



Manager of US Venture Capital Funds  
Investment Advisor to International Financial Institutions  
& Governments in Private Equity

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## **Project Report**

### **The Identification of New Technologies for the Fossil Fuel Industry**

**Presented to  
Shell Technology Ventures Inc.**

**Presented by  
Innovative Ventures Inc.**

**With offices in;  
Grand Rapids, MI USA  
Moscow Russia  
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## Executive Summary

### Project Description

This executive summary presents project results of the initiative of Shell Technology Ventures (STV), Shell GameChanger™ (GC) and Innovative Ventures Inc (IVI). The project objective was to identify and define Russian technologies for commercialization through:

1. A license/sale of IP (through a GC initiative).
2. The investment of venture capital (VC) into an existing small or medium size enterprise (SME) or the creation of a new enterprise.

There were a number of secondary, but nonetheless important objectives like:

1. Create a database of institutes and SMEs for sourcing investment and partnering opportunities.
2. Profile the range of oil/gas technologies from Russia.
3. Make judgments on the ability Russia to create value-added technologies for Shell.

### Project Results

#### *GC Technology Opportunities*

Two technologies, 'Diagnostics of Oil Bearing Formation by Acoustic Waves,' and 'Two-Stage Combustion for Enhanced Oil Recovery,' were identified for GC. A proposal for GC funding was prepared, submitted, and waiting approval for the 1<sup>st</sup> technology. A budget was approved for the 2<sup>nd</sup> technology, and is waiting implementation. The 1<sup>st</sup> technology is new to Shell (& IVI) while the 2<sup>nd</sup> is not.

#### *STV Investment Opportunities*

Two potential VC opportunities were identified over the deal sourcing period.

1. InSys Ltd., developer of sensor/software system to measure combinations of pressure/temperature throughout the well bore.
2. Yutec with a crystallizer technology for use in the refining process.

Both of these deals are on-hold; InSys Ltd., needs to resolve internal operating issues with existing customers before STV/IVI can re-start negotiations. Yutec is a venture-financed, development stage company and its technology is slated for testing in a BP/TNK refinery in Russia, in 2005. Performance data from the test will determine the way forward for STV/IVI; whether the technology's true value is yield improvement (& hence Yutec is a VC opportunity with global potential) or reduced maintenance cost (not interesting for STV/IVI).

IVI expects that one or both of these deal will come back 'on the table' in 2005 when issues/requirements are resolved; IVI is following up and monitoring progress.

Two other companies with interesting technologies, Aquasint (sphere plastic), and OMZ (drilling) still wait Shell review. All four (4) companies are new to Shell (& IVI).

Several Russian technologies fall in a gap where they fall slightly short of competing against the 'best of the best' like Twister for global applications, but where the technology may satisfy Shell's local content needs of doing business in Russia. For example the Krasnodar company Roskom (their separation technology is in

Twister's space), is one that fits in this gap, as do Russian exploration software solutions. Shell's Moscow office should review these technologies to determine which ones might fit in its supply chain network.

### ***Secondary Project Objectives***

The database created to source technologies is attached as a separate document. It includes full contact information of institutes, SMEs, innovation centers and patent holders (Rospatent), in English and Russian. It also contains the full set of technology profiles with full contact information.

### **Future Outlook**

Another ten (10) technologies sourced and evaluated by IVI still wait final review by Shell technical staff, and approval of these increase the number of GC and/or STV opportunities. IVI continues to receive deal flow even though we are in a 'quiet' mode and have taken a pause from active sourcing. IVI feels that we just scratched the surface for opportunities and much more real and undeveloped potential exists.

Exploiting this potential requires proactive strategies and investment for the long-haul. Generally speaking, IVI believes that a limited set of opportunities exist in Russia ***right now*** that ***exactly solve*** problems and match Shell's requirements for VC investment (global state of the art technology for global applications); our guess is that with sufficient support, IVI can transact 1-2 VC deals in 2005 that meet the international test of competitive E&P technology to global customers/markets. Many more GameChanging opportunities exist as R&D with some developing into VC investment opportunities.

### **Go Forward Plan**

Developing this potential into actual opportunities for R&D financing (GC) and/or VC investment (STV/IVI) requires a series of initiatives:

#### ***Implement an Exit Strategy to Maintain Goodwill & Build on Results: Maintain Momentum***

IVI received a total of seventy-two (72) technologies (actually 80, four rejected by IVI and another four received in the past few weeks) from a total of forty-seven sources; twenty-six (26) from enterprises, nineteen (19) from institutes (& innovation centers affiliated with institutes) with two (2) from individuals over a three month period. We think this is a terrific response from the market, but especially so given that results were achieved in just four+ months of active deal sourcing from essentially a standing start.

Two (2) opportunities are for GC with two (2) as STV/IVI opportunities. Compare this to the VC rule of thumb; only one (1) deal is consummated per one hundred (100) evaluated in the developed markets vs. *the emerging markets* where one (1) deal is transacted per two-three hundred (200-300) evaluated.

The market is waiting for a response from us to results achieved, and decisions to technologies submitted. Project results must be communicated to the market; technologies for GC, status of VC transactions and those rejected with reasons why since opportunities of future cooperation hinge on relationships, and the best way to keep a relationship is truthfulness and transparency. Those approved need to hear what the next steps are, and when they will happen.

