



GLOBAL
EDUCATION
FUTURES

Towards Learner- Centered Lifelong Learning

Results of
Global Education Futures California
1-3 April 2015, Menlo Park, CA, USA





Key statement that led to GEF California Forum

Anticipated transition from ‘factory systems’ to learner-centered communities that support ‘lifelong learning everywhere all the time’ is the biggest challenge ever in the history of education.

Many progressive global players already invest into this transition, including major technology companies, governments of OECD countries, venture capitalists and international social movements

Our question is: what are the productive strategies of different players that support & enhance this scenario?



GEF California: Main Subject & Expected Outcomes

Towards learner-centered lifelong learning

We explore main changes in education driven by technological innovations, major social & economic transformations, changes in demand for skills, and rise of personal & collective educational formats that meet needs of learners in 21st century

From 'knowns' to 'unknowns'

This Forum is a collective exploration, a learning lab
It is not to seek expert opinion but to co-create
Our main outcomes are:

- Shared vision for the future of global education, and
- Projects of systemic innovation inspired by collective vision



GEF California Forum: 3 days of intense work



Ca. 100 participants from 15 countries (over three days), including representatives of think-and-do tanks in systemic educational innovation, policy advisors and visionaries, and ca. 40 leaders of online learning platforms & projects*

Mixed Russian-American team of facilitators that used innovative methods of collective creative work (Rapid Foresight methodology)

Forum conducted in collaboration with Global Technology Symposium, a leading venture capital event of the Silicon Valley (over 400 participants in 2015)

4 'maps of the future' and 5 GEF project initiatives

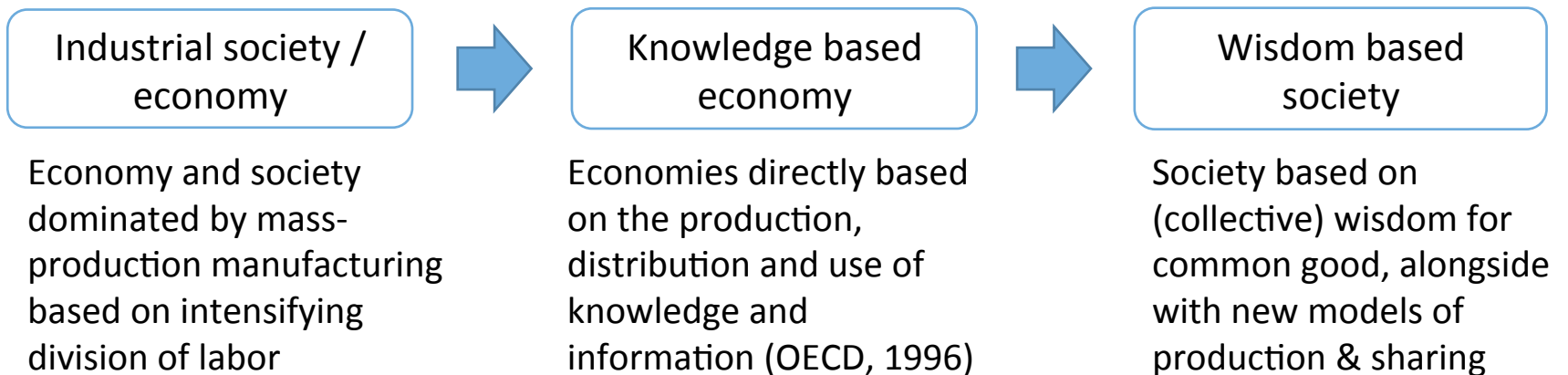
* See details in Appendix

PART 1: PRECURSORS TO LIFELONG LEARNER-CENTERED EDUCATION



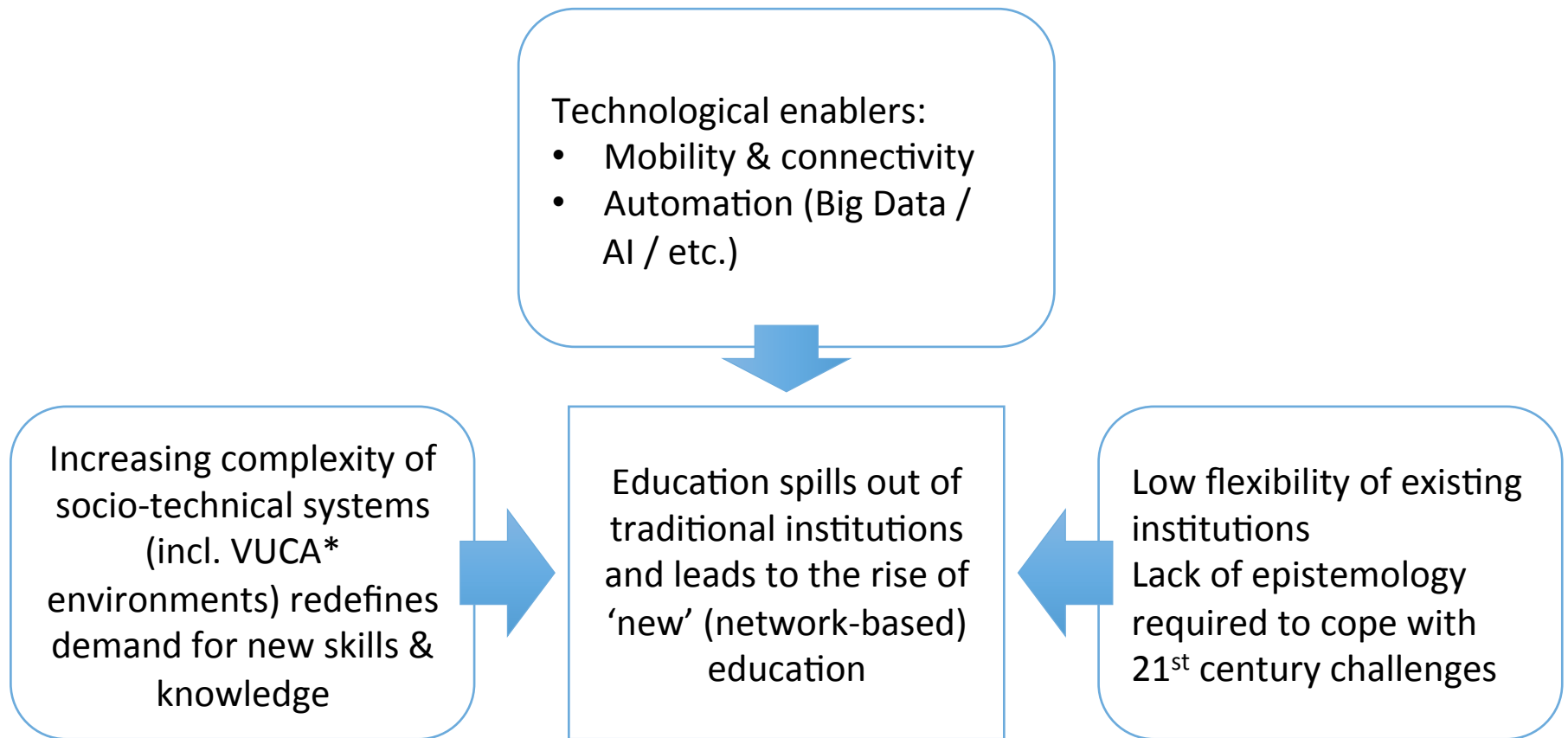
Societies in transition

1. The main challenges and existential threats of modern civilization are endogenous to the society. The bottleneck of civilizational development is the ability of governing structures (including culture & dominating thinking models) to process the accelerated increase of social / technological / environmental complexity
2. Knowledge based economy, shifting attention from mass manufacturing of material goods to mass production of knowledge, does not resolve the 'ills' of industrial society, including the imbalance between the society & nature. In order to cope with future challenges, it is necessary to transit to wisdom based society, where wisdom (as "fundamental pragmatics of life" (Baltes, Staudinger, 2000)) drives decision-making of individuals and collectives.





'New' education rises within and outside traditional education system in response to growing demand from transforming societies



* VUCA = volatility, uncertainty, complexity, and ambiguity



What growth of complexity may imply for systems that transfer skills & knowledge

What happens to skills & knowledge required in increasingly complex societies:

- Lifecycle of specific skill / knowledge shortens, hence it becomes less important than the ability to learn / relearn / unlearn
- Knowledge becomes situated and collectively constructed, thus specific skills become less relevant than meta-skills necessary to construct knowledge, including communication, creativity, diversity of thinking styles etc.
- Abilities for self-guided action become more important than abilities to follow externally guided action (hence we anticipate a generation of Self Guided Learners that will use tools of 'new' education)

What happens to systems that transfer skills & knowledge:

- Shift from 'education as preparation for life' to 'lifelong continuous education'
- Shift from education within a specific institution (school / university) to 'distributed' education within an ecosystem



Emergence of Global Educational Ecosystem

Continuous globalization:

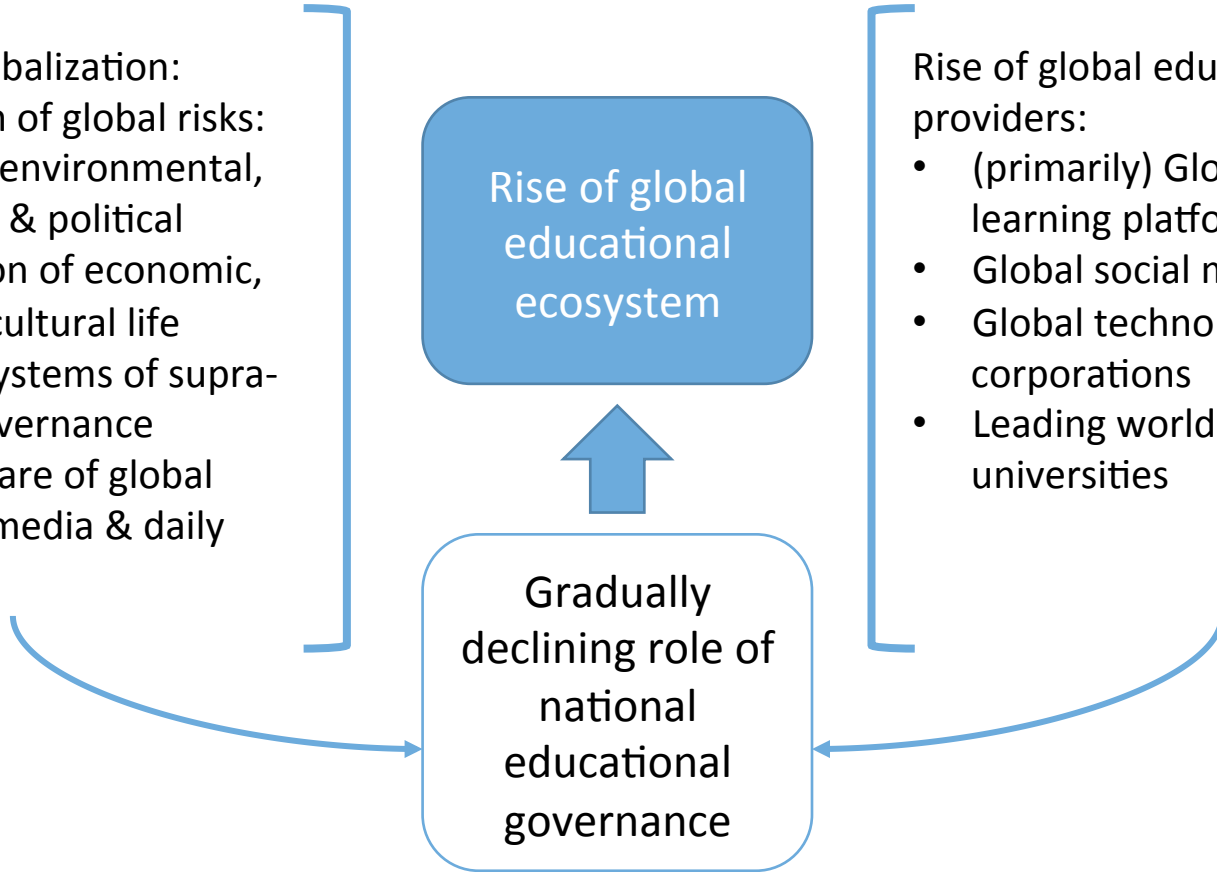
- Recognition of global risks: existential, environmental, economical & political
- Globalization of economic, political & cultural life
- Emerging systems of supra-national governance
- Growing share of global content in media & daily life

Rise of global educational ecosystem

Rise of global educational providers:

- (primarily) Global online learning platforms
- Global social movements
- Global technological corporations
- Leading world universities

Gradually declining role of national educational governance





Design of global education ecosystem: levels of consideration

‘Civilizational transit’: focusing on emerging social practices that help us recognize ourselves as a truly planetary species (e.g. Macy’s Great Turning, Eisenstein’s More Beautiful World etc.)

Key discussions: how can education help us reinvent our relationship between ourselves, with our ancestors / descendants, and with our planet

‘Rebuilding urban civilization’: focusing on life quality & social impact (e.g. Sharing Economy, Scharmer’s Capitalism 4.0, Florida’s ‘Reinventing Cities’ etc.)

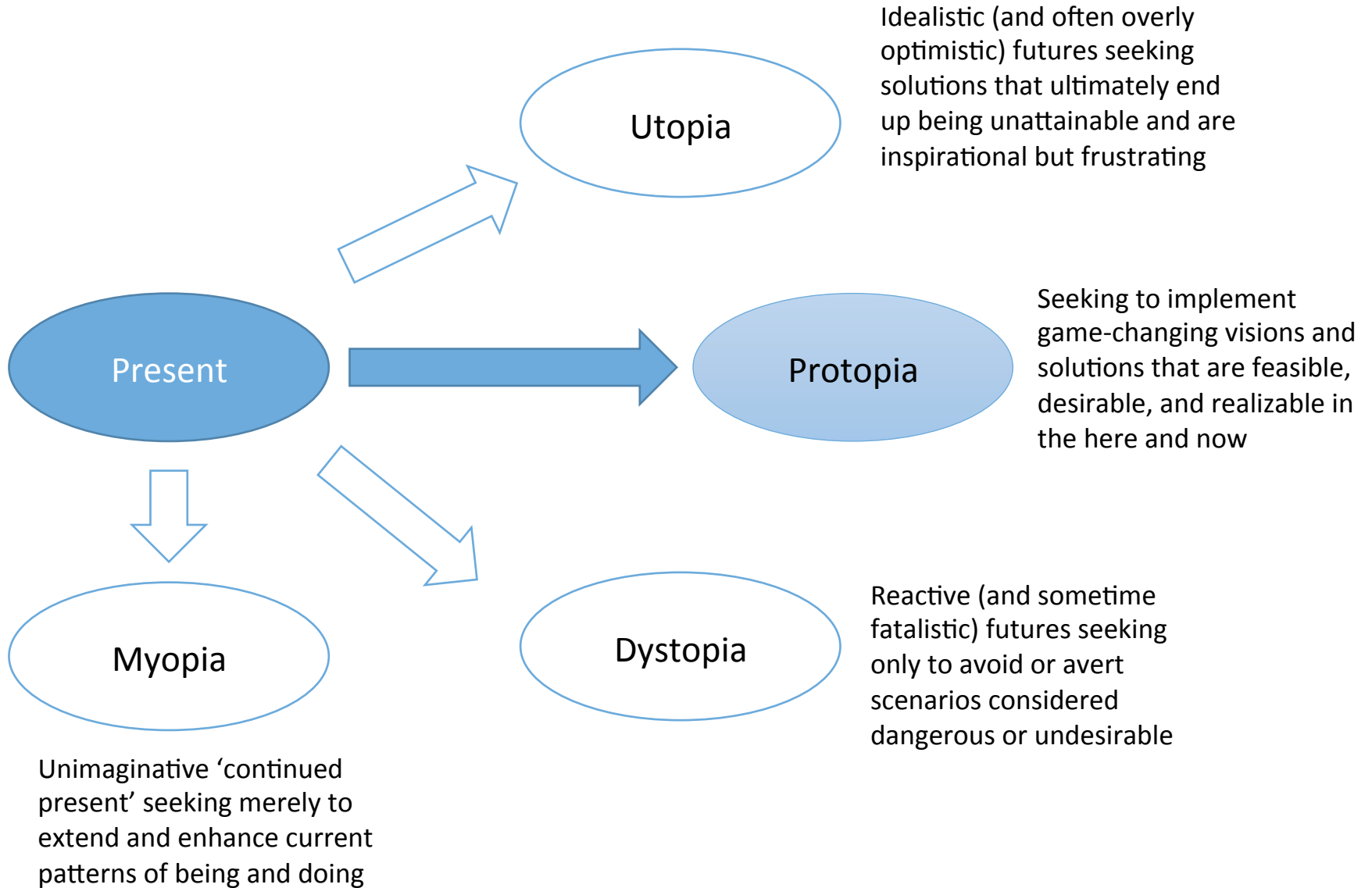
Key discussions: new models of education that should complement existing ones (e.g. urban learning communities)

