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An Entrepreneur's New Product Development Journey

"I started a company because when I was in college, I could never get myself out of bed on time. Seven years later, nearly everyone around me needs the opposite: a clock that will help create time, not cut into it."

– Gauri Nanda, Founder and CEO of Nanda Home

From concept development to market launch, new products are designed through an iterative process that requires the consideration of many factors including business analysis, market research, beta testing, pricing, personal vision, and the boundaries of available resources and technology. An initial idea conceived in a designer's mind undergoes several transformations and the product's eventual design when launched may bear only a slight resemblance to its early formulation.

Design Philosophy

Product designer and entrepreneur, Gauri Nanda, had a clear goal for her company, Nanda Home. She wanted it to become a brand of little helpers for the home, things that could be funny and cute, but clever and purposeful at the same time. It was her personal philosophy that the objects we share our lives with should exhibit the same qualities we expect from our companions. To this end, her approach was to take the stuff of everyday life, understand its absurdities, and merge the two in the creation of humorous lifestyle driven products.

This idea was exemplified in the design and engineering of Clocky, Nanda's first major commercial success. Clocky is an alarm clock that runs away and hides when the alarm sounds, thus forcing his or her owner out of bed on time. Of Clocky Nanda states "At the time, I knew the product evoked humor, but I didn't analyze why. I now realize that it's the absurdity of having to get up before we are ready, the reality that we have to, and our efforts to stall this reality that makes people laugh when they learn about the product."

Initially Nanda didn't ruminate too much on what form Clocky should take, because she knew instinctively that the product's essence was part character, part tool. When she shared the concept with others, their first reaction was a smile or a chuckle. Many people asked if Clocky was a he or a she, which caused Nanda to realize that it had the potential to be regarded as "life-like". She wanted to embrace the anthropomorphic nature of the concept by making it charming and lifelike. In designing Clocky, Nanda thought about the characteristics that make babies and animals cute, and

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integrated similar ones into Clocky's motion and sounds, his "behavior", so to speak. "Part of Clocky's charm is visible when he is not doing his job very well, for example bumping into walls, getting stuck, and then maneuvering to become 'unstuck.' Our objects do their job 'the best way they know how' meaning that the goal is not in creating the perfect technology, but rather embracing an object's flaws in order to enhance its character." Clocky's movement was random, so each morning his path was different. "Human beings are unpredictable and imperfect. Put these characteristics into a product, and people respond by anthropomorphizing their objects" which Nanda felt was a good thing. A recent academic study confirmed this sentiment by concluding that subjects who anthropomorphized objects were more likely to feel positive emotions that enhanced their moodsⁱ

A key factor in Clocky's success was his mobility and it was critical to be able to demonstrate that to consumers. When exhibiting the product at tradeshow, Nanda would typically start the demo by saying something like 'Clocky is an alarm clock that runs away.' People would laugh. Then she would set it to roll off a nightstand and around the room. She noticed that while people embraced the concept right away, it was when they saw it in action that their faces lit up and they began making connections to why and for whom it could be appealing to own. 'So and so needs one of those!' she would hear over and over.

Learning from her experiences with Clocky, Nanda knew that any future product she created for Nanda Home should not only solve the problems of everyday life, but do so with lifelike charm.

New Product Conception

Extending the Alarm Clock Line

Building on the success of Clocky, Nanda felt strongly that she should introduce more products in the same space. She found that the concept of an alarm clock that runs away was so loved and celebrated that there was a great opportunity to grow the product line and create a family of rolling alarm clocks.

In recent years Nanda had tried to glean from consumers what they wanted to see in a follow-up product. She learned that for most owners Clocky was doing its job well; he was scurrying around the room looking for a place to hide and ending up in unexpected locations, thus creating a challenge for over-sleepers so that they actually woke up on time. People seemed to love Clocky's unusual sounds; he seemed to 'talk' to them in his own robotic beeping language. It was also interesting that many people who did not own a Clocky, but had heard or seen it in action, mentioned similar attributes of the alarm clock; and yet they did not buy one (at least not for themselves). Hearing this feedback, Nanda decided that a "Clocky 2.0" should retain the simplicity and charm of Clocky, but also believed that there was room for her to create new versions that added novel dimensions to give the market more choices.

By 2011, Nanda had created a line of alarm clocks that run away. Ticky and Tocky were designed to allow consumers to customize the color of their clock, by changing the product's silicone skin. Customers could also upload MP3s and record their own sounds. Ticky's LCD contained a digital representation of an analog clock, while Tocky displayed a standard numerical time display. Both were more technologically savvy than their predecessor, as they employed touch sensitive plastic to interact with their interface—a departure from the 4 button design used to set Clocky's alarm and time. The products were spherical and because of their shape, they made use of their own momentum coupled with motors to propel them forward. This was something that took a lot of engineering craftsmanship to fit into such a small package. The technically superior design came

with a cost, and the products made their debut at \$69 USD. The products were thus positioned for the higher end as compared to Clocky.

With the launch of Ticky and Tocky, Nanda felt that it was time for something different.

