

## Extended Large (3-D) Integration TEchnology



Seventh Framework Programme FP7-ICT-2007-1 Project Number: FP7-ICT-215030

Deliverable 5.4

Awareness and Wider Societal Implications Report

Version 1.0



## Extended Large (3-D) Integration TEchnology



Project Name	Extended Large (3-D) Integration Technology
Project Number	ELITE-215030
<b>Document Title</b>	Awareness and Wider Societal Implications
Deliverable Number	D5.4
Work Package	WP5
Dissemination Level	Public
Lead Beneficiary	KTH – Royal Institute of Technology
<b>Document Editor</b>	Awet Yemane Weldezion
<b>Delivery Date</b>	February 31 <sup>st</sup> , 2011
Version	1.0



#### **Abstract**

This document is a compilation of societal and socio-economic issues addressed by the ELITE project.

#### **Keywords**

3-D Integration, Flash memory, Integrated Circuit (IC) design, microcontroller, through silicon via (TSV)



## **Table of contents**

1. Introduction	5
2. Main Findings	
2.1. TSV process technology	
2.2. TSV modelling and simulation	
2.3. System architecture	
3. Channels for raising awareness	
4. Wide societal implications	6
4.1. Research	7
4.2. Education	8
4.3. Innovation	8
5. Conclusion	8
6. Appendix A: Report on societal implications (Numonyx)	9
7. Appendix B: Report on societal implications (KTH)	16
8. Appendix C: Report on societal implications (Hyperstone),	
9. Appendix D: Report on societal implications (ULANC)	
10. Appendix E: Report on societal implications (CEA-LETI)	



#### 1. Introduction

The objectives of project ELITE are (1) to show the viability of TSV technology for vertical integration of dies by defining new processing methods adapted from existing tools; and (2) to develop relevant high-level TSV and circuit models that are used to simulate 3-D systems. The specific target application is a stack of NAND flash dies accessed through high-performance, low-power memory controller. The scientific and technology objectives of project ELITE are defined in work packages as follows.

- WP1: 3-D memory system architecture
- WP2: TSV modelling and system simulation
- WP3: TSV Process technology development
- WP4: System level validation through controller development

The tasks defined within each work package have been implemented and reported in the following deliverables.

- D1.1: Definition and outline of 3-D technology
- D1.2: Technology specification
- D1.3: System specification (incl. Demonstrator)
- D1.4: System Concept Simulation
- D1.5: Result assessment and proposal for generalization and future potential
- D2.2: 3-D IC Analysis
- D2.3: 3-D IC's Simulation
- D2.4: 3-D Signaling Conventions
- D2.5: 3-D IC's modeling and simulation conclusion report
- D3.1: TSV submodule
- D3.2: Back side pad Reconstitution
- D3.3: Temporary Handle
- D3.4: Wafer back Grinding
- D3.6 Final report incl. test and characterization of demonstrator
- D4.1: Controller Requirement Specification
- D4.2: Prototype environment report
- D4.3: SSD controller test board
- D4.4: Controller datasheet
- D4.5: SSD controller prototype evaluation report

In this document, we briefly report the methods used to disseminate information including intermediate and final results of the project to the target audience. We describe the short term and long term societal implications of the project through questionnaire reports completed by the consortium partners.

#### 2. Main Findings

The project main findings are summarized in deliverables D2.5, D3.6, and D4.5. Most of the publicly available results have been published in peer-reviewed scientific journals and presented at conferences targeted to the scientific community. Special effort has also been taken to reach wider general public through publication of articles in an open access magazine. Other results are available only to targets defined in the dissemination level as confidential or restricted. The findings are generalized into three areas: TSV process technology, TSV modelling and simulation and System architecture.



#### 2.1. TSV process technology

Chip to wafer bonding technology that enables stacking of multiple layers has been developed. Via middle approach (TSV to be integrated after CMOS before metallization) was chosen and validated with daisy chain test vehicle. TSV dry etch, isolation and Cu filling were demonstrated and tested by means of electrical measurements at wafer level. Temporary handle, backside reconstitution and chip to wafer stacking technology were developed and verified with electrical measurements on 2 layers of 3D stack.

#### 2.2. TSV modelling and simulation

TSV Model development has been one of the main tasks in the projects. The models are constructed by simulating the physical characteristics of TSVs in order to estimate the performance, signal integrity, power & energy consumption, thermal stress and cost of implementing a system using TSVs. For example, closed form TSV models are reported in D2.2, D2.4 and D2.5. Using these models, parasitic RLC (resistance, inductance and capacitance) expressions for any given TSV bundle can be estimated within acceptable error margin.

#### 2.3. System architecture

The system architecture refers to the network and communication architecture and resources including memory controllers that make use of the system for full functionality. Design and model development of the network and communication architecture has been carried out. One of the project objectives is to simulate a system of stacked memories accessed by multiple processors. A test model that runs up to 1000 processing core has been simulated on 2-dimensional and 3-dimensional networks. As reported in deliverables D1.4, D2.3 and D2.5, hierarchical models from physical to system-level that exploit fast nature of TSVs and compact nature of 3-D systems are developed. A memory controller specification that fulfils the requirement of high-performance, high-capacity and low-power has been defined and reported in deliverable D4.1.

#### 3. Channels for raising awareness

In the beginning of the project, a dissemination and exploitation plan was set as described in deliverable D5.1. Accordingly, the consortium has made efforts to use every opportunity to disseminate results to the targeted audience and increase awareness.

The target audience is categorized as follows:

<u>Semi-conductor industries</u>: involved in wafer processing and interested in developing a methodology or technology that enables vertical integration of wafers.

<u>Research institutes:</u> involved in basic and application research and interested in using the research results as an input to their works.

<u>Academic institutes:</u> involved in training and research are interested in recruiting students and develop new educational programs and disciplines focused on 3-D integration technology. <u>Other FP7 and Media+ projects:</u> all entities including consortium members who are collaborating and sharing results through European research networks.

<u>Fab-less companies</u>: involved in innovating intellectual property (IP) based solutions for specific targets and interested in using the research results to develop applications.



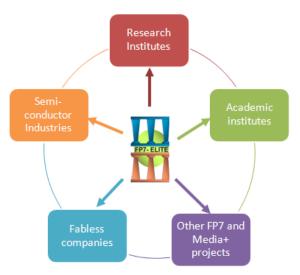


Figure 1. ELITE target audience

The main channels of dissemination are:

- Website: The project website is the most widely accessible channel and contains comprehensive information regarding the project. <a href="http://www.ipack.kth.se/ELITE">http://www.ipack.kth.se/ELITE</a>. It should be noted that special effort has been taken to make several tools available via a web interface in order to enable the wider community to utilise the knowhow gained in this project. This web portal <a href="http://3d-performance.lancs.ac.uk">http://3d-performance.lancs.ac.uk</a> is hosted on a server that allows users to submit simulation jobs to analyse various aspects of 3-D integrated ICs.
- Conferences and Workshop events: These events are used to directly address the target audience. The list is reported in detail on deliverable D5.5.
- Publications: The project publications contain publicly available research results and related information. The list can be found on deliverable D5.5. Also, the links leading to the permanent repositories of each publication are made visible on the project website.
- Deliverables: Depending the level of dissemination, deliverables are also used to inform target audience.

