

# Devil-bot Chatbot

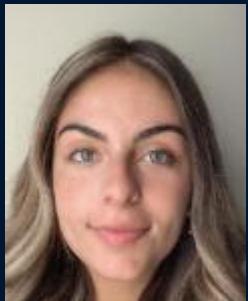
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**Code+ Students:** Ayoub Mahdar, Brady Kim,  
Edna Zhang, Emily Hughes, Jacqueline Cruz,  
Mitchell Negus

**Project Leads:** Mark McCahill, Isabel Valls

# Our Team

**Duke HR**



Emily Hughes

**Duke Registrar**



Jacqueline Cruz

**Duke OIT**



Edna Zhang

**Team Leads**



Mark McCahill



Brady Kim



Mitchell Negus



Ayoub Mahdar



Isabel Valls

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## Team Goals



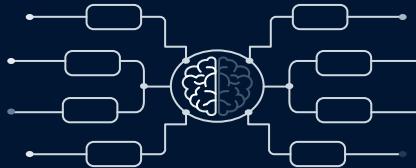
Address the consumer's  
questions before an  
employee has to



Leveraging Microsoft and  
IBM AI technology to build  
Chat-bot

# How Does the Chat-bot Work?

- Software that can automatically communicate with users
- Uses patterns to develop responses

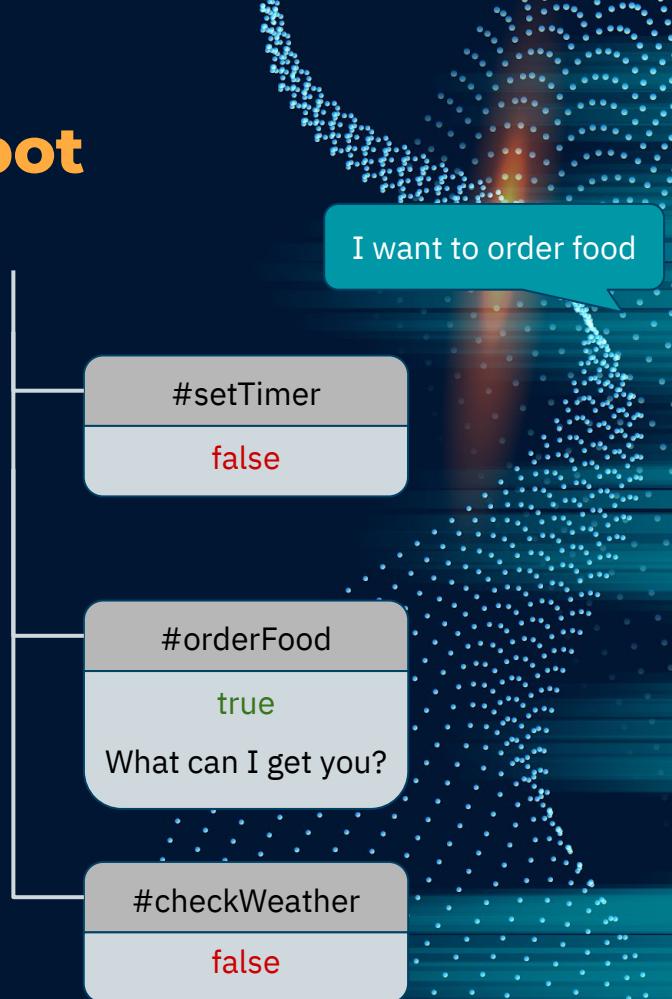


## Technology Implemented

- Applies NLP (Natural Language Processing)
- Analyzes intents and entities used to answer a question
- Implements data to identify how to answer
- Multi-turn conversation

# IBM Watson Assistant Chatbot

- **Detects intent from an utterance**
  - Intent: user's goal or purpose
  - Utterance: what the user says
- **Also looks for entities**
  - Entity: specific word of significance
- **Checks nodes and delivers response**



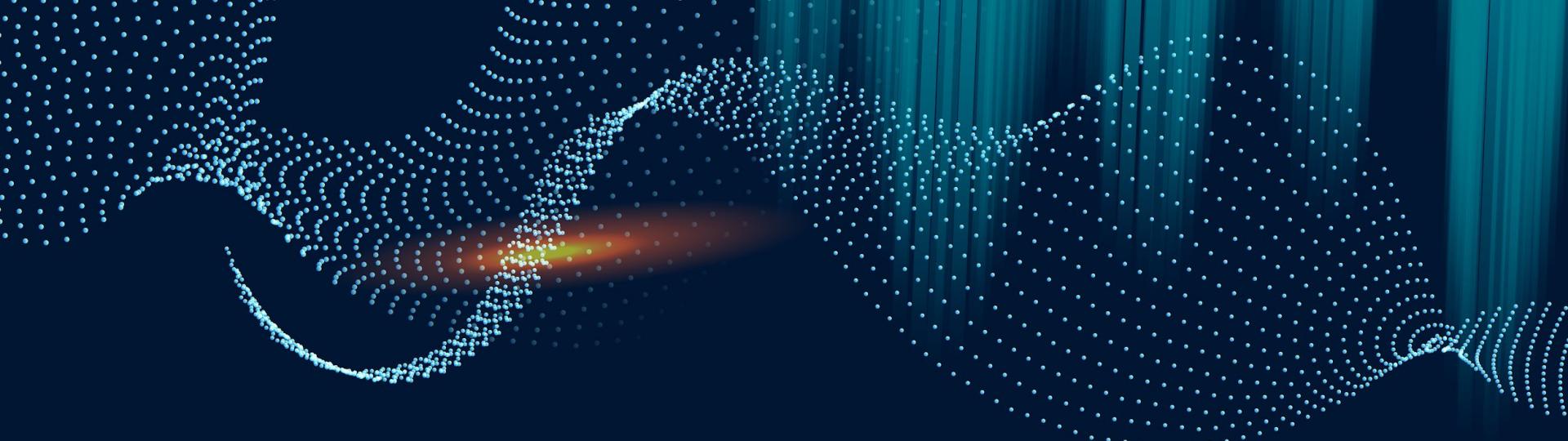
# IBM Watson vs. Microsoft Azure

## IBM Watson

- **Pros:** Easy integration for calling external services (webhook), intents, entities, and dialog at one place, advanced NLP
- **Cons:** Slow maintenance, difficulty with importing knowledge base

## Microsoft Azure

- **Pros:** QnA Maker is easy to navigate & update, more customizable
- **Cons:** Difficult deployment, difficult integration with additional Azure services



01 | **Duke Registrar**  
Jacqueline Cruz & Mitchell Negus

# Duke Registrar Chatbot

## About the Registrar

- Manages a variety of academic services
- Drop/add, final exam schedules, transfer credit, grade changes, DukeHub

## Goals

- Handles a high volume of requests
- Provides a personalized experience
- Offers friendly, round-the-clock support

Undergraduate

Faculty

Graduate

Staff

Professional

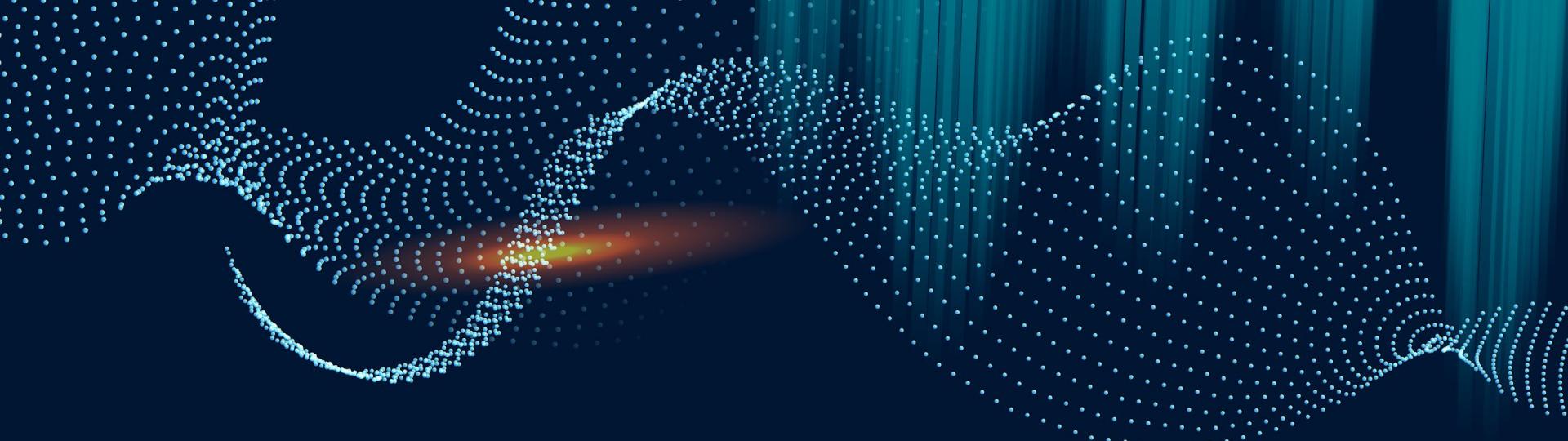
# Duke Registrar Chatbot

## Current Status

- Implemented questions from user testing
- Familiarized users with the registrar
- Chatbot can write to a database

