**IEEE NEW INITIATIVE**

**PHASE I: INITIAL PROPOSAL FORM**

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| **Proposed New Initiative** |
| Initiative Name | Propagation Data Portal |
| Initiative Number | *To be assigned upon submission* |
| Date Submitted | 22 May 2013 |
| Initiative Leader Contact | Prof. Ted Rappaport, New York University |
| Alternate Contacts | Prof. Dennis Shasha, New York University |
| Contacts E-Mail Addresses | tsr@nyu.edu; shasha@courant.nyu.edu |
| Phone/Extension | 718.260.3400 |
| Organizational Unit Sponsor(s) | IEEE Vehicular Technology Society |
| Champion | Prof. David G. Michelson, UBC; Tom Rubinstein, VTS Treas. |

***Please submit the New Initiative Proposal to*** ***newinitiatives@ieee.org.***

***Note:*** *For additional information or questions regarding the new initiative process contact*

*John Keaton at* *j.c.keaton@ieee.org* *or phone: +1 (202) 530-8328*

*Matt Loeb at m.loeb@ieee.org or phone +1 (732) 562-5320*

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| **Please complete the form below describing your proposed New Initiative** |
| **1. Provide a description of the proposed Initiative. Do not exceed 100 words.** |
| IEEE Vehicular Technology Society proposes to develop and host a Scientific Data Repository and Archive for wireless propagation measurement data, models and simulation software that will: 1) Prototype a standardized approach for preserving and disseminating scientific data for future IEEE data publication efforts, 2) Accelerate the development of the models, tools and techniques used to develop wireless standards and plan wireless system deployments, 3) Enhance the linkages between IEEE technical committees, conferences, journals and IEEE Standards Association projects, and 4) Provide a framework for other data repositories. |
| **2. Describe briefly and succinctly the desired outcome / deliverables / time frame of an investment in this Initiative. Please be brief and specific. Do not exceed 300 words.** |
| The lack of a Scientific Data Repository and Archive for wireless propagation is impeding the development of wireless standards and the creation of engineering tools and techniques used to develop wireless standards and plan wireless system deployments. While this gap in capabilities concerns wireless propagation data, the limitation represents a broader problem with scientific data sets in that there is no centralized repository for data assets that can support the broader community of research and practice.Over the next 36 months, with IEEE support, we will create a website for standardized formats of research propagation measurements and models based on the concepts presented in the June 2011 IEEE Vehicular Technology Magazine article "An Open Source Archiving System.” This archiving system will be open to the IEEE membership and will be populated with other measurements and models throughout industry and academia, creating the world's first propagation archive offering in IEEE.The prototype Propagation Data Portal ([http://cims.nyu.edu/cgibin/cgiwrap/~jfb325/WIRELESSScope.py)](http://cims.nyu.edu/cgibin/cgiwrap/~jfb325/WIRELESSScope.py%29) supports queries through any combination of metadata parameters related to wireless propagation. The prototype system includes seed data sets drawn from past research by the proposers. Initially, the Propagation Data Repository will be hosted in the university server (NYU), but will migrate to cloud compute infrastructure over time.Publications resulting from this work will give credit to the original generators of the data and, where appropriate, co-authorship. The key result will be a public archiving system that the IEEE can use to build value in IEEE membership, and encourage affinity with IEEE as another valued offering for IEEE membership. Moreover, the archive will have a design that supports queries on data sets beyond the domain of wireless propagation so can serve as a prototype for data publication efforts across IEEE.  |
| **3. Initiative’s Objectives—Describe the specific objectives of this proposed Initiative. Do not exceed 100 words.** |
| In an era in which development of the tools and techniques used to develop wireless standards and plan wireless system deployments are increasingly being pursued in closed industry forums, the initiative will provide researchers and practitioners with additional incentive to contribute to: 1) IEEE technical committees, conferences and journals with an interest in wireless propagation, wireless system planning and wireless standards development and 2) IEEE Standards activities related to development of standardized wireless propagation models. By promoting exchange of propagation data, models and software between academia and industry, the initiative will accelerate progress in this area and encourage broad participation. |

