# **CSIR-TECH** PATH FORWARD

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October 19, 2009

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### **PURPOSE OF THIS DOCUMENT**

This document is a work in progress and has been created from input, interactions and feedback from the many scientists, staff and directors of CSIR. Much of the content in this document has been previously shared in different forums with leadership of CSIR. This draft consolidates the relevant CSIR-TECH content in one format. In the spirit of collaboration, we are now sending this draft to scientists, staff and directors of CSIR for final feedback and comments, which we will incorporate, prior to submitting to the leadership. Please provide your feedback via mail to <u>shiva@csir.res.in</u> no later than 3:00PM on October 23, 2009.

### DEDICATION

To those dedicated scientists and staff of CSIR Who do their sincere and daily work With little fan fare In quiet desperation Seeking unbridled freedom and support To make mistakes, fall down and rise up, To become next generation of innovators That great India so sorely needs To break from draconian past And vainglorious visions Seeking press and limelight of "I", Alas, when rubber meets road Fall ten steps back Into abyss of feudal order of Control, Control, Control.

### Acknowledgements

This document would not have been possible without the help and input of scientists and directors of CSIR.

Dr. Sivaram, Dr. Naresh Kumar, Dr. R.K. Tuli, Dr. A. B. Mandal, Dr. S.R. Shetye, Dr. Hirwani, Dr. Chandra Shekhar, Dr. Raj Rajakseharan, Dr. A.R. Upadhya, Dr. Girish Sahni, Dr. B.K. Mishra, Dr. T.K. Chakraborti, and Dr. Yogeshwara Rao for their historical information, and/or encouragement and/or support in helping us to formulate the possibilities of CSIR-TECH.

Sheila Sangwan for providing ground realities of the CSIR financial infrastructure.

Dr. Manju Bagai for providing ground realities of the CSIR legal infrastructure.

**Dr. Sunil Abrol and Mr. Subbarao** from CDC for their kindness and time in exploring the various options for forming CSIR-TECH.

**Dr. Damodaran and Dr. Saurabh Srivastava** for their participation and advice in providing their expert advice on CSIR-TECH.

**R.K. Gupta** for providing background on the realities of the CSIR IP portfolio and a summary of the currently commercialized IP's.

Hemant Kulkarni and V. Premnath for their interest and valuable support.

**Dr. Abhyankar** for sharing his knowledge of the existing funding programs within CSIR such as TePP, NIMTLI, TNBD

**Deepak Aggarwal** from NISG for his invaluable thoughts on Company formation models.

**CSIR Scientists** who provided compelling questions, shared their experiences and concerns on barriers to innovation.

**CSIR, HQ Staff** for their feedback and giving the ground realities of what is possible and not possible within the administrative infrastructure

### Foreword

On June 9, 2009, Mitali Mukherjee of IGIB, CSIR introduced to me to, DG, CSIR, who immediately requested my not returning back to Boston. The next day, DG, CSIR provided a formal written offer to be the first Outstanding Scientist STIO/H. The STIO/H position was created by DG, CSIR with tremendous flexibility enabling those of Indian origin, living abroad, to maintain their existing positions in industry, university, etc., while in parallel contributing to the efforts of CSIR. He requested my serving the dual missions of: (1) Creating and being the CEO of CSIR-TECH, and (2) Starting a scientific Center of Excellence.

On June 13, 2009, at DG's request, I began work on CSIR-TECH. By end of June 2009, the IP-focused model of CSIR-TECH was revised to a market-opportunity and product-development focused model. During July through October of 2009 (and continuing to date), using video conferences, face-to-face workshops and teleconferences, the new vision of CSIR-TECH was shared with over 1,500 scientists, directors and staff of CSIR.

At least 10 potential Spin-Off opportunities were uncovered from these interactions. Scientists and directors are now eager to see the commercialization of these opportunities.

Challenges for CSIR-TECH are both simple and complex --- origins of which are systemic and best characterized by Ian Dean as the "DNA" of CSIR. Such challenges will require a major overhaul of the existing CSIR leadership, far beyond the scope of any one project, be it CSIR-TECH, Civil Aviation, Affordable Health or Clean Water.

In spite of such challenges, we move forward with CSIR-TECH, an opportunity to unleash innovation pan-India. We now look to your feedback and support to make this initiative a collaborative effort in finding solutions to the real challenges that lie ahead.

V.A. Shiva Head, CSIR-TECH

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### **Executive Summary**

CSIR-TECH offers a new opportunity for the commercialization of science and technology in India. This document provides a history of the activities and ongoing challenges in the formation of CSIR-TECH. More importantly, it provides a viable path forward, with definitive goals, timelines and deliverables. This document is not a DPR, GB Note, OM draft, etc. It is meant to be a call to action and an information toolkit to answer any outstanding questions.

#### **ORIGINS OF "CSIR-TECH"**

The concept of "CSIR-TECH" is not new. Since the founding of CSIR, at least three attempts have been made to provide an environment for commercialization of CSIR technologies. NRDC, NALTECH and VENTURE CENTER, are such examples, from the 1950's, early 2000, and mid to late 2000, respectively. Based on industry comparisons, these initiatives have had relatively minimal results in spinning out companies and ventures to the scale that was initially expected.

#### **REASONS FOR CSIR-TECH**

The lackluster performance of these initiatives led some to consider the need for setting up "CSIR-TECH". An official note for *Setting Up of CSIR-TECH* was authorized by DG, CSIR on April 17, 2009 outlining various committees and members. The first formal meeting of CSIR-TECH took place on June 13, 2009 at which members attended. At this meeting, the reasons given for not using existing infrastructures (e.g. NRDC, etc.) for implementing CSIR-TECH were:

- (1) Lack of professional management team
- (2) Lack of experienced entrepreneurs
- (3) Organizational inertia

#### **CURRENT HISTORY OF CSIR-TECH**

Lack of professional management and entrepreneurs in leading the earlier initiatives were cited by DG, CSIR for their poor performance. To address this weakness, DG, CSIR offered Dr. V.A. Shiva, an M.I.T. scientist and serial and professional entrepreneur the

position of STIO/H to become head of CSIR-TECH. At the June 13, 2009 meeting, a model was presented for the CSIR-TECH's structure as an IP Holding Company (see Addendum D) that would then yield Spin-Off's. A revised model, market opportunity-focused and entrepreneurially driven was presented by Head, CSIR-TECH, assigned by DG, CSIR as the Head, CSIR-TECH. DG, CSIR approved Head, CSIR-TECH's model and requested a formal presentation of it (Addendum I).

This new CSIR-TECH model included:

- (1) An independent private entity
- (2) A mission focus on product development versus IP holding
- (3) Professional management team
- (4) Use of experienced entrepreneurs, product development specialists and project managers to assist the conversion of technology to product
- (5) A capital structure to incentivize entrepreneurs, management team, employees and potential investors

During July through October of 2009, the CSIR-TECH presentation (Addendum I) was shared with the over 1,500 scientists, staff, and directors of CSIR through on-site face-to-face meetings, video conferences and teleconferences. Through these interactions, at least 10 spin-off opportunities were uncovered.

On August 11, 2009, rough guidelines for the formation of Spin-Off's were presented to the GB of CSIR. In parallel, several options and steps for the formation of CSIR-TECH, starting in July 15, 2009, were discussed and proposed to DG, CSIR. *DG*, *CSIR*, *however, did not agree to any of the options, including one receiving consistent support* from recruited industry and government experts, and from the majority of scientists and staff who have participated in interactions on CSIR-TECH. DG, CSIR stated on September 25, 2009, he would come back within 24 hours and no later than October 5, 2009, with his own plan along with steps for forming CSIR-TECH. As of the publication of this draft, DG, CSIR's plan for CSIR-TECH formation has yet to be received.

#### **PROPOSED OPTIONS FOR CSIR-TECH FORMATION**

While many options for CSIR-TECH formation were discussed, three Options have surfaced as the most viable contenders for executing on CSIR-TECH's mission:

- Option (1) A private company, majority owned by CSIR
- Option (2) A project of CSIR, run at CSIR, HQ (e.g. NIMTLI)
- Option (3) A private company, with no CSIR holding or operational control

#### **CSIR-TECH'S PATH FORWARD**

Experts and an overwhelmingly majority of scientists and staff, who have participated in discussions, have supported Option (3) as the most viable option to ensure CSIR-TECH's success and to overcome the weaknesses of the past (e.g. NRDC, etc.).

Specifically CSIR-TECH per Option (3) will have the following features:

- (1) A culture fostering innovation, encouraging risk (and failures)
- (2) Private, entrepreneurial, vibrant and dynamic
- (3) Professional management team
- (4) Team of experienced entrepreneurs
- (5) Short and long-term incentives for wealth creation
- (6) Enabling labs and scientists to own up to 100% of Spin-Off's

Recent initiatives such as Venture Center have attempted to create a private company, but they have lacked many other elements resulting in minimal results and an admitted "unscaleable platform" by its Founders, for managing large number of Spin-Off's.

To implement Option (3), the Timeline is as follows:

| Receive Joining Approvals from Proposed | October 30, 2009  |
|---|-------------------|
| Board Members                           |                   |
| Commence Company Registration           | November 5, 2009  |
| Launch Company                          | December 15, 2009 |

### **CHAPTER 1: HISTORY**

#### Introduction

The recent history of CSIR-TECH has its origins in 2004 with Kelkar Committee Report. During 2004 to 2008, various ad hoc discussions were underway to form a "CSIR-TECH"-like venture. Between January to June 2009, various models were studied systematically for commercialization of CSIR technologies. In early June 2009, an IP Holding Company model was reviewed. After the joining of Head, CSIR-TECH, this model was revised to a market-opportunity-focused model. This model was approved by DG, CSIR.

Since the approval of the model of CSIR-TECH, two paths have been underway:

- (1) To communicate the model to scientists, staff and directors of CSIR
- (2) To finalize the legal and administrative form of CSIR-TECH

Relative to (1), during July to October, over 1,500 scientists, staff and directors of CSIR were communicated the CSIR-TECH model (see Chapter 2). From these communications at least 10 spin-off opportunities were identified.

Relative to (2), efforts were undertaken to communicate to DG, CSIR, the Options for Company formation of CSIR-TECH. In July of 2009, Dr. Damodaran proposed a private company model and provided a step-by-step plan to affect the formation of CSIR-TECH. In addition, this private company model, also known as "Option 3", independently has been encouraged by staff, scientists and directors during the various CSIR-TECH communication meetings and workshops.

After taking into account the multiple variables that may affect the success of CSIR-TECH, "Option (3)" is the path proposed and being taken forward in this draft. The History below provides details on the particular events leading to our decision to not only selection Option (3) but also and more importantly to value the advice of experts.

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### **Historical Timeline**

NOTE: The timeline below is based on the effort of two (2) individuals with no staff and limited access to all historical information. Best efforts have been taken herein to provide the relevant information. We look to your feedback to amend and correct any omissions and errors. Any items suffixed with '\*' require DG, CSIR's approval.

| Date                  | Item            | Action Performed  |
|-----------------------|-----------------|---|
| 19 <sup>th</sup> Oct. | CSIR-TECH       | Delivery of CSIR-TECH Update and draft document         |
| 2009                  | Update          | entitled, CSIR-TECH: Path Forward, to provide           |
|                       |                 | information requested by scientists.                    |
| 15 <sup>th</sup> Oct. | CSIR-TECH       | Teleconference with Deepak Aggarwal to understand       |
| 2009                  | Research        | NISG company formation model                            |
| 11 <sup>th</sup> -    | CSIR-TECH       | Given no response from DG, CSIR, and Dr. Sivaram        |
| 18 <sup>th</sup> Oct. | Timeline        | and growing queries from scientists on Spin-Off         |
| 2009                  |                 | opportunities identified, based on discussions with Dr. |
|                       |                 | Sardana, decision made by Head, CSIR-TECH to            |
|                       |                 | finalize timeline to implement on Option 3 suggested by |
|                       |                 | Damodaran and create formal draft document for review   |
|                       |                 | and feedback from CSIR scientists, staff and directors. |
| 9 <sup>th</sup> Oct.  | CSIR-TECH Spin- | NIO Spin-Off opportunity identified.                    |
| 2009                  | off Opportunity |   |
|                       | <u>12</u>       |   |
| 8 <sup>th</sup> Oct.  | CSIR-TECH       | Head, CSIR-TECH went to present CSIR-TECH ideas         |
| 2009                  | Workshop        | at NIO on request of the Lab Director.                  |
| 6 <sup>th</sup> Oct.  | CSIR-TECH       | Head, CSIR-TECH and Dr. Sivaram meet and recent         |
| 2009                  | Meeting         | challenges are reviewed. Dr. Sivaram states he will get |
|                       |                 | back to Head, CSIR-TECH.                                |
| 6 <sup>th</sup> Oct.  | CSIR-TECH       | Meeting to understand the Venture Centre model. DG      |
| 2009                  | Meeting         | suggested that CSIR-TECH should understand the          |
|                       |                 | Venture Centre Model. [Ref. Addendum G]                 |

| 6 <sup>th</sup> Oct. | CSIR-TECH       | Meeting chaired by DG to discuss proposal to build      |
|----------------------|-----------------|---|
| 2009                 | Related Meeting | technology incubator at NCL. In ad hoc, last/minute     |
|                      |                 | manner, Deepak Sardana, Hemant Kulkarni and Head,       |
|                      |                 | CSIR-TECH asked to join. When DG, CSIR is asked         |
|                      |                 | for his promised step-by-step plans for CSIR-TECH       |
|                      |                 | formation, no response is given. DG, CSIR now           |
|                      |                 | states "As DG, CSIR, I do not make decisions, I only    |
|                      |                 | approve decisions." DG, CSIR does not provide step-     |
|                      |                 | by-step plan at this meeting. Head, CSIR-TECH, Dr.      |
|                      |                 | Saradana and Hemant asked to go speak with Sivaram      |
|                      |                 | and Premnath.   |
| 30 <sup>th</sup>     | CSIR-TECH /CDC  | Meeting at CDC with Mr. Subbarao to provide advice      |
| Sept.                | Meeting         | on how Head, CSIR-TECH has been successful in           |
| 2009                 |                 | getting information from Labs, and offering perspective |
|                      |                 | on challenges to Commercialization. This meeting was    |
|                      |                 | post a formal meeting at CDC.                           |
| 30 <sup>th</sup>     | CSIR-TECH       | Meeting to discuss CSIR-TECH implementation plan        |
| Sept.                | Meeting         | with Legal Advisor and a few other people from          |
| 2009                 |                 | administration in CSIR HQ. [Ref. Addendum G]            |
| 28 <sup>th</sup>     | CSIR-TECH       | Head, CSIR-TECH met MD, ICICI Venture to                |
| Sept.                | Meeting         | understand their model. She was interested in           |
| 2009                 |                 | collaborating with CSIR-TECH                            |
| 27 <sup>th</sup>     | CSIR-TECH       | Head, CSIR-TECH and DG, CSIR phone meeting to           |
| Sept.                | Communication   | follow up on DG, CSIR's step-by-step plans. DG, CSIR    |
| 2009                 |                 | said he is working on it and has allocated budget of 25 |
|                      |                 | lacs for Head, CSIR-TECH to work on CSIR-TECH.          |
| 26 <sup>th</sup>     | CSIR-TECH       | Head, CSIR-TECH met Mr. Ashok Parthasarthy. He          |
| Sept.                | Meeting         | provided his background.                                |
| 2009                 |                 |   |
| 25 <sup>th</sup>     | CSIR-TECH       | Head, CSIR-TECH & Dr. Sardana meet with DG, &           |
| Sept.                | Meeting         | Sudeep Kumar in Science Centre to discuss the launch    |

| 2009                  |                         | of CSIR-TECH on the eve of CSIR Foundation day.                   |
|-----------------------|-------------------------|---|
|                       |                         |   |
|                       |                         | Decision taken: DG states he will now decide which is the         |
|                       |                         | right form of Company and will give step-by-step process to       |
|                       |                         | form CSIR-TECH within 24 hours, or latest by October 5,           |
|                       |                         | 2009.   |
| 25 <sup>th</sup>      | CSIR-TECH               | Head, CSIR-TECH discusses with Dr. Sardana and then               |
| Sept.                 | Correspondence          | sends a detailed email to DG early in the morning                 |
| 2009                  |                         | sharing his concerns and challenges facing the launch of          |
|                       |                         | CSIR-TECH.  |
| 24 <sup>th</sup> Sept | CSIR-TECH               | DG calls Head, CSIR-TECH to inform that he plans to               |
| 2009                  | Meeting                 | launch CSIR-TECH on 26 <sup>th</sup> Sept (i.e. Foundation day of |
|                       |                         | CSIR) in presence of Honorable Minister of S&T. He                |
|                       |                         | calls for a discussion on it on 25 <sup>th</sup> Sept. 2009.      |
|                       |                         |   |
|                       |                         | Head, CSIR-TECH is also introduced to Mr. Ashok                   |
|                       |                         | Parthasarthy by DG and is asked to take his advice on             |
|                       |                         | CSIR-TECH. DG stated that he is more experienced                  |
|                       |                         | than Mr. Damodaran for such activities.                           |
| 24 <sup>th</sup>      | CSIR-TECH Spin-         | Head, CSIR-TECH discusses the spin-off opportunity                |
| Sept.                 | <u>off Opportunity</u>  | with NIEST scientists.  |
| 2009                  | <u>11</u>               |   |
| 22 <sup>nd</sup>      | CSIR-TECH               | Meeting to discuss CSIR-TECH implementation plan                  |
| Sept.                 | Meeting/Workshop        | with PPD scientists in CSIR HQ. [Ref. Addendum G]                 |
| 2009                  |                         |   |
| 17 <sup>th</sup>      | CSIR-TECH               | Head, CSIR-TECH met Mr. K K Gupta, Asst. Director                 |
| Sept.                 | Meeting <u>Spin-off</u> | of NML. Spin Off Opportunity identified                           |
| 2009                  | <u>Opportunity 10</u>   |   |
| 16 <sup>th</sup>      | CSIR-TECH Spin-         | Head, CSIR-TECH discusses the spin-off opportunity                |
| Sept.                 | off Opportunity 9       | with NAL scientists.  |
| 2009                  |                         |   |
| 1                     | 1                       |   |

