

PROJECT 2: NOVEL INTERFACES

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VideoHive

PROJECT 2: NOVEL INTERFACES INTRODUCTION

The problem domain we have chosen to explore is Remote Conferencing technologies. After the 2020 pandemic, the need for remote collaboration technologies for businesses has seen an all-time high. The DoIT help desk was no exception. At the beginning of the 2020 pandemic, the DoIT help desk has gone completely remote. After the pandemic in early 2021, the help desk switched to a hybrid work model. So, the reason why we chose DoIT for exploring this problem domain is that they are an excellent example of a business that heavily relies on contemporary Remote Conferencing technologies. [At any given time, almost all employees are going to be on an ongoing remote group meeting or call](#) as can be seen in Figure 1. And for those reasons mentioned above, this is why we believe DoIT is a place that can benefit from a better Remote Conferencing software to run their operations smoothly.

As of now, the main Remote Conferencing application used by DoIT is Microsoft Teams, while Teams is a good software that fulfills many of DoIT's needs, it is far from perfect. The problem with Microsoft Teams is that it only facilitates communication between employees in the form of Video/Audio calls, and that's about it. Our team sees things differently. We believe that through this facilitated communication, there are opportunities for more than just video/audio calling. Our prototype, "VideoHive" is a video conferencing

software that's an enhanced version of Teams. It has the following 3 added features:

- Login using Facial Recognition.
- Virtual Breakrooms.
- Brain-Computer Interface (BCI)

These features will be discussed in depth in the next sections.



Figure 1: Each DoIT agents is in an ongoing Teams call

PROJECT 2: NOVEL INTERFACES UNDERSTANDING

The first step we made in coming up with our VideoHive prototype was to understand our users first.

Understanding our users came in the form of the following steps:

1. Conducting an Ethnography
2. Conducting interviews with informants
3. Analyzing the data.

Step 1: We carried out our ethnography at DoIT since DoIT's employees were the prime users of remote-conferencing applications. We observed DoIT employees using the "Fly-On-The-Wall". We collected field notes all throughout observing the employees. [Figure 2](#) depicts the setting, while [Figure 3](#) shows a snapshot of the notes we gathered from our observations.

Step 2: Now that we have gotten a feel for how agents work at DoIT, we conducted interviews with 3 agents who volunteered to be our informants. All throughout the interviews, we have taken notes from each informant and documented all the questions and their answers. Our questions were focused on understanding the deep nuances that couldn't be explained just by observing the agents. The questions were focused on the dynamics of the workspace and how Microsoft Teams plays a role in making those interactions happen across both onsite and remote agents. [Figure 4](#) depicts an example of the notes we gathered from the interviews



Figure 2: POV: Fly-On-The-Wall Observation

A	B	C
	Fly on the wall observations:	Annotations:
1	General notes:	
2	11:02 AM The students work in a busy, fast-paced environment, answering calls from clients regularly throughout the day.	
3	11:06 AM Phone agents seem to be the ones handling simpler and common tasks, as the first line of response at DoIT.	Help queue is segmented by in-person / correspondence. Help queue tends to
4	11:10 AM They try to maintain a friendly and professional demeanor, striving to provide top-notch customer service to clients.	
5	11:15 AM During their downtime, they engage in a variety of activities such as socializing with colleagues, eating, drinking, resting, using their phones, or working on homework.	
6	11:19 AM They appear to have a good rapport with one another and often engage in light-hearted banter and joking around.	Agents context switch interaction (from formal to informal) between calls.
7	11:22 AM The students seem to work well together as a team, often sharing information or knowledge to help one another.	
8	11:27 AM If a client presents a particularly challenging problem, the students are not afraid to ask their QA for guidance.	
9	11:31 AM They use Microsoft Teams to communicate with their supervisor and other colleagues, often typing out detailed descriptions of the issue at hand.	
10	11:36 AM The students frequently consult IT documents to try and find solutions to client problems on their own.	Agents relay on several tools /
11	11:40 AM They seem to be quite knowledgeable about common IT issues, and are often able to solve these problems quickly and efficiently.	
12	11:45 AM HQAs try to ensure the best quality of service for clients by creating a welcoming air for agents to resolve any doubts.	Higher level agents help resolve more complex issues.
13	11:48 AM The students often take detailed notes during client calls in an incident management app, which they use to help them remember specific details or solutions for future reference.	
14	11:53 AM They appear to be well-organized and diligent, often keeping their workspaces tidy and free from clutter.	
15	11:58 AM The students seem to be skilled at multitasking, often taking notes while simultaneously assisting the clients.	
16	12:02 PM They appear to be good listeners, often taking the time to fully understand a client's issue before proposing a solution.	
17	12:07 PM The students seem to have a strong work ethic, often staying late to finish tasks or help colleagues with particularly challenging issues.	Agents deploy customer service skills in addition contemporaneous note
18	12:10 PM They appear to be comfortable using a variety of IT tools and software, such as remote desktop programs, ticketing systems, and chat software.	
19	12:15 PM They appear to be comfortable working under pressure, often handling multiple calls or issues simultaneously.	
20	12:19 PM They appear to be good problem-solvers, often thinking creatively to find solutions to complex issues.	
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Figure 3: Field notes from the Fly-On-The-Wall Observation

