INFORMATICS WORKSHOP

East Marmara Informatics Sector and Bilişim Vadisi Strategy Development Workshop

FINAL REPORT

MARKA
DOĞU MARMARA KALKINMA AJANSI

TÜRKİYE CUMHURİYETİ SANAYİ VE TEKNOLOJİ BAKANLIĞI

BİLİŞİM VADİSİ

JULY 12, 2019, Bilişim Vadisi

You can forward your reviews and comments about the report to the mail address of planlama@bilisimvadisi.co planlama@marka.org.tr.

ACKNOWLEDGEMENTS

Hüseyin AKSOY / Kocaeli Governor
Mehmet Fatih KACIR / Industry and Technology Deputy Minister
Prof. Dr. Habip ASAN / The Head of Turkish Patent and Trademark Office And the Head of Bilişim Vadisi Executive Board

Panelist
Yakup SEZER (Moderator)
Ahmet Hamdi ATALAY
Fahrettin OYLUM
Elif KOŞOK

Organizer
A.Serdar İBRAHİMCİOĞLU
Dr. Mustafa ÇÖPOĞLU

Workshop Moderator
Prof. Dr. Halit KESKİN

General Coordinator
Candan UMUT ÖZDEN
Mücahit AKÖZ

Reporters
Fatma AVŞAR
Kaan HAŞİMOĞLU
Meva Ecem ÇİFTCİ
Tuba ÖZTEPE
Hayriye SEZER
Sümeyye ÇİFTÇİ
Cem BAYRAK
Hüseyin Özgür ÜNSAL
Mehmet YAVUZER
Yusuf Gürhan ÖZTAŞ
Hülya BAYRAK

Graphic Designer / Data Processor / Organizer
Emre YILDIZ
Fatih ÇALIŞKAN
Serap SARICA

This report contains the outcomes of the East Marmara Informatics Sector and Bilişim Vadisi Strategy Development Workshop, which was held on July 12, 2019. The evaluations included in the report reflect the participants' perspectives, and the report will be used to inform the Bilişim Vadisi Strategic Plan and the Sector Report of East Marmara Information and Communication Technologies.

1. INTRODUCTION

1.1. Aim and Scope

The Information and Communication Technologies (ICT) sector steers the global economy and plays a critical role in countries' global competitiveness. When evaluating the ICT sector on a product basis, the inclusion of each final product in the value chain is a crucial and targeted output. The ICT sector is also critical in Türkiye, and Bilişim Vadisi (Muallimköy Technology Development Zone), which was implemented as a vision project in the sector's development, has established itself as an important actor for both the East Marmara Region and our country, and has become a touchstone in the sector's development process. Bilişim Vadisi is located in our country's industry, technology, and R&D base and is a key component in the development of the ICT sector ecosystem.

The "Eastern Marmara Informatics Sector and Bilişim Vadisi Strategy Development Workshop" was organized by bringing together all relevant stakeholders, particularly public authorities, universities, professional organizations, research centers, NGOs, and companies at the central and local level using the participatory planning approach. The workshop was co-hosted by the East Marmara Development Agency (MARKA) and the Bilişim Vadisi Management Company.

It was founded on determining the strategies for Bilişim Vadisi's connection with the region's informatics sector, the sector's status, development opportunities, and determining what has to be done to encourage people to begin ICT studies at a young age. The workshop aimed to determine the sector's development trends with stakeholders in the TR42 East Marmara Region and to determine the sector's development trends, participate in Bilişim Vadisi's Strategic Plan studies, and define common strategies and actions to ensure that they enter the ICT field at an early age.

1.2. Method

Following the workshop opening and protocol speeches, an interactive panel program began, in which the general evaluation of the sector in our country and the East Marmara Region, as well as the development areas, particularly in the fields of defense, finance, and venture capital, were evaluated through examples of good practices.

During the afternoon session, a round table discussion was held, with participants sitting at several tables with representatives from the public, universities, professional groups, businesses, and research institutions. In the workshop, brainstorming was conducted among the participants for a total of 2 hours (excluding reporters at each table. the break) with two separate agenda items, each 30 minutes long.

1st Session The IT Sector in the World, Türkiye and East Marmara	**2nd Session** East Marmara IT Sector and Strategic Plan of Bilişim Vadisi
Shaping and Internationalization According to Global Trends in the Information and Communication Technologies Sector	Positioning of Bilişim Vadisi
Sector Requirements and Strategies for Information and Communication Technologies	Bilişim Vadisi Future Strategies and Common Mind

Each table in the workshop has appointed a moderator. Furthermore, MARKA and Bilişim Vadisi employees served as It is intended to be utilized in the development of national informatics strategies, with a report to the Ministry of Industry and Technology that will be incorporated into Bilişim Vadisi Strategic Plan and the East Marmara Information and Communication Technologies Sector Report.

2. PANEL: Messages from Global IT Sector Managers, Türkiye, and

2.1. East Marmara

2.1.1. Prof. Dr. Habip ASAN / Head of the Turkish Patent and Trademark Office and Head of Bilişim Vadisi Executive Board

- The creation of knowledge, its transfer into intellectual products such as patents, utility models, designs, and brands, and its commercialization form the foundation of today's economies.

- Knowledge generation and transformation into intellectual products in areas where governments focus on boosting the welfare of the country are and should occur.

- Technology Development Zones are significant tools in clustering for knowledge development and commercialization. Bilişim Vadisi was created to serve as a specialized technology development zone.

- Bilişim Vadisi began operations with the goal of becoming a hub for all economic company lines that rely on technology and software.

- In addition to the physical infrastructure, informatics, legal structure, public and private aspects, infrastructure and division of labor, workflows, administrative structure, monitoring and control, and so on, Bilişim Vadisi Strategic Plan will include strategic steps to learn and collaborate with concrete outputs such as informatics, R&D investments, innovations, trademarks and patents, designs, licenses, scientific publications, etc.

- The strategy will entail determining where we will be and how we will get there.

1.2. Dr. Mustafa ÇÖPOĞLU / Doğu Marmara Kalkınma Ajansı Genel Sekreteri

❖ MARKA was involved in the formation of Bilişim Vadisi from the beginning and provided assistance at all stages. Within this scope,

- Bilişim Vadisi workshop in 2013,
- promotional catalogs and website in 2014,
- investment strategy studies in 2016,
- digital animation and game production center project in 2018,
- techno-entrepreneurship training events in 2019 and export-based market entry consultancy

were conducted with the assistance of BRAND.

❖ Our agency is preparing an East Marmara Information and Communication Technologies Industry report, which will serve as a road plan for the sector in the region.

2.1.3. Mehmet Fatih KACIR / Deputy Minister of Industry and Technology

Ministry activities have been carried out within the scope of the National Technology Move. We must domestically create, manufacture, and export essential technology items, particularly in the defense, finance, health, and energy sectors. The share of high-tech exports in total exports is fast increasing and should continue to rise. The IT sector plays a vital role in this ecosystem. Support for the informatics sector, particularly TÜBTAK, will be increased.

❖ Human resources are critical in the IT business, and youth will be prioritized in education and support. Among the notable activities are try-and-make workshops, scientific centers, Techno-Fest, and Türkiye open-source platform.

❖ The emphasis should be on growing the number of humans resources who are skilled in software development. Domestic enterprises are being prioritized in public procurement.

❖ Bilişim Vadisi should play a complementary function in the technopark ecosystem and be an integrated part of the activity of other technoparks.

❖ We value the interaction, coordination, and cooperation of TÜBTAK MARTEK, Teknopark Istanbul, and Bilişim Vadisi, as well as their engagement with industry and digital transformation.

2.1.4. Hüseyin AKSOY / Kocaeli Governor

- The informatics sector is critical to the development of Kocaeli, which is vital in the country's industry.
- TOKİ Vocational and Anatolian High School was changed into a specialist informatics high school (M. Tuğrul Tekbulut MTAL) to promote Bilişim Vadisi and strengthen the informatics sector's capacity.
- According to Gebze Technical University research, Bilişim Vadisi requires a qualified workforce of 10,000 employees.
- We hope to see an increase in the number of enterprises functioning in Bilişim Vadisi and incubation center.

2.2. Panel

Moderator: Yakup SEZER

2.2.1. Ahmet Hamdi ATALAY / General Director of Havelsan

❖ Türkiye's export value per kilogram, which has remained constant for a long time, could rise to 3-4 dollars, up from 1.3 dollars in competing countries.
❖ Informatics is a sector that can bring value to other industries.
❖ Informatics is one of the most simply produced industries; all that is required is an environment where smart children can work with a computer.
❖ The software business is perfectly suited to the Turkish mentality.
❖ Havelsan, as part of the Turkish Armed Forces Foundation, is able to compete in the overseas market by developing more cost-effective and efficient solutions than huge corporations abroad.

Informatics Ecosystem

❖ Government regulatory agencies, universities, research institutes, a good private sector, and a smart strategy that will help them work in a good synergy are the ecosystem's stakeholders. The studies should begin with the strategy section.
❖ The extent to which enterprises located in technoparks benefit from the environment is insufficient.

2.2.2. Elif KOŞOK / TÜBİTAK Venture Capital Support Group Coordinator

❖ TÜBİTAK provides assistance to individuals and organizations from all parts of the ecosystem. Students, young people with ideas, academics, businesses, and institutions can all benefit from assistance ranging from the concept stage to the commercialization and opening up procedures.
❖ Over 21 thousand business ideas for funding were evaluated, with 3 thousand of them becoming business plans. A considerable portion of them has achieved significant commercial volumes.
❖ When compared to other industries, women have a significant role in project conception and implementation in informatics.
❖ Other than the grant, the quantity of commercialization support is insufficient, and TÜBİTAK has identified technology-based early-stage technology-based initiatives based on this assessment. Other than grants, many initiatives have limited access to additional funding sources.
- He created the TÜBİTAK Venture Capital Fund to give funding for various efforts that developed from the university environment in general, as well as to bring the ecosystem together.
- It is expected that universities would promote technology-based initiatives in the future thanks to the program (50 percent funding) designed with the exchange of views amongst institutions in Türkiye.
- It is the goal of the program, another facet of which is to enhance human resource capacity, to have a university employee participate in one of the funds within the scope of support, thus transmitting this implicit expertise to the university.
- The call was made in accordance with a protocol of collaboration with the Ministries of Treasury and Finance.

Informatics Ecosystem
❖ It is critical for those in the ecosystem to collaborate rather than becoming stars on their own.

❖ In collaboration with the State Supply Office and TUBİTAK, a techno-catalog will be developed.
❖ The ecosystem includes regulators, promoters, financiers, researchers, universities, industry, and their marketers. It is critical to share the facit knowledge supplied by TTOs, OIZs, and Clusters. Collaborations outside of the workplace are critical to the diffusion of this information.

2.2.3. Fahrettin OYLUM / Head of MÜSİAD Sector Board

❖ MUSIAD, one of Türkiye's largest non-governmental organizations, serves members from various sectors, and among the primary priorities are information monetization and digital transformation.
❖ It is critical to bring investors with business ideas together, particularly in the IT sector.
❖ There is a perception problem and a lack of promotion of Turkish products in other countries.
❖ We have a price advantage over the United States of America and European countries such as Italy and Germany, therefore, there is room for growth in high-value areas, particularly informatics.

Informatics Ecosystem

❖ Domestic producers have an 84 percent rate of having products that can be sold to the general public. Instead of making big investments to produce their own products, the public sector can carry out more effective work by building cooperation and partnerships with the commercial sector.
❖ Investments in start-ups should be made, and marketing assistance should be supplied. These supports are in a structure that can bring tremendous value with a tiny amount of help. Even putting them together with companies that can produce shared products will result in immediate benefits.
❖ Our sector's enterprises are performing well in terms of product creation in the internal ecosystem, but the external links of the companies developing products in the external ecosystem are insufficient.
❖ The number of salespeople employed by the companies is insufficient. As a result, the targeted level in the commercialization, marketing, and sales processes of the product in the sector has not been achieved.
❖ A sustainable ecology cannot be created just through incentives and grants. The commercialization process should be focused on.

2.3. Q&A

SMEs have significant software and hardware shortcomings. In this atmosphere, how can digital transformation be accomplished, and how can SMEs be digitized?

❖ Non-governmental groups play a part in compiling a list of firms in this regard. Sectoral non-governmental groups should make their projects on this topic known.
❖ First and foremost, think about digital transformation. Importing software or securing licenses is not part of digital transformation.

What differences will TÜBİTAK's new venture capital support have over the old one?

❖ In this regard, sustainability is the goal. The fundamental difference is that instead of providing direct subsidies to support the funds, the necessity has been imposed to amass resources in academic institutions and research infrastructures and make them available to corporations in this manner. It is hoped that by doing so, resources in the ecosystem will be accumulated in technology development zones and technology transfer offices.

What are the predictions for the IT sector, and what should we do?

❖ Because changes happen so quickly, they are impossible to forecast. Information-based applications such as autonomous systems, robots, smart systems, artificial intelligence, and augmented reality are clearly evolving. In terms of the skills deficit, Türkiye appears to be fourth (after Japan, India, and Brazil). Türkiye's human resources are both its strength and its weakness. The number of human resources available for usage in this field is insufficient, but the quality is high. People who can solve complicated problems and think creatively will be more valuable in the future, and education policy should reflect this.
❖ Writing code is not a skill; instead, it is necessary to create algorithms and set up a system. Coding by students from Türkiye's premier schools is not the primary focus. It is critical that the university curriculum include informatics departments that train people with these qualifications rather than code writers.
❖ It is vital to try to sell the created product to the state, but a more active role in global markets should be played.

