



## REPUBLIC OF ARMENIA PROJECTS

| Profile No. | PROJECT NAME                                     | LOCATION |
|-------------|--|----------|
| AR1         | Regional Technology-Based Healthcare Development | Yerevan  |
| AR2         | Software Development for Mobile Telephony        | Abovyan  |
| AR3         | Technology Innovation Center                     | Yerevan  |

## REPUBLIC OF ARMENIA

### Regional Technology-Based Healthcare Development

#### Project Summary

|                                 |                                 |
|---------------------------------|---------------------------------|
| <b>Subsector</b>                | Information Technology          |
| <b>Location</b>                 | Yerevan, Armenia                |
| <b>Project Cost</b>             | US\$3.1 Million                 |
| <b>Export Potential</b>         | US\$2.7 Million                 |
| <b>Project Type</b>             | Telemedicine                    |
| <b>Project Executing Agency</b> | Diagnostica Medical Corporation |



### Project Outline

The project sponsor, Diagnostica, is a leading medical institution in the NIS region, specializing in providing multi-profile medical diagnostics and high technology based services. Diagnostica has operated profitably for nine years, establishing a track record of international cooperation. It is seeking US\$3.1 million in financing to upgrade its equipment (US\$2.7 million) and premises (US\$400,000) to attract a growing number of regional (hard currency) clients providing cost-effective services to compete with European and Russian diagnostic service providers.

Founded in Yerevan in 1984, the company piloted the multi-specialty diagnostic center concept in the former Soviet Union – a model still being emulated in the region. Many of its 330 employees (including nearly 100 trained physicians) possess key medical qualifications that offer high-level contemporary technology backgrounds, some with prior training in the U.S. and Europe.

Diagnostica delivers outpatient and limited in-patient diagnostic services relying on modern diagnostic technologies from leading manufacturers such as GE, Siemens, Picker, Olympus, Aloka, HP and Phillips. Its present equipment includes: CT Scanner, MRI, Ultrasound, X-ray, Mammography, Endoscopy, ECG, Echocardiography, Stress-tests, Myography, Vascular Doppler, Electroencephalography, Diagnostic Spirography, Urodynamics, and various laboratory analyses equipment for clinical chemistry, immunology, microbiology, and pathology. It participates in web-based international collaborative networks, focusing on diagnostic telemedicine, distance learning, and operates other international and domestic links. As Armenia's leading graduate training and research facility in medical diagnostics and telemedicine, Diagnostica serves as the major academic affiliate to the National Institute of Health and the National Academy of Sciences of Armenia.

## Technical Description

Diagnostica currently services the domestic Armenian market, but aims to provide world-class services to regional health care systems given its direct contacts with institutions in the former Soviet Union. Currently, about 98% of the services are provided to the local market and 2% for neighboring countries. The project sponsor plans to increase the proportion of outpatient and inpatient services provided to international clients to contribute to raising the neighboring country sales to 15%. In order to attain this goal, a strong marketing effort will be focused on the regional markets of Georgia and Southern Russia. An enhanced international telemedicine service will play an instrumental role in this market enlargement. Diagnostica expects a significant increase in foreign exchange earnings to be derived from international training opportunities for medical doctors and engineers, both in-house and via distance learning. Finally, revenues are anticipated from exporting the model of technology-based, market-driven healthcare industry development.

Over the last six years, Diagnostica has maintained an average gross operating margin of 15% on its annual revenues of US\$500,00 to US\$600,000. The company has re-invested most of its internally generated funds in fixed assets to keep abreast with rapidly advancing health care technologies.

Utilizing the upgraded equipment, Diagnostica expects to gradually increase revenues to twice the current levels by providing internationally acceptable standards of medical diagnostic services to overseas clients. This growth rate will require strong marketing efforts focusing on Georgia, Turkey, Russia, and Gulf States. According to the sponsor, the company's low cost/quality ratio and the commercial exploitation of its professional reputation, combined with enhanced telemedicine connectivity are expected to play a key role in enlarging foreign market share. In addition, Diagnostica will embark on providing high quality training to medical doctors and engineers, both in-house and via distance learning. For this element of the project, Diagnostica will invest in technology development programs for its staff aimed at developing a sustained demand for its widened range of contemporary medical diagnostic services.

