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CENTRAL EUROPEAN CASE COMPETITION

THE YUSPIFY CASE

2021

THE YUSPIFY CASE

yuspify

Introduction

Márton Vértes and György Herbszt were waiting for this evening for some time now. The Covid-19 pandemic restrictions were finally lifted and they could continue their beloved hobby - playing squash. They were bursting with energy as they raced neck-to-neck in their match of best of 5 games. It was good to take their minds off current business issues. However, during the breaks between games their thoughts inadvertently wandered back to some crucial questions they faced at their company, and they quickly shared their notions with each other. Both of them worked at Gravity Research & Development, an IT vendor company headquartered in Budapest, Hungary, specializing in recommender systems with their personalization product portfolio.

The company offers its new generation personalization engine under the brand name Yusp for enterprise customers from all industries and geographical markets. Márton is heading the Enterprise Division, targeting large customers, while György is managing the Yuspify Division, publicly launched in 2020 with the aim of extending the company's personalization services to small and medium-sized (SME) e-commerce businesses. The new product and target group require a new marketing and sales approach as well, the details of which are currently being formulated.

As Márton and György get ready to continue their match, they cannot help but think about the most pressing questions: Who should they target with the new Yuspify product and with what marketing strategy? What can they offer to potential strategic partners in client acquisition? And who exactly would these partners be? Is their current pricing model accurate or should they rethink it? Which geographical markets are worth focusing on first? These questions have been among the key topics in past months' meetings with no evident answers in sight so far.
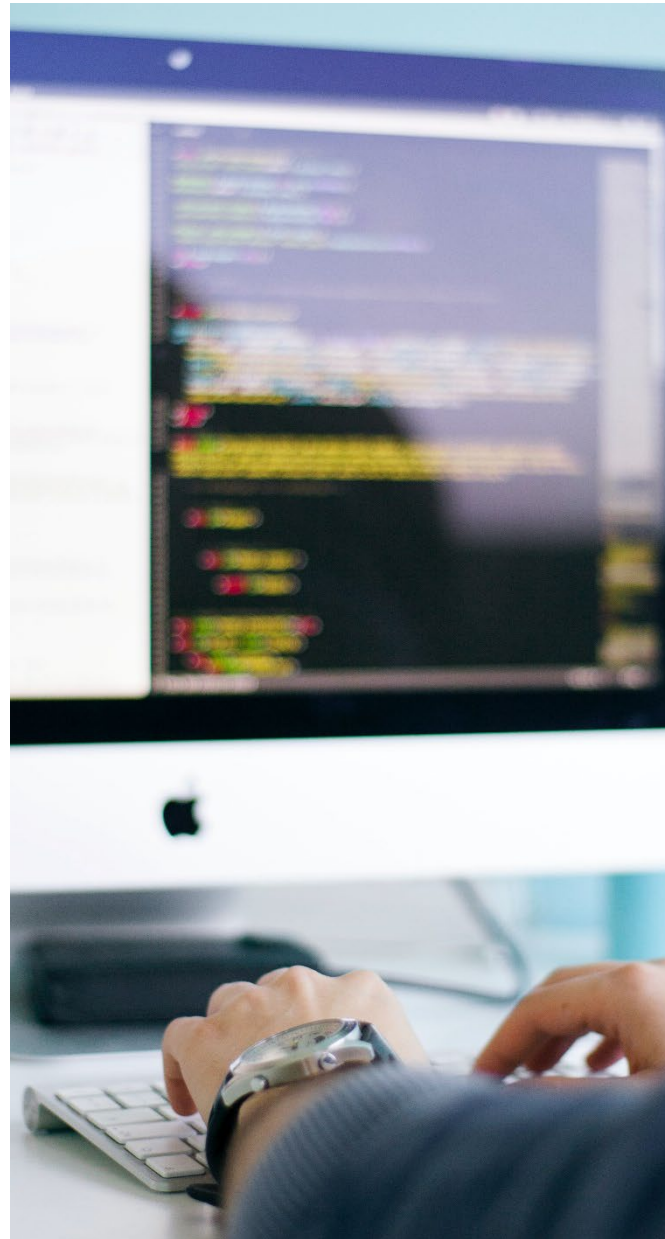
Trends in the e-commerce sector

E-commerce (or electronic commerce), the activity of electronically buying or selling products on online services or over the Internet, has come a long way since the term was coined in 1984. Its actual history began on 11 August, 1994 with the first ever online sale: a man sold a CD to his friend through his website NetMarket, an American retail platform. This was the first example of a consumer purchasing a product from a business through the internet. Since then, online retailing (one area of e-commerce) reached global sales of 3.53 trillion US dollars in 2019 and it is projected to grow to 6.54 trillion US dollars by 2023. This dynamic growth in sales also means an increasing share of retail sales: in 2019, e-retail sales accounted for 14.1% of all retail sales worldwide. This figure is expected to reach 22% in 2023. The fastest-growing online retail market is India, followed by Spain and China. The development in these countries is strongly connected to the constantly improving online access, thanks to the advantages of cheap mobile broadband connections. The average order value of online shopping orders is still higher via desktop but mobile e-commerce sales are improving. In 2019 almost 2 billion people contributed to these figures, and the global number of digital buyers is expected to grow further in the coming years. The coronavirus pandemic also assisted this boost. Online retail websites have made strong traffic gains as large parts of the population are staying at home and ordering items online which they usually would purchase in-store. Amazon.com had a monthly traffic average of almost 3.68 billion visitors in 2020, followed by eBay.com with 1.01 billion visits on average each month.

