



Usability is not
random #gdc13

MACTON@INSOMNIACGAMES.COM

@MIKE_ACTON



Where do we apply usability
lessons?



Where do we apply usability lessons?

- ▶ Tools UI
- ▶ Game
- ▶ API design
- ▶everywhere!

Today's goal

- ▶ Mental model for recognizing and breaking down usability issues

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- ▶ Not even going to scratch the tip of the iceberg

Today's goal

- ▶ Mental model for recognizing and breaking down usability issues
- ▶ Not even going to scratch the tip of the iceberg
- ▶ Not a numbers talk

TL;DL



TL;DL

- ▶ The only way is to watch it live

TL;DL

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- ▶ Choice is bad

TL;DL

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- ▶ One minute is worth 12 iterations

TL;DL

- ▶ The only way is to watch it live
- ▶ Choice is bad
- ▶ Choice is good
- ▶ 20 Questions is all you ever need
- ▶ Learning curve is bad
- ▶ Learning curve is good
- ▶ One minute is worth 12 iterations
- ▶ When in doubt, be like Maya

Working definition: Usability

- ▶ Total time required to solve the specified problem at the desired level of quality.

Let's get this out of the way...



Let's get this out of the way...

- ▶ What tools do you use to measure?

Let's get this out of the way...

► What tools do you use to measure?

The only way is to
watch it live

Let's get this out of the way...

► What tools do you use to measure?

The only way is to
watch it live

To make things more usable, asking good
questions is way more valuable than better
tools.

What is usability a function of?

Context

Information
density

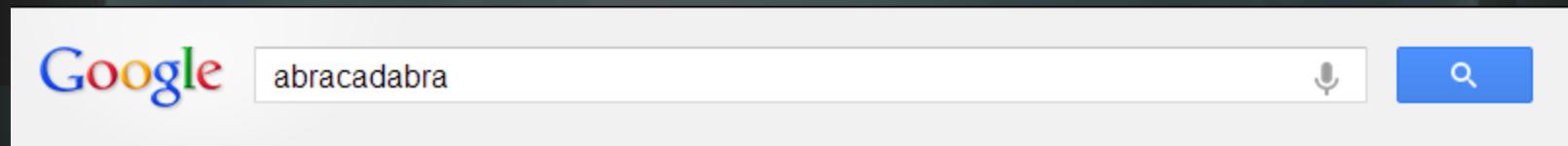
Message
creation

Message
translation

Message
response

- ▶ Let's understand each of these elements by example...

Example 1: Search



Example 1: Search

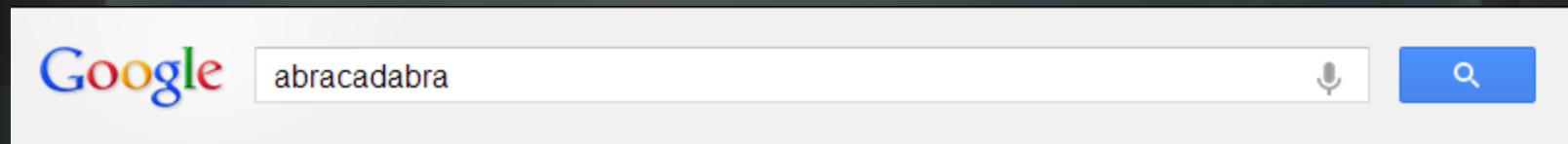
Context

Information density

Message creation

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Message response



Context is all agreed upon information.

Example 1: Search

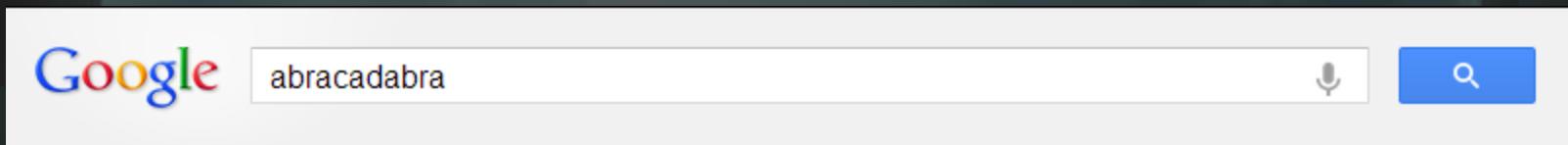
Context

Information density

Message creation

Message translation

Message response



Context is all agreed upon information.

What problem are we trying to solve?

Example 1: Search

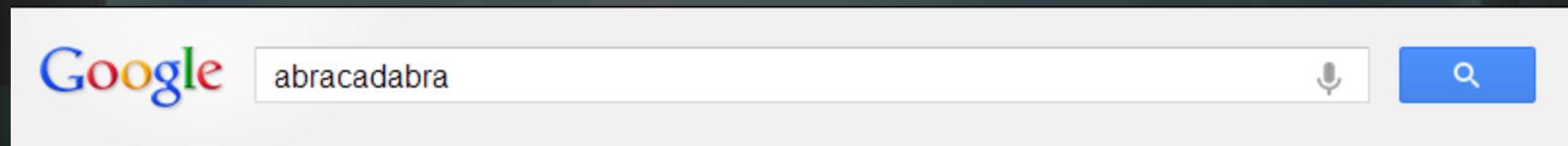
Context

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Do we agree on what we're trying to accomplish?

Example 1: Search

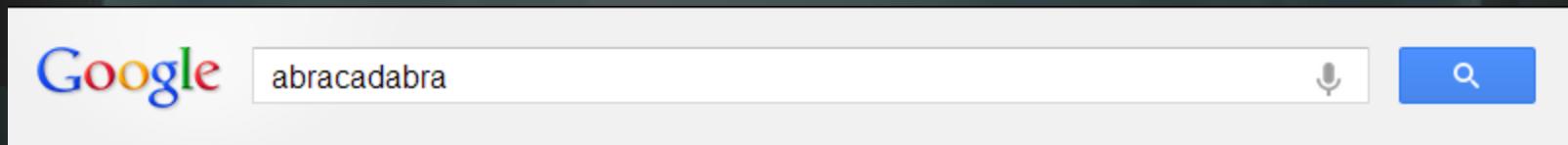
Context

Information density

Message creation

Message translation

Message response



Do we agree on what we're trying to accomplish?

Magic words?

Magic store?

Music video?

Etymology?

Example 1: Search

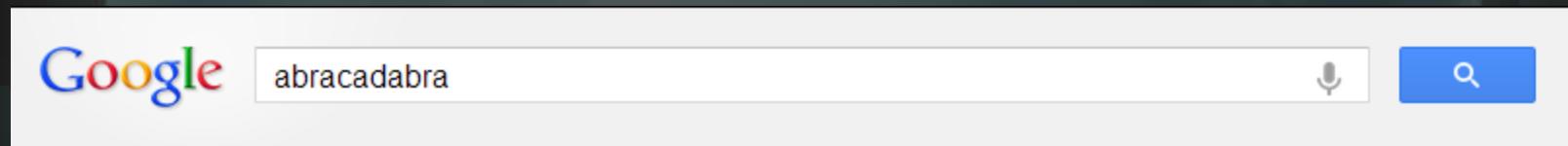
Context

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In general, an **icosahedron** is a 20-faced polyhedron (where icos- derives from the Greek word for "twenty" and -hedron ... equal to the **circumradius** of a face.

Truncated Icosahedron

The truncated icosahedron is the 32-faced Archimedean solid A_ ...

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Must visually parse the results...

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Must guess at possible answer
and click link...

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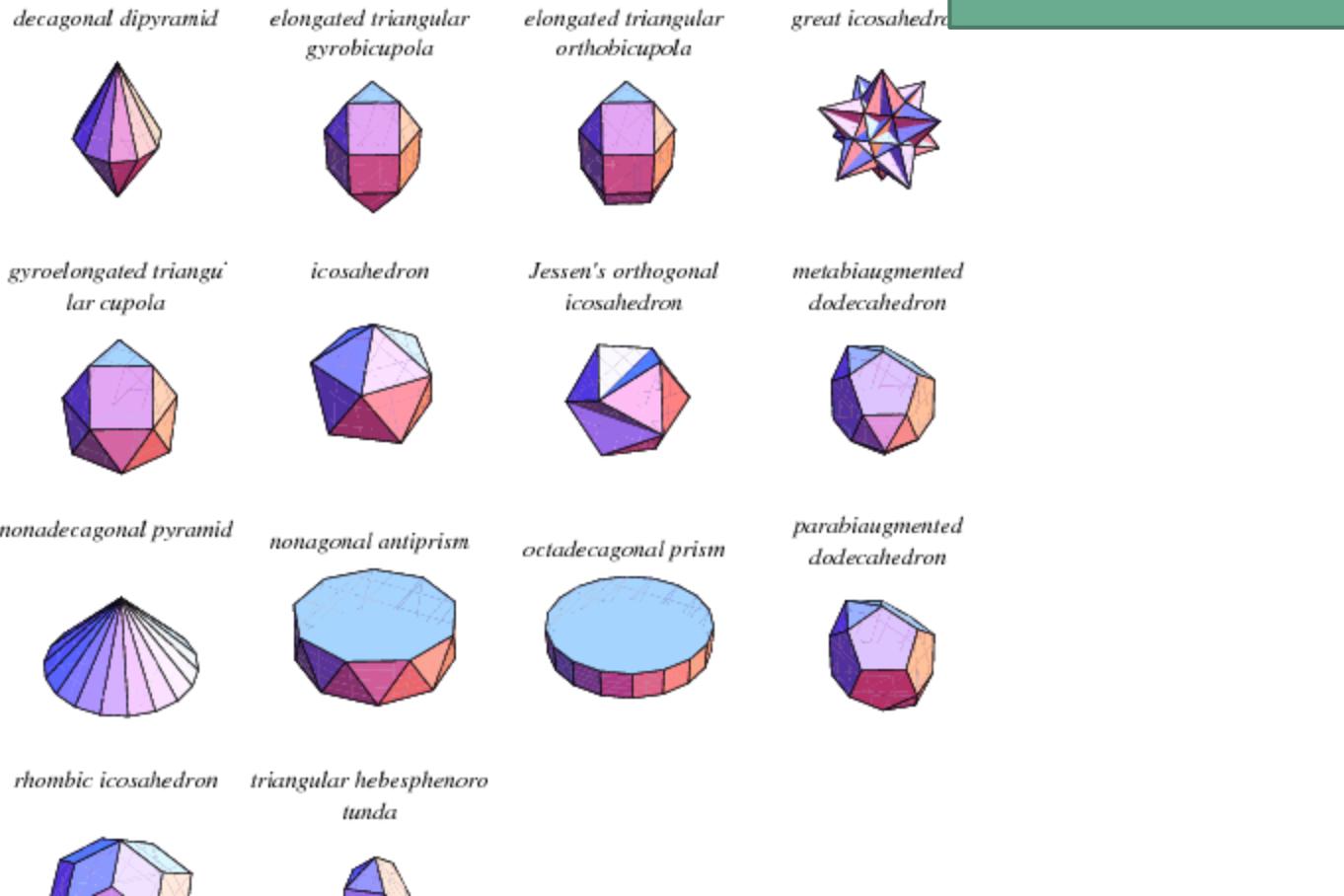
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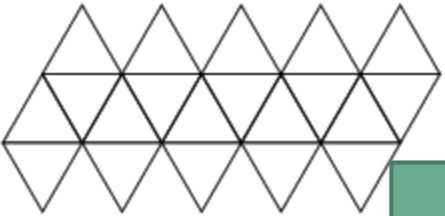
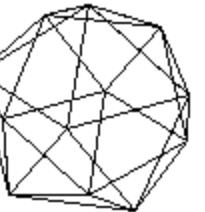
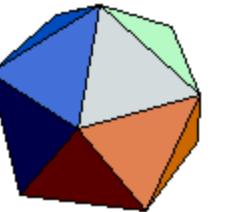
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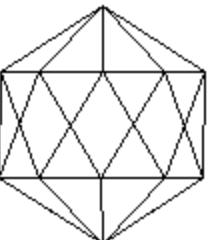
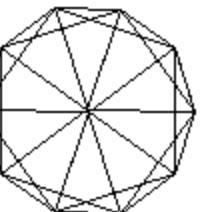
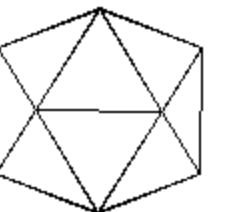


Must visually scan page for
answer...

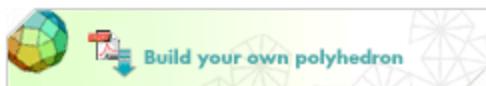
European word for "seat"). Examples illustrated above include the decagonal dipyratoid, elongated triangular gyrobicupola ([Johnson solid \$J_{36}\$](#)), elongated triangular orthobicupola (J_{35}), gyroelongated triangular cupola (J_{22}), Jessen's orthogonal icosahedron, metabiaugmented dodecahedron (J_{60}), nonagonal antiprism, parabiaugmented dodecahedron (J_{59}), 18-gonal prism, 19-gonal pyramid, [regular icosahedron](#), and [rhombic icosahedron](#).



Scroll...



"The" icosahedron (more properly called the [regular icosahedron](#)) is the [regular polyhedron](#) and [Platonic solid \$P_3\$](#) illustrated above having 12 [polyhedron vertices](#), 30 [polyhedron edges](#), and 20 equivalent equilateral triangle faces, 20 {3}.

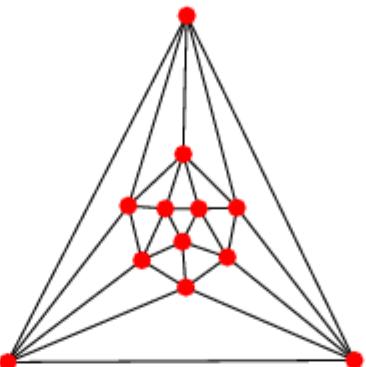


The regular icosahedron is also [uniform polyhedron \$U_{22}\$](#) and Wenninger model W_4 . It is described by the [Schläfli symbol](#) {3, 5} and [Wythoff symbol](#) 5 | 23. Coxeter et al. (1999) have shown that there are 58 [icosahedron stellations](#) (giving a total of 59 solids when the icosahedron itself is included).



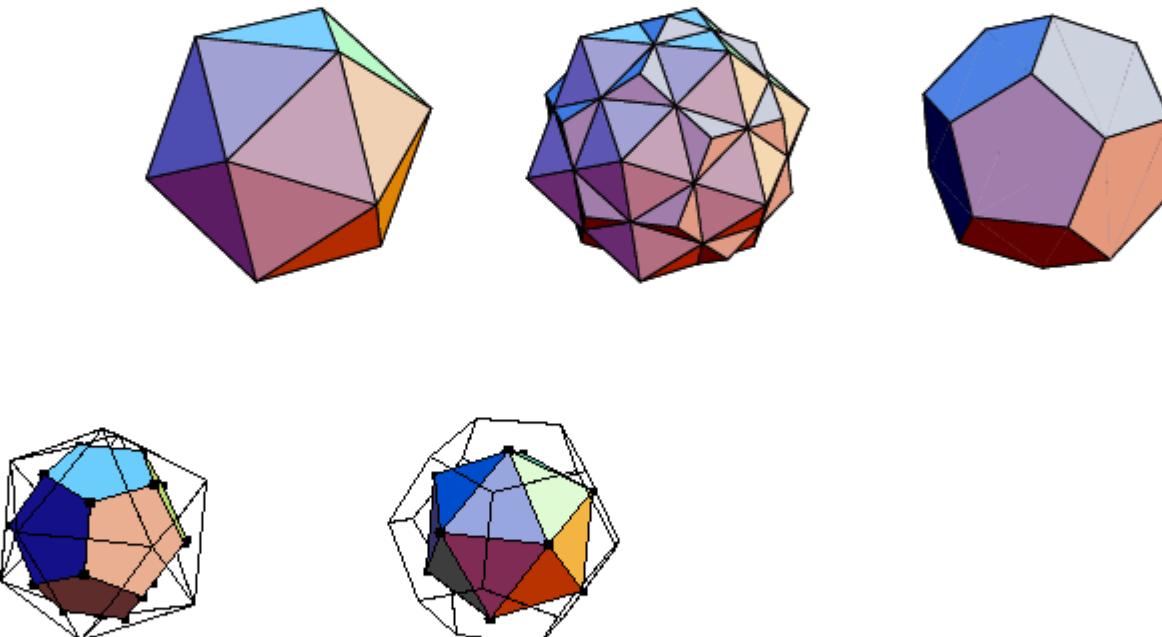
Two icosahedra appears as polyhedral "stars" in M. C. Escher's 1948 wood engraving "Stars" (Forty 2003, Plate 43).

There are 43380 distinct nets for the icosahedron, the same number as for the [dodecahedron](#) (Bouzette and Vandamme, Hippenmeyer 1979, Buekenhout and Parker 1998).

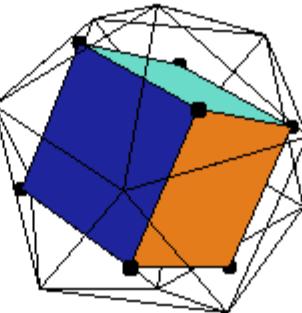


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The icosahedron has the [icosahedral group](#) I_h of symmetries. The connectivity of the vertices is given by the [icosahedron graph](#).

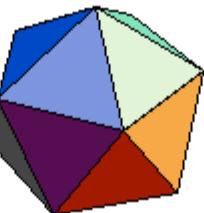
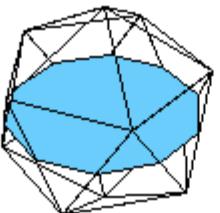


The [dual polyhedron](#) of an icosahedron with unit edge lengths is the [dodecahedron](#) with edge lengths $1/\phi$, where ϕ is the [golden ratio](#). As a result, the centers of the faces of an icosahedron form a [dodecahedron](#), and vice versa, illustrated above (Steinhaus 1999, pp. 199-201).

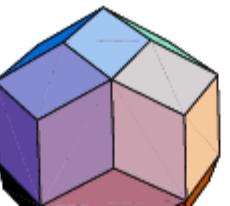


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Taken eight at a time, the centers of the faces of an icosahedron comprise the vertices of a cube. This leads to the beautiful [cube 5-compound](#) and is the basis for [Jessen's orthogonal icosahedron](#).



A plane [perpendicular](#) to a C_5 axis of an icosahedron cuts the solid in a regular [decagonal cross section](#) (Holden 1991, pp. 24-25).



$$z = \frac{1}{10} \sqrt{50 + 10\sqrt{5}} a, \quad (6)$$

which is identical to the radius of a pentagon of side a . The circumradius is then

$$R = h + \frac{1}{2} z, \quad (7)$$

where

$$h = \frac{1}{10} \sqrt{50 - 10\sqrt{5}} a \quad (8)$$

is the height of a pentagonal dipyramid. Therefore,

$$\begin{aligned} R^2 &= (h + \frac{1}{2} z)^2 \\ &= \frac{1}{8} (5 + \sqrt{5}) a^2. \end{aligned} \quad (9)$$

Taking the square root gives the circumradius

$$\begin{aligned} R &= \sqrt{\frac{1}{8} (5 + \sqrt{5}) a} \\ &= \frac{1}{4} \sqrt{10 + 2\sqrt{5}} a \\ &\approx 0.95105 a. \end{aligned}$$

The inradius is

$$r = \frac{1}{12} (3\sqrt{3} + \sqrt{15}) a \approx 0.75576 a. \quad (14)$$

The square of the midradius is

$$\rho^2 = (\frac{1}{2} z)^2 + x_l^2 = \frac{1}{8} (3 + \sqrt{5}) a^2, \quad (15)$$

so

$$\rho = \sqrt{\frac{1}{8} (3 + \sqrt{5}) a} = \frac{1}{4} (1 + \sqrt{5}) a \approx 0.80901 a. \quad (16)$$

The dihedral angle is

$$\alpha = \cos^{-1} \left(-\frac{1}{3} \sqrt{5} \right) \approx 138.19^\circ. \quad (17)$$

The area of one face is the area of an equilateral triangle

$$A = \frac{1}{2} a^2 \sqrt{3} \quad (18)$$

Eventually... if we're paying attention, get answer.

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If not... start over with another link

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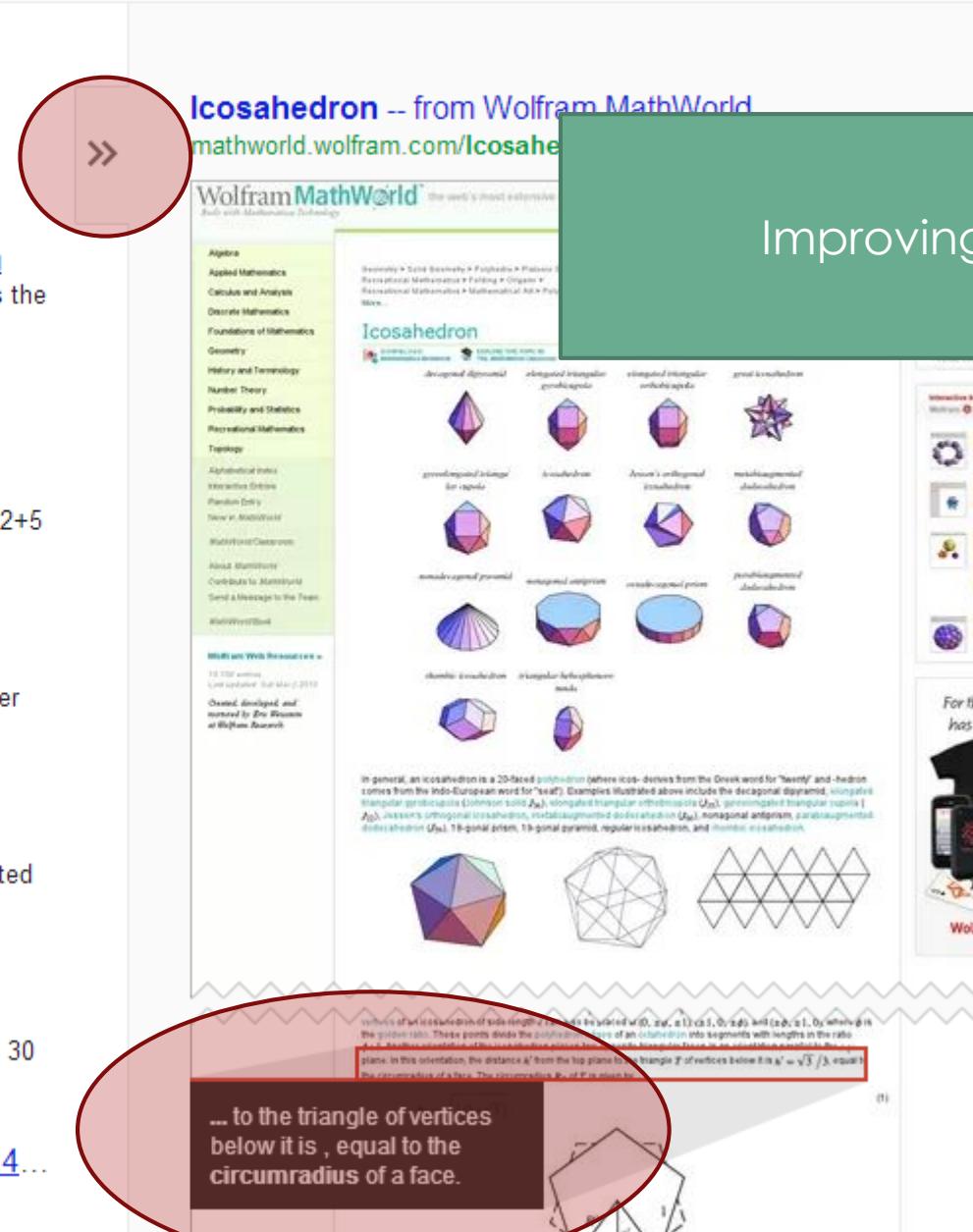
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Improving, but...

