



*Foresight*

# *Assisted Living*

Targeted scenario N°1

**Glimpses of the future  
from the BOHEMIA study**



## **Assisted Living - Targeted scenario N°1**

European Commission  
Directorate-General for Research and Innovation  
Directorate A Policy Development and Coordination  
Unit A.3 Horizon 2020 Policy and Foresight  
Contact Nikolaos Kastrinos  
E-mail [nikolaos.kastrinos@ec.europa.eu](mailto:nikolaos.kastrinos@ec.europa.eu)  
[RTD-PUBLICATIONS@ec.europa.eu](mailto:RTD-PUBLICATIONS@ec.europa.eu)  
European Commission  
B-1049 Brussels

Manuscript completed in March 2018

This document has been prepared for the European Commission however it reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

More information on the European Union is available on the internet (<http://europa.eu>).

Luxembourg: Publications Office of the European Union, 2018

PDF

ISBN 978-92-79-81046-6

doi: 10.2777/100303

KI-02-18-403-EN-N

© European Union, 2018.

Reuse is authorised provided the source is acknowledged. The reuse policy of European Commission documents is regulated by Decision 2011/833/EU (OJ L 330, 14.12.2011, p. 39).

For any use or reproduction of photos or other material that is not under the EU copyright, permission must be sought directly from the copyright holders.

Cover page image: © Lonely # 46246900, ag visuell #16440826, Sean Gladwell #6018533, LwRedStorm #3348265, 2011; kras99 #43746830, 2012. Source: Fotolia.com.

Icons: © UN Sustainable Development Goals Source: <http://www.un.org/sustainabledevelopment/news/communications-material/>

EUROPEAN COMMISSION

***Assisted Living***  
**Targeted scenario N°1**

***Glimpses of the future***  
***from the BOHEMIA study***

## **About BOHEMIA**

*BOHEMIA is a foresight study (contract N° Contract PP-03021-2015) designed specifically to support the preparation of the next framework programme.*

*The study put forward policy recommendations for the next framework programme, based on a foresight processes involving scenario development, a Delphi survey and an online consultation.*

*As part of its recommendations, the study identified 19 likely future scenarios with disruptive implications and associated priority directions for EU research and innovation.*

*The full range of the results of the study is available at <https://ec.europa.eu/research/foresight>*

## Targeted scenario N° 1

### *Assisted Living*

#### Summary

It is 2040. In the ageing populations of Europe, but also abroad, the demand for assistance in daily living has more than tripled over the last 25 years. New service concepts combining automation, robotic assistance, digital helpers, virtual trainers and small exoskeletons have transformed care, assistance and the relevant industries.

#### UN Sustainable Development Goals (SDGs) most relevant to this scenario:



## **The scenario**

By 2040, the market for healthcare services that promote autonomous living for elderly people, and especially those suffering from cognitive ailments (like dementia, Alzheimer's, etc.), has more than tripled from 2016. Digital helpers have become commonplace. Small robot companions (social robots and emergency helpers) are available at reasonable prices. Day management avatars, cleaning robots and automatic cooking machines support domestic daily life activities, and fit seamlessly into structural and interior designs for living spaces.

Medical apps on patients' devices alert doctors and care personnel in cases of emergency for example when there are sudden changes in physical or mental conditions (e.g. depression). Language and behaviour pattern recognition support early warning and diagnoses so that effective treatments can be started, and patients can stay motivated in their care regime. During the last 30 years, new ways of virtual entertainment, training the brain exercises, virtual reality trainers, virtual travelling, physical education animation, dancing and gaming exercises have been developed. These programs are often performed online in groups - facilitating social interaction and addressing feelings of isolation or loneliness. Cultural events like virtual visits to a museum add to this offer - but they are already available for a long time, now. Many of the apps focus on bringing people of different age groups together directly and physically - integrating with autonomous car services, and identifying locations where they can meet, chat and exercise together.

For the physically disabled people, exoskeletons have made a huge difference. They enable people to carry things and move about, while simultaneously serving as trainers to keep the muscles and the skeleton in shape. Exoskeletons are easy to handle and can be steered by thinking. Both exoskeletal support and brainwave human-machine interaction have many applications outside the medical field but they are not widely used as there still is a lot of scepticism and concern about their effects.

Support to autonomous living has tapered the demand to build new hospitals and the hospitals sector has become more concentrated. Household services and healthcare offer attractive jobs with high salaries, reasonable working times and – most important – a work profile that leaves ample room for personal interaction, as heavy and routine tasks are taken over by a range of smart devices. More and more young people are interested in caregiving because they feel that it is more than a job - it is fulfilling and motivating activity. These jobs are well respected within society, and media report regularly about the activities and adventures of caregivers. New schools for caregiving and services are teaching the different skills, partly online and systematized in several directions.

## **Relevance for Europe**

Europe is an ageing society, leading the growth in demand for assistive devices and health care services, driven by the high appreciation personal dignity and autonomy in European societies. Mental health problems are on the increase. New special services that allow these people to stay in their private surrounding are needed.

Assisted living has, of course, a broader importance. Families with children also need support as more and more couples have to work and do not find the time for household duties. Other demographically younger parts of the world will be following in Europe's footsteps. E-health systems and assistive devices will continue to be growing markets for the near and long-term future.

## **Contribution towards the UN Sustainable Development Goals (SDGs)**

Healthcare costs are increasing across the world. To ensure healthy lives and promote well-being for all at all ages (SDG 3) and reduce the inequality within and among the countries (SDG 10) new combinations of technical and social solutions are needed.

## **Implications for EU policy**

The EU can support framework conditions that promote the rapid diffusion of technologies and solutions across the health services of the different countries, ensuring that the market develops and that the demand is channelled to the industry that can respond to it. Its health and consumer protection policies can play an important role here. Education is also important as the world of care will provide opportunities for services and employment. For Industry, Research and Innovation policy assisted living is a massive opportunity area, and it is very important that it is approached as such, supporting market growth and appropriate regulation, for example by ensuring compatibility between different technologies, and ensuring that Europe's industry responds appropriately.

