CHALLENGE PAPER

Climate and Health Initiative

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May 16, 2008

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Challenge Paper

Climate and Health Initiative

1. Purpose of the Challenge Paper

The purpose of this document is to stimulate a Dialogue aimed at dramatically improving capacity to respond to Africa's infectious diseases by engaging the thinking of a diverse group of stakeholders interested and involved in helping to reduce poverty across Africa sustainably. This group includes influential leaders, researchers and packagers of research information, tool developers, policymakers, delivery agencies, development agencies, donors, investors and connectors. These stakeholders in turn operate in different communities including, but not limited to: climate, animal health/veterinary, human health, and knowledge integrators and media. This Challenge Dialogue[1] will commence electronically in May and the feedback to the Challenge Paper will be used to design and inform a face-to-face workshop to be held in Nairobi in September, 2008.

This Challenge Paper is not intended to be comprehensive or academically authoritative. Rather it is a working document; *no assumption is set in stone and every assertion is open to discussion*. Regularly throughout the paper you will note we ask for your feedback. Please provide your responses using the separate ***Feedback Form*** and email them to Joyce Wanderi — j.wanderi@cgiar.org **by June 6, 2008**.

Feel free to respond to all of the paper or, if your time is limited, just the sections and points that most interest you. We recommend that you first read through the entire paper so you have the proper context. We also welcome any and all feedback. Your responses don't need to be comprehensive or backed-up with evidence (although you are certainly welcome to do so). Rough thoughts, bullet point ideas, new questions, etc. are all just fine. We encourage you to provide clear, frank and constructive input. We pledge to keep your feedback confidential and as we move the Dialogue forward will attribute no comments to any specific participant.

2. Key Challenge Statement for this Dialogue

In consideration of climate change — to engage a diverse group of stakeholders from the climate, animal health, human health and entomology sectors[2] in an exploratory Dialogue aimed at catalyzing action-oriented collaboration among these communities to improve responses to climate–related diseases across Africa.

[1] Please see Appendix A for more details on the Challenge Dialogue System.

[2] These are the main disciplinary areas driving this Challenge Dialogue, but we have invited many participants from other areas including knowledge management, ICT's, the broader environmental community, social sectors, development agencies, NGO's, and global and regional agencies, to join the dialogue with their critical perspectives and ideas.

3. Expected Outcomes from the Dialogue

3.1 UNDERSTANDING of:

a. the full nature and magnitude of the climate-related disease challenge in Africa and potential opportunities to address it

b. the anticipated advantages of having people from the climate, human health, animal health and entomology sectors working collaboratively on the climate-related disease challenge

c. who needs to be involved in addressing the challenge, and in what way, to make such a collaborative effort most effective and efficient

d. who the key target beneficiaries are for this collaborative work

3.2 PLANS and ACTIONS[3]:

- That articulate a vision and clear purpose for the collaborative opportunity
- That identify roles and responsibilities and describe how the different groups will work together
- That define a set of actions, projects and necessary resources to start the initiative during its formative stage

3.2 FORMATION OF AN INITIAL COLLABORATIVE COMMUNITY:

- The Dialogue process will create linkages and engender important relationships between the three communities. It will lead to shared and broader-based awareness and understanding of the challenges and opportunities. These conditions will enable the start of an interdisciplinary network or community of practice focused on climate-related diseases.

INPUT REQUEST #1: KEY CHALLENGE & EXPECTED OUTCOMES

Please review the Key Challenge Statement and Expected Outcomes and provide your responses in writing on the accompanying Feedback Form (note: you may want to go through the entire Challenge Paper first).

Are you in alignment with the Key Challenge we have advanced for this dialogue (as opposed to climate and health challenges in general) or do you think it needs to be adjusted?

What Expected Outcomes do you expect from this Dialogue process (as in…"I would consider this Challenge Dialogue a success if…')

[3] In Section 6 we outline some potential Action Options for your reaction.

4. Why is this Challenge needed now? (Background issues and events that led to this Challenge)

4.1 The World Health Organisation (WHO) estimated that changes to the earth's climate was already causing about five million extra cases of severe illness a year and more than 150,000 extra deaths. By 2030, however, the number of climate-related diseases is likely to more than double, with a dramatic increase in heat-related deaths caused by heart failure, respiratory disorders, the spread of infectious diseases and malnutrition from crop failures (Campbell-Lendrum, Pruss-Ustun et al. 2003).

