

PhD and Supervisors Guide to

ArcInTexETN

Marie Skłodowska-Curie actions European Training Network (ETN)



Welcome to ArcInTexETN

This guide to the ArcInTexETN gives an overview of the research program of the training network, the impact promised in our application and also an overview of major network wide training activities as well as the work packages structure of the network.

For contact information, news and up-to-date information please check the ArcInTexETN web at www.arcintextetn.eu

We look forward to work with all of you to develop cross-disciplinary research and research education in the areas of architecture, textiles, fashion and interaction design.

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I. ArcInTexETN research program

This is the research context – with respect to programmatic and methodological directions – in which the PhD students of the network will be trained within the four (WP2-5) training work packages. As such it provides a research foundation for the ArcInTexETN.

The research program opens up for directions of exploring a main challenge. What this means is further open for interpretations from a range of different perspectives at the schools of the training network and maps out a research space for the PhD students built up by a rich variety of disciplines and methodological perspectives.

The research program thus opens up the initiative, opens up for interpretations, open up for building a research space, open up for mixing disciplines and methodological perspectives.

Impact is then what defines the closure, the promises of the initiative.

Main challenge

A fundamental challenge in design research today is to define design programmes that suggest methods for turning current scientific knowledge

and technical development into the design of new forms of living that will provide the foundations for a more sustainable way of life.

Design for sustainability is a vast subject covering a wide range of variables from almost all areas of design: materials, construction and production processes, use, waste, etc. Consequently, the range of different research perspectives on the issue of sustainable design is also very wide. The issue of sustainability is also a thematic foundation for research at universities in general. What makes the network (in this application) fairly unique is the combination of a very broad cross-disciplinary approach with a methodological focus on experimental design research, an area where Europe has a particularly strong position in comparison to other regions of the world.

Programmatic directions

The ArcInTex European Training Network (ETN) aims to strengthen the foundations of design for new forms of more sustainable ways of living by connecting architecture, textiles and interaction design in a training network for early-stage researchers (ESRs).

As natural science and engineering science introduce new materials and new technology, there is an increasing need to explore their possibilities and consequences for the design of our future living environments. Ways of living are intrinsic to both architecture and textiles as areas of design; from near-field clothing design, fashion design, and furnishing to far-field interior design and architectural design, from dressing us and our bodies to situating us in a living space: how to relate the near-field and far-field perspectives of design

expression is a central issue as we try to use technological innovations to improve our ways of living.

Applying technical innovations in order to improve our ways of living is a matter of design. Explorations of possibilities and consequences with respect to the application of new technology require experimental design research. As this is not an area of research initially open for empirical studies, however, we will first need to explore possibilities and reflect on consequences by designing.

Applications of technology address the ways in which we design, both from a far-field perspective (architecture) and a near-field perspective (textile and wearables/fashion design), but also very much the ways in which we relate these perspectives; the interfaces we build and the communication systems and devices we construct (interaction design).

Deepening the connections between textile and fashion design, architectural design, and interaction design will open up for the establishment of a new, reflective foundation on which to base the design for living in an age of technological innovations.

Textile and fashion design is by tradition near-field design and can, in a broad sense, be seen as one of the links connecting ways of living with spaces of living; textile thinking provides the foundations for ways in which we dress ourselves and our living environment, from near-field perspectives to far-field perspectives.

Architecture, on the other hand, can be seen as one of the links connecting spaces for living with ways of living; architectural thinking provides the foundations for ways in which we define our living environment, from far-field perspectives to near-field perspectives. In forming our ways of living, textile and fashion design and architectural design move in opposite directions, so to speak, which opens up for intrinsic interactions with respect to scales of designing.

Interaction design, as a mediating foundation, will put explicit focus on time (and timing) as a central variable. As John Chris Jones formulated this notion already in 1972: "To design in time is, more so than when designing objects, to design life itself, the very form of existence, and surely calls for a gentler touch than can be felt in the insensitive forms of our production-systems, legal-systems, timetables, schedules, distribution-systems, etc."

Methodological issues

The ArcInTex ETN propose training of early-stage researchers in an existing cross-disciplinary research network (ArcInTex, www.arcintex.se) with the main aim to develop new programmes, methods and techniques for the design of adaptive and responsive environments connecting the scales of the body, the interior and the building.

Through this cross-disciplinary and cross-national network, the consortium will build and train a new research community to take on challenges in innovative practice-based design research combining areas of design in which Europe by tradition has a very strong position.

Training within the ETN will focus on textile thinking as a programmatic and methodological foundation. By “textile thinking”, we refer to the ways in which textiles are understood within the field of textile design (which all along proceeds from textile material design, via textile product design, to fashion and textile interior design) as being adaptable and responsive. The ESRs in the network programme will after their initial training belong to a new generation of interdisciplinary trained and high-level educated architects, textile and fashion designers, and interaction designers, who build their work practice on new ideas of material thinking and design thinking with an emphasis on sensitive design expressions for reflective living:

- to explore modern technology through textiles – from body to space,
- to build with performative materials – from space to body.

The primary challenge for practice-based design research is to experimentally explore the nature of these changes. Such research includes everything from materials experimentation to forming scenarios in a sort of archaeology of the future. For the research training, we formulate the working axiom in a slightly more precise manner by saying that these changes go in the direction of more reflective ways of living. Turning scientific knowledge and technical development into design for new forms of living may focus on the functional solutions of given problems, but could also focus on expressional possibilities that open up for ways of living a reflective everyday life. It is this focus on expressional possibilities that is the main research theme.

Connecting architecture, textile and fashion design, and interaction design through explorations into the expressional possibilities of modern technology for dressing, furnishing, and building ways of leading more reflective every-

day lives in the future the overall aim of the ETN is to:

- introduce new design programmes (DP)
- introduce and display new design techniques and methods (DT)
- introduce and display new perspectives on design aesthetics (DA)

Methodology and approach

Methodologically, the ArcInTexETN has its research foundation in practice-based design/artistic research (research by design) concerned with design and artistic experimental work, and aims to develop and deepen practice by introducing new tools (techniques and methods) and new programmes for design and artistic work. ESRs will mainly be trained in the following central areas of practice-based design research methods:

Exploring materials and constructions: Material and constructional experiments are central to research by design. It is both a matter of putting questions to given materials and techniques and a matter of suggesting things that will challenge the invention of new materials and construction techniques. An example of this is the use of thermochromic colouring techniques to explore the idea of dynamic textile patterns, whereby new expressional means and new variables are introduced into textile design. What is important in practice-based textile design research are the questions we ask to an already existing technology: what does it mean to design a dynamic textile pattern, where do these typically slow changes in a textile pattern lead us with respect to expressive and reflective possibilities etc.? Another example is the development of architectural constructions using textile principles.