| 15 <sup>th</sup>      | CSIR-TECH         | Head, CSIR-TECH met Financial Advisor of CSIR to                    |
|-----------------------|-------------------|---|
| Sept.                 | Meeting           | present CSIR-TECH ideas to her and get the feedback.                |
| 2009                  |                   |   |
| 11 <sup>th</sup>      | CSIR-TECH Spin-   | Head, CSIR-TECH discusses the spin-off opportunity                  |
| Sept. 09              | off Opportunity 8 | with NBRI scientists.   |
| 9 <sup>th</sup> Sept. | CSIR-TECH         | Head, CSIR-TECH & Dr. Sardana meet with Dr.                         |
| 2009                  | Meeting           | Srivastava, Dr. Abhyankar, & Dr. Rao. to discuss CSIR-              |
|                       |                   | TECH implementation plan. [Ref. Addendum G].                        |
|                       |                   | Option (3) appears to be the one favored by attendees               |
|                       |                   | present during discussion.  |
|                       |                   |   |
|                       |                   |   |
| 9 <sup>th</sup> Sept. | CSIR-TECH         | Head, CSIR-TECH and DG, CSIR communication on                       |
| 2009                  | Correspondence    | launching CSIR-TECH. E-Mail to the DG and stated, "I                |
|                       | 1                 | sent per your instructions the PPT to Dr. Mashelkar; however, the   |
|                       |                   | concept of launching CSIR-TECH on September 26, 2009 sounds         |
|                       |                   | wonderful, but in what mode?"                                       |
| 9 <sup>th</sup> Sept. | CSIR-TECH         | Head, CSIR-TECH writes to Mr. Sunil (PS to DG,                      |
| 2009                  | Correspondence    | CSIR): "This is the second e-mail I'm sending on this. Several      |
|                       |                   | weeks ago, following a meeting with Dr. Ramamoorthy, it was         |
|                       |                   | agreed that DG and I would meet regularly at biweekly intervals to  |
|                       |                   | ensure direct communication. I asked you post-that meeting to setup |
|                       |                   | time, and sent you a follow up."                                    |
| 8 <sup>th</sup> Sept. | CSIR-TECH         | Head, CSIR-TECH sends a detailed email to Dr.                       |
| 2009                  | Correspondence    | Mashelkar.  |
| 8 <sup>th</sup> Sept. | CSIR-TECH         | DG, CSIR sends an email to Dr. Mashelkar                            |
| 2009                  | Correspondence    | (Advisor for \$100mn 'Innovation Fund' set-up                       |
|                       | -                 | by TATA): "I will be delighted if TATA                              |
|                       |                   | capital can take a stake in CSIR-TECH. I am                         |
|                       |                   | asking Head, CSIR-TECH to follow up this."                          |
|                       |                   |   |
| 7 <sup>th</sup> Sept  | CSIR-TECH         | Head, CSIR-TECH writes to Mr. Sunil (PS to DG,                      |

| 2009                 | Correspondence           | CSIR): "Still have not received e-mail from you on which                  |
|----------------------|--------------------------|---|
|                      |                          | dates/times are good for regular meetings on biweekly basis with          |
|                      |                          | Samir. On the 24th of August, you agreed to follow up with some           |
|                      |                          | timings based on my request. Kindly send. This was a                      |
|                      |                          | committment that was made following our 23 <sup>rd</sup> meeting with Dr. |
|                      |                          | Ramamoorthy."   |
| 7 <sup>th</sup> Sept | CSIR-TECH Spin-          | Head, CSIR-TECH discusses the spin-off opportunity                        |
| 2009                 | off Opportunity 7        | with CIMMACS scientists.  |
| $1^{st} - 5^{th}$    | CSIR-TECH                | Head, CSIR-TECH went to present CSIR-TECH ideas                           |
| Sept.                | Workshop                 | at CLRI & NAL on request of the Lab Director.                             |
| 2009                 |                          |   |
| 30 <sup>th</sup> Aug | CSIR-TECH Spin-          | Head, CSIR-TECH discusses the spin-off opportunity                        |
| 2009                 | <u>off Opportunity 6</u> | with NEERI scientists.  |
| 30 <sup>th</sup> Aug | CSIR-TECH                | Head, CSIR-TECH presented his ideas to CIMAP team                         |
| 2009                 | Meeting &                | and discussed their spin-off opportunity. Meeting at                      |
|                      | Workshop                 | Science Center, very fruitful and productive session.                     |
|                      |                          | However, challenge of Company formation appears to                        |
|                      |                          | be major roadblock.   |
| 29 <sup>th</sup> Aug | CSIR Tech                | Head, CSIR-TECH presented his CSIR-TECH                                   |
| 2009                 | Presentation at          | presentation at CSIR Director's conference.                               |
|                      | Director's               |   |
|                      | Conference               |   |
| 25 <sup>th</sup> Aug | CSIR-TECH                | Head, CSIR-TECH along with Dr. Sardana presented his                      |
| 2009                 | Videoconference          | CSIR-TECH proposal to the labs by way of video-                           |
|                      |                          | conferencing. [Ref. Addendum G]   |
| 25 <sup>th</sup> Aug | CSIR-TECH                | Head, CSIR-TECH along with Dr. Sardana presented his                      |
| 2009                 | Videoconference          | CSIR-TECH proposal to the labs by way of video-                           |
|                      |                          | conferencing. [Ref. Addendum G]   |
| 24 <sup>th</sup> Aug | CSIR-TECH                | Head, CSIR-TECH along with Dr. Sardana presented his                      |
| 2009                 | Videoconference          | CSIR-TECH proposal to the labs by way of video-                           |
|                      |                          | conferencing. [Ref. Addendum G]   |

| 24 <sup>th</sup> Aug                                       | CSIR-TECH  | Head, CSIR-TECH along with Dr. Sardana presented his   |
|--|--|--|
| 2009   | Videoconference  | CSIR-TECH proposal to the labs by way of video-  |
|  |  | conferencing. [Ref. Addendum G]  |
| 21 <sup>st</sup> Aug                                       | CSIR-TECH  | Head, CSIR-TECH meets Dr. Ramamoorthy (RAB   |
| 2009   | Meeting  | Chairperson & Ex-Secretary, DST) to update him on  |
|  |  | CSIR-TECH and get feedback.  |
| 17 <sup>th</sup>   | CSIR-TECH Spin-  | Head, CSIR-TECH discusses the second spin-off  |
| Aug.   | off Opportunity 5  | opportunity at IGIB with IGIB scientists.  |
| 2009   |  |  |
| 13 <sup>th</sup> Aug                                       | CSIR-TECH  | DG, CSIR calls Head, CSIR-TECH in ad hoc meeting to  |
| 2009   | Meeting  | meet with Prof. Anil Gupta (NIF). Head, CSIR-TECH  |
|  |  | and Dr. Gupta meet. The meeting was actually for CSIR  |
|  |  | and NIF agreement sign off.  |
| 11 <sup>th</sup>   | CSIR-TECH  | Head, CSIR-TECH went to Bangalore with Dr. Rajesh  |
| Aug.   | Meeting  | Gokhale (IGIB) to assist him in presenting his spin-off  |
| 2009   |  | plan to Unilever.  |
| 11 <sup>th</sup>   | CSIR-TECH  | CSIR-TECH and spin-off rules are discussed in the GB   |
| Aug.   | related things   | meeting at CSIR HQ. [Ref. Addendum F]  |
| 2009   | discussed in GB  |  |
|  | Meeting  |  |
| 8 <sup>th</sup> Aug  | CSIR-TECH Spin-  | Head, CSIR-TECH discusses the spin-off opportunity   |
| 2009   | off Opportunity 4  | with IHBT scientists.  |
| 8 <sup>th</sup> Aug  | CSIR-TECH  | Head, CSIR-TECH went to present CSIR-TECH ideas  |
| 2009   | Workshop   | at IHBT on request of the Lab Director.  |
| 6 <sup>th</sup> Aug  | CSIR-TECH  | Head CSIR-TECH meets Dr. Abrol (CDC) to discuss  |
|  | ebit illen   | field, CSIR-TECH meets DI. Abioi (CDC) to discuss  |
| 2009   | Meeting  | the structure of CSIR-TECH.  |
| 2009<br>6 <sup>th</sup> Aug                                | Meeting<br>CSIR-TECH <u>Spin-</u>  | the structure of CSIR-TECH.<br>Head, CSIR-TECH discusses the spin-off opportunity  |
| 2009<br>6 <sup>th</sup> Aug<br>2009                        | Meeting<br>CSIR-TECH <u>Spin-</u><br>off Opportunity 3                     | the structure of CSIR-TECH.<br>Head, CSIR-TECH discusses the spin-off opportunity<br>with CIMAP scientists.  |
| 2009<br>6 <sup>th</sup> Aug<br>2009<br>5 <sup>th</sup> Aug | Meeting<br>CSIR-TECH <u>Spin-</u><br><u>off Opportunity 3</u><br>CSIR-TECH | the structure of CSIR-TECH.<br>Head, CSIR-TECH discusses the spin-off opportunity<br>with CIMAP scientists.<br>Head, CSIR-TECH went to present CSIR-TECH ideas |

| 3 <sup>rd</sup> Aug   | CSIR-TECH <u>JV</u>  | Head, CSIR-TECH meets Mr. Uday Bhaskar (GM,              |
|-----------------------|----------------------|--|
| 2009                  | <u>Opportunity 3</u> | Business Dev., Infosys) at the insistence of DG, CSIR to |
|                       |                      | discuss a CSIR JV opportunity with them for software     |
|                       |                      | development.   |
| 1 <sup>st</sup> Aug   | CSIR-TECH            | Rajesh Gokhale, DG, Mr. Sudeep Kumar & Head,             |
| 2009                  | Meeting              | CSIR-TECH review draft of GB notes for Spin-off.         |
| 31 <sup>st</sup> July | CSIR-TECH            | Head, CSIR-TECH meets DG and a former CSIR               |
| 2009                  | Meeting              | employee who is now with the Planning Commission to      |
|                       |                      | discuss CSIR-TECH.                                       |
| 30 <sup>th</sup> July | CSIR-TECH Spin-      | Head, CSIR-TECH discusses the spin-off opportunity       |
| 2009                  | off Opportunity 2    | with SERC scientists.                                    |
| 30 <sup>th</sup> July | CSIR-TECH            | Head, CSIR-TECH went to present CSIR-TECH ideas          |
| 2009                  | Workshop             | at SERC on request of the Lab Director.                  |
| 20 <sup>th</sup> July | CSIR-TECH            | Head, CSIR-TECH went to Bangalore with Dr. Rajesh        |
| 2009                  | Meeting              | Gokhale to assist him in presenting his spin-off plan to |
|                       |                      | ITC.   |
| 18 <sup>th</sup> July | CSIR-TECH Spin-      | Head, CSIR-TECH discusses the spin-off opportunity       |
| 2009                  | off Opportunity 1    | with IGIB scientists.                                    |
| 16 <sup>th</sup> July | CSIR-TECH            | Head, CSIR-TECH met with Mr. Damodaran to present        |
| 2009                  | Meeting              | his CSIR-TECH ideas to him and seek his inputs. Dr.      |
|                       |                      | Damodaran provides a clear step-by-step process and      |
|                       |                      | Option for forming CSIR-TECH. DG, CSIR comes to          |
|                       |                      | meeting late after Damodaran has left. Head, CSIR-       |
|                       |                      | TECH presents Damodaran's expert advice. DG, CSIR        |
|                       |                      | states that Damodaran does not understand all the        |
|                       |                      | aspects and discounts Damodaran's step-by-step plan for  |
|                       |                      | CSIR-TECH company formation.                             |
| 16 <sup>th</sup> July | CSIR-TECH            | Head, CSIR-TECH makes full presentation to Mr.           |
| 2009                  | Meeting              | Rakesh Pandey & Mr. Swapan (TCG Life Science) at         |
|                       |                      | insistence of DG.  |
| 16 <sup>th</sup> July | CSIR-TECH            | Head, CSIR-TECH meet Mr. Deepam Mishra (I2 India         |

| 2009                  | Meeting              | Venture).   |
|-----------------------|----------------------|---|
| 15 <sup>th</sup> July | CSIR-TECH            | Head, CSIR-TECH gets introduced to Legal Advisor of             |
| 2009                  | Meeting              | CSIR and DG, CSIR proposes very rough plans for                 |
|                       |                      | Company formation. After this meeting and Head,                 |
|                       |                      | CSIR-TECH's request from DG, CSIR on a methodical               |
|                       |                      | timeline for forming CSIR-TECH, DG, CSIR states that            |
|                       |                      | whatever Damodaran says is to be followed as the step-          |
|                       |                      | by-step process to form CSIR.                                   |
| 14 <sup>th</sup> July | CSIR-TECH            | Head, CSIR-TECH met Mr. Purnendu Chatterjee                     |
| 2009                  | Meeting              | (Chairperson, TCG) to present CSIR-TECH model at                |
|                       |                      | insistence of DG.   |
| 13 <sup>th</sup> July | CSIR-TECH JV         | Head, CSIR-TECH had CSIR JV discussions with RISE.              |
| 2009                  | <u>Opportunity 2</u> |   |
| 12 <sup>th</sup> July | CSIR-TECH            | Head, CSIR-TECH meets with DG to discuss CSIR-                  |
| 2009                  | Meeting              | TECH Budget.  |
| 10 <sup>th</sup> July | CSIR-TECH JV         | Head, CSIR-TECH had IGIB JV discussions with the                |
| 2009                  | <u>Opportunity 1</u> | group from Finland.   |
| 10 <sup>th</sup> July | CSIR-TECH            | Head, CSIR-TECH shows the final draft of presentation           |
| 2009                  | Meeting              | on CSIR-TECH to the DG.   |
| 4 <sup>th</sup> July  | CSIR-TECH            | Head, CSIR-TECH shows his first draft of presentation           |
| 2009                  | Meeting              | on CSIR-TECH to the DG.   |
| 19 <sup>th</sup> June | CSIR-TECH            | Meeting of CSIR-TECH involving Mr. Basu, Mr.                    |
| 2009                  | Meeting              | Biswas, Hemant, Shiva, and Deepak. Head, CSIR-                  |
|                       |                      | TECH Ayyadurai presented his ideas of CSIR-TECH                 |
|                       |                      | and DG said that it looks good and that we should be            |
|                       |                      | following that.   |
| 15 <sup>th</sup> June | CSIR-TECH            | Dr. Deepak sent meeting minutes of 13 <sup>th</sup> June to Mr. |
| 2009                  | Correspondence       | Hemant Kulkarni (Convenor of the meeting) to be                 |
|                       |                      | forwarded to all. This was shared with Mr. Sahni (Chair         |
|                       |                      | of the meeting).  |
|                       |                      | The meeting minutes was not sent to all as the meeting          |

|                       |                   | remained inconclusive on its 'final recommendations'                 |
|-----------------------|-------------------|--|
|                       |                   | after DG joined towards the end.                                     |
|                       |                   |  |
|                       |                   | * The conclusion that members were coming to were nonetheless        |
|                       |                   | documented by Dr. Sardana and sent to Mr. Kulkarni to be sent to     |
|                       |                   | Dr. Sahni. [Ref. Addendum G]   |
| 13 <sup>th</sup> June | CSIR-TECH         | Project Committee Meeting held. DG asked Head,                       |
| 2009                  | Project Committee | CSIR-TECH Ayyadurai to be present in the meeting                     |
|                       | Meeting           | after informing the Project Committee that he is going to            |
|                       |                   | be the CEO of CSIR-TECH. DG also came in during the                  |
|                       |                   | end of the meeting.  |
|                       |                   | e e e e e e e e e e e e e e e e e e e                                |
|                       |                   | * Mr. Kulkarni & Dr. Sardana also discussed their ideas              |
|                       |                   | with the Financial Advisor of CSIR to get her feedback               |
|                       |                   | prior to the proposed meeting as she was unable to                   |
|                       |                   | attend it  |
| 10 <sup>th</sup> June | CSID TECH         | Head CSID TECH and DC CSID most until 1:00 AM                        |
|                       | CSIK-TECH         | at DC CSIP's house and DC CSIP since Used CSIP                       |
| 2009                  | Meeting           | at DG, CSIR's house and DG, CSIR gives Head, CSIR-                   |
|                       |                   | TECH written terms of Head, CSIR-TECH's Offer.                       |
|                       |                   | Head, CSIR-TECH had planned to leave back to Boston                  |
|                       |                   | on the 22 <sup>nd</sup> of June 2009, following end of his Fulbright |
|                       |                   | tenure in India.   |
| 9 <sup>th</sup> June  | CSIR-TECH         | Dr. Sardana meets Head, CSIR-TECH Ayyadurai for the                  |
| 2009                  | Meeting           | first time. Mr. Zakir Thomas (DGTC) & Dr. Mithali                    |
|                       |                   | Mukherjee (IGIB) were also present during that                       |
|                       |                   | meeting.   |
| 3 <sup>rd</sup> June  | CSIR-TECH         | Email sent to members of the Project Committee for a                 |
| 2009                  | Correspondence    | meeting to discuss CSIR-TECH on 13 <sup>th</sup> June 2009.          |
| 14 <sup>th</sup> May  | CSIR-TECH         | Office Memorandum on the constitution of CSIR-TECH                   |
| 2009                  | Office order      | committees. [Ref. Addendum H]  |
| 20 <sup>th</sup>      | CSIR-TECH         | Hemant & Deepak meet Mr. R K Gupta, Dr. Premnath,                    |

| April                 | Meeting           | and Mr. Saurabh Srivastava on 15 <sup>th</sup> April 2009. [Ref.  |
|-----------------------|-------------------|---|
| 2009                  |                   | Addendum G]   |
| 17 <sup>th</sup>      | CSIR-TECH         | Note on the constitution of CSIR-TECH committees.                 |
| April                 | Office order      |   |
| 2009                  |                   |   |
| 13 <sup>th</sup>      | CSIR-TECH         | Dr. Sardana & Mr. R K Gupta meet Dr. Saurabh                      |
| April                 | Meeting           | Srivastava to discuss with him on how to form CSIR-               |
| 2009                  |                   | TECH and what should be the proposed structure.                   |
| 6 <sup>th</sup> April | CSIR-TECH         | Discussion on CSIR-TECH at CSIR HQ. Meeting                       |
| 2009                  | Meeting           | minutes of it sent on 11 <sup>th</sup> April 2009. [Ref. Addendum |
|                       |                   | G]  |
| 4-5 <sup>th</sup>     | CSIR-TECH         | DG presents CSIR-TECH ideas in the Director's                     |
| April                 | Presentation at   | conference.   |
| 2009                  | Director's        |   |
|                       | Conference        |   |
| 27 <sup>th</sup>      | CSIR-TECH         | Dr. Premnath sends his learning on commercialization              |
| March                 | Correspondence.   | by email after he has visited CSIRO and A*STAR                    |
| 2009                  |                   | officially.   |
| 26 <sup>th</sup> Feb  | CSIR              | Notification says that Cabinet has approved the above             |
| 2009                  | Commercialization | proposal put to it in the 23 <sup>rd</sup> Feb 2009 meeting.      |
|                       | proposal approval |   |
|                       | by the Cabinet.   |   |
| 27 <sup>th</sup> Feb  | CSIR-TECH         | Mr. Zakir Thomas (DGTC) sends an email to Mr.                     |
| 2009                  | Communication     | Somenath Ghosh (CMD, NRDC) suggesting that he will                |
|                       |                   | ask E&Y to put on hold the preparation of the Project             |
|                       |                   | Report. *   |
| 24 <sup>th</sup> Feb. | CSIR-TECH         | DG, CSIR meets with E&Y team. Others present were:                |
| 2009                  | Meeting           | Dr. Sahni, Dr. Sardana, Mr. Kulkarni, Dr. Naresh                  |
|                       |                   | Kumar, Dr. Y. Rao, & Sh. Subramanium.                             |
| 1                     |                   |   |

