Futures of a Complex World
12–13 June 2017, Turku, Finland

THE FUTURE OF WORK: PERSPECTIVES FROM ACROSS EUROPE on the Millennium Project's Future/Work Tech 2050 Scenarios Documentation from the Workshop

Key words: Future of work, jobs and skills; automation & technology; 2050; scenarios; Europe.

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Introduction

The Millennium Project (MP), an international think tank on global future perspectives, has developed long-term scenarios on the future of work and technology until 2050. The workshop 'The Future of Work: Perspectives from Across Europe' held at the Finland Futures Research Centre's (FFRC) 'Futures of a Complex World' conference from 12–13 June 2017, in Turku, Finland, brought in different perspectives on the scenarios and the question of how work might develop, by contrasting different national or regional perspectives and facilitating an interactive discussion.

These perspectives were brought in by representatives of different countries, chairs of the regional Nodes of the Millennium Project and /or members of the Foresight Europe Network, who shared what is specific in their national or regional discourse on the topic, e.g. from national workshops or studies on the topic. The session was organized as a participatory workshop, i.e. it featured short presentations as a starting point, before enabling an interactive, yet systematic discussion. Exemplary questions were: Could the synergy of automation, digitalization and robotics replace a major share of jobs in Europe (and other world regions)? What are upcoming changes in skills demands, which new occupations might emerge? How does the trend towards new organizational forms (agile work, teams "without" hierarchy as in holocracies etc.) bring about new demands on the education system? How can public and private institutions prepare for and answer to the potentially disruptive changes in the work landscape?

Thus, the discussion focused on how participants expect work, jobs and skills demands to change in the next decades, and what actions should be pursued in order to deal with potentially disruptive developments in the field.

The workshop began by introducing the MP Future/Work tech 2050 scenarios as a discussion base. The main part of the session then concentrated on discussing perspectives on the topic from different perspectives from across Europe, with a focus on interaction and shared reflection. Participants separated into country groups (Czech Republic, Finland, Germany, Greece and Spain) and considered the questions and potential impacts in relation to their specific assigned country. Questions such as: What are specific issues in the discussion of the topic in that country? What other perspectives exist in Europe? What would need to be done to prepare for the future of work today? At end of the session, participants interactively presented their group's insights to the entire workshop.

Country Report: Czech Republic

Summary of the Czech table:

- Could the synergy of automation, digitalization and robotics replace a major share of jobs in Europe (and other world regions)?

The impact of the above processes on jobs would differ across Europe (see the map below), due to different economic and employment structures. In Czechia, it is expected that automation, digitalization and robotics will generally bring loss of 5 jobs per 2 jobs created.

- What are upcoming changes in skills demands, which new occupations might emerge?

In the context of increasing automation, digitalization and robotics, opportunities arise for specific kind of jobs: peer to peer professions, jobs with human connection such as health or medical care, also creative and managerial jobs will gain more importance. Also, due to increasing collaboration with robots and AI, skills and professions in different level of programming will be needed.

Jobs will no longer be place-based. It is expected that increasing number of people will work for more clients or networks across national boundaries; that will also bring new challenges in terms of means of payment or taxation.

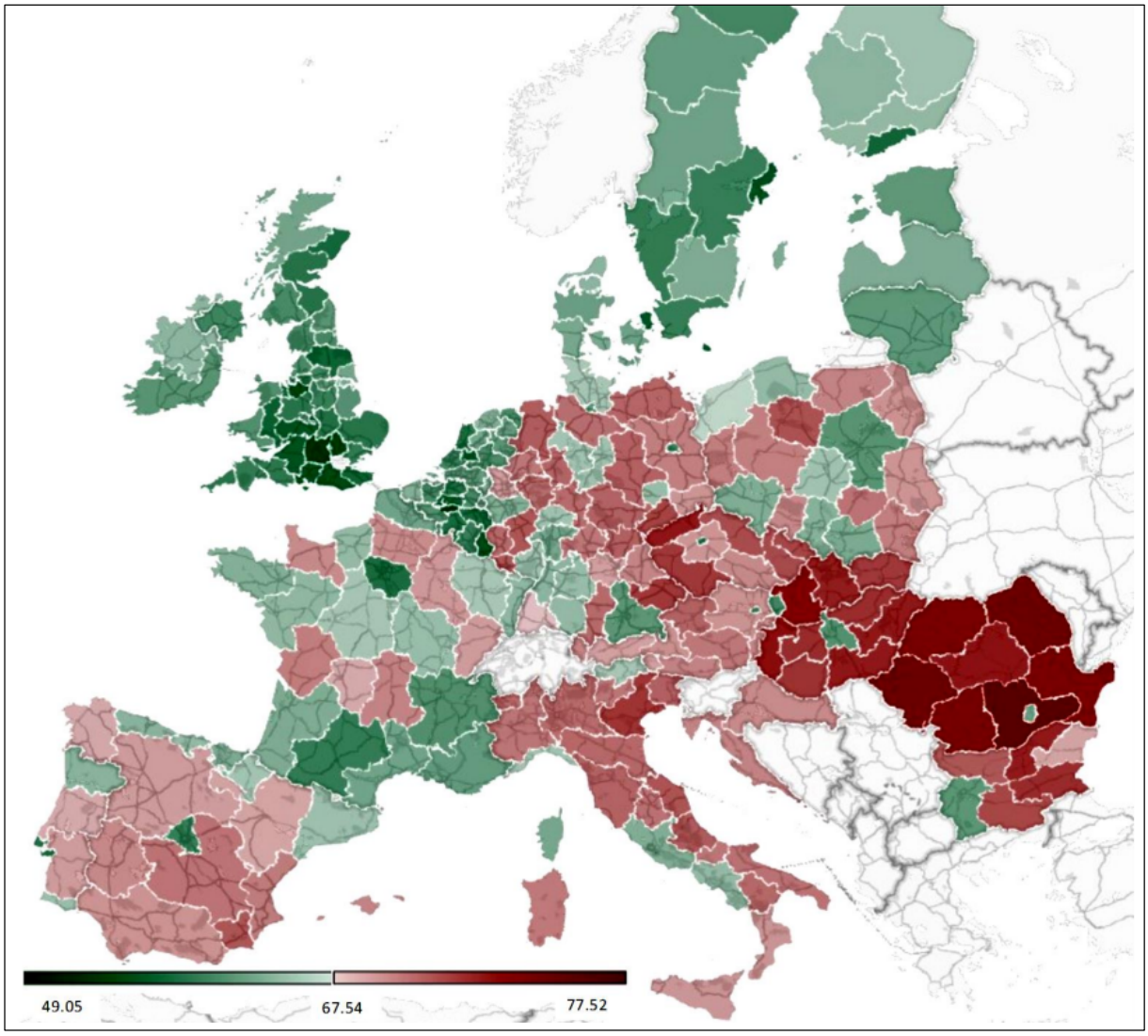
- How does the trend towards new organizational forms (agile work, teams "without" hierarchy as in holocracies etc.) bring about new demands on the education system?

The trends will place new demands especially to education. There will be a need to employ a more holistic and forward-looking approach in education. Also higher significance will need to be given to development of soft skills such as networking or cooperative skills, but also awareness of complexity and change so that more people will become more resilient and able to be prepared for multiple careers. Inspiration in this sense can be found in educational systems of Finland or Norway.

