



**European Cooperation
in the field of Scientific
and Technical Research
- COST -**

Brussels, 22 November 2013

COST 082/13

MEMORANDUM OF UNDERSTANDING

Subject : Memorandum of Understanding for the implementation of a European Concerted Research Action designated as COST Action TD1309: Play for Children with Disabilities (LUDI)

Delegations will find attached the Memorandum of Understanding for COST Action TD1309 as approved by the COST Committee of Senior Officials (CSO) at its 188th meeting on 14 November 2013.

MEMORANDUM OF UNDERSTANDING
For the implementation of a European Concerted Research Action designated as
COST Action TD1309
Play for Children with Disabilities (LUDI)

The Parties to this Memorandum of Understanding, declaring their common intention to participate in the concerted Action referred to above and described in the technical Annex to the Memorandum, have reached the following understanding:

1. The Action will be carried out in accordance with the provisions of document COST 4114/13 “COST Action Management” and document COST 4112/13 “Rules for Participation in and Implementation of COST Activities” , or in any new document amending or replacing them, the contents of which the Parties are fully aware of.
2. The main objective of the Action is to spread awareness on the importance of giving children with disabilities the opportunity to play, while ensuring equity in their exercise of the right to play and by putting play at the centre of the multidisciplinary research and intervention regarding the children with disabilities.
3. The economic dimension of the activities carried out under the Action has been estimated, on the basis of information available during the planning of the Action, at EUR 56 million in 2013 prices.
4. The Memorandum of Understanding will take effect on being accepted by at least five Parties.
5. The Memorandum of Understanding will remain in force for a period of 4 years, calculated from the date of the first meeting of the Management Committee, unless the duration of the Action is modified according to the provisions of section 2. *Changes to a COST Action* in the document COST 4114/13.

GENERAL FEATURES

Initial Idea:

The “LUDI” COST Action aims at the creation of a novel and autonomous field of research and intervention on play for children with disabilities. The network has three main objectives:

- a) collecting and systematizing all existing competence and skills: educational researches, clinical initiatives, know-how of resources centers and users’ associations;
- b) developing new knowledge related to settings, tools and methodologies associated with the play of children with disabilities;
- c) disseminating the best practices emerging from the joint effort of researchers, practitioners and users.

Play for children with disabilities is the object of a fragmented set of studies and it has given rise, in different countries and at different times, to niche projects (i.e. social robotics for autistic children, adapted toys for children with cognitive and motor disabilities, accessible playground areas).

This theme is not yet a recognized area of research because of two main factors: a) disability represents a set of heterogeneous functioning frames; b) play is not leading the educational and rehabilitation contexts.

The multi-disciplinary cooperation of researchers and practitioners in the fields of psycho-pedagogical sciences, health and rehabilitation sciences, humanities, assistive technologies and robotics as well as the contribution of end-users’ organizations will grant the right to play even for children with disabilities, and finally establish play as the main element for children’s development. LUDI will devote specific attention to the societal challenges identified in Horizon 2020 (i.e. the transfer of knowledge to clinical practice, the enhancement of the functionalities of children with disabilities through the implementation of technologies and practices).

Keywords: play, children with disabilities, information and communication technologies, robotics

STRATEGY

Objective 1 (A.1) - Type: Development of a common understanding/definition of the subject matter

1. Internal and External Communication, Website.
2. Science and Technology Output, Education and/or Training Material.
3. Science and Technology Coordination, Short-Term Scientific Missions (STSM).
4. Joint peer-reviewed publication , open access.
5. Science and Technology Event or Meeting, Action Conference.

Objective 2 (A.5) - Type: Development of knowledge needing international coordination: new or improved theory / model / scenario / projection / simulation / narrative / methodology / technology / technique

1. Joint peer-reviewed publication , open access.
2. Stakeholders Outreach, including Unwritten Inputs and Dissemination, to end users/practitioners.
3. Science and Technology Output, Education and/or Training Material.
4. Science and Technology Event or Meeting, Action Conference.
5. Science and Technology Coordination, Short-Term Scientific Missions (STSM).

Objective 3 (A.9) - Type: Dissemination of research results to the general public

1. Science and Technology Event or Meeting, Action Conference.
2. Science and Technology Coordination, Short-Term Scientific Missions (STSM).
3. Internal and External Communication, Website.
4. Science and Technology Output, Education and/or Training Material.
5. Joint peer-reviewed publication , open access.

Objective 4 (B.13) - Type: Bridging separate fields of science/disciplines to achieve breakthroughs that require an interdisciplinary approach

1. Joint peer-reviewed publication , open access.
2. Science and Technology Event or Meeting, Action Conference.
3. Internal and External Communication, Website.
4. Science and Technology Output, Education and/or Training Material.
5. Stakeholders Outreach, including Unwritten Inputs and Dissemination, to end users/practitioners.

A. CHALLENGE

Play as a means of growth and a right for every child

Play is an instinctive need for both humans and other species. It is not possible to force play, but neither can one grow healthily without playing. Play development and play types – use of objects, symbolic, rule play – are determined by the incremental necessity of children to satisfy their evolving needs. Pedagogy and psychology recognized, since their initial studies, play as the privileged way of learning and models have been proposed to describe the relationship between play and child development.