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| **4. Check the specific IEEE Goal(s) that the Initiative will address. *(Check all that apply.)More information about IEEE’s goals are found at the following URL.***[**http://www.ieee.org/about/corporate/strategy/envisioned\_future.html**](http://www.ieee.org/about/corporate/strategy/envisioned_future.html) |
| [x]  **Goal A — Profession: Industry and Practitioners**Industry professionals and their employers will value IEEE as a major resource to achieve success. [x]  **Goal B — Profession: Education**The IEEE will improve professional competencies through shaping the education of students and professionals. [x]  **Goal C — Public: Global Advocacy** IEEE will increasingly be valued by the global community as a catalyst for a balanced dialogue on technology-related issues. [x]  **Goal D — Public: Image of IEEE and the Profession**The public will increasingly value the role of IEEE and technical professionals in enhancing the quality of life and the environment; IEEE will fulfill its requirement to serve the public good.[ ]  **Goal E — Organization: Members and Volunteers**IEEE members will increasingly find value and enjoyment through their involvement in the organization.[x]  **Goal F — Organization: IEEE the Association** IEEE will operate as a model global association, with aligned purpose, energy, and infrastructure that facilitates the development and execution of coordinated strategy.[ ]  **None of the above.** Please explain below.  Use this space to explain why “none of the above” is selected |

**5. Please respond to the following questions.**

a. Describe the features, advantages, and benefits of this Initiative.

**Features** — what is really new and innovative?

Whereas International Telecommunications Union (ITU) does support data repositories, it does so without the ability to query on a large set of metadata parameters. So, while the ITU system is physically scalable, they may not be cognitively scalable in that a user seeking very specific data may have a hard time finding them, especially as the data sources increase in size and number. Further, our database has been designed to allow other metadata parameters to be included as needed and to permit “meaningful querying” – the system guides the user to ranges of query values that are guaranteed to produce non-null answers. This project will establish IEEE VTS as a leader, and could be a new type of archiving system that adds value to IEEE Xplore, as the research community in Electrical and Computer engineering considers sharing measurement data with archival publications. This capability for supporting parametric interrogation of complex metadata and data is the foundational framework for a capable web-based portal for experimental data sets across the IEEE.

**Advantages** — what are the advantages of this Initiative over current practices?

IEEE VTS would emerge as a leader for the entire global community in providing an open research tool for wireless engineers that would add value to IEEE membership, and allow practicing engineers to gain information that can help them do their work, and share their work, in a much more efficient manner than today**.**

**Benefits** — what are the specific benefits and who are the recipients?

Benefits include much more readily available knowledge to IEEE members, free storage capabilities for the research community to place their measured data, ability to share measured data along with IEEE publications, ability to quickly use other's research to design, develop and test new and existing wireless communication systems, will serve as a

community-builder for a segment of the IEEE research community (particularly in the area of Wireless Communications, a hallmark of the IEEE VTS), and ability for IEEE to garner more members and build mindshare as a technology leader.

b. Do the features, advantages, and benefits apply to all IEEE members, the sponsoring OU of the Initiative, Societies or Councils, Sections and Chapters, discipline or profession (including electrical, electronics, communications, computer engineering, computer science, and the allied branches of engineering and the related arts and sciences), or society and humanity. *Check all that apply.*

[x]  All IEEE members

[x]  Sponsoring Organizational Unit – Identify: VTS

[ ]  Societies and Councils – Identify:

[ ]  Sponsoring Organizational Unit –Societies and Councils – Identify:

[ ]  Sections and Chapters – Identify:

[ ]  Discipline or Profession – Identify:

[ ]  Other - Identify:

This proposal would not only benefit IEEE VTS (the originating society), but also the Communications, Microwave Theory and Techniques, and Antennas and Propagation societies. This service could scale and be adopted across many IEEE societies as early success and scaling is reached**.**

c. In developing your New Initiative request, you very likely considered alternatives. Please discuss those alternatives and indicate why you rejected them.