Extending into New Categories

Nanda's assessment was that too often in industry, companies approach product design by making incremental improvements to existing offerings, trying to one-up the competition by adding a lot of extra features (that are not used or too difficult to use), or by competing on costs. Her approach was different. She aimed to completely re-invent a product category; to do something that had never been done previously. To achieve this goal, she would examine the way consumers were currently solving a particular problem. She would note everything that was wrong with the current solution, come up with a vision of how the product could work differently, and try to create something that *she* would actually want to use, or that when she put herself in the shoes of the relevant consumer she could see the benefit. "I don't buy too many things; I'm a minimalist in my design sensibilities, and therefore, a very conscious shopper. I think that's why when I make things, I think about what I could truly use that would make a significant impact on my day-to-day life. If I purchase something, I've already imagined how it will integrate into my life and I've convinced myself that it will make it better from either a functional or aesthetic sense." Nanda attributes her out-of-the box thinking to her diverse background which is at the intersection of technology and design.

I come from a design background with a philosophy of 'less is more' when creating objects and tools. It is so ingrained in me that I think about design issues wherever I am, with anything I use that I love, and even things I hate. I think about the why behind those two feelings. But I work in a field in which technology is a big part of product development and, despite a lot of examples of 'good design' out there, people are still uneducated on design principles. I think what it comes down to is that historically a lot of products have been created with the idea that engineering is first and design is an after-thought; that it's the box that hides the insides. By contrast, I start with the end vision, including how the consumer will interact with the product at the practical and emotional level, and then push to make the engineering happen. Throughout the process I go back and modify the design to fit the limitations of engineering. It might be because I'm not an engineer that I start with the design first.'

According to Nanda, promising new ideas are born from need, and a belief that a new product or service can achieve desired outcomes that outperform previous solutions; they must be in some way superior to the present method. More often than not, these needs were not obvious or explicitly expressed, and it was the task of the innovator to identify and then come up with a novel way to satisfy them. When faced with a new obstacle, designers naturally gravitate to thinking about the present solution and how it can be improved. This is what happened one morning when Nanda was having coffee with her best friend. Nanda's friend had a two-year old who woke up repeatedly throughout the night. Nanda empathized with what her friend had been through and tried to put herself in the shoes of someone that had been denied this basic need for sleep for over two years. Nanda's friend jokingly said 'You've always thought of clocks as things to get you out of bed. You didn't consider that some should help keep us in (bed).'

Unable to get the semi-facetious concept out of her head over the next few days, Nanda began thinking about how the 'opposite' of Clocky, a clock to help parents get *more* sleep, could be created. What would it need to do to fulfill the need she identified? She embarked on some preliminary

research. Such a clock for kids should aid the parent in getting their child accustomed to a bedtime routine. Bedtime routines, as research showed, allowed for faster sleep onset, less night waking episodes, and improved parental mood.ⁱⁱ She began brainstorming ideas to achieve this objective: the clock could alert the child when it was bedtime with message and movement, assist the parent by reading bedtime stories, and soothe the child by singing lullabies. All of this could be controlled and recorded by the parent. As the child's bedtime drew nearer, the clock would stretch its arms, yawn, and roll over, eventually falling asleep, even 'snoring' in white noise. With Clocky, Nanda created a character that connected time to the need to become active and terminate rest. With this new product, Nanda would create a character to connect time with being non-active and restful. It would become a sleeping companion for a child to feel at ease going to sleep in his or her own bedroom alone. Excited by these findings and ruminations, she started sketching an initial concept (see **Exhibit 1**).

Nanda kept refining the concept and generating more ideas for the new "clock for kids". She decided that while much of the novelty in the clock would be in its bedtime roles, it should still be a major part of the wake-up process. For example, in the morning, the clock could sit up, stretch, yawn, say 'good morning!' and utter other messages, indicating to the child when it was ok to get up in the morning. Nanda's hope was that the product could be designed in a way that would prevent the child from getting out of bed and waking up parents too early. It was this dual appeal, to parents and to kids, which kept guiding her design direction.

Nanda called her friend up and shared the concept. She loved it. They would share many phone-calls together bouncing around ideas. Merging 'clock' and 'kid' together they came up with a name-Clockiddie. Although it was only a sample size of N=1, Nanda felt lucky she was able to call up someone she believed was highly representative of the potential target market.

In order to properly illustrate her vision, Nanda employed two interns to help realize her sketches in three dimensions. She provided the same sketches and directions to each intern, and waited for their interpretations, highlighting that the 'cute' factor of the brand should come through. (**Exhibit 2**). She felt that emphasizing 'cute' in the design always helped connect the user to the product on a deeper level, because more emotions are felt, even if only subconsciously. This was both a motivating factor for a customer when purchasing a product, but could also be a factor in a customer continuing to use a product over time if it facilitates attachment. That said, Nanda was aware from her previous products that an over-emphasis on "cuteness" and on evoking an endearing visual response bore some risk; the product might not be taken seriously enough or quickly be relegated into the fad category. Generally, Nanda felt that the best way to mitigate this was to couple an endearing design with great functionality—the product should perform useful tasks that the end user appreciated, alongside the emotional/visual appeals. In her mind, combining fun with function helped avoid the risks of becoming a fad. With Clockiddie, however, given that the end users were children, she felt the risks of emphasizing cuteness were much lower.

Nanda then sent the sketches, the 3d renderings, and a brief synopsis to those in her network, including mentors, those that fit in the target demographic, and potential buyers. By integrating their reactions and feedback with her own gut feelings, an ideal aesthetic design came to light. It seemed a more positive response was given to the character in the second intern's design, and Nanda surmised that part of the reason was its cute factor- some people said the short and stumpy arms resting on a rotund body gave it a cuddly bear-like quality, and dog lovers said it was his floppy ears that did it for them.