There are four main types of e-commerce business models: business to consumer (B2C), business to business (B2B), consumer to consumer (C2C) and consumer to business (C2B). B2C businesses sell to their end-users and this model is the most common one. As B2C purchases have a shorter sales cycle than B2B purchases, B2C businesses typically spend less marketing dollars to make a sale, but also have a lower average order value and less recurring orders than their B2B counterparts. C2C businesses connect consumers to exchange goods and services and typically make their money by charging transaction or listing fees. The key challenge here lies in quality control and technology maintenance. C2B businesses allow individuals to sell goods and services to companies. The model's competitive edge is in pricing for goods and services. Consumers have the power to name their price or have businesses directly compete to meet their needs (e.g. companies pay social media influencers to market their products).

Much has changed since the first products were sold online in the 1990s. Early instances of e-commerce focused on the transaction, with little emphasis on improving fulfillment, customer service or loyalty. Then, organizations began to improve commerce operations in response to customer desires, offering features like inventory visibility, product reviews and package tracking. Recently, organizations focus on more strategic initiatives that will give them competitive advantage.

The value offered by these organizations can be delivered in many ways to the customers. Four popular approaches are D2C, white/private labeling, wholesaling and dropshipping. D2C or direct to consumer cuts out middleman organizations to reach customers directly. White labeling means applying your name and brand to a generic product purchased from a distributor, while in case of private labeling, a retailer hires a manufacturer to create a unique product for them to sell exclusively. In a wholesaling approach, a retailer offers its product in bulk at a discount. While traditionally a B2B practice, many retailers offer it to budget-conscious consumers in a B2C context. One of the fastest growing methods of e-commerce is dropshipping. Typically, dropshippers market and sell items fulfilled by a third-party supplier, and they act as a middleman by connecting buyers to manufacturers.

An important question is how organizations are able to participate in e-commerce. For this, one would need an e-commerce platform, which is a software application that allows online businesses to manage their website, marketing, sales and operations. Many platforms offer powerful e-commerce features, while also integrating with common business tools. Generally, there are three different ways to a platform solution. The first is to build your own e-commerce platform, but this is out of the question for most businesses because of the costs and knowledge needed. The second is using a plugin (e.g. for WordPress), which is not ideal if you're looking to build and grow a legitimate business — even a small one. The third option is to use an existing e-commerce platform, which can come in one of three versions: open-source, SaaS (software-as-a-service) or headless commerce, of which the latter two are gaining more popularity because on average, open-source e-commerce platforms and sites have a higher cost of ownership versus SaaS or headless commerce models. These e-commerce platform solutions can really help brands and businesses get to the market quickly and simply through their hosting environment in the cloud.

WooCommerce was the worldwide leading e-commerce software platform in 2020, with a market share of 28.24 percent. Squarespace Online Stores and Shopify ranked second and third, with shares of 17.69 and 10.98 percent respectively, followed by MonsterCommerce, WixStores, Magento, 100sklepow, Weebly e-commerce, SAP Commerce Cloud and OpenCart.

The contemporary trend in e-commerce advises companies to change their traditional business model from having standardized products, homogeneous market and long product life cycle to focus on varied and customized products. As a result, customers end up with more choices of products, so the information of products for customers to select and meet their needs becomes crucial, and the use of a recommender system is suggested. This system helps recommend the proper products to the customers and helps customers make the decision during the purchasing process. The main ways to do this are: recommending products to customers directly, providing detailed products' information and showing other buyers' opinions or critiques. A key element in recommender systems is personalization. This is highlighted by Gartner as one of the hot future trends in digital commerce, and relies on advanced customer analytics as a key enabling technology leading to superior customer experience, supporting both personalized and unified experience.

The SME personalization market

Although Gravity's SME personalization software, Yuspify is aimed at a quite specific target market, there are some direct competitors with very similar offerings as well as some bigger players with substitute products as part of their more complex packages.

Stand-alone SME vendors are hosted on third-party cloud providers and typically target larger e-commerce platforms like Shopify, WooCommerce or PrestaShop as platform plug-ins and may not be available for custom-made e-commerce stores. The following competitors fall into this first category: Nosto, LimeSpot, DataCue, Recommendify, Recombee, Personyze, Personalization.

Besides the direct competitors listed above, it is worth mentioning the personalization modules of Google and Amazon offered on top of their cloud infrastructure, also available for SME clients with lower traffic. Although their offerings in terms of product modules and customization are limited compared to stand-alone SME vendors, they serve as a good supplement to their other services.

The different vendors don't necessarily follow the same pricing methods. The two main approaches to pricing in this segment is traffic-based and revenue share-based pricing, examples of both can be found in the list of Yuspify's competitors. Amazon Personalize, Google Recommendation AI, Personyze, Personalization and Recombee are the ones with recommendation request-based pricing, while LimeSpot calculates their fees based on generated revenue.

Requests per month	Amazon Personalize	Google Recommendation AI	Personyze	Personalization	Recombee
50k	$151	$13.5	$149	$80	$99
100k	$151	$28	$250	$170	$99
1 M	$227	$343	$450	N/A	$600
10 M	$1,512	$3,493	$1,450	N/A	$2,494
100 M	$5,880	$34,993	$8,650*	N/A	N/A
1000 M	$31,500	$349,993	$80,650*	N/A	N/A

Table 1: Comparison of traffic-based pricing of SME competitors
* Calculated but not clearly listed on website

Other vendors offer revenue share-based pricing, when the cost of the personalization service for clients is proportional with the added value of the service. The difference between LimeSpot's Silver and Gold plans are the extra functionalities in the latter one, like A/B testing and some analytics functionality. Above $90,000 monthly revenue, LimeSpot offers custom pricing.

