# en.Vision

Berkeley ELPP Fall 2022
Team 4: Ramesh Chandrasekharan, Vinod Daga, Justin Wong, Wanghua Wu

en.Vision

## Table of Contents

# Section I: Introduction

en.Vision is a startup focused on enabling on-demand media generation for the content marketing space. Specifically, en.Vision has a platform to generate real-time, online advertising banners and media, based on customer inputs of their products and their desired output theme or marketing vision.

## Small and Medium Business Online Marketing Needs

Finding the most effective online advertising strategies are critical for growth, and this particularly applies to small or medium sized businesses. These businesses have limited resources and smaller budgets for marketing, compared to large businesses. The goal of en.Vision is to empower these businesses in increasing their online presence and reachability.

### Relevant Ads:

The best way to get end-user attention is by showing <u>relevant</u> Ads so that users can <u>relate</u> to them. Relevant ads are all about the user experience, which may be based on user profile, current events, trends, etc. A user is most likely to pay attention to such an ad and potentially click and explore the product and/or service when there is relevance.

For example, a hiker searching for flight tickets to Hawaii sees an airline advertisement with Hawaiian mountains in the background. This may pique the hiker's attention. In an ideal scenario, the website that the hiker is on can be smart enough to create this customized ad, on-the-fly, with the Hawaiian mountains paired for the airline company. This is the technology en.Vision plans to drive the future towards.

### Low Overhead for Content Creation and Distribution

Since small and medium sized businesses have tight budgets, low cost and labor overhead for content creation and distribution are desired. Existing marketing best known methods are to focus on a key target audience and develop the marketing strategy around this clientele. Due to the limited budgets, this is typically considered the best ROI for marketing exposure. Any additional methods to relieve companies of micromanaging the advertisement designs, costs of outsourcing the work to advertising agencies or contractors, and shortening the turnaround time of curating and procuring the ad banners and marketing material is greatly desired. Once the ads are on hand, the go-to-marketing and proliferation strategy of a small or medium sized business also requires significant resources and strategy to correctly display the ads to reach the relevant viewers.

As a result, small and medium sized businesses currently need to invest significant time and cost into getting the marketing correct, which takes away resources from these businesses that would otherwise go towards focusing on their core product growth. en.Vision's technology and product solution will help these small and medium businesses resolve all these challenges.

# Customer Benefits



Figure 1. Benefits to customers to utilize AI ad generation for online marketing

By utilizing en.Vision's technology to automate curated content generation, customers may realize four key major benefits:

1.  ***Customization:*** Content is created based on the user profile, history, current trends, events, etc.  User profile and browsing history helps the AI algorithm understand, define and predict the user's personality and interests.  Current trends may be mined from social media (such as Twitter, Meta or other platforms) and are fast moving fads or behaviors.  Events are single (and possibly recurring) themes or celebrations, such as a major sports game, festival, holiday, election, season, etc.  All these metrics can be embedded to automate the curation of advertising content to generate a relevance to the viewer.
2.  ***On-Demand:*** Content generated through AI algorithms can be done in real-time.  Existing methods require significant time and resources to curate a cache of different ad images to hopefully target the ad viewer correctly when the ads are called for.  With an algorithmic image generator, these ads can be generated when needed, matching the speed of existing ads on websites, but with the additional dimension of flexibility that does not currently exist.
3.  ***Cost:*** Low cost and subscription model helps to maintain high adoption of this service.  In addition to the low cost barrier of using en.Vision's technology, additional cost savings are realized from needing a smaller marketing team and/or less reliance on third party contracting companies to curate the targeted ads.  Additionally, shorter turn-around time will empower these companies with faster and more meaningful ads that may be time sensitive, reducing additional pre-existing churn in their current ad creation methodology.
4.  ***Ease of use:*** Integration with various online marketplaces and eCommerce platforms, such as Amazon, Etsy, Walmart, etc., will bring ease of distribution of the ad exposure to the desired targeted viewer / clientele.  As a result, the marketers will sink significantly less time and effort to focus their ad's target audience.  In a paradigm shift, en.Vision will allow businesses to focus their efforts on reaching a breadth of customers.  The technology will allow ad curation for multiple profiles of targeted audiences, all through an automated means.