‘More of the same’: increasing economic efficiency / productivity / competitiveness in 21 century

Key discussions: education is broken but could be fixed by introducing better pedagogies / ed tech & new curriculum

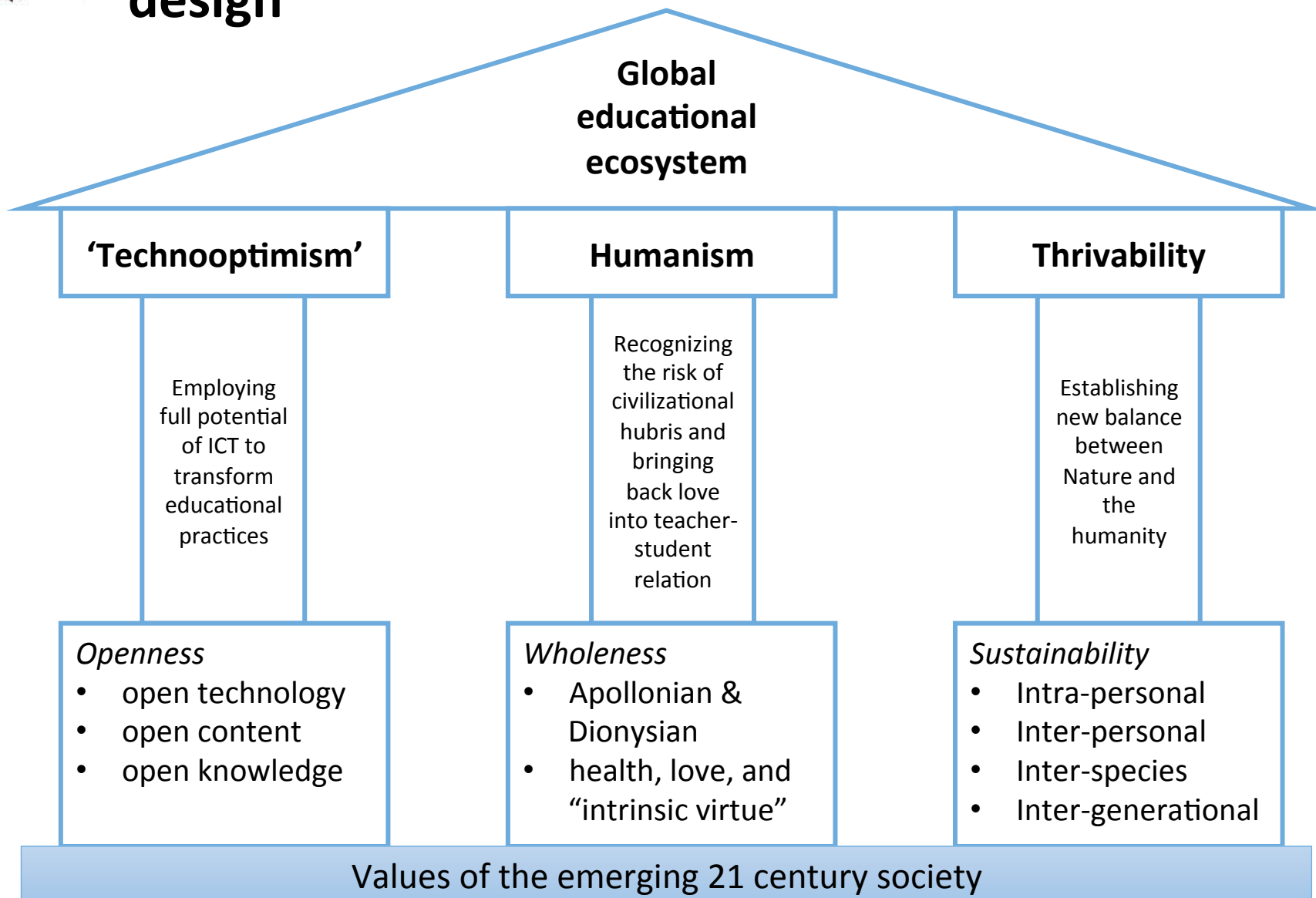


Designing future of global education is seeking the pathway towards protopia





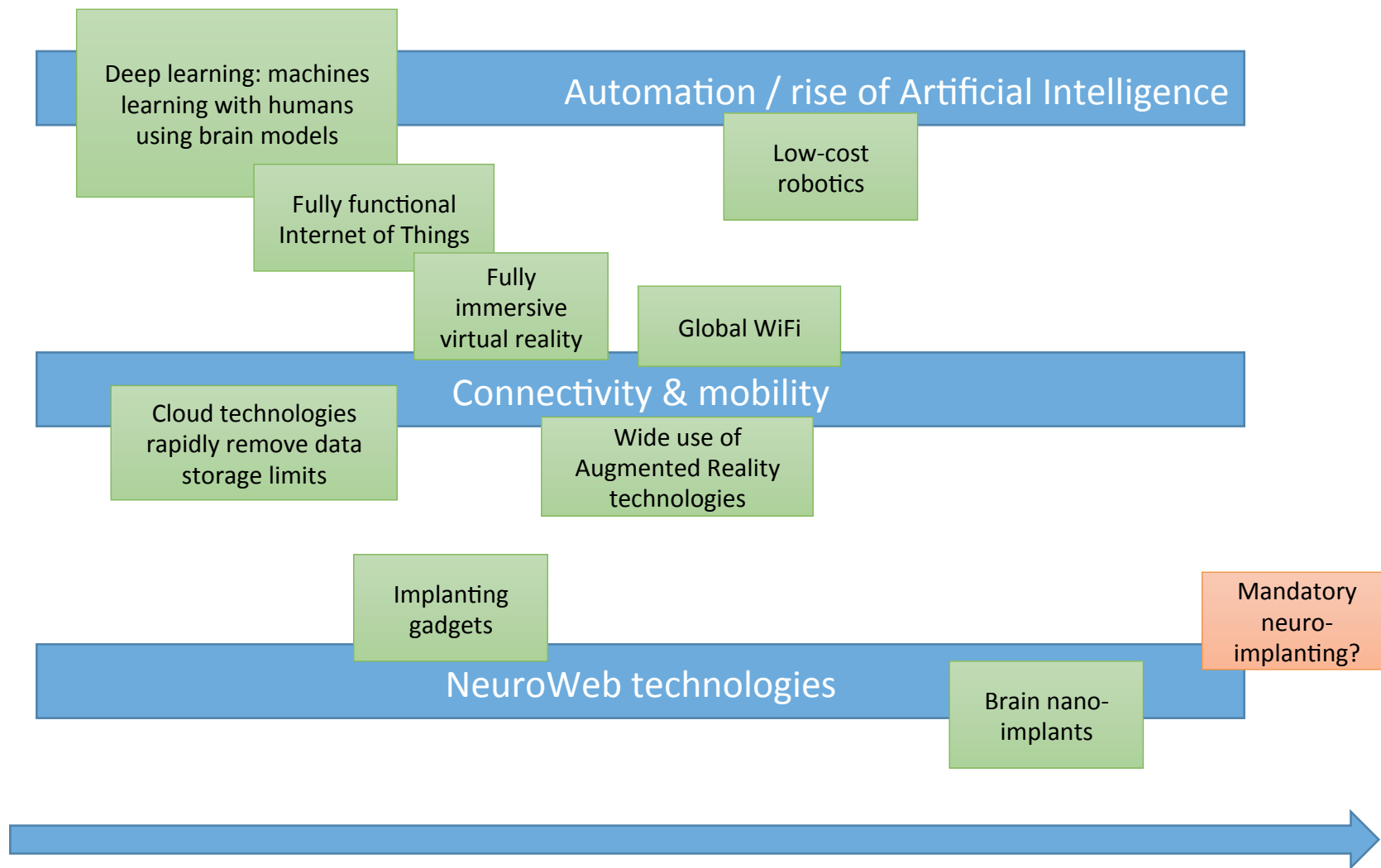
'Three pillars' of global education ecosystem design





