Abstract
This RFP presents the opportunity to improve the lived experience of members of the guitar playing community who have reduced ability to play. The global guitar community is broad and growing in size, with the pandemic inciting a resurgence in sales — 2021 saw a 35% increase in acoustic guitar units sold[1]. Based on first-hand research localized to contacts within Canada, our team observed a community that greatly values the creative freedom and social opportunities the guitar presents. Secondary research also points to significant mental and physical health benefits. Our community is composed of players with conditions such as arthritis, down syndrome, carpal tunnel and other conditions that reduce hand strength and mobility. These members have reduced ability to play guitar and therefore reduced ability to fully engage in the values of the community. There is no set organizational structure or predominant demographic for this community. Our team chose to focus on regional contacts and institutions, but from online forums and secondary research, this community has an inherently global span. Players all experience strain when playing with their dominant hand and/or their fretting hand. Within this community there exists the opportunity to develop an adaptive solution to restore lost mechanical playing ability. This design solution should enhance present playing ability without limiting individual creative freedom or compromising the perceived cultural authenticity of the guitar. The primary stakeholders of this opportunity are players with reduced motor ability, but there exists other secondary stakeholders as well, such as guitar teachers and physiotherapists. The high-level requirements defining a strong solution include the effectiveness of the solution in reducing strain whilst minimizing technique and style limitations, the comfort of the solution, and its accessibility by a range of members within the community with fine motor limitations. Present reference designs include mechanizations and automations of guitar playing, such as the ‘MagiGuitar’[2], and attachable chord fretting devices; these all limit the range of techniques players can employ and hence suppress creative freedom. Therefore, elements can be drawn from these designs to fulfill the requirements by increasing their function. We believe this is a feasible opportunity that presents a significant positive impact on the lived experience of guitar players with fine motor limitations through engineering.

References