

# ALBERT EINSTEIN, MY PERSONAL GENIUS

Updated Design Documentation

As of October 10, 2016

## INTRODUCTION

Imagine the world of science, simplified for kids and made fun through the whimsical but knowledgeable eyes of their own personal genius.

Science is the study of our world. From breakthrough discoveries to the simple luxuries we take for granted, it touches our lives in ways we don't always understand. So who better to help kids navigate this brave, new world, than the father of modern physics, Albert Einstein?

Bearing the likeness of Albert Einstein, My Personal Genius pairs cutting edge robotics and a robust Text To Speech system, allowing Einstein to not only point and move, but display lifelike facial expressions and quirky mannerisms.

When linked to the cloud-connected Stein-O-Matic app, Einstein can also learn names, answer questions and play games, opening up a whole new world of scientific fun and discovery. With new activates added to the Stein-O-Matic every day, Einstein's robust reward system allows kids to earn IQ points, which they can use to unlock special items, bonus games and avatar upgrades.

Using interactive lessons, eye-popping slideshows, daily mental kick starts, thought experiments, jokes, brain games and more, Einstein will guide kids through the world of science and beyond.

According to Einstein, imagination is more important than knowledge, but when paired together, the sky's the limit.

The path to genius awaits!

## OUT OF BOX EXPERIENCE DESIGN

The Out of Box (OOB) experience is what the user sees upon opening the box, through initial power on, during setup/WiFi connection, account sign up, and first profile creation.

The document below details the OOB experience from box open to account creation

### EXECUTIVE SUMMARY - Einstein Robot Start-Up

1. Turn Robot on - Tech Support voice plays
  1. Prompts user that (FAKE) DOWNLOAD command is active
2. (FAKE) DOWNLOAD - prompts user that TUNE is necessary
  1. User Tests motors with EYES, TONGUE, ARM, BLINK, etc. commands
  2. After all diagnostics are cleared - user tries (FAKE) DOWNLOAD again
3. User uses WAKE command
  1. Robot is in "Safe mode" not linked to app
4. User downloads/runs app.
5. User creates account.
6. App Start Screen - looks for Robot over network
  1. Find Einstein on network, enter default password (genius)
  2. Enter Home SSID / PW > passes this info to Robot?
  3. Success = "App connected" mode
7. Create Einstein user account in app
  1. Success = "Cloud connected" mode
  2. Tech Support voice moves to app.
8. User creates profiles in the app

### SCRIPT

Once the user has powered up the robot for the first time, an audio "preshow" will play. This will be executed via pre-recorded VO and SOUND FX.

The user will be guided through the set up process by the narrator "T.S." (or tech support).

The set up process includes the fictional downloading of Einstein's personality into the robot, a brief diagnostic test, a "wake up" call for Einstein and abbreviated instructions on Stein-O-Matic online set up.

At one point, the two personalities (TS and Einstein) will share some brief banter. Both parts are called out in the script, but only Einstein's parts are reflected in the Dragon page

#Outofbox (<https://einstein.dragon.ai/stack/intent.edit/outofbox>)

UPDATE!!!

Per Producer request, several lines from the OOB have been added as well as rewritten and re-recorded to tone down certain aspects of the narrative and more properly introduce the Stein-O-Matic. The updated script is here (changes are in **green**, instructions in **bold**):

## DETAIL

The user purchases a robot companion, opens the box and finds inside a 12-inch robot that resembles famed theoretical physicist Albert Einstein.

Also in the box is a folded **TECH SHEET** with the warning:

“BEWARE - THE DOORS TO THE UNIVERSE, ONCE OPENED CAN NEVER BE CLOSED.  
THE SECRETS CONTAINED HEREIN MAY LEAD TO EXTENDED BOUTS OF INSPIRATION, FITS OF CLARITY AND  
FLASHES OF GENIUS. PROCEED WITH CAUTION.”

The user opens the tech sheet and finds instructions in the form of old-timey blueprints (of the robot) with words like ‘EYES,’ ‘TONGUE,’ ‘ARM’ (“BLINK,” “EXPRESS,” “POINT,” etc) tagging specific parts on the robot schematic. Additionally, a numbered initiation sequence on the sheet indicates that the user should: (1) activate the robot (power on), (2) download genius persona, (3) download Stein-O-matic (download instructions), (4) Sync robot to Stein-O-Matic, (5) Enjoy!

- - Einstein is in Inactive MODE

### **1) ACTION The user follows the first, most obvious instruction and powers on the robot.**

1. SET EINSTEIN TO **outofbox/01-waiting-for-power-on** - waiting for DOWNLOAD keyword

A fast-talking, 50's style voice – TECH SUPPORT (T.S.) – comes from the motionless robot and tells the user to use the ‘verbal command’ to download Einstein’s intellect and bring the robot to life.

1. PLAY **01\_01\_TSintro** VIA ROBOT

vLOOP: T.S. enters an inactivity loop, repeating a phrase every 15s until the DOWNLOAD keyword is heard.

1. PLAY every 15s **01\_02\_downloadinstruct\_nudge1** VIA ROBOT

### **2) ACTION The user speaks the DOWNLOAD command.**

When the DOWNLOAD key word is heard and download sound comes from the robot, but then a warning sound takes over. Tech Support cancels the download, and tells the user to run some diagnostics by speaking the diagnostic tags that can be found on the printed tech sheet (or by simply giving the command AUTOTUNE.)

1. PLAY 02\_01\_downloaderror VIA ROBOT + SET EINSTEIN TO \*motors going crazy
2. PLAY 02\_02\_errorexplained VIA ROBOT
3. PLAY 02\_03\_disgnostic instruct VIA ROBOT
4. PLAY 02\_04\_autotuneinstruct VIA ROBOT
5. SET EINSTEIN TO - waiting for AUTOTUNE or [diagnostic] keywords

**A) ACTION** User consults tech sheet and speaks any of the tagged diagnostic words. MOTORS CAN BE TRIGGERED IN ANY ORDER, AND T.S. RESPONDS AFTER EACH COMMAND. AFTER THE THIRD DIAGNOSTIC, THE PROBLEM IS 'FIXED'. ALTERNATIVELY, THE PLAYER CAN SIMPLY GIVE THE AUTOTUNE KEYWORD COMMAND AND THE PROBLEM IS IMMEDIATELY FIXED.

List of Diagnostic Intents:

EYE

1. SET EINSTEIN TO outofbox/02-waiting-for-diagnostic/eyes - waiting for AUTOTUNE or [diagnostic word] keywords.
2. If 3rd diagnostic, then transition immediately to 'fixed', otherwise PLAY 02\_05\_tunedialogue01 VIA ROBOT

MOUTH

1. SET EINSTEIN TO outofbox/02-waiting-for-diagnostic/mouth - waiting for AUTOTUNE or [diagnostic word] keywords.
2. If 3rd diagnostic, then transition immediately to 'fixed', otherwise PLAY 02\_05\_tunedialogue02 VIA ROBOT

HEAD

1. SET EINSTEIN TO outofbox/02-waiting-for-diagnostic/head - waiting for AUTOTUNE or [diagnostic word] keywords.
2. If 3rd diagnostic, then transition immediately to 'fixed', otherwise PLAY 02\_05\_tunedialogue03 VIA ROBOT

ARM

1. SET EINSTEIN TO outofbox/02-waiting-for-diagnostic/arm - waiting for AUTOTUNE or [diagnostic word] keywords.
2. If 3rd diagnostic, then transition immediately to 'fixed', otherwise PLAY 02\_05\_tunedialogue04 VIA ROBOT

## LEGS

1. SET EINSTEIN TO **outofbox/02-waiting-for-diagnostic/legs** - waiting for AUTOTUNE or [diagnostic word] keywords.
2. If 3rd diagnostic, then transition immediately to 'fixed', otherwise PLAY **02\_05\_tunedialogue02** VIA ROBOT

## AUTOTUNE

1. SET EINSTEIN TO **outofbox/02-waiting-for-diagnostic/autotune** + PLAY **02\_05\_autotunedialogue** VIA ROBOT
2. Transition immediately to 'fixed'

## FIXED

1. PLAY **02\_06\_downloadinstruct** + SET EINSTEIN TO **outofbox/03-waiting-for-wakeup** - waiting for WAKEUP keyword

T.S. indicates that the robot is now in working order, and tell user to give Einstein the WAKEUP keyword command

LOOP - T.S. will now go into a pre-active loop in which he reminds the user to speak the wake up command. TS will repeat his inactivity dialog every 30s until Einstein is awake.

1. PLAY LOOP **\SNORE ROBOTSOUNDFX\** VIA ROBOT
2. **PLAY every 30s 02\_08\_preactiveloop** VIA ROBOT until WAKEUP keyword is recognized.

### **3) ACTION User speaks the WAKE UP command**

Einstein will perform a wake up sequence. The robot, now with the voice and mannerisms of Einstein, wakes up. He seems a bit confused and glitchy, but happy to meet the user nevertheless. The most important user action is to download and connect Einstein to the Stein-O-Matic.

1. SET EINSTEIN TO **outofbox/03-waiting-for-wakeup/wakeup**
2. PLAY **03\_01\_wakeup** VIA ROBOT
3. SET EINSTEIN TO **outofbox/03\_02\_wakeup**
4. PLAY **03\_03\_wakeup** VIA ROBOT
5. PLAY **03\_04\_wakeup** VIA ROBOT

LOOP - T.S. and Einstein will now go into a 'crazy' loop in which the player is reminded constantly to **download the Stein-O-MaticApp** before Einstein's glitches cause him permanent damage.

After each delay of 30s - 45s, and until we detect that the player has activated Einstein as an Access Point, play an intent/audio pair one at a time. Play in order, repeat the list if necessary.

CRAZY LOOP PAIR #1 - SET EINSTEIN TO **outofbox/03\_05\_crazyloop\_a** - waiting for PASSWORD keyword  
+ PLAY **03\_05\_crazyloop\_b** VIA ROBOT

CRAZY LOOP PAIR #2 - SET EINSTEIN TO **outofbox/03\_06\_crazyloop\_a** - waiting for PASSWORD keyword  
+ PLAY **03\_06\_crazyloop\_b** VIA ROBOT

CRAZY LOOP PAIR #3 - SET EINSTEIN TO **outofbox/03\_07\_crazyloop\_a** - waiting for PASSWORD keyword  
+ PLAY **03\_07\_crazyloop\_b** VIA ROBOT

CRAZY LOOP PAIR #4 - SET EINSTEIN TO **outofbox/03\_08\_crazyloop\_a** - waiting for PASSWORD keyword  
+ PLAY **03\_08\_crazyloop\_b** VIA ROBOT

CRAZY LOOP PAIR #5 - SET EINSTEIN TO **outofbox/03\_09\_crazyloop\_a** - waiting for PASSWORD keyword  
+ PLAY **03\_09\_crazyloop\_b** VIA ROBOT

**4) ACTION The User downloads the Stein-O-Matic and launches it for the first time**

**5) ACTION User (1) creates an Einstein Account, (2) receives instruction to prep robot to become an Access Point and (3) makes Einstein an AP**

1) User provides a Username and Password to create their Einstein Account





2) Setup help is provided through standard slide show help panel system. (see panels below)



'Setup help' panel details

A green rectangular panel with a white silhouette of a small robot (Einstein) on the left. To the right of the robot, the text "SETUP INSTRUCTIONS PANEL 1" is written in white, with "(PLACEHOLDER)" below it.	A green rectangular panel with a white line drawing of a hand pointing to a switch on the right. The text "SETUP INSTRUCTIONS PANEL 2" is written in white, with "(PLACEHOLDER)" below it.
<p>"First, make sure your einstein robot is powered on!"</p>	<p>"Next, locate and press the connect switch on einstein's hand."</p>
<p>string ID: INTROHELP1</p>	<p>string ID: INTROHELP2</p>

	
<p>"Now, ask einstein, "What's your password?" Be sure to write it down. You'll need it soon!"</p> <ol style="list-style-type: none"> <li>1. SET EINSTEIN TO 05_01_password</li> <li>2. LOOP: Go back to crazy loop logic after 45s</li> </ol>	<p>"On the next screen, select 'einstein' from the list of networks, then enter his the password. Click the checkmark button when you're ready."</p>
<p>string ID: INTROHELP3</p>	<p>string ID: INTROHELP4</p>

3) Device's Wi-Fi settings screen is opened AUTOMATICALLY (and a Back to Stein-O-Matic link should be provided.)

The player needs to use their device's wifi connect screen to locate the Einstein access point and connect to it.

**A) ACTION** - Find the network labelled 'EINSTEIN' and then enter the password 'genius' followed by the four digit number einstein provided to the player when asked for his password. [EG GENIUS2754](#).

Clicking the os supplied 'Back to stein-o-matic' link will return to the app

**If EINSTEIN AP is not connected**, and the 'Back to Stein-o-Matic' link is selected, play returns to the help instructions (2) screen, on panel 1.

**If EINSTEIN connected**, the connect flow continues with 6) below AS the following occurs:



Einstein is 'feeling better' and T.S. mentions that it's "it's getting crowded in here and moves to the Stein-O-Matic where he stays for the rest of the Einstein experience. From this time point forward, if T.S. is heard, he's coming from the app, not the robot and Einstein provides all further game instruction.

If we can communicate with the robot then:

**Client sends transfer request**

```
{  
  "cmd": "ts.transfer"  
}
```

1. PLAY **05\_02\_online** VIA ROBOT
2. PLAY **TRANSITIONOUTSFX** VIA ROBOT

**server sends reply when to play TransitionISFXn**

```
{  
  "cmd": "ts.transfer"  
}
```

3. then overlap the end with the beginning of PLAY **TRANSITIONINSFX** VIA STEINOMATIC
4. PLAY **05\_03\_online** VIA STEINOMATIC
5. SET EINSTEIN TO **outofbox/05\_04\_online**

NOTE: IF FLOW IS BROKEN BEFORE EINSTEIN BECOMES AN AP, STEIN-O-MATIC WILL ALWAYS START AT THE HELP INSTRUCTIONS (2) POINT ON PANEL 1.

**6) ACTION - Connect Robot to Home Network**

Upon returning from the device network connection screen, user is presented a method to locate (or enter directly) his/her home network SSID followed by the network password.

1. PLAY **06\_01\_cloud** VIA STEINOMATIC

2. SET EINSTEIN TO **outofbox/06\_02\_cloud**

**B) ACTION** - Enter home/local WiFi SSID + password.

App needs a list of networks from robot.

#### **Client Requests Network List**

```
{  
  "cmd": "network.list"  
}
```

#### **Server Reply with the List**

```
{  
  "cmd": "network.list",  
  "device_name": "mac address",  
  "networks":  
    [  
      "manatee_county_public",  
      "Bright House Networks",  
      "manatee_county_public",  
      "GG law firm"  
    ]  
}
```



When the correct network and password is entered, the following activity takes place:

#### Client Sends Account Info and SSID Info

```
{  
  "cmd": "setup",  
  "ssid": "SWEET_NET",  
  "password": "easy123",  
  "host": "cloud",  
  "account_id": "10471611",  
  "account_token": "187cff3425768ffc"  
}
```

#### Server registers the Device

```
https://api.dragon.ai/device.register?  
    account_id=10471611  
    &account_token=187cff3425768ffc
```

&device\_name=MAC\_ADDRESS

Server reply to the client

```
{  
  "cmd": "setup",  
  "device_id": "12348999",  
  "device_secret": "9999999",  
  "device_name": "MAC ADDRESS"  
}
```

1. PLAY **06\_03\_cloud** VIA STEINOMATIC

The robot will reboot.



Einstein is REBOOTED

- Einstein is in Cloud (Fully Connected) MODE
1. PLAY [06\\_03\\_cloud](#) VIA STEINOMATIC
  2. PLAY [06\\_04\\_cloud](#) VIA STEINOMATIC
  3. SET EINSTEIN TO [outofbox/06\\_06\\_profile](#)

4. SET EINSTEIN TO outofbox/06\_07\_profile
5. SET EINSTEIN TO LISTEN MODE: {profile.name}

LOOP - Einstein will enter a loop in which he repeats steps 4 and 5 (above) every 30s until the player speaks his/her name or enters it via the onscreen keyboard.

### **7) ACTION - Player speaks**

Whatever NAME Einstein hears the player say will be displayed in the profile name entry field and can be corrected.

1. SET EINSTEIN TO outofbox/07\_01\_profile - Waiting for YES, NO keywords

YES - SET EINSTEIN TO outofbox/07\_01\_profile/yes

NO - SET EINSTEIN TO outofbox/07\_01\_profile/no

### **8) ACTION - Player creates Stein-O-Matic Genius profile.**

## TIME ADVENTURE

The Time Adventure activity lets the player move through time with Einstein's help. The player visits points in history or the future, along a sequential timeline.

## DESTINATIONS

Players move to different destinations in time, to hear descriptions of what was going on at that point in the world, or universe's history.

Destinations are grouped into "Eras", that tie together larger broad changes. See the example below:

Era	Palaeozoic			Mesozoic			Modern Age		
Destinati on	Cambria n	Devonia n	Permian	Triassic	Jurassic	Cretaceo us	Mt Saint Helens erupts	Chernob yl Disaster	Typhoon Haiyan

Whenever a player moves to a new destination, they hear information about that destination

If the player is moving into a destination that is also in a new era, they hear information about the era first, before then hearing the information about the specific destination.

[Time Content Google Doc](#)

## ERA DIVERGENCE

Eras can also diverge from the sequential list of related events, and instead be an unordered list of related information.

The best example of this is the final era, which corresponds to the end of time. Each destination is a different theory of how the universe will come to an end (if it will at all). Many of these hypothetical conflicting events take place at the same time period, but are separated into an arbitrary order anyway.

## ACTIVITY OPERATION

The activity takes place in a series of turns, which have 3 steps each:

1. Einstein asks the player where they want to go next
2. The player responds
3. Einstein reads the player details about the result.

If the player is just starting the activity, there is also an introduction event that happens before the first turn.

## STARTING AN ADVENTURE

Players hear an introduction from Einstein, whenever they start the activity, but it will be different depending on whether or not they have participated in this activity before.

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## FIRST TIME PARTICIPATING

If It is the player's first time playing, Einstein will tell the player about the rules of how to move through time (**offline\_time\_intro**)

After being introduced to the rules, Einstein tells the player about the current era, and the modern day destination.

After reading details to the player, Einstein asks the player where they want to go next (resuming the turn order at step 1).

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## REVISITING

If a player has played the time adventure before, and they enter the activity... Einstein asks the player whether they want to resume where they left off last time, or start somewhere else (**offline\_time\_revisit\_resume**). These are the valid responses:

Commands	Description
<b>Resume, Previous, Old</b>	Starts the player at the last stored location
<b>Somewhere, Different, New</b>	Takes the player to the list of possible start location choices
<b>Exit, Stop</b>	Exits the activity

If the player chooses to resume, they will be read the era information and then destination information that they had visited last, when they previously played.

If the Einstein cannot understand the answer, he will prompt the user again (**offline\_time\_revisit\_resume\_misheard**)

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## NEW START

If the player chooses to start somewhere else, Einstein asks the player if they want to start at the beginning of time, the end of time, or at the current time (**offline\_time\_revisit\_newstart**). These are the valid responses:

Commands	Description
<b>Beginning, Big Bang, Start</b>	Takes the player to the first destination of the first era
<b>Now, Current, Today</b>	Takes the player to the destination that corresponds to modern day
<b>End</b>	Takes the player to the first destination of the final era (this is deliberately not last destination, see era divergence above)
<b>Random</b>	Takes the player to the first destination of a random Era
<b>Exit, Stop</b>	Exits the activity



As long as Einstein hears a valid answer, the player will be read era information, and then destination information for that point.

After reading details to the player, Einstein asks the player where they want to go next (resuming the turn order at step 1)..

If Einstein does not hear a valid answer, the player will be prompted to answer again  
(**offline\_time\_revisit\_newstart\_misheard**)

## TRAVELING

At the start of each turn, Einstein asks the player where they want to go next (**offline\_time\_whereeto**)

These are the commands Einstein will respond to, in-between destinations:

Commands	Description
<b>Previous, Rewind, Fast Backward</b>	Move to the first destination in the era before this current one
<b>Backward, Reverse</b>	Move to the previous destination, regardless of era
<b>Current</b>	Move to the first destination in the current era
<b>Forward, Ahead</b>	Move to the next destination, regardless of era
<b>Next, Fast Forward</b>	Move to the first destination in the era after this one
<b>Exit, Stop</b>	Exits the activity

If Einstein doesn't hear a valid result, he will prompt the player again (**offline\_time\_whereeto\_misheard**)

Based on any valid result Einstein heard, Einstein will tell the player about what is at that destination, including telling players first about the era, if necessary.

## INVALID DESTINATION

If the player attempts to move beyond the start of time, they will be prompted to either choose to go to the end of time, or move forward in time instead (**offline\_time\_invalidstart**), listening for the following commands:

Commands	Description
<b>Current</b>	Move to the first destination in the current era
<b>Forward, Ahead</b>	Move to the next destination, regardless of era
<b>Next, Fast Forward</b>	Move to the first destination in the era after this one
<b>End</b>	Takes the player to the first destination of the final era (this is deliberately not last destination, see era divergence above)
<b>Exit, Stop</b>	Exits the activity

If no valid response is heard, Einstein will prompt the player again (**offline\_time\_invalidstart\_misheard**)

If the player attempts to move beyond the end of time, they will be prompted to either choose to go to the beginning of time, or move backward in time instead (**offline\_time\_invalidend**), listening for the following commands:

Commands	Description
<b>Previous, Rewind, Fast Backward</b>	Move to the first destination in the era before this current one
<b>Backward, Reverse</b>	Move to the previous destination, regardless of era
<b>Current</b>	Move to the first destination in the current era
<b>Start, Beginning, Big Bang</b>	Takes the player to the first destination in the first era
<b>Exit, Stop</b>	Exits the activity

If no valid response is heard, Einstein will prompt the player again (**offline\_time\_invalidend\_misheard**)

## EXITING THE ACTIVITY

If Einstein hears the player ask to end the activity, he will prompt the user to confirm or deny (**offline\_time\_exit\_prompt**)

The following phrases are considered a confirmation:

Commands
<b>Yes, Correct, Sure, OK, Exit</b>

If The player chooses to exit, Einstein responds with the end of activity dialog (**offline\_time\_exit\_confirm**)

If the player responds with no answer, or with any answer other than a confirmation, Einstein will continue the game, after reading a continue game dialog (**offline\_time\_exit\_deny**).

## ACTIVITY/INTENTS LINK

<https://einstein.dragon.ai/stack/intent.edit/offlineactivitytime>

## MANAGING CONNECTION STATES

There are 4 states that the user can be in with regards their connection

Connection State	Robot State	Mobile Device state	Notes
<b>Online</b>	Online	Online	the robot is connected to Wifi and the Internet and the mobile device is connected to Wifi and the internet
<b>Offline</b>	Offline	Online	robot is off or in AP mode or connected to Wifi with no Internet access or unable to connect to Wifi,

			the mobile device is connected to Wifi and the internet
<b>Direct Connected</b>	AP mode	Einstein Network	The robot is in AP mode and the , the mobile device is connected to the Einstein Network and has connected to the robot

# STEIN-O-MATIC

## CONCEPT

Play with Einstein is driven by the internet connected Einstein 'robot' in concert with the the **Stein-O-matic** science tool (mobile app).

Think of the Stein-O-Matic as the user's guidebook and control system for directly engaging any content that Einstein presents or any challenge he assigns. In addition to quick thinking brain games, designed to test the user's mental agility, and special videos and data cards, used to convey both simple and advanced scientific principles; the Stein-O-Matic also features the tune-o-meter diagnostic tool. And a good thing it does, as Einstein's cheapo electronics tend to wear down quickly!

It's a team effort as Einstein works to promote the user's inner genius, and the user attempts to keep Einstein running efficiently.

## CORE FEATURES

The Stein-O-Matic is presented as a personal handheld science tool (with a 50's retro look) given to the user to help him/her on her 'path to genius,' but it's also got a host of great features that allow the user to stay 'in sync' with professor Einstein.

Each user that 'signs in' to the Stein-O-Matic (up to 3 profiles) will be identified by a unique user profile that included special elements that will track his/her progress. Each profile can be filled with specific information that Einstein will use to personalize his interactions with his new assistant.

Regardless of the content being engaged, Einstein always has visibility into the user's actions on the Stein-O-Matic and will constantly comment and guide the user via vocal responses when appropriate.



*Wherever the 'Ask Einstein' word balloon icon appears, the user can touch it to prompt Einstein for contextual help.*

## DESIGN GOALS

or, agreed upon parameters that will enable consistent and successful product content

### APP DESIGN

#### BROAD

Deliver a Multi-platform experience that is created within Unity enabling builds running on iOS and Android devices, delivered within their respective app stores.

#### BRAIN GAMES

- - Illustrate scientific concepts defined by the (cards?), simply and clearly, through a "microgame" experience.
  - These micro-games will be delivered in a "rapid fire" play session where each individual game lasts no longer than 5 second
  - The microgames will be strung together in a random order so that no game appears twice in a row, but each game may appear more than once in a given sequence. \
  - The overall game sequence will be X games long (do we have varying play sessions)
  - The game action can be briefly prompted via a single verb a la "Warioware" games (i.e. "Launch!", "Balance!", "Slide!", etc.)
  - Each game should not require a tutorial or on-boarding, but will encourage a "fail to win" method of experimentation to determine play control and goals.

#### CONCEPTS

All science content will be pulled from physics in areas that are:

A) Within Albert Einsteins field of study.

B) Understandable by the target demographic (kids 8-12?)

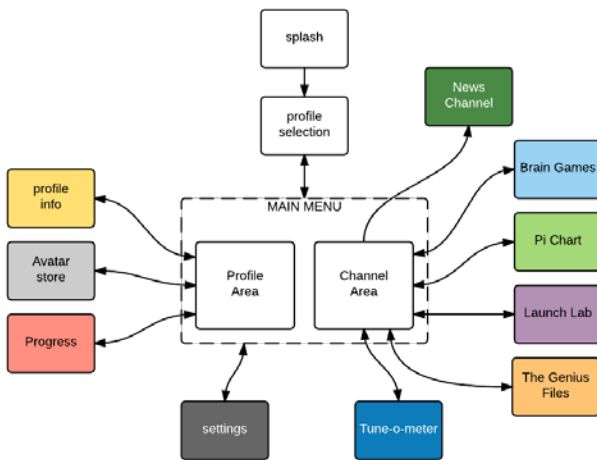
Samples:

-

- Gravity
- Friction
- Mass
- Density
- etc.



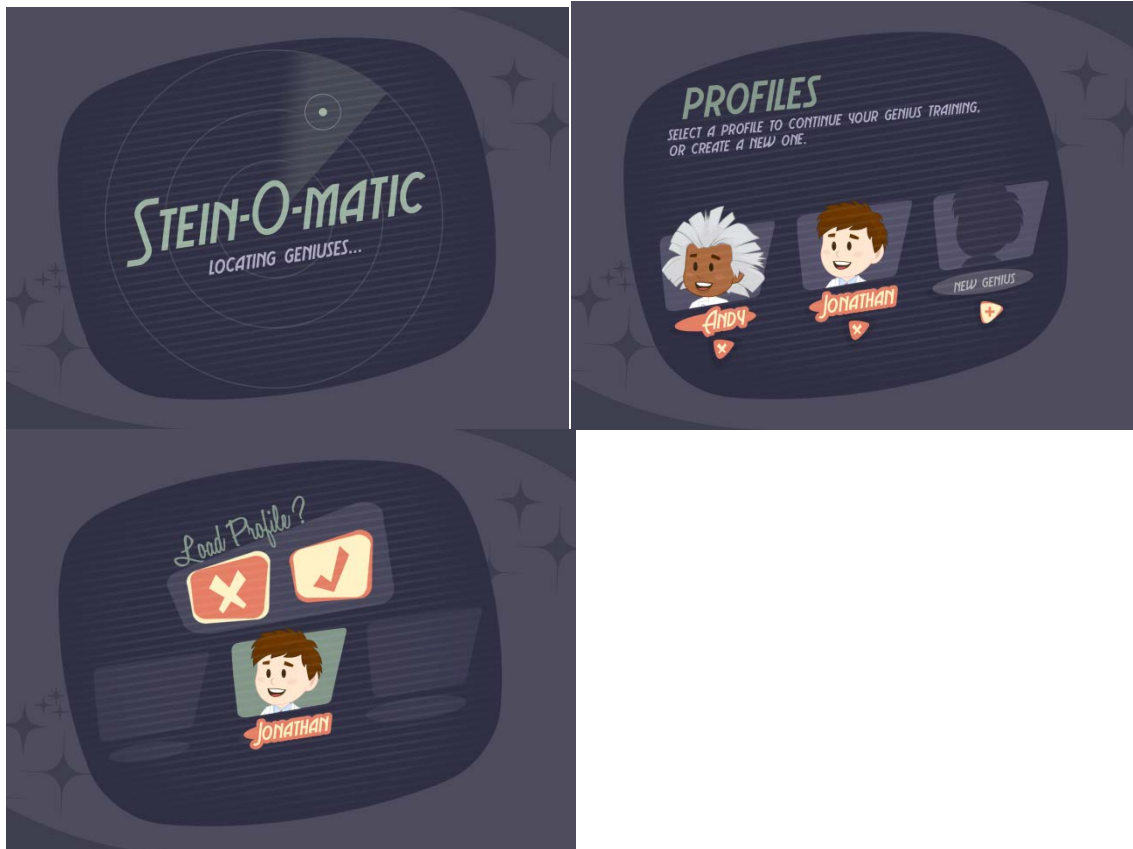
## APP FLOW



The app flows from a splash/sign in action to the main menu from which all content can be accessed.

## SPLASH AND SIGN IN

When the Stein-O-Matic is launched, the user proceeds through the intro splash screen and short sign in experience where he/she selects the appropriate profile to load.



Profiles are unique to each user, and the Stein-O-Matic can handle 3 separate users. When a profile is selected, Einstein assumes that the person represented by the profile IS the person he is communicating with, until a different profile is selected. When interacting, he will use the name, title, and personal information consistent with the selected profile.

Profiles are identified by the user's name and his/her current headshot. Selecting and confirming will load the profile and transition play to the main menu.

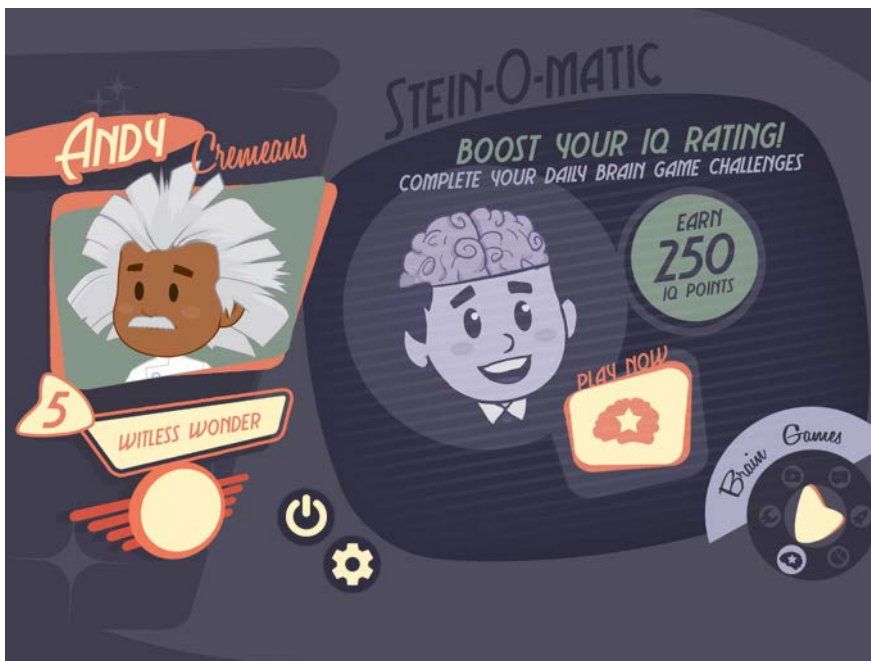
Any active profile can be deleted (after a double confirmation) and a new genius profile can be created (if a free slot is available.)

## MAIN MENU

The Stein-O-Matic Main Menu is split visually into two main areas: The Genius ID Area and Channel Area.

A *settings* icon appears between these two main areas.

A *back* icon will return play to the Sign In screen.



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## GENIUS ID AREA

On the left side of the main menu are the user's current profile ID elements. These include:

- Name
- Current avatar headshot
- Current IQ rank
- Current title

- Achievement Badge

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## NAME

The user's name appears above his/her headshot. The user's first name is required when a new profile is created; however, if the user enters a last name on the profile screen it will appear as well.

Touching the name will immediately transition play to the profile screen. See the Profile Screen section below.

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## AVATAR HEADSHOT

The user's current headshot appears predominant in the ID area. Throughout play, the user has the opportunity to modify his/her headshot by unlocking cool avatar items. Avatar unlocks include a pleasant selection of mustaches, imposing eyebrows and eyewear, professorial hairdos, suitably scientific clothes, headwear and special items like premium Lab Accident elements! You're an up and coming genius – it's time to dress like one!

Touching the headshot will transition play to the Avatar Store screen where the player can view all of his/her avatar items, swap them on/off the avatar or unlock new ones by spending IQ points.

---

## IQ RANK

As the player completes challenges, engages in special activities, shares info with Einstein and keeps him running efficiently he/she will earn the true mark of the genius - IQ points!

IQ points will raise the player's IQ Rank (resulting in more 'heroic' titles and unlocking additional Brain games,) AND they can be spent to acquire new avatar items.

---

## CURRENT TITLE

The player's rank also confers upon him/her a corresponding title. Advance from Witless Wonder to Sub-Genius and earn the respect of your friends!

Touching either the IQ Rank or Title element will transition the screen to the Progress screen where the player can view his/her progress.

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## ACHIEVEMENT BADGE

Completing special actions will award the player with Achievements badges. Touching the achievement badge will transition play to the Achievement screen where the player can view his/her awards and select any earned achievement badge to show in the ID area.

---

## CHANNEL AREA

On the right side of the main menu, a channel area allows the user to access information and functionality specific to the 6 main content area. Only a single channel can be viewed at a time and the user toggles through channels by tapping a tuner element under the channel area.



On first entry after every launch, the main menu defaults to the News Channel.

Channels include:

- News Channel
- Brain Games
- Pi Chart
- Launch Lab
- Tune-o-meter
- The Genius Files

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## THE TUNER ELEMENT

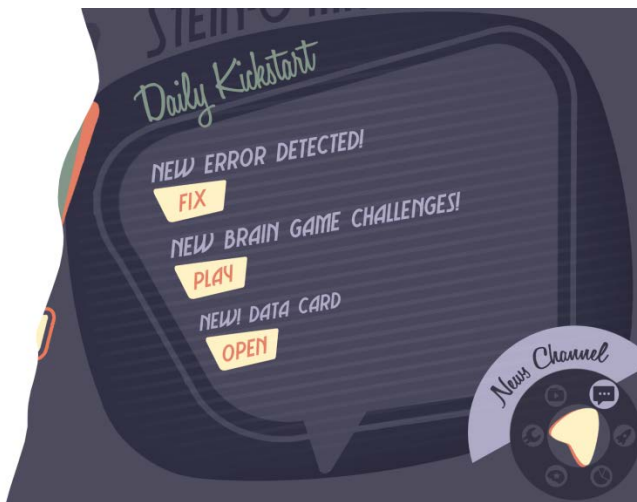


Content in the channel area can be toggled by tapping the Tuner element. Doing so will cause the tuner knob to turn clockwise to the next *channel icon* and all channel area content will change appropriately. *When content is changed, a retro monitor effect and accompanying SFX will play as the old element fade out and new elements appear.*

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## NEWS CHANNEL

Whenever an Alert event occurs, the alert popup can be viewed by switching to the News Channel.



There are several events that can trigger an alert popup. In each case, the popup will display elements specific to the alert as well as a button that allows the player to *respond* to the alert.

Alert types include:

- Daily Kickstart – After Einstein performs his Daily Kickstart each morning, a breakdown of the kickstart can be viewed on the News Channel as an informative popup with links to each activity and task assigned. Until each task is addressed (by loading their respective scene) the Daily Kickstart popup remains active.
- Alarm/Reminder– If the player sets an alarm in Pi Chart, a popup will occur when the alarm is triggered.
- Einstein error log – If the tune-o-meter triggers an error, an error log popup appears and prompts the player to fix the error as soon as possible.
- New Level – If the player earns a new level, the News Channel will indicate this.
- Item Unlock – if the player earns an avatar item or achievement, etc, the News Channel will provide details for the player and request that he/she view the new item by accessing the appropriate Stein-O-Matic screen.

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## CANCELLING AN ALERT

The player can ‘cancel’ an alert by *responding* to it or *ignoring* it.

Every alert has a single button that will allow the player to respond to the alert (except multi task alerts which have several buttons.) The button may appear unique for each alert, but in all cases it acts as a confirmation that the alert has been received, and in some cases, the button will also act as a link to load a scene related to the alert.

Alternatively, the player can ignore the alert by switching the channel. The alert will be cancelled and won’t reappear.

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## MULTI TASK ALERTS

The Daily Kickstart is a multi-task alert. Unless every Kickstart task has been addressed, the Daily Kickstart popup is still considered active and will show on the News Channel - **UNLESS another Alert event occurs.**

If another alert event occurs while the Daily Kickstart popup is active, the new alert will show instead. Once the channel is changed, the new alert is handled and returning to the News Channel will show the Daily Kickstart popup again.

If the Daily Kickstart is cancelled (by accessing the scenes related to each task at least once) then it will no longer appear in the News Channel. If there are no other alerts, the News Channel shows it’s ‘no alert’ content.

---

## DEFAULTING TO THE NEWS CHANNEL

**On first entry after every launch, and upon returning from any activity that triggers an alert,** the main menu will default to the News Channel. This ensures that the player always receives alert info. Once viewed, an alert is considered handled and does not appear again (unless it’s a multi task alert, see above.)