#### 4. Wide Societal Implications

The short term and long term societal implications can be seen in three key areas: Research, Education and Innovation. We believe the target audience greatly benefit from the use of the intermediate and final results of the project.

#### 4.1. Research

The research in 3-D integration using TSV technology combined with on-chip network and communication architecture is a new field of interest that project ELITE brings to play. Researchers had been investigating the field at all levels—process, circuit and system. One of the new aspects of the project is that it is about integration of dissimilar technologies in vertically stacked chip using TSV as interconnect. The dissimilar technologies are processed by separate industries. When the integration is required, researchers work together in order to define a compatible process.



Throughout the project life time, researchers have had several opportunities to explore the technology and make investigations in the different levels of the project. Wafer technology processes have been tested and as a result improved methodologies have been acquired. It is believed that the research works done by the industrial partners Micron-Numonyx and CEA-LETI to develop process methods and the experience gained through participating in the research works will be used as the basis for further activities in 3-D technology development. For TSV modelling and simulation, researchers have tested new models using tools acquired for the project. The network and communication models used for system simulation can be further improved and adapted for other related projects. Moreover, cross industrial research visits made by the researchers enable collaborative works towards a common goal of developing the technology.

#### 4.2. Education

The project has created educational and research opportunities for PhD students studying at ULANC and KTH. The students participated in all work package activities and collaborated in publishing peer reviewed scientific papers. Moreover, they made several visits to the research locations of industrial and academic institutes of ELITE consortium partners. Such visits offer practical learning opportunities and open interactions with senior industrial and academic researchers. Already two PhD thesis documents are made out of this project. All the publications and thesis documents are listed in Deliverable D5.5. Given that 3-D integration technology is relatively new, the students are one of the first few to graduate in the field. In general, the research results and the knowledge created around the 3-D integration technology will help build the expertise of the respective academic institutes involved in recruiting researchers and defining new programs in the field. Possibly, other European universities who have been directly or indirectly collaborating with the consortium members are also believed to benefit from the collaboration work.

#### 4.3. Innovation

It is believed that intermediate and final results can be directly exploited and used in modelling systems, in developing tools, in defining process methodologies and in technology designs. Already, several methods of addressing and managing multiple processors using a memory controller has been patented by Hyperstone. Industrial partners of the consortium have indicated in deliverables D3.3 and D3.4 that new "via middle" process flow methods and materials for wafer thinning and stack bonding have been tested. This helps to build the capacity of the industries in specializing and expanding within 3-D integration field.

The closed form TSV models reported in D2.3 can be directly integrated into existing simulation tools to estimate the parasitic RLCG characteristics during design space exploration phase. The network and communication architectural models reported on D1.3, D2.4 and D2.5 can be extended to be fully functional simulators. Given the technology is yet at research level, the significance of those potential innovations is high and there is a lot more to explore. In the long run, it is believed that other external stakeholders will make use of the research results which are already published as scientific papers, and presented in conferences and workshops.

#### 5. Conclusion

Questionnaires on report on societal implications filled by each individual consortium partner are attached to this report as appendices.



## **Appendix A: Report on societal implications (NMX)**

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

<b>A</b> General Information (completed automatically when Grant Agreement number entered.	is
Grant Agreement Number:	
Title of Project:	
Name and Title of Coordinator:	
B Ethics	
1 Did your project undergo on Ethios Daview (and/on Concering)?	
1. Did your project undergo an Ethics Review (and/or Screening)?	No
• If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports?	110
Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 'Work Progress and Achievements'	
2. Please indicate whether your project involved any of the following issues (tick box):	No
RESEARCH ON HUMANS	1
Did the project involve children?	No
Did the project involve patients?	No
Did the project involve persons not able to give consent?	No
Did the project involve adult healthy volunteers?	No
Did the project involve Human genetic material?	No
Did the project involve Human biological samples?	No
Did the project involve Human data collection?	No
RESEARCH ON HUMAN EMBRYO/FOETUS	T
Did the project involve Human Embryos?	No
• Did the project involve Human Foetal Tissue / Cells?	No
• Did the project involve Human Embryonic Stem Cells (hESCs)?	No
Did the project on human Embryonic Stem Cells involve cells in culture?	No
• Did the project on human Embryonic Stem Cells involve the derivation of cells from	No
Embryos?  Privacy	
PRIVACY  • Did the project involve processing of genetic information or personal data (eg	No



health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	
Did the project involve tracking the location or observation of people?	No
RESEARCH ON ANIMALS	
Did the project involve research on animals?	No
Were those animals transgenic small laboratory animals?	No
Were those animals transgenic farm animals?	No
Were those animals cloned farm animals?	No
Were those animals non-human primates?	No
RESEARCH INVOLVING DEVELOPING COUNTRIES	
• Did the project involve the use of local resources (genetic, animal, plant etc)?	No
Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	No
DUAL USE	
Research having direct military use	No
Research having the potential for terrorist abuse	No

## **C** Workforce Statistics

3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).

Type of Position	Number of Women	Number of Men
Scientific Coordinator	0	0
Work package leaders	0	0
Experienced researchers (i.e. PhD holders)	1	6
PhD Students	n.a.	n.a.
Other		

	4. How many additional researchers (in companies and universities) were recruited specifically for this project?	n.a.
(	Of which, indicate the number of men:	

D (	Gender	Aspects		
5.	Did you	a carry out specific Gender Equality Actions under the project?	O x	Yes No
6.	Which o	of the following actions did you carry out and how effective were the	•	
		Not at all Ve effective eff	ry ective	
		Design and implement an equal opportunity policy OOOO	ecuve	
		Set targets to achieve a gender balance in the workforce OOOO		
		Organise conferences and workshops on gender OOOO		
		Actions to improve work-life balance		
	0	Other: None		
7.	the focus considere	re a gender dimension associated with the research content – i.e. whof the research as, for example, consumers, users, patients or in trials, was the id and addressed?  Yes- please specify No		
E	Synono			
L	Synerg	ies with Science Education		
8.	•	ar project involve working with students and/or school pupils (e.g. ation in science festivals and events, prizes/competitions or joint parties of please specify	_	• ,
	X	No		
9.		project generate any science education material (e.g. kits, websites s, DVDs)?	s, expla	natory
	X	Yes- please specify  Elite website		
	0	No		
F	Interdi	sciplinarity		
10	XX/L * . 1.	Part Para (no Pathala ) and a late and a start		
10.		disciplines (see list below) are involved in your project?		
	0	Main discipline <sup>1</sup> : 2.2 Associated discipline <sup>1</sup> : 2.3		
	0	Associated discipline 1.2.5  O Associated discipline 1.1.2		
G	Engagi	ng with Civil society and policy makers		
11a		our project engage with societal actors beyond the research unity? (if 'No', go to Question 14)	O x	Yes No
11b	If yes, d (NGOs,	id you engage with citizens (citizens' panels / juries) or organised opatients' groups etc.)?	civil soc	eiety
	x O O	No Yes- in determining what research should be performed Yes - in implementing the research Yes in communicating /disseminating / using the results of the project		

<sup>&</sup>lt;sup>1</sup> Insert number from list below (Frascati Manual).



