

HYGH - Technical White Paper (Draft)

2018-11-15

Disclaimer

This is the final draft of a conceptual document (“Technical White Paper”) describing the proposed HYGH Advertisement Platform (HAP). It may be amended or replaced at any time. However, there is no obligation to update the Technical White Paper or to provide the recipient with access to any additional information.

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Executive Summary

The digital OOH Market is an ever growing multi-billion dollar business, but still mostly inaccessible to small and middle-sized companies due to historically grown constraints in terms of flexibility, access, pricing and the time it takes from planning to playing on actual displays.

After researching the OOH market and speaking to several players and potential customers, the HYGH-Team decided to disrupt the current status quo with a technical solution. This solution allows owners of public displays to earn money non-exclusive and on an ongoing base, by providing display-time to Advertisers directly bookable via the HYGH self-service platform, creating a market place between Advertisers and Display Owners.

HYGH is just the intermediary and enabler between Advertisers and Display Providers and allows the booking, content moderation, payment and discovery of Displays of any size in any location around the world. This model is similar to companies like AirBnB, which also does not own apartments, but enables the exchange and discovery between travelers and apartment providers.

As a feasibility study HYGH developed a working prototype, which covers about 70% of the final to-be-developed product features and allows Advertisers to push their ads to a decentralized display-fleet in mere seconds instead of weeks to months it usually takes in today's OOH landscape.

The HYGH Prototype is password protected and can be found at this location:

<https://demo.hygh.tech>

Please contact the HYGH-Team for access, but please note that the prototype is a work in progress.

This document describes the vision of the final product platform in more detail.

Glossary

1. **HAP** - The HYGH Advertisement Platform.
2. **Prototype** - Our current existing system is defined as a working prototype, but is limited in scope. For example all financial transactions are simulated, the system is not load tested and not all planned display clients exist yet. It also needs some architectural changes to comply with GDPR requirements.
3. **User** - A user is defined as a registered member of the HAP.
4. **Display Provider** - A Display Provider is defined as a User, which registers and manages their Displays within the HAP.
5. **Advertiser** - An Advertiser is defined as a User, which books campaigns on the HAP.
6. **Display** - Any screen, which is registered within the HAP and is able to play videos is called Display. Displays can be TV Screens, Computer Monitors, iPads, Tablets, Digital Billboards, etc.
7. **HYGH Player** - Within the HAP ecosystem, the HYGH Player is a client software, which enables displays to play content. The first developed HYGH Player is based on Android and can be installed on Android TV's, Android Sticks, Android Tablets and Phones. More clients for different operating systems are in the works.
8. **Budget Scheduling** - A User can select either Budget or Exact Scheduling for his Campaign. Budget Scheduling allows to define how the Daily or Weekly Budget is prioritized in 2h time slots at all individual week days.
9. **Exact Scheduling** - An Advertiser is able to schedule his Campaign to an exact second and on selected Displays. This allows to show and synchronize Campaigns on many Displays at the exact same time.
10. **Transaction** - Whenever a Campaign gets played on a single Display and the Display confirms this Campaign-Play, a Transaction takes place. This Transaction saves the exact Duration, the per-second price of specific Displays and all other related information to transparently document this Transaction and transfers funds from the Buyer (Advertiser) to the Seller (Display Provider).
11. **Trust-Score** - An internal trust-score gets assigned to users and displays alike and will be updated based on user and display events. This trust-score will be used for

example to promote or punish the visibility of displays and help trustworthy users to expedite the content review process.

12. **Community Validator** - A person, who helps to review content and displays, which will affect their individual trust-score.

Technical Concept

We set our goals to provide a system which should be easy to use for users, scalable and extendable, resilient against failures and outages, safe, secure and trustworthy.

The platform will also conform to strict privacy laws like the GDPR and "*Privacy by Design*" along with "*Privacy by Default*" concepts.

To archive this goal we decided for a inter-communicating micro-service based architecture which consists out of individual modules, described in more detail in this document. The concept is based on assumptions based in part out of observed user behavior, discussions with stake holders and technical experience in building large-scale systems for end users.

Assumptions

In planning the HYGH Advertisement Platform, we started with some technical and usage assumptions as listed below.

1. **Display Challenges:** Displays are neither owned, nor maintained by HYGH. Because of this, HYGH expects very different levels of hardware, network connectivity issues, missing software updates, clock, timezone and other timing issues.

Design Goal: A simple downloadable client software named "*HYGH Player*" for different operating systems, which runs self-tests at launch and provides a minimum of interactivity for end-users following a true "*set & forget*" concept. It also needs to be able to cope with networking and bandwidth issues and play content for up to 2h without Internet connectivity. The HYGH Player is described in more detail below.

2. **User Knowledge Challenges:** Users might be inexperienced, need help with their workflow, forget their passwords and have general understanding problems of the process from idea to display.

Design Goal: Interfaces will have a high-degree of user-tested usability, using "*simple language*" as well as a trained support team, a maintained knowledge-base and a community self-help option ("users help users") need to be provided.

3. **Anti-Cheat Challenges:** Whenever users can make money in an automated way, evil players try to cheat the system.

Design Goal: Since the only way to earn money within the HYGH Advertisement Platform is to play advertisements on displays, we have a very focused scope of anti-cheat mechanisms in place, most within the HYGH Player.

For example, the HYGH Player will be able to detect if it is running within a Virtual Machine, which indicates a high probability of not actually running on a physical display. Also, if the HYGH Player plays in the background or plays in a window instead of full screen, it can indicate that cheating is going on. In either case, this interrupts campaigns and the ability to earn money with displays. Owners of these displays and the displays itself also get a lower trust-score, which makes them less visible for advertisement campaigns within the platform. Additionally unusual behavior gets observed and tracked in the backend.