- How can public and private institutions prepare for and answer to the potentially disruptive changes in the work landscape?

In this context, there is a growing concern about rise of inequalities in the society and among regions. The question of redistribution of wealth and revenues/profit will be crucial, in particular in the context of Czechia, where the substantial share of companies is owned by foreign investors.
Labour unions are perceived as a strong player preventing growing inequalities. Also the institute of basic income was mentioned, as well as the need for unified European taxation of work performed by robots.

Index of risk of job professions by digitalization



Country Report: Finland

Sirkka Heinonen & Sofia Zavialova
REPORT OF THE FINNISH TABLE ON FUTURE OF WORK
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1. Description of the Session

The Millennium Project, an international think tank on global future perspectives (http://millennium-project.org/), has developed long-term scenarios on the future of work and technology 2050. This workshop moderated by Cornelia Daheim, Chair of FEN (Foresight Europe Network)[1] and the German Node of the Millennium project, brings in different perspectives on the scenarios and the question how work might develop, by contrasting different national or regional perspectives and facilitating an interactive discussion.

These perspectives are provided by representatives of different countries, mostly chairs of the regional Nodes of the Millennium Project and members of the Foresight Europe Network. They share what is specific in their national or regional discourse on the topic, e.g. from national workshops or studies on the thematic under discussion. The session is organized as a participatory workshop, i.e. it will feature short presentations as a starting point, but will afterwards enable an interactive, yet systematic discussion. Exemplary questions are: Could the synergy of automation, digitalization and robotics replace a major share of jobs in Europe (and other world regions)? What are upcoming changes in skills demands, which new occupations might emerge? How does the trend towards new organizational forms (agile work, teams "without" hierarchy as in holocracies etc.) bring about new demands on the education system? How can public and private institutions prepare for and answer to the potentially disruptive changes in the work landscape?

Thus, the discussion will focus on how participants expect work, jobs and skills demands to change in the next decades, and what actions should be pursued in order to deal with potentially disruptive developments in the field.

Key words: Future of Work, Jobs and Skills, Automation & Technology, 2050, Scenarios, Europe

2.The working and results of the Finnish FEN Table

2.1 Introduction to Brainstorming

As a table facilitator, Sirkka Heinonen, Chair of the Helsinki Node of the Millennium Project, gave a presentation based on the results from the futures clinique "Fuzzy Futures of Work" (Ruotsalainen et al. 2016) organized by the Neo-Carbon Energy research project at Finland

[1] FEN = FORESIGHT EUROPE NETWORK – the new joint initiative of the European Millennium Project Nodes Initiative (EuMPI) & the European Regional Foresight College (ERFC) was established in Paris, October 24, 2014. See http://www.feneu.org/en/news/

Futures Research Centre[2]. The results are embedded in the vision of "Peer-to-peer Work in Digital Meanings Society 2050" and its seven elements, which are overlapping and intertwined, but focus on specific subtopics. Sirkka Heinonen was assisted by Sofia Zavialova, Millennium Project Intern at Finland Futures Research Centre (FFRC), University of Turku.

The workshop on the Future of Work was run in three rounds. Participants in all five Tables (Czech, Finland, Germany, Poland and Spain) were organized according to the rotation principle. For each round different groups were formed. In the Finnish Table the seven themes / elements that together compose a vision of the desirable future of work in the digital meaning society 2050 were presented (Fig. 1). Each group was invited to answer the following questions:

- Which of these following elements do you find the most interesting?
- What would you like to add or comment?

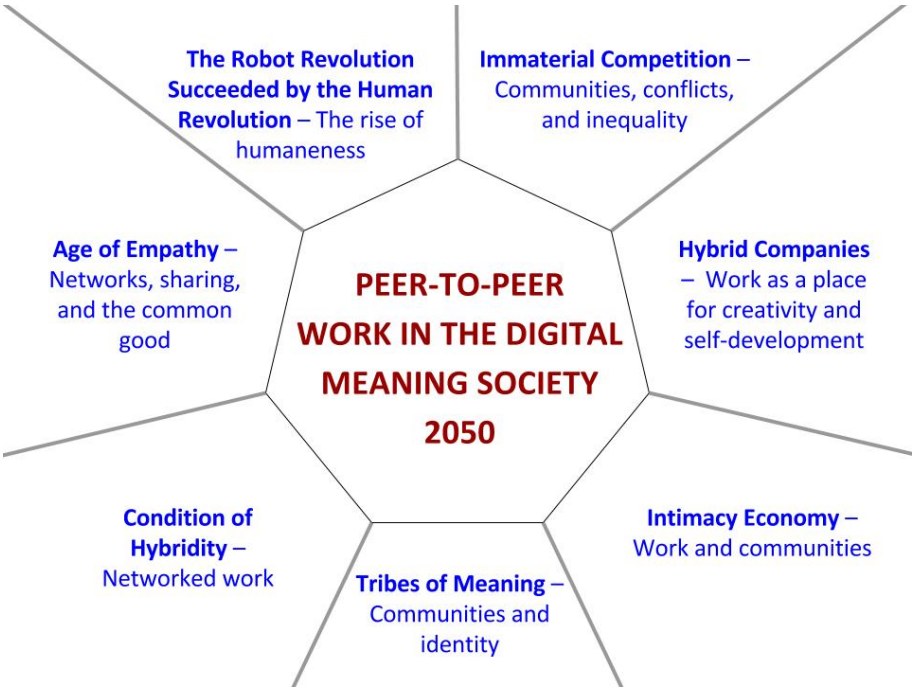

Fig. 1 The seven themes of peer-to-peer work in the digital meaning society 2050

Characteristics of the seven elements of peer-to-peer work in the digital meaning society 2050 are the following:

Hybrid Companies – Work as a place for creativity and self-actualisation

In hybrid companies, no sharp division between work and leisure would exist, and a person would be seen as an individual and a human being also when he or she is working – not as a presenter of certain work role. Companies would function as "free enterprises", as

[2] See https://www.utu.fi/en/units/ffrc/research/projects/energy/Pages/neo-fore.aspx. See also journal paper by Ruotsalainen et al 2016b.

concentrations of intellectual and social capital, rather than the profit-maximizing entities of today. This element of the desirable future of work can be described by the dominance of immaterial needs and values. Work in such companies would require workers to self-define their jobs. Management would be replaced by self-management. The function of human work would be to offer a place for workers' self-expression. Work would be meaningful, creative, and purposeful – products would be "authentic" expressions of workers' individuality.

Intimacy Economy – Work and communities

In the "intimacy economy" traditional organisations would be replaced by work-communities as communities of passion. Workplace relationships would be more personal than professional. Customers would also be part of community. Mutual co-creation between producers and consumers would take place. In this sense the whole society would function as an organic whole. Demand would define supply in much more intricate ways than today. Platforms that connect people with similar interests and enable working flexibility across industries would exist. At different stage of life an individual could be an employee, an employer, a freelancer, and everything in between.

