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Private Sector Competitiveness Enhancement Program


# INFORMATION AND COMMUNICATIONS TECHNOLOGY ACTION PLAN

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## Section I: Executive Summary

### A. Project Goals and Objectives

The goal of the information and communications technology (ICT) sector assessment and action plan is to develop a strategic and operational road map for assisting the ICT sector in Azerbaijan, whereby proposed assistance would lead to increased sales, investment, and jobs. The following objectives guided this consultancy:

- Assess business-critical software development value chain, with emphasis on e-solutions enhancements;
- Assess the broadband services sector and, if possible, identify potential market niches including WiMAX-related GDA opportunities;
- Conduct research on the Government of Azerbaijan's (GOAJ) plans to establish Special Economic Zones (SEZ) and provide an overview of SEZ programs in other countries;
- Assess local computer assembly value chain and identify key stakeholders and market drivers of this subsector.

The Action Plan utilizes value chain, industry and market analysis methodologies to identify value chain constraints and recommend PSCEP actions to reduce competitive constraints.

The strategic rationale underpinning the PSCEP ICT action plan is very simple: Azerbaijan aspires to stimulate the growth of the ICT industry, become a regional ICT market leader and an advanced, knowledge-based society. To reach its ultimate goal, Azerbaijan must transform its small, emerging ICT sector into a regional provider of leading-edge ICT products and services. Furthermore, Azerbaijan must transform an educated, talented, and entrepreneurial population into an information-based e-society. An e-society rooted firmly in world-class technical education, ICT infrastructure, and computer literacy.

### B. Key Findings

#### B1. Sector Size and Composition

The ICT sector in Azerbaijan is comprised of small and medium enterprises (SME) competing as system integrators. Estimated total ICT industry revenues for 2009 are very modest, approximately US$150-200 million, not including telecommunications. When telecommunications is added, industry revenues approach $1 billion (as of 2006 data). The estimate is a consensus number based on interviews with ICT industry executives. Accurate GOAJ data is not available. The ICT industry in Azerbaijan is heavily reliant on government support. An estimated 55-60% of total industry revenues are generated by

GOAJ procurement. The GOAJ directs most ICT procurement to favored "champion system integrators." Reliance on public demand and limited private sector purchasing of ICT products and services pose a serious challenge for the sector.

GOAJ control and ownership of telecom service providers and broadcasting media prompted PSCEP to initially direct its focus away from companies in these markets. Consequently, the PSCEP action plan is focused on ICT industry players competing in the following markets:

- Computer hardware and software distributors and resellers;
- Local assemblers of computers and servers;
- Systems integrators;
- Software solution providers.

### B1a. *S*ystems integrators

There are eight (8) medium size ICT industry players in Azerbaijan competing in the markets noted above. All players compete as GOAJ-favored "champion" systems integrators. All players, except SilverKey, resell and integrate computer hardware and software produced by global technology leaders (Microsoft, Oracle, HP, Cisco, etc.). Only four (4) systems integrators discriminate from their competitors as follows:

- ULTRA – leader in computer assembly;
- Caspel - fiber optic network operation and management;
- SilverKey – develops and integrates web portals, web shopping & secure e-commerce payment solutions; and
- Softline - leader in certified technical training.

The ICT industry in Azerbaijan will remain an embryonic cottage industry; however, the following developments would transform the sector from its embryonic state:

- Rapid deepening of the currently shallow pool of trained Azerbaijani ICT professionals and improve the capacity of leading enterprises;
- Dramatic increase in foreign direct investment (FDI) in the sector;
- Privatization of the telecom industry;
- Confrontation of IP piracy and adoption of a competitive ICT tariff structure;
- Passage of e-commerce laws compliant with global standards to enable secure e-commerce and e-government transactions.
- Increase in GOAJ investment to support the non-telecom segment of the ICT sector.

### B1b. Business critical software (BCS) development

BCS is an integrated suite of software applications that form an enterprise (company-level) framework that includes administrative, manufacturing and human resources planning processes. BCS suites integrate all major enterprise business processes. BCS suites are very costly and complex to design, develop, market and support. No company

in Azerbaijan currently develops business critical software (BCS), nor do they possess the software development skills, financial resources, software configuration management, vertical market (banking, telecom, government, oil) knowledge, or software project management skills required to build BSC applications

### B1c. e-Business enhancement

SilverKey is the only local company in Azerbaijan doing cutting edge e-business enhancements. SilverKey designs, builds, and integrates web portals, on-line shopping and e-payment software applications enabling secure on-line payment transactions. SilverKey is the first e-business market mover in Azerbaijan and currently has no direct competitors. PSCEP will assist SilverKey as an ICT "anchor" enterprise. The case for championing SilverKey is found in Section 2B1 of this report and is based on this firm's managerial capacity, competitive strategy, installed premiere client base, technology expertise, and growth potential.

### B1d. Broadband Services

The GOAJ, through the Delta Telecom monopoly, controls international fiber optic (FO) cable and satellite data channels to Azerbaijan. Domestic Internet infrastructure, including bandwidth allocation, and connectivity to Internet Service Providers (ISPs) is controlled and managed by AzDataCom. Despite current conditions, PSCEP should assist selected broadband service providers to achieve its objectives. PSCEP could provide cost-shared enterprise-level ICT business consulting services to select companies.

### B1e. Domestic computer assembly

There are three computer assembly firms in Azerbaijan: ULTRA, SINAM and AZEL. Computer assembly is not the core business of either SINAM or AZEL, both of which are GOAJ favored systems integrators. ULTRA is the only viable, profitable computer assembler competing against imported computers.

### B1f. GOAJ Special Economic Zone (SEZ)

In 2006, MCIT released a Request for Proposal (RFP) to study the feasibility of establishing a world-class SEZ in Azerbaijan. Booz Allen was awarded the contract and delivered an integrated SEZ plan in 2007. Discussions held on 22 May 2009 with MCIT officials confirmed that SEZ plans have not been funded. Draft SEZ legislation was submitted to Parliament, and presidential approval may be granted within three months.

India and Egypt provide excellent case studies of successful implementation of SEZ and could serve as a model for Azerbaijan. Both countries emerged from decades as centrally planned economies, with strong barriers to foreign investment and dilapidated infrastructure. Like Azerbaijan, these countries made rapid progress towards liberalizing their business environments. SEZs have increased ICT sector revenues, investment, and jobs in India and Egypt.

### B2. ICT Regulatory Environment

The USAID-funded Trade and Investment Reforms Support Project (TIRSP) is doing significant work in the telecom regulatory area, although considerable further work is needed. The ICT regulatory environment, legislation and enforcement are the platform on which ICT business and e-commerce is transacted. TIRSP has recommended revision and reformulation of all laws and regulations related to e-commerce, e-signature and e-government transactions. PSCEP should support the work TIRSP, donor-funded regulatory policy projects, the American Chamber of Commerce, and global technology companies are doing in Azerbaijan to improve the ICT regulatory environment.

## C. PSCEP Strategy and Recommended Actions

### C1. Strategic Rationale

The PSCEP action plan is rooted the embryonic state of Azerbaijan's ICT sector, regulatory environment, and competitive constraints facing industry players. The plan acknowledges the reality that these constraints cannot be overcome quickly, and that PSCEP has limited resources to address ICT sector constraints. However, this action plan describes pragmatic measures PSCEP can undertake to improve near-term ICT sector competitiveness. The ICT sector action plan consists of a three-pronged strategy to enhance ICT sector competitiveness:

- Stimulate ICT innovation and investment
- Champion ICT leaders
- Strengthen ICT industry structure and human capital development

### C1a. Stimulate ICT innovation and investment

Entrepreneurial activity and capital investment is limited among leading ICT systems integrators, hardware and software resellers, and IT solutions providers. They ICT industry actors engage in limited technology and product innovation.

PSCEP will, given its limited resources, stimulate ICT innovation and investment in three ways: (1) award ICT innovation grants; (2) support the development of an ICT-Innovation Center, including WiMAX development; (3) support GOAJ plans to establish Special Economic Zones (SEZ). The GDA component of PSCEP will be a key vehicle in this strategy.

### C1b. Champion ICT leaders

While PSCEP will assist a wide range of sector companies in the course of implementing the Action Plan, the program will provide world class ICT strategic management business consulting services to key "anchor" enterprises with the intent to increase sales and investment, create jobs, and enhance productivity. Initially, these activities will include: (1) Ultra, the only company where computer assembly is a core, profitable business and (2) SilverKey – a developer of web solutions and most importantly secure e-commerce

solutions. The rationale for this focus is that both firms are providing services and goods that create a large multiplier effect on the sector. Championing industry leaders with assistance is a direct, pragmatic way to stimulate ICT sector growth. ICT business consulting skills and expertise are not common in Azerbaijan. PSCEP assistance will target the areas of strategic business, marketing & financial planning, consultative technical sales and marketing, and align people, enterprise systems, and technology for profitable growth. Consulting deliverables will be tailored to company-specific goals and problem(s). PSCEP will engage company executives in hands-on, participative consulting processes to reinforce skills transfer.

### C1c. Strengthen ICT industry structure, associative relationships, and human capital development

PSCEP will assist the 200 member ICT Club. The program will implement an incremental assistance strategy aimed at leveraging the IT Club into an ICT Industry Association or cluster within 12-18 months. PSCEP will also build associative relationships by expanding dialogue and participation among sector stakeholders to address common problems. For example, software piracy accounts for an estimated 95 percent of all software installed in Azerbaijan. PSCEP will partner with local representatives of global ICT technology companies (Oracle, Cisco Systems, Microsoft), AmCham, TIRSP and other donor projects confronting IP piracy. All recognize IP piracy as a constraint to developing an Azerbaijani software industry, enterprise profitability, and direct foreign investment. In the area of human resource development, PSCEP will provide directed assistance to GOAJ and industry initiatives such as facilitating access to finance to meet penetration of computers in local schools.

## D. Expected Results

Expected results from implementation of the Action Plan include:

### D1. Stimulate Innovation and Investment

Key Results:

- Provide three Innovation Fund Grants totaling approximately $75,000 to leverage ICT innovation, investment, sales and employment growth.
- Identify, develop, and support at least two ICT GDAs, including a WiMAX pilot project, and create an ICT-Innovation Center (ICT-IC).
- Provide enterprise-level strategic business consulting services to ICT-IC entrepreneurs.
- Promote and support GOAJ Special Enterprise Zones (SEZ) plans and leverage ICT-IC GDA as a stepping-stone to SEZ implementation.
- **Target results**: attract $20,000,000 in investment; generate estimated sales and jobs of 40 percent above the industry trend line.

### D2. Champion ICT Leaders

Key Results:

- Significant enhancement of strategic management capabilities by these firms, permitting the sustainability growth trends
- **Target results**: sales increase annually by 30 percent or more; capital investment of $5,00,000 in these enteprises and 100-200 new jobs created

### D3. ICT industry structure and human capital development

Key Results:

- Leverage ICT Club and its 200 active members as platform for ICT Industry Association and cluster(s) within 12-18 months, following incremental, social capital creating steps.
- Promote and facilitate GOAJ-funded ICT scholarships and technical certification programs, including assisting Bestcomp to obtain Purchase Order Financing (POF) to implement 3-stage People PC Project (PPCP), also known as the National Computer Project funded by MOE & MOCIT. PPCP will enable 100,000 teachers in Azerbaijan to buy computers on an interest-free basis for 12 months, at prices 25-40 percent below retail price.

While PSCEP is not a business environment or policy program, it will undertake numerous actions that will support GOAJ, USAID, and private sector objectives in this area. For example:

- Using associative relationships with key IP stakeholders to confront IP piracy.
- Possibly award an Innovation Fund grant to the ICT club to train GOAJ tax inspectors and bank auditors to detect and enforce software piracy laws.
- Deepen PSCEP ICT legal and regulatory knowledge base.