A group of community validators will also be tasked to check locations, conditions and the validity of user-provided content for displays, which will affect a display trust-score and the trust-score of its owner.

4. **Content Conversion Challenges:** We expect that users will try to upload any kind of content, especially video in different formats, encodings and sizes.

Design Goal: The system must be able to cope with many different video formats, lengths and encodings. Since there are too many formats, specifications and combinations thereof, it would require an entire team to work on these conversion and detection issues. Instead we decided to use Amazon's Transcoding Service, which solved these issues already and provides a simple and reasonable priced API for these conversions. The system will accept a wide range of user-submitted video formats and normalizes them into the defined HYGH master video format, which will be used system wide to play on connected displays.

5. **Content Moderation Challenges:** The HYGH Advertisement Platform will have a huge reach and allows to push user-submitted content to many public displays in mere seconds and we expect conscious or unconscious abuse cases of the system. Users might upload content, which is not suitable for public displays (pornography, radical political messages, hate speech, etc.) or not suitable for targeted countries, due to different cultural sensitivities.

Design Goal: Through clearly defined Terms of Services and Upload Policies the HYGH platform will make their policies known to every user within the registration process. By accepting these policies, users are warned to behave from the beginning which allows the HYGH team to delete or warn users quickly, should they violate these policies.

Additionally, every user gets an internal trust-score, which is based on his or her behavior. If the user keeps violating policies, the HYGH platform will either delay or refuse to serve their advertisements on the platform.

Every uploaded and to-be-published content will be first checked by technical means (artificial intelligence based filters, for example pornography detection). After the automatic check, content will be additionally checked by community validators.

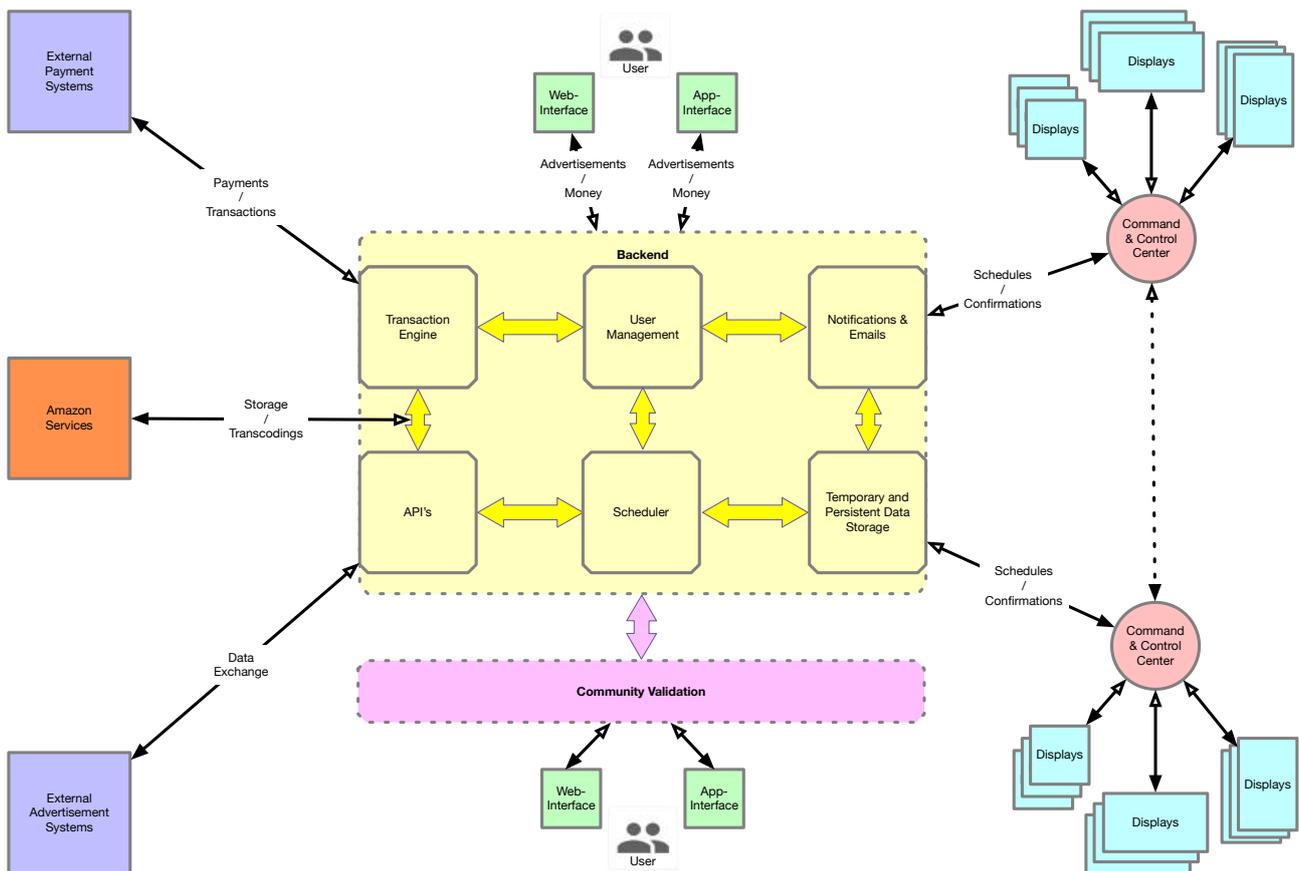
6. **Scalability Challenges:** With every connected display and every new campaign added to the system, the complexity of the network, processing time, bandwidth needs as well as scheduling issues will increase.