---

### **Future Directions for EU R&I policy recommended by the public consultation**

- **E-health solutions including telemedicine, measuring health data and transfer**
  - **Research on assistive technologies and the impacts of their application**
  - **Ethical issues around assisted living (esp. self-determination)**
  - **Training intelligent assistants**
  - **Developing elderly care emotional robots for smart active and assisted ageing housing**
  - **Answering the needs of the assisted people**
  - **Encouraging user innovation and co-creation of devices**
-

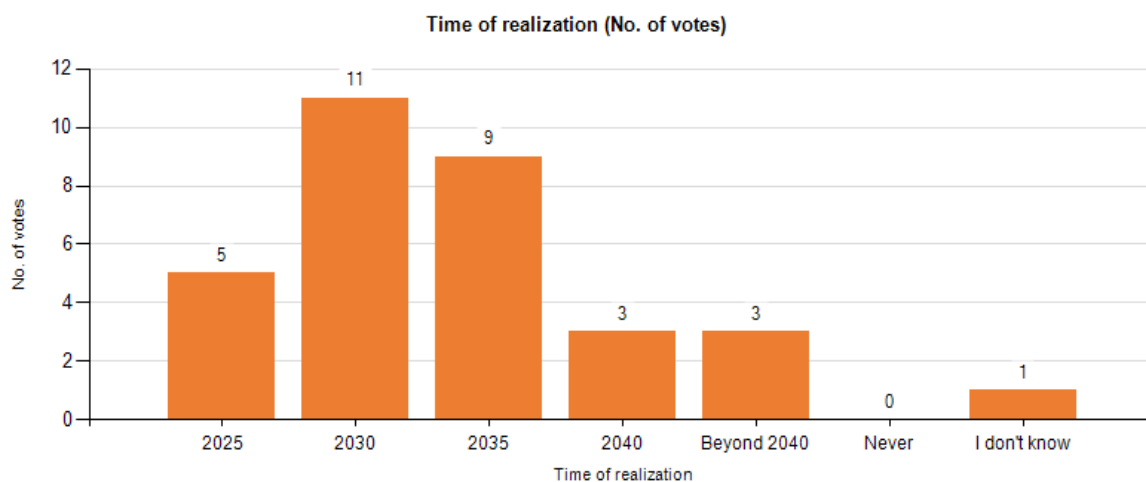
## **Annex: Relevant Data from the Delphi Survey**

The Delphi survey of the BOHEMIA study asked experts about the time of realization of 143 statements about the future, and about the relevance of Research and Innovation for that realization, or about the relevance of the realization for Research and Innovation policy. The experts were asked to justify their judgements with arguments. The whole data set has been published and can be found at: <https://ec.europa.eu/research/foresight>

This annex includes the parts of the data set that are relevant to this scenario.

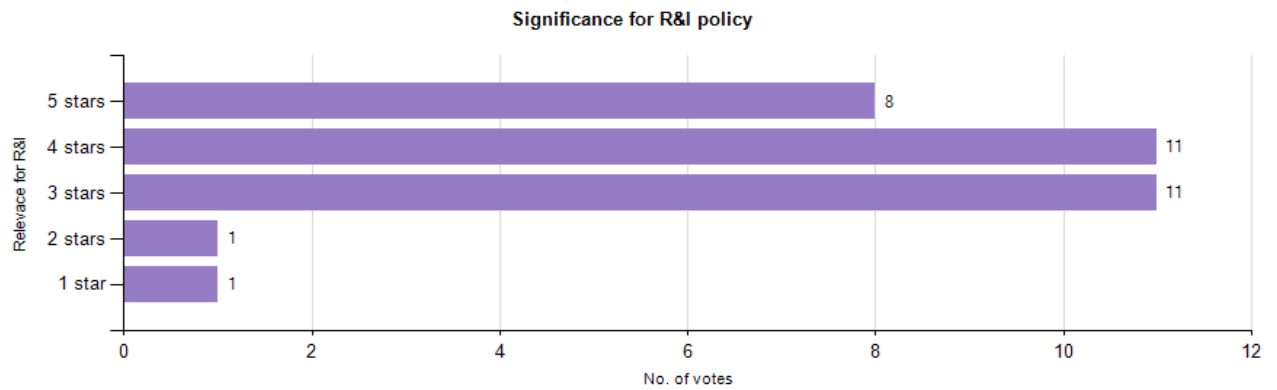


**The market for healthcare services that promote autonomous living for those suffering from cognitive ailments (like dementia, Alzheimer's, etc.) has tripled (compared to 2016)**



**Number of respondents:** 32

Arguments for time of realization	No. of votes
As the number of dement people is increasing drastically, the markets will be developed soon.	25
The needs of individuals with dementia still have to be identified, then adequate services and markets can be developed.	14
Neuroscience is young but attracts funds. Continuous better understanding of neurodegeneration will increase the supply of patient healthcare services.	10
A comprehensive approach aimed at slowing down (even interrupting) the aging process could provide answers to the vast majority of neurodegenerative diseases.	8
Prevention of neurodegenerative diseases will gain increasing attention due to the generally irreversible nature of such diseases.	5
New ways of activating the brain in home care - VR, dancing, social homes etc.	2
Family carers and their needs should be taken into account; as well as financial mechanisms for ensuring that care services are affordable.	2

