



Regional Innovation Strategy to Promote Growth in Jerusalem

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Introduction

The J-RIS project was launched in June 2005 to identify issues that could contribute to the economic development of Jerusalem. This goal is of special importance given the character and status of Jerusalem, which despite being the capital of Israel and its national/historical/principle importance to all of Israel's residents, has remained a poor city. In fact, it is the poorest of all the large cities in Israel. The project, predominately funded by the Sixth EU Framework Programme for Research and Technological Development, was carried out by the Jerusalem Development Authority, Jerusalem Institute for Israel Studies and the North Brabant Development Agency in the Netherlands that contributed of their experience in management of a similar project.

Two key conceptions were at the heart of this project:

1. Innovation is the main driver for generating competitive advantages and profitability. This profitability leads to higher rates of employment, higher wages, increased investment and, in the end, growth of the entire region.
2. The project must strive to reach a regional consensus on the goals and objectives to be promoted in the project. To this end, a strong steering committee was created, in which representatives of the relevant entities in the region were represented.

Beginning in the initial meetings of the steering committee, the members agreed that the J-RIS project itself would need to show a great deal of creative thinking in light of the complexity and uniqueness of Jerusalem. It was recognized that a standard project focusing on innovative aspects of technological and industrial innovation was not necessarily appropriate for a city in which close to 50% of the population are employed in the public sector, where the percentage of employees in industry is among the lowest in Israel, and where the percentage of participation in the workforce is among the lowest in the country.

The uniqueness of the city, beyond its status as the capital of Israel, is in the human fabric and the variety of its constituent components, including secular, Haredi (ultra-orthodox) and Arab populations, as well as its being a secular cultural center and a religious center for the three Abrahamic religions. That said, despite its diversity, Jerusalem suffers from negative migration (primarily among young people), a problematic image and from the fact that it is among the poorest cities in Israel. It is clear that the tremendous potential inherent in the city, as expressed in the existence of leading social and scientific research and educational institutions, has not yet manifested itself in stable economic development. Moreover, the impact of various governmental programs to promote and develop a local industry was found to have a limited effect on the city's development.

At the end of the first year of activity and after several rounds of brainstorming, the steering committee decided to focus on the following areas as those with the highest potential for making the city more attractive to people both within and outside it, and for changing its image from a “bland” city that suffers from negative migration and economic regression to that of a lively city that gives positive expression to its diversity and harnesses the young creative forces in it (in various populations) for growth and economic prosperity.

1. **Integrating the Haredi minority (ultra-orthodox jews) into innovative industries by making higher education accessible to them** – The steering committee instructed the J-RIS staff to examine ways of assisting the members of the Haredi community (the largest minority group in Jerusalem region consist of 300,000 inhabitants), particularly yeshiva (institute of religious studies for pupils aged 13-24) graduates, who are interested in attaining an academic education that will enable them to integrate into innovative areas of occupation with high added value. This approach views the Haredi public, which to date has been seen by many as one of the factors contributing to the city’s economic problems, as one of the factors that in the future will be able to promote economic growth and provide the city with a high-quality and educated workforce.
2. **Developing diverse media, technology and culture cluster** – Jerusalem is characterized by a relative advantage in education in the arts (the full spectrum), software and computer science, and in fields of media and rich culture and content that are unique to the city. Over 50% of the students in Israel who study design, art or media study in Jerusalem. At the same time, many students of engineering and computer science study at institutions in Jerusalem, some of which are considered outstanding by any measure. However, each area/sector individually has not been able to thrive in the city and does not contribute to its economic growth. The steering committee asked the J-RIS staff to find ways to recruit these populations to work to the benefit of the city’s economy and towards creating an atmosphere of creativity and innovation. In particular, the project team was asked to examine ways of realizing the inherent potential of combining the arts with technology to create innovative and breakthrough fields that will transform Jerusalem into a world/national leader in the field.
3. **Jerusalem as a city of knowledge**– The steering committee noted the centrality and ability of the various fields and institutions of higher education in Jerusalem to drive change and enhancement of the city and to be a unique means of attracting people to the city. The project should aspire for the range of higher education institutes in the city, headed by The Hebrew University of Jerusalem, to see themselves as an integral part of Jerusalem in all respects (socio-cultural experience, various communities, and

business sector). Promoting higher education may lead to the creation of high-quality workplaces and also contribute to the image of Jerusalem as a lively academic city – an image which, in and of itself, will help attract the creative workforce needed to develop the city.

4. **Brainstorming team to find ways of promoting rural tourism in the Jerusalem region** – The Steering Committee agreed on the undeveloped tourism potential of the Jerusalem region, particularly in the Mateh Yehuda Regional Council. The J-RIS staff was instructed to review the barriers that prevent the tourism development of the region and to recommend ways of making it into an important tourism center that will provide many jobs, similar to the Galilee. During the work of the team, the Ministry of the Interior and Ministry of Tourism informed us of their desire to issue a call for proposals for development of a master plan for the development of rural tourism in Mateh Yehuda. After discussions with representatives of the ministries and after clarifying that they intend to conduct far-reaching and comprehensive work on this issue, it was decided to cease activity in this regard and integrate it as part of the activity of preparing the master plan in coordination with the entity that will be writing it. Unfortunately, the tender and process of drafting the master plan have still not gotten underway.

In addition to these activities, the project staff was asked to examine the industrial situation in Jerusalem and to generally identify failures that impede its development.

General Overview

Over the past two decades, the economy of Jerusalem has been marked by a low rate of participation in the workforce and a high percentage of residents who live below the poverty line.

After the unification of the city, Jerusalem experienced good years in economic terms. The city experienced accelerated physical growth, low poverty rates, high percentage of human resources participating in the workforce, a large component of people employed in industry and average wages that did not fall below the average wage in Tel Aviv and Haifa. Thus, for example, in 1969¹ approximately 9.9% of families in Jerusalem lived below the poverty line (compared to 7.8% in Tel Aviv and Haifa, and 11.9% in Israel). In contrast, according to a 2003 report on poverty, approximately 33.2% of families in Jerusalem lived below the poverty line (compared to 10.9% in Tel Aviv, 17.5% in Haifa and 19.3% in Israel). This data shows that while the average number of families below the poverty line in Israel grew over the years by close to 60%, the number in Jerusalem grew threefold. Analysis of the situation of children in the city yields an even more drastic picture: During this period, the percentage of poor children in the city increased almost fourfold (compared to an increase of about 100% in the percentage of poor children in Israel).