Design Goal: The system will be build based on individual modules with a micro service architecture. This has the advantage that each module can be individually observed and monitored for bottlenecks and vertically and horizontally scaled, if needed.

Simplified System Overview

Below you can find a simplified System Overview, outlining the basic concepts of the HYGH Architecture.

IMAGE 1: SIMPLIFIED SYSTEM OVERVIEW



Module Description

The HYGH Advertisement Platform utilizes a micro-service architecture and some of the modules are described below.

Backend

The heart of the project is the Backend. Via API's, it is able to feed either the main user interface as well as native-apps and communicates directly with the Command & Control Centers. It consists out of temporary and persistent data storage, the main scheduler, API's to Amazon's Elastic Transcoder, external proprietary advertisement systems and payment providers, the Transaction Engine, Notification and Email modules, etc.

The backend provides the coordination between all modules.

The Scheduler

The heavy lifting of the project is done by the Scheduler. Within the HYGH Advertisement Platform the smallest bookable unit is 1 second of display-time. The scheduler is capable to keep track of the schedule of each connected display and is permanently recalculating individual display-schedules based on new data by users, as well as incoming confirmation data from the Command & Control Centers.

Starting with a simple time allocation algorithm, the dynamic scenario of users permanently adding campaigns as well as displays connecting and disconnecting to and from the network will be implemented with machine learning.

Users and displays will get a trust-score based on their behavior and usage patterns. This trust-score will among other things be used as signals for the scheduler and influences where and when to play advertisements to optimize the utilization of the network.

The Transaction Engine

Initially users are able to book display-time for their advertisements based on 2 concepts: Scheduled campaigns or Budget-based campaigns.

The main difference between both types is who decides for the time-slot when the campaign gets played on individual displays.

With scheduled campaigns, the user decides for the exact date and time as well as which display he likes to play his advertising on. This allows for example to advertise a lunch campaign just before lunch time on many displays in walking distance to a restaurant.

With the budget-based campaign, a user can only give priorities within 2h time frames, but the exact time-of-play gets automatically decided by the scheduler.

As soon as a display confirms a play of a campaign on its Command & Control Center, the transaction engine calculates the exact price of this play based on all involved parameters like:

- Scheduled campaign or budget campaign
- Price per second for this display in this timeframe
- Discounts, coupons, user and display score

All transaction data and the final price for each play is stored in an immutable database and the funds get shared between the user, the display-owners and HYGH. The user will be able to see the transaction in detail in his interface and can control his budget in near realtime.

The transaction engine will be responsible for the calculations, bookkeeping and transfer of funds between the connected users as well as the coordination with external financial services and should be able to work with conventional FIAT and crypto currencies.

Amazon's Elastic Transcoder

We expect most user submitted content to be video and each display has a different screen resolution, a different aspect ratio and a different size, so there is an urgent need to transcode the uploaded content into a HYGH specified master format, which is optimized for all classes of displays.

The currently existing prototype uses a self-developed solution based on the open source project FFmpeg, but its slow and error-prone and will be changed to Amazon's Elastic Transcoder.

The principle is very simple, whenever a user uploads an image and schedules a campaign, the system sends his/her uploaded video files to Amazon's Elastic Transcoder, which returns several optimized files. These transcoded and optimized files then get assigned to all matching displays.

Since Amazon's Elastic Transcoder is API based, fast, reliable and cheap (compared to the overhead of maintaining a server farm doing the same task), it's the best solution to always play the best possible quality videos on each booked display.

The HYGH Player

To control the decentralized display-fleet, we will write individual display clients for the most popular display operating systems. Uniformly HYGH will call them "*HYGH Player*".

The prototype started with an Android-Client, which allows it to run it on Android Phones and Tablets, Android Sticks and Mini-Computers as well as on Android based Smart-TV's. An iPhone/iPad and Apple TV is next, followed by Microsoft Windows and Samsung Software based clients.

To allow a fast expansion to different operating systems, we decided to split the HYGH Player into 2 parts: a native, platform specific one and a web-standard based one. This allows to re-use ca. 80% of the code on all platforms, while only 20% must be specifically be developed for individual operating systems HYGH plans to support.

The web-standard based part of the HYGH Player is written in Javascript, specifically in React and plays videos, images and can show any web-enabled content directly on the display. The native, platform specific part is used to get native display information like screen size, operating system, brand and user events and communicates with the Command & Control Center.

The user interaction follows a simple "*set & forget*" concept: He has to download and install the client, start it and add the shown pairing code once to his HYGH account. After this step, the display is connected to the HYGH network and there will be no other user interaction on the display necessary.

Since the decentralized displays are usually neither owned nor operated by HYGH, but by individuals and companies around the world, their network and availability conditions are out of HYGH's control. Display clients are also just local players, while the intelligence of the system sits in the network. They only need to be able to connect regularly to the Internet, either via passive self-initiated requests to a conventional REST API, or active via Websockets.

To mitigate eventual network or reliability problems, we invented a "*store and forward*" protocol which is based on "*suggestions*" and "*confirmations*". We "*suggest*" a block of campaigns to be played at a certain time and if the display is able to play the content, it keeps track of each successful play and "*confirms*" them back to the network.

Command & Control Center

As already mentioned in the former chapter, displays are neither owned nor maintained by HYGH and so there will be many unknowns in terms of their reliability.

Therefore we decided to create a variable protocol, which allows either realtime communication, but also "*delayed*" communication to control the display fleet. Additionally we got inspired by IOT concepts and botnets, which use Command & Control Centers to communicate with their clients.