Revenue per month	Limespot Silver	Limespot Gold
$5000	$10	$20
$10,000	$20	$30
$20,000	$40	$75
$50,000	$90	$180
$100,000	$150	$325

Table 2: Comparison of revenue based pricing of SME competitors

Recommendify has a product catalog size-based pricing: clients have to pay either $25, $50, or $80, having less than 500, between 500 and 1999, or at least 2000 products, respectively.

DataCue offers four packages in total that differ in the functionalities offered and the platforms for which they are available (Basics and Essentials packages are only available for Shopify customers, the Standard package is also available for PrestaShop and WooCommerce customers, while for Magento only their Premium package is offered). Each package has a fixed monthly fee.

Finally, Nosto, one of the leading players in this segment, continuously changes its price scheme. They currently have a minimum fee of $99 monthly, no additional information is available.

Gravity Research & Development

Gravity Research & Development, the company that offers a state-of-the-art personalization product portfolio under the brand name Yusp and a self-service personalization software called Yuspify was founded in 2009 by four engineers and researchers specialized in recommender systems. However, the story of Gravity as a team dates back to even earlier when the same four people decided to enter the biggest personalization-focused competition ever held called the Netflix prize.

The competition took place between 2006 and 2009 with the participation of thousands of teams from all around the world. The instructions given by Netflix, the organizer and one of the groundbreakers of recommender systems, can be summarized quickly: competitors had to develop an algorithm that would improve Netflix's own in-house solution by at least 10%. Team Gravity (consisting of Domonkos Tikk, now CEO of Gravity R&D, Bottyán Németh, now Product Owner and Marketing Director at Gravity R&D, István Pilászy, now Head of Core Development and Gábor Takács) was among the competing teams, who later joined forces with others and after 3 years of successful participation managed to tie for first place, which apart from the invaluable experience meant significant press attention.

The four team members then decided to slightly turn away from research and build a company around their developments and capabilities related to recommender systems, thus Gravity R&D was born. Three of them, Domonkos, Bottyán and István, are leading the company to this day. In the past 12 years, the organization changed and grew significantly, now operating with four business lines, serving customers in more than twenty countries and employing 35 people. The brand name was changed from Gravity to Yusp in 2017. Since then, all external stakeholders refer to the company under that name, and all the marketing, sales and technical materials are labeled as Yusp.

Current target markets of Gravity

Gravity assesses potential geographical markets to target based on their competitors' presence in a certain region, their own presence and history in that region and the availability of attractive opportunities for Internet service providers based on the relevant characteristics of the region's economic status. Based on the analysis, Gravity has been focusing its sales expansion efforts and implementation resources on three salient regions in the past years. The first of the territories that presents great potential is the APAC region, particularly Japan, South Korea, Vietnam, Malaysia, Singapore, India, Indonesia, and Australia. The second turned out to be some of Central and Eastern Europe and Western Asia, and two large markets in the region, Russia, and Turkey. Although Gravity already built itself a strong presence on most of these markets either through active clients or partnerships, there is still a large untapped potential in these areas that could be leveraged.

Two types of countries were assigned to the second tier of Gravity's focus, both of which hold promising opportunities in the medium term. These are either large, well-developed markets with a high concentration of competitors with local advantages (such as the US, Canada, or most of Western, and Central Europe), or they are emerging territories on which Gravity has some former, at least regional experience, but where the company is far from being strongly rooted (like Brazil, Mexico, Poland, Romania, the Philippines, and Taiwan).

Countries assigned to the third priority group might be relevant in the long term but they are generally less attractive than the previous ones. This category consists of three types of markets. The three Nordic countries assigned here (Denmark, Finland, and Norway) and New Zealand are well-developed, therefore strongly impacted by competition, while also limited in size. The African countries (Egypt, Morocco, Nigeria, and South Africa) show promising scale and growth but it is less likely here that Gravity can leverage the appealing opportunities without building investment-heavy local presence. Finally, the Central European and Balkan states (Bulgaria, Croatia, Serbia, Slovakia, and Slovenia) are neither particularly significant in market size or growth potential, but due to its regional experience and presence Gravity could serve them relatively easily, in case favorable prospects appear.

Gravity's business lines

Currently, Gravity R&D is operating with 4 distinct business lines, each focusing on a different target segment with its unique offering:

- **Customer Success Team (a.k.a. Yusp):** The Customer Success Team is the company's Enterprise Division, offering a product portfolio called Yusp. Yusp covers all primary product modules of personalization engine providers defined by Gartner along with complementary offerings and customized solutions. This division operates in a software-as-a-service business model and serves customers with significant traffic on their online platforms creating a huge amount of user data. More specifically, this means their customers are generating monthly page view numbers (which equals the number of unique users on a website multiplied by the number of subpages viewed by a single user on average) of at least 10 million and often reaching hundreds of millions. Also, the amount of recommendable content on their website (which can mean anything from products to buy, articles to read or videos to watch depending on the business model and industry) ranges from a couple thousand items to millions. The Customer Success Team works with clients from all around the world and from various industries. Most of their customers can be sorted to two main categories based on industry: e-commerce (including online stores, marketplaces, classifieds etc.) and content providers (publishers, news sites, video streaming providers etc.) as these are the most typical use cases for personalization. However, there are several less typical use cases in their portfolio as well, like a job listing site, a B2B news agency and a restaurant finder application, just to name a few. This business line offers highly customized solutions based on the unique requirements of their clients, that is why they are able to offer services to companies in various industries operating with different business models. This also means that an integration project typically takes longer to implement (typically 2-3 months but can take up to 6+ months as well) and the costs the client has to bear depend highly on the required effort from Yusp's team.
Not too long ago, the Customer Success Team and the Yusp product portfolio used to be the whole offering of Gravity R&D. The change came about in the second half of 2019, when due to internal developments and strategic partnerships the company was restructured and thus the four business lines were launched.