# Section II: Technology, Differentiation, Market

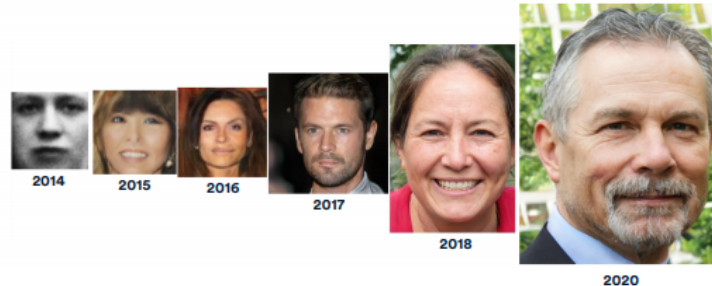## Real-time Content Marketing Generation with GAN Technology



Figure 2. Evolution GAN image generation from 2014 to 2020 [1]

Within the last decade, Generative Adversarial Network (GAN) machine learning algorithms have developed quickly into a method to generate realistic images, Figure 1.  Building upon this technology, Text-to-Image GANs are a derivative that have gained popularity as an approach to control the attribute entanglement that's currently the main challenge with GAN functions.

Google Deep Dream and Open.ai's DALL-E are examples of AI image generation that encompasses various artistic styles as well as formulaically creating objects and compositions. This nascent technology is rapidly increasing in realism and functionality at breakneck speeds, and is ripe for market disruption.

In the online advertising space, ad banners are one-dimensional, predominantly with rudimentary animation embedded into GIFs to try to catch the viewers' attention.  A dismal 0.46% click-through-rate (CTR) for display ads shows how ineffective posting ads are, while search ads have a slightly higher 3.17% CTR.

Using GAN technology to generate advertising banners addresses fundamental headwinds with the current online marketing strategies.  Traditionally, it is recommended to tailor target advertisements to their intended specific clientele, thereby requiring the marketer to focus on a specific user niche, especially given the limited resources for content generation.  Given the near real-time output for image generation of GANs, multiple areas of customer focus may be curated, allowing not long depth into a niche customer reach, but enabling the reach of a breadth of different customers.

Additionally, licensing of intellectual property, such as stock photos or actors, will no longer consume resource overhead.  GANs inherently enable the creation of image likeness akin to creative content, enabling virtual actors or props to be generated to achieve the effect of the desired advertisement.

Finally, since GANs are a subset of AI training algorithms, additional previously intangible metrics may be embedded into the GANs for specific optimization.  For example, the virality or

why certain ads get clicked on more often, may contain subtle features that are not readily evident to humans. However, the ad response behavior and corresponding CTR and ad conversion metrics may be trained through AI to 'learn' this subtle behavior. As a result, it is possible to refine the GAN model with these metrics to generate ad images that will have a higher likelihood of viewers paying attention and clicking on those ads.

In summary, GAN technology represents an impending paradigm shift in image and content generation. It enables realistic images to be created with less overhead and nearly instant, fitting well the classic mantra for competitive advantage: faster, better, cheaper.

## Market Landscape

In 2021, small and medium sized US businesses spent approximately $450M in online advertising, specifically in display advertisements. Based on the amount of money spent by marketers and the resultant CTR and conversion rates, display ads came out roughly to $0.58 per click. Taking this cost along with the average CTR of 0.46%, it can be extrapolated that the $450M roughly equates to 166B display ad impressions.

The $450M or 166B display ad impressions is the Serviceable Available Market which en.Vision will initially focus to penetrate into and scale from. Of the small and medium sized US businesses in the US, 5.4M of these businesses employ 1-500 employees, of which roughly 54% have online presence. This results in 2.9M businesses that en.Vision is targeting, with a goal of getting 5000 of these businesses to use en.Vision's content generator in the first year of operation. Based on the calculations performed for ad impressions, 5000 customers using en.Vision would equate to 674M ad impressions generated by en.Vision.