The economic downturn of the city is attributable foremostly to the low level of participation of the residents in the workforce and the high concentration of public sector employees, in sectors in which the average wage is relatively low, compared to the very low percentage of employees in the industrial sector. Against the backdrop of this employment reality, Jerusalem gradually lost its status as a leading academic city, in terms of the number of students, the number of people employed in the “knowledge industry” and the loss of the student life that had previously characterized the city and attracted educated young people.

Jerusalem’s downward economic slide over most of the years of its unification, hones the need to define relative areas of strength. Focusing on these areas could result in turning the negative trend around and strengthening the city.

In the next chapters, we will review the factors responsible for the downward slide of the city and the fields identified as having the potential to contribute to its economic development.

Workforce and employment:

Undoubtedly, one of the reasons for the upward trend in the rate of poverty in Jerusalem in recent years can be found in the ongoing decline in the percentage of participation in the workforce. This variable is calculated as a percentage of the employed individuals or those actively seeking employment out of the population aged 15 and up. In 1966, even prior to

¹ Source: Jack Haviv, 1974, publication of the National Insurance Institute of Israel (in English).

unification of the city, the percentage of participation in the workforce in Jerusalem was 53.7% compared to 53.1% in the general Israeli population.² However, upon unification of the city and the years following it, the rate of employment began falling dramatically (decline of about 6%) and then was subject to a certain fluctuation in participation of between 45%-47%. In 2005, participation in the workforce was only 46.4% (49.6% among the Jewish population and 38.1% among the non-Jewish population) compared to 55.2% in Israel (58.2% among the Jewish population and 42.2% among the non-Jewish population). Generally speaking, while the percentage of participation in the workforce in Israel is on the upswing, in Jerusalem the trend is downward. It would seem that this trend is attributable to growth of the Haredi and Arab populations, whose rates of participation in the workforce are low for religious, social, political and other reasons.

Analysis of the breakdown of people employed by the various sectors of employment provides additional insight into the economic status of Jerusalem's residents. Over the years since the unification of Jerusalem, and as part of other economic trends, the rate of employed individuals in high added-value employment sectors such as industry declined against lower added-value employment sectors. In fact, despite the sharp growth in the population of the city (from 283 thousand residents in 1969 to 719 thousand residents in 2005), the absolute number of people employed in industry showed almost no change. The percentage of individuals employed in industry declined from 15.3% in 1970 to 8.6% in 2005. This decline was partially offset by the business services sector and the retail sector – two sectors in which the wage does not exceed the general average wage.

Along with the low proportion of people employed in industry, the proportion of those employed in the public sector in Jerusalem increased. In 1970, this sector, which for the most part does not generate high incomes, provided employment to approximately 40% of Jerusalem's residents, and in 2005, approximately 45% of the city's residents worked in this sector. The ratio of the public sector in the employment of the city's residents is approximately 45% higher than the national average (which in 2005 reached close to 32.5%).

² In that year, the workforce was calculated as people aged 14 and above.

Employment in Jerusalem by economic sector: 1970, 1987, 2005

Year	Total no. employed	Agriculture	Industry	Construction	Electricity and water	Trade, food services and hospitality	Transportation, storage and communications	Finance and business services	Public services	Personal services
1970	81.8	0.6	15.3	9	0.5	12.9	6.8	5.7	39.9	9.3
1987	130.7	0.2	13	0.6	0.6	16.1	6.8	9.6	42.4	5.8
2005	192.8	-	8.7	5.6	0.5	18.5	6.7	13.7	44.5	1.7

Source: Central Bureau of Statistics

The decrease in the proportion of industry as a source of employment can be explained in several ways; one of them is the lack of schools of engineering³ that provide important human resources for the development of the high-tech industry. The second is the impact of the *Intifada*, which made recruitment of employees outside of Jerusalem into a difficult and complex task.

The launch of the Jerusalem College of Engineering at the end of the 90s clearly improved the availability of engineering personnel, but at this time the extent to which this college is managing to make a real change is still unclear. While Israeli high-tech centers, and particularly the large companies that provide employment to graduates who have no employment experience, established themselves in the center of the country and in the Haifa region, the graduates of the College of Engineering and those who studied computer science, physics and math at The Hebrew University have found it difficult to find employment in Jerusalem, and many of them are forced to leave the city. In terms of employment, the research conducted by Schwartz⁴ (2006) found that over the past decade the status of the “knowledge industry” in Jerusalem has declined, while in Haifa and Tel Aviv it continued to grow.

At the same time, industrial zones such as Talpiot and Givat Shaul which, from their inception, serviced traditional companies are turning into commercial and office centers. The Atarot industrial zone, which was hit hard by the *Intifada*, currently serves as an industrial center for traditional companies, and also no longer attracts advanced industries. Thus, the city has been left with one active industrial zone, in Har Hotzvim, and an additional industrial zone in Malcha, which due to its nature, size and location provides only a partial solution for the requirements of advanced industry.

³ With the exception of Lev Institute, which is restricted to the Orthodox or Haredi population and trains a limited number of engineers each year.

⁴ Schwartz, D.: The Regional Location of Knowledge-Based Economy Activities in Israel, *Journal of Technology Transfer*, 31: 31–44, 2006.

These processes led to a situation where the rapid growth of the Israeli high-tech industry virtually passed Jerusalem by. But that is not all. The fact that high-tech industries tend to locate in hot spots⁵ created a situation that is difficult to change, and the ability of the city to turn back the wheel and become an important high-tech center is limited.

The attempts to improve the feasibility of establishing companies in Jerusalem through benefits granted under the Encouragement of Capital Investment Law, have proven to only be partially successful. In actuality, very few companies were established or relocated due to these benefits. One of the reasons for this is that these benefits were restricted solely to high-tech industries, while the Encouragement of Capital Investment Law is not sufficiently relevant to many companies in these fields (that are not high-tech). Different surveys conducted by the Jerusalem Institute for Israel Studies show that the main reason for establishment of a company in the city was the proximity to the residence of the founder. Economic considerations and financial benefits were only secondary considerations.

Higher education

Another reason for the downslide of Jerusalem is attributable to the declining strength of the local academia sector, both as an employer and as a central factor in the creation of an environment that attracts a high-quality workforce to the city. After the unification of Jerusalem, The Hebrew University prospered, and between 1967 and 1987, the number of students enrolled grew from 10,561 to 17,881. The number of senior faculty members rose from 740 to 1,481.⁶ However, beginning in the 1990s, the number of senior faculty began to decrease gradually, and reached 1,122 positions in 2004. The growth in enrollment also ground to a halt, and current enrollment is slightly over 20,000 students. A total of approximately 30,000 students currently study at the various institutions in the city. Committee for Planning and Budgeting data from 2004/2005 shows that over the past 15 years, The Hebrew University had the lowest growth rate (4.1%) of all universities in Israel.