Diagnostica has several strategic collaborative partners including University of Maryland's East West Space Science Center, U.S. Medical Informatics and Technology Applications Consortium (partnership with NASA), Washington Hospital Center Radiology Outreach Foundation, Applied Communication Concepts, Armenian International Radiology Society (U.S.), Center for Reproductive Medicine (France), National Cancer Center (Italy), and McGill University (Canada). Diagnostica has received international awards including NASA Certificate of Recognition in International Telemedicine, European Market Research Center Award nomination, and has been cited as a success story in USAID/PricewaterhouseCoopers publications.

## Project Site

This project will be based in Yerevan, Armenia.

## Project Status/Timeline

The project sponsor is seeking to implement its planned upgrades to its equipment and building facilities by the end of 2001 depending on its ability to access financing.

## Equipment and Services

The project sponsor is seeking to upgrade its equipment and technologies, valued at approximately US\$2.7 million. Equipment needs include:

- Open MRI/Permanent magnet and Spiral CT Scanner; computerized EEG;
- Holter monitoring system;
- Two digital ultrasound systems;
- Video endoscopy cabinet;
- PCR laboratory;
- Cath/Angio Lab/digital;
- Digital radiography system;
- R/F room;
- Mammography machine;
- Bone densitometer;
- Lithotripter/ w C-Arm;
- Miscellaneous laser and filming equipment and imagers;
- Endo- surgery cabinet; Operating room with table and light;
- Four bed ICU including four lung ventilators;
- Patient monitors; and
- Defibrillators and oxygen concentrator/bed side and General equipment for a 16 bed inpatient section.

In addition, the project sponsor would like to procure other basic lab and telemedicine related equipment, personal computers, training equipment and other peripherals are needed.

## U.S. Competitiveness

U.S. equipment suppliers are well positioned to provide the needed equipment to Diagnostica. The project sponsor is already collaborating with several U.S. medical organizations and is presently using U.S. technology in its facilities. U.S. equipment manufacturers and suppliers and health care service providers could also serve as effective strategic partners to Diagnostica for its proposed expansion.

## Project Financing

The following is a breakdown of costs for the proposed expansion:

|  |                      |
|--|----------------------|
| Equipment and technologies                 | US\$ 2,700,000       |
| Rehabilitation and construction activities | US\$ 324,700         |
| Training                                   | US\$ 35,000          |
| Marketing                                  | US\$ 40,000          |
| <b>Total</b>                               | <b>US\$3,100,000</b> |

The project sponsor is seeking an equity partner in order to finance the expansion. However, since the majority of the investment is directed towards equipment purchase, the project sponsor would consider equipment based financing that includes technical assistance and training contracts. Diagnostica invites major equipment manufacturers and suppliers, health care service providers and international managers of quality health care services to take up active participation in management, marketing or advancing technology-based health care enterprises in the NIS region.

The project sponsor envisages the following project financials over the next five years:

### Five-Year Financial Projections

(Post-Investment US\$000)

|                   | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------------|--------|--------|--------|--------|--------|
| Net Income        | 550    | 650    | 800    | 1,000  | 1,200  |
| Net Profit        | 80     | 115    | 160    | 200    | 240    |
| Net Profit Margin | 15%    | 18%    | 20%    | 20%    | 20%    |

## Conclusion

Diagnostica is a well-established and well respected medical and telemedical provider in Armenia. It already collaborates with several U.S. and other international medical organizations. The range of market enlargement interventions include:

