A Live Case Study for NSF SBIR Proposal No. 0946146
Libre Texting: A Reshaping of the Medium
Neda Communications, Inc.

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1 Introduction

This is a case study of NSF SBIR proposal number 0946146, titled “Libre Texting: A Reshaping of the Medium.”

1.1 Background context

The proposal was submitted by Neda Communications, Inc. to the Small Business Innovation Research (SBIR) program of the National Science Foundation (NSF) on June 9, 2009. It was assigned to Dr. Joseph Hennessey, with Dr. Errol Arkilic as the Cognizant Program Officer.

The Principal Investigator (PI) for the proposal was Mr. Mohsen Banan. His NSF Biographical Sketch is available at: http://mohsen.banan.1.byname.net/Bio/NsfBioSketch

This was our first SBIR proposal, and our first interaction of any kind with the National Science Foundation. Prior to submitting the proposal we reviewed the relevant Program Solicitation NSF 09-541, and also the Grant Proposal Guide (GPG). As recommended, we also exchanged preliminary emails with the Cognizant Program Officer before submitting the proposal.

The proposal was declined by the NSF. We received notification of this decision, along with the review comments, on November 02, 2009.

After receiving the decline decision and review comments we requested and were granted a debriefing session with Dr. Arkilic. The debriefing took place by telephone at 2:00 pm PST on November 18, 2009, and lasted approximately half an hour. The participants were Dr. Arkilic and Mr. Banan.

Based on the review comments and debriefing with Dr. Arkilic we revised the proposal, and resubmitted it as a new SBIR proposal on December 3, 2009. As of the date of this document, the resubmitted proposal remains pending.

Libre Texting: an ongoing initiative

The Libre Texting initiative is an ongoing project. A more detailed description of the Libre Texting initiative is provided in the following three documents:

- *Libre Texting: An Industry Initiative*. Describes Libre Texting from a conceptual and technical standpoint and establishes a collaborative development framework.
  http://www.neda.com/PLPC/110015
- *ByStar Libre Texting Business Plan*. Describes the business dimension, an essential component for real-world adoption of the Libre Texting model. Describes revenue models, and makes the case for deployment of Libre Texting services in a commercial context.
  http://www.neda.com/PLPC/110019
- *ByStar Libre Texting Proposal for ISPs/ASPs and Handset Manufacturers*. Describes the steps that Handset Manufacturers, Internet Service Providers (ISPs), and Internet Application Service Providers (ASPs) can take to incorporate Libre Texting into their existing products and services.
  http://www.neda.com/PLPC/110017

1.2 Our model: A commitment to transparency

SBIR proposals are rarely web published. This is because SBIR proposals are usually about the development of a proprietary technology, and so must be kept strictly confidential to maintain proprietary ownership of the technology. Furthermore the quality of the proposal, and the nature of the statements and claims made within the proposal, may prove embarrassing if made public. The proposal is therefore also kept private to avoid any adverse effect on the corporate image of the originating company. For these reasons there are very few examples of NSF SBIRs available for public review.

But in contrast to the usual practice, we have web published our SBIR proposal for free examination by anyone. We have done so for several reasons:

- Because we can. Our proposal is entirely non-proprietary, requiring none of the usual ownership protection mechanisms such as patents, copyright, or trade secrecy. The proposed technology is patent-free, copyleft, and based entirely on free software. We are thus unencumbered by any confidentiality requirements.
- Because we believe in the societal benefits of openness and transparency. In particular, we believe that the technologies and assets resulting from research are vastly more beneficial to society when made freely available for use as a public asset.
- Because we stand by the quality of our work, and we are pleased to make it public.

As well as making the proposal public, we have also made the NSF review comments public. We have published these verbatim and in their entirety, without regard for whether they are positive or negative. (Most, in fact, are negative.) This kind of transparency permits free examination and analysis, leading to a greater level of accountability and integrity for all concerned.

1.3 About this Live Case Study

We subjected the review comments to our own internal analysis and discussion, and concluded that they are almost entirely incorrect, representing a near-total lack of understanding by the reviewers of the substance of the proposal.

To enable open consideration and debate of these issues, we have established this Live Case Study. This is intended to be a complete documenting of the entire trajectory of our proposal, from its initial submission through to its ultimate disposition. In particular, this case study includes our own counter-analysis of the NSF review comments. In this document we provide a detailed, point-by-point identification and clarification of the many technical errors and misstatements contained within the review comments.

We also draw attention to the underlying process issues, as revealed by the focus of the review comments. The review comments focus narrowly on a particular set of largely business-related issues, while completely overlooking the much broader content and significance of the proposal. This reveals a widely divergent philosophical outlook and value system between the writers and reviewers of the proposal.

We have established this Live Case Study with the following goals and purposes in mind:

- To enable open examination of the review comments and the review process for our SBIR proposal.
- To create an explicit awareness of the *non-proprietary, for-profit* SBIR proposal, and its special characteristics.
- By these means to create a climate for a better review process for our resubmission. We believe much has gone wrong in evaluating our proposal. By drawing attention to this we hope for a more appropriate handling of our proposal the second time around.
- To induce reevaluation by the NSF of its review process for non-proprietary proposals in general. The concerns that motivate us to create this Live Case Study are bigger than just our own proposal and our own interests. The NSF SBIR program appears to have a heavy bias towards the *proprietary, for-profit* quadrant. This case study may assist the NSF in recognizing and addressing this.

- To provide a real-world SBIR example. This may benefit other SBIR applicants, by providing additional information and understanding of the NSF review process. As far as we know, this is the first complete case study of an NSF SBIR submission to be made publicly available.

This Live Case Study is available for public examination and discussion by anyone. It is "live" in the sense that it is an active, evolving document, subject to revision as a result of ongoing participation and commentary.