Further examples are experiments with shape changing structures using memory polymers and alloys to change the architecture of shape, the

incorporation of electronics in order to facilitate interaction with a user and their space in a closed loop, and also materials explorations in textile technology as a foundation for design work.

Of particular interest is the exploration of materials and constructions connecting architecture, textiles and interaction design to find new ways in which to open up for expressions of future ways of reflective living (This relates to DT).

Critical design/art: Design work is also a methodological tool for critically reviewing and displaying the meanings, possible cultural and societal effects, and consequences of modern technology. The work by Dunne and Raby on the cultural effects of modern computation and communication technology is perhaps the canonical example of this, where critical design examples play a major methodological role.

Of particular interest are ways to connect architecture, textiles and interaction design in design experiments that critically demonstrates societal effects and consequences of the modern technologies used in dressing us and furnishing and building our living environments (This relates to DP and DA).

Deriving methods and defining programmes: Deriving methods and defining programmes on the basis of experimental work is another major example of design as research methodology.

In both cases we suggest things by design, ways of working and directions for future design work. This is methodology at the very heart of practice-based design research: from engineering science as design research to design research with a focus on issues of design aesthetics. The work on the development

of methods for deriving computer programs that satisfy given specifications is a good example of design research in this sense. The work by Papanek on “design for the real world” in the 1970s and more recent work done within the DESIS Network on design programmes for social innovation and sustainability (www.desis-network.org/), as well as the design of innovative buildings to display new ways of dwelling, are all typical examples of programmatic work in design research.

Of particular interest are methodologies and programmatic work for new perspectives on the design of interactions for sustainable ways of living through the connection of architecture, textiles and interaction design. (This relates to DP, DT and DA).

From analysis to design and back again: The duality between analysis and design is fundamental in design work. The shift from one to the other involves shifting between methods for designing and methods for analysis. This is also a general characteristic of the relation between the design of an experiment and analysing the outcome of the experiment, which in turn suggests a design. The point here is the prominence of design as a research result in its own right and the emphasis on going from analysis to design, i.e. examples, methods, techniques and programmes as main results. This is where design methodology becomes research methodology, i.e. experimental methodology for practice-based design research.

Of particular interest are methods that provide a foundation for experimental design research that systematically connects architecture, textiles and interaction design in experiments searching for the expressions of sustainable ways of living (This relates to DT and DA with respect to methods).

From functionality to expressions and back again: The distinction between function and expression introduces another duality that is of fundamental importance to design work: what a design does as we use it and what it is that displays the design. Methodologically, this concerns the ways in which we relate abstractions and concrete expressions to each other in the design research process. This is where design aesthetics become research methodology; the systematic classification of design expressions that provide a solid foundation and frame of reference for future design work. Very typical, even classical, examples of this are the various systems of colour classifications, e.g. the NCS system, and how these are used to relate function and expression in the process of designing.

Of particular interest are methods for describing and classifying expressions of living in the context of connecting architecture, textiles and interaction design (This relates to DT and DA with respect to methods).

Theory: From a methodological point of view, theory work in design research is no different from theoretical work in most other areas of research. It involves the introduction of foundational notions, systematic classifications, etc. What is characteristic here is of course that, in all essentials, this is also research work by design. This is where we provide the concepts and basic tools for experimental work. Typical examples range from theories of form to foundational work in artistic research.

Of particular interest is theoretical work that provides new perspectives on issues of form, material and expression in the context of connecting architecture, textiles and interaction design (This relates to the theoretical foundations of DP, DT and DA).

The Nature and Status of Research Results

– Design examples: The design example is central to practice-based design/artistic research. It shows that something is possible and thereby establishes a matter of fact. As interesting as this may be, however, what is of more interest to the development of the design practice is the way in which this is done. The nature of such a result is that of a generator for the derivation of methods, techniques and programmes. This is no different from the way in which we use e.g. examples in mathematics (which relates to DT, DA).

- Design methods and techniques: The status of design methods and techniques as results in design research is comparable to that of methods and techniques in engineering (which relates to DT).

- Design materials: We turn a given material into a “design material” by a characterisation in terms of expressional properties, where the result is an expressional classification (which relates to DT).

- Design programmes: A design programme is a programmatic declaration laying out the directions of design work and, as such, it has the status of a work plan. The world of science and research is full of such work plans, which receive their status as research results in their own right from the suggestive examples they build on (which relates to DP).

Originality

The main underlying research challenge of the ETN – how to turn the scientific knowledge and technical development of our day into design for the new forms of living that will provide the foundations for a more sustainable way of life – is of general interest in design research and is currently explored worldwide from a variety of perspectives and in many different ways.

The originality of the (present proposal) research program concerns both programmatic directions and methodology:

Programmatic directions: A central working assumption is that design for future forms of sustainable living entails fundamental changes not only in ways of living, but also requires radical changes in design thinking. So what could these changes be all about? The research consortium of the ArcInTex ETN meets this challenge by connecting architecture, textile and fashion design, and interaction design in explorations of the expressional possibilities of modern technology for dressing, furnishing and building for adaptive and responsive forms of future living. Through this programmatic direction of research, the ETN contributes to the “material turn” in design research by introducing an “expressional turn” in an area which has a strong focus on technical solutions and different forms of evidence-based design. The main rationale behind these “turns” is the axiom of design practice saying that analysis eventually must be turned into design through the creation of e.g. a prototype.

This is then considered an act of introducing expressions by shaping materials, one way or another. Experimental examples constitute fundamental sources of knowledge in this context.