## SECTION II: INTRODUCTION AND OVERVIEW

### A. Goals and Objectives

The goal of the information and communications technology (ICT) sector assessment is to develop a detailed action plan or a roadmap, for assisting the ICT sector in Azerbaijan, where proposed assistance would lead to increased sales, investment, and jobs.

Specific **objectives** of the assessment include a description of the:

- Business critical software development value chain, with emphasis on e-solutions enhancements;
- Broadband services sector, including identifying potential market niches including WiMAX -related GDA opportunities;
- Local computer assemble value chain, stakeholders and key market drivers; and,
- Assess Government of Azerbaijan (GOAJ) plans to establish Special Economic Zones (SEZ), and provide an overview of SEZ programs in other countries.

### B. Assessment methodology

The author used value chain, industry, and market analysis methodologies to identify value chain sector shortcomings and recommend PSCEP actions to reduce competitive constraints. The team used multiple sources to gather and validate information keeping in mind the need to constantly perform "reality checks" on findings and recommendations. With few exceptions, company executives interviewed were not open or receptive to sharing company financial data. However, PSCEP was able to develop a clear picture of the ICT sector by triangulating information from the sources listed below:

- interviews with ICT executives and company site visits;
- interviews with investment company executives, hardware and software resellers, systems integrators, and telecom service providers;
- interviews with Azerbaijani experts and consultants;
- review of PSCEP, USAID, World Bank, ICT industry, and consulting reports;
- review of data from The State Statistical Committee of the Republic of Azerbaijan.

### C. Strategic Rationale

The strategic rationale underpinning the PSCEP ICT action plan is very simple: Azerbaijan aspires to stimulate and grow its ICT industry, become a regional IT market leader and an advanced, knowledge-based society. To reach its ultimate goal, Azerbaijan must transform its small, emerging ICT sector into a regional provider of leading-edge ICT products and services. Further, Azerbaijan must transform an educated, talented, and entrepreneurial population into an information-based e-society. An e-society rooted firmly in world-class technical education, ICT infrastructure, and computer literacy.

Goals are easier to put forth than to achieve. Azerbaijan's goals are no exception,

particularly since they require radical industrial and societal transformation.

### D. Sector Description and Assessment

#### D1. ICT regulatory environment

The GOAJ considers ICT as a strategic sector of priority importance. Under the banner of "Black gold into human gold." The GOAJ has made numerous efforts to catalyze sector growth and establish a regulatory environment that supports that growth. USAID, under the Trade and Investment Reforms Support Project (TIRSP) has undertaken significant work in the telecom regulatory area. TIRSP has recommended revision and formulation of all laws and regulations related to e-commerce, e-signature and e-government transactions. Further, GOAJ telecom regulatory policies do not conform to World Trade Organization (WTO), European Union (EU) policies. Telecom policies govern many ICT regulatory issues and commercial practices including privatization, spectrum frequency allocation and licensing, tariff rates, e-business, competition, and consumer dispute resolution.

GOAJ ICT regulatory policies directly impact conduct of ICT business, e-commerce transactions and ICT sector competition in a number of key areas, highlighted below.

**Spectrum management:** GOAJ owns, controls, and licenses the communications spectrum. Spectrum licensing practices are not open, transparent, or competitive. An open, level playing is essential to attracting foreign investment to modernize ICT infrastructure and services.

**Privatization:** GOAJ holds at least partial ownership in various telecom enterprises holding dominant competitive positions in ICT markets. Internet infrastructure, including international network connectivity and local bandwidth allocation are GOAJ controlled.

**Intellectual Property (IP) rights:** GOAJ has signed the World Intellectual Property Treaty mandating IP rights protection. However, computer software piracy remains a serious problem. Piracy accounts for an estimated 95 percent of all software installed in Azerbaijan. IP piracy, including illegal computer software, literally robs Azerbaijan of millions of dollars in VAT and customs duties. GOAJ customs officers, tax inspectors, and bank auditors are not trained to detect and enforce IP-related crime.

**Tariffs and customs duties:** ICT tariffs and customs duties are arbitrary, uncompetitive, and undermine ICT sector growth. IT products (software, hardware components, computers and peripherals) tend to be classified by customs officers as telecom products. Telecom products are subject to 15 percent tariff while IT products are subject to a 3 percent tariff. The current tariff structure favors imported finished goods at the expense of components and spare parts. This means the duty for personal computers is 3 percent, but 10 percent for computer components and spare parts – clearly a disincentive for local computer assembly companies and a hindrance for these firms to become regionally competitive. By contrast, duties on computers, spare parts, and peripherals are 0 percent in Georgia, Turkey, and Turkmenistan.

**e-Commerce laws:** Current Azerbaijani e-commerce and e-taxation laws are not compliant with EU Directives, which serve as the global e-commerce standards. Another serious constraint is the lack of a national electronic certificate authority (CA) in Azerbaijan. The CA is the keystone of e-commerce protection, as it licenses and regulates e-service providers and, most critically, creates, authenticates and controls encrypted public keys that enable secure e-commerce transactions. Aside from limited vendor-encrypted e-payment applications, e-commerce transactions are not secure in Azerbaijan.

PSCEP is not a regulatory policy project, and such activities fall under the purview of the TIRSP program. However, it is critical to recognize these constraints when designing an action plan to improve the competitiveness of the ICT sector in Azerbaijan.

### D2. ICT Overview

The PSCEP ICT sector action plan is by design a prescription. However, enlightened prescription depends on identifying the problem and its seriousness. GOAJ control and ownership, either directly or through joint venture, of telecom service providers (wire line, mobile wireless, ISPs, media) and broadcasting media prompted PSCEP to direct programmatic focus away from these markets. Consequently, the PSCEP action plan is focused on ICT industry players competing in the following markets:

- Computer hardware and software distributors and resellers;
- Local assemblers of computers and servers;
- Systems integrators; and,
- Software solution providers.

### D2a. A Broad View of the Azerbaijan Information Society

Table 1 below paints a candid picture of the state of Azerbaijan's ICT industry.

**Table 1: Key Data: ICT Industry (US$)**

| Key Data | FY 2008 |
|---|---|
| ICT companies with > 100 employees | < 15 |
| Estimated IT workforce (employees) | < 2,000 |
| Estimated ICT industry revenues (2009 $USD) | $150-200 million |
| Productivity per employee (2009 $USD) | $75,000 - 100,000 |
| Estimated GOAJ market as % of total revenues | 80-90% |
| Non-telecom ICT companies with ≥ 200 employees | 0 |
| Non-telecom ICT foreign direct investment | Minimal |
| ICT incubators & Special Econ. Zones | 0 |
| Techno-parks / Smart Villages | 0 |

Source: Industry interviews.

The data in Table 1 starkly illustrates an embryonic, productive ICT industry comprised of small and medium enterprises (SME). Estimated total ICT industry revenues for 2008 are very modest (US$ 150-200M, not including telecom; if telecom is included, revenues

exceeded $1 billion. The estimate is a consensus number based on interviews with ICT industry executives. Accurate GOAJ data is not available. An estimated 80-90% of total industry revenues are generated by GOAJ procurement.

Imported ICT hardware and software products (Microsoft, Oracle, Cisco, HP, IBM, etc.) account for virtually all hardware and software sales. Local resellers, distributors, and technology partners operating in Azerbaijan generate this revenue. These data signal the dependency of the Azerbaijani ICT sector on very turbulent, intensely competitive global markets because ICT sector revenue growth hinges on recovery from the ongoing global recession, rising oil prices, and renewed ICT spending by Azerbaijani industry and the GOAJ.

Another way to examine the ICT sector is to see Azerbaijan's progress toward the creation of a knowledge-based e-society. Table 2 below provides a glimpse of this progress, based on GOAJ State Statistical Committee 2007 data and industry interviews.

**Table 2: The Azerbaijan Information Society in Numbers**

| Key Data | 2007 |
|---|---|
| Home computer penetration: % of total households | 10% |
| Computers per 100 inhabitants | <3 |
| Enterprise computer penetration: % of enterprises w/ computers | 23% |
| Enterprise internet penetration: % all enterprises | 11% |
| Homes w/ Internet penetration: % all total households | < 30% |
| Home DSL internet penetration: % of total households | <1% |
| Homes w/ dialup internet access: % of total with Internet | 45% |
| GOAJ computer penetration: % all GOAJ employees w/computers | Not reported |
| Estimated GOAJ non-telecom ICT spending: % of national budget | < 10% |
| e-Government services: % of all GOAJ services | < 1% |

Source: State Statistical Committee.

Table 2 presents a sobering and somewhat contradictory picture. According to State Statistical data, home computer penetration is reportedly 10 percent, but there are fewer than three computers per 100 inhabitants. Home Internet penetration is reportedly less than 30 percent. 45 percent of all households with Internet have dialup access. Total broadband (DSL) penetration is estimated at less than 1 percent of total households. Enterprise computer penetration is reportedly 23 percent. But official GOAJ data indicate that in 2007 only 11 percent of all Azerbaijani enterprises were equipped with Internet access.

Clearly, the accuracy of data is questionable. Regardless of the specific numbers, the data points to Azerbaijan as a "pre e-society." Low estimated GOAJ non-telecom ICT spending (less than 10 percent), low enterprise computer and Internet penetration rates all support this conclusion. The conclusion, though candid, is neither arbitrary nor

subjective. The author spent years helping global network service providers, telecom service operators (ISPs, fixed and mobile wireless), and Internet Protocol data services providers build, launch, and manage businesses worldwide. Azerbaijan's current level of e-society formation is essentially identical to poorer countries in Latin America, the Middle East, Asia, and Africa roughly 10-12 years ago. Azerbaijan has a long way to go in building a knowledge-based e-society.

On the positive side, Azerbaijan is a wealthy nation with an educated population, and global experience clearly shows that ICT-literacy develops explosively in such an environment.

### D2b. Key Industry Players

As noted above, the GOAJ owns, licenses, and controls the national frequency spectrum. It holds at least partial ownership in various telecom enterprises holding dominant competitive positions in the ICT market. The GOAJ, through the Delta Telecom monopoly, controls international fiber optic (FO) cable and satellite data channels to Azerbaijan. Domestic Internet infrastructure, including bandwidth allocation and connectivity to Internet Service Providers (ISPs) is controlled and managed by AzDataCom. The GOAJ controls, through monopoly or equity position, national and international wire line service. The GOAJ also directly or indirectly controls mobile wireless services through various joint ventures with international investment partners. Finally, the GOAJ controls all radio and television broadcasting channels.

GOAJ control and ownership of telecom service providers and broadcasting media prompted PSCEP to focus away from companies in these markets. Consequently, the PSCEP action plan is focused on ICT industry players competing in the following markets:

- Computer hardware and software distributors and resellers;
- Local assemblers of computers and servers;
- Systems integrators; and,
- Software solution providers.

### D2bi. ICT leaders: "champion systems integrators"

There are eight medium sized ICT industry players in Azerbaijan competing in the markets noted above. All players compete as "champion systems integrators." All players, except SilverKey, resell and integrate computer hardware and software produced by global technology leaders (Microsoft, Oracle, HP, Cisco, etc.). Four (4) integration players discriminate from their competitors as follows:

- ULTRA – leader in computer assembly;
- Caspel - fiber optic network operation and management;
- SilverKey – develops and integrates web portals, web shopping & secure e-commerce solutions; and

- Softline - leader in certified technical training.

All leading ICT players were interviewed for this assessment. Table 3 below contains key information about these companies.