The perceived Total Addressable Market is $78B online advertising, consisting of display ads ($56B) and internet search ads ($22B). This encompasses both large and small US businesses, and represents the potential market segments that en.Vision will be able to target and grow into.
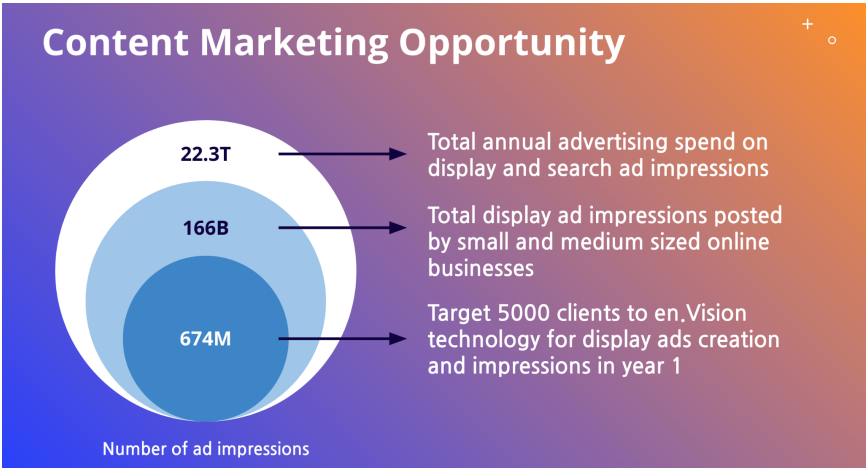


Figure 3. TAM & SAM of Content Marketing for Online Advertising (Display & Search)

# Section III: Business model

en.Vision's business model builds off of the market need for improved CTR and our understanding of the competitive landscape. In the initial phase, the focus will be on generating repeat customers, in which the data and feedback will help en.Vision to improve on the ads on the basis of CTR and additional ad metrics. en.Vision will offer a monthly subscription, which has a finite number of allowable ad images that can be generated. Additional content generated over the specified image cap will then be charged on a prorated basis. The goal will be to improve the ads generated by the en.Vision based on the data from customers as part of the subscription, but this is envisioned to be done manually or in a supervised fashion.

Eventually, once en.Vision has reached the point where ad content can be generated in a dynamic, real-time fashion, the business model will then be centered around charging on the basis of CTR and potentially doing away with the subscription model. The focus will then be on payments for content generated and traffic generated on the basis of the same. There are two possible ways for such the second phase of the business model to work:

1. CTR based payment from businesses, plus
2. Revenue sharing between host services, such as Magneto, who benefit from both increased traffic and from en.Vision. This will occur on the basis of a CTR metric as well.
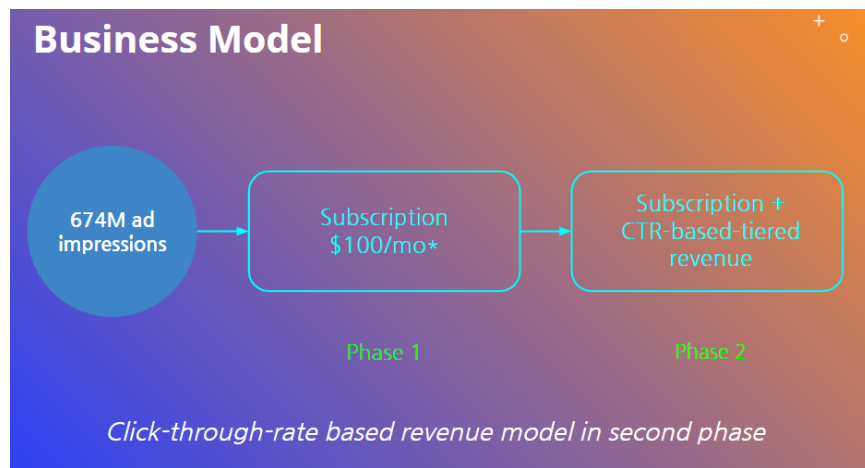


Figure 4. Business model

# Section IV: Competitive Landscape

The competitive landscape can be divided into companies which generate images vs the ones which generate text. On another axis, the market can also be divided into companies which create content for ads vs image or non-image content for non-advertising purposes. There are quite a few text and adaptive-text companies such as Pencil and Persado that aim to tune text content to enable better customer engagement and increase CTR. Though the concept of improving advertisement and text on the basis of CTR is not novel, it is currently non-existent in the context algorithm that can manipulate images. en.Vision intends to become the market leader in being media and content marketing focused and not just niche AI/GAN image-generation.

The image generation space is increasingly populated by stable-diffusion-based text-to-image generators or GAN based image generators (such as Dall-E) that extend to both pictures and videos. The current technology is nascent and currently unsuited for rapid and dynamic changes in images, as a refined generator requires a reasonable amount of training and resources to develop a robust, generalized image generation algorithm. Video GAN technology may be a bit further away, but with the rapidly developing field, the en.Vision team foresees that the current technological forefront is sufficient and may allow static image generation to be refined enough for practical use in this advertisement space.