## Next Steps

- More user testing
- Subject-expert testing
- Iterate and improve the chatbot



02 | Duke OIT

Edna Zhang & Ayoub Mahdar

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# Duke OIT Chatbot

## About Office of Information Technology

- Manage Duke's technology
- Provide services and applications to students and faculty

## Goals

- Cope with staff shortage during the COVID-19 pandemic
- Bridge between website and Live Chat/phone/email



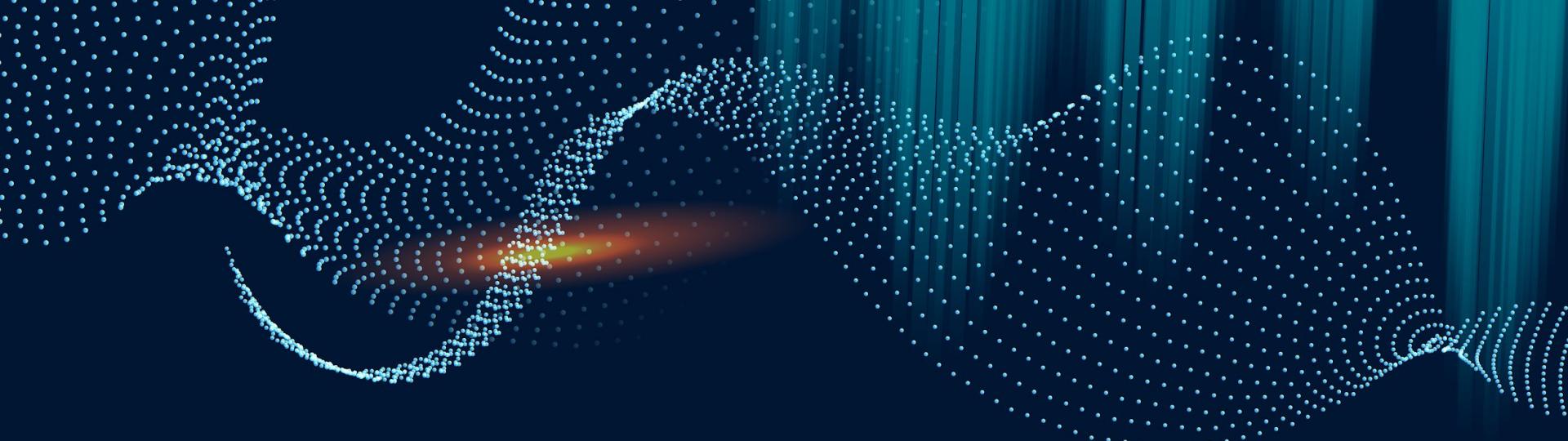
# Duke OIT Chatbot

## Current Status

- Answer OIT FAQs
- 1st round of user testing
- ~7% Redirect to DHTS

## Next Steps

- Use Live Chat transcripts for bot improvement
- Stakeholder testing
- Keep track of intent detection with SQL database



03

# Human Resources

Emily Hughes & Brady Kim

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# Duke Human Resources Chatbot

## About Human Resources

- A department of Duke that aids employees of Duke
- Information on disability benefits to retirement plans

## Goals

- Answers a variety of user questions
- Presents a swift and simple interface
- Provides support anytime of the day
- Alleviates pressure on the HR staff

# Duke Human Resources Chatbot

## Current Status

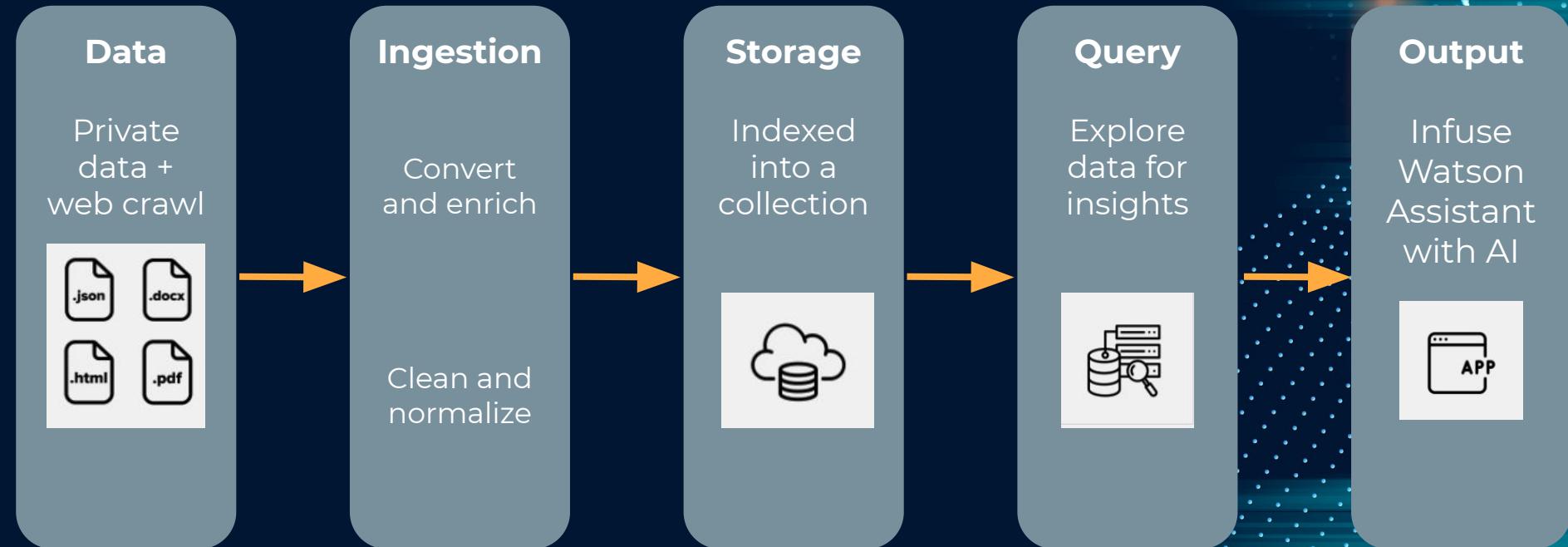
- Implemented Watson Discovery search to update bot automatically when website updates
- Performing user testing
  - Added new intents and rephrased questions

## Next Steps

- Continue user testing to improve bot
- Link SQL database and chatbot by questions asked and answers provided
- Have a broader variety of questions implemented



# Watson Discovery



# Watson Discovery

HRIC Chat-bot

What is DukeWELL?