**Table 3: Key Data: ICT Market Leaders (US$)**

| Company | Core business | Secondary business | Estimated FY08 revenues | Estimated market share % | Employees |
|---|---|---|---|---|---|
| **AZEL** | Systems integration | PC assembly (unprofitable). Computer & software resells, distribution & support. | $30M | 23 | 170 total; 14 technicians |
| **R.I.S.K** | Systems integration | Software tools for aeronautical navigation procedures. | $35M | 26 | 200 total; 170 technicians |
| **Sinam** | Systems integration | Software localization & customization. PC assembly. | $10M | 8 | 120 includes |
| **Caspel** | Systems integration. Fiber optic network services. | Software localization & customization. | $20M | 15% | 100+ includes technicians |
| **Bestcomp** | Systems integration. Computer reseller | Software localization. | $15M | 11% | 130; 80 technicians |
| **ULTRA** | Computer & server assembly | Systems integration services. | $20M | 15% | 120 includes technicians |
| **SilverKey** | Systems integration - **e-payment software & solutions** enabling secure on-line e-commerce & e-government transactions. | N/A | Unknown | 0 | 14 total |
| **Softline** | Systems integration. IT training. | IT consulting & solutions. Software localization. | $3M | 2 | > 50 |
| | | | **Estimated total: US$133M** | | **Estimated total: < 1000** |

Source: Industry interviews.

Table 3 reveals that following about ICT market leaders:

- Industry leaders compete directly as "champion" systems integrators.
- AZEL and RISK are market share leaders.
- All systems integrators have some tind of connections with GOAJ agencies.

- All players except SilverKey represent, resell, and integrate computer hardware and software produced by global technology leaders (HP, Toshiba, Dell, Acer, IBM, Fujitsu-Siemens, Microsoft, Intel, Oracle, Cisco, Oracle, etc.);
- Caspel with FO network services has competitive distinction and advantage;
- ULTRA with Nexus computers is well positioned in both PC assembly and systems integration markets;
- Local software providers (except RISK) are limited to low-value localization and customization of imported software products.
- Soft Line, a systems integrator, is also leader in IT certified technical training.
- SilverKey, a systems integrator, holds a unique competitive advantage as "first market maker" in building and integrating e-payment software solutions enabling secure on-line e-commerce and e-government transactions.

### D2c. Growth potential and constraints

The ICT industry in Azerbaijan will remain an embryonic cottage industry unless the following growth constraints are overcome:

- The shallow pool of trained Azerbaijani ICT professionals deepens rapidly, including the capacity of its leading enterprises;
- Foreign direct investment (FDI) increases dramatically;
- The telecom industry is privatized;
- IP piracy is confronted, and a competitive ICT tariff structure adopted; and,
- E-commerce laws, compliant with global standards, are legislated to enable secure e-commerce and e-government transactions.
- GOAJ investment to support the non-telecom segment of sector increases dramatically;

None of these constraints can be overcome quickly. Increasing FDI, deepening the pool of Azerbaijani ICT trained human resources, and privatizing the telecom industry will take years to undertake; however, PSCEP can take on actions to mitigate these problems. Further, given GOAJ financial resources and political resolve, great strides can be made toward improving the ICT tariff structure, combating IP piracy, and drafting and legislating global best practice e-commerce laws.

## SECTION III: SECTOR ASSESSMENT

This section provides a more detailed assessment of the sectors, and sub-sectors analyzed to develop the Action Plan.

### A. Sector Assessment and Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis

Table 4 in the next page presents a SWOT analysis of the ICT sector. Subsequent sections assess the potential of and present SWOT analysis of individual segments.

At its core, the SWOT analysis may be summarized as follows: good potential, but commitment to developing the sector has not kept up with pronouncements and attempts to develop and support a culture of entrepreneurship.

**Table 4: ICT Sector SWOT Analysis**

| STRENGTHS | OPPORTUNITIES |
|---|---|
| • Educated, entrepreneurial labor force<br>• Rapidly growing mobile telecom market<br>• Existing competitive PC assembly capability<br>• Experienced systems integrators with core competencies<br>• GOAJ ICT development strategy & plans<br>• 1st market maker exists in e-commerce & e -Government market space | • GOAJ-funded ICT projects<br>• GOAJ-funded ICT scholarships & technical certification courses<br>• Enforce IP laws aggressively<br>• Adopt competitive tariff structure<br>• Adopt best practice e-commerce legislation Develop scalable SEZ, free zones & techno-parks<br>• Use internet to drive e-commerce & e-society development<br>• GOAJ-funded ICT Enterprise Investment Fund |
| **WEAKNESSES** | **THREATS** |
| • GOAJ telecom monopoly<br>• Rampant IP piracy<br>• Weak ICT legal & regulatory environment<br>• Inadequate high-speed national backbone & network infrastructure<br>• Lack of university ICT programs<br>• Lack FDI & venture capital for startup companies<br>• No ICT Enterprise Development Fund<br>• Lack software, IT & systems management, PM, strategic business skills, English<br>• Lack of ICT trained and certified professionals<br>• Low PC & Internet penetration<br>• Lack of market data, industry information & market research skills<br>• Poor quality, high cost telecom<br>• Informal ICT sector structure | • "Gifted Brain-Drain" with no way to refresh<br>• Academia has an "aged pool of talent" not adapted to industry needs<br>• Without significant improvement in cost, quality, reliability of telecom, Azerbaijan may be relegated to "low touch" niches<br>• Continuing appreciation of AZN vs. dollar<br>• Time is critical in industry; competitors and other countries moving at increasingly faster pace from which it makes it increasingly difficult for Azerbaijan to catch up.<br>• Almost complete lack of software development, IT management, and computer science skills preclude near-term ICT industry growth. |

## B. Sub-sector Assessment and Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis

The sections below provide an overview of sub-sectors analyzed, within the broader ICT industry.

### B1. Business critical software (BCS) development value chain and e-business enhancements

#### B1a. Market Situation

No company in Azerbaijan currently develops business critical software (BCS). The ICT industry is also plagued by an absence of firms with the software development skills, financial resources, software configuration management, vertical market (banking, telecom, government, oil) knowledge, or software project management skills to build BSC application suites. To understand why, it is necessary to accurately define BCS.

Business critical software is not one software application, but rather consists of an integrated suite of software applications that form an enterprise (company-level) framework that includes administrative applications (finance, accounting), human resources applications (payroll, benefits), and manufacturing resources planning (purchasing, inventory, production). BCS suites integrate all major enterprise business processes. BCS suites are hugely expensive and complex to design, development, market and support. The list of global BCS competitors tells the whole story: SAP, Oracle, PeopleSoft and, of course, Microsoft.

Furthermore, most ICT companies in Azerbaijan do not work in the field of software development. The firm RISK is an exception because it has developed and successfully marketed a suite of software tools for developing aeronautical navigation procedures. While not BCS, RISK has found and penetrated a global niche market. If there were 20 other companies like RISK in Azerbaijan, the BCS scenario would be different.

What are other Azerbaijani companies doing that claim they develop software? They localize and customize software developed and imported from Russia, US, and Europe. These companies are **not developers but system integrators**. They include: AZAL, Sinam, Bestcomp, Caspel, and Softline (See Table 3). This is not to say that they are not good companies. But their core business is integrating and reselling hardware and software components from global vendors into systems tailored for the GOAJ and big companies – not to develop software. Software localization, including translating user interface screens from Russian to Azerbaijani, is low-risk, low-value added work. Software customization can be a higher value-added work and it is in this area where man of these companies are focusing their effort. This is a localized activities and a niche that these companies know well and where they don't require significant assistance.

While there is limited software development capability in Azerbaijan, this does not mean that it does not exist. One exception is SilverKey. Established in late 2006, SilverKey employs 14-15 well-educated, young entrepreneurs including the US-trained Managing

and Country Directors. Section IV of this Action Plan makes a case for PSCEP to support Silver Key as a segment champion. Beyond SilverKey, there are many small website developers; however, these developers do not demonstrate the same potential as Silver Key. The assessment did not identify other players developing e-business enhancements, but PSCEP should continue to expand its "value chain map" to identify new players as some of these existing or new firms emerge to do greater value added work.

### B1b. BCS Value Chain Map

The software development value chain is identical for all software applications: business critical software, e-business enhancement, productivity suites like Microsoft Office, or wireless phone games. All software applications follow the same 8-phase development chain:

1. Planning
2. Requirements analysis
3. Design & development
4. Coding & implementation documentation
5. Testing & integration
6. Evaluation
7. Sign-off & release
8. Marketing & product support

*Key Value Chain Roles*

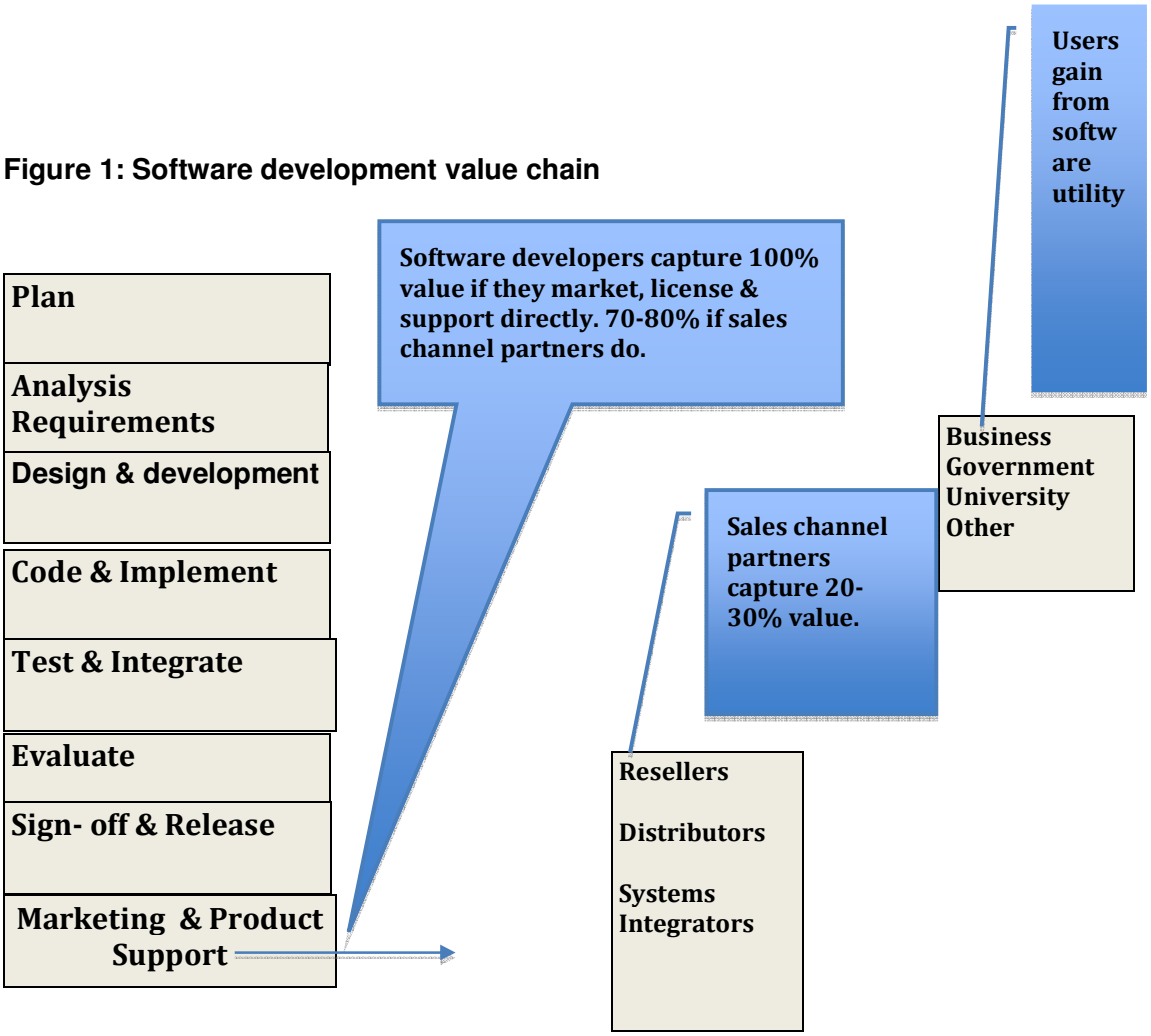
**Software developers**: the entire software development value added chain takes place within the company that develops the application. There are no outside value added contributors in the development process. Some software companies market, license, and provide direct technical support to the end-users of their software products. If they do, they earn 100 percent of added value and achieve profit margins in the 60-75 percent range. However, most have sales channel partners.