Piaget focused on the importance of play for cognitive development: human beings know reality through experience, that is, acting on reality. Play promotes both mental and symbolic activity and has two basic functions: to strengthen the subject's skills and abilities and to reinforce his/her ability to act effectively on reality.

Vygotskij, a socio cultural theorist, highlighted the social nature of children's play and its role in enabling the social development of the child. Play activates the zone of proximal development (ZPD), becoming crucial for the growth of an individual. Even if the growth occurs in a social context, the child's progress is felt far beyond this context. Play is also used, in formal and non-formal educational settings, to build appropriate situations for adequate experiences. To be effective, these activities, called structured play-like activities, must lose their educational intent, or the child involved will not be interested.

Article 31 of the United Nations (UN) Convention on the Rights of the Child (ratification and accession by the General Assembly resolution 44/25 of 20 November 1989) grants the right of the child to rest and leisure, to be able to engage in play and recreational activities appropriate to the age of the child and to participate freely in cultural life and the arts.

Play is the main cultural right of the child, a means of freedom, of expression, of exploration, transgression and relaxation. Caillois categorizes these concepts in: agon (competition), alea (risk), mimicry, and ilinx (the thrill). Huizinga, who was not the first to discover the value of play in explaining human behavior, believed that play precedes chronologically human society

and culture.

In those terms play is also the main means of contact with other people, it allows the sharing of proposals, making experimentation and learning: play itself is communication and inclusion.

The same UN Convention also pursues the right to social inclusion, intended as a general framework for democratic societies and as a model of intervention that promotes everyone's participation, respecting possibilities and constraints, cultural stories and differences. Every nation is currently involved in the efforts towards general inclusion in societies, particularly with regards to education and training institutions and to legislative systems.

Play, as a major and irreplaceable activity in childhood, becomes necessarily the main vehicle for inclusion. The International Play Association (IPA) is actively engaged in supporting the General Comment of the article 31: recommendations will include the lack of awareness of adults of play importance, inadequate provision of space, pressure for educational achievement, increase in structured and programmed leisure time, negative effects of technology, and the fact that children are rarely involved in planning for play (Article 12 of the United Nations Convention on the Rights of the Child – UNCRC).

Even the World Health Organisation (WHO), with its most recent definition of health and disability – the International Classification of Functioning, Disability and Health (ICF, 2001) – provides a reference model and a standard language for professionals and does not neglect the areas dedicated to fun and recreation.

ICF-CY (2007), the version of the Classification for Children and Youth, dedicates special attention to play, which is placed amongst the child's major life areas and is a fundamental component of well-being and development of his/her health.

Play and disability

In children with disabilities, depending on the type of functional limitation, the spontaneity of

play is lost and the activity becomes problematic.

- Children with cognitive and intellectual impairment, especially those moderate to severe, have difficulties in communication, social interaction, and the development of imagination. They hardly interact through play with their peers, preferring younger children, tend to propose repetitive tasks and rarely transfer the acquired skills to other contexts. For many of them, the symbolic and rule phases of play remain inaccessible because too complicated.
- Children with pervasive developmental disorders have difficulty in participating in leisure activities; they are wary of interpersonal relationships and show little interest in what surrounds them or in the proposals of others, except for some objects that attract them continuously and intensely. Approaching, interacting and sharing an object of interest with these children becomes difficult and hinders the building a playful situation.
- A visual impairment causes a decrease in the quantity and quality of games. This results in convergence to activities that depend on preformed materials or on computer use since, for young visually impaired children, movement is not a spontaneous pleasure and sensorimotor play is of little interest. The visual component is crucial in many play activities and it requires appropriate materials to support measures for their participation.
- How children with motor disabilities see their play abilities affected depends on the severity of their functional motor limitations and from their association and interaction with other impairments. If the range of possible actions on the world and objects is very small, the play activities proposed to them imply a strong component of passivity and rarely do these children have the opportunity to reach the more advanced stages of play.

Since play is also a window for children's cognitive development, children may be perceived as more developmentally delayed than they actually are, leading to reduced expectations on the part of adults. This often leads to providing them fewer opportunities to develop and demonstrate their cognitive skills, thus entering a vicious cycle that prevents children from developing to their full potential.

These difficulties often become more severe as the child's needs increase. Often the more accessible toys allow only basic game modes whereas those offering higher cognitive challenges are not accessible. The most complex phases of play, which pave the way to the hypothetical or strategic thinking, are often unreachable. This is not only due to the cognitive limitations but also to the functional impairments and the lack of adequate solutions.

Play does not yet have a central role in the professionals' daily practices in clinical and educational services. Rehabilitation activities and clinical objectives often become dominant and the importance of devoting time, space, and opportunities to promote typical childhood activities such as play, when it does not develop naturally, is largely underestimated. The commitment of families, professionals and educators appears focused on functional recovery and the systematic acquisition of loss-making skills. The timing and rhythms of rehabilitation leads to the adoption of a practice aimed at functional recovery of "what is missing" rather than listening and responding to the spontaneous proposals of the child with disabilities.

Furthermore, because of obstacles set by the functional limitations, the child's families are unable to decode and interpret disabled children's proposals. Educational contexts are not fully inclusive in every country, and even when they are, educational methodologies and practices that encourage play in a group of children with high differences of functioning are not frequent. This may result in further deprivation given the importance of social sharing in peer play: in this sense, the inclusion of children with disabilities remains an unreached goal.