We are inviting the NSF to participate with us in creating a meaningful, multilateral case study, with differing viewpoints accurately represented. In particular, we have no wish to misrepresent the NSF in any way. We invite the NSF to review the case study and respond as it sees fit, to ensure that it accurately reflects NSF processes and values.

At various places throughout this document, where a response or information from the NSF would be particularly illuminating, we present formal questions. These are tagged, "Question for NSF:" Further questions of a more general nature are listed in Section 7.

If you wish to know more or wish to participate in this open discussion, please contact us directly.

1.4 Related documents

The following related materials are all web published and freely available online:

- The proposal as originally submitted on June 9, 2009:
  http://www.neda.com/Records/200906091
- The NSF program to which the proposal was submitted:
  Program Solicitation NSF 09-541
- The NSF review comments, as provided to us via FastLane:
  http://www.neda.com/Records/200911031
- The proposal as resubmitted on December 3, 2009:
  http://www.neda.com/Records/200912031
- This Live Case Study, with our own analysis of NSF review comments and process:
  http://www.neda.com/PLPC/110016
- Prior due diligence evaluations. We take all formal review and due diligence regarding our work seriously, and we generally web publish it at http://www.neda.com/StrategicVision/Participating/DueDiligence.

  There are a number of business and technical commentaries already available that directly contradict the NSF review comments. Of particular relevance are the RFC Editor communication records relating to RFC-2524, available at http://www.neda.com/Records/199902261.

  This commentary clearly demonstrates a consensus that such non-proprietary mobile email protocols are indeed needed for convergence within the mobile messaging environment.

The above web-published information is complete and includes everything necessary for anyone to judge for themselves the merits of the NSF review comments and the validity of our counter-analysis.

2 Summary: Conclusions and Conjectures

Based on this case study we conclude that the review comments are almost entirely incorrect, representing a near-total lack of understanding by the reviewers of the substance of the proposal. Furthermore, we conclude that there are very serious process problems regarding NSF evaluation of non-proprietary SBIR proposals such as ours.

In this section we summarize the key elements of our conclusions regarding the review comments, along with our assessment of the underlying causes at NSF. All these conclusions are substantiated within the body of this case study.

2.1 Conclusion: botched reviews

The review comments are materially erroneous, and the reviewer errors are fundamental in nature.

For example, Reviewer 2, who was selected as a “commercial reviewer” in NSF terminology, fails to recognize our primary revenue source. The revenue source is stated quite clearly in the proposal and is perfectly straightforward: *we are providing a texting service*. Yet the reviewer somehow thinks it is something else altogether.

Many of the reviewer errors go beyond the reviewers being the wrong fit for the proposal. The errors are often a clear case of careless reading, lack of thinking, and lack of understanding.

See Section 5.1, Section 5.2, Section 5.3 and Section 5.4 for details.

2.2 Conclusion: mismanaged review process

The technological context and the business context of our proposal clearly falls within the *non-proprietary, for-profit* quadrant. This is stated clearly in the proposal, and this characteristic informs the proposal throughout.

This is an unusual characteristic, and it demands the right make-up of review panel to understand and assess properly.

Dr. Joseph Hennessey, and Dr. Errol Arkilic as the Cognizant Program Officer, were responsible for subjecting our proposal to a proper review process, consistent with NSF Program Solicitation NSF-09-541.

Dr. Arkilic selected reviewers for the proposal who are all heavily invested in the proprietary culture, with no understanding, experience, or openness of mind to the non-proprietary model. Two of the reviewers are traditional Venture Capitalists, and therefore not just skeptical of the non-proprietary model, but actively hostile to it. The third reviewer, an Academic, also evinces a temperamental opposition to the proprietary model, apparently being opposed on principle to the displacing effect of non-proprietary models on proprietary models.

Selection of the right reviewers is a critical element of a valid review. The above selection represents gross misunderstanding of the proposal and mismanagement of the review process, resulting in materially erroneous reviews.

See Section 3.2, Section 3.3, and Section 3.4 for details.

2.3 Conclusion: no technical review

The technical development element of the proposal was ignored completely. The review comments include absolutely nothing relating to the specific proposed technology, the proposed network architecture, the proposed software architecture, and the proposed research topics.

Essentially, our research proposal was looked at within the very narrow context of a conventional proprietary business plan, though it is none of these things—neither conventional, nor proprietary, nor a business plan.

2.4 Conclusion: only lip service to societal benefits

The proposed technology provides very significant societal benefits. And this is an important part of NSF evaluation of proposals. The program solicitation to which we responded, in addition to evidence of a commercially viable system, also explicitly cites *addressing an important social need* as a basis for supported projects.

Our proposal in fact does both, requiring consideration of both. Yet the panel comments and the reviewers do not recognize or acknowledge the benefits of protocol convergence and the end-to-end Libre model.

See Section 3.6, “Overlooked societal impact,” for more details.

2.5 Conjecture: NSF SBIR program is dismissive of the non-proprietary model

We believe the SBIR program exists wholly within the *proprietary, for-profit* domain, and does not properly recognize anything outside that domain. Presented with a *non-proprietary, for-profit* construct, it simply does not know what to do with it. Based on our experience with our own *non-proprietary, for-profit* SBIR proposal, we believe that other non-proprietary yet commercially-oriented SBIR proposals will be passed over in much the same way—their commercial viability dismissed by persons with the wrong philosophical temperament to appreciate the unique business dynamics at work within the *non-proprietary, for-profit* business sector.

2.6 Conjecture: NSF SBIR program does not welcome transparency

We see no evidence that the NSF SBIR program welcomes transparency. This public case study, and our own committment to transparency, provides a unique opportunity for the NSF to evaluate its review process with transparency. Yet as of the date of this revision, NSF has not participated in this case study, and our efforts to clarify the merits of the NSF review comments have not been productive.