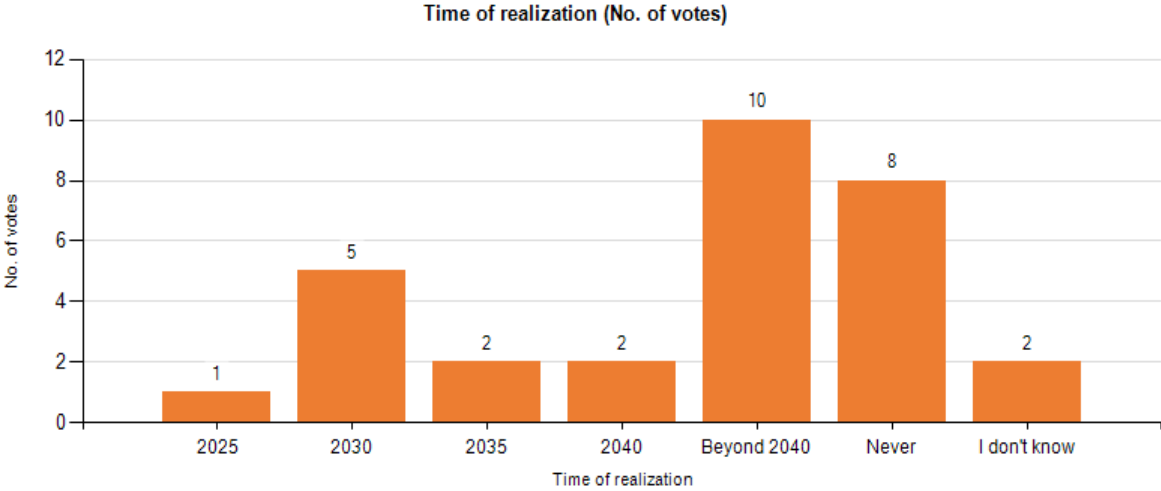


**Average:** 3.75

**Dispersion:** 0.94

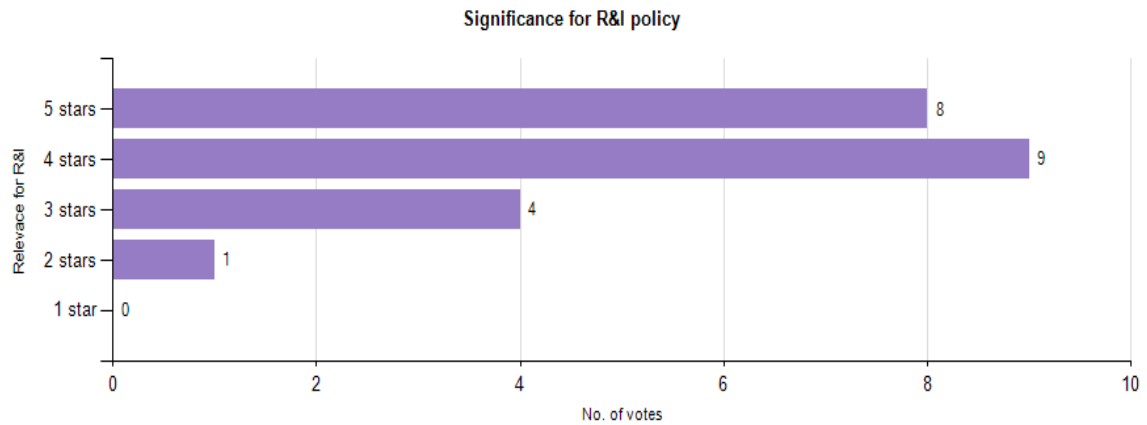
<b>Arguments regarding the significance for R&amp;I policy</b>	<b>No. of votes</b>
Completely new services and approaches have to be developed and regulated.	23
The growing number of dementia patients leads to a new market for care offers focusing on participation - this has to be regulated.	18
Early identification of the potential for neurodegenerative disease could lead to genetic modifications or other intervention to prevent onset.	5
More focus on active aging and healthy living - sleep disorder is major causality related to dementia and Alzheimer as the most frequent form of dementia	5
If the market for health services develops in favor of cures that attack aging, neurodegenerative diseases could be overcome and the demographic crisis curbed.	4
Stephen Hawking points to the effectiveness of prosthetics with neurodegenerative disease. Growth of technology to assist those afflicted will expand.	4
Family carers need to be educated and supported in order to allow ageing in place for their dependent family members. Early diagnostic is necessary.	2

**Compared to 2016, 60% of all European hospitals have closed down**



**Number of respondents:** 30

Arguments for time of realization	No. of votes
More and more diagnosis, advice and treatments take place online.	15
Due to the costs of hospitalization, the health care system will try to diminish the number of patients hospitalized, replacing this by more cost-effective solutions.	10
Especially smaller cities and local communities can't afford the costs anymore.	8
Hospitals are replaced by home care.	8
EU population will live longer. Even if we will live healthier and use smart health solutions, closure of 60% of European hospitals seems to be ambitious.	7
Some hospitals will specialize and some will be smaller, not offering full range of service. But not completely close.	7
Hospitals are cost-intensive and personnel is rare - a lot of hospitals have already been closed.	3
Home monitoring innovations for patients with chronic diseases will help raise the cost of an aging population and trigger changes in geography,	3
Understanding the processes of aging will enable us to transform the diseases that 90% of Europeans die into chronic diseases. Personal preventive medicine will reduce the need to go to the hospital.	3

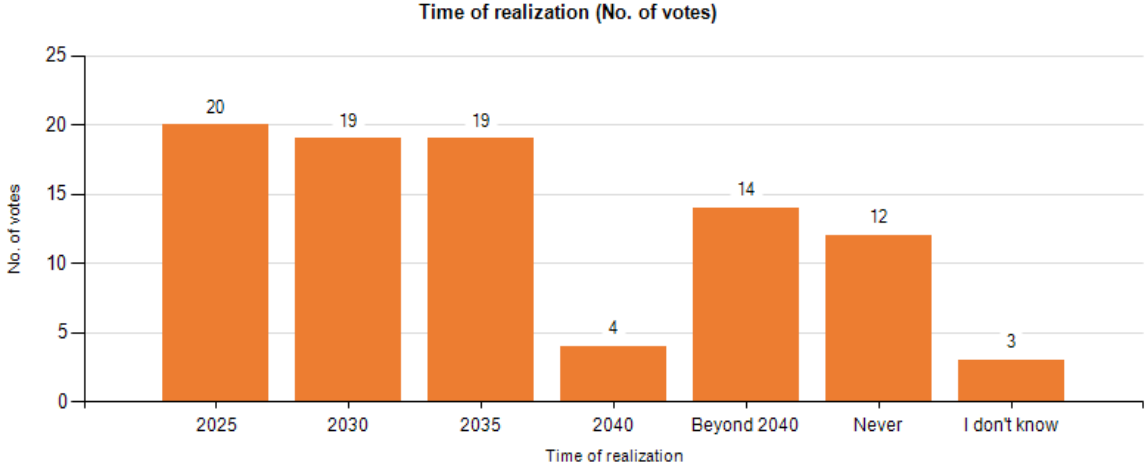


**Average:** 4.09

**Dispersion:** 0.73

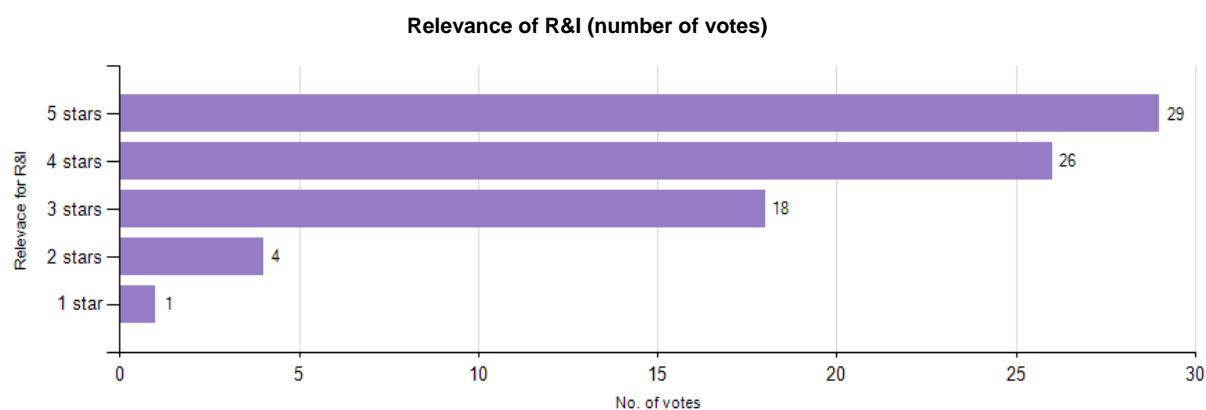
<b>Arguments regarding the significance for R&amp;I policy</b>	<b>No. of votes</b>
People want and need to achieve a longer independent life, the integration of technologies they might need (including technical care) into homes has to be fostered and accompanied by regulation.	21
To have a hospital in close distance to everybody for cases of emergency is still important and has to be maintained (public task).	13
Mobile hospitals are proposed as a solution. Such a system needs to be researched, designed, built up, tested, and re-developed.	9
Healthcare originated disease is best controlled by lessening the concentration of ill people. Home care, outpatient clinics, offer solutions.	4
Hospitals have a problem with accumulation of bacteria and keeping hygienic standards. Therefore, it is often better not to accumulate too many people at one place/ hospital. A CDC evaluation found 7 in 10 patients with sepsis had recently used health car	3