11c	organise	the dialogu	r project involve actors whose e with citizens and organised or; communication company	civil	society (e.g.	x	No No
12.	Did you e organisat		government / public bodies o	or pol	licy makers (including	intern	ational
	x O O		ng the research agenda ementing the research agenda				
13a	<b>Will the</b>		nunicating /disseminating / using the erate outputs (expertise or so		1 0	d be use	ed by
13h	policy m  X O  If Yes, in	Yes – as a <b>pr</b>	imary objective (please indicate are condary objective (please indicate a				
Agricu Audio Budge Compo Consu Cultur Custor Develo Monet Educat	nlture visual and Medi t etition mers e	a ic and 'outh	Energy Enlargement Enterprise Environment External Relations External Trade Fisheries and Maritime Affairs Food Safety Foreign and Security Policy Fraud Humanitarian aid		Human rights Information Society Institutional affairs Internal Market Justice, freedom and security Public Health Regional Policy Research and Innovation Space Taxation Transport		



FP7-ICT-2007-1	renes	s and	l d Wider Societa		E-215030 Dlications
13c If Yes, at which level?  O Local / regional levels  X National level  X European level  O International level					
H Use and dissemination					
14. How many Articles were published/accept peer-reviewed journals?	ed for	· publ	lication in	1 pa	per to be submitted
To how many of these is open access <sup>2</sup> provided?	<u> </u>			0	
How many of these are published in open access jour	nals?				
How many of these are published in open repositorie	s?				
To how many of these is open access not provid	ed?			1	
Please check all applicable reasons for not providing	open a	ccess:			
x publisher's licensing agreement would not permit publ  no suitable repository available  no suitable open access journal available  no funds available to publish in an open access journal  lack of time and resources  lack of information on open access other <sup>3</sup> :			·		
15. How many new patent applications ('prior ("Technologically unique": multiple applications for jurisdictions should be counted as just one application	the sam	e inver		le?	0
16. Indicate how many of the following Intelle			Trademark		0
Property Rights were applied for (give nu each box).	mber	in	Registered design		0
			Other		0
17. How many spin-off companies were create result of the project?	ed / ar	e pla	nned as a direct		0
Indicate the approximate number	of addi	tional	jobs in these compa	nies:	
18. Please indicate whether your project has a with the situation before your project:	poten	itial i	mpact on emplo	ymen	nt, in comparison
X Increase in employment, or		In sm	all & medium-sized	enterp	orises
X Safeguard employment, or	X		ge companies	·	
<ul><li>Decrease in employment,</li><li>Difficult to estimate / not possible to quantify</li></ul>		None	of the above / not re	levant	to the project
19. For your project partnership please estima	te the	emn	lovment effect		Indicate figure:
resulting directly from your participation is = one person working fulltime for a year) jo	in Ful	_	-	TE	

The project involved about X man-years

 $<sup>^2</sup>$  Open Access is defined as free of charge access for anyone via Internet.  $^{^3}$  For instance: classification for security project.





Dif	ficult to estima	ate / not possible to quan	tify			
		•	•			
Ι	Media a	nd Communication	on to	the g	eneral public	
20.	As part of t media relat		the be	neficia	ries professionals in comm	unication or
	O Y	es	x N	Го		
21.	training / a	the project, have any bodyice to improve comm		ion wit	eceived professional media th the general public?	/ communication
22		ne following have been public, or have resulte			nunicate information about project?	your project to
	☐ Press Rele	ease			Coverage in specialist press	
	☐ Media bri	efing			Coverage in general (non-special	list) press
	☐ TV covera	age / report			Coverage in national press	
	Radio cov	rerage / report			Coverage in international press	
	☐ Brochures	s /posters / flyers		X	Website for the general public / i	
	DVD /Fili	m /Multimedia			Event targeting general public (f exhibition, science café)	estival, conference,
23	In which la	nguages are the inform	ation p	oroduc	ts for the general public pr	oduced?
	<ul><li>□ Language</li><li>□ Other language</li></ul>	of the coordinator guage(s)		x	English	

**Question F-10:** Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

#### FIELDS OF SCIENCE AND TECHNOLOGY

- 1. NATURAL SCIENCES
- 1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]
- 1.2 Physical sciences (astronomy and space sciences, physics and other allied subjects)
- 1.3 Chemical sciences (chemistry, other allied subjects)
- 1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)
- 1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)
- 2 ENGINEERING AND TECHNOLOGY



- 2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)
- 2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]
- 2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

#### 3. MEDICAL SCIENCES

- 3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immunohaematology, clinical chemistry, clinical microbiology, pathology)
- 3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)
- 3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

#### 4. AGRICULTURAL SCIENCES

- 4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)
- 4.2 Veterinary medicine
- 5. SOCIAL SCIENCES
- 5.1 Psychology
- 5.2 Economics
- 5.3 Educational sciences (education and training and other allied subjects)
- Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary, methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

#### 6. Humanities

- 6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)
- 6.2 Languages and literature (ancient and modern)
- 6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]



## **Appendix B: Report on societal implications (KTH)**

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

A General Information (completed automatically when Grant Agreement number	is entered.
Grant Agreement Number:	
Title of Project:	
Name and Title of Coordinator:	
B Ethics	
<ul> <li>1. Did your project undergo an Ethics Review (and/or Screening)?</li> <li>If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports?</li> </ul>	No
Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 'Work Progress and Achievements'	
2. Please indicate whether your project involved any of the following issues (tick box):	No
RESEARCH ON HUMANS	
Did the project involve children?	No
Did the project involve patients?	No
Did the project involve persons not able to give consent?	No
Did the project involve adult healthy volunteers?	No
Did the project involve Human genetic material?	No
Did the project involve Human biological samples?	No
Did the project involve Human data collection?	No
RESEARCH ON HUMAN EMBRYO/FOETUS	1
Did the project involve Human Embryos?	No
Did the project involve Human Foetal Tissue / Cells?	No
Did the project involve Human Embryonic Stem Cells (hESCs)?	No
• Did the project on human Embryonic Stem Cells involve cells in culture?	No
• Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos?	No
PRIVACY	_1
• Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical	No

Of which, indicate the number of men:



DUAL USE  Passarch having direct military use		No
Research having direct military use		- 13
Research having the potential for terrorist a	buse	No
	buse	110
C TT 10 C 11 11		<u> </u>
' Manustance National		
Workforce Statistics		
C Workforce Statistics		
Workforce Statistics		
	e indicate in the table below	the number of
3. Workforce statistics for the project: Pleas		the number of
		the number of
3. Workforce statistics for the project: Pleas people who worked on the project (on a he		the number of Number of Men
3. Workforce statistics for the project: Pleas people who worked on the project (on a horype of Position	number of Women	Number of Mer
3. Workforce statistics for the project: Pleas people who worked on the project (on a horype of Position  Scientific Coordinator	Number of Women  0	Number of Men
3. Workforce statistics for the project: Pleas people who worked on the project (on a horype of Position Scientific Coordinator Work package leaders	Number of Women  0 0	Number of Men
B. Workforce statistics for the project: Pleas people who worked on the project (on a horype of Position Scientific Coordinator Work package leaders	Number of Women  0	Number of Men
3. Workforce statistics for the project: Pleas people who worked on the project (on a horype of Position  Scientific Coordinator	Number of Women  0 0	Number of Men



D	Gender A	Aspects					
5.	Did you	carry out spec	ific Gender Equality	Acti	ons under the project?	O x	Yes No
6.	Which o	f the following	actions did von carr	v out	and how effective were th	ev?	
0.	Which o	the following	actions and you carr	y Out		ry	
		Design and imple	ement an equal opportunity	v <b>n</b> olic		ective	
			ieve a gender balance in the				
		Organise conferences and workshops on gender					
		Actions to impro	ve work-life balance		00000		
	0	Other:	None				
7.	7. Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?						
	0	Yes- please speci	fy				
	X	No					
E	Synergi	ies with Scier	nce Education				
	participa X		ease specify	prize	es/competitions or joint pr	ojecis):	
9.	Did the p		e any science educati	ion m	aterial (e.g. kits, websites	explan	atory
	X	Yes- please speci	fy		Elia makaia		
	0	No			Elite website		
F	Interdi	sciplinarity					
10.	Which d	isciplines (see l	ist below) are involv	ed in	your project?		
	0	Main discipline <sup>4</sup> :					
	0	Associated discip	oline <sup>1</sup> : 2.3	0	Associated discipline <sup>1</sup> : 1.2		
G	Engagi	ng with Civil	society and policy	y ma	kers		
11a	•	our project eng nity? (if 'No', go	age with societal actor to Question 14)	ors be	eyond the research	O x	Yes No
11b	-	patients' group No	s etc.)?		els / juries) or organised c	ivil socie	ety
	0		ing what research should b	e perfo	ormed		
	0	r es - in impleme	nting the research				

<sup>&</sup>lt;sup>4</sup> Insert number from list below (Frascati Manual).



	0	Yes, in communi	cating /disseminating / using the	results	of the project		
11c	Ic In doing so, did your project involve actors whose role is mainly to organise the dialogue with citizens and organised civil society (e.g. professional mediator; communication company, science museums)?						
12.	Did you organisat		vernment / public bodies o	r poli	icy makers (including	; interr	national
	X	No					
	0	Yes- in framing t	he research agenda				
	0	Yes - in impleme	nting the research agenda				
	0	Yes, in communi	cating /disseminating / using the	results	of the project		
Will the project generate outputs (expertise or scientific advice) which could be used by policy makers? <ul> <li>Yes – as a primary objective (please indicate areas below- multiple answers possible)</li> <li>Yes – as a secondary objective (please indicate areas below - multiple answer possible)</li> <li>No</li> </ul> 13b If Yes, in which fields?						ed by	
Budge Compo Consu Cultur Custor Develo Monet Educar	visual and Medi t etition mers e	ic and	Energy Enlargement Enterprise Environment External Relations External Trade Fisheries and Maritime Affairs Food Safety Foreign and Security Policy Fraud Humanitarian aid		Human rights Information Society Institutional affairs Internal Market Justice, freedom and security Public Health Regional Policy Research and Innovation Space Taxation Transport		





13c If Yes, at which level?					
X Local / regional levels					
X National level					
X European level					
X International level					
H Use and dissemination					
14. How many Articles were published/accepted peer-reviewed journals?	ed for	publi	ication in	3	
To how many of these is open access <sup>5</sup> provided?				3	
How many of these are published in open access journ	nals?				
How many of these are published in open repositories	?				
To how many of these is open access not provide	ed?				
Please check all applicable reasons for not providing					
publisher's licensing agreement would not permit publ	lishing	in a rep	oository		
<ul> <li>□ no suitable repository available</li> <li>□ no suitable open access journal available</li> </ul>					
☐ no funds available to publish in an open access journa	1				
☐ lack of time and resources					
☐ lack of information on open access☐ other <sup>6</sup> :					
15. How many new patent applications ('prior ("Technologically unique": multiple applications for to jurisdictions should be counted as just one application	he same	e inven		e?	0
16. Indicate how many of the following Intelle			Trademark		0
Property Rights were applied for (give nur each box).	nber i	in	Registered design		0
			Other		0
17. How many spin-off companies were created result of the project?	d / are	e plan	ned as a direct		0
Indicate the approximate number	of addi	itional	jobs in these compai	nies:	
18. Please indicate whether your project has a	poten	tial in	npact on employ	meni	t, in comparison
with the situation before your project:	Povoz		pace on oneproj		., vop.u
☐ Increase in employment, or		In sm	all & medium-sized e	enterp	rises
☐ Safeguard employment, or		-	ge companies		
Decrease in employment,	X	None	of the above / not rel	levant	to the project
Difficult to estimate / not possible to quantify	4 41		4 66 4		I. I
19. For your project partnership please estimate resulting directly from your participation is				'F -	Indicate figure:
one person working fulltime for a year) jobs		111110	z ryurvatent (F I	<i>L</i> =	The project involved
one person working jumine jor a year) jobs	•				about 6.6 man-years

<sup>&</sup>lt;sup>5</sup> Open Access is defined as free of charge access for anyone via Internet. <sup>6</sup> For instance: classification for security project.



Diffi	cult to e	stimate / not possible to quantify				
Ι	Media and Communication to the general public					
20.	As part of the project, were any of the beneficiaries professionals in communication or media relations?					
	С	Yes X N	0			
21.		et of the project, have any beneficiang / advice to improve communication Yes X N	on wit		communication	
22		of the following have been used to neral public, or have resulted from			your project to	
	Pres	s Release		Coverage in specialist press		
	☐ Med	lia briefing		Coverage in general (non-special	list) press	
	TV	coverage / report		Coverage in national press		
	Rad	io coverage / report		Coverage in international press		
	Bro	chures /posters / flyers	X	Website for the general public / i	nternet	
(	DV	D/Film/Multimedia	X	Event targeting general public (feexhibition, science café)	estival, conference,	
23	In whi	ch languages are the information p	roduc	ts for the general public pro	oduced?	
[		guage of the coordinator	x	English		

**Question F-10:** Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

#### FIELDS OF SCIENCE AND TECHNOLOGY

- 1. NATURAL SCIENCES
- 1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]
- 1.2 Physical sciences (astronomy and space sciences, physics and other allied subjects)
- 1.3 Chemical sciences (chemistry, other allied subjects)
- 1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)
- 1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)
- 2 ENGINEERING AND TECHNOLOGY



- 2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)
- 2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]
- 2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