Tribes of Meaning – Community and identity

Communities would allow individuals to construct identities in a meaningful way and to be part of something larger than themselves. Identities, meaning and purpose would be based first and foremost on different communities., and on work done at these communities. Culture would become much more diverse than today with the freedom to choose one's own way of life as a guiding principle. The ability to "know thyself" and consequently life-coaching would become immensely important. Peer-to-peer world would be more chaotic and more in flux than the present world. This could lead to the emergence of "closed bubbles" of like-minded people as a psychological coping mechanism against the chaos, or, on the contrary, to a "global village" that would replace local communities as a kind of new world religion.

Condition of Hybridity – Networked work

If communities were the basic units of new work, the general organisation model for work could be provided by networks. Organic, porous network structures would replace rigid bureaucracies, and different communities would be linked together by interlocking networks. Networks would merge different values, individuals, worldviews and practices together. They would ensure that individuals retain the freedom to choose for themselves and are not embraced by their communities too dearly. On the other hand, networks would dissolve stable social structures such as nations, and their loss could make people want to belong to "closed" communities that set more or less strict constraints in the behavior of the individual.

Age of Empathy – Networks, sharing and the common good

Thanks to automation, people would have universal income that guaranteed basic standards of living. This, in turn would create a basis for altruism, sharing and solidarity. Empathy would be the guiding principle of interaction in the society. Knowledge and ethical goals would replace monetary compensation and all these would lead to decline of the accumulation of private profit. Individuals would seek spiritual and social fulfillment instead of material rewards. Sharing economy and volunteering work could become a substantial part of work routine.

The Robot Revolution Succeeded by the Human Revolution – The rise of humaneness
In the age of high-tech, society would be highly technologized, but technology would be ”discreet“ and invisible. Relationship with technology would be more intimate and effortless, i.e. technology would become more independent so that it would work in the background without a need for human intervention. Humans would be freed to use and develop their human skills, those that machines would not yet possess. Creativity and social intelligence would become even more pivotal than today. Humans would ask questions, set goals, and invent new needs, whereas the role of robots would be to help implementing these plans. This would be a kind of a technology-assisted ”back to nature“ future in which humans would cultivate those attributes that make us humans.

Immaterial Competition – Communities, conflicts and inequality
Nevertheless, this future society might also have its own social problems. The dominance of immaterial values could place people in unequal positions, as some would have more cultural capital and social than others. Despite of material and energy abundance, there still could be competition between companies, marginalization and sociocultural inequality. As a result of shattered public sphere, expert knowledge, and authorities can lose their power and status. Each community and network could have their own notions, knowledge, and morals. Together with chaos and insecurity cased by fragmentation of culture and values, religious fanaticism could become alluring for many.

Participants of the FEN Session of the future of work.

3. Brainstorming in Three Rounds

During the workshop, the following three themes were chosen by voting in each rotation group, accordingly. Each participant had one vote. The 1st rotation group chose **age of empathy** (4 votes), the 2nd rotation group voted for the **robot revolution succeeded by the human revolution** (3 votes), and the 3rd rotation group **hybrid companies** (4 votes). Further in the working phase, participants opened up the chosen theme, discussed it, and came up with new ideas, often reflecting their own country situation and future prospects. All the ideas given and discussed were written and added to the poster (Fig. 2).

The participants in the 1st group were: Amos Taylor, Karolina Mackiewicz, Marjukka Parkkinen, Miki Kuribayashi, Reyhan Huseynova, Sari Söderlund and Sofi Kurki. The participants in the 2nd group were: Tero Villman**,** Robin von Euler**,** Nadezhda Mikova**,** Otto Tähkäpää**,** Erica Bol**,** Reyhan Huseynova and Piero Dominici. The participants in the 3rd group were: Camilla Barragán**,** Martha Laura Montemayor, Marrama Zorrilla Vicente, Miriam Vilageliu, Odelot Capdevila Karen, Piero Dominici and Reyhan Huseynova.

Fig. 2. Several ideas were proposed and discussed concerning the chosen three elements.

3.1 Age of empathy

Summary of the group's ideas

In the age of empathy, the main change can be traced in the shift from welfare state to empathy state, where even the cities are planned according to the "empathy model". Negativity is seen as a disease to be cured. Expertise is shared freely so that everyone benefits. The prestige status of work is at the backstage, and all types of labour are treated equally. Prosuming trend is growing into massive passion that drives the economy. This can be demonstrated by the emergence of prosumeristic fashion 7.0. (i.e. influencers' fashion is massively consumed). Empathy is extended to the world of robots and to nature as well. People are seen as deeply mutually dependent, and empathy is considered as one of the key qualities that is trained and taught at special courses or through 3D games. At the same time, there are also outsiders in such a society who are not willing or not capable to empathize, share and volunteer and this is still an issue to concern in the future. Besides, empathy may also be seen as a pretense of instrumental reasons. If empathy is seen as currency, it is subjected to have this kind of instrumental value, instead of the original "deep" value.

Documentation of ideas in group "Age of Empathy":

- Negativity as disease to be cured
- Expertise sharing
- Mutual dependence
- Understanding different kinds of work -> valuing the work equally (increasing tolerance)
- Hologram
- Empathy
- Engineer
- Environmental empathy
- From welfare to empathy state
- Empathy trainings?
- The outsiders of empathy society?
- Empathy model city
- What are the mechanisms for defining the common good?
- Does everyone have something to share / does everyone have an opportunity to volunteer?
- New generation with robots having empathy
- Learn through the 3D game
- Empathy as pretense for instrumental reasons?
- Prosuming Passions. Fashion 7.0.

3.2 The robot revolution succeeded by the human revolution

Summary of the group's ideas

The "robot revolution" in title of this group refers to widespread use of robots and automation, which both enables and creates demand for "humane" values. In the time of robot revolution and the rise of humaneness, dimensions of such traditional terms as 'robots' and 'human' are reconsidered. New legislations, policies, ethical codes and overall common understanding are emerging. Global governance is needed to level equality. Each country that wants to be a forerunner in robotisation should have a national vision and road map. These changes have a great impact on the education system as well. Robots are involved in tackling societal problems. Robots are, for instance, used as part of retirement plans. Ethical discussions are constantly needed in order to yield common understanding of human/robot interaction. New human-machine interfaces emerge. Robots become humanized and their rights are taken into consideration and are legally protected.

Documentation of ideas in this group "The robot revolution succeeded by the human revolution":

- Humanizing robots
- New human-machine interfaces
- National visions & road map
- Global governance to level equality
- Ethical discussions and common understanding
- Robots rights (not only human rights)
- We have to realize human revolution. We must recover the dimension of humaneness
- Rethinking education
- Values -> Policies -> Laws
- Robot as retirement plan (when I get old I want my own robot (income)).

3.3 Hybrid companies – Work as a place for creativity and self-development

Summary of the group's ideas

In the third theme, the leadership structure is going through considerable transformations. The change in communication culture is taking place as well, especially at organizational and educational levels. The sense behind the act of communication has a deeper meaning than simply extending connections, networking and marketing. More open-minded approach starts dominating also at the public level. "Free enterprises" are emerging thanks to sufficiently flexible framework. The state realized the importance of fit between creative potential of the labour forces and the work opportunities that they get, therefore it took the leading role in coordinating even distribution of working places according to people's preferences and capacities. Continued education programs that are focused on interdisciplinary team-work are

available. Education is oriented on peace and conflict management, and developing emotional intelligence is one of the most appreciated goals.