I searched my knowledge base and found this information which might be useful:

**DukeWELL | Human Resources** 

Payroll Time Away From Duke Workplace Health & Safety International Definitions Forms Benefits Forms Manager Forms You are here Home Health & Wellness *DukeWELL DukeWELL My Health Web...*

[See more](#)

**DukeWELL Care Management What i...** 

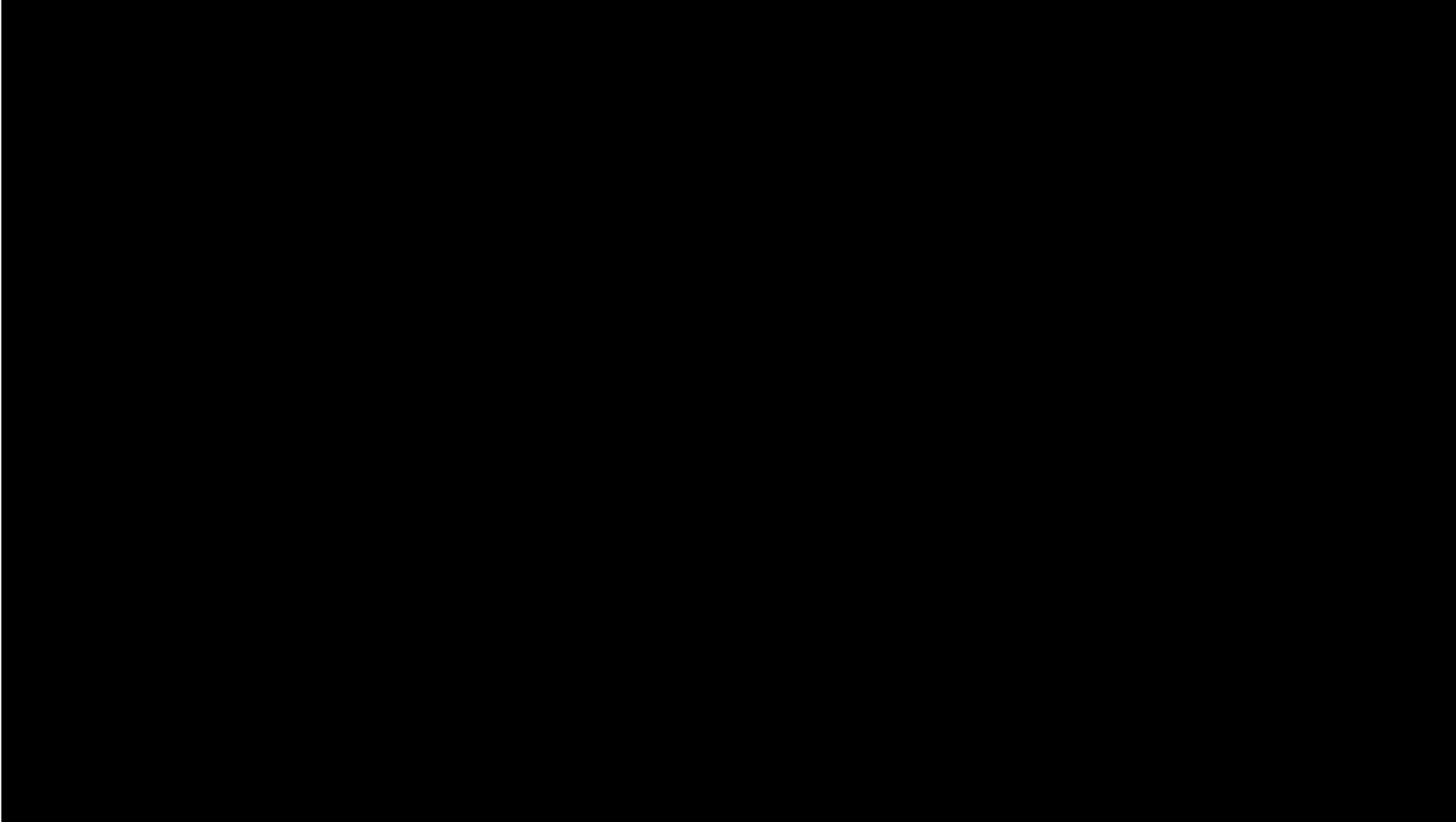
DukeWELL provides supplemental care support services at no additional cost for beneficiaries of select healthcare plans, including Duke Select & Duke Basic. DukeWELL care managers work...

[See more](#)

**Skip to main content Duke@Work Ab...** 

These include: *DukeWELL DukeWELL* provides supplemental care support services at no

Type something...  



Have questions?  
Talk with our OIT chatbot.

# Office of Information Technology

IT STATUS ●

- active incidents

- scheduled maintenance

ABOUT ▾ WHAT WE DO HELP



What can we help you with?



Duke OIT

Yes. Log in to [duke.zoom.us](#), and select Settings > Meeting. Under Other, Schedule Privilege displays users who may schedule on your behalf. Click the + to assign scheduling privileges to a user, who must have a Duke Zoom account. In the Assign scheduling privilege window, type the user's NetID email.

Read more about scheduling privileges [here](#).

Need further assistance?

Thanks

Thank you for chatting with me today. Was your problem resolved?

Yes

No

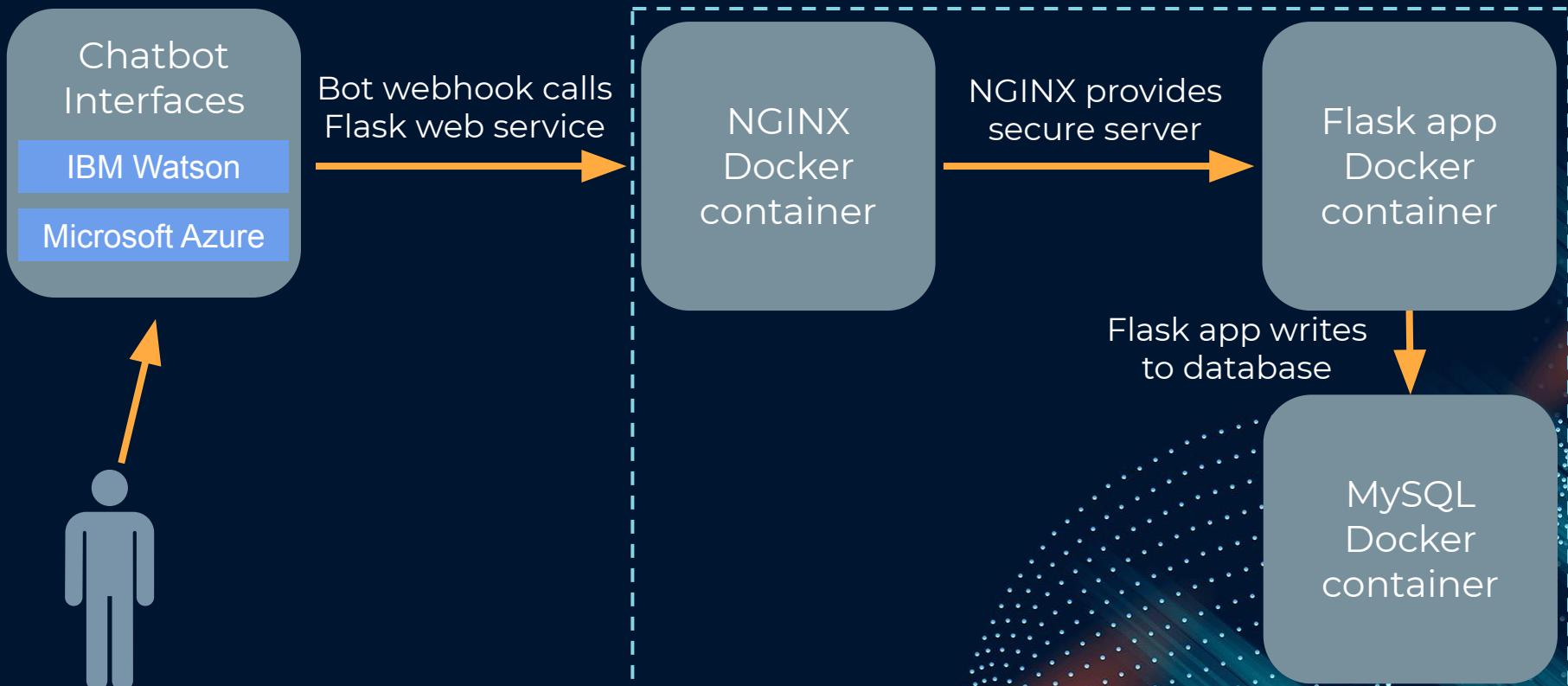
Yes

| Thank you! I'm glad I helped. Bye!

Type something... 