#### 3. MEDICAL SCIENCES

- 3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immunohaematology, clinical chemistry, clinical microbiology, pathology)
- 3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)
- 3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

#### 4. AGRICULTURAL SCIENCES

- 4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)
- 4.2 Veterinary medicine
- 5. SOCIAL SCIENCES
- 5.1 Psychology
- 5.2 Economics
- 5.3 Educational sciences (education and training and other allied subjects)
- Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary, methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

#### 6. Humanities

- 6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)
- 6.2 Languages and literature (ancient and modern)
- 6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]



## **Appendix C: Report on societal implications (Hyperstone)**

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

A	General Information (completed automatically when Grant Agreement number is	s enter
Gra	nt Agreement Number:	
Title	e of Project:	
Nam	e and Title of Coordinator:	
В	Ethics	
1. D	oid your project undergo an Ethics Review (and/or Screening)?	
	• If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports?	No
Req	cial Reminder: the progress of compliance with the Ethics Review/Screening uirements should be described in the Period/Final Project Reports under the Section 2 'Work Progress and Achievements'	
2.	Please indicate whether your project involved any of the following issues (tick	N
box	,	
RES	SEARCH ON HUMANS	ı
•	Did the project involve children?	N
•	Did the project involve patients?	N
•	Did the project involve persons not able to give consent?	N
•	Did the project involve adult healthy volunteers?	N
•	Did the project involve Human genetic material?	N
•	Did the project involve Human biological samples?	N
•	Did the project involve Human data collection?	N
RES	SEARCH ON HUMAN EMBRYO/FOETUS	1
•	Did the project involve Human Embryos?	N
•	Did the project involve Human Foetal Tissue / Cells?	N
•	Did the project involve Human Embryonic Stem Cells (hESCs)?	N
•	Did the project on human Embryonic Stem Cells involve cells in culture?	N
•	Did the project on human Embryonic Stem Cells involve the derivation of cells from	N
	abryos?	
Pri	VACY	
	• Did the project involve processing of genetic information or personal data (eg. health sexual lifestyle ethnicity political opinion religious or philosophical	N



2.2.2				
conviction)?				
<ul> <li>Did the project involve tracking the location or observation of people?</li> </ul>				
RESEARCH ON ANIMALS				
<ul> <li>Did the project involve research on animals</li> </ul>	?	N		
<ul> <li>Were those animals transgenic small laborat</li> </ul>	tory animals?	N		
Were those animals transgenic farm animals	s?	N		
• Were those animals cloned farm animals?		N		
• Were those animals non-human primates?		N		
RESEARCH INVOLVING DEVELOPING COUNTRIES				
• Did the project involve the use of local resources (genetic, animal, plant etc)?				
<ul> <li>Was the project of benefit to local communi healthcare, education etc)?</li> </ul>	ty (capacity building, access	to N		
DUAL USE				
<ul> <li>Research having direct military use</li> </ul>		0 Yes 2		
<ul> <li>Research having the potential for terrorist al</li> </ul>	ouse	N		
C Workforce Statistics				
3. Workforce statistics for the project: Please people who worked on the project (on a heat		the number of		
Type of Position	Number of Women	Number of Men		
Scientific Coordinator		1		
Work package leaders		1		
Experienced researchers (i.e. PhD holders)		2		
PhD Students				
Other				
4. How many additional researchers (in comprecruited specifically for this project?	panies and universities) were	e N		
Of which, indicate the number of men:				





D	Gender A	Aspects						
5.	Did you	carry out specif	ic Gender Equality	Actio	ons unde	r the project?	O X	Yes No
6.	Which of	the following ac	tions did you carry	y out a	and how	effective were t	hey?	
							ery ffective	·
			ent an equal opportunity		y	00000	)	
		-	ve a gender balance in the es and workshops on ge		cforce	00000		
		Actions to improve	1 0	ildei		00000	_	
	0	Other:						
7.	the focus o	f the research as, fo and addressed?	nsion associated wi r example, consumers,					
		Yes- pleas	e specify					
	X	No						
E	Synergi	es with Scienc	e Education					
8.	participa	Yes- pleas	working with studestivals and events, e specify					
9.	Did the p		any science educati	ion ma	aterial (e	e.g. kits, website	s, explan	atory
		Yes- pleas	e specify					
		Total Production	- specif					
Г	X	No						
F	Interdis	sciplinarity						
10.	Which d ○	isciplines (see lis Main discipline <sup>7</sup> :	t below) are involv	ed in	your pro	ject?		
	0	Associated disciplin	ne <sup>1</sup> :	0	Associate	ed discipline <sup>1</sup> :		
G	Engagiı	ng with Civil s	ociety and policy	y mal	kers			
11a	•	our project engag nity? (if 'No', go to	ge with societal actor Question 14)	ors be	eyond the	e research	O X	Yes No
11b		d you engage wit patients' groups o No	h citizens (citizens' etc.)?	pane	els / jurie	s) or organised	civil soci	ety

<sup>&</sup>lt;sup>7</sup> Insert number from list below (Frascati Manual).



	0	Yes- in determini	ng what research should be perfo	rmed			
	0	Yes - in implemen	nting the research				
	0	Yes, in communic	eating /disseminating / using the	results	of the project		
11c	organise	the dialogue wi	oject involve actors whose th citizens and organised communication company,	civil	society (e.g.	O X	Yes No
12.	2. Did you engage with government / public bodies or policy makers (including international organisations)						
	X	No					
	0	Yes- in framing th	ne research agenda				
	0	Yes - in implemen	nting the research agenda				
	0	Yes, in communic	eating /disseminating / using the	results	of the project		
13a	policy m	akers? Yes – as a prima	e outputs (expertise or sci ry objective (please indicate area ary objective (please indicate ar	s belo	w- multiple answers poss	ible)	
13b	If Yes, in	which fields?					
Budge Compo Consu Cultur Custor Develo Monet Educat	visual and Medi t etition mers e	ic and Couth	Energy Enlargement Enterprise Environment External Relations External Trade Fisheries and Maritime Affairs Food Safety Foreign and Security Policy Fraud Humanitarian aid		Human rights Information Society Institutional affairs Internal Market Justice, freedom and security Public Health Regional Policy Research and Innovation Space Taxation Transport		

13c If Yes, at which level?				
O Local / regional levels				
O National level O European level				
O International level				
H Use and dissemination				
14. How many Articles were published/accepted peer-reviewed journals?	ed for pub	lication in	0	
To how many of these is open access <sup>8</sup> provided?				
How many of these are published in open access journ	nals?			
How many of these are published in open repositories	?			
To how many of these is open access not provide	ed?			
Please check all applicable reasons for not providing o	open access:			
□ publisher's licensing agreement would not permit publ □ no suitable repository available □ no suitable open access journal available □ no funds available to publish in an open access journal □ lack of time and resources □ lack of information on open access □ other <sup>9</sup> :				
15. How many new patent applications ('prior ("Technologically unique": multiple applications for the jurisdictions should be counted as just one application	he same inve		e?	1 - PCT/EP20 07/062785
16. Indicate how many of the following Intelle		Trademark		N
Property Rights were applied for (give numerous each box).	nber in	Registered design		N
		Other		N
17. How many spin-off companies were created result of the project?	d / are pla	nned as a direct		N
Indicate the approximate number	of additiona	al jobs in these compa	nies:	N
18. Please indicate whether your project has a	potential i	mpact on employ	ment	t, in comparison
with the situation before your project:				
<ul><li>X Increase in employment, or</li><li>X Safeguard employment, or</li></ul>		mall & medium-sized or rge companies	enterp	rises
Decrease in employment,		e of the above / not re	levant	to the project
☐ Difficult to estimate / not possible to quantify				1 3
19. For your project partnership please estimate	-	•		Indicate figure:
resulting directly from your participation in		ne Equivalent ( <i>F1</i>	E =	
one person working fulltime for a year) jobs:	•			

Open Access is defined as free of charge access for anyone via Internet.
For instance: classification for security project.