These processes led to a decline in the status of Jerusalem as an academic and student city, an attribute which had characterized the city for many years after its unification. Beyond the decline in the ratio of the number of students to residents, the city center was negatively impacted by The Hebrew University's move in 1981 to the Mt. Scopus campus and the fact that the Bezalel Academy of Arts and Design also relocated there in 1986. Many students

⁵ Poudier, R. and St. John, C.H. (1996): Hot Spots and Blind Spots: Geographical Clusters of Firms and Innovation, *The Academy of Management Review*, 21(4) 1192-1225.

⁶ Jeffrey Vigoder, 1988, Higher Education, Study and Research Centers: The Hebrew University and Research and Teaching Institutions, in *Twenty Years in Jerusalem*, Ministry of Defense Publishing House and Jerusalem Institute for Israel Studies.

went to live in the dormitories on Mt. Scopus or in the surrounding neighborhoods. The dispersion of students in neighborhoods outside the city center hurt the lively and young spirit which had characterized Jerusalem in the 70s and 80s. This spirit was replaced by a sense of increasing orthodoxy, political radicalization, and loss of security due to the terror attacks.

Economic Development Strategy

As presented in the Introduction, the J-RIS project identified several potential growth engines that could help improve the economic situation of Jerusalem. This chapter will describe the main findings and recommendations. An in-depth analysis of each of the areas described is attached as an appendix to this paper and is actually a stand-alone chapter. (Available only in Hebrew)

1. Education of Haredim

The changes taking place in the Haredi sector, the largest minority group of Jerusalem, in terms of professional and occupational training make it necessary to investigate this sector through more than an approach that views Haredim as the “source of the problem” of poverty (due to the low percentage of participation in the workforce), but also using an approach that views this group as having the potential to change the trends in the city and place Jerusalem on the growth track. If it were possible to integrate the ever-increasing numbers of this population into the workforce in innovative sectors, based on the strong learning skills of the Haredi public and its ability to gain education relatively quickly, it would be possible to transform this public into a key asset in the city’s growth process. The Haredi public currently constitutes about one third of the Jewish population of Jerusalem and is expected to grow due to the high birth rate in this sector.

In recent years, numerous economic and social developments and changes have taken place in the Haredi community. There are various indications that in recent years there is an increasing willingness to gain vocational or even academic education and earn a living from work. This is illustrated in data from the Central Bureau of Statistics, which show an increasing percentage of Haredim who live in a household with at least one breadwinner. While the rate of such Haredim in Jerusalem was about 50% in 2002, in 2006 this figure was 62%, constituting an increase of 24%. Similarly, the MAFTEACH (Haredi Occupational Development Centers)⁷ program that specializes in training, consulting and job placement of Haredim has had 30% more interest than initially expected. In the first six months of the

⁷ The MAFTEACH (Haredi Occupational Development Centers) program is a joint venture of JDC-Israel, the TEVET (Occupational Momentum) program and the Government of Israel

venture's operation, close to 1,000 Haredim in the Jerusalem district alone indicated interest in receiving consulting.

These developments are taking place for a number of reasons:

First of all, the special state budgets that had been allocated to the Haredi sector have been cut sharply and drastically. The 2003 economic program and the various ensuing regulations, exacerbated the poverty in the Haredi community, particularly among children.

Secondly, the demographic growth of this population created an ever-increasing gap between the number of young people studying teaching and the number of vacant positions (particularly in the internal Haredi market). This gap intensified the economic crisis and the need for major changes in the internal Haredi economy. Unlike in the past, the Haredi system is no longer able to meet the ever-increasing needs for employment and livelihood within the traditional religious frameworks.

Thirdly, the economic prosperity and growth to which numerous young Haredim are exposed made some of them aspire to economic success and want to take part in the success that characterized the Israeli economy at the turn of the century. At the same time, some of the rabbis changed their negative attitudes towards vocational training tracks and even to higher education, and now relate to them as a necessary evil.

Since the middle of the 1990s, special training tracks for a variety of professions have been opened in Jerusalem alone for young Haredi men and women who are interested in becoming part of the general workforce both inside and outside the city.

There are currently several vocational training institutions operating in Jerusalem and two institutions that grant academic degrees to the Haredi public. These institutions are relatively well suited to the unique characteristics and needs of the Haredi community (separation of men and women, study hours, adaptation of the content to the Ultra-orthodox world view). Furthermore, additional professional training tracks are operated by the Ministry of Industry, Trade and Labor and JDC-Israel. The Haredi Center for Vocational Training is the largest such institution in Israel, and it is regulated by the Technology Training Center of the Ministry of Industry, Trade and Labor (MITL). The center has branches in Kiryat Sefer, Bnei Brak and Ashdod, with close to 1,500 students (of which 600 are men) in vocational and academic tracks. The areas of study are diverse, from programming and archeology to secretarial studies and computerized graphics. The academic branch of the center (Bnei Brak Academic College) operates in Bnei Brak, with a current enrollment of 480 students, 140 of which are men. In addition to the Haredi Center for Vocational Training, is the Lomda Institute which has been operating in Jerusalem for 16 years and has an annual enrollment of about 350 students (primarily women). Training at the institute focuses on secretarial skills, consulting and tax accounting, bookkeeping, graphic design and video production.

Vocational training of young Haredim is a desirable and welcome change for Jerusalem. This training contributes to their integration into various workplaces, both in the Haredi sector and the general employment market.

While the vocational training in “instrumental” fields (such as technical professions) is explicitly encouraged among public opinion in the Haredi community, the issue of higher education is still in its nascence. It would seem that the leadership of this sector has still not formulated a clear and uniform position on this issue, and many of those who study at institutions of higher learning do so quietly. However, it is clear that the openness of men and women in the Haredi community to gain academic professions is on the rise.

The need for a balance between the number of people studying low-salary professions and those gaining a higher education for professions that are high paying, is critical to the success of the process of integrating Haredim into the workforce. Without such a balance, the Haredi community will continue to live in poverty, despite the developments taking place. This situation could lead to frustration and, in the end, also stop the process of change taking place in this society.