3 Basic Misunderstandings

The review comments and the panel summary exhibit multiple basic misunderstandings of the proposal. Some of these misunderstandings afflict more than one reviewer. To avoid repetition of the same material for each reviewer, in this section we gather together all the major misunderstandings, and address each in turn.

Later we will discuss each review individually, making reference as necessary to this section.

3.1 Required sophistication of reviewers

The Libre Texting project is large, ambitious and complex in many respects. It is also in some ways quite counterintuitive, running contrary to the implicit assumptions of today’s proprietary texting landscape. For all these reasons it presents some challenges to understanding. In particular, it requires familiarity with a number of key ideas, plus the proper historical perspective, in order to understand properly. Without this intellectual preparation its viability cannot be appreciated.

As a bare minimum, a reviewer must be familiar with the following key concepts:

- A clear understand of the dynamics of protocol-based industries like email and texting. See Section 3.5, “Unfamiliarity with historical precedents” for further discussion.
- A clear understanding of the tremendous power of the non-proprietary model. The Libre Texting proposal is not likely to resonate with those who use Microsoft Windows on their desktop.
- A clear understanding of the dynamics of business operation in the *non-proprietary, for-profit* quadrant. See Section 3.8 for more discussion. Note that the Venture Capitalist philosophy and belief system is in total conflict with the notion of a non-proprietary business construct. They have neither understanding, nor belief, nor experience in this arena.

As well as these critical underpinning concepts, there is of course also the need for domain-specific knowledge of Mobile Messaging, Internet Email Protocols, and GNU/Linux software architecture.

We understand that the right audience for this work is hard to find. But there is the right place to look, and the wrong place to look. (Indeed, it is because of the difficulty of finding the right audience that we are giving our work very broad exposure. And why we take every opportunity to expand this exposure.)

3.2 Proprietary vs. non-proprietary; for-profit vs. non-profit

A business or other construct may be characterized as either proprietary or non-proprietary. And it may be characterized as either for-profit or non-profit. And generally speaking these characterizations are orthogonal. Thus there are four quadrants in which a construct may reside. It is well to bear this in mind throughout this case study discussion.

The NSF has well established, clear and mature procedures for supporting research in the *non-proprietary, non-profit* quadrant. The recipient organizations are typically .edu or .org entities, and the resulting public-funded research comes back to society in the form of unrestricted, non-proprietary results and assets.

Supporting research in the *proprietary, non-profit* quadrant makes no sense at all. Here the results of the research are shut off from the public in terms of both ownership and business: the results are privately held, and make no contribution either to society or to commerce.

So much for the non-profit side of things. On the for-profit side, whether the NSF knows it or not, the SBIR program covers two quadrants: the *proprietary, for-profit* quadrant, and the *non-proprietary, for-profit* quadrant. Historically, proprietary and for-profit have been very closely allied, so that the *proprietary, for-profit* model dominates the SBIR program. We now come along and present something within the *non-proprietary, for-profit* quadrant, and this requires some rethinking.

Publicly supported research that results in unrestricted, non-proprietary assets is vastly more beneficial to the public, than results that are privately held behind the walls of patents and restrictive copyright. Indeed, one could say it is completely wrong to take tax dollars and put them in the pockets or private businesses and individuals.

The business models for the *proprietary, for-profit* quadrant are well established. The Venture Capitalist business model resides exclusively within this quadrant. The focus of Dr. Arkilic and the proposal reviewers also appears to reside squarely within this quadrant.

Recent NSF SBIR solicitations carry language such as this:

> Intellectual Property (IP)—describe how you are going to protect the IP that results from your innovation.

Thus there is a clear acknowledgment, even an explicit expectation, that public SBIR funding will result in conventional IP assets. And therefore NSF-supported research under the *proprietary, non-profit* model does not become a public asset, it becomes a private asset. And if the Small Business is not successful, then no societal benefit results from that research.

The business models for the *non-proprietary, for-profit* quadrant are not well established. The Venture Capitalist constituency does not understand this quadrant, nor does it believe in it, nor does it have any experience in it. The mindset of Dr. Arkilic and the proposal reviewers does not fit well in this quadrant.

But note that NSF-supported research in the *non-proprietary, non-profit* model does become a public asset. And its benefits accrue to society regardless of whether or not the Small Business is succesful.

Batching together non-proprietary and proprietary proposals, and sending them to Venture Capitalists for review, makes no sense. Non-proprietary and proprietary proposals are fundamentally, inherently different and must be dealt with differently.

We are concerned that this problem is systemic throughout the SBIR program. See Section 6 for further discussion.

3.3 Broader than just open-source

All three reviewers are invested in the proprietary culture. Two are Venture Capitalists, while the Academic seems to be saying that he does not like the displacing impact of non-proprietary models on proprietary models. Thus the best they can do to characterize our proposal is to label it as an open-source architecture project. That limited and simplistic characterization clearly exposes the naivete and lack of the necessary sophistication demanded by this proposal.

While free software (open-source) is an important part of our strategy, the proposal is much broader than just that. As well as free software, the proposal encompasses the principles of patent-free protocols, the Libre Services model, and the non-proprietary business model. All these are critically important components along with free software.

3.4 Peer review by non-peers

The NSF Program Information on FastLane states:

> External Peer Review began on 09/10/09

The full text of the review comments is available at: http://www.neda.com/Records/200911031.

Part of the expected benefit of participating in the SBIR program is to subject our work to the peer review process and learn from the resulting comments.

What we did not expect was that two out of the three external reviewers would be Venture Capitalists.