- Upgrading and improving existing outpatient diagnostic services;
- Increasing inpatient diagnostic service for specific diagnostic cases;
- Implementing specific treatment procedures, highly connected with modern diagnostic technologies and thus underused in the country/region;
- Expanding and commercializing its international telemedicine service to attract patients in the country/region who cannot afford costly travels to the Western clinics;
- Creating a highly attractive regional graduate training facility for medical doctors and technicians;
- Creating a regional service/training center with major medical technology manufacturers;
- Creating a HMO-oriented network surrounding Diagnostica; and

- Exporting the model of modern technology-based, market-driven healthcare industry development in the still predominantly state-owned and/or traditional healthcare environment of the NIS region (nearly 40 diagnostic centers created in the NIS region based-on Diagnostica's pilot experience may become efficient hubs for such expansion).

U.S. equipment suppliers are well positioned to provide the needed equipment to Diagnostica. U.S. equipment manufacturers and suppliers and health care service providers could also serve as effective strategic partners to Diagnostica for its proposed equipment upgrade and expansion into providing regional telemedical services.

## Key Decision Makers

|                                     |   |
|-------------------------------------|---|
| <b>Organization or Company Name</b> | Diagnostica Medical Corporation                 |
| <b>Contact Person</b>               | Mr. Saro Tsaturyan                              |
| <b>Title</b>                        | General Director                                |
| <b>Address</b>                      | 6/1 Markaryan Street 375078<br>Yerevan, Armenia |
| <b>Telephone</b>                    | 374-1-34 32 47; 374-1-35 11 01                  |
| <b>Fax</b>                          | 374-1-39 35 79                                  |
| <b>E-mail</b>                       | stsatur@dmc.am                                  |

## REPUBLIC OF ARMENIA

### Software Development for Mobile Telephony

#### Project Summary

|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Subsector</b>                | Information Technology           |
| <b>Location</b>                 | Abovyan, Armenia                 |
| <b>Project Cost</b>             | US\$5.2 Million                  |
| <b>Export Potential</b>         | US\$4.4 Million                  |
| <b>Project Type</b>             | Software for Mobile<br>Telephony |
| <b>Project Executing Agency</b> | Sirius JSC                       |



### Project Outline

The project sponsor, Sirius, designs and tests electronics and software. It is seeking a total of US\$5.2 million in financing (US\$0.5 million in phase 1) to expand its operations into developing software coded mobile telephone chips and intelligent components for European vendors. Sirius is looking to procure the necessary equipment to implement the proposed project as well as a strategic partner to assist in financing the project.

Sirius was founded in 1963 as a scientific production facility for electronic components, electric devices, modulators and programming devices. It currently produces programming chips - EPROM, EEPROM, PROM 27CXX and 28CXX series, the Universal Programmer for Intel Micro controller (IMCS-48, IMCS-51, IMCS-96), programming debugging hardware-software system with emulator for Intel micro controllers MCS-48, MCS-96 and Intel 8086, 8088 processors.

Sirius has an arrangement with Annova Ltd. of the U.K. to market software products as well as Sirius' capabilities in software programming in the U.S. and Europe. Sirius has already completed various projects for other companies in e-Commerce, call billing systems, software packages for product delivery systems, web graphic design, erasing and re-programming chips, and WAP technologies. Annova is financing (via an equity investment) a part of the first phase of the proposed design and software development project that focuses on mobile telephone software and intelligent components.

### Technical Description

As the global mobile telephony markets restructure due to increased competition, Sirius plans to focus on expanding into the niche market for low-cost components and software. Sirius will need to develop its own programs and integrate them into mobile

phone components that will be sold to vendors of quality mobile phone systems in Europe.

Current operations of Sirius allow it to take on emerging web and communications programming and software development in combination with electronic component developments. Its software and electronics skills allow it to produce intelligent electronic components with extreme sophistication. It also produces molds for plastic parts, such as audiocassettes, videotapes, and TV cabinets, a skill complement for eventually manufacturing new technology products such as CD ROMS, AV remotes, mobile phone components, etc.