# Infrastructure



# Testing

## Format

- Zoom meeting
- Sent chatbot link to testers
- Testers were recorded sharing their screen
- Rounds with users and stakeholders

## Results

- New questions to add
- Rephrasing existing questions
- Making chatbot more intuitive
- Moving on to async testing

# Chat-bot Care & Feeding

	Site Visits/Month	% Bot Users	Bot Users/Month
<b>Registrar</b>	43,300	15%	6,495
<b>OIT</b>	100,000	1%	1,000
<b>HR</b>	147,130	15%	22,070

# Chat-bot Care & Feeding

## Registrar

Total Cost Estimate:  
\$954/month

## OIT

Total Cost Estimate:  
\$184/month

## HR

Total Cost Estimate:  
\$3,124/month

- Watson Assistant Plus @ \$140/month for 1000 monthly active users + \$14/100 additional active users
- Flask Web Server Cost:
- Lower- \$527.91/year and \$44/month
- Upper- \$831.23/year and \$69.27/month
- Staff time for bot base maintenance is **not** included in the cost estimates

# Goals in Final Week



## Goal 1

Improve dialog  
and multi-turn  
conversations



## Goal 2

Conduct subject  
expert testing



## Goal 3

Continuously  
gather user  
feedback

# Registrar, OIT, HR Projects



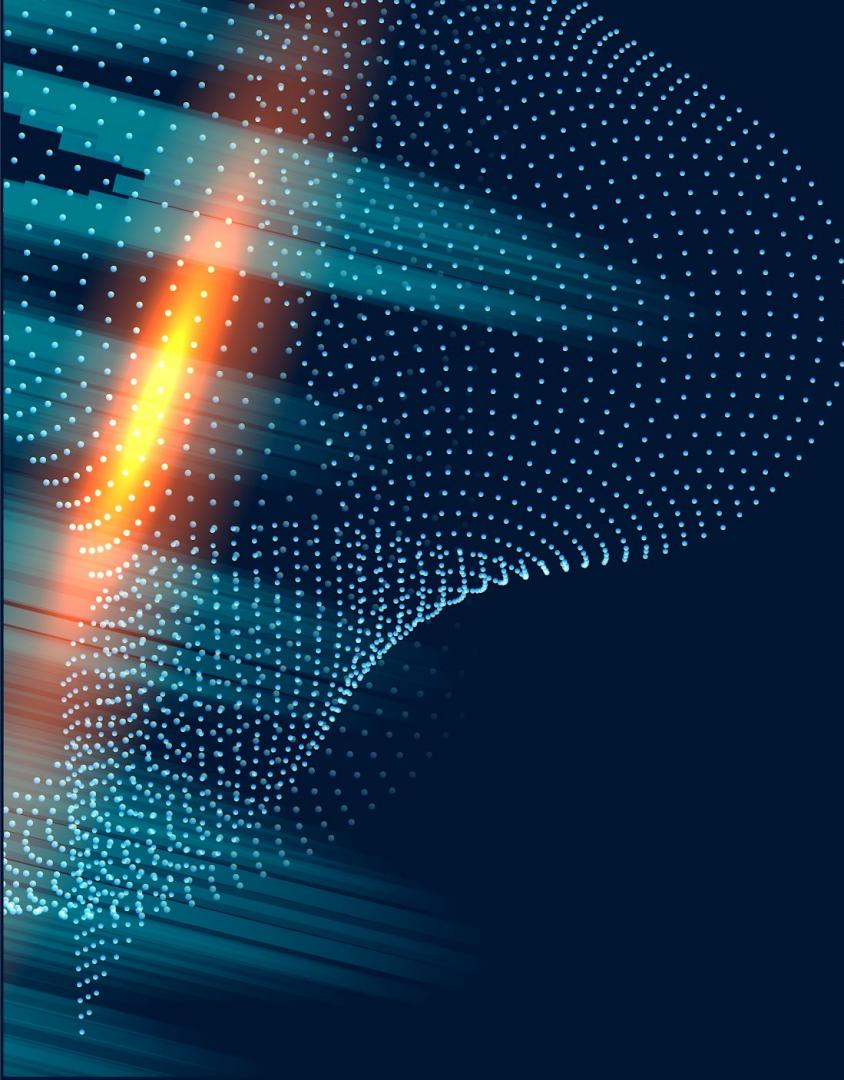
Automate routine  
questions and  
answers



Relay difficult  
questions to a  
human



Improve the  
chatbot on an  
ongoing basis



# THANKS!

Do you have any questions?

We are looking for volunteers to test our Chat-bots.  
If interested, contact [braeden.kim@duke.edu](mailto:braeden.kim@duke.edu)

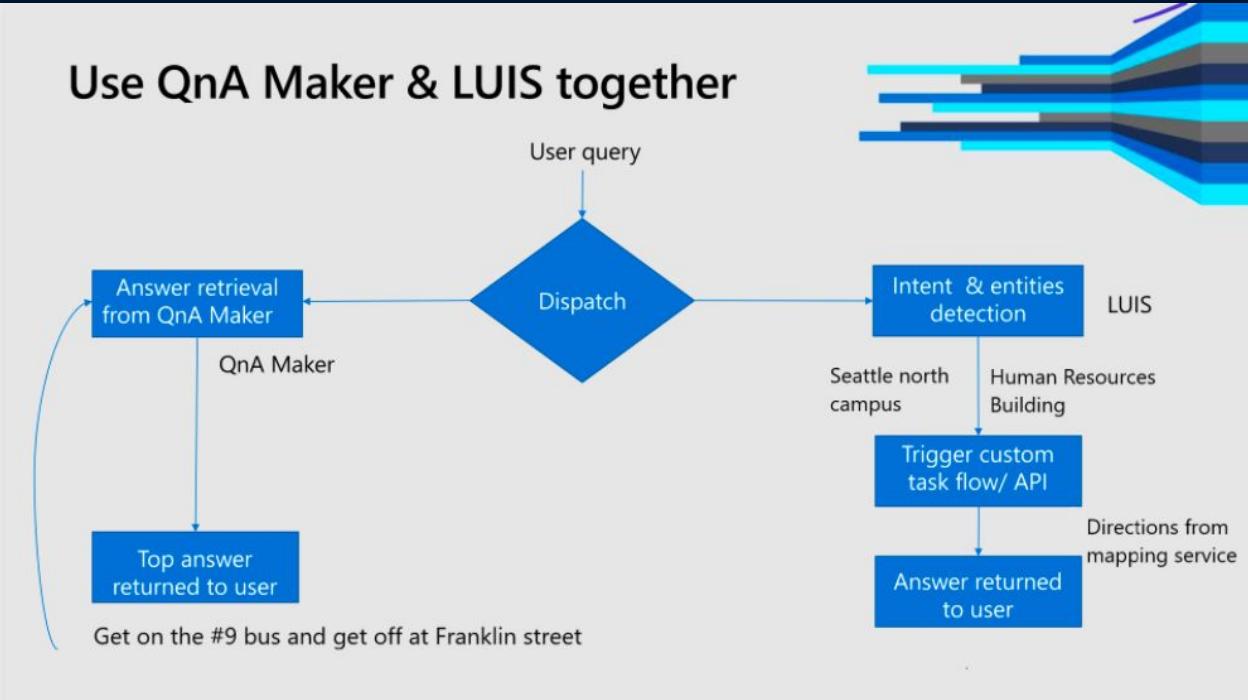


The slides after this are extra  
design slides



# Microsoft Azure bot

## Use QnA Maker & LUIS together



# Infrastructure

## Webhooks

- Activates when dialog node is triggered
- IBM bot calls flask app
- Flask app calls functions

## Database

- MySQL in Docker container
- Perform CRUD operations from flask app
- Track questions and intents

## Deployment

- Default route of flask app
- Embed bots into HTML template
- Copy source code from stakeholder sites

# Infrastructure

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## Current Status

- Implemented questions from user testing
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## Next Steps

- More user testing
- Subject-expert testing
- Iterate and improve the chatbot

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A PICTURE  
IS WORTH A  
THOUSAND  
WORDS



# YOU COULD USE THREE COLUMNS, WHY NOT?



## MARS

Despite being red,  
Mars is actually a  
cold place



## JUPITER

It's a gas giant and  
the biggest planet in  
the Solar System



## VENUS

Venus has a very  
poisonous  
atmosphere

**“This is a quote, words  
full of wisdom that  
someone important said  
and can make the reader  
get inspired.”**

—Someone Famous

# THANKS!

---

Do you have any questions?  
[addyouremail@freepik.com](mailto:addyouremail@freepik.com)  
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## A PICTURE REINFORCES THE CONCEPT

