Helping children imagine
beyond screens

# Our Idea

## Problem

Programming has been always synonymous to writing code on a computer, using a screen interface. However, research shows that increased screen time causes detrimental effects on the cognitive and social developments of a child [1]. They displace sensorimotor skills (manipulation, building, sensory deprivation) in children as they begin to learn about the world around them. An average Dutch child of age 8-11 spends an average of 4.5 hours on a screen every day [2].

## Solution

dCode WunderMind (see last page for ref.) is an educational toy that helps children aged 6 to 9 to learn coding concepts, through a completely screen free and tactile interface. It consists of the main compiler (WunderMind) and a reader which reads the code and sends the instructions to the output (Wunderball) which they could play with. The Wunderball could be tweaked to display lights and sounds according to the code. As there are sensors within the ball that detect vibration, shake and throw allowing you to create logic based on these possibilities to create their own games. We also hand out pre-designed games and activity sheets to inspire them to create their own fun games but also making sure that they learn the core concepts of coding.

## Impact

Learning to code helps children to think logically and enhances their ability to solve problems creatively. It has become one of the essential 21st century skills. With the number of ICT (information and communications technology) and coding related jobs set to increase by 17% in the next five years [3], it is high time for the upcoming generation to be adept with the technology and be its creators rather than mere consumers. Since it is quicker to pick up a new skill in younger ages [8], it is no surprise, that increasingly governments like the UK, has made computational thinking a compulsory part of the school curriculum for kids aged as little as 5 years already [4]. Meanwhile, in Netherlands, 30% of the primary schools have incorporated programming education in some form into their classrooms (Kennisnet, 2017).

## Originality

We have observed through our validation sessions at the playspaces in

Delft that children learn best when engaged in the living world, not on screens. We emphasize on the following aspects while considering the overall design of the product:

**Endless Possibilities**
The product have option of free-play, where kids can design their own challenges using endless programming features, which is constrained only by the child's imagination

**Screen Free Play**
Ensuring children interact with real world objects in a collaborative setting, thereby enhancing their sensorimotor, social and cognitive skills.

**Compatibility with competitors/ substitutes**
Wundermind can be synced with other similar screen-based coding toys, eliminating the need of the screens to program them while keeping the learning and the fun aspect that comes with them intact. At present, most of these existing alternatives for coding, are based on the SCRATCH interface which Wundermind has potential to replicate in a tangible manner. We are imagining children coding their program for their favourite toys in a tactile manner; extending their imagination and creativity without the screens.

## Entrepreneurial Credibility

## Vision and Mission

As a team, we envision a world where children imagine beyond digital interfaces, enabling them to learn and interact with real life objects and become creative problem solvers and changemakers of the future.

## Team Credibility

Our first hand teaching experience in alternative education and in pedagogy design stems from our award winning startup, dHive Rural Design Studio in India, founded in 2015, which is successfully running in 2 countries at present. dHive has won grants from 3M India and Avery Dennison Foundation for its innovative model. For the transformational work with children, we were recognised with the Social Impact Award 2018, 3M Young Innovator Award 2017 and Best Youth Award 2017 respectively.

### Krishna

- Co-founder, dHive
- International James Dyson runner-up
- 3M Young Innovator awardee

**Strengths**
Pedagogy Design - Operation management

### Shreyas

- Co-founder, dHive
- Social Impact Awardee, BAIF
- Masters, Industrial Design

**Strengths**
Toy Design - Electronics - Branding - Marketing

### Venkat

- Global robotics championship awardee.
- Masters, Mechatronics engineering

**Strengths**
Electronics - Fabrication - Robotics

### Varsha

- Data Scientist
- 10 years coding experience
- Expertise in digital marketing

**Strengths**
Programming - Digital Marketing - Software development

# Market analysis

## Market size

For the first 2 years, we are aiming to target parents from middle to high income households from EU, for which the Total Addressable Market(TAM) is around 10.78 million, and our Serviceable Obtainable Market(SOM) is 430,000. With the product priced at 150 eur, the total revenue of 64mn can be targeted spread across five years. We plan to expand to the US and UK markets after the third year since these markets already have interested customers for the coding toys, as shown by the google trend analysis. With an additional SOM of 335,000, it opens up an opportunity to get additional revenue of 50mn eur spread across next 3 years.