Alert Eg. 1- The player earns an avatar item when playing a brain game. Upon returning to the main menu, the News Channel will be activated and the New Avatar Item alert content is displayed. The player can decide to change the channel. At that point, the alert event has been handled and is cancelled. Returning to the News Channel can either show a the Daily Kickstart, or the ‘no alerts’ content.

---

## BRAIN GAMES CHANNEL

The Brain Games channel displays high level information relevant to Einstein's Brain Game Challenges. This includes:

1. A circular channel graphic
2. A text phrase and sub phrase
3. A badge that shows how many IQ points remain for the player to earn before the next Kickstart begins.
4. An icon that loads the Brain Games scene. Touching this icon will transition play to the Brain Games (start) screen.

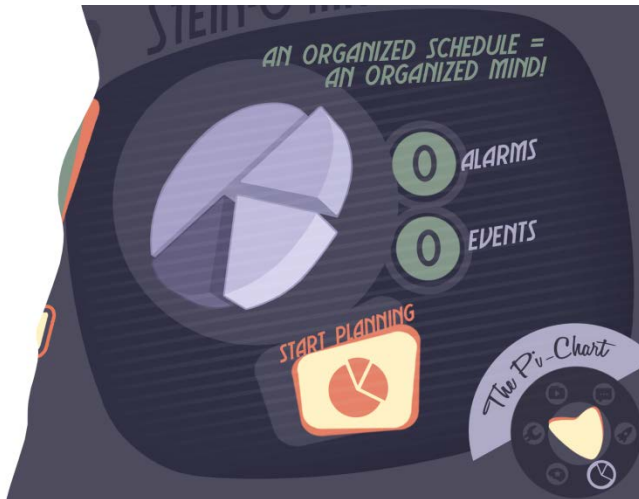


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## PI CHART CHANNEL

The Pi Chart channel displays high level information relevant to the player's current Pi Chart schedule. This includes:

1. A circular channel graphic
2. A text phrase and sub phrase
3. 2 badges containing numbers. The top badge shows how many alarms have been set for today and the bottom how many Events are scheduled for today.
4. An icon that loads the Pi Chart scene. Touching this icon will transition play to the Pi Chart scheduling screen.



## LAUNCH LAB CHANNEL

The Launch Lab channel displays high level information relevant to the player's current Launch Lab game progress. This includes:

1. A circular channel graphic
2. A text phrase and sub phrase
3. 2 badges containing numbers. The top badge shows how planets have been orbited and the bottom how many galaxies crossed during play.
4. An icon that loads the Launch Lab (Gravity) game. Touching this icon will transition play to the Gravity Game Start screen.

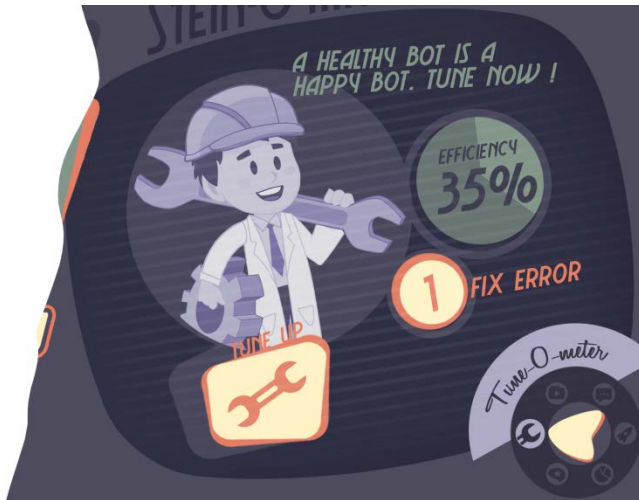


## TUNE-O-METER CHANNEL

The Pi Chart channel displays high level information relevant to the player's current Pi Chart schedule. This includes:

1. A circular channel graphic

2. A text phrase and sub phrase
3. 1 large badge shows Einstein's current efficiency rating as a percentage. A smaller badge shows how many errors Einstein has. If the number is 0, the badge is purple, inactive and reads "0 ERRORS." If Einstein has 1 or more errors, the badge becomes a button. Touching the error button will launch the appropriate tune-o-meter activity to fix the error.
4. An icon that loads the TUNE UP game. Touching this icon will transition play to the tune up start screen.



## THE GENIUS FILE

The Genius File channel displays high level information relevant to the player's current Genius File content. This includes:

1. A circular channel graphic
2. A text phrase and sub phrase
3. 2 badges containing numbers. The top badge shows how many videos the player has unlocked, and the bottom how many data cards the player has collected.
4. An icon that loads the Genius File scene. Touching this icon will transition play to the Genius File menu and allow the user to play videos or view data cards.



## [CONTENT] SETTINGS SCREEN

The Settings screen offers game options for the following:

- Language selection (initial launch supports English, Simplified Chinese and traditional Chinese.
- Manual button to replay the Robot Manual Sequence.
- Sound Effect ON/OFF toggle

## [CONTENT] PROFILE INFO SCREEN

The Profile Info screen allows the player to provide more in-depth information about himself/herself. This information is used in Einstein responses to personalize interactions.

*The type and format of profile information is still being discussed.*

## [CONTENT] AVATAR MENU

The Avatar Menu is launched when the user touches the headshot element on the Main Menu.

When the Avatar Menu elements appear, the player will notice that the headshot remains unchanged, however, the full body of his/her avatar can now be seen.

- The player can customize the look of his/her full body avatar with any elements unlocked during play.
- View a list of owned items (with active items highlighted)
- View a list of unlocked and locked items that can be acquired by spending IQ points

See the *Design\_Progress\_Reward\_v#.#.docx* for a complete design of avatar screen design, items and item disbursement.

## [CONTENT] PROGRESS SCREEN

The Progress Screen is launched when the user touches any progress element on the Main Menu (IQ level, title or achievement badge.)

The progress screen is divided into 3 content areas:

1. The level bar shows the players current level, current IQ points and IQ points to next level. Along the badge can appear icons that unlock a reward once the meter level reaches the icon.
2. The achievement badge viewer and selecto

See the *Design\_Progress\_Reward\_v#.#.docx* for a complete design of the Progress map, IQ ladder and

achievements.

## [CONTENT] BRAIN GAMES

A Brain Game Challenge is a sequence of up to 15 time-pressured, quick thinking micro-actions, played back to back, designed to 'test and boost a player's brain agility.' Each sequence is a random string of brain games drawn from the list of games that the player has unlocked.

- IQ Points are earned for each Brain Game that is passed.
- Everyday, the player can 'mine' the Brain games channel for up to 250 IQ points. Once 250 IQ points are earned, the player must wait until the next Daily Kickstart before more IQ points can be earned. *This does not prevent the player from continuing to play Brain Games as practice, to earn achievement or special avatar items!*
- Players can earn up to 5 achievements playing Brain Games.
- Players can earn 10 special avatar items playing Brain games.

See the *Design\_Brain Game Challenges\_v#.#.docx* for a complete design of the Brain Game Challenge flow, achievements, IQ tables and each brain game.

## [CONTENT] PI-CHART

## [CONTENT] LAUNCH LAB

In the Launch Lab, Einstein takes the player on a digital thought experiment in which the player takes the role of cosmic adventurer Max Burn, and tries to navigate back home across countless galaxies using only a drop of fuel and planetary gravity.

- The player must make sure the planets are in the best orbital position, aim his/her rocket and fire the engine. After that, it's all about gravity. The goal is to hop from planet to planet on a journey home.
- The Launch Lab (Gravity) game is a multi level, scalable game.
- IQ Points are earned for each level that is passed, with a bonus for each galaxy crossed.
- Players can earn up to 5 achievements playing the Launch Lab.
- Players can earn 10 special avatar items playing Launch Lab.

See the *Design\_LaunchLab\_v#.#.docx* for a complete design of the Launch Lab flow, achievements, IQ tables, etc.

## [CONTENT] TUNE-O-METER

## [CONTENT] THE GENIUS FILE

## THE DAILY KICKSTART

As the child's 'constant companion,' Einstein will not wait for the user to engage him. At the beginning of each day, if 'awake,' Einstein will automatically do a number of things to seed the day with activities. This daily list of activity is called the Daily Kickstart.

Einstein's Daily Kickstart routine will consist of a number of activity seeds:

- An inquiry into the user's general mood. "How are you feeling today?"
- A new day welcome. In some cases, this will include an Einstein **quote**. If the user has entered how he/she is feeling today via the Stein-O-Matic, he will comment on it.
- A daily Kickstart your brain experience in which Einstein challenges his protégé with a **science fact**, **Brain Game Challenges**, a **joke** and sometimes a daily **goal**.
- A reminder to either look at the user's schedule or a reminder of upcoming events (based on Pi Chart)
- A reminder that Einstein can always talk to you about 'other' things.
- A requirement to tune Einstein using the Stein-O-Matic's Tune-o-meter diagnostic tool.

## THE STEIN-O-MATIC KICKSTART POPUP

After Einstein presents his Daily Kickstart dialog, it is assumed that the user will immediately launch the Stein-O-Matic to work through some of the tasks and challenges just issued. *Note: It is not necessary to immediately work on Kickstart tasks as they will be available the next time the user launches the Stein-O-Matic, regardless of the time of day.*

### DAILY KICKSTART INFO BOXES

The concept of the Daily Kickstart is an important (and unique) feature designed to allow Einstein to engage a user, rather than the user having to initiate engagement with Einstein first. Throughout this doc, sections in green provide additional information, functionality and features about Einstein's Daily Kickstart.

## LEVELING SYSTEM (EARNING IQ POINTS AND ACHIEVEMENTS)

On his path to genius, the user will have the opportunity to climb the IQ ladder by completing games, engaging in activities and simply interacting with Einstein. The user's current IQ level and corresponding title (protégé, astronomical apprentice or even boy/girl genius) will be visible in the Genius ID section of the Stein-O-Matic. *Einstein will always use the user's current Title appropriately during spoken conversations.*



In addition to a new title, the user will unlock additional avatar items for his profile picture (an impressive ID photo is essential in the world of academia!) and other content.

Advancing in the leveling system will:

- Unlock rewards
- Unlock content
- Unlock new avatar pieces
- Unlock Special Einstein interactions and responses
- Change the user's current Title (which starts as 'Assistant')

To increase his/her level the user earns IQ points by:

1. Excelling at Brain Games challenges (see Brain Games – Challenging your mind)
2. Providing certain optional Profile information (see My Profile)
3. Earning Achievement Badges
4. Interacting daily with Einstein

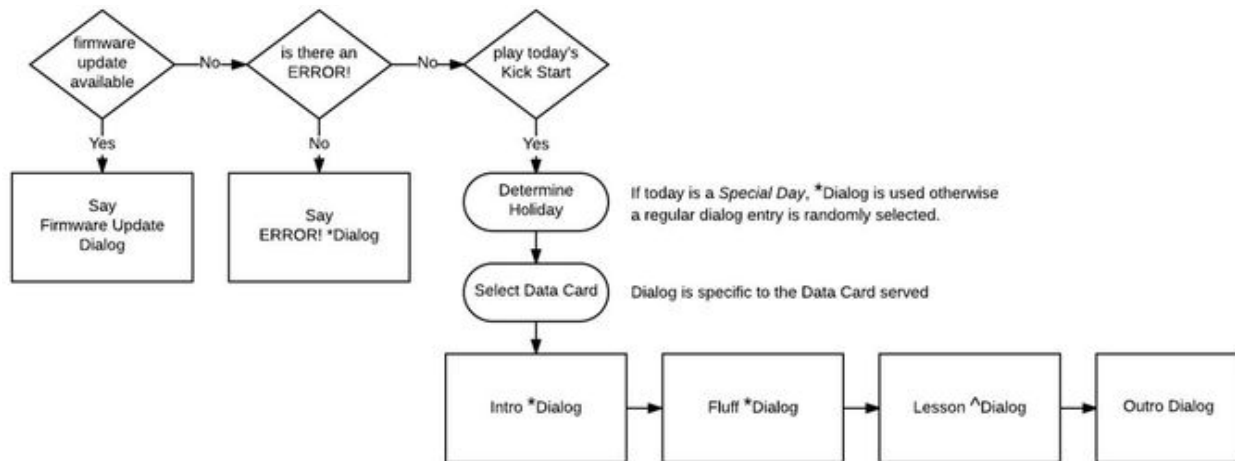
The player can always check his/her progress in the Stein-O-Matic 3000 by selecting their Genius ID badge and viewing My Progress.

*See the Stein-O-Matic > Genius ID section for more information.*

## KICKSTART ASSEMBLY + POWER ON ACTIVITIES

- [UPDATE: ALL Mention of ERROR functionality should be ignored. ERRORS are now a part of Stein-o-matic play only, and do not occur on Power-On.](#)
- [DAILY POWER ON](#)
- [DAILY KICK START](#)
  - [SPOKEN Kick Start](#)
    - [Skipping the Spoken Kick Start](#)
  - [STEIN-O-MATIC Kick Start](#)
    - [If POPUP occurs during Kick Start](#)
- [Special Days List](#)

**UPDATE: ALL MENTION OF ERROR FUNCTIONALITY SHOULD BE IGNORED. ERRORS ARE NOW A PART OF STEIN-O-MATIC PLAY ONLY, AND DO NOT OCCUR ON POWER-ON.**



## DAILY POWER ON

When the Einstein robot is turned on for the first time each day, he will 'RUN' one of the following activities:

NOTE: THIS LIST IS IN ORDER OF PRIORITY

1. **If a firmware update is required**, the robot will begin to download an update. While this is happening, and if the user views the Alert channel, a firmware alert will show.
2. **If Einstein is in ERROR! Mode** (this occurs when we have determined that we want the player to experience a fun Einstein error, and to fix it via a tune-o-meter activity), the robot will begin the appropriate error DIALOG and ask the player to fix his ERROR! *Or, the player can avoid the mini game and just say "AUTO-TUNE," but he/she will not earn an iQ award.* As long as Einstein is in ERROR! Mode, the Alert channel will display an ERROR! Message.
3. **If neither of the above conditions is true**, then Einstein delivers one of the following based on his current state:
  1. If there is a Kick Start to SERVE, Einstein delivers the appropriate Spoken KS (based on the current KS day ID)
    1. If there are NO MORE Kick Starts to SERVE (the player has completed all 100+ days), then Einstein delivers his training complete Dialog (see ks\_lesson\_no\_more in DRAGON)
  2. If Einstein SERVED a KS during this day, but it has not yet been CONSUMED, Einstein will comment on it (see ks\_lesson\_not\_available in DRAGON)
  3. If Einstein SERVED a KS during this day and is was already CONSUMED, Einstein will deliver a dialog (one of several randomized versions) that congratulates the player on his/her progress, and suggests earning more IQ using the Stein-O-Matic or access offline content.

## DAILY KICK START

SOME INFORMATION IN THIS SECTION IS DUPLICATED IN CONTENT AND PROGRESSION DESIGN FOUND HERE: <https://disruptorio.atlassian.net/wiki/x/XACIAQ>

The Daily Kick Start (KS) is the main driver of progression.

When Einstein is turned on each day, his first interaction with the user will form the Daily Kick Start. (SEE DAILY POWER ON ABOVE FOR TWO EXCEPTIONS.)

The Daily KS includes a SPOKEN COMPONENT (via the robot) and a STEIN-O-MATIC COMPONENT that appears as persistent content on the ALERT channel.

## SPOKEN KICK START

The Spoken Kick Start is a conversation Einstein has with the player in which he: Introduces the day, provides some fluff content like a joke or saying, begins a science lesson and ends by reminding the player to load the Stein-O-Matic.

**The Spoken Kick Start consists of dialog from 4 different DRAGON ACTIVITIES strung together using the following simple rule set:**

1. Determine the Day – Some KS content is selected based on whether TODAY is a SPECIAL DAY. Special days include: a recognized Holiday or a SPECIAL DAY from the player's profile (primarily their birthday) for which the player has entered information.
  1. If it's determined to be a special day, THEN the appropriate, pre-designed special day Intro and Fluff dialogs for that day is used.  
I.E IF IT'S THE PLAYER'S BIRTHDAY, THEN "\*\_BIRTHDAY" DIALOGS ARE USED. IF IT'S VALENTINE'S DAY, THE "\*\_VALENTINE" DIALOG IS USED, ETC"
  2. If it is not a special day, THEN a standard dialog is selected randomly.

**NOTE: WHENEVER A RANDOM DIALOG IS USED, IT NEEDS TO BE CROSSED OFF THE LIST OF USEABLE DIALOG. WE DO NOT REPEAT STANDARD KS DIALOG ENTRIES UNTIL ALL OF THEM HAVE BEEN USED ONCE.**

NOTE: THE "\*" SYMBOL IS USED BELOW TO INDICATE WHAT CONTENT IS DETERMINED BASED ON SPECIAL DAYS.

1. Get a data card – A list of ordered Data Cards will live on the server. Each day, the NEXT data card in the list is served during the Kick Start. NOTE: this change ins design occurred at our 7/20 meeting and affects our interest in letting the player select a lesson focus area. IF WE IMPLEMENT the idea of the player selecting one of the 3 science areas as a focus, then this rule would change to: "Each day, the NEXT data card in the player's chosen focus area is served during the Kick Start." Regardless, The data card served determines which Lesson Dialog plays(see #5 below.)
2. Select Intro Dialog\* - Einstein's Intro dialog is a welcome to the new day. It can have any number of dynamic references like: {profile name} or even {profile.city} or {weather}.  
HOW TO SELECT - IF THE DAY IS SPECIAL, QUEUE THE APPROPRIATE SPECIAL DIALOG; OTHERWISE, SELECT A RANDOM INTRO DIALOG.
3. Select Fluff Dialog\* – Fluff Dialog is drawn from one of the following ACTIVITIES: KS\_QUOTES, KS\_JOKES OR KS\_FACTS. Fluff Dialog always has a first sentence lead-in like, "Before we get to the tough stuff, let's stretch your mental muscles with a Joke!" to segue from the Intro.  
HOW TO SELECT – IF THE DAY IS SPECIAL AND SPECIAL FLUFF DIALOG EXISTS, QUEUE THE APPROPRIATE SPECIAL DIALOG; OTHERWISE, SELECT A RANDOM FLUFF DIALOG.

4. Select Lesson Dialog – Lesson Dialog has a first sentence lead-in like, “Ok, Genius. We’re really burning solar radiation here. Which makes me think that’s a great next lesson...” to segue from Fluff Dialog segment. Lesson Dialog is based on the data card picked in #2 above and always ends with a call to check out the new Data Card.

#### HOW TO SELECT – QUEUE THE LESSON DIALOG ASSOCIATED WITH THE SELECTED DATA CARD.

1. Select Outro Dialog – Outro dialog is a random dialog meant to wrap up each KS by reminding the player to launch the Stein-O-Matic. It can be personalized by mentioning the player’s current level or by encouraging him/her to earn more iQ points by playing Brain Game challenges, complete data cards, etc.
2. **HOW TO SELECT – QUEUE A RANDOM OUTRO.**

Kick Start Segment	Dragon Activity Name	Dragon Intent Name Info
<b>Intro</b>	KSIntros/	Non-Holidays = “KS_intro_###”  Holidays = “KS_intro_[SPECIALDAYID]”
<b>Fluff (Einstein quote)</b>	KSQuotes/	Non-Holidays = “KS_quotes_###”  Holidays = “KS_quotes_[SPECIALDAYID]”
<b>Fluff (Joke)</b>	KSJokes/	Non-Holidays = “KS_jokes_###”  Holidays = “KS_jokes_[SPECIALDAYID]”
<b>Fluff (trivia)</b>	KSTrivia/	Non-Holidays = “KStrivia_###”  Holidays = “KS_trivia_[SPECIALDAYID]”
<b>Lesson</b>	KSLessons/	[INDEX#]_[TOPIC TITLE]
<b>Outro</b>	KSOutro/	KS_outro_###

#### SKIPPING THE SPOKEN KICK START

When Einstein begins his spoken Kick Start conversation, the player can choose to skip the spoken KS segment by saying something like, “Let’s do this LATER.” Or simply “LATER.” **EXACT PHRASING TBD.** Doing so will cause Einstein to respond appropriately, telling the player that he/she can just view the Stein-O-Matic’s Alert channel to see his/her Kick Start assignments.

#### STEIN-O-MATIC KICK START

Once Einstein begins his spoken KS routine, the Stein-O-matic is sent a trigger to immediately display the day’s KS content the next time the Alert channel is loaded.

Every Kick Start ALERT displays 5 'Assignment' prompt icons on the Stein-O-Matic’s Alert channel.

KS 'Assignment' prompts alert the player to new content. Each prompt represents a Kick Start assignment, or Bonus assignment.

**SELECTING ANY PROMPT WILL TRIGGER EINSTEIN DIALOG.** Einstein will give a brief explanation of the prompt content.

#### Rules for Alert prompts

1. Show the Data Card Unlock prompt (the number should represent the number of data cards unlocked by the current kickstart.)
2. Show the Brain Games Challenge prompt. (THIS PROMPTS THE PLAYER TO MINE BRAIN GAME CHALLENGES FOR UP TO 250IQ POINTS EVERY DAY)
3. IF any of the data cards unlocked during the kickstart unlock brain games or videos, then show the Brain Game Unlock and/or Video Unlock prompts respectively. (the number should represent the number of brain games or videos unlocked by data cards.)
4. If any of the 5 alert slots remain empty, fill it with a random Bonus opportunity from the BONUS table below. If the player receives a BONUS opportunity, he/she can earn bonus iq by completing the indicated requirements. bonus iq will be rewarded via a bonus iq popup as soon as possible.

#### IF POPUP OCCURS DURING KICK START

- If the condition for unlocking Brain Games was met at any point before the Kick Start begins, a Brain Game POPUP unlock will appear.
- If the condition for unlocking a Video is met, a Video POPUP unlock will appear.

#### SPECIAL DAYS LIST









Date	Weekday	Holiday name	Holiday type
Jan 2	Monday	<a href="#">New Year's Day observed</a>	Federal Holiday
Jan 16	Monday	<a href="#">Martin Luther King Day</a>	Federal Holiday
Jan 28	Saturday	<a href="#">Chinese New Year</a>	Observance
Feb 14	Tuesday	<a href="#">Valentine's Day</a>	Observance
Feb 20	Monday	<a href="#">Presidents' Day</a>	Federal Holiday
Apr 16	Sunday	<a href="#">Easter Sunday</a>	Observance, Christian
Apr 18	Tuesday	<a href="#">Tax Day</a>	Observance
May 14	Sunday	<a href="#">Mother's Day</a>	Observance
May 29	Monday	<a href="#">Memorial Day</a>	Federal Holiday
Jun 18	Sunday	<a href="#">Father's Day</a>	Observance
Jul 4	Tuesday	<a href="#">Independence Day</a>	Federal Holiday
Sep 4	Monday	<a href="#">Labor Day</a>	Federal Holiday
Oct 9	Monday	<a href="#">Columbus Day</a>	Federal Holiday
Oct 31	Tuesday	<a href="#">Halloween</a>	Observance
Nov 11	Saturday	<a href="#">Veterans Day</a>	Federal Holiday
Nov 23	Thursday	<a href="#">Thanksgiving Day</a>	Federal Holiday
Dec 24	Sunday	<a href="#">Christmas Eve</a>	Observance, Christian
Dec 25	Monday	<a href="#">Christmas Day</a>	Federal Holiday
Dec 31	Sunday	<a href="#">New Year's Eve</a>	Observance






## CONTENT AND PROGRESSION

### OVERVIEW

This section contains design relevant to the scope of content and how that content will be rolled out based on progression.

Most Stein-O-Matic content can be classified under one of the three science categories (and subcategories.)

CATEGORIES		
<b>PHYSICAL SCIENCE</b>	LIFE SCIENCE	EARTH SCIENCE
		
SUB-CATEGORIES		
<b>Physics</b>	Biology	Geology
	{need new icon}	
<b>Chemistry</b>	Zoology	Meteorology
		
<b>Astronomy</b>	Botany	Oceanography

		
	Genetics	Paleontology
		
Fringe Science	Fringe Science	Fringe Science

**UPDATE: the MEDICINE subcategory has been replaced with a general BIOLOGY subcategory**

Each category has the following content:

- 50 **DATA CARDS**
- 5 **BRAIN GAMES** (each associated with a specific Data Card)
- 2 motion graphic **VIDEOS** (each associated with a specific Data Card)

#### DATA CARD CONTENT

Each card requires the following quiz content:

- 1 multiple choice **quiz** question written specifically for the Topic
- 3 fun facts. Fun fact topics should hover around the data card topic to which they are attached, but don't need to be specific to the topic. In addition, fun facts can be shared across data cards. That is, they can recur.

#### TUNE-O-METER CONTENT

Tune-o-meter micro games are used to increase Einstein's Efficiency rating or to fix an ERROR!

- 1 Efficiency **Micro Game** (RE-SKIN OF MAG-NEATO)
- 2 Error fixing diagnostic **Micro Games**

#### AVATAR ITEM CONTENT

New avatar items are unlocked whenever a new level is reached, and sometimes when a special game play 'achievement' is earned.

Avatar items that have been **UNLOCKED** can be **ACQUIRED** by spending banked iQ points.

- **SEE CONTENT TABLE BELOW FOR SCOPE ESTIMATES**

## BREAKTHROUGH CONTENT

A Breakthrough is a specific game play **ACHIEVEMENT** for which the player is awarded a nifty, retro-styled badge that can appear on the genius badge section of the Stein-O-Matic. There are five breakthrough badges corresponding to the following game play activities: Brain Games, Launch Lab, Avatar, Tune-o-meter and Data Cards.

- 5 core **badges**
- 5 **devices** to enhance each badge

## VIDEO CONTENT

Each of the Stein-O-Matic's three scientific categories has two motion graphic videos associated with it. **THE FIRST VIDEO IN EACH CATEGORY IS UNLOCKED ON DAY 0, AND THE SECOND IS UNLOCKED WHEN THE DATA CARD ASSOCIATED WITH THE VIDEO IS ASSIGNED DURING THE DAILY KICK START.**

When the associated Data Card is assigned, the player is notified of the video in a number of different ways:

- A video badge appears on the kick start alert.
- As long as the video has not been viewed, the green 'new content' tag will be attached to the video icon on the genius file knob (this only appears **WHEN DATA CARDS ARE BEING VIEWED.**)
- A video icon appears in the activity area of the associated data card. Viewing the video will complete the activity, award the player 'X' iQ points and place a checkmark on the activity icon to indicate that the activity has been completed.

## OFFLINE CONTENT

[TBD based on clarification and further discussion]

## ADDITIONAL DIALOG CONTENT

A TBD amount of dialog content will need to be written to handle the following:

- All "PROFESSOR," cloud-serviced conversations (this includes actions like asking Einstein what the weather is, the intro sequence where the player is asked his/her name, interactions in which Einstein 'collects' profile information via conversation, etc)
- On-board conversations (this includes things like asking Einstein about his research)



CONTENT	SCOPE	INFO
SPOKEN KICK START (DIALOG)		
<b>Welcome Intro</b>	300 - holidays	*HOLIDAYS SHOULD HAVE CUSTOM INTROS
<b>Sayings Dialog</b>	?	[SAYINGS ATTRIBUTED TO EINSTEIN]
<b>Jokes Dialog</b>	?	[SCIENCE RELATED JOKES]
<b>Quick Fact Dialog</b>	?	[SIMPLE SCIENCE FACTS NOT FOUND ON DATA CARDS]
<b>Scientific Lesson Dialog</b>	300	1 for each corresponding Data Card to be unlocked
GENIUS FILE CONTENT		
<b>NARRATED VIDEOS</b>	6	2/science category
<b>DATA CARDS</b>	300	100/science category
<b>Quiz Questions</b>	300+	1-2/data card
MICRO GAMES		
<b>BRAIN GAMES</b>	27	9/science category
<b>TUNE-O-METER</b>	3	1 micro game increases Efficiency, 2 micro games correct specific Errors
BREAKTHROUGHS		
<b>BASE</b>	5	
<b>DEVICE ENHANCEMENTS</b>	25	5/base
AVATAR		
<b>Skin color</b>	10	5/gender
<b>Hair Style</b>	20	10/gender
<b>Accessories</b>	30	[ACCESSORIES ARE SPLIT INTO EYEWEAR AND 'OTHER']
<b>Outfits</b>	25	5 HAVE ACCOMPANYING HATS/HELMETS
<b>Headwear</b>	15	5 COMPLETE AN OUTFIT
<b>Lab R.A.Ts</b>	10	
<b>Lab Accidents</b>	6	2/science category
<b>BREAKTHROUGHS</b>	25	5/area (brain games, launch lab, data cards, tune-o-meter, genius progress)

## PROGRESSION

Game progression is driven by the Daily Kick Start tasks and Data Card completion.

## CORE PLAY LOOP

- > COMPLETE Data Cards or PLAY activities
- > EARN iQ points
- > RAISE level to UNLOCK avatar items and BANK iQ earned (during previous level progression)
- > SPEND iQ to acquire unlocked avatar items.

## DAILY PROGRESSION

On Day 0, a package of content consisting of a number of Data Cards, Brain Games and Videos is unlocked and presented to the player via the Alert channel. From that point on, content is primarily unlocked daily during the Kick Start sequence, in which a single Data Card is ALWAYS unlocked along with other tasks (see below.)

#### Day 0

- 9 Brain Games unlocked (3 per science category)
- 9 Data Cards unlocked (3 per science category)
- 3 videos (1 per topic)

#### Day 1+

- 1 Data Card/day DRAWN FROM THE PLAYER'S CURRENT SCIENCE FOCUS
- Earnable Brain Game challenge points renewed
- OTHER TASKS AND OPPORTUNITIES ASSIGNED (SEE THE KICK START BELOW.)

### KICK START CONTENT

The Daily Kick Start (KS) is the main driver of progression.

When Einstein is turned on each day, his first interaction with the user will form the Daily Kick Start – a conversation that includes a welcome from Einstein,

The only thing that can interrupt the Daily Kick Start is an ERROR!, which must be fixed first. (SEE 'IF EINSTEIN HAS AN ERROR!' BELOW.)

The Daily KS includes a SPOKEN COMPONENT (via the robot) and a STEIN-O-MATIC COMPONENT that appears as persistent content on the ALERT channel. Once Einstein begins his spoken KS routine, the Stein-O-matic will display the KS content the next time the Alert channel is loaded.

#### SPOKEN KS

1. Einstein will **always** have a welcome intro. In the case of holidays and days special to the player (birthdays, etc), this will be a more 'designed' intro.
2. Einstein will **always** offer some specific scientific information or concept he wants to convey, which leads to the unlocking of a Data Card on the topic (See Stein-O-Matic KS below.) NOTE: IF WE IMPLEMENT THE PI-CHART AS A FOCUS SELECTOR+PROGRESS METER, THE TOPIC EINSTEIN CHOOSES EACH DAY WILL ALWAYS BE ONE FROM THE PLAYER'S CHOSEN SCIENTIFIC FOCUS – EITHER, PHYSICAL SCIENCE, EARTH SCIENCE OR LIFE SCIENCE (BIOLOGY).
3. Einstein **always** issues a new Brain game challenge (See Stein-O-Matic KS below.)
4. Einstein **can** invite the player to a CONVERSATION. Conversations are designed to push the robot's verbal interaction and can be used to gather profile info (verbally) from the player. This can be used to ask the player his/her MOOD each day.
5. If any other Stein-O-matic content is disbursed during the KS, Einstein mentions it during his spoken KS routine. (See Stein-O-Matic KS below for possibilities.)

---

## STEIN-O-MATIC KS

Each Kick Start will display up to 5 ‘assignment’ prompt icons on the Stein-O-Matic’s Alert channel. Assignment prompts include:

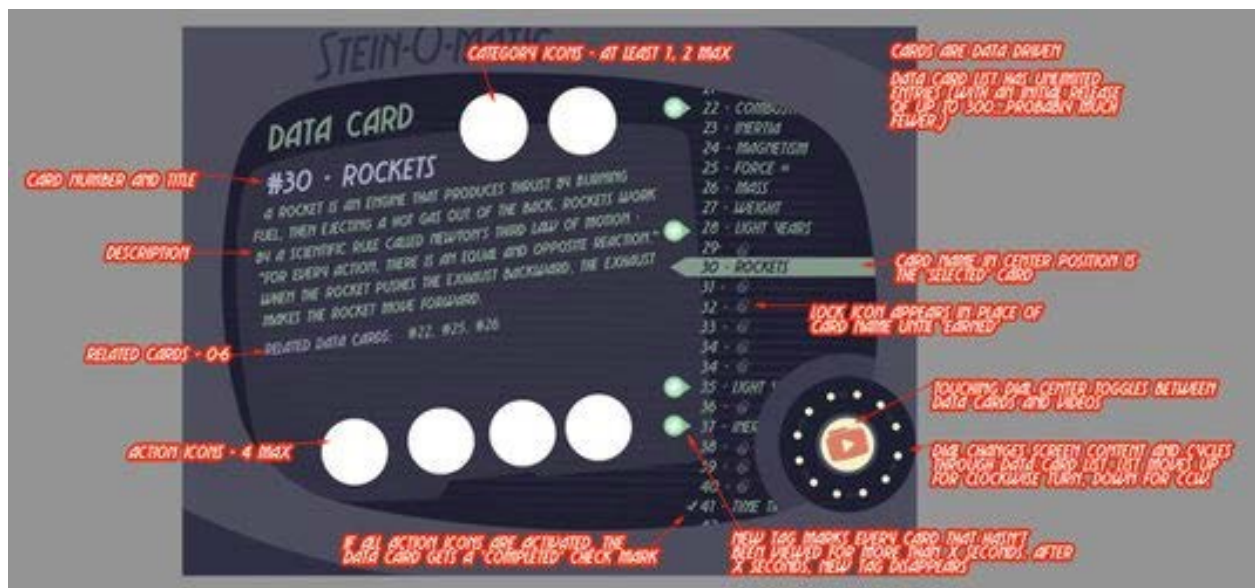
1. A new Data Card is **always** unlocked, unless there are no more Data Cards available in the current category focus. IF this is the case, then:
  1. On the first KS in which a card is NOT available, Einstein tell the player to go to their Pi-chart and change their training focus.
  2. On the second KS in which a card is NOT available, Einstein changes the focus automatically and tells the player their training will continue in the new area.
2. A new Brain Game challenge is **always** issued. A challenge just means that Einstein reminds the player that they can earn up to 250 iQ points DAILY for playing brain game challenges. The player can ‘mine’ the brain games for up to 250 points, playing as many challenges as it takes to earn them. After that, the player will only be playing for fun or to earn Breakthroughs.
3. Einstein will **always** offer a Re-Q Bonus opportunity if the re-Q condition is met (see Data Card Content.)
4. Einstein **can** tell the player his current efficiency level and make a comment that either congratulates or pushes the player to visit the tune-o-meter.
5. Einstein **can** tell the player about the Pi-Chart (especially as he/she nears completion in the current category.)

---

## SKIPPING THE KICK START

When Einstein begins his Kick Start conversation, the player can choose to skip the spoken KS segment by saying something like, “Let’s do this LATER.” Or simply “LATER.” **EXACT PHRASING TBD**. Doing so will cause Einstein to respond appropriately, telling the player that he/she can just view the Stein-O-Matic’s Alert channel to see his/her Kick Start assignments.

## DATA CARD CONTENT



Data Cards are a secondary driver of progression. One Data Card is assigned during each Kick Start. Each Data Card is dedicated to a scientific topic and contains the following information:

- Card number
- Topic Title (single word, preferably)
- A very brief Topic writeup
- Category Icon
- Sub-category icon (optional)
- List of other Data Cards that are related to the current card.
- 4 'activity' icons

A Data Card can be **COMPLETED** by engaging every activity icon at the bottom of the data card. It is by completing Data Cards that other content, like research videos and brain games, are unlocked (**SEE THE COMPLETED DATA CARDS TABLE BELOW.**)

---

## DATA CARD ACTIVITIES

There are four icons at the bottom of each Data Card.

Activity icon #1 will always be one of the following:

- A Brain Game icon matching the Brain Game associated with the Data Card (if any). Selecting the icon will launch the Brain Game in **PRACTICE MODE**. To complete this activity, the player just needs to play through the practice mode one time. **IF THE PLAYER PRACTICES THE BRAIN GAME BEFORE VIEWING THE DATA CARD, HE/SHE WILL EARN THE APPROPRIATE IQ POINTS AND THE BRAIN GAME ACTIVITY ICON WILL ALREADY BE CHECKED OFF ON THE DATA CARD.**
- A Video icon (if a video is associated with the Data Card). Selecting the icon will launch the video as if it was selected from the video screen menu. To complete this activity, the player just needs to view the entire video. **IF THE PLAYER VIEWS THE VIDEO BEFORE VIEWING THE DATA CARD, HE/SHE WILL EARN THE APPROPRIATE IQ POINTS AND THE VIDEO ACTIVITY ICON WILL ALREADY BE CHECKED OFF ON THE DATA CARD.**
- A Quiz icon (if neither of the above two conditions are valid). Selecting the icon will launch a Quiz question (**SEE BELOW.**) To complete this activity, the player just needs to answer the question.

Activity icons #2 - #4 will be Quiz opportunities. Each Quiz can be completed as described in Activity Icon #1 above.

**NOTE: THE FOURTH ICON IS ALWAYS GHOSTED AND INACTIVE UNTIL THE FIRST THREE ACTIVITY ICONS ARE COMPLETED, WHICH CAN BE DONE IN ANY ORDER. ONCE THE FIRST THREE ARE COMPLETED, THE FINAL ICON BECOMES ACTIVE.**

### Feedback for Completing Activities and Data Cards

Touching an icon will launch the activity associated with the icon. Completing the activity will return play back to the Data Card and a checkmark will appear over the activity icon indicating that it has been completed.