4.3 Recent global research provides evidence of climate change-related disease outbreaks already occurring through the spread of different types of pathogens—viruses, bacteria, fungi and parasites.

4.4 Diarrhea is the world's most common disease, with as many as 4 billion acute cases per year. It causes 4% of all deaths and 5% of health loss to disability. Climate change is expected to result in an additional 400 million cases a year.

4.5 By 2050, 6 billion people around the world will be at risk to the 'big 7' climate-related diseases: malaria, dengue and other haemorrhagic fever viruses, schistosomiasis, sleeping sickness, Chagas' disease, Leishmaniasis and river blindness; 4 of the big 7 are zoonoses (Benniston, 2002).

4.6 The last 200 years have seen greater environmental change than the last 2000; the last 20 years have seen greater change than the last 200 (Myers and Tickell, 2001).

4.7 Since 1980, a new disease has emerged on average every 7 months. 60% of emerging diseases are zoonotic, that is, transmissible between animals and man.

4.8 At the moment there is no agreement among researchers and policymakers regarding the importance of using climate-based models to predict future disease prevalence in humans and animals and there is no agreed-upon categorization of what is meant by the term 'climate-related disease'. More work in both of these areas is needed. The following statement represents a 2004 attempt by WHO to categorize and quantify the incidence of such climate-related disease:

> 'Of the 25 common infectious diseases, which together are responsible for 420,000,000 lost disability-associated-life-years, 2 are primarily determined by climate (malaria, cholera); climate has a major role in 8 others (meningococcal meningitis, Leishmaniasis, Dengue, Japanese encephalitis, St. Louis encephalitis, Rift Valley fever, Ross River virus, Murray Valley fever). Climate plays a minor to moderate role in 9 (influenza, diarrhea, lymphatic filariasis, intestinal nematodes, sleeping sickness, Chagas' disease, West Nile virus, yellow fever, Lyme disease). The role of climate is negligible or undetermined for the remaining 6 diseases (sexually transmitted disease, trachoma, tuberculosis, river blindness, childhood diseases)'.

4.9 The research on climate-related disease outbreaks in Africa is neglected because it tends to fall between the disciplinary gaps. It is also neglected because it affects poor people in poor countries. Human health practitioners talk about the 10-90 gap; only 10% of the global health research expenditure is devoted to problems that primarily affect the poorest 90% of the world's population.

4.10 At the moment little evidence exists of causal changes in disease transmission due to climate change within Africa. This lack of evidence does not mean that these changes do not exist. Rather, it may reflect the lack of available epidemiological data as a result of poor or absent surveillance data and health information systems.

4.11 The world's climate is changing at unprecedented rates. African agriculture and pastoralism is expected to suffer some of the greatest impacts of the twin threats of global warming and increasing climate variability; Africa is already warmer than it was 100 years ago. By mid-century it is anticipated that extreme droughts will prevail over large areas of the continent which are now relatively drought-free. Most climate models are global and not very helpful at regional scale, so regional capacity needs to be strengthened.

4.12 Climate variability and change pose increasing risks to Africa's poor livestock keepers. Declining crop and rangeland productivity is reducing the amount and quality of already scarce crop by-products and forages, with which virtually all African small-holders feed their livestock. Less water is making it more difficult to raise farm animals, which typically constitute the prime asset of small-holders.

4.13 There is a growing sense that climate, animal health and human health are integrally linked in the continent of Africa through many different associations, including the following:

- The distribution and impacts of the vector-borne diseases of man and animals. Diseases such as malaria, Rift Valley fever, African horse sickness, and bluetongue vary considerably with seasonal and longer-term climatic variations. The regional director for Africa for WHO has said that climate change directly contributes to changes in the geographic distribution of vector-borne diseases such as malaria and epidemics of meningococcal meningitis and Rift Valley fever and cholera in previously unaffected areas. Some diseases—because of climate change—are moving into new areas where people have little natural immunity (e.g. schistosomiasis, yellow fever, malaria, Chikungunya fever, Onyong-nyong fever, Dengue, West Nile.)

- Water-borne infectious diseases are exacerbated by flooding and complicated by inadequate access to water by people and animals.