Achieving Success in the Marketplace

Drawing from Past Experience

Having sold Clocky for nearly five years, and the new members of the family Tocky and Ticky more recently, Nanda believed the single most important factor in her products' success was that people wanted to talk about them. She observed that the viral nature of the products was largely attributable to the fact that consumers gained a certain satisfaction when sharing the idea ("Have you heard about Clocky..."); it was gratifying for the consumer because it made those around them laugh. This simple pleasure, of communicating humor among one's social group, created a situation where news of the products traveled effortlessly, with little or no work from Nanda at all.

She also believed that the viral nature of her products was a big factor in why they received extensive coverage in blogs and in the press; fans of the products were happy to post their photos and videos of the product in action. Clocky presented its owners with opportunities to document scenarios they wanted to share with others and, in turn, these usages and displays of attachment were of interest to others; likely again due to the fact that wake-up issues were common and evoked emotions that others could relate to. The emergence of digital media and social networks greatly facilitated this process. Nanda reflected further on why people were so apt to talk about Clocky, "Clocky was new and exciting. Nobody had ever thought about an alarm clock that way, so it was enjoyable just to think about it. It gave people something new to talk about, and it helped that it was easy to explain and easily relatable. Everyone knows someone who has trouble getting out of bed – it's a real and serious problem. And Clocky helps solve this problem in a way that also alleviates the seriousness. Clocky is funny on its own, but also because it reminds you of a friend or family member and puts them in a humorous light, with a picture of them struggling to wake up. In one product you've got something fresh, something funny, and something that connects you to people in your lives. When you have a lot of factors like this all working together, you've got a great chance of success."

As a company that was built on a small family loan with no additional funding after launch, Nanda needed all the free publicity she could get. She was able to refrain from costly advertising, and sales were achieved relatively easily- the retailers came to her. Nanda did not have a large team, and because most of the sales came to her, she was able to handle many aspects of her business from engineering to service to manufacturing and logistics, which was critical for her to be able to grow without spending too much money.

For a company with limited resources, such as Nanda Home with its infrastructure constraints, Nanda determined that innovations aimed to create value for consumers the way Clocky does needed to satisfy several criteria in order to ensure commercial success:

- Relevance for a big market; in some sense appeal to a wide range of consumers in a way that it satisfies a common need
- Easy to explain
- Be a character with lifelike behavior that evokes a positive emotion
- Be highly innovative: something that is truly different from the current solutions

Implications for the Next Phase of Innovation

As she drew from her recent experiences and tried to think about how to apply them to her "next big thing", Nanda had the following ruminations. Clockiddie would succeed if it was something that

those in the target market would benefit greatly from, giving them a reason to want to adopt. From her encounters with parents, she knew that anyone with small children would understand the idea right away. What was particularly exciting was the potential for Clockiddie to become a viral phenomenon like Clocky, especially through the 'Mommy' blog community that was so influential in the early adoption phase of products. There were projected to be about 4 million mommy bloggers.ⁱⁱⁱ Because the clock would be a character that moves and interacts with the child, it could be considered both a toy for a toddler *and* a device with appeal to tired parents. This combination could make it an ideal gift from parent to their children—especially on birthday or holiday occasions. While the alarm clock market generated slightly over \$1 Billion in sales (US), the market potential for toys seemed much larger by comparison. Worldwide toy sales in 2010 were \$83.3 Billion and exhibited healthy growth (the US toy market was projected to be \$22 billion in 2012).^{iv}

Nanda sought to validate her assumptions with additional feedback, which was not very difficult to get. Nanda's friend spoke of the concept at her mom's club. It was clear to her that parents and others who had seen first-hand the challenges of getting children to take a nap or go to bed on time would be interested in Clockiddie. One participant in the club reflected: "Parents are interested in anything that will help them get more sleep. My kids take hours to put to bed, get up multiple times throughout the night, and usually end up in my bed by the morning. Having a companion in a clock makes so much sense. It will be a comfort for them and, if it works, I will have less stress and more sleep! I will definitely try it!"

During 2012 Nanda Home was seeing growth in all major channels for her alarm clock line and she felt it was important to capitalize on current distribution and customer relationships (see **Exhibit 3**). In addition, Nanda learned that On-line toy market sales had increased dramatically from \$425 million in 2001 to nearly \$1.5 billion in 2011 (with online sales of toys in Europe even higher than that).^v Given that 40% of Nanda's sales were through direct online and ecommerce retail, Nanda began to feel confident that her existing channels and the consumers they served (at least a subset of them) would warm up to the new product. However, Nanda wanted to verify this by reaching out to her network of distributors and retailers. She feared that since the target market for Clockiddie could be very different from her current customer base purchasing Clockies and Tockies, especially in terms of age (see **Exhibit 4**), that they would not be interested in a product targeted towards younger children. Though it was conceivable that many of the original Clocky consumers have "grown up" in the last 4 to 5 years, are now married with little kids, and hence may be receptive to something like Clockiddie. These fears were quickly alleviated as she shared the product concept and images with her highest selling international distributors in Japan, Poland, and Australia, who all stated that they would be interested in carrying the product. Despite not having a working prototype, and relying on the buyer to use their imagination, the response to the idea was positive across the board. For example, in a meeting for the sale of Clocky to Toys R Us US, Nanda casually mentioned the new product and shared the initial concept 3d drawings. The buyer stated "Now, that's a product I'm really interested in! My sister could use that!"