Completing the fourth activity completes the Data Card, at which time a large check mark appears over the data card (similar to passing a Brain Game) and a small check mark is placed next to the Data Card's topic title in the scrolling list of Data Cards at the right side of the screen indicating that the Data Card is complete.

---

## DATA CARD QUIZZES

A quiz consists of a single question that will earn the player a certain amount of iQ if answered correctly.

Quiz questions are posed via one of three different formats and are generated randomly (see Category Match below) or are pre-generated (see Multiple Choice.)

---

## MULTI-CHOICE FORMAT

During a Multiple Choice formatted quiz, Einstein SPEAKS a question and asks the player to reply with the correct answer. THE QUESTION ALSO APPEARS IN TEXT FORMAT ON THE SCREEN AND THE PLAYER CAN TOUCH THE CORRECT ANSWER ON SCREEN.

Questions are typical of basic science knowledge tests.

Each question is followed by A, B, C and D answers - one correct and three randomly selected incorrect answers - with all answers in the format of Data Card Topic Titles.

### Basic Game Play

On screen text elements and touchable answers are displayed, or the player can simply speak the letter that matches the correct answer. The player can answer correctly OR incorrectly. Either way, selecting or speaking an answer ends the quiz.

Eg. "For what is chlorophyll used?"

1. The Brain   **B. Photosynthesis**   C. Rockets   D. Zoology

NOTE: THE PLAYER WILL BE TOLD TO CHOOSE THE BEST ANSWER AS THERE, TECHNICALLY, MAY BE MORE THAN ONE POSSIBLE ANSWER.

If the player gets the answer correct, Einstein will respond with one of several random 'correct intents.'

If the player gets the answer wrong, Einstein will respond with one of several random 'incorrect intents.'

**intents fro the Multi-Choice quiz can be found in the following dragon activity - #mutlichoicequiz [sp!]**

---

## CATEGORY MATCH FORMAT

During a Category Match quiz, the player must match four different Data Card Topic Titles (Rockets, Digestion, Volcanism, Asteroids) to four category icons, such that each topic is matched to the scientific category that best

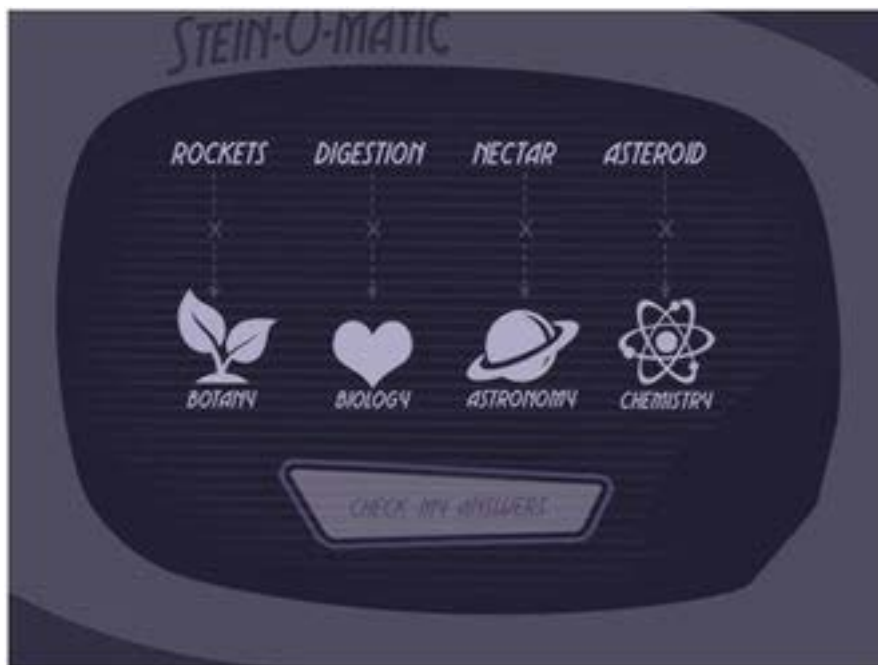
represents (ie. Physics, Biology, Geology, Astronomy, respectively.) Category Match quiz questions are generated randomly.

#### Basic Game Play

1) The player is presented with 4 topics and 4 category/subcategory icons. Initially, each topic is linked to the category icon directly beneath it by a default **GHOSTED**, dashed line graphic. Note: this does not necessarily mean that the topic and icon do not match...the player still needs to match every topic to an icon personally.

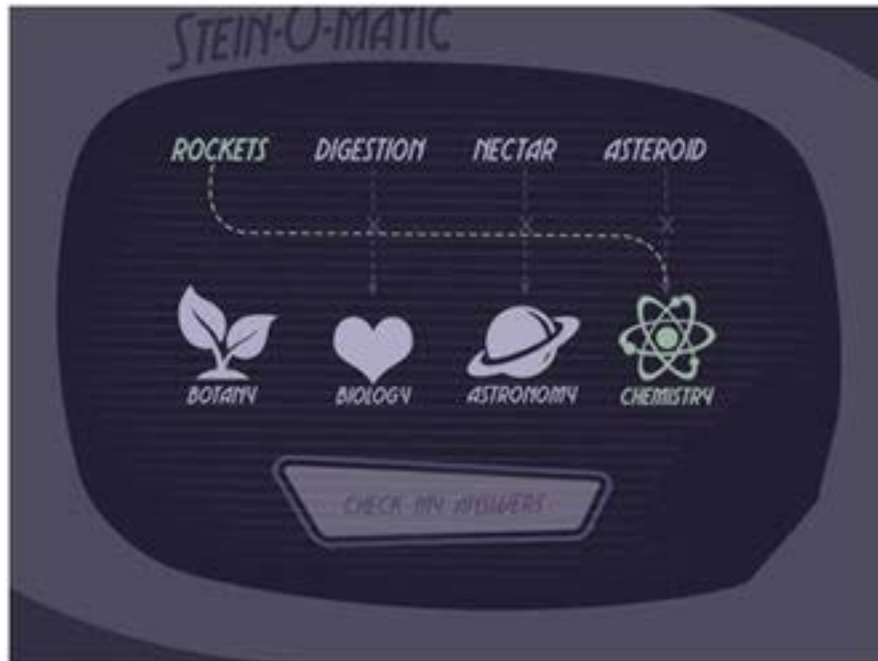
The **CHECK MY ANSWERS** BUTTON WILL BE GHOSTED UNTIL ALL TOPICS AND ICONS HAVE BEEN

**MATCHED BY THE PLAYER.**



2) Player touches a topic (which highlights) and then touches an icon. Both the topic text and icon will be linked by a dashed line. If the player touches a topic then selects an icon that is already linked to a different topic, the icon will be linked to the new topic and the old topic will show its default **GHOSTED**, dashed line graphic.

THE **CHECK MY ANSWERS** WILL STILL SHOULD BE GHOSTED UNTIL ALL TOPICS ARE MATCHED TO AN ICON.



3) Once all topics are matched up, the CHECK MY ANSWERS button will de-ghost. Clicking it will display an 'X' over linked pairs that are INCORRECT or a Checkmark over linked pairs that are CORRECT

after a short delay, play returns to the data card that spawned the quiz.

If all answers were correct, then the player will get a checkmark icon to indicate the quiz was passed. If any answers weren't correct, the player will get an X icon.

EARNING IQ: When the card is completed and the reward screen appears, the player will earn points for each checkmark on the card (but 0 iQ for each 'X'). The amount of iQ earned for completing an activity is in the data cards JSON data.

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## 2-TRUE

In 2-true, the player is presented with 3 fun 'facts,' but one of them isn't a fact at all! They must select the false statement to eliminate it.





Whenever the player makes a choice, an 'X' or 'Checkmark' will appear over their choice to indicate if it is incorrect or correct, respectively.

Additionally, all text changes to appear either red or green depending on if the statement is actually false or true, respectively.

If the player chooses a FACT, the quiz is failed, they will receive an 'X' and, after a short delay, return to the data card where an X will appear over the activity icon.



If the player chooses the FALSE statement, the quiz is passed, they will receive a 'Checkmark' and, after a short delay, return to the data card where a 'Checkmark' will appear over the activity icon.



Completing Data Cards, by touching and engaging each activity icon at the bottom of the card, will unlock the following content.

	accomplishment	content unlocked
<b>Data Cards</b>	complete your first data card	Breakthrough (Data Cards)
<b>Data Cards</b>	complete 5 data cards in each science Category	Breakthrough (Data Cards)
<b>Data Cards</b>	complete 20 data cards	IQ bonus (awarded once)
<b>Data Cards</b>	complete 50 data cards	IQ bonus (awarded once)
<b>Data Cards</b>	complete 100 data cards	Breakthrough (Data Cards)
<b>Data Cards</b>	complete all data cards	avatar item: Einstein Mask (Head Gear)
<b>Data Cards</b>	win your first quiz	Breakthrough (Data Cards)
<b>Data Cards</b>	win 20 quizzes	Breakthrough (Data Cards)
<b>Data Cards</b>	Spend IQ to Unlock a Data Card	Breakthrough (Data Cards)

## IQ POINT AWARDS

Game / Activity	IQ point award	L N i o m t
-----------------	----------------	-------------------

		i t  /  D a y
Data card - Quiz	defined in datacard JSON	
Data card - Brain Game practice	defined in datacard JSON	t h e p l a y e r i s a w a r d e d t h e p o i n t s i n d i c a t e d i n t h e d a

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		c ti c e d t h e fi r s t ti m e o n l y .
<b>Data card - Video</b>	defined in datacard JSON	t h e p l a y e r i s a w a r d e d t h e p o i n t s i n d i c

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t  
h

		e v i d e o i s w a t c h e d t h e f i r s t t i m e o n l y .
<b>Data card - complete a Card</b>	10 x current level	t h e p o i n t s a r e a w a r d e d o n t

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p



		l e t e d c h e c k m a r k a p p e a r s .
Brain game challenge	5/game passed + 50 if challenge is completed	2 5 0
Launch Lab - Gravity Game	5/destination reached  +25 if solar system is completed  +additional iQ points or multipliers available for pick up during play	
Tune-O-Meter tune-up game	T-o-meter games reward efficiency.  iq points are only awarded for special TBD game play conditions.	r e w a r d s c r e e n a w a r d s e f fi

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		will occur after reward is seen immediately
Create profile	TBD bonus iq awards for filling in info	
Complete start-up	NOT SURE WHAT THIS IS	

LEVELING

The player can raise 'levels' by collecting iQ points. The level ladder is a simple, linear progression. Leveling provides the following benefits:

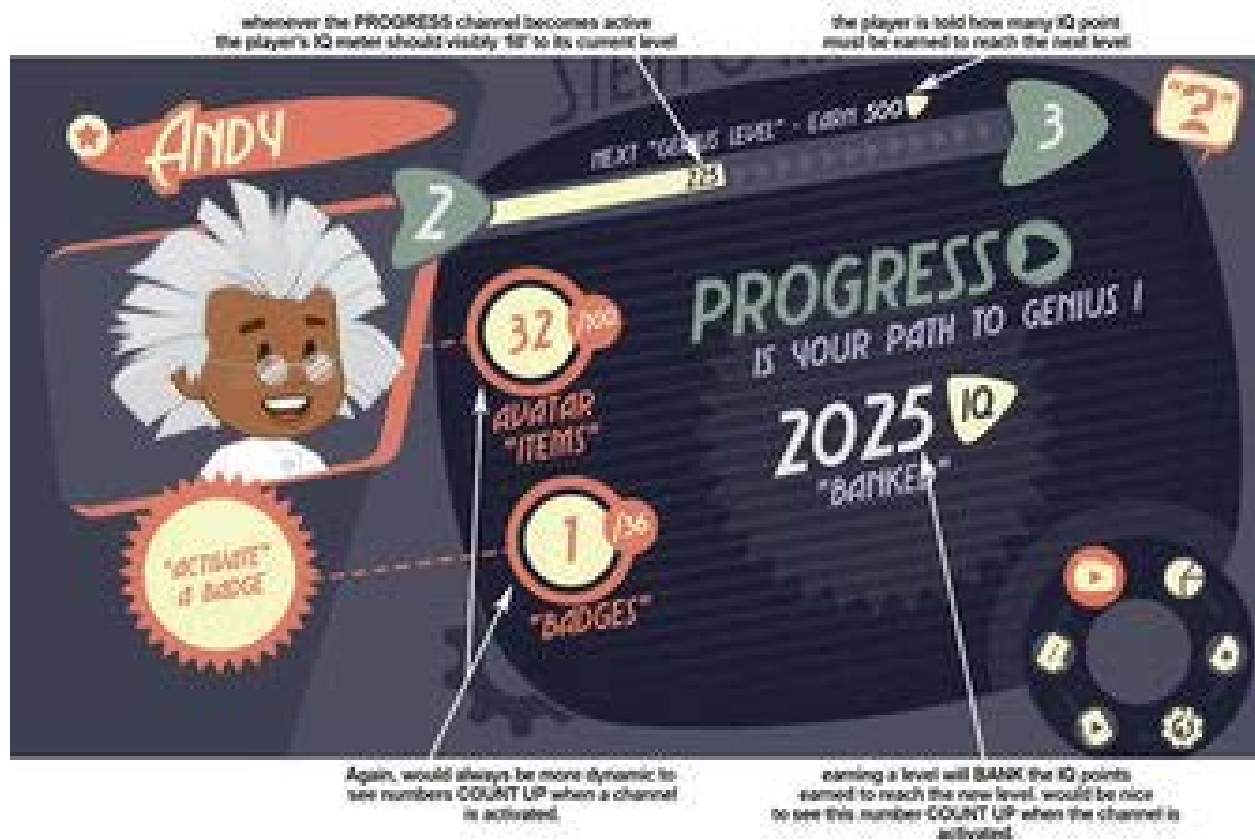
- Each level unlocks additional Avatar Items that can then be acquired by spending banked iQ points.
- When a new level is reached, the iQ points earned to reach the new level are added to the player's 'bank' and can be spent.

Leveling Table			
Level #	iQ point total	Title	
01	0	Lab Rat	
02	75	Protégé	
03	100	Research Assistant	
04	150	Junior Lab Assistant	
05	200	Senior Lab Assistant	
06	300	Junior Lab Technician	
07	500	Associate Lab technician	
08	800	Senior Lab Technician	
09	1000	Assistant Professor	
10	1200	Junior professor	
11	1400	Associate Professor	
12	1600	Senior Professor	
13	2000	Master Professor	
14	2200	Lab Director	
15	2400	Projects Commissioner	
16	3000	Boy/Girl Junior Genius	
17	4000	Earl of Sciences	
18	5000	Timespace Baron	
19	7500	Lord of Matter	
20	10000	Some Kind of Einstein	

## MAIN MENU PROGRESS CHANNEL

The progress channel allows the player to see the four progress elements at a glance:

1. IQ meter - shows current level and progress to next level
2. Banked IQ - show how much spendable IQ the player has earned by raising levels
3. how much genius gear has been ACQUIRED
4. how many breakthrough badges have been earned.



## DATA CARD CONTENT GUIDELINES

over 300 data cards will be distributed across 100 'daily' lessons.

Since the order in which the data cards are distributed is fixed, we can refer to this as the curriculum. The complete list of data cards, order of distribution and all other information will be contained in a spreadsheet that will be parsed automatically, and from which a JSON holding all relevant data will be created. Below is the first pass data card list with ordering and sample writeups.

Assuming a writer will be accessing the sheet, taking care of the research and writing most of topics, I've prepared a list of rules (posted below) in the hopes of maintaining some consistency and to make the bridge between this sheet and the loc sheet more secure.

## RULES FOR DATA CARD TOPIC WRITEUPS

- 75 words or less. have to be super focused. informative, but pithy.
- NO capital letters anywhere in the writeup.
- write for the 10-12 yo level and WITH HUMOR (see writeup samples below)
- every effort should be made to tie topics together. This means mentioning as many other topics as possible in a writeup. Related topics (see R1-R6 columns) should almost certainly be mentioned.
  - we're trying to create a web of knowledge. when another topic is mentioned in a writeup, it will appear in a different color. If you mention another topic, please use the exact word. eg. NUTRITION is the topic so avoid using the word NUTRITIONAL.
  - highlight related topic words by bracketing them with these tags: <> topic </>
  - although we highlight related topic words, let's not highlight the current topic in its own writeup. eg. the word 'work' wouldn't be highlighted in the WORK writeup
- generally speaking, italicized text in the current sheet are suggestions for topic writeup content. not italic black text is 'final' text, PLEASE DON'T EDIT NON-ITALIC BLACK TEXT.
- color your writeup text with a unique color of your choosing, when approved i'll change it to black.

## WRITEUP SAMPLES

### WORK

we're not talking about doing your chores! in <>physics</>, work is the product of <>force</> and the <>distance</> over which it moves. imagine you are pushing a heavy box across the floor The further you move; the more work you do! ok, maybe we are talking about your chores.

### URINE

urine is a type of <>liquid</> <>waste matter</> that must be removed often to keep a body healthy. this thankless job is performed by the <>kidneys</> with a lot of help from the rest of the urinary system. so give them a round of applause...after you wash your <>hands</>.

### PRECOGNITION

the ability to 'see' future events is called precognition. it means "to know beforehand." is it possible that there are things about <>the brain</> that we have not yet discovered? certainly! is it possible that I can glimpse the answers to mr. perkins' math exam using my mind's eye? unlikely. but wouldn't it be cool?

## FIRST PASS DATA CARD MATRIX

This is the source for the cloud-based sheet

## [MATRIX] ACHIEVEMENTS

Breakthroughs (and some avatar items) are awarded (automatically unlocked AND acquired) based on fulfilling a game achievement. Typically, an achievement involves doing **SOMETHING** a certain **NUMBER OF TIMES**, which means that accomplishments must be TRACKED separately for each genius profile.

For example, if PlayerA "completes 100 data cards", they have completed an accomplishment and will be awarded a Breakthrough for their Data Card badge.

## Popup Alerts

Every accomplishment unlocks a specific award or awards, alerting the player via a **BONUS POPUP** at the earliest possible point in play. See [\[Callout\] Popups](#), specifically the section on Breakthroughs and Avatar Items.

A note on Avatar Items:

- STANDARD avatar items (those that are unlocked every time a new level is reached) NEVER receive a bonus popup. To see the new avatar items unlocked when a new level is gained, the player would simply go to the avatar screen and look through the item list for new items.
- SPECIAL avatar items, however (those unlocked via an accomplishment,) always trigger a bonus popup (as indicated in [\[Callout\] Popups](#))

## Achievement Matrix (First Pass)

ID	TYPE	CONDITION	REWARD TYPE	REWARD SPECIFIC
DC_COMPLETE1	Data Cards	complete your first data card	Breakthrough	Datacard
DC_complete5	Data Cards	complete 5 data cards	Breakthrough	Datacard
DC_complete25	Data Cards	complete 25 data cards	IQ	1000
DC_complete50	Data Cards	complete 50 data cards	Breakthrough	Datacard
DC_complete75	Data Cards	complete 75 data cards	item	*_lab accident
DC_complete100	Data Cards	complete 100 data cards	item	*_lab accident
DC_complete300	Data Cards	complete 300 data cards	IQ	5000
DC_quiz1	Data Cards	win your first quiz	Breakthrough	Datacard
DC_quiz20	Data Cards	win 20 quizzes	Breakthrough	Datacard
DC_unlock1	Data Cards	Spend IQ to Unlock a Data Card	Breakthrough	Datacard
BG_practice10	Brain games	practice 10 different brain games (practice mode)	Breakthrough	BRAINGAME
BG_practiceall	Brain games	practice every brain game (practice mode)	Item	*_headgear_a_02
BG_challenge1	Brain	complete your first	Breakthrough	BrainGame

	games	challenge (challenge mode)		
<b>BG_challenge10</b>	Brain games	complete 10 challenges (challenge mode)	Breakthrough	BrainGame
<b>BG_challenge50</b>	Brain games	complete 50 challenges (challenge mode)	Breakthrough	BrainGame
<b>BG_challenge100</b>	Brain games	complete 100 challenges (challenge mode)	item	*_lab accident
<b>BG_wingame25</b>	Brain games	win 25 brain games (challenge mode)	Item	*_headgear_a_03
<b>BG_wingame100</b>	Brain games	win 100 brain games (challenge mode)	Breakthrough	BrainGame
<b>BG_wingame300</b>	Brain games	win 300 brain games (challenge mode)	Breakthrough	BrainGame
<b>BG_failgame25</b>	Brain games	fail 25 brain games (challenge mode)	Item	*_headgear_a_04
<b>BG_failgame200</b>	Brain games	fail 200 brain games (challenge mode)	IQ	1000
<b>BG_destroyplanet</b>	Brain games	destroy a planet 30 times (any mode) - this amounts to failing specific games with planets (DEFLECT, ERUPT, etc)	item	*_lab accident
<b>TM_tune1</b>	tune-o-meter	tune einstein for the first time (WIN YOUR FIRST MAG-NEATO GAME)	Breakthrough	Tuneometer
<b>TM_error1</b>	tune-o-meter	fix your first Einstein ERROR! (WIN YOUR FIRST BUG SWEEP GAME)	Breakthrough	Tuneometer
<b>TM_error25</b>	tune-o-meter	fix an Einstein ERROR! 25 times (WIN YOUR 25th BUG SWEEP GAME)	Breakthrough	Tuneometer
<b>TM_tune500P</b>	tune-o-meter	increase einstein's efficiency by a total of 500% (this is across ALL plays)	item	*_lab accident
<b>TM_tune100X</b>	tune-o-meter	tune einstein 100X (WIN YOUR 100th MAG-NEATO GAME)	IQ	1000
<b>TM_tune100P</b>	tune-o-meter	increase einstein's efficiency to 100%	Breakthrough	Tuneometer
<b>TM_error2taps</b>	tune-o-meter	fix an ERROR! in 2 taps	item	*_lab accident
<b>TM_tune0</b>	tune-o-	let einstein's efficiency	Breakthrough	Tuneometer



	meter	drop to 0%		
TM_findbugs	tune-o-meter	find and squish 10 'mustache' bugs	Breakthrough	Tuneometer
AI_item1	Avatar items	Purchase your first item	Breakthrough	Avatar
AI_equip1item	Avatar items	Purchase <del>and Equip</del> one item from each 'non Lab' category	IQ	1000
AI_equiprat1	Avatar items	Equip your first lab R.A.T	IQ	1000
AI_equiprat3	Avatar items	Equip 3 Lab R.A.T.s	Breakthrough	Avatar
AI_equipaccident1	Avatar items	Equip a Lab Accident	Breakthrough	Avatar
AI_equipaccident2	Avatar items	Equip a second lab accident	Breakthrough	Avatar
AI_equipset	Avatar items	Equip every item from single category. (ie space outfit, space helmet)	Breakthrough	Avatar
AI_unlockbackdrops3	Avatar items	collect three Backdrops (this is equivalent to completing 3 full breakthrough badges)	item	*_lab accident
AI_unlockcategoryal1	Avatar items	purchase all items in a single category	Breakthrough	Avatar
AI_viewbackdrop	Avatar items	view a Lab Backdrop	item	*_lab accident
LL_Orbit1	Launch Lab	Orbit your first planet	Breakthrough	LaunchLab
LL_Orbit20	Launch Lab	Orbit <b>50</b> planets	Item	*_labaccident
LL_enterwormhole	Launch Lab	Enter a wormhole	Breakthrough	LaunchLab
LL_Orbit20x	Launch Lab	Orbit 20 times around a single planet	IQ	1000
LL_collectfuel	Launch Lab	Collect enough fuel to fill your fuel bar 10 times	IQ	1000
LL_useshields20x	Launch Lab	use shields to destroy <b>50</b> asteroids	Breakthrough	LaunchLab
LL_collectwaypoint100	Launch Lab	collect 100 waypoints	Breakthrough	LaunchLab
LL_findblackhole	Launch Lab	find a black hole	IQ	1000
LL_hitsun	Launch Lab	run into a sun	Breakthrough	LaunchLab
LL_meetalien	Launch Lab	meet an alien	Item	*_labaccident
LL_mines100	Launch Lab	be destroyed by 100 gravitic mines	IQ	1000
LL_lightyear1	Launch Lab	travel a light-year	Breakthrough	LaunchLab
PG_level1	Progress	reach level 1	Item	*_outfit_a_01
PG_level5	Progress	reach level 5	Breakthrough	Genius
PG_level10	Progress	reach level 10	Item	*_labaccident

PG_level20	Progress	reach level 20	Breakthrough	Genius
PG_spend1k	Progress	spend 1000 iq points	Breakthrough	Genius
PG_spend10k	Progress	spend 10,000 iq points	Breakthrough	Genius
PG_spend20k	Progress	spend 20,000 iq points	Item	*_labaccident
PG_return10	Progress	Access the Stein-O-Matic 10 days in a row	Breakthrough	Genius
VI_watch3	videos	watch 3 videos	Breakthrough	Genius
VI_watch6	videos	watch 6 videos	IQ	1000
PR_staritem1	profile	enter your first star item into your profile	IQ	50
PR_staritem5	profile	enter 5 star items into your profile	IQ	250
PR_staritemALL	profile	complete your profile	IQ	1000

## BREAKTHROUGHS

- [Summary](#)
- [Breakthrough Screen](#)
  - [Navigating the Breakthrough Menu](#)
  - [Activating a Badge](#)
- 
- [Unlocking Breakthrough Badges](#)

## SUMMARY

1. Breakthroughs are the Stein-O-Matic's version of **achievement badges**. By completing a specific game play achievement like "practice 10 different Brain games" the player can be awarded a Breakthrough badge.  
IN ADDITION TO BREAKTHROUGH BADGES, SOME GAME PLAY ACHIEVEMENTS CAN ALSO UNLOCK BONUS IQ OR AVATAR ITEMS. SEE [\[MATRIX\] Achievements](#) FOR A COMPLETE LIST OF ACHIEVEMENTS AND WHAT THEY UNLOCK DURING PLAY.
2. When a player earns an achievement that rewards a Breakthrough Badge, he/she is immediately notified via a Breakthrough popup. See [\[Callout\] Popups](#) for general popup formatting and information.
3. There are 6 Breakthrough badges for each of six different game play areas (the Data Card badge, Brain Games badge, Launch Lab Badge, Tune-O-meter Badge, Avatar badge and a general Genius badge) and each badge is made up of 6 pieces. Each Breakthrough Badge achievement will award the player with a piece of a specific Breakthrough Badge, which will be either the Base (1x) or an Enhancement (5x). The Base is always earned first, followed by Enhancement pieces (in a linear order.)
4. Once the Base (first piece) of a Badge is earned, that badge can be 'activated' on the Breakthrough menu screen and will appear underneath the player's headshot on the main menu.
5. Collecting all 6 pieces of a Breakthrough Badge will complete the badge, awarding the player with a **backdrop** for their avatar screen. See [Avatar Screen\(s\)](#) for more info on backdrops.

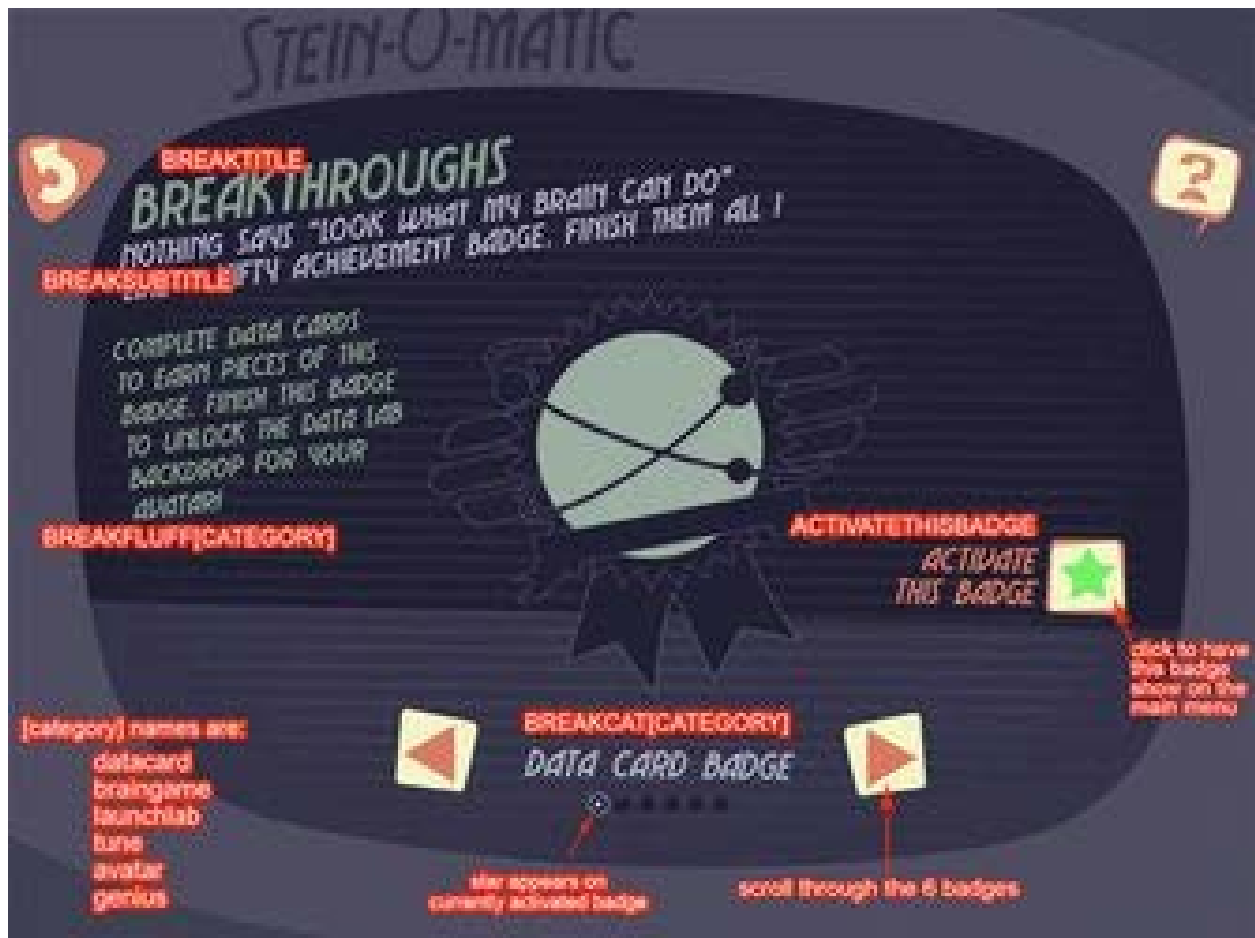


## BREAKTHROUGH SCREEN

The Breakthrough screen can be accessed by clicking on the Breakthrough Badge under his/her headshot (on the Stein-O-matic's Main Menu), or by selecting the "BADGES" button on the Progress Channel.

The Breakthrough screen allows the player to:

1. view all 6 badges (finished or not) - the player can view a badge and see which pieces they have earned (full color elements) and which they have not (positioned in place, but appearing as silhouettes).
2. the player can choose to ACTIVATE a single badge (once the BASE level has been collected), and it will appear under his/her avatar headshot on the Stein-O-Matic Main Menu.



## NAVIGATING THE BREAKTHROUGH MENU

The Breakthrough menu (badge categories) can be navigated just like the avatar menu. The six different badges can be viewed by clicking the right or left arrows. Each time an arrow is clicked,

1. the current badge fades out and the next one scrolls in (from off screen and in the direction the arrow is pointing.)
2. the badge name changes. Below are the ID strings for badge names:

BREAKCATDATACARD	data badge
BREAKCATBRAINGAME	game badge
BREAKCATLAUNCHLAB	launch badge
BREAKCATTUNE	efficiency badge
BREAKCATAVATAR	gear badge
BREAKCATGENIUS	genius badge

The 6 standard navigation dots appear under the badge category name and work in the standard manner, except that the star graphic stays on the dot associated with the currently activated badge

## ACTIVATING A BADGE

Clicking the ACTIVATE THIS BADGE 'checkbox' will place a star in the box (only one badge can be checked at a time!) and immediately trigger a transition to the Main Menu, where the activated badge will replace the current badge along with some reward effect sparkles + SFX.

In addition, the navigation dot associated with the activated badge will now show the star graphic.

## Badge Layers

Each Breakthrough Badge can be completed by unlocking the BASE and all 5 ENHANCEMENT pieces. Pieces are earned in order, and when an enhancement piece of a specific badge is earned, the next piece of the badge is automatically added to the badge graphic on the breakthrough screen, **AND IF THE BADGE IS ACTIVE ON THE MAIN MENU, THE ADDITION WILL BE REFLECTED THERE AS WELL.**

Each Badge has the following layers (the layer in which a piece is placed is labelled from 1-6, with 1 being the top most layer):

BASE (layer 3) - the badge BASE is a simple retro, circular shape that conveys the main theme of the badge through a simple graphic element. For example, the Brain Games badge should show the brain and star logo.

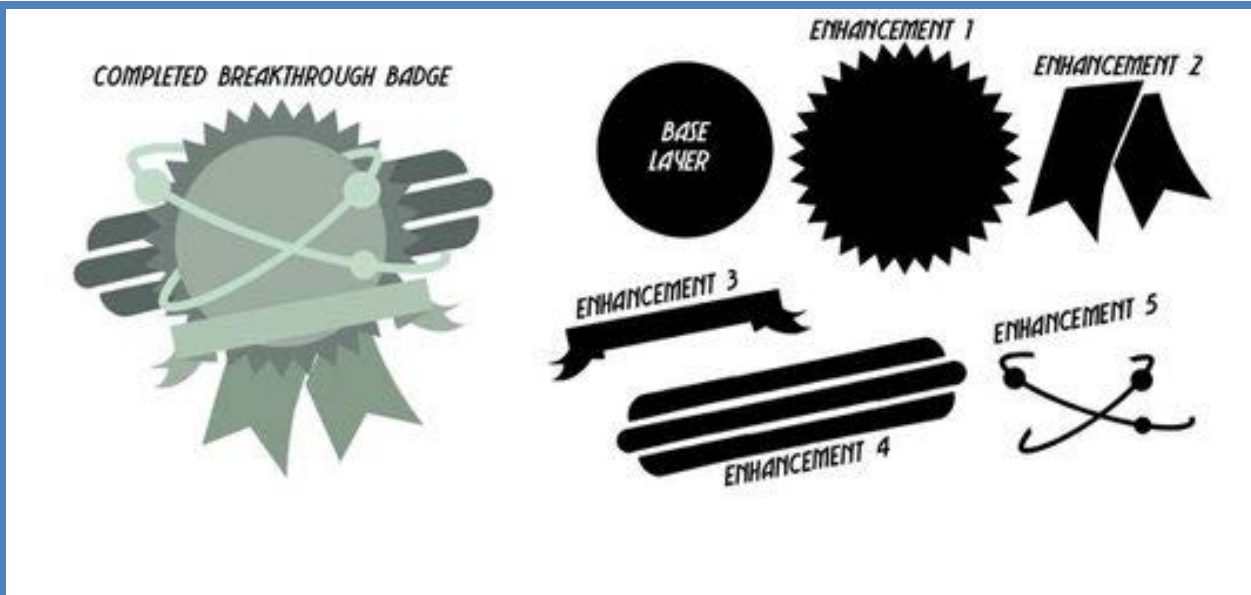
BURST (layer 4) - enhancement 1 is always a burst that bulks up the BASE.

RIBBON (layer 5) - enhancement 2 is always a ribbon that hangs from the BASE

SCROLL (layer 2) - enhancement 3 is always a scroll element placed over the bottom portion of the BASE. It should not obscure the main graphic elements on the BASE. WE MIGHT PLACE TEXT ON THIS ELEMENT.

WINGS (layer 6) - enhancement 4 is always a wing element that flanks the BASE. It is also placed on the lowest layer.

FLASH (layer 1) - enhancement 5 is always a flashy element that lays over all other layers. It should be themed specifically to the badge.



UNLOCKING BREAKTHROUGH BADGES

Breakthrough Badge pieces are unlocked in a specific order, not via a specific achievement. Earning ANY Breakthrough: Data card achievement for the first time will always unlock PIECE NUMBER 1 of the Data Card BADGE TYPE. Earning a second achievement that awards the player a Data Card type Breakthrough will always unlock PIECE NUMBER 2 of the Data Card BADGE TYPE.

UNLOCK ID from achievement matrix	BADGE TYPE	PIECE NUMBER	PIECE NAME
DC_complete1	Data Card	1	Badge_DC_base

DC_complete5	Data Card	2	Badge_DC_burst
DC_complete50	Data Card	3	Badge_DC_ribbon
DC_quiz1	Data Card	4	Badge_DC_scroll
DC_quiz20	Data Card	5	Badge_DC_wings
DC_unlock1	Data Card	6	Badge_DC_flash
BG_practice10	Brain game	1	Badge_BG_base
BG_challenge1	Brain game	2	Badge_BG_burst
BG_challenge10	Brain game	3	Badge_BG_ribbon
BG_challenge50	Brain game	4	Badge_BG_scroll
BG_wingame100	Brain game	5	Badge_BG_wings
BG_wingame300	Brain game	6	Badge_BG_flash
TM_tune1	tune-o-meter	1	Badge_TN_base
TM_error1	tune-o-meter	2	Badge_TN_burst
TM_tune100	tune-o-meter	4	Badge_TN_scroll
TM_tune0	tune-o-meter	5	Badge_TN_wings

TM_findbugs	tune-o-meter	6	Badge_TN_flash
AI_item1	Avatar	1	Badge_AV_base
AI_unlockrat3	Avatar	2	Badge_AV_burst
AI_unlockaccident	Avatar	3	Badge_AV_ribbon
AI_unlockaccident3	Avatar	4	Badge_AV_scroll
AI_equipset	Avatar	5	Badge_AV_wings
AI_unlockcategoryall	Avatar	6	Badge_AV_flash
LL_Orbit1	Launch Lab	1	Badge_LL_base
LL_enterwormhole	Launch Lab	2	Badge_LL_burst
LL_usesields20x	Launch Lab	3	Badge_LL_ribbon
LL_collect waypoint100	Launch Lab	4	Badge_LL_scroll
LL_hitsun	Launch Lab	5	Badge_LL_wings
LL_lightyear1	Launch Lab	6	Badge_LL_flash
PG_level5	Genius	1	Badge_GE_base



PG_level20	Genius	2	Badge_GE_burst
PG_spend999	Genius	3	Badge_GE_ribbon
PG_spend10k	Genius	4	Badge_GE_scroll
PG_return10	Genius	5	Badge_GE_wings
VI_watch3	Genius	6	Badge_GE_flash

## [DIALOG DESIGN] SPOKEN HELP SYSTEM

### SPOKEN HELP SYSTEM FUNCTIONALITY

Whenever the player transitions to a specific section of the Stein-O-matic (that has spoken help defined for it,) he/she will be able to SAY any of the words on screen that appear in "QUOTATIONS." Einstein will recognize that word and respond with a short segment of help dialog.