Through Annova's prospective clients and partners, a wide range of market contacts is available to Sirius in Europe, the Middle East, the Far East and the U.S. However, Sirius plans to initially penetrate markets in Turkey, Iran and Russia.

While Sirius does not have any plans to enter into the large-scale production of mobile phones, the design, software development, and certified production of components are expected to be a significant revenue earner to attract low-cost producers from the Far East.

Sirius has already begun the first phase of the project, partly financed by Annova. An additional US\$500,000 will allow the company to complete the phase 1 design of the software, to develop the chip and the molding, and to acquire the certification of international component buyers and OEMs in Europe.

## **Project Site**

The project will be based in Abovyan, Armenia.

## **Project Status/Timeline**

The first phase of the project (software design and training) is already underway. If the project sponsor receives further financing, the next phases of the project are expected to begin in late 2001.

## **Equipment and Services**

The project sponsor will need equipment for the design and production of coded mobile phone chips and intelligent components for mobile phones. A specific equipment list is available through discussions and upon request from the project sponsor. The value of the equipment totals US\$4.4 million.

## U.S. Competitiveness

U.S. companies are well positioned to provide the necessary equipment to Sirius. U.S. equipment manufacturers and suppliers could also serve as effective strategic partners to Sirius for its proposed expansion, particularly in areas where U.S. technology needs to integrate with European developments, such as 3G (third generation wireless technology).

## Project Financing

The project sponsor is seeking a U.S. strategic partner to provide equity in order to finance the project. The proposed budget is as follows:

|               |                        |
|---------------|------------------------|
| Design        | US\$0.2 million        |
| Training      | US\$0.3 million        |
| Certification | US\$0.3 million        |
| Equipment     | <u>US\$4.4 million</u> |
| <b>Total</b>  | <b>US\$5.2 million</b> |

## Conclusion

Sirius' proposed design and production of coded mobile phone chips and intelligent components gives U.S. technology suppliers an opportunity to supply equipment for the project's production facility. The provision of equity financing for the project as a strategic partner could provide entry into the high technology market in Armenia and a back door into European and Far Eastern markets.

## Key Decision Makers

|                                     |  |
|-------------------------------------|--|
| <b>Organization or Company Name</b> | Sirius                                   |
| <b>Contact Person</b>               | Mr. Hayk Mezhlumyan                      |
| <b>Title</b>                        | President                                |
| <b>Address</b>                      | 11, Sevan St.<br>378510 Abovyan, Armenia |
| <b>Telephone</b>                    | 374-22- 2 41 51                          |
| <b>Fax</b>                          | 374-22- 2 33 97                          |
| <b>E-mail</b>                       | sirius@sirius.am                         |

|                                     |  |
|-------------------------------------|--|
| <b>Organization or Company Name</b> | Annova Ltd.  |
| <b>Contact Person</b>               | Mr. Shandip Popat  |
| <b>Title</b>                        | President  |
| <b>Address</b>                      | 48 Trinity HSE<br>Heath Park Drive, Wembley, Middlesex<br>HAO 1SX United Kingdom |
| <b>Telephone</b>                    | 44 208 907 9950  |
| <b>Fax</b>                          | 44 208 909 2694  |
| <b>E-mail</b>                       | Shan@annova.plus.com   |

## REPUBLIC OF ARMENIA

### Technology Innovation Center

#### Project Summary

|                                 |                              |
|---------------------------------|------------------------------|
| <b>Subsector</b>                | Information Technology       |
| <b>Location</b>                 | Yerevan, Armenia             |
| <b>Project Cost</b>             | US\$8.7 Million              |
| <b>Export Potential</b>         | US\$2.5 Million              |
| <b>Project Type</b>             | Technology Innovation Center |
| <b>Project Executing Agency</b> | Mshak JSC                    |



### Project Outline

Mshak, the project sponsor, intends to develop a technology innovation center that will operate like a technical one-stop-shop providing a highly skilled gateway to enter NIS markets. In the development of the innovation center, Mshak will need equipment for its research and development and wireless facilities. The company is seeking a strategic technical partner to assist in funding the expansion. This project proposal relates to the US\$9.3 million of venture capital required for the establishment of the technology center and the US\$2.5 million of export trade opportunities associated with that investment.