Methodology: The research of the ETN is based on a very broad cross-disciplinary collaboration, which follows two major, interlinked methodological tracks:

(i) Textile thinking as a methodological foundation for the connection between textiles and fashion, architecture, and interaction design, which links near-field and far-field perspectives when designing for body and space.

(ii) Design as a driving force for research that turns experimental research into expressional explorations.

On the basis of this methodological foundation for its research, the ETN introduces textile interaction design and textile architecture as two working methods for meeting the challenges presented by its main programmatic directions.

Innovative aspects

The innovation perspectives of the ETN concern meeting challenges, as well as identifying and making use of opportunities and possibilities to introduce new ways of doing things. Through examples and concrete actions, experimental design will work to turn opportunities into directions, and will in this way not only open up for innovation but proceed to guide it. In a sense, the academic research training of the ESRs will allow them to innovate at the level of design programmes, and as programmatic thinking meets development in the private sector, the ESRs will learn how innovative thinking, in this more general sense, directs the development of innovations for actual use. Thus, innovation is defined as the key methodological direction of the proposed ETN.

The practice-based foundation of research and research training ensures that training for innovation will play a central role in the ETN, in the sense that design is the key methodological dimension of the research training proposed here.

In addition, the environments at the participating schools, i.e. the architecture and design school, the technical university, and the art academy, provide links between innovative ideas in design research and their connections with, and the consequences for, development work in the private sector. Training in

development work at partner companies strengthens and further develops this through the addition of new perspectives on innovation and opens up for ideas that call for further research.

Consequently, the ETN constitutes a loop from research to innovation and back again, which is built on a close collaboration between academia and the private sector.

II. Impact of the ArcInTexETN

Impact is what defines the closure, the promises of the ArcInTexETN. This is what we promise in terms of impact, answering to the call of the Marie Skłodowska Curie Action.

Challenges and promises

Enhancing research- and innovation-related human resources, skills, and working conditions to realise the potential of individuals and to provide new career perspectives (WP2-5)

Potentials of individuals: *By forming a unique cross-disciplinary network of researchers, supervisors, research methods, and infrastructure for experimental design research ranging from fine art, fashion design, and textile design, via industrial design and architecture, to materials research and interaction design; the ETN will provide a unique innovation competence to young ESR that will be better trained for the future challenges given by the design of a more sustainable way of living.*

The broad foundation of the initiative provides all ESRs with a unique opportunity to take experimental research projects all the way from the initial idea to scaled-up models and prototypes ready to exhibit and try out, as well as a to relate fundamental research to development projects which covers all forms of living from a near-field to a far-field perspective.

New Career perspectives 1: The ArcInTexETN training network opens up a new cross-disciplinary arena for research, education, and development projects by addressing a fundamental research challenge, i.e. experimentally exploring how new ways of more sustainable ways of living can be expressed, within a very broad cross-disciplinary context; linked together by a strong, common driving force, i.e. textile thinking for adaptation and responsiveness,

the ESRs participating in the programme will receive training in the context of cross-disciplinary, cutting-edge research and access to a broad network for the development of research within the areas of the ETN.

This provides the ESRs of the ETN with excellent opportunities to progress rapidly in newly opened areas of research, both with respect to experimental work and theoretical foundations.

Fellow's competence: All ESRs will be provided excellent conditions to make progress in their research training as they are supported by a strong research approach consisting of linked subjects and methods through the wide range of perspectives and skills offered by the members of the supervisory groups and through secondments and network-wide training events held both by academic institutions and members of the private sector.

Also, the studios for artistic experimental work and design experiments, the experimental workshops exploring a range of techniques, the laboratories for textile materials research, the studios for architectural experiments, and the industrial full-scale workshops for textile experimental work, will create excellent conditions for innovation and entrepreneurial research training.

Innovative and competitive: *By forming the ESRs into cross-disciplinary teams, the flow of ideas between different disciplines is strengthened, and by establishing working environments in which the connections between architecture, fashion and textile design, and interaction design (body and space) are clearly in focus, the ETN lays down a very broad foundation for the realisation of the potential of individuals.*

Collaborations among the ESRs provide excellent conditions for the creation of lively cross-disciplinary environments, where individual projects are

reflected over differently as other ways of relating to the central theme of the initiative and other forms of textile thinking present themselves. In this sense, the individual ESRs will work in an environment that opens up for new perspectives rather than refers to predefined demarcation lines.

New career perspectives 2: By linking academia and the private sector through a network, within a given context, the flow of ideas back and forth between experimental research and company based development projects are strengthened, and the ETN opens up new channels for close communication between fundamental design research and innovative applied design practice.

Through this combination of in-depth specialisations, collaborative project work training, and private sector secondments, the ESRs of the ETN will form a highly trained avant-garde, ready to take on complex challenges both in academic design education and research and in design development work in the private sector with a focus on urgent issues, i.e. designing for new, sustainable ways of living.

With respect to new career prospects the ETN also emphasizes communication and innovation skills:

Communication skills: The context of research training within the ArcInTex Network and the cross-disciplinary environment at the networking institutions will provide a high level of implicit training in communication across disciplines. Secondments within development projects at private companies will provide in-depth training in communication between the public/academic and the private sector. Communication for research collaborations and team work in development projects is consequently a focal issue within the ETN.

Entrepreneurial and business skills: The training programme is a programme for training in practice-based design research and development work, which entails results in the form of design examples, prototypes, techniques, methods and design programmes in an academic setting as well as at private sector companies. This implies that training of creativity and entrepreneurial skills in relation to the development of design and more general design programmes is at the heart of the ETN.

Innovation and design skills: Secondments at partner companies within development projects will improve training in performing the process of going from the initial product and design ideas to actual product development. As design researchers and educated designers, ESRs will receive in-depth training in concept and prototype development, which will make them highly skilled in the early stages of company based design development work in the areas of the ETN.

Contribution to structuring doctoral / early-stage research training at the European level and to strengthening European innovation capacity (WP1, WP5, WP6)

By defining a new arena for design research, one which builds on areas where Europe by tradition have a strong position, the initiative introduce a new type of cross-disciplinary doctoral and early-stage research training in which art, design and architecture co-operate on a background of broad thematics (design for new forms of living) and a focused methodological approach (textile thinking), and where different European traditions within design, art and architecture are interwoven.