| 2009                  | Commercialization | of the items: "Encouraging Development and                              |
|-----------------------|-------------------|---|
|                       | proposal          | Commercialization of Inventions and Innovations: A                      |
|                       | discussion by the | new impetus".   |
|                       | Cabinet.          |   |
| 13 <sup>th</sup> Feb  | CSIR-TECH         | Mr. Kulkarni & Dr. Sardana meet Mr. Sopwith and they                    |
| 2009                  | Meeting           | discussed the preliminary proposal sent by him.                         |
|                       |                   |   |
|                       |                   | * Later in the day, Mr. Kulkarni & Dr. Sardana come to                  |
|                       |                   | a decision that more 'robust' thoughts have to go into                  |
|                       |                   | the process and structure of CSIR-TECH before they                      |
|                       |                   | meet any 'interested' private party. A 're-look' of the                 |
|                       |                   | entire process that has taken place is warranted. This is               |
|                       |                   | after they get to know about the Parliament Question                    |
|                       |                   | and discuss with Dr. Naresh Kumar (Head, RDPD).                         |
| 11 <sup>th</sup> Feb. | CSIR-TECH         | Meeting at IMT Chandigarh (Dr. Sardana, Hemant                          |
| 2009                  | Meeting           | Kulkarni, Dr. Naresh Kumar, and Dr. Girish Sahni and                    |
|                       |                   | R.K. Gupta) to discuss the proposal submitted by I2                     |
|                       |                   | India. [Ref. Addendum G]  |
| 9 <sup>th</sup> Feb   | CSIR-TECH         | A question is raised in the Parliament on whether                       |
| 2009                  | question in the   | Governing Council of CSIR has proposed to the Govt. to                  |
|                       | Parliament.       | form and launch a holding company in collaboration                      |
|                       |                   | with I2 India. There were sub-questions on NRDC and                     |
|                       |                   | its role. The answer for this was to be provided by 24 <sup>th</sup>    |
|                       |                   | Feb. 2009.*   |
| 9 <sup>th</sup> Feb.  | CSIR-TECH         | NRDC commissions E&Y (vide letter dated 9 <sup>th</sup> Feb             |
| 2009                  | Office Order      | 2009) to write a Detailed Project Report to assess the                  |
|                       |                   | 'proposed' partnership with CSIR. *                                     |
|                       |                   | E&Y email states: "Our mandate as per the agreed scope Here,            |
|                       |                   | the <i>a priori</i> assumption was that NRDC and CSIR have already      |
|                       |                   | assessed their own capabilities and were absolutely convinced about     |
|                       |                   | the need for a private partner and wanted to <b>base their go/no go</b> |

|                      |                | decision on "i2i and the proposed structure with i2i" on E&Y's |
|----------------------|----------------|--|
|                      |                | report."   |
| 6 <sup>th</sup>      | CSIR-TECH      | In 173 <sup>rd</sup> GB Meeting, members applaud the CSIR-     |
| February             | mention in GBM | TECH initiative being taken by DG, CSIR.                       |
| 2009                 | Meeting        |  |
| 5 <sup>th</sup>      | CSIR-TECH      | DG, CSIR approves a note on who will be part of the            |
| February             | Office order   | core team of CSIR-TECH initiative. [Ref. Addendum H]           |
| 2009                 |                |  |
| 2 <sup>nd</sup> Feb  | CSIR-TECH      | Mr. Damodaran (Ex-Chairman, SEBI & UTI) agrees to              |
| 2009                 | Hiring         | be advisor for CSIR-TECH activity.                             |
| 12 <sup>th</sup> Jan | CSIR-TECH      | DG asks Dr. Sardana to follow-up on the email that he          |
| 2009                 | Communication  | received from Mr. Tom Sopwith (MD, BCi).                       |
|                      |                |  |
|                      |                | * Mr. Kulkarni & Dr. Sardana meet with Mr. Tom                 |
|                      |                | Sopwith in late January/early February 2009.                   |
| 1 <sup>st</sup>      | CSIR-TECH      | Dr. Deepak Sardana is hired as a Consultant (DGTC              |
| January              | Hiring         | unit) to help in proposing an organization structure for       |
| 2009                 |                | commercializing CSIR technologies (primarily by way            |
|                      |                | of spin-out companies).  |
| 5 <sup>th</sup> Dec. | CSIR-TECH      | Mr. Deepam Mishra sends an email to the DG, CSIR.              |
| 2008                 | Correspondence | The email also contains MoU and Terms for partnership          |
|                      |                | as attachments. *  |
| 3 <sup>rd</sup> Dec. | CSIR-TECH      | Dr. Yogeshwar Rao (Head, TNBD) writes an email to              |
| 2008                 | Correspondence | Dr. Premnath showing his concern with the                      |
|                      | -              | discrepancies in processes by which I2 India has been          |
|                      |                | chosen for such advanced talks on partnerships. *              |
| 2 <sup>nd</sup> Dec  | CSID TECH      | Dr. Dramnath sands on amail to the CCD. Team that teals        |
| 2 Dec.               | CSIK-TECH      | DI. Frenman sends an eman to the CSIK Team that took           |
| 2008                 | Correspondence | part in 1 Dec Meeting. The purpose is to incorporate           |
|                      |                | DG's suggestions to the proposal presented by I2 India.        |
|                      |                | The suggestions were linked to the equity/revenue              |

|                       |                 | distribution and the organizational structure. *                |
|-----------------------|-----------------|---|
| 1 <sup>st</sup> Dec.  | CSIR-TECH       | I2 India makes a presentation to CSIR team. The                 |
| 2008                  | Meeting         | presentation shows broad outline of the organizational          |
|                       |                 | structure along with equity/revenue distribution between        |
|                       |                 | CSIR and I2 India.  |
| 28 <sup>th</sup>      | CSIR-TECH       | Internal discussion on Imperial Innovation Model. [Ref.         |
| Nov.                  | Meeting         | Addendum]   |
| 2008                  |                 |   |
| 4 <sup>th</sup> Nov.  | CSIR-TECH       | Mr. Deepam Mishra (I2 India Ventures) sends a draft             |
| 2008                  | Correspondence  | proposal to Mr. Zakir Thomas for his review and                 |
|                       |                 | feedback. The proposal outlines I2 India's proposed             |
|                       |                 | partnership with CSIR for commercializing the                   |
|                       |                 | technologies. The proposal also talks about the                 |
|                       |                 | organization structure and other details.                       |
| 11 <sup>th</sup> Oct. | CSIR-TECH       | A Model of CSIR-TECH is suggested. This model                   |
| 2008                  | Correspondence  | perhaps was the result of 'initial' internal brainstorming.     |
|                       |                 | The ideas are very broad and indicative of some                 |
|                       |                 | thinking.   |
| 5 <sup>th</sup> Oct.  | CSIR-TECH       | Mr. Zakir Thomas (Head, DGTC) visits NCL to discuss             |
| 2008                  | Meeting         | CSIR-TECH idea with Dr. Sivaram & Dr. Premnath.                 |
| 19 <sup>th</sup>      | CSIR-TECH       | Meeting to discuss the CSIR-TECH idea, chaired by               |
| Sept.                 | Meeting         | DG, CSIR. [Ref. Addendum G]                                     |
| 2008                  |                 |   |
| 28 <sup>th</sup> Jan. | Germination of  | Mr. Amit Mitra (Sec Gen., FICCI) suggested in 170 <sup>th</sup> |
| 2008                  | CSIR-TECH idea  | GB meeting that "it is important to decide on the returns       |
|                       | in GBM Meeting  | to CSIR from non-public goods in interfacing with               |
|                       |                 | business."  |
| 16 <sup>th</sup> June | Office          | Dr. Y. Rao (Head, TNBD) issues OM for 'setting up               |
| 2006                  | Memorandum      | Incubation Centres in CSIR Laboratories.'                       |
| 2004                  | Official Report | Kelkar Committee Report states (p.141): "[t]he scientists       |

| in the CSIR do not appear to have an adequate             |
|---|
| appreciation of the dynamic interdependence of science    |
| and technology with society and economy CSIR may          |
| like to encourage scientists to develop better            |
| appreciation of the symbiotic and holistic positioning of |
| science and technology in society"                        |

### **CHAPTER 2: CSIR-TECH**

#### Introduction

CSIR-TECH is an initiative that has its objective to deliver an organizational structure to the CSIR scientists for commercializing their invention for the betterment of society and economy. Over a period of time, however, it has become synonymous to the organizational structure itself (i.e. name of the company). The concept of CSIR-TECH has evolved after having gone through many iterations and necessary corrections. Various elements are driving the need for a CSIR-TECH like organization:

- Sr. governmental push for innovation
- Easily accessible seed and growth capital
- Sole distributor of 2,000+ CSIR patents
- Direct access to 4,500+ CSIR scientists

Most important, unlike previous attempts, the driving goal here is a highly entrepreneurial-driven company composed of highly-experienced professionals who are incentivized to not only convert technology to product but also create new companies with professional management teams. NOTE: In some of the diagrams and figures, taken from Addendum I, we refer to CSIR-TECH as "GENESIS". This is currently the internal project name for CSIR-TECH.

### Mission

CSIR-TECH's mission is to become:

India's leading <u>product research and</u> <u>development company</u> delivering CSIR technologies for <u>inclusive growth</u> by driving entrepreneurial <u>innovations through new</u> <u>spin-off's</u> and joint ventures.

### **Market Opportunity**

There is significant market opportunity for innovation in India. The key driving factors

are:

- I Billion consumers in Indian market
- Seeking new products and services
- ~2000+ under-deployed CSIR technologies
- Inability to deliver technology to market
- Minimal incentives for CSIR scientists
- Lack of infrastructure for entrepreneurialism

#### The CSIR-TECH Solution

As shown in the slide below, CSIR-TECH will address the market opportunity by offering an environment for iterative product and company development through working with lab and scientists.

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Earlier models simply had the lab disposing of the technology to a Company (e.g. one directed arrow from Lab to Spin-Off/Company). One can also consider that CSIR-TECH's "input" will be technology from a scientist or lab. CSIR-TECH's "output" will be two-fold: (1) a product with customers and (2) a company (e.g. spin-off) as shown below.



#### How CSIR-TECH Will Work?

CSIR-TECH will be a **services organization** that systematically and professionally converts technology into products and **also** creates companies (as necessary) with sophisticated proven entrepreneurial teams that can sell and service those products. When a CSIR scientist comes to CSIR-TECH to commercialize their technology, a team of experts will first assess its viability and decide on the method of commercialization (e.g. spin-off, join venture, licensing). On recognition of its merit as a spin-off or joint venture, CSIR-TECH shall assign to the scientist a set of three experienced and highly professional people, one each for business development (a highly experienced entrepreneur), product development, and project management, as shown in the bottom part of the slide below.



The troika along with the scientist will be responsible from developing the technology idea from the lab stage to an end product that is user friendly and sellable in the competitive market. The senior CSIR-TECH management team shall lend this team full support in terms of advice and/or strong national/international network.

#### **Technology to Product and Spin-Off Development**

An idea or lab/scientist's technology is a "raw material". To make it viable in the market, it will have to go through a significant process of customer exposure and feedback. Unlike the earlier IP holding company model, in this model as presented to DG, CSIR, scientists, staff and directors of CSIR, per the presentation in Addendum I, CSIR-TECH would perform a service by converting the idea/technology through the stages of the *Innovation Engine* as shown below:



In this approach, the technology/idea will pass through at least three stages of development. In the first stage, the team will be responsible to get at least one customer (i.e. its FIRST adopter) and build a viable product from the technology/idea. The goal here is to get it to the hands of the Customer. Success or failure is not the issue; neither is good or negative Customer feedback. The goal here, to repeat, is to create a product, deliver to the Customer and acquire feedback. For this development, CSIR-TECH shall help in raising government money (e.g. TePP) or initial angel funding.

In the second stage, the team will strive to get at least 5-10 customers by building and executing a sales and marketing plan. This stage is crucial in determining actual sales cycles, servicing needs, cost of goods, etc. These kinds of variables cannot be calculated accurately in business plans using theoretical industry data. The feedback from these early Customers will help in transforming the prototype to a user-friendly product. In

order to do this, CSIR-TECH will provide design support, business development support, and help in raising money.

In the third stage, the CSIR-TECH will lay the ground to develop a business plan and determine the right methodology for scaling the Spin-Off, be it taking the Spin-Off public, raising additional funding from VC's or simply selling the Spin-Off or continuing to organically grow the Spin-Off.

### **CSIR-TECH Spin-Off Company Capital Structure**

An example of spin-off capital structure is proposed. In this example, CSIR-TECH ("Genesis") in lieu of or in addition to reduced services fees has taken a 35% equity stake in the Spin-Off. The Entrepreneur/Management/Employee equity stake in the Spin-Off is 65%.



### **Example** Spin Off Capital Structure

This is only an example and is indicative of one particular capital structure. The capital structure will be influenced by various factors (like, industry, nature of the product, business environment). CSIR-TECH's management will support corporate development of the Spin-Off through recommending and managing the right capital structure.

#### **Projections for CSIR-TECH**

The current projections for CSIR-TECH are shown below. Head, CSIR-TECH has currently identified at least 10 Spin-Off potentials.

- 6 Spin Off's in 2010
- 12 Spin Off's in 2011
- 20 Spin Off's in 2012

#### **CSIR-TECH's Administrative Structure**

The CSIR-TECH legal and administrative structure is based on the advice of the eminent ex-IAS Officer Dr. Damodaran, who is also ex-Chairman, SEBI & UTI. The elements of the structure are as follows:

- A Private Limited Company without "...any baggage from CSIR."
- Seven Board Members:
  - Head, CSIR-TECH
  - o Eminent CSIR Scientist/Director with Science Background
  - Eminent CSIR Scientists/Director with Engineering Background
  - Eminent Accounting/Legal Professional
  - Eminent Government Official

- Eminent Government Official
- Successful Indian Entrepreneur
- Corporate structure as shown earlier
- Company registered in India

### **CHAPTER 3: Spin-Off Opportunities**

Over the past 90 days, the following labs have been identified with likely Spin-Off opportunities. Out of the labs that Head, CSIR-TECH visited, every lab has at least one spin-off opportunity. In addition, from video conferences significant interest was generated leading to many detailed follow up discussions on executing Spin-Off's. The following labs have such potential Spin-Off's:

- 1. NAL, Bangalore
- 2. IGIB, Delhi
- 3. CIMAP, Lucknow
- 4. IHBT, Palampur
- 5. SERC, Chennai
- 6. NEIST, Trivandurum
- 7. CIMMACS, Bangalore
- 8. NBRI, Lucknow
- 9. NEERI, Nagpur
- 10. NML, Jharkhand
- 11. NIO, Goa

The individual Spin-Off opportunities span multiple fields of science and engineering. Given the confidentiality and competitive nature, the details of these opportunities cannot be shared at this point. From the experience so far, it is believed that nearly all thirtyseven (37) labs would have potential spin-off opportunities. It is also exhilarating to note that scientists have shown keen interest in Spin-Off activities, which gives credence to the idea of CSIR-TECH and the need for it.

## CHAPTER 4: CSIR GB Notes on Spinning-Off Companies

On August 11, 2009, at the Governing Board meeting, CSIR Guidelines and Operating Procedures of the Initiative on Encouraging Development and Commercialization of Inventions and Innovations were approved according to DG, CSIR. The meeting minutes of this meeting have yet to be issued.

These guidelines were pursuant to OM that was put in place on May 25, 2009. The guidelines addressed the following four areas:

- (1) Allowing researchers working at CSIR/Labs to have an equity stake in enterprises and spin-off's
- (2) Allowing CSIR/Labs to exchange knowledge base for equity and/or loan in a spin-off or enterprise
- (3) Enabling CSIR/Labs to set up incubation centers
- (4) Facilitating mobility of researchers between industry and scientific establishment.

The Guidelines are shown in Addendum F for the reader's detailed review. Element (3) and Element (4) were executed in previous OM's

While these guidelines are important, they still do not provide a clear step by step guide for a researcher to form a company. In interactions with scientists of CSIR, it is clear that while the are very enthusiastic of CSIR-TECH, they are diffident and cautious about their ability to setup and Spin-Out a company based on the current CSIR infrastructure and poorly drafted GB guidelines.

### **CHAPTER 5: Simplified Spin-Off Procedure**

Per the Guidelines indicated Chapter 4 and detailed in Addendum F, a researcher now can own equity in an Entity. However, some researchers may wish to form that Entity itself as it may not be pre-existent. In this context, the question arises, *how does one form such an Entity?* 

As of today, Head, CSIR-TECH has unearthed at least ten (10) spin-off opportunities within a subset of labs. The holy grail remains how do these researchers form a Company within the CSIR administrative/legal context. In discussions with CSRI, HQ staff, with decades of experience, an overwhelming majority of them, nearly 90%, believe that the current legal framework will not support the formation of a private company or at best make it so difficult and onerous, that no researcher, out of fear will ever venture into creating his/her own Entity.

From personal observations, this in fact appears to be the fact. For example, one CSIR, HQ staff member noted: "I simply wanted to start a non-profit and was told that I could not do it." In another example, a scientist at one lab who did participate in a Company started by his family was reprimanded and told to shut down the Company. And yet, more alarming is the note of one individual at CSIR, HQ who said that he was so demoralized in attempting to form a Company, he said he would never try again.

Such is the environment at CSIR. Fear is the biggest element stopping innovation. Ian Dean (Consultant, Leadership Development Program, CSIR) characterized this fear as a major issue hampering progress at CSIR, in his presentation at the 2009 Director's Conference this August, 2009 (see Addendum A)

Currently, while the Prime Minister calls for Innovation, and while Head, CSIR-TECH in less than 90-days has unearthed innovative spin-off opportunities, creation of the Spin-Off's is not feasible or viable, since the legal mechanisms do not exist or at best are onerous to execute.
Moreover, the current Guidelines require the approval of Lab Director and DG, CSIR for even a researcher to start a Company. Such an approval, while seemingly innocuous, from ground reality brings forth many issues which make starting a Company difficult for the scientist (e.g. internal cultures where an entrepreneurial scientist is not seen as a real "scientist" if he/she wants to become an entrepreneur, or feuds and pecuniary jealousies between scientist and director/DG, CSIR).

## The Need for a Simplified Procedure to Setup a Spin-Off

Right now, to overcome this fear and provide an easy mechanism, what is needed is a **simple** Step-by-Step Guide for Company Formation of a Spin-Off. Using elements of the Guidelines, we propose the following simplified Step-by-Step method. We will be submitting a version of this to the GB, CSIR for approval.

**Step 1:** Disclose your Company Idea to your Lab Director (or DG, CSIR if you are the Lab Director) using form in Addendum B. If there are any perceived conflicts, also fill the form in Addendum C.

**Step 2:** Within ten (10) days of receipt of the form by the Lab Director or DG, CSIR, if Lab Director or DG, CSIR wish to disapprove the idea, they must write the reason why, otherwise the Researcher can form the Company immediately. If there is a disapproval, then the Lab Director or DG, CSIR, in writing must disclose why they are disapproving and the Researcher has the right to appeal the decision to an independent Arbitrator within 30-days. The decision of the Arbitrator is final.

**Step 3:** Researcher can use the Company Incorporation Procedure in Addendum E to form the Company.

The Guidelines of August 11, 2009 are shown in Addendum F for the reader's detailed review.

# **CHAPTER 6: Options for CSIR-TECH Formation**

# Introduction

As aforementioned through the various discussions, three options have emerged as potential structures for executing CSIR-TECH. In this section we review those three structures and provide not only our thoughts, but also incorporate the feedback with those we have interacted with.

# **Option 1**

#### Description:

Create CSIR-TECH based on the equity model wherein CSIR holds near majority equity in CSIR-TECH and convinces early stage investors to take equity positions based on \$100 million valuation (as valued by DG, CSIR). This company will be set up legally and administratively with close ties to CSIR.