- Droughts force peoples and their livestock to move, potentially exposing them to different environments with health risks to which they have never been exposed.

4.14 **Working Proposition —** All of the above has led the Organizing Team, supported by Google.org, to propose the following:

> **The links between climate, animal health and human health are significant. In response, the increased incidence and magnitude of infectious disease effects will increase as global temperatures rise. We expect that the climate and health communities across Africa can be strengthened in a cost-effective manner and that future action-oriented collaboration across these communities has the potential to improve our capacity to predict, prevent and mitigate infectious diseases and to dramatically improve the response time in addressing such outbreaks.**

This proposition has led to the decision to launch this particular Dialogue, in order to test its validity and to attempt to identify areas where targeted efforts have the potential to dramatically improve responses to disease outbreaks.

INPUT REQUEST #2: BACKGROUND STATEMENTS and WORKING PROPOSITION

In your view are there any Background Statements that need clarification?

Are there any that should be added?

Are there any that are not relevant?

Are you aligned with the Working Proposition? How would you improve it?

5. Assumptions driving the team organizing this Dialogue

Participants are invited to react to these assumptions—challenging those which are unclear or with which they disagree.

Subject Matter-Related Assumptions

5.1 For the term 'climate change', we are adopting the UNFCCC (United Nations Framework Convention on Climate Change) definition, which refers to a change in climate attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is *in addition to* natural climate variability observed over comparable time periods. 'Climate models' refer to the physical process models that make forecasts of immediate, medium- and/or long-term climatic conditions. In this Dialogue, we are focusing on both climate variability and change, which will include both the short-term and longer-term benefits to integration of climate and health knowledge.

5.2 The term 'health' encompasses human and animal health and related livelihoods and the term 'climate-related diseases' includes those directly and indirectly associated with climate variability and change.

5.3 It is expected that as global temperatures continue to rise with climate change, people will face greater health risks because:

- distributions of vectors and diseases will change with changing eco-climatic conditions, e.g. vector distributions may expand to higher areas (tropical) that were previously disease-free
- climate change will: (a) foster the evolution of existing diseases and (b) lead to the emergence of new diseases
- tropical diseases will tend to become more widely distributed
- there will be more extreme climatic events and, with these events greater incidence of disease: drought-related disease, flood-related disease and El Nino-related disease;

These factors and events will cause more people movements and migrations-associated disease.

5.4 There are some differences of opinion in the scientific community as to the extent that climate change influences some specific diseases. Our approach will be to seek out these different opinions and seek clarity on their implications. We assume that in this clarification in the future we will be able to create a draft framework for cataloging diseases which are climate-related, and that we are concerned with both new emerging diseases as well as re-emerging diseases.

5.5 There may only be spotty knowledge available (i.e., not synthesized) that indicates for what diseases climate information would be most useful. There is a need for a better understanding of what diseases are largely driven by climate (e.g. vector-borne diseases such as sleeping sickness/trypanosomosis, malaria, Rift Valley fever), versus those that are somewhat, or indirectly influenced by climate (e.g. schistosomiasis, Dengue fever, cryptosporidium), versus those where climate may play a very minor role (e.g. tuberculosis, HIV, foot and mouth, brucellosis).

5.6 While some disease distribution maps exist, and while these will be helpful, what is also needed is ‘vulnerability maps’ that show areas of high vulnerability to ‘climatic diseases’ (climate variability and change) (which diseases, vectors and reservoirs of these diseases, where they are and where they are moving towards, where the poor are in relation to them).

5.7 Diseases that affect business and international trade have tended to receive more attention by governments (e.g. BSE/’mad cow’, foot and mouth) than diseases affecting people with less commercial impact. Diseases of high priority for poor people have also received relatively less attention than disease of the rich (e.g. malaria vs. obesity).

5.8 Early detection and action regarding climate-related diseases has the potential to save many human and animal lives and vast sums of money for governments in Africa, and in the rest of the world: witness the enormous costs of dealing with avian flu, BSE and SARS outbreaks in many countries in recent years.

5.9 There are huge opportunities offered by new information and communication technologies starting to rapidly spread across Africa – to share knowledge, work together at a distance, deal with large datasets, support health systems, support disease surveillance and facilitate quick sharing of that information.