This concept has proven to be extremely resilient and HYGH will borrow these concepts for the HYGH network. Instead of the displays communicating directly with the backend, they communicate with Command & Control Centers, which get placed - similar to CDN's - close to the displays.

The Command & Control Centers itself will be connected to major backbones and synchronize their content with the main backend.

For maximum redundancy, displays always try to connect to their closest Command & Control Center, but are able to connect to any of them.

The Command & Control Centers send all information displays need to play campaigns like the schedule, the media-content itself etc. and collect statistical and operational information from the displays. These then get passed back into the Scheduler and Transaction Engine within the backend.

Community Validation

Campaigns play in a public space and not in a private setting, so HYGH has to ensure that the content is safe for the public. It would be disastrous for any display network to publish unsafe material (i.e. violence, pornography or extreme religious content).

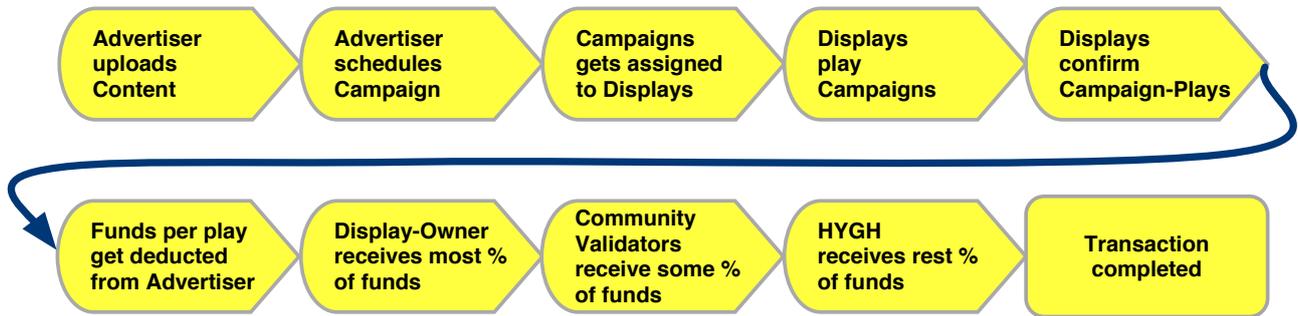
This also extends to placement and descriptions of displays. The HYGH Team already described the related trust-score, but to feed into it, it needs community validators.

They are an elastic workforce, which validate display locations, rate and review campaigns and content. To incentivize community validators, they get a share of every transaction within the system, based on their amount of work they contribute.

This enables anyone to earn an income within the HYGH ecosystem.

User Interaction Scheme

IMAGE 2: TYPICAL USER INTERACTION SCHEME



User Flows

A user within the HYGH Advertisement Platform is defined as anybody who registers within the system.

The user concept is similar to eBay, where any user can be an observer, a buyer, a seller or any combination thereof. At HYGH we call the main roles "*Display-Provider*" and "*Advertisers*".

Display-Providers add their own displays to the system with the purpose to earn money from Advertisers, they occupy the "Seller" role.

Advertisers rent time on the offered displays for their advertisement campaigns and are the "Buyers" in this context.

Neither of these roles are exclusive, a Display-Provider can offer displays but also book advertisement campaigns and vice versa.

In the next chapters we explain the way how the user journey for Display-Providers and Advertisers look like as currently implemented in the prototype, but there might be some adjustments in the final product.

The Display-Provider Flow

Any user can register his own displays in a few simple steps. When done, there is no more activity necessary, it's a true "set and forget" concept and displays will start earning money based on their popularity with advertisers.

The user needs to download and install the HYGH Player, the official client software onto his display or on the attached computer, which powers his display.

After installation, the HYGH Player shows a "Pairing Code", which needs to be entered into the HYGH user interface, to cryptographically tie a single display to a specific user in the system.

