Creating Cultural Change in Education: A Proposal for a Continuum for Evaluating the Effectiveness of Sustainable Schools Implementation Strategies in Australia

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Abstract   Networks are increasingly recognised as advantageous when creating and embedding cultural change within organisations. This paper explores and problematises ideas around networks for education for sustainability (EfS), specifically in relation to the implementation of the Australian Sustainable Schools Initiative (AuSSI), a national, whole-school approach to EfS. In three Australian states - New South Wales, Victoria and Queensland – AuSSI has been implemented in different ways. In examining the use of products, facilitators and networks to embed initiatives such as AuSSI in Australian schools, we propose a "continuum of cultural change strategies" as a framework for thinking about each of these approaches to creating organisational and cultural change for sustainability. We anticipate that such a framework may assist where choices need to be made in relation to the kinds of capacity building processes that might best achieve "deep and wide" change within schools hoping to engender significant cultural change.

Introduction

In questioning the overall effectiveness of environmental education (EE) and education for sustainability (EfS) initiatives in schools, and the apparent glacial pace of educational change to support social transformation, the role of networks is gaining increasing attention. For example, networks are proposed by the United Nations Decade of Education for Sustainability (UN DESD) Implementation Scheme (UNESCO, 2005) as a means to ensure less duplication of limited resources, and greater use of partnerships and alliances. Networks are also seen as offering new ways of building capacity for - and creating - the cultural changes required of complex organisations and systems such as schools and schooling. Networks are structures and sets of strategic relationships of collaborators or partners connected with each other to allow exchange

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processes between them (Posch, 1994). They can be hierarchical with a centralised, often pyramidal, structure; or flatter in their power structures when organised as a dynamic, webbed, participatory network. It is the latter form of network that is the main focus of this paper and that the authors see as having the potential to support organisational and educational change. Such networks offer a complete contrast to more commonly-used strategies and initiatives to embed EE/EfS in schools where, generally speaking, the norm has been reliance on new educational "products" such as textbooks, "kits" or programs as the means of effecting change.

This paper explores the idea of networks as a means for facilitating change, specifically in relation to the implementation of the Australian Sustainable Schools Initiative (AuSSI). It draws on an earlier comparative study by Larri (2006) of AuSSI schools in New South Wales (NSW) and Victoria (Vic), as well as the authors' own evaluation of the network approach adopted in Queensland (Qld) (Davis & Ferreira, 2006). The authors note that much of the discussion around the benefits of networks is rhetorical. In reality, there have been few actual investigations into what networks mean to participants; how they are constructed; who constructs them; their effectiveness; or what challenges to working in networks might arise. For initiatives such as AuSSI, that promote the use of networks, the question is whether or not these are, indeed, effective strategies for change.

In this paper, we propose a "continuum of cultural change strategies" as a way of thinking about the probable change outcomes of the various approaches taken to enable schools to become sustainable. While not intending to disparage the wide range of very successful and high quality environmental education "products" that are currently available, this continuum may provide a useful tool for thinking about whether products really can lead to the "deep and wide" (that is, substantial and long-term) cultural changes that are needed if the "transition to sustainability" (Fien, 2003, p. 1) is to occur. The call for deep and wide change – rather than superficial and transient change - is well argued for in the general literature on educational change. For example, Fullan and Hargreaves, leading researchers and theorists in educational and school change, strongly advocate for a cultural approach to educational reform (Fullan, 1999; Hargreaves, 1997; McLaughlin & Mitra, 2001; Tyack & Cuban, 1995) . Such an approach recognises that deep and wide change is more likely to be evolutionary rather than revolutionary, taking into account the complexities of educational settings and their internal and external relationships. We argue that webbed network approaches to change fall within the ambit of "cultural change" strategies, while product-oriented approaches can be seen as educational "ephemera" (Fullan, 1999). The continuum of cultural change strategies we propose here will assist environmental educators where choices need to be made about the kinds of capacity-building processes that will best achieve the "deep and wide" organisational changes that are necessary if sustainability is to become a reality in Australian schools.