- **Yuspify:** Yuspify is the other division of Gravity operating in a software-as-a-service model. The product, Yuspify works on the same underlying technology as Yusp but offers limited possibilities in terms of product modules, traffic capacity and customizability. The idea behind this division was to make Gravity's sophisticated machine meaning-based personalization available for small and medium-sized e-commerce businesses with a less

significant online presence as well by making the solution much more affordable to these companies thanks to the self-service integration process and reduced monthly pricing. Customers can integrate the Yuspify engine with their website quickly and with limited support from the team, so no one-time development costs occur. Yuspify is constantly working on broadening its offering in terms of available product modules, but at the moment, only product recommendations and search personalization are available.

- **Retargeting:** Gravity's Retargeting Division was created as a result of a strategic relationship with a leading content discovery and native advertising platform, that helps users explore the most interesting content on publisher and advertiser sites. Retargeting means displaying ads or any content of a certain site (the advertiser) on another third-party website that is typically an online magazine, news site or social media site (the publisher) in order to generate more traffic by redirecting them to the advertiser's own platform. Gravity's role in this cooperation is making their placements more accurate to users by taking advantage of their personalization capabilities. Gravity provides the technical know-how and handles the integration process with clients, while their partner is responsible for managing the commercial aspect of the partnership.

- **Deep learning:** The Deep Learning Division can be viewed as the research and development unit of Gravity as it mainly focuses on creating innovation in the underlying technology of the engine, the machine learning algorithms themselves. The focus of this research is the development of deep learning algorithms that can be effectively implemented and used in production to enhance the performance of the personalization engine. Thus, this business unit collaborates mainly with the Customer Success Team and has already started to roll out deep learning-based solutions on the sites of some Enterprise customers. In the future, they are planning to create a new standalone product offering as well.

Comparing Yusp & Yuspify

The two SaaS divisions of Gravity is worth comparing in more detail as multiple similarities as well as differences can be identified between them.

Aspect	Yusp	Yuspify
Served industries	Any	E-commerce
Minimum monthly traffic (page views)	10 million	No minimum
Scalability	Can be scaled up to extremely high traffic (billions of users daily)	No maximum (but potential customers with high traffic are encouraged to choose the enterprise offering of Yusp)
Offered product modules	All primary modules defined by Gartner (product recommendations, search personalization, on-site personalization, marketing personalization) as well as complementary modules and custom solutions upon request	– Product recommendations – Search personalization (beta) – On-site personalization (under development)
Integration process	2-3 month-long process with intense collaboration between Yusp project team and the customer	Self-service solution with minimal required support from Yuspify team (the whole process takes 2-3 hours in case they integrate with a platform on which Yuspify already has a pre-built integration guide and background solution)
Pricing	One-time integration fee on a time and material basis (ranges from $2-3,000 to $40,000 or even higher based on required effort) Monthly service fee with a base fee and scaling based on traffic (includes full support by an account manager and dedicated engineer and a few hours of development). Base fee usually ranges from $500 to $12,000 but is between $4-5,000 for a typical customer.	Monthly service fee (see pricing guidelines in the relevant chapter)

Table 3: Comparison of Yusp and Yuspify offerings
(Source: Yusp)

The enterprise and the SME product are branded under separate brand names because they focus on different customer segments, so the marketing communications should deliver different messages. While Yusp has offers for customers with a large variety of business models, Yuspify is offered solely for e-commerce stores. Also, enterprise and SME customers expect different account management, marketing design and customer support. As seen from the table above, apart from the more limited target group in terms of industry, the main characteristic of Yuspify is its effective integration process and affordability due to its standard offering that makes Gravity's state-of-the-art technology available for a whole new emerging market, the small-scale e-commerce sector.

Yuspify as a product

Yuspify is Gravity's offering for small and medium-sized online merchants, making enterprise-grade machine learning available for this new segment. The product itself is a plug-and-play personalization engine that can be integrated to the online stores operating on major e-commerce platforms (Shopify, Magento, PrestoShop etc.) as well as custom-made shops.

Yuspify was first developed for Shopify (hence the product name) in the second semester of 2018, since Shopify is one of the largest e-commerce platforms worldwide with around 1 million shops hosted.

There were 3 main hypotheses that Yusp SME team intended to verify with the Yuspify launch:

- Revenue share-based pricing is favorable both for client and the company
- Turnkey integration improves client satisfaction and the pace of client acquisition
- Recommendation-as-a-Service (RaaS) is a viable option to simplify integration

Yuspify went live in November 2018 but the team experienced many failures in the operation of the product. The main reason was the automation of the client instance creation process with the container cluster manager software Apache Mesos. Mesos has been in use in Gravity since 2015 for enterprise clients, where automatization is not so crucial due to the availability of the internal operation team. The Mesos community is small and the project is close to abandoned because newer technologies are available. Because of the ill-functioning of Yuspify on Shopify, the Yusp SME team inactivated the plugin in Shopify stores in 2019 Q1. During the time of Yuspify's first operation, only the last two hypotheses were verified, because the number of users did not reach the critical mass to evaluate the revenue share pricing model.