#### General Feedback from CSIR Scientists and Staff

It will be extremely time consuming and difficult to implement CSIR-TECH in this model. Consensus was that it would be very long process to justify such a valuation to CSIR-TECH, given that CSIR-TECH at day one will have no assets. In addition, creating the agreement between CSIR and CSIR-TECH will be yet another longer process. Finally, given the internal governmental rulings, it is unclear if setting up such a company would even be allowed (worst case) and/or end up in numerous approvals required. Example quotes, such as the following were conveyed by experts participating in this discussion: "We will be lucky if this can happen within 3 years", "It will never be possible at CSIR and even if it happens there will be so many conditions, it will become another NRDC".

# **Option 2**

## Description:

Execute CSIR-TECH as an internally funded project. It's goal would be to execute a few Spin-Off's in the next 12-month period. In this option, Head, CSIR-TECH along with CSIR-TECH team would create the same organization proposed in the PPT for CSIR-TECH. However, this structure would reside within the framework and rulings of CSIR and GoI.

#### General Feedback from CSIR Scientists and Staff

This appeared to be a better approach than Option 1. However, the general consensus was that even in project mode, significant constraints would be placed on Head, CSIR-TECH's ability to execute and hire the right and best personnel given the governmental constraints. Furthermore, to get the Project approved itself would take nearly 6 months. While this timeline would be shorter than the process for Option I, market opportunities may be lost. There could also be unforeseen bureaucratic procedures that could be fundamentally anti-entrepreneurialism. Example quotes, such as the following were conveyed by experts participating in this discussion: "You will be severely restricted in hiring the caliber of people you originally envision", "You will still be within the framework of CSIR", and "This is not a long-term solution".

# **Option 3**

## Description:

Create an independent private company that not only serves the purpose of CSIR and its scientists, but also has complete operational freedom. This option is the same model that Dr. Damodaran advised that a completely independent company without "any baggage" from CSIR be formed.

## General Feedback from CSIR Scientists and Staff

Majority of the scientists and staff at CSIR who have interacted in CSIR-TECH sessions have agreed that this option, based on their experience, is the most viable. They consider this option to be the most realistic, the most effective, and the fastest way to commercialize CSIR technologies. This option was also seen as low risk for CSIR. It was observed that this option would afford faster decision-making and enable an entrepreneurial culture, highly unlikely if CSIR-TECH was run in project mode (Option 2) or owned in any way by CSIR (Option 1). Through this option CSIR, its lab, and scientists would benefit from the professionalism needed to convert technology to product and form spin-off companies.

# **Chapter 7: Challenges**

# Introduction

There are multiple challenges to realizing a CSIR-TECH company. Clearly from the previous chapter, the administrative, legal, and financial challenges inherent in the CSIR, HQ infrastructure offers low probability for the success of CSIR-TECH relative to Option 1 and Option 2. However, beyond these known challenges there are significant past and existing challenges and future ones that must be documented and addressed forthwith if CSIR-TECH, even with Option 3, is to become a reality.

Mr. Ian Dean, Consultant, Leadership Development Program, [Refer Addendum A] systematically identified various inherent leadership challenges:

- Loss of faith in leadership
- Lack of professionalism
- Low sense of urgency
- Low sense of energy
- Disabilities such as:
  - o Denials
  - Cover-up's
  - Fear of embarrassment, rejection, victimization.
- Rigidity, conservatism, outdated leadership
- Failure to keep promises

These issues clearly have a significant impact on moving a major project such as CSIR-TECH forward. It is beyond the scope of this document to provide a solution to the core issues identified by Mr. Dean. We however document how these issues have manifest with CSIR-TECH and propose some solutions.

# **CSIR-TECH's Challenges**

Below, we provide the reader some of our experiences in facing the various challenges aforementioned within the context of the CSIR-TECH project. We have also proposed

our solutions to address these challenges. Given the draft nature of this document, we look to the reader to offer feedback and other potential solutions.

## 1. Lack of professionalism

- a. <u>Unresponsiveness</u> to e-mail and follow-up communication requests
- b. Inordinately prolonged meetings with monologues and little interaction
- c. <u>Tardiness and lack of punctuality</u> or simply missing meetings
- d. Random, unplanned, ad hoc meetings are the norm not the exception
- e. Meeting agendas, rarely existent (if so, of show value) and rarely followed
- f. <u>Massive disorganization</u> (except on particular projects)

**SOLUTIONS:** Hiring of professional project managers, training in time management, developing a sense of respect for others times, basic business/administrative management skill, development of core values for the organization tied to compensation.

#### 2. Denials, False Sense of Urgency, Deflections and Cover up's

- a. A consistent habit of creating short-term sense-of-urgency on a project or plan; however, when action is taken by project participants to move forward and original commitments are called forth to deliver, denials of the commitment or no sense of urgency is shown to follow through
- b. For months, CSIR-TECH has followed up on finalizing the structure for CSIR-TECH without any response. A few days before Foundation Day, urgent communication was made to Head, CSIR-TECH to "Launch CSIR-TECH" in presence of Minister.
- c. During recruitment of personnel, verbal and written promises are made.
  However, when execution is required, either denials or cover up's are done to deflect from those commitments.
- Random and evanescent participants appear and disappear from project teams as advisors without any prior notification. Parallel efforts are run without knowledge to existing project leaders giving a cloak-and-dagger environment (e.g. Venture Center knowledge is kept discrete with just enough given to give the appearance of inclusion).

**SOLUTIONS:** A process of proper documentation per the rules of CSIR, regularity in sending meeting notes following a meeting to establish accountability of all participants, openness in communication, regular project meetings rather than ad hoc ones.

#### 3. Promises Not Honored

- a. Example: Promises were made, after numerous follow up's, to deliver his alternative to Option 3, which was devised as early as July 15, 2009, for the Company formation of CSIR-TECH, perhaps the most important element in materializing CSIR-TECH. This promise was made on September 25, 2009. The promise included: (1) follow up in 24 hours with step-by-step methods for forming CSIR-TECH, (2) definition of the type of Company that should be formed by October 5, 2009, and (3) allocation of a budget for Head, CSIR-TECH ( to at least begin executing Spin-Off's uncovered). Step-by-step plan has yet to be delivered, CSIR-TECH has therefore elected to move forward with Option 3.
- b. Example: Head, CSIR-TECH was promised a minimum of Rs. 15 crore budget and staff of up to eight for supporting his efforts to create and be the CEO of CSIR-TECH. No such budget nor staff have materialized. Head, CSIR-TECH still has no dedicated or qualified PS.
- c. Example: The terms of Head, CSIR-TECH's offer which was promised to be clearly communicated to administrative officials at CSIR has yet to be formally done even after multiple and repeated requests. Most recently, on August 23, 2009, per Dr. Ramamurthy's insistence follow up was requested to document Head, CSIR-TECH's offer as agreed on June 10, 2009. DG, CSIR has yet to follow through on this promise, a promise which was the basis of Head, CSIR-TECH joining and becoming the first STIO/H of India.

**SOLUTION:** Develop a core value of integrity and honoring promises as a central theme for all to follow. This means from large issues to small issues. Create a culture of accountability by linking project deliver and/or promises to some recognition model or compensation structure.

#### 4. Inability to Let Go of Control and Allowing Hired Professionals to do their Jobs

- a. <u>One Step forward, Five Steps Back</u>. For example, expert advisors are hired. When a decision is in final stages of maturation, the advice and the path forward are unilaterally and unreasonably dismissed. For example, Dr. Srivastava's (Chairman Emeritus, NASSCOM & TiE, Delhi) advice was later dismissed as having 'vested' interested due to his running an 'angel fund', Dr. Damodaran's (ex-Chairman, UTI & SEBI) advice was dismissed on pretext of lack of complete knowledge of CSIR, etc.
- b. <u>Opposing Views not Allowed.</u> Professionals are assigned to projects their ideas, if they are contrary to DG, CSIR are not accepted and their ongoing efforts are severely constrained and success is sabotaged, even though DG, CSIR has minimal depth of information and domain knowledge. He believes he <u>"knows it all."</u>
- c. <u>A Culture of Sycophants.</u> A close coterie of sycophants, mostly incompetent, having a low sense of urgency and low energy are fostered to ensure that opposition is kept in check and nullified when necessary.

**SOLUTION:** 21<sup>st</sup> Century Leadership Training both short and long-term to be repeated until basic elements of leadership are learned. Beyond book learning.

# **CHAPTER 8: Path Forward**

# Introduction

In spite of the many real challenges faced by the personnel attempting to build CSIR-TECH, a *Path Forward* is proposed based on the input and feedback of the scientists, staff and directors of CSIR. This Path Forward is simple and direct. As stated earlier, this document is not mean to be a detailed DPR, GB Note, etc., but a document which simply presents the facts and a viable option to making CSIR-TECH a reality within the multiplicity of challenges and constraints inherent in CSIR.

# **Elements of the Plan**

The plan calls for the implementation of CSIR-TECH, as described in Chapter 2. Here are the following elements of the plan:

# **GB of CSIR Requirements**

Our implementation Plan requires the following two elements from the GB of CSIR:

- (1) Approval of the Simplified Spin-Off Procedure as previously described;
- (2) Allocation of two (2) eminent CSIR Scientists/Directors to be on the Board of the New Company, which will be on a 1-year rotation basis, to allow inclusive treatment of all labs.

# Company Creation

Per our plan the following steps will be followed to create the Company

- 1. Finalization of Board Composition
- 2. Registration of Company as a Section 25
- 3. Launch of Company

## Hiring of Key Managers

Key managers and entrepreneurs have not only been identified but also are ready to join CSIR-TECH within the proposed model. Such managers are motivated to become part of an innovation movement to create new and exciting companies.

# Funding for Company

In the spirit of entrepreneurialism, this Company will not require any funding from CSIR. It will generate from day-one its own sustainable source of funding and revenue. A detailed self-funding strategic and operation model has been developed. However, given the competitive nature of this effort, the detailed plan cannot be disclosed.

# Execution of Spin-Off's

Given the efforts of the past 90-days and the existing pipeline of nearly ten (10) Spin-Off's, the CSIR-TECH company will generate at least six (6) Spin-Off's within the first 12-months of operation.

# **Operational Timeline**

| Receive Joining Approvals from Proposed | October 30, 2009  |
|---|-------------------|
| Board Members                           |                   |
| Company Creation                        | December 15, 2009 |
| Hiring of Key Managers                  | December 15, 2009 |
| Funding for Company                     | December 15, 2009 |
| Execution of First Spin-Off             | March 15, 2010    |

**NOTE:** The above timeline will move forward in parallel to receiving from the GB the two (2) items mentioned above.

# **Operational Model**

CSIR-TECH will receive a negotiated services fee for executing its process per the *Innovation Engine* (see Chapter 2). The Lab and its Scientists can have the option to own 100% equity in the Spin-Off companies. CSIR-TECH will also offer flexible terms for conversion of services fees to equity.

# **Administrative Precedence**

Administratively, CSIR has already shown its support for enabling and participating directly and indirectly in a private company (e.g. Venture Center). In the case of CSIR-TECH, the process will be significantly easier since no resources (e.g. land, space) are required for the launch of CSIR-TECH from CSIR.

# Advantages to CSIR Scientists

The simple and easy-to-understand CSIR-TECH model proposed herein offers significant advantages to CSIR scientists to exercise innovation at CSIR. These include:

- Professional, seasoned, well-qualified management with decades of entrepreneurial experience
- A powerful innovation engine process, proven in real situations, not a "theory"
- A strong and deep and broad Board
- A culture of innovation, freedom, risk-taking and transparency
- Self-sustainable business model, from day one
- Strong international and national network
- An environment fostering "open door policy" and excellence in communication

Addendums

Addendum A Ian Dean's Presentation At The CSIR Director's Conference August 29, 2009

# Report back on CSIR

lan Dean – 29 Aug 09

Whatever you say about CSIR

# Right will be wrong Wrong could be right









# LEADERSHIP

 Serious loss of faith – in leaders and org – stabilized but delicately poised
 Shortage in number,
 Shortage in number,
 Shortage, urgency and voltage
 Rigid, conservative, outdated, submissive and risk averse (real fear)

# "Are there *enoughwei ropeople*in the lab these days?"

V. Chairman., pharmaceutical house, to a lab director (Jan 06)





# CSIR? Mega organization! Biggest problem?

# How to renew its Human DNA

# Addendum B

# Proposed Form for Spin-Off Company Disclosure CSIR COMPANY FORMATION DISCLOSURE FORM

| NAME:   | ("RESEARCHER")             |  |  |  |
|---|----------------------------|--|--|--|
| ADDRESS:  |                            |  |  |  |
| CITY:   | STATE:                     |  |  |  |
| POSTAL CODE:  | _ COUNTRY:                 |  |  |  |
| CSIR AFFILIATION (if not given in address):                                     |                            |  |  |  |
| TELEPHONE NUMBER (including coun  | try and area codes):       |  |  |  |
| (work)  | (home)                     |  |  |  |
| FAX NUMBER: E-  | MAIL ADDRESS:              |  |  |  |
| I, the above named RESEARCHER, on   | ("DATE") am disclosing to  |  |  |  |
| my Lab Director at CSIR and/or DG, CSIR that I will be forming a Company by the |                            |  |  |  |
|   | ) whose purpose will be to |  |  |  |
|   |                            |  |  |  |
|   | ·                          |  |  |  |
|   |                            |  |  |  |

I understand that within ten (10) days of the DATE, unless I hear otherwise in writing, CSIR is approving my formation of COMPANY and I will proceed with Company formation.

Yours sincerely,

**RESEARCHER NAME** 

SIGNATURE

DATE

# Addendum C

# Approval Forms for Disclosing Conflict of Interest CSIR COMPANY CONFLICT OF INTEREST DISCLOSURE FORM Information on person filling this form

| A1. | Name                 |  |
|-----|----------------------|--|
| a2. | Designation          |  |
| а3. | Name of Laboratory   |  |
| a4. | Affiliation (Group/  |  |
|     | Dept)                |  |
|     |                      |  |
| а5. | Contact information/ |  |
|     | address              |  |
|     |                      |  |
| a6. | Phone                |  |
|     |                      |  |
| a7. | Email                |  |

# Background and origin of potential conflict of interest

| b1 | Describe the             |  |
|----|--------------------------|--|
|    | circumstances leading    |  |
|    | to potential conflict of |  |
|    | interest issue.          |  |
|    |                          |  |
|    |                          |  |

| b2. | CSIR/Laboratory             |  |
|-----|-----------------------------|--|
|     | analysis of avoidance       |  |
|     | of conflict of interest, if |  |
|     | arises.                     |  |
|     |                             |  |
|     |                             |  |
|     |                             |  |
|     |                             |  |
|     |                             |  |
|     |                             |  |

# c. Undertaking

Notwithstanding any permission granted, I shall not directly or indirectly associate myself:

- i. with any process to license knowledgebase to the Scientific Enterprise;
- ii. with any process for the purchase or hiring of any goods and services from the Scientific Enterprise; and
- iii. with the evaluation of any goods or services that compete with the goods or services of the Scientific Enterprise.

Signature: \_\_\_\_\_

Name of the Scientist: \_\_\_\_\_

# Witnesses:

1. \_\_\_\_\_

2. \_\_\_\_\_

**Recommendation of Director** 

Approval of DG,CSIR

# Addendum D

# **Initially Proposed IP Commercialization Model**

The following model is the commercialization model in discussion prior to the joining of Dr. Shiva (Addendum I). This model focuses on CSIR's IP and creates a two-layered infrastructure with an IP Holding Company and Private Partnerships.



# WHAT IS OUR WISH LIST??

- Institutionalize facilitating mechanism to
  - shorten Lab to market cycle and
  - maximize economic returns
  - realign R&D focus to market needs
  - bridge capacity gaps at CSIR
- Protect and complement interests of inventor, CSIR for benefit of the people of India

Examples to learn from around the world

- University of Chicago
- Harvard University
- University of Illinois
- Imperial College
- Imprimatur Capital, Intellectual Ventures
- ISRO
- Massachusetts General Hospital
- Harvard University
- CSIRO

# **Identified Business Models**

# In-house

- Centralized (Tech Transfer Office): Harvard University, The Australian National University, MGH
- Hub and spoke model: CSIRO
- Subsidiary Company: Sarnoff, Antrix
- Public private Partnership
  - ARCH, Imperial innovations
- Independent companies
  - Imprimatur Capital, Intellectual ventures

# In-house Commercialization Capability

# 1. Technology Transfer Offices

#### Advantages

- ✓ Help University scientists to commercialize technologies.
- ✓ Technology transfer officers are knowledgeable in management of technology, negotiating licensing agreements, developing a new venture, raising funds, etc.

#### Drawbacks

- ✓ Technology transfer officers typically have generic understanding of the commercialization process.
- Technology transfer officers typically have limited understanding of a particular industry sector.
- ✓ Technology transfer officers see themselves as advisors/consultants, hence their role in new venture process or technology transfer is less involved.

# In-house Commercialization Capability

# 2. Hub and Spoke Model

This model tries to draw on the benefits of both centralized and decentralized organizational models. Every scientific site is supported by local business development officer, who will do the first evaluation of the commercial potential of technology. Since these officers have good understanding on the scientific subject, they are able to do better justice to the process. They are in turn supported by the centralized team at the Head Quarters who have more advanced knowledge of commercialization process and also have deeper networks.

#### Advantages

- ✓ Help scientists to commercialize technologies.
- Ideal mix of sectoral specialist Commercialization Managers at the local level and functional specialists at the Head Quarter level.

#### Drawbacks

- Officers/Managers see themselves as advisors/consultants, hence their role in new venture process or technology transfer is less involved.
- When remuneration and performance is linked to the number of start-ups then quantity rather than quality of spin-outs become a priority, leading to a high failure rate.



# **Independent Private Companies**

# Advantages

✓ Bring in a high level of expertise for commercialization activity. A very robust process of due diligence before any technology is taken for commercialization.

## Drawbacks

- ✓ The prime objective of these independent companies is profit maximization, hence their commercialization approach is very selective and opportunistic in nature.
- ✓ It is a transaction based approach to commercialization than a deep relationship based approach.
- ✓ The role of scientists and the public research institute is less involved, and the direct benefit in case of any unforeseen big success is minimal.



A private entity develops a deep institutional linkage with a public research institute/university to commercialize their technologies on an exclusive basis.

#### Advantages

- ✓ Bring in a high level of expertise for commercialization activity. A very robust process of due diligence before any technology is taken for commercialization.
- ✓ The organization and the scientist benefit directly from this initiative. Both of them are keen to play an active and responsible role in commercialization process.
- Drawbacks
  - ✓ The prime objective of the private company is profit maximization, although their commercialization approach is less opportunistic in nature as compared to the private independent companies.

# Public Private Partnership – Imperial College

- Imperial Innovations is a private company that is involved in spinning out companies from the Imperial College, London. The important activities of Imperial Innovations are: Intellectual Property Sourcing, Intellectual Property Strategy, Product Validation, and Licensing or Spin-out formation.
- Business Development department support the formation and development of strategic alliances that will lead to research collaborations of value to both partners. Projects can take many forms, such as sponsoring an institute or a student, or collaborative research and development.





# Hybrid Model - University of Illinois

- OTMs (Office of Technology Management) are to be restructured such that technology specialists are hired who will take the initiative to patent, market, and license the intellectual properties. These specialists will be hired in consultation with faculty members of respective unit. This leads to a decentralized organizational structure and more cooperation among various units.
- All the activities of OTMs and IllinoisVenture LLC is coordinated by the Office of Economic Development and Corporate Relations, which in turn reports to the President of the University and to Board of Trustees.