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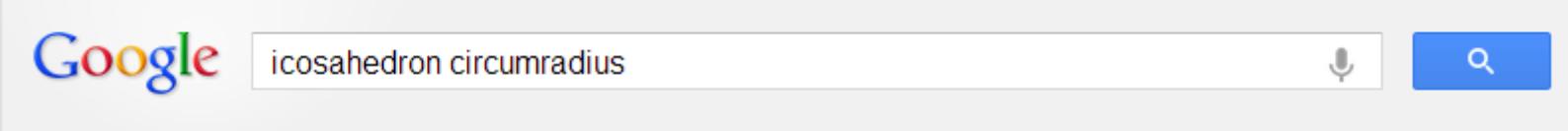
Context

Information
density

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response



What if we had *more context*?

i.e. more agreed upon information



Enter what you want to calculate or know about:

icosahedron circumradius



≡ Examples ↗ Random

e.g. “computational knowledge”

WolframAlpha

computational knowledge engine

icosahedron circumradius



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= circumradius of reg...

= midradius of regula...

= circumradius of reg...

= Platonic duals vs P...

Assuming "icosahedron" is a polyhedron | Use as a class of polyhedra instead

Input interpretation:

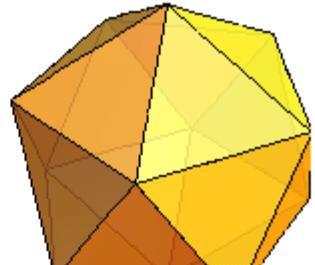
regular icosahedron circumradius

Result:

$$\frac{1}{4} \sqrt{10 + 2\sqrt{5}} \approx 0.951057$$

(assuming unit edge length)

Visual representation:

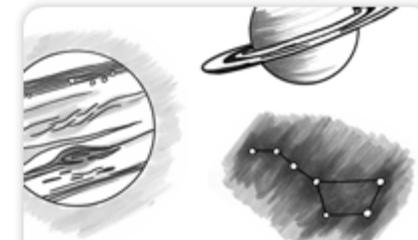


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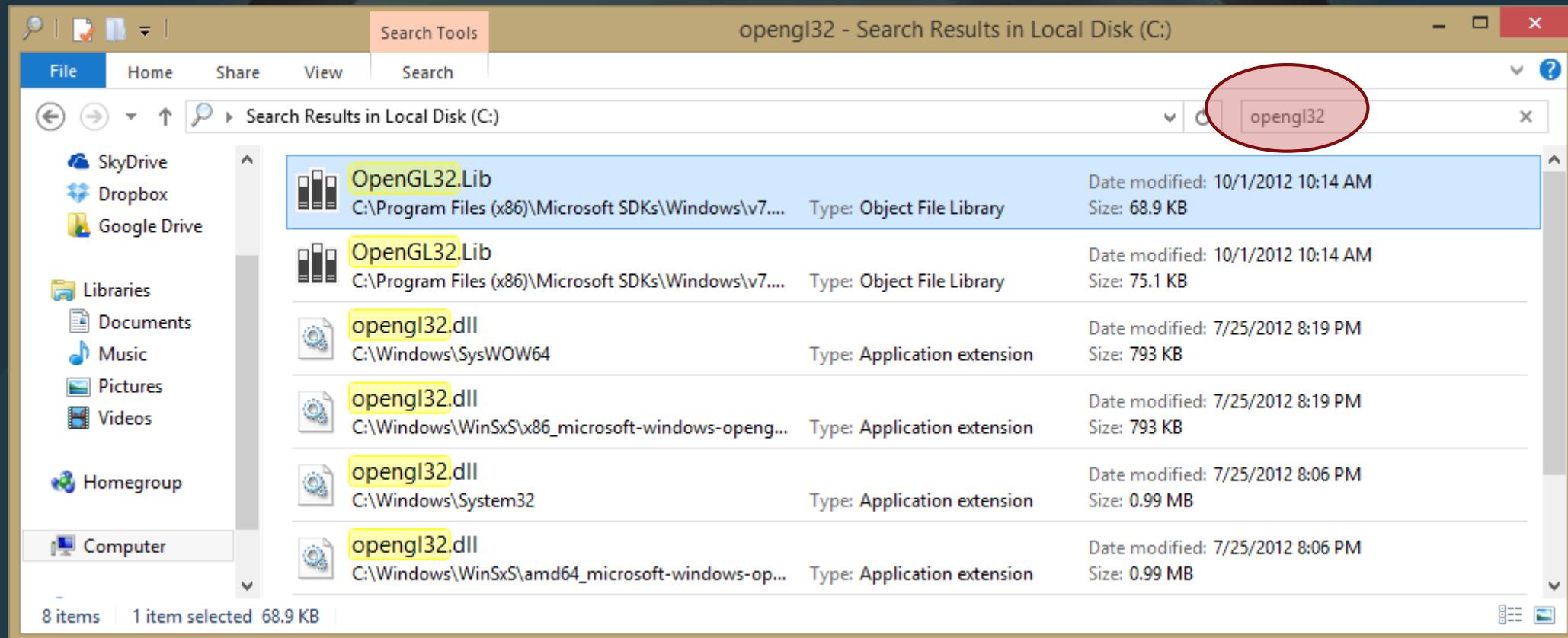


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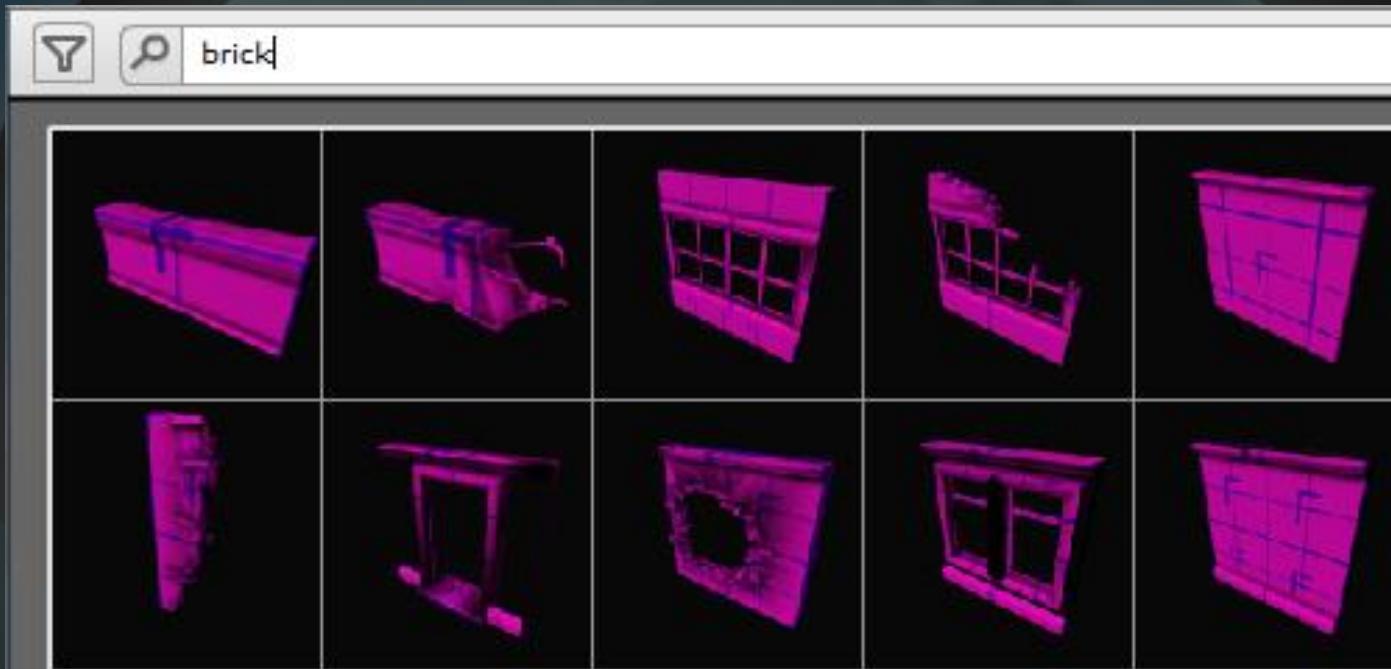


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Eric W. Weisstein - 2010 - Mathematics

...agree on more context in advance

The screenshot shows the Wolfram Alpha search results for 'icosahedron circumradius'. The page is titled 'Icosahedron' and includes a sidebar with navigation links like 'Algebra', 'Geometry', and 'Topology'. The main content area displays several 3D models of different icosahedra, such as the truncated icosahedron, small triambic icosahedron, and great icosahedron. Below the models, there is a section on stellations and a diagram of a truncated icosahedron.

... to the triangle of vertices
below it is , equal to the
circumradius of a face.



Example 1: Search

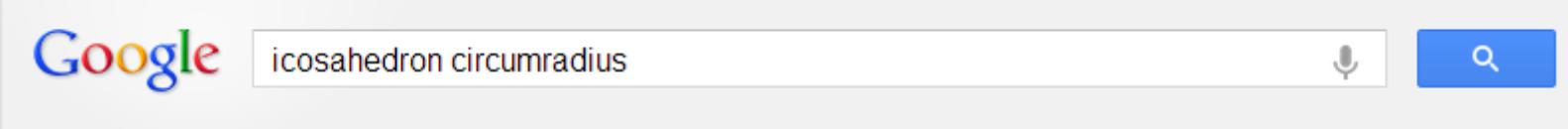
Context

Information
density

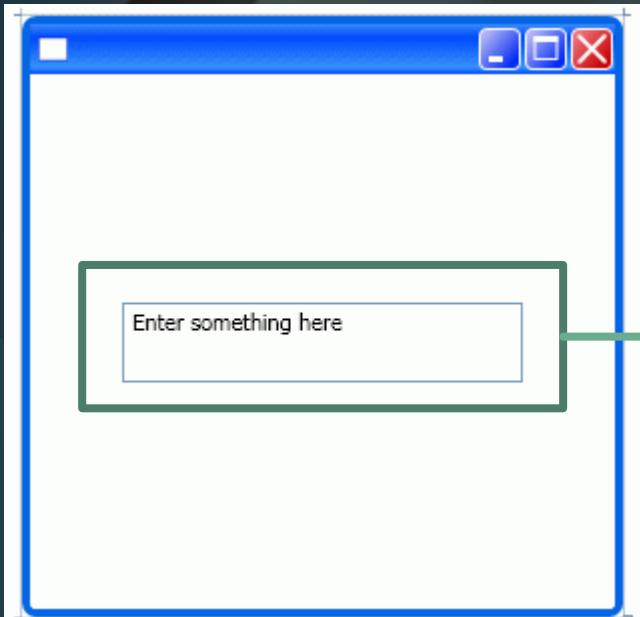
Message
creation

Message
translation

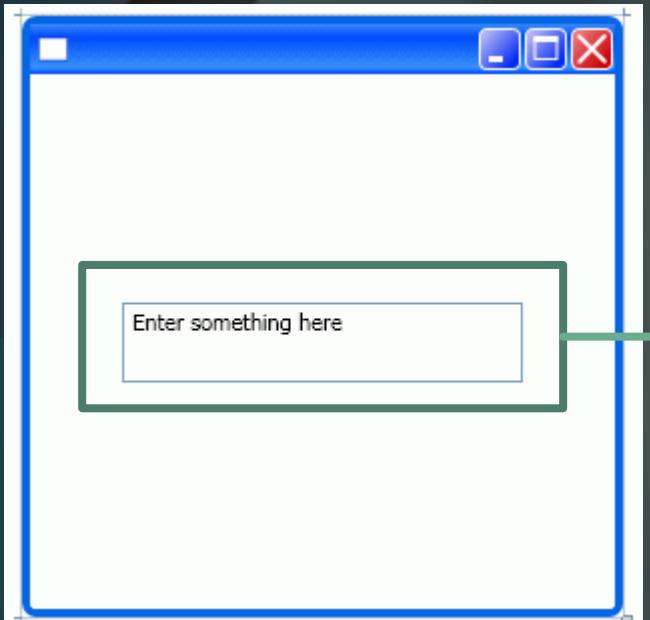
Message
response



What if we had *less* context?

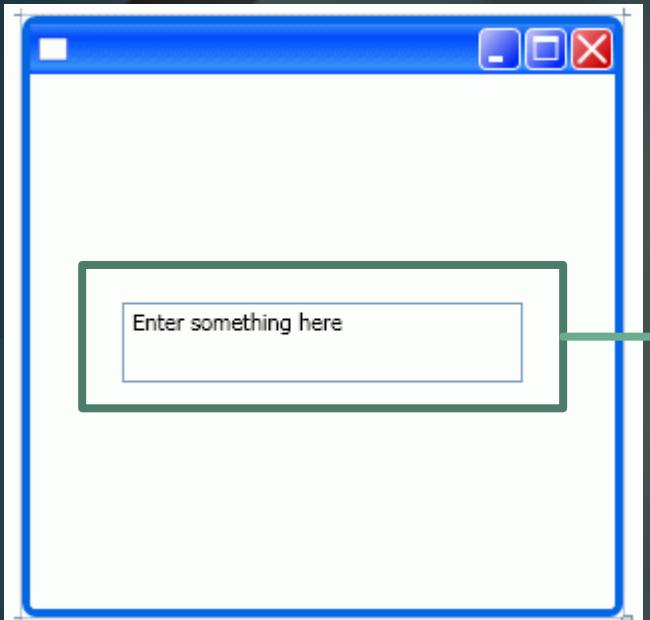


e.g. generic text entry box



e.g. generic text entry box

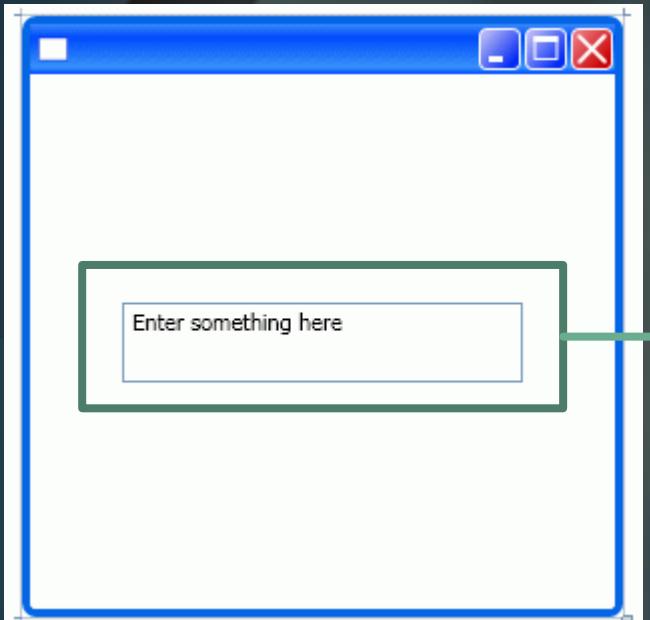
Less context = fewer constraints?



e.g. generic text entry box

Less context = fewer constraints?

How many characters?

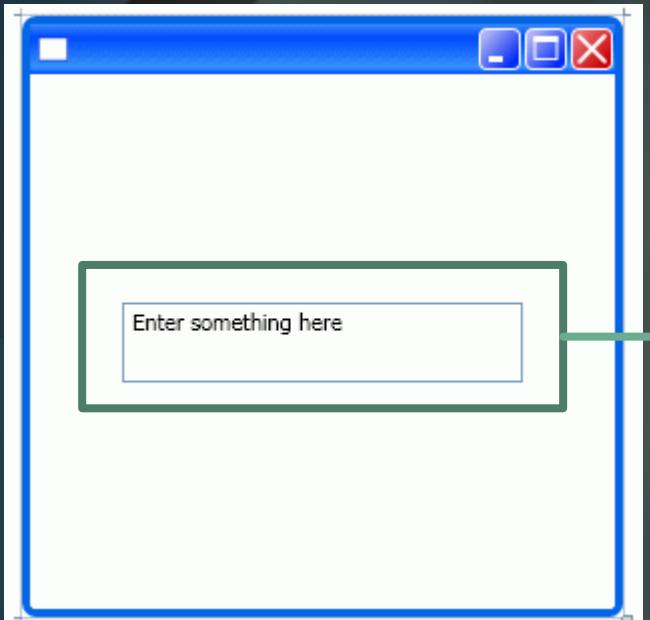


e.g. generic text entry box

Less context = fewer constraints?

How many characters?

What kind of characters?



e.g. generic text entry box

Less context = fewer constraints?

How many characters?

What kind of characters?

What do we know about the problem?

Example 1: Search

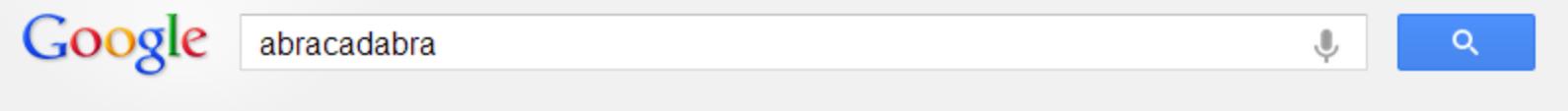
Context

Information density

Message creation

Message translation

Message response



The upper limit of usability is determined by the amount of agreed upon information we start with.



icosahedron circumradius

This is more usable...

Favorites

History

Preferences

Downloads

Uploads

Account

Related Queries

= circumradius of reg...

= midradius of regula...

= circumradius of reg...

= Platonic duals vs P...

Assuming "icosahedron" is a polyhedron | Use as a class of polyhedra instead

Input interpretation:

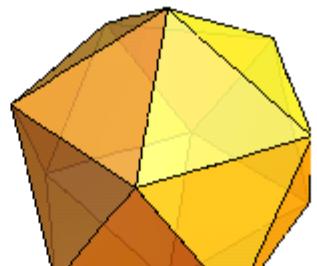
regular icosahedron circumradius

Result:

$$\frac{1}{4} \sqrt{10 + 2\sqrt{5}} \approx 0.951057$$

(assuming unit edge length)

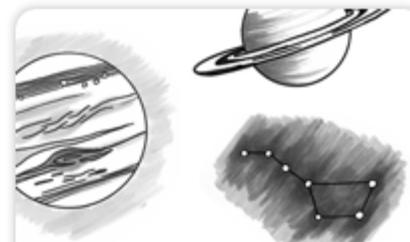
Visual representation:



Share:



Access:



Did you know
you can also use
Wolfram|Alpha for
Astronomy? >>

[Web](#) [Images](#) [Maps](#) [Shopping](#) [Books](#) [More](#) [Search tools](#)

About 9,000 results (0.35 seconds)

[Icosahedron -- from Wolfram MathWorld](#)

mathworld.wolfram.com/Icosahedron.html

In general, an **icosahedron** is a 20-faced polyhedron (where icos- derives from the Greek word for "twenty" and -hedron ... equal to the **circumradius** of a face.

[Truncated Icosahedron](#)

The truncated icosahedron is the 32-faced Archimedean solid A_ ...

[More results from wolfram.com »](#)

[Small Triambic Icosahedron](#)

The small triambic icosahedron is the dual polyhedron of the small ...

...than this...

[great icosahedron circumradius - Wolfram|Alpha Results](#)

m.wolframalpha.com/input/?...icosahedron+circumradius...Gre...

Input interpretation: great icosahedron | circumradius. Result: root of 16 x^4-20 x^2+5 near x = Visual representation: Alternate form: $1/\sqrt{2} \sqrt{1/\sqrt{2} (5-\sqrt{5})}$...

[Talk:Icosahedron - Wikipedia, the free encyclopedia](#)

en.wikipedia.org/wiki/Talk%3AIicosahedron

The stellations of the **icosahedron** are described in University of Toronto ... is greater than (volume of icosahedron with circumradius R)/(volume of sphere with ...

[The Truncated Icosahedron | polyhedra.mathmos.net](#)

polyhedra.mathmos.net/entry/truncatedicosahedron.html

The truncated **icosahedron** is one of the thirteen archimedean solids. It can be created by slicing suitable sections off the ... Circum-Radius, = root (58 - 18 root 5) ...

[The Icosahedron - Whistler Alley](#)

whistleralley.com/polyhedra/icosahedron.htm

Nov 2, 2011 – The **icosahedron** has 20 equilateral triangular faces, 12 vertices, and 30 ... Use it to find the inradius and **circumradius** of the icosahedron.



Enter what you want to calculate or know about:

icosahedron circumradius



≡ Examples ↗ Random

...but only if we agree beforehand that we're searching for “computational knowledge”

Example 1: Search

Context

Information density

Message creation

Message translation

Message response



The upper limit of usability is determined by the amount of agreed upon information we start with.