Documentation of ideas in group "Hybrid companies":

- High level of IT development
- Change the leadership structure
- Facilitate. Have a sufficiently flexible legal framework to allow for these 'free enterprises' to emerge.
- Open-mind approach for self-development
- Administration must offer their jobs to everyone
- Continued education programs
- Interdisciplinary team-working
- Help identify all personal talents & develop them
- Experience validated as much as academic studies
- Open-minded. What we can do before?
- A new culture of communication
    - communication VS connections
    - communication VS marketing
- Developing emotional intelligence
- Education for peace / conflict management

Finally, a summary of the discussions was presented by Sirkka Heinonen in the end of the workshop, as was done for the other four tables as well by their moderators. The work done in this session can be fed into the reflections on Future of Work and Technology 2050 if feasible.

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Country Report: Germany

The group worked was started with introducing specific "German" perspectives on the issue and on the scenarios, e.g. highlighting the relatively good situation on the German labour market, the looming shortage of specific skills, or the comparably slow uptake of work immigration. Also, the current discourse in Germany was lined out, focusing specifically on the initiative "Arbeit 4.0" (=Work 4.0") led by the German ministry for work and social affairs, which included a two-year discussion process and has now led to first conclusions, for example on creating "experimentation zones" for implementing new work forms and involving unions more deeply with accompanying the current and expected changes. In the discussion, several main topics emerged:

Overwhelming choice
In today's world of work, individuals face the challenge of an overwhelming choice of alternatives, which is only likely to increase. As such, individuals need to have the skills necessary to 'manage yourself'. It the workplace, individuals now have the option of combining paid labour, part-time and self-employed creative work. However, the trend seems to be for young people, in particular, to choose pro-bono and low paid creative work.

Work-forms and creativity
Currently there is a tension between new and more traditional work forms, as newer forms of work become increasingly focussed on creativity. It is hard however to find forms of work that find the right balance between "structure and rhythm" (e.g. set times, defined tasks at work) and work that enables spontaneity and creativity. Organizational forms are challenged with this push towards more creativity as it become more and more where the value added is created. In the next decades, human work will become increasingly focussed on "non-robotic niches" I.e. emotional, human-centered, creative, etc.

Generational differences
Changes in generations affect work strongly: younger generations have different values, e.g. more stress on work life-balance, less on traditional careers and traditional ideas of status. Thus, motivations differ. Such as, the expectation of "secure" work also differs, with younger generations (not all, but most) expecting less security. (However, it must be noted that, due to our biases, our discussion imposes an elderly view onto younger generations.) When looking at the empirical research base it shows however, that Millennials look for maximum security.

Training and loss of security
We need to reexamine the role of the unions, or an alternative system, that helps individuals create sustainable work. As we are currently experiencing a paradigm shift towards large losses of employment and workplace security. Perhaps in the future there will be the option for a Robots Union to be paired with the current (human) Labour Unions. Many traditional work fields are experiencing large fundamental changes, for example, teachers are now needing to become practitioners. This will only continue, for example, in the future the field of Human Relations will continue to see huge changes. In the future it will become increasingly important to offer some type of training for entrepreneurship.

Basic Income

We feel that artists, in particular, would welcome the universal basic income. This may be in part due to the fact that many artists already undertake a lot of unpaid work. Many workers, specifically in younger generations, have a gig-like approach to work, with some jobs being a “Side Hustle”. Seemingly, there is also a rise in the “boreout” phenomenon, whereby a lack of work, boredom and consequent lack of satisfaction are affecting, again particularly younger workers, in modern organizations, (and specifically in office-based white collar jobs). It appears that many younger workers, when competing in today’s job market, are faced with the choice of “burning out” or “boring out”.

Overall, Germany needs to learn from other countries in terms of policies. For example, in Finland there are ideas and experiences around care and household work being tax deductible. As such, these forms of work are more supported and thus viewed as more ‘acceptable’, new work is created, and more focus is placed upon work-life-balance.

Millennium Project

Greek Node

THE FUTURE OF WORK
An interactive workshop on perspectives across Europe

The Greek case
Turku 13 June 2017

Epaminondas Christofilopoulos, **The Millennium Project Greek Node**

The Greek Workshop

Thessaloniki, 13 December 2016 , Museum of Photography

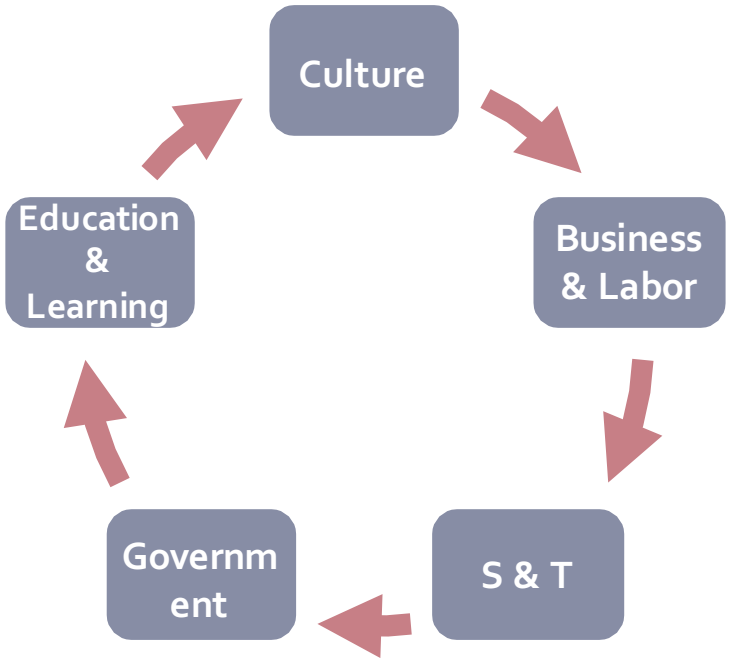
Organisers: The Greek Node of The Millennium Project, Phemonoe Lab, Resilient Thessaloniki/City of Thessaloniki

Participants: Over 40 participants from Research and Technological Organisations, Business Associations, Academic Institutions, Businesses and Press.