#### Example of Spoken Help

The player changes to the PROGRESS channel. On this screen he /she will notice that several words on screen that are surrounded by quotes (""), like: "LEVEL," "BANKED," "GEAR," and "BADGES. If the player speaks the word "BADGES," Einstein should immediately respond with something like, "By performing special actions or playing consistently with the stein-o-matic, you will be awarded pieces of Breaththrough Badges! There are 36 badge pieces, and you've collected [numofbadge.pieces] so far. Click on the badge under your headshot to see your badge collection."

#### Managing Nav Menu and Spoken Help when they occur at the same time

Note that when Einstein is idle he is listening for the Nav Menu words specific to his Connected State (see [\[Power-On\] Connected States and Nav Menus](#)). Given that he ALSO needs to be listening for the Spoken Help words appropriate to the current scene, we need to find a way to combine the two word groups.

This means, that if Einstein is

1. ONLINE or DIRECTLY CONNECTED
2. Idle
3. at a point in the Stein-o-matic where spoken help is offered

THEN he needs to be listening for both the appropriate Nav Menu workgroup AND the Spoken Help word group for the active scene at the same time.

## SPOKEN HELP SYSTEM DIALOG AND WORD GROUPS

THE WORD GROUPS SPECIFIC TO THE NAV MENUS CAN BE FOUND IN [\[Power-On\] Connected States and Nav Menus](#).

**\*\*NOTE:** Spoken Help System dialog can be found on Dragon in the /Steinomatic Spoken Help System folder, divided into #Activities for each content area and further divided into individual intents for each help system word that the player can speak.

<https://einstein.dragon.ai/stack/intent.overview/10477676426118061>

The wordgroups that are created by combining the Nav Menu and Spoken Help system keywords can be found in [\[SYNTHESIS\] Nav Menus and Spoken Help](#)

## [SYNTHESIS] NAV MENUS AND SPOKEN HELP

- [Overview](#)
- [Wordgroups](#)
- [#NavMenu\\_Only](#)
- [#SHS\\_SIGNIN word group](#)
- [#SHS\\_MainMenu](#)
- [#SHS\\_DataCards \(scene, not channel\)](#)
- [#SHS\\_BrainGames](#)
- [#SHS\\_Gravity](#)
- [#SHS\\_Error](#)
- [#SHS\\_Videos](#)
- [#SHS\\_Settings](#)
- [#SHS\\_Breakthrough](#)
- [#SHS\\_ConnectionScreen](#)
- [Additional Functionality: <App Trigger> Responses](#)
  - [Trigger Response Fails](#)
- [Enhanced Time Out Control](#)

## OVERVIEW

This page synthesizes the concepts from [\[DIALOG DESIGN\] Spoken Help System](#) and [\[Power-On\] Connected States and Nav Menus](#) with respect to:

1. How Menu keywords and Spoken Help keywords are combined into wordgroups so that Einstein is listening to all appropriate keywords where necessary
2. What are the keywords in each of the wordgroups

## ISSUE

As explained elsewhere, when Einstein is idle, he needs to be listening for:

1. Nav Menu keywords. These include commands like "Professor" and "Play" and "Connect." these keywords allow the user to 'navigate' the robot's content or even change its connection type.
2. Spoken Help keywords. IF the player is using the stein-o-matic and in a scene that supports spoken help.

## SOLUTION

To allow this, we will have a unique wordgroup for every location where Spoken Help is required, and this word group will ALSO include all appropriate Nav Menu keywords AND non-specific navigation words like "YES", "NO", "CANCEL" and "REPEAT"

for example: if the robot is ONLINE, IDLE and the stein-o-matic is displaying the PROGRESS channel content, the active workgroup will include the following keywords:

**PROGRESS Channel wordgroup = Nav Menu keywords + Progress Channel spoken help keywords + generic navigation words**

## WORDGROUPS

words in **green** are Nav Menu keywords

words in **orange** are the Spoken Help keywords

words in **blue** are the generic navigation words FOR LEVEL 1

## #NavMenu\_Only

if a scene has NO Spoken Help, the only keywords will be Nav Menu keywords

**Professor**

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

## #SHS\_SIGNIN WORD GROUP

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

**profile** - shssignin/profile - 10478818972687178

**training** - shssignin/training - 10478818984813849

## #SHS\_MAINMENU

### ALERT CHANNEL (Offline or Directly Connected state)

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

### ALERT CHANNEL (Cloud Status state)

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

**renew** - shssignin/renew - 10478819305200220

### **ALERT CHANNEL (Robot Status state)**

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

**update** - shssignin/update - 10478822247299072

### **ALERT CHANNEL (Kick Start state)**

Professor

Connect

[Play](#)

[Lab](#)

[games](#)

[cards](#)

[videos](#)

[tune](#)

[Repeat](#)

[help](#)

[kickstart](#) - shssignin/kickstart - 10478822681785364

[pointers](#) - shssignin/pointers - 10478822686914074

[update](#) - shssignin/ksupdate - 10478822711831932

## LAUNCH LAB CHANNEL

[Professor](#)

[Connect](#)

[Play](#)

[Lab](#)

[games](#)

[cards](#)

[videos](#)

[tune](#)

Repeat

help

launch - shssignin/launch - 10478823217446753

orbit - shssignin/orbit - 10478823227227813

travelled - shssignin/travelled - 10478823234435482

crossed - shssignin/crossed - 10478823239263530

## PROGRESS CHANNEL

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

level - shssignin/level - 10478824161732862

gear - shssignin/gear - 10478824179335549

badges - shssignin/badges - 10478824201313677



**banked** - shssignin/banked - 10478824221698117

## **BRAIN GAMES CHANNEL**

[Professor](#)

[Connect](#)

[Play](#)

[Lab](#)

[games](#)

[cards](#)

[videos](#)

[tune](#)

[Repeat](#)

[help](#)

**challenges** - shssignin/challenges - 10478831362352854

**earn** - shssignin/earn - 10478831367177056

## **TUNE-O-METER CHANNEL**

[Professor](#)

[Connect](#)

[Play](#)

[Lab](#)

[games](#)

cards

videos

tune

Repeat

help

efficiency - shssignin/efficiency - 10478831977832404

### **DATA CARDS CHANNEL (also referred to as the GENIUS FILES CHANNEL)**

No spoken help words. Use #NavMenu\_Only

### **#SHS\_DATACARDS (SCENE, NOT CHANNEL)**

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

complete - shssignin/complete - 10478832383810513

## #SHS\_BRAINGAMES

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

challenge - shssignin/challenge - 10478834306562560

practice - shssignin/practice - 10478834315302343

## #SHS\_GRAVITY

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

galaxy - shssignin/galaxy - 10478832697186830

launch - shssignin/launch - 10478832709822472

## #SHS\_ERROR

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

errors - shssignin/errors - 10478833045892709

## #SHS\_VIDEOS

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

universe - shssignin/universe - 10478833158306349

motion - shssignin/motion - 10478833163884425

relativity - shssignin/relativity - 10478833169549683

brain - shssignin/brain - 10478833177932296

locked - shssignin/locked - 10478833182663502

## #SHS\_SETTINGS

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

language - shssignin/language - 10478833498994949

out - shssignin/out - 10478833502236637

manage - shssignin/manage - 10478833507136359

## #SHS\_BREAKTHROUGH

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

complete - shssignin/complete - 10478833988802781

activate - shssignin/activate - 10478833993671868

## #SHS\_CONNECTIONSCREEN

No spoken help words. Use #NavMenu\_Only

Professor

Connect

Play

Lab

games

cards

videos

tune

Repeat

help

**BELOW IS A PASTE FROM THE NAV MENU and HELP SYSTEM V2 Doc sent to the team on 10/7/16. It details the required firmware upgrades needed to implement the nav menu/help system**

This doc will explain how the 3 different nav menus and the help system works together to allow the user to navigate the robot's content AND Einstein to give contextual stein-o-matic help at the same time.

We will need the following to assist this functionality:

1. Additions to firmware – Ricky and Sam
2. Hooks in certain scenes that have help words – Leo or Jon
3. Word groups managed – Brad
4. Intents written - Jonny

### **What we have now**

Whenever the robot is IDLE (and not in an intent listening for keywords!) he should be switching to 1 of 3 different Nav Menu intents based on his connected state so that he is listening for the following keywords: professor, connect, play, lab, games, cards, videos, tune, repeat, help

Nav Menu flow charts can be found here

<https://disruptorio.atlassian.net/wiki/x/MYBUAg>

### **What we want**

Whenever the robot is IDLE (and not in an intent listening for keywords!) he should switch to 1 of 3 different Nav Menu intents based on his connected state (and listening for the nav menu keywords) AND, in addition, he should also be listening for up to 5 additional help words based on the active stein-o-matic scene.

So, at any one time, and when Idle, Einstein is listening for the following keywords:

professor, connect, play, lab, games, cards, videos, tune, repeat, help + 1-5 [help words]

## **Nav Menus**

The IDs for the Nav Menus are:

### **OFFLINE**

offline/nm\_offline\_quiet

10478707833926344

### **ONLINE**

online/nm\_online\_quiet

10478532268308427



DIRECTLY CONNECTED (A.K.A. Ad-Hoc)

direct/directnm\_directconnect\_quiet

10478834744948775

## Help System

When the user is playing with the Stein-o-matic he can speak out loud a specific HELP WORD, based on where he is in the app.

Help words always appear in quotes (""") to indicate that they can be spoken by the player. If the player speaks a help word when it is visible on screen, Einstein will present a short help dialog consistent with the spoken help word.

For example, on the Stein-o-matic Main Menu, when viewing the PROGRESS Channel, the user will notice that 4 words are in quotes: "level," "banked," "gear," and "badges"

Speaking one of these words will cause Einstein to immediately respond with help dialog consistent with the word.

**There are 17 'screens/scenes' in the app where the user can receive spoken help. At each spot, the user can speak between 1 and 5 different help words and get a **RESPONSE** back from Einstein.**

## FIRMWARE UPDATE

What we need is for Einstein to listen for nav menu keywords AND spoken help keywords at the same time.

There are 17 locations where spoken help is offered, there will be **UP TO** 18 unique word groups (1 combo word group for each of the 17 places spoken help is offered + 1 word group that is nav menu only, which is used wherever spoken help is not offered.)

Therefore, each of the up to 18 combo word group will consist of:

**The 10 keywords for nav menu + (1-5) help keywords**

Information about these combined word groups, their exact content and the location of the help word intents in dragon can be found here:

<https://disruptorio.atlassian.net/wiki/x/CACzAg>

General Info on the help system is here: <https://disruptorio.atlassian.net/wiki/x/AwCNAg>

## ADDITIONAL FUNCTIONALITY: <APP TRIGGER> RESPONSES

When the player speaks a Nav Menu word or a Help System word, Einstein usually responds with dialog and motor movement specific to the word spoken by the user, however, some nav menu and spoken help keywords don't cause Einstein to present dialog, rather **they trigger the app to load a new scene**.

This will let us do cool things like launch videos verbally or switch to a game scene via voice command.

Here is an example flow:

1. Einstein is Online, Idle and on the Genius Files channel - so he is listening for his Online Nav words + the two spoken help words ( "cards" and "videos.")

2. The user says, "Videos"
3. The "videos" intent has a <play\_app trigger> which **triggers the stein-o-matic to transition immediately to the Videos Scene.**
4. Since all stein-o-matic scenes have an on\_load dialog that Einstein delivers, he will immediately say something like, "You're a visual learner! That's good because I've got several videos here to stimulate your brain waves. Just pick one and we'll get started."
5. The user can touch one of the video icons OR, since Einstein is now listening for the Online Nav Menu keywords + video scene spoken help words, he/she can just say "the universe."
6. The "universe" intent has a <play\_app trigger> which **triggers the stein-o-matic to transition immediately to the Universe Scene.**
7. The Universe Video plays

#### FIRMWARE UPDATE

We currently have <TE> and <TS> tags that allow us to trigger the app when Text Starts or Text Ends. We need a new tag that triggers the app when NO TEXT EXISTS at all. This trigger will be used in intents that have the trigger command and nothing else - No Einstein dialog or motor commands.

Please implement a <TN> trigger that does not require any text or motor information to be present in the intent.

EG. <TN=PLAY\_MMPPROGRESS.SCENE>

#### TRIGGER RESPONSE FAILS

We need to handle the possibility that an intent triggers a scene, but the stein-o-matic is not open.

## FIRMWARE UPDATE

To trigger a scene that can fail, please implement a <play\_app trigger> that uses the format <TN=Play\_ TRIGGER>

If the 'Play\_' is present in a trigger, Einstein will ALWAYS be expecting an intent PUSH within 5 seconds. If he does not receive a Push within the time limit, he will automatically play his response\_failed dialog:

Response\_Failed intent

shsglobal/response\_failed

10478285615841315

## ENHANCED TIME OUT CONTROL

TECHNICAL GROUP MEMBERS SHOULD TALK THE FOLLOWING FUNCTIONALITY OVER TO SEE WHAT WORKS BEST TO IMPLEMENT THE FOLLOWING FUNCTIONALITY.

As of now, if we're even one level off the root of the nav menu and Einstein is listening for keywords, he may wait forever. We need a way to force a timeout in these conditions.

## FIRMWARE UPDATE

To force a timeout, we need a trigger in the format <TO=#>.

If an intent has this trigger, then after “#” seconds of receiving no valid input, flow should automatically return to the tree's root intent.

Example:

1. Einstein is Online, Idle and on the Genius Files channel - so he is listening for his Online Nav words + the two spoken help words ( “cards” and “videos.”)
2. The user says, “connect”

3. The “connect” intent plays causing Einstein to say, “

“I’M CURRENTLY ONLINE. IF YOU PLAN TO GO MOBILE AND TAKE ME OUT OF RANGE OF YOUR WHY FI CONNECTION, I CAN CONNECT DIRECTLY TO THE STEIN-O-MATIC INSTEAD. DO YOU WANT TO GO MOBILE?”

4. The player does nothing.
5. Issue: Since Einstein is listening for keywords, he should not switch to nav menu mode automatically. The “connect” intent should have a trigger in the format <TO=10> so that control returns to the root intent after 10 seconds of inactivity.

## NAV MENU + SPOKEN HELP SYSTEM FUNCTIONALITY

This doc will explain how the 3 different nav menus and the help system works together to allow the user to navigate the robot’s content AND Einstein to give contextual stein-o-matic help at the same time.

We will need the following to assist this functionality:

1. Additions to firmware – Ricky and Sam
2. Hooks in certain scenes that have help words – Leo or Jon
3. Word groups managed – Brad
4. Intents written - Jonny

### What we have now

Whenever the robot is IDLE (and not in an intent listening for keywords!) he should be switching to 1 of 3 different Nav Menu intents based on his connected state so that he is listening for the following keywords:

professor,

connect,

play,

lab,

games,

cards,

videos,

tune,

repeat,

help

Nav Menu flow charts can be found here

<https://disruptorio.atlassian.net/wiki/x/MYBUAg>

### **What we want**

Whenever the robot is IDLE (and not in an intent listening for keywords!) he should switch to 1 of 3 different Nav Menu intents based on his connected state (and listening for the nav menu keywords) AND, in addition, he should also be listening for up to 5 additional help words based on the active stein-o-matic scene.

So, at any one time, and when Idle, Einstein is listening for the following keywords:

professor,

connect,

play,

lab,

games,

cards,

videos,

tune,

repeat,

help + 1-5 [help words]

(see [https://disruptorio.atlassian.net/wiki/display/ER/%5BSYNTHESIS%5D+Nav+Menus+and+Spoken+Help#id-\[SYNTHESIS\]NavMenusandSpokenHelp-Wordgroups](https://disruptorio.atlassian.net/wiki/display/ER/%5BSYNTHESIS%5D+Nav+Menus+and+Spoken+Help#id-[SYNTHESIS]NavMenusandSpokenHelp-Wordgroups))

**NAV MENU**

The IDs for the Nav Menus are:

### **OFFLINE**

navmenus/nm\_offline\_quiet

10474244345533722

### **ONLINE**

navmenus/nm\_online\_quiet

10474244362740927

### **DIRECTLY CONNECTED (A.K.A. Ad-Hoc)**

navmenus/nm\_wifionly\_quiet

10474244380567965

Please become somewhat familiar with them!

NOTE: I'VE MADE SURE THAT THE 10 KEYWORDS FOR THE ROOT LEVEL OF ALL 3 NAV MENUS IS IDENTICAL.

## **HELP SYSTEM**

When the user is playing with the Stein-o-matic he can speak out loud a specific HELP WORD, based on where he is in the app.

Help words always appear in quotes (""") to indicate that they can be spoken by the player. If the player speaks a help word when it is visible on screen, Einstein will present a short help dialog consistent with the spoken help word.

For example, on the Stein-o-matic Main Menu, when viewing the PROGRESS Channel, the user will notice that 4 words are in quotes: "level," "banked," "gear," and "badges"

Speaking one of these words will cause Einstein to immediately respond with help dialog consistent with the word.

There are 17 'screens/scenes' in the app where the user can receive spoken help. At each spot, the user can speak between 1 and 5 different help words and get a **RESPONSE** back from Einstein.

#### FIRMWARE UPDATE

What we need is for Einstein to listen for nav menu keywords AND spoken help keywords at the same time.

There are 17 locations where spoken help is offered, there will be **UP TO** 18 unique word groups (1 combo word group for each of the 17 places spoken help is offered + 1 word group that is nav menu only, which is used wherever spoken help is not offered.)

Therefore, each of the up to 18 combo word group will consist of:

**The 10 keywords for nav menu + (1-5) help keywords**

Information about these combined word groups, their exact content and the location of the help word intents in dragon can be found here:

<https://disruptorio.atlassian.net/wiki/x/CACzAg>

General Info on the help system is here: <https://disruptorio.atlassian.net/wiki/x/AwCNAg>

#### ADDITIONAL FUNCTIONALITY: <APP TRIGGER> RESPONSES

When the player speaks a Nav Menu word or a Help System word, Einstein usually responds with dialog and motor movement specific to the word spoken by the user, however, some nav menu and spoken help keywords don't cause Einstein to present dialog, rather **they trigger the app to load a new scene**.

This will let us do cool things like launch videos verbally or switch to a game scene via voice command.

Here is an example flow:

1. Einstein is Online, Idle and on the Genius Files channel - so he is listening for his Online Nav words + the two spoken help words ( "cards" and "videos.")
2. The user says, "Videos"
3. The "videos" intent has a <play\_app trigger> which **triggers the stein-o-matic to transition immediately to the Videos Scene**.
4. Since all stein-o-matic scenes have an [#on\\_entry](#) dialog that Einstein delivers, he will immediately say something like, "You're a visual learner! That's good because I've got several videos here to stimulate your brain waves. Just pick one and we'll get started."



5. The user can touch one of the video icons OR, since Einstein is now listening for the Online Nav Menu keywords + video scene spoken help words, he/she can just say “ universe.”
6. The “universe” intent has a <play\_app trigger> which **triggers the stein-o-matic to transition immediately to the Universe Scene.**
7. The Universe Video plays

#### FIRMWARE UPDATE

We currently have <TE> and <TS> tags that allow us to trigger the app when Text Starts or Text Ends.

**We need a new tag that triggers the app when NO TEXT EXISTS at all. This trigger will be used in intents that have the trigger command and nothing else - No Einstein dialog or motor commands.**

Please implement a <TN> trigger that does not require any text or motor information to be present in the intent.

EG. <TN=PLAY\_MMPPROGRESS.SCENE>

#### TRIGGER RESPONSE FAILS

We need to handle the possibility that an intent triggers a scene, but the stein-o-matic is not open.

#### FIRMWARE UPDATE

**To trigger a scene that can fail, please implement a <play\_app trigger> that uses the format <TN=Play\_TRIGGER>**

If the ‘Play\_’ is present in a trigger, Einstein will ALWAYS be expecting an intent PUSH within 5 seconds. If he does not receive a Push within the time limit, he will automatically play his response\_failed dialog:

Response\_Failed intent

[shsglobal/response\\_failed](#)

10478285615841315

#### ENHANCED TIME OUT CONTROL

TECHNICAL GROUP MEMBERS SHOULD TALK THE FOLLOWING FUNCTIONALITY OVER TO SEE WHAT WORKS BEST TO IMPLEMENT THE FOLLOWING FUNCTIONALITY.

As of now, if we’re even one level off the root of the nav menu and Einstein is listening for keywords, he may wait forever. We need a way to force a timeout in these conditions.

## FIRMWARE UPDATE

To force a timeout, we need a trigger in the format <TO=#>.

If an intent has this trigger, then after “#” seconds of receiving no valid input, flow should automatically return to the tree’s root intent.

Example:

1. Einstein is Online, Idle and on the Genius Files channel - so he is listening for his [Online Nav words](#) + the two spoken help words ( “cards” and “videos.”)
2. The user says, “connect”
3. The “connect” intent plays causing Einstein to say:  
“I'M CURRENTLY ONLINE. IF YOU PLAN TO GO MOBILE AND TAKE ME OUT OF RANGE OF YOUR WHY FI CONNECTION, I CAN CONNECT DIRECTLY TO THE STEIN-O-MATIC INSTEAD. DO YOU WANT TO GO MOBILE?”
4. The player does nothing.
5. Issue: Since Einstein is listening for keywords, he should not switch to nav menu mode automatically. The “connect” intent should have a trigger in the format <TO=10> so that control returns to the root intent after 10 seconds of inactivity.

## LAUNCH LAB: GRAVITY GAME

### OVERVIEW



In Gravity, the user imagines himself traveling the vast reaches of space in the X1-Cosmolux, a rocket ship packed with last decade's state-of-the-art technology and sporting the adventurer's package; including handy upgrades like the Window Klear Plus - a one centimeter thick transparent dome that provides a constant view of the chilling, unending, cannot-turn-it-off-without-closing-your-eyes vastness of space. Their mission, until they find out which galaxy they're in and head for home, is to explore everything that the vacuum of space has to offer! One small issue. Unlike the X1b the X1 does not come with turning jet, only a booster and a retro. Enjoy!

In each level of Gravity, the player needs to get from where he is to the next 'waypoint.' Without turning jets, all navigation relies on using the X1's booster, retros and the gravity of the planetary bodies around him.

Across light years of travel, the player will come across several different collectible items that allow him to increase his dwindling power reserves, enhance his nearly obsolete technology and even learn a few things.

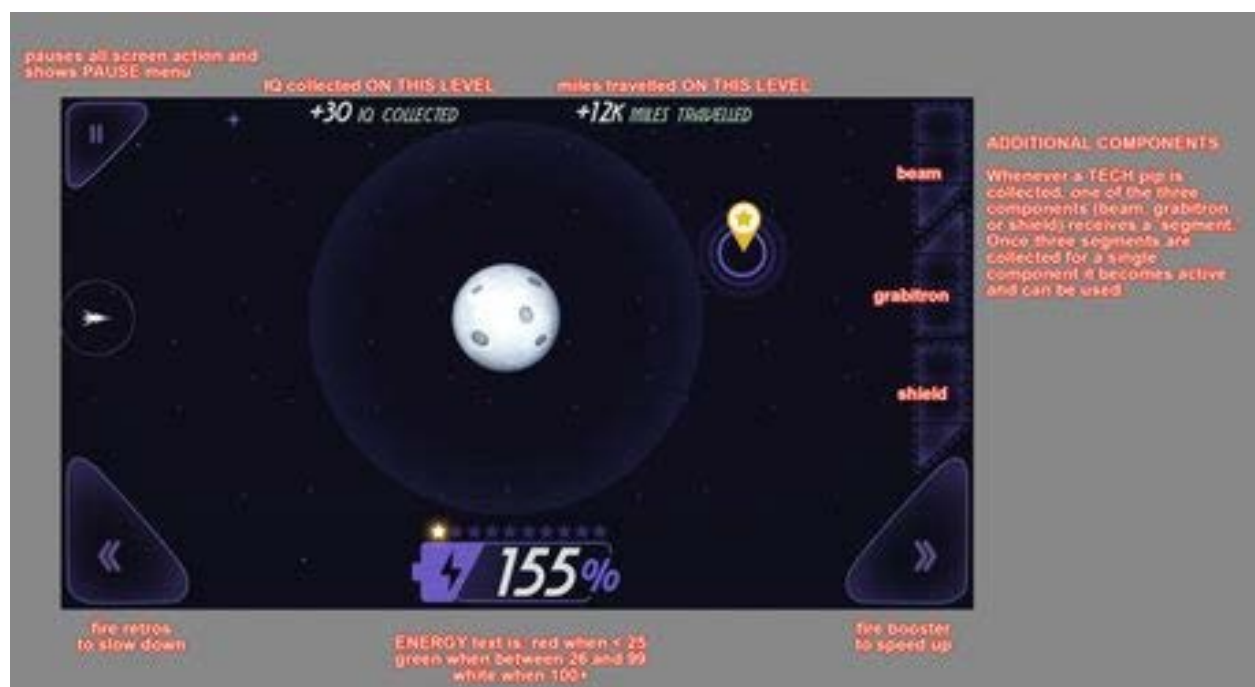
Throughout this imaginative experiment, Einstein provides verbal help and instruction.

- The player learns about basic inertia, mass, volume and gravity.
- The player learns that the mass of a planet is a factor of its size (volume) and density
- Basically, a more massive object has a stronger gravitational force.

### UI

There are 10 persistent UI elements:

1. Pause Icon (top left) - touching the icon will pause all screen action and toggle ON the Pause menu
2. Retro (bottom left) - touching/holding depletes ENERGY and slows rocket
3. Energy Meter (bottom center) - displays ENERGY remaining in percentage format. text is colored based on percentages level as follows: level < 25 = red, 26<level<100 = green, level > 99 = white.
4. Waypoint stars (bottom center, above energy meter) - A purple star appears for each level in the current solar system. Reaching a waypoint marker will cause the next star in the row to highlight. Red stars indicate timed levels.
5. Booster (bottom right) - touching/holding depletes ENERGY and speeds up rocket
6. Shield (right side) - The shield button must be activated by collecting three shield Tech pips. Once activated, the shield can be used by touching/holding the shield icon, which depletes ENERGY and protects the ship from damaging elements.
7. Grabitron (right side) - The grabitron button must be activated by collecting three grabitron Tech pips. Once activated, the grabitron can be used by touching/holding the shield icon, which depletes ENERGY and extends the reach of the ship's tractor beam.
8. Multi-Beam (right side) - The beam button must be activated by collecting three beam Tech pips. Once activated, the beam can be used by touching/holding the shield icon, which depletes ENERGY and projects a multi-beam.
9. Miles Travelled readout (top) - text actively counts up how many miles have been travelled ON THE CURRENT LEVEL (in 1000 mile, 1K, increments). If the waypoint is not reached on this level, these miles are lost.
10. IQ Collected readout (top) - text actively counts up how many IQ points have been collected ON THE CURRENT LEVEL. If the waypoint is not reached on this level, the points are lost.



## PAUSE MENU

Touching the Pause Icon in the top left corner will pause all screen action, and slide on the Pause menu elements. IF THE PLAYER DECIDES TO QUIT THE CURRENT LEVEL BEFORE REACHING THE STAR MARKER, ALL COLLECTED IQ AND MILES TRAVELLED WILL BE LOST.



## METERS

### ENERGY

The player's ship uses ENERGY to do everything (except 'glide' via inertia.) If the ship's energy meter is depleted, a warning chime occurs and it will explode in 3 seconds (if additional energy pips are not collected within the 3 second limit.)

### NAVIGATION

Energy is primarily used by firing the Booster and Retro rockets (but later, it is also used when the player collects additional components like the shield, grabitron and multi-beam.) The player can accelerate forward by tapping/holding the Booster button, and can decelerate by tapping/holding the Retro button.

Using acceleration, deceleration and gravity wells, the player can navigate from the start point to the Star waypoint marker on all levels.

Energy is displayed at the bottom of the screen in a percentage counter. Energy meter number text is colored based on percentage level, as follows:

- current level < 25 = red text #e47f6e
- 26 < current level < 100 = green text #8cad96
- current level > 99 = white text #dcdcdc

## HEALTH

The player's ship has a health meter. The ship's health level is hidden, but can be thought of as a percentage meter. When a ship is 100% damaged it explodes. There are a number of things that can reduce the ship's health, but they all fall into one of three types:

Planet - Planets do 100% damage instantly. Hitting a planet will always destroy the ship (unless it is a destination marked by a Star waypoint marker, in which case, it will end the current level.)

Collidable - An element marked as a Collidable will always do 100% damage instantly, UNLESS the ship's shield is on, in which case the collidable object is destroyed instead.

Damager - An element marked as a Damager will damage the ship over time, and as long as the ship is within it's sphere of influence. Damagers have a %damage/second rate for as long as the ship is in the damager's sphere of influence. As a ship's health percentage goes down, it is colorized red, such that, when the ship is 99% damaged it appears solid red. If a ship ever takes 100% damage while in a Damager, it explodes. When a damaged ship leaves a Damager's sphere of influence, it immediately and rapidly begins 'healing.'

Additional Feedback - While the ship is being affect by a Damager, the warning klaxon will sound AND/OR Einstein will alert the player.

## LEVELS

- Initial levels will be very simple, stepped Tutorial Levels to teach the player basic controls. All levels designated as a Tutorial Level will show standard tutorial slide show elements before the level begins (see Brain Game Practice levels)
- Levels are designed as 'challenges' requiring the player to go from the start position to the Star Waypoint marker before they run out of fuel or are destroyed, while maximizing collectibles along the way. Using a handful of specific elements like Planets, Gravity Wells, Asteroids, Radiation Fields, Gravitic Mines laid down by some kooky alien race, Worm holes, Collectibles, Markers, etc. - levels can be designed with simple puzzle moments.

## EINSTEIN INTRO

Einstein introduces every Gravity level with a short but informative DIALOG that tells the player what to expect, for example:

"Looks like we have a chance to power up. Make sure you grab those energy pips."

"Watch out for those gravity mines! Looks like we've wandered into an old space battlefield."

"That planet looks promising, but it's atmosphere looks pretty dangerous."

## COLLECTIBLES

There are 4 types of collectibles:

Energy Pips - collecting an energy pip will immediately add Energy to the ship's energy meter.

Tech Pips - Collecting tech pips allows the player to enhance his X1 with new components. Each tech pip is either a shield, grabitron or multi-beam pip and enhances the relevant component. Initially, the player begins with no extra components and must collect 3 pips (of a specific type) to activate the component. Doing so will immediately add the proper button to the UI and the component can be activated.

IQ Points - collecting IQ points will add the appropriate number of points to the 'IQ Collected' readout at the top of the screen. The player will be awarded these bonus IQ points IF the level is completed. However, if the player decides to quit the level before reaching the Star waypoint, the collected IQ will be lost.

Miles Travelled - As long as the ship is moving, Miles will be added to the 'Miles Travelled' readout at the top of the screen. These miles will be added to the player's overall total IF the level is completed. However, if the player decides to quit the level before reaching the Star waypoint, the miles will be lost. **THE PLAYER'S TOTAL MILES (IN LIGHT YEARS) ARE SHOWN ON THE GRAVITY GAME'S INTRO SCREEN. REACHING A CERTAIN NUMBER OF MILES TRAVELLED WILL AWARD THE PLAYER WITH BREAKTHROUGH BADGES AND OTHER ACHIEVEMENTS. SEE [\[MATRIX\] Achievements](#).**

## COMPONENTS

### SHIELD

Once the Shield component is equipped, by collecting 3 shield Tech pips, it can be activated by touching/holding the Shield button.

Activating the ship's shield will

1. surround the ship with a blue energy bubble that prevents all collider/damager effects as long as the shield is on.
2. drain energy.

---

## GRABITRON

Once the Grabitron component is equipped, by collecting 3 grabitron Tech pips, it can be activated by touching/holding the Grabitron button.

Activating the ship's grabitron will

1. surround the ship with a golden energy bubble that enlarges as long as t's help and attracts all collectibles in its radius
2. drain energy.

---

## MULTI-BEAM

Once the Multi-beam component is equipped, by collecting 3 multi-beam Tech pips, it can be activated by touching/holding the multi-beam button.

Activating the ship's multi-beam will

1. TBD for now

## Hazards

Hazards are elements that the player needs to avoid. Generally speaking, hazards will always have a RED color associated with them.



- Gravity Mine



- Asteroid



## MARKERS

Markers are special indicators that guide the player to a specific spot or item in the level. Contacting a marker will cause it to 'pop.'

---

### STAR MARKER

A special Destination waypoint is marked with a STAR. Reaching a Star waypoint allows the player to save his progress (including all IQ earned and miles travelled since the last Star waypoint), and will immediately offer the player the option to

continue or pause/save their mission and continue later. All levels have a single Star marker, but can have any number of other markers.



Contacting the Star marker will pause the game, zoom in on the ship's current location and slide on the Pause menu elements **with the "Destination Reached" text appearing instead of the "Journey Paused" text and a green glow instead of the red pause screen glow.**



---

## BASIC MARKER

Basic Marker point to locations that will be of interest to the player. When it is contact with the ship, it will POP in the usually manner.



## NUMBERED MARKERS

Numbered markers point out to locations that must be reached in the order indicated by the number on each marker. When the #1 marker is reached, the marker disappears and the #1 is left. If the player touches the #2 marker next, the same effect occurs to the #2. Touching the last marker in the sequence will cause them all to POP. If at any time the player touches a marker out of sequence, all of the markers will reset.



---

## PLANETS

Planets, and their immense gravity wells, are the means by which the player can change direction and navigate to certain points in space.

Planets are also a source of important collectibles.

---

## GRAVITY WELLS

Different planets have different Gravity Wells. Early on, Einstein dialog will convey the idea that the strength of a planet's gravity well is affected by it's size and density, so a relatively small planet might have a strong gravity well if it is extremely dense. To keep things simple, there are 3 gravity well strengths: Weak, Standard and Strong.

When the ship enters a gravity well's area of effect, the ship will be immediately pulled toward the planet with a force based on the strength of the planet's gravity.

Weak - Weak gravity wells are marked by a single "ring" of effect.

Standard - Standard gravity wells are marked by a double "ring" effect.

Strong - Strong gravity wells are marked by a triple "ring" effect.

## ATMOSPHERES

Some planets have a distinct atmosphere. In most cases, this is just a visual effect, but if the atmosphere is red (our danger color), then the ship will take 'damage' as long as it remains in the atmosphere's area of effect.

---

## ORBITING AND 'SCANNING'

### INFO FROM EINSTEIN

Whenever the player enters the Gravity Well of a planet, Einstein will begin to tell him about it. The goal is to provide the player with certain types of information that will clue him in on the kinds of resources that can be gained from orbiting (and scanning) the planet.

***NOTE: It would be great if we could determine which planet the player was heading toward so that Einstein could talk about it before we even entered a gravity well. Something like "that massive planet ahead will have an immense gravity well. Be Careful!"***

### ORBITING A PLANET

The mechanic of orbiting a planet will be the toughest to convey. It is important we do so, however. To this end, there will be a tutorial level that uses Numbered Markers to help teach the concept. Once it is grasped, the player should be able to go from planet to planet.

A planet is orbited when the craft makes a complete, unbroken orbit around the planet while in its gravity well.

## SCANNING A PLANET

Making a single, complete orbit of a planet will ALWAYS trigger the Scan event and the following effects:

1. A **PLANET SCANNED SFX** and special animated text appears.
2. Einstein will present a random 'Scan Complete' DIALOG
3. A special selection of collectibles will appear at different points in the planet's gravity well.

## OTHER ELEMENTS

- Black Holes
- Worm Holes

## REWARD

Whenever the player reaches a STAR waypoint, he has the option of pausing his journey or continuing to the next level.

When the player decides to pause (quit), he will encounter a reward screen in which he will be awarded all IQ and miles accumulated since the beginning of the Launch Lab 'session.'

The player is awarded the IQ collected by gathering IQ pips as well as +20IQ for each standard level passed +40 IQ for each timed level.

see [\[Callout\] Reward Screen](#) for reward screen format

## TUNE-O-METER

- [EFFICIENCY](#)
  - [Raising Efficiency](#)
  - [ERRORS/GLITCHES](#)

Einstein's cheap...ah...economical mechanical parts and operating system can be 'cleaned' up by playing two unique mini-games.

**The tune-o-meter allows the player to:**

1. [Play levels of Mag-Neato](#) to raise Einstein's EFFICIENCY percentage which ALWAYS appears on the Tune-o-meter channel.
2. [Play the Bug Sweep game](#) to fix Einstein when he is in ERROR mode by locating bugs in his system files.

## EFFICIENCY

Einstein's efficiency level drops as the player uses the Stein-o-matic.

Einstein's efficiency level is used to:

1. Trigger an achievement (eg. an achievement can be earned for dropping Einstein's efficiency to 0%, raising it to 100%, etc ...)
2. Trigger ERROR "glitch" mode. The lower the Efficiency level, the greater chance Einstein has of experiencing ERRORS

## RAISING EFFICIENCY

The Tune-O-Meter channel always shows Einstein's Efficiency as a percentage which lowers as the player uses the stein-o-matic and raises as the player completes Mag-neato levels.