Figure 5. Competitive Landscape of potential content marketing vs content generation

# Section V: Go-to-Market Strategy

In the initial phase, small and medium sized online business retailers will be targeted. These companies have limited budgets for advertising material, and yet, need highly contextual ads to boost sales to scale their business. en.Vision's product helps these businesses with a solution that reduces ad generation turnaround time as well as propensity to improve ad CTR. To reach these small online business owners, partnerships with major eCommerce platforms will be the go-to-market strategy. For example, Magneto, Shopify, and several other prime candidates in Figure 6 are whom en.Vision will plan to partner with in the initial phase. More than 250,000 merchants worldwide use Magneto as their eCommerce platform, accounting for 12% of all eCommerce sites. Shopify is popular amongst small and medium sized businesses and has over 2 million merchants as of Dec 2021. Having these eCommerce sites recommend our content generation services will help convince and on-board these business clients to utilize en.Vision's content generation technology and may be more effective than targeting via search and display ads.



Figure 6. Potential partners for market adoption.

## What do we offer in this partnership?

eCommerce platforms have two major revenue streams: a recurring subscription component called 'Subscription Solutions' and a merchant success-based component called 'Merchant Solutions'. Using Shopify as an example, 30% of its 2021 revenue came from subscription solutions while the remaining 70% (i.e. $3.27B) came from merchant solutions, which included accepting payments, shipping, fulfillment, securing working capital, etc. [2]. How does Shopify make money through merchant solutions? Below are two examples:

- **Shopify Payments:** Shopify principally makes money in merchant solutions through payment process fees and currency conversion fees from Shopify Payments, which is Shopify's payment gateway. Based on subscription plans, Shopify charges merchants 2.4% to 2.9% of the GMV of transaction.
- **Advertising:** Revenue is generated when merchants click on apps that are advertised by its partners of the Shopify App Store.

Therefore, Shopify has noted that enhancing its ecosystem and partner programs on its platform are critical to its future success, through enabling merchants to use features on the platform to grow their businesses. In fact, to attract the best developers in the world, Shopify changed its revenue share model in 2021, offering app and theme developer partners a zero-percent revenue share on the first million dollars that they make annually on the Shopify App Store. App and theme developers then pay a 15% revenue share on earnings after the first $1 million [2]. en.Vision's ad generation service provides highly contextualized ads based on GAN technology to increase CTR, conversion rate and additional metrics, thus increasing merchants' sales. Once these advantages have been demonstrated, en.Vision will gain differentiation amongst the many partners and move to a top tier level, allowing en.Vision to further leverage more data from the eCommerce platforms, eventually to make even more dynamic content generation that further boost merchants' sales.

## Two Stages of Partnership

In the initial phase, featured articles on ad content generation using en.Vision will be included in the eCommerce platform's resource page. This will attract a fair amount of traffic to en.Vision's website, where more examples will be available to showcase the content generation capabilities. Each prospective user will have a free trial opportunity to generate images based on their product image input and their desired theme to create the curated content. The trial process will demonstrate how easy, fast, intuitive, and high quality the generated ads will be. Registration will be required for the trial, which helps to potentially retain the prospective customer, as well as valuable data on customer's contact, product, needs, preference, etc. en.Vision will offer different tiers of subscription plans. The basic trial plan will be $100 per month, which will be comparable to competitive offerings and attract the initial users who have this marketing needs. With the data collected from these initial users, en.Vision will be able to improve and refine the AI algorithm and app development, setting up en.Vision's technology for further differentiation.

In the second go-to-market phase, an app will be ready for integration on en.Vision's partners' ecosystems. This app will initially provide manual ads generation based on users' inputs, and will eventually support dynamically generated and updated ad content according to seasons, trends, and various heuristics that en.Vision has garnered to increase viewer CTR on those images. en.Vision expects large customer growth in this phase and more subscribers on the tier where content generation is infused with CTR and additional ad metrics, and is dynamically generated. en.Vision's business model will evolve from an initial fixed monthly subscription fee to a CTR based pricing model, to catalyze the biggest product differentiation en.Vision possesses compared to traditional content generation methods and competition.