The said model has elements of hub and spoke model, technology transfer office model, and private subsidiary company.



# Proposed Model for CSIR should have...

- Sector specialist commercialization manager should be the first person to asses the commercial viability of the technology at the individual lab level.
- 2. A subsidiary company (profit or non-for-profit) should have the rights to commercialize all the technologies of CSIR.
- 3. Subsidiary company forms a partnership with independent private companies to commercialize technologies transferred to it. It is recommended that multiple partnerships with sectoral focus are formed to carry out this activity. This activity should only be limited to new venture formation.
- 4. The preferred partner for the given sector will have the first right to assess its viability for a new venture formation. If concluded otherwise, the technology is retained by the subsidiary for other commercialization options (like licensing).

The proposed model is a <u>HYBRID MODEL</u> as it contains elements of: Hub and Spoke model, subsidiary company model, public private partnership model (University of Chicago and Imperial College), and independent private companies model.



Underlying drivers - Valorization of CSIR IP portfolio

- Model should be systematic and fair Level playing field to all players – No selection bias and equal access to the portfolio of CSIR IP
- Non-binding and non-exclusive arrangements Testing boundaries and compatibility – Avoid "<u>stuck in the middle</u>" problem
- In case of common interest shown by two or more organizations for an IP, selection of partner is based up on scientific criteria (which includes business plan and monetary returns to CSIR) - thereby avoiding problem of "preferential treatment" to an individual company.

# Addendum E

# **Company Incorporation Procedure**

**Step 1**- Availability of name - As a starting point, a search to check the availability of the desired name needs to be conducted online on the Ministry of Company Affairs (*MCA*) portal. It is recommended that 3 to 4 names be provided in the desired order of preference. It is further recommended that the NewCo be incorporated as a private (rather than public) company, as private companies are subject to a more liberal regime as compared to public companies under Indian law.

<u>Step 2</u> - A Board resolution of the two shareholding companies (please see Step 5 below) will need to be passed approving incorporation of a company in India, authorizing members of our firm to sign the documents on behalf of the shareholding companies.

<u>Step 3</u> - Determination of authorized share capital - The minimum authorized share capital of the company at the time of incorporation will depend upon the proposed name of the NewCo. For example, if the proposed name of the NewCo includes the word "India", the minimum authorized share capital needs to be Rupees 500,000 (approximately Euros 7,500). Ad valorem stamp duty will be payable on the amount of authorised capital (at the time of incorporation) based on the rates of stamp duty applicable in the state where the NewCo is proposed to be incorporated.

<u>Step 4</u> - Directors, Director Identification Number (DIN) - A minimum of two directors are required for a private limited company incorporated in India. Whilst the directors could be of any nationality, any person proposed to be appointed as a director of an Indian company will need to have obtained a DIN. The procedure for obtaining a DIN is attached separately. The names and DINs of the proposed directors are required to be mentioned in Form 1A. If the proposed directors of the NewCo do not have a DIN at present, members of our firm can, in the interest of

time, act as the first directors of the NewCo. The nominees can obtain their DINs in the meanwhile by following the attached procedure. The directors will also need to obtain digital signatures to make regulatory filings with the MCA. This is quite a straightforward procedure which can be actioned simultaneously with the DIN applications.

<u>Step 5</u> - Filing of the 'availability of name' form (Form IA) - After determining the above mentioned details, an application in Form IA for availability of name is to be submitted with the MCA. Following details are to be furnished in this form:

- A private company should have a minimum of two shareholders.
  Names and addresses of the shareholders to be mentioned. The other shareholder can just hold a nominal number of say 10 shares.
- $\Box$  State where the new company will be based.
- □ Main objects of the company and proposed authorized capital.
- $\Box$  Particulars of directors please see Step 4 above.
- □ The Board resolutions mentioned in Step 2 above, duly notarized and apostilled, authorizing the incorporation of the NewCo and sanctioning the use of name to be submitted.
- □ It needs to be mentioned whether the proposed name is either a registered trademark or a subject matter of a pending trademark application in India. If so, the details of the trademark or the application need to be provided.
- $\Box$  The form should be signed digitally.

The name approval process typically takes between four to five working days from the

<u>date a completed Form IA is filed</u> with the MCA. The name approval is initially valid for a period of sixty days within which the company must complete all registration formalities (i.e. Step 6).

**Step 6** - Filing the incorporation documents - Once the MCA has approved the name of the NewCo, we will need to file Form 1 (for declaration of incorporation of a company), Form 18 (for intimating the location of the registered office of the NewCo) and Form 32 (for appointment of directors) with the MCA along with the Memorandum and Articles of Association and the prescribed filing fees (which will depend. on the amount of authorised capital). It usually takes between <u>seven to ten working days for the MCA to issue the certificate of incorporation</u> from the date on which a complete application has been filed.

Please note that the above timelines may vary slightly depending on the state in which the NewCo is proposed to be incorporated.

<u>Step 7</u> - Post incorporation requirements - The NewCo will need to take the following steps after receipt of the certificate of incorporation.

- □ Obtain a common seal
- Obtain Permanent Account Number (PAN) This is a routine registration with the income tax authorities (which is also a prerequisite to open a bank account).
- $\Box$  Open a Bank Account.

☐ Obtain Tax Deduction Account Number (TAN) – This is a routine registration with the income tax authorities for the purpose of deducting tax at source.

# Addendum F

Guidelines for Spin-Off and Knowledge to Equity Guidelines and operating procedures for implementation of the initiative on Encouraging Development and Commercialization of Inventions and Innovations: a New Impetus

# Preamble

Department of Scientific & Industrial Research (DSIR) vide OM NO. 3/3/2009-TU/V/Knowledge-to-equity dated May 25, 2009 has put in place a new initiative entitled "Encouraging Development and Commercialization of Inventions and Innovations: A New Impetus". This initiative has four distinct components, namely:

- Permitting the researchers working in Scientific Establishment to have an equity stake in scientific enterprises / spin offs while in professional employment with their research and academic organizations;
- Permitting the Scientific Establishment to invest knowledgebase as equity and / or loan in an Entity;
- (iii) Encouraging the Scientific Establishment to set up incubation centers; and
- (iv) Facilitating mobility of researchers between industry and scientific establishment.

CSIR had constituted a committee to prepare detailed guidelines and operating procedures for implementation of the initiative and also to evolve guidelines to address issues related to conflict of interest. These have been worked out and given in the following paragraphs:

# A. Guidelines and operating procedures for the Initiative

# Component 1: Guidelines for Scientific Entrepreneurship Scheme

# 1. The Background

Promoting science and engineering based enterprises and entrepreneurship is the future challenge for Indian R&D institutes and universities as the way to create continued impact on society and the economy. This measure will encourage not only creation of new businesses/ spin off companies but also employment opportunities for highly skilled technical and scientific personnel.

# 2. Definitions

In these guidelines, unless the context otherwise requires:

- (a) "Government" means the Central Government;
- (b) "Entity" means a "person" which includes any company or association or body of individuals, incorporated under various laws, constituted primarily to commercialize Knowledgebase;
- (c) "Scientific Enterprise" means a special class of new Entity that leverages scientific research, inventions and innovations and transform into commercializable technologies/products.
- (d) "Scientists" means Group IV scientist of CSIR.
- (e) "Knowledgebase" means all inventions / innovations (whether patentable or not) invention / innovation disclosures, trade secrets, know-how, proprietary information, technical data, documentation, data collections, databases, concepts, processes, software, designs drawings, materials,
support services and the like, whether or not the foregoing are in tangible or intangible form.

#### 3. Eligibility

The scheme shall be applicable to Group IV scientists in CSIR.

#### 4. Procedures

- 4.1 Any CSIR scientist desiring permission under the scheme shall apply to the Director of the Laboratory in prescribed form.
- 4.2 The concerned Laboratory shall examine each application received under the scheme, seeking permission to have a stake in a scientific enterprise and to be associated with the Entity as non-executive Director, in accordance with procedures.
- 4.3 The application of the scientist shall be decided by the Director of the Laboratory and will be approved by the DG,CSIR in shortest possible time.
- 4.4 Not withstanding anything contrary contained in any other rule, order or notification but subject to the provisions of this Scheme, Director of the Laboratory may or may not recommend permission as sought by the Scientist in the application.

### 5. Responsibilities and Liabilities of Scientist

- 5.1 The primary responsibility of the Scientist is to the CSIR and shall be bound by any instructions, general or specific, that the CSIR may issue from time to time.
- 5.2 The Scientist(s) making application under the scheme shall bring the potential conflict of interest issues to the knowledge of the Director of the Laboratory(or his/her nominee) and shall be governed by the instructions

issued by the Director of the Laboratory. The guidelines on issues relating to conflict of interest will form the basis for this purpose.

- 5.3 Notwithstanding any permission granted to a Scientist, no scientist shall directly or indirectly;
  - i. associate himself / herself with any process to license knowledgebase to the Scientific Enterprises;
  - associate himself / herself with any process for the purchase or hiring of any goods and services from the Scientific Enterprises;
  - associate himself / herself with the evaluation of any goods or services that compete with the goods or services of the Scientific Enterprises;
- 5.4 The scientist may provide professional advice to the Scientific Enterprises, on such terms and conditions as the CSIR/ Laboratory concerned may prescribe from time to time.
- 5.5 If the scientist desires to be associated with the Scientific Enterprises in the initial stage on a full time basis, the scientist shall be on a lien for a maximum period of three years from the CSIR/Laboratory concerned.

#### 6. Responsibilities and Liabilities of Scientific Enterprise

- 6.1 The scientific enterprise should not be construed as an agent or representative or part of the CSIR/Laboratory. The scientific enterprise is solely responsible for the activities undertaken by it or for any liabilities that may arise from its activities.
- 6.2 The Scientific Enterprises can utilize the resources of the CSIR/ Laboratory concerned (the term 'resources' shall be construed widely and

include, without limitation, laboratories, equipments, personnel and space of the Scientific Establishment) with prior approval in writing and on such terms and conditions as the CSIR/ Laboratory concerned may prescribe.

- 6.3 Subject to the existing rights or licenses, the scientific enterprise shall have the option to obtain license of Knowledgebase from the CSIR by paying royalty (upfront or staggered with milestones or a combination of both).
- 6.4 The scientific enterprise shall continue to be liable to the CSIR for payment of royalty as per agreement even if the Scientist disinvests his/her stake in the Scientific Enterprises.

#### 7. Responsibility and Liabilities of CSIR/ Laboratories

- 7.1 CSIR may take equity stake in the Scientific Enterprise in lieu of royalty/premia or its combination, as per agreement. In case CSIR decides to disinvest the equity, it will be first offered to the promoters of the Scientific Enterprise.
- 7.2 Inventor will have the first right of refusal of exploiting the knowledgebase to create Scientific Enterprise. However, CSIR shall license Knowledgebase to the Scientific Enterprise on terms not less than the terms on which the CSIR would have licensed the Knowledgebase to another entity on arms length basis.
- 7.3 The scientist who has been granted permission under the scheme shall be exempted from the provisions of the Rules 15, 16 and 18 of CCS (Conduct) Rules, FR-11 and other related rules.

#### 8. Resolution of disputes

"Any dispute arising out of the agreement shall be referred to an arbitral tribunal comprising of three arbitrators; one arbitrator to be appointed by each party to the dispute and the two arbitrators in turn shall appoint a third arbitrator. The three arbitrators shall constitute the Arbitral Tribunal. The decision of the arbitral tribunal shall be final and binding on the parties. The venue of the arbitration shall be the place of the laboratory concerned. The arbitration proceedings shall take place in accordance with the Indian Arbitration and Conciliation Act 1996 or any subsequent amendment thereof. The cost of arbitration proceedings shall be equally shared by both the parties. The language of the arbitration proceedings shall be English.

## Component 2: Guidelines for Investing Knowledgebase as Equity in an Entity

#### 1. The Background

The focus is to permit Scientific Establishments and Industrial Research Organizations (SIROs) to invest knowledgebase as well as cost of support services as equity in an Entity.

#### 2. Objective

The objective of this scheme is to encourage and support enterprises aiming to commercialize knowledgebase developed at CSIR labs by allowing CSIR to take equity in lieu of licensing/assignment fees (upfront or deferred, in part or whole) and/or fees for support services.

#### 3. Definitions

In these guidelines, unless the context otherwise requires:

- (f) "Government" means the Central Government;
- (g) "Entity" means a "person" which includes any company or association or body of individuals, incorporated under various laws, constituted primarily to commercialize Knowledgebase;
- (h) "Scientific Enterprise" means a special class of new Entity that leverages scientific research, inventions and innovations and transform into commercializable technologies/products.
- (i) "Scientists" means Group IV scientist of CSIR.
- (j) "Knowledgebase" means all inventions / innovations (whether patentable or not) invention / innovation disclosures, trade secrets, know-how, proprietary information, technical data, documentation, data collections, databases, concepts, processes, software, designs drawings, materials, support services and the like, whether or not the foregoing are in tangible or intangible form.

### 4. Eligibility

With the permission of DG-CSIR, all CSIR laboratories shall be able to exercise an option of taking equity in an entity in lieu of licensing fees (upfront or deferred, in part or whole) and/or fees for support services.

#### 5. Procedures

#### 5.1 General

5.1.1 The Laboratory desiring permission for equity participation for its knowledgebase shall apply to the Director General in prescribed form.

5.1.2 The Laboratory shall provide a detailed justification for a) taking the equity route as opposed to the conventional licensing route, and b) the rationale for the proposed level of equity planned to be held in the entity and any other related terms.

5.1.3 Not withstanding anything contrary contained in any other rule, order or notification but subject to the provisions of this guideline, Director General, CSIR may or may not grant permission as sought by the Laboratory in the application on the basis of sensitivity angle.

5.1.4 The final approval on the application made by Laboratory shall be given by DG,CSIR within a quarter (three months time) from the date of receipt in CSIR HQs.

#### 5.2 Terms of Knowledgebase as Equity

5.2.1 The terms of knowledgebase as equity would be finalized by CSIR based on the mutual agreement between the identified entity, and other involved parties and the CSIR constituent Laboratory.

5.2.2 Equity investment shall be made in lieu of royalty/premia (upfront or staggered with milestones or a combination of both or in any form as agreed upon) resulting or expected from Knowledgebase (as defined) through a valid licensing agreement only.

5.2.3 CSIR Laboratory could also invest the cost of support services of CSIR as equity with the approval of the respective competent authority.

## 5.3 Issues pertaining to management of the Entity wherein equity stake is being taken

5.3.1 Laboratory shall not participate in the management of the Entity wherein CSIR constituent Laboratory is investing knowledgebase as equity. The management of such entity shall vest in the promoters or next majority stakeholder.

5.3.2 Laboratory shall be allowed to nominate its representative on the Board of Directors of the company/ management mechanism of the Entity if required.

## 5.4 Distribution of the money received from the Enterprise wherein equity stake is being taken

5.4.1 The dividend received from entity as well as divestiture of equity shall be shared with the innovators and staff of concerned CSIR Laboratory /CSIR HQs. as per the procedures laid down by CSIR.

5.4.2 Dividend received from the income of such entity as well as the amount received due to divestiture of equity shall be ploughed back by CSIR in furthering its research objectives.

5.4.3 CSIR/Laboratories shall be permitted to hire the services of professional institutions to assist in setting up equity arrangements and/or managing the equity portfolio.

5.4.3 CSIR at an appropriate opportunity, on its discretion, shall have the option to divest its equity in an entity as per the financial norms.

#### 6. Power to approve investment of Knowledgebase

The Competent Authority to approve investment of Knowledgebase as well as cost of support services as equity, in an Entity is DG,CSIR.

# B. Guidelines to address issues related to Conflict of Interest related to implementation of the initiative

CSIR has not only pioneered the concept of R&D as Business but has practiced it successfully and fine tuned it over the years. The contract R&D undertaken by CSIR constituent Laboratories has lead to understand not only tenets of IP capturing and sharing with sponsors but also maintaining proprietary of knowledge among various clients. CSIR thus has long experience of dealing with industry for R&D related matters.

#### 1. The basis for establishing Conflict of Interest

Conflict of interest arises in a situation in which a scientist's interest vis-à-vis the interest of CSIR in the event of permitting scientist to have equity stake in a scientific enterprises while continuing as scientist in the CSIR. A conflict of interest may prejudice a scientist's ability to perform his or her duties and responsibilities objectively.

The situation can be better explained by use of the term "conflict of roles". Scientist of CSIR may experience situations where those two roles conflict.

## 2. General principles for dealing with conflicts of interest and commitment for scientists:

It is the policy of CSIR that its scientists and others acting on its behalf have the obligation to avoid ethical, legal, financial, or other conflicts of interest and to ensure that their activities and interests do not conflict with their obligations to CSIR / Laboratory or its welfare.

In this context, CSIR scientist shall disclose all possible situations that may result in a conflict of interest to the designated officer in the CSIR/Laboratory. The designated officer shall also advice individuals on conflict avoidance and / or management, wherever required. Scientist of CSIR / Laboratory shall mitigate the possibility of conflicts arising by recusing them from certain situations / decisions or avoidance. CSIR scientist should also report any breach of the conflict of interest or commitment policy without deliberate intention or knowledge to the designated officer in the CSIR / Laboratory.

## Addendum G Selected Meeting Minutes

## Meeting Note : 19<sup>th</sup> Sept. 2008

#### Thought paper: CSIR Tech (by V. Premnath)

Date: 19 Sept 2008

#### DG's points - CSIR Tech:

- A private limited company with an arms-length relationship with CSIR
- For-profit  $\rightarrow$  meaning "profit gets distributed" to share holders.
- Professional management and transparency of licensing (agreements, negotiations)
- Not like NRDC  $\rightarrow$  in terms, employee incentives and linkage to performance.
- Create highest value out of IP

#### The proposal:

CSIR-Tech as proposed:

- A private limited company
- Ownership control by CSIR (?)
- CSIR as investor? Other investors?
- Makes profits (but will it?)
- Delivers returns to shareholder broader social return ("Do Something" model listed NYSE/ NASDAQ) or a simple profit.
- May or may not be Section 25 (only relates to distribution of profits to share holder)
  - Plus: Not Section 25 may allow sharing company with employees (ESOPS)
  - Minus: Section 25 will allow access to public funds.