The player can choose to play Mag-neato at ANY time by clicking the TUNE button, which will launch the Mag-neato game at the level [LAST LEVEL *attempted* +1]

Every Mag-neato level involves moving a magnet in a straight horizontal or vertical line in order to make contact with icons that represent breaks in the circuit. The understanding being, if the broken circuit is touched, the magnet will fix it as it passes over.

For every broken circuit fixed in this way, Einstein's EFFICIENCY is raised by  $1\% + 1\%/\text{break already fixed on the level}$

Eg. fixing the first break is worth +1%, the second +2%, the third +3%...

This is meant to reward players who are able to solve more of the level, rather than players who may simply go in, fix the nearest break, jump out, then go back in, etc.

The player can raise Einstein's Efficiency while playing, but still not win the level. However, if they do 'win' a level, they will earn 1 IQ point for each % point earned. IQ points are rewarded on a single reward screen when the player chooses to QUIT and return to the Main Menu. Just before transitioning back, they should be presented a Reward screen with the cumulative IQ reward.

## Levels

There are a finite number of Mag-neato levels and they should be encountered in linear order with the last level leading back to the first level. The player will replay these levels many times over the life of the experience. After failing or completing a level, the player is presented the appropriate win/fail message as well as an option to continue or quit. Continuing plays the NEXT level, while quitting returns the player to the Main Menu (after a reward screen moment if any IQ was earned!)

## Einstein Reactions

The idea behind the tune-o-meter was to get direct reactions from Einstein as the user plays. We need to design these points into the game play. There are two possibilities:

1. LIGHT INTERACTION - Whenever a circuit break is fixed, we can push an intent to evoke a reaction. "Ah, that's better (Einstein moves arm). Keep going...I can almost feel my toes!"
2. HEAVIER INTERACTION - Whenever a circuit break is fixed, we can push an intent to evoke a reaction. In addition a command word appears on the screen for 1 second then disappears. If the player says that word, Einstein reacts to it with a motor command, then a phrase like, "Ah, that's better (Einstein moves arm). Keep going...I can almost feel my toes!" This can earn the player bonus efficiency.

### **Updates to current game play**

There are a number of tweaks that should be made to current game play:

1. Add Brain Game like tutorials to the game. These appear when the player clicks "How To Play."
2. It would help if Einstein's efficiency meter was added to the Mag-neato interface
3. When a circuit break is fixed, the appropriate '#%' element should fly from the game field up to the efficiency meter, incrementing it appropriately.

WE'VE NEVER REALLY GONE OVER FIRST PASS MAG-NEATO PLAY. HERE ARE TWO GAME PLAY CHANGE OPTIONS (THESE ARE JUST SUGGESTIONS WE SHOULD CONSIDER):

1. WE CAN REMOVE THE TIMER, WHICH IS NOT VERY EFFECTIVE AND ADD A 'NEGATIVE ELEMENT' THAT MIGHT MOVE AROUND THE BOARD. CONTACTING THE ELEMENT WOULD END THE GAME; OTHERWISE, THE PLAYER HAS AS LONG AS HE/SHE WOULD LIKE TO COMPLETE THE LEVEL. THIS REQUIRES A DISCUSSION.
2. WE CAN REMOVE THE TIMER, BUT HAVE EACH CIRCUIT BREAK HAVE A TIMER INSTEAD. THE TIMES WILL VARY, BUT IF A CIRCUIT BREAKS TIMER EXPIRES IT TURNS RED AND IS LOCKED, EFFECTIVELY BECOMING A WALL PIECE. THIS ALTERS THE BOARDS AND REALLY PUSHES THE PUZZLE ASPECT OF THE GAME.

## **ERRORS/GLITCHES**

When Einstein's Efficiency is low, he can begin to experience unusual ERRORS.

When Einstein has an ERROR, he will play an intent or series of intents designed to show that he is not operating as he should. WE SEE THIS AS AN OPPORTUNITY TO HIGHLIGHT THE 'LIVING' NATURE OF EINSTEIN AND TO USE HIS EMOTIVE FACIAL MOTORS AND CHANGING VOICE IN A FUN INTERACTIVE SEGMENT. IN ADDITION, IT SHOWS THAT THE PLAYER CAN 'HELP' EINSTEIN INSTEAD OF JUST BEING HELPED BY HIM.

### **Getting an Error**

Einstein will randomly get an error based on his current Efficiency level.

Whenever a transition to the Main Menu occurs, there is a percentage check to see if Einstein experiences an error.

level	efficiency level	error chance
GREEN	>70	0%
YELLOW	30-69	20%
RED	<29	40%
	0	100%

Einstein can experience 1 of 5 different errors. They can be determined randomly.

rserror/severe\_error\_a

10477671115949512

rserror/severe\_error\_b

10477671119130620

rserror/severe\_error\_c

10477671124702499

rserror/severe\_error\_d

10477671128357529

rserror/severe\_error\_e

10477671132292049

**When an ERROR occurs:**



1. a transition to the error scene is immediately triggered. The player cannot leave this scene unless he/she uses the auto-tune feature or manually tunes Einstein by winning Bug Sweep.
2. The error scene's on\_entry dialog should play followed by 1 of the five different severe error intents which will loop indefinitely as long as the player is viewing the error scene
3. if the player decides to play Bug Sweep, Einstein should be looping the mild version of his error and interrupted only when a push occurs.

rserror/mild\_error\_a  
10477671210302034

rserror/mild\_error\_b  
10477671214312328

rserror/mild\_error\_c  
10477671220308044

rserror/mild\_error\_d  
10477671225297225

rserror/mild\_error\_e  
10477671229387950

## Fixing ERRORS

An ERROR can be fixed by:

1. Saying "AUTO-TUNE"

Saying auto-tune initiates the Auto-tune response (see intent url/ID below) from Einstein who performs a self fix.

rserror/severe\_error\_a/tune  
10479137266706123

After the auto-tune intent plays, a transition back to the Main Menu will occur.  
Einstein's efficiency is immediately raised to 75%

2. Touching the "AUTO-TUNE" text

Touching the text has the same effect as saying "auto-tune"

3. Touching the FIX ERROR button and completing a level of Bug Sweep.

During Bug Sweep the player hunts down bugs via a blind search/hot and cold mechanic. (see <https://disruptorio.atlassian.net/wiki/x/PgCFAg>)

## MAG-NEATO

Hey guys,

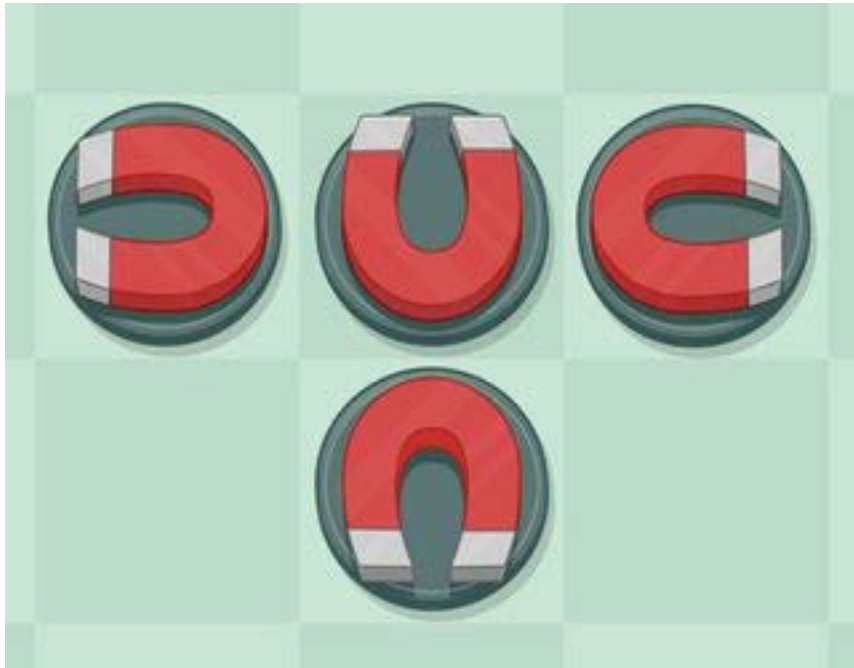
I have thrown up the initial sprites up for the Magnet Game up to the FTP site under:

/Sprites/BrainGames/Magneato

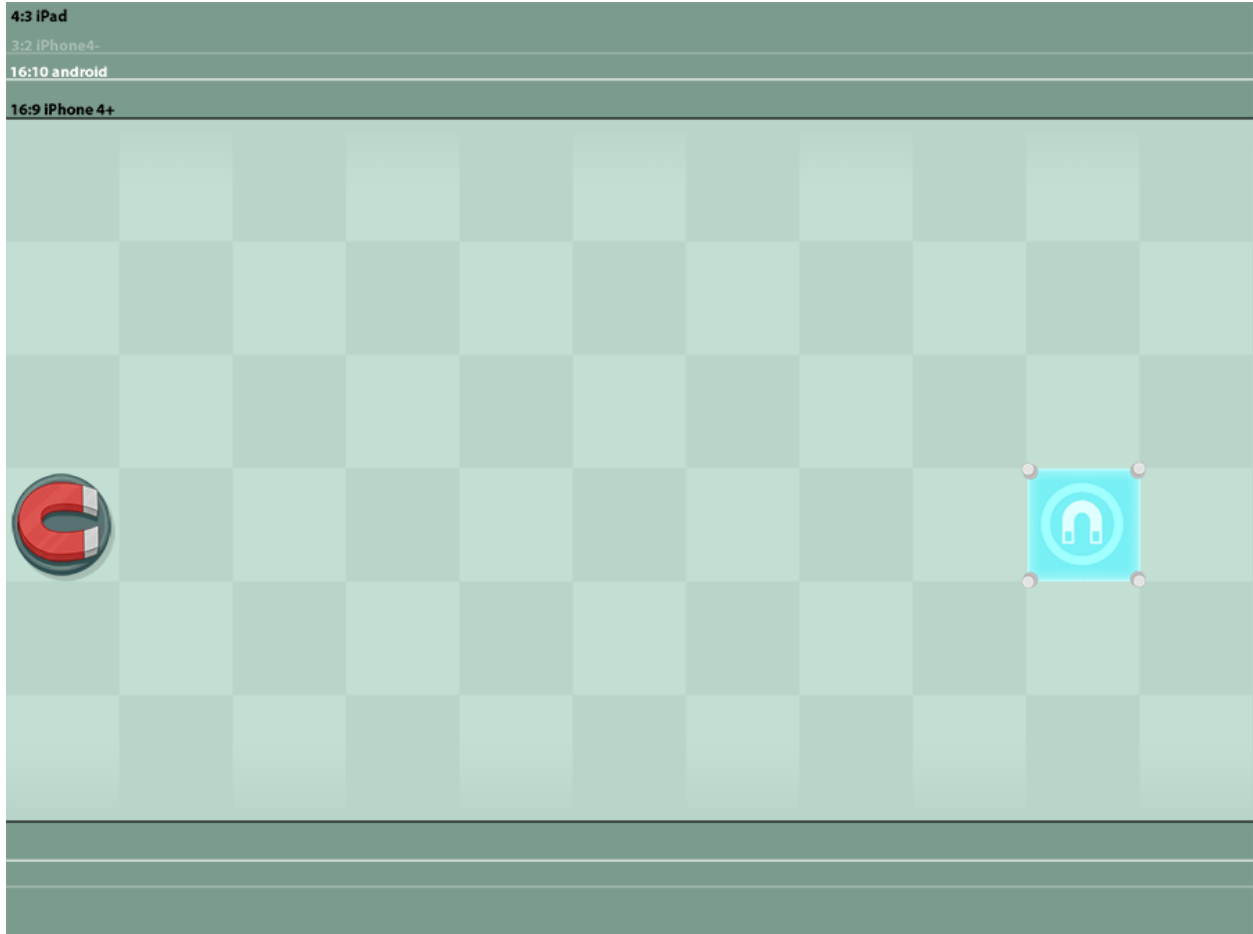
Attached are some gifs explaining some things I'd like to see happen.

Since this is a simple game, I think its essential that we make it dynamic and not stiff ...like just having things slide around like a chess board. I have some ideas for that.

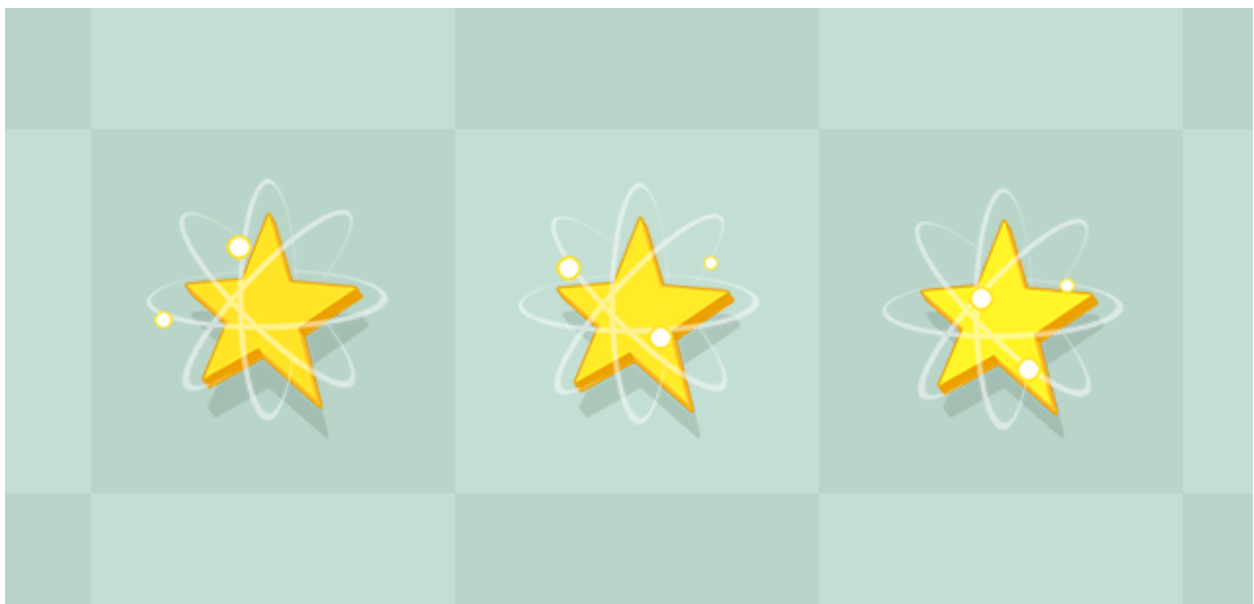
**To make it fun and not stiff:**



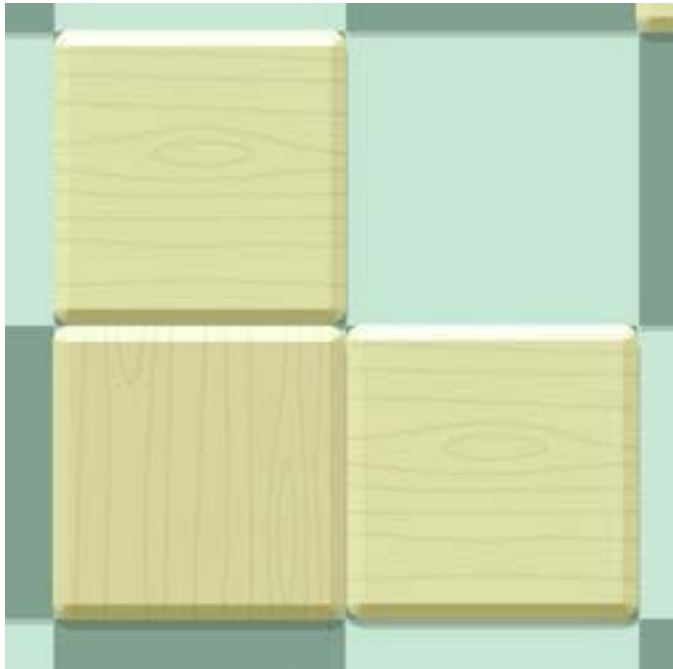
MagnetTurns.jpg - Even though this is top down, I put a slight angle on the magnet puck, so I would like to have 4 sprites, up down left right to snap to depending on the direction the puck is going. It wont look as good just rotating one sprite.



MagnetRampUp.gif - To make this feel dynamic and fun and not stiff, we should make the magnet puck move like a real magnet. Meaning, once it is pointing toward a blue block, it should start moving toward it slowly and then gain speed the further it goes. It then should slightly overshoot the square and pop back.

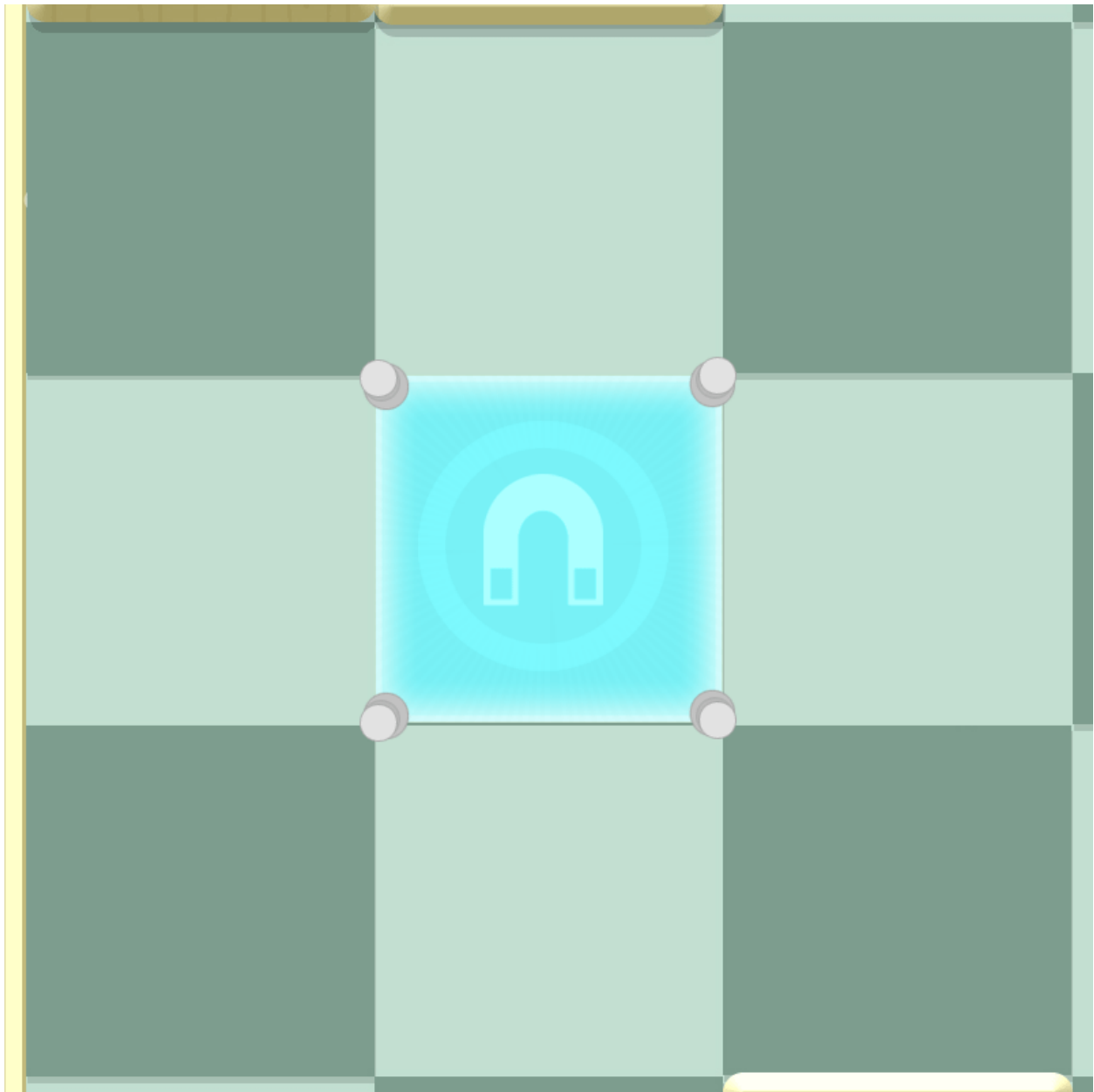


StarBounceOffset.gif - There will be stars all over the map, but we want to offset their bounce animation randomly to make them feel like they are on their own, not just playing one big animation.

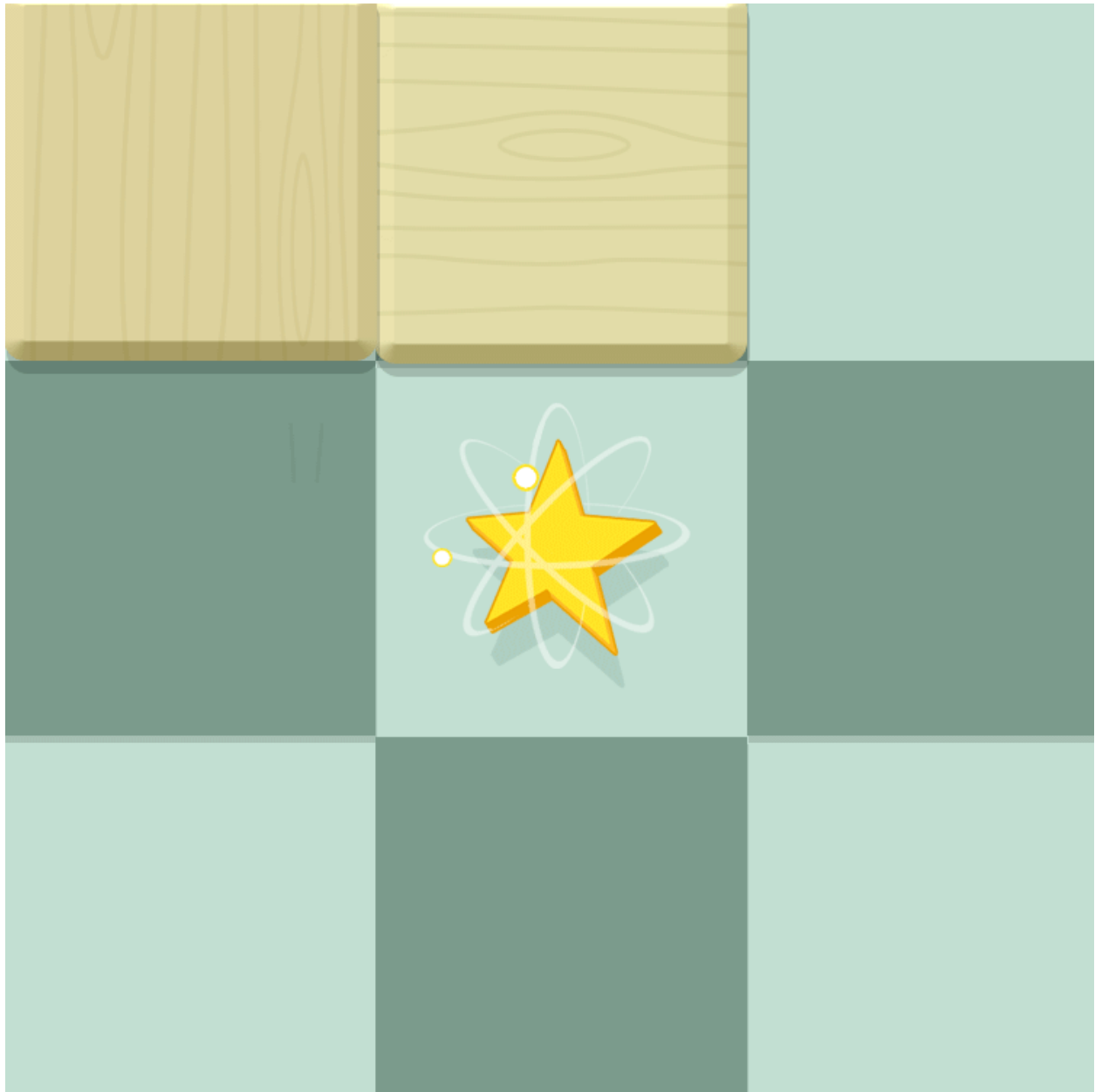


Wood.jpg - There will be wood and other materials that you can run into. I would like to do two different sprites for each material to mix it up a little bit in order to make it look more organic and not a repeated wood block over and over again. Those sprites are named Brain\_Mag\_WoodA and Brain\_Mag\_WoodB

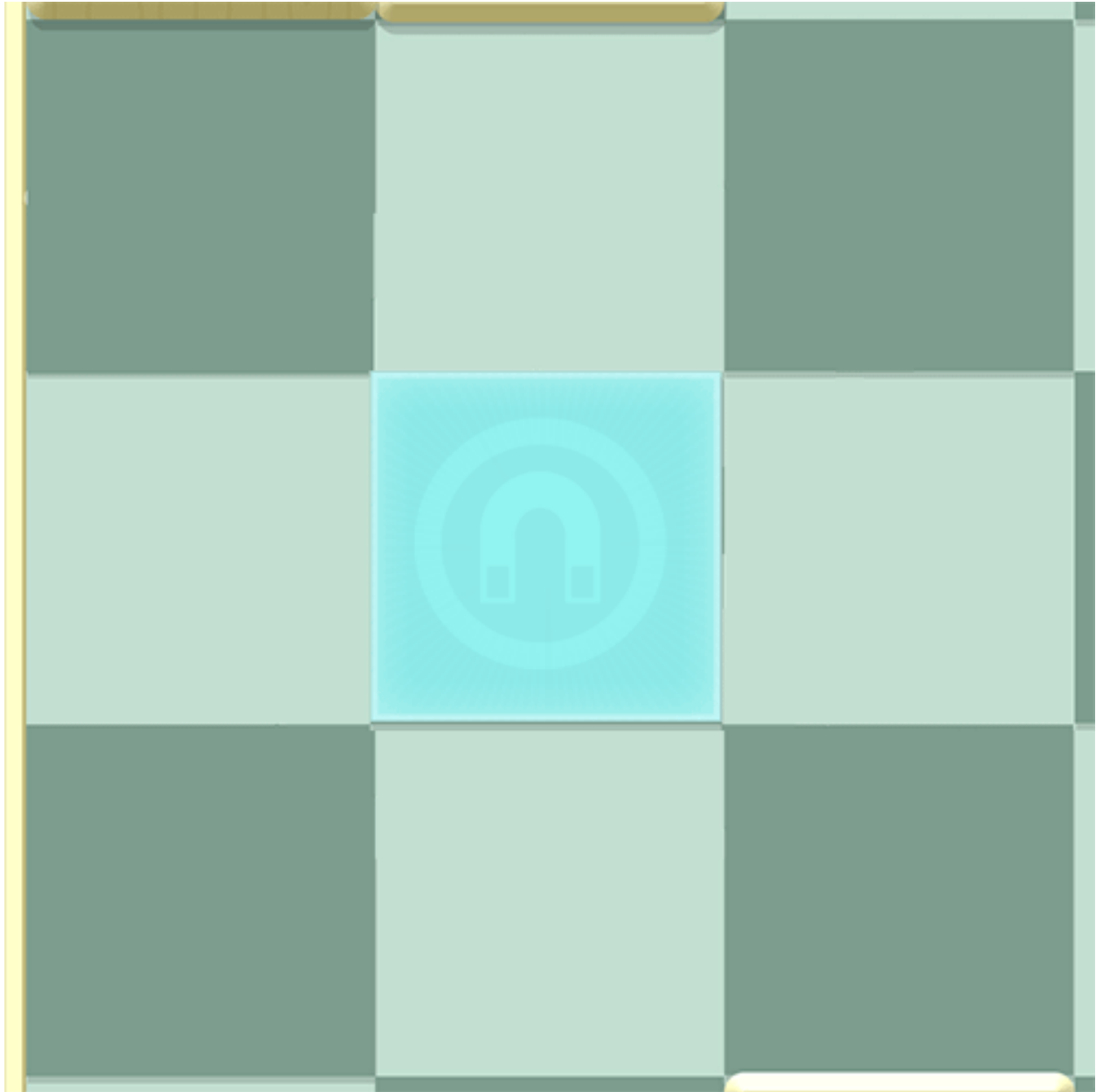
**Gameplay:**



MagnetConstantPulse.gif - The magnetized squares will constantly play the animation Brain\_Mag\_MagPulse on a loop once they have been activated.



Starpop.gif - When a star is run over by the puck, we will ditch the star and play the Brain\_Mag\_StarBurst animation.



SquareCharge.gif - When a square CAN be magnetized, it starts with a static box, (Brain\_Mag\_PotentialMag) Then, when the square is first magnetized, it will play the sprite Brain\_Mag\_Glowbox for one frame like a flash, and then have a shockwave sprite (Brain\_Mag\_ShockwaveRing) expand and fade out.

The background that is up is temporary, but the game board area is pretty solid. The areas above it and below it show where the canvases stop depending on the device.

This should be plenty enough to start with and we can tweak and add as we go!

Please let me know if you have any questions!

## BRAIN GAMES

### CONCEPT

A Brain Game Challenge is a sequence of up to 15 time-pressured, quick thinking micro-actions, played back to back, designed to 'test and boost a player's brain agility.' Each sequence is a random string of brain games drawn from the list of games that the player has unlocked.

### EARNING IQ

Every day, the player can engage in as many challenges as he wants, earning IQ points for every game passed, UP TO 200 IQ points per day. Once the 200 IQ points are 'mined,' the player will need to wait for a certain period of time (24 hours?) before more IQ points can be earned. **IN THE MEANTIME, THE PLAYER CAN CONTINUE TO TAKE CHALLENGES AS PRACTICE, OR IN AN EFFORT TO EARN ACHIEVEMENTS OR AVATAR ITEMS (SEE BELOW).**

### EARNING BRAIN GAME AVATAR ITEMS

Completing challenges – passing at least 13 games in a challenge sequence – will award the player a piece of an avatar item. Earning all 5 pieces of an avatar item awards the player the item.

### EARNING ACHIEVEMENTS

There are 6 achievements that can be earned playing brain games.

ACHIEVEMENT BADGES			
Brain Games			
Name	Achievement	IQ pts	Badge Type
Brain Trainer	Play 5 brain games	5	base
Quick Wit	Pass 50 brain games	20	device
Brain Buster	Complete your first brain game challenge	50	device
Witted Wonder	Unlock 4 new Brain games	20	device
Braniac	Complete 30 brain game challenges	30	device
Brainstormer	Pass 100 brain games	40	device

## START SCREEN



When the Brain Game 'channel' is selected from the Stein-O-Matic Main Menu, game play transitions to the Brain Game (start) screen. Here, the player can see the following:

1. an icon for every BG that can be unlocked, with BGs that are currently locked appearing with a lock icon over them, and a number for the level at which they unlock. **CHALLENGE SEQUENCES ONLY USE THE UNLOCKED BGS.**  
If the player touches any BG icon, the scene will transition to the card viewer and provide an explanation of the scientific principle reflected by the game. A back button will return the player directly to the BG Screen.
2. A large START CHALLENGE button which, when pressed, begins a new challenge Sequence.
3. A Main Menu button used to return to the Main Menu

## EINSTEIN DIALOG

- A dialog response from Einstein explains Brain Games and encourages the player to take a challenge. **THIS WILL OCCUR THE FIRST TIME THE PLAYER ENTERS THE SCENE, BUT PERHAPS SUBSEQUENT ENTRIES REQUIRE A HELP BUTTON TAP.**

## SEQUENCES

Brain Game micro-actions are designed to be completed in less than 6 seconds each.

If the player fails 3 games, the entire challenge sequence is broken and the challenge ends. If the player continues to pass each game, the time limit will become shorter and shorter, based on the chart below.

Challenge Progression		
Games passed	Time limit	info
5	Reduced to 5	Faster music
10	Reduced to 4	Even Faster music

## LESSON & UNLOCK ORDER

Unlocking Games				
	Game	Unlocked on Lesson #	Datacard	Index
1	LAND!	0 (default)	Rockets	4

2	GROW!	0 (default)	Flora	223
3	CHART!	0 (default)	Astronomy	82
4	BALANCE!	6	Mass	8
5	ERUPT!	14	Volcanism	265
6	ATTRACT!	31	Magnetism	30
7	DEFLECT!	42	Meteors	107
8	COMBINE!	48	Lasers	6
9	NAVIGATE!	54	Echolocation	149
10	DIGEST!	56	Digestion	147
11	SLIDE!	67	Friction	38

## GAME PLAY

All brain games have the following:

1. a purple Stein-O-Matic screen frame and interlace lines (STEINOMATIC OVERLAY.) Action occurs under these elements as if they appear on a screen.
2. A timer in the upper right hand corner that appears over the STEINOMATIC OVERLAY.
3. A quit icon in the upper left hand corner that appears over the STEINOMATIC OVERLAY.
4. A unique, fast 'sliderpop' text element that introduces each game
5. A standard game FAIL 'sliderpop' that appears immediately upon failing a game.
6. A standard game PASS 'sliderpop' that appears immediately upon passing a game.

## EINSTEIN DIALOG

- When a challenge is started, Einstein will have a number of encouraging phrases. “Go get ‘em, tiger!”

## QUITTING A SEQUENCE

If at any time the player selects the quit ‘X’ button, play will transition to a modified award screen that simply states that the game was interrupted.

## PASSING AND FAILING

Every game has a distinct success or fail outcome based on whether the user performed the correct action within the given time limit.

- If the player performs the action properly, the BG is passed immediately and the next game in the sequence begins.
- If the player triggers the fail condition, or does not perform the action properly before the timer runs out, the BG is failed immediately and the next game in the sequence begins.

## EINSTEIN DIALOG

- For ALL brain games, Einstein may also speak during gameplay, noting successes and failures.

## CHALLENGE REWARD SCREEN

The challenge sequence immediately ends if the player fails a third game, or passes game #15 – at which time play transitions to the Reward screen. Here, IQ points are earned based on how many games in the sequence were passed regardless of whether the challenge was completed. If the player completed the challenge, he will be awarded IQ points for each game passed in the sequence AND a piece (1/5) of an avatar item. If the sequence was not completed, the player is awarded half as many IQ points for each game passed.

On the reward screen:

- Challenge “COMPLETED” or “NOT COMPLETED” text.  
NOTE: IF THE PLAYER GETS TO THE REWARD SCREEN BY HITTING THE QUIT ‘X’ ICON DURING PLAY, THE TEXT WILL ONLY INDICATE THAT THE GAME WAS QUIT.
- IQ points earned with animated numbers appearing to count up to the reward total.

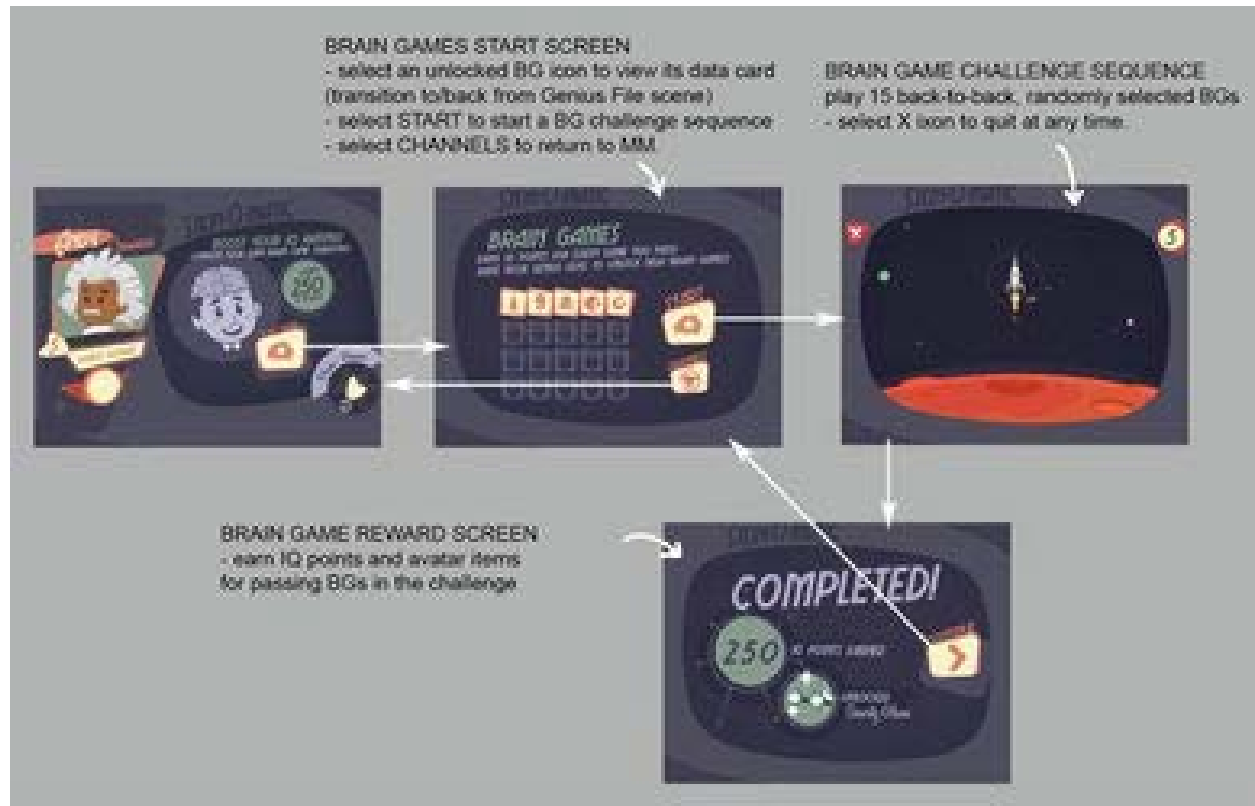
NOTE: IF THE PLAYER GETS TO THE REWARD SCREEN BY HITTING THE QUIT ‘X’ ICON DURING PLAY, IQ POINT ELEMENTS WILL NOT APPEAR

- The avatar piece (if earned.)
- A CONTINUE button which, when selected, transitions play to the Brain Games start screen.