As a consequence, the **(proposed)** ETN will contribute to further developing the European principles of Innovative Doctoral Training, and link together strong European traditions within the fields of art, design, and architecture on the level of practice-based research education. Through the structure, the ETN will define a form of European doctoral/early-stage research training which is characterised by:

- training in cross-disciplinary groups, in which the individual ESRs work with a specific perspective on a common theme.
- secondments which moves groups of ESRs between different academic institutions, between different environments with respect to subject matters and supervision, and between academic research training and company based training in the application of research in development projects in which research innovations are linked together in a natural manner on a foundation of cross-disciplinary and practice-based design research.
- training in experimental design research with close links to the development of design practice.

By this, the ETN contributes towards defining a new model for a European, nomadic form of doctoral/early-stage research training in artistic fields with a focus on urgent matters pertaining to the exploration of expressions of new forms of living.

Contribution of the non-academic sector to the doctoral / research training (as appropriate to the implementation mode and research) (WP2, WP3, WP4)

Through its strong focus on practice-based design research in the connected fields of architecture, textile and fashion design, and interaction design, the ETN will contribute to further establishing design research at a level similar to that of engineering science, which is of special importance for collaborations

between academia and the private sector in the given areas of design research. This will contribute to strengthening and establishing practice-based design research as a driving force in innovation.

III. Work packages 2–4

The main objective of the ArcInTexETN, i.e. to develop programmes, methods and techniques for the design of adaptive, responsive environments connecting the scales of the body, the interior and the building, is tackled in three work packages:

(WP2) Textile thinking for adaptive and responsive architecture – the scale of the building

This programme examines the largest-scale engagement of the research cluster. Using textiles as a material for adaptive and responsive architecture, the aim is to consider the structural, material and interactive complexities of the field and to further develop textile thinking in the field of architecture. The programme involves five ESRs, each with their own research project addressing one of the following three research topics:

2.1 Textile structures for adaptive and responsive architecture (textile architecture – 2 ESRs) The Berlin University of the Arts

2.2 Designing adaptive and responsive textiles (textile and fashion design – 2 ESRs) Royal College of Art, The Swedish School of Textiles-University of Borås

2.3 Designing for adaptive and responsive far-field interactions (textile interaction design – 1 ESR) Royal College of Art

(WP3) Textile thinking for adaptive and responsive interior design – the scale of the interior

The programme examines the middle scale of the research cluster, and, using textiles as spatial dividers, looks at the spatial functions, the decorative potentials, and the interactive relationships these textiles can embody. The programme involves five ESRs, each with their own project addressing one

of the following research topics:

3.1 Textile structures for adaptive and responsive interiors (textile design – 2 ESRs) Royal College of Art, Ludvig Svensson AB/The Swedish School of Textiles-University of Borås

3.2 Designing bespoke textiles for interior performance (textile and fashion design – 2 ESRs) Vilnius Academy of Arts

3.3 Designing for adaptive and responsive near-field interactions (textile interaction design – 1 ESR) The Berlin University of the Arts

(WP4) Textile thinking for the design of adaptive and responsive wearables – the scale of the body

This programme examines the scale of the body through experimental explorations guided by the development of textile thinking in wearable design. The programme involves five ESRs, each with their own project addressing one of the following research topics:

4.1 Textile structures for adaptive and responsive clothing (textile design – 2 ESRs) Heriot Watt University

4.2 Designing adaptive and responsive clothing (fashion design – 2 ESRs) Eindhoven University of Technology, The Swedish School of Textiles-University of Borås

4.3 Designing for adaptive and responsive wearable interactions (textile interaction design – 1 ESR) Philips Electronics Netherland B.V./Eindhoven University of Technology.

IV. Summer schools, courses and workshops

In addition to the course programme at each home institution, which are open to visiting ESRs from the network, the training network will offer two joint courses (5 ECTS credits each) on the foundations of research within the network, and it will also organise three summer schools on transferable skills. The summer schools will focus on (1) practice-based research, (2) presenting and managing research, and (3) disseminating and exploiting research. Each school in the ArcInTex ETN will invite visiting researchers to the courses, summer schools, and joint workshops of the training network:

- **Common course 1 – Textile architecture:** This research course on textile architecture will discuss the role of textiles in architectural design, with a dual focus on spatial and structural implications. (January 2016)

Deliverables: papers on theoretical viewpoints within the field and mapping the research practice of the ESRs themselves into this field; an oral presentation in front of peers.

- **Common course 2 – Embodied textile interaction design:** This research course will explore the dynamic and interactive qualities of textiles and how these relate to ways of being and living. (December 2016)

Deliverables: conceptual models exemplified in prototype garments; an oral presentation in front of peers.

- **Summer school 1 – Practice-based research methods:** This first summer school will discuss the role of practice-based research in knowledge production (Universität der Künste, Berlin, September/October 2015).

Deliverables: a written paper reflecting on theoretical viewpoints in relation

to the collaborative project selected by the ESR; an oral presentation in front of peers.

- **Summer school 2 – Research entrepreneurship in the academic and non-academic area:** The second summer school will focus on entrepreneurship both inside and outside of the academic area. (Royal College of Art, London, September 2016)

Deliverables: Innovative business ideas based on individual design.

- **Summer school 3 – Research, career development and business plans:** The third summer school will focus on the development of business plans based on exploitation of the results of design-led research. (Technische Universiteit Eindhoven, September 2017)

Deliverables: A business plan and a career development plan.

- **Secondments:** Each ESR will spend a total of four months at other schools in the network, covering all three main fields of the programme, and a total of four months at partner companies, working on development projects to exploit the maximum potential of **professional and complementary skills** and network-wide training.

Deliverables: This arrangement will provide ESRs training in complementary fields, thus offering ESR training by assistant supervisors while learning about different research methodologies and research topics. The secondment in the associate partner organisation will also provide ESRs knowledge about different research cultures, research management, and industrial applications. The table below gives an overview of secondment sequences, scheduled

timing, and placement. It is, however, the SB who will decide on the exact schedule for secondments based on the development of the research and the partners' schedules.