IMAGE 3: HYGH PLAYER PAIRING SCREEN

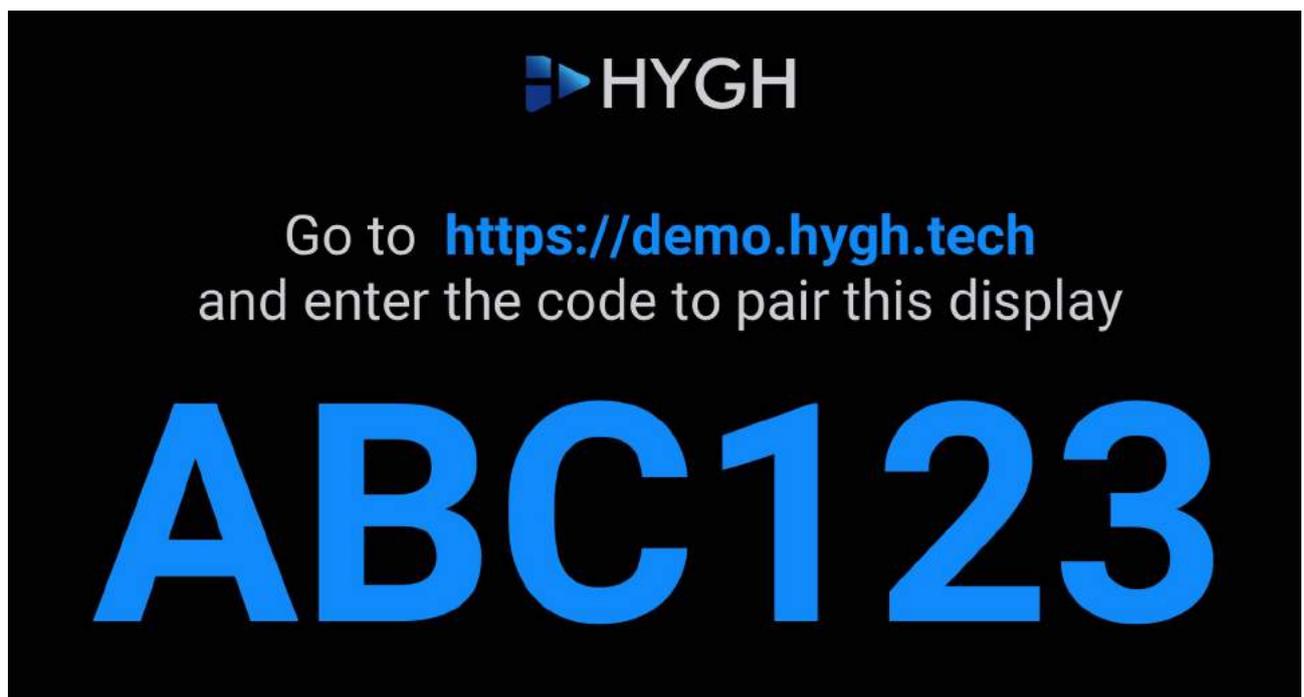
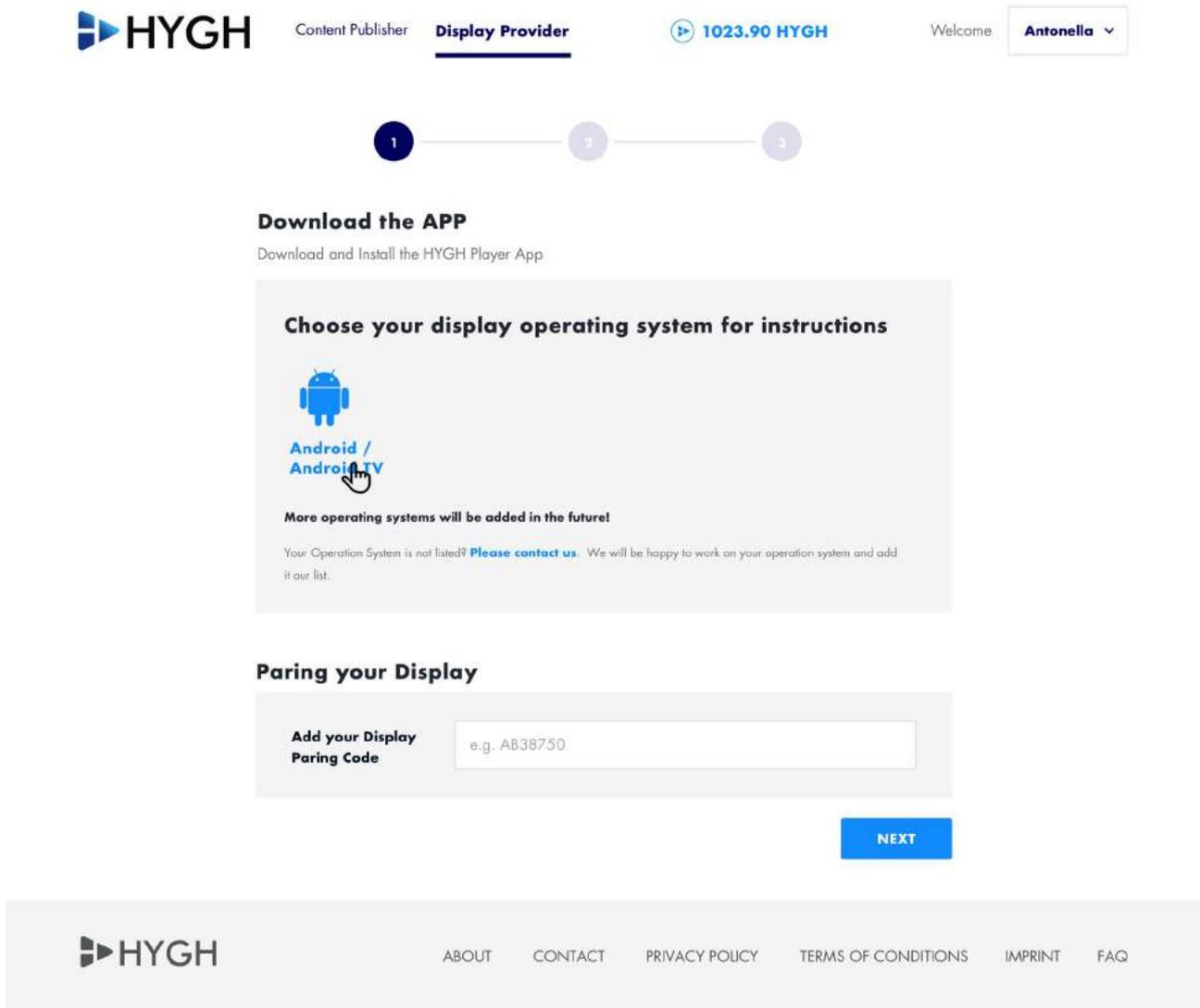


IMAGE 4: USER INTERFACE PAIRING SCREEN



Now the user needs to enter some information about the display, for example tags of suitable and unsuitable content, timeframes when the display is available, the exact location and if the display is located indoor or outdoor. When done, the display is instantly available to Advertisers.

Please note: the interface above shows only the icon for Android, but the available space on the right is reserved for user friendly instructions to help installing additional display operating systems.