Venture Capitalists are not our peers. We are engineers. Our mandate is to create things of real and enduring value. Our realm is science and technology. As engineers we understand the tremendous power of the non-proprietary model. We understand how collaboration can outdo competition. As engineers we understand the dysfunctionality and true costs of the existing Intellectual Property regime of patents and restrictive copyright. And as engineers we understand how the dysfuntionality of the IP regime represents a gigantic business opportunity for the non-proprietary model. We have created an Open Business Plan to articulate precisely that.

The Venture Capitalist mandate is to make money. There are no considerations beyond that—no considerations of such quaint notions as enduring value, or societal benefit. This is the constituency that brought us the dotCon fiasco. The spin-and-flip model, the pump-and-dump model—these are perfectly acceptable business methods within the Venture Capitalist's value system.

We have dealt with many Venture Capitalists, and we take pride in having been repeatedly thrown out of their offices. See http://www.neda.com/StrategicVision/Participating/Investment for a description of our Investment Philosophy.

We came to NSF for research funding because we want to build something of real and enduring value. And we don't want to deal with VCs to do it. When Venture Capitalists are called our peers, we consider this an insult.

If the NSF is to use the phrase "external peer review" on the Program Information page, then let it be exactly that—a true peer review. And this means review by engineers, with the right knowledge, experience and insight. And the right values.

3.5 Unfamiliarity with historical precedents

The proposal exists within a particular historical context. And part of this context is a number of historical industry events, that are essential to understanding the how's and why's of Libre Texting. In writing our proposal, we expected and assumed the reviewers would be familiar with this context.

One such historical event is the evolution of email, and the dynamics of that evolution. In the year 1992 or thereabouts, the then-fragmented email industry began to converge on a set of non-proprietary protocols. At that time the email landscape was dominated by a number of large proprietary players, most notably IBM's PROFS system, DEC's All-in-One, Lotus Notes, Microsoft Mail and various X.400 products. All proprietary, and all component-wise non-interoperable. These did interconnect through various gateways. But not well enough. And in a matter of two years or so, all of them converged on SMTP/POP/IMAP. The convergence point was non-proprietary, and it was not driven by big businesses. SMTP (Internet email) provided no new capabilities and met no new need. But it reshaped the email medium. Note the word: reshaped.

Today with mobile messaging we are presented with a similar landscape. And a similar set of dynamics are at work. We have SMS, Blackberry, Apple's iPhone mobile email, Palm, and multiple others. All proprietary, and all component-wise non-interoperable. These do interconnect today. But not well enough. Our proposal is about convergence on a set of non-proprietary end-to-end protocols for mobile messaging, in precise analogy with the 1992 history. The proposed convergence point is non-proprietary, and creates a big business opportunity for those shaping the convergence.

We expected the reviewers to be well aware of this and other historical points of context. Without this awareness, a reviewer cannot possibly put our proposal in the proper context.

And beyond this, we also expected the reviewers to clearly understand the dynamics that have repeatedly lead to convergence of major data communication services towards a unified protocol. The forces of convergence lead to a winner-takes-all dynamic as the service matures.

We have studied the history and characteristics of succesful protocols, and we have designed the Libre Texting model based on that. In 2000 we wrote a white paper titled "Lessons from History: Comparitive Protocol Case Studies," where we identify and analyse the critical enabling characteristics. This document is available online at: http://www.freeprotocols.org/PLPC/100017

In 2008, the IAB published RFC-5218 titled, "What Makes for a Successful Protocol?" The IAB document essentially repeats the same lessons as our 2000 paper.

An intuitive understanding of these historic lessons is required of a competent reviewer.

3.6 Overlooked societal impact

The NSF procedures call for reviewers to include a section called, "What are the broader impacts of the proposed activity?"

None of the reviewers recognizes or acknowledges the benefits of protocol convergence and the end-to-end Libre model. This model delivers a number of critical societal benefits, including greater protection of privacy, greater communication confidentiality, and greater prevention of centralized control.

Quoting from the program solicitation to which we responded:

> Successful proposers will conduct Research and Development (R&D) on projects that:
>
> 1. Provide evidence of a commercially viable product, process, device, or system, and/or;
> 2. Meet an important social or economic need.

Our proposal in fact does both, requiring consideration of both. Yet the panel comments are about (1) only, with no acknowledgment or discussion of (2).

3.7 Primary revenue source: Internet Mobile Messaging Services

The reviewers totally misunderstood our main revenue source. Our revenue source is that of being a Mobile Messaging Service Provider (similar to BlackBerry). Instead the reviewers misconstrued it as a Support Services revenue source (similar to Redhat). This is a fundamental misunderstanding, especially for reviewers focussing on the business aspects.

Our business focus on Mobile Messaging Services, not software professional services, is made perfectly clear in the proposal.

This revenue strategy is based on several considerations, most notably being that from today's perspective, that's where the money is.

But we can also benefit here from another historical lesson: that of Netscape's shifting business strategies and their consequences around 1996. In common with our proposal, Netscape's plan included:

1. Client Software
2. Server Software
3. Application Services

Netscape placed their bets on (1) and (2) but tragically overlooked (3). And as we now know, it is the Applications Services that represent the overwhelmingly dominant revenue source.

Our business strategy puts the emphasis primarily on (3), the Application Services, and this is stated quite clearly in our proposal. Yet the review comments indicate that the reviewers did not understand that our business model is based on Application Services, not on professional services or software licensing.

We did not include these kinds of historical perspectives in the body of the proposal, since we expected the reviewers to know the context already.

3.8 Pioneering the non-proprietary, for-profit quadrant

The business model for Libre Texting is very well developed. We have invested considerable intellectual and creative energy in formulating this business model, and we have articulated it fully in the form of our Open Business Plan, available at: http://www.neda.com/StrategicVision/BusinessPlan.

Business operation within the *non-proprietary, for-profit* quadrant is still very unusual at this time, and mature business models for this quadrant do not yet exist. Therefore our own Open Business Plan may be considered the most complete business analysis of the non-proprietary model in existence today.