Sustainable Schools

In the past fifteen or so years, increasing attention has been paid by schools to environmental and sustainability issues, in Australia and internationally (Fien, 2001; Gough, 2005; Gough & Sharpley, 2005; Henderson & Tilbury, 2004; James, 2006). Internationally, there are a range of whole-school initiatives such as Enviroschools in New Zealand, the Green School Project in China, Global Green USA's Green Schools, the Environment and Schools Initiatives (ENSI) Eco-Schools and the Foundation for Environmental Education's (FEE) Eco-Schools, the largest internationally co-ordinated effort. In Australia, the Australian Sustainable Schools Initiative (AuSSI) is supported and promoted by the Australian Government, in partnership with the governments

of all the States and Territories. The vision of AuSSI is for "all Australian schools and their communities to be sustainable" (Australian Government, 2008, para 2).

Efforts to turn schools into "sustainable schools" initially focused attention on reforming existing school curricula - often within disciplines such as Science, Social Studies or Geography. However, more recent initiatives have sought to broaden reform processes so that they impact across the whole school. Efforts have therefore been made to "green" school management and governance processes; the curriculum and teaching and learning strategies; school buildings and school grounds; and to build partnerships between schools and their communities. This "holistic" approach reflects the belief that "effective environmental education for sustainability is not just a curriculum issue; it requires the involvement of the whole school" (Gough & Sharpley, 2005, p. 7). The "whole-school" approach also responds to global calls to reorient the curriculum, management and practices of school education towards sustainability (UNESCO, 2005; Henderson and Tilbury, 2004). Networks are proposed as a key strategy in this reorientation (Gough & Sharpley, 2005, p. 12).

The Australian Sustainable Schools Initiative (AuSSI)

In 2002, the Australian Government provided funding to support a trial Sustainable Schools Initiative in the states of New South Wales (NSW) and Victoria (Vic), with pilot projects in approximately 100 schools beginning in 2003. These were considered successful (Australian Government, 2008) and, as a result, AuSSI was launched nationally in 2004, bringing Western Australia (WA), South Australia (SA) and Queensland (Qld) into the Initiative. By mid-2005, funding had been provided for the Northern Territory (NT) and Australian Capital Territory (ACT) to also join AuSSI, with Tasmania (Tas) establishing a Sustainable Schools Scheme in 2007. At present, over 2000 schools, representing approximately 1/4 of all schools in Australia, participate in AuSSI (Australian Government, 2008).

To enable schools to become sustainable, AuSSI has "integrate[d] ... many different approaches to environmental education into a holistic initiative delivering measurable educational, environmental, economic and social goals" (Australian Government, 2006, p. 9). This is a novel response that does not take the traditional approach of producing and providing new materials and resources or "products". As Ferreira, Ryan, and Tilbury (2007) argue, the use of "products" seems to be the "default model" when consideration is being given to how to bring about school change. There is, however, little evidence that new products alone lead to substantial or long-term changes; indeed, as Fullan (1999) comments, appropriating someone else's successful program or policy and transplanting it has a long history of failure because capabilities are not transferred along with the content. AuSSI seeks instead to establish "an environment in schools in which resources and programs may be more easily and effectively used" (Australian Government, 2006, p. 9).

Through AuSSI, support is provided to encourage schools to develop a culture of sustainability throughout the whole school that will:
• facilitate the use of environmentally friendly technologies to mimimise a school's energy, waste and water usage;
• lead to new management strategies for school grounds that conserve biodiversity; and
• integrate sustainability into curricula through generating better engagement with existing EE and EfS approaches, resources and products.

The use of networks is proposed as a key strategy for developing such a culture of sustainability within schools (Gough & Sharpley, 2005).

Analysing Sustainable Schools Implementation Strategies

The research reported on in this paper arose from our interest in how the various strategies for implementing Sustainable Schools in Australia - the development of products, the use of facilitators and the creation of networks - effect the longevity and sustainability of such initiatives. As it is the creation of networks that is the least researched and understood, we decided to examine the benefits and limitations of the networked approach that was being used to implement AuSSI in Qld. In this paper, we consider our findings in relation to those of Larri (2006) who undertook an earlier comparative assessment of the two facilitated approaches used to implement AuSSI in NSW and Vic. As a result of our analysis, we argue that the more an implementation approach is networked, the more effectively new ideas and approaches can be introduced, taken up, and embedded into a system. Potentially, such networked approaches may lead to stronger alliances, a deeper understanding and embedding of changes, and ultimately greater long-term success for initiatives such as AuSSI.