Diffi	icult to estimate / not possible to quantify					
Ι	Media and Communication to	the g	eneral public			
20.	As part of the project, were any of the beneficiaries professionals in communication or media relations?					
	O Yes X N	Ю				
21.	As part of the project, have any beneficial training / advice to improve communication Yes X N		-	communication		
22	Which of the following have been used to the general public, or have resulted from			your project to		
	Press Release		Coverage in specialist press			
	☐ Media briefing		Coverage in general (non-special	list) press		
	TV coverage / report		Coverage in national press			
	Radio coverage / report		Coverage in international press			
	Brochures /posters / flyers		Website for the general public / i	internet		
	DVD /Film /Multimedia		Event targeting general public (feakhibition, science café)	estival, conference,		
23	In which languages are the information p	roduc	ts for the general public pr	oduced?		
	☐ Language of the coordinator		English			
	Other language(s)					

**Question F-10:** Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

#### FIELDS OF SCIENCE AND TECHNOLOGY

- 1. NATURAL SCIENCES
- 1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]
- 1.2 Physical sciences (astronomy and space sciences, physics and other allied subjects)
- 1.3 Chemical sciences (chemistry, other allied subjects)
- 1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)
- 1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)
- 2 ENGINEERING AND TECHNOLOGY



- 2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)
- 2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]
- 2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

#### 3. MEDICAL SCIENCES

- 3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immunohaematology, clinical chemistry, clinical microbiology, pathology)
- 3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)
- 3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

#### 4. AGRICULTURAL SCIENCES

- 4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)
- 4.2 Veterinary medicine
- 5. SOCIAL SCIENCES
- 5.1 Psychology
- 5.2 Economics
- 5.3 Educational sciences (education and training and other allied subjects)
- Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary, methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

#### 6. Humanities

- 6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)
- 6.2 Languages and literature (ancient and modern)
- 6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]



## **Appendix D: Report on societal implications (ULANC)**

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

A General Information (completed automatically when Grant Agreement	number is entered.
Grant Agreement Number:	
Title of Dunicate	
Title of Project:	
Name and Title of Coordinator:	
B Ethics	
1. Did your project undergo an Ethics Review (and/or Screening)?	
1. Did your project undergo an Etines Review (and/or Screening):	
• If Yes: have you described the progress of compliance with the relevant Review/Screening Requirements in the frame of the periodic/final reports?	
Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Sec	ction
3.2.2 'Work Progress and Achievements'	
2. Please indicate whether your project involved any of the following issues	(tick No
box):	(4-4-1
RESEARCH ON HUMANS	
Did the project involve children?	N
Did the project involve patients?	N
Did the project involve persons not able to give consent?	N
Did the project involve adult healthy volunteers?	N
Did the project involve Human genetic material?	N
Did the project involve Human biological samples?	N
Did the project involve Human data collection?	N
RESEARCH ON HUMAN EMBRYO/FOETUS	
Did the project involve Human Embryos?	N
Did the project involve Human Foetal Tissue / Cells?	N
Did the project involve Human Embryonic Stem Cells (hESCs)?	N
Did the project on human Embryonic Stem Cells involve cells in culture?	N
Did the project on human Embryonic Stem Cells involve the derivation of ce	ells from N
Embryos?	
PRIVACY	
Did the project involve processing of genetic information or personal of health, sexual lifestyle, ethnicity, political opinion, religious or philo	. •



conviction)?		
<ul> <li>Did the project involve tracking the location</li> </ul>	on or observation of people?	N
RESEARCH ON ANIMALS		
<ul> <li>Did the project involve research on animal</li> </ul>	s?	N
<ul> <li>Were those animals transgenic small labor</li> </ul>	atory animals?	N
<ul> <li>Were those animals transgenic farm anima</li> </ul>	ls?	N
• Were those animals cloned farm animals?		N
• Were those animals non-human primates?		N
RESEARCH INVOLVING DEVELOPING COUNTRIES	S	
• Did the project involve the use of local res	ources (genetic, animal, plant of	etc)?
Was the project of benefit to local community	nity (capacity building, access	to N
healthcare, education etc)?		
DUAL USE		
<ul> <li>Research having direct military use</li> </ul>		N
<ul> <li>Research having the potential for terrorist</li> </ul>	abuse	N
C Workforce Statistics		
3. Workforce statistics for the project: Plear people who worked on the project (on a h		the number of
Type of Position	Number of Women	Number of Men
Scientific Coordinator		1
Work package leaders		1
Experienced researchers (i.e. PhD holders)		3
PhD Students		1
Other	1	
4. How many additional researchers (in con	manies and universities) wer	e 3
recruited specifically for this project?		
Of which, indicate the number of men:		3
of which, mulcare the number of men.		3



Gender Aspects										
Did you carry out specific Gender Equality Actions under the project?  Yes Yes										
X No										
Which of the following actions did you carry out and how effective were they?										
Not at all Very effective effective										
☐ Design and implement an equal opportunity policy ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐										
Set targets to achieve a gender balance in the workforce										
<ul><li>□ Organise conferences and workshops on gender</li><li>□ Actions to improve work-life balance</li><li>□ ○ ○ ○ ○</li></ul>										
O Other:										
Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?										
Yes- please specify										
X No										
Synergies with Science Education										
Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?										
Yes- please specify										
X No										
Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?										
X Yes- please specify Online 3-D tool collection available to general public http://3d-performance.lancs.ac.uk/										
O No										
Interdisciplinarity										
Which disciplines (see list below) are involved in your project?										
O Main discipline <sup>10</sup> : 2.2										
O Associated discipline <sup>1</sup> :1.1 O Associated discipline <sup>1</sup> :1.2										
Engaging with Civil society and policy makers										
Did your project engage with societal actors beyond the research community? (if 'No', go to Question 14)  Yes  No										
o If yes, did you engage with citizens (citizens' panels / juries) or organised civil society										
(NCOs, notiontal groups etc.)?										
(NGOs, patients' groups etc.)?  O No										
1										

<sup>&</sup>lt;sup>10</sup> Insert number from list below (Frascati Manual).



