Project Background:

In 2013, a survey was conducted by the Open Source Hardware Association (OSHWA) to collect data about the open source community. This survey found that 90.3% of the participants were using open source hardware. From the demographic standpoint, the top two user backgrounds were in engineering and science, with people coming from high school (13.7%), undergraduate (40.5%), and graduate school (28.8%). In the same year, a Printed Circuit Board (PCB) software company, CadSoft Computer surveyed more than 100 engineers from around the world representing 42 countries to better understand PCB design trends in the electronics industry as they have evolved in 2013. This survey found that 64% of respondents believe that the expansion of development kits has eliminated the need for developing customized PCB. The trend is that engineers seem to favor more in adopting development kits over customizing themselves unless they have to.

But in contrast, there are groups of people call themselves as Makers. They build complex, impressive, and clever electronic and robotic projects, even though sometimes they have no formal engineering background, less technical education, and limited resources to go beyond manufacturing. On June, 18th, 2014, the first-ever Maker Faire was hosted at the White House. In reaction to the rise of maker culture, President Obama pledged to open several national research and development facilities to the public. "Today's Do-It-Yourself is tomorrow's Made in America", he told participants of the White House Maker Faire. "Your projects are examples of a revolution that's taking place in American manufacturing - a revolution that can help us create new jobs and industries for decades to come." This statement has been the stimulant of a growing number of Makers around the world, who want to build something with low-cost manufacturing tools, rather than buy it off-the-shelf.

Why SnapBloks:

1. Most development kits come straight from manufacturers and are not open hardware. It comes with an expensive price tag. It is true that development kits are customizable and speed up time-to-develop, but usually it uses vendor-lock-in parts only. In comparison to SnapBloks, it is made of the open source Arduino.

2. As projects' complexity is growing, breadboards are not ideal anymore because the number of wiring will keep growing and not scalable.

3. SnapBloks are modular and reusable blocks: no soldering, no wiring. Each Blok snaps together through magnetic contacts. When we are done with those parts, it can be easily detached and reuse for other projects.

4. Unlike traditional development kit, SnapBloks is designed as a network of interacting elements with physical input and output instead of as standalone devices. This approach makes it perfectly positioned for broadening its adoption to STEM education, toward the "Maker community" at large. The "Maker culture" emphasizes learning-through-doing in a social environment.

Short Term Business Goal:

While targeting the global open source community in the long term, SnapBloks has a significant potential for commercialization in the field of Science, Technology, Engineering, and Mathematics (STEM) education, where it can provide an engaging learning-by-doing experience to middle and high school, undergraduate, and graduate students. Therefore, for short term plan, we propose SnapBloks to target any education level aforementioned, by making computer science, mechanical, and electrical engineering more appealing to young students.

Funding:

SnapBloks will try to get its traction by starting a campaign on Indiegogo and Kickstarter, rewarding backers with flat-rate ($5-10) reward for each Blok

Competition:

Looking at the existing modular electronics and robotic kits in the market, littleBits (http://littlebits.cc) seems to be the closest potential competitor. However, it is merely electronics hardware and does not come with any design nor software development environment. It is worth mentioning that littleBits has a very weak intellectual property protection, but they managed to raise $62.34M in 5 rounds from 21 investors in modular electronics business.

Patent:

U.S. Patent Application No. 15/632,112
Entitled: "MULTI-PLATFORM MODULAR DEVICE"
Filing Date: June 23, 2017
Inventors: Ekawahyu Susilo, et al.