But these children have the right to play and without it they could have limited chances for development. The United Nations Convention of the rights of persons with disabilities (2006) recognizes this risk and dedicates the article 7 to the expression and protection of the rights of children with disabilities, emphasizing the need to guarantee them proper educational process in an inclusive and lifelong educational system (art. 24), as well as the right to participate in recreational activities, sports and entertainment, including those that take place in schools (art. 30).

This right may be threatened by many factors. The described functional difficulties are associated with the lack of adequate materials and suitable environments, the difficulty in identifying the right socio-educational contexts, the lack of specific expertise in the training of professionals and the lack of direction of parents and peers. This situation results in partial, or even total, deprivation of play and outlines how the interventions must be on many levels, ranging from the individual to the instruments and contexts.

The risk is that children with disabilities lose interest in the world around them and the will to demand their right to play, thus losing the opportunity to express themselves and explore the world despite the best efforts made by adults in family, rehabilitation, clinical and educational contexts.

Play for children with disabilities as scientific theme

Play for the child with disabilities raises today a considerable scientific interest by different actors, but it remains the object of fragmented and not fully interdisciplinary research initiatives. The theme has interesting reflections in product development (toys and technologies) and in experimental research, for example in the Framework Programmes of the European Union.

Despite having given rise to a large collection of studies of excellence in different countries and periods, individual research projects and the results they obtained were confined to some specific niches. Just as an example, it is worth mentioning:

- studies related to the implementation of adapted toys or dedicated to specific disabilities, or accessible playgrounds;
- theoretical researches, related to the identification of methods to support the development of play or to evaluate the skills of children with disabilities (above all, the concept and the Test of Playfulness);
- experimental research in advanced technology, as in the case of social robotics, to facilitate the skills of play and the emotional involvement of the child in inclusive settings.

The theme lies at the crossroads of three major areas of scientific interest, each with its own autonomy, studies and products: disability (impairments types, functioning characteristics), play (development, evaluation, rights), environmental factors (tools, contexts, play situations and scenarios).

These three areas reflect the main domains on which the ICF-CY model (WHO, 2007) is built for the functioning of child and adolescent within their life contexts. If the different types of disability with their operational characteristics can be described within “body functions and structures”, play is placed in the domain “activities and participation”, while tools (e.g., toys, technology) and play contexts are described within the “environmental factors”.

In this way, it is possible to describe the interrelationships between the three domains, and highlight how the interactions could redefine the whole system: these changes should be aimed at an improvement of the overall health and well-being of the child. Children’s capacity of action and social participation in their life contexts should be extended, as well as the surrounding environment should become more adequate, thanks to a greater availability of effective materials,

tools and contexts and also to an increase in the competence of adults interacting with them.

Each of the three fields of study gives rise, in a joint perspective, to novel in-depth research orientations that can be summarized as follows.

1. Children's play in relation to the types of disabilities: it is a combination of traditional epistemological and methodological topics, within legislative and psycho-pedagogical fields, concerning the child's play with data from clinical and rehabilitation practices.
2. Tools and technologies for the play of children with disabilities: this field provides a comparison and discusses issues related to assessing the usability and effectiveness of tools and technologies.
3. Contexts for the play of children with disabilities: it will study in-depth all the aspects of context that may affect the quality, effectiveness and inclusiveness of the child with disabilities' play, including natural and artificial environments, formal, non formal and informal educational contexts, interpersonal relationships among peers and play support by adults. Accessing the children's voice will be a strong point of attention for this part of the research.
4. Methods, tools and frameworks for the development of the child with disabilities' play: this area of research aims at developing all the partial studies conducted previously, with the goal of an exhaustive overview and a further dissemination of intervention models, training and policies addressed. This research is directed at professionals in health, education, industry fields, policy makers, and last but not least at the members of the child with disabilities' family.

Why LUDI: the thematic Action objectives

The purpose of the COST Action LUDI is to create general awareness on the quality of life of children with disabilities, starting from a crucial aspect, i.e. play activities, and initiating a process of cultural and social change that will break down the barriers that hinder the full exercise of their right to play and the realization of a true social inclusion.

The UN are alerted on the theme: the demand for a General Comment to article 31 of the Convention on the Rights of the Child is especially addressed to groups of children requiring particular attention in order to realize their rights under this article: children with disabilities, young girls, children in institutions, working children and children in deep poverty are some examples of these.

The UN General Comment will go beyond a formal analysis and will provide a detailed elaboration of the specific actions that governments need to take to ensure that all the provisions of Article 31 are fully implemented. To achieve its purpose, so authoritatively supported, LUDI will establish a highly interdisciplinary scientific network, involving from the outline researchers from COST countries and International Partner Country institutions. The participants will be coming from the following professional sectors:

- Clinical (paediatricians, psychiatrists, child neuropsychiatrists), rehabilitation professionals (physiotherapists, speech and occupational therapists), developmental and educational psychologists;
- Educational: teachers, pedagogists, educators, operators of recreational and educational centers for children;
- Engineering and design;
- Industrial;
- Legal and policy making.

Alongside the breadth and variety of the areas involved, the COST Action LUDI also has a further constitutive feature: the confluence between theoretical studies – aimed at the creation of models, methodologies, data collection and analysis, standard rules – and studies related to intervention practices in the fields involved, from the clinical to the industrial one.