	Informant 1:	Annotations:
	John (Fake Name) (2 years of experience in the call center)	
Question	Is the environment always fast paced?	
Answer	No there are certain peak times and you can tell by the number of agents available, and then there are slower times, usually after 5pm or during the weekend.	Less staffing during week
Question	What are the main tools in agents work?	
Answer	The Laptops or the stations computers are at the core. Then a lot of telecommunication apps like Teams, Webex, Jabber, are the second core level for the agents function, as we use Teams to communicate and consult eachother, and Jabber or Webex, to communicate with the clients. Then we have Chatterwell and Nova, to keep track of cases.	Communication at DoIT is
Question	How do you see the interactions between agents?	
Answer	Usually, friendly and cool. Obviously with people coming and going, and the DoIT being a small part of their college journey, its hard to say we are like a family, but we try.	
Question	How do you perceive the interactions with clients?	
Answer	We always try to attain the highest level of professionalism, beyond our own exussion or mood. For us we are though and always insisting on client comes first, although it's fair to say some times we do not get the same level of respect back from the clients.	Student employees main
Question	What is the main factor in agents work?	
Answer	Time. Even in the down times we always try to be efficient and quick with our services to value time for the client and ourselves.	This comes back to my f
Question	Tell me more about the QA.	
Answer	The QA is like a parent for the DoIT family. During different times we have different QAs which are in charge of handling callback cases, security cases, or helping students resolve more complex issues. They also act as a bridge to full time supervisors.	Sounds like QAs are the

Figure 4: A snapshot of one of 3 notes we gathered from the interviews

PROJECT 2: NOVEL INTERFACES

Understanding

Step 3: Now that we have all the data we need on DoIT and how their agents go about their shifts, we started parsing through the data we got. First, we needed to understand the hierarchy within the help desk. So, we constructed an Affinity Diagram to break down the roles within DoIT. See [Figure 5](#)

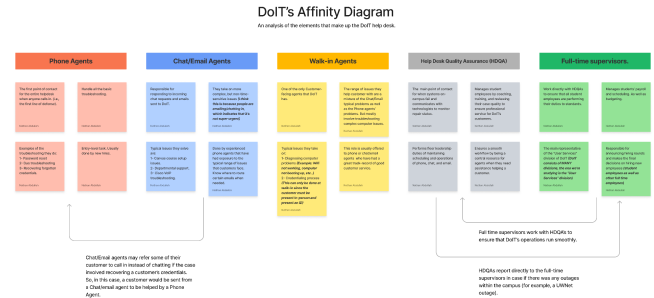


Figure 5: Affinity Diagram explaining all the roles in DoIT

In addition to that, we needed to understand the flow of when a call comes in all the way to the very end. So, a sequence model was built to put things in perspective. This model helps us get a better understanding of what agents do on their computer the moment a call comes in. The construction of the sequence model in [Figure 6](#) would not have been possible without conducting the interviews with the informants since observing agents alone isn't enough to understand the intricacies of case handling, see [Figure 6](#).

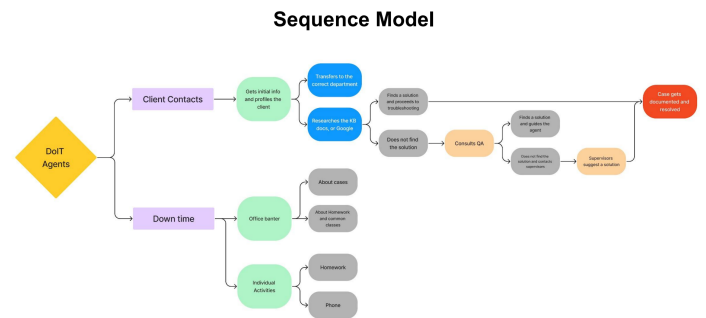


Figure 6: Incident vs work place interaction

Finally, to understand how the different roles described in Figure 5 interact with each other, a flow model was built to analyze the way all the different employees within DoIT interact with each other to run the help desk's operations smoothly. See [Figure 7](#).



Figure 7: Flow model representing the interaction between the different roles at DoIT

Analysis of all the data we gathered enabled us to generate ideas for our “VideoHive” prototype. These ideas will be discussed in detail in the next section.