This exit strategy will ensure that the market knows that its work was not in vain and give Shell leverage for continued work; ten (10) technologies still wait technical review and follow-up with decisions communicated to these too. Numerous foreign companies and investors have asked Russian counterparties to provide info, submit applications, etc., with absolutely no feedback or decisions from the foreign side.

IVI requests that budgeted but unspent Phase IV monies be used to execute this recommendation.

***Leverage the GameChanging Capabilities & Technologies of Russian Talent into VC Transactions***

A number of institutes and SMEs possess the capabilities and personnel to develop innovative technologies into GC projects as a source for future VC investment opportunities. Some of these include the Department of Radiation Monitoring, Ural State Technical University, the Faculty of Information Technologies, Novosibirsk State University and the Institute of Petroleum Chemistry, Siberian Branch of the Russian Academy of Sciences to name a few. Although their technologies were not accepted by us, they (and others) are working in innovative areas and IVI placed them on the 'watch' list for continued interaction. A complete list is provided in the main body of the report.

Several strategies exist to tap this talent for Shell's benefits; one is to select an institute/SME and contract with it to solve a range of problems as Shell is doing in St. Petersburg. At the opposite end of the spectrum in cost, time and risk is to establish an R&D center similar to Schlumberger. But this is a long-term effort and expensive; Schlumberger opened its Moscow R&D center many years ago, and by the end of 2005, the investment is US\$10+ million with staffing of 100+ and one development lab located in a regional city.

***Link Shell's Global Technology Activities to Supply Chain Needs of its Russian Operations***

Schlumberger has two expats backed with a local team scurrying around Russia seeking acquisitions; purchase of assets deepens its presence in Russia and helps it satisfy local supply chain requirements. Secondly, this team seeks technology for global markets through minority investments/contracting (this effort is not part of Schlumberger's VC activities in Paris; there is no coverage from their VC group in Russia). This program costs Schlumberger about US\$1 million/year. Several SMEs/institutes that participated in our project were visited by this Schlumberger team, some before and others after IVI's contact. This team put offers on the table to some of these institutes/SMEs.

IVI puts two alternatives before Shell to access Russian technology for GameChanging & VC opportunities and link this global technology effort to deepen its Russian local supply chain, each with different degrees of cost, risk and time. The 1<sup>st</sup> is to fund IVI's equity facility for investments in IP and companies. The 2<sup>nd</sup> option is to fund an IVI led consortium along with two other multinational oil companies and one multinational service supplier. This option is less cost/risk vs. #1, but only provides deal/IP exclusivity to competitors outside the consortium, not to those inside the consortium; consortium members receive equal access and less cost/risk is the trade-off. These two programs are detailed in a separate document to Messgrs., Rozenfeld/Zdun of GC & STV.

## Project Report

### Objectives & Technology Focus

This report presents project results of the initiative between Shell Technology Ventures (STV), Shell GameChanger™ (GC) and Innovative Ventures Inc (IVI). The project objective was to identify and define Russian technologies for commercialization through:

1. A license/sale of IP (through a GC initiative):
2. The investment of venture capital (VC) into an existing small or medium size enterprise (SME) or the creation of a new enterprise.

There were a number of secondary, but nonetheless important objectives like:

1. Create a database of institutes and enterprises working in the fossil fuel sector that Shell and IVI can use to source new technologies for investment and partnering opportunities.
2. Profile the range of oil/gas technologies from Russia, and
3. Make judgments on the ability Russia to create value-added technologies for Shell.

Answers to these questions are needed as inputs to determining future interventions for STV, GC and IVI since Russia's ability to create value-added technologies is what attracts VC and provides opportunities for supply chain linkages between Russian SMEs, institutes and multinationals like Shell so they can satisfy local content requirements.

IVI sourced deal flow from Russian SMEs and institutes in the Russia Federation with some opportunities received from CIS countries Kazakhstan, Ukraine and Belarus. Technologies fell into three categories:

1. Solutions for the exploration of fossil fuels
2. Solutions for the production and upgrading of fossil fuels
3. Solutions for sustainable development (fossil, renewable energy, hydrocarbon conversion & other innovations)

### *Project Implementation & Timing Schedule*

The project consisted of four phases, three that have been completed.

1. Phase #1: Project pre-start-up activities, announce and implement the project in the market
2. Phase #2: Generate deal flow & conduct due diligence (independently & in partnership w/Shell)
3. Phase #3: Conduct final due diligence and selection of technologies for presentation
4. Phase #4: Presentation of technologies and SMEs to Shell in Moscow, with decisions to:
  - a) Determine/decide technologies for funding/adoption, either through an IP transfer structure and/or delivered through an existing or new SME
  - b) Resolve outstanding issues
  - c) Create the plan to accomplish & next steps for funding and/or commercialization