Two academic institutions especially for this population operate in Jerusalem: The Haredi College, which operates under the auspices of Bar-Ilan University and trains Haredim in social work, computers, speech therapy and social sciences – and Jerusalem College of Technology. The Haredi College has an enrollment of 300 students a year, a very small number of which are men. The Jerusalem College of Technology (JCT) leads in computer science, engineering and practical engineering among the national-religious community, but Haredi students also attend. Between 1996-2006, approximately 550 Haredi students, among them 100 women, graduated from JCT.

It is important to remember that the issue of education is still very sensitive among many parts of the Haredi community. Many Haredi leaders believe that higher education is a necessary evil that allows Haredi men or women to earn a respectable livelihood. Moreover, there are those who say that the relatively old age at which they could begin their academic studies (25+), the fact that most candidates have families, children and major financial obligations (such as mortgages), the immediate financial implications of leaving the *yeshiva* (institute of religious studies), and the desire for evening studies (so they can study Torah during the day) all make it difficult for young Haredi men to acquire a higher education. This reality is what motivated the widespread trend among the leaders of the Haredi community to establish vocational training tracks that are supposed to “arrange” a workplace for the young Haredim for a relatively short period and get them on a basic employment track that requires minimal training. Academic studies that require investment of several years of study and,

among other things, are driven by intellectual curiosity, are not necessarily at the top of the list of priorities and sometimes even pose a threat to the Haredi system of education.

In an attempt to examine the willingness of young Haredim to acquire higher education and deal with the main barriers involved in higher education, the Jerusalem Institute for Israel Studies, as part of the J-RIS project, conducted an unprecedented study that examined the opinions, barriers and difficulties in this regard among the Haredi community. As the research team realized that the integration of Haredi women in the job market and in academic training programs does not pose any serious problems, it was decided to focus on the male Haredi population, which faces major structural, economic and social barriers that required organized solutions.

The initial findings of this study (which involved over 500 respondents) are, in part, very surprising. First of all, the study found that a large portion (over two thirds) of the Haredi public was interested in acquiring higher education. Many of the respondents even indicated their willingness to enter programs that require studies during the day, assuming that these programs would shorten the length of time required to obtain a bachelors degree. The difficulty in financing their studies and providing for their families during their studies was cited as a key factor that makes the decision to study a difficult one. In contrast, the response of the immediate surroundings of most of the respondents, particularly the reaction of their families, was actually a factor that drove them to want to acquire higher education. Among those who were already studying in academic programs, the research showed that the most common reason for selecting a particular field of study was actually interest (66%), followed by anticipated future salary (38%) or demand for the profession in the job market (37%). Numerous respondents even noted that they selected a specific course of study by default, as the professions that interest them are not taught in the Haredi academic programs. These findings, to be published later this year in a special report, require a more open discussion of the issue of higher education in the Haredi sector and make it possible to believe that by implementing the right policy, the educated Haredi population could become one of the important growth engines for the city. It would seem that despite the obstacles and difficulties involved in Haredim entering higher education tracks, targeted solutions such as special scholarships, study tracks that suit the Haredi lifestyle and more can allow them to be overcome. We believe that the growth and revival of Jerusalem, and the future strength of the Jerusalem metropolitan area must be based on the Haredi human reserve living in the area. The recent developments in this community may lead to a real change in Jerusalem's economy.

Main recommendations:

The findings of the study presented above prove the existence of significant demand for high-quality academic studies and training among many young people in the Haredi community, who face barriers and numerous and diverse problems when attempting to take this course.

- **Minimizing knowledge lacunae:** First and foremost, the major knowledge lacunae that male Haredim face when they set out to acquire higher education. To this end, special high-level preparatory courses need to be established within select academic programs, including The Hebrew University, which will bring young Haredim to an appropriate academic level that will enable them to participate in a variety of academic tracks. The preparatory courses that currently exist for the Haredi public enable this community, even if not formally, to only be part of the specific program of study for which it has completed the course.
- **Personal mentoring and counseling:** As part of these preparatory programs and as part of the academic studies themselves, Haredi students who need it will receive personal mentoring. The project team recommends that the mentoring and counseling be provided by doctoral students who have undergone special training and will earn extensive scholarships.⁸This mentoring program will help both the (secular) student population and the Haredi student population and reduce the social tensions typical of the city.
- **Economic support and assistance:** In addition to bridging the existing knowledge gaps, there is a vital need to provide economic assistance in financing studies and helping provide for the Haredi students while they study. Scholarships for Haredi students will be given based on their academic achievements, under the condition that they contribute part of their time to some type of public or community service. To prevent the students from dropping out, economic support will be provided gradually to encourage those who receive this support to persevere in their higher education.
- **Social support and bridging information gaps:** Beyond the objective and material difficulties the young Haredim face when wanting to take part in academic training, we learned that numerous informative and social difficulties also exist in the transition from the world of the *yeshiva* to the realm of higher education. In an attempt to help the young people who chose to seek higher education, we recommend establishing forums for Haredi students that will provide personal, reliable and accurate information about the existing educational tracks and programs. This forum would also serve as a supportive social network and would operate support groups and personal counseling for students who require this type of support. Pursuant to this recommendation, we suggest opening *kollels* (institutes for advanced Jewish studies,

⁸ By doing so, the city will achieve a secondary objective of providing outstanding doctoral students with an incentive to study in Jerusalem

particularly for married men) for working and academic Haredi men, which would also serve as social and communal support systems for young Haredim who have integrated into various employment programs.

2. New Media

The efforts to transform Jerusalem into a major high-tech center, which took the form of direct and indirect financial benefits to Jerusalem-based companies, did not manage to lead to a real change in the willingness of high-tech companies to open in the city. The advantages provided by the industrial zones in the center of Israel, the tendency of these types of companies to locate in industrial clusters (as seen in Herzliya) and the lack of a technology tradition in Jerusalem have made the chances of development of this type of industry there minimal. Therefore, the attempt to transform the city into a high-tech magnet requires innovative thinking that goes beyond “high-tech” and alternatively focuses on specific areas that are not identified yet with other areas and in which Jerusalem offers a significant competitive advantage. Thus, for example, Haifa decided to emphasize development of the medical devices industry over focusing on the life sciences in general.

As part of the J-RIS project, new media was identified as a field with significant economic potential in which Jerusalem offers significant relative advantages that could help transform it into an important industrial center for this field. This economic sector is relatively new and its complexity means that its products cannot be included in traditional categories of other industries. New media grows from the interface created between new information technologies and the art, content and design world. Among other things, the field includes the industry of games designed for various platforms (computers or cellphones), interactive television, education (online instruction, teaching materials, illustrative materials), computerized animation, medicine (monitoring, simulation means, teaching devices and simulators), sports (simulations, managing games in real time, sports research), etc. Susan Christopherson⁹ relates to new media as the intersection of “old” media (cinema and television) with the Internet and IT technologies that make use of manipulation of text, voices and images, and change the shape of traditional industries such as the culture and entertainment industry.