NOTE: if an Achievement is earned on a Brain Game, this will be indicated when play returns to the Main Menu, as usual.

## EINSTEIN DIALOG

- An appropriate dialog response from Einstein (based on the player's success or failure.)



## BRAIN GAMES

### [Brain Game Backlog](#)

Current Brain Game Dispersal by Kickstart

As of September 2, 2016

### 1) LAND!

Scientific concepts: simple explosive force, gravity

LAND! Asset list	
SLIDERPOP Intro text elements	These elements pop in, then slide off just before game begins. They instruct the player to LAND!
SteinOMatic overlay	DEFAULT FOR ALL BRAIN GAMES- this is the frame and interlace lines. It lays over all brain games elements except timer and quit buttons.
Dotted touch point	DEFAULT FOR MANY BRAIN GAMES- Surrounds the rocket at all times, rotates slowly. This is the area in which the player can touch to fire the rocket engine. It moves with the rocket.
Rocket	ONE FOR NOW, BUT WOULD BE EASY TO CREATE DIFFERENT KINDS TO SWAP OUT RANDOMLY
Booster flame	animated
Smoke puff	Animated – puffs from booster when cut off and maybe plays on a soft landing?
Planet	ONE FOR NOW, BUT WOULD BE EASY TO CREATE DIFFERENT KINDS TO SWAP OUT RANDOMLY
SLIDERPOP pass text elements	These ‘checkmark’ elements pop in immediately on success state, then slide off just before next game begins.
SLIDERPOP fail text elements	These ‘X’ elements pop in immediately on fail state, then slide off just before next game begins.
Landing element	Animated – just marks landing area on planet
explosion	Animated – played when rocket crashes
Space background	

## FAIL

If the rocket leaves the screen (too much boost) or hit the ground at ‘crash speed,’ the game is failed

## PASS

If the rocket touches the landing point at a ‘safe speed’ before time is up, the game is passed

## PROPERTIES

We will need external control over the following properties:

- Gravitational force
- Engine boost force
- Something to adjust ‘crash speed’



## 2) SLIDE!

Scientific concepts: inertia

LAND! Asset list	
SLIDERPOP Intro text elements	These elements pop in, then slide off just before game begins. They instruct the player to SLIDE!
SteinOMatic overlay	DEFAULT FOR ALL BRAIN GAMES- this is the frame and interlace lines. It lays over all brain games elements except timer and quit buttons.
Dotted touch point	DEFAULT FOR MANY BRAIN GAMES- Surrounds the rocket at all times, rotates slowly. This is the area in which the player can touch to fire the rocket engine. It moves with the rocket.
SLIDERPOP pass text elements	These 'checkmark' elements pop in immediately on success state, then slide off just before next game begins.
SLIDERPOP fail text elements	These 'X' elements pop in immediately on fail state, then slide off just before next game begins.
Puck	Circular element that the player 'flicks' at targets
target	Target element player needs to hit to win game
Target break	Animation of target breaking apart
star	DEFAULT FOR TOP DOWN BRAIN GAMES. Animation of star being collected.

'ice' background	
------------------	--

## FAIL

If all targets are not hit before time is up, the player fails.

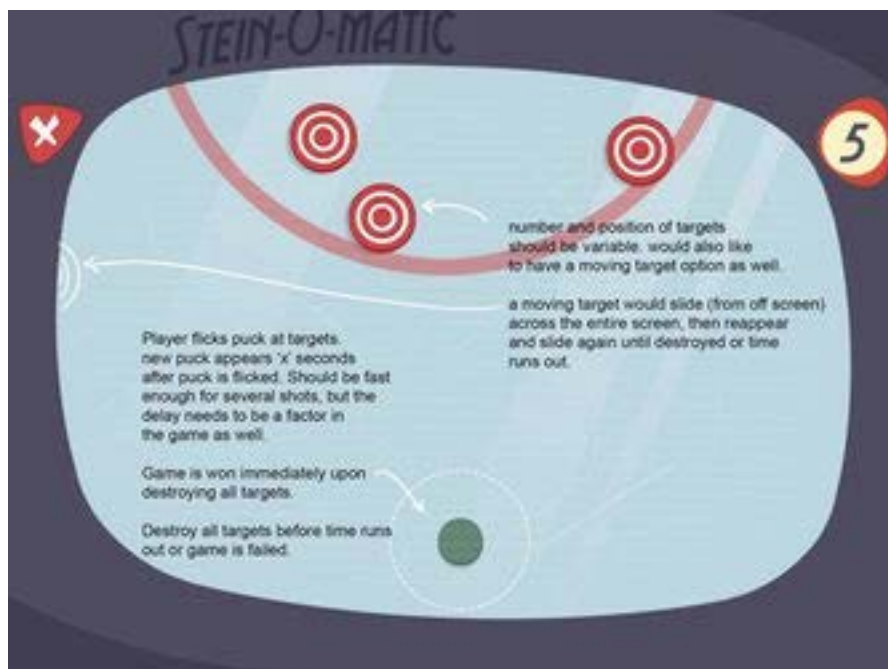
## PASS

If all targets have been hit before time is up, the game is passed

## PROPERTIES

We will need external control over the following properties:

- Length of time before a new puck appears and can be flicked at the targets
- Number and position of targets
- Whether a target is moving or not and speed of target



## 3) BALANCE!

Scientific concepts: mass, weight

LAND! Asset list
------------------

SLIDERPOP Intro text elements	These elements pop in, then slide off just before game begins. They instruct the player to BALANCE!
SteinOMatic overlay	DEFAULT FOR ALL BRAIN GAMES- this is the frame and interlace lines. It lays over all brain games elements except timer and quit buttons.
Dotted touch point	DEFAULT FOR MANY BRAIN GAMES- Surrounds the rocket at all times, rotates slowly. This is the area in which the player can touch to fire the rocket engine. It moves with the rocket.
SLIDERPOP pass text elements	These 'checkmark' elements pop in immediately on success state, then slide off just before next game begins.
SLIDERPOP fail text elements	These 'X' elements pop in immediately on fail state, then slide off just before next game begins.
Robot body	
Crossbeam balance arm	Rotates around center point to show imbalance in weight
Verticle container forearm	
Planet (weight) element	Planets (several variants) representing heavy objects drop from the touch point and into the robot's hand container's when the player touches the dotted touch points.
Chest UI rectangle – balance indicator	Can be seen through chest window on robot and is rotated to match the angle of the crossbeam arm. Colorized green when arms are in a good position, yellow in imbalanced position and red when robot is basically dead (though we should have a slight delay between going red and destroying robot.)
Robot destroyed	Animation occurs when game is failed either by imbalance at time=0 OR if the scale is 'tipped'
Robot smiles	If the game is won, the robot's eyes will light up and it will smile.
robot background	A strip through the center of the background shows the 'sweet spot' for the balance arms. Keeping the arms in this position will win the game.

---

## FAIL

If the arms are out of balance (not in the 'sweet spot') when time runs out OR either arm drops to the lowest point (destroying the robot), the game is immediately failed.

---

## PASS

If the arms are balanced when time runs out, the game is passed.



## PROPERTIES

We will need external control over the following properties:

- The amount of weight each PLANET (WEIGHT) ELEMENT adds to the system.
- The amount of weight (at game start) in each bucket.
- Amount of time between CHEST UI RECTANGLE – BALANCE INDICATOR going red and game fail/robot destruction.



4) DEFLECT

5) ATTRACT

6) GROW



7) COMBINE



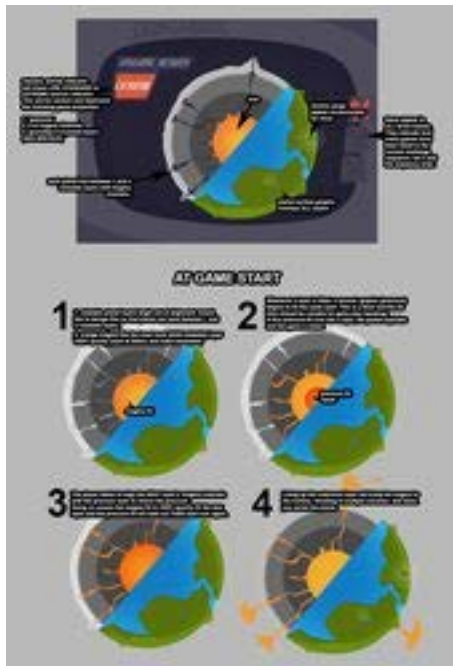
## 8) ERUPT!

In ERUPT, the player has  $X$  seconds to rotate the layers of a planet such that all magna chambers are aligned and the magma can vent on the planet's surface in the form of volcanos.

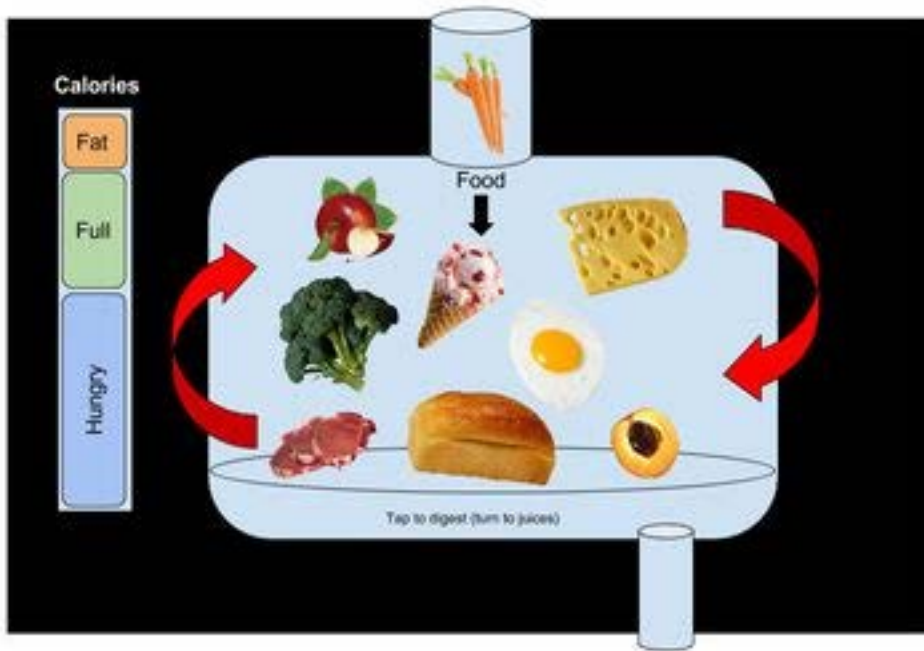
Don't vent the magma and pressure builds until the planet splits.

Potential randomized properties for this game should be:

1. a variable press level. Higher pressure means the player has less time to align each layer before the planet blows up. (higher pressure = less time = more difficult)
2. a variable number of planet layers to rotate (more layers = more difficult)
3. A variable number of magna chambers in a planet layer (more chambers = more difficult)



9) DIGEST!



Biology - Anatomy - ? (no datacard yet)

Tap on swirling pieces of food to digest them. Don't digest too many calories, or you fail.

[Digest implementation details](#)

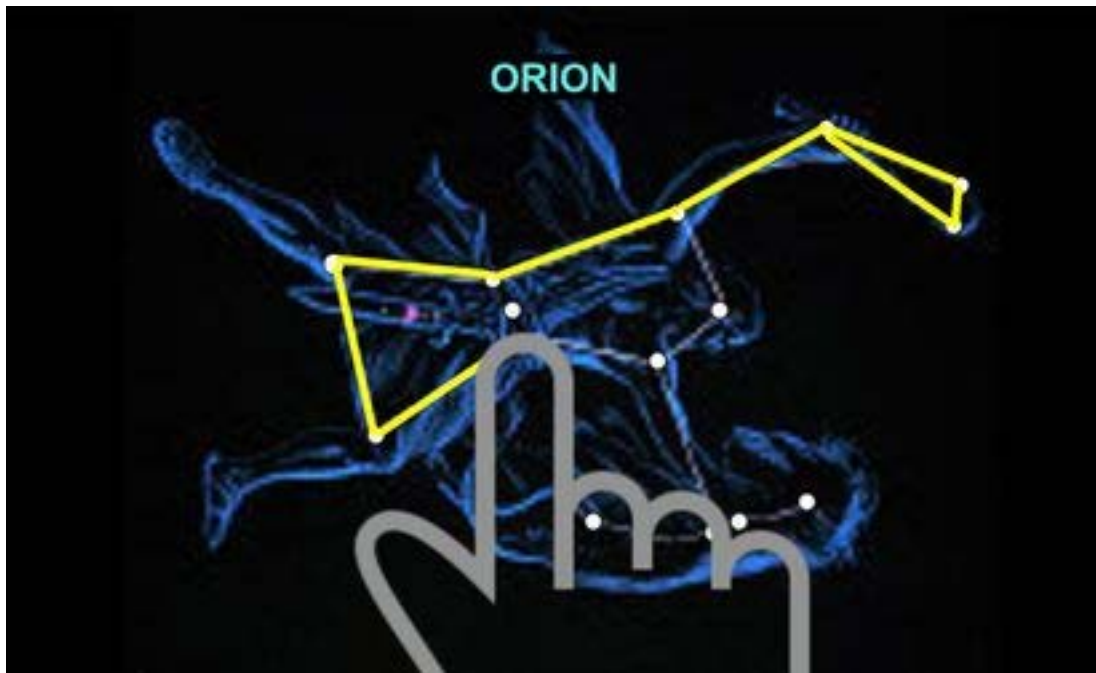
## CHART! (CONSTELLATION)

For data cards related to stars or astronomy.

Players are briefly shown a series of 3 randomly selected constellations, and must re-create them one at a time.

Here is an example of the similar game of glyph hacking in ingress:

<https://www.youtube.com/watch?v=6x0IR3c2stc>



THE FAINT WHITE LINES IN THIS EXAMPLE WOULD NOT BE VISIBLE IN THE FINAL GAME

- Players are shown 3 images one at a time, for 1 second each.
  - Each image is a completed constellation including an illustration, the name, the stars, and the connections between the stars
  - These 3 images are shown during the count-down timer, so as to not waste this time.
  - The 3 constellations are randomly selected. The first 2 are randomly chosen from the easy group, and the last is chosen from the hard group.
- After the countdown timer, players are shown the illustration, and the stars for the first constellation
  - the players have to draw the links themselves
  - incorrect links flash red and disappear when made
  - only after all the correct links are made, will the next illustration be shown
- Players can only win by successfully drawing all the links on all 3 constellations before time runs out.

## CONSTELLATIONS

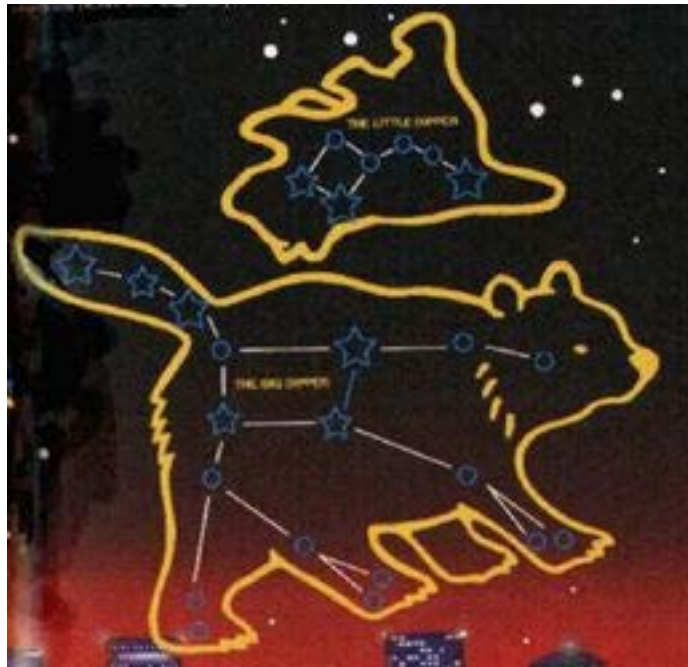
The star links will need to be created by hand. (I can do this part, if we make constellations an object with a variable number of stars and links between them - Brad)

**Big  
Dipper**



Need a good spoon illustration

**Ursa  
Minor  
(Little  
Dipper)**



Aquila

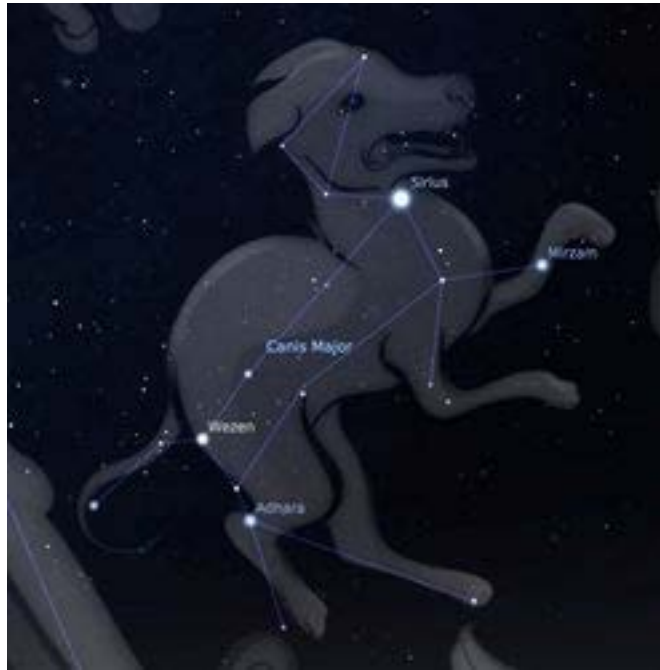


Aries





Canis  
Major



perhaps this one uses too many lines

Cassiopeia





Lyra



Capricorn

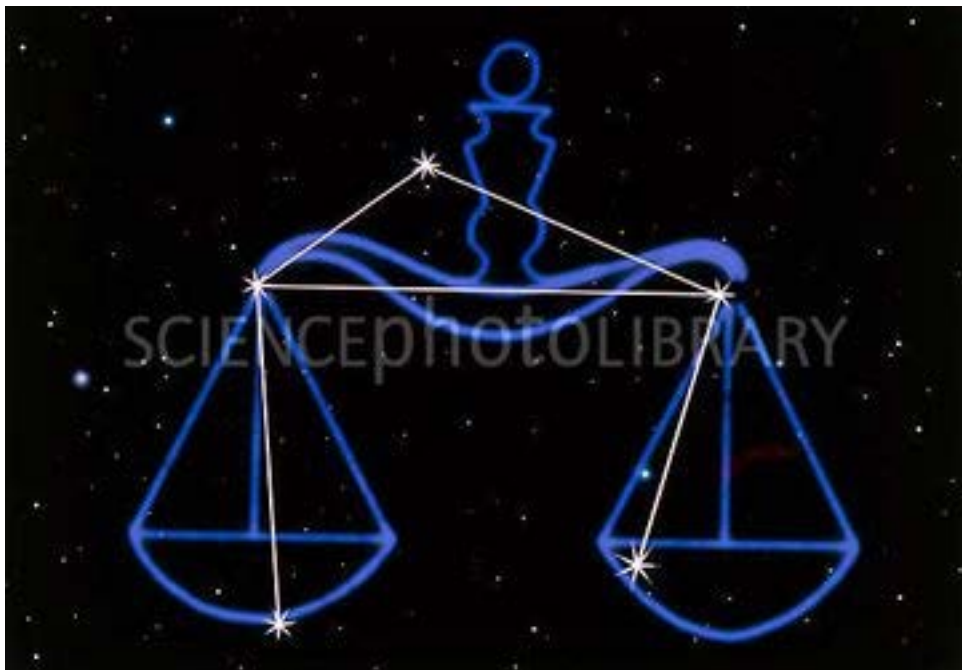


Cancer



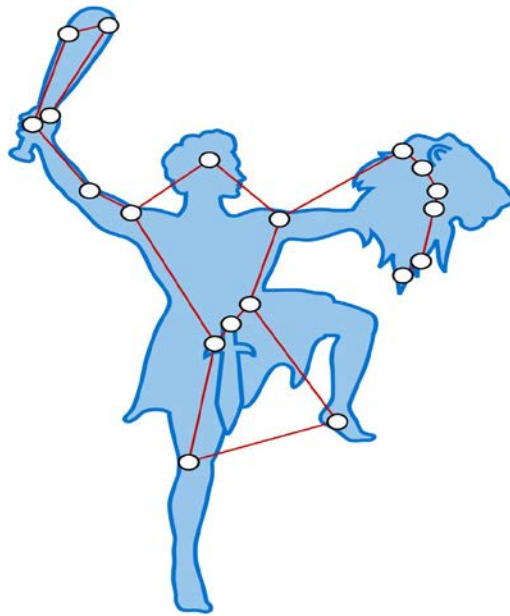
There are a few variations for cancer. I'm sure that we can make something more intuitive than this sideways y across the body

Libra



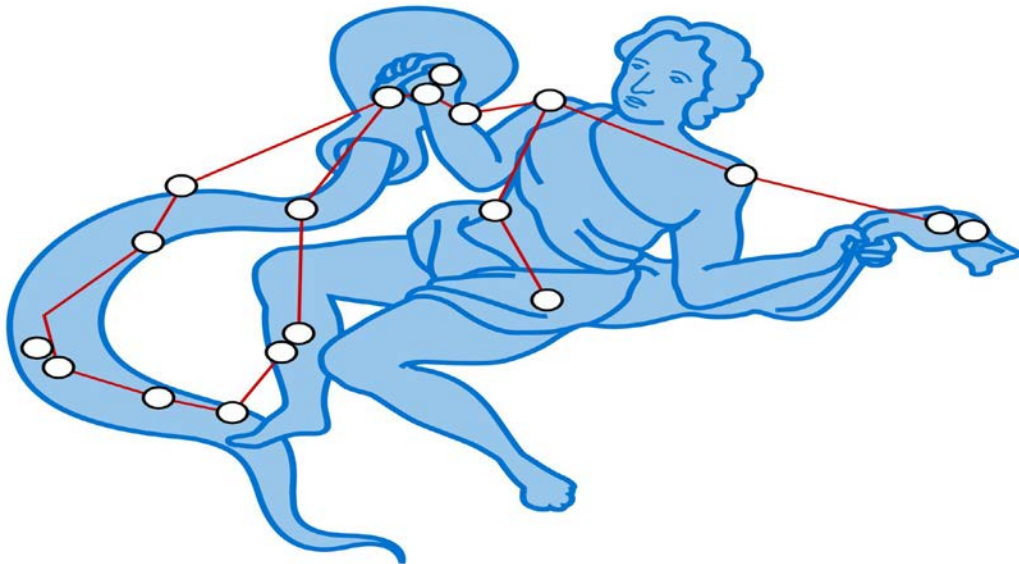
HARD

Orion



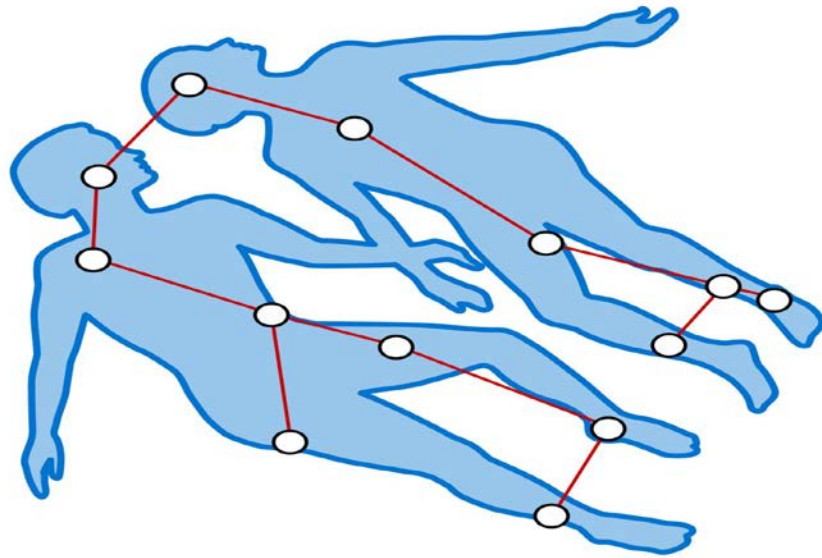
ALSO SEE THE GREAT IMAGE USED AT THE TOP OF THE PAGE

Aquarius



Although it might look like a woman, Aquarius is supposed to be a young boy

Gemini

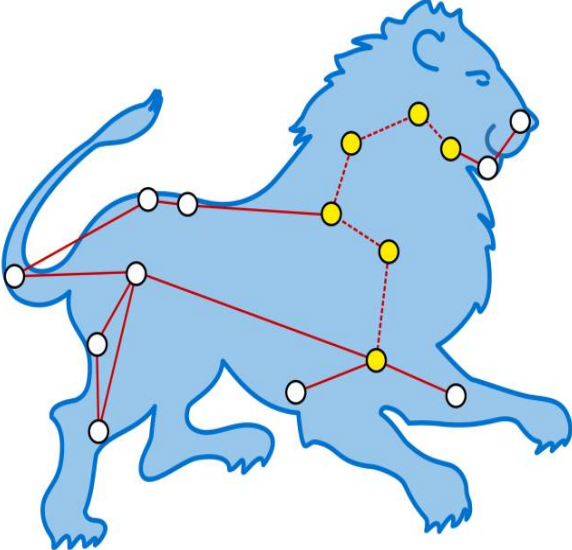
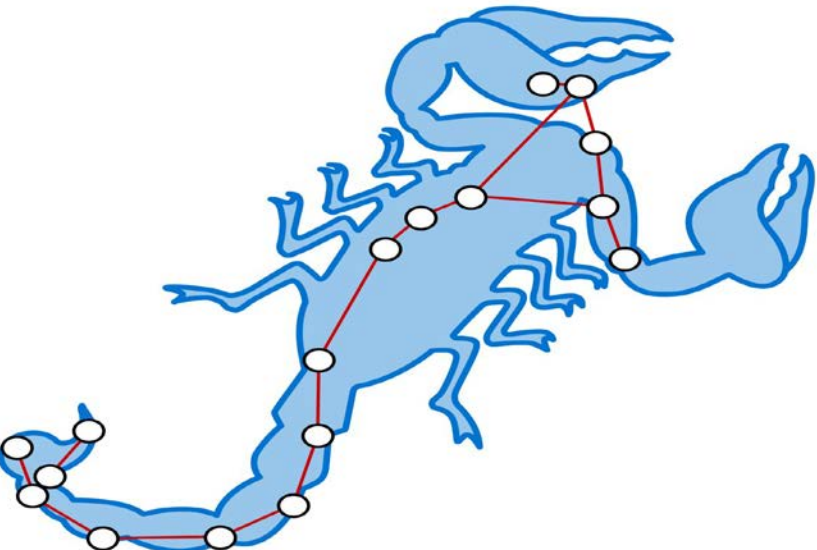


male twins

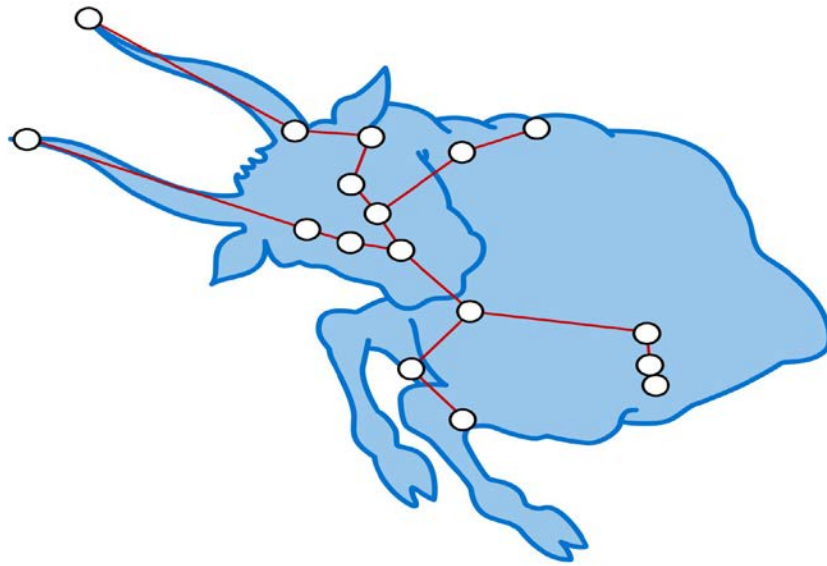
Cygnus



I'm going to move this to the simple constellations (but that doesn't change the art requirement at all)

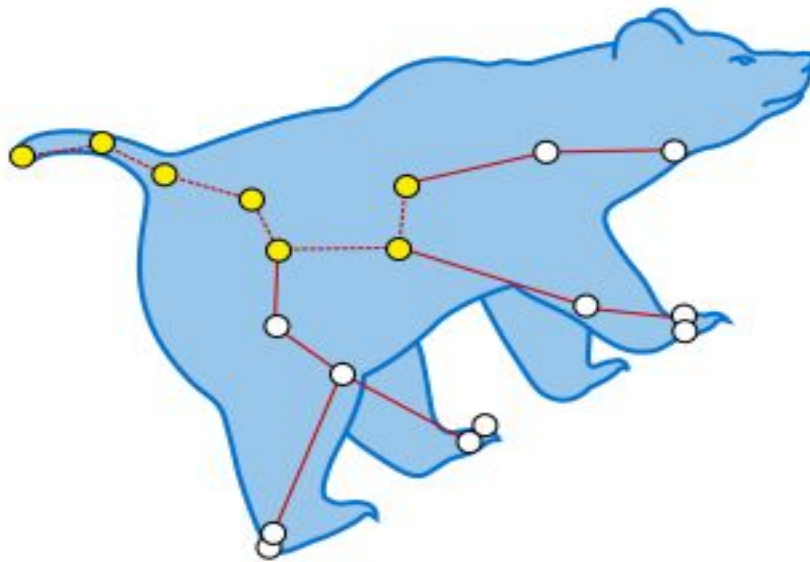
Leo	 A diagram of the Leo constellation overlaid on a blue silhouette of a lion. The constellation is formed by white and yellow stars connected by red lines. The yellow stars represent the primary stars of the constellation, including Regulus (the heart of the lion) and Deneb (the tail star). The white stars represent secondary stars. The lines connect the stars to form the outline of the lion's body, mane, and tail.
Pisces	This has already been done. Great!
Scorpio	 A diagram of the Scorpio constellation overlaid on a blue silhouette of a scorpion. The constellation is formed by white stars connected by red lines. The stars trace the outline of the scorpion's body, including its pincers (chela), legs, and long, segmented tail (metasoma) which ends in a stinger (telson). The lines connect the stars to form the outline of the scorpion's body and its various appendages.

Taurus



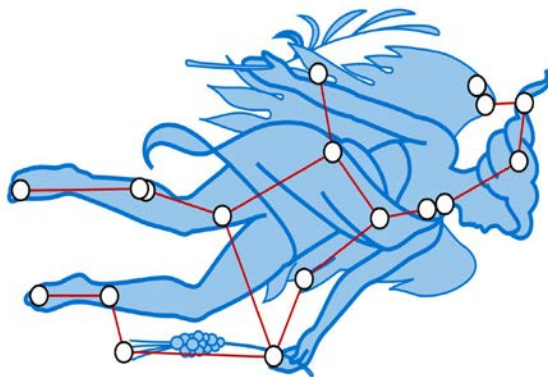


Ursa  
Major

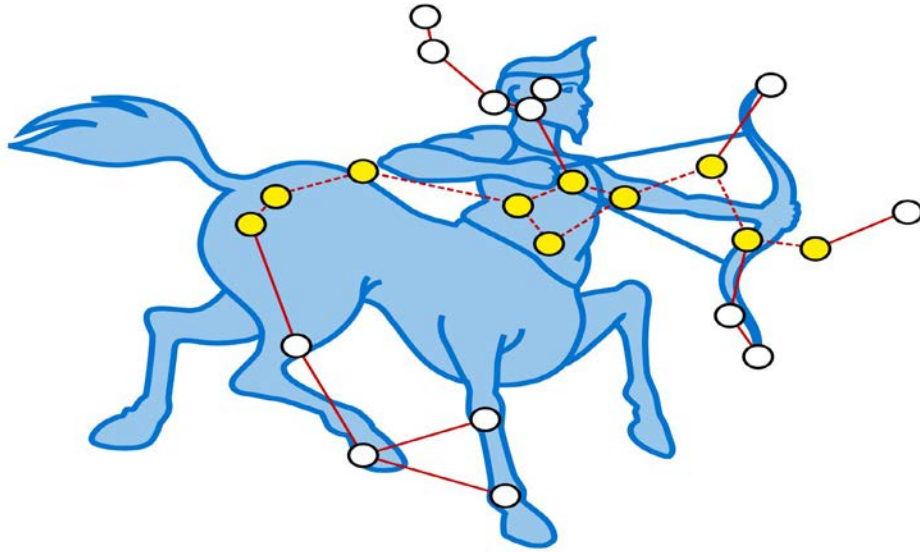


If you can re-use the artwork from ursa minor, go for it. The stars are what matters, and they will be laid out differently

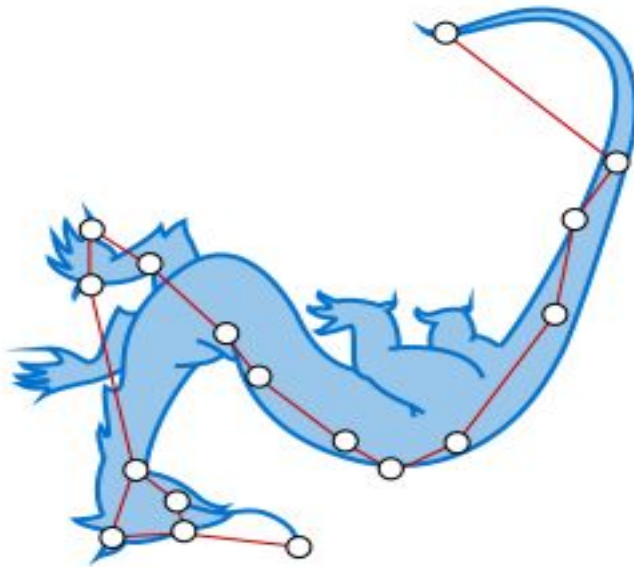
Virgo



Sagittari  
us

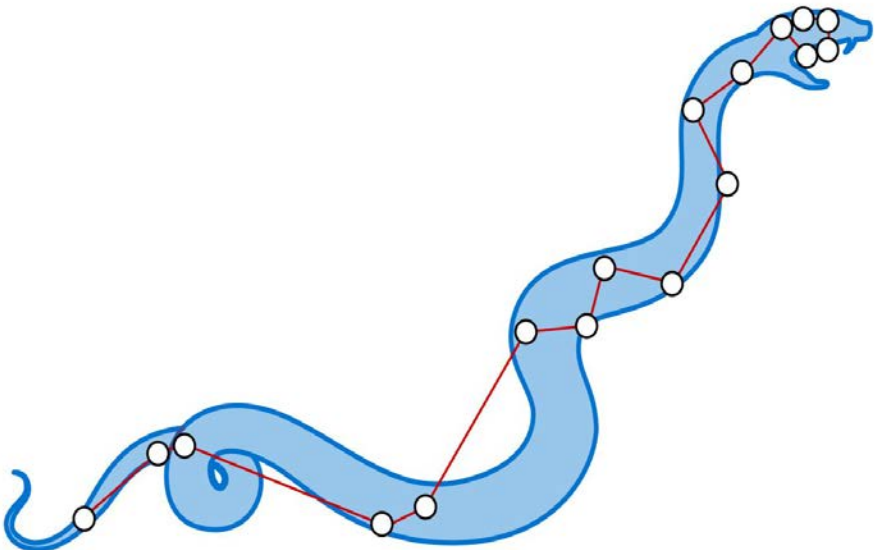
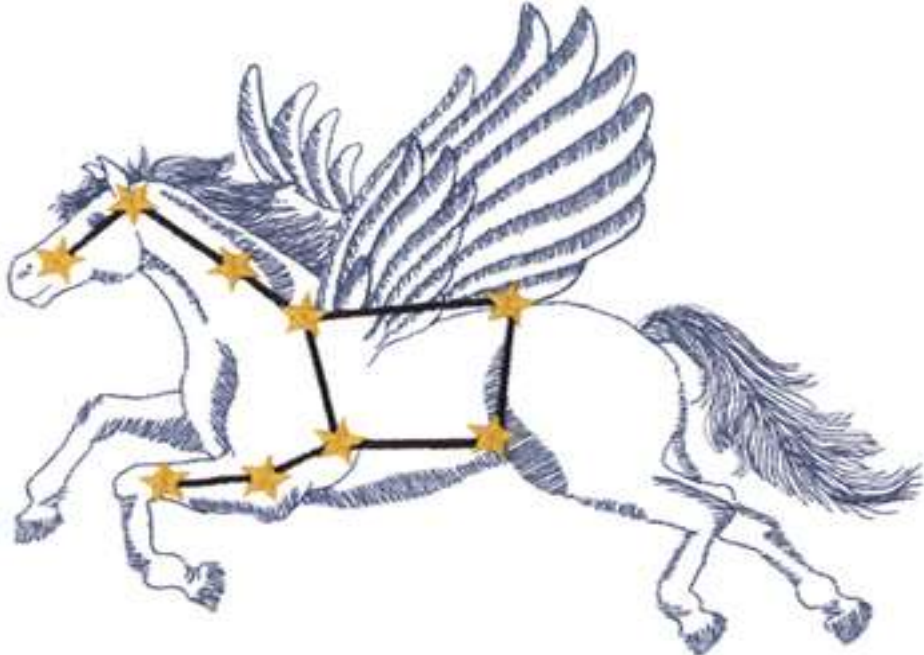


Draco



maybe a simplified version of this for the easier constellations (the artwork remains the same)



Hydra	 <p>Maybe a simplified version of this, for the easier constellations (the artwork remains the same)</p>
pegasus	

## INSTRUCTION SCREENS

Memorize 3 constellations

2

One at a time, redraw those previous constellations

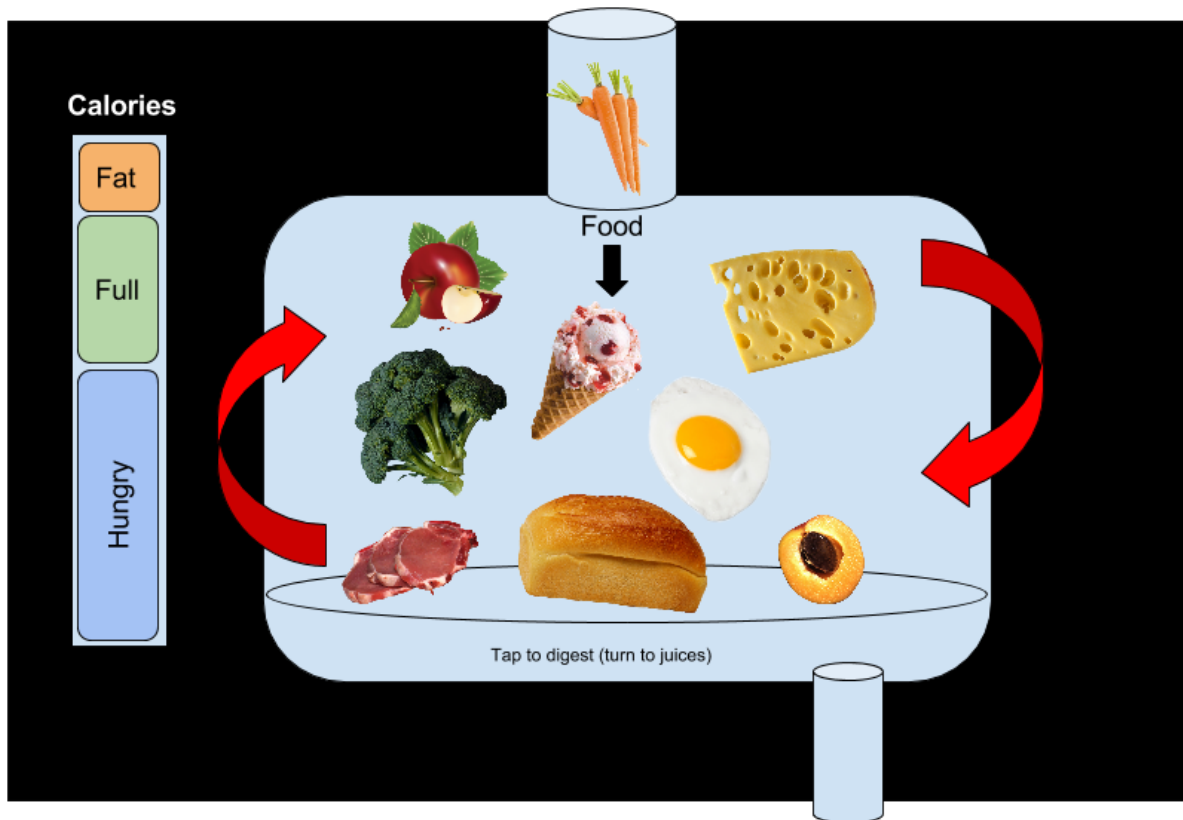
3

Connect two stars by drawing a line between them with your finger

4

Recreate all 3 constellations before time runs out

## DIGEST!



- Food is churning in a circular motion in the stomach.
- Player can tap on food to collect calories
  - After each tap, the calories gained are displayed as a text indicator that pops up and quickly fades away
- Player wants to get just the right amount of calories, without going over
  - The player will lose instantly if they go over
  - The player will win instantly if they land within the healthy zone
  - The player will lose if they run out of time and are still in the hungry zone
- There is a calorie counting bar in the upper left corner

## FOOD TYPES

- All fields should be tunable variables.
- I expect to be able to add my own food items in the future.