The lesson learned was that a new cluster manager software should be used that fits the automated operation requirement of the Yuspify product. In other words, the fourth inherent hypothesis was that the enterprise operation model is appropriate for Yuspify, and it turned out to be not.

After a thorough analysis of the technology landscape, Kubernetes – originally developed and open-sourced by Google – was selected as the backbone of the new SME product. In addition, with the advancements of the technological partnership with Alibaba cloud, it was decided to move the operation to their IaaS environment. The project was completed in December 2019. The actual Yusp SME clients had been started to migrate to Alibaba Cloud by a so-called "dark launch" – meaning that the traffic is mirrored from the legacy system to the new system – in 2020 January. After the migration, some troubleshooting and post development clean-up was still to be completed until the product's second public launch.

The second and current version of Yuspify debuted in the second half of 2020 with a limited offering of only personalized recommendation boxes and personalized listing. Since then, they launched a beta version of their search personalization capabilities as well, that include keyword suggestions and autocomplete, a dynamic search result list that is organized based on personal relevance and faceted search navigation. The third product module, on-site personalization, that will consist of customized pop-ups, dynamically changing content blocks and personalized design elements (e.g. carousels, banners) is also under development and is expected to launch in 2021.

Integrating Yuspify to an online store is now a relatively simple and automated process. The Yuspify team offers some support to its customers if needed but the integration can be carried out independently as well in Yuspify's Design Editor in a few hours-long process. The main tasks during integration are the following:

1. **Importing the store's product catalogue:**
   All available products that can be purchased from the site have to be uploaded to the Yuspify engine in a catalogue containing a unique identifier and all relevant data about each product (e.g. name, product category, pictures, price, brand etc.)

2. **Designing the personalization placements:**
   In Yuspify's Design Editor, customers can put together all elements of the recommendation placements they would like to use on their site. They can choose the business logic behind a recommendation box (e.g. Similar Products, Others Also Bought, Recommended for You) and the design elements, like the text font, colours and size of the pictures to appear.

3. **Placing the recommendation boxes on the site:**
   Once all recommendation placements are designed, users can easily choose the best location for them on their site with an easy drag-and-drop solution.
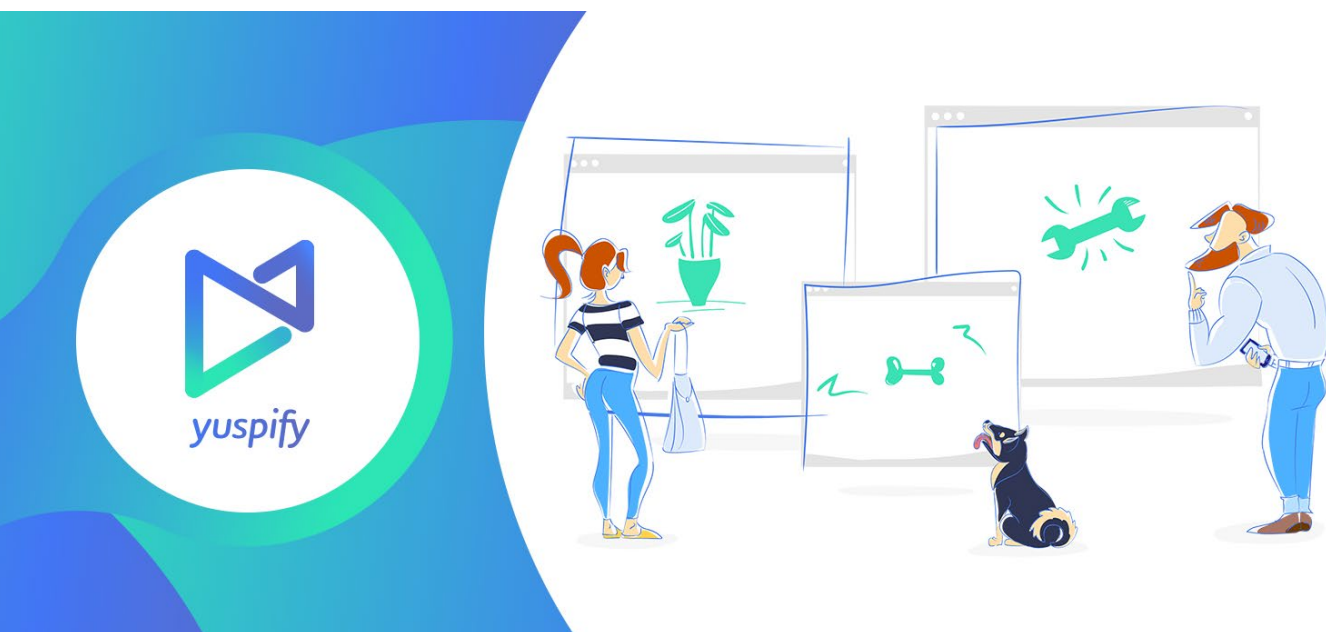
Yuspify's market entry and business model

The current version of Yuspify was launched in 2020 and currently they are providing their personalization solutions to 50 online stores generating on average 215 USD monthly revenue per store. However, the engine is capable of serving significantly more customers than it currently has as at the moment the pace of integration is quicker than the pace of customer acquisition. That is why the team behind Yuspify and Gravity's management is working on a marketing strategy that would ensure the acquisition of a higher number of customers relatively quickly and hopefully through long-term strategic partnerships with industry players instead of targeting online shop owners directly.