**More than 80% of the population older than 12 years has an avatar as a personal assistant**



**Number of respondents :** 89

<b>Arguments regarding the time of realization</b>	<b>No. of votes</b>
The progress in AI emotion recognition and communication increases chances of avatar adoption in the next decade.	54
Technology facilitates communication but doesn't replace real human interaction.	47
The personal assistant responds to the shifting demands of an aging society.	38
There are large categories of people reluctant to virtual reality.	32
'Personal assistance' is too broad a concept that an avatar can capture, they will only serve for very limited purposes - but for those purposes they will be a real help.	31
Robots provide social and medical care for the elderly.	23
Human-machine interfaces will be intuitive and multimodal.	23
Semantic and knowledge model-based search engines will be able to give relevant answers.	16
People get used to avatars to replace them in games more and more, they will soon want to have one in real life.	16
Avatars will not work as a substitute for personal interaction and will not see a huge uptake because they will be seen as too cumbersome, apart from niche scenarios.	12
Interaction with concrete or abstract objects will be facilitated by AI and speech recognition, but will not take the form of a 'personal assistant' persona.	11
It will take substantial time to prove that the data gained by the avatar will not be misused by third parties, as well as substantial long-term benefits, in order to establish trust in the technology.	8
In another generation having an 'on-line' persona will be taken for granted.	8
Real-life experiences are increasingly valued over and above virtual existences. Read E.M. Forster's short story 'The Machine Stops'.	4
Elderly people lacking sufficient human interaction may prefer avatars but social pressure is unlikely to broaden acceptance beyond defined communities such as techs, military, etc.	3
The main statement is not considering the prevailing market-economic philosophy and policy needing a large part of the world population to work for others at varying salary scales, participation, etc.	1
The concept of an avatar is to represent a person, not to assist a person.	1

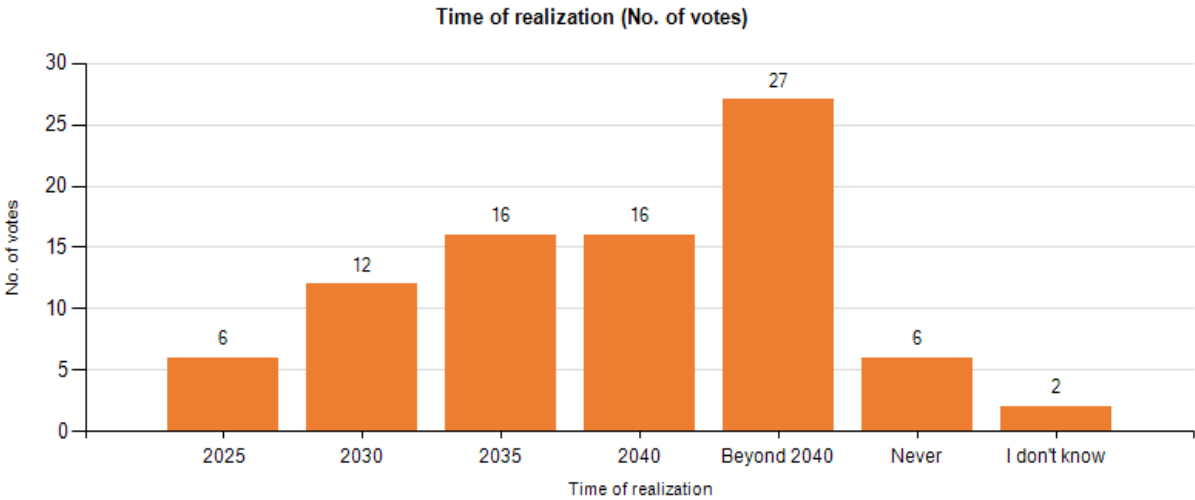


**Average:** 4

**Dispersion:** 0.92

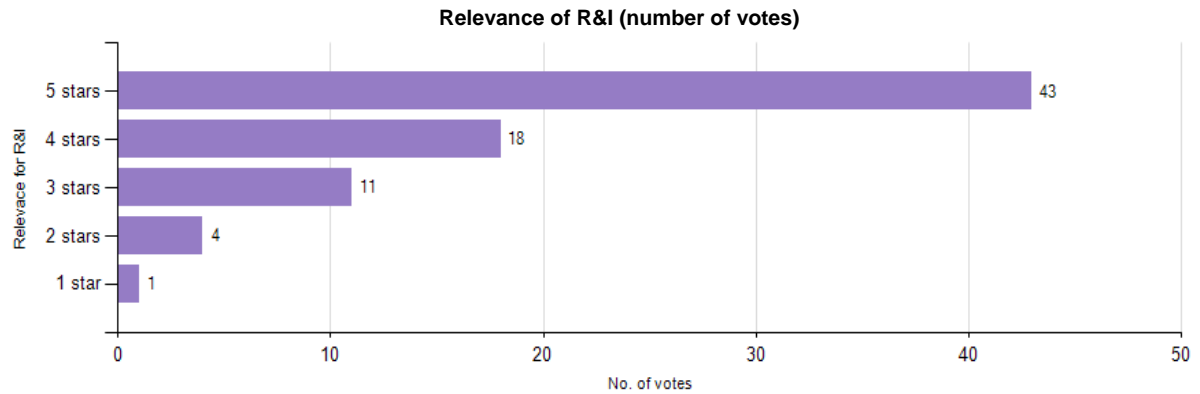
<b>Arguments regarding the relevance of R&amp;I</b>	<b>No. of votes</b>
Research needs to address questions on how virtual assistants can correctly understand human goals and intentions.	77
Progress in natural language processing needs to be made.	41
There is need to assess the psychological impact of virtual assistants.	35
At least as big as the technological challenge will be the societal challenge to make people comfortable and accepting of avatars.	23
AI competences and technologies are important for Europe to be able to address these needs from multi cultural European perspective	17
As soon as a rudimentary market for personal assistant avatars is functional, the development is greatly accelerated.	11
Research to redefine the meaning of 'humanity' is necessary.	9
Artificial intelligence will require more and faster computation capabilities. Particularly, heterogeneous integration at hardware-level is required to support server clusters advancements.	9
Real needs (and/or European challenges) driven research will be recognized	7
Existing European research results have to be known and explored	5
PAs are likely to first have large penetration in schools to improve education and in professions where multiple details and people need to be tracked.	2
Helping assistance offer a means of social control - take your meds, don't smoke-so may be favoured by authoritarian societies - big brother is with you!	1