No other alternative exists within IEEE, although the International Telecommunications Union (ITU) study group 3 (ITU SG3) hosts a radio propagation data base for the research community. The query limitations of the ITU SG3 have been discussed in point a above. The existing methods to match research with measurement or modeling data sets are to use ad- hoc methods that are not scalable or to hire costly consulting companies. We propose to make an open, scalable portal that could ultimately benefit all of the IEEE community. This project uniquely combines faculty and students from both ECE and Computer Science, with programming and database expertise stemming from close relationships in the past year at NYU – few if any other vendors could provide this expertise.

d. Identify other IEEE OUs that could participate in this New Initiative, either by providing required competencies or benefiting from it, and thereby enhancing its adoption by more OUs. *Check all that apply.*

[x]  Educational Activities

[ ]  IEEE Foundation

[ ]  IEEE History Center

[ ]  IEEE Women in Engineering (WIE)

[ ]  IEEE-USA

[x]  Publication Services and Products including IEEE Xplore digital library, journals, magazines, conference proceedings, standards and books

[ ]  Regional Activities including regions, sections, chapters, student branches and chapters

[x]  Standards Association including SA members and standards development activities

[x]  Technical Activities including technical societies and councils

[x]  Other IEEE entities that might participate — Identify: Several other IEEE societies, such as the Antennas and Propagation, Communications, and Microwave Theory and Techniques society could participate. The IEEE Standards Association and IEEE Xplore could become joint custodians and keepers of the data and the entry of data over the long term.

e. In Item 3 you identified the Initiative’s Objectives. How will you measure actual performance against the stated objectives?

We shall have a user community of leading academics and corporate users to provide regular feedback on the usability of the site, and the prioritization of features. IEEE VTS has a large number of active members who do research in the field of wireless propagation, and this community of volunteers shall help vet and potentially build the archiving system. Also, access and utilization shall be carefully measured, and used to drive website improvements

and requested features. We shall rely on the active members of IEEE VTS to provide inputs,

data, and user feedback.

f. Initiatives should add value to IEEE’s treasury of products, processes, volunteer and staff investments of time, and opportunities for growth. How would you justify an investment in

this Initiative? *Note: Keep in mind that initiatives can be justified on quantitative or qualitative basis. The quantitative generally are associated with products and processes; the qualitative with member services or benefits to the general public.*

Justifiable through: added value to IEEE VTS and IEEE member community, added value to

propagation papers published in IEEE journals and conferences, added value in the perceived leadership of IEEE VTS in advancing the state of the art in wireless communications, added value in creating web-based products and offerings that can be scaled through other IEEE societies.

g. You have given a great deal of thought in preparing this proposal. What is the impact on the future of the sponsoring organizational unit, other OUs or IEEE as a whole if this Initiative is not approved? Examples could include competition against IEEE or an OU product, loss of authors, loss of a leading position in the discipline, and so on.

(i) We would lose an opportunity to move the wireless industry forward, and lose the ability to pioneer a new concept that has yet to impact the Electrical and Computer Engineering community. Academic researchers are becoming less experimental, and are more theory/abstract based, while industry has gone away from publishing at IEEE conferences (they file patents, instead). By creating an open repository portal for propagation researchers, we could bring together the experimentalists in both academia and industry, and create a new concept and capability for the wireless engineering community. (ii) We would lose the ability to attract standards bodies to use IEEE membership if we fail to support propagation measurement and modeling, as all wireless standards require channel models based on measured data. Thus, not funding this would diminish IEEE’s relevance to all wireless standard activities. (iii) The proposed project will allow us to retain IEEE members if they find added value in the portal. By not doing this, we fail to invest in new ideas and valuable capabilities that would both enhance our membership value proposition while supporting more involvement and activism across academia and industry. (iv)

Furthermore, the down-side to not funding this initiative is that we would lose the momentum and substantial energy already invested in this idea by the IEEE VTS Board of Governors, and several students and faculty who have been working on these concepts at no cost to IEEE since the publication of the June 2011 magazine article. Without investment and endorsement by IEEE, the ideas and energy may rot on the vine, without bringing value to IEEE membership, and losing out on the ability to offer new benefits to IEEE VTS members (where the idea has been born).