Key technological trends that shape future of education`

- Hard technologies
- Risk factor



2015

2020

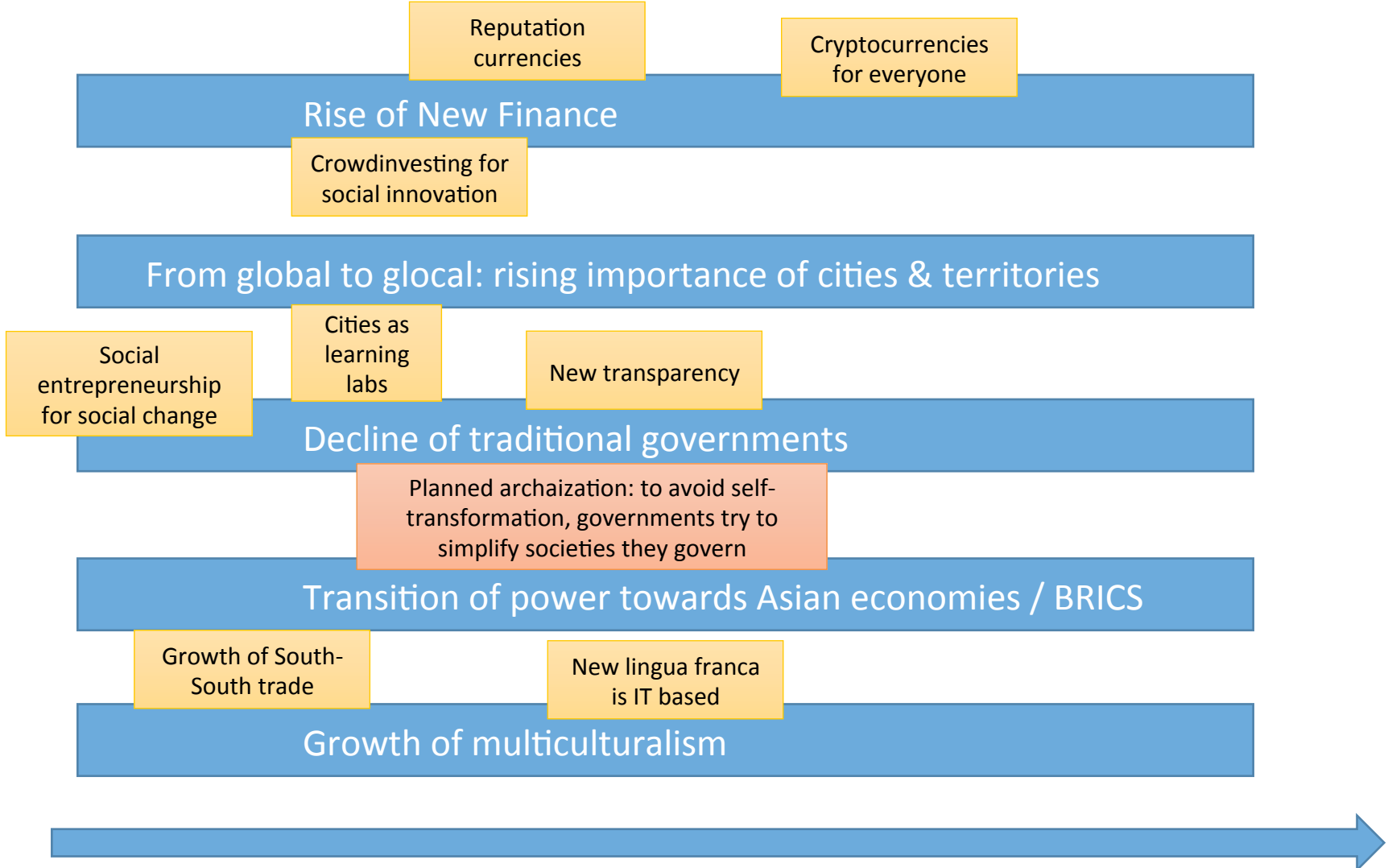
2030

Source: GEF CA session summary



Key social & economic factors that shape future of global education

- Soft technology / format
- Risk factor



2015

2020

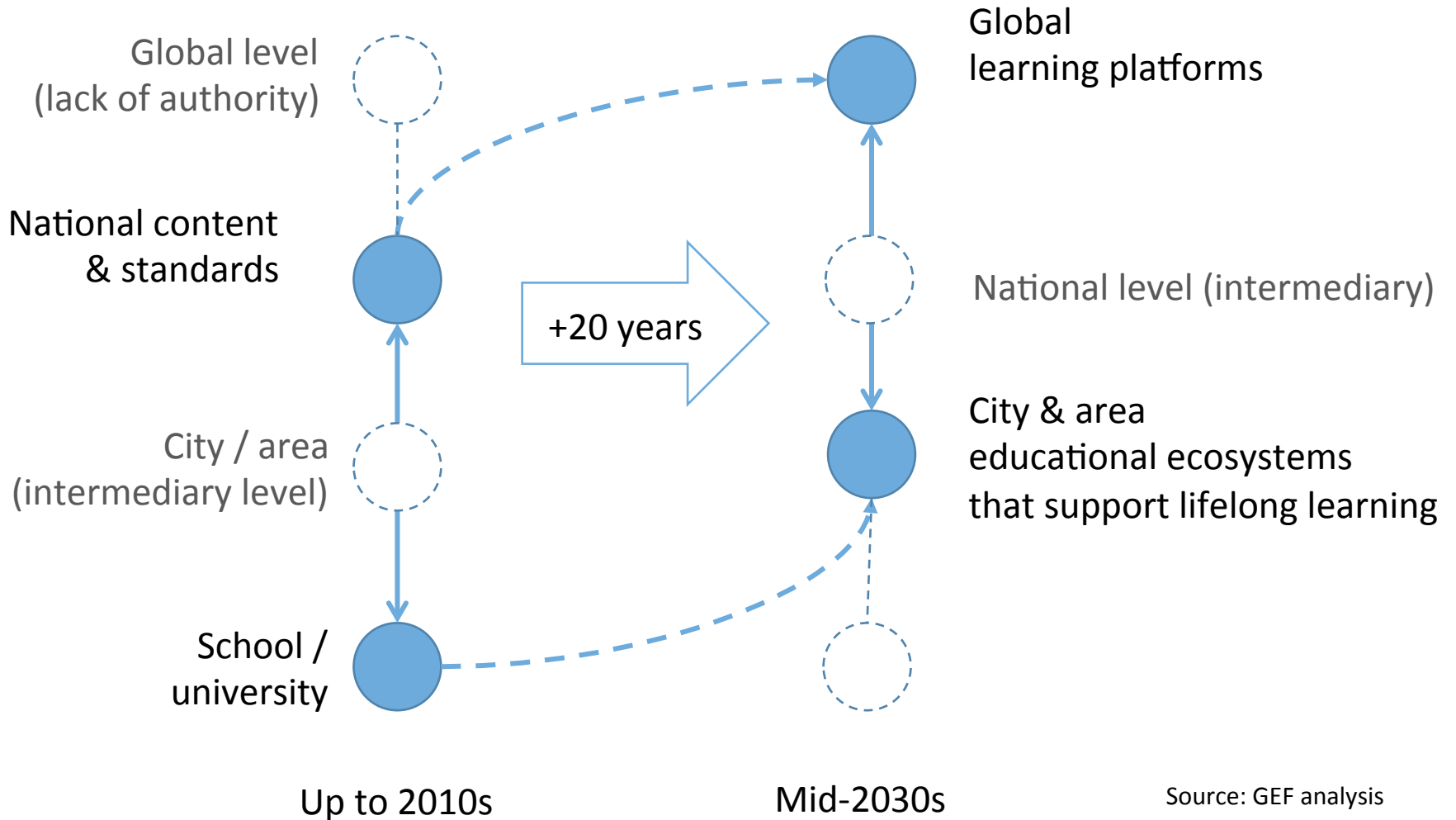
2030

Source: GEF CA session summary

PART 2: KEY ELEMENTS OF GLOBAL EDUCATION ECOSYSTEM



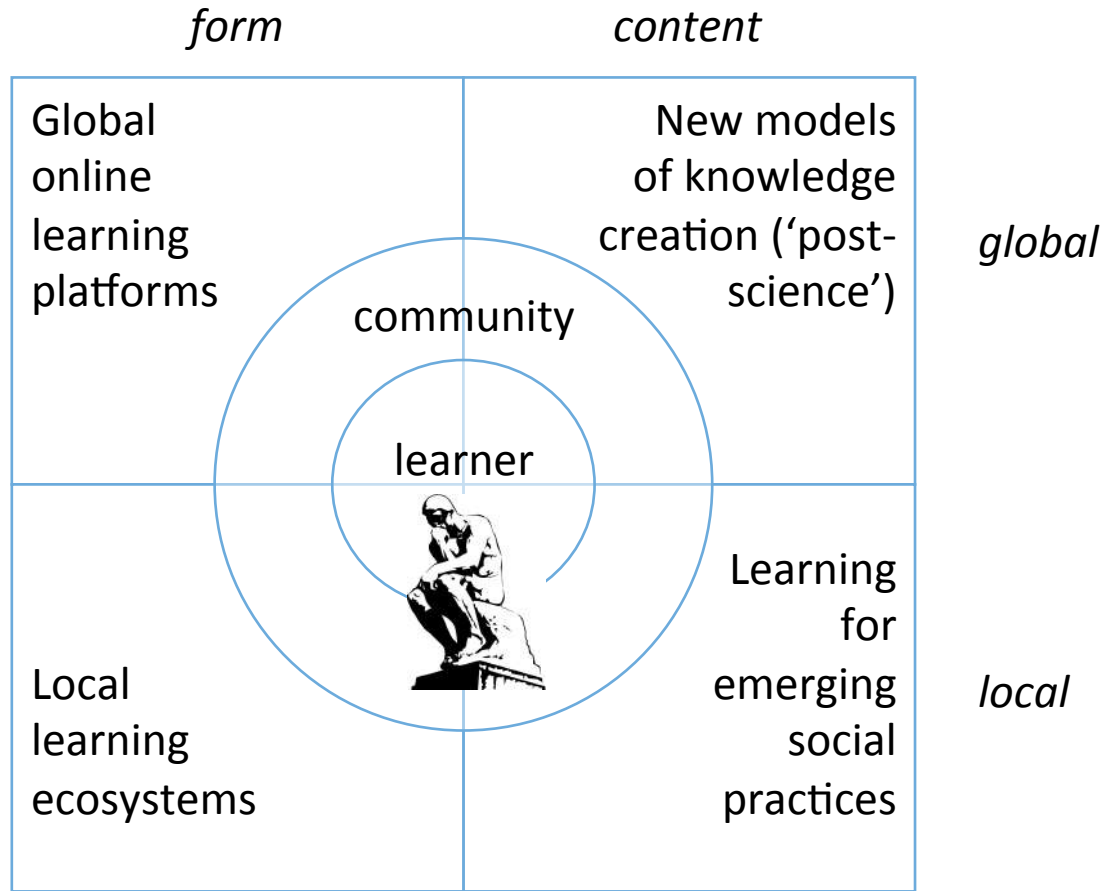
Dramatic shift: from local-national to regional-global



Source: GEF analysis



Main aspects of the emerging global educational ecosystem



Source: GEF analysis



Theme 1: Global learning platforms (GLPs)

Global online learning platforms	New models of knowledge creation ('post-science')
Local learning ecosystems	Learning for emerging social practices

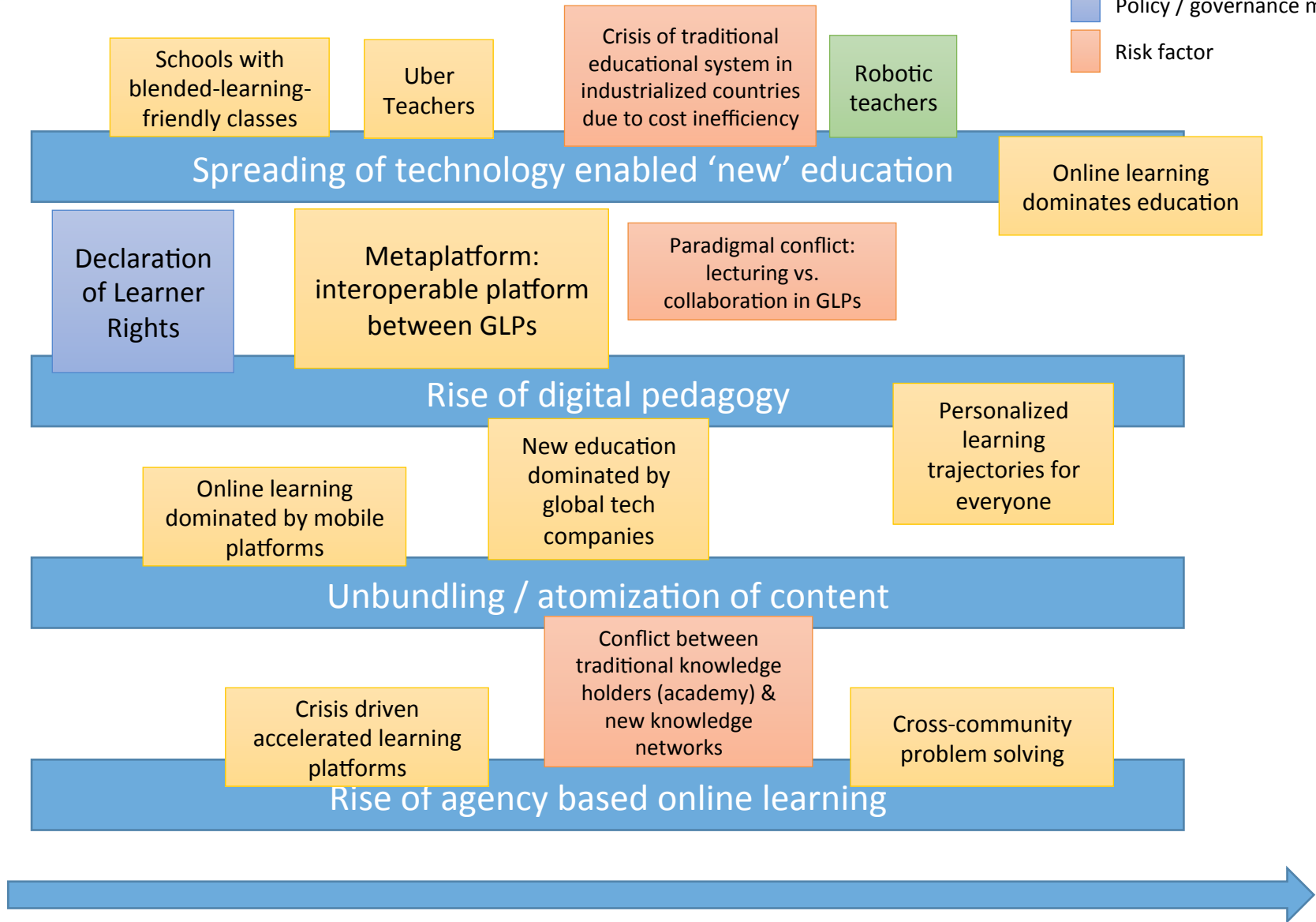
Some questions discussed by the group:

- Relationship between face-to-face, blended, and online learning? How will new models of learning change traditional schooling structures and the older model of teacher/student relation?
- How are the internet, the social web, video games, and other forms of gamification changing the educational ecosystem on a local and world scale?
- How can families, educators, policy makers, and school leaders use technology to create learning opportunities that are both personalized and collaborative in design and nature?
- What does it mean that English is the lingua franca of the internet age? How will it influence local and global learning networks? Might English be eclipsed by other languages, including computer languages (e.g. Python, Ruby etc.)?



Mapping future of GLPs

- Hard technologies
- Soft technology / format
- Policy / governance mechanism
- Risk factor





Key trends that shape the future of GLPs

Spreading of technology enabled 'new' education through GLPs:

- At the moment, online learning is considered complimentary and experience-enhancing as compared to face-to-face learning. This idea continues to encourage more schools & universities to adopt blended learning in their curriculum & create blended-learning friendly classrooms. The most important problem resolved by 'new' education is the increased value of time for learners, teachers & administrators.
- Gradually, learning shifts to mobile platforms, detaching the learning process from traditional venues like the classroom & university.
- Increasingly costly face-to-face education in industrialized countries is leading to vast inequalities among students and among broader population segments. Such disparities could well polarize societies and encourage more and more people and populations to shift to GLPs.
- Within 15-20 years, online learning (enhanced by mobile connectivity, wearable gadgets & augmented reality technologies) may become the dominant form of learning globally.

Rise of agency-based online learning:

- Project-based learning (PBL) begins to dominate face-to-face education, and will gradually be adopted by GLPs as well. It will especially be demanded by Self-Guided Learners (see Theme 3) that prefer an active exploratory attitude in learning to passivizing 'knowledge consumer' attitude.
- GLPs can help improve life on planetary scale, e.g. incubating activists projects through project-based learning. GLPs allow engaging in ethical behavior for massive groups without imposing doctrinal restrictions
- Also, GLPs can be used to help rapidly transfer new knowledge & skills to communities / societies in distress in crisis situations (economy collapse, war, natural hazard, environmental disaster, etc.). Over time, GLPs can become essential in connecting communities across the world that face similar problems (e.g. poverty, crime, hunger, etc.) to help cross-community learning



Key trends that shape the future of GLPs (2)

Unbundling / atomization of content (subtrend):

- Atomization allows learners to obtain content that more precisely matches their interests & development needs. Also, atomization supports mobile delivery of content
- Atomization challenges the position of traditional 'knowledge holders' (i.e. academia) leading to conflicts. IP rights and licensing might well be used to protect the position of traditional institutions and perhaps further secure the relationship between traditional academic research institutions and corporations. In this future vision, what becomes of the users who are often creators of content and new forms and means of knowledge?
- Aggregation of atomized content into searchable global library, curated topical collections & collaborative structured discussions
- Over time, as more knowledge work migrates into distributed network knowledge creation structures (see Theme 2), this conflict will likely be resolved in favor of GLPs. As a result, knowledge comes to be created by an ever more vast number of people yet is controlled or archived by distinct agencies, platform creators, or service providers (such as Google, Minecraft, and Wikipedia).
- In such a global society, what happens to the largely western conception of 'liberal education' (education across many fields of knowledge & exploration) in favor of more focused career training? Are some forms of knowledge such as memorization displaced while other forms of knowledge such as discernment become ascendent?



Key trends that shape the future of GLPs (3)

Rise of digital pedagogy:

- Digital pedagogy (enabled by Big Data analysis and Artificial Intelligence) allows gradual customization (later, personalization) of GLP content based on learner's behavioral patterns and life strategies (incl. career, health, etc.). Within 15-20 years, it will allow delivery of personalized education to every tech-equipped learner. Questions remain about how personalization could well serve to drive learners towards select kinds of information and conclusions based on human biases or AI manipulation, intentional or otherwise.
- Global technology companies, as aggregators of personalized online behavioral data, will inevitably play significant role in future global educational ecosystem. This raises issues of privatization, learner privacy, and social engineering on a world scale.
- In collaboration with global tech companies, a 'meta-platform' can be created as a consortium between GLPs, which will aggregate standardized learners' data in order to foster interoperability of GLPs (recognizing that any fixed platform will be a hindrance to evolution of the ecosystem). Interoperability or a standard meta-platform could boost the personalized learning trajectories of individuals and communities while supporting the development of new online pedagogies that meet the needs of an ever more diverse base of learners.
- Due to the sensitive nature of learning processes, the importance of education for individual and societal advancement, learners' interests must be protected against abuse & manipulation by commerce & governments. To guard against these possible violations, GLPs and global tech companies should adopt the Declaration of Learner Rights in the nearest future. Platforms should build on learner's interests, help make learning more relevant to life, don't waste their time and give them feedback and recommendations. Platforms also should allow room for disagreement, diversity and open-mindedness.