Assumptions Related to the Approach Being Taken

5.10 This Dialogue will attempt to clarify a set of big-picture key challenges being faced by various actors and influential leaders in the different sectors (climate change, animal health, human health). We are also assuming that there are cost-effective ways to connect them so that they develop and implement innovative interventions with potential to make a significant and positive difference.

5.11 Through the Dialogue as well as subsequent actions we identify, we will aim to conduct a systematic review of the impact of climate on animal and human disease in Africa. The review will cover different ways of defining climate-related diseases, the impact of climate on disease, and the relative importance of climate influence versus other factors. Some time will be spent on reviewing key learnings from present research and possible future priorities. The over-riding focus being on identifying actions and investments that show high potential for reducing response time in addressing climate-related diseases.

5.12 We assume that there is a huge gap between the generators of climate information (e.g. climate modelers) and the potential users of this information.

5.13 We assume that as a result of this Dialogue there will be willingness to address this issue, and action evidenced by investments (financial, policy support, admin/structural).

5.14 We assume that the focus of this Dialogue will not ignore poor communities, and especially the big tradeoffs involved (e.g. wiping out poor smallholders' livestock assets to eradicate disease threats to rich countries).

5.15 We should define high-priority communities we would like to target for benefits (e.g., women, children, urban, Sahelian, pastoral, highland, riverine, coastal).

5.16 It is crucial to look at the impacts of 'dual-burden' — i.e., both animal and human diseases. We assume that the human health community has moved towards allocation of resources according to disease burden and cost, but the animal health community may need greater support in order to do so.

5.17 Improving vet-med-climate/eco linkages will lead to better response and management of climate-related outbreaks because:

- human disease tends to be a very difficult starting point for understanding climatic links/causes because so many other behavioral factors come into play whereas animal diseases can be linked more easily to climate-related factors

- counting the "total burden" (human, animal and environmental health costs) will create a stronger case and lead to more pro-poor and pro-environment resource allocation

5.18 Poor funding and investment in government veterinary and human health departments has made many departments relatively ineffective in many African countries. An improved understanding of the challenges and opportunities on both sides of the health-related climate risks and climate-related health risks could lead to breakthrough innovations.

5.19 It is possible to strengthen considerably the interaction and collaboration between the climate and health sectors/communities across Africa in a cost-effective manner. We assume that the Dialogue will identify all the elements and leverage points (i.e., the general system within which these elements and relationships operate) that play an influential role in improving the efficiency and effectiveness of responses to disease threats and outbreaks.

INPUT REQUEST #3: ASSUMPTIONS

Please review the Assumption Statements and provide your responses in writing on the accompanying Feedback Form.

Which assumptions require more clarification for you to understand?

Do you strongly disagree with any of these assumptions?

Are there any assumptions that you would add to the list?

Are you aligned with the Working Proposition? How would you improve it?

6. Concepts, Critical Questions and Potential Action Options to Stimulate the Dialogue

Note – You are welcome to respond to all of the material in Section 6 or only those parts that are of particular interest to you.

6.1 Concepts for Management of Diseases of the Poor and their Animals in Africa

We advance three novel concepts to challenge participants to think creatively and integratively about better management of diseases of the poor and their animals in Africa. We seek specific, action-oriented options building on these concepts.

a. The concept of **climate-related diseases** as an entry-point to better health, and its relation with the linked concepts of emerging infectious disease, zoonotic disease, neglected tropical diseases, vector borne disease, water borne disease, etc.

b. The concept of the **triple disease burden** – integrating animal, human and environmental impacts of disease gives the real costs and greater insights into disease control.

c. Re-conceptualizing frameworks for disease detection and response – a **bottom-up ripple** model supplementing or replacing the conventional top-down, chain of command model.

Critical Questions

We have tied these questions back to some of the key Expected Outcomes, which are repeated here for convenience and shown in bold italics.

Understanding the full nature and magnitude of the climate-related disease challenge and the potential opportunity to address it.

6.2 How do climate-related diseases differ and how are they similar? How can we best classify them for this proposition? e.g. can they be grouped by origin, impact, intervention, or management?

6.3 What relative emphasis should we place on new and emerging diseases, versus established and changing diseases? How much do we know about what is responsible for spreading these diseases?