**Resellers, distributors and systems integrators** market, license and support end-users. For instance, systems integrators in Azerbaijan (Table 2-3) market, integrate, license and support Microsoft, Cisco, Oracle products. However, they only capture 20-35 percent of added value.

**End users** capture no added value but benefit from using software products.

Figure 2-1 below illustrates the software development value chain applicable to systems integrators in the Azerbaijani market.

**Figure 1: Software development value chain**



### B1c. Value chain constraints

Key value chain constraints in the Azerbaijan BSC and e-business enhancements markets include:

- Lack of any BSC market players
- Lack of software developers with global best practice expertise
- Lack of skilled software development project managers
- Lack of market demand for SME business process software solutions

### B1d. BSC SWOTs analysis

**Table 2-5: BSC development & e-business enhancement SWOTS analysis**

| STRENGTHS | OPPORTUNITIES |
|---|---|
| • Educated, entrepreneurial labor force<br>• Rapidly growing mobile telecom market<br>• GOAJ ICT development strategy & plans<br>• 1st market maker exist in e-commerce & e -Government market space | • GOAJ-funded ICT projects<br>• GOAJ-funded ICT scholarships & technical certification courses<br>• GOAJ-funded ICT Enterprise Investment Fund<br>• Develop scalable SEZ, free zones & techno-parks<br>• Use internet to drive e-commerce & e-society development |
| **WEAKNESSES** | **THREATS** |
| • Lack s/w development, IT & systems management, PM, strategic business skills, English<br>• Rampant IP piracy<br>• Weak ICT legal & regulatory environment<br>• Lack of university ICT programs<br>• Lack FDI & venture capital for startup companies<br>• No ICT Enterprise Development Fund<br>• Lack of ICT trained and certified professionals | • "Gifted Brain-Drain" with no way to refresh<br>• Academia has an "aged pool of talent" not adapted to industry needs<br>• Without significant improvement in cost, quality, reliability of telecom, Azerbaijan may be relegated to "low touch" niches<br>• Lack of GOAJ funding & political resolve<br>• Almost complete lack of software development, IT management, and computer science skills preclude near-term ICT industry growth. |

### B1e. Recommendations

Recommendations for the sub-sector are incorporated in the Action Plan section. In sum:

- PSCEP should not invest considerable resources on business critical software development. While this would be a sound activity for a larger project focused on the ICT sector alone, it is a long term effort.
- PSCEP *should* leverage SilverKey success as Azerbaijan's first e-business market mover, and help them to extend e-commerce and e-government services across all sectors of the Azerbaijan economy and population.
- PSCEP should advocate for GOAJ-funded scholarships for university-level computer sciences.

## B2. Broadband Services Value Chain

### B2a. Market situation

The GOAJ, through the Delta Telecom monopoly, controls international fiber optic (FO) cable and satellite data channels to Azerbaijan. Domestic Internet infrastructure, including bandwidth allocation, and connectivity to Internet Service Providers (ISPs) is controlled and managed by AzDataCom.

### B2b. Value chain map

*Key market chain roles*

**Delta Telecom** manages and operates both the FO and satellite channels.
The International FO data channel travels from Moscow through Georgia to Baku along the Baku-Tbilisi-Ceyhun pipeline. The satellite data channel is used primarily as a backup channel.

**AzDataCom** connect the FO and satellite channels to the national backbone network infrastructure, manages Internet infrastructure, including bandwidth and ISP connectivity.

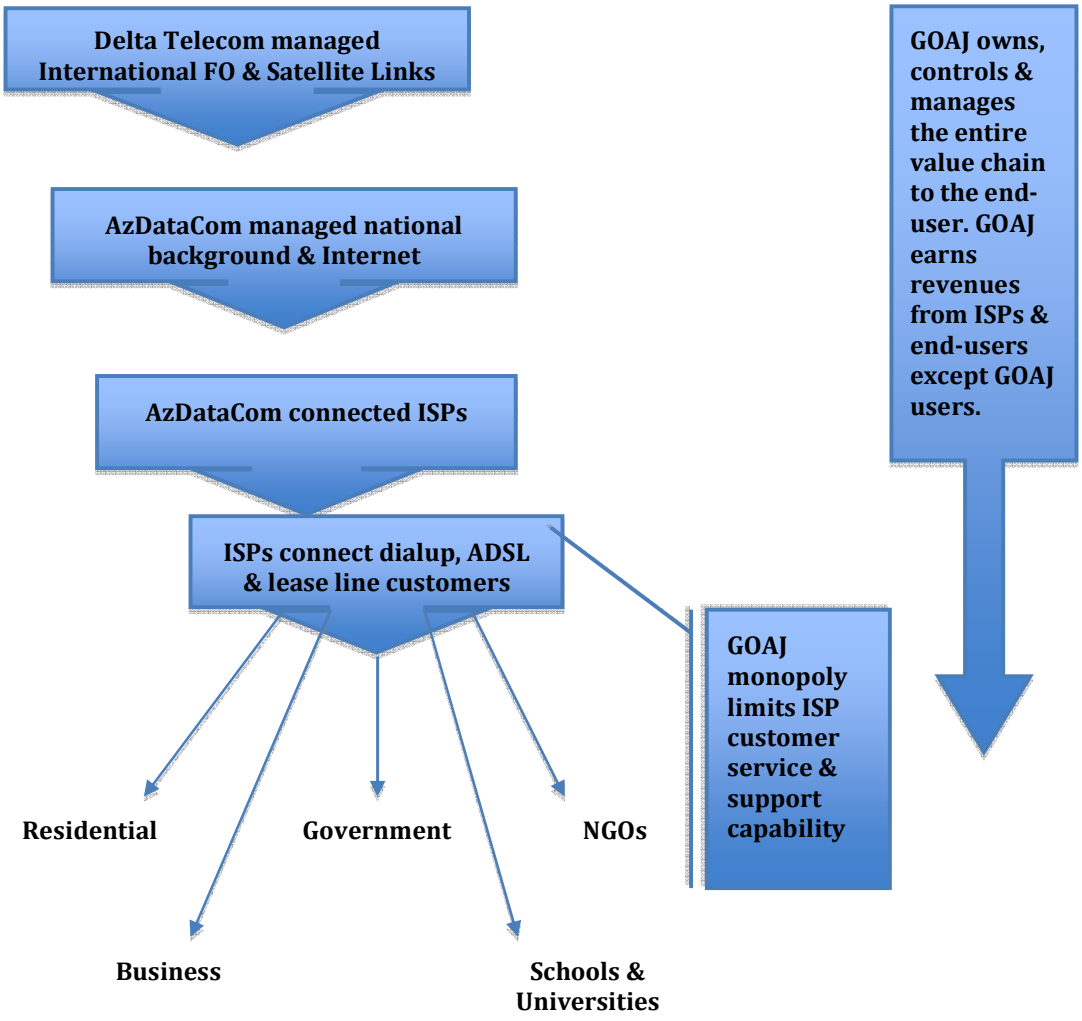
**ISPs** provide Internet access service to residential, small business, government, educational, and corporate customers in Azerbaijan. There are an estimated 30 ISPs operating in Azerbaijan. Larger ISPs include Azerin, Azeronline, Adanet, Ultel, Bakinternet, and AvirTel, all of which depend on AzDataCom leased data lines. ISP customers connect to the Internet through dialup and ADSL access over existing copper phone lines controlled by GOAJ-owned Azertelecom and Baktelecom. Further, all ISPs are dependent on Azertelecom and Baktelecom to install Internet modems in GOAJ-owned Central Telephone Offices. That means that **ISPs cannot manage or guarantee** customer service installation and service.

**Customers** benefit from Internet access and future e-commerce & e-government services.

## Value chain map

The graphic below describes the GOAJ-controlled broadband services value chain.

**Figure 2: GOAJ-controlled broadband services value chain**



### B2c. Value chain constraints

Key broadband services constraints include:

- GOAJ holds equity stakes in telecom enterprises holding dominant competitive positions in the ICT market.
- GOAJ, through the Delta Telecom monopoly, controls international fiber optic (FO) cable and satellite data channels to Azerbaijan.
- GOAJ, through AzDataCom, manages and controls domestic Internet infrastructure, including bandwidth allocation, and connectivity to Internet Service Providers (ISPs)
- GOAJ controls, through Azertelecom and Baktelecom, national and international wire line service.
- ISPs depend on Azertelecom and Baktelecom to install Internet modems in GOAJ-owned Central Telephone Offices. This means ISPs cannot manage customer service provisioning and support.

### B2c. Broadband services SWOTS Analysis

**Table 5: SWOT analysis**

| STRENGTHS | OPPORTUNITIES |
|---|---|
| • Rapidly growing mobile telecom market<br>• GOAJ ICT development strategy & plans<br>• Existing ISPs | • Telecom privatization<br>• Telecom deregulation<br>• Independent telecom Regulator established<br>• Telecom policy comply with WTO & EU standards<br>• Use internet to drive e-commerce & e-society development |
| **WEAKNESSES** | **THREATS** |
| • Poor quality, high cost telecom service<br>• Weak ICT legal & regulatory environment<br>• e-commerce laws<br>• Inadequate high-speed national backbone & network infrastructure<br>• Lack of university ICT programs<br>• Lack of ICT trained and certified professionals<br>• Low PC & Internet penetration | • Without significant improvement in cost, quality, reliability of telecom, Azerbaijan may be relegated to “low touch” niches<br>• Continuing appreciation of AZ vs. dollar<br>• Lack of GOAJ funding & political resolve |

### B2d. WiMAX and Broadband Services

The assessment explored WiMAX as a potential area in which PSCEP could assist the ICT sector. WiMAX is a telecom technology that provides wireless transmission of data using a variety of transmission modes, from point-to-multipoint links to portable devices for fully mobile Internet access. In other words, WiMAX technology is used to provide wireless broadband Internet access to portable devices like smart phones and laptop computers equipped with embedded WiMAX devices.

Unlike Wi-Fi that does provides coverage only for small areas, WiMAX provides wide area (≈30 miles) mobile coverage at speeds reportedly five times faster than DSL or fiber optic cable. WiMAX technology works well, making it a strong potential competitor to telephone and cable companies' broadband services. As highlighted in the text box below, however, WiMax is expensive to deploy.

WiMAX is cutting edge technology, and at present neither the Ministry of Communications and Information Technology (MCIT) nor local ICT companies possess hands-on WiMAX expertise. However, US-based WiMAX technology providers could deploy WiMAX in Azerbaijan with MCIT cooperation and co-funding. WiMAX requires a piece of the frequency spectrum to operate. The GOAJ, through MCIT, licenses and controls the frequency spectrum. So MCIT would play a key role in any potential WiMAX GDA.

There is no short cut for MCIT or local ICT companies to acquiring hands-on WiMAX technical expertise. PSCEP ICT grants could be utilized to assist local ICT companies in building limited WiMAX technical competency, but near-term PSCEP return on investment (ROI) is unlikely. The consultant is aware that Caspel, a local systems integrator with solid telecom networking expertise, is seeking a WiMAX license and may also be developing WiMAX technical competency. There are other local ICT players seeking WiMAX licenses, but the consultant believes Caspel is the strongest potential player in a WiMAX GDA project (see Action Plan Section).