***Milestone Events***

- |  |                    |
|--|--------------------|
| 1. Project approval received from Shell                                  | 13 March 2004      |
| 2. IVI starts building the database for securing deal flow               | 15 March 2004      |
| 3. IVI creates project text for IVI web site. Shell approval received    | Mid-April 2004     |
| 4. IVI 'un-officially' announces project & marketing campaign begins     | Mid April 2004     |
| 5. 1 <sup>st</sup> Russian technology 'deal' received                    | 26 April 2004      |
| 6. Contract signed between STV & IVI                                     | 8 May 2004         |
| 7. IVI officially announces project & formally starts marketing campaign | 8 May 2004         |
| 8. Due diligence begins of technologies received                         | 8 May 2004         |
| 9. IVI receives 1 <sup>st</sup> contract monies from Shell               | 10 June 2004       |
| 10. Marketing campaign finished for sourcing of new technology deals     | End of August 2004 |
| 11. Selection of 1 <sup>st</sup> set of technologies for GC funding      | Mid September 2004 |
| 12. Draft of this report   | Mid-October 2004   |

## Summary of Results to Objectives

### Overall Results to Expectations

IVI received a total of seventy-two (72) technologies (actually 80, four rejected by IVI and another four received in the past few weeks) from a total of forty-seven sources; twenty-six (26) from enterprises, nineteen (19) from institutes (& innovation centers affiliated with institutes) with two (2) from individuals over a three month period. Some institutes and SMEs submitted multiple technologies for funding, e.g., the Innovation Technological Center of Nizhniy Novgorod State University submitted six (6) technologies for investment.

Two (2) of these opportunities have been selected for GC and another two (2) are potential candidates for STV/IVI investment.

Approximately ten technologies still wait technology evaluation/decision by Shell and the final number of technologies selected and *actually receiving* GC/STV support may increase depending on the outcomes of the technology reviews and face-to-face meetings between Shell and technology developers (both institutes and companies), and the success/failure of negotiations and contract discussions. This same uncertainty exists with the short-listed SMEs for VC investment; one waits final Shell evaluation pending performance data for their prototype device (to be tested in a BP/TNK refinery in 2005) and the second SME halted negotiations pending resolution of internal operating issues.

We at IVI think this is a terrific response from the market, but especially so given that these results were achieved in just four+ months of active deal sourcing from start-up (we built market access from scratch), and given obstacles encountered in project management. Compare these results to the VC rule of thumb that only one (1) deal is consummated per one hundred (100) evaluated in the developed markets vs. *the emerging markets* where one (1) deal is transacted per two-three hundred (200-300) deal evaluated.

Deal flow was received pretty much from the entire country with three clusters of innovation existing in Russia; Moscow/Moscow region (expected), Tomsk/Novosibirsk (expected, the heart of Siberia and Russia's natural resources) and Nizhniy Novgorod (unexpected, but explainable since the region was the heart of scientific talent for underground nuclear testing, and these skills have been applied to the oil/gas area). A secondary cluster with potential is the Urals (which includes the cities of Yekaterinburg, Ufa, and Kazan, a region populated with old fields and technical development directed to EOR and productivity solutions).

See the section of the report titled 'Characteristics of the Market,' for the presentations and the analyses of deals sourced, type of technology, etc.

### ***Future Outlook***

IVI continues to receive deal flow even though we are in a 'quiet' mode and have taken a pause from active sourcing of technology and VC opportunities. We feel that Shell and IVI have just scratched the surface for opportunities and much more real and undeveloped potential exists.

Exploiting this potential requires proactive strategies and investment for the long-haul. Generally speaking, we at IVI believe that a limited set of opportunities exist ***right now*** that ***exactly solve*** problems and match Shell's requirements for VC investment (global state of the art technology); our guess is that with sufficient support, IVI can transact 1-2 VC deals in 2005 that meet the international test of competitive E&P technology to global customers/markets.



A greater number of opportunities exist to help Shell and other international oil companies/service suppliers satisfy local supply content requirements in doing business in Russia and with the Russian Government regulations; increase the number of supply chain relationships with Russian technology companies (or create companies for institute technology) with solutions that are almost, but not quite world-class. We at IVI are confident that a half dozen GC transactions are possible in 2005 with institutes/SMEs that possess interesting technology but that require direct customer interaction to better target development/skills to international needs and test the technology to international standards. Many technologies that caught our attention were rejected because the test and performance evaluations were not done to international standards and proper benchmarking.

Several institutes and companies warrant being placed on the 'watch list' to monitor their progress as candidates for funding:

#### Companies

1. InSys Ltd., Moscow
2. Roskom, Krasnodar
3. Yutec, Moscow
4. Central Expedition for Geophysics, Moscow
5. LARGE, Moscow
6. Mikhail Mozolin (founder of a new start-up. He sold his software company Softplast to Roxar right as he was submitting a funding application to STV/IVI. Their technology met the international test of value-added to global competitiveness), Moscow
7. Neurok TechSoft, Moscow (actually Troitsk)

#### Institutes

1. Oil & Gas Research Institute, Moscow
2. Ural State Technical University, Yekaterinburg
3. Institute of Geophysics, Novosibirsk State Institute, Novosibirsk
4. Institute of Computational Mathematics & Mathematical Geophysics, Novosibirsk
5. Tomsk Polytechnic Institute, Tomsk
6. Institute of Petroleum Chemistry, Tomsk
7. Novosibirsk State University, Novosibirsk
8. Ufa State Petroleum Technological University, Ufa
9. Nizhniy Novgorod State University, Nizhniy Novgorod
10. Hydrogen & Plasma Technology Institute, Moscow

#### **Creation of the Database of Russian Enterprises and Institutes/Inventors**

IVI created a database that includes records and contact information (English & Russian) of SMEs, institutes, innovation centers, patent holders of oil/gas innovations (from Rospatent) that IVI marketed this project too, and used as our primary way to source technologies and developers. Shell and IVI can use this database to source new technologies from Russia and use it for other business/technology development and VC activities.