The development potential for new media in Jerusalem derives its strength from the instructional and research institutions for the arts and design, and the many students studying these fields in Jerusalem. Three institutions that train students in the fields of computers and engineering operate in Jerusalem, along with another ten institutions for art studies. These institutions train approximately 4,000 students a year in the arts – constituting over half of the art students in Israel, and another approximately 3,000 students in the different areas of engineering. These institutions are:

- The Bezalel Academy of Arts and Design (1,568 students for all degrees in 2005/6)

⁹ Susan Christopherson, *The Divergent Worlds of New Media: How Policy Shapes Work in the Creative Economy*, Review of Policy Research, Vol. 21 No. 4, 2004.

- Hadassah College (900 students for all degrees in 2005/2006)
- Sam Spiegel School of Film and Television (176 students in 2006)
- Nissan Nativ Acting Studio (65 students in 2003)
- The Ma'ale School of Television, Film and the Arts (72 students in 2003)
- The Jerusalem Academy of Music and Dance (695 students for all degrees in 2005/2006)
- Musrara – Naggat School of Photography, Media and New Music (110 students in 2003)
- The School of Visual Theater (70 students in 2003)
- The Hebrew University – art studies (463 students for all degrees in 2004/2005)

In Jerusalem there are several technology and computer institutions, some of which have the highest levels of excellence. These include:

- The Hebrew University of Jerusalem – School of Computer Science and Engineering (817 students for all degrees in 2006/2007)
- Hadassah College Jerusalem (668 students for all degrees in 2005/2006)
- Jerusalem College of Technology (1,780 students for all degrees in 2005/2006)

The subjects taught today at the educational institutions in Jerusalem cover most of the professions necessary for the new media industry, and yet, the industry has still not developed. There are approximately 30 new media companies in Jerusalem, most of which develop new technology platforms for cable and satellite broadcasting and for Internet communications. There are a small number of companies engaged in content development, such as computer games and cellular games, most of which are portfolio companies of JVP Studio, the only incubator of its type in Israel. Along with this technology and human strength, we also see that the large communications providers in Israel (Cellcom, Golden Lines, etc.) have an increasing need for content providers.

There is no doubt that Jerusalem cannot compete with the Dan region as the Israeli high-tech center, but the prominent presence of the institutions of learning focusing on the arts and creativity in Jerusalem, along with the fact that the new media industry has still not developed in Israel indicate that Jerusalem has a real chance of becoming a global center for new media, just as Israeli high-tech found its way into the top tier of global high-tech. This type of thinking requires an explicit policy to be formulated along with investments and incentives, and will make good use of the variety of relevant cultural institutions in the city (such as the

Science Museum and "The Lab") such that it will support the creation and exposure of the industry.

Main recommendations:

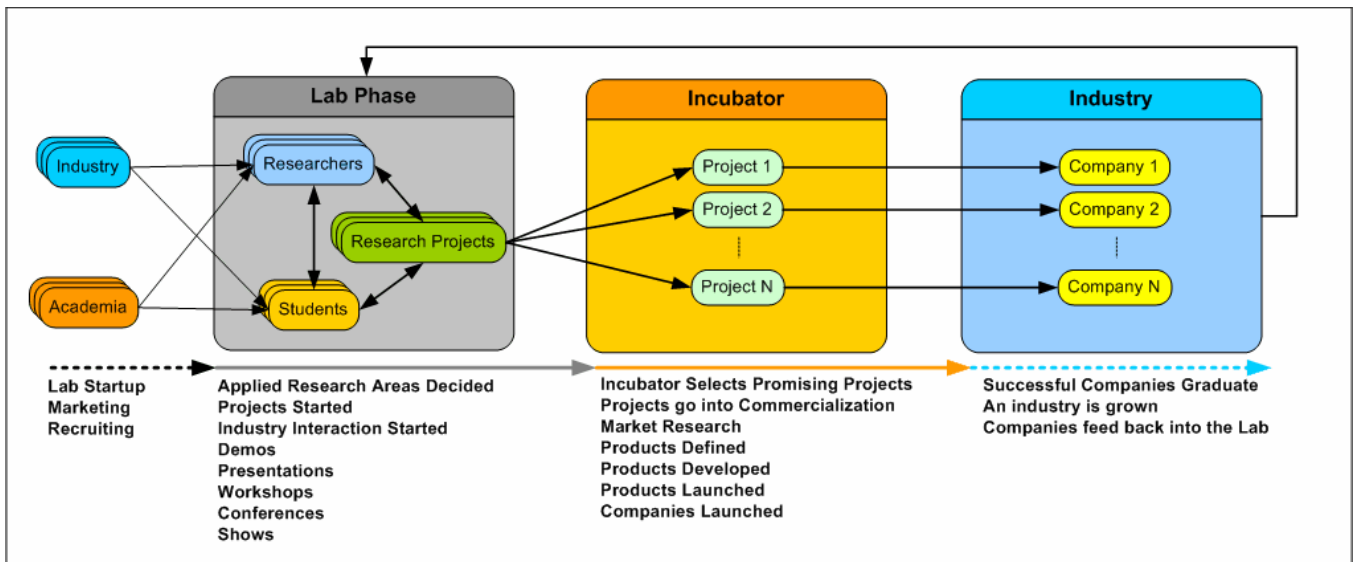
The research team recommends establishing a dedicated research center which will work along with the other programs currently being planned by the Jerusalem Development Authority to promote the issues of design and new media. **The center for new media in Jerusalem** will be a physical center where research groups comprising researchers and students from various arts and technology disciplines will work. The center will highlight the advantages that could be derived from the synergy between the various fields of activity. Similar centers are operated in various locations around the world, and they were studied in depth during the course of the project.¹⁰The center will operate according to the following principles:

- **A center for applied research which will nurture and develop the new media industry in Jerusalem**
- The center will strive to develop innovative technologies and will not be satisfied with development of marginal enhancements of existing technologies
- The center will strive to commercialize the knowledge developed through a dedicated incubator in an attempt to establish additional companies in Jerusalem. To commercialize the knowledge, the institution will hire dedicated employees who will focus on protecting the intellectual property rights and identifying potential investors, very much like and perhaps even in cooperation with the placement company of The Hebrew University.
- The center will offer training courses and workshops on specific subjects required by new media employees and which are currently not taught at the institutions in Jerusalem.