Example 1: Search

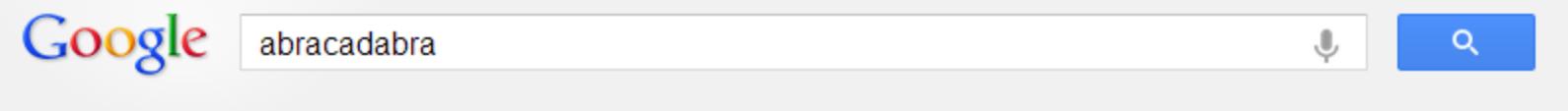
Context

Information density

Message creation

Message translation

Message response



The upper limit of usability is determined by the amount of agreed upon information we start with.

i.e. More constraints = More (potentially) usable

Example 1: Search

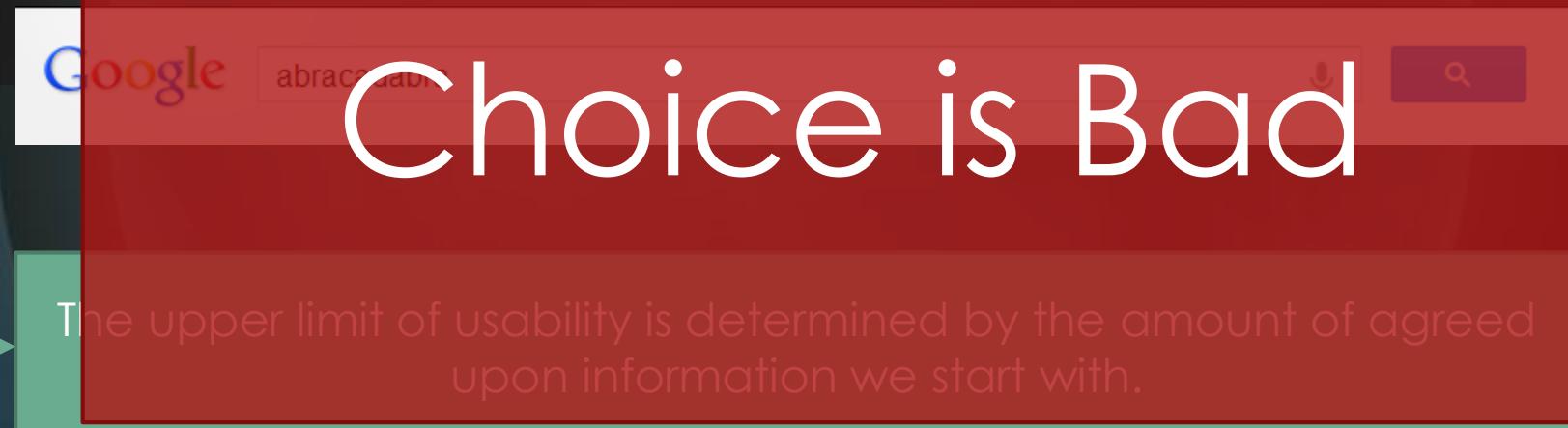
Context

Information density

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i.e. More constraints = More (potentially) usable

Example 1: Search

Context

Information density

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Message response

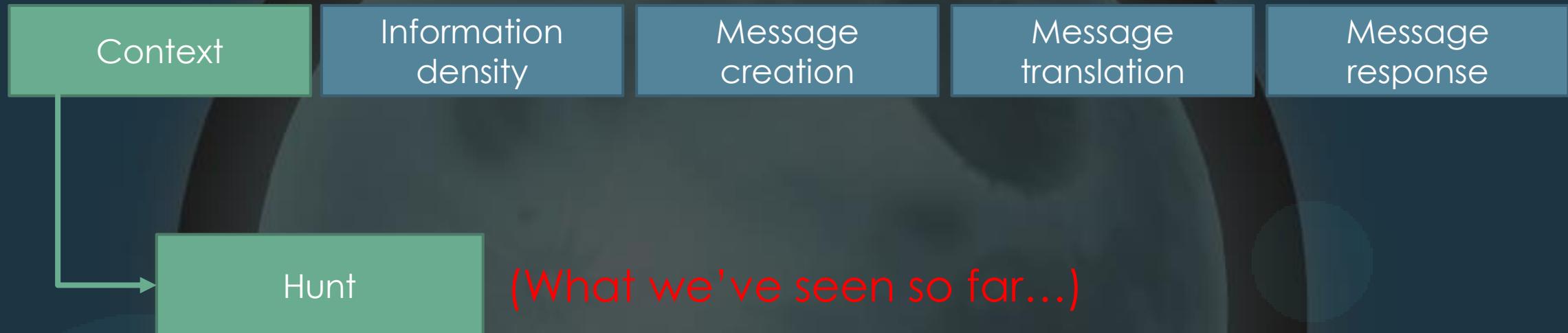


To make things more usable, solve more specific, not more generic, problem.

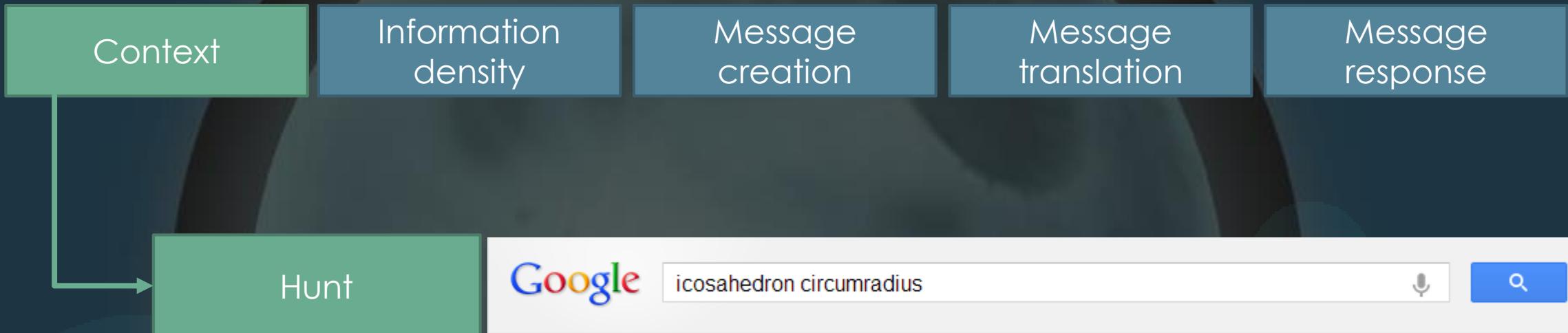
Choice is Bad

- ▶ How do you measure it?
- ▶ How do you know when to stop?

Example 1: Search

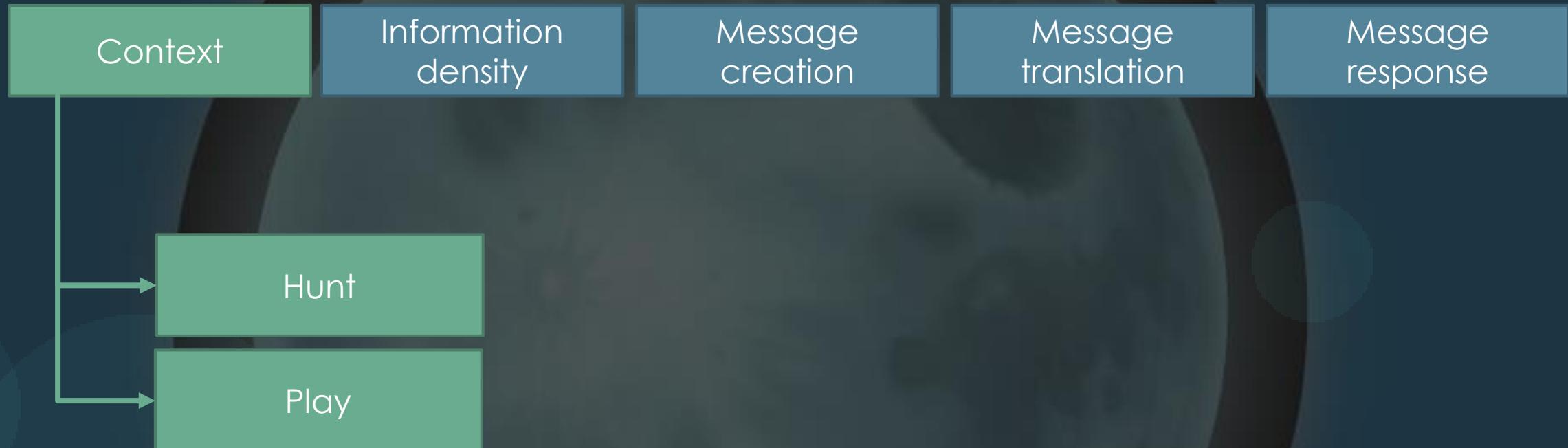


Example 1: Search

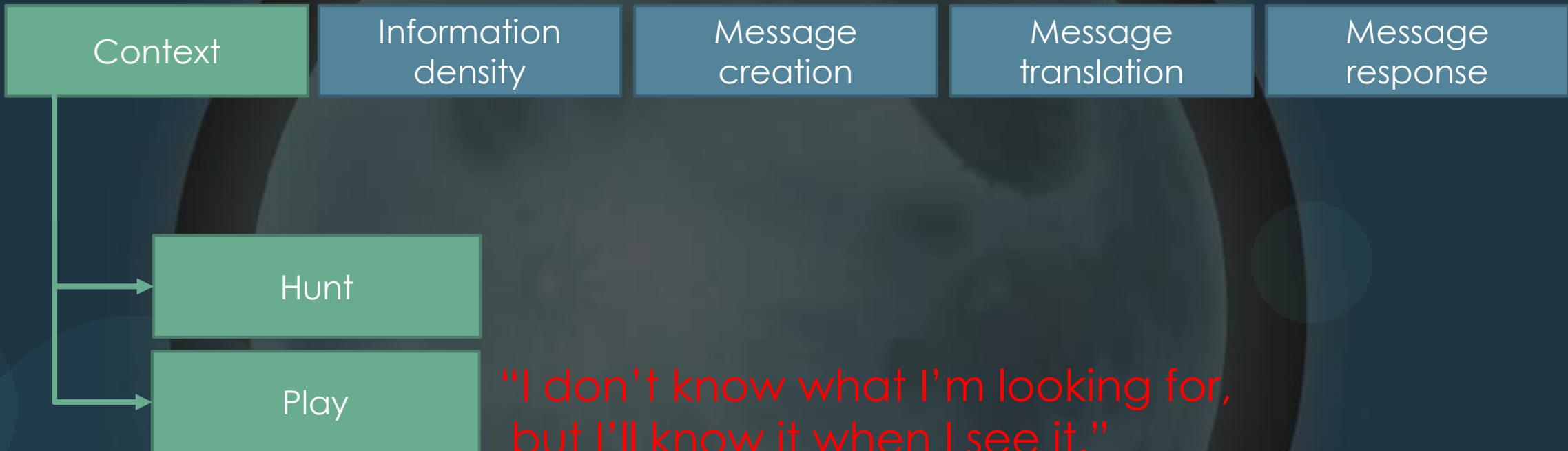


(Know what the end result is...)

Example 1: Search

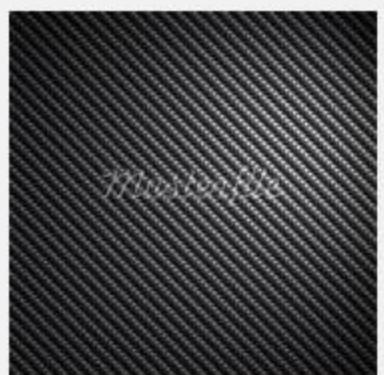
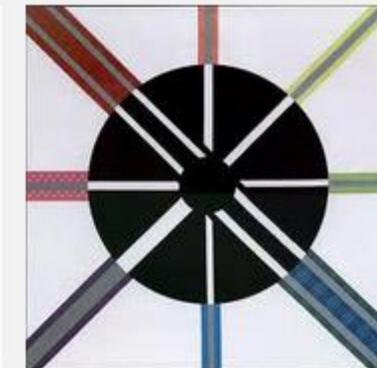


Example 1: Search

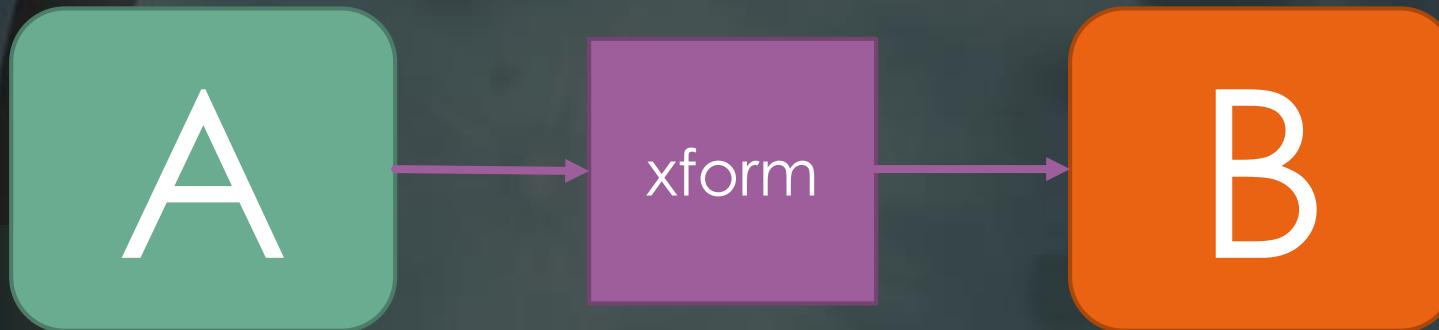


(Play)

i.e. Iteration, Inspiration, Creative, ...

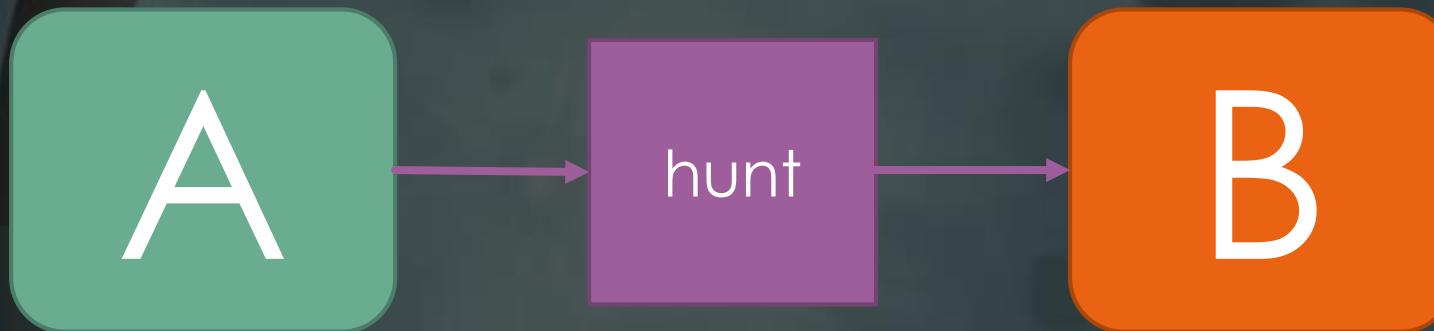


In other words, (hunt vs. play)



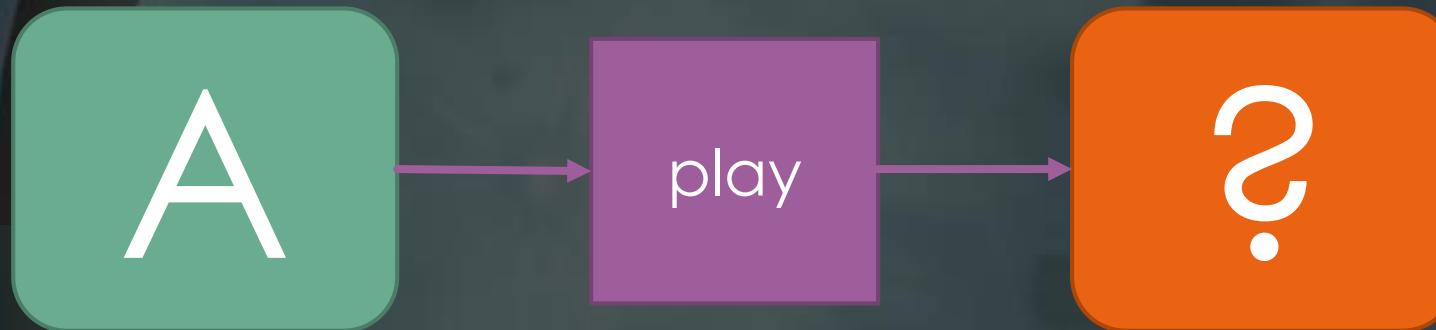
- ▶ The only purpose of any program is to transform some data from one form (A) into another form (B)

In other words, (hunt vs. play)



► When you know what (B) is

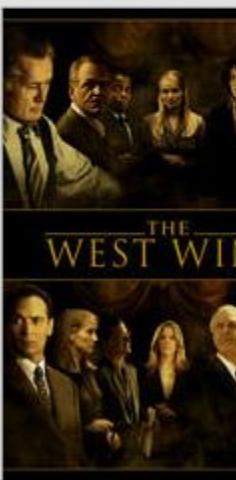
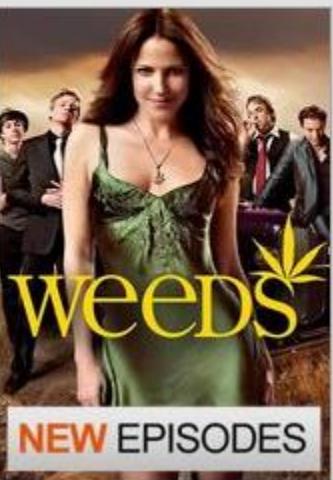
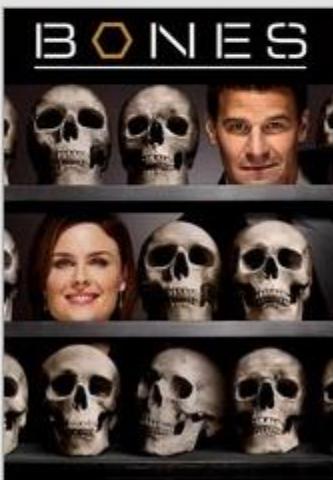
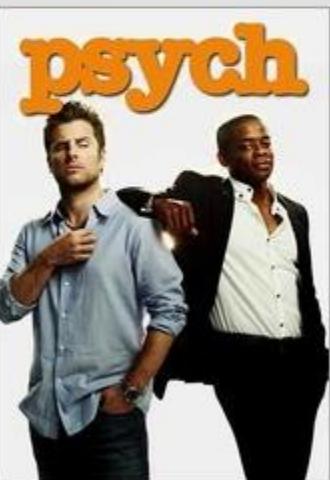
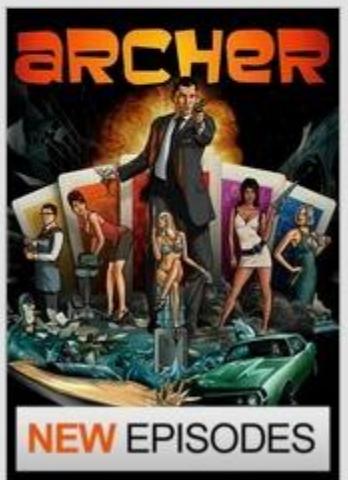
In other words, (hunt vs. play)



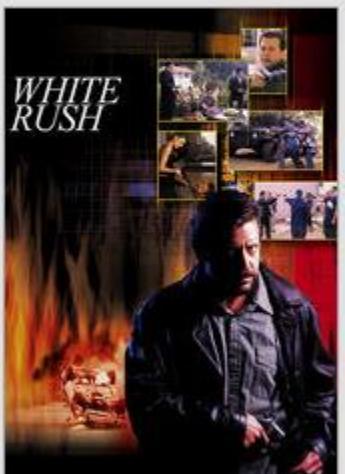
► When you don't

[Watch Instantly ▾](#)[Just for Kids ▾](#)[Instant Queue](#)[Taste Profile ▾](#)[DVDs](#)

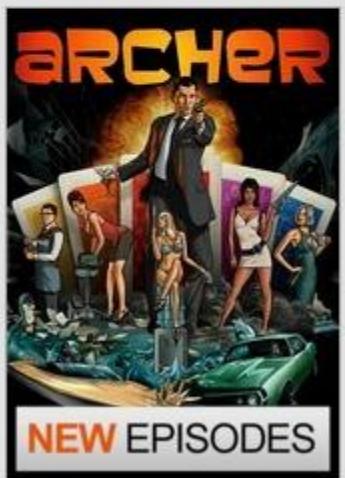
Netflix



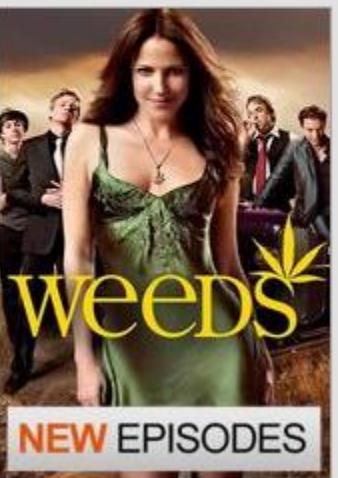
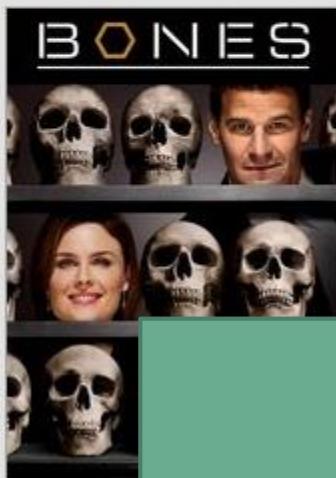
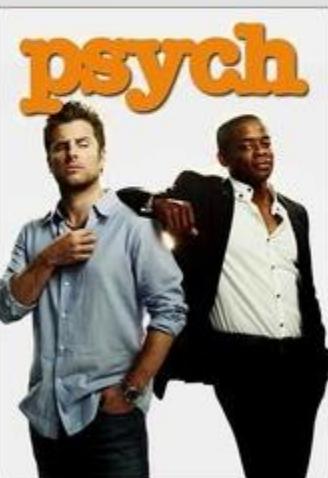
Spicy & Suspenseful Revenge Action & Adventure



Netflix



NEW EPISODES

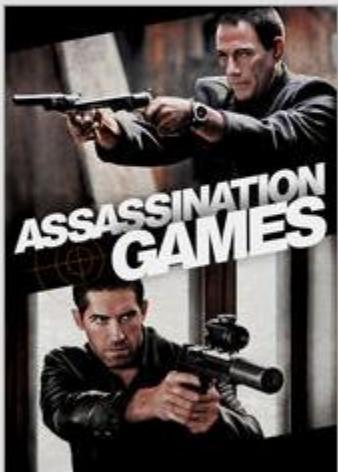
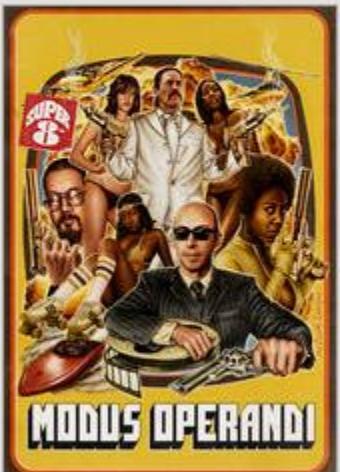
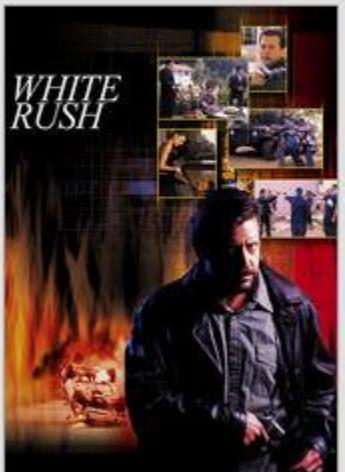


NEW EPISODES



(Play)
Many choices, quickly...