It is critical to provide protection and assurance to the sector. There are challenges in transitioning low volume but highly profitable military industry production to industrial transformation. What are your thoughts on the subject?

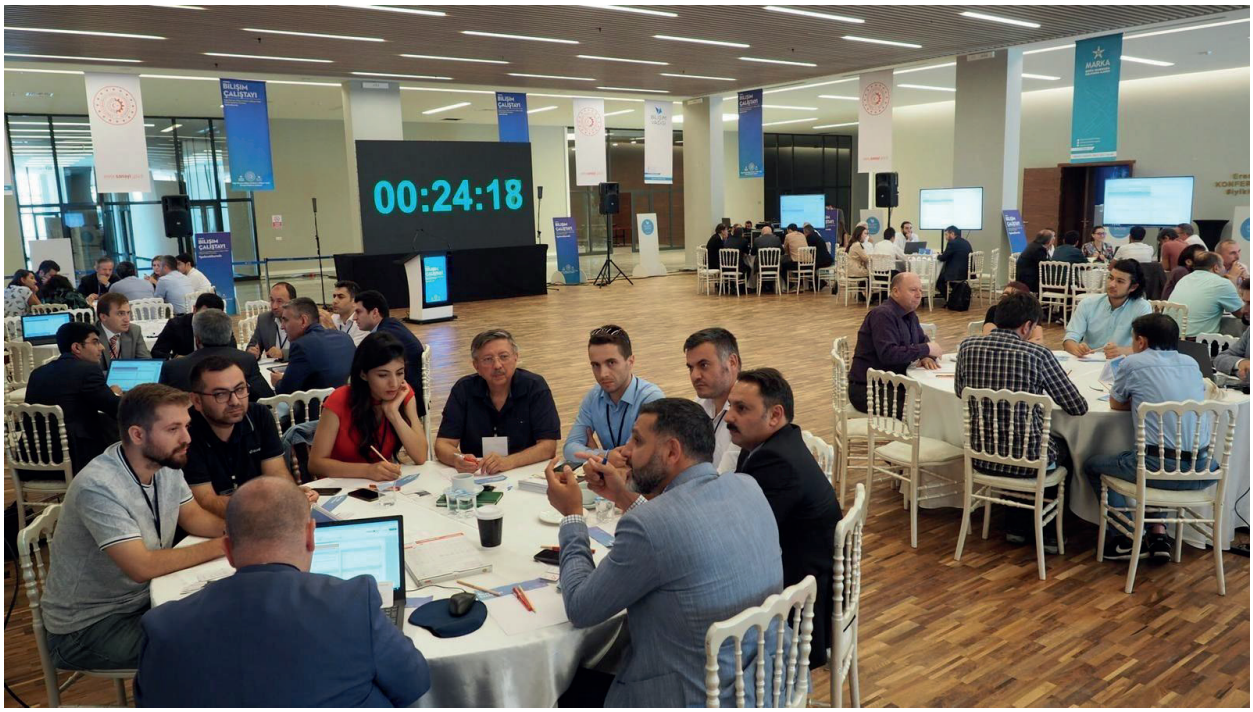
❖ While the market in developing and developing countries is dominated by software and services, hardware is important in Türkiye. Our competitive power is poor because there is a hardware monopoly in the world, but improvements should be made in the sectors of software and services. In this sense, regulation is required, but the sector must also be planned within itself.

There are challenges in transitioning low volume but highly profitable defense industry production to industrial transformation. What are your comments on the subject?

❖ There is no additional profit in the defense industry as compared to other sectors across the country; there is only continuity. It is critical to transition products designed for the defense industry to civilian use.

3. FIRST WORKSHOP: East Marmara Informatics Sector and Bilişim Vadisi Strategy Development Workshop

Photographs from the workshops



3.1. Shaping and Internationalization in the Information and Communication Technologies Sector Based on Global Trends

3.1.1. Global Trends in the Sector and Sector Structure in Türkiye

Global Trends

The following areas have a tendency to expand and are predicted to develop in the sector globally:

Big data management,
- data control,
- data analysis,
- data processing,
- data storage,
- data security

- Cloud systems
- 5G communication technologies
- Sensor technologies
- Cyber security
- Advanced image processing
- Robotics and robotic automation (IOT)
- Artificial intelligence and the internet of things (IOT)
- Industry 4.0
- Blockchain applications
- Digital animation
- Mobile software
- Wearable technology
- Smart phones
- Open-source software
- Digital transformation
- Autonomous vehicles

Sector Structure in Türkiye

- Enterprises in Türkiye tend to meet some service requests from the IT sector, particularly data backup, from foreign companies. In Türkiye, infrastructure and services for data backup should be established.
- The sector's potential for cooperation is weak, therefore chamber associations or professional umbrella organizations should be fostered (such as a chamber of profession or sector union).

- New technologies should be prioritized in the industry 4.0 focus. While applications for the domestic market have become common in Türkiye, there are none for the global market.
- Because Industry 4.0 processes are based on Western technologies, hardware-oriented solutions are created. Human and user-centered solutions should be built in Türkiye using this gear.
- There is a global trend toward artificial intelligence, robotics (industry 4.0), and virtual reality industries, and Türkiye is at the machine learning stage and needs to expand swiftly.
- Technoparks around the world are becoming more specialized. However, Türkiye has not made the anticipated progress in this regard.
- Technology Development Zones are crucial in terms of creating an environment for cluster formation. Companies should collaborate to undertake commercial meetings and marketing operations abroad, rather than going it alone.
- In Türkiye, the number of pioneer enterprises in the sector is insufficient.
- The education level in the sector is insufficient.

Sectoral trends and their application areas are not well understood in Türkiye.

- It is critical for enterprises in the sector to specialize in their respective specialties **(vertical specialization).**
- There is a tendency to promote the growth of arguments such as crypto money, despite the fact that this structure has not been formed in Türkiye.
- Game software and esports are global trends. In Türkiye, it is critical to establish advancements and legal laws in this industry.
- There is a problem with a lack of standards in the development of ICT enterprises.
- Türkiye has a long way to go in the field of artificial intelligence, but significant corporations are working on it. It is vital to concentrate on value-added software (new software that can be produced to complement existing software) and open-source software.

As a result of a natural process in the domain of cyber security, Technopark Istanbul is undergoing software specialization. The importance of cyber security is crucial, and the Presidency of Defense Industry has a department dedicated to this sector. These units bring together private and public sector technology innovators.

- Türkiye is the fifth country in the world and the first in Europe to be targeted by ransomware, making cyber security a critical problem.
- It is critical in Türkiye to develop local cloud centers and secure information security.
- Insurance plays a vital role in the market. With new technology, the Uber example has had a disastrous influence. A similar issue might arise in the insurance industry.

Featured Comments

- More effective Internet of Things (IoT) and blockchain integration research should be evaluated in Türkiye.
- **Blockchain** applications are predicted to proliferate fast in the sectors of security and finance.
- Industry 4.0 is a top focus, particularly in Europe, and IoT in the United States.
- Leaving or not entering the central issues should be considered when establishing sectoral infrastructure and providing services.
- The global competitiveness of Turkish data storage studies remains limited.
  Companies situated abroad provide data backup; firm data is promptly transferred abroad and then to companies in Türkiye. These procedures can be integrated.
- More **integrated solutions** are desired by both manufacturers and users. •
- A focus is made on global clustering and cooperative project development. Furthermore, **"Accelerator Programs"** are becoming more common. The notion of cooperative project development is uncommon in Türkiye.
- Autonomous vehicles are demonstrating a strong development trend in the interface of the informatics and automotive sectors.
- **Cyber security, information, and data security, cloud systems, and military technology are being prioritized.**
- Global trends include game software and esports focal areas. Furthermore, the digital animation sector is growing.
  - There is a growing shift away from closed-source software and toward open-source software. Mobile technologies are expected to develop as technology becomes more accessible (mobile phones and the internet). Because informatics is produced and developed in California / San Francisco, industry development will be difficult unless this region is integrated.
- The worldwide monopolization of infrastructure and service provision attracts attention.
- Priority should be given to nationalization in our country, particularly the awarding of international certifications gained overseas. The accreditation process is complicated, and the criteria for determining potential are ambiguous.
- The shift of the software sector's sales-oriented strategy toward the leasing model should be studied.
- Enterprise resource planning (ERP) software is becoming more popular.
- Adaptation to digital transformation is a critical area that must be assessed.

3.1.2. Evaluations of the IT Sector in the Region's Focus Areas and Target Markets

Focus Areas

The following are the areas on which sector firms in the Eastern Marmara region focus and should focus:

- Defense
- Cyber security
- Smart cities
- Game software
- Industrial Automation (Software for Industry 4.0 transformation) •
- Autonomous Robot and Vehicle Technologies
- Robotic coding
- Internet of Things (IoT)
- Cloud Technologies • Digital Transformation
  - Education, Health, and Agricultural Technologies
  - Technologies for Insurance, Financial Services

Target Markets

The following are the target markets where the information and communication technologies sector can be competitive or leading in the region:

- Internal Market (Türkiye)
- Balkans and Turkic Republics
- The Middle East
- Africa
- Asia (developing countries with low competitiveness in the sector, such as Indonesia and Pakistan)
- Balkans and Europe
- China

Featured Comments

- It is critical to conduct a current scenario analysis in order to determine the focal area and target market, identify the products and services for the open areas, and prioritize the competitive branches.
  - In the banking sector, Türkiye's software sector (product) has a competitive advantage in military software. Opening up should gain traction in these and other areas where we have a competitive advantage.

- The industry must be integrated into the Domestic Automobile process, which is one of our country's vision projects.
- The importance of software development in the sector should be underlined.
- Educational simulations are one of the industry's focus areas in the context of digital transformation.
- The field of informatics services should be promoted in order to increase mass manufacturing in the sector.
- When prioritizing target markets, the home market should also be strategically positioned.
- More secure e-commerce software and/or platforms should be developed.
- It is critical to build automation software and systems, as well as contribute to production by overhauling machines that have reached the end of their useful life.
- Expired base stations, chips on electrical circuit boards and lithium batteries must all be reused.
- Our software developers should be directed to examples of best practices that are competitive in the sector and have legislation and administrative processes that are consistent with our country.
- Import replacement for robotic sensors imported from China should be offered.
- Medical software and e-commerce domains should be designed with the health sector in mind. Thermal tourism can be chosen as an activity area in Yalova, one of the provinces in the region.

3.1.3. Roles of Regional Actors in Promoting International and National Cooperation

- By developing each key stakeholder's communication network at the national level, it should play a role in generating the essential human resources by collaborating with universities, facilitating the flow of internationally created information to Türkiye and sector, collaborating commercially with Chambers of Commerce and Industry, and cooperating with NGOs on a civil basis.
- Technoparks should prioritize commercialization and contribute more efficiently to globalization.
- The operations of the enterprises in the technopark aimed at specific markets should be encouraged.
- Development Agencies or other funders should grant funds specifically for the IT industry to foster international cooperation through public-private partnerships.
- International funding should be used wisely and effectively (making joint EU projects)
- Sector Promotion Days should be held, including participation from all key stakeholders.
- Clustering in the sector, as well as trips by these formations overseas, should be fostered and organized by fostering cooperation.
- Project-based company development and clustering activities should be encouraged.

- In collaboration with universities, it is vital to train human resources with the qualifications required by the industry.
- A call-based mechanism should be designed to foster collaboration (call to invite companies for a specific job).
- International students studying in ICT-related fields should be considered commercial ambassadors.
- With the help of local governments, information fairs should be increased.
- As in the case of the Technokatologist (TÜBİTAK-DMO), a platform that contains who is doing what and where, who is an expert in which discipline, and similar information in the industry should be built.
- Discounts on Youth Union of Türkiye rental rates should be applied if they contribute to the local ecology, such as internships for anchor companies.
- Supports for abroad technical study visits and similar activities should be made available in a format that startups and micro-enterprises may use.
- 3+1 and 7+1 internship programs at colleges should be developed as structured trips to enterprises abroad (Erasmus, Farabi, etc.).

Featured Comments

- In the relevant industry, the chamber and similar professional associations facilitate the position of the company's representative and director; however, this organization does not exist in the IT sector.
TÜBİFED has the potential to take the lead in this organization.
    - TAITRA, a public entity of the Taiwanese State, is responsible for actions relating to the marketing of Taiwanese products. Based on these and comparable instances, integrated studies should be designed at the institutional level.
- A platform/application (mobile or desktop) for online collaborations rather than actual gatherings should be created, and webinars / promotional organizations should be held.
- In Technology Development Zones, where company workers can collaborate, a synergy should be formed.
- Non-Governmental Organizations can link organizations that can collaborate with one another. It is critical to develop a national shared database and make matches.
- Our country has prior experience hosting international events. The frequency and number of such events should be increased. Our country hosted the Global Insuretech Summit.
- Our universities have built augmented reality (VR) laboratories that are open to the public. http://latarum.kocaeli.edu.tr/Visitors from the Middle East (neighboring countries) have requested to visit the Laser Technologies Research and Application Center (LATARUM) at Kocaeli University; however, these requests cannot be realized due to legislative reasons.http://latarum.kocaeli.edu.tr/

- Collaboration between start-ups and corporate firms should be established.