The Display-Provider can now start earning money, or - as a bonus - can even play his own content on his displays free of charge. In exchange for this free feature, the HYGH Network collects statistical data per connected display, which gets used to enhance the planning feature of the scheduler.

IMAGE 5: USER INTERFACE DISPLAY DASHBOARD

The screenshot shows the HYGH user interface for a Display Provider. At the top left is the HYGH logo. To its right, the user's role is identified as 'Display Provider' (underlined), with 'Content Publisher' shown in a lighter font. A balance indicator shows '1023.90 HYGH'. A welcome message 'Welcome Antonella' is displayed in a dropdown menu. Below the header, there are two tabs: 'Displays' (active) and 'My Content'. The main content area is titled 'Display Dashboard' and features a '+ ADD A DISPLAY' button. A single display card is shown for 'Display 123 Samsung T600', which is 42 inches and currently in 'CAMPAIGN MODE'. The card displays '1.02 HYGH' in bold, with 'TODAY EARNINGS' below it. Navigation links for 'CAMPAIGNS' and 'MY CONTENT NAME' are present. The footer contains the HYGH logo and a list of links: ABOUT, CONTACT, PRIVACY POLICY, TERMS OF CONDITIONS, IMPRINT, and FAQ.

The Advertiser Flow

Advertisers can add a campaign in a few simple steps, while being able to customize the impact and reach of their campaign.

The first step is to name a campaign, followed by uploading one or many "Media", which can be either a prepared video or image, to the system and creating a playlist for their campaign.

IMAGE 6: CREATE A CAMPAIGN SCREEN

HYGH Content Publisher Display Provider 1023.90 HYGH Welcome Antonella

1 2 3

Create a Campaign

Campaign Name: My first Campaign

Upload your Content

Add image Add video Media Library HYGH Appstore COMING SOON

Order the Playlist Campaign

TOTAL PLAY 13m 04s

Imagename.jpg	01s	X
Imagename.jpg		X
nameofvideo.mov	12m 21s	X

Define your Campaign

Add as many as you want tags, define which content you just uploaded.

Tags: Select tags

NEXT

HYGH ABOUT CONTACT PRIVACY POLICY TERMS OF CONDITIONS IMPRINT FAQ

After adding content to the campaign, the advertiser has 2 choices how he likes to schedule and control his campaign.

The first option is called *Budget Scheduling*. Here the advertiser is able to set a daily or weekly budget and can adjust the weekday and times where he prefers that his campaign will be shown.

IMAGE 7: CAMPAIGN BUDGET SCHEDULING

HYGH Content Publisher Display Provider 1023.90 HYGH Welcome Antonella

1 2 3

Budget mode Exact scheduling mode

Set a budget

10 25 50 or Other amount WEEKLY DAILY CONTACTS 0

When do you want to launch your Campaign?

Select the date: Dec 06, 2018 - Dec 18, 2018

Decide When you want your campaign to be played!

Click on the timeslots you want to advertise on. You can distribute more budget towards a given timeslot if you click twice or thrice. A darker blue indicates a more frequented timeslot, so you would get less Plays for your budget, but similar contacts.

	Mo.	Tu.	Wi.	Th.	Fr.	Sa.	So.
Night							
00:00 - 02:00							
02:00 - 04:00							
04:00 - 06:00							
Morning							
06:00 - 08:00							
08:00 - 10:00							
10:00 - 12:00							
Afternoon							
12:00 - 14:00							
14:00 - 16:00							
16:00 - 18:00							
Evening							
18:00 - 20:00							
20:00 - 22:00							
22:00 - 00:00							

Select Displays OPEN MAP

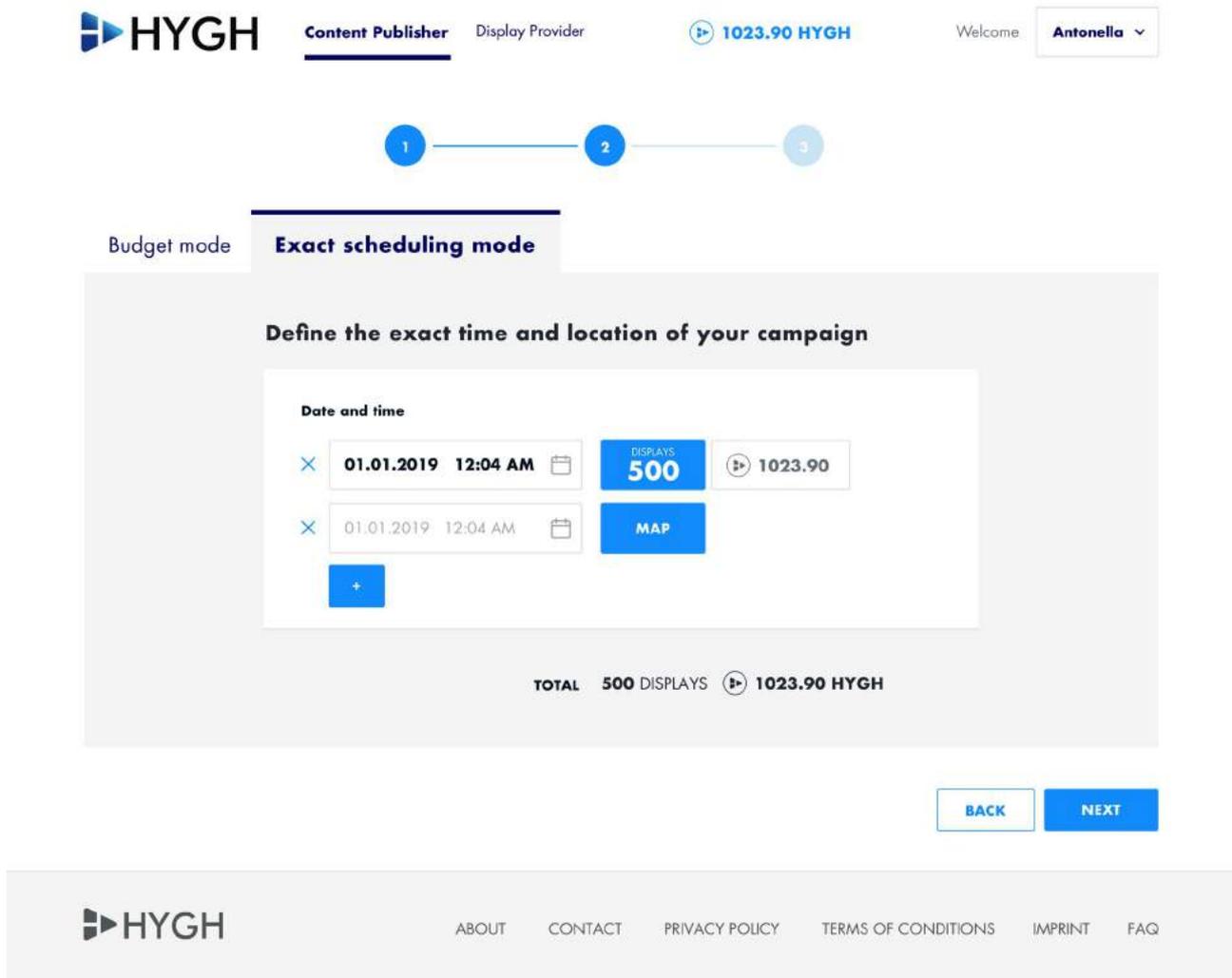
Start to select the slots to make appear more info about your booking!