Explosive Revenge Action & Adventure



Best For Today

Browse Recommended

Recommendations

Books

Arts & Photography

Audible Audiobooks

Bargain Books

Biographies & Memoirs

Books on CD

Business & Investing

Calendars

Children's Books

Christian Books & Bibles

Economics & Graphic Novels

Computers & Technology

Cookbooks, Food & Wine

Crafts, Hobbies & Home

Education & Reference

Gay & Lesbian

Health, Fitness & Dieting

History

Humor & Entertainment

Large Print

Law

Libros en español

Literature & Fiction

Medical Books

Mystery, Thriller & Suspense

Parenting & Relationships

Politics & Social Sciences

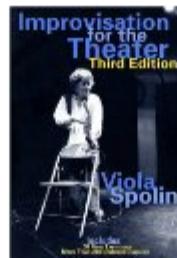
Professional & Technical

Religion & Spirituality

These recommendations are based on items you own and more.
We also have Books on Kindle recommendations for you.

view: All | New Releases | Coming Soon

16.



[Improvisation for the Theater 3E: A Handbook of Teaching and Directing Techniques \(Drama and Performance Studies\)](#)

by Viola Spolin (July 28, 1999)

Average Customer Review: ★★★★★ (21)

In Stock

List Price: \$22.95

Price: \$15.61

116 used & new from \$6.62

Add to Cart

Add to Wish List

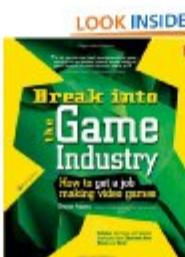
I own it

Not interested

Rate this item

Recommended because you purchased [The Viewpoints Book](#) (Fix this)

17.



[Break Into The Game Industry: How to Get A Job Making Video Games](#)

by Ernest Adams (May 19, 2003)

Average Customer Review: ★★★★★ (12)

In Stock

List Price: \$30.00

Price: \$15.01

87 used & new from \$1.49

Add to Cart

Add to Wish List

I own it

Not interested

Rate this item

Recommended because you purchased [Breaking Into the Game Industry](#) (Fix this)

18.



[Nausicaä of the Valley of the Wind Box Set](#)

by Hayao Miyazaki (November 6, 2012)

Average Customer Review: ★★★★★ (26)

Available from [these sellers](#).

12 used & new from \$134.99

See all buying options

Add to Wish List

I own it

Not interested

Rate this item

Recommended because you purchased [The Art of Osamu Tezuka: God of Manga](#) (Fix this)

Best For Today

Browse Recommended

Recommendations

Books

Arts & Photography

Audible Audiobooks

Bargain Books

Biographies & Memoirs

Books on CD

Business & Investing

Calendars

Children's Books

Christian Books & Bibles

Economics & Graphic Novels

Computers & Technology

Cookbooks, Food & Wine

Crafts, Hobbies & Home

Education & Reference

Gay & Lesbian

Health, Fitness & Dieting

History

Humor & Entertainment

Large Print

Law

Latin American & Spanish Editions

Literature & Fiction

Medical Books

Mystery, Thriller & Suspense

Parenting & Relationships

Politics & Social Sciences

Professional & Technical

Religion & Spirituality

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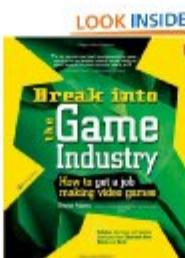
I own it

Not interested

★★★★★ Rate this item

Recommended because you purchased The Vanishing Girl

17.



[Break Into The Game Industry](#)

by Ernest Adams (May 1, 2007)

Average Customer Review: ★★★★★ (1)

In Stock

List Price: \$30.00

Price: \$15.01

87 used & new from \$1.49

Add to Cart

Add to Wish List

I own it

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★★★★★ Rate this item

Recommended because you purchased Breaking Into the Game Industry (Fix this)

18.



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12 used & new from \$134.99

See all buying options

Add to Wish List

I own it

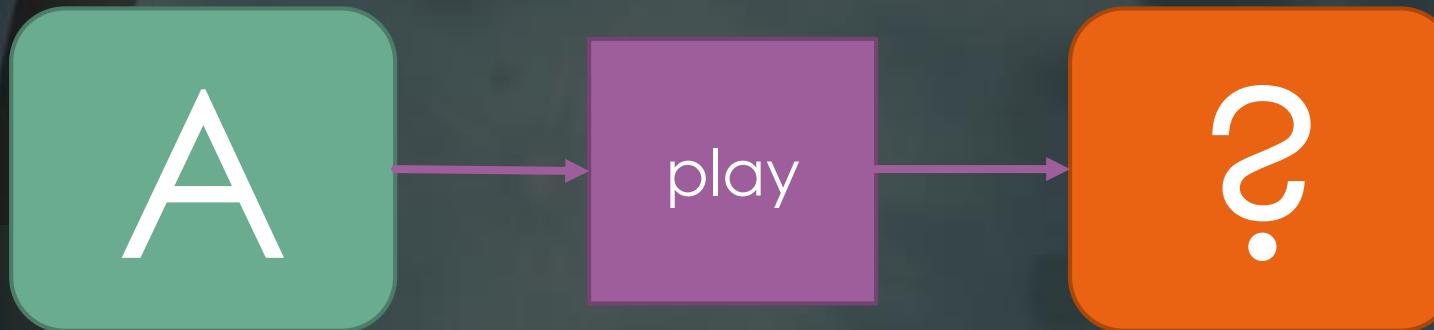
Not interested

★★★★★ Rate this item

Recommended because you purchased The Art of Osamu Tezuka: God of Manga (Fix this)

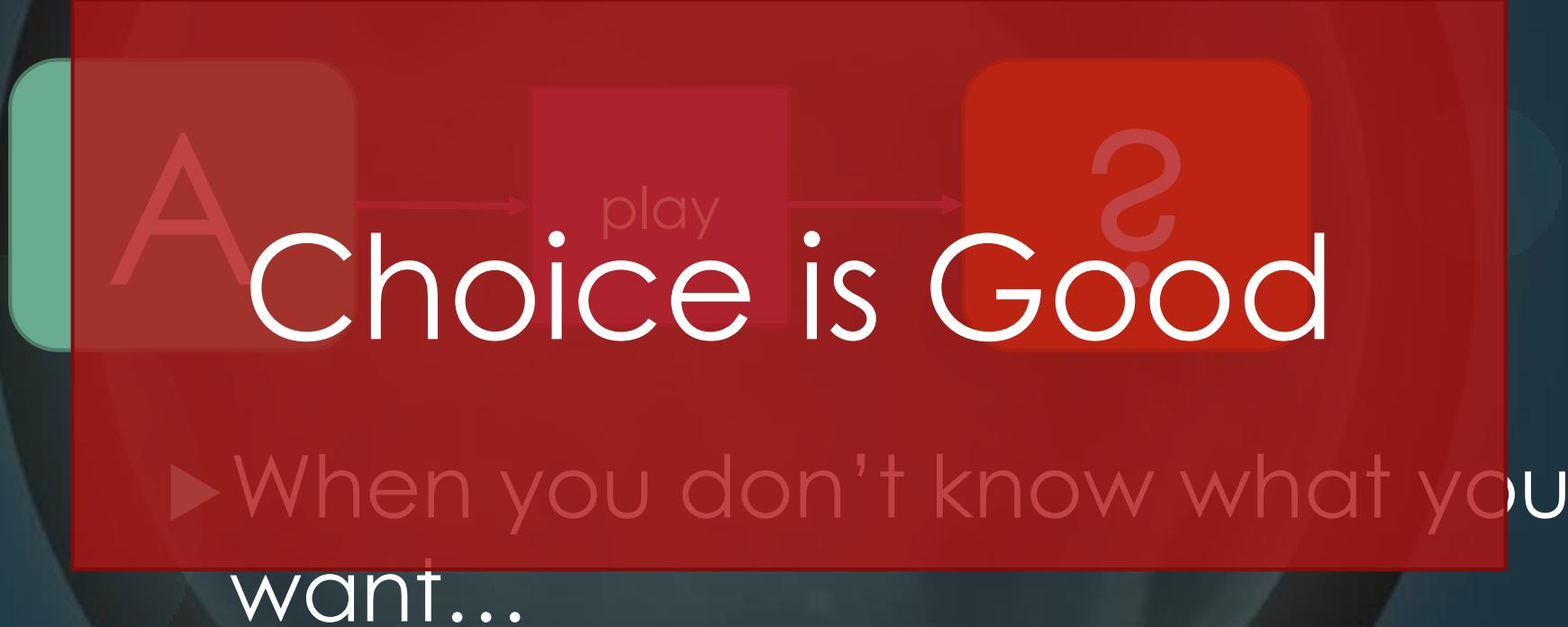
(Play)
Recommend more choices,
quickly...

In other words, (hunt vs. play)



- ▶ When you don't know what you want...

In other words, (hunt vs. play)



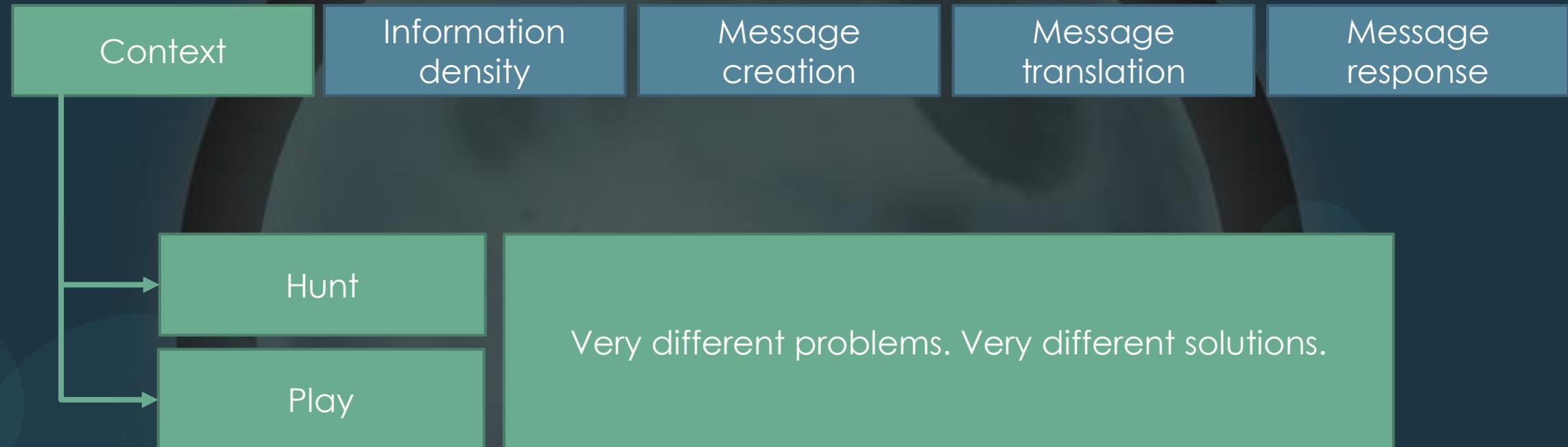
In other words, (hunt vs. play)



Choice is Good

- ▶ How do you measure it?
- ▶ How do you know what to show?

Example 1: Search



Example 1: Search

Context

Information
density

Message
creation

Message
translation

Message
response

Example 1: Search

Context

Information
density

Message
creation

Message
translation

Message
response



Amount of the problem that can be solved with any particular message.

Example 1: Search

Context

Information
density

Message
creation

Message
translation

Message
response



Amount of the problem that can be solved with any particular message.

Message = data associated with each step of a process



Start search



Start search

Visually parse the results...



Start search

Visually parse the results...

Guess at possible answer and
click link...

Start search

Visually parse the results...

Guess at possible answer and
click link...

Scan page for answer...

Start search

Visually parse the results...

Guess at possible answer and
click link...

Scan page for answer...

Scroll...

Start search

Visually parse the results...

Guess at possible answer and
click link...

Scan page for answer...

Scroll...

Found result?

Start search

Visually parse the results...

Guess at possible answer and
click link...

Scan page for answer...

Scroll...

Found result?

No

Start search

Search text

Visually parse the results...

Guess at possible answer and
click link...

Scan page for answer...

Scroll...

Found result?

No

Start search

Search text

List of possibilities

Visually parse the results...

Guess at possible answer and
click link...

Scan page for answer...

Scroll...

Found result?

No

Start search

Search text

List of possibilities

Visually parse the results...

Mouse scroll,
page click

Guess at possible answer and
click link...

Scan page for answer...

Scroll...

Found result?

No

Start search

Search text

List of possibilities

Visually parse the results...

Mouse scroll,
page click

List more possibilities

Guess at possible answer and
click link...

Scan page for answer...

Scroll...

Found result?

No

Start search

Search text

List of possibilities

Visually parse the results...

Mouse scroll,
page click

List more possibilities

Guess at possible answer and
click link...

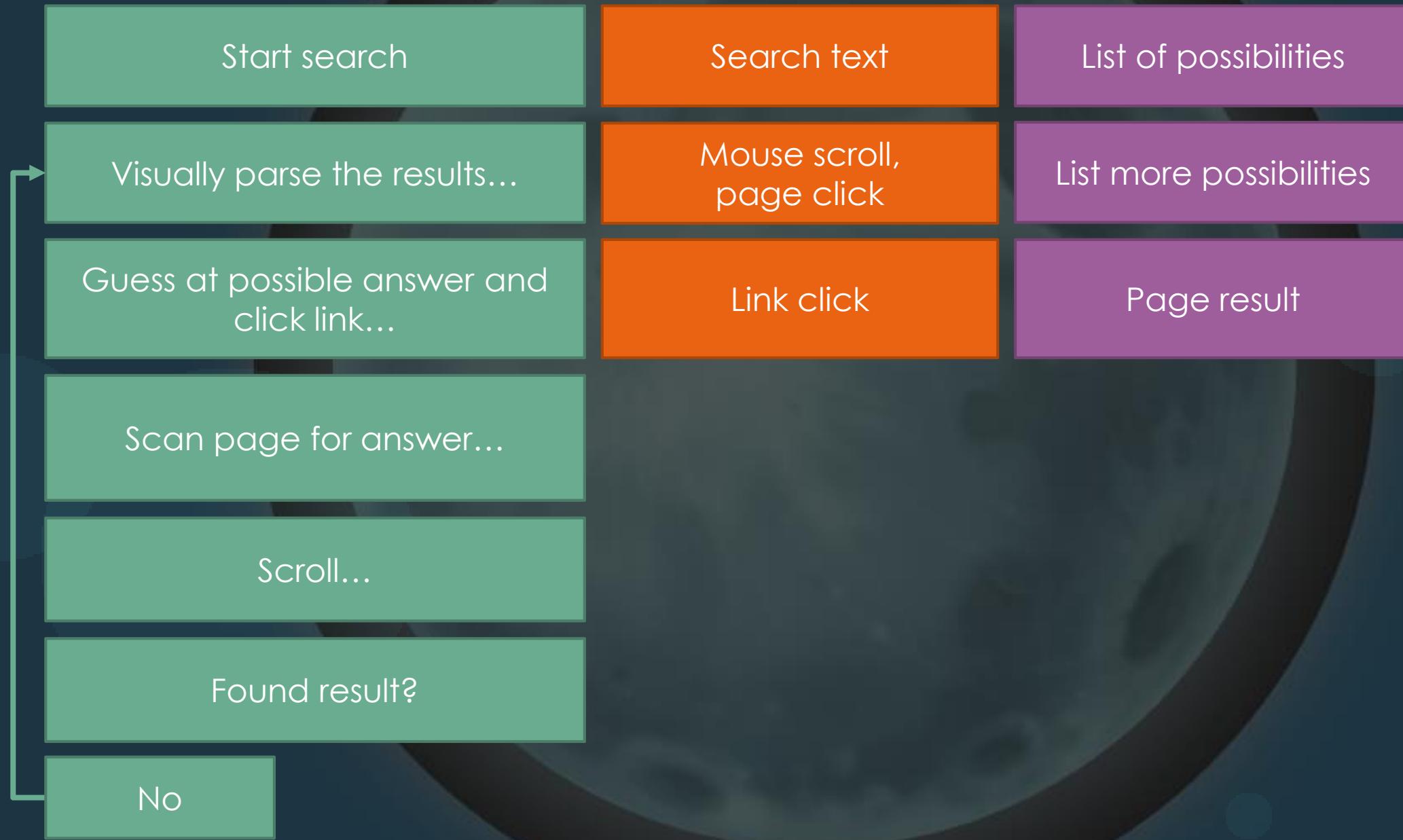
Link click

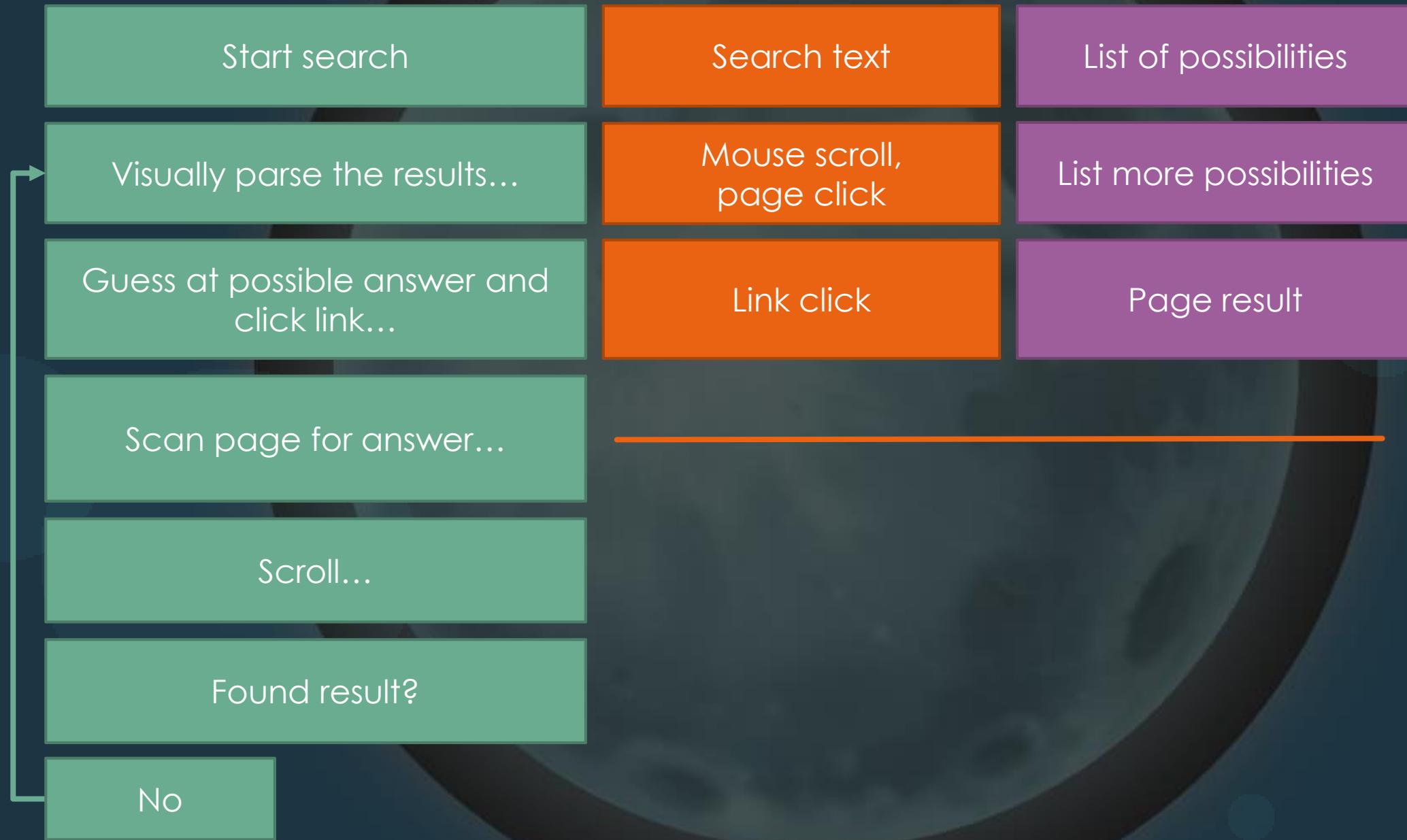
Scan page for answer...