Images reveal large amounts of data, so remember: use an image instead of long texts

# AWESOME WORDS

---

Because key words are great for catching  
your audience's attention



# YOU COULD USE THREE COLUMNS, WHY NOT?



## MARS

Despite being red,  
Mars is actually a  
cold place



## JUPITER

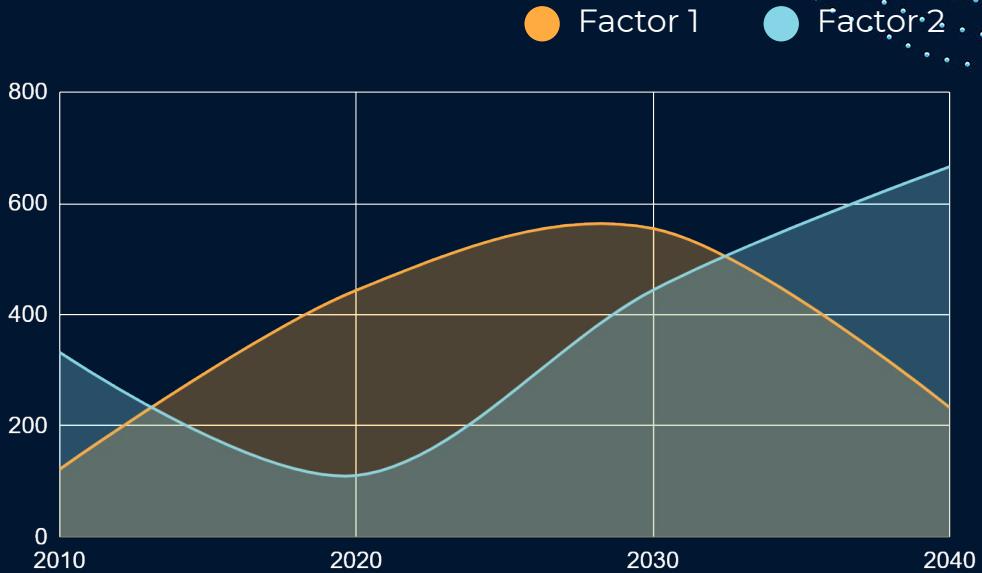
It's a gas giant and  
the biggest planet in  
the Solar System



## VENUS

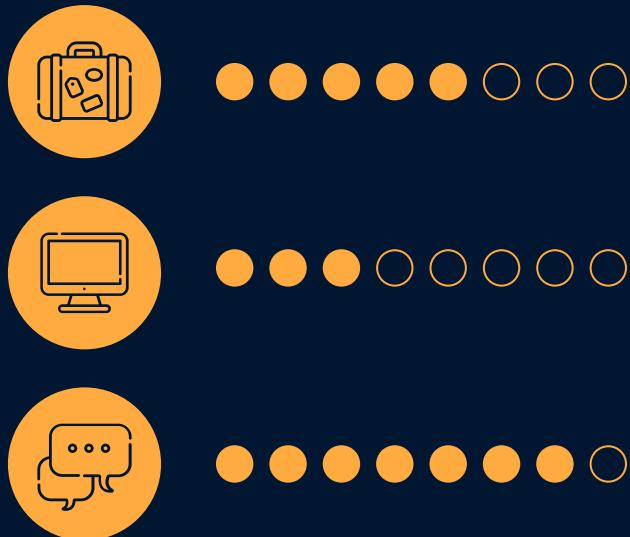
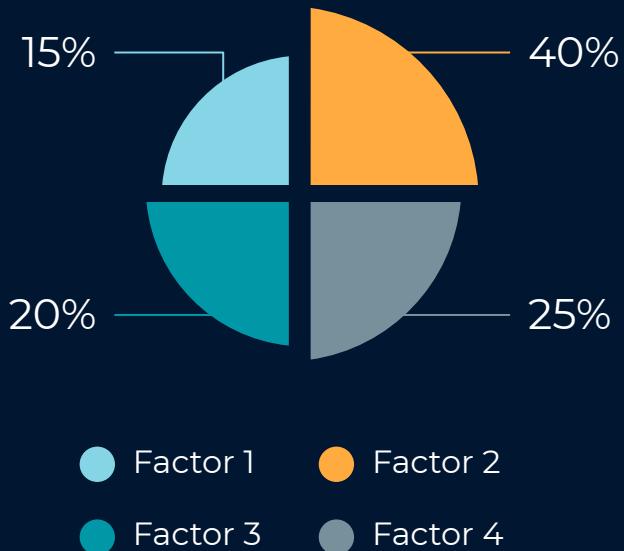
Venus has a very  
poisonous  
atmosphere

# THIS IS A GRAPH!



To modify this graph, click on it, follow the link,  
change the data and paste the new graph here

# INFOGRAPHICS MAKE YOUR IDEA UNDERSTANDABLE...



---

# INFOGRAPHICS MAKE YOUR IDEA UNDERSTANDABLE...



---

**... AND THE SAME GOES  
FOR TABLES**

	MASS	DIAMETER	GRAVITY
MERCURY	0.06	0.38	0.38
MARS	0.11	0.53	0.38
SATURN	95.2	9.4	1.16

---

# THIS IS A MAP!



---

# A TIMELINE ALWAYS WORKS WELL

**DAY 1**

Earth is where  
we live on

Jupiter is the  
biggest planet

**DAY 2**

**DAY 3**

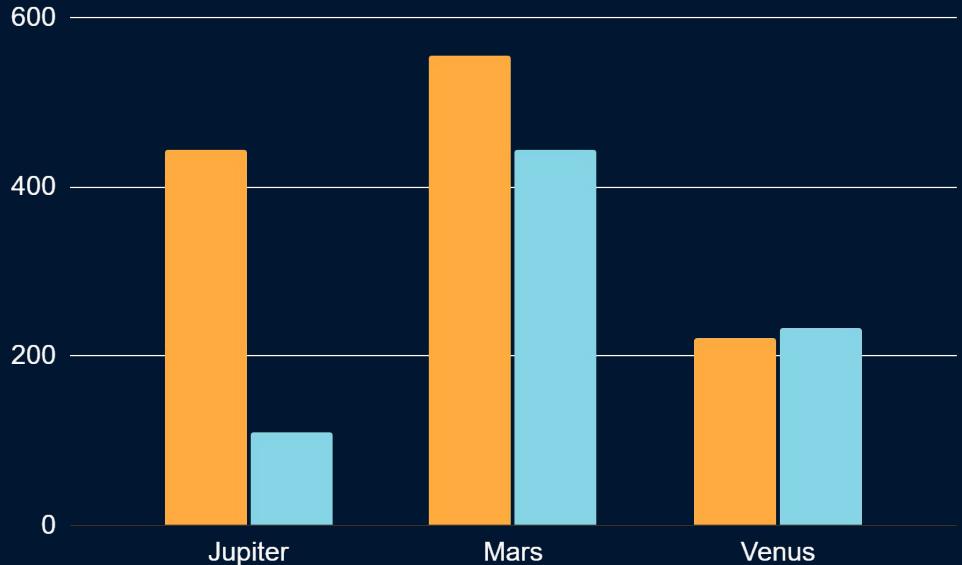
Mars is a cold  
place

Venus has a  
nice name

**DAY 4**



# DO YOU PREFER THIS GRAPH?



● Factor 1

● Factor 2

To modify this graph,  
click on it, follow the  
link, change the data  
and replace it