Consequently, the LUDI COST Action will produce materials aimed at a concrete impact at and on society, valuing and supporting initiatives for the widening of social inclusion.

Play for the child with disabilities, in fact, cannot be identified as a vehicle of social inclusion until this subject cannot be considered as an autonomous research area and not merely a speculative niche research field.

Granting this subject the status of a scientific and social theme of full visibility that collects, organizes and distributes all existing studies and support the development of novel researches, is the main challenge that the LUDI COST Action aims to address; this will be achieved through the following macro-objectives:

- a) to collect, to systematize and to disseminate the best practices emerging from the joint effort of researchers and practitioners active in the field of inclusive play (competence and skills produced by educational researches and clinical initiatives, know-how of resources centres and users' associations, development of theoretical models, design, implementation and evaluation of technologies);
- b) to develop new knowledge through a collaborative approach related to all the aspects associated with the play of children with disabilities: methodologies, instruments and contexts for the play of children with disabilities, effective intervention models, recommendations, rule systems and guidelines for developing and evaluating the usability of products;
- c) to develop training methodologies for intervention and interdisciplinary action based on matrix of competences to support the child with disabilities' inclusive play in each of the areas involved.

On a general level, the goals that the Action pursues are:

- establishing play as a milestone of research and intervention initiatives regarding the child with disabilities;
- spreading awareness about the importance of the theme and improve the quality of life and the inclusion of children with disabilities;
- ensuring equity in the exercise of the right to play for all children.

The themes of the LUDI COST Action in EU reports and policies

The theme identified by the LUDI COST Action is currently taken into account by a series of initiatives from different perspectives. However, none of them is specifically devoted to play.

The EU has developed the *European Disability Strategy 2010-2020* to fulfil the commitment to the Convention on the Rights of Persons with Disabilities at the United Nations. This strategy aims to raise general awareness about the topic of disabilities, encouraging EU Member States or candidates for a joint effort to remove obstacles to the social inclusion of these people.

The social inclusion of children with disabilities is monitored by the European Agency for Development in Special Needs Education which, through the biennial gathering of Country Data on school inclusion, focuses primarily on the differences between existing school systems within Europe and makes comparisons between pupils with special educational needs (SEN) in inclusive schools and pupils with SEN in segregated special classes or special schools.

The same Agency also released, together with UNESCO Institute for Information Technologies in Education, a report on the application of new technologies as a vehicle for inclusion in educational environments. The report establishes four possible areas for the contribution of ICT in the education for the child with disabilities: (a) supporting personal access to information and knowledge; (b) supporting learning and teaching situations; (c) supporting personal communication and interaction; (d) supporting access to educational administrative procedures.

Even stakeholders who represent users with disabilities devoted particular attention to the role of technology. In a 2009 statement of the European Forum for Persons with Disabilities, technological tools are considered necessary in order to increase the participation in school activities for children with cognitive and sensory-motor impairments, advocating however the necessity of training programs specifically aimed at educators.

Education of children with disabilities was, in 2012, the object of interest of the European Commission through the report “Policies and practices in education, training and employment for students with disabilities” published by NESSE (Network of Experts in Social Sciences and Education), on behalf of the DG Education and Culture. This report goes beyond the condition of children with disabilities in educational settings and identifies inclusion of these children as an indicator for how much they will be integrated once they are adults by having access to training opportunities and professional schools.

Consistency with the Action Strategy

The importance of the LUDI COST Action, according to the guidelines laid down for Actions, from a strategic perspective will cover: a) the possibility that the various proposers involved can work as a pan-European team; b) the founding, consolidation and extension of the research community that the network aims to aggregate around the theme of play for children with

disabilities.

Particularly with regard to the strategic objective of working as an international team the sub-objectives are:

- development of a common understanding and definition of the subject matter;
- development of knowledge needing international coordination: new theory, methodology, technology;
- dissemination of research results to the general public.

Regarding the goal of aggregating a community of researchers, this Action aims to achieve the following sub-objective:

- separate fields of science bridging/disciplines to achieve breakthroughs that require an interdisciplinary approach.

B. ADDED VALUE OF NETWORKING

LUDI networking objectives

The objectives of the LUDI COST Action are of an interdisciplinary nature. They are at the cross-section of three major fields of study: play, disabilities, and environmental factors – tools, technologies, play contexts – and include several fields of study: medical, rehabilitative, psycho-pedagogical, technological, legislative, design and industry. These objectives will only be achieved if the knowledge, skills and experiences of those involved in each of the areas are related to both their theoretical and practical applications.

The network aims for results – in terms of new knowledge, expertise, and recommendations for products' development – that can be in each of the mentioned areas. These new results will also grant a sound coherence and a shared background to the theme of play for children with disabilities.

People and institutions with different knowledge, skills and experience must be involved in the network to achieve these results and to fulfil the declared objectives of the Action:

1. putting play at the centre of research objectives and intervention regarding the child with disabilities;

2. spreading awareness about the importance of the theme and improve the quality of life and the inclusion of children with disabilities;
3. ensuring equity in the exercise of the right to play for all children.