**Functional brain-to-machine interfaces are used by 50% of the EU population for work or entertainment**



**Number of respondents :** 83

<b>Arguments regarding the time of realization</b>	<b>No. of votes</b>
The design and implementation of an effective general-purpose brain-to-machine interfaces still requires significant research efforts.	75
Brain-to-machine interfaces have enormous potential for individuals with disabilities, but are unlikely to find wide-spread application in the general population in the near future.	55
Employees will resist the introduction of such interfaces due to fears of mind-control and violations of privacy.	33
These technologies will be much more popular, and therefore more readily adopted, for entertainment rather than work purposes.	25
The design and implementation of effective general-purpose brain-to-machine interfaces still requires multidisciplinary research.	21
Human thinking and social interaction is embodied in human bodies. This substantially limits the range of applications of brain-machine-interfaces.	13
Biological, ethical, and socio/cultural barriers will have to be addressed to enable broad use of brain-to-machine technologies.	11
Brain machine interface is likely to be used in surgery and other activities requiring rapid interaction of teams of people using various automated devices.	4
Pilots, large process managers, political campaign managers, SWAT teams, others will all gain significant advantage from effective B-M links. A condition of employment.	1



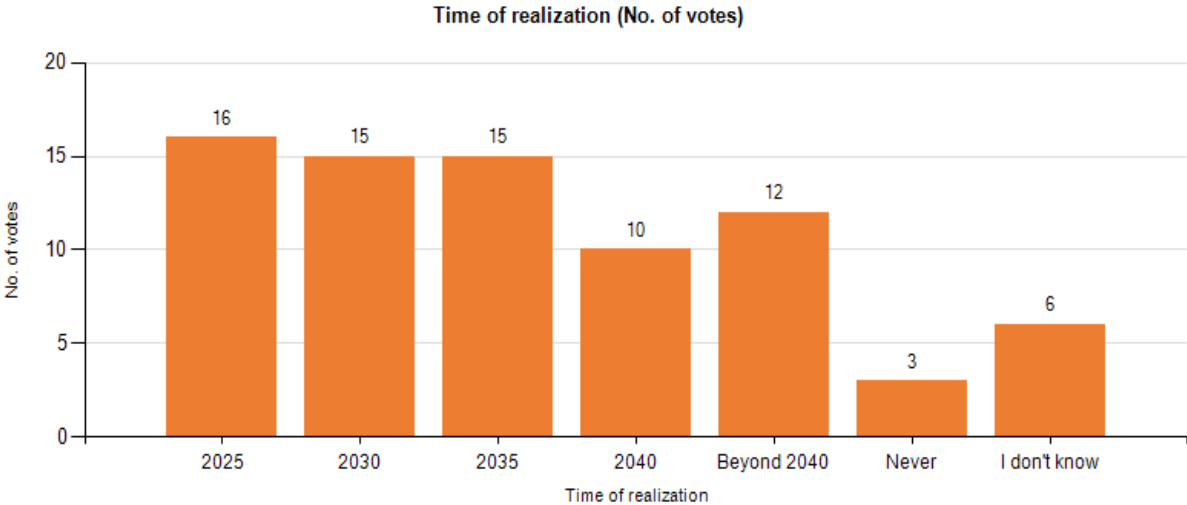
**Average:** 4.27

**Dispersion:** 0.97

<b>Arguments regarding the relevance of R&amp;I</b>	<b>No. of votes</b>
It will be necessary to devise non invasive and easy-to-use technologies to encourage people to use brain-computer interfaces in general settings.	64
It is essential to understand the challenge to privacy within a work-environment with pervasive brain-to-machine interaction through such interfaces.	51
Research needs to develop commercially feasible alternatives to the EEG technology.	26
Inter and multidisciplinary R&I in neuro-ergonomics (neuro-feedback for divided attention) for new disruptive Brain-Machine-Interfaces devices, or evolutioned devices (mobiles, etc.) will be crucial.	23
Legal issues will take longer to resolve than practical realisation issues, especially for work use of BM-interfaces	14
Collaboration with people with disability or serious disease (ex Alzheimer) is essential for progress and human-oriented innovation	13
New forms of psychoneural disorders are likely to emerge requiring research and creating new forms of therapy, insurance coverage, etc.	1

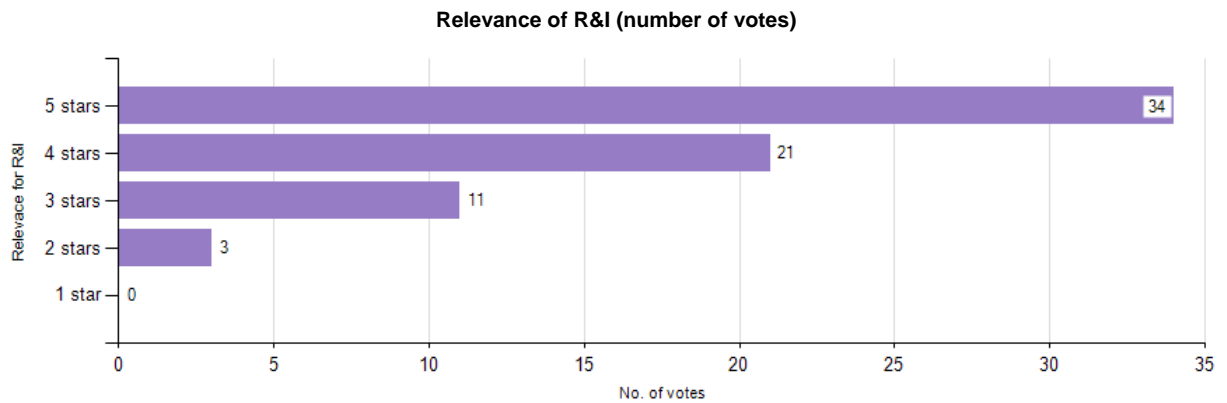


**Brain-to-machine communication via brainwaves is possible (e.g. controlling machines with brainwaves)**



**Number of respondents :** 70

<b>Arguments regarding the time of realization</b>	<b>No. of votes</b>
The current interface technology is very crude at this point, but will see tremendous advances.	53
If achieving this is at all possible, it will help many disabled people to control the machines that assist them.	51
It is already possible to steer implants with signals from brain/ nerves, but this needs a lot of training and learning. Therefore, it will take a long time until brainwaves can be used directly.	45
Combination of existing sensing technologies with cognitive and situational awareness technologies will drive usability and adoption of such technology.	11
As already pointed out, some early prototypes already exist. The question does not specify how broadly such devices should be available to justify positive answer.	8
This is not an argument: what exactly do you mean by brain waves? EEG, Local Field Potentials, etc.?	5
Some prototypes are about to enter the market already, as other need some more detailed research.	3