# 300,000

---

Big numbers catch your  
audience's attention

---

# DO YOU NEED FOUR COLUMNS?



## MARS

Despite being red, Mars is a cold place



## MERCURY

Mercury is the closest planet to the Sun



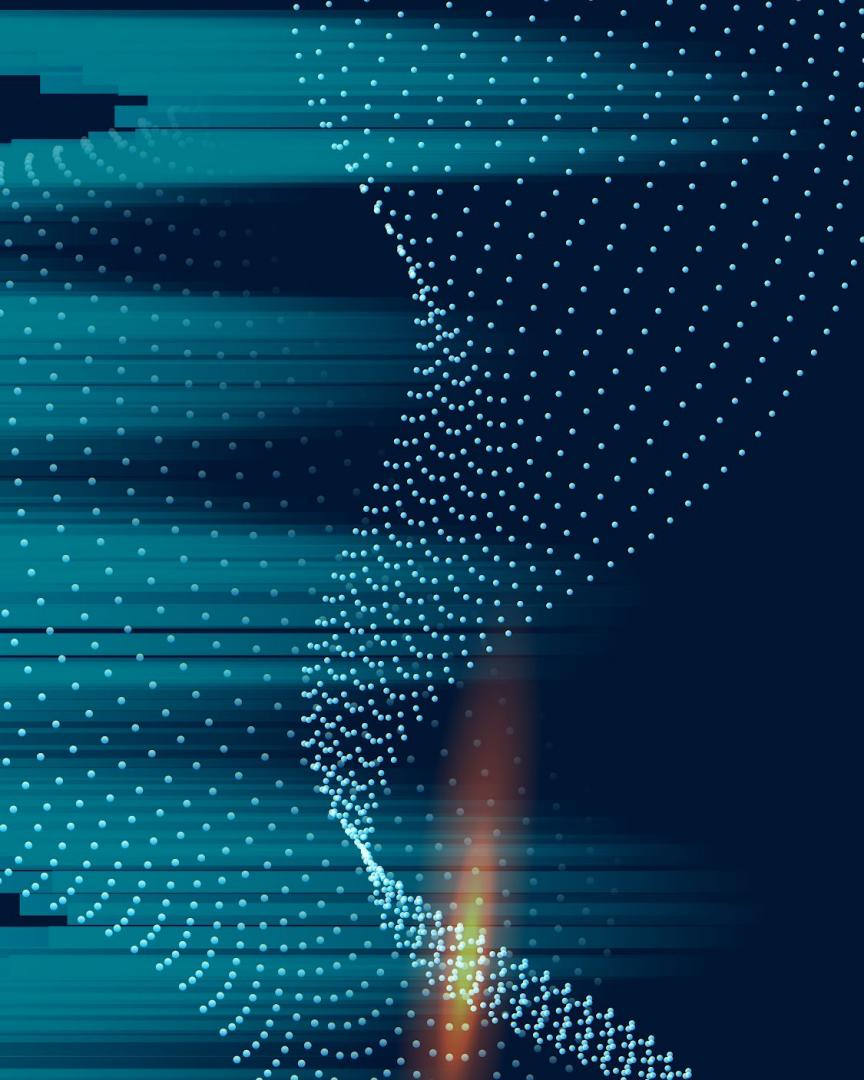
## JUPITER

It is the biggest planet in the Solar System



## VENUS

Venus has a beautiful name, but it's hot



**333,000**

Mercury is the smallest planet

**245,000**

Jupiter is the biggest planet

**386,000**

Despite being red, Mars is cold

---

## THESE ARE THE PERCENTAGES!

**34%**

Mars is a cold place

**48%**

Mercury is the smallest planet

**18%**

Jupiter is the biggest one

# **REVIEWING CONCEPTS IS A GOOD IDEA**

## **MERCURY**

Mercury is the smallest planet

## **VENUS**

Venus has a beautiful name

## **MARS**

Mars is actually a cold place

---

## **JUPITER**

It's a gas giant and the biggest one

## **SATURN**

Saturn is the ringed one and a gas giant

## **NEPTUNE**

It's the farthest planet from the Sun

# A SUMMARY IS GOOD!

You can use bullet points to talk about the concepts. It is much more visual than a large text

# WHAT THEY SAY ABOUT US?

“Mercury is the closest planet to the Sun”

—**SARA BLACK, 19**

“Jupiter is the biggest planet of them all”

—**HELENA PATTERSON, 22**

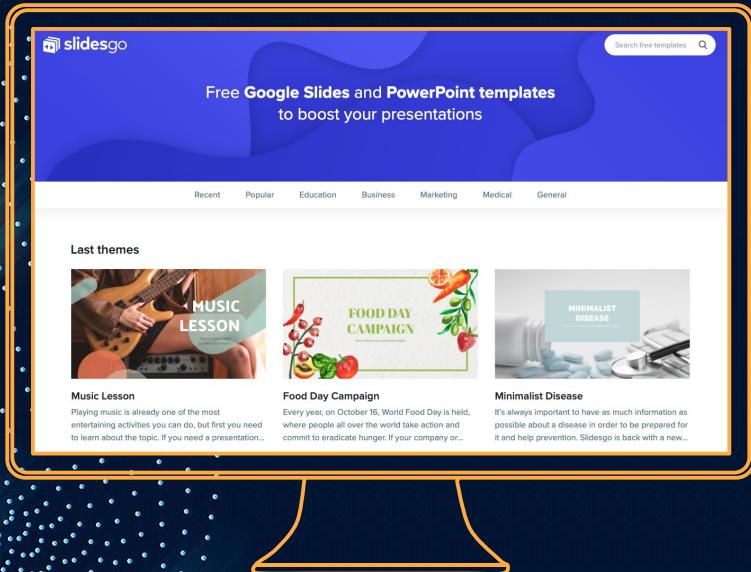
“Despite being red, Mars is actually a cold place”

—**JOHN DOE, 31**

“Venus has a beautiful name, but it’s hot”

—**WILL WHITMAN**

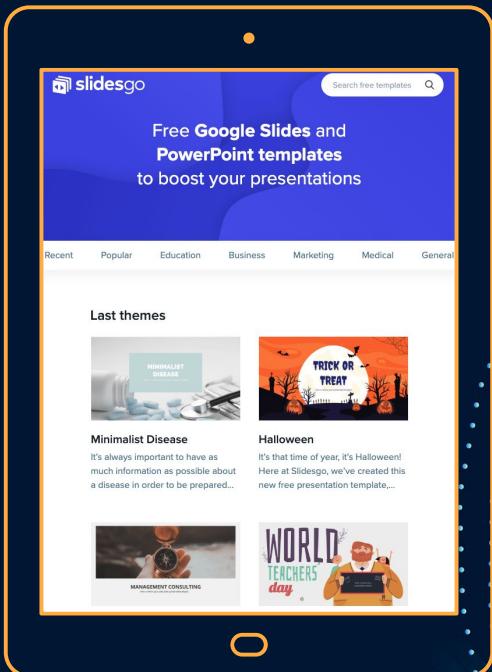
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# TABLET APP

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# MOBILE WEB



You can replace the image on the screen with your own work. Just delete this one, add yours and center it properly



## A GOOD WAY TO END THE PRESENTATION

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Mercury is the closest planet to the Sun and the smallest one in the Solar System—it's only a bit larger than the Moon

# THANKS!

---

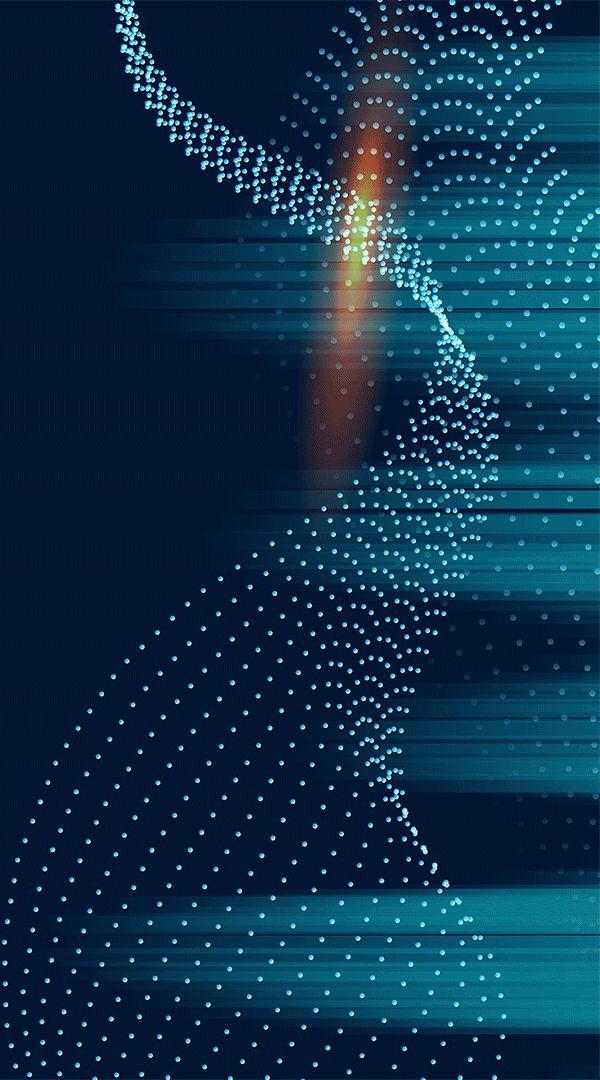
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[yourcompany.com](http://yourcompany.com)