This will be reached through the following actions:

- promoting collection, research studies, analysis on the play for children with disabilities as a complex issue aimed to support their physical, cognitive and social development;
- promoting dissemination and rising awareness for improving the quality of life and the inclusion of children with disabilities through establishment of appropriate conditions and environments for play;
- strengthening national capacities to prepare, implement and manage inclusive policies by disseminating the findings of the project and the development of recommendations and guidelines for key specialists to establish appropriate environments and support for the play of children with disabilities.

A shared idea of play

Play for children with disabilities currently assumes different meanings in different fields. In psychology and pedagogy, play drives the cognitive and social development of the child. Children with disabilities, however, may encounter difficulties in autonomously initiating, engaging and enjoying shared activities. Too often these difficulties are completely underestimated. Play has to be learnt by children with disabilities, they must be prompted, helped and supported. Appropriate environments must be prepared, suitable tools must be identified, effective interpersonal relationships and experiences with adults and with peers must be established so that the contexts and playful experiences are satisfactory and useful.

Play activities should take place within a framework that keeps an authentic context in which play is the only objective and not just an opportunity for artificial exercises. When the activities are carried out in clinical settings that focus on the achievement of measurable functional goals, they are often distant, or even unaware, of a theme that is central and should be preeminent in childhood: play. Play is seen essentially as a means to create more immersive and involving exercise tasks and as a way to obtain greater collaboration.

In the field of technology, play is seen mostly as a goal, an activity to be facilitated or encouraged through the creation of artefacts such as robotic toys and videogames for therapeutic purposes. It is perhaps the area that most closely captures the essence of the theme of what play is for a child with disability, but it has produced only niche studies, early prototypes and novel research directions. This field suffers a substantial lack of interdisciplinary scientific awareness. For example, through the use of an uncertain notion of play and the fact that it has not yet obtained significant results applicable to both clinical and educational research. Basically, these studies have not yet contributed to the formation of a clearly established theme.

Design research and industry are associated with this field too. Their main aim is the development and distribution of toys and playful equipment, but often they are unaware of their potential users' variability of functioning and do not consider issues such as usability and adaptability of products. Some proposals for assessment of these parameters in the commercial mainstream production gave rise to excellent practices but the degree of generalization, dissemination and standardization of the results is unsatisfactory.

Accessing the "children's voice" should also be fundamental for the research: that is the views, opinions and experiences of children with disabilities in relation to their play needs and experiences.

In summary, the progress of studies and actions on the subject of play for the child with disabilities is uneven and disjointed. Researchers from various areas seem to lack a common design, a real scientific exchange, and a sound epistemological foundation. The role of play for children with disabilities, how why and where it should be promoted and supported, are research questions that should gain sufficient evidence of their interdisciplinary value and their crucial impact on the lives of children with disabilities.

The strategy of the LUDI COST Action

The COST Action will gather each of the contributing areas around the central topic, so combining theoretical research and innovative experimentation with the necessity of producing concrete, operational outcomes related to the evolution of models and intervention practices. The added value of the LUDI network will therefore be a consequence of the results achieved in the four

identified novel research areas. In particular, each area will develop thematic specifications, which will contribute to achieving the Action objectives, as specified below.

1. Children's play in relation to the types of disabilities:

1. models of development of play activities for the child with disabilities;
2. observation and evaluation methods of the playing of the child with disabilities;
3. the right to play of the child with disabilities.

2. Tools and technologies for the play of children with disabilities:

1. "designing for ludic engagement": development of toys and technologies for the play of children with disabilities;
2. usability and accessibility of toys, technologies for play and recreational environments designed for children with disabilities;
3. databases of tools and technologies for child's play in relation to the types of disability;
4. models of assessment of the "qualities of use" of tools, technologies, and playful environments in the case of children with disabilities.

3. Contexts for play of children with disabilities:

1. collection and analysis of data regarding play scenarios and experiences in relation to the type of impairment;
2. models for intervention and support of inclusive play of children with disabilities;
3. models for the effective use of ICT and assistive technology to support the children with disabilities' play.

4. Methods, tools and frameworks for the development of the child with disabilities' play:

1. an exhaustive epistemological framework of the theme;
2. models of clinical intervention and education, including the issues of evaluation;
3. models for information and training of operators and family members on the subject of inclusive and accessible play for children with disabilities;
4. guidelines for the development of tools, technologies, and playful environments that are suitable for the creation of accessible and inclusive play contexts.

Scientific Impact of the Action

The LUDI COST Action will establish “play for children with disabilities” as a central theme to promote a wider and effective inclusion process for them through the opening of new opportunities for social participation.

The contribution of research to this overall objective will be carried out according to the following steps:

- systematization and enhancement of existing knowledge;
- new theoretical knowledge and epistemological framing of the topic; for example, regarding the play evolution in the case of disability through stages and phases, its modifiability driven by the support offered, by the activated contexts and the used tools;
- tools and models of observation, assessment and intervention in relation to:
 - enhancement of competencies already developed and construction of new ones;
 - the various types of disabilities;
 - the playful interactions both with peers and adults;
 - the play contexts and their characteristics;
 - types of play and their characteristics.

The widespread awareness that will result from the dissemination and the application of these studies will have a positive impact also on the recognition of the right to play for children with disabilities, and on the adoption of measures to allow the exercise of this right.

Societal Impact of the Action

All contexts of the child with disabilities’ life (clinical, educational, family) should be underpinned through novel scientific, theoretical and practical knowledge.