A review of our Open Business Plan and understanding the non-proprietary business model would no doubt prove illuminating to the befuddled reviewers. But we did not include discussion or reference to this in our SBIR proposal, because we were submitting a research proposal, not a business plan.

4 Telephone Debriefing

After receiving the decline decision and review comments we requested and were granted a debriefing session with Dr. Errol Arkilic, the Cognizant Program Officer. The debriefing took place by telephone at 2:00 pm PST on November 18, 2009. The participants were Dr. Arkilic and Mr. Mohsen Banan, the Principal Investigator for the proposal.

Prior to the debriefing we submitted a list of our questions to Dr. Arkilic in writing, via email. The complete list of questions is provided in Section 7.

Some of the information we requested and that was provided to us during the debriefing is as follows:

- One of the reviewers has an academic background. In this document we refer to him as "Reviewer 1: Academic."
- Two other reviewers were described to us as "commercial reviewers," in NSF terminology. One of the commercial reviewers is a late stage Venture Capitalist (VC). The other was described to us as a "serial entrepreneur" and an early stage Venture Capitalist specializing in the wireless domain.

  Dr. Arkilic did not clarify whether Reviewer 2 was the Venture Capitalist and Reviewer 3 the Entrepreneur/Venture Capitalist, or the other way around. But we have assumed the former ordering, and in this document we refer to them as "Reviewer 2: Venture Capitalist" and "Reviewer 3: Entrepreneur/Venture Capitalist."

  Question for NSF: Did we get that right?
- The proposal was batched together with 14 other proposals and sent to the above three primary reviewers as a single review package.
- The review panel consisted of seven people: Dr. Arkilic, the above three primary reviewers, and three other people who had access to the proposal. We don't know if these other three people read the proposal or commented on it in any way.

  Question for NSF: Is this correct?
- Mr. Banan pointed out that the basic characterization of the proposal in the panel summary is incorrect. Dr. Arkilic said that we should not take that too seriously. Mr. Banan continued to address the great significance of this fundamental mischaracterization.
- Dr. Errol Arkilic himself had reviewed the proposal. A summary of his general impression is that what we propose is unrealistic, and we are tilting at windmills.
Mr. Banan: You mean like Don Quixote.
Dr. Arkilic: Yes.
Mr. Banan: We've heard that before, from a number of Venture Capitalists.
- Mr. Banan pointed out that Reviewer 2: Venture Capitalist had completely misunderstood our main revenue source, that of being a Mobile Messaging Service Provider (similar to BlackBerry), and had misconstrued it as a Support Services revenue source (similar to Redhat). And he made the observation that this error is fundamental. Dr. Arkilic looked at the Reviewer 2: Venture Capitalist review comments and agreed it is in error, but did not regard this as fundamental.
- At 2:30 Dr. Arkilic, with several of the questions not yet answered, said we should cut to the chase because he had a 2:30 phone call coming in. Mr. Banan said that we wish to resubmit the proposal. Dr. Arkilic said he does not encourage this, because the bases of the proposal will again not be favorably received.
- The issues concerning the total absence of review comments relating to the technology, the novel network architecture we proposed, the software architecture we proposed, and the research topics we proposed—these were not addressed at all during the debriefing phone call.

5 Review Comments

5.1 Panel Summary

5.1.1 Mischaracterization of the proposed innovation

The Panel Summary states:

> This SBIR project proposes to develop an open source architecture for wireless messaging.

But the proposal is far broader than just open-source.

This SBIR project proposes to enable the creation of a non-proprietary convergence point for today's fragmented mobile messaging industry.

This characterization of the project by the Panel Summary as an open-source architecture is like describing Blackberry as a software architecture or a hardware architecture. Blackberry is a messaging service. While open-source architecture is part of the proposal, characterizing it as just that is not correct.

See Section 3.3 for a more detailed discussion.

5.1.2 State of the industry affirms the compelling need

The Panel Summary states as one of the proposal weaknesses:

> Fails to demonstrate compelling need not already addressed by competing proprietary protocols.

The proposal fits in the faster/cheaper/better category. (And in the Libre and more competition category.) It does not fit in the address-a-compelling-need category.

We do not claim to be addressing a *functional* need that is not already being addressed. Just as GNU/Linux is not addressing any particular functional need that is not addressed by Windows. Just as Firefox is not addressing a functional need that is not already being addressed by Internet Explorer. And just as SMTP did not address any functional need that was not already being addressed by, say, the proprietary IBM PROFS.

The proposal is about technocratic model, not about functionality. The proposal states clearly and repeatedly that in functional terms what we are doing is essentially the same as what is already being done. But we are proposing to do it based on the Libre model. The subtitle of the proposal is: "A Reshaping of the Medium." Note the word: reshaping.

The existing competing proprietary protocols naturally demand a non-proprietary convergence point.

Anyone familiar with the inherent and proven dynamics of the data communications industry would consider the need to be obvious and significant. This Panel comment demonstrates lack of understanding of the industry, and lack of understanding of the proposal.

The email landscape in 1992 was similar to the current mobile email landscape. Yet by 1994 there was a non-proprietary convergence point in the form of SMTP/POP/IMAP. The need is as clear and compelling today as it was in 1992.

See Section 3.5, "Unfamiliarity with historical precedents," for further discussion.

5.1.3 Path to commercialization is clear and credible

The Panel Summary states as one of the proposal weaknesses:

> Does not articulate a credible path to commercialization.

Based on the understanding that the proposed non-proprietary protocols and software will credibly gain widespread usage (in turn based on the technical characteristics described in the proposal left unaddressed by the review comments), the path to commercialization is perfectly clear.

The proposal identifies Mobile Messaging Services as the major revenue source. All review comments overlook this major revenue source.