Generating feedback from children themselves was also important to consider; after all they would be the end users of the product. Although not impossible, Nanda believed that reliable input from kids would be difficult to obtain at this stage without a working prototype. The child participating in such market research would have to be told what the product might be able to do without actually having something tangible to react to; only sketches, images and descriptions. It would require a reliance on the child's imagination to interpret what he/she was told, which could vary greatly between participants. She concluded that she should take the risks and continue with development, accepting the fact that end-user testing would be undertaken only after a functioning product was near completion. However, considering that it was the parents who would be

purchasing the product, and also benefiting from it indirectly, the risk was not that the product would not sell initially (assuming the feedback from parents was indicative), but rather that the product would not be embraced and used by kids, i.e., prove effective over time.

Competition

Nanda felt that her product was highly innovative but as part of assessing likely future market performance, it was time to more carefully examine the competition. Was her idea better than other sleep solutions for kids?

Prior to Clocky's introduction, alarm clocks were black box devices, impersonal machines that sounded off with loud mundane sounds. Clocky was arguably the first alarm clock that could make its user smile. Once Clocky was brought to market, people began to think of alarm clocks differently. Other alarm clock concepts started popping up on the market in the wake of Clocky's market debut, from the 'Puzzle alarm clock' that required its user to put together a puzzle to make the alarm stop to the 'Kuku alarm clock' that laid eggs and crowed until the sleeper put the eggs back in the clock.

As she surveyed the marketplace, there appeared to be one main competitor to Clockiddie, 'My Tot Clock.' This product addressed both sleep and wakeup using lights and sound. The 'My tot clock', priced at \$49 USD, attempted to help parents with a bedtime routine by playing bedtime stories available in the form of external cartridges that customers had to purchase separately. However, its function was limited as only six stories were available, and kids could tire of them within months. The existence of a product that had a similar function was both good and bad news. On the negative side, someone had already thought of a product to solve a similar need. But on the positive side, this was further validation for Nanda that her basic intuition was correct: indeed a market existed for a product geared towards parents' and kids' bedtime routine, and with only one relatively new product out there, the market was still very young. Moreover, she believed her concept was far more relevant to the target audience and offered the "right" mix of benefits, with superior functional and emotional characteristics. Clockiddie would provide the ability to record new stories and lullabies, in essence, to make bedtime routines not so routine but constantly evolving. And the motion characteristics of the clock would generate far greater attachment and hence effectiveness from the child's standpoint. 'My Tot Clock' was manufactured by a small company called White Dove Innovations. While she could not find any sales data, the product did not seem to have distribution beyond Amazon. The reviews on Amazon were positive though.

Aside from 'Tot Clock', there were two other products on the market that addressed the kids market—but only from the 'wake-up' aspect (i.e., not the going-to-sleep-side of the equation). 'Ok to Wake' for \$30 USD and 'Kids' Sleep,' for \$37 USD. They primarily functioned as a kid's first alarm clock, but additionally used light to signal to a child when they should stay in bed longer.

Nanda felt that the major advantage of Clockiddie, expected to retail between \$39 and \$49 USD, over the others, was that it would be interactive: a character that moved its body and arms on its own. The 'lifelike' quality of the product would behave as a companion, to lull the child to sleep even when their parent was not present. Once again, the idea of creating a connection with the user, which went beyond the functional, would set Clockiddie apart. In Nanda's mind, this was important because the entire sleep routine presented many challenges, frustrations, and friction for and between parents and kids. Hence, much in the same way that Clocky was able to diffuse the negative feelings snoozers had towards their alarm clock (a reflection of the negative disposition towards having to wake up and face the commitments of the day), Clockiddie could serve a similar purpose in the context of parents and kids and the process of waking up *and* going to sleep.

Proof-of-concept Prototyping

Nanda proceeded to write a general product specification to detail the expected user interface, interaction, and performance expectations with regards to the mechanical design. 3d renderings and specifications were then sent to a contract mechanical engineer in the U.S. skilled in design for manufacturing (DFM). He would create the initial prototype and tackle some of the more difficult tasks to move the project along faster. This prototype would eventually be sent to an overseas factory to engineer for manufacturing.

In the initial engineering stage, a designer is forced to look critically at the complexities of the specification and 'trim the fat', so to speak, that is, to re-evaluate the design and determine the simplest specs that can do the job. Nanda had gone through this before with Clocky and had been careful not to over-engineer the product. She recalled that originally she sought to create a very smart alarm clock, one that would be able to sense its surroundings and re-act in order to keep moving. She realized that the problem of Clocky bumping into walls and having to reorient itself could be achieved in an equally charming way by simply programming the product to change directions at regular intervals so that it wouldn't be 'stuck' for too long when facing a wall, or a shoe. This effectively did away with the need for expensive sensors and microprocessors.

Resolving Trade-offs from Concept to Prototype: An Example

The original specification for Clockiddie required that his arms have two functions: (1) they move on their own at bedtime to illustrate stretching, yawning and sleeping and (2) allow for manual movement, an interface for the user to set the time; moving the arms up would increase the digits on screen, and moving them down would decrease them. Nanda felt that setting the time in this way would be a unique feature that could be illustrated via video and animation on the company's website, as well as be another element for customers to talk about with others. Kids could enjoy it too, as it's much more intuitive and interactive to set the time with up and down motion, rather than pressing a button. However, Nanda's engineer explained that to employ this feature in the product, they would have to add extra components that would cost at minimum \$.45 extra per product, which when multiplied by a factor of 4 for the typical retail markup, would add an additional \$1.80 to the retail price. At this point, Nanda did not know what the COGS factory quote would look like for the full product, but she knew if they were over-budget, this would likely be one of the first features to go. She asked herself: "Would the user even know this was a feature of the product when they saw it sitting on the toy store shelf? Will it really help us sell more units since most people purchasing the unit are doing so only to get their kids to bed? Is this just a 'nice to have' but not a 'must have'?"