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# ALTERNATIVE RESOURCES

## PHOTOS:

- Low angle man with virtual reality simulator
- Young man working on an ethernet switch medium shot
- Motherboard with optical fiber cables
- High speed optical fiber with blue light

---

# RESOURCES

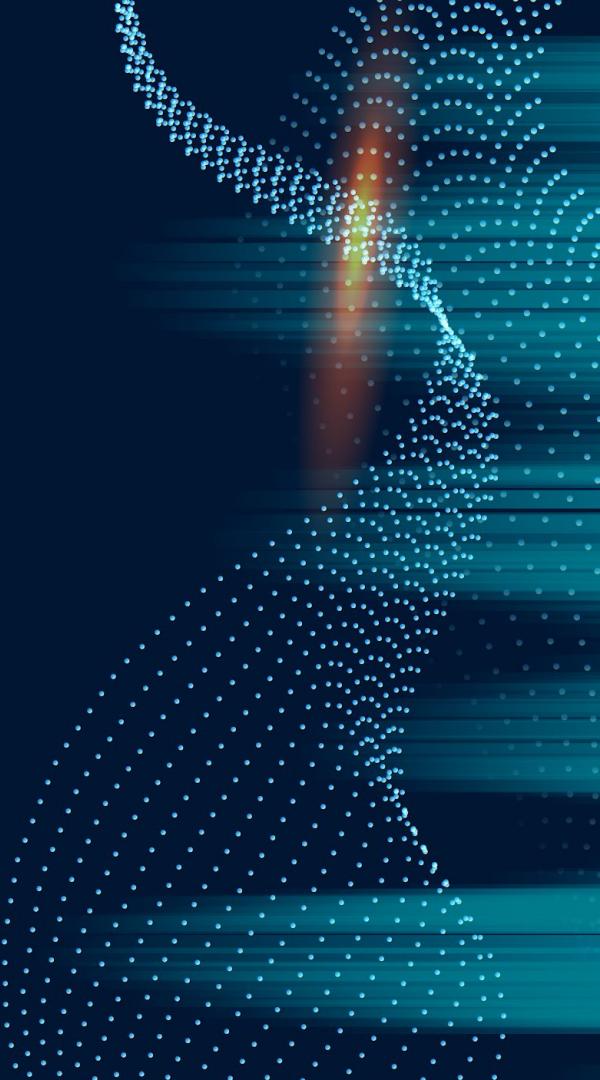
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- Particles background in gradient