Mshak modernizes and retrofits industrial equipment with computer controllers. It has a unique market for such equipment in automation projects that require design and implementation of automation pilots, particularly for the machine tool manufacturers of the NIS region. In one previous project, it developed automation control components for complicated machines processing automobile spare parts for Nizhni-Novgorod Automobile Manufacturing company and GAZ. Using group CTO machine processing, it collaborates with several Russian manufacturing, processing technology, lubrication, and cooling systems companies.

Mshak offers state-of-the-art design and testing of industrial software and integrates unique machine and production line automation solutions for international clients requiring specialized design and manufacturing of key high precision components. Under a recent contract, the company is developing special equipment for National Semiconductor, automating their print line in the production cycle of low temperature co-fired ceramics for housing semiconductor circuitry.

## Technical Description

The strategic objective of the technology innovation center is to act as an international corporate catalyst for industrial development – optimally integrating available domestic human, capital and technology resources with state-of-the art technologies provided by international technology leaders. This advances the long-standing technical expertise and industry recognition of Mshak’s pool of engineers and avionics industry experts from the former Soviet Union into modern-day competitive numerical and precision machine processing industry sectors of the west.

Mshak will integrate resources at the proposed technology center by developing the operating structure that already serves the following functions:

- Upgrading not-yet-obsolete Armenian technical resources and the former Soviet Union by integrating advanced Western computerization-led applications;
- In-sourcing internationally competitive high-tech contracts from international companies for cost-effective servicing from Armenia; and
- Distributing a combination of product, project and systems related services to clients in both the NIS region and North America.

Through the development of the center, Mshak, over the next five years, plans to facilitate approximately US\$150 million of precision technology exports. By integrating operations of (a) technology providers from Armenia; (b) operations of its functional lines; and (c) key western technologies acquired through clients and partners (e.g. numerical control systems), Mshak expects to generate direct and indirect profits from these exports. The technology center will also offer a platform to develop high technology-based precision equipment and after-sales support service for manufacturers investing in NIS markets. This could generate additional contract revenues.

Mshak’s business plan relies on investing in the development of software, hardware, control, and digital systems that integrate with both industrial units in the NIS region and with high precision technology needs of major western firms. Active in Russia, Mshak expects to expand its motion control device sales and its technical cooperation through established distribution networks. Its business plan focuses on centrally providing research and development to site-support units in order to integrate western IT and technology solutions with not-yet-obsolete Soviet technologies.

Mshak expects to integrate technologies at three levels: (a) product (e.g., control systems for machine tooling); (b) project (e.g., multi-company level processing technology assessments for GAZ in Russia); and (c) international industry (e.g., through distributorships and technology outsourcing arrangements for international suppliers such as Delta Tau and National Semiconductor).

The current operating revenues of Mshak during 2001 are expected to be US\$4 million of which US\$1.5 million are from exports of computer controlled systems to machine tooling operations in Russia and Ukraine and US\$2.5 million from high precision technology development contracts with U.S. companies. Based on the foregoing strategy, the various components of the technology innovation center are expected to develop technology exports from Armenia and generate income as follows:

- Marketing and export development facility revenues (five year estimate of US\$0.875 million) would be realized from enterprises with export potential as fees for developing export plans and international business consulting;
- Research and development revenues (five year estimate: US\$6 million) for the center would be realized from training in CAD, CAE, CAM and fast prototyping services;
- Demonstration workshop revenues (five-year revenue estimates of US\$6.8 million from automobile spare parts and US\$4.7 million from dies and moulds) from the provision of space for testing and piloting solutions in real manufacturing processes. Based on the marketing research of international clients, the demand for automobile parts and moulds would be initially exploited; and
- Radio frequency (RF) and wireless design facility revenues (five year estimate of US\$0.9 million) are expected from contracts (e.g. from international firms such as Raytheon, Northrop Grumman, Ericsson and Cisco) for marketing low-cost upgrades to installed aviation and communications systems in the NIS region. This function is expected to become self-financing after one year and to be acquired by an international firm.