We expect that the activity of the center will help build up the field in Jerusalem and create a significant competitive advantage for companies in the field or similar fields.

The model of the center (lab phase) and its integration into the local industry is described below:

¹⁰ See a separate report on new media



The figure shows that the center will serve as an accelerator for the development of the industry. Different ideas that will be developed at the center are expected to develop and move into commercialization phases that will be reflected in their transfer to the industry or their transformation into young companies (incubation phase). Some of said ventures may later become stable companies which will continue to nourish the center.

The center is expected to employ about five research groups to be comprised of a senior and recognized researcher in a given field, five low-ranking researchers (generally graduate students) and a number of part-time research assistants (usually undergraduates). Work at the center will be salaried. The center will work to grant an academic degree by working with the academic institutions in Jerusalem, although initiating the activity will not be contingent upon this cooperation.

In the initial phase, the center's income will come from public and philanthropic support, and later will rely more on industrial financing and income from commercialization of the knowledge.

3. Jerusalem as a City of Knowledge

The contribution of the institutions of higher learning to the economic development of Jerusalem is manifested at several levels: First – at the level of direct contribution – the academic institutions are an important source of employment. The Hebrew University alone employs approximately 4,500 people¹¹ in the first circle, and the remaining institutions (and colleges)¹² provide an additional 1,000 jobs. In the second circle (adjunct faculty, maintenance crew and service providers), the number of additional employees can be estimated at at least 4,000. Despite the fact that the overall number of direct employees at academic institutions is not significant to employment in the city, the high ratio of the number of students and general number of employees at academic institutions (1:5) indicates the tremendous occupational potential inherent in increasing the number of students in Jerusalem. Recent research studies indicate the need to increase the number students in the city by 50%-100% over the coming decade. ¹³This type of growth is expected to create an additional 3,000-5,000 direct jobs, along with thousands of additional jobs in the second and third circle.

Another direct contribution of academia is attributable to the commercialization of academic knowledge derived from royalties for the university's inventions, profits of companies held by the university at different rates (spin-offs) and from advanced research services the academia provides the industry. While the royalties from the sale of the university's knowledge to various external sources are among the highest in the world, the study shows the relatively poor research relationships between academia and industry in Jerusalem. Thus tools should be developed to provide better access to the knowledge industry and research infrastructures of the various research institutions. This type of activity has recently begun with the establishment of BioJerusalem.

At the indirect contribution level, academia in Jerusalem plays a central role in training high-quality graduates that feed the various economic sectors in Israel in general, and particularly in Jerusalem. The lack of jobs for graduates, and particularly those without work experience, causes many of them to leave the city. This is how the city loses one of the main points of strength it has. Research conducted for New Spirit – the largest socially minded student organization in Jerusalem – found that the employment issue is the main reason students leave Jerusalem. This problem can be remedied through assistance to businesses that employ graduates of academic institutions in the city. This approach expands the approach currently

¹¹ 2002-2003: Teaching staff (2,241) and technical administrative staff (2,211) in terms of full-time positions. Source Planning and Budgeting Committee.

¹² Of which approximately 600 are teaching staff.

¹³ Such as the study conducted by Guri Zilka and Prof. Gur Ofer, still unpublished

standard with the Jerusalem Development Authority and the Investment Center, that emphasize attracting companies and workers (who work outside the city) to Jerusalem.

Another indirect contribution of the institutions of higher learning is the unique contribution of a young and open spirit that is created by the large number of students and researchers who live in the city. This atmosphere is what attracts young and creative human resources. Florida's study (2002)¹⁴ indicated the relationship between urban vitality and the open atmosphere it radiates and economic growth. According to Florida, this trend can be attributed to the strong attraction the open and young atmosphere creates for educated and creative populations, who are to a large extent responsible for entrepreneurship and the ability to innovate in a variety of realms of activity.

Main recommendations:

Various studies conducted recently indicate the need to increase – and even double - the number of students in Jerusalem. The obvious question in this regard naturally relates to how the number of students in the city can be increased without the standards being lowered. The aspiration must be to prevent a situation in which the growth in the number of students is the result of lowering the admission requirements. This objective is possible if the academic institutions on the one hand, and the city on the other, become significantly more attractive, so that the number of students who register for various degrees increases at a rate that is higher than the growth rate in the number of students. In other words, the city needs to attract outstanding students, who in the given conditions do not view studying in Jerusalem as an option. To this end, wide-ranging thought needs to be given to the branding of the city as a city of knowledge and higher education, including competitive thought designed to cause students to opt to study in Jerusalem. These advantages can be attained by developing unique study tracks, expanding the options for studying (for example through cooperation between the different academic institutions), subsidizing tuition or cost of living and creating living and entertainment spaces for young people (religious and secular), moving some of the educational institutions to the city center, providing incentives for students to live in the city center, increasing interaction between the students studying at the different institutions (through activities, exhibitions, initiatives and joint courses), strengthening the ties between the students and the cities cultural institutions, improving students' access to the content studied at other institutions, etc. It is clear that attaining these objectives, either in whole or in

¹⁴ Richard Florida, *The Rise of the Creative Class*. 2002 New York: BasicBooks.

part, requires close cooperation among the different institutions and between them and the city decision makers. Data of the Planning and Budgeting Committee of recent years show that 30% of the students accepted to studies in the Hebrew University decided not to study there, a figure that is significantly higher than that at other universities.

A study tour conducted by the project's steering committee in Stockholm revealed structured cooperation between the different institutions of higher learning in the city (Stockholm Academic Forum). This model is based on the establishment of a secretariat that works to identify issues of common interest to the different institutions and to promote them both at the inter-institutional level and with the various authorities. This secretariat employs several people, who work not only to promote the issues identified, but also to create ongoing dialogue among the different institutions. The reality shows that the existence of this type of secretariat is vital as ongoing inter-institutional dialog and cooperation, even if being obvious, does not happen naturally and is frequently pushed aside or fails due to conflicts of interest or being low on the list of priorities. The effectiveness of this secretariat in Sweden is proven and can be seen both in the willingness of the various institutions to fund its activity and in the ever-growing number of institutions that are members.

The project team recommends adopting a similar model and putting it to work in Jerusalem. Like the Swedish model, it is advisable to establish a secretariat, initially, as a cooperative venture between the four institutions (Hebrew University, Bezalel, Hadassah College Jerusalem and the Jerusalem Academy of Music and Dance) and immediately thereafter expand the forum to include the Jerusalem College of Engineering and Jerusalem College of Technology (JCT). Later, the forum's activity should be expanded to also include institutions of higher learning that do not grant academic degrees. Past experience (including that in Sweden) shows that beginning activity at full volume right from the start may prove to be a problem.