## Beachhead market

Netherlands has the fastest growing toy market in Western Europe which showed a growth of 3 percent in 2017 [2]. Based on our qualitative study, 6 out of 10 Dutch parents are interested in buying coding/STEM toys.

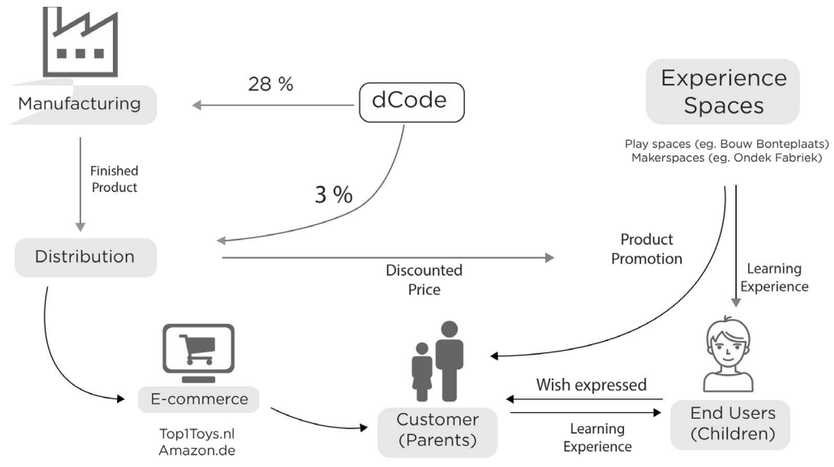
## Scalability

As per Google Trend analysis, coding toys for children are most trending in UK, Finland, Australia, Canada and the United States. We are planning to have Finland, the rest of EU and UK as our follow up markets. UK has a strong demand for coding toys justifying our follow up here. By having some Finnish schools as our early adopters, we could also achieve the brand positioning having tested it in here which could help scaling up to other countries.

## Channels and Touchpoints

**Online Retail (e-Commerce)**
Since the number of physical retail stores is declining by more than half (ABN Amro, 2018) with the rise in e-Commerce and more customers preferring to buy toys and educational materials online. Hence, our main channel would be e-Commerce. This also cuts down costs on logistics and warehousing.

**Experience Spaces**
According to our market research, in order to penetrate the schools as the Decision Making Unit is usually teachers, who don't prefer to try new brands and teaching approaches. Hence, to reach school going students, we are targeting play spaces such as makerspaces and hackerspaces (Ontdekfabriek, NEMO etc) and paid play areas like de Bouw Bonte Plaats. The goal is to provide experience of our toys to these children, and also to maximise product visibility to parents.




## Sales and Marketing Strategy

## Customers

Although our end users are children (aged 6-9 years) - 620k kids in the Netherlands for the beachhead market - the economic buyer are middle and high income parents. Our research reveals that this segment of parents are more aware of coding as an important skill and pose higher probability to buy the product.

## Competitors/Substitutes

Our competitors include tactile programming toys which are either new entrants into the screen free market(Competitors) or have a digital app or web interface (Substitutes). Competitors: Cubetto, TACO Playbits and Cubroid, Substitutes: Ozo bot, Sphero, Makeblock Neuron and LEGO mindstorms. However, our product stands out from the competitors for mainly two reasons: Our product encourages kinesthetic play involving more children to play in a collaborative team setting by enabling them to design their own creative games Our product has a potential to be compatible with the competitors' and the substitutes' toys making them as an opportunity rather than a threat to our product.