BACK NEXT

HYGH ABOUT CONTACT PRIVACY POLICY TERMS OF CONDITIONS IMPRINT FAQ

The second option is called *Exact Scheduling*, where it is possible to play a campaign on a day and time to allow the syncing of many different displays. This feature can be used for example to synchronize many displays, playing the exact same content on the exact same time. The smallest time granularity the system allows is 1 second.

IMAGE 8: EXACT SCHEDULING SCREEN



After the campaign is scheduled and the budget is set, the user needs to select displays to be used in his campaign. He is able to filter all available displays on a map or list view and select his favorites. Through a "radius" filter, he is also able to book all available displays for example in a radius of 10km around a certain location, for example a restaurant or a shop.

IMAGE 9: MAP BASED DISPLAY SELECTION SCREEN

HYGH Content Publisher Display Provider 1023.90 HYGH Welcome **Antonella**

1 — 2 — 3

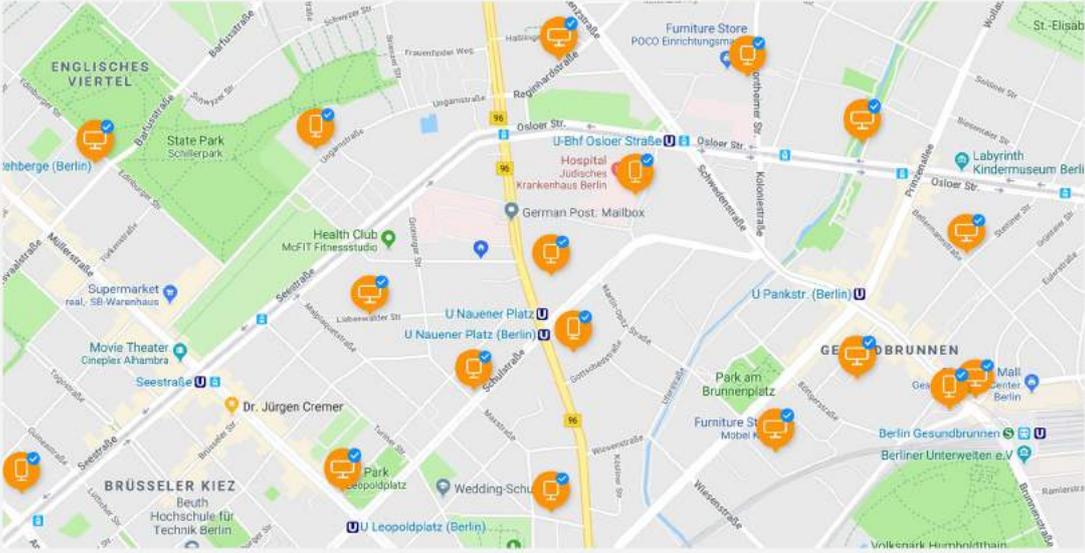
Select displays for your campaign!

Oudenarder Str. 30, 13347 Berlin + 2 KM **SEARCH**

NARROW BY: **CLEAR ALL**

Outdoor **Horizontal** **Type** **Size** \$\$\$

Map view List View 10 Displays in this view **UNSELECT ALL**

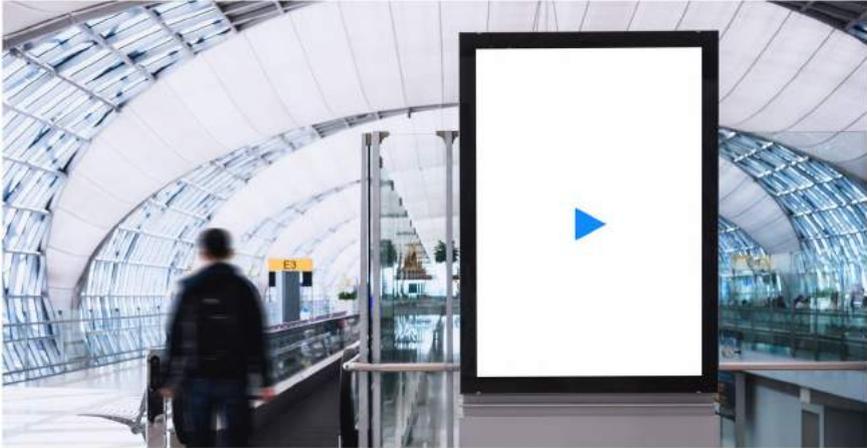


CANCEL **249 DISPLAY SELECTED** **SAVE**

When the schedule and display selection is done, the advertiser can preview his settings, see his campaign on simulated displays in a real-world-scenario and finally book his campaign.