6.4 Can we and would it be useful to rank climate-related diseases by how much we can do to mitigate them rather than by how much harm they cause?

6.5 Can and do we need to untangle the short, medium and long term effects of climate on health?

6.6 Which climate-related diseases are of most concern and why?

6.7 Among all the health problems facing Africa, how important is climate-related disease?

Understanding who needs to be involved in addressing the challenge, and in what way, to make such a collaborative effort most effective and efficient. Understanding who the key target beneficiaries are for this collaborative work.

6.8 Who needs to be involved in tackling climate-related disease (in terms of disciplines)?

6.9 Who has insight into climate-related disease (in terms of people and institutions)?

6.10 What can veterinarians or human health practitioners contribute to improving control of climate-related disease?

6.11 Will looking at disease through the lens of climate and climate change really make a difference to the poor who particularly bear the burden of these diseases?

6.12 What do medical disciplines need from veterinarians to better deal with the problem of climate-related disease?

6.13 What do doctors/health workers need from climatologists to better deal with climate-related disease?

6.14 For health workers, what are the barriers and what are the pay-offs to working with veterinarians and climatologists?

6.15 For vets and animal health workers, what are the barriers and the pay-offs with working with the health community?

Plans and Actions that define a set of actions, projects and necessary resources to start the initiative during its formative stage.

6.16 How do we move from knowledge to action on climate-related disease? What tools do different end users need to address theses challenges?

6.17 Is knowledge enough – what else blocks end-users from responding to climate-related disease – e.g., institutional, attitudinal, incentive and resource constraints?

7. Potential Action Options to consider (things we could do together)

7.1 **Categorize climate-related diseases** (direct and indirect) and prioritize areas with potential for significant short-term impact. (Prioritize in different timeframes)

7.2 Produce **two case studies** of responses, with 'best practice learnings' and areas where specific assistance would have made a major difference.

7.3 Describe and analyze at least **two response frameworks for addressing animal and human disease events** (top-down and community-up) and identify key inputs that would make the framework functional.

7.4 **Joint proposals** developed with innovative partnerships and approaches aimed at meeting specific user needs in order to improve responses to climate-related diseases in Africa.

7.5 **A new consortia or community of practice** made up of a diverse range of organizations and individuals concerned with improving responses to outbreaks of 'climate diseases' in people and animals.

INPUT REQUEST #4: CONCEPTS, CRITICAL QUESTIONS and ACTION OPTIONS. Please provide your feedback in the accompanying Feedback Form.

A. Please review and provide your reactions to the Concept for Management of Diseases of the Poor and Their Animals in Africa.

What other overarching concepts or constructs might help or guide our collective thinking?

B. Please review the Critical Questions and provide your responses to those that are of interest to you in writing in the accompanying Feedback Form.

Are there other critical questions that need to be raised in this Dialogue?

C. Please review the Potential Actions and provide your responses in writing on the accompanying Feedback Form.

Which actions need to be clearer?

Do you strongly disagree with any of these actions (and would like them changed or removed)?

Are there any actions that you would like add to the list?

8. Next steps

8.1 Participants are requested to use the accompanying ***Feedback Form*** to provide their reactions to this Challenge Paper (comments, questions and suggestions). It is extremely helpful if you could please refer to both the statement number and the specific content item in your response. Please send your completed Feedback Form to **j.wanderi@cgiar.org** **by June 6, 2008.**

8.2 All of the comments received will be compiled "as-is" and un-attributed and provided electronically to all of the Dialogue participants on or before the end of June 2008.

8.3 Your feedback will also be synthesized in a Progress Report that will be sent to all participants in July, and used to both guide the design of the Workshop and to inform the preparation of a *Workshop Workbook*, which will be used to support the workshop process. It will be distributed to all Dialogue participants in advance of the Workshop electronically. Printed copies of the Workbook will be available to those attending the workshop.

8.4 A representative group of participants will be invited to participate in the face-to-face workshop to be held in September 9-11, 2008 in Nairobi.

8.5 Results of the Workshop will be shared with all Dialogue participants through a second Progress Report (#2) and further input will be sought via a Feedback Form.

9. References

References available on request.

Many thanks for your anticipated contribution!