Phemonoe Lab
Shape Future Today

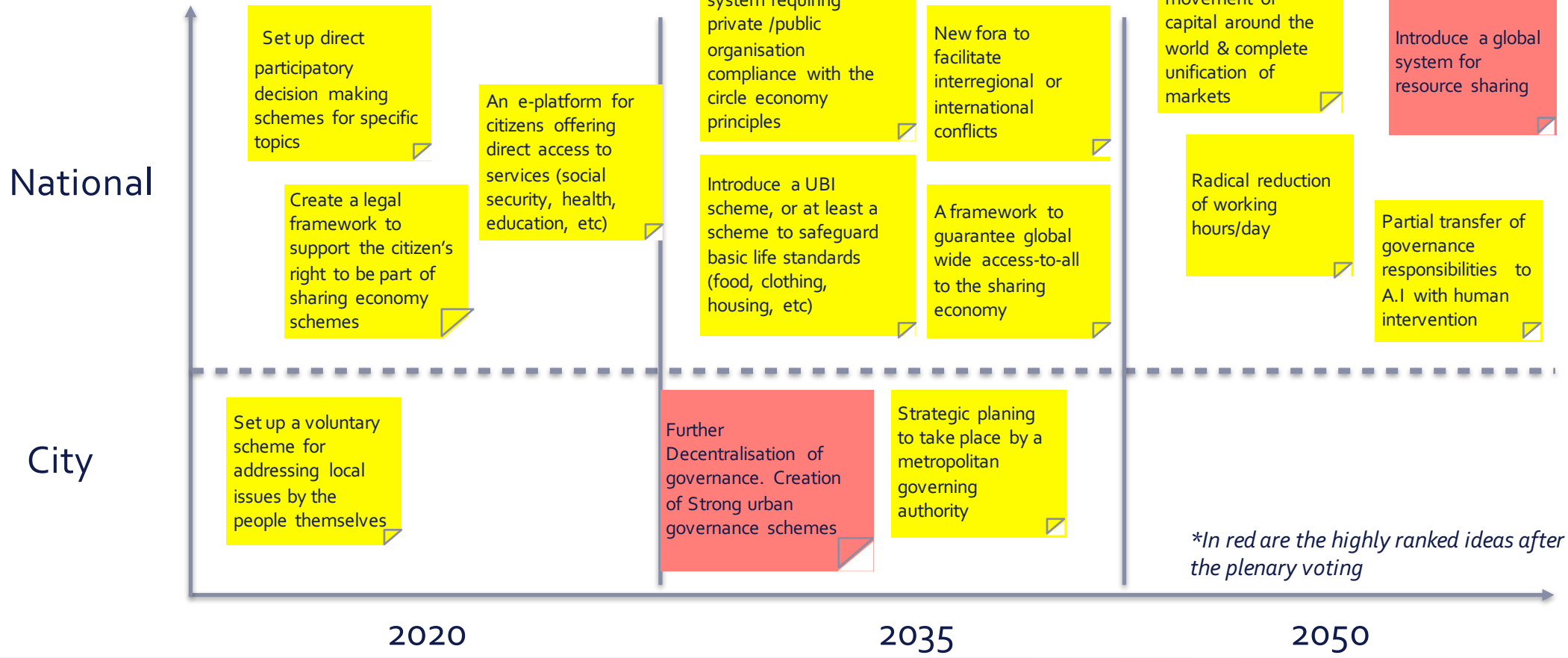
RESILIENT THESSALONIKI

Workshop Discussion Groups



1. **Education**: How should education, training, and learning systems change? And what strategies will make that happen?
2. **Government**: Will a guaranteed income program become necessary? What kind? When? Cash flow projections to show what is possible?
3. **S&T** (AI/Robotics/synthetic biology/nanotech) changes affecting work by 2025, 2035, 2050?
4. **Culture:** What changes in culture will be needed? culture that says jobs/employment is the source of self-respect?
5. **Business/Labor**: What should be the roles of private business in a national long-range strategy? Reducing income gaps and concentration of wealth.

Ideas on Governance

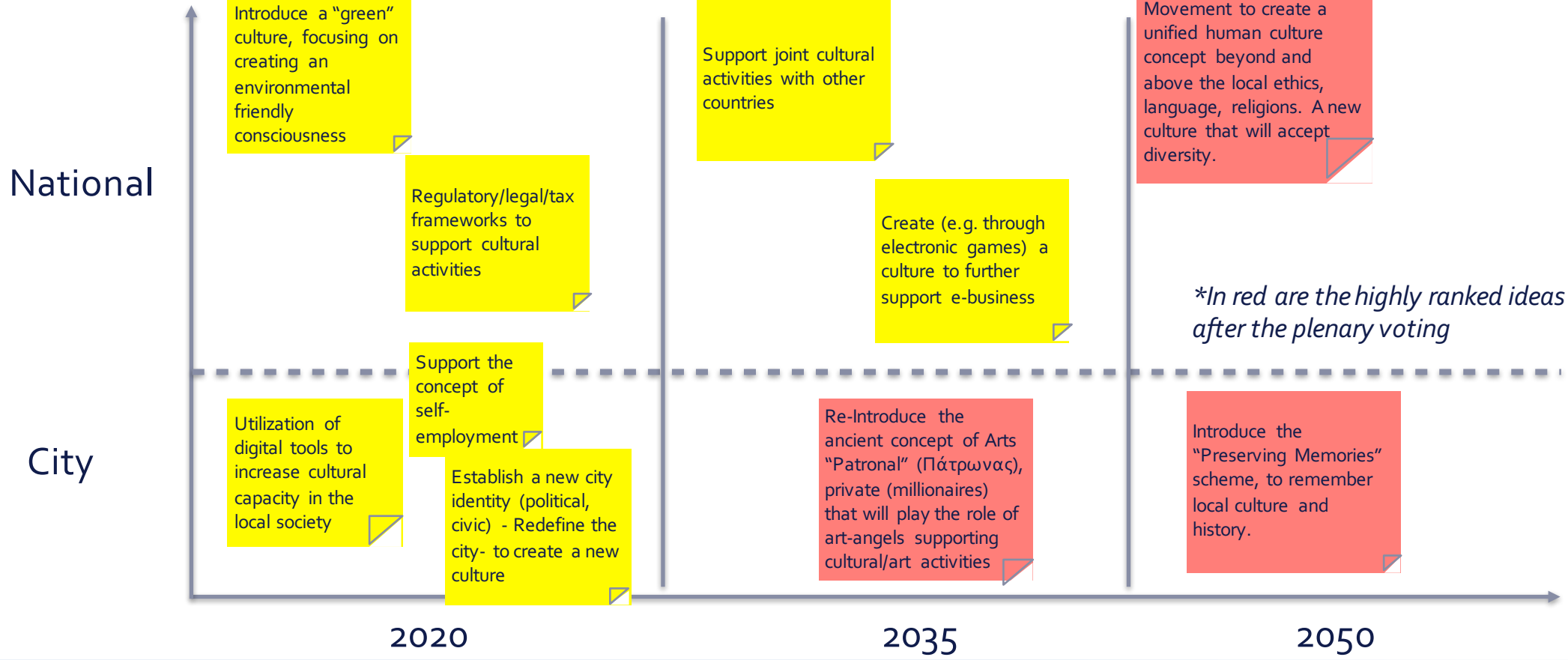


Ideas on Governance

	2025	2030	2050
National Level	-Set up direct participatory decision making schemes for specific topics. -Create a legal framework to support the citizen's right to be part of sharing economy schemes. -An e-platform for citizens offering direct access to services (social security, health, education, etc)	-A national obligatory system requiring private /public organisation compliance with the circle economy principles -Introduce a UBI scheme, or at least a scheme to safeguard basic life standards (food, clothing, housing, etc). -New fora to facilitate interregional or international conflicts -A framework to guarantee global wide access-to-all to the sharing economy	**-Introduce a global system for resource sharing.** -Secure the free movement of capital around the world & complete unification of markets. -Radical reduction of working hours/day -Partial transfer of governance responsibilities to A.I with human intervention
City Level	-Set up a voluntary scheme for addressing local issues by the people themselves	**-Further Decentralisation of governance. Creation of Strong urban governance schemes.** -Strategic planing to take place by a metropolitan governing authority.	

