LIMITS Visioning Project Report

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Background and Motivation:

In 2019, over thirty scholars came together in Lappeenranta, Finland to attend the ACM workshop on Computing within Limits (also known as LIMITS 2019). Since 2015, this international workshop has occurred every year throughout different locations across North America and Europe. The goal of the workshop is to discuss future ecological, material, energetic, and societal limits on computing and how to best address technologies' role in sustainability efforts and resource-constrained environments.

During the most recent workshop, a handful of participants discussed the future of the LIMITS community through a 10-year vision. They discussed what the LIMITS community has accomplished, what topics have been explored, what topics need further exploration, what aspects of the community need to change, and what actions the community should take in the future. As a result of these discussions, the participants realized that there are differences between community members' values, goals, and expectations of what the LIMITS community should be. Thus, a broader community-wide discussion was needed to understand the diversity of views and to create a collective vision for the community.

To jump-start the community-wide discussions, the scholars of this report designed a three-phase visioning project. Visioning is a dynamic and ongoing process of managing objectives and strategically planning for future goals of the community or organization. It an important component towards strengthening the long-term success of these research discussions and impact. We believe articulating a shared vision is vital for the LIMITS community as it continues to grow and become known within other communities.

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[1] This report was put together by Samantha McDonald using a combination of writings provided by herself and the other authors of this work.
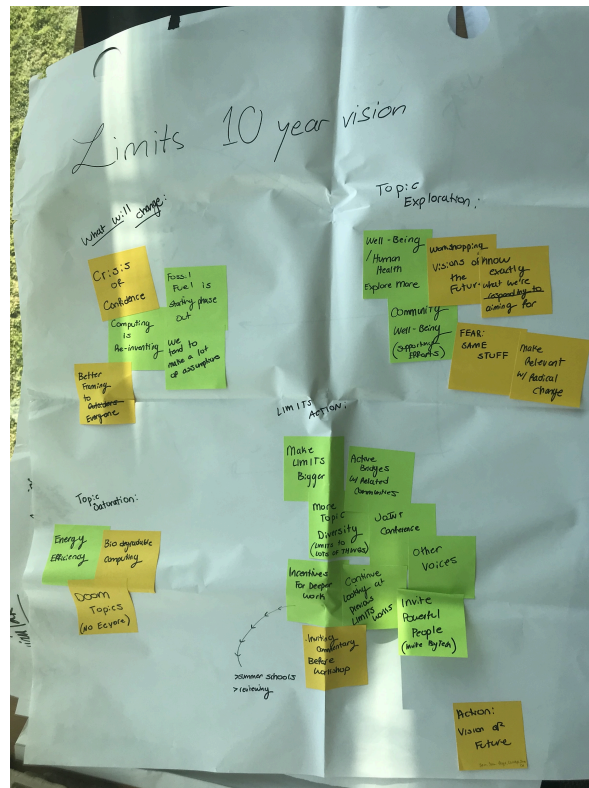
LIMITS 10 Year Vision. Photo of a Posterboard from the Workshop Discussion.

Phase 1 of this visioning project involved two components: the historical documentation of LIMITS and the development of a community survey. The researchers contacted the creators of the LIMITS community to create a historical narrative about how the workshop came to be, what the original goals were, and how those goals and expectations have changed over the past several years. The researchers then developed a survey collaboratively with the community to capture individual and collective articulations of the LIMITS community and its future vision.

Phase 2 of the project requires sharing the results of the survey and historical documentation with the LIMITS community in order to have a community-wide discussion of its implications and the development of a shared vision. The goal was to have the report presented and discussed at the next LIMITS conference in June 2020.

Phase 3 will involves the development of a final report that includes the work of Phase 1 and Phase 2 to describe how the community intends to move forward into its future vision(s).

Phase 1: Historical Documentation - Interviews with the Founders

In November and December of 2019, Sam McDonald interviewed Bill Tomlinson, Barath Raghavan, and Daniel Pargman to detail the history of LIMITS. The content below detail the history of LIMITS based on their stories.

The History

The LIMITS community came into existence as a result of interactions between three branches of investigation. Starting in 2010, Swedish scholar Daniel Pargman began to question assumptions within the Ubiquitous computing community [1]. After attending a NordForsk seminar on the culture of Ubiquitous Computing, Pargman became frustrated by the notion that ubiquitous information and infrastructures were inevitable and perpetual in a future society. Given his knowledge on peak oil, he began questioning this assumption. Pargman proposed a paper called "Ubiquitous information in a world of limitations" to explore what ubiquitous information would mean in a world of limitations [2].

At the same time, there were two other branches in America beginning to explore similar concepts separately. American scholar Barath Raghavan was a computer scientist in networking, systems, and security at Williams College. Raghavan had a side interest in environmental science and energy after learning about peak oil and computing. After giving a talk about this work to undergraduates at the college, he wrote a paper with colleague Justin Ma called "Networking in the long emergency". This paper got the attention of Pargman who reached out to talk to Raghavan to discuss his work.

