

Appendix A : SWOT and Competitor analysis

Strengths

- Shrimp replicates capabilities of popular “Arduino Uno” hobby board for a fraction of the price.
- Arduino compatibility gives us a free-ride on development tools and a huge resource of ‘Shrimpable’ projects online.
- Compared to our competitors’ Printed Circuit Boards (PCBs) our @ShrimpingIt builds...
 - can be rewired for different uses
 - are more educational (circuit is visible)
 - are cheaper, a ‘cost-plus’ service wrap around wholesale commodity electronics
 - are designed specifically for UK educators and accompanied by supporting resources for the classroom.
 - offer a price point suitable for every student to be given their own Shrimp
- Shrimp-based projects are more practical for real-world deployment than those based on power-hungry high-speed ARM chips

Weaknesses

- @ShrimpingIt is a new brand identity in the marketplace
- The apparent simplicity of competitors’ PCBs can mislead educators who have not recognised their shortcomings in the classroom.
- The ~£10 prices for full-project bundles are misleading for purchasers. Well-thought-out communication strategies are needed to underline that project #2 can reuse almost all the components from project #1.


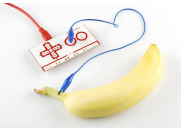


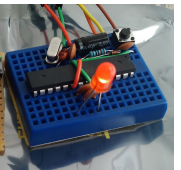
Opportunities

- By September 2015 programming becomes mandatory in computing classes
- BBC’s Micro Bit launch brings physical computing into focus for programming lessons among UK educators and its scarcity (only one million free to a single year group) is likely to increase demand for alternatives
- @ShrimpingIt is a well-known brand among cognoscenti in the UK maker and hackspace volunteer community, offering a free vector for outreach and promotion.
- @ShrimpingIt builds are cheap enough to be given away to kids as part of educational initiatives.

Threats

- Arduino, Raspberry Pi, mbed and others are adopting faster computing modules based on mobile phone technology e.g. quad-core ARM SOCs. Although these are currently not competitive, prices will reduce as volumes increase
- The well resourced promotional vehicles targeting education and supporting Micro Bit and Raspberry Pi may eclipse our offerings in the marketplace for bulk buy purchasers
- Low quality community led activities, run by volunteers as ShrimpingIt might undermine the perceived quality of the product and service.

Competitors

Product	VAT Price	Applications	Notes
 <p>Raspberry Pi</p>	£41.99	Multimedia and desktop oriented programming learning, (limited physical computing capabilities)	Price shown includes minimum for operation, incl. SD card, power supply and case. However, for practical applications, a screen, keyboard and mouse is also needed, bringing it to the price of a reconditioned laptop, but with fewer features and less convenience. Because of its limitations, for many 'physical computing' projects, a board like an Arduino or Shrimp is needed anyway.
 <p>MakeyMakey</p>	£49.99	Conductive keyboard; make a Banana piano or control keyboard driven games	A MakeyMakey has an Arduino inside, but it is ill-documented how to use it, so this is relevant only to skilled practitioners. This device is popular among educators for high-impact demonstrators. Our @ShrimpingIt Conductive Keyboard kit offers equivalent behaviour for just £10.30
 <p>Arduino Uno</p>	£20.80	For physical computing projects, roughly equivalent to the £1.38 chip on the Shrimp	Widely adopted by hobbyists and experimenters, Arduino has a free programming environment (also used to program the Shrimp) and many tens of thousands of projects online for learners to replicate. However, to do more than blink an LED, you need extra sensors or actuators and a breadboard to connect them anyway (as included in our @ShrimpingIt Addon packs). The Arduino circuit itself is not as educational as the Shrimp - you can't see how it is connected together. The Shrimp is binary- and pin-compatible with an Arduino Uno, and can substitute for an Uno in almost any project.
 <p>BBC Micro Bit</p>	1 million Free Price unknown	Similar scope to Arduino Uno	BBC's 'Make It Digital' announced 1 million year-7 pupils in the UK will get a programmable Micro Bit for free. Roughly equivalent to the Arduino, (and with the same problems), but without ten years of community development, software and documentation. Retail prices not known. Expected to create huge latent demand in the classroom for accessible physical computing, especially in those year groups not offered the free hardware.
 <p>@ShrimpingIt Bundle</p>	£9.30	Shrimp Parts with a UART + Breadboard substitute for an Arduino Uno.	Incredibly cheap. Once you have a bundle and breadboard, project addons are literally pocket money (from £1 to £3.50), such as our Conductive Keyboard Addon, which replicates a MakeyMakey. The £3.30 UART is only needed when programming, and can be kept as a classroom resource, making the base price per pupil closer to £6 retail. The Shrimp is built on breadboard. For any practical projects, Raspberry Pi, Arduino or Makey Makey users need to buy a breadboard as an extra expense.