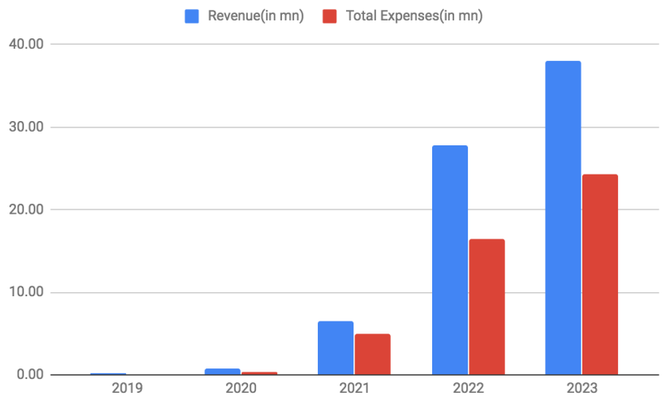
## Promotional Strategy

We plan to do digital advertising through a combination of Pay Per Click (PPC) to gain actual clicks to our online stores (partner) and Pay Per Impression (PPM) to gain brand visibility. We also plan to use display and affiliate marketing, SEO and SEM to reach as many targeted digital users as possible.

Influencer Based Marketing Toy reviews on Youtube channels are becoming increasingly popular for children and parents willing to buy a product. We plan to reach out to few such channels to cover our product in their next video which can get us brand and product visibility to thousands of youtube channel subscribers.

## Customer Acquisition cost

**Online channels** We focus on e-commerce websites like amazon for our initial digital marketing effort - with an average CPC of 1.5€, an average CTR (Click Through Rate) of 0.3%[9], an average conversion rate on amazon of 10% - assuming an average daily impression of 50k as per the stats, we spend about 15€ to acquire one customer. With the product priced at 150€ and the gross profit margin being 53% per unit, the daily Gross Margin to CAC ratio turns out to be 1.6 for online channels.



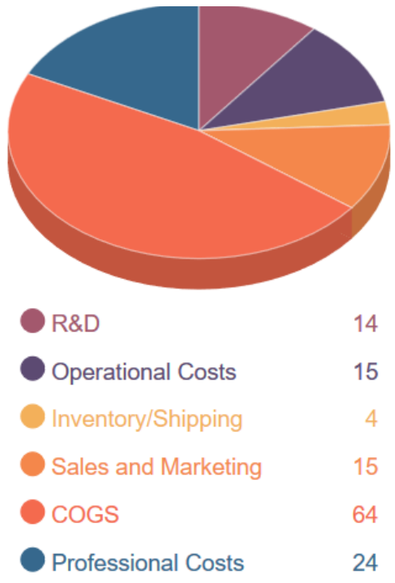

**Revenue versus expenses**

## Sales Forecast

In the initial phase we will be focussing on the Netherlands for year 1 owing to the recent introduction of programming into the mainstream curriculum by the Dutch House of Representatives, 2017. From year 2, we will be reaching out to UK and Finland owing to the high interest for coding toys as per Google trends. By year 3, we will reach out to the USA, as there is a sizeable market of 16 million children of age 6 to 12 living in the households which we would like to focus by this year.

## Cost of Operation

Since we are launching our crowdfunding with the first batch of 1000 products, we will be going for high volume production methods right from the initial stage and going for alternatives to injection moulding such as rotational moulding/vacuum forming to cut down on the COGS which is amounting to 40 percent of the total revenue. And also since we are using printed electronics technology, the production process is highly scalable. In the first two years of operation, we are also planning to cut down costs by not having an exclusive sales team and limiting the team size to four members (co-founders). The total cost per unit is around 130 euros including the fixed costs of 65 euros as well as variable costs of 65 euros.