#### **Candidates for Investment**

##### *R&D Stage Technologies for GC Support*

Two technologies, 'Diagnostics of Oil Bearing Formation by Acoustic Waves,' and 'Two-Stage Combustion for Enhanced Oil Recovery,' were identified for the GC program. A proposal for GC funding was prepared,

submitted, and waiting approval for the 1<sup>st</sup> technology (acoustic waves). A budget was approved for the 2<sup>nd</sup> technology (two stage combustion). The 1<sup>st</sup> technology is new to Shell (& IVI) while the 2<sup>nd</sup> is not.

In 2000, STV (Leonel Pirela) evaluated the two-stage combustion technology, but Leonel rejected it for venture financing pending further development. IVI re-introduced the technology to Eric de Rouffignac in October 2003 but we were unable to organize a meeting between Eric and the developer when Eric was in St. Petersburg in the fall of 2003. Shell and the developer have not made contact with each other until IVI brought this deal back on the table by incorporating it in the project in June 2004 and securing test data for Eric.

Ten (10) other technologies still wait a final review/decision by Shell, and some of these may qualify for GC/STV funding.

#### ***Enterprises for VC Investment (STV/IVI)***

Two potential VC opportunities were identified from the forty four (44) evaluated.

1. InSys Ltd., developer of sensor/software system to measure combinations of pressure/temperature through the well bore
2. Yutec with a crystallizer technology for use in the refining process.

Two other companies with interesting technologies, Aquasint (sphere plastic), and OMZ (drilling) still wait Shell review. All four (4) companies are new to Shell (& IVI).

High interest exists for the pressure/temperature sensor. Discussions for investment with InSys Ltd., are on hold until Company management resolves internal operating issues with existing customers; like many Russian companies, InSys Ltd., is thinly staffed with technical personnel on the pressure/temperature activity pulled off development to resolve technical issues with an on-going project.

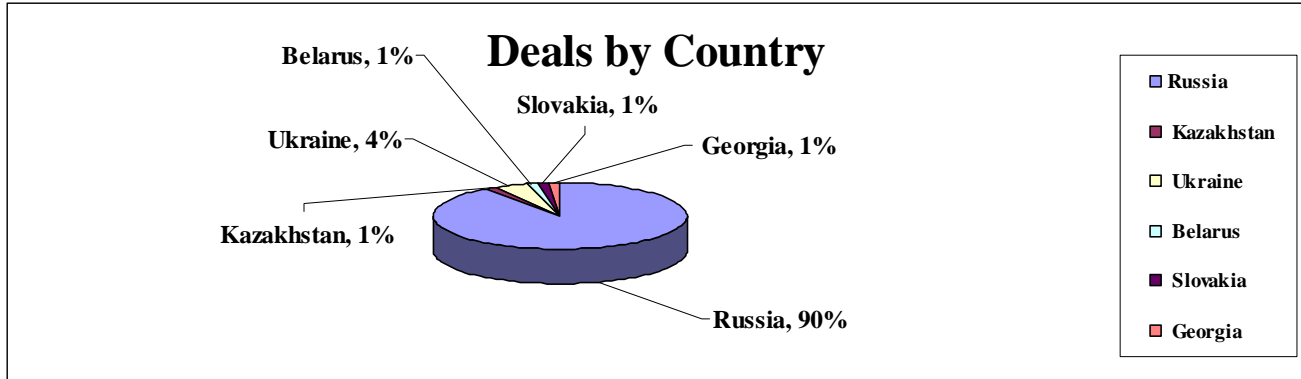
Yutec is a venture-financed, development stage company and their technology is to be tested in 2005 in a Russian BP/TNK refinery. This performance data will determine the true value of the technology and its potential for VC investment (yield improvement is of interest to STV/IVI while reduced maintenance cost is not).

IVI expects that one or both of these deal will come back 'on the table' for VC investment in 2005 when a variety of issues/requirements are resolved.