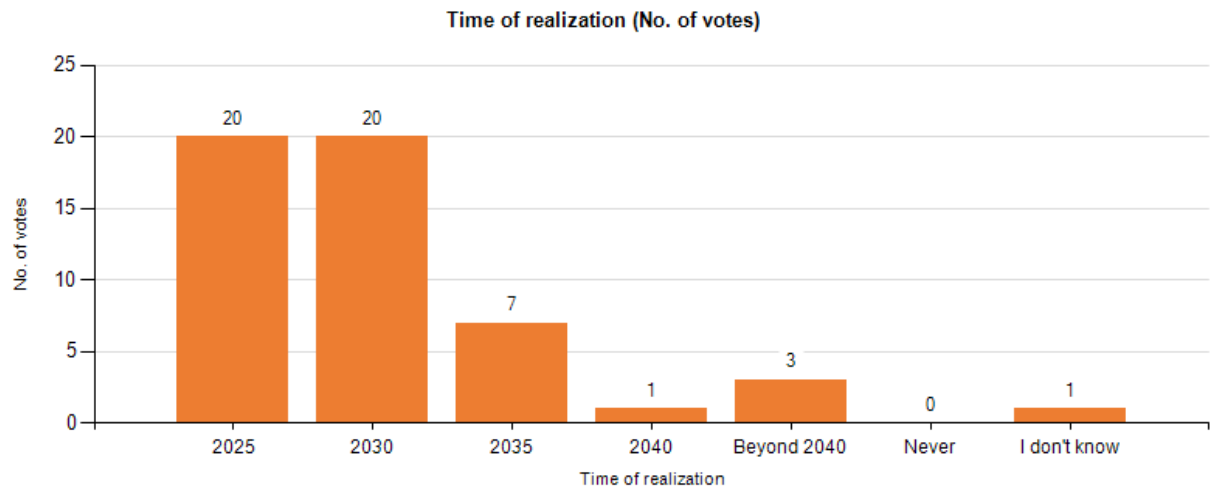


**Average:** 4.25

**Dispersion:** 0.73

<b>Arguments regarding the relevance of R&amp;I</b>	<b>No. of votes</b>
Advances are needed in brain-to-machine communication beyond information exchange for communication of other mental states (feelings etc.).	55
Research on the ethical implications of such technology (mind hacking, mind-control etc.) is important.	50
Science should clarify how brainwaves are evoked actively and why people are able to use alpha waves, e.g. for meditation. Then one might go one step further to use waves actively for machines but also for relaxation techniques.	23
Brainwaves is rather broad word. It would be useful to have few more detailed options, like sensing the nerve signals to e.g. speech muscles	18
Neuro-engineering, even neuro-nanotechnology, could be new promising R&I disciplines for new talented people and disruptive technologies/devices.	15
Neurological (bio) research, sensor technology, plus modeling, complex situational awareness (IT) are key investment domains to enable the realization of such vision.	8
Reliable and highly resolved brain-machine interaction requires very controlled, disturbance-free environments, which limits the widespread use.	4
Training of pilots, teleoperators, large equipment operators would benefit from direct B-M links to speed up learning to operate complex equipment, particularly under threatening circumstances.	2
Piloting aircraft and control of drones or other teleoperation could significantly benefit and will drive research with military applications and those for disabled in lead with entertainment.	1

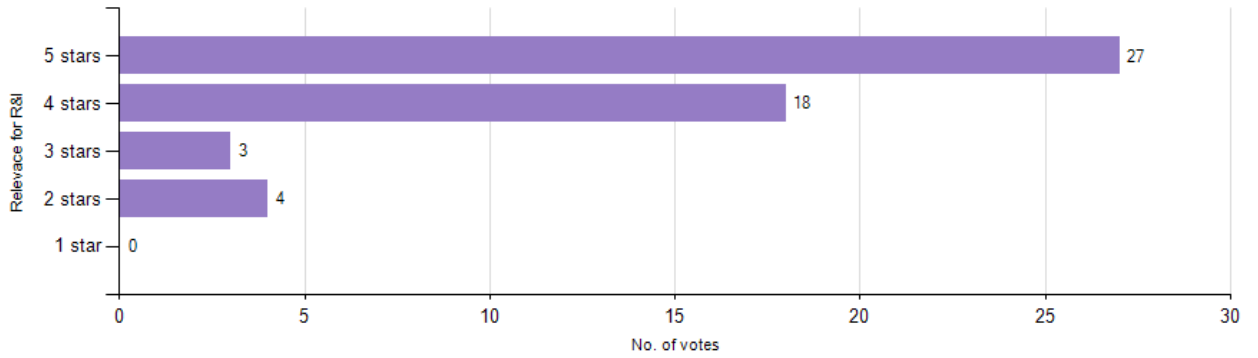
## The majority of the EU population use integrated Artificial Intelligence devices and machines in their daily lives



**Number of respondents :** 52

<b>Arguments regarding the time of realization</b>	<b>No. of votes</b>
AI technologies will be used to improve analysis and prediction in devices used daily, without being recognised as such by the users (e.g. navigation devices, smart home controllers, smart cars etc.).	48
Online services (e.g. Google Translate) already employ self-learning AI.	34
AI (or 'synthetic intelligence') will be utilized by most of the pervasive large-scale services (finance, media, social networks, e-commerce), so that people interact with it, for the most part unknowingly, all the time.	31
Self-driving cars, trucks and busses will be prevalent by 2030 implying daily contact for almost the entire population. Fraud protection in financial systems based on blockchain will be pervasive.	14
In practice, there are no real AI machines in our daily lives. Service robots like vacuum cleaner robots are not intelligent.	7
AI has been in development for a long time and we still have problems with language recognition.	6
It will take time until real AI will be in our households, but if this happens, they might be treated like family members (see Aibo and other pets).	3
We do it already today. When my TomTom with HDtraffic sees a traffic jam, I follow its advice for a detour.	1
People will use AI Technology quite frequently if it comes to data related services, e.g. via Internet, but there will be no intelligent machines (robots) in their daily life.	1