**In bold are the highly ranked ideas after the plenary voting*

Ideas on Culture

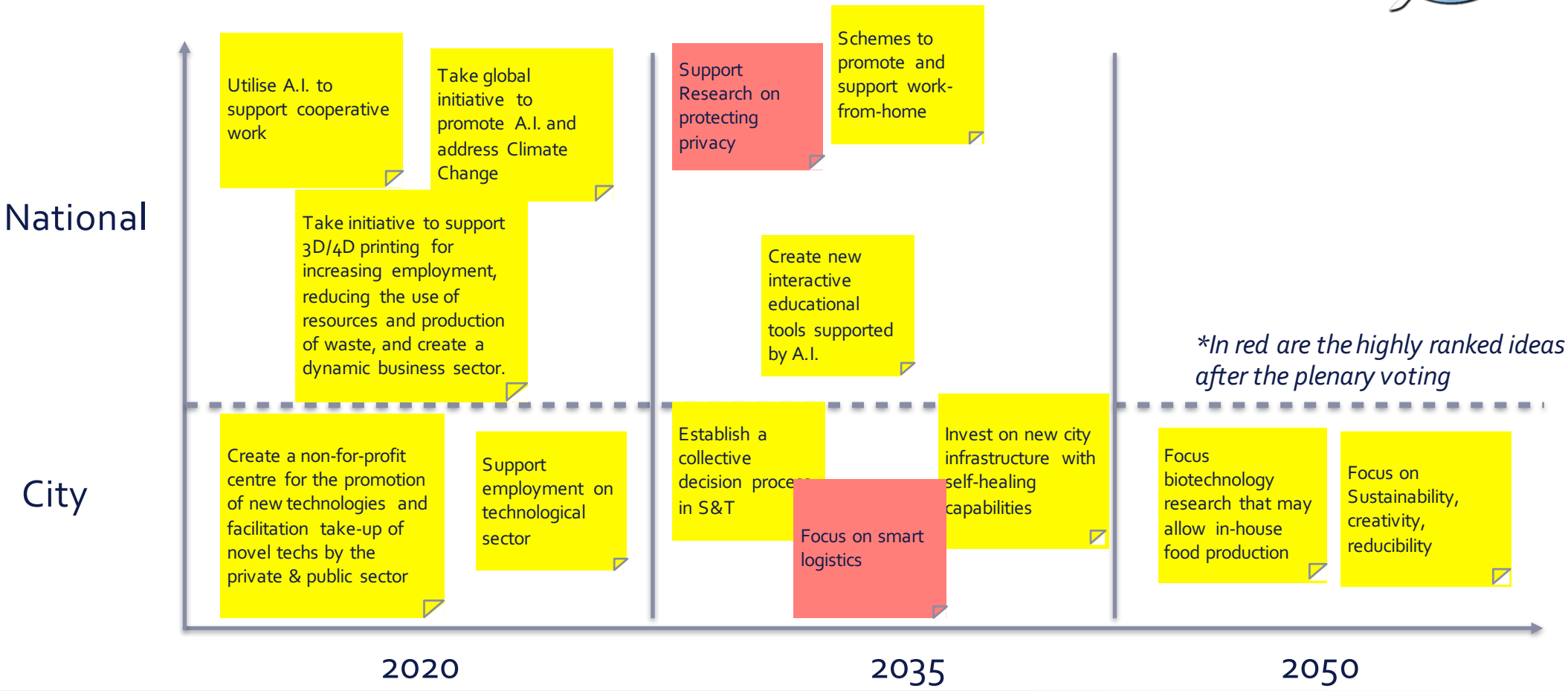


Ideas on Culture

	2025	2030	2050
National Level	-Introduce a "green" culture, focusing on creating an environmental friendly consciousness . -Regulatory/legal/tax frameworks to support cultural activities	-Create (e.g. through electronic games) a culture to further support e-business. -Support joint cultural activities with other countries.	**Movement to create a unified human culture concept beyond and above the local ethics, language, religions. A new culture that will accept diversity.**
City Level	-Utilization of digital tools to increase cultural capacity in the local society. -Support the concept of self-employment . -Establish a new city identity (political, civic) - Redefine the city- to create a new culture.	**-Re-Introduce the ancient concept of Arts "Patronal" (Πάτρωνας), private (millionaires) that will play the role of art-angels supporting cultural/art activities**	**Introduce the "Preserving Memories" scheme, to remember local culture and history.**