**Total per unit cost**

## Production scalability

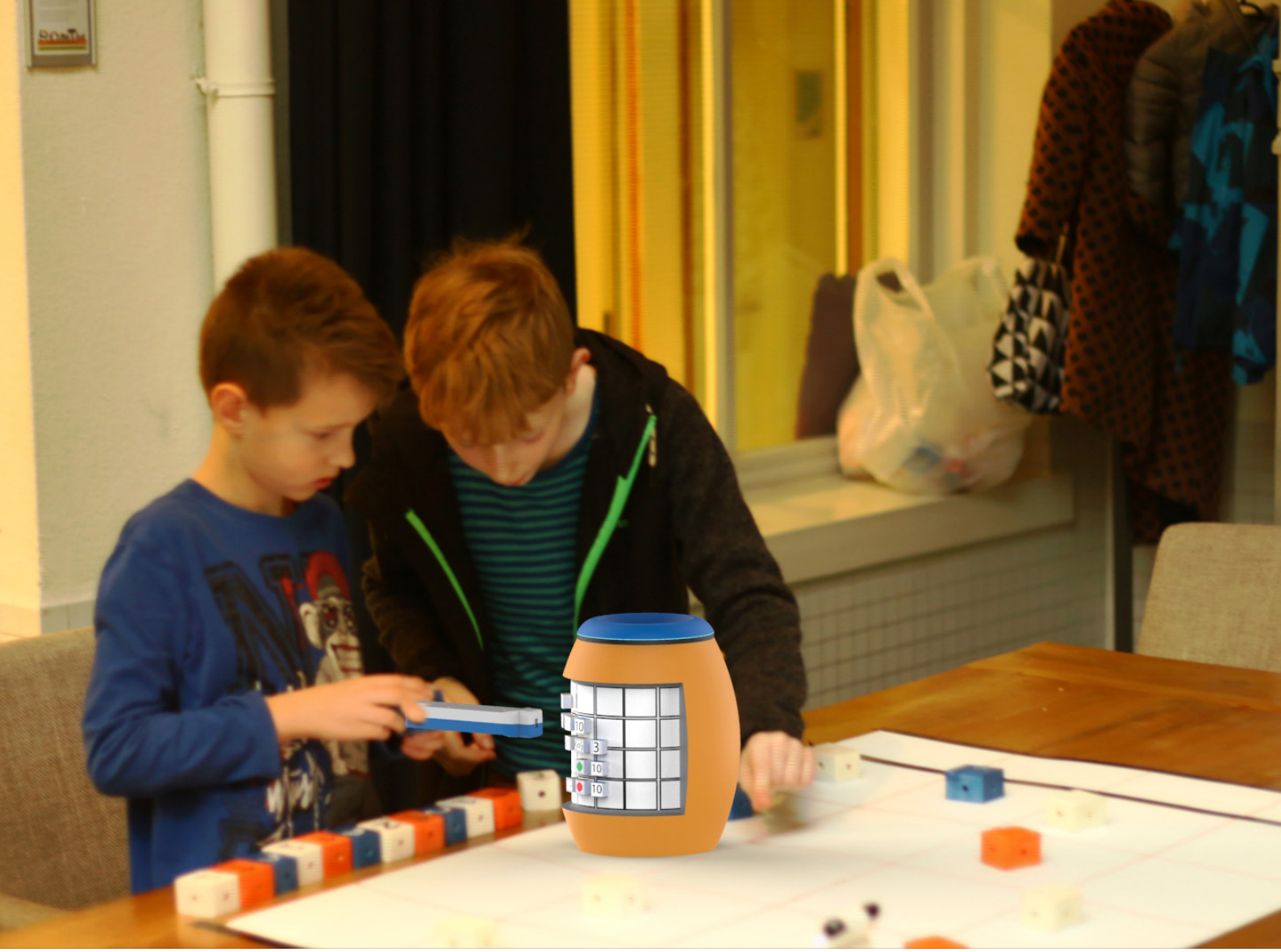
Since the body (embodiment) will be blow moulded while the electronic components are made using printed electronics technology, the production is highly scalable. By these processes, we are cutting down on costs on a production scale. Also because of going through e-commerce platforms which have systemised supply chain which could handle our inventory/ logistics operation.

## Revenue Streams

Our primary revenue stream is from goods sales of the Wundermind Kit on the e-commerce website Amazon. We are planning to make it available in two variations- Basic Kit (150 Euros) and Deluxe Kit (200 euros). Extra components like activity cards, additional stickers with added functionality and add-ons will be sold as. Our recurring revenue stream is selling our product using the Box Subscription model of Amazon STEM Club. It is available to customers at $19.99 to customers (shipped from US). This could also help in brand visibility in the US markets.

## Financial Plan

We plan to raise initial funding of €200,000 through kickstarter campaigns, to bring our prototype to the production phase for first 1000 early adopters. Kickstarter levies a fee of 5% of total funds raised. To scale up production and penetrate into the market we seek venture capital investment.



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For other references, refer (https://drive.google.com/open?id=1mmjdjbCDDBWY9zbUpVW8RcHP-0bO60T5E)