3.1.4. Opportunities for Bilişim Vadisi to Collaborate with Diverse Actors in the Context of Expanding Collaborations

Commercial Collaborations

- Bilişim Vadisi should maintain regular communication with all regional informatics sector associations. It should have direct contact with the regional stock exchange, NGO, university, and R&D centers.
- Analyzing the needs for automation transformation within Organized Industrial Zones and meeting these needs through Bilişim Vadisi should be considered.
- Bilişim Vadisi should collaborate with the region's chambers of industry and commerce, as well as the management of organized industrial zones, to aid in the commercialization of projects developed within it.
- The establishment of a free zone should be considered in order to facilitate regional companies' exports and increase competition.
- Cooperation with other Technology Development Zones should be developed within the framework of specific themes, and work done with universities should be announced to member companies.
- Bilişim Vadisi company activities should be expanded to include
    - **joint marketing,**
    - joint human resource management,
    - **joint academy,**
    - virtual technopark,
    - virtual incubation center.

- Active collaboration should be established with Technology Transfer Offices. Bilişim Vadisi should play a role in the development of TTO relations by building capacity and raising awareness in TTOs.
- TÜBİTAK, KOSGEB, Development Agency, and relevant Ministry units should collaborate (joint use of existing infrastructures, information on **incentives** and **supports**, cooperation in various projects).
- Institutional collaboration should be developed in order to participate in fairs and meetings.
- Determine the needs of the companies, form groups or clusters within this scope, and bring organizations and institutions from different groups together by organizing activities tailored to the needs of each cluster.
- It should be ensured that businesses in incubation centers collaborate with experienced individuals to provide mentoring services.

Finance Accessibility

- Access to financial resources is one of the sector's most pressing issues.
    - Bilişim Vadisi should make certain that the appropriate project has access to the appropriate financial resources.
- To facilitate access to finance, the formation of an investment fund in Bilişim Vadisi should be considered.
- An angel investment platform should be established in Bilişim Vadisi ecosystem.
- An Bilişim Vadisi project pool should be created, and idea filtering should be ensured in the provision of TÜBİTAK support.

International Collaborations

- International Organizations, Applied Research Centers, and Bilişim Vadisi should collaborate.
- It is critical that the Bilişim Vadisi representative, as well as the industrialist, participate in the state summit's overseas visits.
- It is necessary to be included in communication networks where similar technoparks exist in other countries.
- Collaborations with international brands should be established.
- Bilişim Vadisi should serve as the interface for developing national and international partnerships with companies.

Academic Collaborations

- Bilişim Vadisi and university collaboration should be encouraged.
- Academic staff from universities near the Bilisim Vadisi region should be given the opportunity to work in the region, and universities should be given the opportunity to use the region as a university-owned technopark.
- Mechanisms for continuous and effective collaboration with Kocaeli University and Gebze Technical University should be developed.
- Activities with technoparks and universities on consultancy issues should be expanded, and companies should be provided with facilitating issues outside of commercial activities.
- Bilişim Vadisi should develop collaborations with the region's universities and collaborate to meet the human resources needs of the region's companies through the university channel, TÜBİTAK, İŞKUR, development agency supported at no cost / low cost.
- Academic advisors should be encouraged to participate in projects, and other Youth Unions of Türkiye should take an active role in this regard. The involvement of academics in the zone in the project monitoring processes should be evaluated.

Transportation and Technical Infrastructure

- Transportation alternatives to Bilişim Vadisi should be developed in order to increase corporate collaborations.
- Transportation facilities in the region should be improved in collaboration with local governments.
- Joint resource utilization studies can be carried out to meet the common needs (expert personnel, training, test studies, etc.) of the companies within the Bilişim Vadisi.
- Test environments for the developed applications must be created in collaboration with the public.
- It is critical to ensure Bilişim Vadisi's competence as an information security and testing center.
- A Mega Technology Corridor should be designed with a shared resource and social cooperation that includes the local ecosystem (MARTEK, Teknopark Istanbul, GOSB, GTU, etc.).

Human Resources and Training

- University students should be included in Bilişim Vadisi ecosystem (jobs, internships, camps, etc.) and necessary facilitation (SSI premium payments, etc.) should be provided with public support.
- Places and opportunities for primary, middle, and high school students, such as experience centers and virtual reality, should be developed.
- Bilateral internship collaborations with the Bilişim Vadisi and universities should be established, as should regular internship programs.
- The protocols within the scope of internship and job opportunities with institutions such as TEI and TUSAS should be expanded by establishing business partnerships with universities and other academy organizations.
- Joint training programs should be organized with the Ministry of Industry and Technology, and companies' human resource capacities should be developed in this manner.
- Education and awareness studies, not just R&D, should be conducted with the entire education sector (Ministry of National Education and universities).
- It should be ensured that Bilişim Vadisi and companies both play an active role in coding and equipment supply with schools affiliated with the Ministry of National Education.
- Visits to Bilişim Vadisi should be organized for secondary school students in order to broaden their vision, introduce them to, and attract their attention.
- To develop human resources within the framework of Bilişim Vadisi, an "Information Academy" for the education age and working people should be built.

3.2. Sector Requirements and Strategies for Information and Communication Technologies

3.2.1. The Main Issues Faced in Qualified Employment in the Sector, as well as the Reasons Why Employees Prefer to Work Abroad

Basic Issues and Findings Concerning Qualified Employment

- There is a need for trainers with the necessary competencies to be assigned in workshops and laboratories of vocational education institutions.
- University-sector interaction is not at an adequate level.
- Long-term internships, part-time jobs, and graduation projects should be industry-related or carried out in conjunction with industry.
- Recently graduating students lack experience.
- Due to financial constraints, newly founded businesses are unable to hire suitable people.
- There is no career planning for non-corporate personnel, and there is no possibility for people to improve themselves in order to keep up with contemporary technologies.
- University courses continue to be primarily theoretical.
- Domestically qualified human resources choose cities with a small population.

Causes of Brain Drain

- The material and moral expectations of the sector's human resources are not being addressed adequately.
- The sector's overall working ecosystem does not satisfy international standards. -
- Social life and standards do not fully fulfill employee expectations.
- Companies in other countries offer more options to their employees, and career and educational opportunities are more appealing.
- The workload in the sector is extremely heavy, and working hours are irregular. -
- Employees are concerned about the future in economic, social, and political terms.

Featured Comments

- Firms should be notified about government assistance for the employment of recently graduated students.
- Because work in the ICT sector is measurable but cannot be measured in terms of wages, wage rules should be changed.
- Informatics is the most popular field in vocational high schools, and there are presently 53 informatics coding workshops in Kocaeli.

◦ There is a lack of trainers with the requisite skills to lead seminars.

- There are few opportunities for people to earn qualifications in the workplace. Due to industry competitiveness, experience transfer is limited.
- Our universities' educational quality varies; there is a lack of direct specialization. There is no uniformity of training fields (for example, artificial intelligence), which has an impact on the sector's human resource selection.
- Current and potential employees should be persuaded that ICT is a promising industry.
- The sector is project-based, and job security is minimal in comparison to other sectors.
- Project management approaches are underutilized.
- ICT companies should take a more professional approach to training and career development.
- Universities should be involved in the issuance of international certificates.
- The key actors in the sector are countries such as the United States and China, and the ideas that will transform the world come from these countries.
- Student quotas at universities must be kept realistic.
- In Türkiye, there is no inventory of the ICT sector.

3.2.2. National Education Policy Recommendations for Training Qualified Human Resources, as well as Bilişim Vadisi and Development Agencies' Expectations

National Education Curriculum and Education Policies

- Because high-level corporations hire qualified individuals and there are few human resources in this industry, it generates problems in the rest of the sector.
- A collaborative policy should be prepared in collaboration with the Ministry of National Education, business leaders, and non-governmental groups.

◦ o Sector needs should be identified, and a training program should be developed to meet those needs.

◦ The content of curricula and training should be defined and developed by the sector's leadership.

- A strategic plan should be developed to assist the development of the information sector in the field of human resources.
- Students' abilities should be assessed, and special education programs should be used to do so.

o Special education programs and budgets should be developed for gifted youngsters.

- A smooth transition from formal and mandatory schooling to a distant and flexible education model should be ensured.

- It should be assessed whether informatics-related courses are designed in such a way that commercial advancements in the industry are observed.
- High school specialization and integration of specialist high schools with the sector and Bilişim Vadisi should be studied.
- There should be a top policy on STEM and technology integration in education, and Bilişim Vadisi should serve as the coordinator in this regard.

Featured Comments

- Children have an intrinsic gift for things, such as painting and music, which must be identified at a young age. This should be accomplished through national projects and programs rather than on a local level.
- It is critical to ensure that the trainers who will train in informatics leave the stable environment and pursue the industry. In this regard, the curriculum should be demanding. -
- Coding instruction should be expanded. For the funding shortage observed in these trainings, business sector sponsorship opportunities should be established.
- Students should be given resources about informatics and related subjects and encouraged to create projects.
- Primary and secondary school curricula should contain software and algorithm development skills.

Education Organizations

- Vocational education should be strengthened, and experience-based education programs should be prioritized and weighted. Bilişim Vadisi and development organizations should reach out to universities and high schools in this area and encourage collaboration.
- The Ministry of National Education should adopt a policy on educator continuing education.
- Students' entrepreneurial abilities should be supported by Bilişim Vadisi and the Development Agency.

Platforms and money should be provided to assist the IT sector, and laws should include rules.

- Employees in the IT sector, both new and experienced, should be included in trainings conducted

in collaboration with the Ministry of National Education.

- Bilişim Vadisi should create teacher and student training programs in collaboration with the region's schools.
- Bilişim offering free courses in informatics and related subjects.
- Bilişim Vadisi Academy should be founded, and activities such as identification, training, camps, and courses for children should be organized at a young age. Collaboration with Provincial Directorates of National Education should be ensured in this subject.
- The establishment of applied training facilities where people who are not active in employment or education (between the ages of NEET-18 and 34) would be employed following software training should be examined.

All Training Center in Luxembourg and similar structures should be examined.

- In training **informatics experts**, development agencies, Bilişim Vadisi and private sector should provide financial support.
- Bilişim Vadisi should establish its own ecosystem to students in secondary school to transform their ideas into products and commercialize them by working as a science center.

Educational Infrastructure and Collaborations

- Sector should support (software, consumables, educator training, coaching, mentoring, and entrepreneurship supports) the **thematic vocational high schools** in the region.
- Establishment of **Portable Informatics Workshops** (try-do workshops) should be evaluated.
- Supporting the establishment of **software** and **design workshops** at all educational levels should be evaluated.
- Bilişim Vadisi and Development Agencies should make **matches** by university-industry mentorship.
- **Career Days** should be organized for university graduates in Bilişim Vadisi and students and companies should be brought together.
- In Technology Development Zones, laboratories should be established for students' training. These regions should also be training centers and their accreditation should be ensured by the **Vocational Qualifications Authority.**

Featured Comments

- The life standards and societal status of teachers should be improved. The Ministry of National Education should use budget policies more efficiently.
- Constant change of National Education policies causes negativities for students and teachers. Therefore, attention should be paid to making these arrangements sustainable and small-scale.

3.2.3. Expectations of Development Agencies and Bilişim Vadisi Aimed at Overcoming the Obstacles Encountered by Entrepreneurs in Sector

Company Expectations

- Bilişim Vadisi should present offers with different alternatives and price ranges to the companies who want to operate within itself.
    - o Convenience should be provided to small companies.
    - For companies to have a place actively in Bilişim Vadisi, the rental system should be rearranged (such as reducing the area of square meters suitable for rent). For example, there can be options starting from 10 m2 field suggestions.

- Coaching (mentorship) services should be provided to entrepreneurs for free or at a minimum cost.
- Opportunities aimed at **joint resource** use should be researched by Bilişim Vadisi.
- **Coordination** should be ensured between public and companies.
- Entrepreneurs in the informatics sector should be supported by institutions such as the Development Agency, KOSGEB, Bilişim Vadisi, until they commercialize their activities.
- Bilişim Vadisi should present **different package** options according to business references and academic adequacy (capability) of the companies.
- Within Bilişim Vadisi, a **system** to allow companies to **develop joint projects** should be designed.
- It should play a coordinating role in terms of **the evaluation and marketing of project** ideas of the students and recent graduates.
- **Committees** should be constituted to determine the quality of the projects in terms of receiving support and the support procedure should be facilitated according to the quality of the project.
- ICT sector should pioneer for providing training, qualified consultancy, and training (certification) services based on the needs and demands.
- It should assume the role of **matcher** between the parties need technology and produce technology.
- **KOSGEB Technology Center** should be established within Bilişim Vadisi.
- Bilişim Vadisi, the legal entity, should assume the role of **angel investor** for entrepreneurs.
- Bilişim Vadisi and Development Agency should provide support in terms of **access to finance,** procedures should be reduced, and **investors** and **entrepreneurs** should **be brought together.**
- A **business model** that will coordinate the **commercialization processes** by interacting with qualified startups according to their specialization fields.
- Bilişim Vadisi should provide **cheap** or free **infrastructure** use.
- By developing a model on entrepreneur scoring and accreditation, a trust index in terms of access to finance and gaining customers should be prepared.
- In the Development Agency support evaluation committees, people who are actively operating in the sector should also have a place alongside academicians.
- Agency support procedures should be simplified.

Featured Comments

- For entrepreneurs to receive domestic and foreign investments, their **recognition** should be increased.
    - Training and mentorship programs should be developed regarding encouraging/accelerating entrepreneurship.

Promotion days should be organized by Bilişim Vadisi and marketing activities should be supported.

o Bilişim Vadisi and Technology Development Zones should provide support for entrepreneurs in terms of promotion and the sector should focus on business development process.