Through the scientific exchanges and the activities that the network will start, an impact is expected in terms of:

- definition of objectives;
- priority in the intervention modalities;
- knowledge and ability to use appropriate tools;

- knowledge and competence in the activation of effective and inclusive contexts of play;
- knowledge and competence in developing effective and proactive play relationships, aimed at individuals and groups of children;
- support and advice to families for creating appropriate and enjoyable activities.

The Action aims to return to clinical, educational and family contexts the idea of a child who, despite his/her disability, can rely on play as the strongest spring of their own development. Nonetheless, play must be supported, encouraged, and enhanced through appropriate relationships, contexts and effective tools.

The Action ambition is to spread the belief that children with functional limitations are first and foremost children with natural needs and rights. It also aims to train parents and professionals to become proficient at interacting with children with disabilities in order to give them the chance to learn and grow through play.

Technological Impact of the Action

The network will also attain the mainstream design, development and production of technologies, play tools, toys and furniture. These are a fundamental component of play environments and can be barriers or facilitators for play activities, depending on their form and mode of operation.

Advanced technology that can foster the play of the child with disabilities will be included, as well as assistive technologies that provide support for functional limitations by mediating the relationship between user and final tools. Specific attention will be devoted to technologies such as social robots that, besides supporting functional limitations, also offer possibilities to engage in meaningful interaction so as to meet these children's play needs.

Concerning tools and technologies, LUDI aims to achieve a consensus and conclusive agreement relating to:

- usability of toys and playful materials for all;
- accessibility of games, toys and playful materials in relation to different kinds of impairments and to the characteristics of the play activities;
- models for evaluation, selection, use and development of tools, technologies, and materials for

play in relation to different kinds of impairment and to the characteristics of the playing activities;

- criteria for evaluating the effectiveness of tools and technologies for the play of the child with disabilities.

Including the needs of final users – children with disabilities themselves – in the planning and design of technology products and tools for play will be the added value offered by these measures by expanding the number of people able to use them and also improving their competence.

An increased usability of tools and technologies for play, together with accessible products and assistive technologies, will allow inclusive play situations among children with disabilities and those with typical development. Together they will be able to share, with different modes of functioning, the same play environment.

Policy Impact of the COST Action on European research strategies

The Action also offers a substantial contribution to priority “Societal Challenges” of Horizon 2020, in particular to the “health and well-being” and “inclusive society” objectives and follows the European Disability Strategy 2010-2020, with reference to participation, accessibility and training.

The LUDI COST Action will develop tools and theoretical-critical methodologies of effective intervention for children with disabilities. New knowledge, besides enriching the scientific psycho-pedagogical sciences, will give more effective therapeutic and preventive value to educational and rehabilitative interventions.

The project extends its interest to the European challenge of inclusion: play scenarios, technologies, modes of interaction, support methodologies for the mediation; features of adaptability and accessibility will allow the full participation of children with disabilities within their peer group.

The choice to include studies on technologies as mediators of play, fully responds to the objective

(Digital Agenda for Europe) of exploiting the innovation and technological progress for the benefit of citizens and communities.

Among the expected results, there is also the definition of a training model for all the professionals involved in the network. This will promote awareness of the importance of inclusive play with children with disabilities and to spread and improve related practices. In this sense, the project fulfils the “knowledge triangle” of the European Research Area: research, innovation, education.

C. MILESTONES AND DELIVERABLES: CONTENTS AND TIME FRAMES

The Organization of the activities

The LUDI COST Action has a duration of four years. In the course of its implementation it will develop a network organized in Working Groups (WGs). The theme of play for children with disabilities will be approached under numerous perspectives, considering all the crossroads.

All the activities carried out by the WGs and in plenary meetings will have the common purpose of ensuring to the theme of children with disabilities’ play the status of a major scientific, social and cultural theme, initiating all appropriate initiatives so that it can become an autonomous and recognized area of study, and that it can be able to collect, organize and disseminate all existing research and support the development of new ones.

Action activities will be organized along four areas of intersection between the sectors involved, which are described in the Challenge.

Among the participants, four Working Groups (WG) will be started. They will act on the following subjects:

WG1: Children’s play in relation to the types of disabilities

WG2: Tools and technologies for the play of children with disabilities

WG3: Contexts for play of children with disabilities

WG4: Methods, tools and frameworks for the development of the child with disabilities’ play

Each WG will have, within its specific area of study, activities aimed at realization of the expected deliverables. The work of WG1, WG2 and WG3 will take place in full autonomy in work planning and will finish at Month 30 (see table 1). They are to be considered, for each domain, foundational documents for the studies, and deliverables that are developed within the WG4.

The results of the WG1, WG2 and WG3 will be presented to the Action Conference – called "State of the art of network LUDI" – in which the composition of WG4 – that will also present some preliminary deliverables at the same Conference – will change, including some members of other groups and reorganizing its structure to produce the final deliverables of the network.

At the first meeting of the Action Management Committee (MC), the Chair and Vice-Chair of the Action will be elected. Each WG, moreover, will elect its own leader and vice-leader, who will agree on the dates of periodic meetings, the planning of Short-Term Scientific Missions (STSMs) and will define the scheduling of scientific work, in particular the deadline for draft versions of deliverables.