Similarly, the size of Clockiddie's arms was brought up as a point of discussion. The arms, which were previously thought to add to the cuteness factor of the product's design, if made longer could result in a whooping \$.70 per unit saving. Longer arms could further aid in the mechanical design as the product moved from sitting to sleeping positions. This forced Nanda to go back to the drawing board to explore additional arm shapes and sizes.

Nanda was sensitive to these issues after her experience with the Tocky alarm clock. She had created Tocky, billed as Clocky's technically savvy cousin, as it could not only run away when the alarm sounds but also play mp3s and record messages controlled via touch screen plastic. Communicating all of these points in addition to it being a 'rolling alarm clock,' which was still a new concept for those that had never heard of Clocky, proved difficult. It seemed as though the touch screen feature was lost in the marketing.

After a few months of work, an initial prototype of Clockiddie showed promise (see **Exhibit 5**). But the work in getting the prototype ready for manufacturing by the factory was still ahead and difficult decisions would need to be addressed soon.

Realities of Design for Manufacturing

The process of designing for manufacturing can be long, and involves several stages after an initial mechanical design is realized— from programming to software breadboard prototypes to testing product behavior to tooling and then tooling adjustment before production and quality control. Nanda found, and other product designers all seemed to agree, that things always seemed to take twice as long as projected by the factory.

Yet time was typically not on the innovator's side. Pressure was on to hit important dates, for events such as tradeshow in advance of typical selling seasons (such as back to school and holidays). In Nanda's case, heading into 2013 with a product line that had started showing signs of maturity, she also felt a need to keep sales reps and retailers interested in her company by introducing something new every so often. Clockiddie would be her answer.

For a new product that helped with sleep routines for kids, several retailers expressed an interest in carrying the product as a back-to-school item— in this period parents are very open to spending on whatever it took to ensure their children were equipped and ready for school. However, in talking to moms, Nanda also learned that when products are launched for the winter holiday season, there is the added excitement and buzz about what is perceived to be the hot new gift of the season. Therefore, it was a bit difficult to gauge if back-to-school or the holiday season would be the more effective launch period. Because in her eyes Clockiddie was more of a useful tool that parents would encourage kids to develop a relationship with, rather than being just a toy to play with, Nanda was leaning towards an August/September 2013 back-to-school launch. This made timing all the more compressed.

Because of this, she felt it was important to explore additional options in manufacturing, ensuring she had the best partner for the job. In May of 2012, she traveled to China, for what would be her 4th trip in 7 years, to source a factory for the job. She was looking for an outfit with a top engineering team that could be trusted and could deliver reliable quality, as well as be enthusiastic about the new design. Cost was also a factor.

Nanda visited with three new factories on her trip, which consisted in each case of a morning product development meeting and an afternoon factory tour. Before her trip, each of the factories had seen the prototype and specs and discussed the features at length with Nanda as well as provided a quote for development, tooling, and the bill of materials. The initial prototype and tooling costs, as well as development costs including engineering and software masking, seemed to mimic what Nanda expected them to be, under \$100k. The question that still stood in Nanda's mind was could the product be engineered under the current specifications to an acceptable cost of goods and retail price point. From what she saw on her trip there seemed to be a distinct range in each factory's ability to communicate with Nanda, in the expertise of the engineering team, and in costs. Unfortunately, the best fit seemed to come at the highest cost. As Nanda Home didn't have a staff engineer, she felt she had to make the most expensive factory work.

Consequently, Nanda now realized she had to more critically look at simplifying the features, the interface, and ultimately the design to reduce product costs. If not addressed immediately, they could greatly affect time to market. Nanda's manufacturers kept mentioning that all of their

consumer electronics customers want products that are less than \$5 to make, a trend that has stayed consistent since the economic downfall of 2009, creating pressure for Clockiddie to be produced more cost effectively.

As the product moved further along the design cycle, Nanda prepared herself for intellectual property protection. After which, Nanda would need to beta test the product in typical usage scenarios, make adjustments in the design, and take a leap on a small initial run of 1000 pieces. Ultimately the constraints to accomplishing all this are talent, resources, time, and money. Nanda knew that there would be challenges ahead on all these fronts.

A summary timeline Nanda envisioned for moving from concept to prototype to final tooling is given below:

- Early Summer 2012: Product concept and design
- Late Summer 2012: Initial factory visits
- Late Fall 2012: Finalize Engineering and Prototype testing
- Early 2013: Begin tooling
- Spring 2013: Initial production runs and quality control
- Summer 2013: Launch

Future Extendibility: Thinking Long-Term

When Nanda came up with the idea for Clocky, it was intended to be a week long class project. It turned into a 7-year business that was continuing to see growth. But given the speed with which things had moved, the intensity of the media and consumer interest, and the one-woman show nature of the business, Nanda didn't have the time to flesh out what the company would look like as an enduring brand. After the initial prototype for Clockiddie was developed, which proved the mechanics of how the product would move from sitting to sleeping and from yawning to changing time, Nanda's team began to seriously consider what the future of the product line would look like, and what additional product offerings could exist as part of the line. Nanda believed that for an innovation concept to have a long "shelf life", it needed to provide the innovator opportunities to build on it in the future. Anticipating those early on could be very important - as it would allow making early design choices that would facilitate these next-generation modifications and upgrades.