PROJECT 2: NOVEL INTERFACES IDEATION

After concluding our observations through the ethnography, we realized the imminent need for a better way to connect and activate agents' workspace; a method in which the agents would be able to initiate their work more efficiently.

The initial idea was developed around the principle of initiating all the applications used by agents all at once. The application called VideoHive was to be an integration of MS Teams that initiates all the applications that an agent needs to log into.

During our first round of bodystorming, with the help of the participants, we decided to add secondary futures that make working with the application easier. The initiation of the VideoHive process was decided to be upon a facial scan. Having a camera, agents would be able to initiate everything simply by sitting in front of the camera and using their faceID; after the one-time set-up of the application with their credentials.

Another feature that was brainstormed to be added in order to reflect a more futuristic functionality, was integration of BCI into a special headset calibrated to the app, giving the agent the ability to initiate calls or cases using their brainwaves.

Through our secondary bodystorming, possible difficulties with the BCI such as customization or sensitivity were raised and later addressed. Additionally, Agents importantly pointed out the need for Log-in

options based on their roles, which was implemented into the revised storyboards.

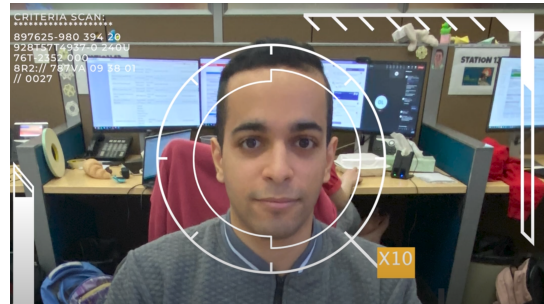


Figure 8: VideoHive Facial Recognition function



Figure 9: VideoHive BCI integration

- Agent 1:
- Upon arriving at the call center, Agent 1 was given a demonstration of the VideoHive app and headset by us.
 - The agent first tried out the facial recognition log-in process and found it to be quick and easy, **only requiring a few adjustments to the camera angle.**
 - Next, the agent put on the headset. They appreciated the **hands-free nature of the headset** and the ability to focus and trigger tasks without having to manually initiate calls or callbacks.
 - The **agent suggested** the addition of a feature that would allow for **customizable triggers.**
- Agent 2:
- When Agent 2 used the **facial recognition** log-in, the agent found it to be **surprisingly simple and efficient.**
 - Once logged in, the agent explored their apps to make sure everything is logged in properly and ready to use.
 - **Despite the technical difficulties, the agent appreciated the integration of all necessary applications in VideoHive** and the ability to initiate cases and callbacks with the headset.
 - The agent especially liked the fact that **they could just focus and create a case while doing other tasks,** while on call.
- Agent 3:
- Agent 3 was initially hesitant about the headset.
 - After logging in with the facial recognition, the agent loved that everything was ready to use.
 - Once the headset was set up, the agent was amazed by the **ability to focus on tasks without having to manually do them.**
 - The agent liked the fact that it initiated calls or callbacks based on beta brain waves, but **raised the concern about sensitivity of the headset,** and how it is possible to make accidental cases or call backs.
 - The agent suggested the **addition of some sort of differentiation on what agents have to log into based on their role.**

Figure 10: BodyStorming notes

PROJECT 2: NOVEL INTERFACES PROTOTYPING

Keeping a video informative and engaging is as much of an art exercise and a strict matter of human psychology. In three minutes we aimed to explain one captivating feature of VideoHive, the Face Recognition login capabilities. How do we connect our audience with this human computing interaction?

The video should likewise display the problem without intervention. Finally, we must demonstrate how VideoHive solves the problem outlined, gain adherence, and not lose attention, remaining informative.

In early iterations we conducted fly on the wall observations. The literal environment our cultural probe captured resembled a worker beehive. Playing off this concept, the direction of the production created a fly on the wall flight path through the workplace.

A great deal of time was spent in choosing a soundbed for the video. The sound chosen is an original composition. Several images were taken from within DoIT, which were used with the Ken Burns effect and referenced in designing the 3D building model used in the prototype video as well.

The voice over work is a product of an iteration that focused on prototyping the software. The production team considers a scenario in which a worker arrives to work minutes early to set up their workstation.