- Scope:
  - Strategic funding of technology projects in CSIR labs (only CSIR labs?) in return for full IP rights → similar to NMITLI function
    - Technology fund
      - Socially relevant technology fund: More likely to receive philanthropic funding besides funding.
      - "Market" driven technology fund
    - Technology road mapping and market opportunity identification
  - IP/ patent development
    - IP assessment and valuation; IP portfolio planning
    - Further funding to broaden/deepen IP portfolio; test ideas, pilot plant etc
    - Strategic drafting, filing and prosecution of patents. → similar to *IPMD function*
    - Investment in patents; holding company
    - Decision to allow lapse/ maintenance etc; Decision to donate IP etc.
  - In-licensing of intellectual property; developing it further; consolidation
  - In case of IP which is not of interest to CSIR Tech (for investment purposes), CSIR Tech can still provide tech transfer services:
    - For a service fee and a performance based commission, negotiate deal, agreement and seal the deal as an independent 3<sup>rd</sup> party player.
    - Insurance cover for CSIR labs
    - This should take care of IP generated outside CSIR Tech funding.
      This IP is not part of CSIR Tech holding.
  - Out-licensing of IP
    - Marketing; Identifying potential buyers
    - Negotiating
    - Agreements
    - Enforcement and recovery

- Insurance
- Spin-off companies based on IP
  - Identifying IP to be spun-off as companies
  - Know-how developers as equity holders
  - Structuring spin-offs
  - Bringing an entrepreneurial team into place
  - Bringing in seed investment/ co-investment
  - Business incubation support physical and mentoring/ advisory support
  - Exit: Strategic sale, IPO
- Pre-seed/ seed/ venture funds
  - NBFC subsidiary of CSIR Tech
  - Professional investment committee

#### Issues/ potential barriers

- Known fact that not too many technology transfer offices earn their expenditure.
- Investing in technology development is risky (long incubation periods; high risk of failure; lot of judgment while deciding on which project to fund)
- How to incentivize scientists of CSIR to tap into CSIR Tech funding? They have several other funding choices.
- Most technology licenses have to include an arrangement involving the inventors/ technology developers close involvement in commercialization. Will the inventor take an arms-length view if CSIR Tech is outside the system?
- Will/ should there be clauses to promote Indian interest/ commercialization in the Indian market? Will this interfere in the company's decision making process?

#### **Role models:**

- Imperial Innovations: <u>http://www.imperialinnovations.co.uk/</u>
- Oxford (ISIS Innovations; Begbroke Science Park): <u>http://www.isis-innovation.com/</u> | <u>http://www.begbroke.ox.ac.uk/</u>
- IP Value: <u>http://www.ipvalue.com/</u>

- Imprimatur Capital: <u>http://www.imprimaturcapital.com/</u>
- Intellectual Ventures: <u>http://www.intellectualventures.com/</u>
- TTP Group : <u>http://www.ttpgroup.com/</u>

#### Differentiation:

| Current<br>proposal | Business as<br>usual case:<br>TNBD,<br>BDD, IPMD | NRDC          | Take NRDC<br>and change<br>it | Third party;<br>outsourced;<br>Ex:<br>Imprimatur<br>Capital |
|---------------------|--|---------------|-------------------------------|---|
| Can                 | Employees  | Public sector |                               |   |
| incentivize         | incentives                                       | company;      |                               |   |
| employees.          | not linked to                                    | Employees     |                               |   |
| Can keep            | performance                                      | incentives    |                               |   |
| them                | / delivery.                                      | not linked to |                               |   |
| entrepreneur        | Limitations                                      | performance   |                               |   |
| ial.                | in attracting                                    | / delivery.   |                               |   |
|                     | the right  | Limitations   |                               |   |
|                     | people.  | in attracting |                               |   |
|                     |  | the right     |                               |   |
|                     |  | people.       |                               |   |
| Involvement         | Only   | Only          |                               | Technology  |
| and                 | intermediary                                     | intermediary  |                               | funding   |
| ownership           | . No funding                                     | . No funding  |                               | usually   |
| from                | of   | of            |                               | absent. They  |
| concept to          | technology.                                      | technology.   |                               | come in at  |
| end.                | Lack of  | Lack of       |                               | invention   |
|                     | ownership/                                       | ownership/    |                               | disclosure  |
|                     | responsibilit                                    | responsibilit |                               | stage. Risk   |
|                     | y for  | y for         |                               | taking still  |

|              | technology.   | technology.  |    | conservative   |
|--------------|---------------|--------------|----|----------------|
|              |               |              |    |                |
| Strategic    | Strategic     | Strategic    |    |                |
| planning and | thinking and  | thinking and |    |                |
| decision     | investment    | investment   |    |                |
| making       | decision      | decision     |    |                |
|              | absent        | minimal      |    |                |
|              | Commercial/   |              |    |                |
|              | investment    |              |    |                |
|              | decisions     |              |    |                |
|              | can be        |              |    |                |
|              | biased/       |              |    |                |
|              | colored by    |              |    |                |
|              | other         |              |    |                |
|              | consideratio  |              |    |                |
|              | ns. Difficult |              |    |                |
|              | to take a     |              |    |                |
|              | unbiased      |              |    |                |
|              | decision.     |              |    |                |
|              | Are we        |              |    |                |
|              | underselling  |              |    |                |
|              | ? Quality of  |              |    |                |
|              | agreements?   |              |    |                |
|              | Liabilities?  |              |    |                |
| Can have     |               |              |    | National       |
| clauses to   |               |              |    | interests will |
| protect      |               |              |    | not be         |
| national     |               |              |    | considered.    |
| interests.   |               |              |    |                |
|              |               |              | ?? |                |
| Liability of | Liability is  | ??           |    | ??             |

| CSIR Tech.  | directly of |  |  |
|-------------|-------------|--|--|
| Insurance   | CSIR.       |  |  |
| etc cover.  | Mechanism   |  |  |
| Better      | to protect  |  |  |
| agreements. | are weak.   |  |  |

## Meeting Note : 28<sup>th</sup> Nov. 2008

Meeting on 28 Nov 2008

#### Desired end-points

Better protection and enforcement (improve filing strategy; improve quality of drafting; track infringement)

Better returns for investment on patent filing costs (better ideas; better draft quality of patents; portfolio management; aggregation; more aggressive and professional marketing; explore more avenues besides traditional licensing – spin-offs, PPPs)

■ Lower time and efforts of scientists and CSIR (efficient operations by external-to-CSIR dedicated and specialized persons with minimum time commitment of CSIR scientists → create institutional systems to hire/ retain good people)

Lesser risks of liabilities etc (better agreements; deal through limited liability entity)

Greater transparency and lower opportunities for unethical practices (built-in rewards systems for transparency and ethical negotiations/ deals)

#### Other desirables

Seek partnerships with experienced players with tech marketing expertise (ex: Imperial Innovations, TTOs)

Seek global markets and players with global reach

• Leverage ability of (private?) companies in being more aggressive, efficient and their ability to hire/ retain people of the right kind with greater incentives.

#### Things to retain

Freedom and authority of labs/ Directors

Meeting on 28 Nov 2008



#### My guess of how Imperial Innovations is structured



My guess of how Imperial Innovations is structured



## Meeting Note : 9<sup>th</sup> Feb. 2009

| Review of Proposal submitted by I2India to be partner organization |  |  |
|--|--|--|
| for Setting up of CSIR-Tech  |  |  |
|  |  |  |
| Monday, 9 <sup>th</sup> February 2009                              |  |  |
|  |  |  |
| IMT, Chandigarh  |  |  |
|  |  |  |
| Dr. Girish Sahni, Dr. Naresh Kumar, Mr. R. K. Gupta, Mr. Hemant    |  |  |
| Kulkarni, Dr. Deepak Sardana                                       |  |  |
|  |  |  |

In spite of sizeable patent portfolio, CSIR has been successful only in a limited way to translate its knowledgebase into services and goods for economic and societal applications. It is felt that, setting up commercial entity that can supplement competencies of CSIR and which would be run independently and professionally would be desirable and viable option. In this regard, it was decided to solicit the support and involvement of a private partner who could bring in following competencies and services to put the idea into practice:

- Established track record of commercialization of IP from R&D organizations
- Preparation of Business/IP Strategy/policy documents and manuals
- IP evaluation, building of portfolio and 'business' based on IPs
- Strong network with stakeholder community within and outside country for all facets of business support / hand holding
- Business development including fund Mobilization and marketing
- IP Audit and project management
- Training and Competency Building for IP Management
- Management of portfolio emanating from R&D activities

In this connection CSIR had meetings with I2India Pvt. Ltd. who has shown interest in joining hands with CSIR to take forward commercialization process. The company accordingly submitted a proposal. The team members considered the proposal from the point of view of project requirement and CSIR needs. It was felt that the proposal by I2India broadly meets the objectives of CSIR. It was also noted that the business model proposed has been tried successfully in other parts of the world by Imperial Innovations, ARCH Partners. As per the proposal, CSIR would set up a JV and make its IP portfolio available to the proposed JV through NRDC. The private partner would bring in funds and operational management expertise. For effective functioning of the entity, it is desirable that the entity be independent and run on professional lines. Hence it is suggested that CSIR should hold minority stake in JV. While the overall pattern of shareholding suggested by I2India is reasonable, the team recommends more deliberations, on micro level distribution of the accrued income from licensing and equity, to ensure that it is equitable to both the parties and in line with international practice. The team further recommends that as a pilot, CSIR identifies a few IP / IP portfolio that are of high commercial value and enter into a MoU with I2India to develop them into spin-outs. This will not only demonstrate the managerial claims of I2India, but also bring forth any issues related to the synergy. The exercise will set the foundation stone for deeper and more involved partnership through CSIR-Tech.

In summary, we recommend that :

- *prima facie* I2India seems to be a prospective and suitable partner that can help CSIR realize its commercial objective.
- ii) CSIR may enter into an MoU with I2India and undertake (e)valuation of select IPs from its portfolio and develop few spin offs as 'pilot'.

HK/DS to prepare and finalise MoU - 27<sup>th</sup> Feb

iii) One internal deliberations on issues such as due diligence, legal opinion regarding tax / other statutory issues and micro level distribution of income
 <u>Internal Meeting / brainstorm - 3<sup>rd</sup> week of Feb</u>

## Meeting Note : 6<sup>th</sup> April 2009

Meeting: Discussion on CSIR-Tech Date: 6 April 2009 Time: 1130 - 1900

#### Attendees:

- Mr Damodaran, Dr Saurabh Shrivastava
- DG-CSIR, D/NCL, D/IMTECH

- (partly) H/TNBD, FA, H/RDPD, D/NAL, H/IPMD

- Premnath (VP), Deepak (DS), Hemant (HK)

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Discussion points:

\_\_\_\_\_

- Re-inventing technology and IP commercialization at CSIR (brain storming session)
- Spinning off commercial aerospace project into an independent PPP entity
- Update and learnings from Australia and Singapore visit of CSIR delegation

Key action points:

\_\_\_\_\_

- Committee file to be created including OM.

- Chairman and Advisor: Mr Damodaran
- Expert invitee: Dr Saurabh Srivastava
- Members: D/ NCL, D/IMTECH, VP, DS, HK
- Any others?

- 1 day mtg to be planned with Dr Saurabh Srivastava to here his ideas on a potential framework. (Action: Deepak)

- DS, HK and VP to study Antrix model for ideas. DG has secured MoA and AoA. DG suggested visit to Antrix for mtg with MD (Shreedhar Murthy).

(Action: DS, HK, VP)

- Some key points:

- Dr Saurabh Shrivastava suggested that CSIR was too big/ diverse for tying up with one marketing partner.

- VP argued that the system needs to be flexible to accommodate various spinoff/commercialization models as is clear from the

CSIRO experience. We should not over-specify or strait-jacket everything. - Mr Damodaran has suggested documenting the following and using that as justification for our decision:

- Problems and deficiencies in the current systems

- Alternative models, experiences and their pluses/minuses

- Model suggested by the committee

- DS to plan committee mtgs to evolve the documentation and thought process. (Action: DS)

- H/TNBD requested to lead creation of spin-off around commercial aerospace technology of NAL with the entity created thinking of potential sub-parts of the technology and related services they can commercialize in stages. DG refered to entity as AvTech. (Action: H/TNBD)

- D/NAL to inform of final dates of computational sciences meet of CSIR labs at Bangalore. VP to attend. (Action: VP)

- VP has requested text of govt bill on allowing equity for CSIR and scientists for study. (Action: DS)

## Meeting Note : 13<sup>th</sup> June 2009

#### **Meeting Minutes**

### Date: 13<sup>th</sup> June 2009

**Attendees**: The Project Committee of CSIR-Tech (except Financial Advisor), Dr. Shiva Ayyadurai (Special Invitee).

Following are the points that the Project Team agreed to:

- 1. There is a need to take affirmative measures to change the current structure of commercialization that is not delivering desired results.
- 2. There is a need to involve private players to help in the commercialization process.
- 3. The private partner shall bring in management expertise and will be instrumental in raising funds to spin-out companies.
- 4. There is a need to follow hub and spoke model despite involving private partners for commercialization. This could be operationalized by asking private partners to depute individuals with good sectoral understanding at the lab-level. These individuals will interface between scientists in the lab and professionals based in the company HQ. These professionals based in company HQ will bring in strong functional expertise.
- 5. CSIR should undertake a due-diligence exercise to identify patents that have maximum potential for commercialization by way of spin-outs. This exercise should be done jointly by IPMD and URDIP, in-house units that have stated expertise in the given area.
- 6. Expression of Interest for the selected patents should then be asked from private players on non-exclusive basis.
- 7. Setting-up of a committee that will have necessary expertise and mandate to seek private proposals from private partners, evaluate them, and then make a decision.

- 8. Following submission of business proposal for commercialization of technology by a private partner, the said committee should evaluate them.
- 9. Initially only MoU should be signed with the private partner for spin-out of a few identified technologies.
- 10. Only after the performance of these individual initiatives, CSIR should take measures to initiate long-term strategic relationship with a private partner.

Following are the points that The Project Team recommended for more careful deliberation:

- 1. The need and role of CSIR Holding Company.
- 2. Crucial role of URDIP and IPMD in the new set-up.
- 3. The role of CSIR HQ and the current BDMG set-up at the lab level.
- 4. Should private partnership be limited for spin-out activities or should it also include technology licensing?
- 5. Clearly defined support mechanisms of DSIR in facilitating the process.
- 6. More fine-grained understanding on the financial implications of this activity on CSIR.

## Meeting Note : 19<sup>th</sup> June 2009

#### **Meeting Minutes**

#### Date: 19<sup>th</sup> June 2009

This was the **meeting of Operational Team** with **special invitees** (- Prof Brahmachari, Dr. Shiva, Dr Abhyankar, Mr Basu, and Mr Biswas). The meeting came to the following conclusion:

- NRDC should focus on the technologies that are for social sector. Commercialization of such technologies is of vital importance to the development of the country. This requires special skills and good understanding of the needs of masses – NRDC is ideally placed for it and it has got a good track record in this front.
- There is no need to set-up an additional IP Holding Company for CSIR. IPMD should be the nodal department within CSIR that will do the precommercialization screening and filing of patents for the technology. IPMD shall take help of URDIP and/or NRDC as and when it is required.
- 3. CSIR should seek a robust partner, preferably a government financial institution (like SBI Ventures), that will set-up a private entity for commercialization of technologies of CSIR.
- 4. The new company should focus only on spinning-out companies; licensing of technologies should be left to labs. Labs can however take assistance of any organization that they deem appropriate.
- 5. The process of spin-out is diagrammatically, as defined by Dr. Shiva, is represented below:



Technology for commercialization will be financially supported and incubated for the initial 12 month period. This will be done by making use of available government funding (e.g., through DSIR promoted TePP). Thereafter, the start-up should raise private funding to develop its project.

Scientists and senior management of the private company should be given shares upfront. It was decided that scientists who have got commercializable patents and those who will take active interest in the commercialization process (e.g. by helping prepare a short report on the commercial applications of the technology along with clear depiction of market need) shall be given a fixed amount of common shares at 50% discount.

6. Following structure has been envisaged for the private company by Dr. Shiva:



At the setting-up of the company, following shareholding pattern has been envisaged:

- CSIR (as founding member) = 26%
- Senior Management = 14%
- Scientists = 10%
  - 20% of this pool will be given as common shares at 50% discount to the eligible scientists.
  - $\circ$  80% of this pool shall be given as open options.
- ESOPS = 10%
- Private Partner = 40%

## Videoconference Meeting Note : 24<sup>th</sup> Aug 2009 (Session 1)

## Meeting Minutes Date: 24th Aug 11am Labs on Video: NIIST,NBRI, IMT, CSMCRI, NISCAIR, IICB, CEERI

#### CSMCRI

1. Since scientists will be turning entrepreneurs, does it mean that other entrepreneurs will not have access to our technologies? Earlier we used to transfer technologies to entrepreneurs for commercializing them...

A. CSIR-Tech may not be viable as a private company in Indian Context as it will come under scanner on why all technologies have been transferred to one private entity.

CSIR Tech exists in the HQ as an enabling unit. Spun out companies asks for an open bid from private players and choose their private partners themselves.

Many current deals that are non-exclusive in nature have low value.

**2**. Initially focus on very critical technologies that have proved difficult to commercialize by way of licensing. Start those as companies because there is a strong conviction that people/nation will benefit from its start.

#### Lucknow

 CSIR has broad variety of technologies. There has to be interaction with a variety of technologists from many different spheres. There used to be multiple technology transfer units across India... One centralized unit will make it difficult as there will be 400 ideas from many different fields... A. We will identify 12 major market opportunities and share with you... We will map those 400 ideas and assess them up front – may be some of these technologies will be good only for licensing, and may be some we can spin out.

Strategic Innovation Experts will go to the labs and interact with you. The idea is to distill 20 ideas to 2-3 ideas for start-up.

#### NIIST

1. Rural Technologies and how to take them forward.

A. DG's opinion is that NRDC takes up technologies relating to social sector.

#### IICB

**1**. How do you find JV partner?

A. It is on case to case basis. Help in the process from me (read Shiva) is assured. Talk to multiple prospective partners, generate competition and interest among them, and ask for a bid.

#### **CEERI**, Pilani

1. What will happen to the structure of fees and royalty that scientists currently get?

A. It will be negotiated on case to case basis.

**2**. How do we handle technologies that are of strategic sectors (like aerospace, defence). Demand for them may be limited with potentially very few clients, nonetheless they are important for the nation.

A. I do not have a right answer to it... perhaps, we can do it as a project. We, as a team, needs to think more on it.

## Videoconference Meeting Note : 24<sup>th</sup> Aug 2009 (Session 2)

#### **Meeting Minutes**

Date: 24 Aug 3:30pm

Labs on Video: CFTRI, CGCRI, NISTADS, CIMAP, NEIST, AMPRI, CIMFR, CLRI, CMERI, IGIB, IMMT, IIP, IICT, NEERI, NML

#### IIP, Dehradun

**1.** IIP is instrumental in bringing people to oil industry. This is a big opportunity to start as company

to provide quality people to oil industry.

A. Lab director has to give consent to the idea. Negotiate with CSIR on capex and equity structure of this company.

**2**. IIP has non-exclusive license deal with one of the companies in Mumbai for a catalyst. Can we start our own manufacturing unit of the same catalyst and spin it out as a company?

A. You can do that, but one needs to understand the market well, and think if it makes sense to become a competitor. Can one form a JV with the same company to which license has been granted?

#### CIMAP

2. Training to farmers and supply of high quality planting material is our main activities. How do you go about spinning out companies for this?

A. The company has to be approved by the Director and the DG. Formal training procedures should be set-up. Equity structure should be discussed thoroughly.

#### CGCRI (Dr Maiti)

**1**. There is an opportunity to set-up a small company based on optical fiber activity. We also have an interested partner, an NRI from the US, to set-up manufacturing facility. What help can CSIR-Tech provide in this case?

A. CSIR-Tech can help in structuring the deal.

#### NEERI

1. How will we structure the company as most scientists do consulting in the lab?

A. Scientists can have equity position in the consulting services company. They can also train consultants to service clients on daily basis.

#### IIP, Dehradun

1. Can the new company use facilities of lab and how?

A. Lab director has to negotiate the cost and have to have justified basis for it. It should be an arm's length agreement that will not attract vigilance. It should be fair.