**Characteristics of the Russian Market for Oil/Gas Technologies**

*Figure 1: Technology Deals by Country*

**Figure 1**



*Figure 2: Technology Deals by Russian City*

**Figure 2**



*Figure 3: Sources of Deal Flow*

**Figure 3**

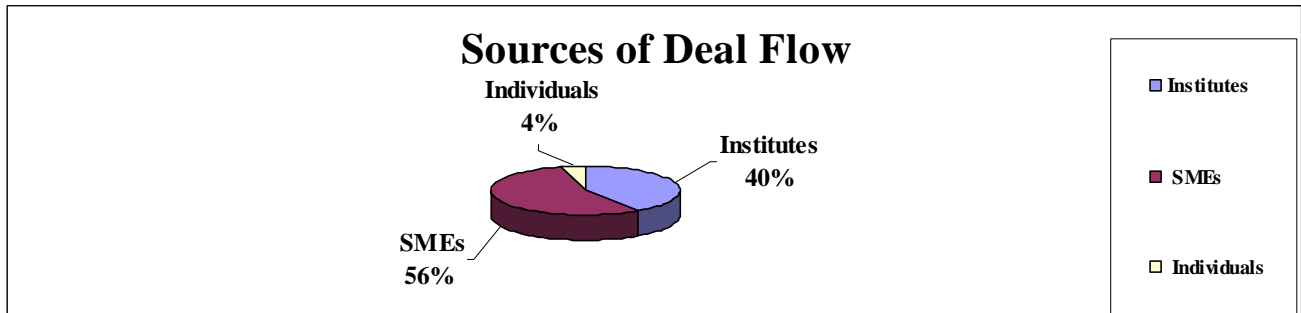


Figure 4: Deals by Technology

Figure 4

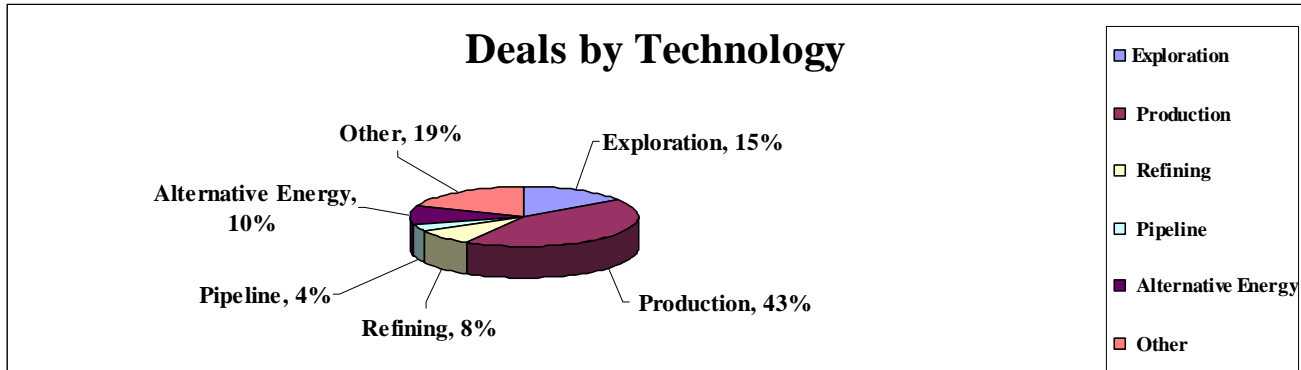


Figure 5: Deals by Specific Technology

Figure 5

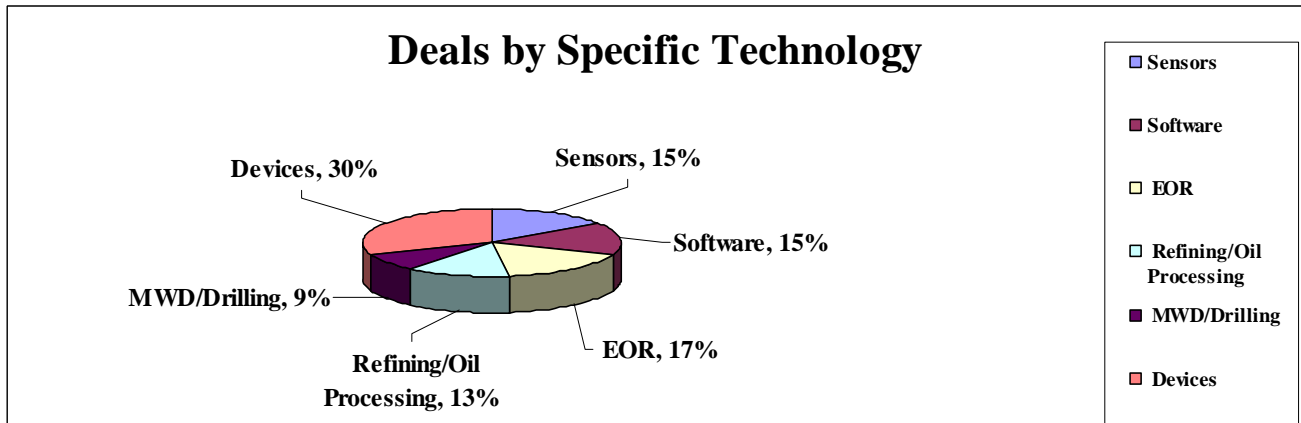
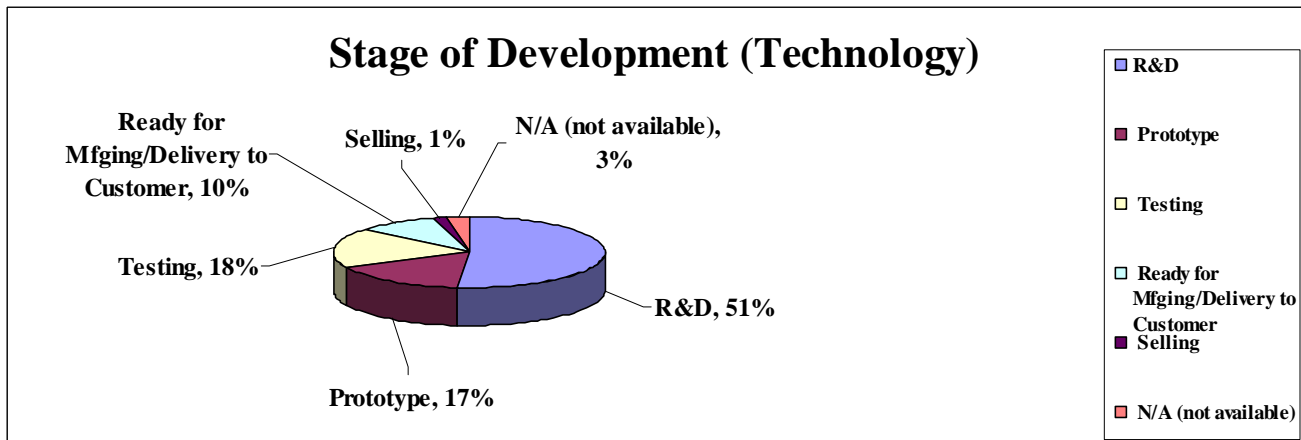