- In project evaluation processes, people who are experts in their fields should play a role and in addition, sector representatives should involve in the process.
- Free internet access (Kadıköy Municipality İşlik Example: http://www.ideakadikoy.org/Icerik/islik) should be provided.
- Costs in terms of promotion and marketing should be reduced.
- The government should work jointly with technology companies, as can be seen in the example of South Korea.

3.2.4. Problems In Sector Caused by Legislation and Solution Proposals

General Legislative Subjects

- Legislation regarding **cloud use** should be reviewed.
- Establishing the concepts "Virtual Technopark", "Virtual Incubation Center", "Virtual Company", and "Virtual Citizenship" is important.
- The processes and details regarding the **protection** of products produced in sector (licensing, patent, etc.) should be defined.
- Eliminating the problems regarding employing **foreign software developers** is important in terms of the development of sector.
- It is important to constitute specific criteria and standards for the establishment of informatics companies.
- Protecting the profession and employees and introducing a **certification** system are important.
- Creating a **company valuation system** will play a role in facilitating access to finance.
- Arrangements regarding flexible working (home-office) should be made.

Standardization

- The insufficiency of unit number at the levels of **accreditation** and **competence center** causes ambiguity in this field.
- "**Vocational certificate system**" should be brought to informatics sector and it should be standardized.
- The sector should be defined, and **occupation legislation** should be constituted.
- In software projects, there is a problem of not being able to obtain intellectual and industrial property right. Regulation regarding this subject is needed. And sector should be informed.

Organization

- Institutional organization being insufficient in sector and the lack of representation at chamber level are the negativities. To solve this issue, necessary arrangements should be made.

Public Procurement

- Due to the purchase legislation, public is obliged to purchase the cheapest solution instead of the most suitable solution. Legislation arrangements are required for the situations that the cheapest solution is not the most suitable solution.
- In Türkiye, there is a dislike towards domestic goods and this situation is perceived as such due to the perception. Due to the presence of the same situation in public, problems are encountered, and local companies cannot improve. (A communication network that was thought to be suitable and purchased abroad caused numerous issues.)
- Public to plan purchases that will improve local companies and choosing specific companies and specialize them in specific topics will be beneficial.
- In public procurements, purchase of computers and equipment with open-source software is largely not accepted, and the license is strictly required. In public procurements, to allow the purchase of applications developed with open-source software, regulations should be made, and awareness should be raised.

Featured Comments

- With the Presidential Circular dated July 6, 2019, it was stated that cloud services of which servers are abroad cannot be used, however there is no domestic alternative. Therefore, the constitution of domestic cloud systems should be ensured.
- Bilişim Vadisi can take on the accountant needs of businesses for the requirements of accounting and tax law. And the Social Security Institution transactions can be monitored by Bilişim Vadisi.

3.2.5. Suggestions Aimed at Increasing the Effectivity of the Government Aid Provided to the Sector

Support Types

- **Salary support** provided by KOSGEB to R&D projects can be taken as an example to develop supports.
- It will be advantageous to increase international marketing and consultant support, **product development** in terms of national, regional, and industry, and **market growth** (advertising, fair, promotion) supports based on KOSGEB, TÜBTAK, etc. supports based on KOSGEB, TÜBTAK, etc.
- Currently, there is no support aimed at informatics sector for effective commercialization. Supports aimed at product commercialization are required.
- National supports should be cascaded according to importance and needs.

It should be assured that project supports are set based on the nature of the activity, and that the same maximum limit is not applied to each project.

- Providing assistance for the same issue by different public institutions while facing challenges with inter-institutional communication diminishes its efficiency. It should be assured that public support is pooled under a single umbrella and that access is made easier.
- KOSGEB should review the introduction of special grant programs for software developers as well as the creation of grant programs for application programs.
- Customized support designs should pave the way.
- General support for the IT sector should be expanded.

Support Items

- There are shortcomings in the marketing of the funded projects. Marketing criteria should be established while designing supports.
- Funding software developers' advertising charges and include them in support items is critical for product commercialization.
- The establishment of computer laboratories with powerful processors should be encouraged.
- It should be assessed whether the assistance provided to new entrepreneurs is planned fully or primarily as a grant or as a payment after the product generates a profit.
- The most significant expense item in the IT sector is personnel. As a result, it should be ensured that the personnel item's support rate is enhanced in support and incentives, and if possible, boosted to 100 percent. It should be ensured that testing and certification support is improved, and that fees for intellectual and industrial property rights associated to informatics are eliminated.
- Reducing or eliminating taxes on software items for a set period of time should be considered as an incentive.
- Supports such as SSI exemptions for one year with legislative regulations might be examined in Bilişim Vadisi.

Support Processes

- Whether the expert supports offered through on-site audits are employed in accordance with their purpose should be effectively audited.
- If necessary, some of the support should be withdrawn by analyzing the project's performance as outcomes.
- To boost the efficiency of state supports, rapid and effective monitoring and inspection methods should be implemented.
- Support processes should be facilitated. It is critical in public services that service provider interfaces are user-friendly, and that robust communication is created in this area. Transferring support applications and application processes to online interfaces would be advantageous.

The fact that the payment periods for the supports are so extensive and that they demand pre-financing forces tiny IT enterprises. This problem should be assessed, and assistance should be provided.

- It is critical to boost efforts to educate entrepreneurs about the availability of assistance.
- It should be addressed in the implementation processes of the supported projects to enable transitions between the cost items defined in the project application and to create possibilities for arrivals between different items (excluding changes that will affect the basis).
- A vocational competency area for informatics consultancy can be defined, particularly in SMEs, and these services can be supplied through SME consultancy.
- The fact that support is difficult to obtain, and the reporting process is cumbersome puts a pressure on the companies. As a result, regulations should be simplified in terms of access to support and reporting.

Featured Comments

- It should be ensured that ministers and senior bureaucrats collaborate more actively in enterprises, and that the sector is brought to the forefront using the power of the media.
- Making payments in state aids after expenditure puts small and fledgling firms at a disadvantage.

3.3. Positioning of Bilişim Vadisi

3.3.1. Bilişim Vadisi Definition and Priority Action Suggestions

Definition

- Bilişim Vadisi should act like Silicon Valley.
- Bilişim Vadisi should be the catalyst of the entrepreneurial ecosystem for informatics and related sectors.
- It should be positioned as a core base from which the sector can collaborate with all of its sub-branches.
- Bilişim Vadisi should be seen as an institution that shapes the informatics sector and offers new and appealing opportunities.
- It should be a magnet for enterprises in the industry.
- Bilişim Vadisi should serve as a hub for technological transfer. • It should serve as a gathering place for the region's software engineers.

Activity Suggestions

- An ecosystem should be established to ensure that the assets obtained and produced in the region are preserved.

- In terms of production-consumption, data analysis in the EU has been reduced to waste (trash). This methodology of analysis should be used in our country and by companies situated in Bilişim Vadisi.
- Working efficiently with one another should be one of the major activities of IT organizations.
- It should be a center for the study of advanced and newly developed technologies, as well as the localization of essential technologies for the country.
- It should provide all types of infrastructure and support operations that businesses will require in a high-quality manner.
- It should present to the sector by doing research and reporting on sector-related studies.
- It should ensure the formation of collaboration between industry-leading foreign businesses like Huawei and Microsoft and companies in our country, as well as play an active role in marketing the products produced to the rest of the world.
- Bilişim Vadisi should expand its collaboration with all national and international institutions and non-governmental organizations.
- The focus area should be prioritized for digital transformation.
- It should ensure that the enterprises inside it are promoted and visible.
- It should undertake national projects.

Featured Comments

- Ability to generate, manage, and direct valuable ideas, needs, code, analysis, and market strategies at all scales is required (domestic and abroad).
- It is critical to correctly connect or match the public's digital needs with Bilişim Vadisi resources.
- Bilişim Vadisi should assist businesses that manufacture high-value export items.
- It should help other countries by importing, purchasing, fixing, and selling defective medical devices. (Ability to work in the field of biotechnology)
- Bilişim Vadisi ecosystem should encompass all institutions that do business with technology (such as the Ministry of Agriculture for agricultural technology and the Ministry of Education for educational technologies).
- It should seek to meet the industry's technological needs, and one of its key responsibilities should be to stimulate and coordinate R&D operations in the sectors of domestic autos and complete automation.
- It should be involved in obtaining spin-offs from TÜBİTAK BİLGEM or universities.
- Bilişim Vadisi Software Specialization TDZ is what it is.
- It should aim to expand the companies inside its own body rather than attracting large corporations.

3.3.2. Resources and Assets of Bilişim Vadisi and the Advantages of Resources

Resources, Assets, and Advantages

- The partnership structures
- The geographical location
- The physical scale of the campus

- With the completion of the building, it will be the largest thematic Technopark in the world.
- Its ecosystem opens to development and planning
- Having the largest Congress Center in the Eastern Marmara Region (including the Anatolian Side of Istanbul),
- Internet infrastructure
- Being usable as a Data Center
- Ability to attract funds
- Being in the Mega Technology Corridor

Along with these advantages, it was also stated that the available resources were insufficient.

Featured Comments

- Because of its location, Bilişim Vadisi is at the heart of the industry, and its proximity to universities, technoparks, TUBITAK, TSE, and similar institutions, airport, YHT, and metropolitan cities such as Bursa, Istanbul, and Ankara is a significant advantage.
- Bilişim Vadisi will sustain its location advantage by improving accessibility with necessary and sufficient transportation options.

o Access to Bilişim Vadisi should be provided in different ways. Integrative solutions should be produced with the surrounding settlements.
o Transportation options should be expanded, sea and rail transportation advantages should be assessed, transportation opportunities in nearby cities such as Yalova should be identified, and ring service routes and frequencies should be increased.

- Because of the competition for companies to locate in Bilişim Vadisi, the attraction of Bilişim Vadisi will increase if it strengthens its brand image.
- Bilişim Vadisi will benefit from the collaboration of qualified and experienced IT professionals.
- It is necessary to ensure that regional companies benefit from this structure. For example, it would be beneficial if this structure added financial value to companies, served as a communication network, and aided in the acceleration of processes.
- Easy operation of bureaucratic processes is an advantage in opening an office and similar business/transactions in Bilişim Vadisi.
- Rental costs in Bilişim Vadisi are advantageous compared to other technoparks.
- Having venues such as meeting, and conference rooms provides the advantage of being able to organize corporate organizations.

3.3.3. External Factors That May Affect the Functioning of the Ecosystem

Social

- Developing the social relations network between companies
- Increasing social reinforcement areas, living spaces such as hotels, entertainment, parks, sports, etc.

- Activation of the communication network
- Target-oriented planning of PR work
- Housing area need
- Lack of trained personnel in nearby areas

Technological

- Establishment of "Science Center" in Bilişim Vadisi
- Establishment of structures for children in the zone
- Large companies with a large ecosystem move some of their suppliers to the Bilişim Vadisi

Environmental

- Environmental factors originating from Dilovası adversely affect Bilişim Valley (e.g., air pollution)

Executive / Legal

- Establishment of an Advisory Board, Sector Boards with national stakeholders
- Establishment of a separate legislation for Bilişim Vadisi

Economical / Political

- Financial Sustainability (economic income mechanisms need to be strengthened)
- Reducing government assistance to Bilişim Vadisi without ensuring sustainability
- Providing incentives and advantages to international companies that want to invest or develop joint projects in Bilişim Vadisi
- Demand for companies to have a campus in Bilişim Vadisi
- Political and economic risks

Featured Comments

- Aside from defining informatics as an industry branch is important, policymakers should develop policies to help Türkiye become a country that produces high-value-added products.
- Failure to adhere to the strategies determined in the establishment and ongoing process is a risk factor.

- Insufficient promotion of Bilişim Vadisi creates a disadvantage for the organization.
- Although it should be one of the first Technology Development Zones of Türkiye that does come to mind, its awareness is low.
- Universities are underrepresented in Bilişim Vadisi.
- The Strategic Plan needs to be considered suprapersonal.

3.4. Bilişim Vadisi Future Strategies and Common Mind

3.4.1. What the Bilişim Vadisi Can Do for the Companies to Expand Abroad, Institutionalization, Branding, Investments, Services, Development of Human Resources Potential and Ecosystem

Branding of Bilişim Vadisi

- Bilişim Vadisi should be institutionalized and promoted through the establishment of a department (on all channels, including social media).
- It should be evaluated to ensure that the companies produced in Bilişim Vadisi are accredited with a logo in the style of "Made in Bilişim Vadisi" (Quality companies, quality products).
- Bilişim Vadisi's brand positioning work should be evaluated in order to create a trustworthy brand image. Bilişim Vadisi should create a strong corporate identity.
- Bilişim Vadisi should be known on a global and national scale. It should create a specific brand perception (this will increase the preference of companies to invest and work with the companies within the Vadi).
- A department should be established to oversee Bilişim Vadisi's corporate identity and promotion (on all channels, including social media).

Expand Abroad

- It should be ensured that joint cooperation with international peer institutions is developed.
- Bilişim Vadisi should attend all fairs in which the sector participates, either alongside (national/international) companies operating within its body or in a way to represent these companies.
- Bilişim Vadisi should maintain constant contact with global brands.
- Bilişim Vadisi should establish **liaison offices abroad** to facilitate international communication and interaction.
- Bilişim Vadisi should hire qualified individuals to guide companies in the incubation center or other companies looking to expand internationally, to **represent the companies jointly**, to carry out their correspondence, and **to provide translation support.**
- Bilişim Vadisi should promote its businesses on a global scale.
- It should be assessed whether products and services for target countries are produced in digital and printed catalogs (in the target country's language) and contribute to promotion.