– **Network-wide ESR training workshop 1 is a second innovation module which** will address the need for industry-academic training programmes focusing on applied research in the intersection between foundational research and industrial application. Thus, it will address both SMEs and financing and management during the start-up phase of a business. The workshop will be based on case presentations and seminars. (Technische Universiteit Eindhoven, March 2016)

Deliverables: Professional skills training.

– **Network-wide ESR training workshop 2 is a third innovation module which** answers to the requirements posed by national research councils, as well as those found in the European Charter for Researchers concerning the publication of research activities for the benefit of society at large. This workshop aims to improve the communication skills of the ESRs and prepare them to hold presentations aimed at non-specialists and laymen. Moreover, the workshop will explore the cultural and ethical dimension of the conducted research from a wider societal perspective. (Heriot-Watt University, Edinburgh, December 2017)

Deliverables: Professional skills training.

– **Seminars, videoconferences, web-based interaction:** All partners will frequently hold local seminars and will be requested to present their research and the results thereof both internally and externally. As all partners are

familiar with involving in international work via digital media, video, and the web, other forms of Internet-based communication will be used for the continuous communication within and the cross-disciplinary development of the ETN.

– **ETN start-up meeting:** At the ETN start-up meeting, the newly recruited ESRs will present their research proposals before the SB and their peers. This is a training event, integrated in the first summer school, aimed at improving the ability of the ESRs to define and formulate research problems in practice-based design research.

Deliverables: Research proposals in relation to selected collaborative project.

– **Final ETN conference:** The final network conference will sum up and discuss three years of cross-disciplinary doctoral training in practice-based design research and highlight both doctoral training and research which cross the borders between the fields of architecture, textiles and interaction design. At the conference, there will be a special track for the discussion of pedagogical issues and evaluation of the learning outcomes of the ETN. The conference will have an international profile, inviting key researchers and practitioners from the network areas in order to advance and nourish the research community initiated by the ArcInTex ETN. As part of the conference, the network ESRs will present their thesis works to a broader public.

Deliverables: Conference proceedings/preliminary report of major learning outcomes of the ETN.

V. Secondments

Workpackage 2

Textile thinking for adaptive and responsive architecture – **the scale of the building**

WP Leader UDK	Host and Main Supervisor		Objective	Expected result	Secondment 1 (project month 20-23)	Purpose	Secondment 2 (project month 32-35)	Purpose	Main Supervisor	Assistant Supervisor	Assistant Supervisor
ESR1 Daniel Suarez	UDK	D2.1	Textile structures for adaptive and responsive architecture (textile architecture)	At the scale of the building, introduce and display design programmes, techniques and methods for the design of adaptive and responsive architecture and introduce and demonstrate expressive examples of textile thinking for adaptive and responsive architecture	VAA	Cross-disciplinary training in textile design	HWU	Cross-disciplinary training in interaction design	UDK Prof Norbert Palz*	RCA Prof. Jo-Anne Bichard*	RCA Prof Clare Johnston*
ESR 2 Iva Resetar	UDK	D2.1	Textile structures for adaptive and responsive architecture (textile architecture)	At the scale of the building, introduce and display design programmes, techniques and methods for the design of adaptive and responsive architecture and introduce and demonstrate expressive examples of textile thinking for adaptive and responsive architecture	VAA	Cross-disciplinary training in textile design	HB	Cross-disciplinary training in interaction design	UDK Prof Norbert Palz*	TUE Ass Prof Bart Hengeveld*	HB Dr. Delia Dumitrescu*
ESR 3 Marina Castan Cabrero	RCA	D2.2	Designing adaptive and responsive textiles (textile and fashion design)	At the scale of the building, introduce and display design programmes, techniques and methods for performance, detail and quality in the design of adaptive and responsive textiles and demonstrate expressive examples of textile thinking for adaptive and responsive architecture	VAA	Cross-disciplinary training in textile design	HWS	Architectural research for adaptable textiles structures, with uses in a variety of scenarios	RCA Prof Clare Johnston*	HB Dr. Delia Dumitrescu*	UDK Dr. Phil Katharina Bredies*
ESR 4 Jyoti Kapur	HB	D2.2	Designing adaptive and responsive textiles (textile and fashion design)	At the scale of the building, introduce and display design programmes, techniques and methods for performance, detail and quality in the design of adaptive and responsive textiles and demonstrate expressive examples of textile thinking for adaptive and responsive architecture	VAA	Cross-disciplinary training in textile design	LUS	Research and development work in functional interactive textiles for use in interior design for public spaces	HB Prof Clemens Thornquist*	UDK Prof Norbert Palz*	HB Dr. Delia Dumitrescu*
ESR 5 Bastian Beyer	RCA	D2.3	Designing for adaptive and responsive far-field interactions (textile interaction design)	At the scale of the building, introduce and display design programmes, techniques and methods for expressions of response in the design of far-field interactions and demonstrate expressive examples of textile thinking for adaptive and responsive architecture	VAA	Cross-disciplinary training in textile design	HWS	Architectural research for adaptable textile structures, with uses in a variety of scenarios	RCA Prof. Jo-Anne Bichard*	UDK Dr. Phil Katharina Bredies*	RCA Mr Ian Higgins*

*Or someone with similar expertise

Workpackage 3

Textile thinking for adaptive and responsive architecture – **the scale of the interior**