Implementation Approaches and Strategies

As mentioned earlier, AuSSI was initially piloted in Vic and NSW in 2003/2004. Both states shared the same goal – to build capacity for change – and took the same general approach to implementation – that of the facilitator-consultant. However, differences were evident in strategy and on-the-ground implementation. In Vic, the approach was "centralised, controlled, [and focused on] small scale capacity building" (Larri, 2006, p. 9). In contrast, the NSW approach was a "decentralised, diffused, statewide large-scale implementation" approach (Larri, 2006, p. 9).

In Vic, a facilitated product approach was taken to implement AuSSI, undertaken through a partnership between the Education Department and two community organisations, the Gould League (now the Gould Group) and the Centre for Education and Research in Environmental Strategies (CERES). These two organisations jointly developed an implementation strategy (Larri, 2006, p. 9), the aim of which was to "start small" in a select number of schools, with attention focused on capacity building for school teachers. AuSSI in Vic also developed a core "whole-school" learning module and provided project support, including face-to-face support, on ways to address a range of environmental issues such as water, waste, energy and biodiversity within schools (Australian Government, 2006). The facilitator consultants - called "Sustainable School facilitators" - were employed full-time by either the Gould League or CERES and were based in Melbourne, with state-wide responsibilities (Larri, 2006, p. 13). Their role was to initially undertake an analysis of each of the target schools' readiness for change, and then to support schools to bring about such change through "face-to-face advice and training, [and] telephone and email 'help-line' support" (Larri, 2006, p. 13). The process was thus focused on a small number of facilitators, based in Melbourne, and a limited number of schools, dispersed across the State.

In NSW, the network of facilitators approach was developed between the state Education and Environment departments – the Department of Education and Training and the now Department of Environment and Climate Change - to manage the process. The NSW strategy was to target all schools in the State through a "large-scale, decentralised and … diffused capacity building project" (Larri, 2006, p. 10). In this way, it was hoped that a network of schools could be established so that schools could communicate with one another, and also provide leadership to new AuSSI schools into the future. A sustainable schools program was developed that linked into the NSW Environmental Education Policy for Schools (2001). Facilitator-consultants were employed and trained to assist schools in developing School Environmental

Management Plans (SEMPs) as these are required by the NSW Environmental Education Policy for Schools (Australian Government, 2006). In NSW, the facilitators were part-time employees of one of the two State Government departments responsible for AuSSI and formed part of a "Sustainable Schools Support Team". They were based throughout the State, with responsibility for schools in identified regions. Their role was to liaise with schools to assist them in analysing their readiness for change, and to support the development of a range of possible actions that schools could take, such as undertaking audits and situation analyses, raising awareness, building staff capacity, and future planning (Larri, 2006, p. 13). The process was thus focused on a larger number of facilitators and schools, dispersed across the State.

In Qld, a network approach to change was used to implement AuSSI, called the Queensland Environmentally Sustainable Schools Initiative (QESSI). At inception, key partners were the Queensland Department of Education, Training and the Arts (EQ) as the lead agency, and several government (state and local), university, and non-government organisations (NGOs) and agencies. The implementation approach taken in Queensland was to work through a network or "alliance" of practitioners who were already engaged in guiding and supporting the development of EE/EfS in Qld schools, most often through the provision of teaching and learning resources, products or programs (Department of Education and the Arts & Sustainable Futures Australia, 2005). In contrast to this "traditional" approach, the primary focus of the QESSI approach was the development of a network of individuals and organisations, and the use of networking as a process for creating and sharing ideas, resources and capacities. There were various levels of commitment and types of relationships within this network, called the QESSI Alliance, including core members, partners and affiliate members as well as sponsors, friends and supporters. The activities of the QESSI Alliance were (and remain) coordinated through a Steering Committee comprised of a range of education providers, government organisations and NGOs who share an interest in sustainability in schools. The Steering Committee liaises with QESSI "hubs", which consist of regionally-based groups of educators, most often in environmental education centres or within environment groups. The hubs work as conduits, by facilitating connections between schools, the Steering Committee and Alliance members. This is structured as a multi-directional pathway. Ideally, it should result in all areas of the network being able to directly communicate with and influence each other.