**6. Please indicate the estimated funding required and the anticipated duration**

**(maximum of 3 years) of this Initiative.**

**a. Estimate the funding by year and identify potential sources of revenue. Justify the potential revenue sources by providing a list of potential users/customers. If the new Initiative involves non-financial returns of some kind, identify the users/customers.**

**b. When considering human resources, please estimate the “fully-loaded” cost. (“Fully-loaded” cost includes direct plus all indirect costs, including infrastructure/overhead.)**

**c. Identify ongoing costs for sustaining this Initiative as part of IEEE operations at the conclusion of the Initiative period.**

**Duration of Initiative:** [ ]  1 Year [ ]  2 Years [x]  3 Years

**Budget: *To complete, Double Click on the Spreadsheet to enter data.***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Budget Item** | **Year One** | **Year Two** | **Year Three** | **Initiative****Totals** |
| **Anticip ated Revenue** | $0 | $10,000 | $20,000 | $30,000 |
| **Anticip ated Expen ses****(les s HR)** | $6,000 | $9,000 | $0 | $15,000 |
| **Anticip ated HR Cos ts** | $50,000 | $50,000 | $50,000 | $150,000 |
| ***I nitiative Net*** | ($56,000) | ($49,000) | ($30,000) | ($135,000) |

**Revenue Explanation:** Justify the potential revenue sources by providing a list of potential users/customers. If the new Initiative involves non-financial returns of some kind, identify the users/customers.

Revenue estimates are from increased conference participation at VTC, possibly increased

page charges from papers using this data, and increased memberships in IEEE VTS. IEEE VTS is a small society with only about 5,000 members, but is one of the fastest growing in terms of percentage increase in members. The member base is primarily interested in wireless communications. Thus, VTS and its conferences and publications have a large market opportunity. This initiative could bring in a wide community of members who are already part of other IEEE societies (e.g., ComSoc, AP-S, MTT-S). The revenue estimates are small and conservative. The real value of this project is that it could be scaled and used across the entire IEEE platform of societies and could eventually be integrated into IEEE Xplore for archiving measurement data. With success, this concept could be built out in other areas of IEEE where real-world data or software (e.g., a code repository, radar image repository) could add value to other societies.

**7. Estimated life cycle/budget impact costs: Identify the ongoing costs for sustaining this Initiative as part of IEEE operations at the conclusion of the Initiative period. Please discuss the life-cycle funding for the proposed project and indicate when, how much, from whom and for what purpose any additional funding will be available after the New Initiative money expires.**

Once up and operational, some resources would be needed to maintain and ensure data integrity. We believe paid resources would be minimal, and much work could be handled with IEEE's existing IT support that it provides VTS or IEEE Xplore. Most of the administration could be voluntary, from participants of the web-portal itself, much like Wikipedia is voluntary and self- policing. However, as the wireless research community evolves, new measurements and models would drive the need for a dedicated programming team to upgrade and enhance the portal. We believe voluntary members could do this, as well. This brings to light the importance that the propagation portal, from the beginning, must be modular and well thought out to allow for future expansion including machine-to-machine querying capabilities using semantic web querying features.