Yuspify's customers are currently segmented based on the e-commerce platform they use. Since the number of small and middle-sized e-commerce businesses is constantly growing and gaining one more customer does not mean a significant revenue, it is more beneficial for Gravity to specifically target users of the most popular platforms. The following e-commerce platforms are considered:

- Shopify, hosted, 1,350,000 shops

- Magento, self-hosted, 200,000 shops

- PrestaShop, self-hosted, 263,000 shops

- WooCommerce, self-hosted, 970,000 shops

Despite the large number of WooCommerce users, the focus is currently on the first three platforms, because WooCommerce users typically run very small businesses and are less willing to pay for extra services than the users of the other three platforms. In the first months after the launch, the team put more effort into collaboration with Hungarian e-commerce platforms as well, like Shoprenter and Unas, but in the long-term international expansion is definitely a priority.

Another potential strategy would be to partner with different professional service providers who have many e-commerce sites among their customers. These companies could be marketing or design agencies, web developers or webshop maintenance providers. For either of the potential target groups, Yuspify's offering and commercial model has to be clearly defined to create a beneficial collaboration for both parties.

Yuspify's pricing strategy is based on a revenue sharing model summarized in the following table.

From generated revenue (USD)	To generated revenue (USD)	Percentage of revenue share
0	5,000	3.0%
5,001	20,000	2.5%
20,001	50,000	2.0%
50,001	100,000	1.5%
100,001	∞	1.0%

Table 4: Yuspify's pricing scheme

Revenue share is one of the most typical pricing schemes of similar services, as it represents a customer-centric approach by being transparent and easily understandable compared to traffic-based pricing, another popular strategy. Another benefit is that in this model, the risk of churn is somewhat reduced since the fees are linked to ROI.

How to proceed from here

The match was hard-fought and by the end of the reserved time slot, nothing has been decided. György and Márton stood two games apiece.

"*Maybe we should call it a day.*" György suggested. They intended to finish the match one way or another but they had to wait until next week. In the meantime, they had some vexing dilemmas to address:

- Both of them agreed that SMEs should have the opportunity to enjoy the advantages of machine learning through Yuspify's unique value proposition, still, scaling up was a thorny question. Yuspify had to reach enough SME clients to make this concept work financially, but how? Starting at the very beginning, which geographical markets should they focus on? How big is the addressable market and what would be a feasible market share to go after?

- The end-users of the Yuspify product are SME webshops, but who should be their direct customers? Who should be targeted and with what kind of marketing strategy? Which customer acquisition channels should be the focus and what value propositions should be highlighted for each?

- Though Yusp had enough resources to finance realistic scenarios without a need for additional capital, the return on investment was obviously important. This in turn draws attention to the potential cost structure of the project and whether the current pricing model would be adequate or not.

György and Márton were still pondering on these questions, as they headed to the parking lot of the squash court. After saying goodbye to each other, they drove home to have a refreshing sleep. Though they had some initial ideas, they were more than excited to hear about the young and bright consultant teams' insights into these issues, scheduled for tomorrow.

Appendix

	Yuspify	Google Recommendation AI (Beta)	Amazon Personalize (Preview)
Core Features			
Item to Item recommendations	Yes	Yes	Yes
Personalized recommendations for user history	Yes	Yes	Yes
Collaborative filtering algorithms	Yes	Yes	Yes
Metadata based personalized	Yes	No	Yes
Metadata based item to item	Yes	No	No
Popularity based algorithms	Yes	No	Yes
Hybrid algorithms	No	No	Yes
Deep learning algorithms	No	unknown	Yes
Using contextual data	No	No	Yes
Bring your own algorithm	No	No	Yes
Industry specific algorithms	E-commerce	No	No
Total number of algorithms	6	unknown	6
Algorithmic presets for common scenarios	Recommended for you, Other items you may like, Frequently bought together, Add to your cart/list/registry, Search, User history	Recommended for you, Other items you may like, Frequently bought together, Add to your cart/list/registry	Popularity, Personalized, Cold start, Collaborative filtering similar, Search ranking
Real time user modelling	Yes	Yes (events)	Limited
Optimization goals	Revenue	Engagement, revenue, or conversions	Default or one custom metric

| Business rule engine			
Basic filtering	Yes	Filter out-of-stock items, Filter duplicate items, Filter by custom tag, Result diversification on/off, Personalization on/off	No
Advanced rules	Yes	No	No
Visual rule editor	Yes	No	No
A/B testing	Yes	Yes	Yes
Integration			
Recommendation w/o IT involvement	Yes	No	No
Plugins	Yes, for WooCommerce PrestaShop, Magento, Shopify	Google Cloud Storage, Big Query	No
Visual recommendation box editor	Yes	No	No
Drag And Drop editor for adding recommendations to the site	Yes	No	No
APIs	REST API, Java client, PHP client, Android, iOS, JavaScript, Google Tag Manager	Google Tag Manager, Google Shopping	REST, All Amazon SDK supported languages
Product modules			
Product recommendation	Yes	Yes	Yes
Search personalization	Partial	No	Partial
On-site personalization	No	No	No
Social personalization	No	No	No
Newsletter personalization	Partial	Only through do it yourself integration	Only through do it yourself integration
Cart abandonment email	No	No	Only through do it yourself integration
Ad retargeting personalization	No	No	No
Support			
Integration support	Documentation	No	No
Account management	No	No	No
Customization	No	No	No