WP Leader RCA	Host and Main Supervisor		Objective	Expected result	Secondment 1 (project month 20-23)	Purpose	Secondment 2 (project month 32-35)	Purpose	Main Supervisor	Assistant Supervisor	Assistant Supervisor
ESR 6 Ana Piñeyro	RCA	D3.1	Textile structures for adaptive and responsive interiors (textile design)	At the scale of the interior, introduce and display design programmes, techniques and methods for the design of textile structures for adaptive and responsive interiors and demonstrate expressive examples of textile thinking for adaptive and responsive interior design	HB	Cross-disciplinary training in interaction design	HWT	Cross-disciplinary training in textile art	RCA Prof Clare Johnston*	VAA Prof Egle Ganda Bogdaniene*	HB Dr. Delia Dumitrescu*
ESR 7 Svenja Keune	LUS	D3.1	Textile structures for adaptive and responsive interiors (textile design)	At the scale of the interior, introduce and display design programmes, techniques and methods for the design of textile structures for adaptive and responsive interiors and demonstrate expressive examples of textile thinking for adaptive and responsive interior design	HB	Cross-disciplinary training in interaction design	RCA	Cross-disciplinary training in architecture	HB (LUS) Dr. Delia Dumitrescu*	LUS Mrs Dorte Bo Bojesen*	VAA Prof Jolanta Vasalinskiene*
ESR 8 Sara Lundberg	VAA	D3.2	Designing bespoke textiles for interior performance (textile and fashion design)	At the scale of the interior, introduce and display design programmes, techniques and methods for the design of bespoke textiles for interior performance and demonstrate expressive examples of textile thinking for adaptive and responsive interior design	HB	Cross-disciplinary training in interaction design	AUD	Training in the development of interior fabrics, through focusing on the development in textile finishing	VAA Prof Jolanta Vasalinskiene*	RCA Prof Clare Johnston*	UDK Dr. Phil Katharina Bredies*
ESR 9 Juste Peciulyte	VAA	D3.2	Designing bespoke textiles for interior performance (textile and fashion design)	At the scale of the interior, introduce and display design programmes, techniques and methods for the design of bespoke textiles for interior performance and demonstrate expressive examples of textile thinking for adaptive and responsive interior design	HB	Cross-disciplinary training in interaction design	AUD	Training in the development of interior fabrics, through focusing on the developments in textile finishing	VAA Prof Egle Ganda Bogdaniene*	UB Hanna Landin*	HB Dr. Delia Dumitrescu*
ESR 10 Ramyah Gowrishankar	UDK	D3.3	Designing for adaptive and responsive near-field interactions (textile interaction design)	At the scale of the interior, introduce and display design programmes, techniques and methods for the design of adaptive and responsive near-field interactions and demonstrate expressive examples of textile thinking for adaptive and responsive interior design	HB	Cross-disciplinary training in textile design	TUE	Cross-disciplinary training in interaction design	UDK Dr. Phil Katharina Bredies*	VAA Prof Jolanta Vasalinskiene*	RCA Mr Ian Higgins*

*Or someone with similar expertise

Workpackage 4

Textile thinking for adaptive and responsive architecture – **the scale of the body**

WP Leader HB	Host and Main Supervisor		Objective	Expected result	Secondment 1 (project month 20-23)	Purpose	Secondment 2 (project month 32-35)	Purpose	Main Supervisor	Assistant Supervisor	Assistant Supervisor
ESR 11 Marion Bertin	HWU	D4.1	Textile structures for adaptive and responsive clothing (textile design)	At the scale of the body, introduce and display design programmes, techniques and methods for the design of textile structures for adaptive and responsive clothing and demonstrate expressive examples of textile thinking for the design of adaptive and responsive wearables	UDK	Cross-disciplinary training in interaction design	HB	Architectural research for adaptable textiles structures, with uses in a variety of scenarios	HWU Prof George Stylios*	TUE Ass Prof Oscar Tomico Plasencia*	HB Ass Prof. Sarah Keith*
ESR 12 Mila Sveh-tarova	HWU	D4.1	Textile structures for adaptive and responsive clothing (textile design)	At the scale of the body, introduce and display design programmes, techniques and methods for the design of textile structures for adaptive and responsive clothing and demonstrate expressive examples of textile thinking for the design of adaptive and responsive wearables	UDK	Cross-disciplinary training in interaction design	HB	Architectural research for adaptable textiles structures, with uses in a variety of scenarios	HWU Prof George Stylios*	TUE Ass Prof Bart Hengeveld*	TBA
ESR 13 Vidmina Stasiulyte	HB	D4.2	Designing adaptive and responsive clothing (fashion design)	At the scale of the body, introduce and display design programmes, techniques and methods for the design of adaptive and responsive clothing and demonstrate expressive examples of textile thinking for the design of adaptive and responsive wearables	UDK	Cross-disciplinary training in architecture	TUE	Cross-disciplinary training in interaction design	HB Prof Clemens Thornquist*	HWU Dr. Danmei Sun*	TUE Ass Prof Oscar Tomico Plasencia*
ESR 14 Troy Nachtigal	TUE	D4.2	Designing adaptive and responsive clothing (fashion design)	At the scale of the body, introduce and display design programmes, techniques and methods for the design of adaptive and responsive clothing and demonstrate expressive examples of textile thinking for the design of adaptive and responsive wearables	UDK	Cross-disciplinary training in textile and fashion design, architecture, and interaction design	PHI	Training in the field of designing wearable electronic systems that contribute to well-being of individuals; personal coaching	TUE Ass Prof Oscar Tomico Plasencia*	HB Dr. Delia Dumitrescu*	HB Ass Prof. Sarah Keith*
ESR 15 Angella Mackey	PHI	D4.3	Designing for adaptive and responsive wearable interactions (textile interaction design)	At the scale of the body, introduce and display design programmes, techniques and methods for the design of adaptive and responsive wearable interactions and demonstrate expressive examples of textile thinking for the design of adaptive and responsive wearables	UDK	Cross-disciplinary training in textile and fashion design, architecture, and interaction design	TUE	Cross-disciplinary training in textile and fashion design, architecture, and interaction design	TUE Ass Prof Stephan Wensveen*	PHI Mr Koen van Os*	UdK Dr. Phil. Katharina Bredies*

*Or someone with similar expertise

VI. Exploitation, dissemination and communication

Learning outcomes exploitation and dissemination during the course of the training programme

- (1) Supervisor seminars for pedagogical development of doctoral training, in cooperation with learning centres at the beneficiary partners, will be held in connection with the two yearly joint meetings of the ESRs.
- (2) Special workshop sessions will be organised at Summer schools 2 and 3. At Summer school 2, these sessions will focus on learning outcomes in relation to presenting and managing research, and at Summer school 3, they will focus on learning outcomes in relation to the exploitation and application of research results.
- (3) A pedagogical track will be organised for the final network conference in order to sum up learning experiences.