At the University of California, Irvine (UCI), scholars Bill Tomlinson and Six Silberman were thinking about resource constraints. A Ph.D. student at the time, Silberman proposed the notion of "*Precarious infrastructure and postapocalyptic computing*" [3] to think about changes in raw material availability. On sabbatical, Tomlinson pondered this topic more, and together with Don Patterson, Yue Pan, and Eli Blevis, they wrote a paper at CHI 2012 called "*Collapse Informatics: Augmenting the Sustainability & ICT4D Discourse in HCI*" [4]. In 2013, a team of professors at UCI started RiSCIT (Tomlinson, Patterson, and professors Bonnie Nardi and Debra Richardson) [5]. RiSCIT was a $5,000 start up project to explore meeting societal needs with reduced resources. This goal was to gain institutional backing to explore these topics further.

Seeing both these trends of work in America, Pargman reached out to Tomlinson, eventually coming to UCI for a 6-month sabbatical in 2014. During this sabbatical, Pargman invited Raghavan to UCI to give a talk on his work. This began a relationship between Raghavan, Pargman, and the UCI team.

A month into his sabbatical, Pargman went north to Berkeley to visit Raghavan. Raghavan and Pargman discussed the need for a venue to publish their work, finding that ICT4S and other venues were not radical enough for their work. After a marathon multi-day meeting, the two proposed what is now the LIMITS workshop to the RiSCIT group.

The first LIMITS workshop was held in 2015 at UCI because four of the original founders were hosted there. Raghavan and Tomlinson both agreed that the first LIMITS were "their people". It was a space where they didn't have to explain or defend sustainability or ecological limits, where radical ideas in HCI that are normally misunderstood in typical venues were accepted.

LIMITS Continued

LIMITS was held at UCI again in 2016. The workshop then moved to Santa Barbara to be hosted by Patterson in 2017. It was then co-hosted with ICT4S when it came to Toronto in 2018, and co-hosted again in Finland 2019. In 2020, the conference will be remote.

Phase 1: Community Visioning Survey

A broader community-wide discussion was needed to create a collective vision of the LIMITS community. In order to do so, we developed a visioning survey.

What is Visioning?
Visioning is a way to manage objectives and strategic planning, shared and owned by the workers of that space. It provides a method to compare where we are now and where we want to be, creating a crucial foundation towards developments of practice. We believe articulating a shared vision is vital as the LIMITS community continues to grow.

Visioning Timeline
   ● January 1st-14th: Survey Collaborative Development and Deployment
   ● January 14th- February 14th: Survey Deployment and Data Collection
   ● February 15th - March 19th: Survey Analysis and Report Development

We wanted this to be a collaborative visioning project that was inclusive of the entire community. We asked the community to not only take the survey but also contribute to its development. The community was invited to engage with a draft survey document developed by the four main researchers. Community members were invited to provide comments and suggestions to questions. The final survey was deployed on January 14th of 2020. The community had one month to answer the survey.

The survey was separated into four main categories. The first was *Envisioning the Current LIMITS.* We asked participants to describe their own motivations for participating in LIMITS,

what they believe is the life force and strengths of the community, and topics of personal interests.

The second category was *Future Visions of LIMITS* which focused on future topics and subjects in need of representation and exploration, characteristics of the workshop that need to change, and future obstacles and things the community should avoid.

The third category included questions related to *Venues and Sites of Publications*. We asked the community if they had a preference of venue, of publication methods, degree of digitization, and additional modes of output and sharing. It should be noted that these questions were asked before the current pandemic, and it would be interesting to see if things have changed.

The final category was *Community Support*. We asked the community to think about what kinds of participants are attracted to the LIMITS community, how to maintain scholarly retention, and how to recruit individuals for long-term success.

Preliminary Survey Analysis

This section details our preliminary analysis from the survey. 14 individuals participated substantially in the survey. We are making all responses publicly available to the entire community.

The final data set is located here:

https://docs.google.com/spreadsheets/d/1e71QoLXWxHRxJSp2yDvQSGKfSqwLS6fU98TK7L1ak5s/edit?usp=sharing

Due to societal circumstances, the completion of this analysis has been delayed. Here are findings that have been discerned from the survey results thus far.

Envisioning The Current LIMITS:

To be analyzed.

Future Visions of LIMITS:

1. **LIMITS in 5 years? 10 Years?** There are a plethora of visions. Terms that showed up were Leverage points, resilience, mindfulness, slower and more meaningful, relation to political environments, community-wide projects, indigenous, social science, nature, anthropology, environmental justice, and mental health.

There are visions for merging into other spaces and continuing completely virtual, but also visions for having several physical workshops at different venues, and reflective sessions.

There was a critical voice on the discouragement of criticism in the CfC for LIMITS'20.

2. **What the community shall be best at.** A supportive collaborative environment that is not afraid to criticize and act, wild and daring as well as reflective.

3. **Obstacles for the 5-10 year changes.** Keeping momentum and vision; climate, economics, and inertia; possible collapse (individual burnout, social, environmental); academic incentives.

4. **To avoid.** Centralization, stagnation (lack of new blood), toning down our attitude, narrowing the CfC, avoiding confrontation.