See Section 3.7, "Primary revenue source: Internet Mobile Messaging Services," for further discussion.

5.1.4 Business feasibility hinges on understanding non-proprietary business

The Panel Summary states as one of the proposal weaknesses:

> Despite some technical development, this proposal primarily requires a demonstration of business feasibility.

By choice, we have positioned the business model for this proposal to operate in the *non-proprietary, for-profit* quadrant. This is novel, complex and large.

Unless the reviewers are properly qualified, it is not possible to demonstrate feasability of this new business model in the limited space allowed for the proposal. Venture Capitalists in particular are not qualified to understand the dynamics of the *non-proprietary, for-profit* quadrant, because they take the proprietary mechanisms of patents and copyright for granted as an inherent necessity for all businesses.

In the commercialization plan section of the proposal, we discuss and describe:

- The colossal business opportunity, based on citation of existing market sizes.
- Our primary revenue source is Mobile Messaging Services. Neda is an Internet Application Service Provider, and already has the necessary infrastructure in place. Unlike open-source, this revenue source is recurring and highly scalable.
- Other tactical revenue sources.
- How we withstand competition.
- Our business execution strategy, based on making our software widespread through the non-proprietary model and through synergistic software component architecture.

See Section 3.8 for further discussion.

5.2 Reviewer 1: Academic

Reviewer 1: Academic states:

> This is a radical idea attempting to transform the Hi-tech industry into an "open everything" paradigm. I personally do not favor breaking every Hi-tech solution into microbes.

Despite internal discussion, and putting some of our best minds on the problem, we don't really understand what "breaking every Hi-tech solution into microbes" means. Does anyone? It seems to say that our proposal is somehow destructive.

The proposal is evolutionary and collaborative. It builds on what exists and promotes convergence. The only thing that the proposal breaks is the proprietary model, in favor of a new non-proprietary model.

Reviewer 1 seems to be saying he does not like the displacing impact of the non-proprietary model upon the existing proprietary model. We find this comment startling, and actually quite disturbing, particularly if it reflects NSF's position.

Reviewer 1: Academic states:

> It make little sense to propose a first phase which, although entails some technical developments and technical feasibility and validity evaluation, amounts to a business feasibility study.

The proposal can in no way be considered business feasibility study.

Question for NSF: What aspect of the proposal can be considered a business feasibility study?

5.3 Reviewer 2: Venture Capitalist

Reviewer 2: Venture Capitalist states:

> Proposals like this one to develop open source versions of existing applications raise interesting questions about intellectual merit.

Again, this is not just an open-source project.

Furthermore, the intellectual merits of faster/cheaper/better (and Libre and more competition) are significant in themselves.

Reviewer 2: Venture Capitalist states:

> ... however, in practice it is not convincing that the wireless messaging market is too closed or too uncompetitive today. Indeed, the market has become increasingly competitive and fragmented over the last five years. This is partly b/c interoperability is already pervasive at the end-user application level they can send messages from any device to any device.

There is general consensus among my peers at the IETF that today's wireless messaging is a walled-garden model. It is a closed, anti-competitive environment, where telephants rule.

Only a Venture Capitalist can deny the closedness of that environment, and keep a straight face.

Interoperability is NOT pervasive. Entry into and exit from SMS requires the use of walled-garden gateways. Crossing SMS addressing (phone numbers) and RFC-822 addressing requires translation.

Reviewer 2: Venture Capitalist states:

> Opening the lower layers of the messaging stack would indeed be interesting, but seems to lack the compelling intellectual merit.

The strength of the Libre Texting proposal is that it assumes IP connectivity at layer 3 (perhaps via NAT) and builds everything else on top of that.

Libre Texting is not about "opening the lower layers of the messaging stack." Reviewer 2's comment is gobbledygook, indicating that he understands neither the proposal, nor the mobile messaging stack. The reviewer has some technical vocabulary, and knows how to construct sentences according to the rules of grammar. But the resulting linguistic construct is meaningless.

Question for NSF: What does "opening the lower layers of the messaging stack" mean? What are the messaging stack protocols? What needs to be opened? And how does any of this relate to our proposal?

(Note: These questions and others like them may be considered to be semi-rhetorical. We pose these questions here to illustrate that the reviewer's comment is meaningless blather. NSF can adequately dispose of these questions by acknowledging this frankly. Otherwise they become strictly non-rhetorical, and the burden is then on NSF to provide coherent, meaningful answers.)

Reviewer 2: Venture Capitalist states:

> Open source software business models have been validated, however, successful businesses typically rely on a heavy professional services component. It is not clear that wireless messaging will enjoy a strong services component. While the PI may have other revenue models in mind like licensing, they are not sufficiently developed in this proposal to evaluate their potential.

This is a clear case of careless reading, lack of thinking, and lack of understanding.

Our primary revenue source is in the form of Internet Mobile Messaging Services. This is repeated numerous times throughout the proposal. See 3.7 for details.

Reviewer 2: Venture Capitalist states:

> The other commercial concern is the broad ambition of this proposal which necessitates significant changes across the messaging architecture

No. It. Does. Not. This statement is completely wrong. A key characteristic of Libre Texting is that it is technologically evolutionary—in other words, the exact opposite of what the reviewer is saying. This statement clearly indicates that Reviewer 2: Venture Capitalist does not even begin to understand the proposal.

Question for NSF: What specific aspect of our proposal necessitate significant changes across the messaging architecture?

5.4 Reviewer 3: Entrepreneur /Venture Capitalist

Reviewer 3: Entrepreneur/Venture Capitalist states:

> The applicant proposes to examine the feasibility of large-scale deployment of the various technological components of "Libre Texting," a new model for text messaging on mobile devices. For the purposes of this project, the applicant proposes that the viability of Libre Texting – both the architectural and economic viability, presumably – should be taken for granted.