**In bold are the highly ranked ideas after the plenary voting*

Ideas on Science & Technology

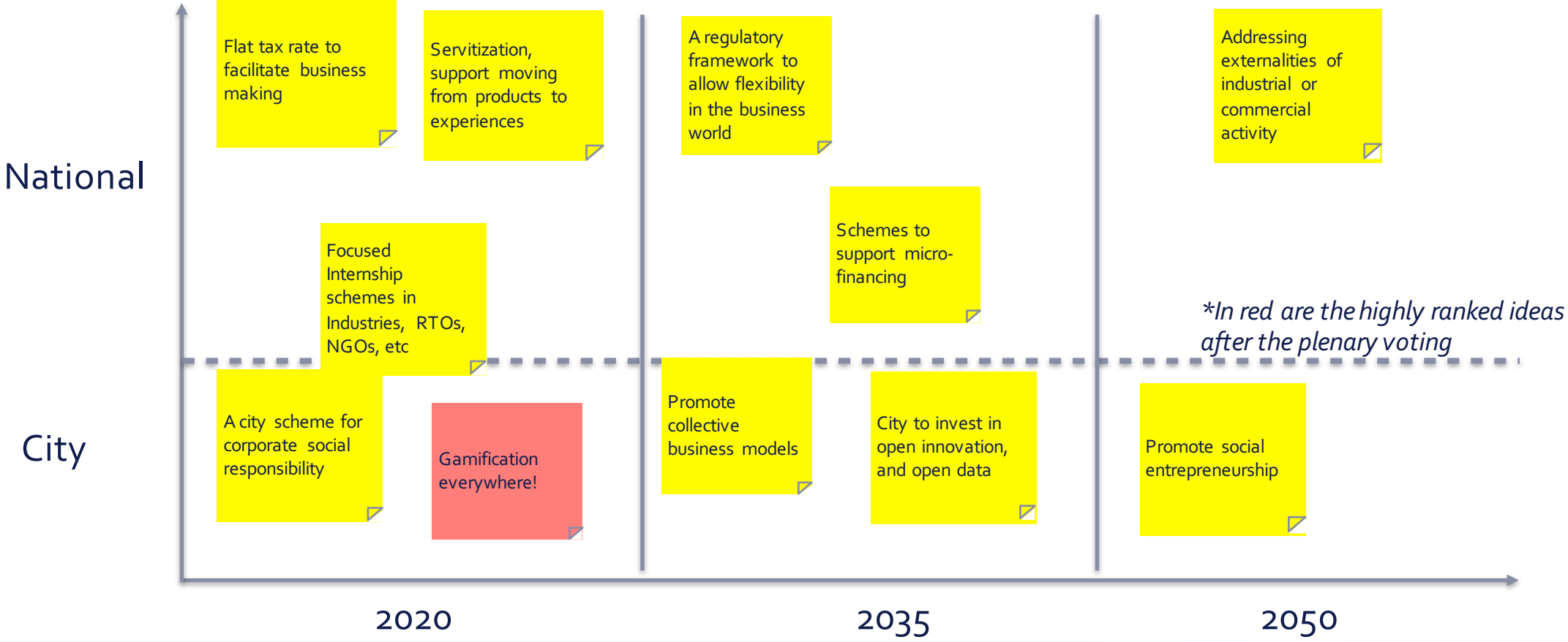


Ideas on Science & Technology

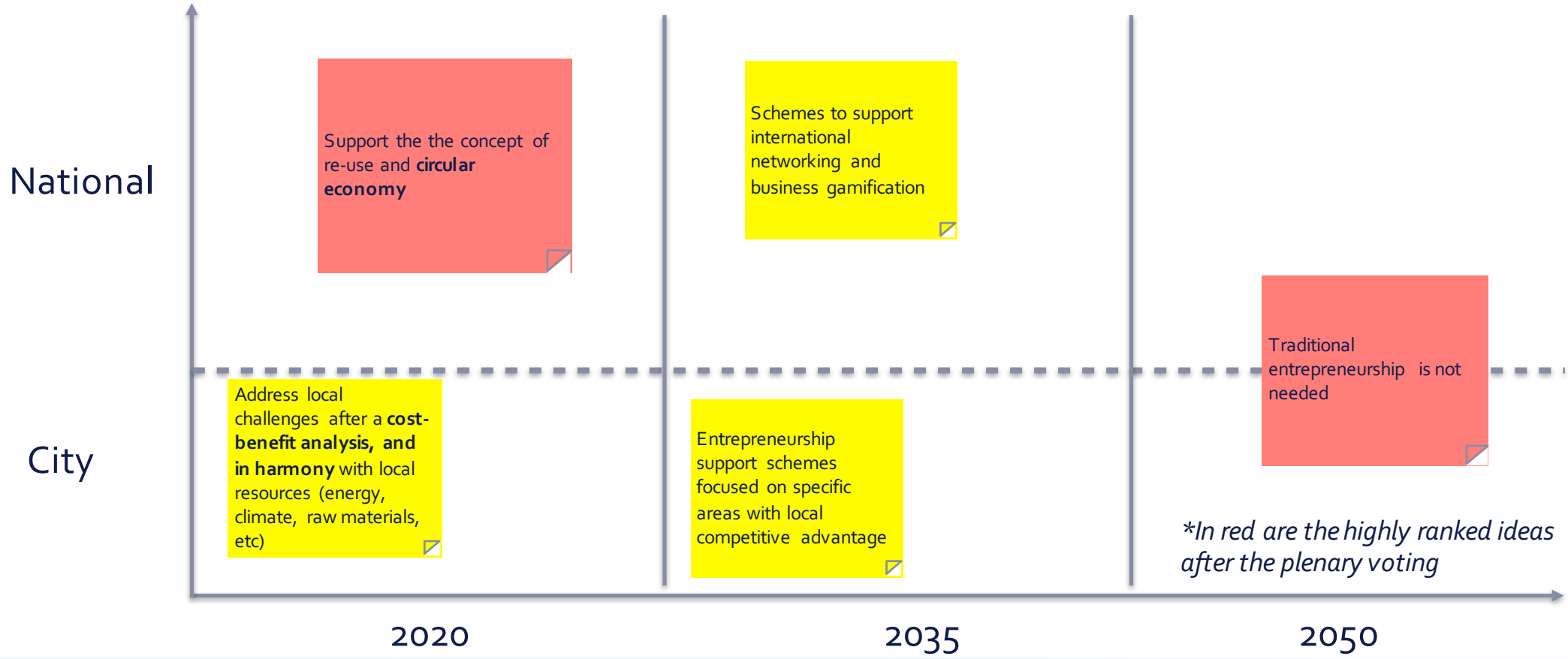
	2025	2030	2050
National Level	-Utilise A.I. to support cooperative work (and research) -Take global initiative to promote A.I. and address Climate Change . -Take initiative to support 3D/4D printing for increasing employment, reducing the use of resources and production of waste, and create a dynamic business sector.	**-Support Research on protecting privacy.** -Schemes to promote and support work-from-home -Create new interactive educational tools supported by A.I.	
City Level	-Create a non-for-profit centre for the promotion of new technologies and facilitation take-up of novel techs by the private & public sector. -Support employment on technological sector.	**-Focus on smart logistics.** -Establish a collective decision process in S&T. -Invest on new city infrastructure with self-healing capabilities.	-Focus biotechnology research that may allow in-house food production. -Focus on Sustainability, creativity, reducibility.