Mshak already has the following technology partners and clients: Delta-Tau Data Systems of Los Angeles, California; National Semiconductor from Irvine, California; MTS based in Minnesota; and numerous NIS industrial units such as GAZ and Nizhni-Novgorod Automobile Manufacturing Company.

## **Project Site**

The project will be based in Yerevan, Armenia.

## **Project Status/Timeline**

Mshak is seeking to establish the technology innovation center over the next two years and the export marketing services over the next five years.

## **Equipment and Services**

The proposed center will have a research and development facility for software development and a radio frequency/wireless design facility. Equipment needs for both facilities totals approximately US\$2.5 million. A detailed equipment list is not available at this time.

## **U.S. Competitiveness**

One of Mshak's objectives is to act as a facilitator between U.S. and Armenian technology providers. Mshak is already working with U.S. companies, such as National Semiconductor, Delta-Tau Data Systems, and MTS. The company is predisposed to U.S. technology for its equipment needs and is seeking a U.S. strategic technical partner to help fund the technology innovation center.

## Project Financing

The project sponsor is seeking a U.S. strategic technical partner to provide equity in order to finance the technology innovation center. The proposed budget is as follows:

|                                 |                        |
|---------------------------------|------------------------|
| Administration                  | US\$1.0 million        |
| Export market development       | US\$1.0 million        |
| Research and development        | US\$3.2 million        |
| Design facility (RF/Wireless)   | US\$0.6 million        |
| Demonstrative workshop          | US\$1.5 million        |
| Business integration (Armenian) | <u>US\$2.0 million</u> |
| <b>Total</b>                    | <b>US\$9.3 million</b> |

The project sponsor has already received US\$0.6 million in financing from National Semiconductor for the RF/wireless design facility. The project sponsor is, therefore, seeking a total of US\$8.7 million in financing from a strategic technical partner.

## Conclusion

Mshak's proposed technology innovation center offers U.S. technology suppliers an opportunity to supply equipment for the research and development and RF/wireless facilities. Providing equity financing for the center as a strategic technical partner will provide a U.S. company entry into the high technology market in Armenia as well as the region as a whole. A successful technology innovation center will facilitate U.S. technology exports to Armenia as well as facilitate U.S. access to Armenian technology resources.

## Key Decision Makers

|                                     |  |
|-------------------------------------|--|
| <b>Organization or Company Name</b> | Mshak JSC  |
| <b>Contact Person</b>               | Mr. Levon Poghosyan                              |
| <b>Title</b>                        | President  |
| <b>Address</b>                      | #3 H. Hagopian Street<br>375033 Yerevan, Armenia |
| <b>Telephone</b>                    | 374-1-27 69 91; 374-1-27 85 37                   |
| <b>Fax</b>                          | 374-1-27 40 70                                   |
| <b>E-mail</b>                       | Levon@mshak.am                                   |

|                                     |  |
|-------------------------------------|--|
| <b>Organization or Company Name</b> | Mshak JSC  |
| <b>Contact Person</b>               | Mr. Armen Gyokchyan                              |
| <b>Title</b>                        | VP Finance & International Relations             |
| <b>Address</b>                      | #3 H. Hagopian Street<br>375033 Yerevan, Armenia |
| <b>Telephone</b>                    | 374-1-27 69 91; 374-1-27 85 37                   |
| <b>Fax</b>                          | 374-1-27 40 70                                   |
| <b>E-mail</b>                       | agyokch@mshak.am                                 |