One route Nanda was particularly intrigued by was to embrace unpredictability as a way to keep objects fresh in the minds of consumers. Nanda had been asking herself the question 'how can objects change over time as their users do,' and 'how can objects forge deeper emotional connections between people?' Most objects in our homes are static and non-evolving. Nanda and her team realized that what they had with Clockiddie was not only a children's product that could help solve the age old problem of getting kids to go to sleep on time, but also eventually connect users with friends and family. For example, the Clockiddie, via USB or WiFi, could download a grandmother's recorded bedtime story. Traveling parents could sing a lullaby and send it to their child's Clockiddie for a morning surprise. A form of social networking would ensue. The clock could now be updatable by anyone in the social network, and we could use mobile devices like smart phones to update them. This would make Clockiddie far more interactive than what Clocky had been and expand the possibilities of "gift-giving" - not only could someone get the product as a gift for parents (or kids), but on a continued basis content could be either created or purchased for its users as yet another form of gifting.

Something like this may not come out till well after Clockiddie was on the market, but Nanda needed to plan for it now so that re-work wouldn't be needed in the tooling. Nanda wondered what the costs to incorporate these add-ons into the design would be, and began researching the matter.

The next generation of Clocky

Although Clockiddie represented a major new concept for Nanda Home that consumed much of Nanda's time, she still devoted some effort into managing her rolling alarm clock line. Yet sales of Clocky had matured and even those of Tocky and Tick started to wind down. While this was something to be expected, and she was pleased at how long Clocky was able to sustain momentum in sales, Nanda knew that the price points for these products were not helping. Even with price decreases over time (Clocky down to about \$30-\$35 from its initial \$50 price point and Tocky to about \$55-60 by the end of 2012 at retail), she would often hear retailers say 'If you ever make a much cheaper version, we would be very interested.'

Initially Nanda didn't think she would be interested in pursuing this path, having spent so many years building the rolling alarm clock line and feeling a desire to move on to other product ideas. Besides, she was concerned about her brand's image if lower end products were introduced; a "dumbed down" version of Clocky did not make sense to her at the time. But as often happens, taking a break can often rejuvenate creativity and bring new life to old ideas or change one's perspective about a certain innovation direction. Indeed, after switching gears for over a year to Clockiddie, Nanda was surprised to find renewed energy for extending the Clocky line "downward". One day, she unexpectedly found herself thinking about what a mass-market version of Clocky would look like, and what it would take to engineer something that would retail for \$20 USD, effectively having a COGS around \$5 USD. The 'Pop Clocky' concept was born.

The idea for 'Pop Clocky' literally popped into her head as she was thinking about what could retain some of the general attributes of Clocky - be functional in waking up people with snooze issues yet be funny about how it does so and create some emotional attachment— yet be much cheaper to produce. She knew the "rolling" part of her previous clocks made them more expensive to make. She wondered what could serve a similar purpose, still have some non-stationary element to it, but would be less complex. She imagined a two-part alarm clock design, a head and a base. The head would pop out of a base when the alarm went off. In order to turn off the alarm, the user would have to get out of bed, retrieve the head and place it back on the base. The act of placing the head back on the base would spring load it so that it was ready for takeoff the next morning. The engineering would be simple; a single motor would release a switch, which would activate a spring, loaded to propel the head up and out of the base. The remaining parts would be simple electronics and plastic, and the design could fall within a range of \$5-\$6 USD.

She envisioned several 'Pop Clocky' characters, each with a different head design but sold with the same stationary base containing all of the electronics, available in different colors (see **Exhibit 6** for initial prototypes). The characters would each have their own sounds and names and back story, a powerful strategy in helping to market and build a brand. She was excited about the possibilities!

Reflections on the NPD Journey to Date

As she sifted through cost estimates and re-design sketches for Clockiddie, Nanda stepped back to reflect on the lessons she had amassed throughout her multi-year journey of developing and commercializing new products. A number of insights stood out as she tried summarizing to herself what were some of the most critical factors to being a successful innovator.

1. **Focus and Flexibility:** While it is very important to have a clear vision of products and markets you want to focus on when you start a company, you should be flexible to the notion that the actual product roadmap may be further defined and refined through an iterative and reflective product development process. You cannot be rigid.
2. **Embracing Serendipity:** Flexibility also allows you to be open minded to those serendipitous moments when you come across a potential new product idea. Leverage unexpected creativity.
3. **Facilitating Virality:** Emphasize simplicity, character, and differentiation to generate viral interest in products. Help create the market by using social marketing social spontaneity to your advantage.

Armed with these insights, Nanda felt she was ready to continue her exciting journey of developing products and markets.