Name	Category	Spawning weight	Total Calories	Taps to digest (rewards proportional calories)
Broccoli	vegetable	1	50	4
Salad*	vegetable	1	100	4
Carrots*	vegetable	1	50	4
Apple	fruit	1	95	2
Banana*	fruit	1	95	2
pineapple*	fruit	1	95	2
Hamburger	meat	1	375	2
Fish*	meat	1	275	2
Chicken*	meat	1	275	2
Bagel*	grain	1	250	3
Rice*	grain	1	200	3
Spaghetti*	grain	1	300	3
Yogurt*	dairy	1	100	3
Milk*	dairy	1	100	3
Cheese*	dairy	1	100	3
Ice cream cone	sweets	1	300	1

Candy bar*	sweets	1	300	1
Donut*	sweets	1	300	1

\*Starred items do not yet have placeholder artwork. These can be added later.

## OTHER VARIABLES REQUIRED

Type	Description	Placeholder value
int	Under-fed capacity (the amount of calories needed, to reach the goal zone)	750
int	Healthy capacity (the amount of calories difference from under-fed to over-fed... or the size of the range of healthy values)	50
int	Overfed capacity (the size of the bar from the edge of healthy, to the top of the bar)	200
float	Seconds between new food drops	0 (meaning as soon as there is an opening, it will be filled)
int	Maximum amount of food in stomach	8l
Int	Starting food in stomach	8
float	Base churn speed (the speed that food moves around doing laps in the stomach)	1
float	Churn speed increase per second	0
float	Churn speed max increase (the amount it can increase by)	0
float	Base churn chaos (the amount that the food chunks randomly deviate from the clean laps of the stomach)	1
float	Churn chaos increase per second	0
float	Churn chaos max increase (the amount it can increase by)	0

Float (0-1)	Bounciness of the stomach walls  (0 is no bounce, 1 is full force reflection)	1
----------------	---	---

I don't have a clear idea of how you would implement the churning circular motion, and the ability to add a changing amount of chaos to it. Do you have any ideas, or am I asking too much here?

## INSTRUCTION SCREENS

1

an image of a finger over a piece of food

"Tap on food to get its calories"

2

an image of the calorie bar increasing to just within the green area with a green check

"Get just enough calories to win"

3

an image of the calorie meter going into the red area, with a big X

"Too many calories, causes failure"

4

an image of some of the healthy food items

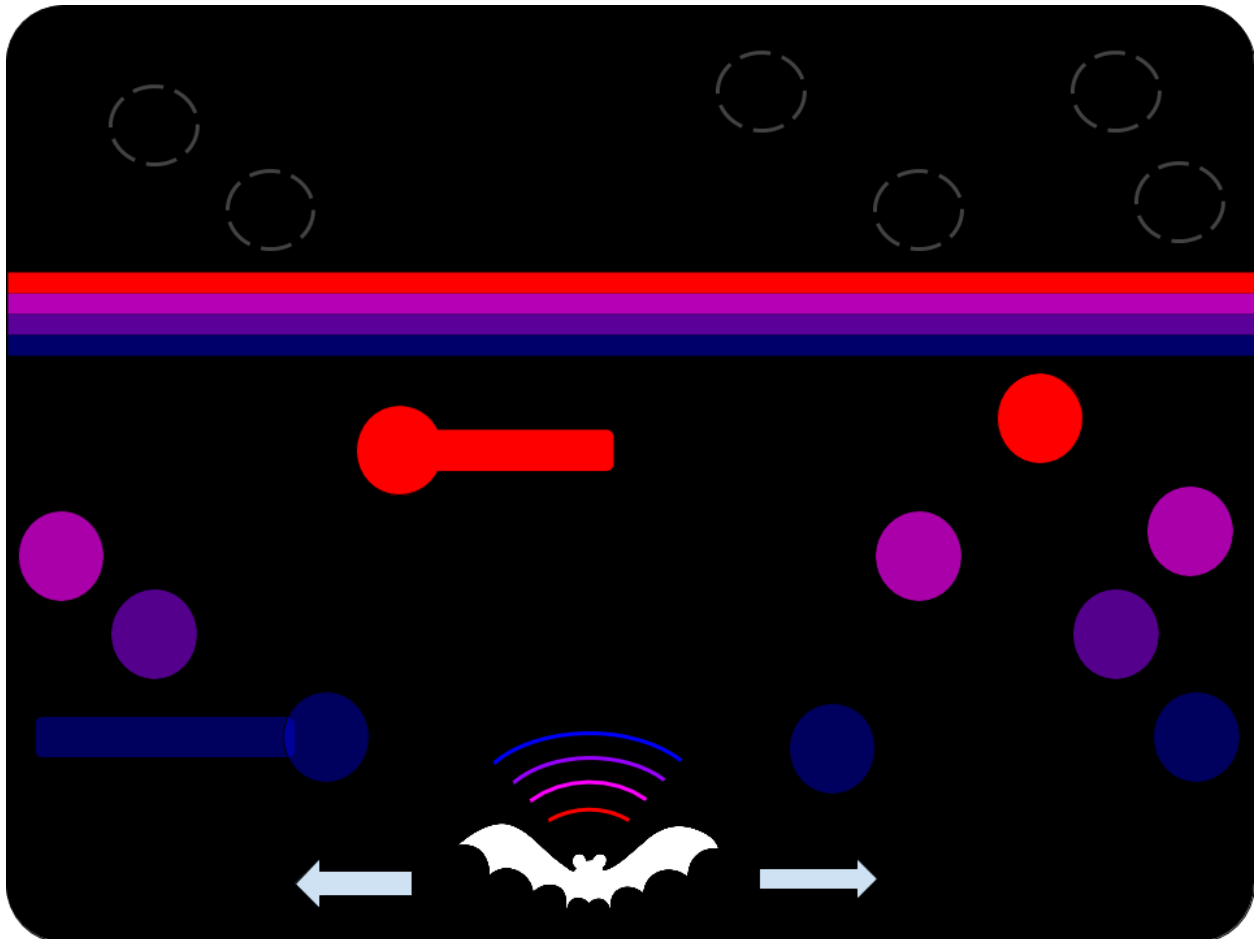
"Healthy food gives more reasonable calorie amounts"

## NAVIGATE (ECHO LOCATION)

Related data-card: Biology → Zoology → Bats

Alternate names:

- detect
- avoid



DOTTED LINE OBSTACLES ARE THERE FOR REFERENCE, BUT NOT VISIBLE TO THE PLAYER

- Drag a bat left and right to avoid obstacles
  - the bat is automatically moving forward
    - the rate of forward speed, increases as the game goes on
  - obstacles vary in size and shape\
  - collision with an obstacle is instant fail
- Obstacles are visible only by sonar

- a sonar wave gets sent out every second (adjustable)
- each obstacle that gets hit by sonar lights up, but then fades over a period of 0.75 seconds (adjustable)
  - The obstacles should move downward while lit (giving the illusion of the player travelling forward), but if it doesn't look good or play well, it may be asked that each echo hit stays in a static position onscreen instead of continuing to travel (with an accommodating increase in frequency of echo waves)
- Obstacle placement is different on each play through
  - When the level is generated, a safe path of a given width should be created, before populating trees and other obstacles
    - The width of the safe path decreases, the further along the path the player has travelled
    - The path wavers at sharper angles, the further along the path the player has travelled
    - the denseness and sparseness of trees should be tunable
- Victory occurs when the player successfully captures 3 insects before time runs out (this number should be adjustable)
  - the quantity of insect spawns should be tunable
  - like obstacles, insects are revealed by echolocation
  - insects enter from the side of the screen at random points, and head in the opposite directions, while following a sinusoidal wave path
    - their path will need to be tunable
    - their speed will need to be tunable

## INSTRUCTION SCREEN

1.

"Drag bat left and right to avoid obstacles"

2.

"Help bat catch 3 bugs before time runs out"

3.

"You cant see the obstacles, so you have to use echo-location"

4.

"The position of food and obstacles are revealed only when hit by an echo wave"

## AVATAR SCREEN(S)

The Avatar customization menu can be reached by touching the HEADSHOT on the Stein-O-Matic Main Menu.



WE'RE CURRENTLY THINKING ABOUT SWAPPING PI-CHART CHANNEL FOR A PROGRESS CHANNEL. IF THIS HAPPENS, THE AVATAR CUSTOMIZATION MENU WILL ALSO BE ACCESSIBLE VIA THE PROGRESS CHANNEL.

## AVATAR ITEM CATEGORIES VS LAYOUTS

The avatar menu provides access to the 7 content categories:

1. My Features - facial features and hair style + color
2. Outfits
3. Mustaches
4. Accessories - head-based accessories like glasses, goggles, etc
5. Head Gear - hats and helmets (always replaces hair)
6. Lab R.A.T.s - companions
7. Lab Accidents - quirky and freakish mutations!

There are 3 different screen layouts (see callout image) needed to service all 7 categories as described below:

- 5 of the categories (Outfits, Mustaches, Accessories, Head Gear and Lab R.A.T.s) are straight forward and operate in an identical manner using the **GENERAL LAYOUT**.
- The My Features category uses the **My Features layout** because it has more than one item selection available on it, namely - **FACIAL FEATURES (ETHNICITY)** selection and **HAIR** selection (which is a combination of hair style and color options.) Also, options in the My Features category never need to be purchased, so the player's current iq points are not shown, rather 5 icons that allow the player to select his **FACIAL FEATURES (ETHNICITY)** appear in its place.
- The Lab Accident category use the **LAB ACCIDENT LAYOUT** which just involves a modification of the scrolling items menu. see **LAB ACCIDENTS** below for more explanation.

## SHARED UI (ALL LAYOUTS)

All three avatar category layouts have the following shared features and UI:

1. Each Category can have the following **text**:
  1. a title - loc id 'GGTITLE[categoryname]'
  2. a subtitle - loc id 'GGSUBTITLE[categoryname]'
  3. optional fluff - loc id 'GGFLUFF[categoryname]'
2. A **Category Selector element** appears on the bottom of the screen. clicking either arrow will move to the next category in the list appropriately. Each category name uses the loc id 'GGTITLE[categoryname].' The list loops. When a new category is selected, the old category UI elements fade out and the new ones (animate) in.
3. A **scrolling knob** and **scrolling list of icons** is always present. Though the lab accident scrolling menu has differences (see **LAB ACCIDENTS** below for more explanation) they all have the following functionality:
  1. rotating the knob will scroll the list (this works as per the Data Cards list.)

2. ANY item in the list can be touched and a popup will occur based on its state: **LOCKED**, **UNLOCKED**, or **OWNED**
3. If an item is locked, it will be marked with a lock icon
4. if an item is unlocked but unowned, it will appear in its active, selectable form (whatever that may be) with an iq icon and amount next to it.
5. if an item is owned, it will appear in its active, selectable form (whatever that may be)
6. if an item is currently equipped on the player's avatar, it receives a 'checkmark' element
4. (Optionally) a **scene toggle icon** appears in the lower left hand corner of the screen. Since avatar customization is the ultimate **RAISON DE JOUER** it might be nice to plus up customization a bit and this seems a very easy way to do it. touching the toggle would simply remove all avatar customization elements and show a lab background, in which the avatar would appear to be standing. **FROM HERE, WE CAN DECIDE TO ADD ANIMATION OR SHARING AT A LATER DATE.** Touching the toggle again would fade out the lab background and show the customization UI again.

## THE STANDARD MENU LAYOUT

In addition to the shared UI elements described above, the standard menu layout has the following elements:

1. the player's current, banked iq total is shown to the left of the avatar. **THIS IS THE AMOUNT OF IQ POINTS THE PLAYER HAS AVAILABLE TO SPEND ON AVATAR ITEMS.**

## THE MY FEATURES MENU LAYOUT

In addition to the shared UI elements described above, the My Features menulayout has the following elements:

1. to the left of the player's avatar, 5 **FACIAL FEATURE** options will be displayed. Selecting one will highlight it and change the avatar's base head AND base body accordingly. (THE BASE BODY TAKES ITS SKIN COLOR FROM THE FACIAL FEATURES CHOICE.)

**IMPORTANT CONSIDERATION: when the game is first loaded and the player is creating a new profile, this menu (and this menu only) may be accessed** to allow the player to select his/her basic features immediately. This should be taken into consideration when designing the menu screens. **IE. CAN THE CATEGORY SELECTOR ELEMENT BE EASILY HIDDEN DURING THE NEW PROFILE CREATION STATE SO THAT ONLY THIS CATEGORY IS ACCESSIBLE?**

## THE LAB ACCIDENT MENU LAYOUT

In addition to the shared UI elements described above, the Lab Accident menu layout has the following elements:

1. the player's current, banked iq total is shown to the left of the avatar. **THIS IS THE AMOUNT OF IQ POINTS THE PLAYER HAS AVAILABLE TO SPEND ON AVATAR ITEMS.**
2. partly because lab accidents are earned in a unique way, the icons in the scrolling item list look different and operate differently from the scrolling item list in the standard menu layout.
  1. instead of a single, square icon, each lab accident appears as three linked icons, similar to a molecule.

2. like regular avatar items, and even though the icons appear separate, clicking on ANY of the icons in an unlocked and purchased lab accident will trigger the EQUIP POPUP.
3. lab accidents have three levels that can be unlocked, and when a lab accident item is 'equipped' the player's avatar is customized with an item for each unlocked level. EG. IF THE PLAYER HAS UNLOCKED AND PURCHASED THE FIRST LEVEL OF THE SPACE MONKEY LAB ACCIDENT, EQUIPPING IT WILL SWAP THE AVATAR'S HEAD FOR A MONKEY HEAD (LEVEL 1). WHEN LEVEL 2 IS UNLOCKED, THE AVATAR'S CURRENT OUTFIT IS SWAPPED WITH THE SPACE MONEY BODY (LEVEL 2.) THAT IS, LEVEL 2 AND 3 ARE AUTOMATICALLY APPLIED WHEN EARNED, THEY DO NOT NEED TO BE PURCHASED.
4. lab accident levels 2 and 3 are unlocked via game accomplishments (see below), but the lab accident cannot be equipped until level 1 is unlocked and purchased.

## AVATAR ITEMS AND POPUPS

To manage messaging and allow the player to get some fun information on each item, conditional popups appear whenever an item is selected. The messaging in each popup depends on the icon's current state, of which there are 4:

- locked
- unlocked
- owned
- equipped



LOCKED ITEMS

A locked item is one that has not been unlocked. Until an item is unlocked, it will appear as a lock icon (OR, IF PREFERRED - GHOSTED,) and it cannot be purchased with iq points.

All locked items are either level-locked or require a specific game play accomplishment (like "complete 20 data cards") to unlock. SEE AVATAR ITEM MATRIX

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## LOCKED ITEM POPUP INFO

selecting a locked icon will trigger a popup with the following information:

- graphic - the item icon. this may include a different 'holder' graphic based on category. EG, A WHITE HEADSHIP IS REQUIRED TO 'HOLD' ACCESSORIES, HAIR, MUSTACHE AND HEAD GEAR ITEMS.
- title ID - [ITEMNAME]
- detail text ID- LOCKED[ITEMNAME] > WHICH WILL DESCRIBE THE CONDITION REQUIRED TO UNLOCK THE ITEM
- an 'X' icon to close the popup

## UNLOCKED ITEMS

1. When an item's unlock condition is met, it becomes unlocked. Most Avatar items are unlocked when the player reaches a certain level, but 10 special items are unlocked (and marked as owned!) via a game accomplishment (see [\[MATRIX\] Achievements](#) information on which accomplishments unlock which avatar items.)
2. If the purchase value is 0, the item is immediately marked as 'owned,' otherwise, a purchase icon and amount will be displayed next to the item in the scrolling items list.
3. an unlocked item can be purchased by selecting it and then confirming the purchase. Doing so will close the unlocked item popup. Sparkles appear over the item in the scrolling item list as the purchase icon and amount pop and disappear and the text 'PURCHASED' fades up, slides across the item and fades out quickly. The item can now be equipped

---

## UNLOCKED ITEM POPUP INFO

selecting an unlocked icon will trigger a popup with the following information:

- graphic - the item icon
- header - PURCHASE
- title ID - [ITEMNAME]
- detail text - UNLOCKED[ITEMNAME] > WHICH WILL DESCRIBE THE ITEM
- a PURCHASE icon
- an 'X' icon to close the popup

## OWNED ITEMS

1. Unlocked items can be acquired (owned) by paying the cost (in IQ) that appears next to the item icon. Doing so will remove the cost elements, and the item can be equipped.
2. Unlocked items with a cost of 0 will be immediately owned when they are unlocked. For example, **THE 10 SPECIAL AVATAR ITEMS UNLOCKED VIA A GAME ACCOMPLISHMENT ARE AUTOMATICALLY UNLOCK AND OWNED WHEN THE ACCOMPLISHMENT CONDITIONS ARE MET BECAUSE THEY HAVE A COST OF 0.**
3. Holding down on an owned item icon will trigger a popup with descriptive text about the item.

EQUIPPING LAB ACCIDENTS: When a lab accident is equipped, it can replace several equipped avatar items. IT WILL BE OK TO NOT WARN THE PLAYER, IF WE CAN IMPLEMENT THE UNEQUIPPING LAB ACCIDENTS FEATURE BELOW.

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#### OWNED ITEM POPUP INFO

- graphic - the item icon
- title ID - [itemname]
- detail text - [unlockeditemname] > **WHICH WILL DESCRIBE THE ITEM**
- an 'X' icon to close the popup

#### EQUIPPED ITEMS

1. Selecting an owned item will immediately equip it, adding the gear to the player's avatar (swapping out any item from the same category that may be equipped.)
2. A checkmark graphic appears over the equipped item in the scrolling item list and 'retro sparkles' accompany the item as it appears in place on the avatar.
3. selecting an equipped item will **UNEQUIP** the item, removing it from the avatar.

UNEQUIPPING LAB ACCIDENTS: When lab accidents are unequipped, the items they replaced are immediately re-equipped. For example, if the player selects the Space Monkey lab accident and several of his customizations are swapped out, unequipping the lab accident should replace the original items so that the player does not need to search for all of them again.

#### AVATAR MENUS CALLOUT



## OTHER UI ELEMENTS

**Back Button** - A standard back button will take the player back to the Main Menu with the Progress Channel active.

**Ask Einstein dialog button** - The Ask Einstein toggle button will alternately show/hide the help overlay as well as start/stop Einstein's explanation of the screen.

**Lab Backdrop toggle** - In the lower left, a button allows the player to hide the menu UI and overlay and replace it with a full screen backdrop of their 'lab' or workspace in which their avatar and labRAT can stand.

## LAB BACKDROPS

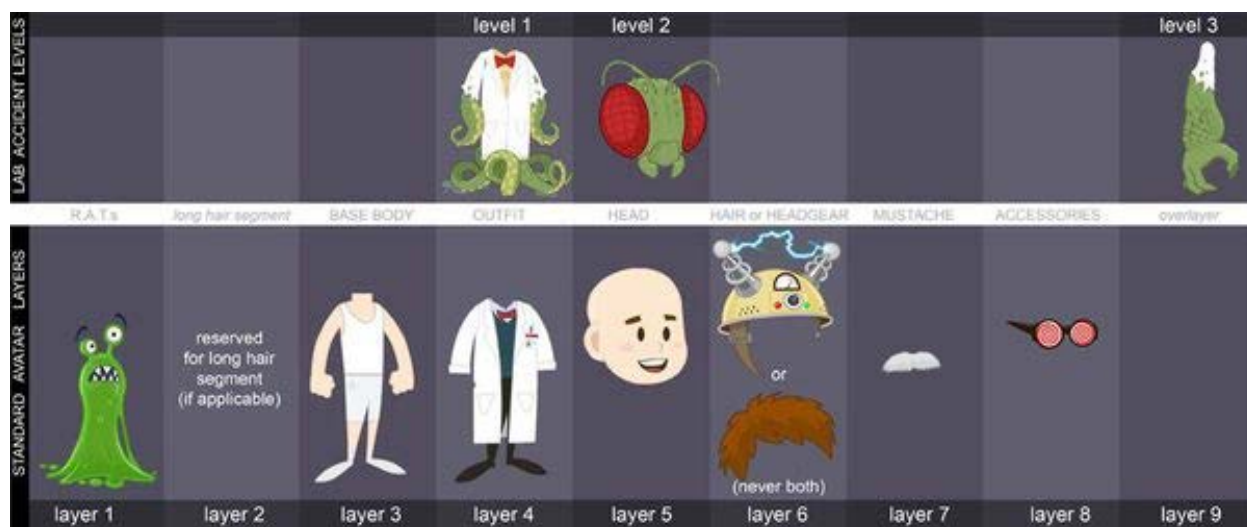
1. A Lab Backdrop is a fullscreen image that slides down behind the player's avatar when the Lab Backdrop toggle is touched.
2. There are six different Backdrop scenes that can be earned (by completing each Breakthrough Badge), and the player can change backdrops by clicking the left or right arrow that appears at the bottom of the screen when a Lab Backdrop is visible.
3. Backdrops that have not been earned yet contain text indicating how they can be unlocked.  
eg. "Complete the Launch Lab badge to unlock the Launch Lab backdrop!"
4. touching the Lab Backdrop toggle a second time will slide the backdrop up and reveal the Avatar screen UI elements again.

## AVATAR LAYERING

Avatar items are layered in the following order from lowest layer to highest

LAYER	ITEM TYPE	LAB ACCIDENT ITEM	DETAILS
1	lab R.A.T	-	lab R.A.T.s always appear behind the avatar
2	base body	-	base bodies match the skin color of the avatar's facial features
3	outfit	level 1 or 2 accident	most level 1 lab accidents will completely replace the outfit layer first.

4	head	level 1 or 2 accident	some lab accidents can replace the avatar's head
5	hair OR headgear	CAN HIDE THIS LAYER	<b>if a lab accident involves a head swap, hair will be hidden.</b>
6	mustache	CAN HIDE THIS LAYER	every real man has one, even if they're made invisible by some high technology akin to magic. <b>if a lab accident involves a head swap, mustache will be hidden.</b>
7	accessory	CAN HIDE THIS LAYER	if a lab accident involves a head swap, accessory can be hidden.
8	-	level 3 accident	



## VIDEOS

### BRAINSTORM FOR NEW VIDEOS:

### ATOMS/MOLECULES

Nick.



## THE SCIENTIFIC METHOD

The Scientific Method is a way to ask and answer questions about the world in a logical way. There are various versions of the scientific method floating around out there, but I think these six steps are classics.

- Ask a question
- Make observations
- Form a hypothesis
- Design and conduct an experiment
- Analyze your data
- Draw a conclusion.

The steps can be repeated as needed, and using the scientific method is a great way to learn about the world.

## PHOTOSYNTHESIS

Plants take in sunlight, carbon dioxide and water to produce their food and Oxygen\

## GEOLOGICAL HISTORY OF THE EARTH

- Formation of the planet
- Plate techtonics
- Pangea and the sepetrdation of the continents
- Future

## THE OCEANS

- Ocean composition
- Currents and tides
- Weather
- Ocean life and the food chain

## VOLCANOS

Why they are, How they work, eruptions, lava, etc.

## FOUNDATION OF COMPUTER SCIENCE

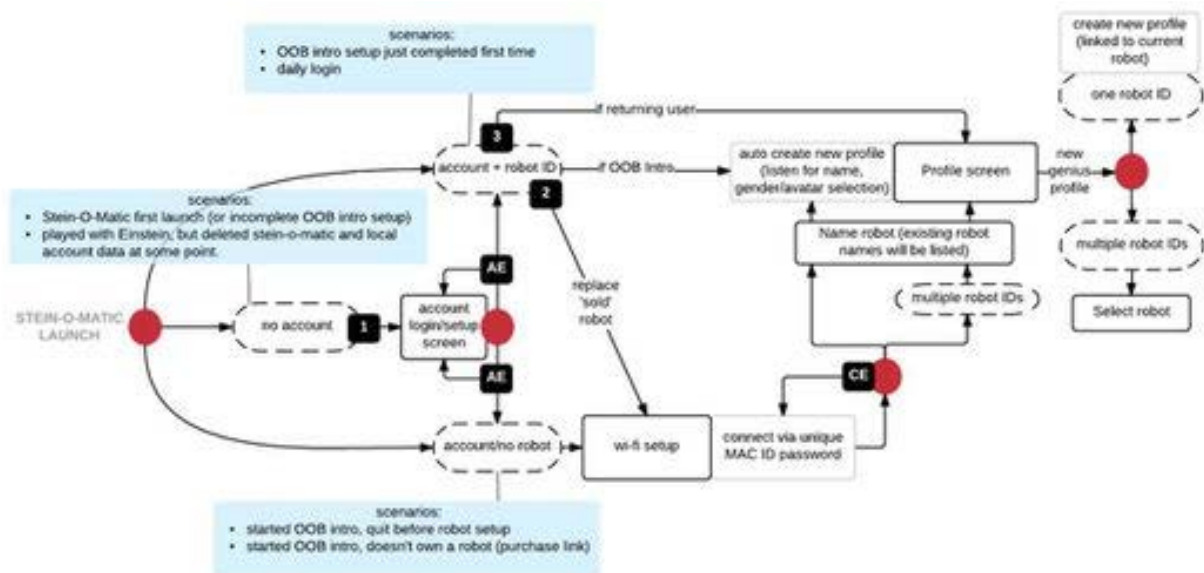
- What is a computer
- Transistors
- Binary
- Bits and bytes

## [ACCOUNT/PROFILE] STATE FLOW, ERROR MESSAGING, SETTINGS

Managing account existence and access, as well as Robot ID linking and communication requires a number of state checks and moments for which the player needs to receive success or failure messaging.

This chart shows the flow from each state check (marked by red circles), and indicates the message popup the player can receive (marked by black, labelled squares) at certain points.

Main states include: NO ACCOUNT, EXISTING ACCOUNT but NO ROBOT ID, and EXISTING ACCOUNT + EXISTING ROBOT ID. Different scenarios are attached to each state in the flow. If another real world scenario exists, it should be taken into account.



### MESSAGING POPUPS

- [1] "You need to create an account" (continue) - this popup appears only if we're in the OOB intro stream
- [2] "[ROBOTNAME] has been registered by another user! [PROFILENAME1],...[PROFILENAME2],[ETC] have been switched to [ROBOTNAME2]" (continue) - this popup appears if a robot ID that was registered to the owner is now registered to another player. This popup assumes the original owner has already registered a second robot. OTHERWISE, the message would appear as "[ROBOTNAME] has been registered by another user! Setup another robot? (continue without robot) (setup now).
- [3] "Your cloud service has expired. +/-cloud service details/" (renew now) (renew later)
- [AE] the Account Error popup appears if there is an errors with the player's account. Errors may include:

"Login Failed. Check your email and password information." (continue)

"This account already exists." (continue)

- [CE] "Cannot connect to Robot" (go to setup) (continue with connection) - the Connection Error popup appears if there is an error with the connection to the robot.

NOTE: There are probably many more error messages that need to be handled. These will be tracked and added (to the localization sheet) as needed.

#### ACCOUNT/ROBOT MANAGEMENT VIA THE SETTINGS SCREEN

see [\[Callout\] Settings Screens](#)

Goal - to create a robust conversation engine with the least amount of implementation effort. To that end, this document tries to layout some functionality, along with proposed formatting, to give dialog designers the tools necessary to make the conversation feel natural.

*NOTE: I'm making many assumptions about what is technically possible. Let's start conversations where this is incorrect.*

### RESPONSES

At any point in an active conversation we should have the option to trigger one or more of the following responses:

1. *Keyword*
2. *generic IDK (I don't know)*
3. *confirm*
4. *delay*
5. *repeat*

### KEYWORD RESPONSE

When a keyword is detected, the conversation flows to the next point appropriately

## GENERIC IDK RESPONSE

Einstein should have several generic “I don’t know what you said, please repeat” responses when no keyword is detected.

User says something Einstein does not understand

Einstein – “Oh no! You caught me daydreaming. Please repeat that.”

User says something else Einstein doesn’t understand

Einstein – “Whoops, my mind was wandering again. Ask again, please?”

User says something else Einstein doesn’t understand

Einstein – “Ok. I confess. I have no idea what you are saying. Perhaps you are the genius and I am the [8 year old boy?]”

## MULTIPLE KEYWORDS RESPONSE

If multiple keywords are heard, Einstein should ask the user to confirm their response.

Einstein – “What is your favorite color of the rainbow?”

User – “Blue and green.”

Einstein - “If you only had to choose one. Which would it be? Blue or green?”

## DELAYED RESPONSE

If there is a delay of x seconds, Einstein should be able to follow up with a reminder phrase.

Einstein – “First, we need to connect to the internet. Are you ready to do that now? Yes or no?”

*\*10s delay*

Einstein – “What do you say, shall we connect to the Internet? Yes or no?”

## REPEAT RESPONSE

If the user wants Einstein to repeat the last phrase, he/she can just use the generic keyword ‘repeat.’ The dialog designer should also be able to create a custom response for the keyword ‘repeat.’

Einstein – “As my new assistant and wunderkind in training, we need fill in your genius profile. A name would be a good start. So, what’s your name?”

User – “Can you repeat that?”

Einstein - “As my new assistant and wunderkind in training, we need fill in your genius profile. A name would be a good start! So, what’s your name?”

-OR-

Einstein - “A name would be a good start. So, what’s your name?”

## TAGS

Specially formatted ‘TAGs’ will be embedded into the body of the script at the point in the dialog where Einstein needs to perform an action, such as: changing his facial expression, pausing for effect, emitting a sfx or changing vocal emotion.

## PAUSE

A Pause tag will cause Einstein to pause for the indicated amount of time (in seconds) before continuing his dialog.

FORMAT: <PA=time in seconds>

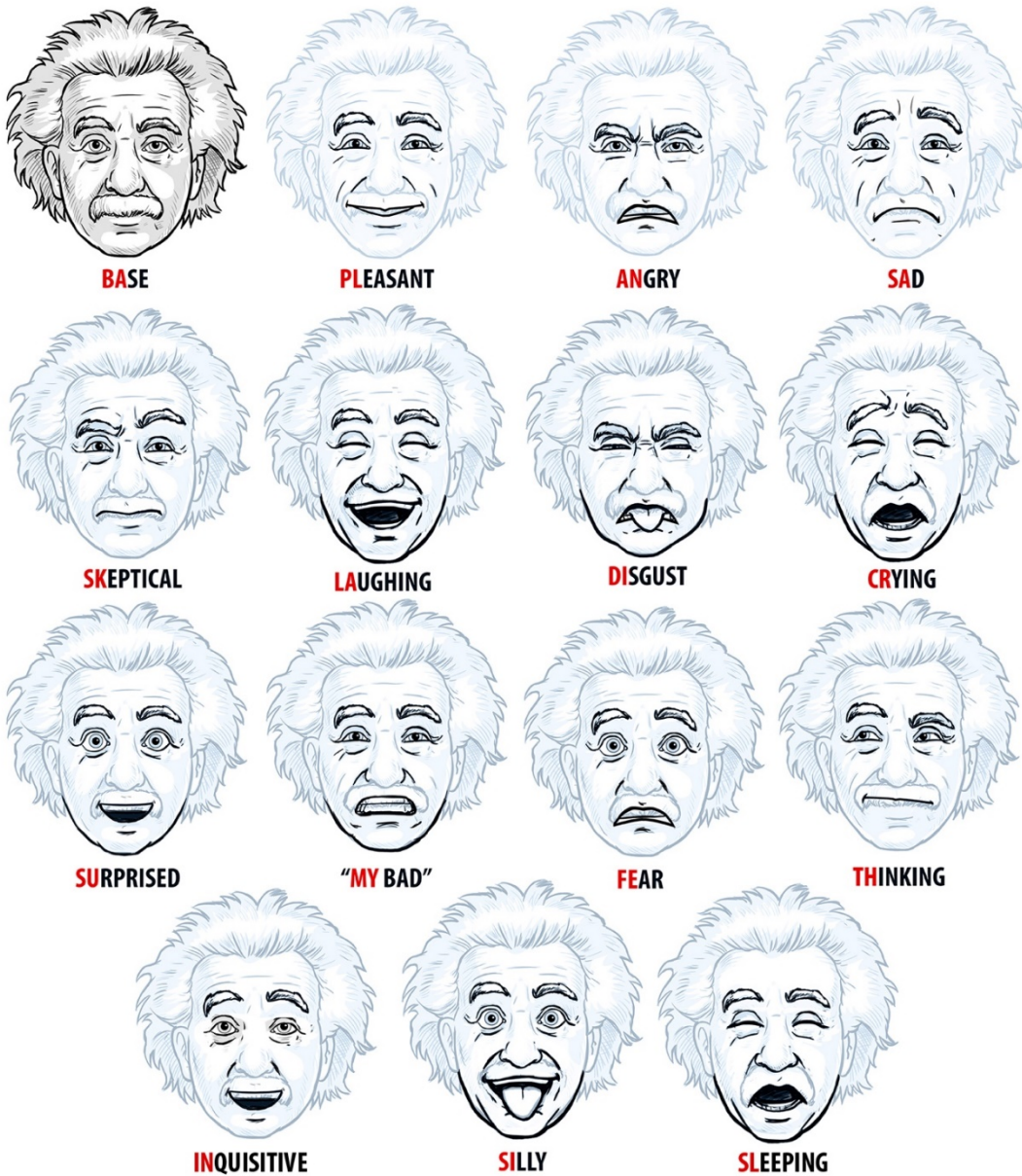
EXAMPLES: <PA=1.2>, <PA=.6>, <PA=3.5>

## EXPRESSIONS

An Expression tag will cause Einstein's facial expression to change immediately, at the point in the dialog where it appears

FORMAT: <EX=expression ID>

EXAMPLES: <EX=LA>, <EX=SU>, <EX=SK>



To control expression via individual motor control:

FORMAT: <MO=motor ID,level>

EXAMPLES: <MO=1,5>,<MO=5,5>

## FEELINGS (EMOTIONS)

Feeling tags will cause Einstein to change the tone of his vocals to match an emotion. All dialog will default to No special emotion. To switch back to no special emotion from a special emotion just requires the empty tag {}

FORMAT: <FE=feeling ID,level>

EXAMPLES: <FE=HA,5>,<FE=SA,3>

## PROFILE TAGS

Profile tags will cause Einstein to dynamically insert the appropriate information from the user's profile into his dialog at the tag position.