The proposal clearly states that we only assume the viability of the Libre model.

Reviewer 3: Entrepreneur/Venture Capitalist states:

> . . . Technology questions aside, there's no evidence offered of user demand, . . .

The user demand for mobile messaging is obvious. Again, this is a faster/cheaper/better (and Libre and more competition) proposal.

Reviewer 3: Entrepreneur/Venture Capitalist states:

> . . . nor is any revenue model proposed for existing or new industry players (apart from the applicant).

Of course not—our goal is to build our own business, not other people's. Proposing revenue models for existing or new industry players is not part of the proposal.

But since the reviewer raises the question: any existing or new industry player can use *exactly the same revenue model as us*. This is most fundamentally because our proposal is *non-proprietary*. If the reviewer understood what this means the question of revenue models for other industry players would not arise. What non-proprietary means, is that *we own nothing*. What this means is that any industry player, new or existing, can come along and say, "Hey, we like what you boys are doing. In fact, we like it so much, that we are going to do exactly the same thing ourselves." And indeed they can. So there is the revenue model.

Reviewer 3: Entrepreneur/Venture Capitalist states:

> The size of the texting market is cited, but it is based on a model that the applicant seeks to overthrow.

The size of the texting market is not based on the delivery model; it is based on user demand. The market is what it is, and it doesn't go away just because the delivery model changes. The size of the market is one thing; the technocratic model for satisfying that market is another. Yet somehow the reviewer is conflating these two things. Does the reviewer imagine that people are going to stop texting?

The size of the texting market is wholly independent of the delivery model. It is gigantic under the proprietary model. It will stay gigantic under the Libre model.

Reviewer 3: Entrepreneur/Venture Capitalist states:

> There are some statements about the greater efficiency of Libre Texting, and its ability to deliver long-discussed features, but the proposed activity does not seek to verify this claimed superiority.

There are several points to be made here. First, let's speak a bit more precisely: the greater efficiency attaches to the protocols, not the Libre model. Thus the reviewer would have better phrased his comment as, "There are some statements about the greater efficiency of the protocols, . . . "

The reviewer is then correct: the proposed activity does not seek to verify this claimed superiority. But that is for two reasons. First, the claimed superiority has already been studied and verified elsewhere. And second, the technical superiority of the protocols is not the topic of our proposal.

Page 10 of our proposal includes this text:

> Various efficiency studies comparing EMSD with SMTP, POP and IMAP are available. A detailed theoretical and empirical comparison of SMTP and EMSD is available in *Efficiency of EMSD*.

Thus there is no need for us to conduct activity that has already been conducted and documented, and is clearly referenced in our proposal.

But far more important than the technical characteristics of the protocols, are the *technocratic characteristics of the Libre model*. This is the truly significant context of our proposal, not this or that technical characteristic of the protocols.

As we state plainly in our proposal, Libre Texting does not provide significant end-user functionality that is not already being provided by the existing proprietary solutions. The protocols do have some elements of superiority from a technical engineering perspective, but again, from the point of view of the end user this is not of any great significance.

The true significance and superiority of the Libre model is that it has all the characteristics, technical and technocratic, to become an *industry convergence point*. This also is fully analysed and documented elsewhere.

Given that this is the context and the goal, the question then becomes one of scalability. Hence, our proposal is about the verification of extremely large (planet-wide) scalability of the proposed protocols and software architecture.

Reviewer 3: Entrepreneur/Venture Capitalist states:

> Indeed, the applicant states that AT&T abandoned this general approach after massive investment; . . .

Once again, we need some clarity of thinking here. The reviewer's comment, and our response, turn on the phrase "this general approach." What do we mean by this?

AT&T did something, and we are doing something. But they are not the same something.

What AT&T did was fund development of a set of protocols. They did so in a particular context, and for a particular tactical purpose. What we are doing is proposing a complete, end-to-end Libre Texting model, in which every component of the model—the protocols, the software, the network, and the service—is wholly non-proprietary. These are entirely different in scope and purpose.

AT&T funded development of the protocols in the context a particular competitive situation that existed at that time. A full historical account of what they were doing and why they were doing it is out of scope here. But essentially, they were trying to break a proprietary hegemony of paging devices by Motorola, over which they had little control.

It is true that they viewed the protocols in a non-proprietary way, as a lever to accomplish this. But every other aspect of the pACT messaging system—in particular, the network and the service—would remain proprietary and firmly under AT&T control. A complete Libre Texting system, such as we are proposing, was in no way part of AT&T thinking or purpose.

The reviewer implies that because AT&T abandoned pACT, this somehow discredits the Libre Texting model. But we are talking apples and oranges here, incorrectly equated within the phrase "this general approach."

AT&T funded development of the pACT protocols for use with a specific network, namely, their Narrowband PCS network. But they did not recognize the potential scope of the protocols beyond this, i.e. the applicability of the pACT protocols to other networks they owned. Today we see the former pACT protocols now resurrected as the point of convergence for Libre Texting. But AT&T did not view them this way. As part of their abandonment of pACT, they abandoned the Narrowband PCS network. And since they viewed the protocols as part of pACT, they abandoned the protocols too.

Question for NSF: What is the basis for the reviewer's statement that "AT&T abandoned this general approach"?

Reviewer 3: Entrepreneur/Venture Capitalist states:

> . . . that various standards groups are likely to reject the Libre Texting model; . . .

Certainly, the standards groups will make every effort to quash the Libre Texting model. (Or more precisely, they will attempt to quash the proposed protocols as the basis of the Libre Texting model. Standards groups are concerned with protocols, not with models.)

Standards bodies are perennially hostile to protocols originating outside their own authority. They typically show the classic NIH (not invented here) reaction—we didn't do it, so it's no good, and we can do it better.