5. **Degree of virtualization.** Semi-virtual. Nine answers supported the option of reducing but not eliminating travel, and three answers were for a part in person, part virtually option.

6. **Degree of distribution.** At least two locations simultaneously was the option supported by 10/14 answers.

Venues and Sites of Publications:

1. **A desire for hybrids and distribution**. There is a general consensus among survey participants that both in-person and virtual options should be provided at the same time, with the in-person option being available in two or more physical spaces. The majority desired events that are co-located with a virtual connection, with a small group also wanting sections that are completely virtual. One person commented to say that the completely virtual option would be best for inclusivity.

2. **ACM is a highly reputable and resource-rich publication source - but it comes with its drawbacks.** The use of ACM as the venue or publication is somewhat mixed. 60% of participants though ACM was suitable, while 35% were less persuaded - indicating that it 'might or might not' be the best place. One person thought it was not the right place. There is fear of ACM restricting the community from the inclusion of parties that may not be familiar or associated with ACM's expectations. One person noted that ACM is costly and demonstrating unethical practices that may be a concern. Another person brought up the fact that publishing within ACM helps us better challenge assumptions made within the community, rather than having external conversations that have no direct link.

There is also a question of an alternative/ What could be the benefits of moving to another option, and what would be lost if the connection to ACM is cut? That information is not something that the chairs of the workshop may understand more in-depth than the participants.

3. **Papers should be open access, accessible long-term. Prioritizing indexing is split.** Everyone wants the papers to be open-access. All but two participants think we should prioritize long-term reliability. Only half the participants believe indexing is an important quality to publication - showing a clear cut difference in personal preferences.

4. **Where and how we publish is mixed. The publishing venue does not matter as much as the qualities it provides.** Half of the participants identified ACM and the LIMITS website as preferred publication venues, with some minimal interest in CEUR WS, First Mondays, and other options. One person noted that it did not matter where it was as long as it was accessible and beneficial to the community - which points back to a heavier focus on the publication qualities rather than that actual venue. One person noted that websites are not publication venues, and long-term storage and indexing will require institutional repositories.

5. **It doesn't have to be a paper.** Non-paper contributions were also suggested, including video presentations for outreach, syllabi and other pedagogy toolkits, models/web assets, and magazines.

6. **What's in a name? LIMITS can probably stay...for now.** Just under half (42%) say that LIMITS is the right name for the community. 35% think it may be a suitable name, (21%) say it is not the right name. The name LIMITS has history and recognition now. Two people commented on the potential negativity with such a name but found it hard to think of alternatives that still maintain acknowledgement of the old name and it's already development recognition and value in the community.

Community Support:

1. **Attracting Ph.D. Students: Supporting the possibility of attending and gaining mentors**
The two main suggestions were community and monetary support. Community support included creating an atmosphere to welcome students, have their labor become part of the community impact, and developing strong mentors. Funding support included assistance with registration fees, volunteering opportunities, and location assistance.

In addition, the question of publishing opportunities came up with one suggestion to provide smaller options like posters with radical ideas. This point was particularly

important to the visioning research team who are half graduate students. Traveling to the work-shop in person would be impossible without avenues for financial support and publication support.

2. **Attracting Senior Faculty: Advancing their career**
   The faculty have similar needs to the students. Faculty need publication opportunities and opportunities to assist in their career progress. Publication opportunities were mentioned the most. Additional suggestions include pairing the workshop with conferences and providing networking opportunities.

3. **Who are we not speaking to? Everyone**
   The request for external involvement is as diverse as the community itself. There are calls for more collaboration and engagement with mainstream computing research including scholars of Big Data, AI, and NLP. There is a call for more collaboration with sister events such as ICT4S and COMPASS. Lastly, there is a call for more social movements organizations, environmental justice advocates, or any community with ecological concerns. Radical outsiders, educators, and artists were also suggested. Indeed, there seems to be a request to communicate with everyone that could touch this space in some way.

Prioritizing Thoughts

What do you think is the most important issue for LIMITS to prioritize in the organization of the workshop?

"Above anything, climate change. I think the dual conference/ virtual conference is a great start for this in the workshop organization and definitely makes me feel proud of the community taking a stance on what it believes is right."

"Keeping the workshop spirit, not a mini-CHI/CSCW"

"To get the old fogies to write a paper and then show up. Not sure there is enough young blood yet/at this point"

"Taking concrete steps toward influencing all of computing research and practice to a LIMITS mindset."

"Research topics and format."

"Remote meeting and collaborating, post-capitalist computing"

"A mix of structured time (presentations), and opportunities to mingle, explore ideas. burnout of organizers"

"Activism."

"Community outreach and connection; virtualization"

"What makes this group different from others? What is it that we actually want to accomplish in a few years? Do we actually want to grow, and what that would look like? "

"Exchange of ideas and support of each other's work."

"Community outreach, but that's an ever-present problem with workshops and conferences, and staying engaged with each other's work"

Phase 2: Community Report and Presentation

For Future Developments