### Videoconference Meeting Note : 25<sup>th</sup> Aug 2009 (Session 1)

#### **Meeting Minutes**

Date: 25th Aug 10:30am

Labs on Video: CDRI, CECRI, NCL, CBRI, IIIM, CCMB, NGRI, NPL, NIO, CRRI

#### CDRI (AK Saxena)

**1**. Is there any early private investor or company when we start off a company? Can one have them?

A. Yes. But along the way there has to be a process of dilution.

#### C-MMACS (P. Goswami)

1. What will be the Structure and equity of the company? Will there be Non-Exec Directors from Lab, CSIR, etc? What will be the basis of having non Exec Directors? Will it be based on equity structure?

A. Scientists can take leave and participate actively. One need not leave CSIR to become Non Exec Director. Scientists can even be only involved as a consultant.

Labs have to figure out distribution or share of knowledge as equity. Equity of scientists to be figured out based on their role in spin off and their contribution.

Equity structure has to be negotiated. If Lab Director is involved then DG has to approve so as not to have conflict of interest.

#### NAL (Dr. Satyanarayana)

**3.** How to commercialize rural technologies? If technologies are not fully developed and it involves a lot of investment, one would then need to have partner upfront. The

investments could be far beyond Rs 50 lacs. But there are chances that business partner may not be willing to invest much upfront.

A. That number may not be applicable in some cases. So, an exception can be made to such opportunities. Then the model have also to be assessed for such opportunities... perhaps, CSIR-The could help find a partner upfront.

#### **CDRI (T. Chakraborty)**

**1**. Start CSIR-Tech as a separate organization. It should develop prototype on its own and not leave it to the scientist.

In Taiwan, basic research is funded by the government. Then the project calls for equal amount of money from industry and government. In the last phase government contribution is only 10% of the sum.

**A**. Perhaps, for drug discovery one needs to have partner upfront. In such cases, I would like to see this spin-off as a JV where partners come in early. For example, one gets a big hospital chain that will help in clinical trials along with a big pharma company. The idea is that with equity model one can generate more wealth and help in doing more innovative type partnering.

#### IIIM, Jammu

**1**. Technology transfer can get us a few crores, whereas with equity model one is not getting immediate money. If institute does not want to be part of spin off but the scientist wants it, how does one go about it?

A. Spin off companies or equity model will have exit strategy built into it, and one can generate more wealth. It makes sense to do a spin off only if one is sure that it will generate substantial more wealth than licensing.

#### NAL (Dr Shyamsunder)

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**1**. What will be the infrastructure and other support system for this kind of activity? Do we have identified VC that are willing to participate and help in refining the projects early on?

A. One may set aside some lab infrastructure for this activity. It could be *production based infrastructure* that can be leveraged by different spin-outs. It has to fairly priced and should be the same for all spin-outs in a particular time period.

VCs can be called. Equal rights should be given to all VCs and no one should feel that any preferential treatment is being given. Ask for open bid from VCs. We, at CSIR-Tech, can help you in building documents that will be useful for VC.

From CSIR-Tech we would like to provide common infrastructure. It could be like regional business incubators that new ventures can use.

#### **CRRI (Dr Radha Shukla)**

**1**. We have an idea for intelligent transport system, but Not enough money to develop prototype.

A. One should promote ideas. Look for early adapters who could potentially be the first customers. For such great ideas, one should also try to work cohesively and bring in other labs that can contribute to the project/technology development.

People should read "Crossing the chasm" by Geoffrey Moore.

## Videoconference Meeting Note : 25<sup>th</sup> Aug 2009 (Session 2)

## Meeting Minutes Date: 25th Aug 09 0100 pm Labs on Video: CSIO, CBRI, IHBT, CECRI, CIMFR, IMMT, NML, CFTRI

#### CECRI

1. How do we know what market opportunities are?

A. We are doing a DPR that will identify 10-12 major market opportunities that covers nearly every lab. Each lab can also do this exercise within their sector.

#### **CSIO (Dr Pawan Kapur)**

**1**. Are you talking about existing market opportunities or creating a new market? There are strategic technologies with limited customers... those technologies can also benefit the masses... perhaps, not be of much commercial value.

A. CSIR is supposed to be a hub to create technologies of commercial and strategic interest. One should however do a complete risk-benefit analysis of the idea. The suggested model does not exclude strategic technologies, but it may just need a bigger strategic partner given the needs of funds.

#### CIMFR

4. What will be the role of innovator and business development people in the lab?

A. Most BD people are currently doing IP licensing. This activity is significantly different. This does not mean that CSIR-Tech personnel and BD will not make work. Both will work coherently as BD person knows most the value of technology in lab and

can help CSIR-Tech in finding good technologies for spinning out. BD will be very valuable in valuing technologies.

#### NML

**1**. Can scaling-up of current commercial activity be part of CSIR-Tech? How can scientists who are doing this as a side job participate in this?

**A**. This is really a late stage company, according to our model. CSIR-Tech can definitely help in scaling up.

Scientists can have equity position. Some can run the company after taking leave from CSIR. There are many ways scientists can participate in the spin out.

#### CBRI

1. There is an opportunity with us to commercialize components/sensors...

A. If you have components that need to be commercialized, CSIR-Tech can help in finding the first customer. Product development manager can be brought in packaging the technology in a better way. If you have an idea and you know who can buy it, it is a very good start.

#### CECRI

**1**. There are multiple components with multiple customers. Can we do this as one company?

A. One can get a partner that is a good systems integrator. They can coherently put different pieces of technologies together and help draw more value from them.

#### **CRRI (Dr Radha Shukla)**
**1**. It is my observation that Private structure can be more flexible. The main thing is that you can attract good people with that.

# Meeting Note : 9<sup>th</sup> Sept. 2009

## **Meeting Minutes**

Date: September 9, 2009

Purpose: Feedback on CSIR-Tech Implementation

## Attendees

Dr. Abhyankar, DSIR Dr. V.A. Shiva Ayyadurai, STIO Mr. Saurabh Rao, CDC Dr. Deepak Sardana, CSIR Dr. Saurabh Srivastava, NASSCOM

Dr. Shiva opened the meeting sharing with the attendees an update of the past 3 months since his recruitment on June 10, 2009 including:

 Summary of lab visits and spin-off opportunities identified
 Power point presentation of CSIR-Tech [same presentation that was offered to lab directors via video conference prior to Director's Conference]as attached.
 Opportunity to run a parallel process of: A. Organizing paperwork for formalizing CSIR-Tech within the governmental processes with B. Starting CSIR-Tech either in projet mode.

Dr. Srivastava was keen on understanding the equity structure and spin-off process and offerred to follow up with Dr. Shiva in a phone call to give his more detailed comments.

Mr. Rao shared his knowledge on executing a DPR and said it would take between three (3) to four (4) months to get a DPR done and based on internal timelines additional months for approval and allocation of funds.

Dr. Abhyankar shared his governmental experience and summarized the TEPP and TDB programs for funding.

Dr. Sardana gave a background on the earlier 9 months prior to Dr. Shiva's joining of the iterative process and the Committees that were in place.

Dr. Shiva summarized the 3-5 spin-off potential's he had identified of significant market opportunities. Many of these are time sensitive given competition and market needs. He asked the team to give their feedback on what was the realistic manner to get CSIR-Tech and the spin-off's implemented.

Discussion ensued on this topic.

Following discussion, it was clear that there were three options for implementing CSIR. Below are those options and the realistic efforts required to realize them.

## Option I

\_\_\_\_\_

Create CSIR-Tech based on the equity model proposed in the PowerPoint presentation.

## Background on Option I

In this option, a company would be started with CSIR with 40% ownership, 20% to Founders, 10% to CSIR scientists, 20% in Mgt Options, 10% to Initial Investors, The Company would have to receive numerous governmental approvals. Dr. Shiva shared that DG,CSIR with his in depth knowledge of the IP Royalty stream had calculated a \$100 Million Valuation.

#### General Feedback from Attendees

#### \_\_\_\_\_

It will extremely time consuming and difficult to implement CSIR-Tech in this model. Consensus was that it would be very long process to justify such a valuation to CSIR-Tech, given that CSIR-Tech at day one will have no assets. In addition, creating the agreement between CSIR and CSIR-Tech will be yet another longer process. Finally, given the internal governmental rulings, unclear on if setting up such a company would even be allowed (worst case) and/or end up in numerous approvals required.

#### Option II

### \_\_\_\_\_

Execute CSIR-Tech as an internally funded project. It's goal would be to execute 3 Spin-Off's in the next 12-month period.

#### Background on Option II

\_\_\_\_\_

In this option, Dr. Shiva would create the same organization proposed in the PPT for CSIR-Tech. However, this structure would reside within the framework and rulings of CSIR. Dr. Shiva would be expected to prove the viability of his Spin-Off process in this project mode. It would enable low-risk evaluation of the process.

## General Feedback from Attendees

\_\_\_\_\_

This appeared to be a better approach than Option I. However, the general consensus was that even in project mode, significant constraints would be placed on Dr. Shiva's abiilty to execute and hire the right and best personnel given the governmental contraints. Furthermore, to get the Project approved itself would take nearly 6 months. While this timeline would be shorter than the process for Option I, market opportunities may be lost. There could also be unforseen bureacratic procedures that could be fundamentally antientreprenueralism.

## Option III

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Create an independent company that has no links to CSIR at all and raises its own funds.

## Background on Option III

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This option is the same model that Dr. Damodaran had proposed nearly two months ago. At that time, DG, CSIR had requested Dr. Shiva to get Damodaran's advice on which way forward to expedite CSIR implementation.

Damodaran adviced that a completely independent company without "any baggage" from CSIR be formed. Following the meeting, however, DG, CSIR did not approve this approach and requested Dr. Shiva to seek more advice.

General Feedback from Attendees

\_\_\_\_\_

At the meeting today, attendees agreed that this model, based on their experience was the most viable. They found a clear merit in the proposal.

They consider that this would be the most realistic and fastest way to commercialize CSIR Technologies. This would also be a very low risk option for the cSIR. Being independent of CSIR would also help the private company in making faster decisions, a must to promote entrepreneurial culture. In this model, CSIR would get the benefit of professionalism from this Company and also be able to invest if and only if it wanted to.

# Meeting Note : 22<sup>nd</sup> Sept. 2009

## **Meeting Minutes**

Date: September 22, 2009 Attendees: Shiva Ayyadurai Deepak Sardana Mayank Mathur Anoj Kumar Chadder K Venkata Subramanian Vandana Bisht S.K Tiwari U S Tandon Hemant Kulkarni R Venkatesh Meenakshi Singh Hari Om Yadav Vibha Malhotra Sawhney R. P Singh Bhavana Prashar A K Behl A K Kundalia D J Davidson

Time: 11Am to 1Pm

## Agenda

## I. BACKGROUND

## A. Introduction

Each attendee gave a brief introduction of themselves and their role at CSIR.

### B. DR. Shiva

Attendees where curious of Dr.Shiva's background prior to CSIR. He provided a brief bio of himself and the events leading to his joining CSIR.

#### C. Review of Meeting Agenda

Dr. Shiva then reviewed the Meeting Agenda i. Intro to CSIR-Tech ii. Summary of Lab Visits iii. Current Hurdles to Execute Spin Off vi. Open mini- participative workshop to get feedback on ways to address challenges

### II. Intro to CSIR-Tech

The same slides presented to Dr. Mashelkar were presented to the attendees. The slides served to bring attendees up to speed on the CSIR-Tech model. Attendees who gave feedback liked the approach and it addressed some of their questions on what infrastruture CSIR-Tech will provide emerging entrepreneurs.

## III. Summary of Lab Visits

Dr. Shiva shared how labs are eager to see their technologies in market; Scientists who are entrepreneurial fall into two groups: a. Ready to leave and start their spin-off's as long as strong support exists, and b. Want to stay at CSIR while being less risk-taking. Most scientists fall into the latter group.

#### IV. Current Hurdles to Execute Spin-Off

The discussion then focused on the actual hurdles. Dr. Shiva shared the three options to starting CSIR-Tech (the same options which were discussed on Sept 9, 2009 meeting).

He reviewed each option in detail. He informed the group that he is awaiting DG's response on which option to pursue. At this meeting there was a general consensus on Option 3 as optimal path to enable CSIR-Tech to succeed. The Option 3 was the one proposed by Dr.

Damodaran to start CSIR-Tech as a private limited company with little to no involvement of CSIR.

In discussing the spin-off process nearly every one agreed that starting a spin-off is itself a challenge given all the onerous rules, politics, and approvals necessary.

V. Mini Workshop

Dr. Shiva then asked for full participation from the team to interactively assist him in solving the problem of creating a spin-off. After a very lively discussion where nearly everyone participated, a proces was defined to execute the first spin-off which involves the following steps:

1. Draft letter for scientist to notify of equity ownership in spin-off.

2. Deliver letter to HoD.

3. If approved, deliver letter to the Director.

4. If approved, deliver letter to the DG.

In parallel to the above steps if a company does not exist, a spin-off company will be registered independently of CSIR's involvement (via family/friends/etc).

5. If approvals are received then shares from registered company are issued to scientists.

6. Company starts.

There is a consensus that most scientists to leave CSIR to start a company will need a financial package equivalent to their current situation. There was also a consensus that

CSIR culture must support a scientist seeking to be an entrepreneur in a generous and proactive manner. Given the lack of historical culture of entrepreneurialism this support is necessary to ensure success and to enable risk-taking, which simply does not exist today. CSIR system should recognize a spin-off activity on or above par with a paper publication and/or patent. The system should allow a scientist to leave and spin-out a company, success or failure should be accepted back as an honorable scientist. Regardless of monetary issues SIMPLY leaving CSIR to pursue a spin-off is itself a risk, culturally and professionally.

VI. Other Important Feedback

a. Rules are set-up to stop people if they are seen as going to "greener pasterus".

b. Success and wealth creation are not supported.

c. A scientist being an entrepreneur is perceived as though he is less of a scientist.

d. Only 2 out of the 16 attendees believed that the above six-step process (mentioned above) will be effective in setting up the company. They shared how random rules and "public exigencies" and/or onerous conditions may be inserted by the HoD/Directors/DG to stop the spin-off.

e. The attendees suggested that the approval process should be free from the central control of the Director and DG. Some gave examples of how their own opportunities were stopped through such centralized control and felt that such similar controls would avert a scientist from executing the spin-off. It was acknowledged that the politics between DG, Director, HoD, and scientist should not get in the way of a spin-off being approved.

Meeting ended at approximately 1pm. Everyone agreed to participate in the execution of first spin-off for CSIR-Tech.

# Meeting Note : 30<sup>th</sup> Sept. 2009

## **Meeting Minutes**

Date: September 30, 2009

Purpose: Feedback on CSIR-Tech Implementation

## Attendees

K A Qureshi Tariq Badar L R Meena Y K Sharma S C Kalra S Chandrahas R P Sharma Manju Bagai

## 1. Introductions

A brief background on Dr. Shiva's joining CSIR in June of this year was provided along with his scientific and entrepreneurial history. The purpose of his recruitment including his being the CEO of CSIR-Tech to define and form CSIR-Tech was provided.

## 2. Background on CSIR-Tech

A brief background of discussions prior to Dr. Shiva joining in June were summarized. Key among this was the problem of formation of CSIR-Tech as well as any company formation. In addition, anecdotal feedback of scientists, based on Dr. Shiva's trips, and their needs on spinning out companies was given.

#### 3. Presentation

The same summary PPT point presentation given to labs, scientists, HQ staff was provided to the attendees.

### 4. Discussion

The discussion focused again on the options to form a company. The three options as before were reviewed.

### **Option 1**

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There was a general consensus that option 1 (a wholly owned CSIR company) would require significant rules changes and time to execute the plan defined in the presentation. While this may seem theoretically plausible, the government constraints and time in executing this model may not be possible. Dr. Shiva shared that DG, CSIR, however, prefers this option and is working on figuring a mechanism to execute this model.

### **Option 2**

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Option 2, which involves running CSRI-Tech as a Project within CSIR, while plausible again would require rules changes and constraints (though less). And, as option 1 would significantly constrain hiring of personnel and resources in a easy manner. Moreover, DG, CSIR in a recent meeting (Sep. 25) stated that he is against this option since it is not a viable long-term option.

## **Option 3**

Option 3, wherein, a private company with no CSIR affiliation except an agreement for spinning-off CSIR opportunities, is created. Dr. Shiva explained that this was the preferred model proposed by Dr. Damodaran. In this model CSIR-Tech would receive no funding from CSIR, but serve to identify opportunities and when one was found, CSIR-

Tech would spin out company, negotiate for any licensing for that Spin-Off and offer CSIR equity option.

Discussion ensued on the above options. From a straw vote, it was clear that while all options are "plausible", Option 3 was the one that was looked upon as clearly the most favorable and capable of being executed within the current infrastructure. In Option 3, the CSRI-Tech could be a pure services company that has a services contract with CSIR to hunt and develop business opportunities --- beyond that no other financial relationship.

# Meeting Note : 6<sup>th</sup> October 2009 (B)

## **Meeting Minutes**

Date: October 6, 2009

Subject:Follow up with Dr SivaramFrom:"Dr. V.A Shiva Ayyadurai" <shiva@csir.res.in>Date:Tue, October 6, 2009 8:03 pmTo:"Samir K Brahmachari / Sunil Kumar" <dg@csir.res.in>Priority:NormalOptions:View Full Header | View Printable Version | View Message details

Dear Samir,

Dr Sivaram did come up to see me late this evening. I had a persional discussion with him and summarised events of csir-tech formation. We explored the concept of both a section 25 company with affiliation to a private company as well as a pure private company, as Damodharan suggested. He said at the time of Venture Center formation, they were limited by various constraints. Since Premnath had to leave, he and Premnath will connect tonight and get back to me. Therefore, there will be no meeting tomorrow. Best, Shiva \_\_\_ Dr. V.A. Shiva Ayyadurai, Ph.D. Outstanding Scientist (STIO)/H CSIR Headquarters 2, Rafi Marg Anushandhan Bhavan New Delhi-100001, INDIA

# **Addendum H**

# **Relevant Office Memorandums (OM's) & Official Notes**

Acceptance Offer by Mr. Damodaran



Prof. Samir K. Brahmachari Director General, Council of Scientific & Industrial Research Anusandhan Bhawan 2, Rafi Marg <u>New Delhi-110 001.</u> March 5, 2009

Dear Prof. Brahmachari,

Thank you for your letter no DG-PS/2009-RDPD/89 dated February 2, 2009, received by fax yesterday.

I am delighted to formally communicate my acceptance of your offer of Consultancy to Council of Scientific & Industrial Research (CSIR) at an annual token honorarium of Re. 1 and on the other terms indicated in your letter under reference.

I should be in a position to commence functioning as a Consultant from  $16^{\circ}$  March 2009.

With warm regards,

Yours sincerely,

(M. Damodaran)

MPAR PI. spenk

## Offer letter to Dr. Shiva Ayyadurai for STIO/H

वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH अनुसंधान भवन, 2 रफी मार्ग, नई दिल्ली-110001 Anusandhan Bhawan, 2, Rafi Marg, New Delhi-110001



No. 6-3(121)/2009-E.III

July 13, 2009

From

संयुक्त सचिव (प्रशासन) Joint Secretary (Admn.)

To,

Dr. V.A. Shiva Ayyadurai C/o CSIR Maharani Bagh Guest House New Delhi.