Furthermore, the relevant standards groups are fully infiltrated and controlled by Big Business, and have long since lost their integrity and responsibility toward the public good. Each of the big industry players wants to assert its own quasi-Libre construct as an industry standard, thereby claiming leadership of a new "open" industry paradigm.

So, no argument with the reviewer about the likely reaction of standards bodies to the Libre Texting initiative.

But as noted in the proposal, we have already published the protocols as Internet RFCs. The significance of this is perhaps not recognized by the reviewer. The significance is that we are well aware of the politics of standards processes, and we have experience in dealing with those politics. The process we went through to compel RFC publication of the protocols is documented in the Due Diligence section of our website at http://www.neda.com/StrategicVision/Participating/DueDiligence

Reviewer 3: Entrepreneur/Venture Capitalist states:

> ...and that competing approaches already have been adopted by players including Apple and Yahoo!

The fact that many different competing approaches are being pursued, creates the opportunity that the proposal addresses. None of these "competing" approaches are converging on a common protocol. The proposal is about creating a protocol convergence point.

Reviewer 3: Entrepreneur/Venture Capitalist states:

> In this context, it's unclear why the viability of Libre Texting should be assumed, let alone why its scalability should be investigated at taxpayer expense.

Understanding the viability of Libre Texting requires understanding of how protocol-based industries evolve, and knowledge of the relevant historical precedents. See Section 3.1, "Required sophistication of reviewers" and Section 3.5, "Unfamiliarity with historical precedents" for further discussion.

The comments from Reviewer 3: Entrepreneur/Venture Capitalist indicate a fundamental lack of understanding of the most basic premise of Libre Texting.

6 Broader Concern: NSF Process Issue

The concerns that motivate us to create this Live Case Study are bigger than just our own proposal and our own interests. The NSF SBIR program appears to have a heavy bias towards the *proprietary, for-profit* quadrant. Based on our experience with our own *non-proprietary, for-profit* SBIR proposal, we believe that other non-proprietary yet commercially-oriented SBIR proposals will be passed over in much the same way—their commercial viability dismissed by persons with the wrong philosophical temperament to appreciate the unique business dynamics at work within the *non-proprietary, for-profit* business sector. This case study may assist the NSF in recognizing and addressing this issue.

The Venture Capital culture is completely the wrong demographic to ask to review a non-proprietary business model. This culture is wholly wedded to the proprietary business model, and this weddedness pervades their thinking and assumptions at every turn. The notion of a non-proprietary business model is completely alien and incomprehensible to the VC value system and mindset. Presenting a non-proprietary business model for review by a VC panel all but guarantees its rejection.

7 Questions for Dr. Errol Arkilic (November 2009)

The following is the list of questions we submitted to Dr. Arkilic by email prior to the debriefing telephone call (November 18, 2009). As we described above, these questions were addressed partially and verbally in the debriefing. It would be very helpful to this case study if Dr. Arkilic would respond to these fully and in writing.

1. We received comments from three reviewers. Was the proposal reviewed by these three only, or were there other reviewers? If there were any other reviewers, can we please see their comments?
2. Did you yourself read and review the entire proposal? Are your own review comments included anywhere in what we received? If not, would you please provide us your own independent review of the proposal?
3. Can you please tell us how you chose the reviewers? Can you tell us about the background and credentials of the reviewers, in terms of both technology and business?

4. The proposal summary and the reviewer comments characterize our proposal as an open-source project. This is a fundamental error and mischaracterization. Throughout the proposal we repeatedly emphasize the Internet Service as primary. We clearly identify "Broad-Based Libre Texting Services" as our main revenue source. Yet the reviewers comment on problems with open-source revenue models. Did you notice this fundamental error of the reviewers?

5. Many of the review comments are incomprehensible. For example, Reviewer 1: Academic writes, "I personally do not favor breaking every Hi-tech solution into microbes." What does that mean? How can we go about understanding what the reviewers mean when their comments are incomprehensible?

   (Note that the proposal explicitly emphasizes an evolutionary technological model.)

6. Reviewer 3: Entrepreneur/Venture Capitalist says that we assume the viability of Libre Texting. This is not correct and reflects careless reading and poor understanding of the proposal. We say that "we take the viability of the Libre model for granted." In other words as described in "The Model" section, we take the viability of patent-free and copyleft approach as viable. The architectural, technological, and economic viability is not assumed and is addressed. Did you notice this error?

7. The review comments in their entirety include no comments with respect to the network architecture that we proposed, the software architecture that we proposed and the research topics that we proposed. There are no technical comments anywhere in the reviews we received. We were also looking for technical peer review comments. The comments we received are as if they are in the context of a business plan competition. Are these types of comments common in the context of an NSF SBIR? What about the technical comments?

8. The reviewer comments focus primarily on the business aspects of what we propose, and they do so in a very conventional and simplistic manner. By choice, we have positioned the business dimensions of this proposal in the *non-proprietary, for-profit* quadrant. The dynamics of that quadrant are very different from the traditional *proprietary, for-profit* quadrant. Were the reviewers businesswise qualified to address something this new and this sophisticated? We have spent a lot of time and effort formulating our business strategy for operation in the *non-proprietary, for-profit* quadrant. For the purposes of this NSF SBIR proposal we produced a research proposal, not a business plan.

9. Given all the errors and mischaracterizations in the review comments, what are our options with respect to reconsideration by NSF?

10. For resubmission, what does "significantly revise" the proposal mean? Most of our proposal was technical and research oriented, about which we have received no comments. Do we need to revise the proposal with regard to the technical and research oriented content as well, or just the business part?

11. Can you please provide us the list of successful proposals in the same area and same program call? If not, can you please provide us the numbers. How many were non-proprietary?