Thesis Project Portfolio

Design of a Prioritization Methodology for Equitable Infrastructure Planning

(Technical Report)

Surge of Streaming Services: Back to Square One for Artists

(STS Research Paper)

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Sociotechnical Synthesis

Advancements in technology are increasingly help shape the society that individuals live in, but most importantly, the lifestyle of professions and the manner that people operate within these career choices. Through the technological advancements are we, as a society, to extrapolate the progression that occurs from the technology and to what degree progression is witnessed. This portfolio documents the methodology and results of two independent research processes that tie under the umbrella theme of the introduction of technological tools that aid in certain careers. More specifically, the technical research topic embeds equity and walkability into a prioritization tool to aid in project planning within the greater Charlottesville area. Whereas, the science, technology, and society (STS) research topic addresses the role of music streaming platforms and their affect specifically on musical artists – for better or worse. Both projects place a heavy outlook on the creation of technological tools but with the emphasis on the larger impact measured. The technical research topic provides a final product of a prioritization tool for users alongside a user guide that aids in project planners to dedicate effort to the right projects with a closer look at equity, walkability, and cost. For the STS research topic, the deliverable is a discussion that helps answer the research question: how has the surge of music streaming platforms truly hindered artists more than it helps? In general, the STS portion investigates the drawbacks of technological tools in certain scenarios in which the prioritization tool is able to limit.

With the COVID-19 pandemic limiting bus drivers but at the same time increasing budgets/grants, the city of Charlottesville has shifted a focus on increasing walkability for students through the improvements of infrastructure projects. The prioritization tool built by the technical team addresses these concerns while out scoping to include equity concerns as well.

The tool outlines a methodology by initially addressing communities of concerns (COC) within the greater Charlottesville, addressing tradeoffs with demand and walkability, and finally projecting the projects in comparison to impact and cost. The initial step allows the project planners to finalize which COC and areas to target first as the tool addresses areas with no projects in the past years, lack of attention in a larger scale, as well as schools that do not get the same attention as others. After selecting the COC, the user is able to see which projects impact demand and walkability to diagnose the impact that the projects have evenly in those categories. Lastly, the tool finally visualizes the cost and benefit for each project to narrow the selection as evenly as possible. In short, the technical team created prioritization tool that creates a defined methodology in the development of infrastructure projects and creates a tool with an impact for careers in project and infrastructure.

As for the STS portion of the portfolio, streaming platforms have changed the landscape of the music industry in terms of accessibility for consumers and reach for artists. Much of that change has been positive on the surface, but the real impact is not understood until the discussion is solely focused on the true impact on artists. As such, focusing solely on this issue, the research question is as follows: how has the surge of music streaming platforms truly hindered artists more than it helps? The exploration in this discussion focuses on the benefits that technological tools provide but mainly how we need to extrapolate the misuse of them and where improvements can and should be made. Through the STS framework of technological determinism, one can witness the change streaming services have made on the music industry but also finding the main step back it has been for artists in general. Evidence from interviews and historical case studies provide valid arguments and evidence that demonstrate how artists do not benefit financially or socially through these platforms but in fact are hurt more through them.

While advertised as giving the autonomy back to the musical artists, these streaming platforms are, in turn, the ones that are halting the progression for these artists.

This portfolio leverages case studies and projects to hold unique value in providing key evidence of technological tools and their impact on greater society. Through the STS portion are we able to identify where technological tools that are advertised to help society take a different path in its reference to equity, which is then addressed as a major focus through the prioritization tool built by the technical team. For the two research projects, the dual focus is focus on technological tools and their focus on equity. They serve complementary as through the discussion on music streaming services is one able to identify their lack of attention on equity, whereas the prioritization tool is able to learn from the mistakes and gather progression in how technological determinism should truly be applied.