**USAID Experiences in Promoting WiMax Through GDAs: The case of Vietnam**

A 2-phase WiMAX GDA pilot project was implemented in Vietnam under USAID's Last Mile Initiative, in collaboration with Intel Corporation and Vietnam Data Communications, part of the Vietnam Post and Telegraph Group. The project deployed WiMAX in the rural agricultural province of Lao Cai, a mountainous region of 600,000 people in northern Vietnam. Intel has helped promote more than 250 WiMAX trials worldwide as part of a broad effort to extend low-cost broadband access to undeveloped areas. Intel supplies the silicon chips used in WiMAX deployments.

Loa Cai is one of Vietnam's poorest regions, with current per capita GDP of $330. The Project aims at providing industries such as agriculture and forestry with new telecom infrastructure to grow their business, and attract cross-border trade with China. Another GOAJ is to attract foreign investment to the region.

Unfortunately, WiMAX is expensive technology. Only two US cities, Baltimore and Portland, Oregon, have deployed WiMAX. WiMAX works best in flat landscapes where a single communications tower can beam a signal for miles. To deliver service in Portland, with its hills and tree-lined street like Baku, WiMAX equipment was installed on 300 transmission towers costing about $150,000 each. The total cost amounted to **$45 million** to deploy WiMAX technology in Portland.

One possible WiMAX GDA scenario could involve wiring a selected user-intense area of central Baku adjacent to MCIT offices, universities, corporate and NGO project offices to demonstrate e-commerce and e-government services. The project goal would be to demonstrate a WiMAX-enabled e-service application that cuts across multiple sectors of Azerbaijan's economy and society.

### B2e. Broadband Services Recommendations

PSCEP should actively pursue a GDA to initiate or pilot WiMax efforts in Azerbaijan. While PSCEP is not a policy or business environment project, it should work with TIRSP, and other donors to help establish a more competitive, more private sector oriented broadband sector.

### B3. Domestic Computer Assemby

### B3a. Overview

The computer industry is a very challenging environment for conducting business, as the history of the evolution of the industry has shown. When the personal computer (PC) industry first began to take shape in the early 1980s, the founding companies manufactured many of the components themselves—disk drives, memory chips, graphics chips, microprocessors, motherboards, and software. Believing that they had to develop key components in-house, companies built expertise in a variety of PC-related technologies. Moreover, leaders of these companies organized their businessed to produce components as well as handle final assembly.

However, as the industry grew, technology advanced quickly in so many parts and components that early PC manufacturers could not keep pace. There were too many technological innovations in components to pursue and an overabundance of manufacturing intricacies to master. No vertically integrated manufacturer could keep its products on the cutting edge. New companies emerged that specialized in making particular components. Specialist firms could mass-produce a component and supply it to several computer manufacturers far cheaper than any vertically integrated manufacturer could.

In the 1990s, computer makers began outsourcing nearly all components from specialists. Instead, they concentrated on efficient assembly and marketing of their brand of computers. This value chain model featured arm's-length transactions between specialist suppliers, manufacturer/assemblers, distributors and retailers, and end-users. IBM, Compaq and HP followed this model until recently. This is the value chain model that ULTRA, the leading PC assembler in Azerbaijan follows.

At that time, Dell and Gateway changed the PC world by offering **build-to-order** computers on-line. They employed a shorter value chain model selling direct to customers on-line, eliminating the time and costs associated with distributing through independent resellers. Building to order avoided:

- Keeping many differently-equipped models on retailers' shelves;
- Clearing out slow-selling models at a discount before introducing new models; and,
- Retailer costs and markups (retail dealer margins typically range from 4-10%.

No computer assembler in Azerbaijan provides built-to-order computers.

IBM and Gateway are no longer computer market players. HP and Compaq struggle continually with profitability. Why? Like most things, the computer became a commodity like TVs, consumer goods, and cell phones. Profit margins are so slim, and global competition so intense that great companies simply choose to leave the playing field to concentrate their resources in profitable markets.

### B3b. Market Situation

There are three (3) companies assembling computers in Azerbaijan:

**SINAM**: A well-positioned systems integrator, SINAM assembles computers under the **Kur** brand name. The SINAM computer assembly plant located in Mingachevir was built under GOAJ-MCIT contract to supply computers to schools and state institutions in Azerbaijan. The Mingachevir plant also manufacturers info kiosks found in post offices, banks and mobile operator service points. FY 2008 sales were reportedly $840,000, with marginal profitability.

**AZEL**: A leading systems integrator, AZEL assembles, markets and sells computers under the **Lazer** brand name directly to customers through its retail stores in Baku, and indirectly through agent dealers in the regions. Computer assembly is not AZEL's core business, and perhaps unprofitable. AZEL executives did not share Lazer computer sales information with the consultant and in fact even failed to mention Lazer during a very informative discussion of their systems integration business.

**ULTRA**: The firm assembles eight computer models under the **Nexus** brand name. Computer assembly is a profitable core business for the company. ULTRA also builds four models of network servers - the only company in Azerbaijan building servers. ULTRA employs 120 people (100 percent year-over-year increase). Official FY08 revenues were US$20M; FY09 sales forecast is US$30M (50 percent increase). ULTRA computers are assembled on "bare bones" computer chassis imported from Taiwan, and US-produced components. ULTRA exports its computers unbranded as original manufacturer equipment (OME) to Kazakhstan - the only computer assembler in Azerbaijan exporting. Imported US components increase the cost of Nexus computers. ULTRA does not compete on price, but rather customer service and quality. It operates a service center with 7-day repair turn-around-time (TAT). Resellers of imported computers cannot provide 7-day repair TAT. All Nexus computers come with localized programs and e features such as English/Azerbaijani keyboard. ULTRA markets and sells directly to GOAJ and corporate clients, and indirectly to retail customers through agents.

All three (3) computer assembly players suffer from arbitrary, uncompetitive ICT tariffs and customs. IT products (software, computer components and peripherals) tend to be classified by customs officers as telecom products. Telecom products are subject to 15% tariff. The current tariff structure favors imported finished goods at the expense of components and spare parts. The duty on imported personal computers is 3%, but 15% for computer components and spare parts.

According to ULTRA executives, the total available market for computers (notebooks,

laptops, desktops) is 100,000 units per/year. Market growth increased 20% per year from 1998 to 2008, according to ULTRA executives. Unit sales of laptop, desktop, and notebook computers were not disclosed to the consultant. However, it is clear that sales of laptop and notebook computers are increasing, and desktop sales are fading. Not knowing the sales mix by computer type makes calculating total available market value difficult. However, assuming an average price per unit of $700 indicates a total available market value of $70M. This appears high but might explain why many ICT executives estimate total available market value for ICT hardware, software, and services at $150-$200 million annually.

ULTRA appears to be the only viable, profitable computer assembler in Azerbaijan.

### B3c. Value Chain Map

*Key value chain roles*

The value chain for assemblers such as Ultra is based on purchasing components from specialist suppliers, enabling them to focus on assembly and marketing of computers.

Key value chain players include the following:

**Specialist suppliers:** provide disk drives, memory chips, graphics chips, microprocessors, motherboards, and software used in computer assembly. Specialized suppliers perform R&D needed to keep their products at the leading edge.

**Assemblers:** ULTRA favors US-based component suppliers, Intel microprocessors and chips, and localized (Azerbaijani-English) Microsoft software and keyboards. ULTRA assembles these components into “barebones computer chassis” from Taiwan.

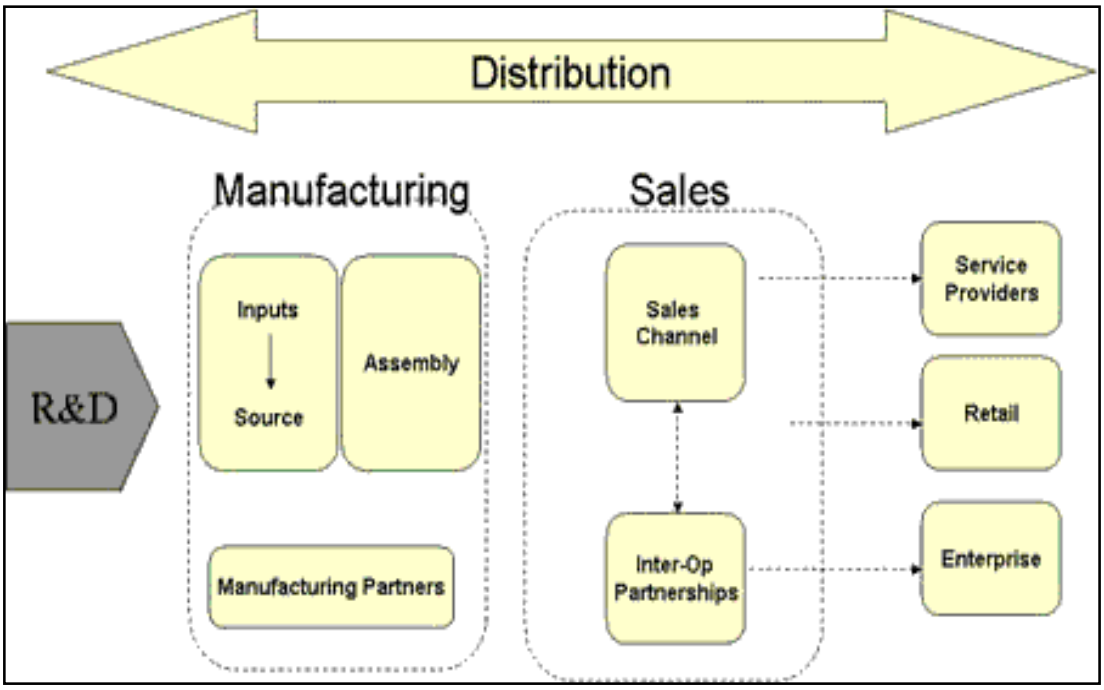
**Sales and distribution:** ULTRA sells direct to corporate and GOAJ accounts, and uses indirect channel partners including retailers and agents for retail sales. Azel also sells directly and through its stores, primarily in Baku.

**Product Service:** ULTRA repairs and services Nexus computers.

**Customers** benefit from Nexus computer utility and productivity.

Figure 2-3 below describes the domestic computer assembly value added chain for Nexus computers, which is similar to the others. Many specialized companies perform R&D and manufacture the components for Nexus computers. Accordingly, distribution is a function that occurs many different times in the process. All players in the supply/value chain distribute their particular product. This model shows distribution as a function that flows across the map. A Nexus computer may have hundreds of components. Accordingly, supply chain management is essential to the success of these assemblers, especially given the relatively low margins. Partnerships across the value chain became common in the 1990s. These partnerships require sharing of product knowledge as one or both companies tried to enhance the other's product.

**Figure 3: Domestic computer assembly value chain**




### B3d. Value Chain Constraints

Domestic computer assembly constraints include the following:

- Arbitrary, uncompetitive tariffs and customs duties. The current tariff structure favors imported finished goods at the expense of components and spare parts.
- Customer perception that domestic computers are not comparable to imported computers in quality or performance.
- High price relative to local computers relative to imported computers.
- Aggressive imported computer pricing and marketing.

### B3e. Value Chain SWOT Analysis

The table in the next page highlights major strengths, weaknesses, opportunities, and threats of the computer assembly segment.