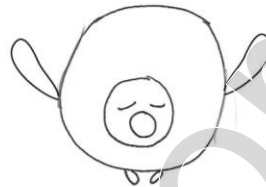
Exhibit 1 Initial Sketches for Clockiddie

A common complaint made by parents of toddlers is lack of sleep. Clockiddie is a clock that helps children learn when it's time to go to sleep, when it's time to nap, and when it's ok to get up in the morning. He's a gentle companion, something kids trust and parents rely on.

it's daytime!



cheeks slowly turn to from yellow to red to signify daytime. he rolls up and yawns



stretches and yawns



and starts speaking messages you record

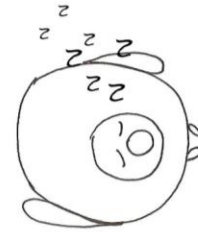
*it's bedtime....
(or naptime!)*



plays back recorded stories, songs and messages
cheeks turn to a soft yellow to signify nighttime



stretches, yawns, and lays down

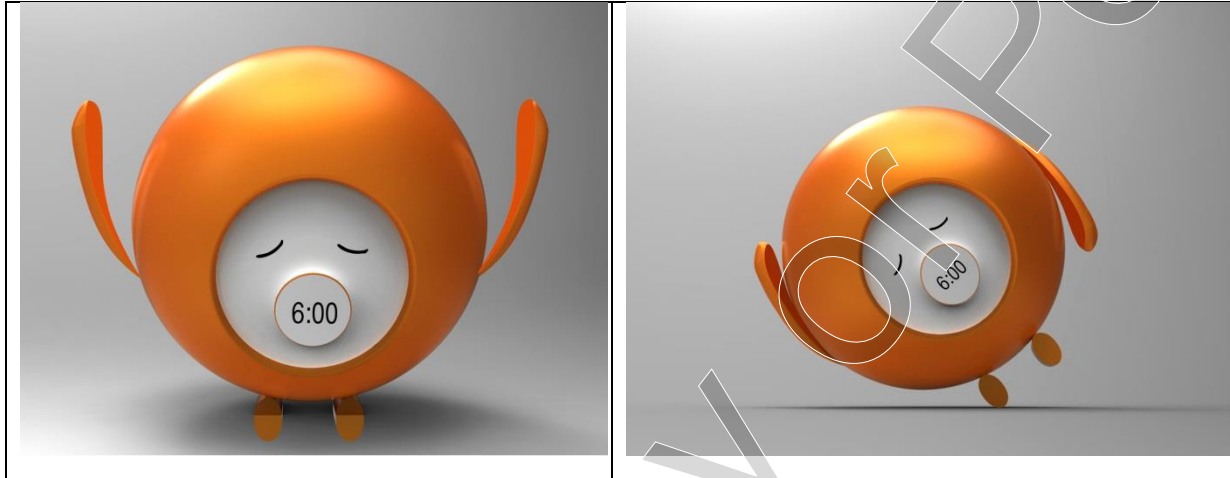


softly snores in white noise

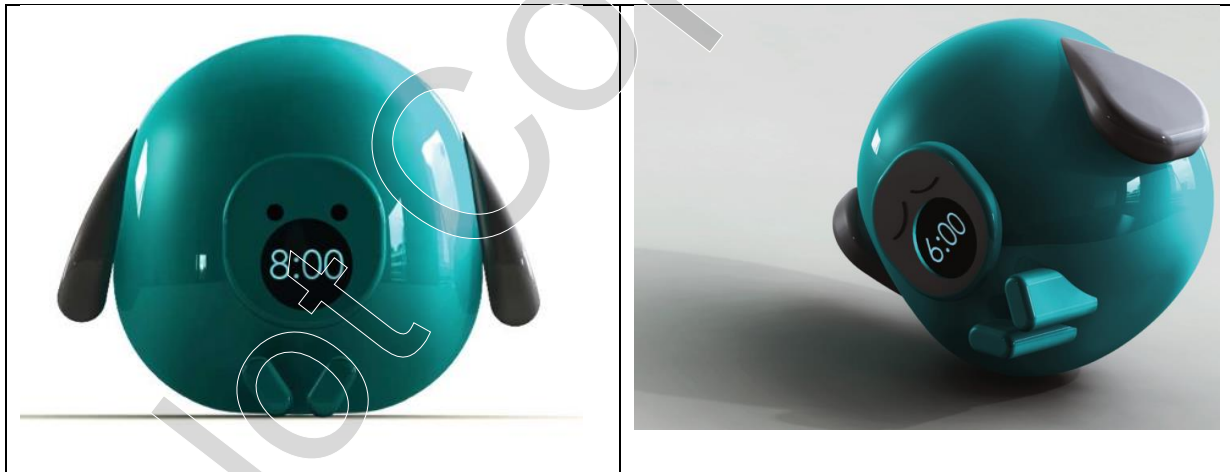
Source: Company documents.