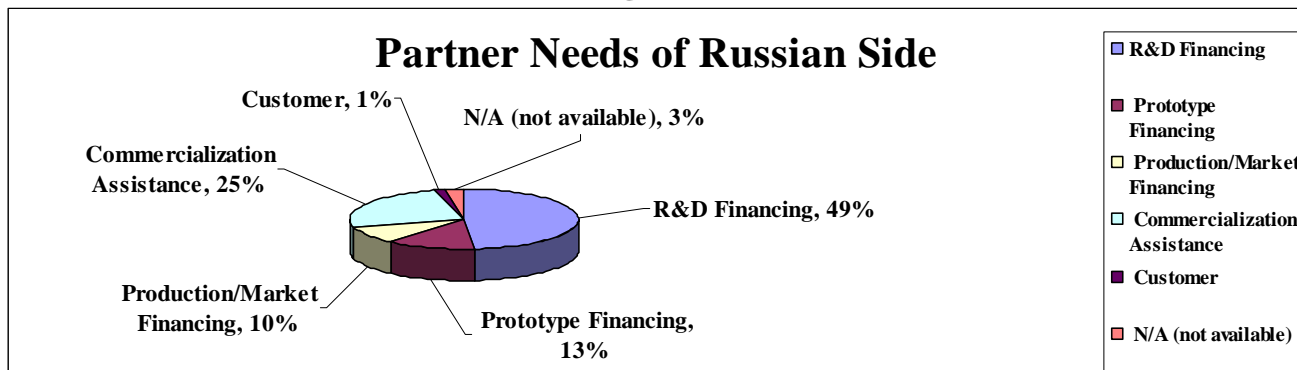
Figure 6: Stage of Development (Technology)

Figure 6



**Figure 7: Partner Needs of Russian Side**

**Figure 7**



Some explanation to Figures 6 & 7:

1. Figure 6 represents the stage of development of submitted technologies; 51% are in the R&D stage, 17% are in the prototype development stage, etc.
2. Figure 7 portrays what the Russian institute or company needs from a multinational partner; the category 'commercialization assistance' is a catch-all group that requires business development, marketing/sales *and* financing support to bring innovation to market.

**Project Learning Curve Lessons (i.e., what would IVI do differently if we knew what we know now)**

***More Time & Budget Needed to Consummate VC Investments or GC Support/Financing***

This joint project was very much an effort to 'snapshot' the market for Russian tech sector and to see how the relationship would work between Shell and IVI. Our assessment (putting aside minor nit-picking) was that both objectives were satisfied, we really enjoyed working with Alex Rozenfeld, GC (our main contact) and Greg Zdun, STV. In retrospect and in looking forward, IVI makes the following suggestions:

1. Structure projects to the more classic venture capital model in due diligence and execution with the budget and time to work the market and bring opportunities to their natural conclusion.

Numerous opportunities took two+ months to get a technology review by Shell and/or a conclusion as to whether or not the technology was interesting or not: this was due a combination of factors; Shell staff busy with multiple priorities and internal responsibilities which prevented them from responding in a timely fashion, finding the right expert, summer vacations, and Russians' (sometime) nasty habit of not directly answering questions (which wasted time) and their inability to work in a multi-tasking mode. While this is not anybody's fault or incompetence, it extended the project in time and cost beyond the budget with only IVI paying the bill for the overrun; and we're too small for this.

The amount of time to do such a project was also too little to make investments; deals take time to develop with all the necessary conditions. When 'stuff' happens, deals get pulled off the table like the opportunity with InSys Ltd., and the need for definitive performance data with the Yutec technology to resolve the uncertainty over its value-added, i.e., reduction in maintenance cost (not interesting for Shell and the global market) or yield improvement (exciting for Shell and the world

market). While we're confident that these two deals will come back on the table, timing did not work out for progression into Phase IV, and IVI does not get the reward (additional money and the investment opportunity) of the contract.

For future projects IVI would hire and staff the effort with investment officers with E&P operating experience to reduce the reliance on Shell for 1<sup>st</sup> round due diligence and use Shell for higher level evaluation. This will help speed up the due diligence process so we can be more responsive to the market and also give it better feedback.

Likewise three months was too short to achieve the objectives that set expectations and launched the project; a more realistic time is twelve months, spread out over eighteen months if the intent is to snapshot the market and test the relationship. We actually believe that three-five years is needed to work the market, make VC investments, consummate GC projects and create supply-chain networks. A bigger budget is required to execute to this objective and time frame.