**Table 7: Computer Assembly SWOT analysis**

| STRENGTHS | OPPORTUNITIES |
|---|---|
| • Annual market growth of 20%<br>• GOAJ-funded computer tenders<br>• ULTRA market share<br>• ULTRA product service center<br>• ULTRA products built with US components<br>• ULTRA supply chain & assembly expertise | • Regional export market development<br>• Cutting customs & duties on imported components<br>• Marketing aimed at changing customer perceptions<br>• GOAJ fiscal incentives stimulating exports<br>• Leverage internet & secure e-payment to drive demand for build to order computers |
| **WEAKNESSES** | **THREATS** |
| • Poor quality, high cost Internet service<br>• Weak ICT legal & regulatory environment<br>• e-commerce laws<br>• Inadequate high-speed national backbone & network infrastructure<br>• Low computer & Internet penetration = low computer literacy & demand. | • No change to tariff & customs duties<br>• Continuing appreciation of AZN vs. dollar<br>• Aggressive price-driven foreign competition |

### B3f. Recommendations

Key recommendations for PSCEP, highlighted in Section IV, Action Plan, include:

- There is a "sector multiplier or catalyst" case to be made for Azerbaijan to have at least one strong, sustainable computer assembler, given the indirect impact in creating a skilled workforce and ICT experience. PSCEP should provide direct, strategic management support ULTRA, and leverage this relationship to accomplish other sector objectives. Potential PSCEP consulting services could highlighted in the Action Plan include:

    1. Gap analysis (Pain assessment, diagnosis and solution);
    2. Strategic business growth planning;
    3. Aligning ULTRA people, processes, and technology for growth;
    4. Strategic market planning and development; and,
    5. Consultative sales techniques and training.

### B4. Innovation and Regional Economic Zones (REZ)

The clustering or concentration of technology companies in established locations has been a strategy fundamental strategy for many countries, such as Ireland, Jordan, the Dominican Republic, Vietnam, and China. In essence, it is an approach that attempts to catalyze or expedite the "natural" clustering process evidenced by Michael Porter in his seminal work on clusters. Technology, including ICT, is one of the industries most benefiting from clustering and support services, as evidenced by the concentration of similar companies in the U.S. in Silicon Valley, Boston, Austin, and the North Carolina

Research Triangle. This concentration often occurs naturally, as companies are attracted by the concentration of educational facilities, labor force, infrastructure, etc. They are also often catalyzed by the private sector, government, or a combination of both through public-private partnerships.

It is important to emphasize, however, that the approach is dependent on the overall business climate for innovation and business development. Innovation is unlikely to thrive in an environment without appropriate rules governing intellectual property rights or where monopolies limit entrepreneurial talent. This was a key issue addressed in the 2007 Booz Allen report discussed below.

Two approaches being developed and/or considered in Azerbaijan include innovation centers or incubators, and special economic zones with a separate technology facilities.

### B4a. GOAJ Regional Innovation Zones (RIZ)

To diversify its economy, the GOAJ has indicated that development of the ICT sector is a priority, especially the concept of Regional Innovation Zones (RIZ). The Presidential Decree on "State Program on Development of Communications and Information Technologies in the Republic of Azerbaijan 2005-2008" encompasses:

- Developing competitive domestic and regional export production capacity;
- Establishing techno-parks to stimulate development of SME entrepreneurship aimed at ICT innovation that crosscut the Azerbaijan economy;
- Encouraging local production and export of "made in Azerbaijan" electronic equipment and software products;
- Developing Azerbaijan as an international data transit center;
- Developing state-of-the-art ICT network infrastructure;
- Establishing an IT University within the SEZ/RIZ to train Azerbaijani IT professionals;
- Offering legal, taxation, duties and customs, and GOAJ investment incentives.

In 2006-2007, the Ministry of Communications and Information Technology (MCIT) issued a classified report led by Booz-Allen, which laid out a grand strategy and recommended the RIZ focus on four flagship projects:

- Two (2) domain-specific projects: smart oil field and environmental services; and,
- Two (2) development projects: e-government and information society creation.

The study also cautioned the GOAJ that achievement of SEZ/RIZ plans hinged on three (3) growth scenarios. The **low growth scenario** envisioned no GOAJ ICT reforms; ongoing monopolies in voice (Aztelekom) and Internet (Delta Telecom); fragmented GOAJ IT buying; and GOAJ preference for system integrator "champions" in GOAJ procurement. The low growth scenario also forecasted the total market for ICT software, hardware and services in 2012 at $255M. The Booz-Allen low growth scenario validates this Action Plan's estimate of total market value for these same ICT products/service of

$150-200M in 2009.

Discussions held in May 2009 with MCIT officials in preparation for this Action Plan confirmed that RIZ plans have not been funded; draft SEZ/RIZ legislation was submitted to Parliament; and presidential approval could be given by August 2009.

### B4b. ICT Innovation Center, initiated by Azercell

Azercell, a leading mobile wireless service operator is moving toward the idea of establishing an innovation center, or incubator, for stimulating mobile technology, services and software applications. The Azercell mobile innovation center would attempt to replicate a similar project funded in Turkey by Ericsson Telecom, an Azercell equity partner in Azerbaijan.

Azercell's motivation for establishing such a center is three-fold: (1) demonstrate social responsibility; (2) nurture mobile technology innovations, and (3) identify emerging entrepreneurs and new businesses. The Azercell strategy is based on the classic business incubator model. Azercell plans to rent office space of approximately 300 $mg^2$ (3200 $feet^2$) in the Old City – a symbolic location, which reflects the idea that new approaches are coming out of the old but solid foundation. The space would hold up to 50 innovators, where they will be provided with workspaces, furnishings, data and Internet lines, PCs and telephones.

Candidates eligible for selection for the Innovation Center must be senior students, graduates of technical schools, and young entrepreneurs. Azercell is planning to select candidates on a competitive base. An evaluation committee will be established and will consist of the main stakeholders' representatives. The selection process will follow the roll-out of a large advertisement campaign (publicized via ATL on TV, Radio, web, and billboards to BTL with special focus on universities and technical colleges.

Applicants must possess marketable and innovative ideas and demonstrate the capacity to transform these ideas into actions in incubator conditions over a period of six (6) months. Depending on the progress and complexity of a task, this period might be extended. Chosen candidates must be able to operate with little direct supervision from the Center; however, they will have access to ICT and GSM equipment and gain exposure to the best international knowledge. After the allocated time period, the innovators will present their developments to the evaluation committee. If the invention passes the test and gets selected, the Center will help the young entrepreneurs to obtain a patent for their invention and consult with mass production and marketing. It is worth noting that according to the design of a Center, Azercell retains the right to utilize the innovation itself before its release to the public. In this case, this would be done on a contractual basis between Azercell and the innovator.

Phase One of this project will take place over a period of 12 months. The project will be extended at least for two to three more years depending on the outcomes of the first year. The total estimates for Year One can be estimated between 150,000-200,000 AZN. Currently, Azercell is looking for partners for co-sponsorship as well as technological

partners to add value to the Innovation Center. An Azercell-sponsored mobile technology incubator has great potential for the following reasons:

- Mobile wireless service covers most of Azerbaijan;
- Mobile user penetration is estimated at 60% and rising in Azerbaijan;
- Mobile service providers are already attracting direct foreign investment (FDI);
- Currently, most FDI is allocated for expanding the coverage of wireless networks but does not promote innovation.

### B4c. Innovation and Special Economic Zones Recommendations

Both the private innovation center and the GOAJ technology zones are in nascent stages. PSCEP has an opportunity to make a contribution to both as follows and discussed in more detail in the Action Plan.

Key PSCEP recommendations addressed in the Action Plan include:

- Provide support to the Azercell Innovation Center, exploring numerous mechanisms to do so. This includes use of PSCEP's Innovation Grant Fund, and, in particular, through a GDA involving U.S. technology partners PSCEP grants to stimulate ICT innovation, investment, sales and employment;
- Support and promote GOAJ RIZ plans as they develop, including teaming with the TIRSP project to secure an appropriate legal and regulatory environment for the zone. Given nascent stage of these efforts, PSCEP should establish a regular point of contact with the Ministry of Communications to discuss progress. Should these plans progress in ways that make business sense and are sustainable, actively explore GDAs to support their development of the innovation zones.
- Leverage the proposed ICT-Innovation Center promoted by Azercell, as an opportunity to create a strong public-private partnership, ensuring however, that government involvement does not in any way hamper private sector innovation.

## SECTION IV: ACTION PLAN

### A. Strategic Rationale

The PSCEP action plan is rooted the embryonic state of Azerbaijan's ICT sector, regulatory environment, and competitive constraints facing industry players. The plan acknowledges the reality these constraints cannot be overcome quickly, and that PSCEP has limited resources to address ICT sector constraints. ICT is a larger sector, encompassing some areas requiring significant government involvement and/or capital outlays. However, PSCEP can take a number of strategic actions to enhance the competitiveness of ICT sector in the near-term, and help to catalyze strong multiplier effects over the medium and longer terms.

PSCEP will undertake a set of targeted actions under **three-pronged strategy** to enhance ICT sector competitiveness:

1. Stimulate ICT innovation and investment;
2. Champion ICT leaders; and,
3. Support ICT industry by forging associative relationships, and building ICT human capital;

The PSCEP action plan is prescriptive, realistic, achievable and measurable against targeted PSCEP results metrics. Action areas are described briefly including objectives, rationale, key actions, tasks, and performance benchmarks. Performance benchmarks include targeted technical, qualitative, and quantitative results metrics including increased investment, sales and jobs creation.

**Key tactical actions** that **drive** the **three-pronged rationale** include:

**1. Enterprise level assistance**. PSCEP will provide world-class ICT business consulting services to key "anchor" enterprises who have multiplier effects beyond their own enterprises. This is a direct, pragmatic approach to increasing sales and investment, creating jobs, and enhancing productivity. Strategic ICT business consulting skills and expertise are not common in Azerbaijan. PSCEP assistance will target the areas of strategic business, marketing, and financial planning, consultative technical sales and marketing, and aligning people, enterprise systems and technology for profitable growth. Companies initially selected for assistance include Ultra, the leading computer assembler in the country and SilverKey, the leading provider of internet security services, a sector crucial to promoting greater web-based business. Consulting deliverables will be tailored to company-specific goals and problem(s). PSCEP will engage company executives in hands-on, participative consulting processes to reinforce skills transfer. Firms receiving assistance will co-share costs related to PSCEP's assistance.

**2. ICT innovation and investment**. Entrepreneurial activity and capital investment is limited among leading ICT systems integrators, hardware and software resellers, and IT solutions providers. They engage in limited technology and product innovation. PSCEP will stimulate ICT innovation and investment in four ways: (a) awarding ICT innovation

grants to leverage the work of enterprises doing innovative work; (b) tapping USAID's Global Development Alliance (GDA) and leveraging the knowledge of leading U.S. ICT and technology companies to, *inter alia*, initiate adoption of WiMAX technology and as well as support the ICT-Innovation Center planned by Azercell; (c) supporting GOAJ plans to establish Special Technology Economic Zones (STEZ); and, (d) strengthening human capital development, i.e., computer/technology literacy and development.

**3. Building social capital.** The ICT sector may be small and emergent, but ICT stakeholders appear committed to stimulate the growth the marketplace, and eliminating competitive constrains they face everyday. An ICT Industry Association does not exist at present. However, an ICT "Club" does exist. The club has a constitution, Chairman, Board of Directors, upper and lower chambers of governance, and 200 active members. PSCEP will work with the Club on a regular basis and especially with industry champions within the club, to implement an incremental assistance strategy aimed at leveraging the IT Club into an ICT Industry Association within 12-18 months. PSCEP will also build associative relationships and create greater social capital by expanding dialogue between and the participation of new stakeholders. For example, Intellectual Property (IP) laws exist under GOAJ laws, but are not enforced: software piracy accounts for an estimated **95 percent** of all software installed in Azerbaijan. PSCEP will partner with local representatives of global ICT technology companies (Oracle, Cisco Systems, Microsoft), Am Cham, TIRSP and other donor projects confronting IP piracy. All recognize IP piracy as a constraint to enterprise profitability and direct foreign investment.

### B. Key Assumptions

The PSCEP action plan is rooted in four (4) key assumptions:

1. GOAJ will not, in the near term, release control of the ICT spectrum; privatize its holdings in key telecom companies (Aztelekom, Baktelecom); reduce barriers to new market entrants; or liberalize ICT competition and pricing.

