muscles/fibres	Textile electrode	.	.	.	.
Environmental – temperature, colour	Photochromic polymer fibres	.		.	.	.
Rip/tear/strain	Optical fibres			.		
CHEMICAL SENSORS:						
Perspiration	Galvanic skin	.	.		.	
Aroma			.		.	
ACTUATION IN RESPONSE TO SIGNALS	Textile Actuators To Be Developed Project Stream 1					
PHYSICAL ACTUATORS:						
Visual display – colour, pattern, light	Colour-changing fibres/light emitting	.	.	.	.	.
Tactility	Electroactive actuator polymers	.	.	.	.	.
Shape	Electroactive actuator polymers			.	.	
Porosity	Electroactive actuator polymers			.	.	
Sound	Accoustic array				.	.
Heating/cooling	Encapsulation/shape change	.		.	.	
Vibration	Electroactive actuator polymers		.	.	.	
CHEMICAL ACTUATORS:						
Aroma	Encapsulation				.	.
Drug delivery	Encapsulation		.		.	

NB • coloured dots denote the application of textiles to application area(s)

PARTICIPANTS

PARTICIPANT	EXPERTISE	PLATFORM TEXTILES TO BE DEVELOPED	APPLICATION OF TEXTILE SENSORS & ACTUATORS TO CLOTHING & ENVIRONMENTS				
			FUNCTIONAL ASPECT			EMOTIONAL ASPECT	
		Project Stream 1	Project Stream 2 Sports Clothing	Project Stream 3 Health Clothing	Project Stream 4 Environment	Project Stream 5 Emotion & Clothing	Project Stream 6 Emotion & Environment
Carbonate	Product development		.	.			
S. Baurley, CSM	Textiles/wearable tech	.				Lead	.
Sports Innovation, MIT	Sportswear		.			.	
U Reading	Biomimetics	.			.		
CSM	Textile design	.				.	
International Newsletters	Media						
TechniTex/DTI	Technical textiles	Lead					.
Glasgow/Equator	Computing Science / HCI					.	
CSM	Textile design						.
Eleksen	Textile sensors	.			.		
QMUL	Sports bio-mechanics		Lead			.	
Leeds	Textiles/electronics	.		.			
LCF	Textile design					.	
UMIST	Direct Writing	.		.			
Sport UK	Sports products		.				
CSM	Textile design	.		.		.	
Bartlett/UCL	Built environment						Lead
HP Labs	Psychology / HCI					.	
U Newcastle	Civil Engineering	.			Lead		
Philips Research	Wearables/GPS	.	.			.	
Imperial	Affective computing					.	.
QinetiQ	Materials	.			.		
NWTexNet	Technical textiles	.					
CSM	Textile design					.	
TWI	Materials joining	.					.
CSM	Environment design						.
Foster & Partners	Built environment				.		.
Heriot Watt	Technical textiles	.		.			
TechniTex	Technical textiles	.		Lead			
U Reading	Biomimetics	.		.			
Kodak	Electronic materials	.				.	