## 2. Update Administrative Policies and Procedures to Speed Action & Decision-Making

Spreading the due diligence between Shell and IVI made project administration very complex and time consuming; applications were uploaded to IVI's server (after one-two days of correcting the text for each application since information was submitted in poor English vs. Russian, and getting follow-up questions answered), and then downloaded and reviewed by Shell, then the technical expert had to be found, contacted, send the application for evaluation (which sometimes they responded to and other times not), get their feedback by e-mail, then review by IVI, get clarification, send to developers, etc.

What this resulted in was enormous amounts of administrative staff and management to keep up with the flurry of e-mails between Shell, IVI and the developers (companies and institutes) so information and hence deals would not fall through the cracks. This was achieved, but at a huge investment in energy, cost and time.

IVI conducting the due diligence will certainly help in streamlining administrative effort.

It is worth repeating a comment made at the beginning of this report: *IVI could not have performed the technical due diligence to the same degree of accuracy and insight as Shell technical staff, nor compared Russian technologies to the 'best from the West,' one of our objectives. Overall the partnership and division of labor was a success.*

## 3. Conduct More Site Visits to Institutes/SMEs in the Regions.

The administrative burden chained IVI staff to the office more than it wanted and stopped us from getting into the regions enough to meet with institutes and SMEs, to really understand current skills and what they capable of doing. This work was done when some developers traveled to Moscow and over the phone, but more could have been accomplished through face-to-face meetings in the cities of Yekaterinburg, Kazan, Ufa, Novosibirsk, Tomsk, Omsk, Samara, Krasnodar and Saratov to mention a few. IVI spent a couple of days in Nizhniy Novgorod (with an excellent result, a GC proposal waiting approval), and St. Petersburg. Going forward, more site visits are required.

### ***It's Impractical to Source Technology from the Commercial Sector vs. the Weapons Program***

This project was conceived to identify opportunities from institutes and SMEs working in the commercial sector and opportunities from institutes and SMEs that were former institutions of the Soviet Union's

Weapons of Mass Destruction program (WMD). Shell was to fund costs of sourcing technology from the commercial sector and ISTC to fund sourcing technology from former WMD institutes/SMEs.

As the market learned about our activities, we received technologies from both groups; some value-added and interesting with others less so. We don't think it possible to segregate the market into two distinct categories with funding from an NGO like ISTC and funding from a private company like Shell; doing so would have produced much overlap and problems in commercialization. Technologies sourced with ISTC money would preclude it (Shell) from having an exclusive and proprietary position in the technology; if ISTC money is spent in a project, the host government that funded the project (e.g., the US) has a non-exclusive license (ownership) to the technology in the USA (and its territories).

We received several inquiries from developers working in closed cities, but we declined offers for submission, due to uncertainties of working with them and the criminal trials levied against scientists by the Russian Government (specifically the FSB). ISTC and CRDF could make a meaningful contribution in future projects to identify technologies from the closed cities since they must receive host government (Russian) concurrence to such projects and this concurrence provides some measure of comfort.

### ***Focus Attention on the Three Clusters of (Apparent) Innovation in the Oil/Gas Sector***

Moscow/Moscow region, Tomsk/Novosibirsk (region) and Nizhniy Novgorod region (which includes Sarov) are the three clusters for site visits and business trips to assess the capabilities and skills of institutes/SMEs in the technologies of software, EOR, earth modeling and sensors as examples for E&P technologies. The Urals has expertise in crystals and crystallography for sensor applications, EOR and chemical processes for improving oil recovery in old fields. Tomsk/Novosibirsk are located in the heart of Siberia, abundant with natural resources and the local institutes served oil company needs with both technology and a pool of graduates in petroleum engineering and related sciences.

## **Next Steps, i.e., the Go Forward Plan**

### **Implement an Exit Strategy to Maintain Goodwill & Build on Results: Maintain Momentum**

The market is waiting for a response from us to results achieved, and decisions to technologies submitted. Project results must be communicated to the market; technologies for GC, status of VC transactions and those rejected with reasons why since opportunities of future cooperation hinge on relationships, and the best way to keep a relationship is truthfulness and transparency. Those approved need to hear what the next steps are, and when they will happen.

This exit strategy will ensure that the market knows that its work was not in vain, and to give Shell leverage for continued work; ten (10) technologies still wait technical review. Numerous foreign companies and investors have asked Russian counterparties to provide information, submit applications, etc., with absolutely no feedback or decisions from the foreign side.

Information to be communicated to the market to close out the project includes:

1. Technologies approved for a GC budget, those in the GC process, what the next steps are to take these to their natural conclusion and when they will happen (timing schedule given uncertainties).
2. Technologies rejected.
3. Technologies identified as potential candidates for VC investment, with decisions postponed due to internal operating at one company, and the need for definitive performance data for the other to make final decision. We can use this bit of information to our advantage since it will help Shell/IVI to educate the market what *it needs to do* to accelerate the investment process.

4. Results of the initiative. All applicants need feedback and to learn overall results so the market knows that participation was not in vain and also to encourage the institutes and companies that value in the Russian tech sector exists and that this value will/can be rewarded. Such education creates long-term dividends for all.