- It should be ensured that companies doing similar business among the companies within the body are included in the high-level commercial delegations.
- Bilişim Vadisi should institutionally become a member of international networks and increase its cooperation.

Investments

- For companies to have a place actively in Bilişim Vadisi, the rental system should be rearranged (such as reducing the area of square meters suitable for rent).
- The Presidential Investment Office should conduct lobbying activities for global companies to invest in Bilişim Vadisi Valley and organize roadshow events.
- Participation in thematic fairs, seminars, and meetings in other countries should be encouraged, and companies should be assisted in attending these events.
- Efforts should be made to connect entrepreneurs and investors, as well as to connect them with Organized Industrial Zones.

Services

- Bilişim Vadisi should attract not only R&D and IT companies, but also PR and law companies.
- Activities should be conducted in Bilişim Vadisi to encourage stakeholders to use the products and solutions developed by companies in Bilişim Vadisi.
- Bilişim Vadisi management can handle the company's official business and transactions.
- Bilişim Vadisi should connect businesses with public institutions and be considered for legal and project development consulting.
- Bilişim Vadisi should help companies with similar marketing goals with their commercialization strategies.
- It should routinely inform the companies in its body about the sector's incentive and support mechanisms.
- Bilişim Vadisi should establish collaborative working areas, technical infrastructure, educational opportunities, laboratories, and social facilities to aid in the development of new technologies.
- Bilişim Vadisi should have guides/consultants to assist SMEs with their digital transformation.

Human Resource Potential

- Thematic training should be provided for entrepreneurs and companies, including personnel of the Bilişim Vadisi management.
- Bilişim Vadisi should provide intern finding services to start-ups.

- Activities should be conducted to create an "Information Academy" and to train human resources.

Physical Infrastructure

- In the Bilişim Vadisi, living areas such as social facilities, hotels, entertainment, parks, and sports facilities should be expanded.
- It should be ensured that transportation and communication opportunities (such as ring services) are expanded among nearby stakeholders and that the communication network is more effective.
- Bilişim Vadisi's transportation options must be improved and diversified.
- To improve internal communication, screens, and communication boards can be placed along major routes in the Bilişim Vadisi.

Developing the Ecosystem

- It will be beneficial to strengthen the activity and social interaction environments, which will allow the development of a network of social relations between companies.
- Platforms for inter-firm technology transfer network development should be established.
- Qualified events should be organized to increase company and employee satisfaction.
- Bilişim Vadisi can guide companies in providing qualified consultancy and training services.
- Appropriate support and incentives for companies in the Vadi should be followed and determined by Bilişim Vadisi, and an active role in project development processes should be played.
- An environment for out-of-school teaching and socialization should be developed in collaboration with the surrounding universities, particularly Gebze Technical University.
- Efforts should be made to strengthen and make the enterprise acceleration and incubation system attractive.
- A high level of collaboration with industry should be established as a criterion for companies coming to the Bilişim Vadisi to better adapt to the zone's ecosystem.

Featured Comments

- It should be ensured that the Bilişim Vadisi website contains more information about the companies.
- Companies should be encouraged to get to know one another via the intranet.
- Company owners should attend cooperative meetings on a regular basis.
- Bilişim Vadisi cloud services must be supported by businesses when they are transferred to the local area.

- In the process of determining the training date and time, it is critical to adhere to the companies' appropriate time intervals.

3.4.2. Topics that Bilişim Vadisi Can Lead, Facilitate and Support

Research and Vision Determining

- It should direct the industry by determining the industry's needs and future projections, as well as direct the companies by conducting market research.
- It should be the driving force behind Türkiye's digital transformation. On topics such as industrial automation, active collaboration with nearby industrial establishments should be developed.
- It should direct companies to produce domestically developed products.
- Bilişim Vadisi can be considered as a focal point as an international brand to reverse the brain drain.
- Bilişim Vadisi should advise policymakers and funders on where to direct their efforts.
- Bilişim Vadisi should lead in the field of information technology standardization and support the development of legislation and policies.
- It should encourage the establishment of a cloud-based data center in the Bilişim Vadisi to meet the Türkiye's needs, and the center should be located here.
- Activities should be conducted to plan the resources required by Türkiye's IT sector, and Türkiye should be designated as a Futuristic Center.
- It should be ensured that Bilişim Vadisi guides and leads other technology development regions in Türkiye.

Communication and Collaboration

- Activities should be conducted to bring businesses and public institutions together.
- Hosting large-scale events like Teknofest (with themes like digital transformation) can help with promotion.
- It can help with technological entrepreneurship.
- Bilişim Vadisi should create structures that all educational institutions can use, and these structures should be centered on informatics (Science Center, Center of Excellence).
- Hosting conferences, and panels, and creating a network (social) place on trending topics such as robotics, industry 4.0, artificial intelligence, and virtual reality will be beneficial.
- Hardware production will be difficult in Bilişim Vadisi; it will be more logical to concentrate on software research. Because there are a significant number of good software developers in India, human resource transfer from India can be prioritized.

Joint Sourcing and Procurement

- It should play a direct and indirect role in providing funds for company projects and supporting foreign trade activities.
- It is critical to offer affordable contracts with domestic data centers of incubators or start-ups.
- Companies will benefit from sector-based (internal and external) matching activities (supplier development) for the marketing of technological products.

3.4.3. Strategies and Risks of Bilişim Vadisi to Achieve Goals

Strategies/Actions

- Making brand image works
    - The brand value of Bilişim Vadisi should be increased by bringing in R&D companies.
- Completion of its institutional structuring and internal functioning within the framework of the strategic plan (Organizational structures, departments, number, and quality of personnel)
- Establishment of Strategy Development and Strategy Execution Commissions, including representatives from regional companies, Chamber of Industry, and similar organizations,
    - Target/Performance criteria should be defined
- Establishment and sustainability of TTO within BV
- Preparation of communication strategy
    - Establishing and sustaining cooperation with central and local authorities, local governments, and all other relevant stakeholders.
    - YouTube channel, social media influencers, success stories
- It should keep strong communication between companies and with other stakeholders in the ecosystem
- Designing a structure in coordination with the Istanbul Financial Center
- Within the framework of the human resources policy, it should increase the existing human resources and group them vertically on the basis of subjects
- Realization of joint training
- Inviting experts who can provide training in foreign institutions to training events
- Developing International Outsourcing Collaborations

Outsourcing studies with India (China, Singapore, etc.) can be developed in software (some software can be advantageous).

- Coordination of Domestic Production of Certain Hardware Products

Evaluation and production of production possibilities in the Bilişim Vadisi or the zone for some hardware products Ensuring international cooperation

- Developing Project Based Collaborations
    - Developing cooperation models between domestic and foreign companies by creating an index

- Having environments/laboratories where users can get hands-on experience with electronic and software products
- Creating product marketing and sales strategies, as well as advising businesses on commercialization
- Contributing to company product sales and exports through international bilateral cooperation
- Creating a database of entrepreneurs, mentors, investors, academics, and potential matches Providing microcredits to students in formal education for the production of technological/informatics products

Risks

- The settlement area has not yet been fully developed and does not provide enough opportunities for a livable settlement area
- Inadequate coordination.
- Long-Term Financing / Government Support: The risk of not receiving a financial return from government institutions in a short period of time (less than one year). Long-term financing options should be considered.
- The risk of remaining a standard TDZ.

Featured Comments

- All processes, from idea generation to commercialization, must be coordinated with all relevant public institutions and organizations, particularly the Ministry of Industry and Technology.
- Bilişim Vadisi Management should develop strategies to enable the companies operating within its body to collaborate with regional industrial organizations.
- Strategies for developing current technology shoulde be developed with academic support throughout Türkiye.
- Current announcement of support and incentive mechanisms, participation in company project development processes, and projects should be designed and implemented.
- It should serve as a congress center, hosting meetings that determine Türkiye's agenda in the field of informatics (in the context of digital transformation in the industry).

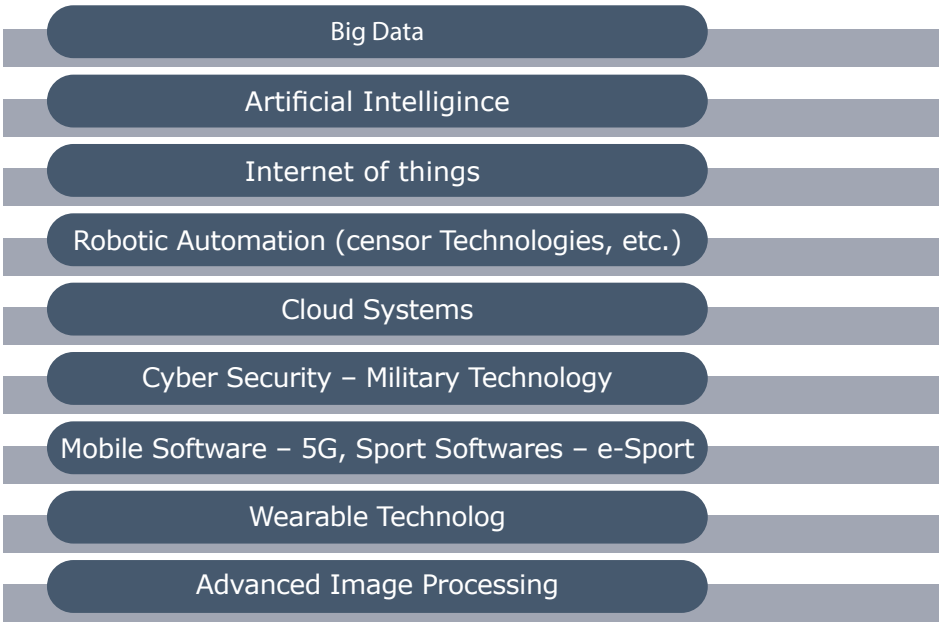
4. GENERAL COMMENTS

4.1. Agenda 1.1 Shaping and Internationalization According to Global Trends in the Information and Communication Technologies Sector

4.1.1. Question 1: What are the global trends in the sector and what is the sector structure (specialization, clustering, etc.) in Türkiye?

The phenomenon of globalization, which expresses the process of international integration, causes some changes in the knowledge economies of all nations. On the one hand, the transition from labor-intensive to information/technology-intensive production models accelerates; on the other hand, it creates competitive pressure by allowing information, technology, and products to act quickly. As a result, it is critical for Türkiye to take a position based on global trends in the information and communication technologies sector and accelerate its internationalization activities.

When the global trends in the sector and the responses produced by the participant groups regarding the sector structure in Türkiye are analyzed, it is stated that the global order has evolved from closed-source software to open-source software. Big data management (control, analysis, processing, storage, and security of data), artificial intelligence, the internet of things, robotic automation, cyber security, military technologies, cloud systems, mobile software, wearable technology, game software and e-sports, and advanced image processing technologies are stated to be developing rapidly as developing areas.



In return for these developments, there are some current problems regarding the sector structure of Türkiye. In the light of the findings, these problems are listed below:

- Although there is a tendency towards specialization in Technocity in the world, the desired point has not been reached in Türkiye in this regard, and therefore there is a lack of ecosystem and culture of work together.
- As a result of the small number of leading companies and the inadequacy of sectoral training, lack of sufficient information about how to apply the trends and their application and usage areas
- Insufficient level of legal regulations in the field of game software and e-sports
- Difficulties in integrating with global powers.

4.1.2. Question 2: Which focus area (product and service production) and which target markets (domestic and foreign) should the IT sector in the region focus on?

The product and service production that the zone's IT sector should focus on is very similar to the aforementioned global trends. It is emphasized in this context that a focus on defense, smart cities, game software, industrial (automation) software, autonomous and robotic coding, the internet of things, artificial intelligence, and digital transformation is required. Priority markets should be given to Turkic Republics (Central Asia), the Middle East, Africa, and Europe, respectively.

It was emphasized that, particularly in the domestic market, software, and hardware solutions for the industry 4.0 infrastructure should be developed, investments should be made not only in the industry but also in education, and content in the informatics sector should be developed. As a result, strong content should be produced using training know-how, and our own products and services should be exported to foreign markets. It has been stated that it is important for the end-of-life machines contributing to production, especially with the revision, and to recycle and reuse the products (reuse of base stations, reuse of chips in electronic circuit boards, reuse of lithium batteries) in the domestic market.

The suggestions of the participating groups are given below:
- Achieving competitive advantage by focusing on core competencies: Providing competitive advantage by accelerating the outsourcing of competencies, especially in software for the banking and defense industry.
- Prioritizing of products and services for open areas by analyzing Turkic Republics and neighboring countries (which can be easily accessed) and prioritization of strong branches (defense industry, games, etc.)
- Integration of banking software in Turkic Republics, Africa, and developing countries (Indonesia, Pakistan, etc.)
- Ensuring import substitution in robotic sensors imported from China: Ending China's monopoly and turning bargaining power in Türkiye's favor by diversifying suppliers

- Development of products and services for the domestic market in software for the industrial sector
- Production and use of domestic software for defense and strategic sectors (information security and informatics security, medical informatics)
- Supporting the domestic automotive project

4.1.3. Question 3: What can be the roles of actors in the zone to develop international and national cooperation?

Commercial Support of Public Institutions

- In order to support domestic production, public institutions, especially local governments, prefer to purchase products and services from domestic companies and make commercial contributions
- Supporting Informatics Fairs

Establishment of a Flexible and Quality Communication Structure

- Having a communication structure that will allow domestic companies (especially companies in the Bilişim Vadisi) to make foreign partnership agreements
- Visit program to businesses abroad
- Participation in international fairs, meetings with foreign companies, meetings where delegations from abroad and domestic companies are brought together.
- Hosting international event organizations
- Creating a platform/application (mobile or desktop) for online collaborations rather than actual gatherings and webinars, and creating a synergy / holding promotional organizations
- Designing a call-based mechanism to foster collaboration (call to invite companies for a specific job).