How will the future look for GLPs

... in 2020

- Online education forms continue spreading, and more educational institutions adopt blended-learning friendly curriculum & environments
- GLP learning model gradually shifts from one-to-many (conventional MOOCs) towards many-to-many, and from 'consumerist' towards 'activist' model of learning; first project-based learning global online platforms emerge
- Declaration of Learner Rights and Global Learning Meta-platform help advance the development of digital pedagogy and design of inter-platform learning trajectories

... in 2030

- Online or online-supported learning (enhanced by AI and AR) dominate education
- Inexpensive personalized learning available to any tech-equipped user
- Many-to-many pedagogy and online project based learning are increasingly popular as the generation of Self Guided Learners comes into play
- GLPs play important role in coordinating and enhancing collective effort for better world



Theme 2: New Models of Knowledge Creation

Global online learning platforms	New models of knowledge creation ('post-science')
Local learning ecosystems	Learning for emerging social practices

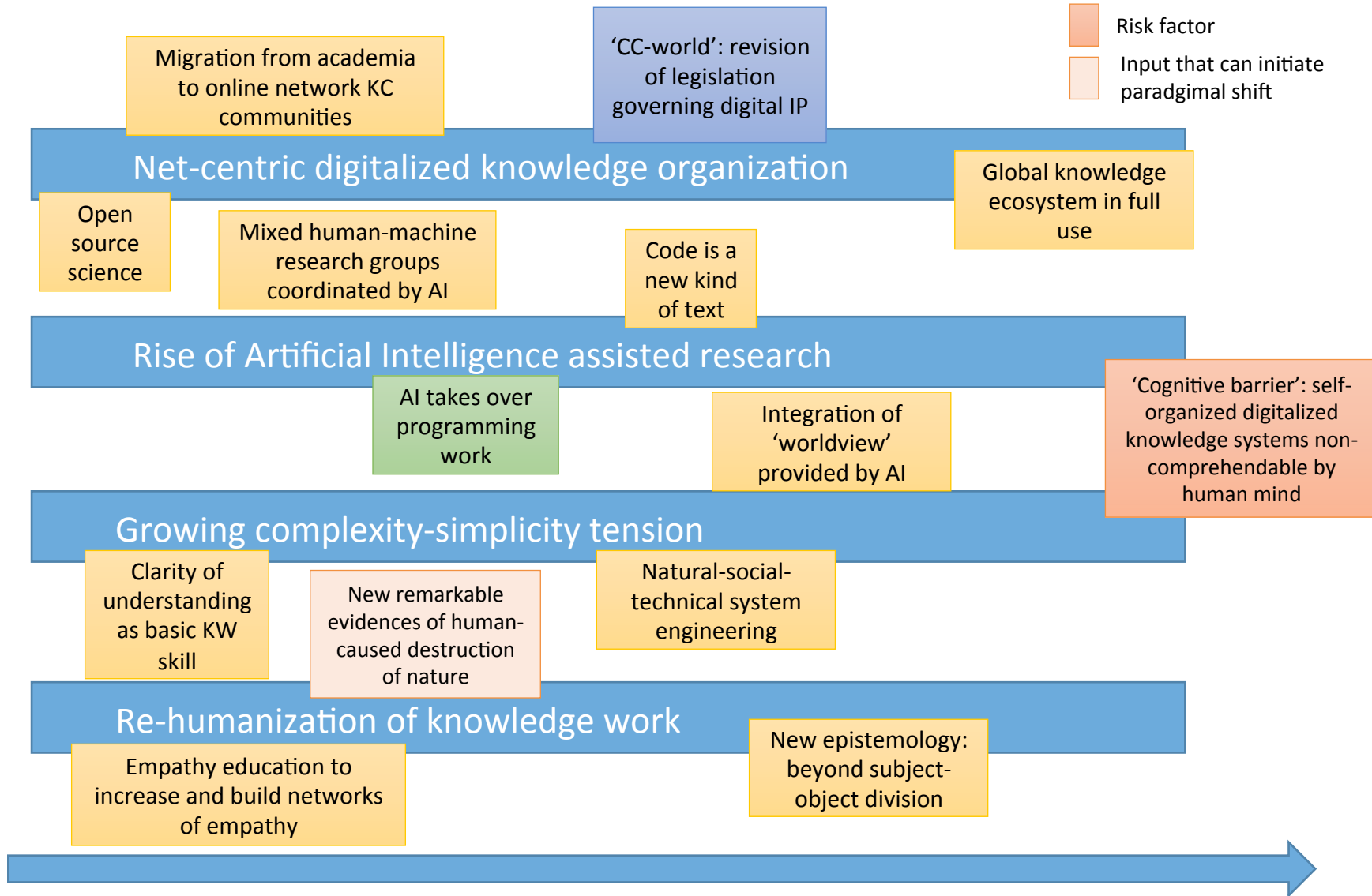
Some questions discussed by the group:

- Science in the era of 'instant knowing', the role of AIs & BigData
- Many types of knowledge and their federation, who creates & owns the 'worldview'
- New 'technologies of thinking'
- The trend toward over-simplification of knowledge in schools (and the loss of true understanding for students)
- The increased attention to the importance of empathy for sharing worldviews and to give depth to shared knowledge



Mapping future of Knowledge Creation

- Hard technologies
- Soft technology / format
- Policy / governance mechanism
- Risk factor
- Input that can initiate paradigm shift



2015

2020

2030

Source: GEF CA session



Key trends shaping future of knowledge creation

Net-centric knowledge organization:

- Knowledge work gradually moves from traditional institutions (limited by physical space, time of work and number of participating individuals) into network-like online knowledge creation communities. These communities start to build new kind of ‘knowledge ecosystem’ (early prototypes of which are represented by ArXIV, PLoS and Wikipedia) – which will replace traditional institutions of knowledge capturing within next 15-20 years
- Another key process in this trend is that knowledge storage becomes increasingly digital (hence “[digital] code is a new text”). An immediate consequence is that knowledge work based on interconnected & interoperable digital models of reality (e.g. computation models of biological & social systems) will create shared computational approaches for ‘applied’ knowledge (used to develop technologies, solutions & recommendations) and ‘fundamental’ knowledge (the way to capture fundamental relations).
- The speed of ‘new’ knowledge creation model proliferation will be contingent on how (obsolete) institutions of intellectual private property will hold. Wide adoption of models such as Creative Commons will facilitate the transformation of knowledge worker community.



Key trends shaping future of knowledge creation (2)

Growing complexity-simplicity tension:

- Tension between increasingly complex knowledge organization (required to help guide complex societies) and barrier to complexity comprehension will be the main problem of knowledge work in 21st century, and thus simplification of knowledge becomes a great risk. It is necessary to seek methods that help deal with this issue, by being willing to embrace the complexity, and also by developing new ways of sharing and developing shared understanding
- Also, an increased complexity – including increasingly observable feedback from nature on human action (including climate change effects and massive destruction of marine wildlife) – will call for more sophisticated modelling of feedback loops, especially in engineering. An already-happening paradigm shift from technical to socio-technical systems design will be soon followed by the next shift, towards natural-socio-technical systems design that monitors feedback loops in a highly integrated, real-time fashion.
- Over time, as volume & complexity of available knowledge increases, in next 10-15 years AI will gradually take over the role of ‘integrator’ that helps to summarize theoretical foundations of a discipline or the dominating ‘worldview’. Within the next 10-15 years after that, a foreseeable risk is that knowledge organization will become totally incomprehensible by any individual, or even collective, human mind.
- The need for new ways of ‘knowing’ will increase



Key trends shaping future of knowledge creation (3)

Rise of AI assisted research:

- Artificial Intelligence (AI) will play increasingly important role in research work. AI will become increasingly self-organized, taking over not only data analysis but also low-level programming work. As knowledge representation becomes increasingly digital, 'in silico' experimenting will often complement other forms of research.
- AI will become a fully functional member of research teams, helping to identify knowledge 'lacunas' and generate research hypotheses.

Re-humanization of knowledge work:

- Knowledge work has long suffered from 'factory style' knowledge creation processes that alienate researchers from research interests & results. In addition, the dominant ethics passivized studied 'objects' (incl. animals & human beings) and detached them from the researcher. In future knowledge creation work, the driving force will be researcher's passion about the theme of study – thus empathy becomes a key research skill. Adoption of empathic (mutually transforming) relation between 'the one who studies' and 'the one being studied' may eventually lead to the rise of a new epistemology that overcomes the division between the object and the subject.



How will the future look like for Knowledge Creation Models

... in 2020

- Open Source science becomes increasingly popular. Knowledge workers gradually migrate from traditional knowledge creation institutions towards loosely organized network knowledge creation communities.
- AI starts playing increasingly important role in all aspects of research process, from data organization and model identification to experiment design and team planning.
- Soft skills of knowledge workers become increasingly important, including new ways of working with complexity by creating means of access to deeper shared understanding of complex systems, through honoring the process and the person(s)

... in 2030

- Human knowledge work focuses on more 'humanistic' aspects of cognition that involve creativity, passion, openness, and personal relation. New ways of 'knowing' are on the rise
- Global knowledge ecosystem replaces the significant share of traditional organization of science.
- Natural-socio-technical systems designs help monitor feedback loops in a highly integrated, real-time fashion. AI plays significant role in organization of knowledge, with risk of moving towards the level beyond human comprehension



Theme 3: Learning for Emerging Social Practices

Global online learning platforms	New models of knowledge creation ('post-science')
Local learning ecosystems	Learning for emerging social practices

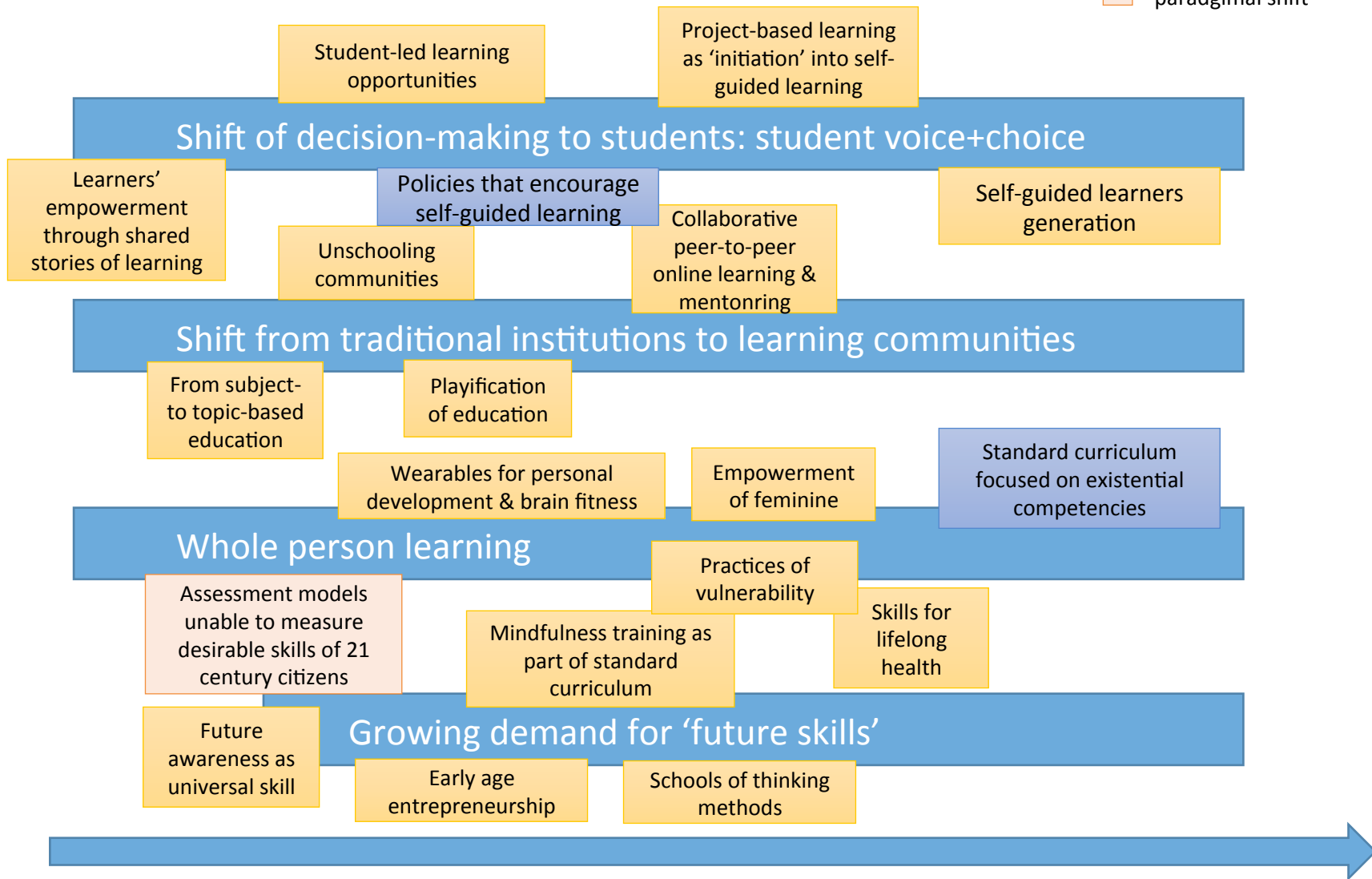
Some questions discussed by the group:

- What new skills will be demanded in the transforming 21st century society, and how should these be taught?
- How will competence based model look in lifelong learning? What models will support lifelong personal development?
- What will be the organization of learning spaces, and the change in role of teacher & learner?



Mapping future of learning for emerging social practices

- Soft technology / format
- Policy / governance mechanism
- Input that can initiate paradigm shift



2015

2020

2030

Source: GEF CA session



Key trends that shape the future of learning for emerging social practices

Shift of decision-making to students: student voice+choice:

- Recognition of student voice (and shift of decision making to students) is one of the main transformational challenges for the secondary & tertiary education, to which many administrators, teachers, and families (and even some students themselves) resist. The gradual introduction of student-led learning opportunities is, however, inevitable – since we can become ‘learners for life’ only through the regular practice of self-guided learning (and the skill of lifelong learning becomes crucial to cope with 21 century challenges).
- Project-based learning (PBL) is among one of the highly efficient tools to ‘initiate’ students into self-guided learning (as it is driven by student’s own interests and choices) – and so it will be increasingly applied across all levels of education. Policies that encourage self-guided learning (including regulations that allow more flexible choice of educational providers) will be widely adopted in countries with developed educational systems.

Shift from traditional institutions to learning communities:

- Horizontal / network-structured learning communities start playing increasingly important role in learning, offering programs & curriculums more relevant to student needs. Part of their role for learners is to unschool, to remove negative ‘programming’ created by ‘industrial education’. Learning communities can offer education centered around students’ interests and real-world problems (i.e. topic-based education instead of subject-based). ‘Unstructuring’ of existing schools can be part of this process.
- Learning communities can be created with a cause (e.g. focused on social activism or specific needs of a local community), and thus collaborative action can guide the collective learning. While some of this learning may happen face-to-face, it may also be conducted in peer-to-peer online networks (also see Theme 1). In addition to peer-to-peer learning, P2P mentoring will be an important part of future learning landscape



Key trends that shape the future of learning for emerging social practices (2)

Growing demand for future skills:

- For self-guided learners, it will be crucial to build personalized long-term development strategies and to obtain meta-skills that will be suitable in various professional and personal circumstances.

Among such meta-skills are:

- future awareness (the ability to understand variety of future scenarios and create individual and collective strategies);
- entrepreneurship (the ability to initiate & organize new projects, social & commercial initiatives) that should be taught from the early age;
- diverse thinking methods for better comprehension of complex problems (incl. mathematical, systemic, artistic, poetic etc.)
- mindfulness, that should also be taught from early age & become part of the standard curriculum
- and, among the most important, various skills that help maintain lifelong physical, mental & social health (as well as skills for maintaining personal, family & community health)
- Playification (as distinguished from gamification) becomes increasingly important in getting skills of the future as it allows 'living through' studied topics instead of learning about them (story-dwelling, not story-telling)



Key trends that shape the future of learning for emerging social practices (3)

Whole person education:

- In 21 century education, limited focus of industrial education on the development of cognitive abilities and professional skills only will be seen as highly deficient. Instead, a call is made to develop ‘humane’ abilities, including emotional and social intelligence, creativity, and skills that support collaborative work. This process will be enhanced by the increased recognition of irrelevance of standardized learning achievement measurement (including tests of cognitive abilities), and the need for more ‘holistic’ assessment metrics that embeds various aspects of human mental, physical, and emotional development.
- Whole person education should recognize qualities neglected in Western ‘white-male’-centered civilization, including the support to practice of vulnerability (which helps promote openness and sincerity within the society) and recognition / empowerment of the feminine within each of us
- In lifelong education, a gradual shift of pedagogical focus will occur from skills to meta-skills (e.g. thinking methods, creativity etc.) and from meta-skills towards existential skills (that determine our long-term ‘strategies of living our lives’). Within 15-20 years, some of existential skills may become a focus of standard curriculum in developed countries.
- Whole person education key principle is 3H: Heart on, Hands on, and Head on! (Also: we might want to add ‘learning with the gut’, i.e. anticipatory/ intuitive/ sensing aspects of learning to this).



How will the future look like for learning for emerging social practices

... in 2020

- Schools & universities increasingly offer student-led learning opportunities and encourage self-guided learning.
- Collaborative learning communities (with a cause) provide robust alternatives to conventional education and help in 'unschooling'
- Notion of 'whole person learning' gets limited recognition in education, and providers outside conventional education system increasingly provide opportunities for holistic education – including education technology companies that provide gadgets for personal development.
- Some 'future skills' enter into conventional or complimentary education, including future awareness and entrepreneurship for all groups of learners.