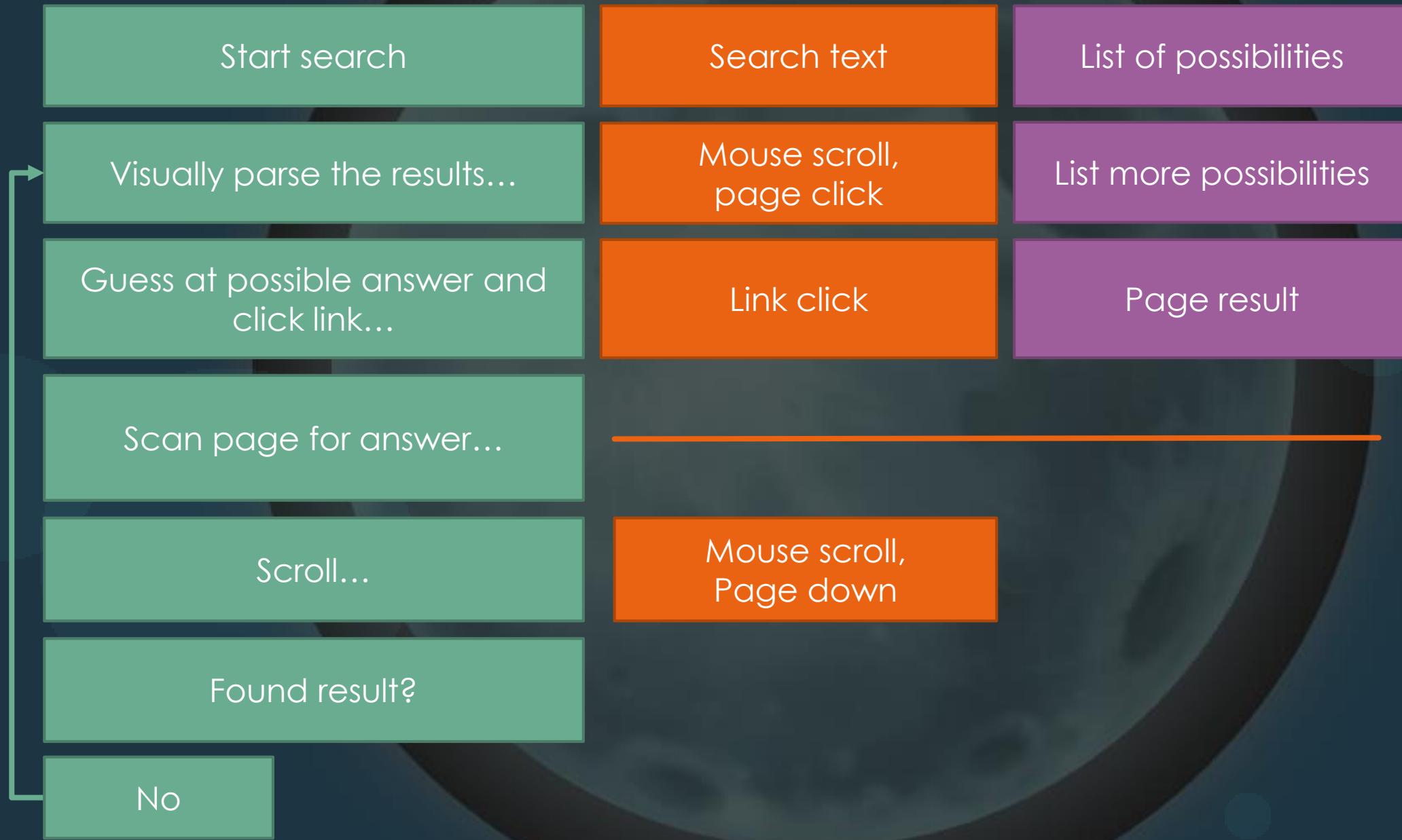
Scroll...

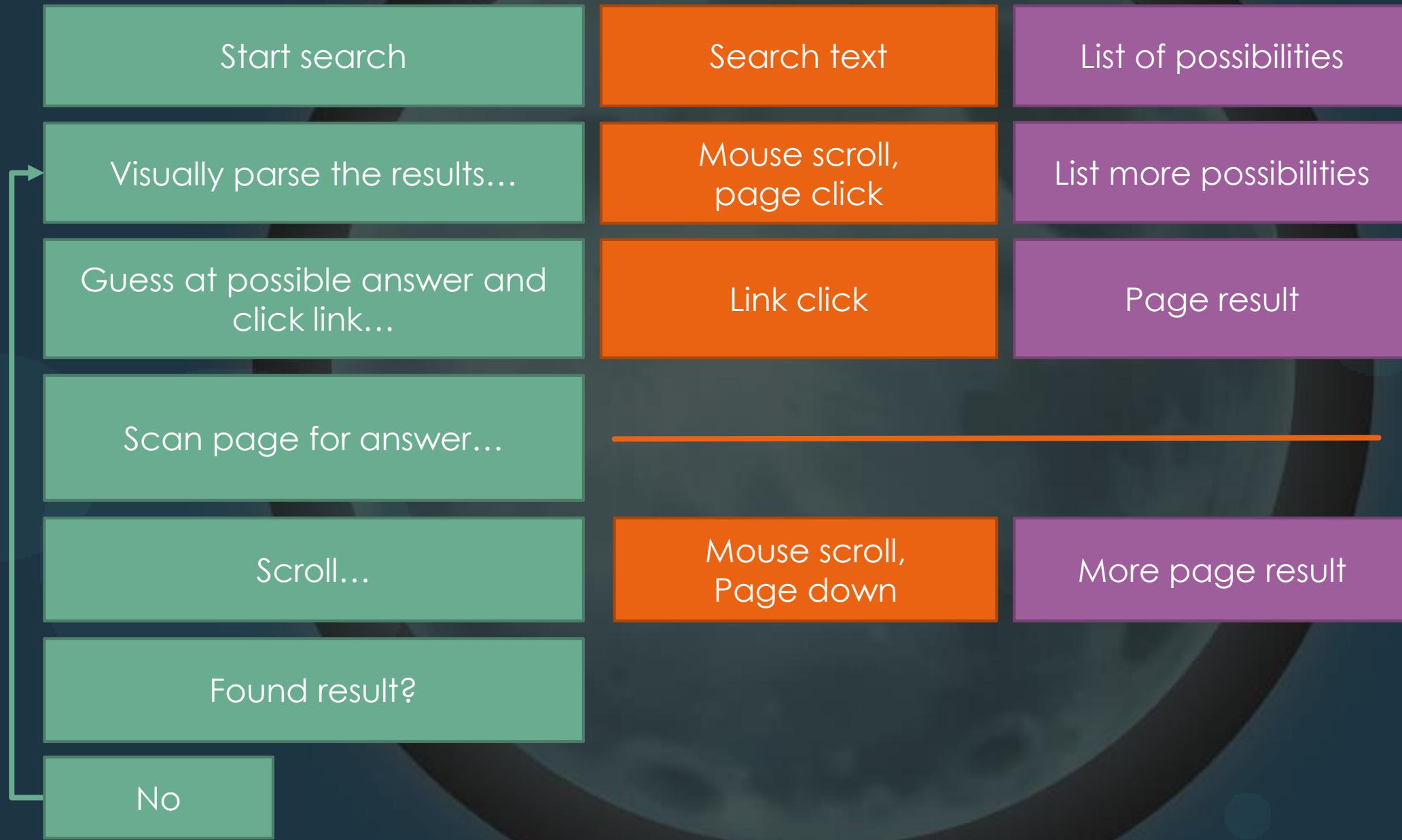
Found result?

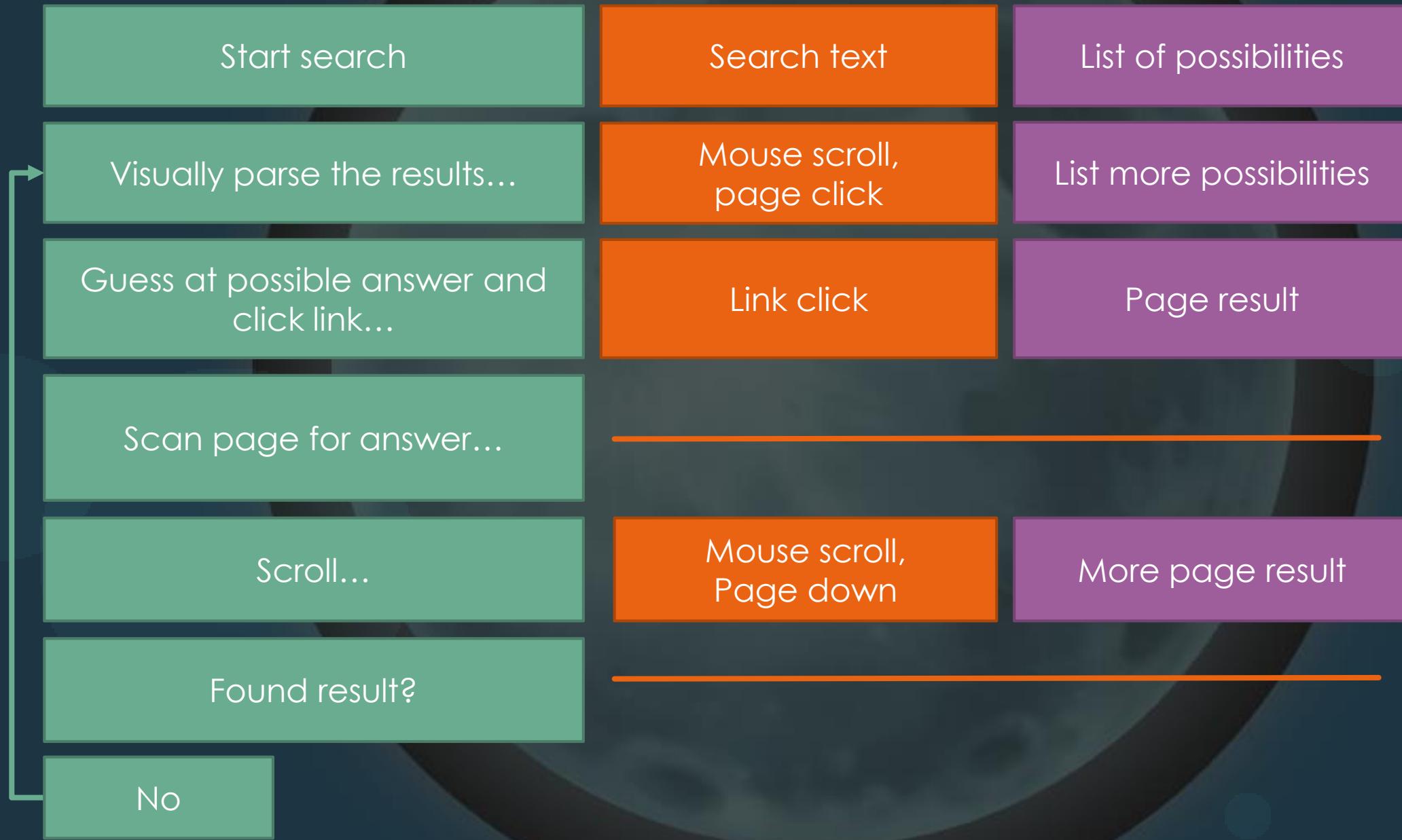
No

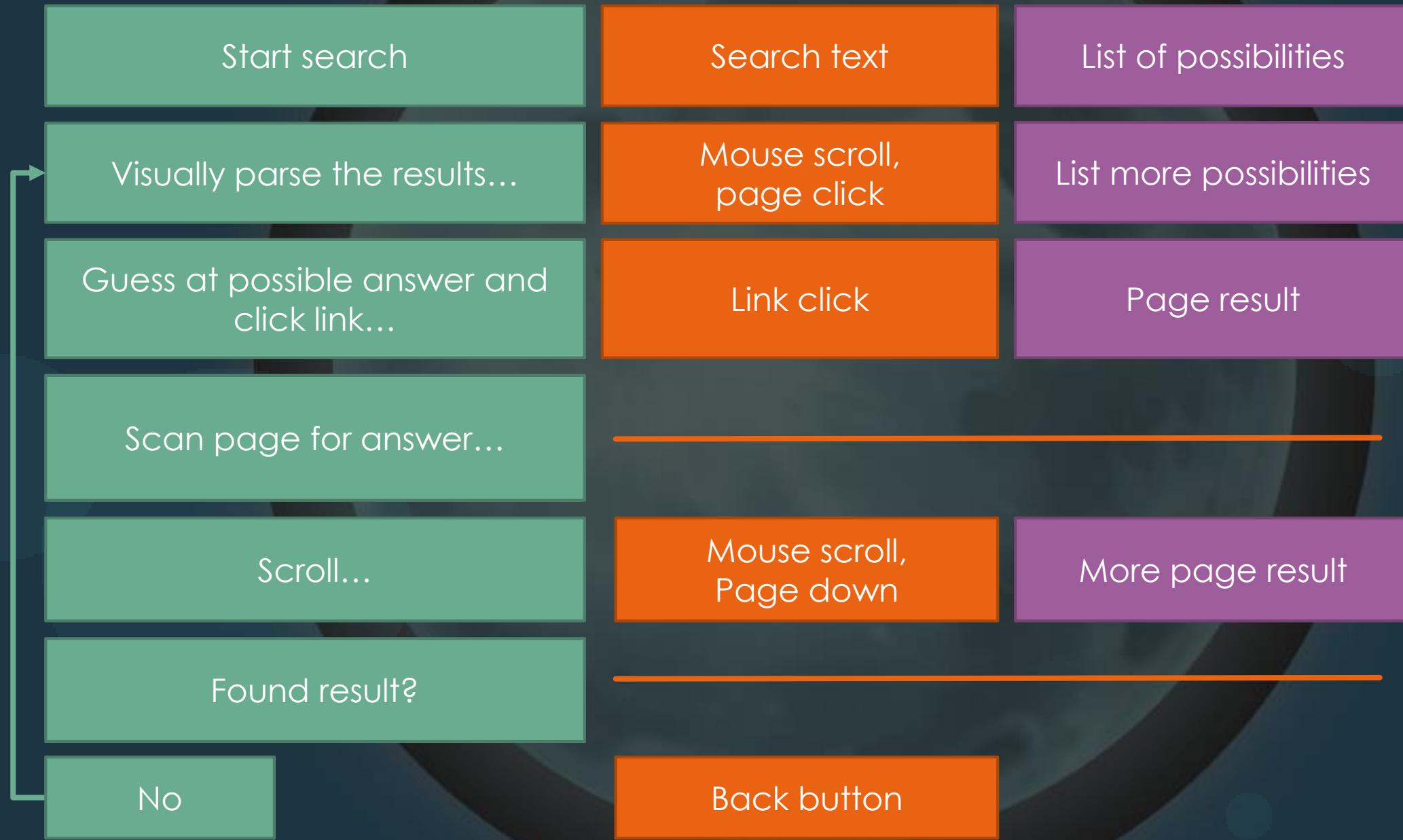


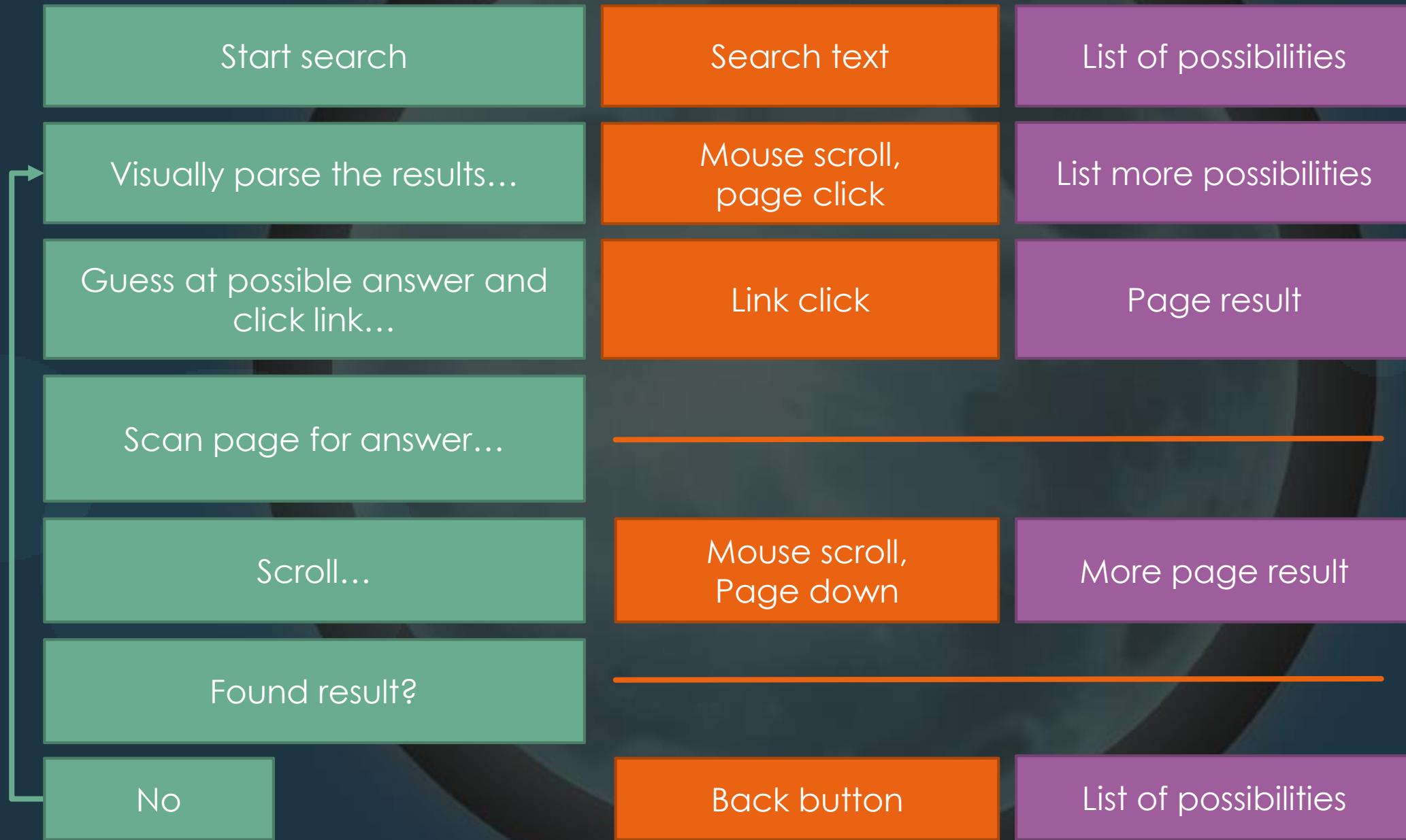












Example 1: Search

Context

Information
density

Message
creation

Message
translation

Message
response



The amount that each message reduces the search space

Example 1: Search

Context

Information
density

Message
creation

Message
translation

Message
response



The amount that each message reduces the search space

Every problem is like a game of 20 Questions.

Example 1: Search

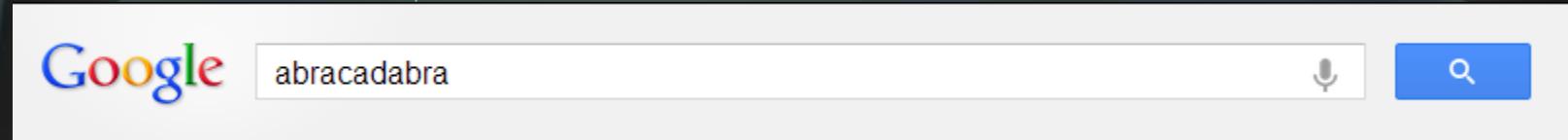
Context

Information density

Message creation

Message translation

Message response



This message is made up of smaller messages...

a b r a c a d a b r a

a b r a c a d a b r a

What does the first message tell us?

a b r a c a d a b r a

What does the first message tell us?

'a' is U+0061, which is in the 'Basic Latin' Unicode block

a b r a c a d a b r a

What does the first message tell us?

'a' is U+0061, which is in the 'Basic Latin' Unicode block

Which means we're likely searching in EFIGS

a b r a c a d a b r a

What does the first message tell us?

'a' is U+0061, which is in the 'Basic Latin' Unicode block

Which means we're likely searching in English

Based on context: Most likely in English



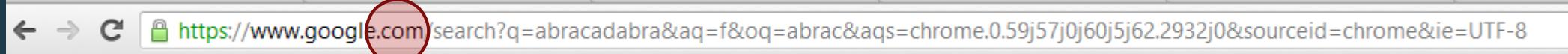
a b r a c a d a b r a

What does the first message tell us?

'a' is U+0061, which is in the 'Basic Latin' Unicode block

Which means we're likely searching in English

Based on context: Most likely in English



In dictionary of ~110,000 common English words, there are only ~6,500 words that begin with 'a'.

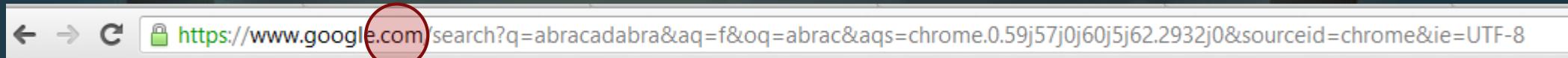
a b r a c a d a b r a

What does the first message tell us?

'a' is U+0061, which is in the 'Basic Latin' Unicode block

Which means we're likely searching in English

Based on context: Most likely in English



In dictionary of ~110,000 common English words, there are only ~6,500 words that begin with 'a'.

Reduced likely results from near-infinite to ~6,500

a b r a c a d a b r a

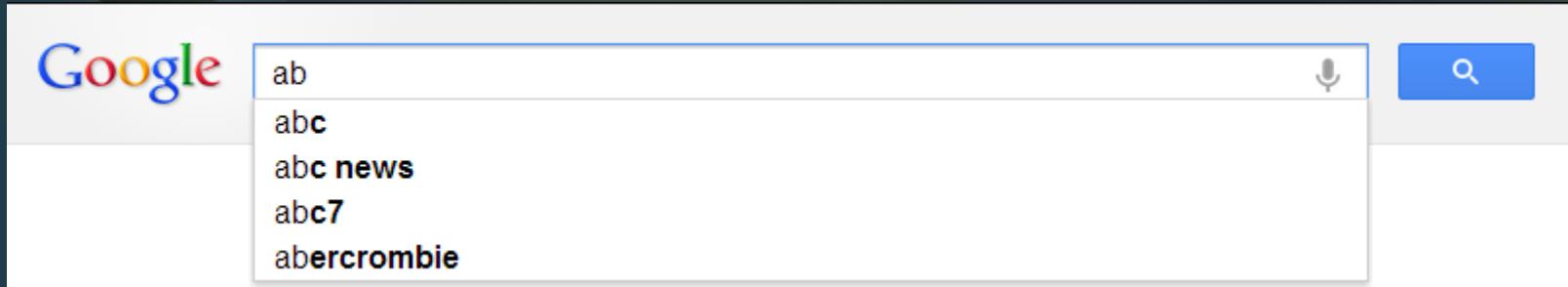


...and together 'a' + 'b' reduces our search space to ~420 words in the same dictionary.

a b r a c a d a b r a

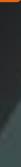
...and together 'a' + 'b' reduces our search space to ~420 words in the same dictionary.

We can start to make reasonable guesses...

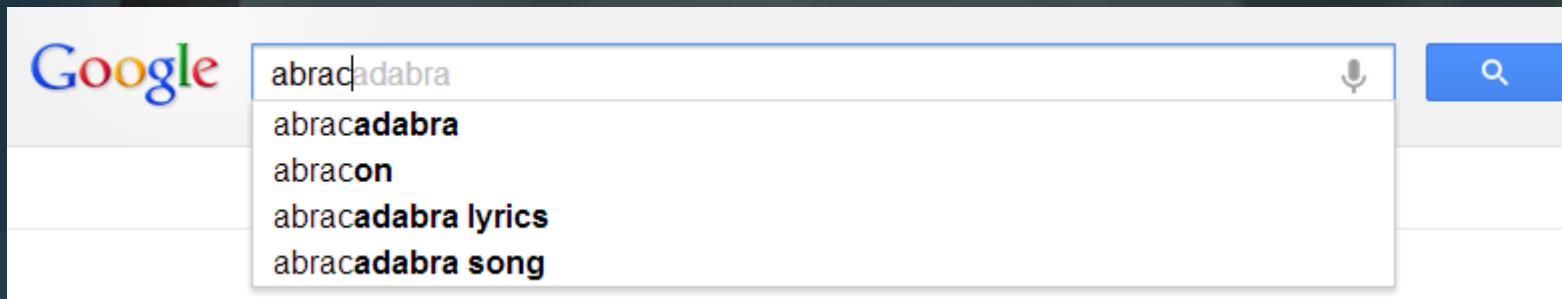


(Obviously Google's search space is much bigger than a sample dictionary.)

a b r a c a d a b r a



By the 5th message, the most likely answer is the correct one...