Cooperation with Universities

- Increasing communication with alumni by performing joint social activities
- Bringing together the human resources of the university and IT companies by conducting joint activities with the Career Centers of the universities
- Realizing the most appropriate match between the needs of the companies and the academics at the university and the scientific knowledge produced (joint project, consultancy, etc.)
- Establishment of open laboratories for common use
- The ability to give some practical courses, especially on education, in technoparks and similar institutions

Support of TDZs

- Bringing the supports provided for abroad trips into a format that can be used by startups and very small-size companies

- Being a pioneer for abroad trips by organizing clusters
- Carrying out joint marketing works that companies cannot carry out alone
- Applying discounts to companies in TDZ rental fees if they contribute to the local ecosystem
- Developing a platform that includes information such as teknokatolog (TÜBİTAK-SSO), who is doing what where, and in which field.
- Ensuring that organizations that can cooperate with each other are matched
- Establishing a national common database with other technoparks and making matches

4.1.4. Question 4: In the context of increasing collaborations, what kind of collaborations with which actors (public, other technoparks, universities and companies) can Bilişim Vadisi develop?

When the answers given by the participant groups are examined, the suggestions made specifically for Bilişim Vadisi are listed below:

- Being in direct interaction with all IT sector associations, stock markets, NGOs, universities, and R&D centers in the zone,
- Developing joint projects with universities, creating internship opportunities for students,
- Providing common resources to meet the common needs of companies within the scope of Bilişim Vadisi (Expert personnel, training, test studies, etc.)
- Developing cooperation with OIZs: Making a needs analysis for the companies in the OIZ and producing solutions on the basis of these needs by the companies within the Bilişim Vadisi,
- Correct matching with OIZ companies in order to support the commercialization of projects developed within Bilişim Vadisi
- Developing collaborations with other Technoparks within the framework of certain themes
- Conducting training and awareness activities, not just R&D, with the entire education sector (MEB, universities)
- Engaging in networks with similar technoparks and silicon valleys abroad
- Ensuring access to the right financial resources
- Developing collaborations with the zone's universities and collaborate to meet the human resources needs of the region's companies through the university channel, TÜBİTAK, İŞKUR, development agency supported at no cost / low cost.
- Coding support, equipment support to schools affiliated with the Ministry of National Education
- The inclusion of university students in Bilişim Vadisi ecosystem (jobs, internships, camps, etc.) and necessary facilitation (SSI premium payments, etc.) should be provided with public support.
- Increasing work on consultancy with technoparks and universities, providing facilitating issues to companies other than commercial activities.

4.2. Agenda 1.2 Sector Requirements and Strategies for Information and Communication Technologies

4.2.1. Question 1: What are the main problems experienced in qualified employment in the sector, what are the reasons why employees prefer to work abroad?

Lack of qualified human resources: Graduate students' theoretical knowledge (university education remains theoretical) and a lack of practical experience are cited as major issues. As a result, long-term internships, part-time work opportunities, and graduation projects must be industry-oriented or carried out in collaboration with the industry.

Education system lacks specialization: The disparity in university education quality and the lack of standards for education fields (e.g., artificial intelligence) for direct specialization have a negative impact on graduate student quality.

The reasons why the current trained human resources prefer to work abroad are:

- inability to provide sufficient financial income,
- inability to work at global standards,
- having a project-based perspective in the sector,
- low job security compared to other sectors,
- excessive workload,
- working hours are not regular,
- the absence of a career plan created by companies for their employees, and insufficient social opportunities.

4.2.2. Question 2: How should the national education policy be shaped in raising qualified human resources? What are the expectations from Bilişim Vadisi and development agencies?

The changes required to be made in national education are listed below:

- Strengthen vocational education, and prioritize experience-based education programs
- Determining the needs of the sector and structuring the training curriculum and training processes accordingly
- Providing continuous training to the trainer
- Transition from formal and compulsory to distance and flexible education model in education, differentiation of compulsory courses according to students' interests.
- Establishment of thematic, specialized high schools
- Supporting students' project production

Therefore, the expectations from Bilişim Vadisi and development agencies are as follows:

- Bilişim Vadi's strategic plan to accelerate the development of the informatics sector,
- Creating platforms and funds to support students' entrepreneurial capacity,
- Supporting the thematic vocational high schools (software, consumables, educator training, coaching, mentoring, and entrepreneurship supports) in the zone.

The evaluation of the establishment of Portable Informatics Workshops (try-do workshops).

The evaluation of supporting the establishment of software and design workshops at all educational levels.
Establishing the Bilişim Vadisi Academy, organizing education, camps, courses, etc. for children at an early age.

- Establishment of laboratories where students can receive education in TDZs and transforming TDZs into a training center
- Monitoring the sector with scientific methods in order to determine the needs of the sector (the quality sought) and to follow up
- Bilişim Vadisi, working as a science center, establishing an ecosystem for students in secondary school to transform their ideas into products and commercialize them.
- Initiating award-winning projects with educational institutions on issues where companies are looking for alternative solutions
- Bringing students and companies together by organizing career days

4.2.3. Question 3: What can be the expectations from development agencies and Bilişim Vadisi to overcome the obstacles faced by entrepreneurs in the sector?

The biggest problem faced by entrepreneurs is not being able to find financial support. Aside from the public support expected from Bilişim Vadisi and development agencies, the creation of meeting environments with angel investment networks and angel investors is a step in this direction. Demo days should be established, as well as platforms for entrepreneurs to market their ideas. Furthermore, companies are expected to act as a bridge in communicating with public institutions that they cannot meet and communicate with individually.

The second major issue that entrepreneurs face is that their ideas cannot be scaled. For this reason, it is expected from Bilişim Vadisi and development agencies to organize training that will grow and mature ideas (Intellectual property rights, business functions, and feasibility studies related to activities in the value chain, business development, and growth management, university-industry collaborations, and commercialization) and provide support. Mentors with extensive application knowledge should also provide information support on real-world problems. Establishing qualified committees to determine the quality of the projects prepared to receive support and facilitating the support procedure according to the nature of the projects are among the requested issues.

Another significant issue that entrepreneurs face is a lack of publicity. As a result, Bilişim Vadisi should launch an effective promotional campaign to inform academics, researchers, industrial organizations, and private sector companies about their activities. Companies can benefit from market and marketing research. Company audits should be prepared on the web in order to lay the groundwork for companies to do business together. Furthermore, clustering of companies in similar business areas should be ensured, as should activities such as facilitating cooperation between these companies. Organizations should be structured in order to increase interactions between companies. Other expectations include providing an environment and services (prototype workshops, laboratories, etc.) where entrepreneurs can develop their projects, creating opportunities for joint resource use and joint project development, and dividing office spaces according to companies.

4.2.4. Question 4: What are the regulatory problems of the sector and how can they be resolved?

- Lack of institutional organization (room, etc.) in the sector and obstacles.
- Insufficient number of departments at the level of accreditation and competence center for the sector
- Having to choose the cheapest solution rather than the most appropriate solution due to the public procurement legislation.
- General issues in current legislation regarding cloud use
- Failure to obtain patents for software projects
- Supports have very long payment periods and require pre-financing.
- Employment problem in activities involving more than one NACE code because software and hardware are intertwined.
- Only projects developed through software can benefit from tax exemption, so projects related to software embedded in the product cannot benefit from this exemption
- Access to support is not easy, reporting process is too much.
- The support is given by different public institutions in the same fields and problems in communication.

The suggested solutions for these problems are as follows:
- Introducing and standardizing the vocational certificate system in the IT sector
- Defining the sector and creating professional legislation
- Creating common definitions of the concepts of "Virtual Technopark", "Virtual Incubation Center", "Virtual Company", "Virtual Citizenship"
- Establishing criteria and standards for the opening of IT companies
- Protecting the products produced in the IT sector (licensing, patents, etc.)
- Taking the profession and members of the profession under protection and introducing the certification system
- Elimination of problems encountered in the employment of foreign software developers

4.2.5. Question 5: What should be done to increase the efficiency of the government supports provided to the sector?

When the responses of the participating groups are examined, it is revealed that more government support is needed in the following subjects:

- Developing supports by taking salary support provided by KOSGEB to R&D projects as an example.
- Increasing international marketing and consultant support, product development in terms of national, regional, and industry, and market growth (advertising, fair, promotion) supports based on KOSGEB, TÜBTAK, etc.
- Simplifying support processes
- Developing monitoring and inspection systems in the effectiveness of state aids,
- Supports have very long payment periods and require pre-financing.
- The support is given by different public institutions in the same fields and problems in communication.
- Pooling the public supports under a single umbrella and making easier the access
- Reviewing the introduction of special grant programs for software developers withing KOSGEB as well as the creation of grant programs for application programs.
- Developing cloud centers and secure information security.
- Funding the advertising expenses of the software developers
- Encouraging the establishment of computer laboratories with powerful processors.
- Providing transitions between determined cost items
- Increasing support for testing and certification, removing patent fees.

4.3. Agenda 2.1: Positioning of Bilişim Vadisi

4.3.1. Question 1 How should we define Bilişim Vadisi? What should the main activities of Bilişim Vadisi be?

In order to find a good place in the minds of external stakeholders, Bilişim Vadisi should primarily understand what external stakeholders expect from it. According to the responses given to the related question, Bilişim Vadisi, as an enterprise guiding the IT sector and creating new appealing opportunities, should be positioned as the catalyzer of the entrepreneurship ecosystem for relevant sectors. External stakeholders expect Bilişim Vadisi to focus on growing the companies under its roof by creating not the bigger actors but the entrepreneurial ecosystem. It should both be a host for entrepreneurs and act as an organizer that will support their activities. It should act as a superior mind by focusing on strategic issues such as developing politics and creating a vision. Main services expected from Bilişim Vadisi in this respect are as follows:

- Bilişim Vadisi should make research and prepare reports related with the IT sector and present these to the sector.
- Bilişim Vadisi should particularly support companies manufacturing export products with high
added value.
- Bilişim Vadisi should be the core center for technology transfer and attract leading companies like Huawei and Microsoft to cooperate with the companies in our country.
- It should serve as a core center for technology to let academicians or professionals of the sector know that this place is the best of the field. New products should be attracted to Bilişim Vadisi and there should be a close relationship with the NGOs of the sector.
- Bilişim Vadisi ecosystem should encompass all institutions that do business with technology (such as the Ministry of Agriculture for agricultural technology and the Ministry of Education for educational technologies).
- Bilişim Vadisi should pioneer clustering of the companies under its roof and define the needs of the fields it could specialize in.

4.3.2. Question 2: What are the valuable resources and assets of Bilişim Vadisi and their current and/or future advantages for Bilişim Vadisi?

- **Availability of an Ecosystem Open to Improvement:** Companies have the opportunity to play a role in the shaping of the ecosystem
- **Positional Advantage:** Is close to universities and Organized Industrial Zones and transportation opportunities have been improved
- **Government Support and Policies:** IT sector is included among the prioritized fields
- **Size:** It will be the largest thematic technopark of Türkiye upon the completion of constructions
- **Partnership Structure:** This structure offers companies a material value and a network and helps facilitation of processes.
- **Rental Cost:** It charges lower rental fees than other technoparks

4.3.3. Question 3: What are the valuable resources and assets of Bilişim Vadisi and their current and/or future advantages for Bilişim Vadisi?

- **Environmental Factors:** Air pollution, Probability of the emergence of new Technology Development Zones
- **Legal Factors:** Arrangement of a specific regulation for Bilişim Vadisi
- **Social Factors:** Lack of social opportunities for families to benefit for a full day, Lack of public recognition
- **Economic Factors:** Cutting government support before the achievement of sustainability, Weak

4.4. Agenda 2.2. Bilişim Vadisi Future Strategies and Common Mind

4.4.1. Question 1: What should Bilişim Vadisi do to support international expansion, institutionalization, branding, investments, services, human resource potential of external companies and improvement of the ecosystem?

Review of findings reveal that there is a positive correlation between the quality of support and institutionalization and branding of Bilişim Vadisi. It is important to create the image of reliable brand on the basis of corporate identity. Sustainability of Bilişim Vadisi will certainly support development of companies in many areas. In this respect, it is advised to prioritize the following activities to specifically ensure sustainability of the ecosystem.

