

Sol-Cap: 3 Year Business Plan Summary

Unique selling point:

Sol-Cap is the world's first structural water-soluble and biodegradable packaging design. The cellulose-based hydrogel polymer used in its construction is highly transparent and easy to mould into a range of packaging forms that achieve good mechanical and tensile properties, while still remaining 100% biodegradable and non-toxic. As a packaging product for small food and cosmetics items it is able, therefore, to compete with – and in environmental terms far surpass – traditional plastic products. In a market of increasingly environmentally conscientious consumers and correspondingly increasing industry regulation, Sol-Cap is uniquely placed to be able to provide a solution to the problem waste management in the food and cosmetics industries that satisfies both customers and manufacturers alike.

Properties of Sol-Cap:

- non-toxic, non-allergenic and odourless
- suitable for Vegans
- can be produced in a variety of shapes/forms
- appearance can be transparent or pigmented and accepts printed media (for branding etc.)
- 100% biodegradable
- safe to ingest
- air and liquid tight
- long lasting shelf life, up to 2 years
- FDA approved

Market opportunity:

The opportunity we see in the food and cosmetics markets rests in the now well established, though somewhat conflicting, desire of consumers to possess conveniently packaged disposable goods that are also highly environmentally friendly. However, it is rare on the whole that both of these user requirements are met at once: either a product is environmentally friendly or it is convenient and disposable. Rarely is it both, but we believe that the availability of single-use, biodegradable packaging could provide the tipping point that the industry needs to begin to provide this.

We expect a product such as Sol-Cap, that is strategically placed to exploit this gap in the market, will become highly successful within this growing tide of user demand for sustainable, disposable products. Producers and suppliers are well aware of this emerging trend in consumer behaviour and are beginning to act now to deliver it.

Sol-Cap will be sold through partnering with retailers, hotels, restaurants and caterers. Our first target customers will be retailers that manufacture their own products with a view improving waste management, and consumer convenience and satisfaction. Once we have

established a basis in this sector we will branch out by approaching caterers, hotels and restaurants, who are known to rely heavily on small single-use packaged products. The strategy is that the initial trials with retailers will serve to de-risk the product and make it attractive to more risk averse sectors of the market.

Entering the market:

Our target market is the single-use, small-format packaging industry that supports the food and cosmetics industries. We aim to enter the market with a portfolio of products in economically developed countries where consumption of disposable goods is relatively high. In particular we are focused on the UK due to the prospect of partnering with large well-known companies such as M&S, Lush and John Lewis who have a proven track record of endorsing progressive and environmentally conscious solutions to the sale and distribution of their products and services. And once the roots of the business are well established in the UK we see no reason why our products should not be propagated globally.

As a company we are positioning ourselves in the fields of product development, manufacturing and supply for packaging. In line with this we will provide services in international sourcing and procurement management for and on behalf of our clients. We believe that an important factor in the success of our business is the establishment of strong partnering ethos between ourselves and our clients, built on mutual trust and cooperation. In order to achieve this we aim to work as closely as possible with our clients while actively promoting the idea of thinking about the full life cycle of products so that a long-term view of our shared business can be taken.

We will aim to monitor our products' life cycle as far as possible so that this feedback can be used to further improve our existing products as well as to inform the design for new ones markets and societies that are continually evolving. Following the establishment of a product line in small-scale biodegradable packaging we intend to test the application of our technology on larger items such as chocolate, biscuit and fruit trays.

Cost and feasibility of manufacture

We have developed our own material and the manufacturing techniques to produce Sol-Cap and we filed a UK patent application. The material used in the production of Sol-Cap are already in existence. The cellulose-based hydrogel polymer is widely used for pharmaceutical purposes to produce drug capsules, and in food and cosmetics industries as a thickener / emulsifying agent due to its non-toxicity and low cost. In knowledge of this we identified the opportunity to introduce these technologies to new areas of industry through innovation. The advantage of repurposing already established material and manufacturing processes is clear from a financial point of view because it saves costs and reduces the lead-in time to getting the product into circulation. Our company is the world's first to introduce these ideas to the packaging industry and is leading the field in biodegradable packaging in this respect.

As design and procurement managers of this new product line we intend to outsource our production by working with manufacturers who produce pharmaceutical capsules. We have contacted and received positive feedback from 4 manufacturers, based in Canada and China, who have R&D departments that can help us develop our design before manufacturing it. The minimum quantity to place an order with these companies varies between 1 and 10 million units, and the prices for this varies between \$5,000 – \$40,000. The manufacture of a mould will also be required, at a cost of \$10,000 (inc. associated R&D). Given this, the cost of manufacturing one Sol-Cap unit will be approximately \$0.015, with a sale price to the retailer of \$0.1. Based on the current demand alone for single-use packaging we estimated our sales revenue will achieve \$1 million in 3 years.

	Year 1	Year 2	Year 3
Total sales revenue	\$100,000	\$500,000	\$1 million
Net cash flow	0	\$430,000	\$860,000
Retail price per Sol-Cap	\$0.1	\$0.1	\$0.1
Cost of manufacturing per Sol-Cap	\$0.015	\$0.014	\$0.014
Annual sales	1 million	5 million	10 million

Competition in the packaging market

The product is believed to be unprecedented, and as such we are already ahead of the competition. Sol-Cap's basis in existing material technologies means that we have an unusually high level of cost certainty at this stage, and can expect lead-in times to production to be as low as 3 months, which will further ensure that we continue to stay ahead of our competitors.

The clear commercial value of what our product achieves suggests that it will be a strong competitor to current petroleum-based packaging while simultaneously offering the added benefits of being biodegradable and non-toxic. It is also worth noting that unlike alternative bioplastics used by our competitors (which tend to suffer from relatively high manufacturing costs), industry advice we have received strongly supports our product's potential as a genuine competitor to traditional plastics.

Proposed funding allocation:

Our entry is for Mid-stage Ideas funding. Granted this award we would allocate funds as follows:

Funding used for expenses	Year 1 (01/01/18-01/01/19)
Manufacturing Cost of 1 million units + mould cost for one design	\$15,000-£12,000
Annual Studio/Office/Lab Space Cost	\$7.200
Salary chemical engineer-freelance (4 months)	\$10.000
Annual salary of Ayca-full time, design director	\$18.000
Annual salary of Ezgi-full time, research director and sales	\$18.000
Salary of Francis Field, freelance, design development and marketing	\$10.000
Marketing and PR	\$6.200
WIPO patent application	\$8.000
Accountancy cost	\$3.600
Product testing and material cost	\$1000
Annual travel expenses	\$3000
Total	\$100.000

Challenges

Sol-Cap has been under development since 2014 and we fully understand the challenges that bringing a new and innovative product to the market involves. The product has come a long way since then and we are now able to procure small batches. Clearly now the next and perhaps biggest challenge is the leap for us into mass production – to produce the (minimum) first production run of 1 million units. The barrier we face is one of initial capital costs, but this is one that can certainly be overcome with funding from the award.

Closely associated with the above financial challenge is the need also, in parallel, to engage a partner company in the retail sector who is knowledgeable in our chosen market and is willing to accept the degree of risk that inevitably comes with any new business venture. This is where we imagine that the Beyond Acceleration Program will come into play though putting us in touch with people that can help us face this.

Finally, in the interest of developing a product from a truly holistic point of view that is concerned equally with each stage of its life cycle, we recognise that we still have things to learn about the full environmental impact of the early stages of Cap-Sol's manufacture from

raw materials. Aspects of this such as energy use, waste from factories and transportation are all areas that we will challenge ourselves to understand in great detail.

Sol-Cap

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