CREATIF collaboration achieves a software platform for smart fabric design

Have you ever wanted to design and create a smart fabric but lacked the necessary technical knowledge? Or do you want to know what a smart fabric is? The EU project CREATIF now provides a software platform to enable the design and realization of interactive smart fabrics even if you don't have specialist technical knowledge. Three creative partners: Base Structures (UK), Diffus Design (DK) and Zaha Hadid Architects (UK) have collaborated with four research partners: Ardeje (FR), Grafixoft (BG), Institut für Textiltechnik Aachen (DE) and the project coordinator, the University of Southampton (UK), to realise a smart fabric design and realisation platform.

> **Key project data**
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> Title: CREATIF – Digital Creative Tools for Digital Printing of Smart Fabrics
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> Start date: 1 Oct 2013
> End date: 30 Sept 2016
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> EC Research call: Objective ICT-2013.8.1 Technologies and scientific foundations in the field of Creativity
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> Website: www.creatif.ecs.soton.ac.uk
> Contact us at creatif.network@gmail.com
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> Partners: Base Structures (UK), Diffus Design (DK), Zaha Hadid Architects (UK), Ardeje (FR), Grafixoft (BG), Institut für Textiltechnik Aachen (DE) and University of Southampton (UK)

The project has achieved software design tools enabling designers to produce interactive fabric designs without needing specialist technical knowledge. The software tools allow the designer to create, layout, visualise and simulate the operation of a smart fabric.

The smart fabric can then be printed remotely, using a printer designed in the project, and then supplied to the designer. The realised smart fabrics are based on active electronic materials in the form of inks and operated by an electronic circuit connected to the smart fabric. Colour patterns can be also be integrated alongside the smart fabric functions. Designs can even be produced while collaborating in real time with other designers elsewhere in the world using the internet-based software platform. An online forum also allows designers to share designs and share their experience with the platform.

CREATIF is funded by EU's Seventh Framework Programme and is a design driven development project. Recently developed fabric compatible functional inks and printing techniques allow physical realisation of the designs emerging from CREATIF's collaborative software tools. The CREATIF tools should enable anyone using fabrics to design smart fabrics. The barriers to entry to this field are removed by significantly reducing the complexity of the process and the technological learning curve required. The three year project is now at the end of year 2 and has produced the software tools to achieve the design of smart fabrics.

Smart functions which are currently achievable with the smart fabric are light and sound emission, colour change and proximity/touch sensing.
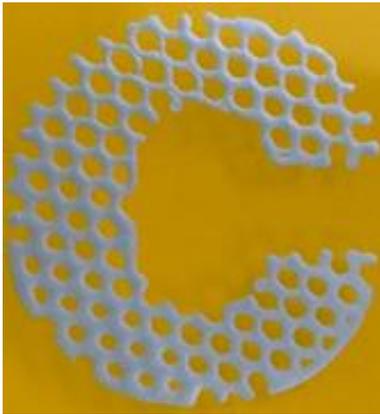
The smart fabric is designed using 3 stages of the software platform:
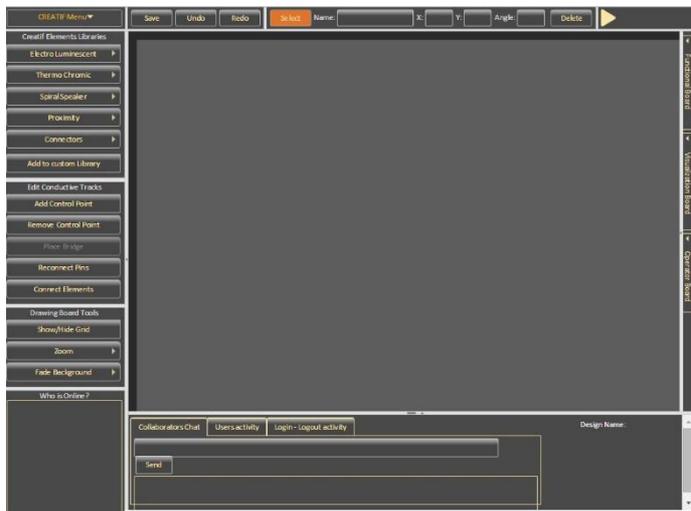
The 'Collaborative Drawing and Design in the Cloud Tool' is an add-on to Adobe Illustrator CC. Designers can create colour based images as usual using Adobe Illustrator. The CREATIF add-on allows designers to add smart functionality to their colour designs in the form of pre-determined smart functional elements for light emission, colour change and sound emission. Additionally these smart functions may be coupled to a sensing capability allowing proximity or touch to control the smart functions. All aspects of the designs can be uploaded to the cloud to allow interactive design between designers. Users of other drawing packages can also upload colour drawings to the cloud for the addition of smart functions within a bespoke design in the cloud interface.