As this summary shows, three distinct approaches were taken to the implementation of AuSSI in NSW, Vic and Qld. In Vic, the principal approach was that of a new "product" introduced by "facilitator-consultants", with some networking also being developed; in NSW, the approach was that of the facilitator-consultant, with greater emphasis on establishing networks. In Qld, the approach was to build and support a strong network of practitioners already engaging with, or seeking to engage with, schools. None of the states resorted to the default model of only developing new products. While an exemplar module was developed in Vic, this was disseminated through, and with the support of, the facilitator-consultants. Consequently, our examination identified that a "continuum" of approaches has been used to meet the AuSSI vision for "all Australian schools and their communities to be sustainable" (Australian Government, 2008, para 2).

The Proposed Continuum

Our examination of the various approaches taken to the implementation of AuSSI in Vic, NSW and Qld, and of the literature on organisational and cultural change, has enabled us to identify four key approaches to creating "deep and wide" whole school change through AuSSI. We call these the *product approach*, the *facilitated product approach*, the *network of facilitators approach*, and the *webbed network approach*. Each

of these approaches demonstrates varying levels of complexity and interactions in the networks they produce and through which they work. Collectively, these create our "continuum of cultural change strategies", as illustrated in Figure 1 below.

This continuum is our "first take" at representing these strategies in relation to each other. It illustrates our premise - increasingly supported in the literature - that dynamic networks offer the most effective opportunities for creating "deep and wide" cultural change in schools.

The Product Approach

The key feature of the product approach is the development of a new program or product. This is commonly in the form of a "kit", and often on a specific environmental topic, such as water conservation or greening the school grounds. These products are generally developed by individuals or groups outside the school who have expertise in particular environmental issues. Another feature is that the product is usually a generic item, with end users having to do the work of applying the product to their own contexts. Such products are distributed to schools where they may - or may not - be taken up by end users who are individual teachers, groups of teachers, or, much less frequently, whole schools. Essentially, a product approach to creating change is a hierarchical one; the "knowing expert" provides "information" for the "unknowing teacher" (Ferreira, Ryan, & Tilbury, 2007).

In saying this, we do not wish to be overly critical of the development and use of such products. Indeed, many environmental education products are of high quality and educationally sound. However, the question is whether such products can, on their own, lead to substantial and long-term (that is, deep and wide) change that is necessary to achieve an environmentally sustainable society. While some teachers may engage deeply with such products, in ways that lead them to change their overall practice, it is also likely that such products will end up unused on a teacher's shelf - or superseded by newer products, as Shallcross (2004) has noted. We argue, therefore, that the product approach is an ineffective means through which to achieve change that is both deep and wide and sustainable into the future. Despite this, the development of kits and products seems to be the default response for embedding environmental thinking and practices in schools. The product approach sits at one extreme of our continuum of cultural change strategies.
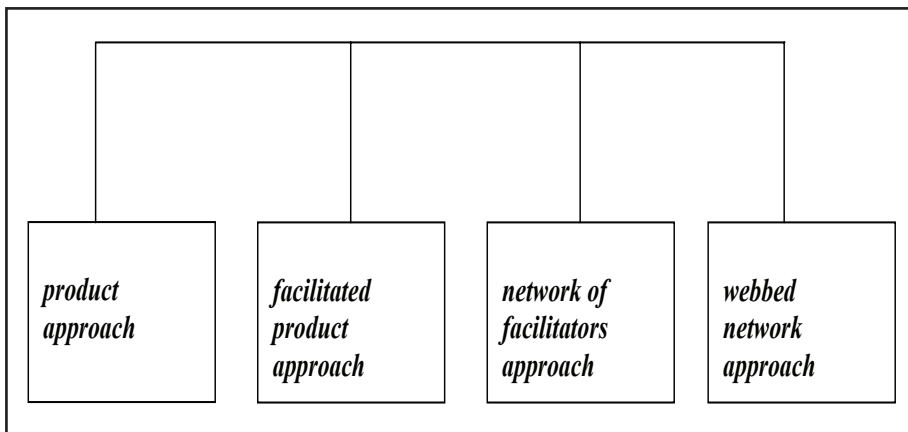

