ATTACHMENT "A" between **TAEJAE RESEARCH FOUNDATION** and **WEIZMANN INSTITUTE OF SCIENCE**

THE RESEARCH GOALS OF THE COLLABORATIVE JOINT RESEARCH PROJECTS

THE FUTURE SMART CITY "FSCL CITY"

WHERE 'FSCL' STANDS FOR 'FUTURE, SMALL BUT COMPETITIVE AND LIVABLE'

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1. Transformation to the industrial society city brought about by the innovation of printing technology

The transformation from an agricultural society to the current industrial society, based on printing technology, has allowed the public to benefit from knowledge, which was not available in previous societies. This was a process of reconstructing society, introducing individual rights such as freedom and equality, democracy, capitalism, finance and corporations, electricity, automobiles, and more. During this process, cities inevitably transformed from feudal or aristocratic fortresses into prosperous metropolises optimized for mass production and consumption.

However, the current industrial society's metropolitan cities, which absorbed population like a black hole, have ultimately led to 1) high entry barriers, 2) overconsumption of energy and resources, 3) loss or weakening of communities such as households, neighbors, and villages in exchange for urban anonymity, and 4) decline of small and medium-sized towns and rural areas. In particular, the skyrocketing real estate prices have made it impossible for young talents to enter and reside in metropolitan cities, and the excessive costs of startup failures are destroying the future creativity of cities.

2. Transformation towards future digital society cities brought about by digital innovation

While industrial society standardized knowledge and supplied it unilaterally through mass production, digital society enables personalized knowledge tailored to individuals and facilitates bilateral communication as needed. Moreover, digital technology transcends time, space, and cost, creating unprecedented societal changes and signaling the future. For companies, most of their business functions are being replaced by platform capabilities and remote work, raising the question of whether physical offices are still necessary.

Universities are emphasizing students' problem-solving skills beyond specialized knowledge and investing less in non-essential matters such as campuses, creating universities without campuses. Media is also undergoing rapid changes with the explosive growth of YouTubers and influencers, replacing traditional broadcasts and newspapers. These changes in various fields of society will transform the current cities into future cities, just as the transition from agricultural to industrial society transformed the rural areas into industrial cities.

3. Promising 'FSCL _ Future, Small but Competitive and Livable _ City' and 'Future Governance' and 'Future Housing' Needed for Its Realization

The future city must overcome the unsustainability of the current city and resolve the extinction of future creativity. Additionally, it must be able to lead or accommodate digital social change. Therefore, the intersectional guidelines of the following three elements are necessary to become a potential future city: 1) Pedestrian small cities equipped with environmentally friendly conditions, 2) Low barriers to entry for local cities to secure economic sustainability and attract start-ups and creative talents, 3) Strategies to increase competitiveness and secure quality of life in the future digital society of these small local cities. In other words, to become a so-called 'FSCL City' that utilizes digital technology to secure global competitiveness and quality of life comparable to existing large cities, the following components will be necessary: small cities with populations of 10,000 to 30,000:

A	**Selected/Concentrated Industry of the City, City's Creation Platform**	The city selects/concentrates on specialized industries and creates a knowledge/venture ecosystem to make the city a global platform city for the selected industry.
B	**Digital Lifestyle, Digital Living Infrastructure**	Digitalized jobs and urban functions such as work, education, healthcare, and cultural experiences are treated as public goods on a digital platform, like water, electricity, and roads. Basic quality of life is guaranteed for citizens.
C	**Limited Physical Facilities, Urban Composition**	As most urban functions are provided to citizens through digital platforms, physical facilities within the city are limited to the experiences such as childcare, sports, entertainment, knowledge and venture ecosystems that require face-to-face interactions, and residential facilities.
D	**Small City Network, Server City**	With a limited population, small cities have limitations in installing urban facilities. Therefore, a server city will be created that provides facilities according to the combined population of 300,000, 1 million, etc. through a network.
E	**Big Data City, Community City**	The civic communities may be formed by the people who agree on economic management, lifestyle, and pursued values. It is also a civic community as a unit that agrees on the production, utilization, and management of digital big data. Social conflict may be minimized.
F	**Governance for realizing FSCL Cities**	To pioneer future industries and knowledge on the city's creation platform, the national government provides strategic support for basic and applied knowledge development that cannot be carried out by small cities due to insufficient budget. This is the role of the national government in securing the competitiveness of the FSCL Cities.
G	**Future Housing in FSCL Cities**	Most urban functions such as work, education, healthcare, cultural experiences, administration, legal affairs, shopping, and banking will be provided to residents through digital platforms in future smart homes. In addition, smart homes that enhance the role of households, such as identity-based education for children, enjoyment of daily life, and health and recharge, are essential for realizing the future city.

4. The Executable Challenges Towards 'FSCL City' : The Research Goals of The Collaborative Joint Research Projects

Research Goal 1 **City of Reduced Energy Consumption (eg. By 80%) and Alternative Energy**	**Research Goal 2** **City of Prefabricated Buildings and Materials that are Recyclable**
• Energy is being overconsumed primarily in cities today. Energy consumption is being used about 3/4 for urban buildings and transportation such as air conditioning, lighting, and transportation. • Changes in buildings, infrastructure, and transportation can reduce energy consumption. What are the solutions to becoming a city that reduces energy consumption, eg. to 1/5 of the current level? • Developing new green energy resources is required.	• Currently, most of the major materials used in construction, such as structural, exterior, and interior materials, are not recycled and end up being discarded as waste. Even steel and wooden frame constructions have low actual recycling rates. Similarly, other materials such those used in electronic devices, cars and etc. are not recycled. • What are the solutions to achieve the goal of reducing waste to a minimum and recycling over 80% of materials through prefabricated construction, or efficient ways to recycle? Developing new materials for those purposes which also enables cost reduction and shortened construction time? What kind of city will be created through such futuristic architecture?
Research Goal 3 **City with Digital Living Infrastructure**	**Research Goal 4** **City with Pollution and Climate Crisis Issues Solutions**
• The current concentration of the capital region and large cities based on overwhelming superiority in quality of life, and the resulting problems of rural and small city decline have no clear solutions. • Digitalization of work, education, healthcare, cultural experiences, and more, which was once only possible in large cities, can now be achieved in rural and small cities as well. What are the implementation measures for "Future Small Cities" to secure the quality of life through this Digital Living Infrastructure?	• Industrialization has led to global ecological destruction and environmental pollution, and we are facing a climate crisis. For a sustainable future society, we not only need to seek a fundamental healing of the climate crisis, but also need a solution to overcome the climate crisis, which is an urgent issue. • Future cities should adopt these solutions to contribute to a safer and healthier global ecosystem and global community.