(4) During the course of the training programme, the Supervisory Board (SB) will, in collaboration with the teams of supervisors, systematically keep track of the learning outcomes of the individual ESRs (individual study plans, etc.) in relation to the progress of research in their field, their capabilities to work and communicate across disciplines and between the public and private sectors, and their development toward an independent research career, and also in relation to issues of creativity and entrepreneurial skills. Special emphasis will be placed on learning outcomes and experiences of cross-disciplinary doctoral training and also on the type of private sector secondment introduced by the ArcInTex ETN. Research results achieved by individual ESRs and project groups will be exploited and disseminated throughout the training programme.

Exploitation and dissemination after completion of the training programme

- *Seminars for pedagogical development of doctoral training will be organised within the ArcInTex Network, discussing the learning outcomes of the ETN.*
- *The Swedish School of Textiles will, after completion of the programme, publish the workbooks of the project groups.*
- *The central web of the training network will, after the completion of the programme, be used for dissemination of both research results and learning outcomes as part of the ArcInTex Network web.*

Communication and public engagement strategy of the project

The ETN will organise a series of public exhibitions, displaying the general research agenda of the ArcInTex doctoral training programme and the work of collaborative project groups under the title “*ArcInTex ETN exhibitions*”.

Another central arena for communication is blogs reporting on the advancement of research and development. *Within the ETN, each ESR team will use selected social media as a workbook to report on the work performed within individual projects, as well as general team discussions.*

Concerning matters of communication, one of the big advantages of the ETN is that the fundamental research challenge, together with results in the form of concrete suggestions, are easy both to explain and display. This is also why exhibitions and blog posts are very efficient means to open up for, and foster, a public discussion and thereby make a strong case for research training in the areas of the ArcInTex ETN.

Marie Skłodowska-Curie Ambassadors: All ESRs recruited by the ETN will be obliged to promote their research field as Marie Skłodowska-Curie Ambassadors by taking part in teaching at their home institutions, helping to organise workshops as visiting ESRs within the secondment programme of the ETN, and presenting the overall training network at partner companies during their secondments.

ETN Project Open Day: Each partner institution will, during the training programme period, organise one ETN Project Open Day with lectures and open labs, studios and workshops. ESRs will act as hosts at these events. Partner companies will be invited to take part in these events.

Publications: The Swedish School of Textiles, University of Borås will publish an overview of the training programme in the form of a book, which is aimed toward the general public in connection with the final ETN conference.

ETN web information: Public information about ETN activities will be

published continuously as research carried out is reported in the project group blogs, at the central ArcInTex ETN website, and in the blogs of individual researchers. Information on the progress of the research work will also be available at the websites of the partner institutions.

VII. Overview ESR:s

Work Package 2 Lead UDK The Scale of the building					Work Package 3 Lead RCA The scale of the interior					Work Package 4 Lead HB The scale of the body Clemens Thornquist					Work Package 5 Lead HB Networkwide training activities Delia Dumitrescu						Work Package 6 Lead TUE Dissemination and Exploitation			
ESR:s	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	All ESR:s						All ESR:s		
																UDK	UDK/HB	TUE	RCA	VAA	TUE	HWU		
HB				D2.2 Jyoti Kapur																				Journal publications
RCA			D2.2 Marina Castan Cabrero		D2.3 Bastian Beyer	D3.1 Ana Pineyro																		Commercial publications
HWU											D4.1 Marion Bertin	D4.1 Mila Svechtarova											Work shop 2	Webpage
VAA								D3.2 Sara Lundberg	D3.2 Juste Peciulyte														Common course 2	Results
UDK	D2.1 Daniel Suarez	D2.1 Iva Resetar								D3.3 Ramyah Gowrishankar						Summer school 1	Common course 1							Best Practice
TUE																								Outreach
PHI																								
LUS							D3.1 Svenja Keune																	

- D2.1 Textile structures for adaptive and responsive architecture (textile architecture)
- D2.2 Designing adaptive and responsive textiles (textile and fashion design)
- D2.3 Designing for adaptive and responsive far-field interactions (textile interaction design)
- D3.1 Textile structures for adaptive and responsive interiors (textile architecture)
- D3.2 Designing bespoke textiles for interior performance (textile and fashion design)
- D3.3 Designing for adaptive and responsive near-field interactions (textile interaction design)
- D4.1 Textile structures for adaptive and responsive clothing (textile architecture)
- D4.2 Designing adaptive and responsive clothing (textile and fashion design)
- D4.3 Designing for adaptive and responsive wearable interactions (textile interaction design)
- WP 5 All ESR:s
- WP 6 The ArcInTexETN will disseminate progress reports and research results through various channels.

VIII. Activities by year and month

Project month 1-12 Researcher month 1-6												
2015	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec
Reporting							Researchers declaration Step 1 and Step 2			UdK to write a report on the Summerschool		
Supervisor / PhD activities	Kick Off meeting London Supervisory Board meeting			Recruitment			Employment contracts	Employment contracts	Employment contracts Summerschool, Berlin Supervisory Board meeting			
Project month 13-24 Researcher month 7-18												
2016	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec
Reporting	Progress Report Deadline 31/1-2016 See Grant Agreement	UDK/UB to write a report on the Common Course 1		TUE to write a report on Workshop 1					RCA to write a report on Summerschool 2		Mid Term review meeting, initiated by the commission See Grant Agreement	
Supervisor / PhD activities		Common Course 1 UDK/UB		Workshop 1, TUE			Summerschool 2, RCA		Secondment 1	Secondment 1	Secondment 1	Secondment 1

**Project month 25-36
Researcher month 19-30**

2017	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec
Reporting		RP 1 = Periodic report incl. Technical report Deadline 28/2-2017 See Grant Agreement	VAA to write a report on Common Course 2						TUE to write a report on Summerschool 3			
Supervisor / PhD activities		Common Course 2, VAA						Summerschool 3, TUE	Secondment 2	Secondment 2	Secondment 2	Secondment 2 Workshop 2, HWU