**8. Champion of the Proposal**

**Name:** David G. Michelson, IEEE VTS

The proposed Scientific Data Repository and Archive for wireless propagation will: 1) introduce important experimental practices that are common in other disciplines but which have not yet been adopted by Electrical and Computer Engineering, 2) distinguish IEEE journals and conferences from their competitors, 3) elevate collaboration between IEEE journals and IEEE Standards Association activities concerned with wireless communications to new heights, and

4) encourage both companies and researchers to share propagation data after the original motivation for collecting them has been fulfilled. If this proposal is approved, I anticipate that a very modest investment by IEEE New Initiatives will lead to exciting long-term outcomes that will greatly benefit IEEE, its members and its community. The reputations of the proposers give me every confidence that the effort will achieve its ambitious goals. Accordingly, the proposal has my full support.

**The information provided in items 1-8 will be used by the New Initiatives Committee to determine whether a complete project plan should be developed for this proposed project. You will receive a response to your Initial Proposal within 30 days.**

**END OF PHASE 1 FORM**

**PHASE 1 REVIEW**

**REVIEWER COMMENTS SECTION**

a. Proposal strengths and weaknesses:

NIC will use this space to discuss the proposal's strengths and weaknesses.

b. Recommendations from New Initiative Committee to those preparing a complete project plan:

NIC will use this space for recommendations. c. Other Comments:

NIC will use this space for additional comments.

***IEEE NEW INITIATIVES***

**PHASE II — PROJECT PLAN**

**Please do not complete the following project plan until directed to do so by the New**

**Initiative Committee.**

**9. Provide an Executive Summary of the proposed Initiative.**

Use this space for the Executive Summary.

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| **10. Provide a description of the following issues to accomplish this Initiative.** |
| a. Describe the project’s scope.Use this space to describe the project's scope. |
| b. List any technologies associated with this project and the level of confidence in using the technologies. Will research be required to develop any of the technologies?Use this space to list technologies and level of confidence in using the technologies. |
| c. If this project includes development of a product or service that will be sold to members or external customers or provided as a member service, please provide a marketing and distribution plan. In other words, tell us how you intend to convince customers to purchase,members to take full advantage of the project’s deliverables, and describe the distributionchannels.Use this space to describe the marketing and distribution plan. |
| d. Describe the risks and uncertainties related to this project.Use this space to describe the risks and uncertainties. |
| e. Identify the knockouts: anything that may prevent this Initiative from being successful.Use this space to describe the knockouts. |
| f. People requirements:i. Provide the names of the people and organization (s) that will be involved in this Initiative including the project manager, volunteers, IEEE staff, contractors and consultants. Organization(s): Project manager: |

|  |  |  |
| --- | --- | --- |
|  |  | Volunteers: |
|  | Staff: |
| ii. | Ar | Contractors or consultants:e new full-time hires required to fulfill the expectations of this proposal? |

NO

YES, please specify the number, general qualifications, and expected time of hire after the availability of funding.

Use this space to specify the number, general qualifications of new hires, and anticipated date of hire.

iii. Are new part-time hires required to fulfill the expectations of this proposal?

NO

YES, please specify the number, general qualifications, and elapsed time of hire from availability of funding.

Use this space to specify the number, general qualifications of new hires, and anticipated date of hire.

iv. Provide an estimate of the number of volunteer and staff hours required to fulfill the requirements of this proposal.

Volunteer hours: Staff hours:

v. Identify any scheduled projects or other work that will be delayed or cancelled if this project is approved.

Use this space to describe the opportunity costs and what work will not get done.

g. If the project involves a period of one year or less, describe the plan for maintaining continuity and identify the sustaining costs for the following three years.

Use this space to describe the plan for continuity and sustaining the activity the following three years.

h. Identify any other positive or negative considerations that could prevent this project from attaining the results specified in Item 2.

Use this space to describe the positives and negatives.