**In bold are the highly ranked ideas after the plenary voting*

Ideas on Business 1



Ideas on Business 2

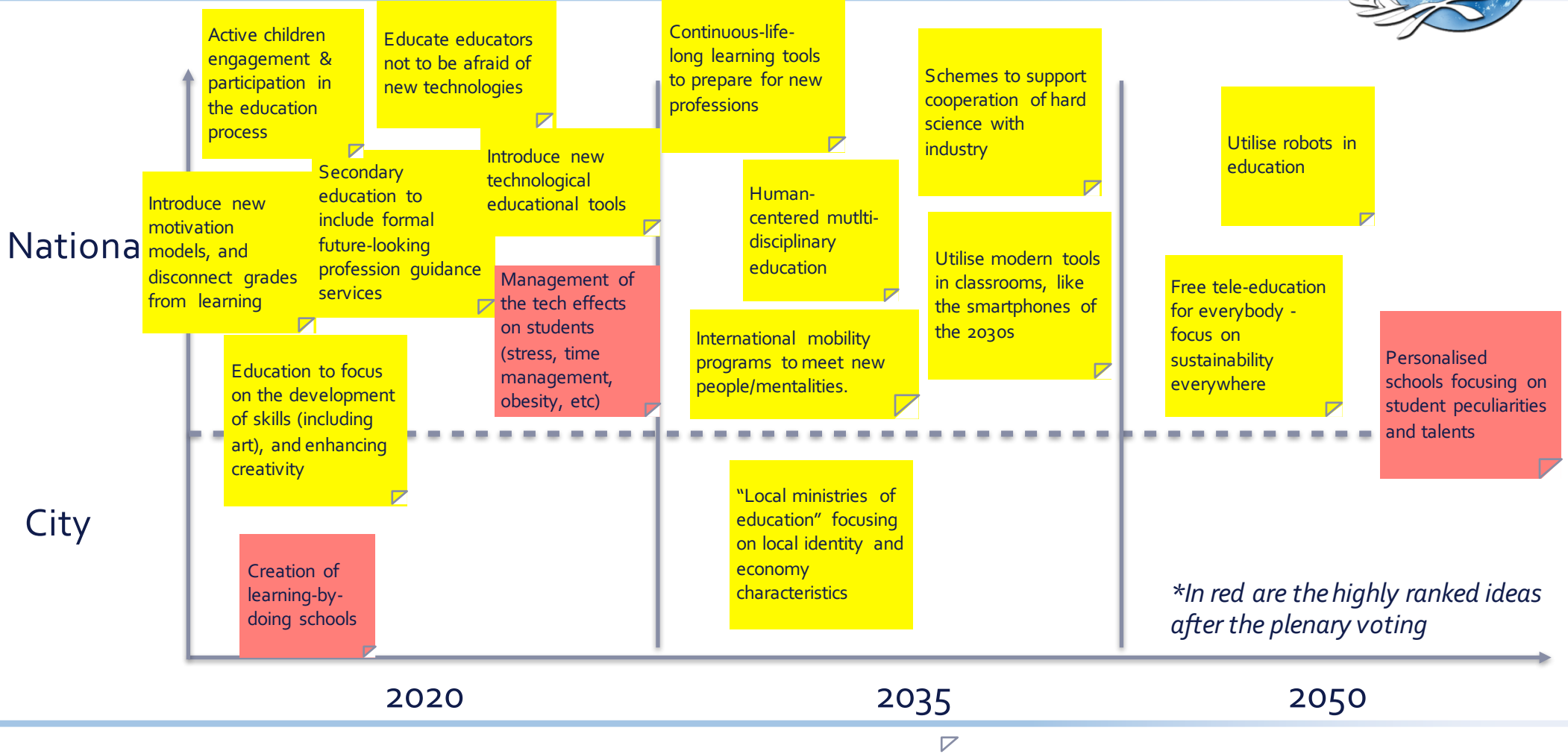


Ideas on Business

	2025	2030	2050
National Level	**-Support the the concept of re-use and circular economy.** -Flat tax rate to facilitate business making. -Servitization, support moving from products to experiences. -Focused Internship schemes in Industries, RTOs, NGOs, etc.	-Schemes to support international networking and business gamification. -A regulatory framework to allow flexibility in business making. -Schemes to support micro-financing.	**-Traditional entrepreneurship is not needed .** -Addressing externalities of industrial or commercial activity. -Addressing externalities of industrial or commercial activity.
City Level	**-Gamification everywhere!** -Address local challenges after a **cost-benefit analysis, and in harmony** with local resources (energy, climate, raw materials, etc). -A city scheme for corporate social responsibility .	-Entrepreneurship support schemes focused on specific areas with local competitive advantage.	-Promote social entrepreneurship .

**In bold are the highly ranked ideas after the plenary voting*

Ideas on Education



Ideas on Education

	2025	2030	2050
National Level	**-Management of the tech effects on students (stress, time management, obesity etc).** -Active children engagement & participation in the education process. -Address the fear of technology problem in education .Educate educators not to be afraid of new technologies. -Introduce new technological educational tools (e.g. augmented/mixed reality) . -Secondary education to include formal future-looking profession guidance services. -Introduce new motivation models, and disconnect grades from the learning process. -Education to focus on the development of skills (including art), and enhancing creativity	-Continuous-life-long learning tools to prepare for new professions. -Schemes to support cooperation of hard science with industry . -Human-centered mutlti-disciplinary education. -Utilise modern tools in classrooms, like the smartphones of the 2030s ("bring the phones in the classroom" scheme) -International mobility programs to travel around the world and meet new people/mentalities.	**-Personalised schools focusing on student peculiarities and talents.** -Utilise robots in education. -Free tele-education for everybody - focus on sustainability everywhere.
City Level	**-Creation of learning-by-doing schools.**	"Local ministries of education" focusing on local identity and economy characteristics.	

**In bold are the highly ranked ideas after the plenary voting*

Topics of Discussion

- Do you believe AI/Robotics/New Techs will replace a major share of Jobs in Europe by 2050?
- What are the specific impacts in less tech intensive countries (e.g Greece) and what strategies are required to adress these issues?
- What are the necessary skills of the "future" human? Is the enchanced human the answer?
- Do you think the EU shall establish a UBI scheme across Member States?

Main feedback received

- Do you believe AI/Robotics/New Techs will replace a major share of Jobs in Europe by 2050?
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- Do you think the EU shall establish a UBI scheme across Member States?

Main feedback received

- **Do you believe AI/Robotics/New Techs will replace a major share of Jobs in Europe by 2050?**

There was no overall agreement. They believe that several jobs will be created in new sectors, while the concept of "work" will be also probably differently defined. In this framwork, probably unmployement will be meaured differently in the fuutre.

- **What are the specific impacts in less tech intensive countries (e.g Greece) and what strategies are required to adress these issues?**

Due to limited time, this topic was not discussed.

Main feedback received

- **What are the necessary skills of the "future" human? Is the enchanced human the answer?**

There was an overall agreement in this topic, by the vast majority of the particpants stating that the basic skill is "to be able to adapt to change", to be flexible, and not think lineary. This is the basic quality needed to be future proof.

Other participants raised the idea to go back to the basics, and learn basic skills like reading or crafting.

Main feedback received

- **Do you think the EU shall establish a UBI scheme across Member States?**

-Although UBI seems a necesity , and there are several ongoing experiments in different countries (including Finland) the introduction of a UBI raised a lot of scepticism and conflicting opinions from the participants, although most of them recognised the validity of the idea.

-Some particiapnts questioned the financial viability of a UBI scheme (allthough a tax on machines/robots was proposed), and the capability to be established such a scheme at Europe-wide level.

-There was also a strong cultural aspect at the UBI discussion, as participants from specific countries claimed that if UBI would be established, then nobody would be interested working in their countries.

Country Report: Spain

Some initial suggestions (Spain):

1. Education/Learning
2. Labour
3. Business
4. Government
5. Science & Technology
6. Culture
7. Society

Some Long-Range Strategies

- Need to share the information and scenarios with civil society. Awareness raising is urgent. Experts talk to other experts; we need to take the debate from a bottom-up approach.
- Rethink the education system. People need to recycle themselves to face the long term scenarios
- Stop training people on jobs that have no future
- Young people want different work experiences that are linked to their values
- Spain needs a long term strategy such as Finland has, specially in the field of education
- The change should come from civil society, pushing decision makers for a long term view
- Need for life long learning approaches
- Promote community values, not the traditional self-made person approaches.
- Entrepreneurs need to have the idea that they are covering the needs of other people, not just serving their own needs.
- Some people believe in politicians that promise jobs based on protectionism, immigration fight… This does not work in the long term. Need more trust in Institutions.
- Basic income test in Finland could give people hope to people to make the change. Rethink of the well-fare system
- New sharing economy could bring good opportunities
- Block-chain could be interesting if the regulators enable sharing economy
- There was no strategy related to immigration in Spain
- The demographic challenge is related to the automatization of jobs and the real need of
- Combination of part-time jobs with volunteer activities
- Need to change the values. Work less and distribute the jobs.
- There is a skills gap
- Older people have problems to change jobs or careers.
- The case with mini-jobs in Germany is not really working, since people have low salaries and cannot earn enough to get retired

About

Finland Futures Research Centre's (FFRC) 'Futures of a Complex World' conference 12–13 June 2017, in Turku, Finland
https://futuresconference2017.wordpress.com/

Underlying studies:

Millennium Project, Work / Technology Scenarios 2050 (results are available internally but have not yet been published): http://www.millennium-project.org/millennium/AI-Work.html

In German: 2050: The Future of Work. Results of an international Delphi study from the Millennium Project: https://www.bertelsmann-stiftung.de/de/publikationen/publikation/did/2050-die- zukunft-derarbeit/

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