- Expansion of the technology transfer network
- Collaborating with international peer companies
- Developing the inter-company social network and enhancing transportation and communication opportunities among close stakeholders to achieve this
- Pioneering provision of qualified consultancy and education services intended for the needs
- Offering unique advantages for the manufacturing of local products
- Enabling that companies created in Bilişim Vadisi are accredited with a logo (Made in Bilişim Vadisi)
- Helping entrepreneurs meet investors and Organized Industrial Zones
- Increasing the number of social living spaces
- Participation to international fairs
- Offering an out-of-school training and socialization environment with GTU and other universities
- Preparing "company check-up" catalogues (in writing and digital) for the companies under its roof
- Increasing and diversifying the instruments for access to financing

4.4.2. Question 2: What would you expect Bilişim Vadisi to play a pioneering or facilitating/supporting role.

- Defining the products and services the sector needs to focus on, making research on global trends and guiding companies in this regard
- Keeping a close track of relevant practices and incorporating good practices
- Determining, supplying, and raising the human resources needed
- Creating an infrastructure to meet personal needs (accommodation, social opportunities etc.) for individual employees
- Developing a local (cloud) technology for data backup, founding a data center, and designating Bilişim Vadisi as the host
- Funding projects of companies, contributing to commercialization of products, offering export opportunity, and supporting commercial activities
- Pioneering digital transformation of Türkiye

- Making studies for the planning of resources required by the IT sector in Türkiye.
- Defining special privileges for companies about strategic products and contributing to the creation of supports
- Supporting reverse brain drain

4.4.3. Question 3: What should be the strategies to achieve these goals? Review potential risks to be faced.

- **Strategic Goal 1: Institutionalizing and Creating a Sustainable Ecosystem**
  - Goal 1: Structuring internal and external stakeholder relationships
  - Goal 2: Improving Human Resources quantity, quality, and satisfaction
  - Goal 3: Strengthening the Organizational structure and Branding
  - Goal 4: Strategy Development and Strategy Executive Committees
  - Goal 5: Building a Living Campus (means of transport, social opportunities etc.)

- **Strategic Goal 2: Developing High Quality Relationships**

  - Goal 1: Working in coordination with all relevant public institutions and organizations, particularly including the Ministry of Industry and Technology, in all processes starting from development of a project for an idea until commercialization of such idea
  - Goal 2: Cooperating more with Organized Industrial Zones, universities, and NGOs
  - Goal 3: Developing strong and continuous relationships with the local authority

- **Strategic Goal 3: Generating Qualified Outputs**

  - Goal 1: Long-Term Financing / Government Support: Long-term financing opportunities should be used against the risk of not gaining a material return in the short-term (less than 1 year) from the supports received from public institutions,
  - Goal 2: International Outsourcing Cooperation: Developing outsourcing studies with countries like India, China, and Singapore in the field of software
  - Goal 3: Domestic Production in Certain Hardware Products: Benefiting from production opportunities for certain hardware products in Bilişim Vadisi or in the zone. Enabling international cooperation.
  - Goal 4: Project-Based Cooperation: Creating an Index and Developing Cooperation models between domestic and foreign companies.
  - Goal 5: Ensuring the best match between the needs of the internal companies and external companies with the potential to carry out R&D activities, academicians in the university and the scientific information produced,
  - Goal 6: Allowing cooperation between companies doing business in Bilişim Vadisi and the industrial organizations in the zone,
  - Goal 7: Founding a Technology Transfer Office and ensuring its sustainability

4.5. Reviews Relating to the IT Sector

4.5.1. Global Trends

1. Big Data and Its Management, 5G Communication Technologies, Sensor Technologies, Cyber Security, Advanced Image Processing, Robotics and Robotic Automation, Artificial Intelligence, and Internet of Things, Blockchain, Mobile Software, Game Software, E-sports, Digital Animation, Cloud Systems, Autonomous Tools and Military Software come to the forefront in the sector as the global trends that increasingly develop and are expected to develop.
2. Global solutions integrated in the commercial structure of the sector, development of inter-company joint products and services as well as products based on open-source software and product leasing models come to the forefront.

4.5.2. National Case

3. It is believed that in Türkiye, there is a potential for development in the software and service sector instead of the hardware sector. Short-term focus in on the generation of innovative solutions based on basic global IT infrastructure in the software sector for the competitiveness of the country.
4. The issues addressed are the lack of organization in the sector and inability of access to financing, lack of qualified personnel and pioneer companies and not prioritizing domestic suppliers in public purchases.

4.5.3. Structure and Potential of the Zone

5. Defense industry, cyber security, smart cities, game software, industrial automation, robotics and robotic coding, autonomous tools, internet of things, cloud technologies, digital transformation (particularly including education, health, agriculture, insurance, and financing) solutions are considered as the main areas in the ecosystem of Bilişim Vadisi particularly including the East Marmara TR42 Zone and Istanbul and Bursa.
6. The domestic market as well as the Balkans and Turkic Republics, South Asia, Middle East, Africa, Europe, and China are defined as the target geographies for the products and services in the Zone. In this respect, it is important to carry out research about these markets, to determine the products and services addressing the country and zones and to support external expansion of companies based on this potential.
7. It is stated that it will be advantageous if the IT sector in the zone develops more products and services
in the fields of e-commerce, digital transformation, integration to domestic automotive processes, defense industry software, banking, training simulations, automation, robotic sensors, and industrial automation addressing the internal market.
8. Making a detailed analysis of the products and services imported in the IT sector and ensuring that the companies in the zone work under public guidance for import substitution in these fields come to the forefront as the issues needed to be addressed for the domestic market in Türkiye.

4.5.4. Cooperation for Internationalization

9. It is considered as important to help countries companies to develop joint projects among each other and with public, academia and civil society for competition in external markets.
10. It is also considered as important to form technology development zones-based clusters in the sector, to enable specialization and to create focal points in external expansion.
11. Companies' lack of resources for one-to-one external expansion is viewed as an issue that could be overcome with inter-company cooperation. In this respect, joint digital and printed advertising catalogues, procurement committee organizations that could be represented by superior structures, Webinars and joint commercial activities should be considered.
12. Overseas partnerships are also included among the instruments companies could use for external expansion. In this respect, managers of technology development zone, development agencies and chambers of industry and commerce should consider promotional activities for investment.

4.5.5. Utilization of Joint Infrastructure and Resources

13. A digital inventory should be created in universities, research centers and institutes, public institutions, local administrations, and private sector for the coordinated utilization of features such as augmented reality, laser technologies, prototype atelier, test and calibration equipment and their joint utilization should be ensured to achieve resource efficiency.
14. Use of try & do workshops and other similar practices by educational schools and related individuals should be spread with the support of local administrations. Training and Human Resource
15. Primary training and preschool education period should be taken as the starting point to bring up qualified personnel and entrepreneurs for the sector. Therefore, it is important to shape and implement the curricula of the National Education accordingly. Skill qualification test and algorithm, basic coding and STEM trainings should be offered and supported by local provincial and district directorates as well as school managers for the implementation of the curricula and execution of activities toward this goal.
16. Utilization of thematic activities and educational organizations suitable for student age groups should be spread. Competitions and events should be organized on city and region basis.
17. Sponsorship and donation mechanisms other than public resources should be developed in high schools with IT and coding ateliers, particularly including specialty high schools, in order to attain the required hardware and physical environment. Furthermore, it is important to spread practices like teachers' training and communication with the sector, coaching and mentorship in high schools.

18. It is stated that the training offered on IT and related fields in universities is at theoretical level only, and practical experience is not sufficiently developed. It is important to create awareness about self-improvement in students studying in these departments and to encourage them to engage in internships, competitions, and other similar activities.
19. It is important for technology development zones to serve as an interface to allow university students studying in departments related with the sector to easily access to short- and long-term internship and part-time employment opportunities in suitable enterprises.
20. Working overseas is preferred due to the facts that material expectations of qualified personnel and entrepreneurs cannot be sufficiently met, the working ecosystem is not at international standards, social opportunities are below the expectations, overseas career and educational opportunities are better, there is heavy workload, working hours are not organized and there are economic and social anxieties about the future of the country.
21. Sector employees are mainly hired on project-basis and thus, job security anxiety is reported to be higher compared to other sectors.
22. Hiring of IT sector employees from overseas should be supported. In this way, know-how transfer should be allowed for local employees and competitive power of the companies in the sector could be increased.

4.5.6. Publicity and Marketing

23. Activities should be carried out by Technology Development Zones as well as chambers of commerce and industry for achieving joint publicity of companies inland and overseas, joint programs should be organized, and companies should be informed. Thematic specialization should be prioritized in these processes, coordination should be enabled by attaching importance to equality of opportunities and competition and financing organizations should support such activities of technology development zones and chambers. Legislation and Public Procurements 24. Legislative arrangements addressing Cloud IT applications are required in Türkiye.
25. It is also needed to regulate and standardize job definitions and licenses of authorization relating to IT sector. It will be useful to expand studies on accreditation and qualification in the sector.
26. Due to the purchase legislation, public is obliged to purchase the cheapest solution instead of the most suitable solution. Legislation arrangements are required for the situations that the cheapest solution is not the most suitable solution. It is necessary to clearly define and apply flexibilities to allow domestic products and services to be the first choice.
27. In public procurements, purchase of computers and equipment with open-source software is largely not accepted, and the license is strictly required. In public procurements, to allow the purchase of applications developed with open-source software, regulations should be made, and awareness should be raised.
28. Public to plan purchases that will improve local companies and choosing specific companies and specialize them in specific topics will be beneficial.

4.5.6. Access to Finance and Government Supports

29. Personnel expenses is one of the main areas that needs support in the IT sector. The nature of the sector requires it to employ qualified personnel, leading to high personnel costs. As a small-scaled sector, financial sustainability comes out as a significant problem particularly during the founding stages. Hence, increasing the amount of government supports and incentives offered to the sector for personnel-related items, with a partial difference from those offered to other sectors, will enhance the efficacy of these supports.
30. Since the number of personnel employed by companies doing business in IT sector is relatively small, entrepreneurs may spare more time to processes carried out to benefit from supports and incentives, leading to disruption of the execution of main activities. Therefore, technology development zones should be able to keep a close track of these processes on behalf of companies, help companies to benefit from suitable support programs and play an active role in project application and implementation processes.
31. Support programs in the IT sector should be designed as tailor-made as well as in form of general calls.
32. Similar supports offered by different organizations should be brought together; monitoring, application and implementation processes should be simplified and moved to the digital environment as much as possible.
33. Alternative options like the founding of an investment fund or an angel investment platform within Bilişim Vadisi should be considered for enabling companies to access finance.
34. It takes a long time for the products to turn into revenue in the IT sector. Besides personnel expenses, commercialization of products, publicity and marketing activities need support. To allow for resource efficiency, supports intended for these areas should be organized and joint activities should be carried out by the managers of technology development zones, chambers of industry and commerce and development agencies to achieve such publicity.
35. Testing, certification, and patent fees are high for small-scaled companies, yet these are obligatory for commercial operations of companies, which poses a problem for new enterprises. Consequently, lowering testing, certification and patent fees in the IT sector will be helpful.

35.1.1. Entrepreneurial Ecosystem

36. Access to finance, planning of ideas, commercialization of projects, protection of intellectual and industrial property rights, and integration to business networks for product and service presentation are listed among the main issues regarding entrepreneurship in the sector. At this point, managers of technology development zones, development agencies and chambers of industry and commerce are expected to support current and potential entrepreneurs in consultancy, training, publicity, and project management issues.

4.6. Reviews Relating to Bilişim Vadisi

4.6.1. Perception on Bilişim Vadisi

38. Bilişim Vadisi is perceived to become the Silicon Valley of Türkiye. In addition, it is expected to become the core of the IT ecosystem in Türkiye, an attraction centre in IT sector, a technology transfer point, and a meeting area for the sector.
39. It is suggested that Bilişim Vadisi carries out pioneering activities for the sector, leads sectoral innovations, serves as a core center where international projects and events take place and uses its brand value to support the companies working under Bilişim Vadisi.
40. Bilişim Vadisi draws attention with its large, comprehensive, and high-quality campus. It has strengths such as providing a powerful technical infrastructure for the information and communication technologies sector and being globally accessible. On the other hand, currently there are some inadequacies in terms of investment and being preferred by companies. Besides, availability of institutionalized technology development zones in the neighborhood, inadequacy of social opportunities and the risk of unsustainability of the public financing model are listed among the negative perceptions regarding the zone.

4.6.2. Corporate Cooperation Offers for Bilişim Vadisi

41. Building a mechanism for continuous communication with IT sector associations will enable cooperation that is based on the expectations of the sector and joint use of resources. It will also be useful to ensure regular communication with neighboring exchanges, private sector R&D centers and other non-governmental organizations.
42. Continuous interaction with neighboring organized industrial zones and chambers of industry and commerce is necessary for commercializing the products and developing need-based solutions for the companies under the roof of Bilişim Vadisi.
43. Bilişim Vadisi should cooperate with other technology development zones, companies, and technology transfer offices available in these those in order to develop business and theme-based partnerships. Business based partnerships could be developed among companies particularly by building a database covering the specialty fields of companies.
44. It is suggested that Bilişim Vadisi cooperates with TÜBİTAK, development agency and KOSGEB and develops informing and consultancy mechanisms to help the companies working under the roof of Bilişim Vadisi to benefit from supports and incentives in a faster and efficient manner.
45. Bilişim Vadisi should continuously cooperate with the universities available in the ecosystem, play a role in bringing companies together with the academia and build platforms to enable development of joint projects.
46. It is believed that effective use of the information and communication technologies of Bilişim Vadisi by public institutions particularly at Ministerial level and incorporating them into the ecosystem will be helpful.

47. Cooperation with the Presidential Investment Office should be established and systematized in order to identify potential international (including developing countries) brands that could take place in Bilişim Vadisi and to attract them to the zone.

4.6.3. Physical and Technical Infrastructure of Bilişim Vadisi

48. Transportation opportunities of Bilişim Vadisi should be developed, and alternative means of transports should be considered. In this respect, priority should be given to projects that are planned in coordination with local administrations.
49. Testing and information security should be fully ensured in Bilişim Vadisi and it should be assured that applications developed by companies completely fulfil security requirements.
50. It is expected that priority is given to the establishment of high-quality social facilities including accommodation, dining, recreation, entertainment, sports, and health services inside and in the surroundings of Bilişim Vadisi campus to present to the use of sector employees, customers, and visitors. Cooperation with local administrations should be ensured for this.