The 'Translation Tool' converts the user generated designs into the required printed layers necessary to achieve the smart fabric consisting of a colour image based on conventional inkjet inks and the smart functions based on advanced electronic inks.

The 'Visualisation Tool' allows the user to see and adjust a visual representation of the appearance of the final smart fabric before it is printed. Parameters can also be set to control the smart fabrics functions such as electroluminescent lamp brightness.

Background: In Oct 2012 the EU issued a call within the Information and Communications Technology Programme covering 'Technologies and scientific foundations in the field of creativity'. This call addressed creative tools and aimed to equip different industries with more effective creative tools that make use of all our senses and allow for richer, more collaborative and interactive experiences. This challenge called upon research and industry to unite their forces to produce more powerful and interactive tools for creative industries, enhance the creativity of workers pursuing different professions,

and anticipate future trends in research and innovation by encouraging interaction in and between different segments of the creative industries.

Further information: If you would like to be kept informed via future newsletters and press releases please contact us at creatif.network@gmail.com.

Consortium: The consortium consists of the Department of Electronics and Computer Science at the University of Southampton (UK) www.southampton.ac.uk, as project coordinator and with world leading expertise in creating smart fabrics by printing electronic functional materials, Institut für Textiltechnik der RWTH Aachen University (DE) www.ita.rwth-aachen.de, specialised in fabric machine design, Grafixoft (BG) www.grafixoft.com, a digital design software developer, Ardeje (FR) www.ardeje.com, an SME specialised in advanced inkjet printers and finally, three creative partners active in both architecture, design and tensile fabrics: Diffus Design (DK) www.diffus.dk, Base Structures (UK) www.basestructures.com and Zaha Hadid Architects (UK) www.zaha-hadid.com

Partner presentation:

	The University of Southampton, Department of Electronics and Computer Science is the coordinator of CREATIF. Within the Department of Electronics and Computer Science, we have been researching printed electronics and sensors for 30 years with particular emphasis on printed smart fabrics for the past 8 years. Through world-leading research and enterprise activities, the University of Southampton connects with businesses to create real-world solutions to global issues. Through its educational offering, it works with partners around the world to offer relevant, flexible education, which trains students for jobs not even thought of. This connectivity is what sets Southampton apart from the rest; we make connections and change the world. www.southampton.ac.uk www.southampton.ac.uk/weareconnected #weareconnected
	Grafixoft Ltd is an innovative software engineering company with more than 15 years of experience in the development of complex business solutions. It has a wide background in implementation of reliable and custom tailored software applications. Always eager to face challenges and deliver competitive advantage to its partners, the company has gained an impeccable and trustworthy reputation across Europe.
	Diffus Design has a main missions to combine traditional know-how and codified production processes with uncharted 'soft' technologies and complex materials. The idea is to emphasise familiarity, luxury and comfort and try to combine different materials and innovative technology in often unpredictable ways and unconventional twists but always with strong concepts and clear narratives.
	Base Structures designs, manufactures and installs world class tensile fabric structures across the globe. From iconic architectural fabric structures that define a building to smaller scale tension structures that make a statement, Base' reputation for quality and experience is unrivalled. Notable client projects include Up at The O2, Heathrow Terminal 5, London 2012 sporting venues and the Mound Stand at Lords Cricket Ground.

Zaha Hadid Architects	Zaha Hadid Architects work at all scales and in all sectors. They create transformative cultural, corporate, residential and other spaces that work in synchronicity with their surroundings. Zaha Hadid Architects continues to be a global leader in pioneering research and design investigation.
ardeje	Ardeje is acting in significant Research works at the European level, and have been cultivating Science and Technology in terms of fluid jetting for more than fifteen years. Motivated by a sense of results, Ardeje combine technical know-how and total commitment. From design to implementation in specific environment, they develop industrial solutions that meet needs in terms of fluid jetting.
ITA	The Institut für Textiltechnik belongs to the Faculty for Mechanical Engineering of RWTH Aachen University. The focus of our research is therefore on the development of new textile machines and new textile processes. We carry out research within publicly funded projects (e.g.EU) and also in direct R&D projects for industry.