



WEAR
sustain

WEARABLE TECHNOLOGISTS
ENGAGE WITH ARTISTS FOR
RESPONSIBLE INNOVATION

WEAR Sustain Glossary

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In WEAR, a range of disciplines is encouraged to collaborate to ensure comprehensive and sustainable prototype and product development. Despite the fast development of design and technology of “wearables”, standardisation of terminology is only at the beginning, and many different definitions can still be found in literature in the various disciplines involved. We have found that this often leads to delays and issues in communication.

This glossary maps out WEAR’s understanding of commonly used terms in and around “wearables”, and can be used as a reference for communication between stakeholders involved in WEAR. The glossary will be updated throughout the project, and we welcome feedback from experts and teams taking part in WEAR.

Sustainability

Sustainability is the endurance of systems and processes. Sustainability can also be defined as a socio-ecological process characterized by the pursuit of a common ideal. By persistently and dynamically approaching it, the process results in a sustainable system. Healthy ecosystems and environments are necessary to the survival of humans and other organisms. Ways of reducing negative human impact are environmentally-friendly chemical engineering, environmental resources management and environmental protection. Information is gained from green chemistry, earth science, environmental science and conservation biology. *"The term 'sustainability' should be viewed as humanity's target goal of human-ecosystem equilibrium (homeostasis), while 'sustainable development' refers to the holistic approach and temporal processes that lead us to the end point of sustainability."*(Shaker, 2015:304–314) Despite the increased popularity of the use of the term "sustainability", the possibility that human societies will achieve environmental sustainability has been, and continues to be, questioned.

The three pillars of sustainable development goals, include economic development, social development and environmental protection.

Extracts from Wikipedia: <https://en.wikipedia.org/wiki/Sustainability>

Eco design - from the EU Directives suggest:

Many energy-related products have a significant potential for being improved in order to reduce environmental impacts and to achieve energy savings through better design which also leads to economic savings for businesses and end-users. In addition to products which use, generate, transfer, or measure energy, certain energy-related products, including products used in construction such as windows, insulation materials, or some water-using products such as shower heads or taps could also contribute to significant energy savings during use.

<http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32009L0125&from=EN>

Ethics - data and privacy, body, labour

The amount of data that wearable technologies capture, in particular their users' personal data, raising ethical issues regarding privacy, ownership, control and processing of this data by the wearables manufacturers and service providers.

The EU directive on data collection

Wearable Computing

"A wearable computer is a computer that is subsumed into the personal space of the user, controlled by the user, and has both operational and interactional constancy, i.e. is always on and always accessible."

Steve Mann, 1998¹

Wearable technology

Wearable technology is related to both ubiquitous computing and the history and development of wearable computers. The term describes an object worn directly on the body (clothing, jewelry, accessory, etc.) that holds the physical set-up enabling the electronic functionality. In some cases this is only the hardware (sensors, actuators, antennas for wireless communication), in other cases software is included where data processing happens locally on the wearable.

Wearables

Wearables is a colloquial term for either wearable technology or wearable computing, and describes the object worn directly on the body (clothing, jewelry, accessory, etc.) that holds the physical set-up enabling the functionality. In some cases this is only the hardware

¹ <http://wearcomp.org/wearcompdef.html>

(sensors, actuators, antennas for wireless communication), in other cases software is included where data processing happens locally on the wearable.

Smart materials

Smart materials are materials that have one or more properties that can be significantly changed in a controlled way by external stimuli, such as stress, temperature, moisture, pH value, electric or magnetic fields.

Smart textiles

Smart textiles are textiles that have been treated (e.g. printed, coated, dyed) with smart materials, and can be significantly changed in a controlled way by external stimuli, such as stress, temperature, moisture, pH value, electric or magnetic fields.

Electronic textiles (e-textiles)

Fibres that conduct electricity are at the centre of a wide field of research that spans textile engineering, electronic engineering, textile design, fashion design, applied physics and chemistry. Conductivity is achieved by either coating fibres with conductive metals or polymers, or by winding conductive thin ribbons or metal threads around a core (Cork, 2015). Although some techniques have been used for centuries to apply decorative value to textile products, thin flexible fibres came only widely into electrical operation in the form of the filament in the electrical lamp (Edison, 1880).

Interactive textiles

Interactive textiles describe fabrics and textile materials with embedded electronic and / or computational functionality, that take advantage of the familiarity of moving textile and soft materials (e.g. folding, crumpling, stretching), to design intuitive modes for interaction between textile and user.

Interactive clothing

Interactive clothing describes garments with embedded electronic and computational functionality, that take advantage of the familiarity of dressing and using garments, to design intuitive modes for interaction between garment and wearer.

Fashionable Technology

The term *Fashionable Technology*, coined by Sabine Seymour, describes garments, accessories, or jewelry that combine aesthetics and style with functional technology (Seymour, 2008, p.12).

Fashion tech

The term *Fashion tech* is an abbreviation of Fashionable Technology. Although not different in its meaning, *Fashion tech* has been more used in recent years, and has often (but not

always) a direct link to the fashion industry.

Physical Computing

“Physical Computing is an approach to learning how humans communicate through computers that starts by considering how humans express themselves physically... In physical computing, we take the human body as a given, and attempt to design within the limits of its expression.”²

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² <http://www.tigoe.net/blog/what-is-physical-computing/>