Appendix 1: Yuspify's offering compared to IaaS providers' personalization products

Summary of services of stand-alone SME personalization vendors:

- **Nosto:** Nosto was founded in 2011 with the goal of creating a user-centric experience on e-commerce platforms. Thousands of online stores use their services to personalize user experience on their sites with solutions like product and content recommendations, personalized pop-ups and marketing channels, in-store personalization and A/B testing and optimization capabilities. Out of the main personalization product modules, search personalization is the only one they are currently not offering. It is possible to integrate Nosto's engine with all well-known e-commerce platforms as well as some smaller ones so their services are widely available for SME customers.

- **LimeSpot:** Limespot offers product recommendations, email personalization by integrating with 6 different email automation providers and personalized Google ads. Their service is available for customers of Shopify, WooCommerce and BigCommerce and they serve retailers of all sizes from the smallest online stores to Enterprise-level customers. Thus their pricing is calculated based on their 3 packages, Silver, Gold and Enterprise.

- **DataCue:** DataCue is specifically aimed at smaller e-commerce businesses with a limited offering compared to other industry players: as per their own words, they create personalized homepage experiences for visitors. In terms of product modules, their customers can enjoy the benefits of product recommendations, personalized banners and notifications. Out of the e-commerce platforms, they are partnered with Shopify, Magento, PrestaShop and WooCommerce but they also offer API integration for all other platforms.

- **Recommendify:** Recommendify also only targets smaller online retailers and their solution is only available for Shopify stores. Their offering is limited to product recommendations that can be set up based on some typical business use cases (e.g. recommending popular products, similar ones to the one currently viewed and products bought by similar users). Three pricing packages are available based on the number of available products on the site, starting from less than 500 products and ending in stores with more than 2000 products.

- **Recombee:** Recombee is by far the most versatile player in this list both in terms of technology and industries served. Besides the most typical personalization algorithms like collaborative filtering, they also use image processing, deep learning and several specialised models in their engine. Industry-wise, they have solutions for different content providers (publishers, video streaming providers and music and podcast platforms) and work together with specialised domains (e.g. job listing sites) besides their e-commerce customers. Among the offered product modules are product and content recommendation, search personalization and customized email and push notifications.

- **Personyze:** Personyze is both a machine learning-based personalization engine and a marketing automation system offering a comprehensive package for a customized user experience. Besides search, they provide all primary personalization product modules with a focus on their marketing solutions. Their services are not limited to neither the e-commerce sector nor the SME segment, they are quite flexible in terms of traffic and industry.
- **Personalization:** Personalization is specifically targeting e-commerce sites on all main platforms (Shopify, Magento, WooCommerce, OpenCart, PerstaShop) as well as custom-made ones with their API integration option. They offer product recommendations and personalized and automated emails on web and mobile app platforms.

Appendix 2: Yuspify's main competitors
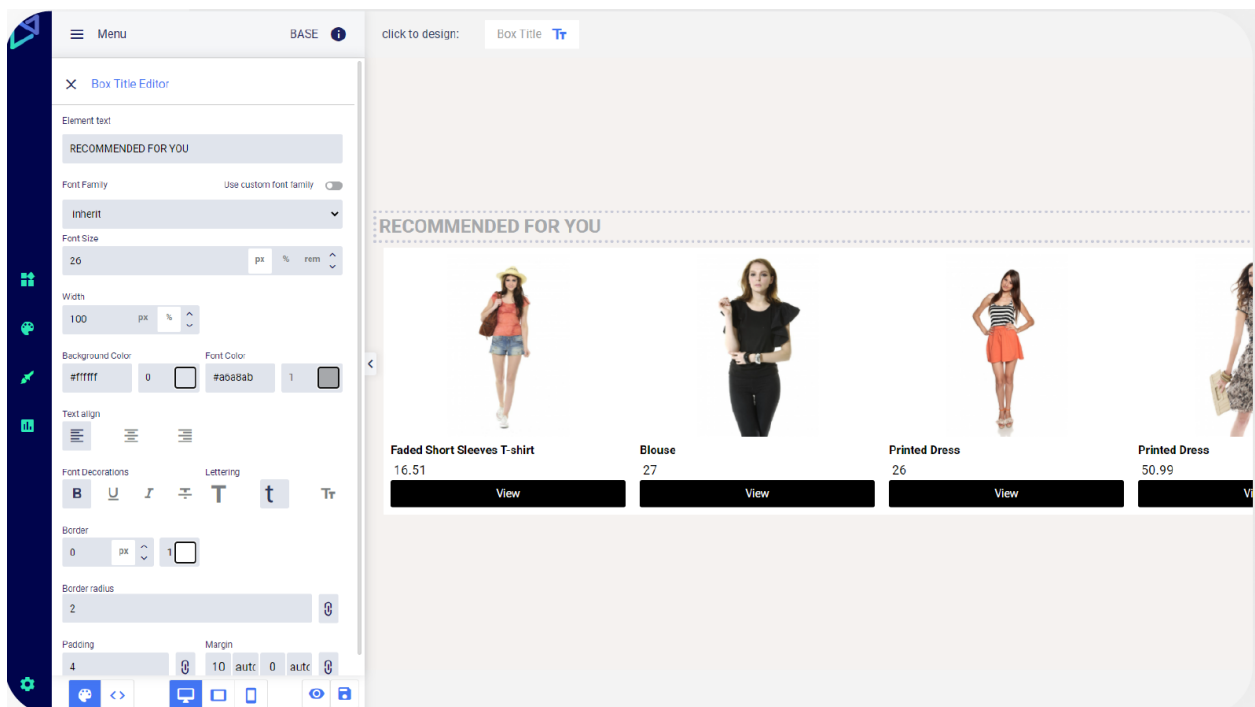
Appendix 3: User Interface of Yuspify's Design Editor