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| **11. Revenue, Expense, and Net Worksheet** |
| **COMPLETE the FOLLOWING WORKSHEET****(Please note that, for example, Year 1 is the 1st full year from date of initial funding)*****To complete, Double Click on the Spreadsheet to enter data.*** |
|  | **Budget Item** | **Year 1** | **Year 2** | **Year 3** | **Total** |  |
| **Revenue Sources** |  |  |  |  |
| Source (1) |  |  |  | $0 |
| Source (2) |  |  |  | $0 |
| Source (other) |  |  |  | $0 |
| ***Total Revenue*** | ***$0*** | ***$0*** | ***$0*** | ***$0*** |
|  |  |  |  |  |
| **Expenses** |  |  |  |  |
| Staff Costs **(Total)** [All staff time must be included.] |  |  |  | $0 |
| Consultants |  |  |  | $0 |
| Research / Surveys |  |  |  | $0 |
| Other Contractors |  |  |  | $0 |
| Equipment |  |  |  | $0 |
| Workshops |  |  |  | $0 |
| Meetings |  |  |  | $0 |
| Communication |  |  |  | $0 |
| Travel |  |  |  |  |
| Volunteer |  |  |  | $0 |
| Staff |  |  |  | $0 |
| Training |  |  |  | $0 |
| Promotion |  |  |  | $0 |
| Publicity |  |  |  | $0 |
| Start-up |  |  |  | $0 |
| Maintenance |  |  |  | $0 |
| Other: |  |  |  | $0 |
|  |  |  |  | $0 |
|  |  |  |  | $0 |
| ***Total Expenses*** | ***$0*** | ***$0*** | ***$0*** | ***$0*** |
|  |  |  |  |  |
| ***Initiative Net*** | ***$0*** | ***$0*** | ***$0*** | ***$0*** |
|  |
| **Provide any required explanations to this Initiative Worksheet: Sources of Revenue, Promotion, Publicity, and other expenses that may have an impact on the success of the project.**a. Use this space to list explanations for revenue and expense items.b. Use this space to list explanations for revenue and expense items. c. Use this space to list explanations for revenue and expense items. |

***After completing the initiative worksheet above, please transfer the totals to the Budget Table in Item 12.***

**12. Financial Summary**

**Duration of Initiative:** 1 Year 2 Years 3 Years

**Budget: *To complete, Double Click on the Spreadsheet to enter data.***

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| --- | --- | --- | --- | --- |
| **Budget Item** | **Year One** | **Year Two** | **Year Three** | **Initiative****Totals** |
| **Anticipated Revenue** | $0 | $0 | $0 | $0 |
| **Anticipated Expenses****(less HR)** | $0 | $0 | $0 | $0 |
| **Anticipated HR Costs** | $0 | $0 | $0 | $0 |
| ***Initiative Net*** | $0 | $0 | $0 | $0 |

**Estimated life cycle/budget impact costs:** Identify the ongoing costs for sustaining this Initiative as part of IEEE operations at the conclusion of the initiative period. ***To complete, Double Click on the Spreadsheet to enter data.***

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|  | **Post New Initiative, Life Cycle Estimates** |
| **Life Cycle Estimates** | **Year 1 after****NIC funding is gone** | **Year 2 after****NIC funding is gone** | **Year 3 after****NIC funding is gone** | **Total for Years 1****3 after NIC****funding is gone** |
| **Anticipated Revenue** | $0 | $0 | $0 | $0 |
| **Anticipated Expenses (less****HR)** | $0 | $0 | $0 | $0 |
| **Anticipated HR Costs** | $0 | $0 | $0 | $0 |
| ***Project Net*** | $0 | $0 | $0 | $0 |

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**13. Use the table below to list the important actions/milestones required to complete this Initiative. For each, identify measures that can be used to assess results, the person/group accountable for the action, and indicate the target date for completion.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Action / Milestone** | **Measures to****Assess Results** | **Person/Group****Responsible** | **Estimated****Completion****Date** |
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**14. Please provide any additional information you would like the New Initiatives**

**Committee to consider when evaluating your proposal.**

Use this space to provide any additional information.

*IEEE New Initiative Proposal form last updated: June 2010*