O Yes, in communicating /disseminating / using the results of the project								
organise	the dialogue wi	oject involve actors whose th citizens and organised communication company,	civil	society (e.g.	O X	Yes No		
12. Did you engage with government / public bodies or policy makers (including international organisations)								
X O O	Yes - in implemen	ne research agenda nting the research agenda cating /disseminating / using the	results	of the project				
<ul> <li>Will the project generate outputs (expertise or scientific advice) which could be used by policy makers?</li> <li>Yes – as a primary objective (please indicate areas below- multiple answers possible)</li> <li>Yes – as a secondary objective (please indicate areas below - multiple answer possible)</li> <li>X</li> <li>No</li> </ul> 13b If Yes, in which fields?								
Agriculture Audiovisual and Med Budget Competition Consumers Culture Customs Development Econon Monetary Affairs Education, Training, Employment and Soc	nic and Youth	Energy Enlargement Enterprise Environment External Relations External Trade Fisheries and Maritime Affairs Food Safety Foreign and Security Policy Fraud Humanitarian aid		Human rights Information Society Institutional affairs Internal Market Justice, freedom and security Public Health Regional Policy Research and Innovation Space Taxation Transport				



FP7-ICT-2007-1	and l			E-215030 olications
13c If Yes, at which level?  O Local / regional levels O National level O European level O International level				
H Use and dissemination				
14. How many Articles were published/accepted for pepeer-reviewed journals?	ublica	tion in	2 pu	blished, 2 under review
To how many of these is open access <sup>11</sup> provided?			2	
How many of these are published in open access journals?			0	
How many of these are published in open repositories?			2	
To how many of these is open access not provided?	0			
Please check all applicable reasons for not providing open acce				
<ul> <li>□ publisher's licensing agreement would not permit publishing in</li> <li>□ no suitable repository available</li> <li>□ no suitable open access journal available</li> <li>□ no funds available to publish in an open access journal</li> <li>□ lack of time and resources</li> <li>□ lack of information on open access</li> <li>□ other<sup>12</sup>:</li> <li>15. How many new patent applications ('priority filing</li> </ul>			a?	N
("Technologically unique": multiple applications for the same in jurisdictions should be counted as just one application of grant)	nventior		•	
16. Indicate how many of the following Intellectual		rademark		N
Property Rights were applied for (give number in each box).	Re	egistered design		N
	Ot	ther		N
17. How many spin-off companies were created / are presult of the project?	planne	d as a direct		N
Indicate the approximate number of addition	onal job	s in these compa	nies:	N
$\times$ Safeguard employment, or $\times$ Ir	n small on large of the large o	& medium-sized companies the above / not rel	enterp	rises
resulting directly from your participation in Full T			TE.	in in the second

8 FTE within project

<sup>=</sup> one person working fulltime for a year) jobs:

 $<sup>^{11}</sup>$  Open Access is defined as free of charge access for anyone via Internet.  $^{12}$  For instance: classification for security project.



Diffi	icult t	to estimate / not possible to quantify	7							
Ι	I Media and Communication to the general public									
20.		part of the project, were any of th dia relations?	e l	beneficia	ries professionals in comm	unication or				
		O Yes X		No						
21.	21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?  O Yes X No									
22		ich of the following have been use general public, or have resulted f				your project to				
>	<b>〈</b> ]	Press Release		×	Coverage in specialist press					
Ţ		Media briefing			Coverage in general (non-special	ist) press				
Į.	<b>」</b> ′	TV coverage / report			Coverage in national press					
Ţ		Radio coverage / report			Coverage in international press					
Ţ		Brochures /posters / flyers		×	Website for the general public / i	nternet				
		DVD /Film /Multimedia		×	Event targeting general public (for exhibition, science café)	estival, conference,				
23	In v	which languages are the informati	or	n produc	ts for the general public pro	oduced?				
[		Language of the coordinator		×	English					
Г	<b>1</b>	Other language(s)								

**Question F-10:** Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

#### FIELDS OF SCIENCE AND TECHNOLOGYS

- 1. NATURAL SCIENCES
- 1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]
- 1.2 Physical sciences (astronomy and space sciences, physics and other allied subjects)
- 1.3 Chemical sciences (chemistry, other allied subjects)
- 1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)
- 1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)
- 2 ENGINEERING AND TECHNOLOGY



- 2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)
- 2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]
- 2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

#### 3. MEDICAL SCIENCES

- 3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immunohaematology, clinical chemistry, clinical microbiology, pathology)
- 3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)
- 3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

#### 4. AGRICULTURAL SCIENCES

- 4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)
- 4.2 Veterinary medicine

#### 5. SOCIAL SCIENCES

- 5.1 Psychology
- 5.2 Economics
- 5.3 Educational sciences (education and training and other allied subjects)
- Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary, methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

#### 6. Humanities

- 6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)
- 6.2 Languages and literature (ancient and modern)
- 6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]



## Appendix E: Report on societal implications (LETI)

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

A General Information (completed automatically when Grant Agreement number is	s enterea.
Grant Agreement Number:	
Title of Project:	
Name and Title of Coordinator:	
B Ethics	
1. Did your project undergo an Ethics Review (and/or Screening)?	
• If Yes: have you described the progress of compliance with the relevant Ethics	No
Review/Screening Requirements in the frame of the periodic/final project	
reports?	
Special Reminder: the progress of compliance with the Ethics Review/Screening	
Requirements should be described in the Period/Final Project Reports under the Section	
3.2.2 'Work Progress and Achievements'	
2. Please indicate whether your project involved any of the following issues (tick box):	No
RESEARCH ON HUMANS	
Did the project involve children?	N
Did the project involve patients?	N
Did the project involve persons not able to give consent?	N
Did the project involve adult healthy volunteers?	N
Did the project involve Human genetic material?	N
Did the project involve Human biological samples?	N
Did the project involve Human data collection?	N
RESEARCH ON HUMAN EMBRYO/FOETUS	
Did the project involve Human Embryos?	N
Did the project involve Human Foetal Tissue / Cells?	N
Did the project involve Human Embryonic Stem Cells (hESCs)?	N
Did the project on human Embryonic Stem Cells involve cells in culture?	N
Did the project on human Embryonic Stem Cells involve the derivation of cells from	N
Embryos?	