## PHOTOS:

- Skyscrapers with sunlight
- Vivid girl in vr headset having fun



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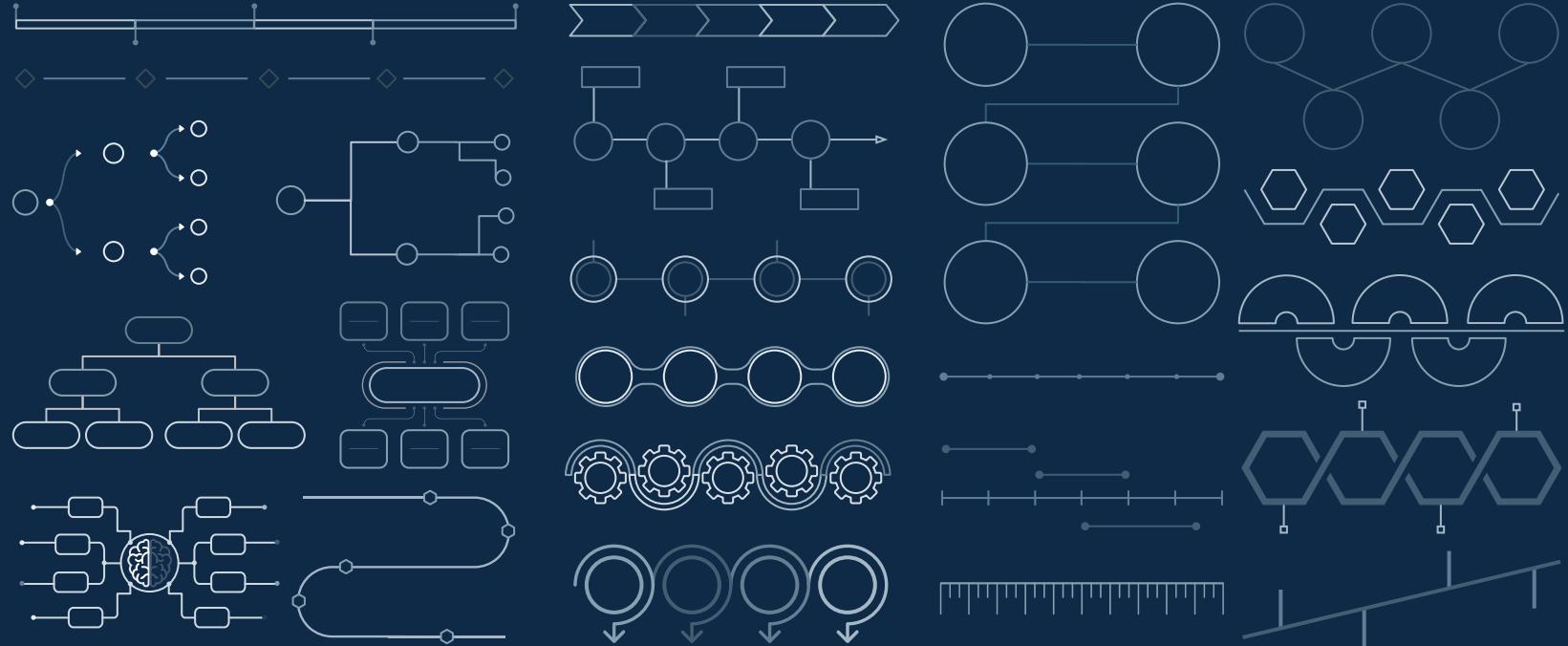
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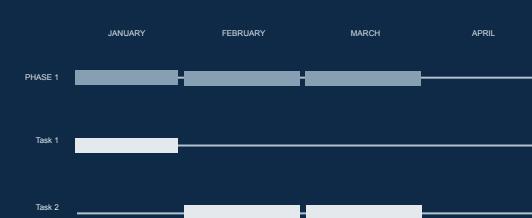
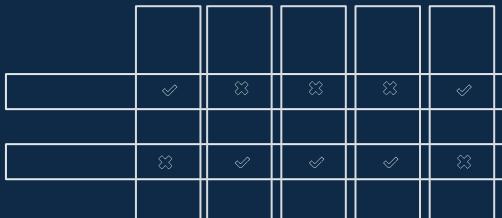
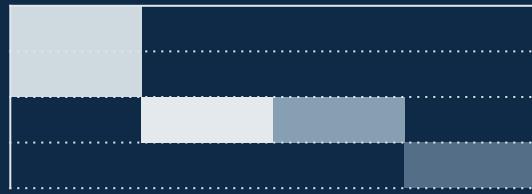
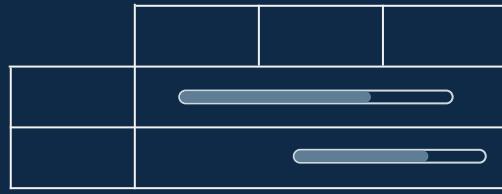
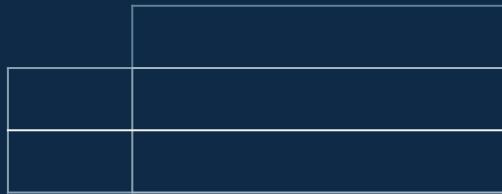
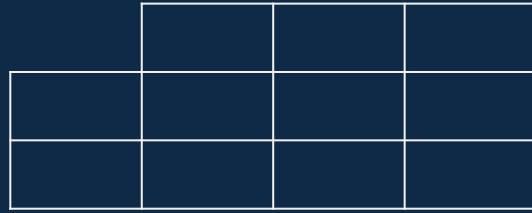
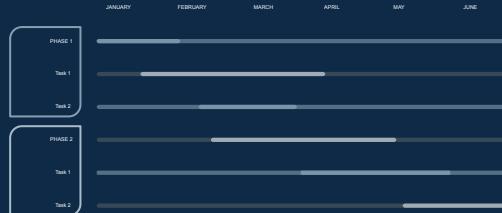
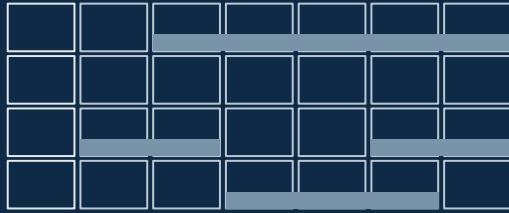
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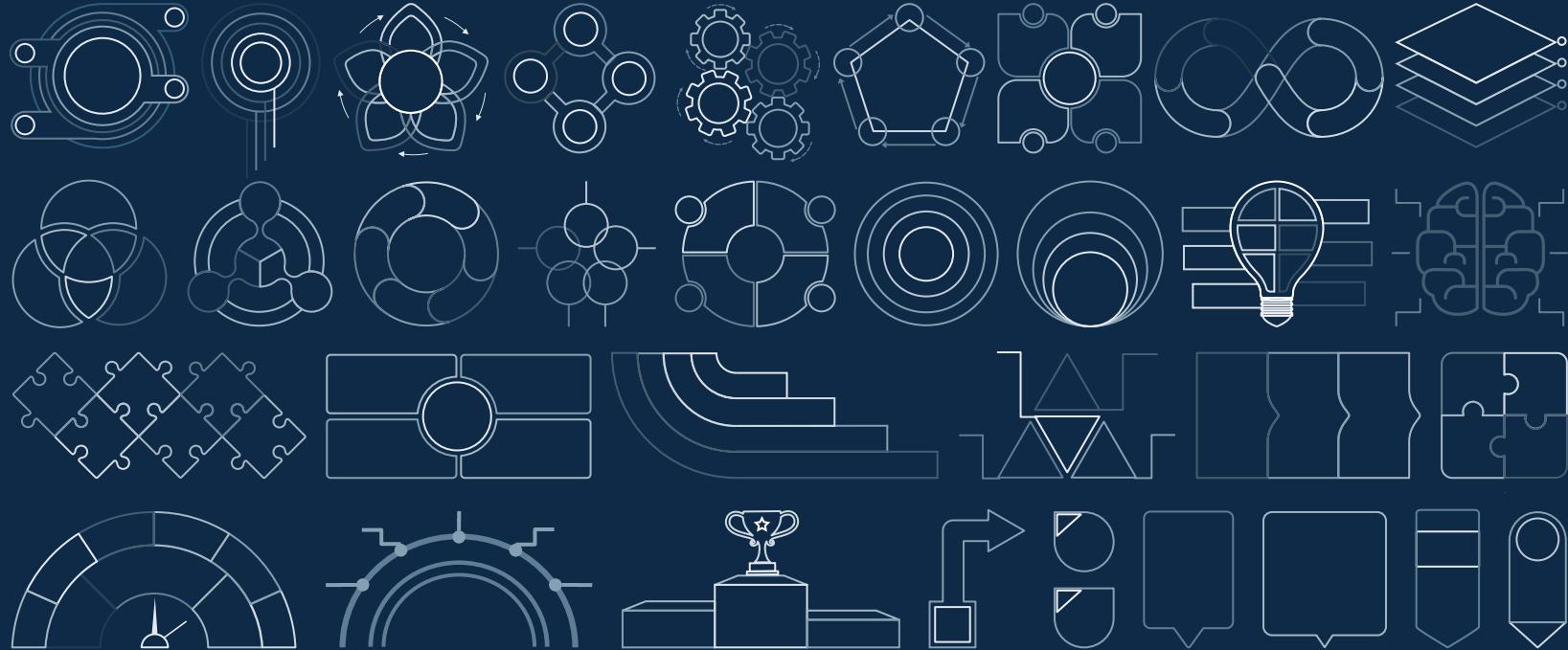
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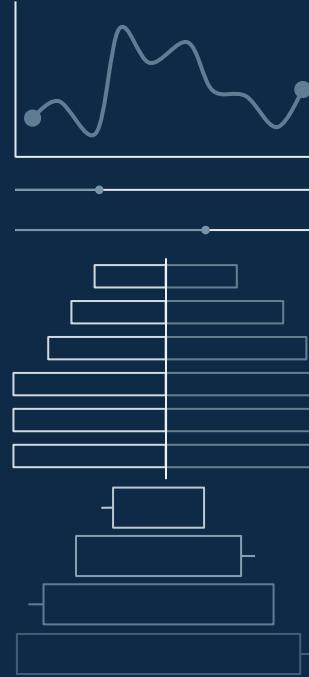
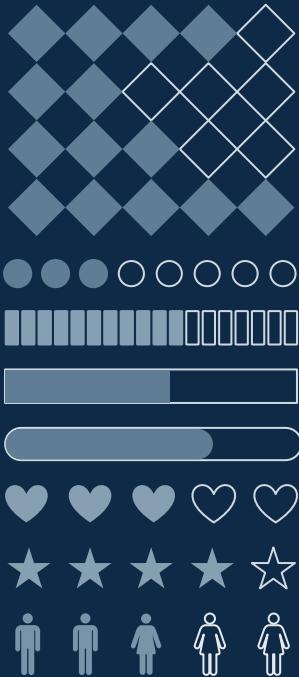
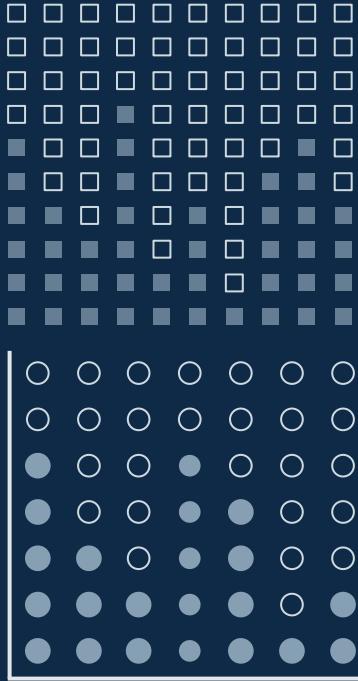












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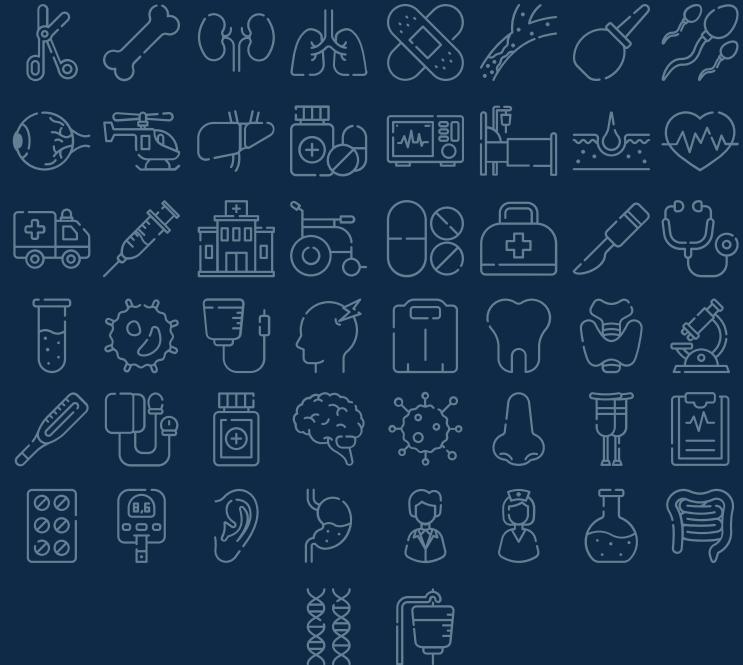
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## Educational Icons



## Medical Icons



## Business Icons



## Teamwork Icons



## Help & Support Icons



# Avatar Icons



## Creative Process Icons



## Performing Arts Icons



# Nature Icons



# SEO & Marketing Icons