Appendix A

The Organizing Team is using the *Challenge Dialogue System (CDS)* — a flexible but disciplined process for engaging diverse stakeholders to collaborate and innovate in accomplishing complex tasks — to help structure the conversation so that participants can efficiently respond to some initial ideas advanced by the Team and bring forward new ideas, questions and action-options. A schematic summary of the process (a 'roadmap') is included below.

In brief, the process will involve the following 5 steps: (1) initial scoping of the Dialogue and participant identification by the Collaborative Planning Team; (2) the development of the invitation, prospectus (2-page description) and the *Challenge Paper* by the Team and its distribution; (3) synthesis of responses received and the preparation of Progress Report #1; (4) use of the synthesis to design the Sept. Workshop (agenda, flow, process) and build and inform the *Workshop Workbook* to guide and inform the workshop process; (4) Preparation of Progress Report #2 which captures the workshop results including any plan for future actions. Note: Everyone will receive the Workshop Workbook and Progress Reports and be asked to provide feedback regardless of whether they attend the workshop.

Road Map to Organizing and Operating a Challenge Dialogue Using the Challenge Dialogue System (CDS)

Define the **Key Challenge.**
Decide whether CDS is the right approach.

Get ***Organizing Team*** aligned on purpose and scope.

Identify and enlist the best people to play the role of ***Champion(s)***, ***Facilitator***, ***Project Manager*** and ***Reporter*** or overall ***Mentor***[1].

Decide on communication protocols.

Decide on performance indicators for the Dialogue. Prepare a **Process Planning Memo** to guide the entire Challenge Dialogue process.

Identify key *stakeholder groups* and profile the *type of people* you wish to engage as *participants.*

Issue formal **Invitation** from the *Champion(s)*.

Consider key characteristics of the **participants** and in establish communication protocols and technology support needs.

Use online resources and create a customised, easy-access, digital workspace for the *Organizing Team* and dialogue participants to use – templates, easy to use branding and other related tools.

[1]Some will be Innovation Expedition members and some will be from client organizations.

Write the **Challenge Paper** including the *Key Challenge*, *Background Statements*, *Assumptions*, *Expected Outcomes*, *Questions-Issues-Opportunities-Ideas-Action Options* and *Next Steps.*

Assemble digital version of supporting documents for the Organizing Team.

Distribute to the Dialogue participants inviting their feedback electronically using a **Feedback Document** by a specified date.

Compile and summarize the participant feedback and incorporate it into a **Progress Report*.**

Champion(s) provides his/her reflections and further thinking sparked by the participant input.

The Progress Report is sent to participants with invitation for further feedback electronically by a specified date.

One or two cycles of progressive Dialogue, with accompanying Progress Reports, may be used depend-ing on the complexity of the challenge and diversity of the group.

Design and plan for the **Face-to-Face Workshop** so it reflects the input received thus far. Create a **Workshop Workbook** which provides a complete guide to each Workshop *session*, highlights the progress to date and includes a clear *purpose*, *tasks*, and *resource materials* for each session.

Conduct the Face-to-Face Workshop which is focused on identifying (1) acknowledging areas where there is *alignment* already, (2) areas of *confusion* that need further clarification, (3) areas of mis-alignment that need further Dialogue, (4) *key learnings*, and (5) tangible future *actions*.

Synthesize the Workshop results in the context of the full Dialogue process and prepares a **Moving Forward Action Plan** and a companion **Key Learnings** document. These are confirmed with the participants for their completeness and accuracy

Dialogue during the Face-to-Face Workshop is captured by the *Facilitator*, *Reporter* and the participants.

Prepare "final" reports — ***Strategy, Action Plan* or *Business Plan, etc.*** — that reflects the alignment and commitment achieved through the Dialogue process.
Assess readiness to begin moving to **Action**.

Evaluate performance of Challenge Dialogue process using performance indicators and identify areas for improvement.

Plan for other **follow-up work** as identified in the Dialogue, if necessary.

Continue to nurture the collaborative team that has developed, share new insights and knowledge and make sure everyone continues to be engaged with the progress and/or is kept well informed of it.

* Note in ***Mini-Challenge Dialogues*** the process may be truncated whereby elements of the Progress Report are integrated directly into the Workshop Workbook session materials. See Step 6.

Innovation Expedition

For more information, go to: www.innovationexpedition.com