HYGH Content Publisher Display Provider **1023.90 HYGH** Welcome **Antonella**

1 — 2 — 3



Exact scheduling - Summary

Time and date	Displays	Cost
01.01.2019 12:04 AM	500	1824 HYGH
29.01.2019 10:04 AM	30	28 HYGH
03.03.2019 03:04 PM	2	1 HYGH
TOTAL		2034 HYGH

N. MEDIA	PLAY DURATION	N. CAMPAIGNS PLAYS	ESTIMATED CONTACT
4	125	5000	5 - 13K

Ich stimme den Nutzungsbedingungen zu.

[BACK](#) [BOOK NOW](#)

In a campaign dashboard the current status, impact, costs, etc. can always be observed to give the advertiser a near realtime overview about their advertisement campaigns.

IMAGE 10: CAMPAIGN DASHBOARD

The screenshot shows the HYGH Content Publisher Dashboard. At the top, there's a navigation bar with the HYGH logo, 'Content Publisher' (underlined), 'Display Provider', a balance of '1023.90 HYGH', and a user profile for 'Antonella'. A green success message states 'Success! Your campaign was successfully added!'. Below this is the 'Content Publisher Dashboard' header with an '+ ADD A CAMPAIGN' button. The main area displays a list of campaigns with filters for 'Budget', 'Exact', 'Paused', and 'Archived', and a 'Sort by Date Created' dropdown. Five campaign cards are visible:

- My First Campaign:** 3 MEDIA, 12 SECONDS, 7 SCHEDULES. 20 HYGH TOTAL COST, 0/2000 PLAYED. Status: EXACT SCHEDULING, IN REVIEW. Button: STOP.
- Live Poker How To Win Tournament Games:** 3 MEDIA, 12 SECONDS, 10 SCHEDULES. 20 HYGH TOTAL COST, 0/2000 PLAYED. Status: EXACT SCHEDULING, REJECTED. Message: Your Campaign has been Rejected! Please edit the content to comply with our policies. Button: EDIT.
- 5 Tips To Finding Effective Anti Snore Devices:** 3 MEDIA, 12 SECONDS, 120 SCHEDULES. 20 HYGH TOTAL COST, 13 HYGH ALREADY SPENT, 0/2000 PLAYED. Status: EXACT SCHEDULING. Button: STOP.
- Change Your Mind Change Your Luck:** 3 MEDIA, 12 SECONDS, 7 SCHEDULES. 20 HYGH TOTAL COST, 13 HYGH ALREADY SPENT, 999/2000 PLAYED. Status: EXACT SCHEDULING, RUNNING. Button: STOP.
- Live Poker How To Win Tournament Games:** 3 MEDIA, 12 SECONDS, 10 SCHEDULES. 20 HYGH TOTAL COST, 0/2000 PLAYED. Status: EXACT SCHEDULING, OUT OF FUNDS. Message: You have run out of funds! Please recharge your account and resume the campaign. Buttons: RESUME, ARCHIVE.

This concludes the user flow. The HYGH team will change or modify the final user flow based on initial feedback of their customers, but the goal will always that Display-Provider and Advertisers only need a few simple steps to use the system and both parties are always informed about the current status and money flow of their campaigns and displays.

Future Enhancements

Additionally to the features and functionality outlined in the document above, HYGH has already planned some future enhancements, which are described below:

1. **Appstore** - The focus of the HYGH Platform is to deliver advertisements to displays. Advertisement campaigns are mostly videos or still images, but new markets might expect also new media to be shown on displays. For this, the HYGH Platform already supports Youtube videos additionally to videos and images and will enhance the system to other digital media with an Appstore offering. New apps will provide an interface to add any digital media to be used for advertisement campaigns, be it another form of video, live-broadcasts, Twitch live-plays, etc.
2. **Campaign Text/Image/Video Editor** - While most people in the advertisement industry already prepared their campaigns either as stills, slideshows or videos, the HYGH platform also wants to support advertisement newcomers and allow to put your own campaign together with an integrated editor. This editor allows to select templates, stock images and videos and text integration for a full interactive experience and allows to create an advertisement from scratch within the platform itself.
3. **API to external Advertisement Networks and Products** - It would be silly to ignore the already existing advertisement networks and products and so the HYGH team plans to connect to already existing products with an open API. The HYGH Advertisement Platform can be used as an additional distribution network, or screen-networks can be integrated as additional displays. The possibilities are endless.
4. **Smart Parameter based Advertisements** - The current prototype and final product assume that an advertiser wants to select displays within a certain region, for example a city, a country or specially selected local displays. However, the more display data HYGH collects and the integration with external data sources would also allow to use parameter and natural language processing based display selection, for example *"use all displays near sports arenas, but only if the temperature is higher than 25 degrees Celsius"* for fully dynamic, context aware advertisement campaigns.