FIGURE 1:   Continuum of cultural change approaches for embedding change

The Facilitated Product Approach

In an effort to secure teacher engagement and to improve the width and depth of their use, the introduction of new programs and products is often "facilitated". Such facilitation ranges from offering professional development sessions about the product, such as one-on-one introductions to and assistance in using the product, to in-depth engagement of end users in the actual development of the product (see Fien & Maclean, 2000; Tilbury, Podger, & Reid, 2004). Generally, there are some opportunities to contextualise the product to teachers' or schools' specific needs. It is this approach that was used in the Vic implementation of AuSSI. A product was developed by "experts" then introduced into a limited number of schools through facilitated, one-on-one engagement between the AuSSI facilitators and end-user teachers. The network that is created is an hierarchical one, characterised by strategies "to reach, train, and stimulate [practitioners] to accept an innovation and to use it in a prescribed way" (Posch, 1994, p. 65).

In the facilitated product approach, we see some concerted efforts to engage the end users of a product. In the implementation of AuSSI in Vic, this engagement occurred at the dissemination phase. While this approach does more to engage teachers in the process of change, thereby enhancing the depth of engagement, the approach is resource-intensive. As such, the breadth of change is limited to a few teachers or a few schools, especially in the early stages. In addition, while teachers may be considered to be "partners" in efforts to achieve change, there is no ongoing structure to ensure longevity for the change. The facilitated product approach is thus located one step to the right of the product approach on our continuum of embedded change effectiveness.

The Network of Facilitators Approach

The network of facilitators approach seeks to bring about change through connecting the facilitators of change with each other and with teachers. This is the approach taken to the implementation of AuSSI in NSW. In building connections between participants, networks begin to be formed and strengthened. There is a more explicit effort to share knowledge and power across the network. In this approach, change is not limited to a few teachers or facilitators, but occurs across a broader network of participants. There is increasing focus on contextualisation of the initiative, with growing support for teachers. While the network of facilitators approach is resource intensive, there are efforts to promote greater sharing and exchange of knowledge, skills and resources, to a widening group of end users. Possibilities for broader and deeper change across the system are more likely as the network aspects of the approach strengthen.

In the NSW implementation of AuSSI, there was collaboration between the facilitators but this network did not extend into the targeted schools. Here, the network provided a supportive and collaborative learning environment for the facilitators, but they remained in a position of power compared with the teachers in schools, who were still essentially the recipients of the facilitation processes. Because of the enhanced opportunities for autonomous communication across the developing network, though, the network of facilitators' approach should lead to increasing levels of engagement by teachers. However, in the NSW example we examined, a network beyond the facilitators was not built.

The Networked Web Approach

A networked web approach seeks to bring about change through linking together all the potential change participants and harnessing their collective knowledges and energies. Such an approach is an example of a webbed network, rather than a hierarchical one where relationships are more likely to be larger, dynamic, multi-modal

and contain varying levels of uncertainty. As the Qld manager of QESSI states: "QESSI is not another program or product in a market place that is saturated with resources that focus on environmental education for a sustainable future for schools.... What QESSI is aiming to do is build the capacity of existing service providers to achieve their goals and collectively ... achieve the vision of all schools in Queensland demonstrating environmentally sustainable practice" (Mackenzie, 2005, para 7). What distinguishes this approach from the other approaches on our continuum is that neither the outcomes nor the interactions involved in the process can be controlled centrally. Outcomes, for example, are determined at several points across the web by network members, not by a central facilitator who manages the change. Likewise, connections are not safe-guarded by predefined rules; rather, they are defined and changed by shared interests and nothing, by definition, is included in or excluded from the network. In such a network, as Posch (1994) points out, interactions happen between any participant at any time on any topic or issue. The networked web also affords longevity, for two reasons. First, because the network is not dependent on a key individual - everyone in the network has some power and control - if a person leaves, the whole web does not unravel. Second, if one of the links in the network is broken, there are enough other links for the web to stay connected and to either repair or recast the broken link. While "letting go" from hierarchical structures and ways of working may seem challenging and might encourage some colleagues to steer away from this approach, we argue that such an approach means participants can become fully engaged with the process of change and are, therefore, more likely to have stronger ownership of the processes and outcomes.