4.6.4. Suggestions of Roles in Training and Development of Human Resources

51. "Bilişim Academy" should be established in Bilişim Vadisi and this academy should organize regular trainings, camps, thematic events, conferences, and symposiums addressing a wide range of people from children at primary school age to students doing their master's degree, from sector employees to unemployed people and people offering supportive services (legal consultancy, project management etc.). Activities of the academy should cover joint practices with national education directorates, school managers, technology development zones, universities, technology transfer offices and local administrations available in the close ecosystem.
52. It is considered as important that Bilişim Vadisi plays an active role in finding personnel and interns for the companies under the roof of Bilişim Vadisi. It will also be useful to ensure regular communication with training institutions for building a potential personnel pool and with institutions like İŞKUR and SGK regarding employment processes and incentives.

4.6.5. Suggestions of Roles in Publicity and Marketing

53. It is important that Bilişim Vadisi becomes a powerful international and national interaction point for the companies doing business under the roof of Bilişim Vadisi. It is also important that it plays a swift and effective role in finding customers or partners and in informing companies about recent developments.
54. Bilişim Vadisi should jointly represent the companies under its roof and provide matching, informing and translation services addressing the target markets. In this respect, establishment of overseas contact points may be considered.
55. Bilişim Vadisi should have up-to-date digital and printed catalogues that cover the products and services of companies to be offered to relevant people.

56. Bilişim Vadisi should follow fairs and other publicity organizations related with the sector and take active role in such publicity and marketing platforms considering the product and service structures of the companies doing business under the roof of Bilişim Vadisi.
57. It is also important that Bilişim Vadisi takes an active place in central government or senior level commercial, procurement and business committees and works in coordination with the relevant committees for effective promotion of potential business opportunities.

4.6.6. Suggestions of Roles in Supportive Services

58. Bilişim Vadisi is expected to offer consultancy to companies regarding the main shortcomings of the sector including the intellectual and industrial property rights, legal issues, public relations, and communication. Employment of relevant personnel or practices of contracted companies could be considered for this.

5. EKLER

5.1. Katılım Listeleri

#	Name of the Institution	Name of the Participant	Title of the Participant
1	TÜBİTAK Marmara Teknokent (MARTEK)	Abdulkadir CİVAS	Consultant
2	Kocaeli Chamber of Commerce	Abdurrahman ÇUHADAR	Executive Board Member
3	Gebze Chamber of Commerce	Adem YILDIRIM	
4	KOSGEB	Ahmet AKDAĞ	Vice Chairman
5	Düzce Directorate of National Education	Ahmet YAKUPOĞLU	Unit Head
6	Elpo Bilişim	Ahmet Z. TAŞKIN	Marketing Manager
7	Kocaeli Chamber of Commerce	Akın DOĞAN	Head of the Council
8	Elpo Bilişim	Ali SÖNMEZ	Chairman of the Board
9	Gebze Technical University Technology Transfer Office	Alkan KOÇ	Specialist
10	Geobilgi	Alper DEMİRÇEVİREN	Business Development
11	Big Partner Group	Arda MERİÇ	General Manager
12	Rectorate of Yalova University	Res. Ass. Dr. İrfan KÖSESOY	Faculty Member
13	Takosan Otomobil Göstergeleri A.Ş.	Bahadır HIZLAN	
14	IT Federation of Türkiye (TÜBİFED)	Banu ÖZKUL	Employment Commission Member
15	Teknopark İstanbul	Bilal TOPÇU	General Manager
16	Düzce Directorate of National Education	Bilgin CAN	Provincial Coordinator of Information Technologies
17	HAVELSAN	Burak GAYRETLİ	Corporate Communication Manager
18	Novelty Yazılım	Celalettin BİLGEN	Software Specialist
19	İDE	Cem BAYTOK	
20	HUAWEI	Deniz ÖZGÜR	Sales Manager
21	Takosan Otomobil Göstergeleri A.Ş.	Dinçer SERİN	
22	Industrial Management Institute of Turkey (TÜSSİDE)	Doğa GÜNAY	Project Coordinator
23	Software Industrialists Association (YASAD)	Doğan Ufuk GÜNEŞ	Chairman

24	Kocaeli Teknopark	Dr. Ahmet ŞEN	Leader
25	İzel Kimya	Dr. Cemil DİZMAN	R&D / Quality Control Manager
26	Rectorate of Bolu Abant İzzet Baysal University	Dr. Nuh YAVUZALP	Information Processing Unit Head / Dr. Faculty Member
27	İnsurtech Hub	Ebru ŞEVLİ SAKİNE	Program Leader
28	Kocaeli Teknopark	Eliçin DİNÇER	
29	Scientific and Technological Research Institution of Türkiye (TÜBİTAK)	Elif KOŞOK	TÜBİTAK Venture Fund Supporting Group Coordinator
30	Düzce Directorate of Industry and Technology	Enes KESKİN	Officer
31	Kocaeli Directorate of National Education	Erdinç BOZKURT	Vice Manager
32	Rectorate of Yalova University	Eyüp ALBAYRAK	Information Processing Unit Head
33	Insurtech	Fatih ACER	General Manager
34	Protem Teknoloji	Fatih Selim SANCAKTAR	R&D Engineer
35	Duman Arge	Feride ALAKUZU	Office and Storehouse
36	NETSUN	Fikri ŞATIR	
37	Arkel Elektronik	Gözde KALMIZ	
38	KOSGEB Kocaeli Directorate of the Organized Industrial Zone	Hakan DEMİRCİ	Director
39	NETSUN	Hakan PELTEK	Software Developer
40	Istanbul Chamber of Industry	Haktan AKIN	Secretary General
41	Crytek	Halit ALTUNTAŞ	Corporate Marketing Team Leader
42	Big Partner Group	Hande ARPALIGİL	General Coordinator
43	Kocaeli Directorate of National Education	Hasan Burçin MENTEŞ	
44	HAVELSAN	Hüseyin KALINTAŞ	Executive Specialist
45	Kocaeli Directorate of National Education	İbrahim DOĞAN	Unit Head
46	Sakarya Directorate of National Education	İbrahim TÜRK	R&D Unit
47	KOSGEB Kocaeli Directorate	İbrahim USTAÖMER	Director
48	Kocaeli Directorate of Industry and Technology	İlhan AYDIN	Provincial Director
49	Mirengi Yazılım	İlkay Başak ÜREGEN	Senior ERP Consultant

50	Industrial Management Institute of Turkey (TÜSSİDE)	İsmail DOĞAN	Institute Manager
51	Kocaeli Chamber of Industry	Kadir DECLELİ	Council Member
52	Kocaeli Metropolitan Municipality	Kemal ALTUNEL	Resource Development and Affiliates Office Head
53	Kocaeli University Technology Transfer Office	Kıymet EŞİYOK	Specialist
54	Kocaeli Chamber of Industry	Mehmet Oğuzhan ÖZKURT	
55	Kocaeli Directorate of Industry and Technology	Mehmet TİZAR	Specialist
56	Rectorate of Kocaeli University	Mehmet Zeki KONYAR	
57	Atılım Yazılım	Melih UMAR	Sales Manager
58	Hamle Mühendislik	Murat AKKAYA	Chairman of the Board
59	Protem Teknoloji	Mustafa AŞKIN	IT Supervisor
60	Arz Portföy	Mustafa ÇINAR	
61	Gebze Governorate	Mustafa GÜLER	Governor
62	Sakarya Information Technology Sector Association (SABİDER)	Nahit GÖK	Chairman of the Board
63	Yalova Chamber of Industry and Commerce	Necat RÜZGAR	Communication Coordinator
64	Sakarya Chamber of Industry and Commerce	Necmettin KIRIK	Vice Manager of the Council
65	Kocaeli Teknopark	Nesrin AYDIN	Vice Manager
66	Bilişim Guru	Nessim BACİ	
67	Körfez Chamber of Commerce	Nihat Can KIRCI	
68	Türkiye Elektrik Dağıtım A.Ş. (TEDAŞ)	Nihat İSMUK	Vice Manager
69	Mirengi Yazılım	Nilgün BAĞAÇ	
70	NETSUN	Nurgül MANTARCI	IT Supervisor
71	Metin Madenciliği Yazılım A.Ş. (Wordego)	Okan EROL	CEO
72	Har Holding Astav Yazılım	Okan KARAÇAM	Administrative Affairs Director
73	Sakarya Information Technology Sector Association (SABİDER)	Ömer A. AYHAN	Secretary General
74	Düzce Directorate of Industry and Technology	Ömer EGİNLİGİL	Provincial Deputy Director

75	Erenköy Physical Therapy and Rehabilitation Center	Ömer Muharrem YAĞCIOĞLU	Orthopedics
76	Düzce Directorate of National Education	Ömer ÖZTÜRK	Provincial Coordinator of Information Technologies
77	Duman Arge	Onur ÇAKMAK	Accounting Manager
78	ARKEL	Onur DEMİREL	
79	SAP Türkiye	Onur YILDIRIM	Public Relations Coordinator
80	MENTALİK	Orhan ERYİĞİT	Human Resources Manager
81	Istanbul Chamber of Commerce	Orkun KIZILBEY	Assistant Specialist
82	Architects and Engineers Group	Osman BALTA	General Manager
83	Crytek	Ozan ERKAN	Project Manager
84	Protem Teknoloji	Özden YÜCEL	Software Specialist
85	Interbank Card Center (BKM)	Özge ÇELİK	Business Development Director
86	Düzce Directorate of Industry and Technology	Özhan KURŞUN	Chief
87	Kocaeli Teknopark	Özlem KOÇKAYA	Head of Business Development Unit
88	Rectorate of Gebze Technical University	Prof. Dr. Arif Çağdaş AYDINOĞLU	Assistant to Rector
89	Rectorate of Sakarya University	Prof. Dr. Cemil ÖZ	Computer Eng. Department Head
90	Rectorate of Yalova University	Prof. Dr. Derya GÜROY	Assistant to Rector
91	Rectorate of Kocaeli University	Prof. Dr. Engin ÖZDEMİR	Faculty Member

92	Sakarya University Technology Development Zone Directorate / Sakarya University Teknoloji Geliştirme Bölgesi Yönetici A.Ş.	Prof. Dr. Mehmet Emin ALTUNDEMİR	Secretary General
93	Rectorate of Gebze Technical University	Prof. Dr. Nilay COŞGUN	Assistant to Rector
94	Rectorate of Yalova University	Prof. Dr. Orhan TORKUL	Assistant to Rector
95	Visiobit Bilişim Teknolojileri	Ramazan ÇUBUKCI	General Manager
96	Duman Arge	Ramazan DURMAZ	Software developer
97	TÜBİTAK Marmara Teknokent (MARTEK)	Recep AKSOY	Senior ERP Consultant
98	Information Technologies Association of Türkiye (TÜBİDER)	Rüştü ARSEVEN	Chairman of the Board
99	Duman Arge	Samet ALKAN	Technical Service Manager

100	Kocaeli Chamber of Industry	Seda AYDIN	Specialist
101	Ritma Teknoloji	Selim ÜNÜVAR	
102	IT Federation of Türkiye (TÜBİFED)	Şenol ANLAŞ	Chairman of the Board
103	Bilişim 112	Serkan BİLEN	
104	Atılım Yazılım	Serkan YILMAZ	Project Manager
105	HAVELSAN	Şevket ÜNAL	
106	Bolu Chamber of Industry and Commerce	Süleyman UZUNOĞLU	Member
107	HAVELSAN	Tahir COŞKUN	
108	Bilişim Guru	Tesnim BACİ	
109	Hamle Mühendislik	Tevhid KORKMAZ	Software Engineer
110	Yalova Chamber of Industry and Commerce	Tolga AKINCI	Deputy Secretary General
111	Hidropar Hareket Kontrol Teknolojileri Merkezi Sanayi ve Ticaret Anonim Şirketi (HKTM)	Tolga Cankurt	
112	Düzce Chamber of Industry and Commerce	Tuncay ŞAHİN	Chairman of the Board
113	Crytek	Utku BAYAT	Software Engineer
114		Yakup Hasan KÜÇÜK	Student
115	Albaraka Türk	Yakup SEZER	
116	Saykal Elektronik	Yücel SAYKAL	General Manager
117	Mirengi Yazılım	Yunus ATMACA	ERP Consultant
118	Körfez Chamber of Commerce	Yunus COŞKUN	
119	BNTPRO Bilgi ve İletişim Hiz. A.Ş.	Yusuf BAKIRCI	Sales Manager
120	NETSUN	Zerrin ZIVALI	Finance
121	Yonca Bilişim Teknolojileri	Zeynep Eylül YAĞCIOĞLU	

5.2. Minutes of Session

In workshop sessions, reporters have made a record of the issues agreed by the participants of each desk. Minutes of workshop sessions are available on https://bit.ly/3356vHs.

INFORMATICS WORKSHOP

East Marmara Informatics Sector and Bilişim Vadisi Strategy Development Workshop

FINAL REPORT

MARKA
DOĞU MARMARA KALKINMA AJANSI

TÜRKİYE CUMHURİYETİ SANAYİ VE TEKNOLOJİ BAKANLIĞI

BİLİŞİM VADİSİ

JULY 12, 2019, Bilişim Vadisi