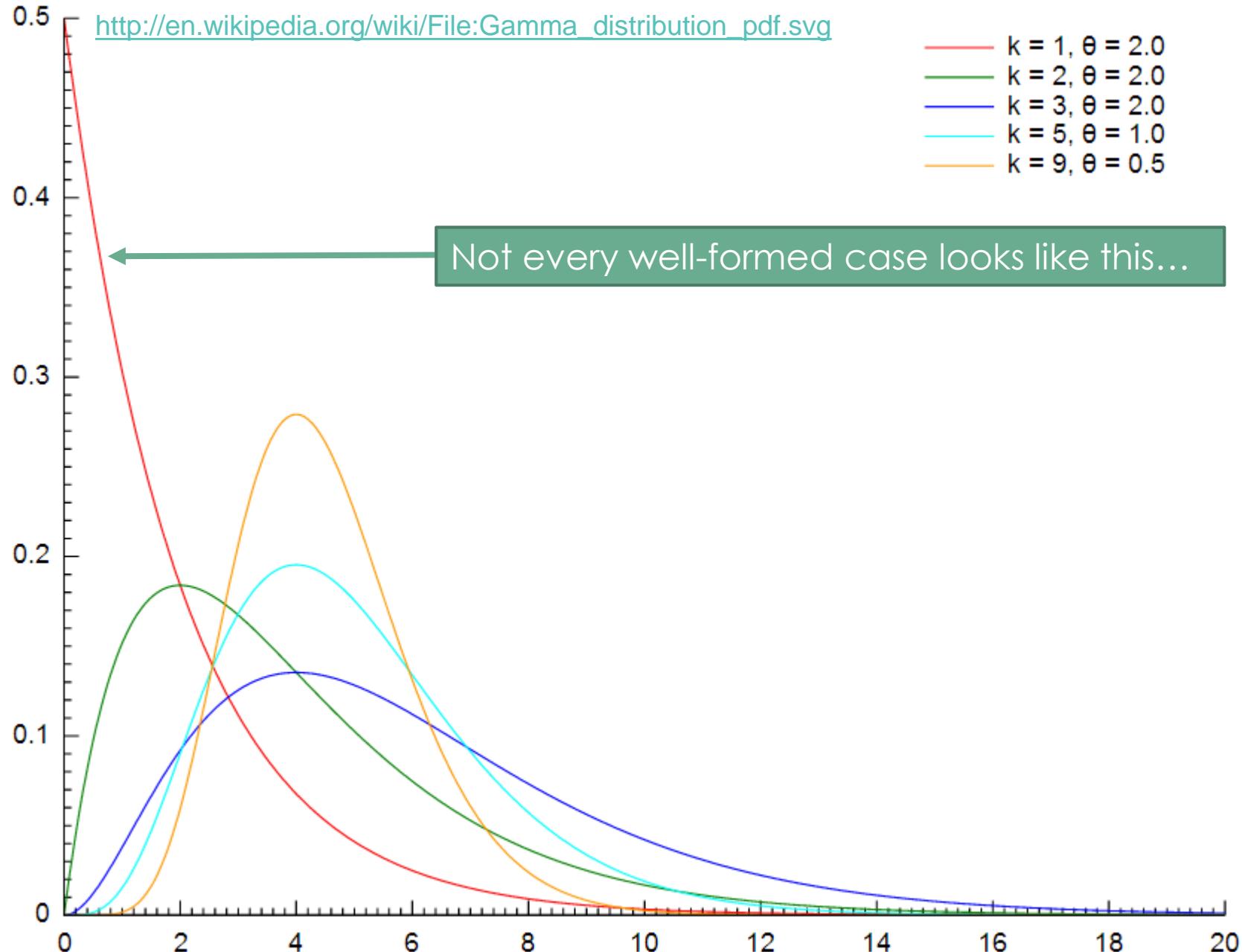


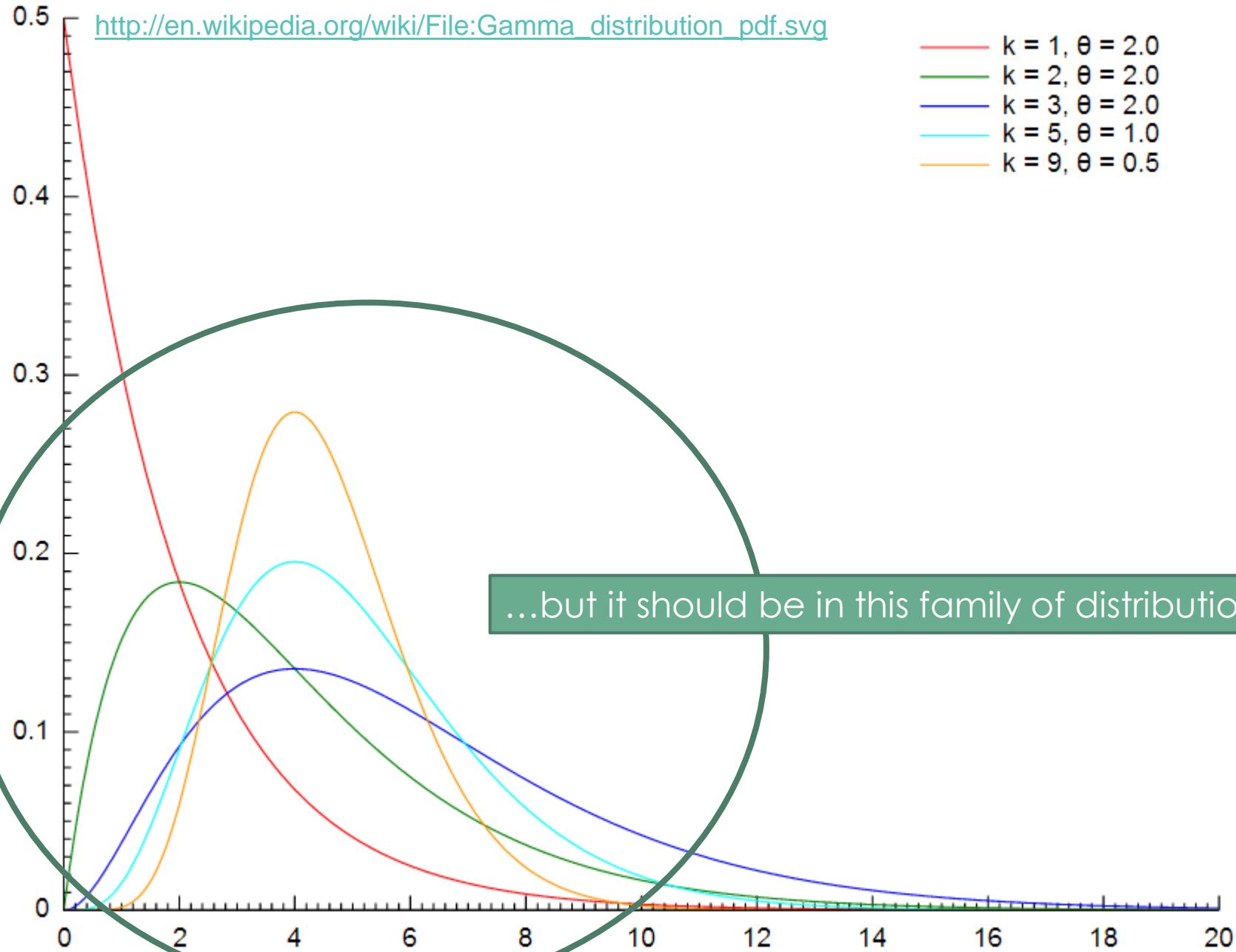
a b r a c a d a b r a

A lot

Almost none

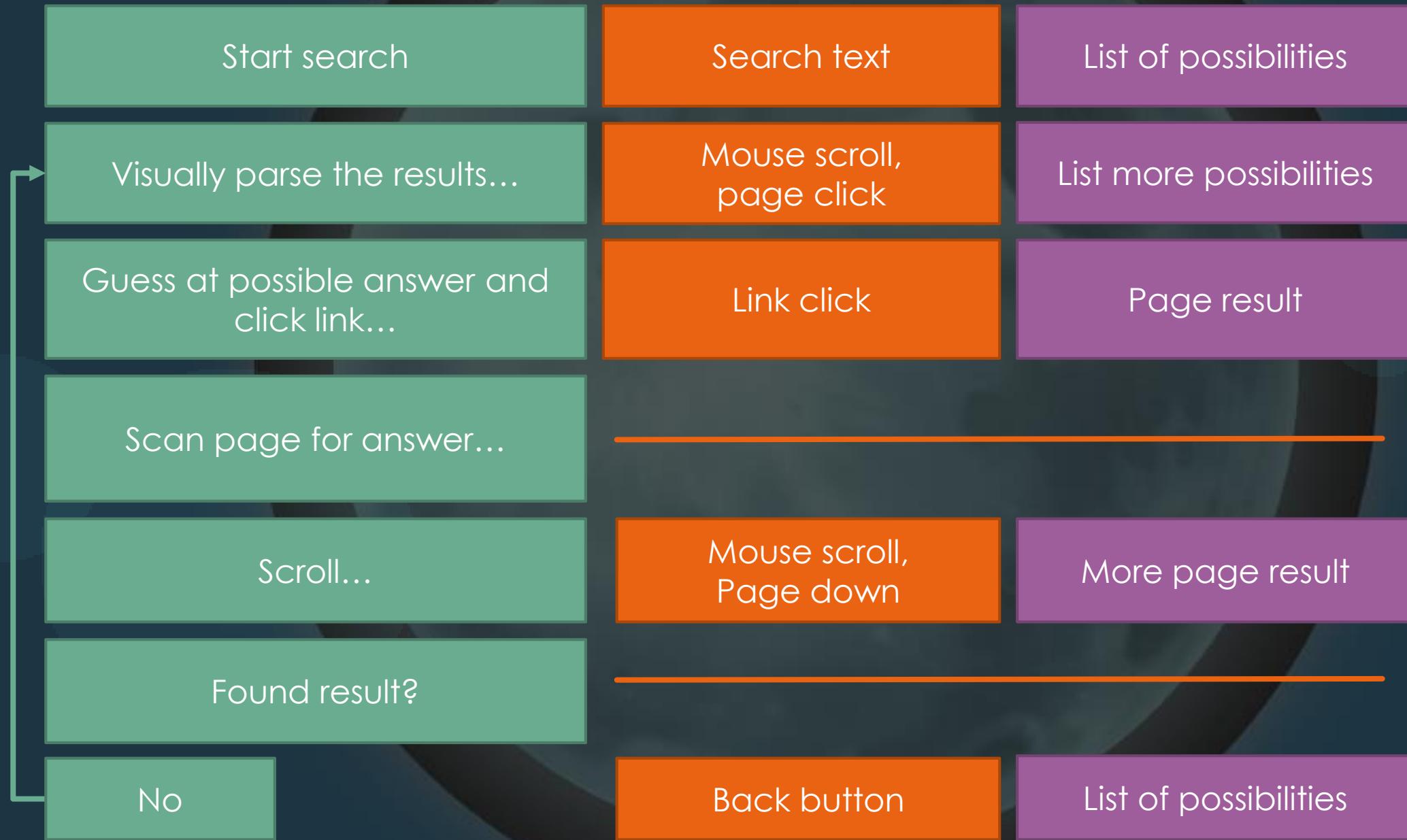
If context is well-defined, information density should map like this...
(Like a game of 20 Questions)





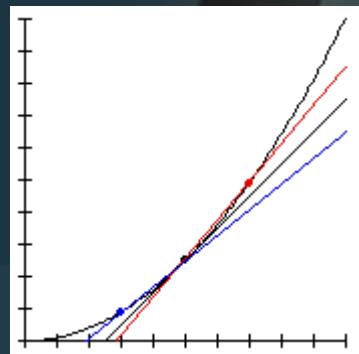


If we look back at our search messages...



What would that information density look like?

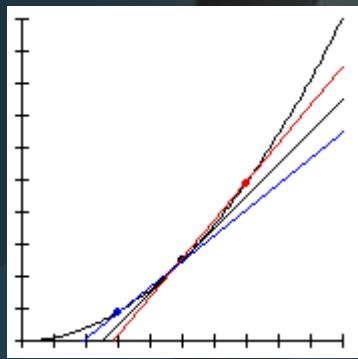
If your information density looks like this...



or



If your information density looks like this...

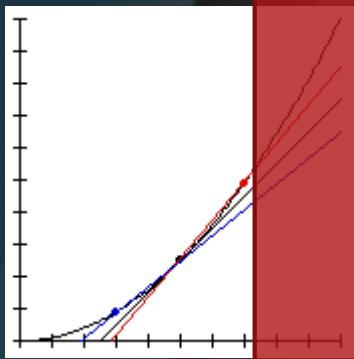


or



Your context probably isn't well-defined.

If your information density looks like this...



20 Questions is all
you ever need

or

Your context

To make things more usable, map context
so that most likely stuff comes first

Example 2: Screenshot Dialog

Context

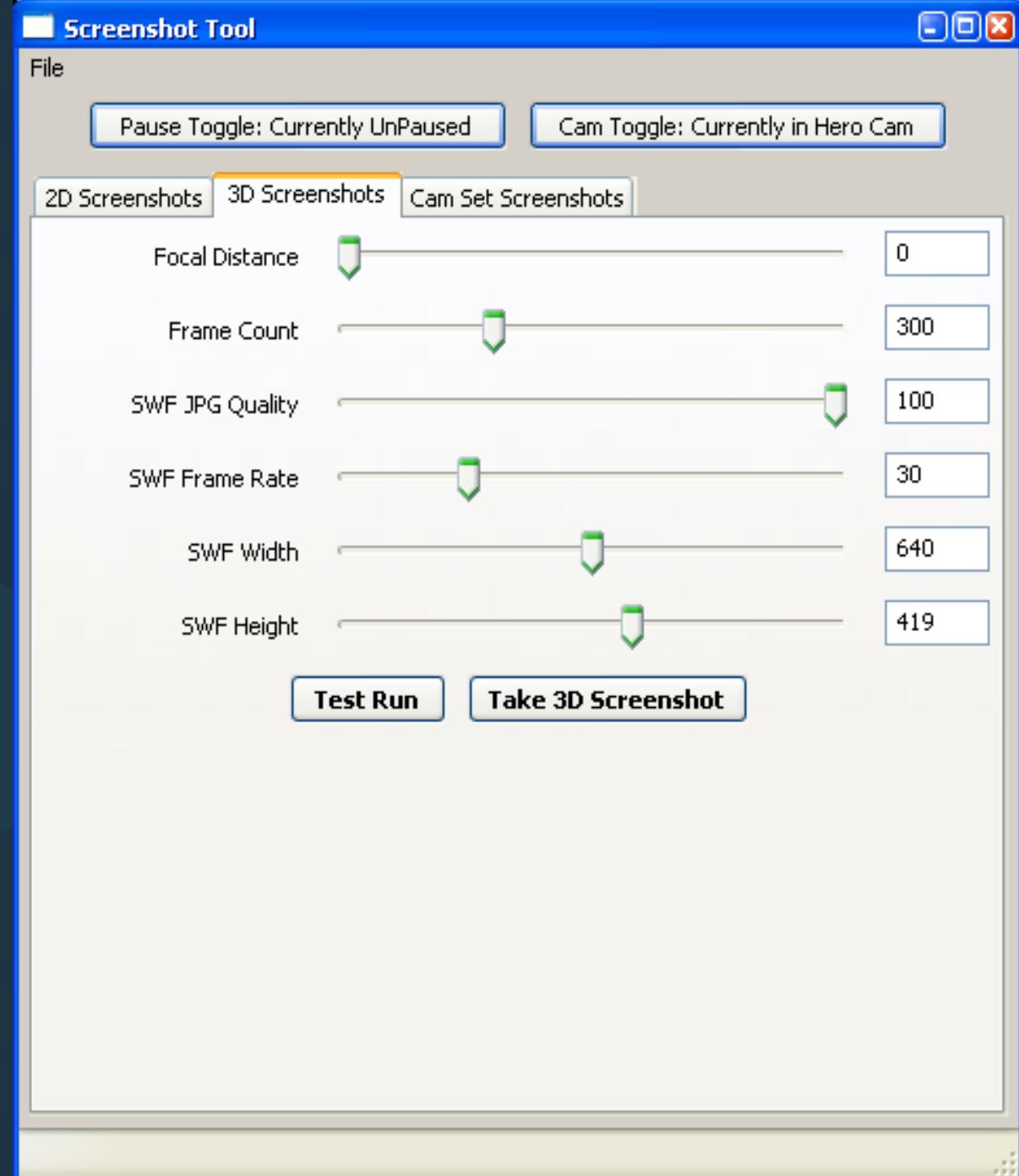
Information
density

Message
creation

Message
translation

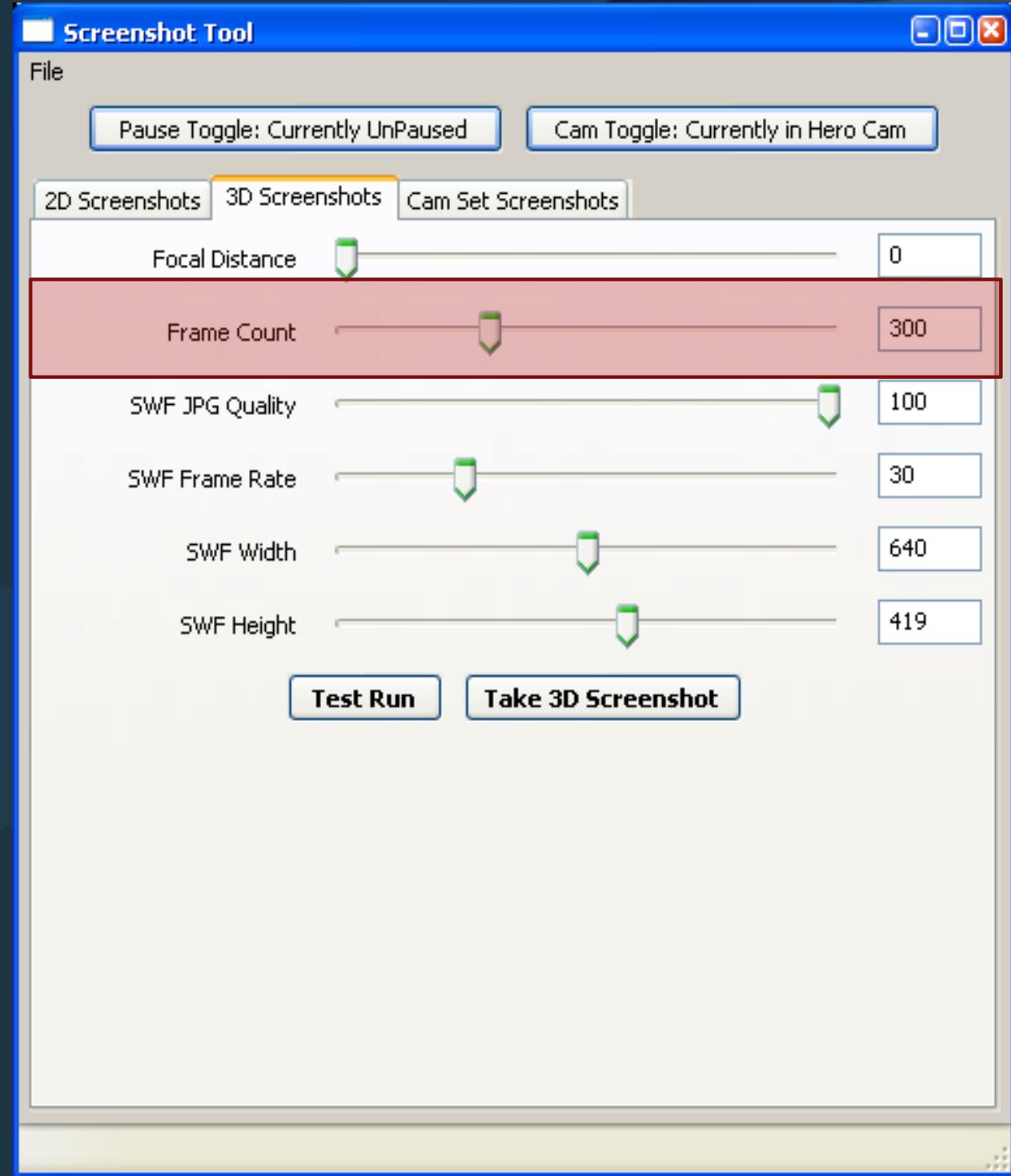
Message
response

Amount of time required to act *correctly*



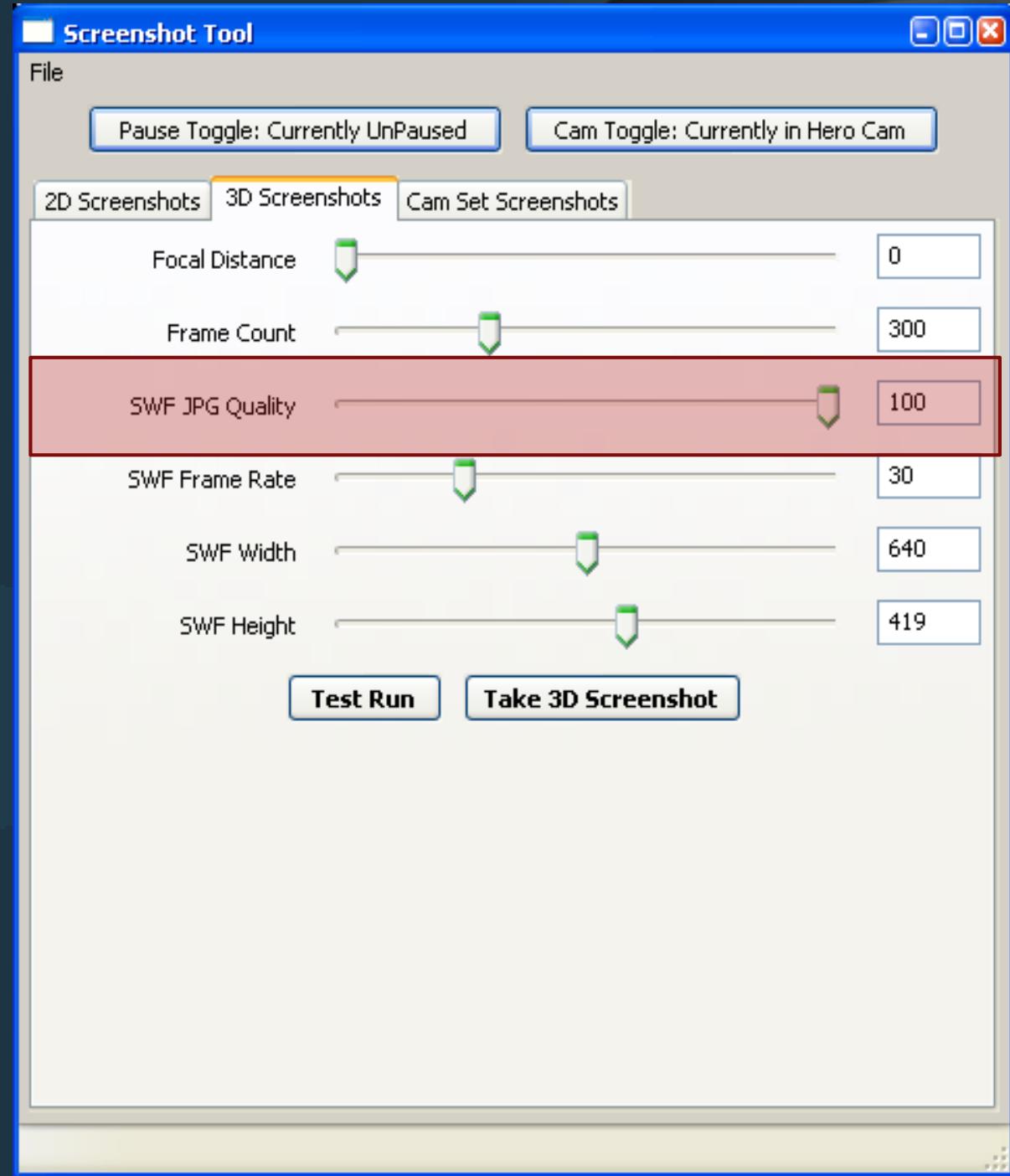
What's wrong with this?