Relevance of R&I (number of votes)

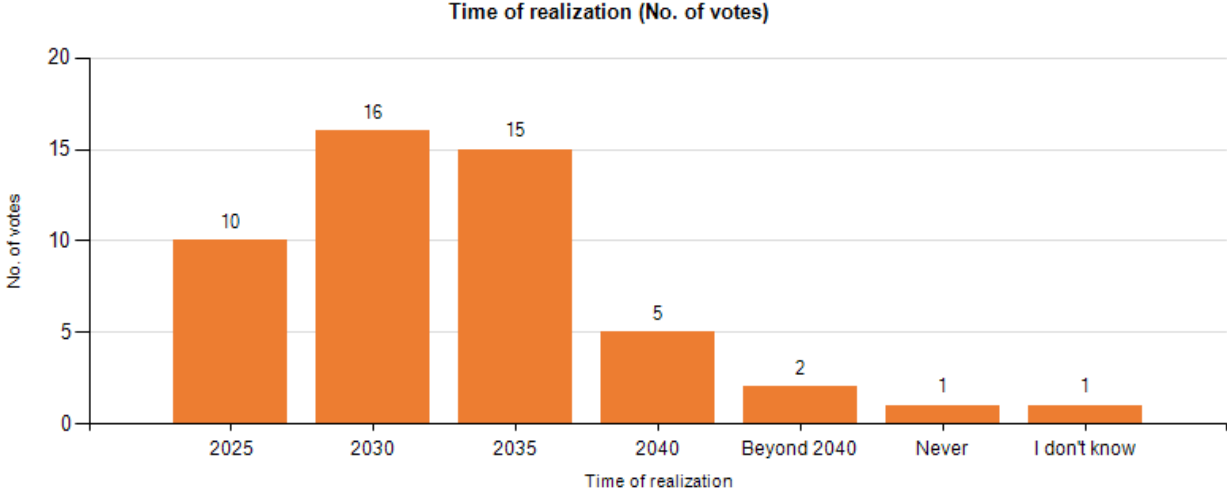


Average: 4.31

Dispersion: 0.77

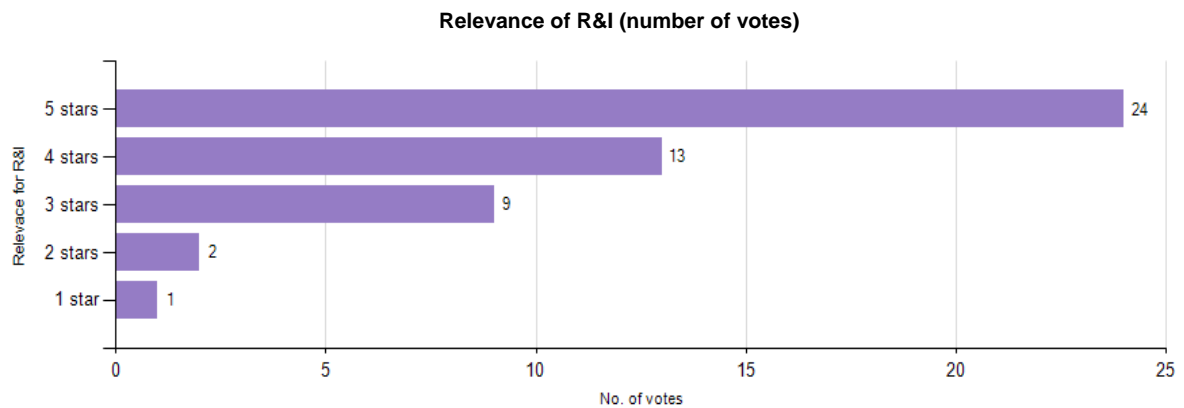
Arguments regarding the relevance of R&I	No. of votes
To make the machines around us really 'intelligent' requires a lot more research.	40
Research in ethics and regulation is needed to address issues of responsibility and agency.	33
Research on how humans can learn and interact further with AI is needed	15
When a diffused presence of AI will become apparent the main problems will become social acceptance linked to privacy and security concerns	10
Liability, accountability and other security considerations need to be carefully and thoroughly examined.	8
Use it or lose it. Pervasive AI raises the need for research in retention of human capabilities as thinking and other skills may be less needed to get through the day.	5
Deep learning has already turned a corner technologically. It's not genuine AI, but it's good enough, so more budget is needed for understanding social and societal impact.	5
Also in future AI will need large computing power, therefore an efficient information transmission without losing discriminative characteristics is needed. Still an open research field	4
Some data needs to be processed in server farms, requiring heavy software and hardware improvements. EU should strengthen both.	3

**Autonomous robots are in daily use in hospitals and home healthcare across the EU**



**Number of respondents :** 49

<b>Arguments regarding the time of realization</b>	<b>No. of votes</b>
Demand for assisted living increases due to the aging of the population.	46
Autonomous robots in healthcare will handle practical matters before they will handle medical matters.	33
AI based diagnostic systems will be considered necessary for cost as well as patient safety.	16
Substantial progress has been made in natural language processing, which dramatically improves communication with machines in such environments.	14
Autonomous vacuum cleaners, cognitive AI assistants, cooking assistants, etc. for aiding in home care will be very common.	13