2. GOAJ is committed to economic diversification and to transforming "black gold into human gold" by investing in human resources development. Extent and timing of GOAJ economic diversification and human resources investment is uncertain.

3. Western technology firms (Oracle, Cisco, Microsoft) with offices in Baku are focused on supporting their local distributors and resellers, building local market share, and will only be receptive to PSCEP sector initiatives if they see a direct payoff for themselves.

4. ICT industry executives will embrace an opportunity to receive PSCEP enterprise level technical assistance, and collaborate with PSCEP in improving ICT regulatory & business environments.

## C. Activities / Action Areas

### C1. Stimulate ICT Innovation and Investment

This action area addresses the lack of entrepreneurial innovation and capital investment in the ICT sector. It recommends bold, targeted strategies, ICT innovation stimulation, and GOAJ capital investment aimed at kick-starting technology innovation, product development, and ICT sector market growth.

Key objectives of this action area include:

- Provide PSCEP ICT grants to stimulate innovation, investment, sales and employment growth;
- Help catalyze development of the Azercell Innovation Center;
- Support and promote GOAJ Regional Innovation Zones (SEZ) plans, helping to focus GOAJ efforts business-driven and sustainable initiatives; and,
- Development of GDA plan and implementation to support innovation.

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**Rationale:** Entrepreneurial activity and capital investment is limited among leading ICT systems integrators, hardware and software resellers, and IT solutions providers. These market leaders are profitable, hold strong market share positions, self-finance their operations and, if required, draw on established bank credit lines. They engage in limited technology and product innovation. The picture is very different in the telecom (wire line, mobile wireless, ISP, media) markets. Mobile wireless operators have attracted significant domestic and foreign direct investment (FDI). Mobile service providers are actively investing to build-out and deploy networks, service delivery and customer support capacity. The GOAJ holds direct and indirect equity stakes in all major telecom players. Two (2) GDA opportunities have been identified that require MCIT and telecom service provider participation. In 2006, the GOAJ engaged Booz Allen to prepare a feasibility study of SEZ development to stimulate ICT innovation, investment and sector growth. The GOAJ has <u>not</u> yet committed funds to the SEZ project. Azerbaijan investment companies would be receptive to ICT investment proposals, but none have been received from ICT entrepreneurs. ICT innovation, investment (except for mobile operators), and entrepreneurial activity are minimal.

### C1a. Actions to Stimulate ICT Innovation and Investment

#### i. Tap PSCEP's Innovation Grant Fund to leverage ICT innovation

PSCEP should utilize a significant percentage of its Innovation Grant Fund (IGF) to support innovations from a cross spectrum of business and civil society innovators. Not only can these grants leverage private sector human capital and financial resources, but the process itself will serve to provide PSCEP with a better understanding of innovation and innovators in Azerbaijan. Applicants whose applications are not funded for whatever reason could be worthy of PSCEP assistance through other mechanisms. In sum, using IGF to leverage knowledge and resources should provide solid returns.

In analyzing grants, PSCEP should focus on several key criteria: level innovation introduced; impact beyond the individual firm or group assisted; amount of private sector financial leverage; clarity of idea, including existing business plans that maps out innovation development.

#### ii. Support the ICT Innovation Center, initiated by Azercell

The concept of an ICT Innovation Center is based on an incubator model for stimulating mobile technology, services and software applications.

Business and technology incubators have been used successfully worldwide to nurture and develop leading edge technology, services, products and new business models. The Azercell concept has merit, but can be taken to a higher level with crosscutting sector impact. This is in important in light of PSCEP's performance objectives. PSCEP will help expand this program into an ICT Innovation Center (ICT-IC) hinged on the following objectives:

- Extend innovation beyond mobile technology to ICT solutions and services;
- Focus on marketable ICT product/service development, not "pure" R&D;
- Emphasis SME business software solutions development;
- Give emerging startup businesses a "home" in the incubator;
- Provide strategic business and mentoring support to incubator participants;
- Define and build a GDA based on the ICT-IC concept (discussed below); and,
- Leverage successful ICT-IC GDA model into GOAJ RIZ plans.

Specific steps will include development of a Competitiveness Plan or Memorandum of Understanding (MOU) with Azercell, that will describe in detail PSCEP and Azercell responsibilities. PSCEP should also help establish appropriate forums (meetings, conferences, etc) to promote public-private sector dialogue and cooperation in this area. The Azercell Innovation Center should become an integral part of overall GOAJ efforts to promote ICT innovation in Azerbaijan.

As discussed below, a key PSCEP contribution to this effort will be to introduce a comprehensive Global Development Alliance (GDA) program, thus introducing significant U.S. industry players in the program.

#### iii. Support Adoption of WIMAX technology

As described in the assessment section, the GOAJ, through MCIT, licenses and controls the frequency spectrum. Accordingly, the MCIT would play a key role in any potential WiMAX effort, including a GDA in this area. MCIT would allocate frequency spectrum to WiMAX and co-finance a portion of the capital investment required to design, deploy and sustain the GDA pilot project. Delta Telecom and AzDataCom combined manage and control international FO and satellite data channels, national backbone infrastructure and broadband lease lines. Both companies will benefit from the WiMAX GDA

deployment and, ideally, co-finance a portion of the project.

A critical first step for PSCEP would be to meet individually with all the key players involved in a potential WiMAX pilot initiative. Second, PSCEP could play a key role in bringing these parties together, to forge a mini-WiMAX focused action plan. Ideally, this could be undertaken in conjunction with A GDA specialists that is familiar with similar programs worldwide and whose expertise could expedite this process (see GDA, Section C.4 below).

#### iv Support and promote GOAJ Regional Innovation Zones (RIZ) plans

The GOAJ has not made significant progress on the RIZ since development of the Booz Allen strategy for the MCIT in 2006-2007. According to GOAJ officials interviewed, the plans are scheduled to be reactivated after approval by the legislature in the summer/fall of 2009. PSCEP should maintain close dialogue with the MCIT to see areas of possible cooperation. These potentially include:

Helping to develop RIZ knowledge base. PSCEP could assist the MCIT of expanding its knowledge of the experiences and lessons learned from RIZ's world-wide. The PSCEP team has not had an opportunity to review the entire Booz Allen document, which may contain some of this information. PSCEP should not invest efforts in work already undertaken, nor utilize its scarce funding in areas where the MCIT is ready to invest. However, where information and dialogue (including short term consultancies) can leverage GOAJ funding, PSCEP should take advantage of these opportunities. Maintaining a dialogue with the MCIT and tapping USAID's and other USG initiatives in this area is important.

Forging GDAs and investments in RIZ's. This a prime area for GDA support that PSCEP should aggressively explore. In addition, should the RIZ concept and process develop sufficiently, PSCEP could play a critical role in identifying equity investors in companies working within the RIZ's, both from local and international sources.

### C1b. Impact Benchmarks for ICT Innovation and Investment

- Approximately three to four Innovation Grants awarded with a value of approximately $75,000, that introduce or significantly enhance the adoption of new technologies. These technologies will have an impact of no less than 50:1 (or approximately $4 million) in terms of new sales and/or investments during the PSCEP life-of-project.
- Establishment of Innovation Center with Azercell and additional companies participating in the program by September 2011, each developing new ICT technologies; development of 10 to 20 "bankable" business plans developed to assist ICT-IC entrepreneurs, generating an estimated $1 million in investment; generate estimated sales of $3 to 5 million and 50-100 jobs by 2011.[1]

[1] This number of jobs may seem low, but given the significant dearth of ICT human resource capital in Azerbaijan, they represent a significant increase in the available talent pool.

- WiMAX pilot program being implemented by September, 2010, with cooperation from MCIT, and leading private sector firms.
- Strategy developed and in implementation stage for PSCEP to assist MCIT in development of RIZ's).

### C2. Champion ICT Leaders

While working with individual firms such as Azercell and grantees under the Innovation Fund, much of the proposed actions for the ICT sector involve sector level actions. This Action Plan also proposes that PSCEP directly assists to ICT champions in the critical areas of computer assembly (ULTRA) and internet security (SilverKey). Strategic ICT business consulting skills and expertise are not common in Azerbaijan, particularly in the areas of strategic business, marketing and financial planning, consultative technical sales and marketing, and aligning people, enterprise systems and technology for profitable growth. ULTRA and SilverKey are growing rapidly and struggling to align their people, enterprise systems and technology for profitable growth.

### C2a. Ultra Computers

As described in the assessment section, computer assembly is, in international terms, largely a commodity business. PSCEP's assessment premises, however, that there is a strong case for providing firm level support to ULTRA as Azerbaijan's leading computer assembler, and as a competitive systems integrator. First, there is a strong "learning curve" consideration. Ultra's assembly operations comprises the rare "technology" driven manufacturing operation, outside segments of the petroleum sector. Their computer and servers are the most technically advanced products being assembled in Azerbaijan. Nexus computers are built with US-produced components integrated into chassis produced in Taiwan. That means that Nexus computers are virtually identical to imported computers branded HP, Toshiba, Dell, and Acer sold in Azerbaijan. ULTRA is the only Azerbaijani company assembling network servers. That puts ULTRA assembly technologies, processes, quality control, and technical management expertise at the forefront of Azerbaijani industry. Bottom line: ULTRA technology and assembly expertise are important national assets for Azerbaijan**.** Continued and enhanced expertise in higher tech manufacturing offers a good platform for developing the manufacturing learning curve, for the company and for the country.

Second, assistance to ULTRA will be highly leveraged by its top notch management, i.e., carefully targeted, strategy assistance to Ultra ill have a substantial impact because Ultra is already a well run company – but PSCEP assistance could be crucial in permitting management to manage the company's growth. Official FY08 revenues were US$20M; FY09 sales forecast is US$30M (50 percent increase). ULTRA currently employs 120 people, a 100 percent increase over FY08. Yet behind this growth picture are looming threats. Management acknowledges that managing this high level of growth is increasingly difficult. In fact, ULTRA may be at or fast approaching the growth "wall" encountered by many – in fact most – fast growth technology firms, including those in the U.S. and Europe. Beyond a certain number of sales and operations, systems (human, manufacturing, technical, and most of all, managerial) get stretched to the limit, and often

break, leading to a collapse in growth innovation.[2] Management recognizes that its people, processes, and technologies are not coping effectively. Despite 50% sales revenue increases, ULTRA profit margins are shrinking. ULTRA management understands that ULTRA people, processes and technologies must be aligned, or growth could eventually destroy the company. Accordingly, they have sought PSCEP management in strategic planning and operations.

Third, beyond computer assembly, the company is positioned for e-business: **t**he next competitive leap for ULTRA is built-to-order computers using the Internet, an on-line storefront, and secure e-payment to enable ULTRA customers to customize, purchase and pay for computers on-line. ULTRA is positioned to make the leap to e-business. ULTRA is teamed with Microsoft on a pilot PKI (Public Key Infrastructure) project to demonstrate secure GOAJ e-government transactions using Personal Digital Identity Cards (PDIC); the pilot ends late 2009. This pilot PKI project is an important stepping-stone to e-business capability for ULTRA.

As will be defined specifically in an MOU to be signed by Chemonics and ULTRA, PSCEP will provide key strategic management assistance to the company, specifically in overall strategic direction, and aligning growth and product development with internal and strategic management systems. This assistance will be delivered by an international expert with extensive experience in doing similar work for Western companies. The company will cost share part of the costs of these consultancies.

PSCEP will also work with ULTRA in other areas such as access to finance, international partnerships, and GDAs.

### C2b. SilverKey

SilverKey designs, builds, and integrates e-payment software solutions enabling secure on-line electronic payment transactions. It is the "first market mover" in the e-commerce and e-government solutions and services markets in Azerbaijan. Accordingly, its prospects are at least over the short and medium term tide to the e-commerce industry in Azerbaijan. SilverKey has implemented e-commerce payment solutions for major telecom, insurance and utilities companies.