**Project month 37-48
Researcher month 30-36**

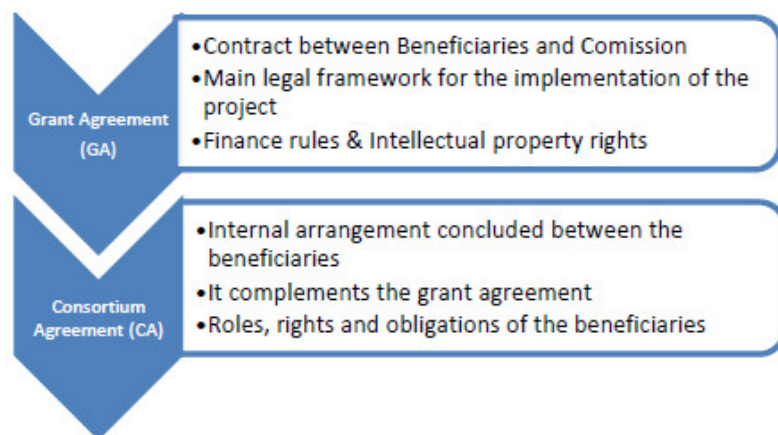
2018	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec
Reporting	HWU to write a report on Workshop 2											Reporting Period 2 (Periodic report incl. final technical report) See Grant Agreement
Supervisor / PhD activities												

4th year

2019	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec
Reporting		Deadline RP 2 incl final technical report										
Supervisor / PhD activities												

IX. Legal guide

This guide aims to give you some general pointers as to the issues, including intellectual property rights, confidentiality and dissemination of results, the recruited researchers and supervisors should be thinking about when participating in ArcInTex ETN.



Participating in ArcInTex

- As research fellow, you will be expected to cooperate in the efficient implementation of the project, promptly and on time, in order to achieve the goals and objectives of ArcInTex.

Intellectual property rights

Definitions

- **Access rights:** means rights to use results or background under the terms and conditions laid down in the Grant Agreement.¹
- **Background:** means any data, know-how or information – whatever its form or nature (tangible or intangible), including any rights such as intellectual property rights – that:
 - (a) is held by the beneficiaries before they acceded to the Agreement, and
 - (b) is needed to implement the action or exploit the results.²
- **Results:** means any (tangible or intangible) output of the action such as data, knowledge or information – whatever its form or nature, whether it can be protected or not – that is generated in the action, as well as any rights attached to it, including intellectual property rights.³
- **Confidential information:** All information in whatever form or mode of communication, which is disclosed by a Party (the “Disclosing Party”) to any other Party (the “Recipient”) in connection with the Project during its implementation and which has been explicitly marked as “confidential” at the time of disclosure, or when disclosed orally has been identified as confidential at the time of disclosure and has been confirmed and designated in writing within 15 calendar

¹ Article 25 of the Grant Agreement

² Article 24 (GA)

³ Article 26 (GA)

days from oral disclosure at the latest as confidential information by the Disclosing Party⁴.

Results

- The grant agreement and consortium agreement set out the intellectual property rules for the project, so each beneficiary is responsible to have appropriate contracts in place with its recruited researchers to ensure that the beneficiary controls the intellectual property generated by them in the course of the project implementation.
- Results are owned by the Party (beneficiary) who carried out the work generating the Results or on whose behalf such work was carried out by subcontractors.⁵
- ArcInTex ETN strives for a broad and efficient exploitation of results. To achieve this purpose, the protection of research results is essential. Research results potentially eligible for commercial or industrial exploitation must be protected during an appropriate period.

Access Rights

- The recruited researchers are entitled to access rights, on a royaltyfree basis, to the beneficiaries' background and project results necessary for their research training under the action⁶.

⁴ Article 10.1 of the consortium agreement

⁵ Article 8 (CA)

⁶ Articles 25.5 and 31.6 (GA)

- The request should be done in writing and do not include the right to sub-license.
- Any such access rights will be governed by confidentiality provisions.

Confidentiality

- The beneficiaries are bound by confidentiality obligations imposed by the grant agreement and the consortium agreement during the term and for a period of 4 years⁷ after the end of the Project.
- The beneficiaries have undertaken the following contractual obligations in regards to confidential information:
 - o not to use Confidential Information otherwise than for the purpose for which it was disclosed;
 - o not to disclose Confidential Information to any third party without the prior written consent by the Disclosing Party;
 - o to ensure that internal distribution of Confidential Information by a Recipient shall take place on a strict need to-know basis; and
 - o to return to the Disclosing Party on demand all Confidential Information which has been supplied to or acquired by the Recipients including all copies thereof and to delete all information stored in a machine readable form.⁸

⁷ Article 10.2 (CA)

⁸ ditto

- Since we count with the involvement of an industrial partner, there are some specific measures to keep in mind when working with confidential information:
 - o All confidential information should be stored in locked file cabinets or rooms accessible only to those who have a “need-to-know.”
 - o Use strong passwords to protect confidential information on electronic devices.
 - o Staff should clear their desks of any confidential information before going home at the end of the day.
 - o Staff should refrain from leaving confidential information visible on their computer monitors when they leave their work stations.
 - o All confidential information, whether contained on written documents or electronically, should be marked as “confidential.”
 - o Balance the interests involved in your publication – Confidentiality is a common publication issue, in particular for PhD students.

Exploitation and Dissemination of results

- The cornerstone of the Marie Curie Training program is the knowledge-sharing activities and ArcInTexETN will focus on promoting a wide transfer of knowledge and dissemination of results.
- According to the Grant Agreement, beneficiaries are obliged to disseminate the results swiftly by any appropriate means (e.g. scientific publications, general information on web sites, participation

in conferences and workshop) unless it goes against the legitimate interests of the other beneficiaries or it is subject to restrictions (e.g. confidentiality or the publication of research results can block the registrability of certain IP that require novelty: patents and designs)

- In order to monitor the dissemination process, the beneficiary that intends to disseminate its results must give advance notice to the other beneficiaries of at least 45 days, together with sufficient information on the results it will disseminate.⁹ If no objection is made within the time limit stated above, the publication is permitted.¹⁰
- In case of publication in a scientific journal which the publisher want you to enter into a contract with them, please contact the legal counsel at your institution to verify that this contract does not contravene the grant agreement or the consortium agreement.
- The researchers should collaborate in ensuring open access to all peerreviewed scientific publications relating to the beneficiary’s results.
- Any dissemination of results must display the EU emblem and the following text: “This project has received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 642328”¹¹
- All related matters must be discussed with the supervisor at your host institution.

⁹ Article 29 (GA)

¹⁰ Article 8.3 (CA)

¹¹ Article 29.4 (GA)