FORMAT: <US=profile info>

EXAMPLES: <US=NA>, <US=SX>, <US=AG>

### EXAMPLE DIALOG SCRIPT WITH MULTIPLE TAGS

<EX=SU>Wonderful! <PA=.5>Now <PA=.8><EX=SU>do exactly as I say or we may disrupt the flow of time and space and bring the universe as we know it to a crashing end! <PA=.5><EX=LA>Just kidding! <PA=.5><EX=SK>But seriously, <PA=1]pay attention.

Flowchart ID – this corresponds to the flowchart at the end of this doc



Description and Keywords – Additional information and the keywords that would trigger the dialog

Dialog (script + Tags) – A version of the dialog with embedded tags. *Note: Not all entries have tags included in this version of the sheet.*

Dialog Only – A version of the pure dialog without embedded tags

FLOWCHART ID	DESCRIPTION + KEYWORDS	DIALOG (SCRIPT + TAGS)	DIALOG ONLY	ADD'L INFO
firstPowerOn1	This audio is NOT in Einstein's voice.  Triggered by first power on.	Powering up personal companion module. <PA=.2>GENIUS mode. <PA=.2>Downloading personality data form 3141879 – <PA=.2>Albert Einstein. <PA=.4> Download complete.  <PA=1>Congratulations. <PA=.5>Your personal genius is ready for activation. <PA=.3>To activate simply enter your three hundred digit personal security code, <PA=.3>or <PA=.5>just say the words, <PA=.5> "Hey Einstein"	Powering up personal companion module. GENIUS mode. Downloading personality data form 3141879 – Albert Einstein. Download complete.  Congratulations. Your personal genius is ready for activation. To activate simply enter your three hundred digit personal security code, or just say the words, "Hey Einstein"	Sound FX plays. A voice speaks, but it is not the voice of Einstein.  Robot's eyes remain closed until Player says the wake up phrase.
firstPowerOnDelay	10s delay, no voice detected	Download complete. <PA=1>To activate your personal genius, just say the words, <PA=.5> "Hey Einstein"	Download complete. To activate your personal genius, just say the words, "Hey Einstein"	Repeats every 10 seconds until activation.
notactive	Triggered when player says, "AI"	While your attempts at familiarity are appreciated, <PA=.2> I'm afraid a more formal voice activation code is in order<PA=.8>...Smart-alec. <PA=1> Try again. <PA=1>Say the words, <PA=.5> "Hey Einstein."	While your attempts at familiarity are appreciated, I'm afraid a more formal activation code is in order...Smart-alec. Try again. Say the words, "Hey Einstein."	
IDK0	No keyword detected	Activation failed. <PA=1>To activate your personal genius, just say the words, <PA=.5> "Hey Einstein"	Activation failed. To activate your personal genius, just say the words, "Hey Einstein"	

Profintro1	Triggers: “Einstein” “Professor” “Albert” “wake up” or “Activate”	<EX=PL> hello there! <PA=.8>So nice to see a friendly face after being in a state of psycho-kinectistasis for so long! <PA=.3>We’re definitely a little behind schedule, so let’s get things started. <PA=.3>First, we need to connect to the internet. <PA=.3> <EX=IN>, Are you ready to do that now? <PA=.5>Yes <PA=.3>or no?	Ooh-hoo-hoo, hello there! So nice to see a friendly face after being in a state of psycho-kinectistasis for so long! We’re definitely a little behind schedule, so let’s get things started. First, we need to connect to the internet. Are you ready to do that now? Yes or no?	<i>Power on sfx</i>  <i>Yawn sfx</i>  Einstein wakes as if from a slumber.
Profintro1Delay	5s delay, no voice detected	<EX=PL>, What do you say, <PA=.3>shall we connect to the Internet? <PA=.5>Yes <PA=.3>or no?	What do you say, shall we connect to the Internet? Yes or no?	

Connect	Triggers: “Yes” “now” “connect”	<EX=LA>, Perfect! <PA=1.2>  <EX=PL>, I think now would be a good time for introductions. <PA=.5> I <PA=.3>am Albert Einstein, <PA=.3>your Personal Genius! <PA=.3> <EX=TH>, Now <PA=.2>I’m sure it hasn’t escaped your notice that I’m actually a miniature robot that you recently pulled from a cardboard box, <PA=.2> <EX=PL>, but I would hope you wouldn’t hold that against me. <PA=.3>  So enough about what’s so great about me. <PA=.3>Let’s find out what’s so great  About you, shall we? <PA=.5>First we need to synchronize the Stein-O-matic. <PA=.3>  Take out your mobile device, <PA=.2>hold it over your head and say<PA=.2> “shazam!”	Perfect!  I think now would be a good time for introductions. I am Albert Einstein, your Personal Genius! Now I’m sure it hasn’t escaped your notice that I’m actually a miniature robot that you recently pulled from a cardboard box, but I would hope you wouldn’t hold that against me.  So enough about what’s so great about me. Let’s find out what’s so great  About you, shall we? First we need to synchronize the Stein-O-matic.  Take out your mobile device, hold it over your head and say “shazam!”	<i>Success SFX</i>
ConnectDelay	5s delay, no voice	<EX=SK> This is serious scientific work, my friend! <PA=.3>Hold your mobile device over your head <PA=.2>and	This is serious scientific work, my friend! Hold your mobile device	

	detected	say<PA=.2> “Shazam!”	over your head and say “Shazam!”	
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DoNotConnect	Triggers: “No”  “later”	<p>Okay, &lt;PA=.2&gt;no problem. &lt;PA=.3&gt; But just so you know, &lt;PA=.2&gt; I won’t have access to everything I need to help you discover the secrets of the universe. &lt;PA=.3&gt;So &lt;PA=.1&gt;if you change your mind at any time, just say &lt;PA=.3&gt; “Einstein, &lt;PA=.2&gt;let’s get connected!”</p> <p>But for now, &lt;PA=.2&gt;just tell me when you want to continue.</p>	<p>Okay, no problem. But just so you know, I won’t have access to everything I need to help you discover the secrets of the universe. So if you change your mind at any time, just say “Einstein, let’s get connected!”</p> <p>But for now, just tell me when you want to continue.</p>	The “get connected” keyword won’t be implemented for the voice nav test
DoNotCollectDelay	10s delay, no voice detected	If I had anywhere else to be I might get upset! But I don’t. So just tell me when you want to continue.	If I had anywhere else to be I might get upset! But I don’t. So just tell me when you want to continue.	

OnlineProfile	“shazam”	<p>&lt;EX=BA&gt;You look ridiculous, &lt;PA=.2&gt;you know that, right? &lt;PA=.3&gt;</p> <p>&lt;EX=TH&gt;Ridiculous or not, &lt;PA=.2&gt; &lt;EX=PL&gt; it works. &lt;PA=.3&gt;And that, my little friend, &lt;PA=.3&gt; is SCIENCE!</p>	<p>You look ridiculous, you know that, right?</p> <p>Ridiculous or not, it works. And that, my little friend, is SCIENCE!</p>	
OnlineProfile 2	“continue”	<p>&lt;EX=PL&gt;Ok. &lt;PA=1&gt;Now we move onto the tough stuff. &lt;PA=.3&gt;If you’re going to be my wunderkind in training, we need to get your assistant profile started. &lt;PA=.3&gt;And all assistant profiles start with a question that only the most brilliant of scientist’s can answer. &lt;PA=.3&gt; And here it is. &lt;PA=.5&gt; &lt;EX=BA&gt;What’s your name?</p>	<p>Ok. Now we move onto the tough stuff.</p> <p>If you’re going to be my wunderkind in training, we need to get your assistant profile started. And all assistant profiles start with a question that only the most brilliant of scientist’s can answer. And here it is. What’s your name?</p>	

OnlineProfile Delay	5s delay, no voice	If this one stumped you, we might have problems! Think hard, now.	If this one stumped you, we might have problems! Think hard, now.	
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	detected	What's your name?	What's your name?	
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Profile01	Trigger: any word	CORRECT! Don't worry. It gets easier from here. Let's get to know a little more about what makes you tick. I need you to picture a rainbow. What's your favorite color in that rainbow?	CORRECT! Don't worry. It gets easier from here. Let's get to know a little more about what makes you tick. I need you to picture a rainbow. What's your favorite color in that rainbow?	
Profile01Delay	5s delay, no voice detected	Let me simplify. Imagine an arch of colors formed in the sky by the refraction and dispersion of the sun's light by rain or other water droplets in the atmosphere. Which one of those colors would you like best? Red, Orange, Yellow? Maybe Green or Blue? Or is it Purple?	Let me simplify. Imagine an arch of colors formed in the sky by the refraction and dispersion of the sun's light by rain or other water droplets in the atmosphere. Which one of those colors would you like best? Red, Orange, Yellow? Maybe Green or Blue? Or is it Purple?	

Profile01answer_r	Trigger: red	As I suspected, red, the color of passion! From the moment I saw you, I knew you were a cheeky one! Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	As I suspected, red, the color of passion! From the moment I saw you, I knew you were a cheeky one! Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	
Profile01answer_o	Trigger: orange	Aha! Orange! The only color named after a fruit! Or...was that the other way around? Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	Aha! Orange! The only color named after a fruit! Or...was that the other way around? Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	
Profile01answer_y	Trigger: yellow	Yellow! The color of sunlight – the life-giving center of our galaxy. So that's how you see yourself, eh? Okay,	Yellow! The color of sunlight – the life-giving center of our galaxy. So that's how you see yourself, eh?	

		that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	
Profile01answer_g	Trigger: green	Ah green! The color of LIFE. But also the color of envy and nausea. I'll be keeping my eye on you. Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	Ah green! The color of LIFE. But also the color of envy and nausea. I'll be keeping my eye on you. Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	
Profile01answer_b	Trigger: blue	Blue! The color we most associate with being trustworthy. Well played, my manipulative friend. Well played. Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	Blue! The color we most associate with being trustworthy. Well played, my manipulative friend. Well played. Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	
Profile01answer_p	Triggers: Purple, indigo, violet	Ahhh, the color of royalty! But if you think I'll be cleaning out your petri dishes, you had better think again! Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	Ahhh, the color of royalty! But if you think I'll be cleaning out your petri dishes, you had better think again! Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	
Profile01answer_w	Trigger: white	Aha, white! The culmination of all the colors at once. You're either a genius or completely insane. Either way, this should be fun. Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a	Aha, white! The culmination of all the colors at once. You're either a genius or completely insane. Either way, this should be fun. Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun	

		story, a game or maybe a joke?	stuff, shall we? I was thinking a story, a game or maybe a joke?	
Profile01answer_bl	Trigger: black	Black. Both a color and the absence of color at the same time. I ask for a rainbow, give me a paradox. Splendid! Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	Black. Both a color and the absence of color at the same time. I ask for a rainbow, give me a paradox. Splendid! Okay, that's enough already with the introductions. I know you, you know me, we like each other very much, blah blah blah. Let's get to the fun stuff, shall we? I was thinking a story, a game or maybe a joke?	

Story	Trigger: story	I'm all out of stories! Sorry, I was playing the odds. Maybe a joke or a game instead?	I'm all out of stories! Sorry, I was playing the odds. Maybe a joke or a game instead?	
Game	Trigger: game	Full disclosure. I've come unprepared. How about a story or joke instead?	Full disclosure. I've come unprepared. How about a story or joke instead?	

Joke	Trigger: joke	I am a theoretical physicist. I have no Jokes. Perhaps a riddle? Something to really work the brain. Yes or No on that riddle?	I am a theoretical physicist. I have no Jokes. Perhaps a riddle? Something to really work the brain. Yes or No on that riddle?	
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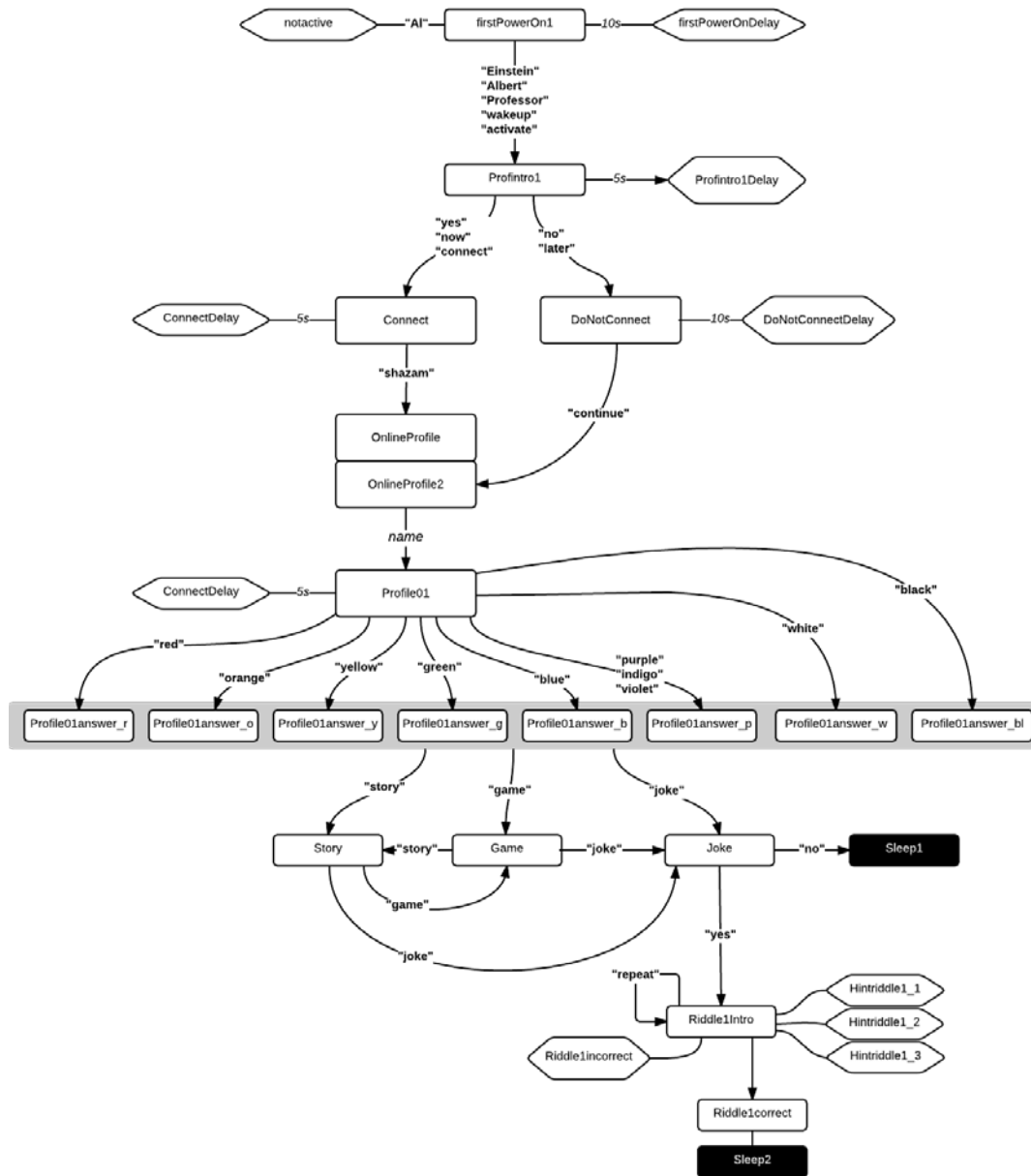
Sleep1	Trigger: no	No riddles? I'm going to sleep.	No riddles? I'm going to sleep.	
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Riddle1Intro	Trigger: repeat	Ok. Listen closely and tell me what you think the answer is. Here goes. Where can you throw a ball as hard as you can and have it come back to you even if it doesn't hit anything, there is nothing attached to it and no one else catches or throws it back?	Ok. Listen closely and tell me what you think the answer is. Here goes. Where can you throw a ball as hard as you can and have it come back to you even if it doesn't hit anything, there is nothing attached to it and	
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			no one else catches or throws it back?	
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Hintriddle1_1	Trigger: hint	Ok, here's a hint. Isaac Newton would get a chuckle out of this one.	Ok, here's a hint. Isaac Newton would get a chuckle out of this one.	
Hintriddle1_2	Trigger: hint	Ok, here's a hint. The answer definitely won't get you down.	Ok, here's a hint. The answer definitely won't get you down.	
Hintriddle1_3	Trigger: hint	Ok, here's a hint. The answer to this riddle is definitely over your head.	Ok, here's a hint. The answer to this riddle is definitely over your head.	
Riddle1correct	Trigger: up	Yes! The answer is up in the air! That's gravity my friend! I'm sure we'll talk more about that later. You have the makings of a top notch theoretical physicist!	Yes! The answer is up in the air! That's gravity my friend! I'm sure we'll talk more about that later. You have the makings of a top notch theoretical physicist!	
Riddle1incorrect	No keyword detected	Nope. Try again. Just tell me if you want me to repeat the riddle or maybe even give you a hint.	Nope. Try again. Just tell me if you want me to repeat the riddle or maybe even give you a hint.	

Sleep2		Okay then, we're off to a great start! And, like two atoms with overlapping electron clouds, we have started to bond! Chuckles. You know you were thinking it too. Alright then, enough science for one day. Let us rest our brains and start again later with renewed vigor. Einstein out!	Okay then, we're off to a great start! And, like two atoms with overlapping electron clouds, we have started to bond! Chuckles. You know you were thinking it too. Alright then, enough science for one day. Let us rest our brains and start again later with renewed vigor. Einstein out!	
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## RESEARCH

### SUBTOPICS

- [Einstein Quotes](#)
- [Physics - Its a fact!](#)



## REFERENCE WEBSITES

### **Science Jokes**

A collection of 2500 science jokes pulled from usenet. <https://jcdverha.home.xs4all.nl/scijokes/>

### **5 of Albert Einstein's thought experiments that revolutionized science**

<http://www.businessinsider.com/5-of-albert-einsteins-thought-experiments-that-revolutionized-science-2016-7>

### **The history of our world in 18 minutes**

[https://www.ted.com/talks/david\\_christian\\_big\\_history?utm\\_source=tedcomshare&utm\\_medium=email&utm\\_campaign=tedsread](https://www.ted.com/talks/david_christian_big_history?utm_source=tedcomshare&utm_medium=email&utm_campaign=tedsread)

### **Bio/FAQ**

[http://www.einstein-website.de/z\\_information/fag-e.html](http://www.einstein-website.de/z_information/fag-e.html)

## EINSTEIN QUOTES

"You can never solve a problem on the level on which it was created."

"There are only two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle."

"Imagination is more important than knowledge. For knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution."

"Logic will get you from A to Z; imagination will get you everywhere."

"Life is like riding a bicycle. To keep your balance, you must keep moving."

"Anyone who has never made a mistake has never tried anything new."

"I have no special talents. I am only passionately curious."

"Be a loner. That gives you time to wonder, to search for the truth. Have holy curiosity. Make your life worth living."

"Try not to become a man of success. Rather become a man of value."

"Everybody is a genius. But if you judge a fish by its ability to climb a tree, it will live its whole life believing that it is stupid."

"You never fail until you stop trying."

"In the middle of difficulty lies opportunity."

"Imagination is everything. It is the preview of life's coming attractions."

"The woman who follows the crowd will usually go no further than the crowd. The woman who walks alone is likely to find herself in places no one has ever been before."

"Insanity: doing the same thing over and over again and expecting different results."

"Once we accept our limits, we go beyond them."

"If you want to live a happy life, tie it to a goal, not to people or things."

"Only those who attempt the absurd can achieve the impossible."

"The only sure way to avoid making mistakes is to have no new ideas."

"The only source of knowledge is experience."

"A person who never made a mistake never tried anything new."

"Only a life lived for others is a life worthwhile."

"Weakness of attitude becomes weakness of character."

"Great spirits have always encountered violent opposition from mediocre minds."

"It's not that I am so smart, it's just that I stay with problems longer."

"You have to learn the rules of the game. And then you have to play better than anyone else."

"We cannot solve our problems with the same thinking we used when we created them."

"A ship is always safe at the shore – but that is NOT what it is built for."

"If you want to [live a happy life](#), tie it to a goal, not to people or things."

“Only those who attempt the absurd can achieve the impossible.”

It is better to believe than to disbelieve; in so doing you bring everything to the realm of possibility.

## PHYSICS - ITS A FACT!

SOURCE: <https://www.quora.com/What-are-some-mind-blowing-facts-about-physics>

The highest temperature ever reached on earth was 4 trillion degrees Celsius. This was in quark-gluon plasma at Brookhaven RHIC.

Prof. Seth Lloyd of MIT, a proponent of the idea that the universe is a computer, calculated that the universe can hold a maximum of  $10^{120}$  bits. This bound was calculated by considering the amount of information (entropy) that one can store in a volume before it has the properties of a black hole, whose entropy is proportional to its surface area. The second paragraph of his paper on this result has the most hilarious string of citations I have ever seen (85 in a row): <http://www.nature.com/nature/jou...>

Air near the surface of the ocean moves slower than air at higher altitudes due to friction with the water. Albatross can use the a north-south wind speed gradient to fly without flapping their wings when going east-west by moving downwind at higher altitudes to gain speed relative to ground and then moving to a lower altitude before going in their intended direction. (Fact courtesy of Prof. Allan Adams.)

The hypothetical sterile neutrino does not interact via any of the fundamental interactions in the Standard Model except gravity.

The Biot-Savart law is used in aerodynamics to calculate the velocity induced by vortex lines when induced air currents form solenoidal rings around a vortex axis that plays the role of electric current.

Water in the liquid state possesses many molecular interactions which broaden the absorption peak and allow people to eat foods like Pizza Bagels after microwaving them. In the vapor phase, isolated water molecules absorb at around 22 GHz, almost ten times the frequency of the microwave oven.

Quantum effects in the specific heat capacity of hydrogen gas were observed by Maxwell 50 years before quantum theory was developed.

A record high of 83 exoplanets were discovered in 2009 (out of around 531 total). See [List of extrasolar planets](#).

Plasma was first named "plasma" in 1928 by [Irving Langmuir](#) because it reminded him of blood plasma.

The sun fuses 620 million metric tons of hydrogen per second.

Since 1967, a second has been defined as the duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium-133 atom. In 1977, the second was lengthened by about  $1 \times 10^{-10}$  to correct for general relativistic effects above mean sea level. In 1997, the definition was refined to include the phrase, "This definition refers to a caesium atom at rest at a temperature of 0 K."

Assuming that the [Universe](#) continues to expand, it is thought that in  $10^{19}$  to  $10^{20}$  years the galaxies will evaporate. However, white dwarfs should be able to survive this process. Their subsequent lifetime is on the order of the proton lifetime, which is at least  $10^{32}$  years.

Some theories of quantum gravity propose a discrete model of time. One such model suggests the chronon as the basic quantum of time (around  $7 \times 10^{-24}$  s for an electron)

On March 1, 2010, NASA announced that the moon's northern pole contains millions of tons of water ice.

The standard value of gravitational acceleration on earth  $G$  is from an object in free fall at sea level at a latitude of 45 degrees.

"... Additionally, flammable metals with relatively low boiling points such as zinc, whose boiling point of  $907^{\circ}\text{C}$  ( $1,665^{\circ}\text{F}$ ) is about  $1,370^{\circ}\text{C}$  ( $2,500^{\circ}\text{F}$ ) below the temperature at which thermite burns, could potentially boil superheated metal violently into the air if near a thermite reaction, where it could then burst into flame as it is exposed to oxygen." [\[Wikipedia article on thermite\]](#)

[Ketchup](#) is a [thixotropic](#), meaning that that the fluid viscosity decreases over time given a constant [shear](#). In other words, fluid motion is initially difficult to start, but once flowing will continue to do so freely. (via Wikipedia)

The energy cost of sending a payload to the stars (i.e.,  $d = \text{infinity}$ ) is only 10% more than the cost of sending a payload to Saturn (i.e.,  $d = \text{around } 1.2 \text{ billion km}$ ). See [How hard is space travel, in principle?](#) for the calculation.

The approximate power of [Galileo space probe's](#) radio signal (when at [Jupiter](#)) as received on earth by a 70-meter [DSN](#) antenna is a zeptowatt ( $10^{-21}$  watts). In comparison, the power consumption of a human cell is  $10^{12}$  times greater. (via Wikipedia)

The 100 dinar Serbian banknote has Tesla on the front. Check it out! [File:100RSD front.jpg](#)

The latest abstract on my physics arxiv RSS feed describes the use of artificial neural network simulation to conclude that the temperature in Antarctica during Captain Robert F. Scott's death in 1912 was 13 degrees F higher than Scott reported. The last sentence reads, "On the basis of the mentioned evidence I concluded that the real minimum near surface air temperature data was altered by Lt. Bowers and Captain Scott to inflate and dramatize the weather conditions."

Numerical integrals used to be calculated by drawing the curve and measuring the area underneath using a planimeter. This is how Johnson originally evaluated the voltage gain integrals in his paper on Johnson shot noise (1928).

The sun radiates as a 6000 K blackbody in the optical range but can have a blackbody temperature of over  $10^6$  K at radio frequencies.

In 1999, Jaffe, Busza, and Wilczek at MIT (along with Jack Sandweiss at Yale) co-wrote a paper discussing apocalyptic situations that could arise from high energy relativistic heavy ion collisions, including miniature black holes and the production of a dangerous "strangelet" particle. The abstract ends with the sentence, "Given minimal physical assumptions the continued existence of the Moon, in the form we know it, despite billions of years of cosmic ray exposure, provides powerful empirical evidence against the possibility of dangerous strangelet production." (See <http://arxiv.org/abs/hep-ph/9910333>.)

The sun has cycles of 11, 22, 87, 210, 2300, and 6000 years. (Only the 11 and 22 year cycles are clearly observed.)

In 1996, NASA conducted an experiment with a 20,000-meter conducting tether in space. When the tether was fully deployed during this test, the orbiting tether generated a potential of 3,500 volts. This conducting single-line tether was severed after five hours of deployment. It is believed that the failure was caused by an electric arc generated by the conductive tether's movement through the Earth's magnetic field.

George Zweig, one of the physicists who proposed the quark model, originally preferred the name "ace" to "quark."

In 1997, scientists used a 16 tesla magnetic field to levitate a frog with no apparent ill effects on the frog. (The strongest continuous magnetic field yet produced in a lab is 45 teslas).

The sun is actually [yellow](#), just like everyone thinks it is.

A human being continuously radiates about 1000 watts. A nude person indoors absorbs about 900 watts. Wearing clothes reduces the outgoing heat flux, as observed by rapper Nelly in "[Hot in Herre](#)" (2002).

There is not enough mass in the universe to build a Gott time machine.

Velociraptors may have been able to run at 40 mph for short bursts.

The universe is accelerating. (According to Alan Guth when I asked, this is the most important thing one can learn from him.)

In 1912, mathematician Karl Fritof Sundman proved that there exists a series solution in powers of  $t^{1/3}$  for the 3-body problem. Unfortunately, this was after Poincare already won King Oscar II's prize for solving the problem, even though he didn't.

The coldest measured temperature (450 pK) has a peak black body emittance wavelength of 6400  $\mu\text{m}$ .

The Raman laser operates by Raman scattering of photons. When light hits a substance, it causes the atoms in the substance to vibrate sympathetically. The collision of photons with the substance causes some of the photons to gain or lose energy, resulting in a secondary light of a different wavelength. A Raman laser takes this secondary light and amplifies it by reflecting it and pumping energy into the system to emit a coherent laser beam.

Tycho Brahe lost the bridge of his nose in a duel in 1566 and was said to have pasted a replacement nose of either gold, silver, or copper to his face for the rest of his life.

The Space Pen, used by NASA astronauts since the 1970s, operates from -35 to 120 degrees Celsius and has an estimated shelf life of a century. The ink is forced out by compressed air at nearly 35 psi. ([Space Pen](#))

A subatomic particle with kinetic energy equal to a baseball traveling at 60 mph was observed in 1991. See [Oh-My-God particle](#).

The theory of doubly-special relativity predicts that the speed of light is energy-dependent. ([Doubly special relativity](#))

In 1783, geologist John Michell published a letter postulating that if "the semi-diameter of a sphere of the same density as the Sun were to exceed that of the Sun in the proportion of 500 to 1 . . . all light emitted from such a body would be made to return towards it by its own proper gravity." He suggested the idea of gravity influencing light nearly 130 years before Einstein but apparently predicted spectral shifts in the wrong direction because he thought that blue light had less energy than red.

A small herd of American bison lives on the grounds of Fermilab, a symbol of Fermilab's "connection to the American prairie." [Wikipedia]

The current record for coldest temperature ever achieved by man was set in 1999 by cooling a piece of rhodium metal to 100 picokelvin. While we're on the topic of rhodium, 1 kg of rhodium costs nearly 2x the MIT yearly tuition, making it the most precious metal.

This one deserves direct quotation. "If a spaghetti stick is uniformly bent until it fractures and ejects a third piece, then the third piece is always ejected outwards from the convex side. When the spaghetti fractures for the first time, the two remaining pieces then spring outwards, and providing there is a sufficiently weak potential fracture site on the opposite side a second fracture occurs, resulting in a third piece being ejected away from the initially convex side." (Nickalls, Oliver and Richard; "Linear Spaghetti," [NEW SCIENTIST](#), p. 52, 1995)

Air spontaneously ionizes at 2500 kV/m. Fields in lightning storm clouds are usually 10 times less.

The youngest person to receive the Nobel Prize in Physics was William L. Bragg at age 25. I wonder if he Bragged about it.

The largest pinhole camera in the world was built from an abandoned F-18 hangar in California. The resulting photograph measured 108 feet by 85 feet and was developed in an Olympic-sized swimming pool

John A. Wheeler, Feynman's mentor, believed that all electrons had the same observed mass and charge because they were all the same electron traveling backwards and forwards in time.

The sun's magnetic poles reverse every 11 years. The next reversal is in 2012.

Researchers at the University of Minnesota have experimentally verified that humans swim in syrup at the about same speed as humans swim in water. Reference:<http://it.umn.edu/news/inventing...>

Sir David Brewster, best known for being the guy who has a "magic" angle named after him ("magic" is the precise terminology used by Prof. Gedik of 8.03), also invented the sea thermometer. Most people, including myself, do not know what a sea thermometer is because nobody has written a Wikipedia article about it yet.

The Leonids meteor shower of 1833 may have reached 200,000 counts per hour in eastern North America. In Independence, Missouri, the shower was interpreted as a sign that the Mormons should leave.

1 attoparsec per microfortnight is roughly equal to 1 inch per second. (1 parsec = 3.26 light-years, atto- =  $10^{-18}$ , fortnight = 14 days)

"Tokomak" is a transliteration of the Russian word "tokamak." (Okay, it looks like the same word but it's supposed to be written in the Russian alphabet.) "Tokomak" is either short for "**toroidal chamber with magnetic coils**" or "**toroidal chamber with axial magnetic field**".

Dr. Tom Gutierrez at UC Davis wrote a Standard Model Lagrangian that basically summarizes everything that mankind has ever measured in one equation with, like, 29319393 terms. See it here: <http://nuclear.ucdavis.edu/~tgut...>

Gamma ray bursts were discovered accidentally while the US government was searching for evidence of the Soviets testing nuclear weapons in space. Their discovery was kept secret for years. (This fact courtesy of Prof. Chakrabarty.)

One (serious) explanation of sonoluminescence is that the light bursts generated by imploding bubbles in a liquid excited by sound are actually due to quantum vacuum radiation. If I'm not mistaken, this means that pistol shrimp (which produce sonoluminescent light by snapping their claws) have the impressive ability to convert virtual photons into real photons.

The radiation from the Crab Nebula (at visible wavelengths!) is actually from electrons moving in a circle of radius 2 AU with a period of 2 hours. Each flash of observable radiation, however, only lasts  $10^{-15}$  seconds.

Feynman diagrams are also called Stueckelberg diagrams.

Maxwell's original formulation of E&M contained 20 equations in 20 variables and probably didn't fit on a t-shirt.

Oliver Heaviside coined the terms admittance, conductance, impedance, and inductance in E&M theory. More obscurely, he also coined reluctance, which is defined as either magnetic resistance or what you feel before manually computing any integral that involves Coulomb's law and weirdly shaped wires.

The plot of how much time it takes a double pendulum to flip over as a function of initial angle displacements looks like this: <http://en.wikipedia.org/wiki/Fil...> (I think my grandmother used to wear a shirt that looked like this, incidentally.)

Microwaves are more efficient on frozen water than liquid water because the molecules aren't free to rotate in frozen water.

The fastest object ever made by man is the Helios 2, a spacecraft that orbited the sun with an estimated velocity of 153,800 mph at perihelion. That's 0.0002 times the speed of light.

The shortest time interval ever measured is on the order of 100 attoseconds ( $10^{-16}$  seconds). In a brilliantly non-obvious article about this in 2004, the BBC wrote, "The advance opens up the possibility of more accurate timekeeping."

Supposedly the oldest thing ever observed in the universe is a star that exploded 13 billion years ago, when the universe was 600 million years old, which is only slightly older than Harvard.

Metal detectors create magnetic fields, which induce eddy currents in metal objects, which create magnetic fields, which induce annoying beeping sounds in metal detectors.

Ferrolíquids are used for cooling in loudspeakers without extra energy input. They're less magnetic at higher temperatures, so a strong magnet placed near the heat-producing voice coil will attract cold ferrofluid more than hot ferrofluid.

Electric toothbrushes recharge without any exposed contacts. The brush unit and the charge unit each contain half of a transformer. When brought together, a varying magnetic field in one coil induces a current in the other coil, charging the battery by induction.

Homing pigeons can't navigate on Mercury because Mercury has no magnetic field. Or atmosphere. That's another reason. (Today is extra special because this fact incorporates both biology and physics, which is like half of the MIT general institute requirements.)

Physics fact of the day: There is current research in the use of nonthermal plasmas to decontaminate fresh produce.

Lightning can reach temperatures five times that of the surface of the sun.

### **1. Relativity Makes Space Travellers Younger (Kinda)**

Both velocity and gravity have an effect on the speed of time; the higher they are, the slower time passes.

Astronauts aboard the International Space Station (ISS) (who are in reduced gravity compared to people on Earth but travelling at increased speed around it) experience time more slowly, at a rate of roughly 1 second 'lost' every 747 days.

### **2. Without $E=MC^2$ GPS Would Malfunction**

The satellite navigation in your car or on your phone relies on a series of geostationary satellites to pinpoint your location, exchanging data using radio waves. Because of the theory of relativity, the speed at which the satellites' onboard clocks tick is around 38,000 nanoseconds faster than clocks on the ground. Every time data is sent to the receiving device, a calculation must be applied to correct the timings to within the required 20-30 nanosecond accuracy.

### **3. 'The Speed Of Light' Isn't Constant**



Most people will have heard about the speed of light (c. 671 million miles per hour), which according to all accepted laws of Physics is the fastest that anything can travel. In actual fact, this figure refers only to the speed of light in a vacuum. Really, light is slowed whenever it passes through something, being measured travelling as slowly as just 38 miles per hour at absolute zero (-273.15C) through ultra-cooled rubidium.

#### **4. Humanity Could Fit In A Sugar Cube**

Remember when you learned all about the basic structure of the atom – protons, neutrons, electrons? You might recall there was a lot of empty space, and you'd be right. Most of atoms is just empty space, so much so that if you gathered the entire human race together and removed the empty space of all the atoms that make them up you would be left with something no larger than a sugar cube. Incidentally...

#### **5. That Sugar Cube Would Weigh Five Billion Tons**

Why? Because all that empty space doesn't have any mass, so the sugar cube of humanity would be extremely dense. It's the same principle behind why 1kg of bricks and 1kg of feathers weighs the same, but a box of bricks is denser and has more mass than an equally-sized box of feathers.

#### **6. We Don't Know What Most Of The Universe Is**

Despite all the advances made in astrophysics in recent years, not least the discovery of various exoplanets beyond our solar system, we don't know what makes up the majority of the universe. It is possible to make reasonable estimates of the mass of the universe, except that visible matter (stars, planets, stellar objects) only accounts for 2% of that; what exactly makes up the rest – so-called 'dark matter' and 'dark energy' – remains a mystery.

#### **7. Go Fast, Gain Weight**

Our old friend relativity explains this one as well – mass and energy are equivalent, meaning that as you add energy to a moving object (i.e. increase speed) then that object's mass increases. At 'normal' speeds, this mass gain is pretty negligible, but as you approach the speed of light mass begins to increase dramatically. In case you're wondering why sprinters and cars and aeroplanes don't get heavier because of this, don't worry – the increase in mass as a result of increased speed is only temporary.

#### **8. You Could Be A Walking H-Bomb**

The First Law of Thermodynamics holds that in any situation, the total amount of energy in will equal the exact same amount of energy out. As well as meaning that you can't create energy out of nothing, this law means that you also can not destroy energy. So what happened to all the energy that came from what you put in your own body? The short answer is that most of it remains stored within your body, an average of  $7 \times 10^{18}$  joules – this amount of energy, if released all at once, would have the same power as 30 hydrogen bombs.

#### **9. You Might Already Have Read This**

According to Big Bang cosmology, the universe is constantly expanding. One school of thought suggests that this expansion must eventually not only slow down, but also go into reverse and cause a 'Big Crunch'. What would happen then is a mystery, but if there is indeed a cycle of 'bang, expansion, contraction, collapse, bang', it may well be that the universe plays out in exactly the same way. You might have been born, lived, read this article, lived some more and died in exactly the same way over and over again and not even know it.

#### **10. Another You Might Have Died Reading This**

According to the multiverse theory (yes, it's not just a Family Guy thing), there are an infinite number of universes existing parallel to one another, with each differing slightly and every possible scenario being played out in its own

universe. This would mean that in at least one universe, a freak accident meant that you were hit by a meteor and killed before finishing this sentence. In another universe, you wouldn't have even read this article in the first place, because I would have been hit by a meteor and killed before finishing writing it. For a classic 90s TV take on this theory, go look up Sliders on Youtube.