PSCEP believes a case can be made for championing SilverKey as Azerbaijan's emerging leader in e-business and e-government enhancements and secure transactions. The SilverKey case is supported by the following rationale:

**1st e-business market mover**: SilverKey was formed and financed by a local investor(s) and Golden Pay, a US-based e-payment gateway company. As the first e-business market

[2] During his career as an investment banker, the PSCEP COP witnessed this growth wall repeatedly. For high tech start ups, for example, it usually occurred at approximately the five million dollar in sales mark, where the basic accounting systems, human resource management policies, and strategic direction of a young start up were suddenly inappropriate for a firm with substantially more sales and nearly doubling them every few years.

mover, SilverKey currently has no direct competitors in Azerbaijan. In other words, development of secure e-commerce and even e-government solutions in Azerbaijan depends on SilverKey.

**Technology and expertise:** SilverKey designs, builds and integrates web portals, on-line shopping and e-payment software applications enabling **secure on-line payment** transactions. All transactions pass through the Golden Pay payment gateway (electronic clearinghouse). On-line customers need a credit card and, in certain client applications, personal digital identity cards (PDIC). SilverKey earns a small fee from each transaction that passes through the Golden Pay gateway.

**Anchor clients:** SilverKey has designed, built, and launched e-payment systems for a premiere list of "anchor clients" including major telecom, insurance, and utilities companies; an e-marketplace portal modeled after Amazon.com; and a social networking website modeled after Facebook. Other clients include the Azersun Holding Group, Standard Holding Group, the American Chamber of Commerce in Azerbaijan, and Microsoft Azerbaijan

**Competitive strategy**: build an installed base of "anchor clients," grow market share rapidly, outperform and defend against late market entrants. This is classic technology-driven competitive strategy and, if well executed, very difficult for late market entrants to overcome. And it appears to be working for SilverKey given their installed "anchor clients."

As will be the case with Ultra, based on agreement reached between Chemonics and SilverKey, PSCEP will deliver world-class strategic ICT business consulting services. Through this assistance, PSCEP international consultants will work hands-on with partner company executives using participatory consulting techniques to ensure skills transfer and organizational transformation. The company will cost share part of the costs of these consultancies.

PSCEP will deliver consulting services for both Ultra and SilverKey in September/October in preparation for the 2010 fiscal year (FY) for both companies, starting January 2010. Potential follow-on consulting could be provided in March 2010 to enable FY 2010 "course correction." The consulting process will begin with interviewing ULTRA and SilverKey executives to identify key strategic goals, problems (pain), and solution(s). PSCEP will use various methods including "pain analysis" to determine root problem(s) and potential solutions. Consulting deliverables will be tailored to company-specific goals and problem(s). PSCEP will engage company executives in hands-on, participative consulting processes. These processes will reinforce skills learning and transfer.

PSCEP's strategy envisons an on-going PSCEP- ULTRA - SilverKey client relationship. PSCEP will deliver consulting services delivered periodically, and on-going results monitoring and evaluation. Focusing on strategic business and market planning will directly impact ULTRA and SilverKey competitive strategy and tactics, sales forecasts, investment plans, market and product development activity, and job creation. The ICT

value chain manager will periodically monitor and evaluate performance results of ULTRA, SilverKey, and other enterprise partners.

### C2c. Results / Impact of Supporting ICT Champions

- PSCEP-ULTRA-SilverKey partnership terms and conditions defined, and MOU signed.
- ULTRA and SilverKey key strategic goals, problems/constraints identified, and consulting services delivered.
- ULTRA and SilverKey performance monitored and evaluated. **Target results**: sales increase annually by 30%+; capital investment of $500,000 to $1,000,000 in each company; and 50-100 new jobs created by end 2010.
- Indirectly, marked progress in Azerbaijan's e-commerce and e-services (outputs to be agreed up before October 30, 2009).

### C3. Global Develop Alliance Program

PSCEP is developing a separate GDA strategy and program which will be described in a separate document. ICT, however, is one of the sectors where PSCEP intends to pursue GDAs most aggressively.

As described above, this Action Plan identifies potential GDAs to demonstrate WiMAX technology and to establish and support an ICT Innovation Center (ICT-IC) in partnership with local telecom service providers. GDA efforts will be led by O'Brien and Associates, who will begin developing the strategy in late June / July. The GDA alliance builder will initiate alliance building, and develop PPP strategy, action and implementation plans including key PPP activity roadmap. The impact of GDA programs are described in other sections (with GDA as an important means of achieving ICT objectives), but they include:

- Potential ICT-IC and WiMAX GDAs identified, alliances built, PPP strategy, action and implementation plans completed.
- ICT-IC & WiMAX GDAs generating potential a significant investment (detailed estimate to be incorporated into GDA strategy plan).
- At least one GDA implemented by project close-out.

### C4. Strengthen ICT industry structure

### C4a. ICT Club and Forging Associative Relationships

The ICT sector may be small and emerging, but ICT stakeholders appear committed to growing the marketplace and eliminating competitive constrains they face everyday. Discussions with multiple stakeholders during this Action Plan preparation has demonstrated that industry stakeholders do communicate formally and informally on a regular basis. While there is no formal association, there is a relatively active ICT "club." The club has a constitution, a Chairman, a Board of Directors, upper and lower chambers of governance, and 200 active members. PSCEP met with club representatives who

enthusiastically welcome assistance to formalize the club into an association and strengthen its capacity for public-private sector dialogue and to solve common problems. PSCEP will implement an incremental assistance strategy aimed at leveraging the IT Club into an ICT Industry Association within 12-18 months. This could be done through a series of workshops and meetings to analyze common industry constraints, latest developments, arranging workshops with Microsoft and other international, companies, etc. The key is developing increasingly higher levels of trust and cooperation, leading to the formation of an active, sustainable association.

### C4b. Help Develop Build Human Capital

This action area proposes a pragmatic approach to a problem that PSCEP cannot resolve: the acute lack of ICT skills and trained professionals in Azerbaijan, especially university trained computer science and IT management graduates with "real world" skills and the marketable skills required by private enterprises and government. It does not refer to computer literacy such as using the Internet or software productivity tools like Microsoft Office.

At a minimum, it will involve PSCEP dialogue with the GOAJ – through USAID – to make encourage the GOAJ to implement its commitment to significantly increase the amount of training funds, programs, and scholarships to, in the words of the GOAJ ICT strategy document, "turn "black gold into human gold." The ICT skills gap is huge. The pool of trained ICT professionals very shallow in Azerbaijan and no strategy is likely to be successful, with a significant commitment from the GOAJ to enhance this human resource base.

At the next level, PSCEP could work with Microsoft, Oracle, Cisco and other companies that offer limited certification programs in Azerbaijan, and more advanced certification regionally to explore expansion of these programs, possibly through a GDA.

Finally, PSCEP will take advantage of targets of opportunities it identifies in its work with the ICT Club and other stakeholders to enhance human capital development. Potentially, an immediate opportunity may be to assist Bestcomp, a leading computer reseller, to access short term financing needed to purchase computers for the **People PC Project** (PPCP) (AKA National Computer Project) funded by the Ministry of Education and the MCIT. The PPCP is a three-stage project aimed at enabling 10 percent of Azerbaijani teachers nationwide to buy computers interest free for 12 months, at prices 25-40 percent below retail price. Bestcomp is teamed with HP and Microsoft to provide PCs and software. PPCP goal: " allow teachers to acquire computers and licensed software, reduce "digital inequality" by expanding ICT to support GOAJ information society and e-government activities." During the initial four month pilot stage, the parties involved would like to deliver 3,000 computers will be delivered during the 4-month pilot stage. Bestcomp invested $2M to implement the pilot stage. BestComp estimates that it will need to buy from HP approximately 100,000 computers in stages two and three. The company will need financing of US$8M-10 million for these computers purchases. PSCEP will advise and facilitate Bestcomp in seeking Purchase Order Financing to capitalize the US$8M-10 milion Bestcomp requires for the PPCP.

### C4c. Results / Impact of Strengthening Industry Structure

- At least 3-4 workshops/industry events hosted by ICT Club with PSCEP assistance during Year 1, beginning in September 2009.
- Membership increased by 50% and 100% in Years 2 and 3, respectively.
- Formal association or cluster established by end 2010
- Significant increase in GOAJ investment in human capital development, catalyzed at least in part by USAID-PSCEP dialogue
- Over 100,000 computers sold to teachers nation-wide, made possible by access to finance made possible by PSCEP.

### D. Summary Timeline

The table below highlights PSCEP Actions and timeline for this activity.

**Table 7: Summary timeline of Major Activities in 2009**

| Task | Date |
|---|---|
| Develop SOW and Request for Grant Applications and distribute | May (initial round) January 10 (second round) |
| Evaluate and select grantees and award | June/July 2009 |
| Grant implementation, monitoring, and evaluation | August-December 2009 |
| Competitiveness Plan or MOU developed with Azercell on Innovation Center | July 2009 |
| Workshop / meeting with Azercell, MCIT, other stakeholders on innovation centers, and public-private partnerships in this area | July 2009 |
| GDA Plan / Strategy in place | July/August 2009 |
| Initiation of Dialogue with the MCIT on RIZ's | July 2009 (continuous) |
| Develop and sign MOUs with Ultra and SilverKey | July/August 2009 |
| Initiate dialogue and program to expand ICT group | July / August 2009 |
| Deliver strategic management assistance to Ultra and SilverKey | September/Oct. 2009 |
| Assist BestComp access to credit line for app. US$8 million | July/August 2009 |
| Industry event sponsored by ICT Club with PSCEP assistance | October 2009 |
| GDA discussions, program development | September – Nov. 2009 |
| First GDA agreement signed | December 2009 |

**Annex A: Action Time & Gantt Chart (2 years)**

**Note: The Gantt chart cover two years.**

## Annex B. Persons Interviewed (page 1 of 2)

Igor Yakovenko
President
Azerbaijan Electronics (AZEL)

Rasim Ibrahimov
Management Board Chairman
Azerbaijan Electronics (AZEL)

Rauf Hasanov
General Manager
Bestcomp Group

Saleh Hasanov
Manager, Development & Service

Elkhan Ismaylov
Business Development Manager

Murad Gasimbeyli
Director, Sales & Marketing
Caspel

Samir Ganiyev
PR Manager
Caspel

Agshin Hajiyev
Unit Head, Strategy & Business Development
Azercell Telecom, LLC

Sevda Talibova
Business Development Manager
AvirTel

Farid Ismayilzada
Country Manager
SilverKey, AZ

Kent Babin
Managing Director
SilverKey AZ

Zaur Mannedzade
Director
ULTRA Co.

Farid Musayev
Analyst
Azerbaijan Investment Co.

## Annex B. Persons Interviewed (page 2 of 2)

Vahid Bagirov
Senor Analyst
Azerbaijan Investment Co.

Alim Salahov
Managing Director
SoftLine Co.

Sarkhan Hashimov
Chairman, Azerbaijan ICT Club

Mr. Emin Akhundov
Program Manager
Microsoft Corp.

Ayaz Bayramov
Head, Dept. of International Relations
Ministry of Communication & Information Technologies (MCIT)

Rafat Tagizadeh
Deputy Head
Dept. of International Relations
MCIT

Bakhtaran Mammadov
Head, Legal & Human Resources
MCIT

Yashar Hajiyev
Director
Information Policy Analytical Center

Dan Cruz-DePaula
Chief of Party, PSCEP

Ramal Jafarov
Value Chain Manager, PSCEP

Yashar Farajov
Value Chain Manager, PSCEP

**Global WiMAX technology partners:** Global partners could include: Intel Corp., Alcatel-Lucent, Nokia-Siemens, Alvarion, Clearwire and its parent company Sprint. These partners would co-finance or contribute WiMAX equipment, technical and project management expertise.