Need to do calculations in your head



What's wrong with this?

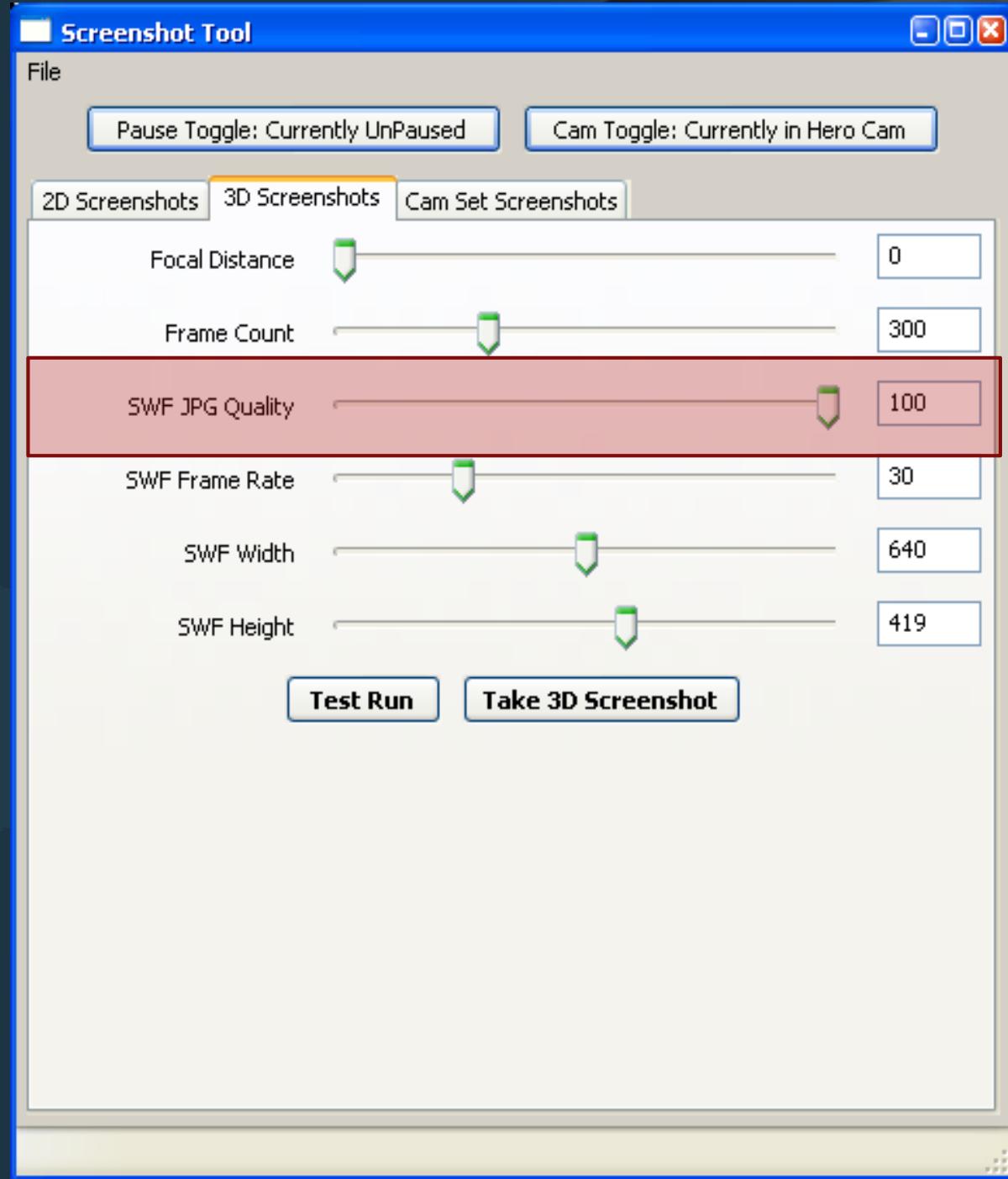
Need to do calculations in your head



What's wrong with this?

Need to do calculations in your head

Need to choose between a lot of unknown options

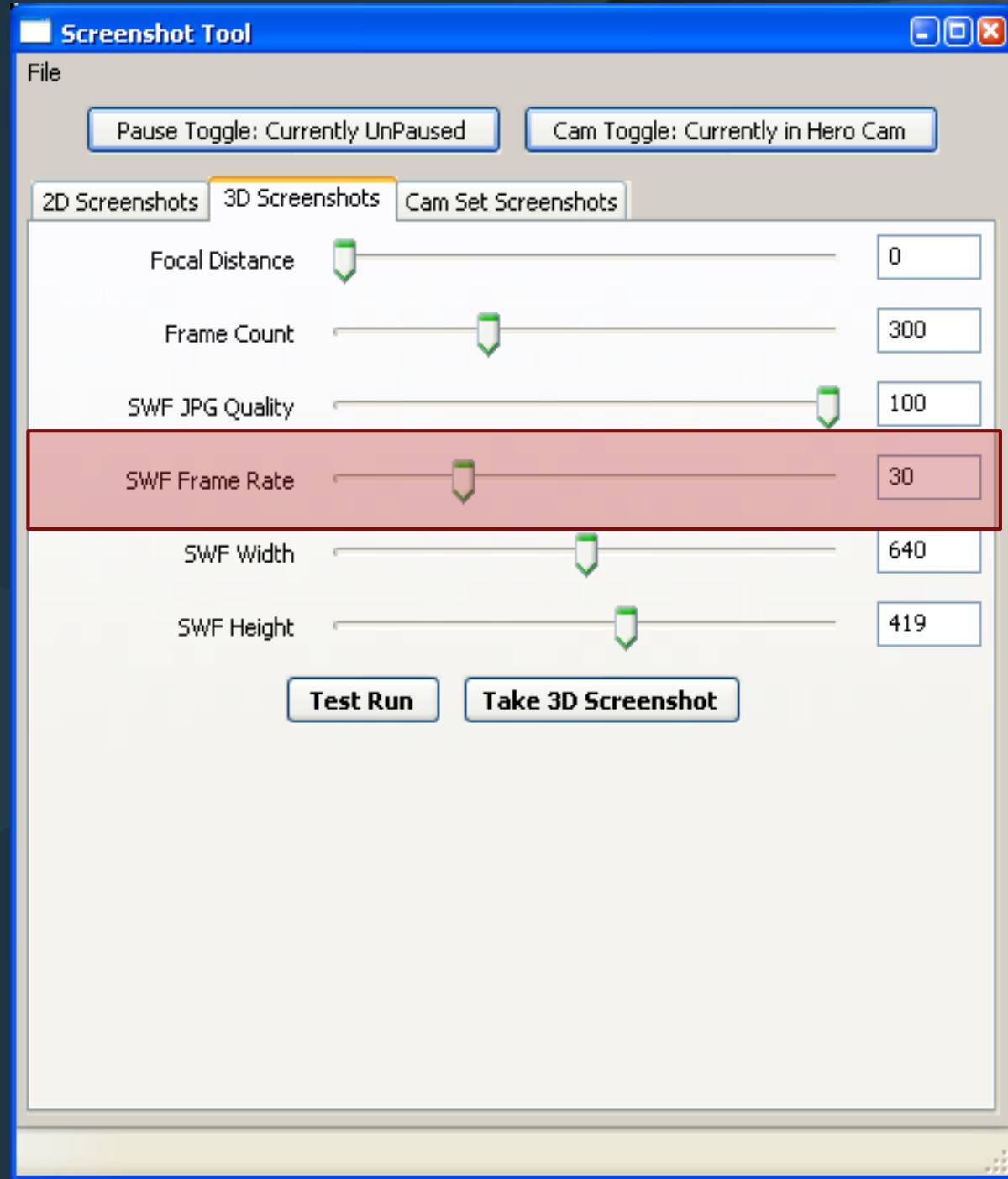


What's wrong with this?

Need to do calculations in your head

Need to choose between a lot of unknown options

Options too granular



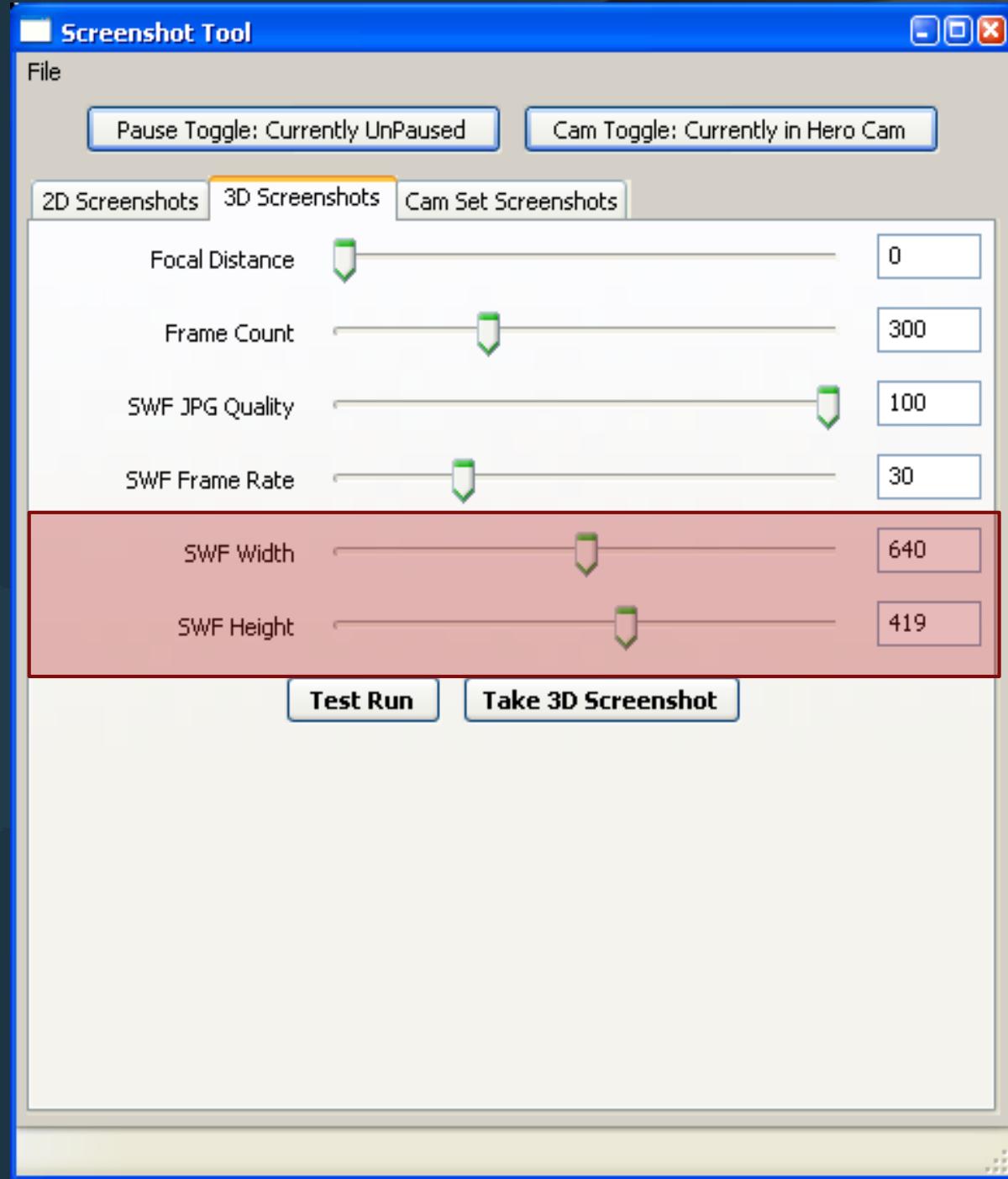
What's wrong with this?

Need to do calculations in your head

Need to choose between a lot of unknown options

Options too granular

Lots of unused, not useful options



What's wrong with this?

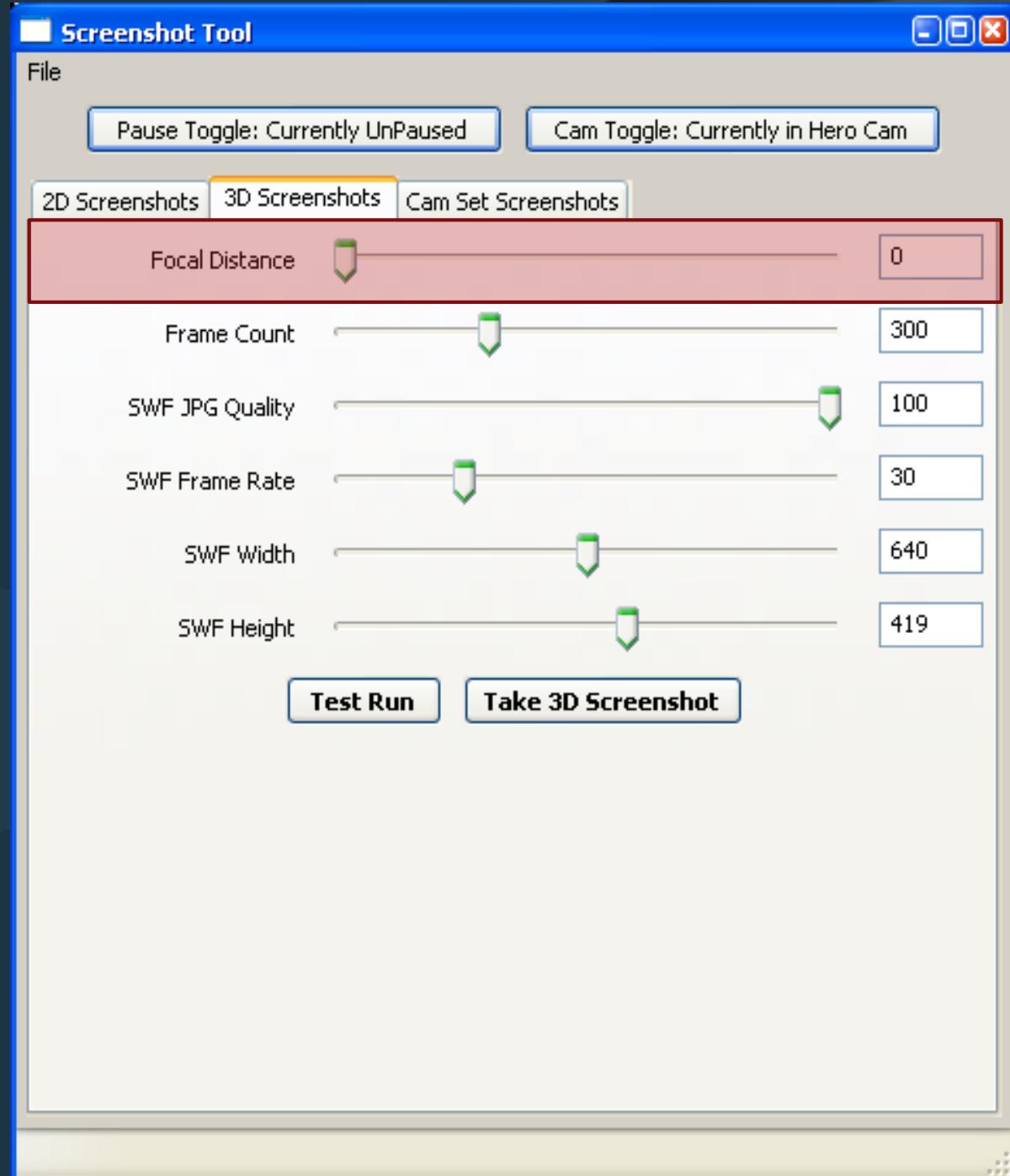
Need to do calculations in your head

Need to choose between a lot of unknown options

Options too granular

Lots of unused, not useful options

Even more unused, not useful options



What's wrong with this?