Specific Action Items include:

1. Create rejection notices (for e-mailing or post) with rejection reasons given as categories, e.g., outside tech focus, technology more appropriate for a service supplier, problem solved with other solutions, etc.
2. Selectively telephone some of the rejected since they were diligent in responding/following up and deserve some personal attention. Some of the rejected applicants have special skills that we'll want to access in the future, i.e., SME/institute that may work on a set of problems, i.e., St. Petersburg.
3. Contact those who technologies have been accepted by GC and inform them of the next steps.
4. Create a summary report (sanitized by deleting confidential or Shell specific info) from the Shell/IVI final report and post to our web site. This report to summarize results, give macro-statistics like charts from the report, range of technologies, #s from companies vs. institutes, etc. This information will educate readers to characteristics of the market. Participants need to see a summary report since many waited 2+ months for a decision and have earned answers from us. Send this report to selected international and Russian media that track the technology/investment sector, e.g., Expert Magazine is one since they organize an annual innovation contest that is well respected and transparently managed (Roskom was a winner in April 2004). Perhaps selectively send to Russian government officials and (maybe) the RVCA.
5. Place announcement on results (interim) to IVI site and send e-mails to the entire data base directing them to the site to view the summary report.

IVI requests that budgeted but unspent Phase IV monies be used to execute this recommendation, and follow-up on technologies (#s 61, 56, 38, 39, 52, 69, 70, 72 & 73, and maybe 45) still in-review with Shell and conduct due diligence as needed. Prepare technology applicants for Phase IV presentations and business modeling as needed for those accepted into GC.

### **Leverage the GameChanging Capabilities & Technologies of Russian Talent into VC Transactions**

A number of institutes and SMEs possess the capabilities and personnel to develop innovative technologies into GC projects as the prelude to future VC investment opportunities. Some of these include the Department of Radiation Monitoring, Ural State Technical University, the Facility of Information Technologies, Novosibirsk State University and the Institute of Petroleum Chemistry, Siberian Branch of the Russian Academy of Sciences to name a few. Although their technologies were not accepted by GC or STV, they (and others) are working in innovative areas and IVI placed them on the 'watch' list for continued interaction. A complete list is provided in the main body of the report.

A number of strategies exist to tap this talent for Shell's benefits; one is to select an institute/SME and contract with it to solve a range of related problems as Shell is doing in St. Petersburg. For example, Shell and IVI could present industry problems to scientists and SMEs as a strategy to 'direct' their R&D efforts to needs for new technology and products. Re-directing some institutes/SMEs to the needs of Shell can 'jump-start' the attention of developers to the financial and professional opportunities in the oil/gas industry. Commercialization of new technology starts with R&D and technology development projects to demonstrate 'proof of concept' and the value of novel ideas.



At the opposite end of spectrum in cost, time and risk is to establish an R&D center similar to Schlumberger. They are very, very active in the market, but their activity is expensive and long-term; Schlumberger opened its Moscow R&D center many years ago, and at the end of 2005, the investment is US\$10+ million with staffing of 100+ and one development lab located in a Russian regional city. Its long-standing director Christian Besson returned to Paris recently and the new director is Yan Kuhn deChizelle.

### **Link Shell's Global Technology Activities to Supply Chain Needs of its Russian Operations**

Schlumberger also works very quietly and in stealth mode; it has two expats backed with a local team scurrying around Russia seeking acquisitions; the most high profile purchase to-date is PetroAlliance, Russia's main, home-grown service supplier organized to international standards of value and conduct. This acquisition caught the market totally by surprise and such a strategy deepens Schlumberger's presence in Russia and helps it satisfy local content requirements.

Secondarily, this team seeks technology for global markets through minority investments/contracting (they were beat out by Roxar to purchase Softplast, a company that approached IVI in this project). This acquisition team is different than Schlumberger's venture group (that's based in Paris. There is no coverage from their VC group in Russia).

This program costs Schlumberger about US\$1 million/year. Several SMEs/institutes that participated in our project were visited by this Schlumberger team, some before and others after IVI's contact. This team extended offers to some of these institutes/SMEs.

IVI puts two options on the table as alternatives to emulating Schlumberger's strategy; to deepen Shell's Russian local supply chain with Russian technology and directly link it with its GC & STV activities, each with different degrees of cost, risk and time.

Both of these options seek GameChanging & VC opportunities, but also create technology supply chain links. Several Russian technologies fall in a gap where they fall slightly short of competing against the 'best of the best' like Twister for global applications, but where their technology is good enough for niche customers that need good, but not the best solution and/or use in Russia to satisfy Shell's local content requirements. Roskom's separation technology is one example fit in this gap, as does some of the software solutions received.

The 1<sup>st</sup> is to fund IVI's equity facility for investments in IP and SMEs. The 2<sup>nd</sup> option is to do the same, but to do so as a consortium with two other multinational oil companies and one multinational service supplier. This IVI led consortium is less cost/risk vs. #1, but only provides deal/IP exclusivity vs. competitors outside the consortium, not to those inside the consortium; consortium members receive equal access and less cost/risk is the trade-off for this compromise.

These two programs are detailed in a separate document to Messgrs., Rozenfeld/Zdun of GC & STV.

## **Appendix**

**IVI's Original Project Proposal to Shell Technology Ventures**

**Deal Flow Log Sheet**

**Statistics for Charts**

**Technology Applications & Database (Contents in Separate & Attached Document)**