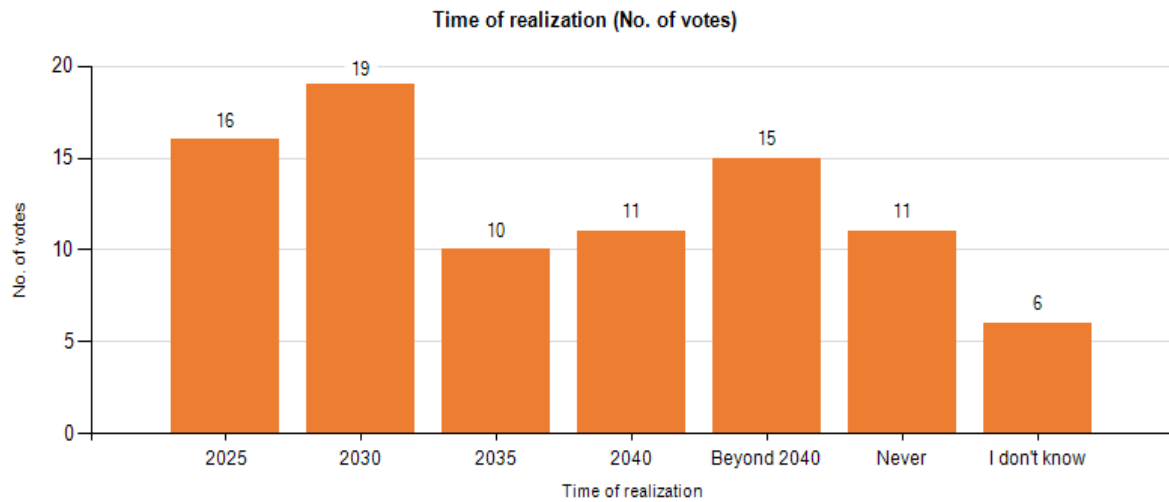


**Average:** 4.16

**Dispersion:** 1.02

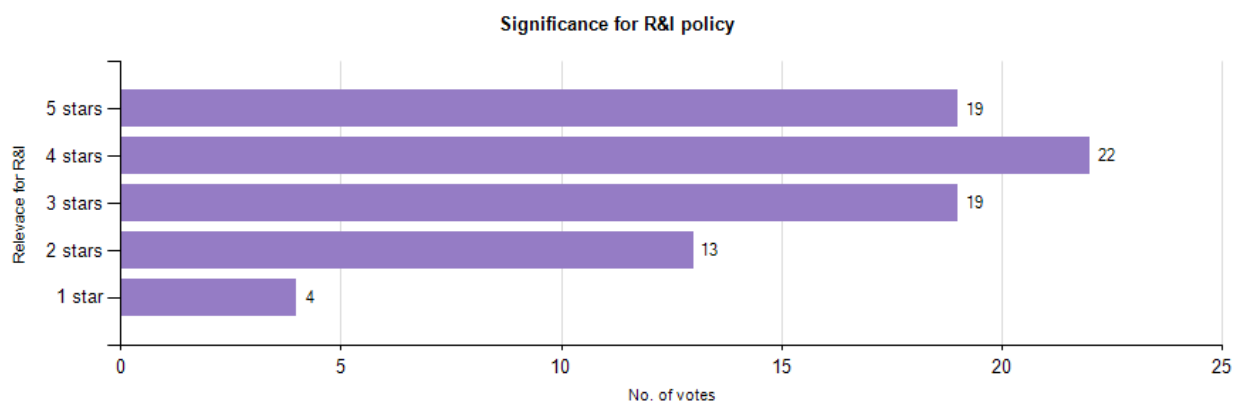
Arguments regarding the relevance of R&I	No. of votes
More care is needed, as we have more elderly and chronically ill people in Europe, and robots for care support are one of the solutions. More R&I is needed for problem-solving in view of practical use.	35
Robotics for healthcare is part of the answer to the aging of population, but it cannot be the only approach. More R&I is required, but is not sufficient.	27
Human-machine interaction is a promising research field.	24
Attention to the social impact of this approaches needs to be promoted from the beginning with a truly interdisciplinary approach	11
AI systems need to be developed to systematically exercise human capacities, particularly for the aging population, that otherwise wither due to disuse.	10
More research is needed on how to construct flexible, and real AI, systems.	7
There is a need to better understand the dimension of autononmy that is needed in such Robot Systems. Maybe they are more just a tool with less autonomy but high practical use.	5

## Virtual Reality and Augmented Reality techniques are standard practice in 95% of all educational settings



**Number of respondents:** 88

<b>Arguments for time of realization</b>	<b>No. of votes</b>
VR & AR will enhance rather than replace the currently available techniques.	77
VR & AR have to be researched very carefully. We do not want a 'one size fits all educational needs'. Where appropriate, VR & AR are welcome.	35
Even in developed countries, the basic educational technologies have changed remarkably little over the past hundred years.	35
As VR becomes more mainstream and anecdotes of secondary effects (increased isolation, anxiety, ill-health etc.) proliferate, there will be widespread resistance against the generalized use of these techniques in education.	18
Virtual Reality and Augmented Reality techniques raise privacy concerns.	14
If mixed realities are just an add-on then it will be the same story as with school television, internet, etc. We need to start from instructional design and the functionalities of this technology.	12
Oculus warns users to keep the VR gadgets out of the reach of children (and pets).	7
Question is how long will VR and AR be around.	5
New VR and AR technologies under development will address many issues regarding nausea, dizziness, etc.	5
This would required a very strong investment in education from all EU MS, which will not happen.	2
VR is good for teaching that includes empathy. However, more potential lies in Augmented Reality (AR).	2
VR/AR firstly need to prove their usefulness in that context in pilots, which may well be funded also e.g. via cohesion instruments if schools apply.	2



**Average:** 3.51

**Dispersion:** 1.37

<b>Arguments regarding the significance for R&amp;I policy</b>	<b>No. of votes</b>
Using Virtual Reality and Augmented Reality techniques in educational settings (eg schools) will require greater attention in R&I in terms of security, privacy and ethics.	55
Social and individual impacts (cognitive, behavioral, emotional) of such proliferation of AR/VR tech will alter norms (including research & scientific culture) and practices = new policy conditions.	39
The long-term neurological impact of frequent use of VR will need to be consistently monitored and studied - and may need regulation.	38
Technology assessment and social impact of all AR & VR approaches have to be carefully investigated.	22
All impacts (cognitive, emotional, educational..) of VR and AR should be studied.	13
Research on the impact of extensive VR use on individual personality will be controversial among various interest groups. This will soon become a political question.	9
Even policies in the EU and elsewhere can be tested by VR in the long run.	8



## **Getting in touch with the EU**

### **IN PERSON**

All over the European Union there are hundreds of Europe Direct Information Centres. You can find the address of the centre nearest you at: <http://europa.eu/contact>

### **ON THE PHONE OR BY E-MAIL**

Europe Direct is a service that answers your questions about the European Union.

You can contact this service

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696 or
- by electronic mail via: <http://europa.eu/contact>

## **Finding information about the EU**

### **ONLINE**

Information about the European Union in all the official languages of the EU is available on the Europa website at: <http://europa.eu>

### **EU PUBLICATIONS**

You can download or order free and priced EU publications from EU Bookshop at: <http://bookshop.europa.eu>. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see <http://europa.eu/contact>)

### **EU LAW AND RELATED DOCUMENTS**

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex at: <http://eur-lex.europa.eu>

### **OPEN DATA FROM THE EU**

The EU Open Data Portal (<http://data.europa.eu/euodp/en/data>) provides access to datasets from the EU. Data can be downloaded and reused for free, both for commercial and non-commercial purposes.

It is 2040. In the ageing populations of Europe, but also abroad, the demand for assistance in daily living has more than tripled over the last 25 years. New service concepts combining automation, robotic assistance, digital helpers, virtual trainers and small exoskeletons have transformed care, assistance and the relevant industries.

*Studies and reports*



Publications Office