... in 2030

- Self-guided learning becomes a norm, not an exception
- Collaborative learning communities play significant role in lifelong education – and their 'horizontal' protocols enter into conventional education as a new norm
- 'Holistic' paradigm in education is generally accepted, and existential competences become the focus of curriculum for life-long learners
- Meta-skills such as mindfulness and healthy lifelong living become part of the standard curriculum in developed countries



Shift from competences to existential competences

In move towards lifelong learning, educational systems should take into consideration not only competences but meta-competences and existential competences – fundamental not only to our professional and social success but to quality of our life.

Type of competence	Examples of competence	Average lifetime
Context / domain-specific competences	Professional knowledge & skills (e.g. anatomy & surgery techniques for a surgeon)	Months to few years
General competences	Generally shared skills & knowledge that create basis for collective work and division of labor, e.g. skill of reading, writing, calculation etc.	Years to decades
Meta-competences	Thinking models & technologies Creativity & esthetic capabilities etc.	
Existential competences	'The ultimate answer to 'why we do what we do' (i.e. system of priorities) Our ability to connect with ourselves and others on existential level (i.e. ability to experience joy and love) Ability to stay healthy	Decades to lifetime



Problems in the existing set up of educational systems that can block or threaten emergence of new learning ecosystems

- Over-exploited teachers (demanding too much from teachers that are poorly trained for current workload and are paid little)
- Conveyor belt teaching (teaching teachers 'quickly and crudely', believing teachers are just another type of service-providers and don't need special socio-emotional preparation to start performing their activity)
- 'Young cheap teachers' (as more and more mature teachers find it hard to support themselves and their families given their small salary, we see more and more young incompetent teachers (most commonly poorly trained according to old expectations) taking over the places)
- Too many non teaching teachers in the system (a lot of administrators and educational leaders have never had teaching experience)
- Resistance to spiritual education (on behalf of secular community/government that confuse religious and spiritual education)
- Writing off affective experience (eg. lack of recognition of the affects of trauma)
- Stakeholders invest in technology but not in teaching teachers or how to use it well (with the growing EdTech market we are all facing immense investments into technology and very little investment into alive teachers, who are still the main 'source' of knowledge.)



Theme 4: Local learning ecosystems: resilient cities & communities

Global online learning platforms	New models of knowledge creation ('post-science')
Local learning ecosystems	Learning for emerging social practices

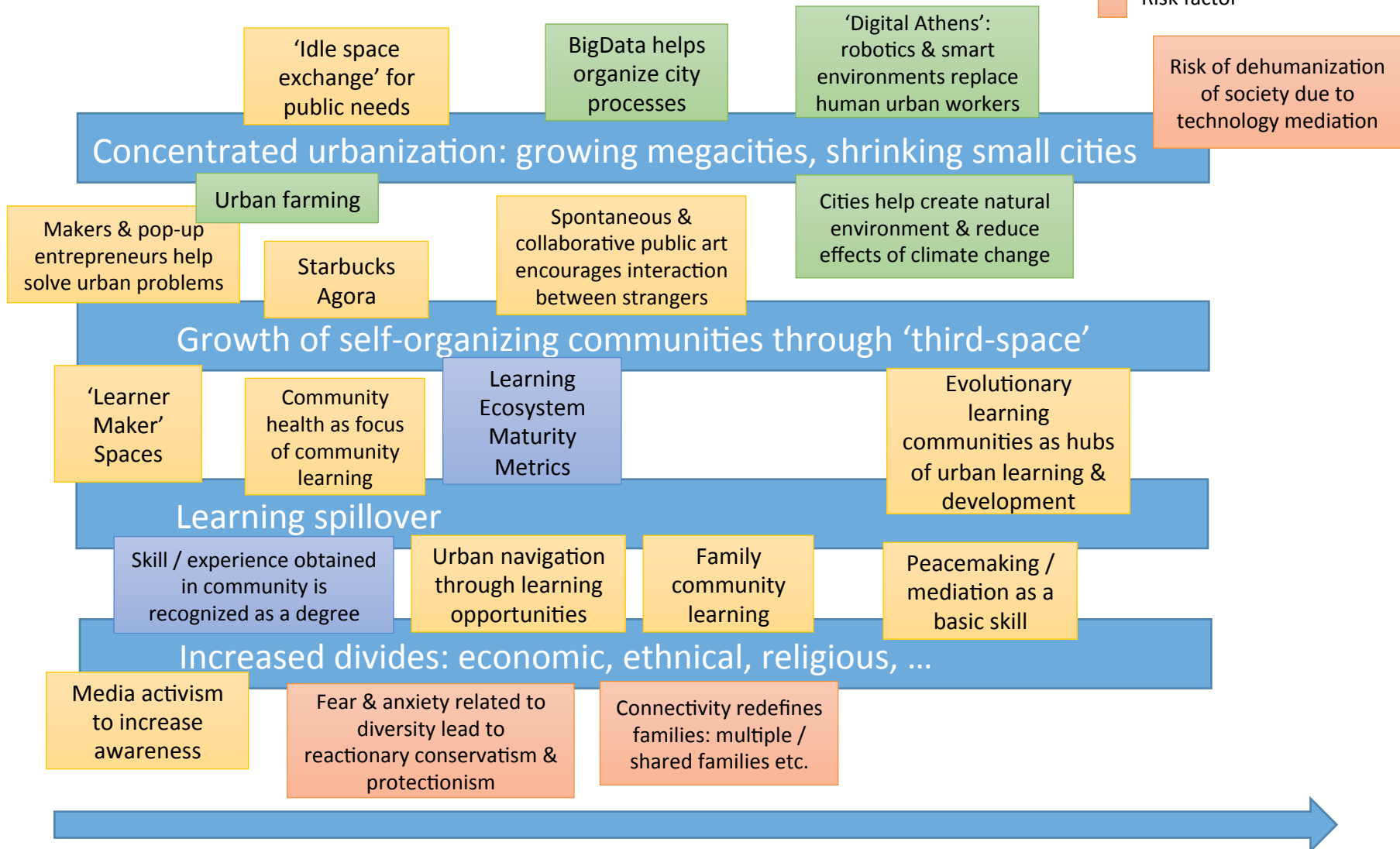
Some questions discussed by the group:

- Education for 'family lifecycle'
- Education for personal & collective health / wellness / well-being
- Urban resilience through 'communities with a cause'
- Transformation of public spaces & role in learning



Mapping future of local learning ecosystems

- Hard technologies
- Soft technology / format
- Policy / governance mechanism
- Risk factor



2015

2020

2030

Source: GEF CA session



Key trends shaping future of local learning ecosystems

Concentrated urbanization - growing megacities, shrinking small cities:

- Urbanization in 21 century is coupled with city concentration, as people move from small cities into megacities. The richness of megacity educational landscape allows for emergence of full-scale 'learning ecosystems' that would support education of a whole person throughout lifetime.
- Sustainability of megacities will require application of various technologies that would increase safety & comfort of the city, increase the productivity of urban work, and redefine city relation with the natural environment: robotics, smart environment & Big Data for execution & coordination of city processes; healthy food production through urban micro-agriculture; new resource & waste management processes that can make cities the source of clean air / water, fertile soil, restored species of plants & animals. These practices of sustainability should be supported by community learning (e.g. learning about sustainable food production as 'learning through eating')
- Efficient management of city resources would allow more public spaces be used for learning & interaction, allowing communities to create more public good. Idle spaces can be shared through public 'exchanges'

Growth of self-organizing communities through 'third-space':

- Public spaces become venues where communities are established & maintained. 'Starbucks Agora' is an exemplary format that encourages local communities to use cafes and other 'third-spaces' to connect, share knowledge & skills (in form of public lectures, leisure clubs etc.), and discuss important community matters through various forms of participatory dialogues.
- Self-organized city communities can aim to solve local problems through project-based problem-oriented formats such as local hackathons, maker movement activities, pop-up entrepreneurship etc.
- Spontaneous & collaborative public art becomes an important vehicle in removing barriers between individuals & communities and engaging strangers into dialogues and collective actions.
- Essentially, communities become the places to prevent dehumanization of society that is induced by intensified application of technologies



Key trends shaping future of local learning ecosystems (2)

Learning spillover – from formal to informal, from specialized to omnipresent:

- As city increasingly becomes a learning space, new tools will support individual & collective learning. Among the most important ones are navigation tools which will couple personal learning trajectories (or interests / preferences) with learning opportunities that exist in the proximity of a learner.
- In the longer run, various elements of community-based learning would integrate into Evolutionary Learning Communities that may become ‘hubs’ of urban learning & development for individuals, families, and groups (a prototype of such ‘hubs’ are ‘Learner Maker Spaces’ for new models of learning)
- Policies that recognize skills / knowledge obtained in community-based learning as a formal degree will help legitimize and increase popularity of new forms of education.
- Learning Ecosystem Maturity Metrics, a system of indicators indicating comparative development of local learning ecosystems (similar to Technology Readiness metrics or LEED certification system), can be used to help NGOs and regional administrations to understand how to improve learning processes in their local ecosystems and to create increasingly resilient communities.

Increased divides – economic, ethnical, religious, ..?

- Cities, and especially megacities, due to their high diversity, often become the source of tensions. In response to the increasingly complexity of urban life, some societies try to conserve themselves, restrict the inflow of variety and even launch ‘controlled archaization’ – which moves the problem to next systemic level and potentially aggravates it. This may lead to increased instances of violence & social injustice directed at minority or stigmatized groups. ‘New media’ can become the source of urban activism that responds to such processes. Conflict mediation & peacemaking may become widely distributed skills to help prevent community & family violence.
- Families are undergoing a major transformation that is accelerated by connectivity that both builds barriers within the conventional family and allows for new associations. Participation in multiple or shared families becomes widespread, and rationale of the family is redefined, shifting from kin loyalty and economic bonds to associations based on shared values and existential interests. Families become collective learners that increasingly engage in multi-generational community-based learning.



How will the future look like for local learning ecosystems

... in 2020

- Public spaces and ‘third-places’ become venues of community-based learning. Idle spaces are increasingly used for collective learning needs. Public art projects encourage people to explore and remove barriers between individuals / communities
- Instant formats for community interaction, such as ‘Starbucks Agoras’ and urban hackathons, help connect & empower local learners and solve local community problems
- Tools for urban learner navigation help connect personal learning interests with the multitude of learning opportunities offered within communities, events, institutions etc.

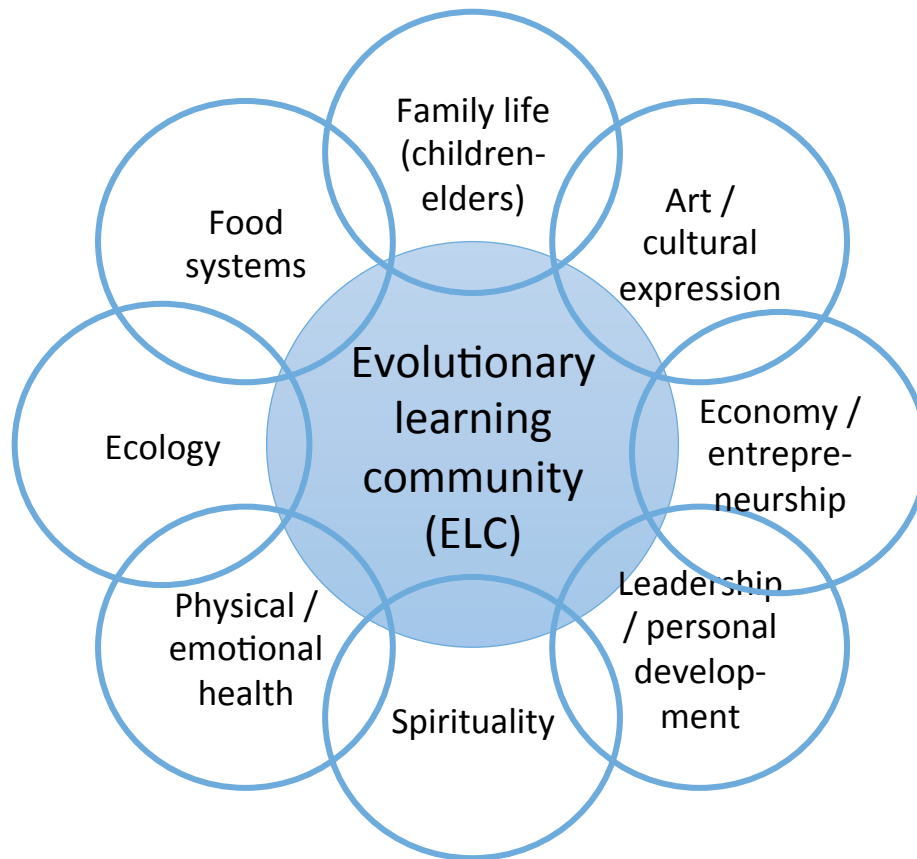
... in 2030

- Technology-enriched cities redefine the organization of urban living and the relation between the city and Nature
- ‘Digital Athens’ - new balance of work/leisure is enabled by robotics & smart environment
- Learning is interconnected with a quest for health and quality of life. There is a strong emphasis on individual and community health
- Families redefine themselves on the grounds of shared values and existential interests, and new families become multi-generational community learners



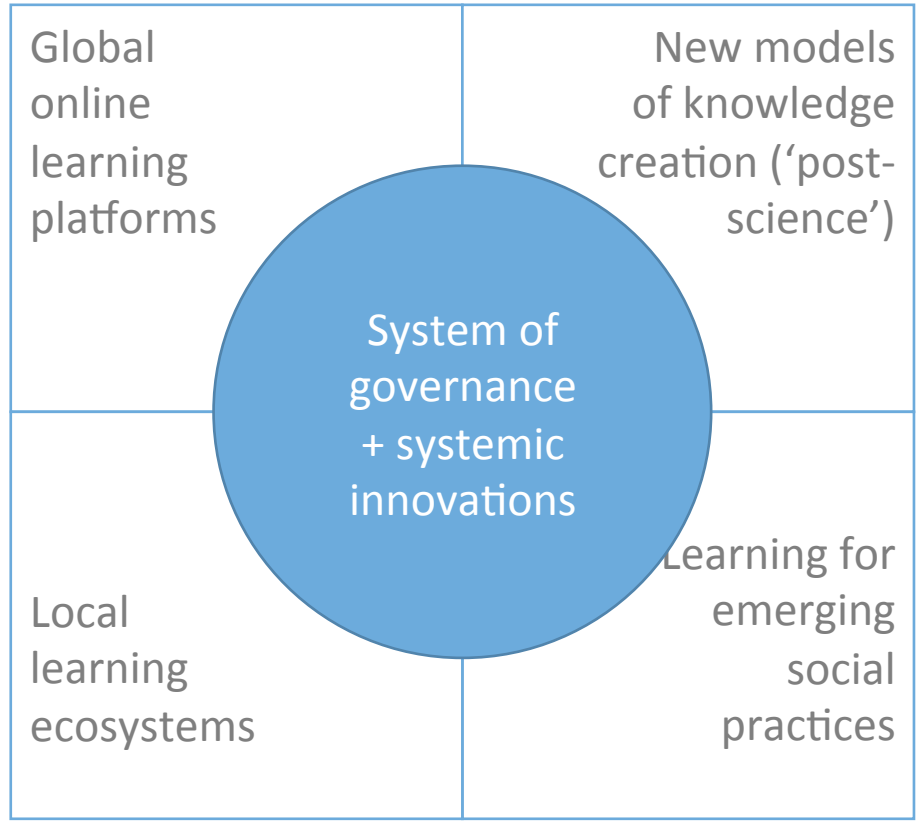
Evolutionary learning communities: hubs for learning, inquiry, design & action

Evolutionary learning communities are places where we can do the work to prevent the dehumanization of society





Governance of Global Learning Ecosystem & Shared Projects





Architecture of global educational ecosystem



Global learning platforms (GLPs)

'Meta-city'