# Section VI: Product Roadmap and Opportunity

A key part to growing en.Vision will be in its technological and product offerings. The technology roadmap will primarily dictate the differentiated product offerings from en.Vision with an underlying strategy based on technology development in four phases. The development phases will be additive, with each phase requiring technological readiness of a previous phase to further the differentiated content generation from en.Vision.
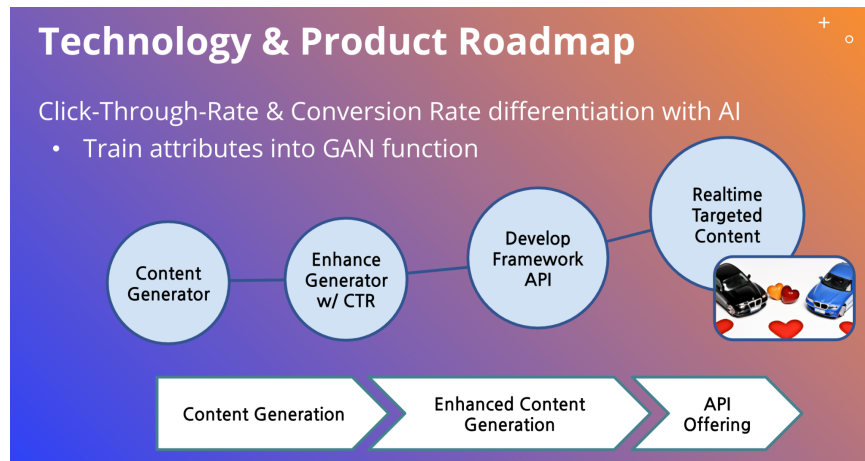


Figure 7: Technology and Product Roadmap

## Technology Roadmap

The first phase will be to Develop the Content Generator, which predominantly exists as the current implementation of existing Text-To-Image GAN image generators. These generators are able to produce near-realistic images with the desired themes and objects and may be utilized along with separate frameworks, such as drawing text on images, to automatically construct the banner ads as desired by clients.

In the second phase, the focus will be to Enhance the Content Generator with additional metrics. Online advertising metrics, such as CTR and conversion rate, may be harvested through partnership platforms as well as through seeding advertisements. Machine learning allows the content generator algorithms to be trained and infused with these advertising metrics. This will create significant product differentiation with the competition, as non-tangible behavior, embedded in the image itself, can be utilized to make the banner ads themselves more attractive to the viewers, resulting in higher CTR.

With the differentiated GAN, the next technology development phase will be to develop a framework that will be able to generate images based on various viewer inputs or interactions from the target websites that will host en.Vision's content marketing technology. The framework API is needed due to the technological limitations of static ad banners. This will be the first step towards unsupervised content generation, where the API will be smart enough to understand the product or theme being marketed and have the ability to dynamically adjust to stay relevant.

In the fourth phase, the vision of creating content marketing that dynamically adjusts for the end viewers will be achieved. Once the API and framework in the third phase is functionally viable, focus will be to improve the API to adapt real-time as well as continuous improvement to train the content generator on themes relevant to the day, such as virality and other socially relevant themes. The API may be broadened to work on various digital media devices, such as the Metaverse and VR spaces, enabling businesses to be empowered with broader content marketing techniques that stay relevant to the viewers. en.Vision hopes to lead in driving and changing content marketing in a paradigm shift in the industry to one that becomes hyper-contextualized, both empowering the marketers as well as more meaningful advertising content to the viewers.

## Product Roadmap

Parallel with the technology roadmap, en.Vision will have product offerings reflecting the readiness of the technology being developed. In the initial phase, en.Vision will take advantage of the existing content generator technology to offer curated content for clients. The competitive advantage will be the use of a customized, self-directed content generator that will be able to help marketing clients with content generation with immediate turn-around time, allowing businesses to forego the need to rely on contracting companies and ad agencies for marketing content.

Once en.Vision has reached technological development in the second phase milestone with ad metrics infused in the content generation, en.Vision will be able to offer a differentiating content marketing as a premium product. The metric infused content will enable more potent ad CTR for the marketers and will allow en.Vision to develop several product tracts. The original content generator will still be a standard offering, and the more advanced content generator will be positioned at a higher subscription cost due to the generated images' improved potency for higher CTR and user engagement.

When en.Vision's technology development has reached a minimum viable product (MVP) for the dynamic content generation API, en.Vision will start to offer this API via partnerships with pre-existing customers to gain a foothold in transitioning the shift to dynamic content generation. Through proliferation of the API, en.Vision will be able to lead and position itself as the key driver of a new content marketing ecosystem.

Sources:
[1] https://aiindex.stanford.edu/wp-content/uploads/2021/11/2021-AI-Index-Report_Master.pdf, page 52
[2] https://thestrategystory.com/2022/03/18/how-does-shopify-make-money-business-model/