PRIVACY						
• Did the project involve processing of genetic			N			
health, sexual lifestyle, ethnicity, political or	pinion, religious or ph	ilosophical				
conviction)?						
Did the project involve tracking the location or	bservation of people?		N			
RESEARCH ON ANIMALS			N			
Did the project involve research on animals?						
Were those animals transgenic small laboratory a	animals?		N			
Were those animals transgenic farm animals?			N			
<ul> <li>Were those animals cloned farm animals?</li> </ul>			N			
<ul><li>Were those animals non-human primates?</li></ul>			N			
RESEARCH INVOLVING DEVELOPING COUNTRIES						
<ul> <li>Did the project involve the use of local resources</li> </ul>	(genetic, animal, plant e	etc)?	N			
Was the project of benefit to local community (c	apacity building, access	to	N			
healthcare, education etc)?						
DUAL USE						
Research having direct military use						
Research having the potential for terrorist abuse						
C Workforce Statistics						
3. Workforce statistics for the project: Please indi		the numbe	r of			
people who worked on the project (on a headco	unt basis).					
Type of Position	Number of Women	Number	of Men			
Scientific Coordinator						
Work package leaders						
Experienced researchers (i.e. PhD holders) 4 18						
PhD Students						
Other						
4. How many additional researchers (in companies and universities) were recruited specifically for this project?						
Of which, indicate the number of men:						



D	Gender Aspects										
5.	Did you carry out specific Gender Equality Actions under the project?  O  Yes  No										
6.	Which of the following actions did you carry out and how effective were they?  Not at all effective effective										
	□ Design and implement an equal opportunity policy       ○ ○ ○ ○ ○         □ Set targets to achieve a gender balance in the workforce       ○ ○ ○ ○ ○         □ Organise conferences and workshops on gender       ○ ○ ○ ○ ○         □ Actions to improve work-life balance       ○ ○ ○ ○ ○         ○ Other:       ○ ○ ○ ○ ○										
7.	Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?										
	Yes- please specify										
	X No										
E	Synergies with Science Education										
8.	Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?  Yes- please specify										
•	X No										
9.	Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?										
	X Yes- please specify Online 3-D tool collection available to general public http://3d-performance.lancs.ac.uk/										
F	O No Interdisciplinarity										
10.	Which disciplines (see list below) are involved in your project?  O Main discipline <sup>13</sup> : 2.2 O Associated discipline <sup>1</sup> :1.1 O Associated discipline <sup>1</sup> :1.2										
G	Engaging with Civil society and policy makers										
11a	Did your project engage with societal actors beyond the research community? (if 'No', go to Question 14)  Yes X No										
11b	If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?  O No O Yes- in determining what research should be performed O Yes - in implementing the research										

<sup>&</sup>lt;sup>13</sup> Insert number from list below (Frascati Manual).



	0	Yes, in communic	eating /disseminating / using the	results	of the project				
11c Ir	O X	Yes No							
12. Did you engage with government / public bodies or policy makers (including international organisations)									
	X No O Yes- in framing the research agenda O Yes - in implementing the research agenda O Yes, in communicating /disseminating / using the results of the project								
<ul> <li>Will the project generate outputs (expertise or scientific advice) which could be used by policy makers?</li> <li>Yes – as a primary objective (please indicate areas below- multiple answers possible)</li> <li>Yes – as a secondary objective (please indicate areas below - multiple answer possible)</li> <li>X</li> <li>No</li> </ul> 13b If Yes, in which fields?									
Agriculture Audiovisua Budget Competitio Consumers Culture Customs Developme Monetary A Education, Employmen	n and Medi- n ent Econom Affairs Training, Y	ic and	Energy Enlargement Enterprise Environment External Relations External Trade Fisheries and Maritime Affairs Food Safety Foreign and Security Policy Fraud Humanitarian aid		Human rights Information Society Institutional affairs Internal Market Justice, freedom and security Public Health Regional Policy Research and Innovation Space Taxation Transport				

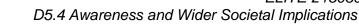
## 30 S

uary 31, 2011 D5.4 Awareness and Wider Societal Implication	ICT-2007-1 uary 31, 2011	ELITE-21503 D5.4 Awareness and Wider Societal Implication
---	-----------------------------	--

13c If Yes, at which level?						
O Local / regional levels						
O National level						
O European level						
O International level						
H Use and dissemination						
14. How many Articles were published/accept peer-reviewed journals?	ted for	publi	ication in	1		
To how many of these is open access 14 provided	!?			0		
How many of these are published in open access jour	rnals?			1		
How many of these are published in open repositorie	es?			0		
To how many of these is open access not provid	ed?			0		
Please check all applicable reasons for not providing						
□ publisher's licensing agreement would not permit publishing in a repository □ no suitable repository available □ no suitable open access journal available □ no funds available to publish in an open access journal □ lack of time and resources □ lack of information on open access □ other <sup>15</sup> :						
15. How many new patent applications ('prior ("Technologically unique": multiple applications for jurisdictions should be counted as just one application	the same	inven		e?	N	
16. Indicate how many of the following Intelle			Trademark		N	
Property Rights were applied for (give nu each box).	mber i	n	Registered design		N	
			Other		N	
17. How many spin-off companies were create result of the project?		N				
Indicate the approximate number	r of addi	tional	jobs in these compa	nies:	N	
18. Please indicate whether your project has a	notoni	tial in	nnact on amploy	man	t in comparison	
with the situation before your project:	potem	uai III	iipaci oli eliipioy	inen	t, in comparison	
☐ Increase in employment, or		In sm	all & medium-sized	enterp	rises	
☐ Safeguard employment, or						
☐ Decrease in employment,		None	of the above / not re	levant	to the project	
☐ Difficult to estimate / not possible to quantify						
19. For your project partnership please estima					Indicate figure:	
resulting directly from your participation		Time	e Equivalent (F7	ľ <b>E</b>	8 FTE within	
= one person working fulltime for a year) jo	bs:				project	

Open Access is defined as free of charge access for anyone via Internet.
 For instance: classification for security project.

ı



Dif	ficul	lt to est	imate / not possible t	to quantify					
Ι	I Media and Communication to the general public								
20.	20. As part of the project, were any of the beneficiaries professionals in communication or media relations?								
		0	Yes	X N	o				
21.	21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?  O Yes X No								
22			of the following have			unicate information about project?	your project to		
		Press	Release			Coverage in specialist press			
		Media	briefing			Coverage in general (non-special	list) press		
			verage / report			Coverage in national press	. •		
		Radio	coverage / report			Coverage in international press			
		Broch	ures /posters / flyers		X	Website for the general public / i	nternet		
		DVD	/Film /Multimedia		X	Event targeting general public (for exhibition, science café)	estival, conference,		
23	Ir	n which	n languages are the	information p	roduct	ts for the general public pro	oduced?		
		_	age of the coordinator language(s)		X	English			

Question F-10: Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

#### FIELDS OF SCIENCE AND TECHNOLOGYS

- 1. NATURAL SCIENCES
- 1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]
- Physical sciences (astronomy and space sciences, physics and other allied subjects) 1.2
- 1.3 Chemical sciences (chemistry, other allied subjects)
- 1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)
- 1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)
- 2 **ENGINEERING AND TECHNOLOGY**



- 2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)
- 2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]
- 2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

#### 3. MEDICAL SCIENCES

- 3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immunohaematology, clinical chemistry, clinical microbiology, pathology)
- 3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)
- 3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

#### 4. AGRICULTURAL SCIENCES

- 4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)
- 4.2 Veterinary medicine

#### 5. SOCIAL SCIENCES

- 5.1 Psychology
- 5.2 Economics
- 5.3 Educational sciences (education and training and other allied subjects)
- Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary, methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

#### 6. Humanities

- 6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)
- 6.2 Languages and literature (ancient and modern)
- 6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]