The work of the WGs will be coordinated, supervised and monitored by the Management Committee of the Action. A Steering Group (SG) will be responsible for coordination, supervision and monitoring of scientific activities. The SG will be composed of the Chair and Vice-Chair of the Action, as well as by the leader and vice-leader of each WG.

The Chair and Vice-Chair of each Working Group will be the coordinators of the networking activities, will have the task of organizing periodic meetings, preparing the agenda and collecting and disseminating the results. Moreover, they will communicate with the other WGs in order to harmonize the activities and also with the MC and with the SG. The meeting between the members of each WG and the meetings of the two mentioned committees will be held twice a year and will be organized in such a way as to match the commitments of researchers that play a role in the various WG and MC. The activities of the MC and the SG, as well as the possible administrative and organizational structure of the Action are described in detail in part D.

The outcomes of the COST Action and their schedule

Every Working Group will discuss the issues to which it is dedicated, developing thematic

deliverables; WG and deliverables are listed below.

Children's play in relation to the types of disabilities: it is a combination of traditional epistemological and methodological topics, within legislative and psycho-pedagogical fields, concerning the infant play with data from clinical and rehabilitation practices.

D1 – Theoretical models descriptive of play development of children with disabilities. (0-15 Months)

D2 – Theoretical models for the evaluation of the play of children with disabilities. (16-30 Months)

Tools and technologies for the play of children with disabilities: this field provides a comparison and discusses issues related to assessing the usability and effectiveness of tools and technologies.

D3 – Repertoire of systems for evaluating the usability and accessibility of the toys and technologies for the children with disabilities' play. (0-15 Months)

D4 – Guidelines for evaluating the accessibility and usability of toys and technologies for the children with disabilities' play. (16-30 Months)

D5 – Standard rules for the design and development of technological products and toys for the play of children with disability. (16-30 Months)

Contexts for the play of children with disabilities: it will study in-depth all the aspects of context that may affect the quality, effectiveness and inclusiveness of the child with disabilities' play, including natural and artificial environments, formal, non formal and informal educational contexts, interpersonal relationships among peers and to support the play by adults.

D6 – Repertoire of playing experiences with children with disabilities (categorized according to types of impairment, tools and contexts). (0-15 Months)

D7 – Models for intervention and support of play development of the child with disabilities in inclusive contexts. (16-30 Months)

D8 – Models for the effective use of technology and assistive technology to support play of children with disabilities. (16-30 Months)

Methods, tools and frameworks for the development of the child with disabilities play: this area of research aims at developing all the partial studies conducted previously, with the goal of an exhaustive overview and a further dissemination of intervention models, training and policies addresses. This research is directed at professionals in health, education, industry fields, policy makers, and last but not least at the members of the child with disabilities’ family.

D9 – User needs report (which includes practitioners and healthcare, education, industry, technological fields, policy makers, families of children with disabilities, and children themselves, with or without any impairment). (0-12 Months)

D10 – Training model to support the play of children with disabilities in inclusive contexts and on strategies of intervention (methods and tools): beta version. (12-24 Months)

D11 – Validation of the model. (25-30 Months)

D12 – Training model to support play of children with disabilities in inclusive contexts and on strategies of intervention (methods and tools): final version (31-45 Months)

D13 – Guidelines for the play of children with disabilities. Methodologies, tools, contexts, relationships. (31-45 Months).

Year	Y 1			Y 2			Y 3			Y 4	
Month	3	6	12	15		24	25	30	36	45	48
WG1				D1				D2			
WG2				D3				D4			
WG3				D6				D5			
								D7			
WG4				D9			D10			D11	
										D12	
Milestones	M1	M2		M3			M4	M5			
										M6	M7 M8

Table 1: Timetable of the Milestones and Deliverables scheduled in the LUDI network

As previously mentioned, the activities of the WGs will have different timings. In particular, WG1, WG2 and WG3 conclude their activity – organized in Deliverables of a thematic study– at month 30. The products covered by the WG4, on the other hand, begin the first month of life of the network but are also carried out during the last year of operation (Month 45).

This responds to a precise scientific need. All the activities ending at month 30 (deliverables from

no. 1 to no. 11, in charge to the four different WGs), in fact, develop and deepen partial aspects of the LUDI COST Action theme – the play for children with disabilities – and, despite being independent, these deliverables are also preliminary studies for the fulfilment of deliverables D12 and D13, which can be considered the final products of LUDI.

D12 in fact will present the definitive training model – after successful validation – for professionals of rehabilitative and educational sectors, in relation to the children with disabilities’ play and strategies (methods and tools).

D13 instead will be represented by “Final guidelines for the play of children with disabilities. Methodologies, tools, contexts, relationships”. This deliverable is a summary of the partial work done by the four WGs, but also a systematization of the knowledge produced up to that time by the Action.

To accomplish this, after Month 30, WG4 will include the members of other WGs; the work will be specifically reorganised and redistributed in order to build the two final products.