Highlighting the benefits of VideoHive! 🦋

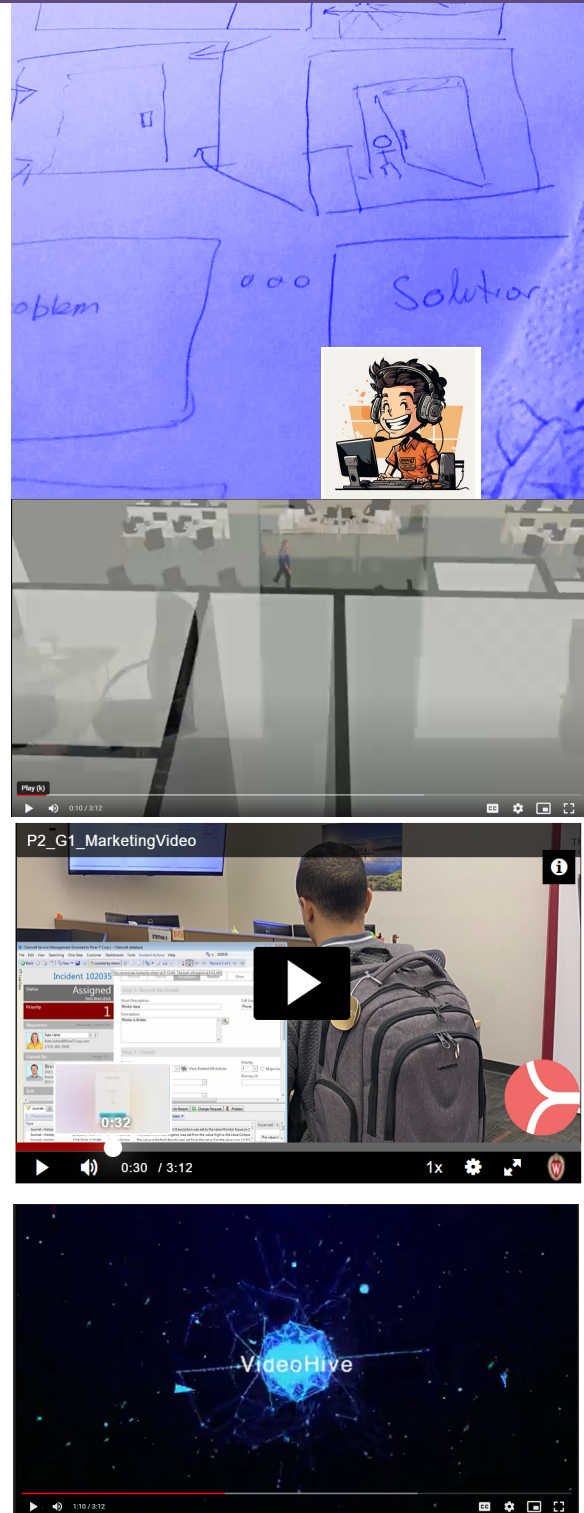


Figure 11: Informational Video Production collage (from brainstorm to prototype).

PROJECT 2: NOVEL INTERFACES FINAL SOLUTION

The client is expecting state-of-the-art, high-tech gear, but the solution is more primitive than what our topdown approach suggests. Simply comparing employee credentialing profile pictures with a live reference from a Hi Definition Webcam offers software engineers an early PC state runtime software development opportunity.

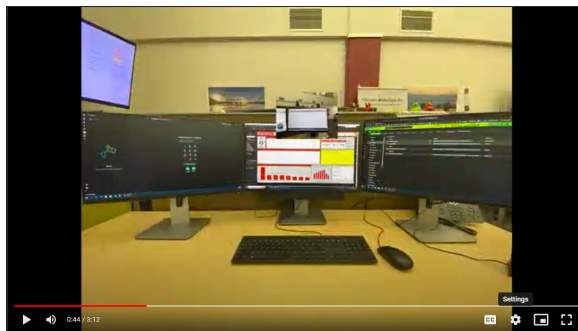


Figure 12: Video Clip. Logging into multiple programs, apps, and websites. (Problem)

After extensive brainstorming, bodystorming, and prototyping, the final version of VideoHive was ready to be presented. Taking the testing feedbacks into consideration, our application function as follows:

VideoHive as a solution for Help desks to efficiently initiate the Agent's workspace, uses facial recognition to boot the app, then gives the agents an option to choose between different options for which application they want to be booted up

based on their role. Then the requested applications are launched.



Figure 13: Video Clip: Face Recognition demo (Solution)

After MVP VideoHive could explore other computer signaling protocols.

The VideoHive interface is paired with a special headset that when worn by the agent, is able to monitor the agent's beta brain waves.

Since beta brain waves are able to be triggered voluntarily, the agents are able to customize the headset to trigger an action on a spike of beta waves, thus giving the agents the ability to do certain actions with the power of their mind; this technology is known as Brain-Computer Interface aka BCI.

Actions such as initiating a case or a call back can be assigned to be triggered using this function. Since we only use Beta waves the headset will not pick up on the waves unless they are picked by the agents simply with the act of focusing.