City / area educational ecosystem

- Global content is crowdsourced in real-time through collaborative creativity & computer-assisted knowing and learning environments
- Niche players in global content provision integrated by integral providers that support (standard) individual learning (& career) trajectories
- Meta-platform built on the principles defined by 'Declaration of Learners Rights'
- Global corporations with shared practices
- International movements (e.g. Slow Food or Rotary)
- Educational franchises, incl. social change platforms (e.g. Impact Hub, Techstars, ...)
- International online / offline art projects
- Local (learner focused) content & process
- Local educational providers integrated into personalized learning 'pathways' (that may also be physical pathways)
- Urban public spaces becoming educational: e.g. Starbucks Agoras
- 'Points of connection' with GLPs

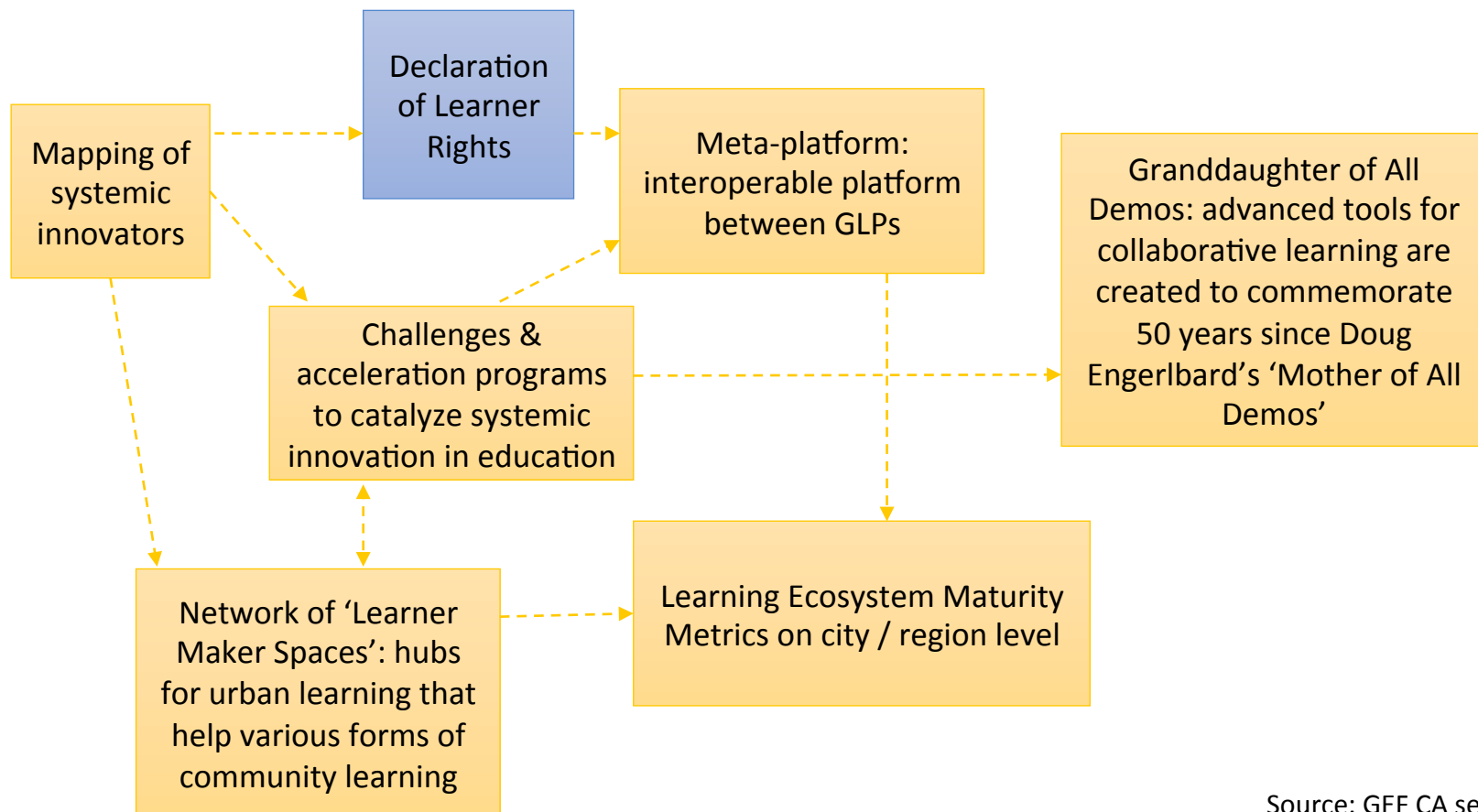


(Ethical) principles of global educational ecosystem

1. 'Technologies for people – not people for technologies': future educational systems cannot be built with new technological architecture alone (as it happened with Internet search, social media interaction, or personalized helpers like Siri). It should also consider
 - Values & principles defined by the 'Declaration of Learner Rights' (incl. the principle of primacy of learner demands & interests)
 - Social design of new education based on systemic pedagogical & psychological research (incl. 'digital pedagogy')
2. If the transition to true life long learning happens:
 - The objective of education should not be 'acquisition of skills & knowledge', but support to life long human development (transition from competencies to meta-competencies, and from meta-competencies to existential competencies)
 - Education should become focused on whole person, i.e. it should help develop not only our cognitive abilities and 'knowledge base', but also our bodies, our social & emotional intelligence – and this development should be supported by various educational technologies
 - Quality of the learning and related human feelings, such as love, joy, trust, and acceptance, should be placed at the heart of educational processes.
3. Community (of practitioners driven by shared values) becomes a central space in knowledge acquisition and knowledge creation (that in the future become elements of the same process)



GEF: possible strategic initiatives that may accelerate transition towards 'new' education



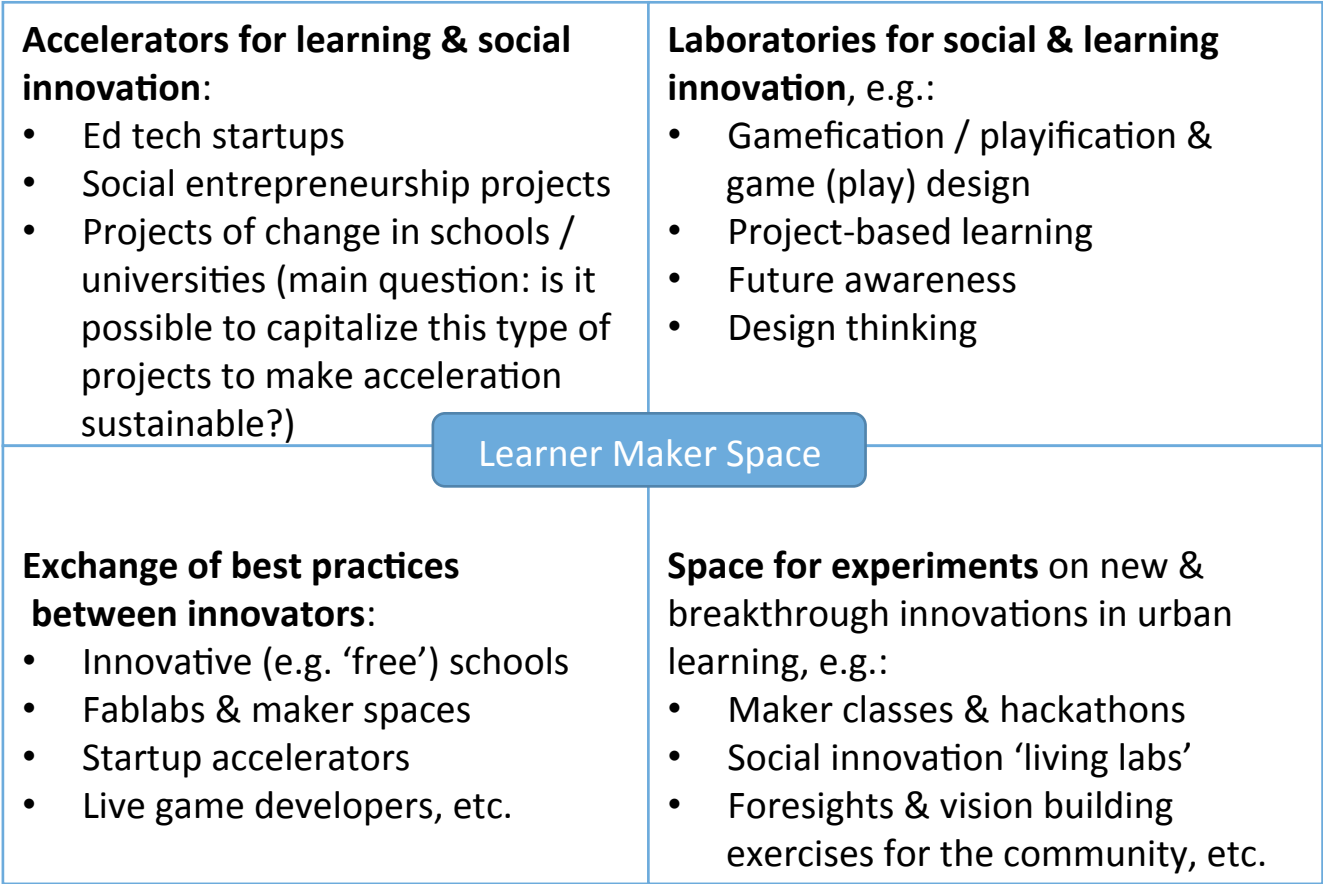
Source: GEF CA session



Learner Maker Space: a hub for urban learning ecosystem innovations

VC funds investing in new projects

Network of 'hubs' across the world



Source: GEF CA session and GEF interviews

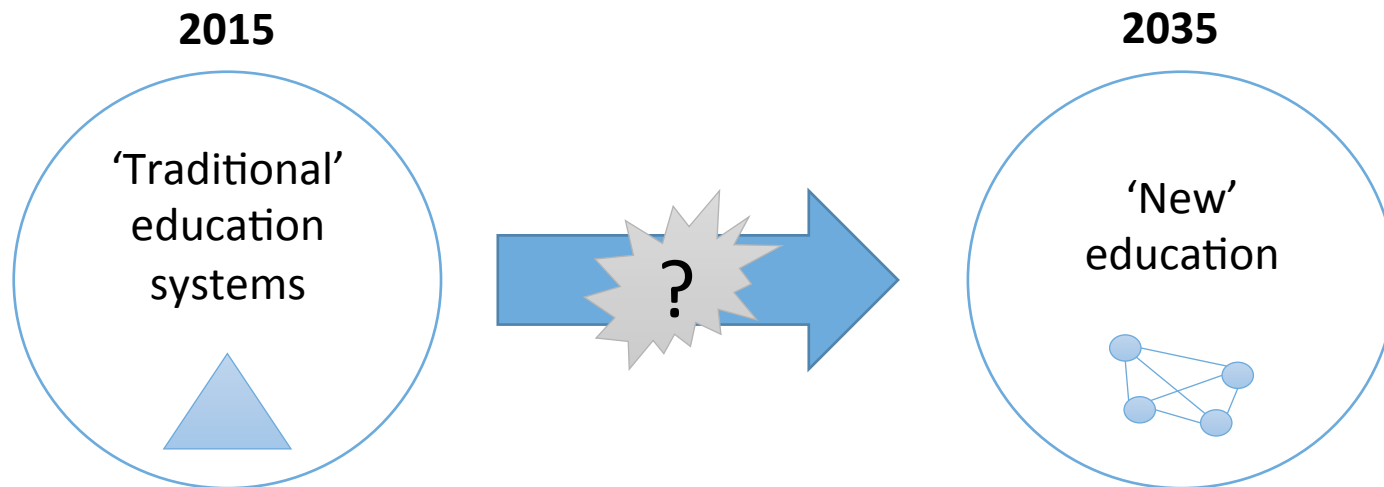
Demand from local schools & universities

Agenda of local / regional communities & govt

PART 3: HOW WILL NEW EDUCATION UNFOLD – POSSIBLE SCENARIOS



Internal inertia of existing system is the main challenge in creating 'new' education



Current design:

- Hierarchical system of educational 'levels' largely controlled by national governments
- Focuses on socializing & professional skills during first 15-25 years of life
- Learning happens in specific locations in specific times only

Blockage: existing system design, although inefficient, is based on several *interdependent locked-in arrangements* (e.g. degree & certification system, teacher qualifications & job market arrangements, etc.) that has high 'reassembly' cost that no individual agent (not even government) is ready to pay

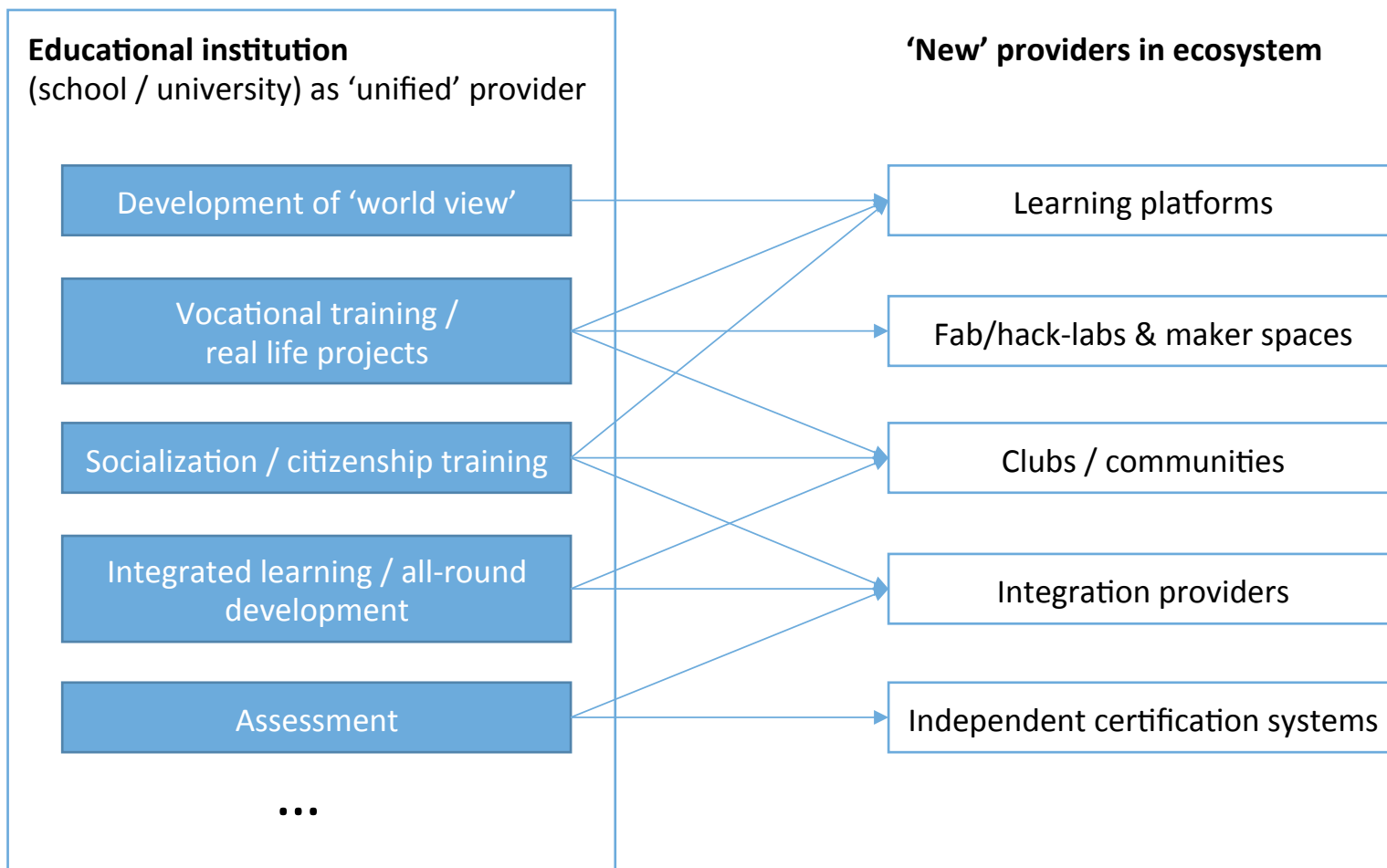
'Reassembled' design:

- Network-based dynamically evolving eco-system of multiple types of providers
- Supports lifelong learning
- Supports learning everywhere, all the time



What are (some) key roles that ‘new’ education providers have to undertake?