Milestones

In addition to the deliverables that concern strictly the work of each WG, first separately and then jointly, the LUDI COST Action aims to reach the following Milestones:

M1: First Plenary Workshop completed (Month 3)

M2: Website set-up and functioning (Month 6)

M3: Conference: “The first year of work of the network LUDI” (Month 15)

M4: Training school of validation of the training model (Month 25)

M5: Conference. “State of the art of the LUDI network. Conclusion of Deliverables 1-11” (Month 30)

M6: Final Conference (Month 45)

M7: A new collaborative project submission to an identified call (Month 47)

M8: Final publication of the Action: preparation of a Special Issue journal about LUDI (Month 48)

The concrete achievement of these Milestones will depend on the quality of the deliverables produced by each WG and on their compliance to the Action timetable. However, the MC and the

SG will be in charge of the organization of preparatory meetings and activities necessary to the achievement of the Milestones.

The milestones have both the objective of carrying out background actions to keep the network going – for example, creating and maintaining the website – and also to organize and manage crucial actions, placed at specific times in the evolution of the project. These activities consist in:

- three MC and joint WG meetings – scheduled at months 1, 15 and 30 – which constitute together the summary of work done and the ground for the start of further steps and one MC and joint WG meeting scheduled at Month 45 that will summarize the work done by WG4;
- the organization and fulfillment of the Training School –Month 25 – for the validation of the beta version of the training model aimed at professionals, which will become one of the final products of LUDI.

The milestones, as well as a function of monitoring the progress of activities carried out by the network, will serve as verification of the effectiveness of the activities involved, pointing to the MC and especially to the SG possible changes to the overall work plan of the network.

The contribution that the LUDI network intends to bring to the theme of play for children with disabilities is even beyond the duration of the Action itself. In this context the M7 and M8 should be read because they intend to extend the network of contacts established with LUDI and the sharing of knowledge created through it, to respond to the call of the Horizon 2020 framework programme and publish, as the final publication of the Action, a Special Issue on a high qualifying Journal discussing the scientific impact of activities.

D. ACTION STRUCTURE AND PARTICIPATION – WORKING GROUPS, MANAGEMENT, INTERNAL PROCEDURES

General organization

The duration of the LUDI COST Action is four years. It will be a framework open to organisations, institutions and enterprises interested in collaboration within the fields of research interested by the network.

The Action LUDI will be coordinated and organized by the Management Committee (MC). An Action Chair, a Vice-Chair, four Working Group leaders and co-leaders will be elected from the members of the MC at the 1st MC (kick-off) meeting of the Action.

The Action Chair, Vice-Chair, together with the Working Group leaders and co-leaders will form the Steering Group (SG).

Further persons in charge of key positions in the Action will be elected at the 1st MC Meeting as well, namely a Coordinator for Early Stage Researchers, a STSM Coordinator and a Website and Electronic Mailing List Coordinator.

At the 1st MC Meeting the MC will decide on the policies and the organization of the network activities.

The various committees and Working Groups will communicate through dedicated online resources which will be a mailing list for each group that will grant effective and punctual sharing of information.

Additionally to MC and WG meetings, which will take place yearly, Action participants will collaborate also through remote conference calls (e.g. through Skype or Google Hangout). An effort will be made to organise co-located MC and joint WG meetings.

The responsibilities and tasks for each of the organization elements of the Action are described in the following.

The Management Committee

The Management Committee (MC) will be responsible for the general planning and coordination of the Action. More specifically, the yearly work programme, budget, and dissemination plan will be discussed and agreed on by the MC.

The MC will be responsible for supervision of ongoing work, dissemination activities, contacting external interested parties, setting up the work schedule and logistics for events and schools.

Furthermore, the MC will coordinate and plan its own meetings, the meetings of each of the Working Groups, the Short-Term Scientific Missions (STSM), and other events taking place during the course of the Action. The MC will also monitor the specific activities of the Working Groups, STSM, Workshops and Training Schools and it will maintain under control the budget of the whole Action making decisions at the right time following unplanned extra costs.

The MC will work together with the Coordinator for Early-Stage Researchers to facilitate the participation of these researchers in the Action. The means to support them will consist in the possibility for them to profit from budget allocated to Short-Term Scientific Missions and other meetings.

The Steering Group (SG)

The Steering Group will be responsible for scientific guidance of the Action, as well as for discussing relevant issues to be brought to the attention of the MC. Its tasks will include organization of the communication between the Working Groups, harmonization of the research topics used in the different Working Groups, designing and overseeing the technical programmes of workshops and training schools organized by the Action, and other related tasks. The SG will also monitor the overall scientific work ensuring the fulfilment of the deliverables of every WG.

Together with each WG, the SG will organize the scheduled conferences and the Training School.

The Coordinator for Early-Stage Researchers

The Coordinator for Early-Stage Researchers (ESRs) and will be responsible for promoting broad participation of ESRs in the Action.

A good number of ESRs have been involved in the planning phase of the Action and these researchers are already working together with established national experts. Further steps for further involving early-stage researchers will be taken by the Coordinator for Early-Stage Researchers. Specifically, the responsible person will have the task of identifying those who have profiles suitable for participation in the Action. These researchers will be encouraged to organize and participate in STSMs, WG meetings and Training Schools organized by the Action.

Website and Mailing List Coordinator

The Website and Mailing List Coordinator will be responsible for setting up and managing a website and an electronic mailing list for the Action. The mailing list will serve as a discussion forum and for general information exchange, e.g. to announce meeting dates and meeting locations of the Action.

The website will be organized such that all members of the Action will be able to post content to the website, for example in the form of announcements of conferences, publications, videos, or datasets.

It will be the responsibility of the website coordinator to ask Action members for content and to approve content before it is made public.