Exhibit 2 Clockiddie initial 3d renderings

Intern 1

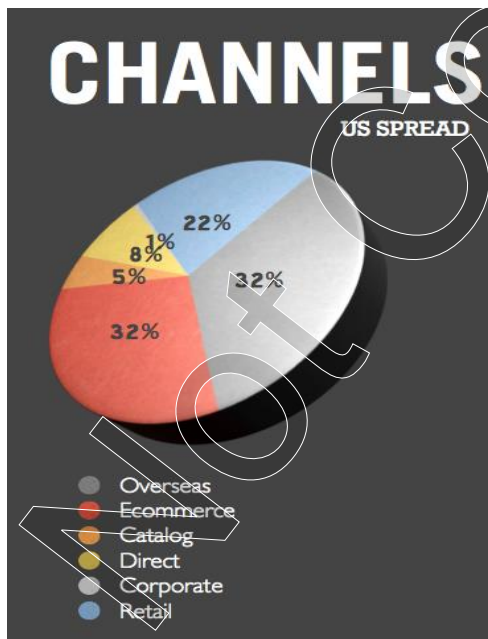
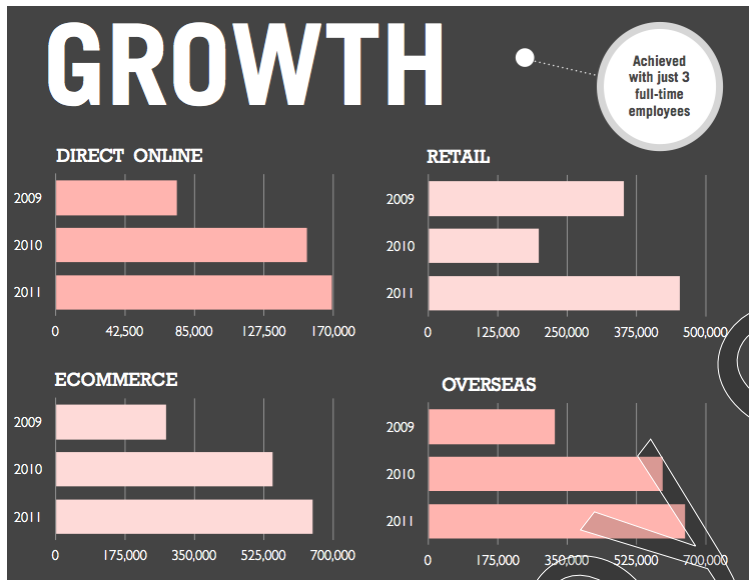


Intern 2

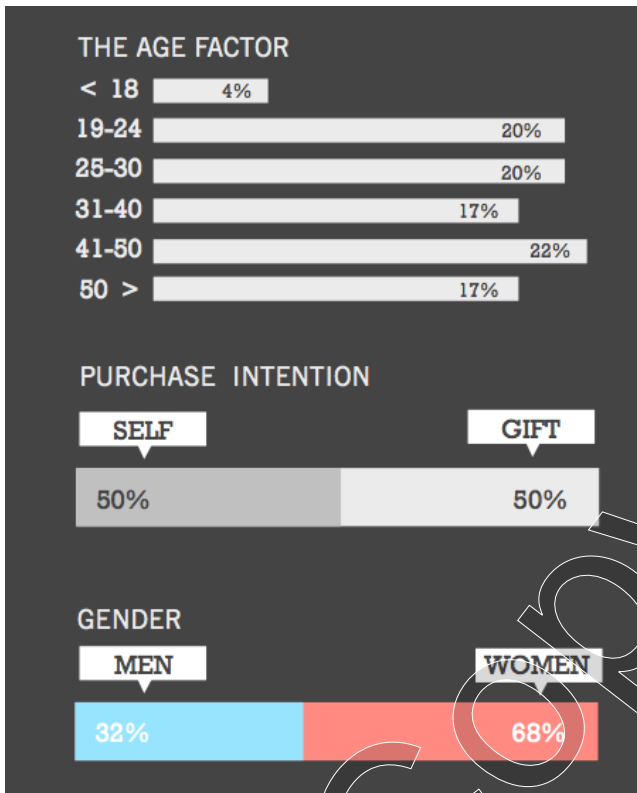


Source: Company documents.

Exhibit 3 Clocky Sales by Channel (USD)



Source: Company documents.

Exhibit 4 Online Purchase Data on Clocky Buyers

Source: Company documents.

Exhibit 5 Clockiddie Prototype



Source: Company documents.

Exhibit 6 Pop Clocky Initial Prototypes



Source: Company documents.

Endnotes

ⁱ Matthew Hutson, "Teddy Bears Make You Friendlier – and Maybe Healthier," *The Blog, Huffington Post*, April 30, 2012, http://www.huffingtonpost.com/matthew-hutson/teddy-bears-make-you-frie_b_1461916.html/, accessed February 2013.

ⁱⁱ Nestor Lopez-Duran, "Bedtime Routines: More evidence and step-by-step guide," *Child-Psych, child-psych.org*, May 15, 2009, <http://www.child-psych.org/2009/05/evidence-for-bedtime-routines.html/>, accessed February 2013.

ⁱⁱⁱ Mae Anderson, "Mom Blogs Drive \$22B Toy Market," *The Fiscal Times*, Associated Press, December 20, 2011, [http://www.thefiscaltimes.com/Articles/2011/12/20/AP-Mom-Blogs-Drive-\\$22B-Toy-Market.aspx#page1](http://www.thefiscaltimes.com/Articles/2011/12/20/AP-Mom-Blogs-Drive-$22B-Toy-Market.aspx#page1), accessed February 2013.

^{iv} "World Toy Sales in 2010 Were \$83.3 Billion, An Increase of Nearly 5 Percent Over 2009," NPD press release, June 20, 2011, on NPD website, https://www.npd.com/wps/portal/npd/us/news/press-releases/pr_110702/, accessed February 2013. And Wendy Goldman Getzler, "NPD: Overall global toy sales up by 5%," *Kidscreen.com*, June 20, 2011, <http://kidscreen.com/2011/06/20/npd-overall-global-toy-sales-up-by-5/>, accessed February 2013.

^v NPD Group, "What is Worth ? 1.7 billion in Europe 5 and only ? 1.4 billion in the U.S.? - Online sales: the new game changer in the toy market," Web Advertisement, NPD Group, 2012, <https://www.npd.com/perspectives/euro-toys-brief/>, accessed February 2013.