
Site-specific Cultural Infrastructure: Promoting Access and Conquering the Digital Divide

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The ability to create and deploy networking technologies able to deliver relevant content over multiple platforms has until very recently depended on access to costly technology, infrastructure and expertise. The result has been a digital divide that is particularly acute in highly unequal economic contexts like South Africa. The potential of ICT to democratize the public realm, currently dominated by large media houses catering to individuals with the economic means to access costly data services, has not been realized.

The increased availability of cheap, open-source technologies, along with the growth of communities of users around these technologies, has made possible new kinds of digital publics beyond the abovementioned constraints.

Drawing on these technologies we have developed a freestanding platform capable of empowering users to create, publish and access their own network-dependent projects. We have done this using a solar-powered single-board computer (Raspberry Pi) and have tested its application in two projects: a site-specific digital literature project; and a virtual site-specific museum of apartheid-era forced removals. Both are based in the city of Potchefstroom in South Africa's North West Province.

Site-specific digital literature project

Site-specific digital literature, by allowing users to access place-bound, multimodal digital literature via mobile devices, opens doors for creative expression, place making as well as experiencing traditional texts in a new way. It can also contribute to a better understanding of the relationship between digital interfaces, spatiality and people and empower people in terms of what is called place-making practices (Kaye, 2000:203; Turner & Davenport, 217-220).

Byderhand (Byderhand.net, 2016), is a site-specific digital literature project launched during the 2015 Aardklop National Arts Festival in Potchefstroom, South Africa. Users accessed multimodal texts on their mobile devices through QR-codes deployed around various sites at the North-West University. *Byderhand* was awarded the Aartvark prize for a ground breaking production, and the team was approached to host similar productions elsewhere. In 2016 the *Byderhand*-project and platform were used in various educational contexts. Most recently, the *Byderhand*-team, assisted 1st additional language (Afrikaans) learners at a Potchefstroom secondary school to publish their own site-specific digital literature on the school grounds.

Although there is a demand for expansion of the *Byderhand*-project, cost and scalability are limiting factors. First, in its current form, implementing the project requires a team of dedicated members. Second, functionality depends on the provision, maintenance and upgrading of infrastructure such as servers and physical QR-codes. On the user end, mobile data cost is a constraining factor.

Therefore, we explored the design of the infrastructure for an automated platform that could empower a low-skilled user, to create, publish and access their own projects. This was important as usability of a platform can either promote access or restrict it through the way the interface is developed (Shneiderman, B. 2003).

The infrastructure chosen was a single-board computer (Raspberry Pi) and a platform was developed based on open standards.

Virtual museum project

South Africa's heritage landscape remains largely skewed in ways that exclude intangible heritage such as stories and memories of such events as apartheid-era forced removals. A virtual museum of forced removals aids in remedying this by offering an in situ space where people can give voice to their experience and preserve it for future generations.

The city of Potchefstroom was one of the first places where forced removals took place during the apartheid regime but little historical records exist outside oral accounts and some pictures of what took place. The platform we developed provides access for a community to tell their own story without the need for expensive infrastructure. It can provide a place for reconciliation, healing and understanding the intricacies of racial tensions within the context of a specific community.

In summary our paper reports on prototyping a cheap, scalable system, independent of electricity and data costs that can allow users to add and access content for both these projects. In particular, the paper considers the following:

1. How the prototype platform enables users to publish multimodal texts and multimedia (e.g. audio, images and video) on their own.
2. How the prototype platform provides an easy way to consume published work using entry-level smartphones.
3. The scalability of this cultural infrastructure, with regard to expanding multimodal site-specific literature and museums along with the creation of site-specific corpora.
4. Educational applications:
 - a. How the platform could be ported into other applications such as freestanding, free-access libraries for schools and community centers.
 - b. Educational possibilities created that can introduce students to the world of digital literature.
 - c. A lesson in the value of interdisciplinary collaborations.
5. Building collaborative communities and empowering them to tell their own stories.
6. Mini-showcase of the project

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