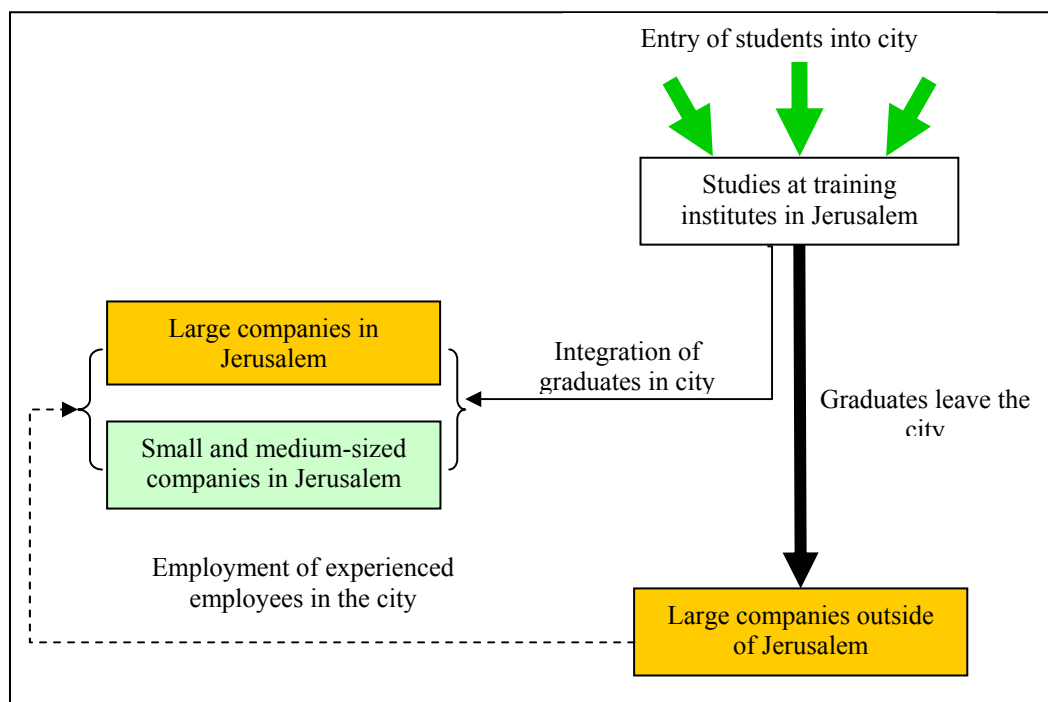
Realizing the advantages inherent in cooperation among institutions of higher learning in the city may in the future express themselves at the institutional level, student level and municipal level. With respect to the institutions, it can be assumed that the cooperation will lead to the identification and promotion of common interests, and in the end, lead to promotion of the institution, raising the academic level and, as a result, attracting outstanding faculty. At the student level, the proposed cooperation may be expressed in the expansion of the academic and peripheral services to which the student is exposed, while improving the learning environment. At the municipal level, the proposed process may lead to enhancing the attractiveness of Jerusalem as an academic town and, as a result, to an increase in the number of students in the city. As stated, the growth in the number of students in the city would have important direct and indirect economic implications.

4. Industry

The project team reviewed the problems and failures that make industrial activity in the Jerusalem region difficult. This activity was based on in-depth interviews with numerous companies and key players in the industry (such as managers of the industrial parks) as well as a survey that examined the opinions of company managers with respect to their activity in Jerusalem. In the survey 50 companies in Jerusalem were questioned and another 10 from Haifa for the sake of comparison. The city of Haifa was selected due to the similarity attributable to the distance from the center of the country.

The industry research indicated a number of key failures, including:

- Lack of employees and managers with meaningful occupational experience. This is not trivial to the explanation in light of the high negative migration from Jerusalem, attributable in part to the lack of jobs. This conflict is evidently due to the small number of large technology companies that provide most of the jobs for inexperienced employees. As a result, the graduates of the various academic institutions are forced to leave the city and move to the center of the country. Side by side with this process, the small and medium-sized technology companies that for the most part prefer hiring experienced personnel (for reasons including the inability to provide training internally) are forced to import experienced employees from outside the city – a complex task considering the image of Jerusalem, in terms of its distance from the center of the country, the traffic jams when entering and leaving the city and the relatively low salary levels compared to the other cities.



- The lack of relationships (or limited relationships) between technology companies and research institutes. This problem is partially attributable to the cultural differences between academia and the industry, and in part due to a lack of information and the complexity of engaging with the researchers. There is no doubt that the limited number of relationships prevents the industry from maximizing its competitive abilities, particularly in light of the relative strength of the research institutes.
- Bureaucratic failures are expressed in the high frustration level of some of the industrialists from the services they receive from the city. These services relate in part to “simple” issues of parking, transportation, cleaning and security that are the result of poor infrastructures or poor planning, and in part relate to a general sense of unwillingness to help or accommodate with respect to the various issues that trouble the industry.
- The poor image of the city that is the result of the perception of Jerusalem as a city of public servants and not as a city of industry, from an image of a conservative/traditional city with a complex social/demographic reality that makes doing business in Jerusalem more difficult, and its perception as a city that is far away from the country’s business center.
- Difficulties stemming from the high level of competition between cities and other employment centers in Israel, particularly in regions that provide a wide variety of services at low costs (rent, city taxes, etc.) as well as greater accessibility to human resources.

Main recommendations:

Following the study, four action plans were drawn up:

1. Assistance grants for employment of inexperienced employees at firms located in Jerusalem

One of the ways to handle the failure described under the “employment model” is to encourage small and medium-sized businesses in the city to hire inexperienced graduates in fields of engineering and management. The model proposes helping companies finance the cost of the inexperienced employee for a five-month period, the average employee training period.

The proposed grant will enable the number of Jerusalem graduates leaving the city to be reduced, and it is also expected to significantly increase the supply of open positions for inexperienced employees in the city. Furthermore, by taking advantage of the grant,

companies will be able to offer more competitive salaries and attract the most talented graduates.

The assistance will be given to small and medium-sized companies (up to 100 employees) defined as industrial companies that undertake to employ an inexperienced graduate for a two-year period. The assistance will be given to companies for graduates who have completed their studies at an institution of higher learning in Jerusalem in the year prior to their employment and who live in Jerusalem.