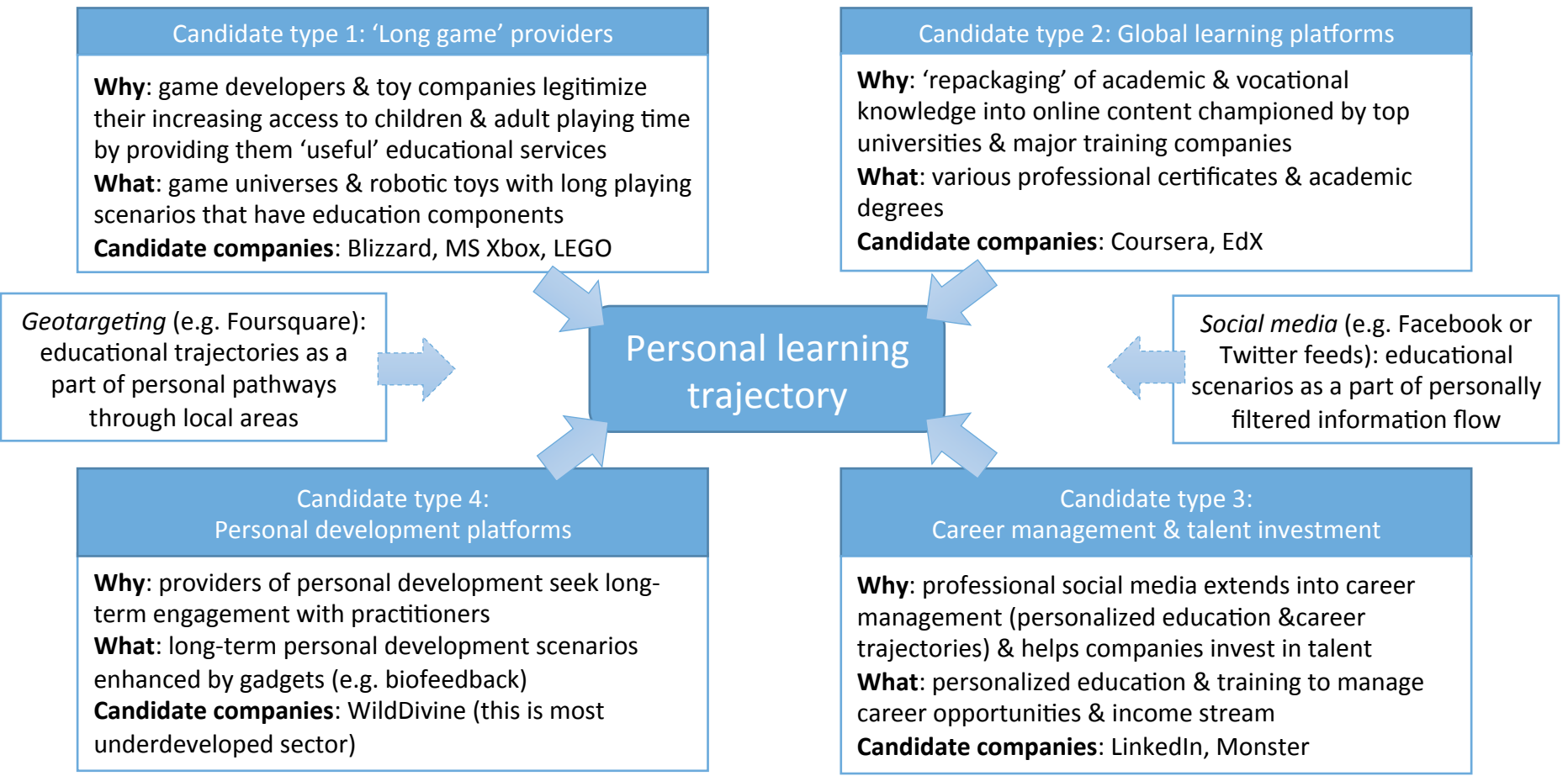
Functions of traditional ‘integrated’ educational providers can be ‘unbundled’ by networks of ‘new’ providers within learning ecosystems





New integrators: who are the candidates?

In the new (network) economy, ecosystems are built around ‘integrators’ that serve as ‘entry point’ to end users (e.g. Google in searching, Facebook in social media, AppStore in smartphone applications, etc.). In ‘new’ education, such integrators must become long-term providers of personalized learning trajectories

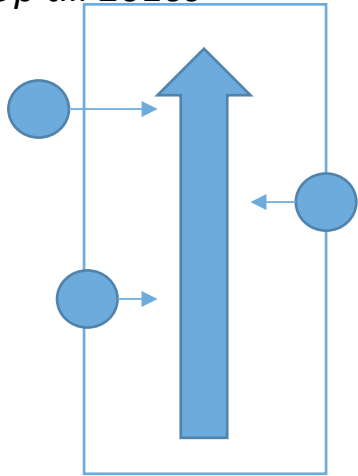




How can 'beautiful exceptions' become 'new systemic norm': a possible scenario

Stage 1: support to existing system

Up till 2010s

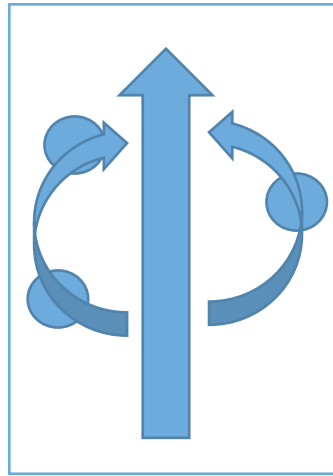


Educational system largely dominated by traditional institutions (schools / colleges / universities), while new providers focus on supporting services

Majority of ed tech companies that see schools & universities as their target market and work on specific improvements for existing educational processes: e.g. Blackboard, Promethean etc.

Stage 2: system expansion

2010s-2020s

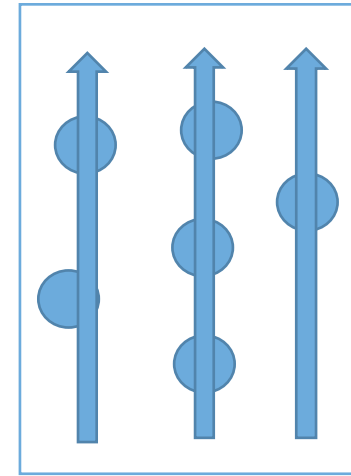


New educational providers attempt to take over parts of the key educational processes in areas that are complimentary to existing schools / universities

Providers that seek to create additional skills / knowledge outside or adjacent to standard curriculum: e.g. EdModo, PresenceLearning, Lego Mindstorm clubs etc.

Stage 3: emergence of ecosystem

Late 2020s and onwards



New educational providers can support all-round process on par with existing educational system (and can provide new functionality such as personalized learning)

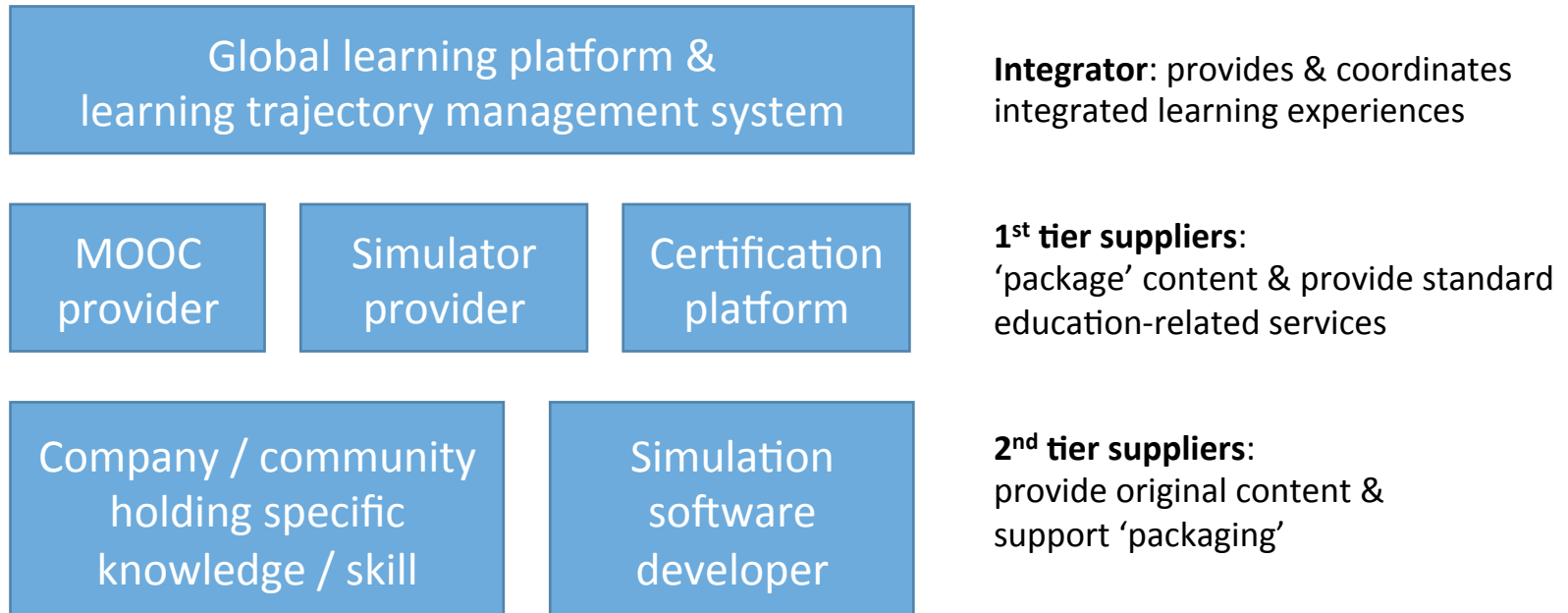
None of the existing players at the moment; multiple candidate technologies exist (global learning platforms such as Coursera and EdCast, etc.)

Source:
GEF
analysis



Possible architecture of future educational ecosystems

Future educational ecosystems will likely model the design of other network-based industries: in this case, ecosystems will be clustered around integrators that coordinate their supplier systems, organized into tiers. Various type of education providers and ed tech companies will need to define their role in relation to future integrators.





Key challenge remaining: public vs. private changemaking?

While it is highly possible that private and independent providers are capable of rebuilding or upgrading many elements of educational systems, education also serves societal needs and therefore should retain public elements. However, it remains an open discussion whether public providers are able to lead the transformation, or if they are going to respond to pressures created by providers outside the conventional system. Also, the role of regulators themselves is likely to shift from direct governance to cultivation of ecosystems. Some ideas from participants of GEF California are quoted below:

“Scenario [of change driven by private providers outside education system] raises concerning questions about the degree of democratic control or influence upon such changes; and their impact upon (the already fragile) effort toward equity. (..) If transformation is to come from within education systems themselves, it will depend upon the emergence of a different kind of leadership.”
Valerie Hannon (2015)

“Governments can contribute to the acceleration of innovations in education through the investment and carrying out of high-level research. National organization can also help build bridges between different parts of the system.” – Olivier Brechard

“You can’t govern free and open learning resources, it’s an unstoppable force and it’s the most important thing that happened to the world in the last 20 years. [However, i]n the foreseeable future, the government will and should retain the responsibility for certification of professionals. But it has to remain dynamic so that we continue asking ourselves a question what people of a certain profession need to know and be able to do.” - Tom Vander Ark

“Technology and policies are closely linked. Government may decide to build educational tools and content and to make them available as public good.” – Francois Taddei

“One of the most important things is peace. All countries that are not in peace have no chance to participate in global education system.” - Victor Van Rij



The future of education: scratching the surface

“

We have only just begun the process of discovering and inventing the new organizational forms that will inhabit the 21st Century. We need the courage to let go of the old world, to relinquish most of what we have cherished, to abandon our interpretations about what does and doesn't work.

”

Margaret Wheatley



Scratching the surface ...

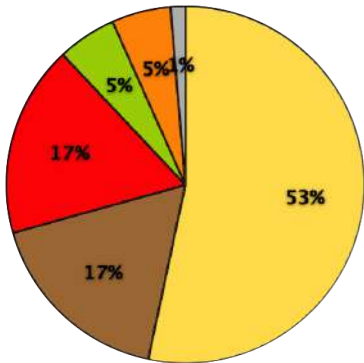
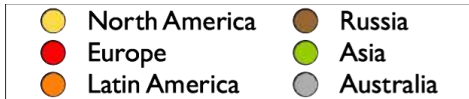