In this networked web approach, cultural change will not occur if participants do not engage, as there is no one central person or organisation to drive the process. Although our own study (Davis & Ferreira, 2006) into participants' perceptions of working with the QESSI networked approach found that the network did not operate fully as a webbed network, nevertheless, participants still felt that the approach offered a unique opportunity for participation and building a sense of community. They also saw the potential of the webbed network approach for the shared and complementary development of resources and strategies, and the sharing of existing materials and information. Moreover, participants recognised that there were increased opportunities for influencing and impacting on schools and government departments as a result of the new synergisms that the network was affording them. A high level of ownership of the network was also reported. As our study showed, the flattening out of control did increase the depth and breadth of participant engagement and did increase both the promise and practicalities of change.

The key features of each of these approaches is summarised in Table 1.

Implications of the Continuum for Embedding Change in Educational Organisations

It is clear to us from our comparative study of the different approaches to implementing AuSSI in schools in Vic, NSW and Qld, that the networked web approach of the QESSI Alliance provides a range of advantages and potentials over facilitator approaches. As the thinking behind the QESSI strategy and our evaluation demonstrates, a webbed network affords opportunities for deep engagement; it has longevity built into the structure; it provides for an economic use of resources as it connects together already active practitioners and their existing resources; it allows for contextualised reform; and it shifts the mechanism for change from a hierarchical to a dispersed system of power and control.

TABLE 1:   Key Features of Approaches

Approach	Characteristics
Product approach The knowing expert provides information for the unknowing teacher	• programs or products • usually developed outside the context by "experts" • generally limited distribution within a school • teachers do all the work of contextualisation
Facilitated product approach The knowing expert directly engages with interested teachers	• builds on product approach by "facilitating" the introduction of the program or product • greater level of engagement between "expert" and teacher or end-users of the product • teachers do most of the work of contextualisation
Network of facilitators approach Facilitators manage knowledge and power-sharing relationships with teachers	• connecting facilitators of change (not products) with each other and with teachers • hierarchical relationships forged between facilitators and teachers • facilitator "manages" the network • promotes a widening group of end-users • teachers are supported in contextualising their learning
Webbed network approach All participants are recognised as "knowing experts", learning and acting together around contextualised issues and problems	• dynamic, shifting relationships • outcomes and interactions are not "controlled" by any participant in the network • allows for "fuller" engagement in process of change by all participants in a network • the change process is mainly directed by the needs and interest of participants in specific contexts • BUT outcomes may be difficult to clearly identify

The issue of power and control is a central one. A key point that we want to make is that there are increasing levels of complexity and interactions in relationships as one moves along the continuum - from simple linear (transmissive) relationships between products and teachers, to highly complex sets of diverse and unmediated relationships. Concomitant with this increasing complexity is a decreasing level of power held by a single source. In other words, the more complex the network, the greater the likelihood of strength appearing right across the system. This is evident, for example, in the QESSI Alliance structure where the network spreads across several levels in the Qld school system. The power of any one individual or any one organisation within the network is considerably reduced and mediated through a webbed network approach to change.

Interestingly, Larri's (2006, p. 29) evaluation of the problems with the NSW and Vic approaches - limited resourcing, heavy workload and the slow speed of change - also identified the better use of networks as one way to overcome such problems. Gough (2004) in her evaluation of a Sustainable Schools program in Vic encourages the development of clusters of Sustainable Schools to provide mutual support and networking. Greater use of networking can be used, for example, to share information about the benefits of becoming a Sustainable School to students, teachers and their communities, as well as providing opportunities to share good practice and resources among schools.

Conclusion

We suggest that our continuum of approaches for embedding change provides a framework for thinking about - and making choices about - the kinds of strategies that can be used to implement EE and EfS in schools. We put forward the proposition that the webbed network approach - rather than the product-driven or facilitated approaches to change - shows the most potential for achieving this goal. This is because it offers a change process built on participant engagement, capacity building and power-sharing.

We recognise, however, that this approach - and the continuum in which it sits - needs far greater theorising and critical evaluation of networks-in-action, especially in light of the desired goals of the UN DESD, already in its fifth year. While there are undoubtedly many well-designed EE and EfS products available to teachers - and many excellent facilitated programs - we have come to the conclusion that these cannot be "scaled up" sufficiently quickly or with enough "critical mass" to meet the very real challenges of sustainability. We suspect instead that networked approaches may provide a better way to realise the deep and wide cultural changes that whole-school initiatives such as AuSSI hope to achieve.

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