Number	Name of item	Data of the previous business year (thousand HUF)	Data of the current year (thousand HUF)
001.	**Assets**		
002.	**A. Fixed assets**	**522 216**	**590 015**
003.	I. Intangible assets	504 750	574 096
004.	1. Capitalized value of research and development	51 007	60 750
005.	2. Concessions, licenses and similar rights	952	398
006.	3. Intellectual products	452 791	513 948
007.	II. Tangible assets	15 204	12 515
008.	1. Land, buildings and connected property rights	6 496	6 040
009.	2. Technical equipment, machines, vehicles	7 534	5 834
010.	3. Other equipment, fixtures and fittings, vehicles	1 174	641
011.	III. Invested financial assets	2 262	2 404
012.	1. Long-term participations in affiliated undertakings	2 262	2 404
013.	**B. Current assets**	**464 016**	**367 484**
014.	I. Inventories	11 182	0
015.	1. Goods	11 182	0
016.	II. Liabilities	240 369	319 071
017.	1. Receivables from delivery of goods and services (clients)	168 035	242 197
018.	2. Receivables from affiliated undertakings	1 347	17 896
019.	3. Other receivables	70 987	58 978
020.	III. Securities	7 841	7 841
021.	1. Own shares and own partnership shares	7 841	7 841
022.	IV. Liquid assets	204 624	40 572
023.	1. Cash, checks	824	913
024.	2. Bank deposits	203 800	39 659
025.	**C. Accrued and deferred assets**	**45 708**	**12 592**
026.	1. Accrued income	13 961	460
027.	2. Accrued expenses	31 747	12 132
028.	**Total assets**	**1 031 940**	**970 091**
029.	**Sources**		
030.	**D. Equity**	**689 569**	**535 901**
031.	I. Issued capital	10 125	10 125
032.	1. Capital reserve	290 075	290 075
033.	2. Accumulated profit reserve	354 278	320 778
034.	3. Tied-up reserve	58 848	68 591
035.	4. Profit after tax	-23 757	-153 668

036.	**E. Provisions**	**0**	**0**
037.	**F. Liabilities**	**194 485**	**241 100**
038.	I. Subordinated liabilities	0	0
039.	II. Long term liabilities	0	0
040.	III. Current liabilities	194 485	241 100
041.	1. Accounts payable (trade creditors)	54 401	109 882
042.	2. Short-term liabilities to affiliated undertakings	66 139	67 492
043.	3. Other short-term liabilities	73 945	63 726
044.	**G. Accruals and deferred income**	**147 886**	**193 090**
045.	1. Deferred income	10 893	18 489
046.	2. Deferred costs, expenses	33 541	95 620
047.	3. Accrued income	103 452	78 981
048.	**Total equities and liabilities**	**1 031 940**	**970 091**

Appendix 4: Balance sheet of Gravity (2019)

Number	Name of item	Data of the previous business year (thousand HUF)	Data of the current year (thousand HUF)
001.	01. Net domestic sales	107 035	124 376
002.	02. Net external sales	977 755	889 331
003.	**I. Net Sales Revenue**	**1 084 790**	**1 013 707**
004.	03. Own work capitalized	172 149	176 338
005.	**II. Own performance capitalized**	**172 149**	**176 338**
006.	**III. Other income**	**26 900**	**34 250**
007.	04. Cost of raw materials and consumables	3 340	3 923
008.	05. Cost of services	655 537	663 058
009.	06. Cost of other service activities	6 383	4 293
010.	07. Cost of services sold (intermediated)	88 566	112 319
011.	**IV. Material costs**	**753 826**	**753 593**
012.	08. Wages and salaries	331 745	336 520
013.	09. Other employee benefits	14 128	13 551
014.	10. Contributions on wages and salaries	67 928	65 821
015.	**V. Staff costs**	**413 801**	**415 892**
016.	**VI. Depreciation**	**88 730**	**110 974**
017.	**VII. Other operating charges**	**22 584**	**19 114**
018.	including: loss in value	1 034	0
019.	**A: Operating (trading) profit**	**4 898**	**-105 278**
020.	11. Other interest and similar income (received or due)	2 243	2 061
021.	12. Other income from financial transactions	31 555	17 101
022.	**VIII: Income from financial transactions**	**33 798**	**19 162**
023.	13. Interest payable and similar charges	1 318	1 352
024.	14. Other expenses on financial transactions	13 256	21 560
025.	**IX. Expenses on financial transactions**	**14 574**	**22 912**
026.	B. Profit or loss from financial transactions	19 224	-3 750
027.	**C: Profit before tax**	**24 122**	**-109 028**
028.	**X. Tax payable**	**47 879**	**44 640**
029.	**D: Profit after tax**	**-23 757**	**-153 668**

Appendix 5: Profit and loss account of Gravity (2019)

Acknowledgements

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yusp personalization engine by Gravity R&D