If the company decides not to continue the employee's employment for two full years, it shall repay the grant, pro rata, to the funding entity. Should the employee be terminated after about six months, the grant shall be repaid in full, after an additional six months, the firm shall have to repay 50% of the grant and so forth.

2. Grant to strengthen the ties with academia

In order to bring academia and companies in Jerusalem closer together and provide accessibility to the capabilities of the academic institutions to the public of companies, we will create a model to encourage companies to learn about the developments at the academic institutions. This type of program is operated successfully by the Dutch partner in the project in the North Brabant region, and the experience accrued there shows that companies that have begun working with the academia under this benefit program for the most part continue the joint activity beyond it. It is clear that increasing cooperation with the academia may lead to better realization of the relative advantages in the city and contribute to improving the competitiveness of the industry.

Structure of the model

The financing organization will issue vouchers that grant each company interested in it a credit of up to NIS 45,000 for work with researchers at one of the city's academic institutions. The grant will be given directly to the academic institution for the actual joint research project.

To examine the effectiveness of the grant as one of the initiatives of the J-RIS project, it is proposed that the staff offer funding of approximately NIS 4.5 million for approximately 100 grants. It is assumed that in the first phase, the percentage of companies that take advantage of the grant will be relatively low (approximately 10%), and therefore the total actual investment will not exceed NIS 500,000.

3. Program to promote ties between students and industry through innovative activity funded by the Chief Scientist

The assistance programs for industrial R&D run by the Chief Scientist's Office in the Ministry of Industry, Trade and Labor allow for state grant of up to 60% of the cost of the approved program for performance of industrial R&D. The assistance is given for relevant human resources costs and for the purchase of specific materials and equipment for the development. In 2006, the Chief Scientist allocated NIS 917 million to R&D grants.

The J-RIS team and Jerusalem College of Engineering have begun creating a model according to which Jerusalem-based companies will write an R&D plan together with students and submit them for funding by the Chief Scientist. Should the plan be approved and be granted funding, the company would employ the students who participated in developing the concept and writing the research plan. The purpose of the model is to promote innovation in industry, along with creating jobs for graduates of academic institutions in the city and to help develop relationships between industry and the academic institutions.

Structure of the model

The model will be implemented as part of a year-long academic course that will be taught at the engineering schools in Jerusalem. The course will be designed for students in their final year of studies, and the goal will be to train the students to identify and come up with ideas for research and to write them up in the format required for submission of requests for support from the Chief Scientist in the Ministry of Industry, Trade and Labor.

The course itself will include several groups that will be assigned to a number of firms, with each group being assigned a professional advisor who will mentor the project. Each group of students will study the firm's activity and come up with innovative/original ideas for research with the help of the firm's representatives and the advisor. After a leading concept is selected, the research proposal will be prepared for submission to the Chief Scientist. This submission will be the final project in the course.

If the proposal is accepted, and the Chief Scientist approves a budget for the firm to conduct the project, the firm will warrant to employ the students who submitted the request on its behalf (and who have just graduated). The assumption is that after the company gets to know the students while they are writing the request, it will be interested in employing students (or at least some of them) who are already familiar and committed to the project. In special cases, when the company is not interested in hiring any of the students in the group, an alternative system will be put into effect for employing graduates of Jerusalem institutions.

This model will, on the one hand, promote innovation among companies and, on the other hand, helps integrate graduates of Jerusalem institutions in industry.

Project funding

In the pilot phase, the proposed project will be financed by the Jerusalem College of Engineering and the J-RIS project.

If the project does receive funding, the cost of employing personnel on the project team (in this case, the students who put the project together) is included in the budget items for which assistance is provided by the Chief Scientist. Thus, in fact, the company receives a very significant subsidy for the new employees.

4. Establishing a task force to market industry in the city and development of a system of services for industry

The members of the steering committee went on a study tour of Stockholm, where they visited the Kista Science City visitors' center. The park managers presented the management model, which is based on close cooperation with companies and the entities in the park. The model is implemented through management committees in the following areas: academia and research, industrial innovation, marketing, infrastructures and key industries in the park.

Following the tour and as a result of the findings of the study, we recommend establishing an industrial center that will operate a task force for marketing industry in the city and improving the array of services provided to the industry.

The center's activity

✧ **Services to companies in Jerusalem** – The center will act as a one-stop shop and offer an array of services to support industry that are unique to Jerusalem. The services will include assistance with bureaucracy in everyday activity with the city and various regulatory bodies, provision of information regarding different benefits given by different organizations, networking systems and more.

✧ **Services for companies interested in relocating to Jerusalem** – In addition to services to companies operating in Jerusalem, the center will also provide information and assistance to Israeli or international companies considering Jerusalem as a potential location to base the company or to expand. These companies will be given consulting services, including assistance in finding appropriate space, assistance in filing all the paperwork required for the move and any other assistance required.

The ability to provide information and assistance with all matters related to the bureaucracy involved in establishing a company in Jerusalem or a company's ongoing activity is a key point in the center's ability to have a material impact on industry in the city. To this end, this type of center needs to be given the authority to submit requests and documents on behalf of the companies to all of the relevant municipal organizations and government ministries.

- ✧ **Marketing Jerusalem as an industrial center** – The center will be responsible for improving the image of industry in Jerusalem and marketing it in Israel and worldwide. In addition to international marketing, the center will establish an image-building and marketing system that will include information about industry in the city and will reach out to diverse target audiences beginning with company owners in the city to company owners around the country and the general public, students and foreign tourists.
- ✧ **Development of select industries** – In addition to promoting all of the industry in Jerusalem, the center will have area coordinators for industrial sectors in which Jerusalem has advantages such as the life sciences and industries the city of Jerusalem wants to promote such as the new media industry. Each area coordinator will work to strengthen and create the industrial cluster characteristics in that field. The authority already operates a center for the life sciences industry that is managed by Dr. Shirley Kutner. This center will work together with the industrial center that will be established and generate synergy with the coordinators of other areas.

In brief, the economic trends that currently characterize Jerusalem require explicit steps to be taken, even if they involve a certain amount of risk, in order to prevent the downward spiral of the city. The danger inherent in the current reality is a vicious circle that will lead young people and educated people to leave the city and reduce the attractiveness of Jerusalem for similar populations outside the city. Should Jerusalem find itself in that position, it could lead to a dangerous point of no return. The J-RIS project noted several areas in which Jerusalem must take decisive action and invest the required resources to attempt to promote the city's economic growth and make the city attractive to the Israeli public in general, and specifically to the Jerusalem public.