Sub.:- Offer of appointment to the post of Outstanding Scientist (STIO) in Pay Band-4 in the pay scale of Rs. 37,400-67,000/- with Grade Pay of Rs. 12,000/- in CSIR Hgrs.

Sir,

I am directed to state that on the recommendations of Committee consisting of Chairman, CSIR RAB and DG,CSIR, Vice-President, Council of Scientific & Industrial Research has been pleased to accord approval to the appointment of Dr. V.A. Shiva Ayyadurai to the post of Outstanding Scientist(STIO)/H on ad hoc/contract basis for a period of one year in Pay Band 4 in the pay scale of Rs. 37,400-67,000/- with Grade Pay of Rs. 12,000/-, (Pay equivalent to Additional Secretary level posts) plus usual allowances as admissible under the rules, on the terms and conditions of service contained in Annexure-I. You will be eligible for the entitled benefits and privileges attached for this posting.

The pay of Dr. V.A. Shiva Ayyadurai will be fixed at Rs.60,000/-plus Grade Pay of Rs. 12,000 in PB 4 in the pay scale of Rs. 37,400-67,000, as recommended by the Committee.

You are requested to fill up the enclosed attestation forms relating to verification of character & antecedents, in duplicate, and arrange to send the same to CSIR for necessary action.

You are required to produce Medical Certificate of health and physical fitness for service from a Medical Board/Hospital in the enclosed format.

If offer of appointment is acceptable to you on the terms and conditions contained in Annexure-I, you may kindly convey your acceptance and take over the charge of the post at CSIR Headquarters immediately.

mar) Joint Secretary (Admn.)

Encl: As above

Phone : EPA8X-23710138, 23710144, 23710158, 23710468, 23710805, 23711251, 23714249, 23714249, 23714769, 23715303 Fax : 91-11-23714788, Gram : CONSEARCH, NEW DELHI, E-mail : csirhg@sirnetd.ernet.in 2

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## **OM for Technology Incubators**

## COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

Technology Networking and Business Development Division Anusandhan Bhawan, 2, Rafi Marg, New Delhi – 110 001

No. 4/CMG/2006-TNBD

June 16, 2006

## OFFICE MEMORANDUM

Sub: Scheme for Setting up Incubation Centres in CSIR Laboratories

### 1. Background

Encouraging growth of knowledge driven businesses is crucial for future economic development of the country. The practical application of knowledge requires entrepreneurial skills on one hand and appropriate enabling infrastructure on the other. Actual application of knowledge/ innovation requires further fine-tuning and nurturing of a given knowledgebase through S&T inputs for commercialization.

The Sivaram Committee while reviewing CSIR guidelines for technology transfer and utilization of knowledgebase recommended creation of Incubation Centres within the confines of CSIR laboratory in order to give a boost to innovation led (industrial) development in the country and also for nurturing start up companies.

The Governing Body in its 166<sup>th</sup> meeting held on 16<sup>th</sup> February 2006 considered the scheme for Setting up Incubation Centres in CSIR Laboratories and approved the same for implementation. The details of the scheme are as mentioned below:

### 2. The Scheme

The scheme will be known as Setting up Incubation Centres in CSIR Laboratories

## 2.1.1 Aims & Objectives

Incubation Centre would be a multipurpose facility. On one hand it would aim to provide high quality infrastructure and environment to entrepreneurs and knowledge workers while on the other, it would help incubate novel products, technologies, knowhow(s), process(es) and other patentable knowledge into marketable goods. The objective of Incubation Center(s) would be to nurture start up companies and encourage early stage innovation through appropriate hand holding mechanisms. It would encourage commercialization of innovation led developments and shall provide a breeding ground for start up companies and technopreneurs.

## 2.1.2 Scope

The incubation centre shall facilitate:

- Set up of start-up / venture companies to develop innovations to commercialisable products;
- Set up of R&D companies to serve Indian and international customers; and
- Incubate R&D centres by national / international companies as a prelude to setting up their own independent R&D centres.

## 2.1.3 Eligibility

A CSIR Laboratory, which has:

- generated an average laboratory reserve of the order of Rs. 2 crore/ year in preceding 3 years from the year of application;
- (ii) spare laboratory space; and
- (iii) external funding for creating incubation centres, including for construction of new facility if envisaged

is eligible for setting up of an incubation centre.

However, exceptions from the eligible criteria, based on other performance parameters (such as technologies developed & transferred for commercial exploitation and patent portfolio in place) and its niche area of operation, could be considered by DG, CSIR.

## 2.2 **Procedure for Application**

The Laboratory desirous of setting up of an incubation centre shall submit a proposal for necessary clearance in the prescribed proforma. The proposal is to be submitted to the Head, TNBD Division, CSIR HQs, for necessary examination and processing for approval of DG,CSIR.

## 2.3 **Operation Modalities**

- The Incubation Centre (IC) will function as an independent entity under Section 25 company mode and will be professionally managed.
- The IC would endeavour to be a self-sustaining entity within a period of 5 years of its commencement.
- In case CSIR laboratory has spare built up area, the same could be utilized for setting up of the IC. Other necessary facilities could be set up through grant-in-aid support from external funding agencies.
- CSIR laboratories which are not able to spare built up space for housing the incubation centre, may consider constructing a suitable building through external grant-in-aid funding support for construction.
- All the support services that are provided by the laboratory to IC will be separately costed and recovered from the IC on a regular basis.

## 2.4 Management of the Incubation Centre

- The Director of the concerned laboratory shall act as Chairman of the Board of Directors of the Section 25 company specifically set up to operationalize the IC. He will have the over all responsibility of running the IC (of the concerned laboratory). The Board of Directors and Managing Director or CEO shall assist the Chairman in the management of the IC. The company shall have the powers, among others, to select the applicants based on a rigorous assessment of the applications received.
- The IC can identify a suitable person from the laboratory or hire the services of a professional as Managing Director or CEO (at competitive market prices) to manage the incubation centre. He would be responsible for the day-to-day operations and assist the Chairman for smooth running of the company.
- The Board of Directors would meet atleast once in six months to discuss and take decisions for smooth running of IC.
- DG, CSIR shall, from time to time, constitute an external committee to review the performance of the incubation centres and shall decide to close the non-performing

incubation centres.

## 2.5 Agreement

A suitable agreement shall be entered into between the IC and Incubatee depending upon the scope of the project (as defined in para 2.1.2). The agreement shall clearly define the role of each party, their obligations, scope of services to be provided and duration of tenancy, etc.

## 2.6 Exit options

Either party could exercise exit option. In either case, a six month's notice shall be given to the other party. Before vacating the premises, the incubatee shall have to clear all payment dues and obtain a clearance certificate from the IC. Notwithstanding the exit provision, the IC could direct an incubatee to vacate incubator on the condition of non-fulfillment of obligations or violation of terms of conditions of agreement. In such a case, the IC shall give a three months notice to the incubatee.

## 3. Proforma

The Proforma for seeking approval for setting up of a Incubation Centre (IC) in the designated CSIR Laboratory is placed at Annexure.

## 4. Part of CSIR Guidelines

The entire scheme forms part of CSIR guidelines for technology transfer and utilization of knowledgebase.

The scheme is effective from the date of issue of this OM.

(D. Yogeswara Rao)

Head, TNBD

Copy to:

- 1. All Laboratories for:
  - a. Director
  - b. Head, Business Development & Marketing Group/ Head, PME Group
  - c. Sr. COA/COA
  - d. Sr. F&AO/ F&AO

- 2. At HQs. for
  - a. DG,CSIR
  - b. JS(Admn.)
  - c. FA,CSIR
  - d. Heads of all Divisions

## Annexure

# Proforma for seeking approval for setting up of Incubation Centres (IC) in CSIR Laboratories

## 1. Particulars of laboratory

- i. Name of the laboratory
- ii. Name of the Director
- iii. Contact details (postal address, telephone, fax, email)
- iv. Core R&D areas of the laboratory alongwith strength in each of the area (please describe following for each of the area)
  - a. Manpower (please give strength of group IV and III personnel)
  - b. Facility base (please provide details of major equipments and facilities)
  - c. Commercialisable knowledgebase developed (briefly describe the technology/ patent portfolio)
- v. Lab reserve generated in preceding three years from the year of application
- vi. Details of built up space laboratory can spare for the IC

## 2. Details on Incubation Centre (to be set up)

- i. Aims & Objectives
- ii. Scope
- iii. Budgetary details (including grant-in-aid obtained)
- iv. Proposed modality for setting up the 'IC':

Being set up within the existing laboratory building (give details)

or

Being set up in the facilities outside the laboratory or in a new building to be constructed in the laboratory premises (give details)

- v. Details of built up area along with details of area to be provided for each facility and area available to each incubatee
- vi. Details of proposed tenancy
- vii. Fields of activity

- viii. Details of facilities to be created
- ix. Details of support services to be provided
- x. Revenue generation model
- xi. Proposed constitution of the section 25 company (provide names of the Board of Directors)
- 3. Certificate by Director of the Laboratory

| It is certified that the Incubation Centre at | is as per |
|---|-----------|
| CSIR  |           |

(Name of laboratory)

guidelines on the subject. The laboratory meets the criteria laid by CSIR for setting up of the Incubation Centres.

(Signature)

Date:

## Office Order on the constitution of Core CSIR-TECH Team

#### **R&D** Planning Division

5<sup>th</sup> February, 2009

We have initiated dialog with a few companies to draw up road map for CSIR Tech. To facilitate the process, it is suggested that Shri Hemant Kulkarni (TNBD) and Dr. Deepak Sardana (DGTC) be identified as core team members for CSIR Tech. and. may take further necessary steps to .\-- $X_x$  prepare plan for CSIR Tech. Dr. G. Sahni, Director IMT, Chandigarh would ,-<u>\spearhead</u> this initiative. The other team members shall be Dr. V. • Premnath (NCL Ventures), Dr. R.R. Hirwani (URDIP), Shri R.K. Gupta, ,- " Head, IPMD and the undersigned.

/ Jn this connection, the core team will visit IMT/NCL/ other places, as per project need.

DG, CSIR may please approve as above.

(Naresh Kumar) Head, RDPD

DG. CSTR - PA-372

## **Office Memorandum Constituting various Committees for CSIR-TECH**

#### COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH **R&D** Planning Division Anusandhan Bhawan, 2 Rafi Marg, New Delhi-110001

No. 26/37/2009-RDPD

14" May, 2009

#### OFFICE MEMORANDUM

#### Sub: Setting up of CSIR-Tech: Constitution of High-Powered Committee, Project Team, and Operational Team.

CSIR is in the forefront of indigenous technology development efforts, having to its credit a large number of path breaking processes and technological achievements overarching various S&T domains. The knowledge generated by CSIR is of applied nature and can be put to the betterment of the society, which is one of the avowed objectives of CSIR. In order to do this, an organizational structure is needed to meet/ facilitate the business requirements and mandate of CSIR in the new and globalized economic environment. This activity to define new avenues, modalities and roll-out plan for commercializing technologies of CSIR is being named as "CSIR-Tech".

In order to work out the detailed objectives, operational domain of CSIR-Tech, and methodology, DG-CSIR has been pleased to accord approval to the setting up of a High Powered Committee, a Project Team and an Operational Team with distinct, yet cognate, 'Terms of Reference' for each one of them. The individual composition of each one is detailed below:

#### Project Team:

- 1. Dr. G. Sahni, IMT Chairman
- Dr. R. R. Hirwani, URDIP
  Dr. V. Premnath, NCL
- 4. Mr. R. K. Gupta, IPMD
- 5. FA, CSIR or Nominee
- 6. MD, NRDC or his nominee
- Dr. R. R. Abhyankar, DSIR
  Mr. Hemant Kulkarni, TNBD Convenor
- 9. Dr. Deepak Sardana, DGTC

The Project team will carry out an objective assessment of the knowledgebase and formulate a long-term strategy that will lead to the desired objective of its successful commercialization.

#### Terms of Reference (TOR)

To prepare comprehensive report and recommendations covering:

- 1. Scope, phase wise roll-out plan and outcomes of the proposed activities.
- 2. Various options, models and organizational structure for new entity including equity holding & dilution mechanisms.
- 3 Tax / other statutory implications.

Kunst

Contd....2

The team will coordinate the activities and submit its report within 12 weeks of its constitution. The Chairman can co-opt members including outside agencies / experts for specific task.

The Project team will be supported by an 'Operational Team' whose composition and Terms of Reference have been approved by the Director General as under:

#### The Operational Team:

- 1) Dr. V. Premnath Convenor
- 2) Mr. M. Damodaran (as an Advisor)
- 3) Dr. Saurabh Srivastava (as an Advisor)
- Mr. Hemant Kulkarni
- 5) Dr. Deepak Sardana

#### Terms of Reference (TOR)

#### To support the Project Team by:

- In-depth analysis of the current situation vis-a-vis commercialization activities in CSIR.
- Identifying different successful technology commercialization models across the world.
- Identifying different successful technology commercialization of technologies of CSIR.
  Identifying suitable models for commercialization of technologies of CSIR. 4. Liaison and support staff of an external agency, if hired, to prepare Detailed Project Report.

Recommendations by the Project Team will finally be considered for adoption by the 'High-Powered' Committee for the implementation, whose composition is as under:

#### The High-powered Team:

- 1. Dr. Vijay Kelkar Chairman
- 2. Dr. S.K. Brahmachari Co-chairman
- 3. Mr. M. Damodaran (Ex-Chairman, SEBI)
- 4. Dr. S. Sivaram (Director, NCL)
- 5. Dr. Saurabh Srivastava (Chairman Emeritus, NASSCOM)
- 6. Dr. Girish Sahni (Director, IMTech)
- 7. Dr. V. Premnath Secretary

#### Terms of Reference (TOR)

1. To consider for adoption the recommendations put forward by the Project Team.

TA/DA and Honorarium of the non-CSIR members shall be borne by CSIR. All others would meet their travel and other incidental expenditure from their respective laboratories/departments.

Kunst (NaresrvKumar)^\* Section Officer, RDPD

Copy to:-

- 1. Chairman and all the members
- 2. PS to DG, CSIR
- 3. PPS and US to Joint Secretary (Admin.)
- PAtoCVO
  Office Copy

# Addendum I CSIR-TECH PRESENTATION



Dr. V.A. Shiva Ayyadurai, Ph.D. (M.I.T.)

Head, CSIR-TECH Outstanding Scientist STIO/H

# **Executive Summary**

GENESIS is poised for explosive growth:

- Sr. governmental push for innovation
- Easily accessible seed and growth capital
- Sole distributor of 2,000+ CSIR patents
- Direct access to 4,500+ CSIR scientists
- Proven management and spin-off process
- Seeking early-stage financial partners

# Mission

India's leading <u>product research and</u> <u>development company</u> delivering CSIR technologies for <u>inclusive growth</u> by driving entrepreneurial <u>innovations through new</u> <u>spin-off's</u> and joint ventures.

# **Company: GENESIS**

- Founded 2009
- HQ: New Delhi, INDIA
- Projections
  - 6 Spin Off's in 2010
  - 12 Spin Off's in 2011
  - 20 Spin Off's in 2012

# **Company Structure**



# Market Opportunity

- 1 Billion consumers in Indian market
- Seeking new products and services
- ~2000+ under-deployed CSIR technologies
- Inability to deliver technology to market
- Minimal incentives for CSIR scientists
- Lack of infrastructure for entrepreneurialism







|       | 09Q4 | 10Q1 | 10Q2 | 10Q3 | 10Q4 | 11Q1 | 11Q2 | 11Q3 | 11Q4 | 12Q1 | 12Q2 | 12Q3 | 12Q4 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| LEADS | 10   | 15   | 20   | 30   | 35   | 40   | 50   | 55   | 60   | 60   | 60   | 60   | 60   |
|       |      |      |      |      |      |      |      |      |      |      |      |      |      |
|       |      |      |      |      |      |      |      |      |      |      |      |      |      |

# Addendum J BIOGRAPHIES

## Dr. V.A Shiva Ayyadurai, Ph.D. (M.I.T.)

#### Curriculum Vitae

V. A. Shiva Ayyadurai, Ph.D. Massachusetts Institute of Technology 77 Massachusetts Avenue, 3-237 Cambridge, MA 02138 US Phone: (617) 955-0894 MIT Office Phone: (617)253-2816 INDIA Cell Phone: 011-91-900-302-6545 E-Mail: <u>vashiva@mit.edu</u>

#### Executive Summary

V.A. Shiva Ayyadurai is a scientist, entrepreneur, inventor and educator. Born in Bombay, India, Shiva moved to America at the age of seven. He completed his secondary school education in New Jersey and four degrees at M.I.T. spanning the fields of electrical engineering, computer science, architecture, applied mechanics and systems biology. He is the inventor of the world's first E-Mail system, aka "Dr. E-Mail", holding the first US Copyright for E-Mail. He has started and successfully grown several start-up companies. Following his winning of a White House competition to automatically analyze and sort mail, Shiva started EchoMail, Inc. which he grew to nearly \$200 Million in market valuation. He holds three US Patents in pattern recognition. His love of computing, modeling, pattern recognition and biology led him to systems biology where he invented CytoSolve, a scalable method to integrate distributed biological pathway models. He is currently on the Faculty at MIT his research is focused on integrating the world of systems biology with traditional medicine systems towards accelerating the development of personalized medicine. He has published scientific articles in conference proceedings and refereed journal articles. Shiva continues his passion for entrepreneurialism as Managing Director of General Interactive, a venture fund that incubates, mentors and funds new startups in various areas including rural healthcare, media, biotechnology, information technology, to name a few. Shiva has received awards and national press, including a feature story in The MIT Technology Review. He has appeared in columns and articles in The Wall Street Journal, New York Times, NBC News, USA Today and other major publications. He was named Top 40 in the Improper Bostonian. He the author of two books: Arts and the Internet and The Internet Guide to Publicity. He has been a teacher and educator to students at MIT as well as to CEO's and Executive Management at Fortune 1000 companies. He is a member of Sigma-Xi, Eta Kappa Nu and Tau Beta Pi. He is a founder of the Shanthi Foundation which raises money to provide scholarships for education to orphaned girls. He is also a supporter of various arts and non-profit organizations including the Guggenheim Museum, Very Special Arts, National Public Radio and the National Geographic Society. Shiva enjoys yoga, travel, tennis, animals, art and architecture, and lives Belmont, MA, USA.

## Dr. Deepak Sardana, Ph.D. (The Australian National University).

Dr. Deepak Sardana has Ph.D. in Strategic Management and Entrepreneurship from The Australian National University (Canberra), M.Phil in Science Policy from Jawaharlal Nehru University (New Delhi), and M.B.A. from Griffith University (Brisbane). After his doctoral degree, Dr. Sardana joined Australian School of Business in Sydney (ranked 32<sup>nd</sup> in the world by the *Financial Times*) as staff member. There he was involved as Project Manager for the re-design of Executive-year courses of M.B.A. He also had opportunity to evaluate strategic plans submitted by Exec-MBA students as assignments. Dr. Sardana has his paper accepted in many tier-1 international conferences. In 2008, his research proposal submitted to the Australian Research Council (counterpart of NSF, USA) by him and his senior colleagues was judged as 'A+' category proposal (i.e. in top 5%). On January 1 2009, Dr. Sardana joined DG Technical Cell, CSIR as consultant at the invite of the DG, CSIR. He has since then been involved in CSIR-Tech activities.

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