APPENDIX

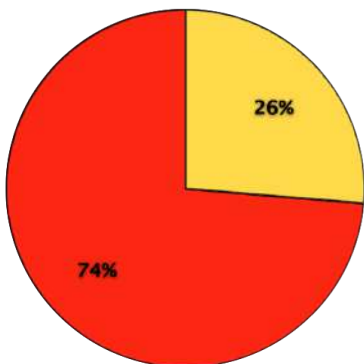


Composition of the Participants Group

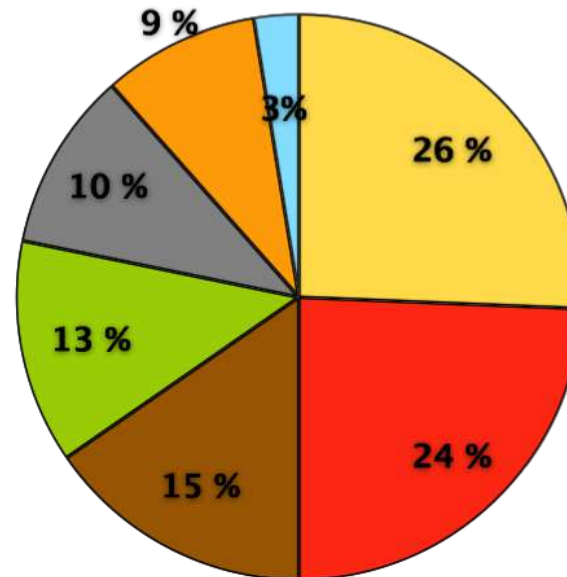
Regional representation



Male / female



Organizational representation



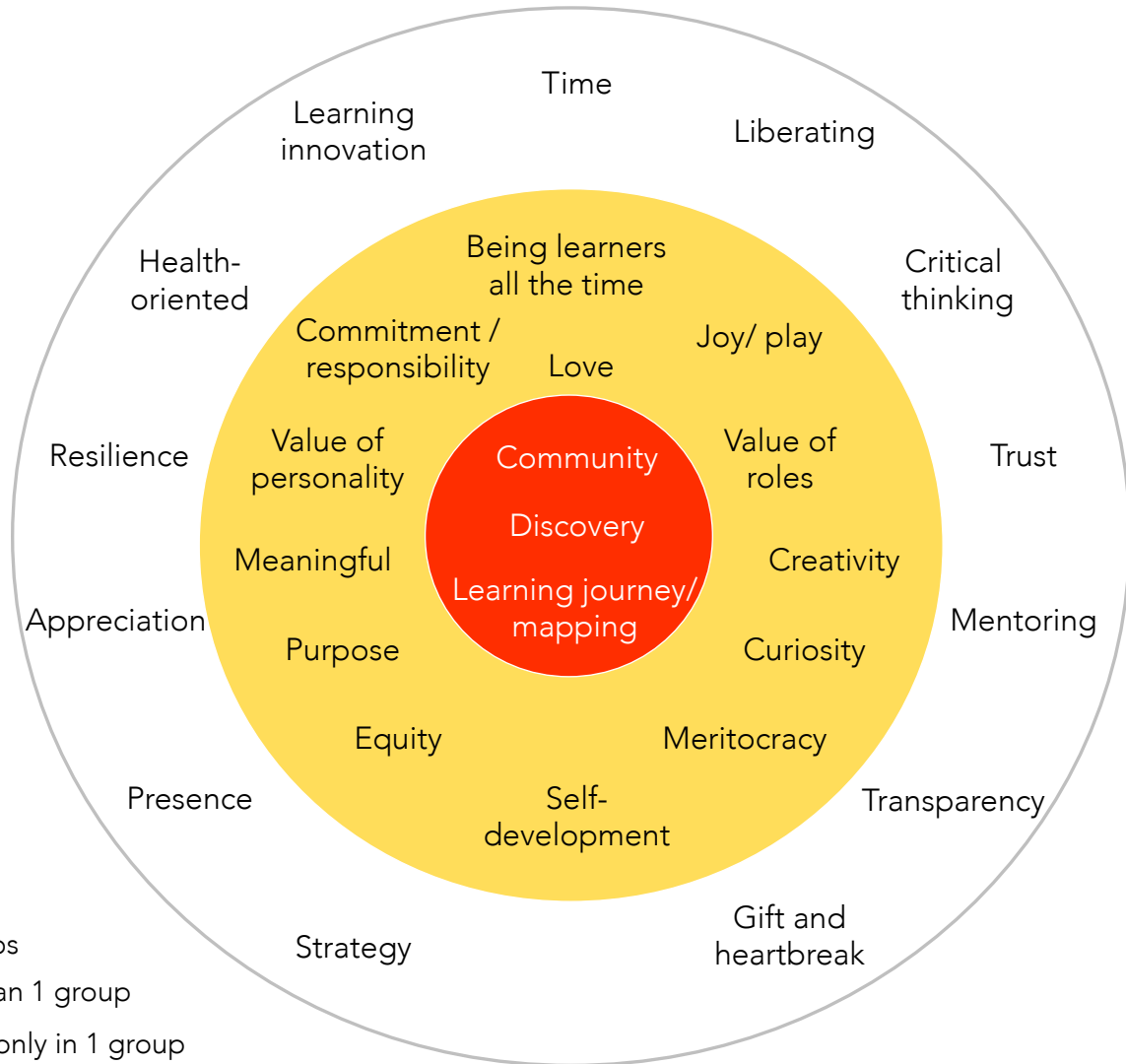
* Innovation & Change Platforms are various NGOs that work towards systemic transformation of education on regional or global level

Analysis based on the list of registered participants (N=82)
 Around 15-20 additional participants from Global Technology Symposium joined several of the sessions



Global Education Futures California: Shared Values Space

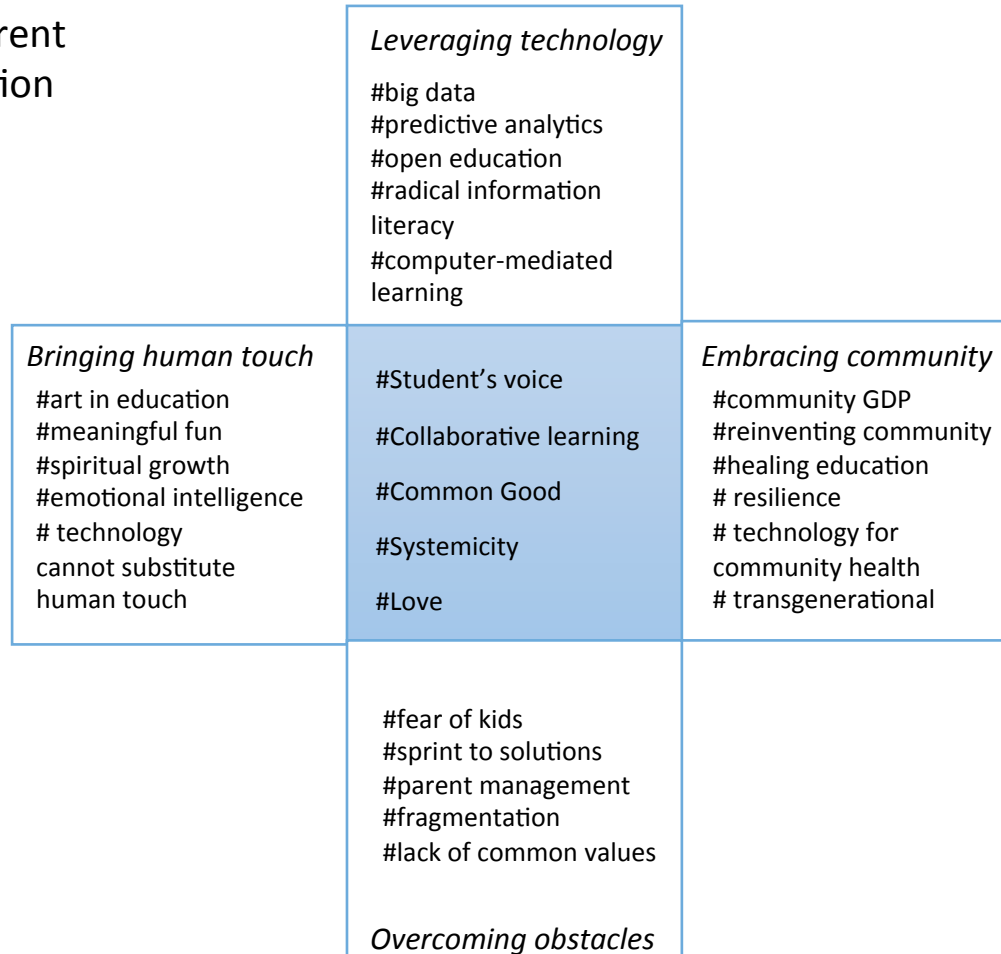
Named by participants in response to the question “What key values are manifested in experiences that shaped you as learner, teacher, and changemaker?” and summarized within four working groups





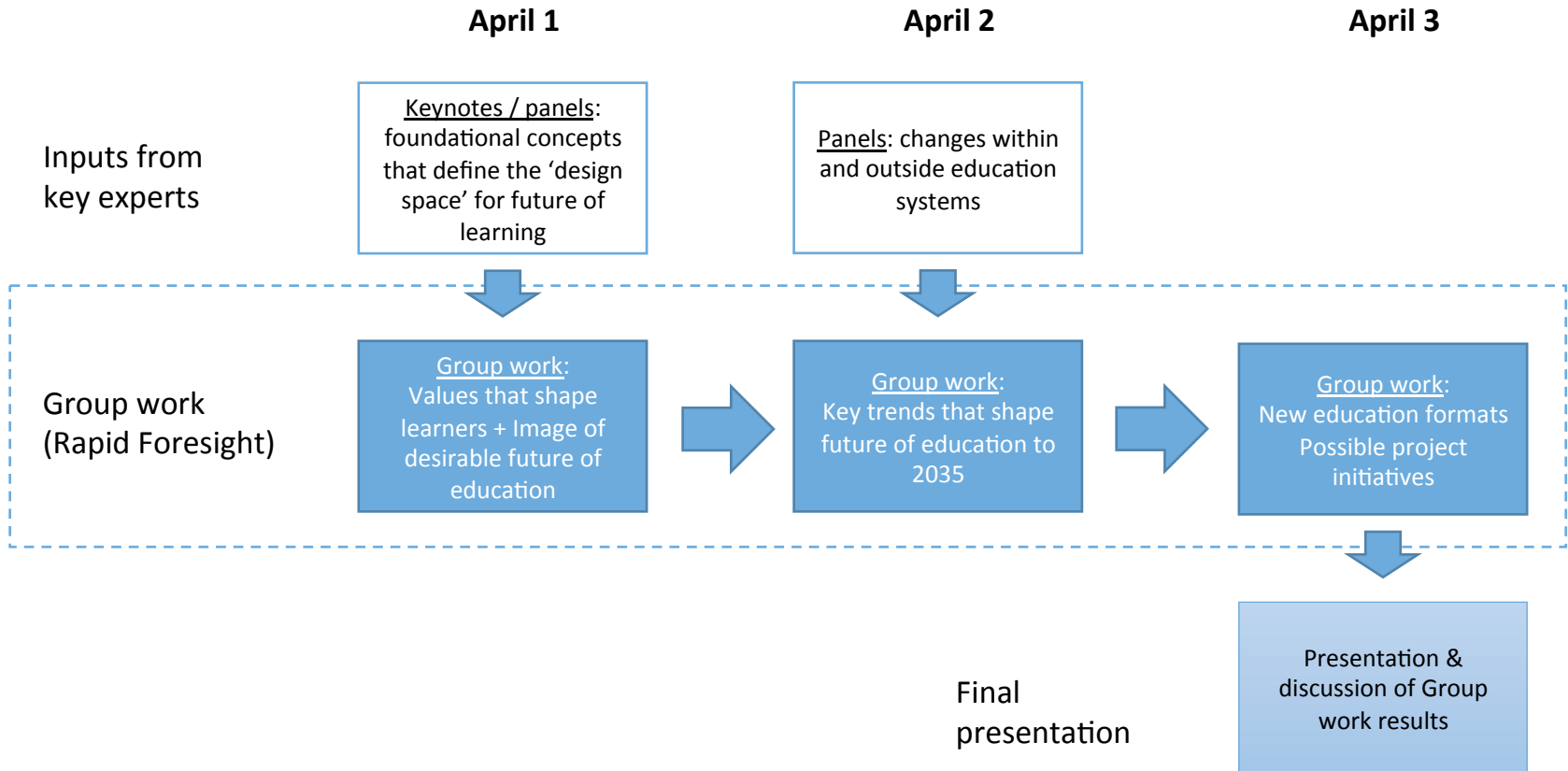
Global Education Futures California: Project Space

Clustering of #tags used
by participants to
describe their current
projects in education





GEF California: Key Process





GEF California: List of Contributors

Parvin Akhmadi (*Pleasanton Unified School District, USA*)

Valerie Androsenko (*InCIET, Russia*)

Nargiz Asadova (*Skoltech Institute, Russia*)

Motaz Attalla (*Education Policy Research, USA*)

Judi Bauerlein (*Montessori School, USA*)

Sarah Bradley (*Open Masters, USA*)

Olivier Brechard (*Institute of Action Research for Education, France*)

Andrew Campbell (*Co-Create, UK*)

Julian Caspari (*Schools without Borders, Canada*)

Yin Cheong Cheng (*Hong Kong Institute of Education, Hong Kong*)

Igor Chirikov (*Higher School of Economics - Institute of Education, Russia*)

Joshua Cubista (*Strategic Action & Sustainability, Canada*)

Viktor Demin (*Tomsk State University, Russia*)

Lucas Dixon (*Google, USA*)

Ruben Dominguez (*Claudio Naranjo University, Mexico*)

Cees Donkers (*City Eindhoven, Netherlands*)

Henry Etzkovitz (*H-STAR Institute & Triple Helix Association, USA*)

Stuart Evans (*Carnegie Melon U, USA*)

Mei Lin Fung (*Institute for Social Excellence, USA*)

Sue Gabriele (*South Bay Special Division Coordination Team, ASTD-LA, USA*)

David Goldsmith (*Goldsmith Organization, USA*)

Stanley Gould (*Knowledge Communities Federation, USA*)

Virginia Green (*Stillwater, USA*)

Alexey Gusev (*Russian Venture Company, Russia*)

Sam Hahn (*Program for the Future, USA*)

Valerie Hannon (*Innovation Unit & GELP, UK*)

Frode Hegland (*Liquid, UK*)

Leah Hirsch (*Institute of Play & Quest to Learn School, USA*)

Toru Iiyoshi (*Center for the Promotion of Excellence in Higher Education, Kyoto University, Japan*)

Sarah Ittelson (*USA*)

Alexandra Ivanovitch (*Centre for Interdisciplinary Research, France*)

Dino Karabeg (*University of Oslo, Norway*)

Maxim Kiselev (*Skoltech Institute, Russia*)

Vince Kohli (*Biz Innovators, USA*)

Steven Korte (*Pasco, USA*)

Richard Lang (*Democrasoft, USA*)

Alexander Laszlo (*Buenos Aires Institute of Technology, Argentina*)

Anthony Mackay (*Innovation Unit & GELP, Australia*)

Fedor Marchenko (*Higher School of Economics - Institute of Education, Russia*)

Jason Meek (*iDEAL World, USA*)

Karl Mehta (*EdCast, USA*)

Cynthia Merchant (*SAT Institute, USA*)

Claudio Naranjo (*SAT Institute, USA & EU*)

Kathleen Ohm (*Planning Center, Association of California School Administrators, USA*)

Ken Otter (*Saint Mary's College of California, USA*)

Jack Park (*TopicQuests Foundation, USA*)

Anna Peplova (*Theartika project, Russia*)

Dmitry Peskov (*Agency for Strategic Initiatives, Russia*)

Marc Prensky (*Global Future Education Institute, USA*)

Askar Ramazanov (*Theories & Practices Media, Russia*)

Alex Reben (*MIT Media Lab, USA*)

Jim Ruddy (*Learnosity, Ireland*)

Petr Schedrovitsky (*G.P.Schedrovitsky Foundation, Russia*)

Polina Schedrovitskaya (*Mexico*)

Emily Schneider (*Lytics Lab, Stanford University, USA*)

Matthew Shapiro (*Social Planetarium Initiative, USA*)

Jesse Sleamaker (*School for Change, USA*)

Alexander Sidorkin (*Higher School of Economics - Institute of Education, Russia*)

Alexey Sitnikov (*Skoltech Institute, Russia*)

Francois Taddéi (*Centre for Interdisciplinary Research, France*);

Fabiano Valerio (*iDeal World, USA*)

Victor Van Rij (*UNESCO Institute for Information Technologies in Education, Netherlands*)

Tom Vander Ark (*GettingSmart, USA*)

Stephan Vincent-Lancrin (*Center for Education Research & innovation, OECD, France*)

Alan Webb (*The Open Masters, USA*)

Gabriel Wilson (*Design Your Stanford, USA*)

Andrew Whitworth (*University of Manchester, UK*)

David Whyley (*Learning Technologies, UK*)

Esther Wojcicki (*Palo Alto High School, USA*)

Luping Xu (*Tsinghua University, China*)

Georgette Yakman (*STEAM Education, USA*)

Boris Yarmakhov (*Google, Russia*)



GEF California: List of Moderators & Organizers

GEF California Facilitation Team

Pavel Luksha	Team leader
Darshan Elena Campos	Facilitator, Global Learning Platforms
Vladimir Sinelnikov	Facilitator, Global Learning Platforms
Kennan Salinero	Facilitator, Models of Knowledge Creation
Timour Shchoukine	Facilitator, Models of Knowledge Creation
Simone Tiesinga-Poutnik	Facilitator, Learning for Emerging Social Practices
Kristina Kashfullina	Facilitator, Learning for Emerging Social Practices
Kathia Laszlo	Facilitator, Resilient Cities & Communities
Dmitry Sudakov	Facilitator, Resilient Cities & Communities

GEF California Organization Team

Pavel Luksha	Director / Report Author
Kristina Kashfullina	Report Analyst
Tatyana Pirog	Administrative Director
Olga Duka	Communication Manager
Pavel Surkov	Communication Manager
Lyudmila Arnaut	Travel Manager
Katerina Luksha	Content Manager
Boris Yarmakhov	Social Media Communication



GEF California: List of Supporters

Project operator



Key sponsors of GEF California



Support also provided by