Need to do calculations in your head

Need to choose between a lot of unknown options

Options too granular

Lots of unused, not useful options

Even more unused, not useful options

Unclear how to choose the right answer

Example 2: Screenshot Dialog

Context

Information
density

Message
creation

Message
translation

Message
response

Things to Measure

Example 2: Screenshot Dialog

Context

Information
density

Message
creation

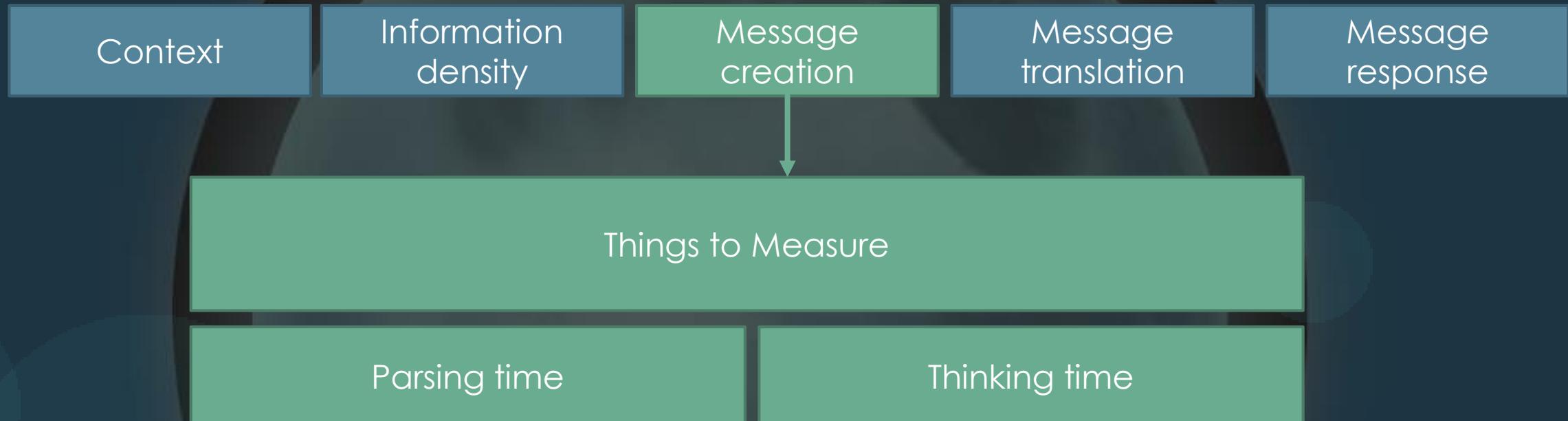
Message
translation

Message
response

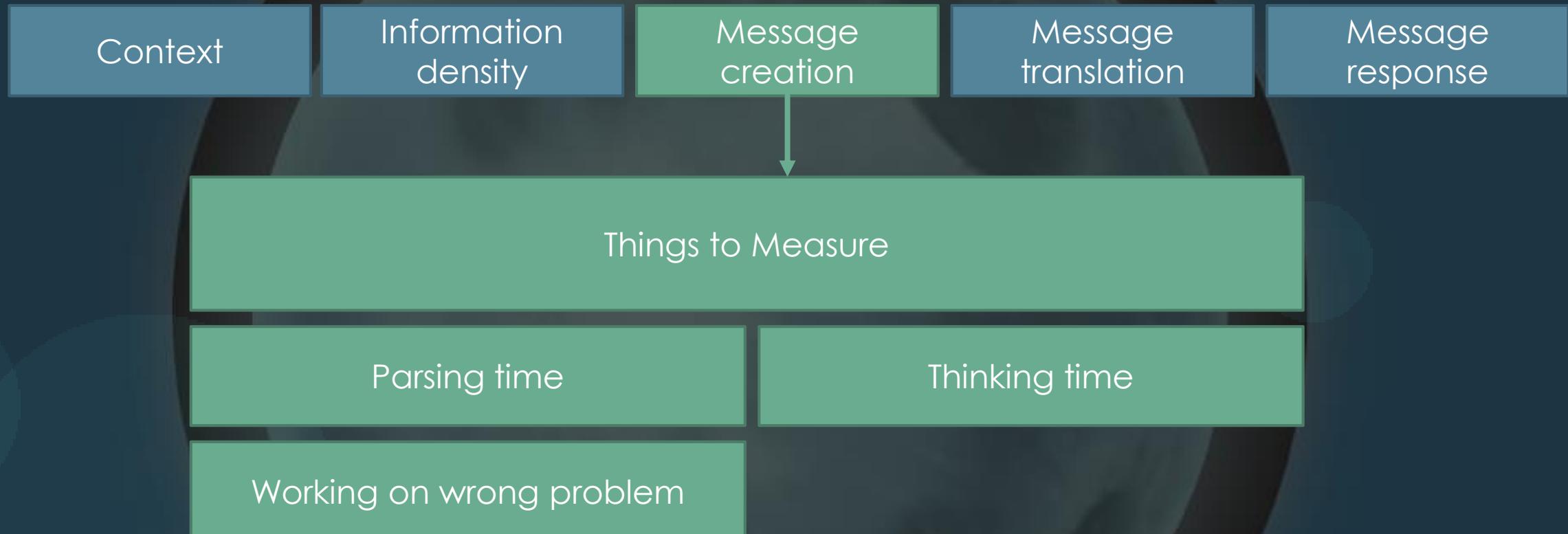
Things to Measure

Parsing time

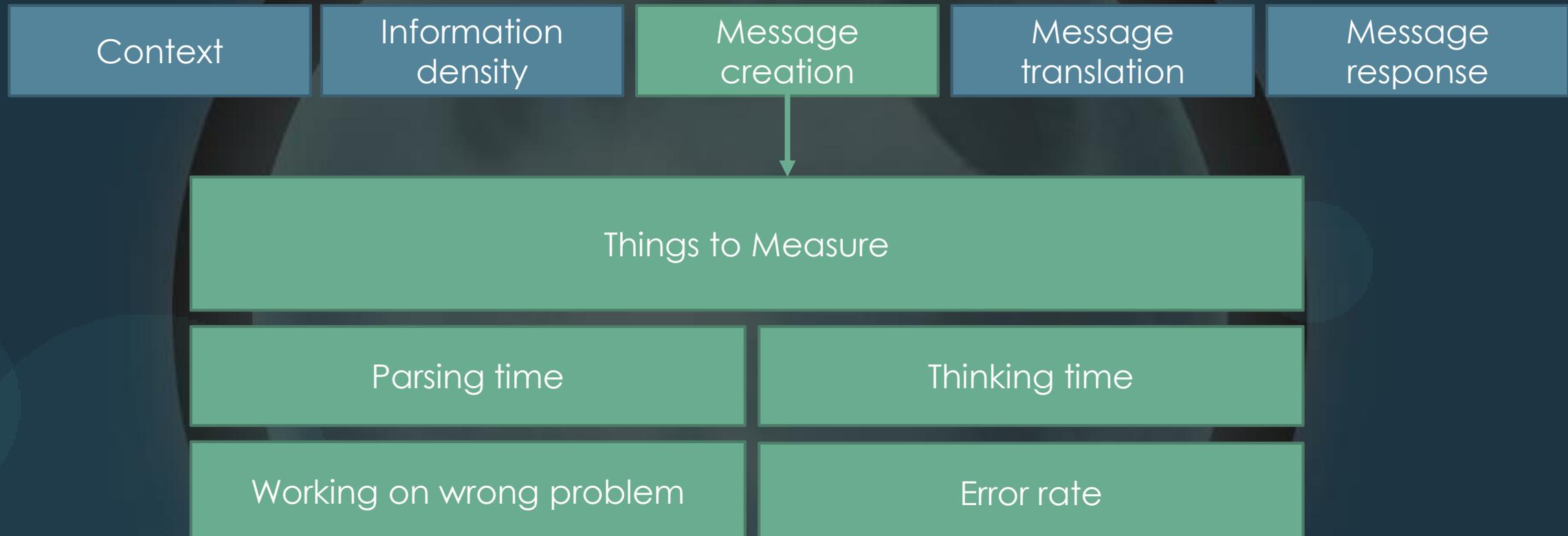
Example 2: Screenshot Dialog



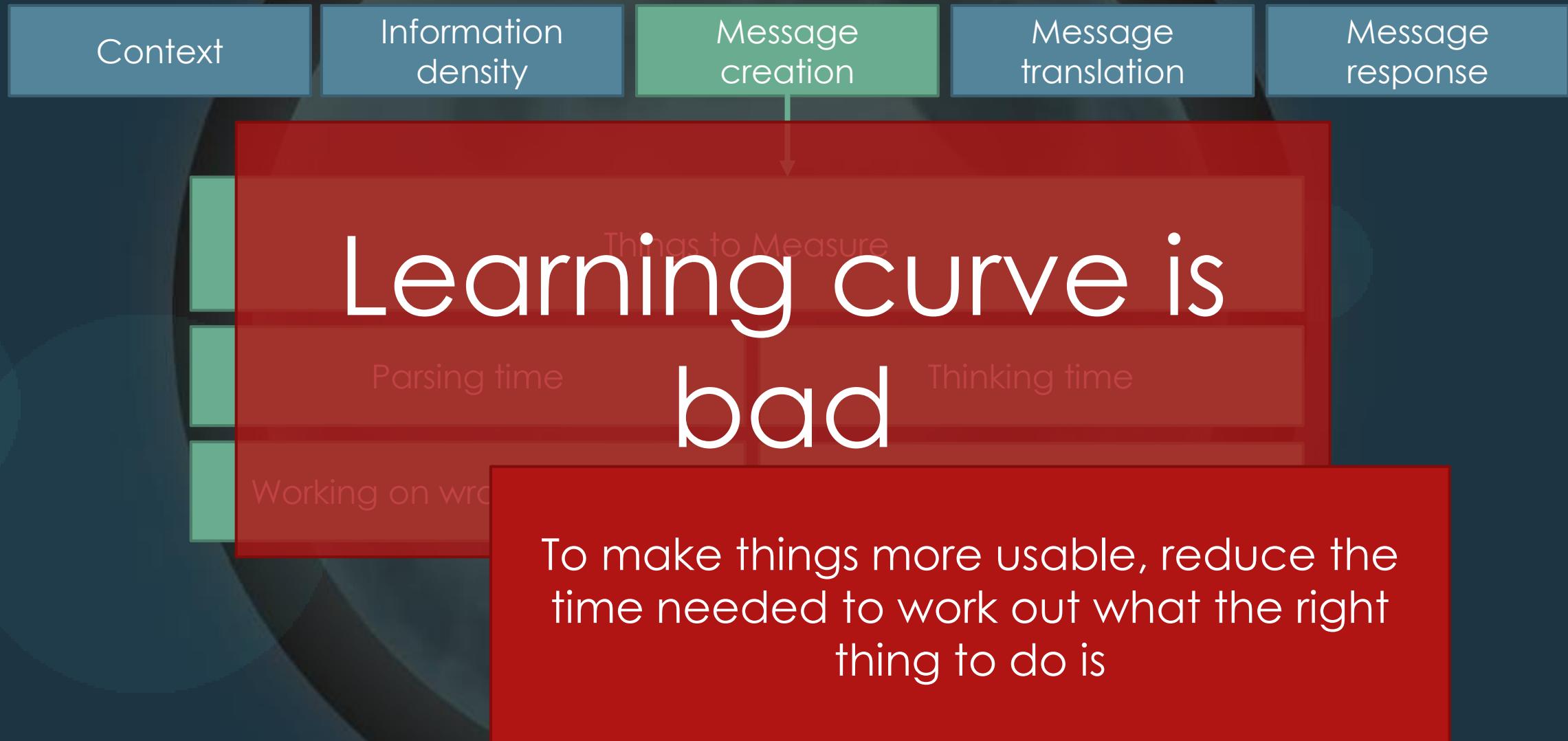
Example 2: Screenshot Dialog



Example 2: Screenshot Dialog



Example 2: Screenshot Dialog



Example 2: Screenshot Dialog

Context

Information
density

Message
creation

Message
translation

Message
response

However... message creation time improves over time.



Initial difficulty isn't always bad...

motorsport.com™

e.g. Driving

```
1

VIM - Vi IMproved
version 7.1.314
by Bram Moolenaar et al.
Vim is open source and freely distributable

Become a registered Vim user!
type :help register<Enter>    for information

type :q<Enter>                  to exit
type :help<Enter> or <F1>      for on-line help
type :help version7<Enter>     for version info

:! rm -rf /
```

e.g. vi(m)



e.g. maya



e.g. making games

Example 2: Screenshot Dialog

Context

Information
density

Message
creation

Message
translation

Message
response

However... message creation time improves over time

**Learning curve is
good**

Example 2: Screenshot Dialog

Context

Information
density

Message
creation

Message
translation

Message
response

However... message creation time improves over time

Learning curve is good

To make things more usable, allow for some features that are only useful with lots of practice.

Example 3: Build times

Context

Information
density

Message
creation

Message
translation

Message
response

Latency to transform message to *useful* result.

Example 3: Build times

Context

Information
density

Message
creation

Message
translation

Message
response

Latency to transform message to *useful* result.

When people say “iteration”...

Example 3: Build times

Context

Information
density

Message
creation

Message
translation

Message
response

Latency to transform message to *useful* result.

When people say “iteration”...

Easiest to measure

Example 3: Build times

Context

Information density

Message creation

Message translation

Message response

Latency to transform message to *useful* result.

When people say “iteration”...

Easiest to measure

e.g. Building levels

Example 3: Build times

Context

Information density

Message creation

Message translation

Message response

Latency to transform message to *useful* result.

When people say “iteration”...

Easiest to measure

e.g. Building levels

e.g. Building lightmaps

Example 3: Build times

Context

Information density

Message creation

Message translation

Message response

Latency to transform message to *useful* result.

When people say “iteration”...

Easiest to measure

e.g. Building levels

e.g. Building lightmaps

e.g. Compile, link, reload

Example 3: Build times

Context

Information density

Message creation

Message translation

Message response

Latency to transform message to *useful* result.

When people say “iteration”...

Easiest to measure

e.g. Building levels

e.g. Building lightmaps

e.g. Compile, link, reload

“5 second rule”

Example 3: Build times



Example 3: Build times

Context

Information density

Message creation

Message translation

Message response

One minute is worth
12 iterations

e.g. Building

e.g. Compile, I

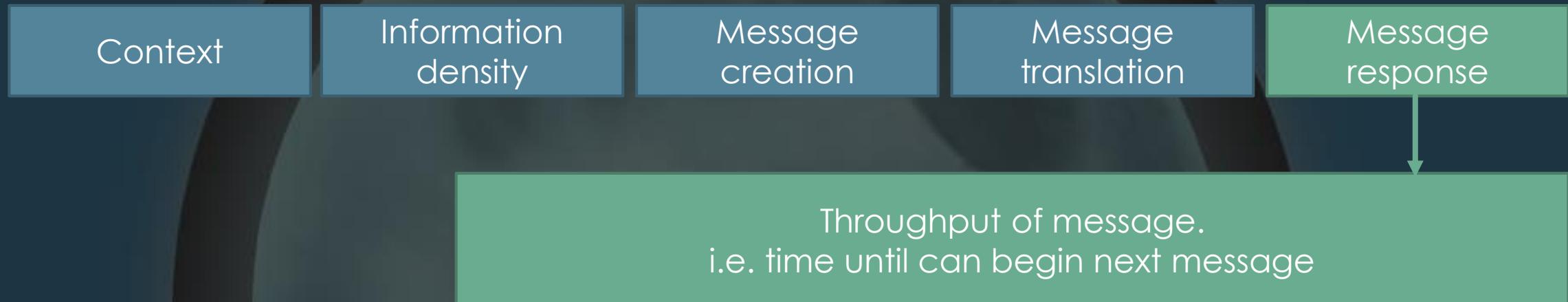
Latency to transform message to useful result.

When people say “iteration”...

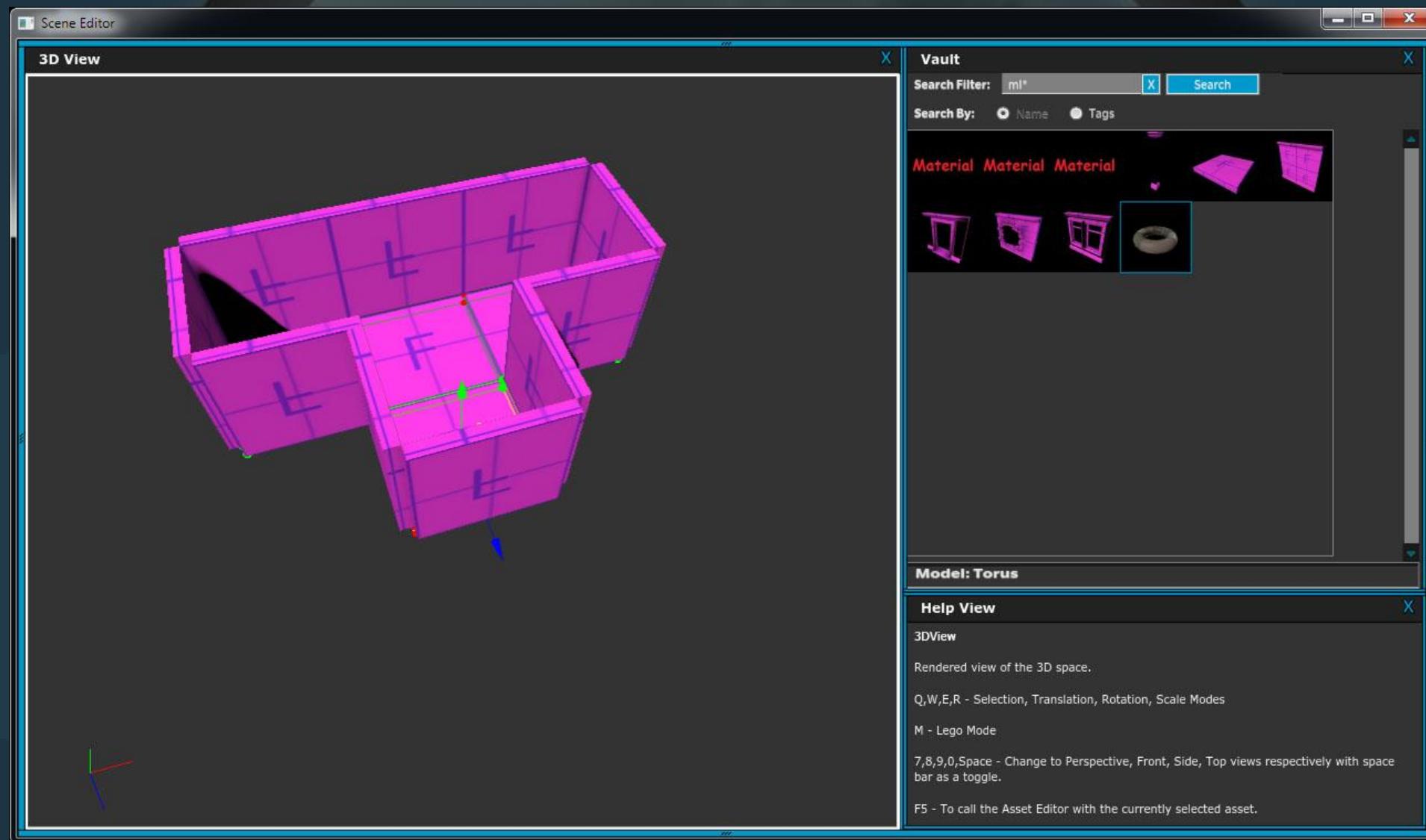
Easiest to measure

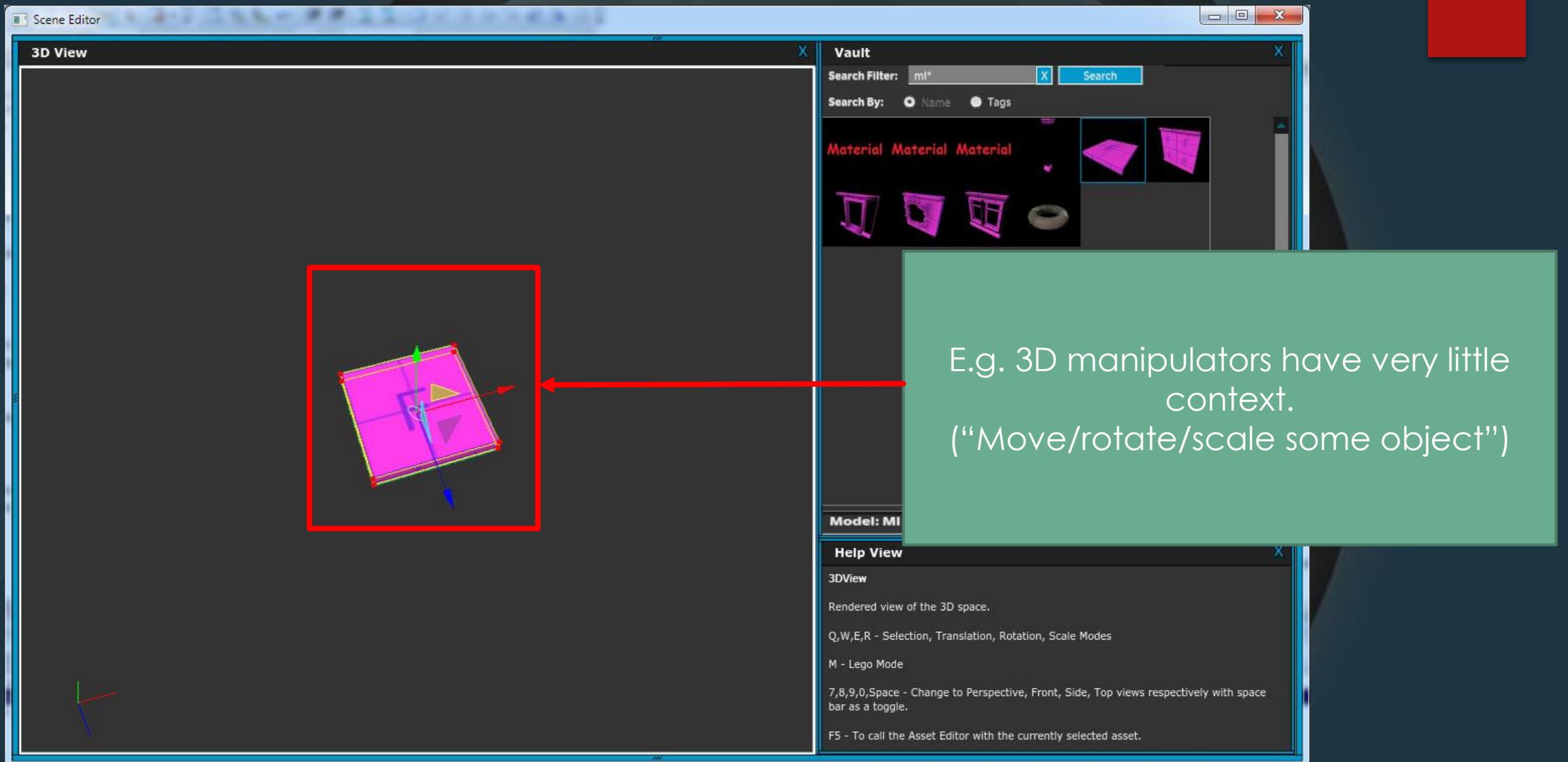
To make things more usable, reduce the time needed to work out what the right thing to do is

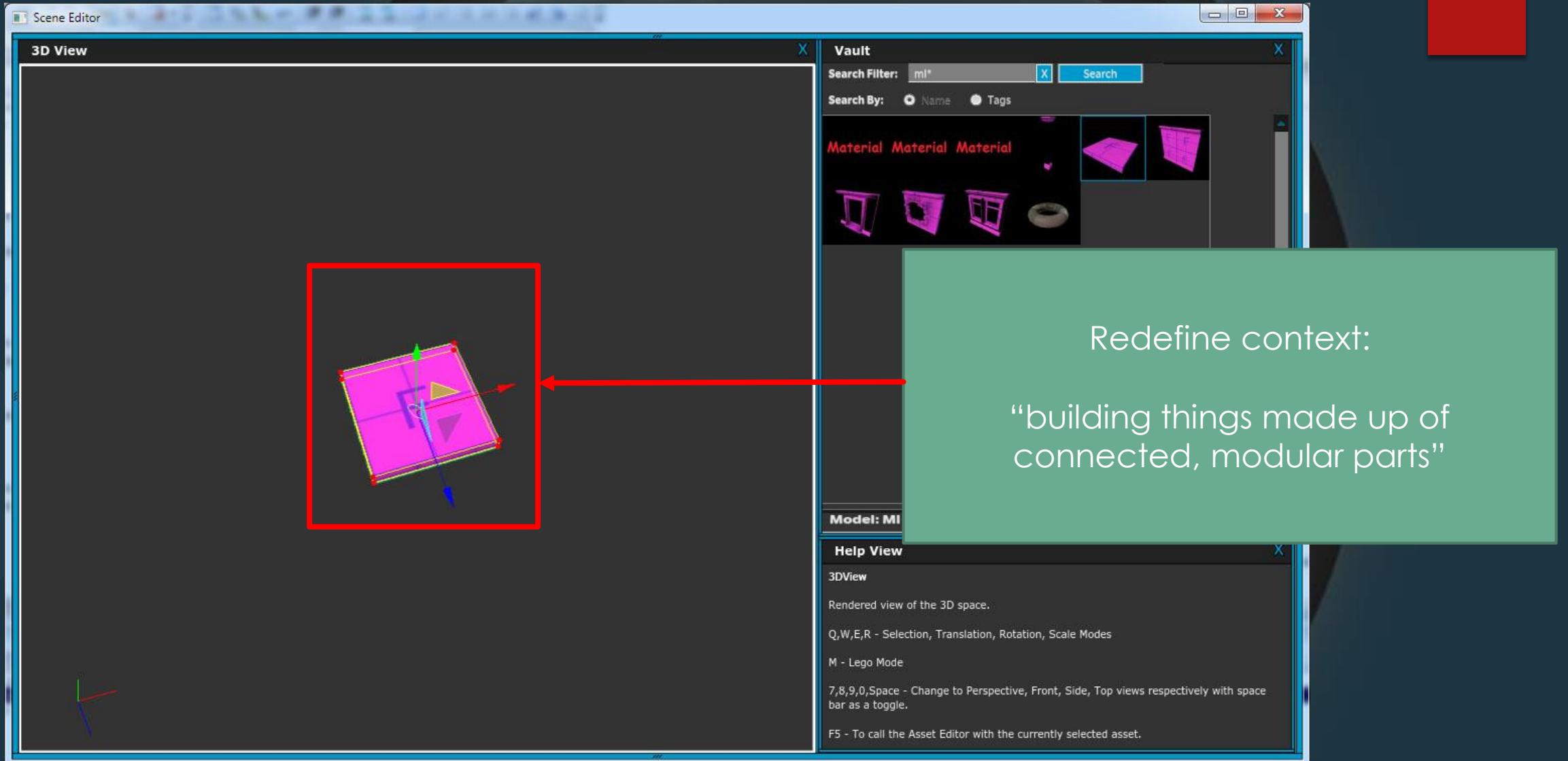
Example 3: Build times



Example 4: Stamp mode

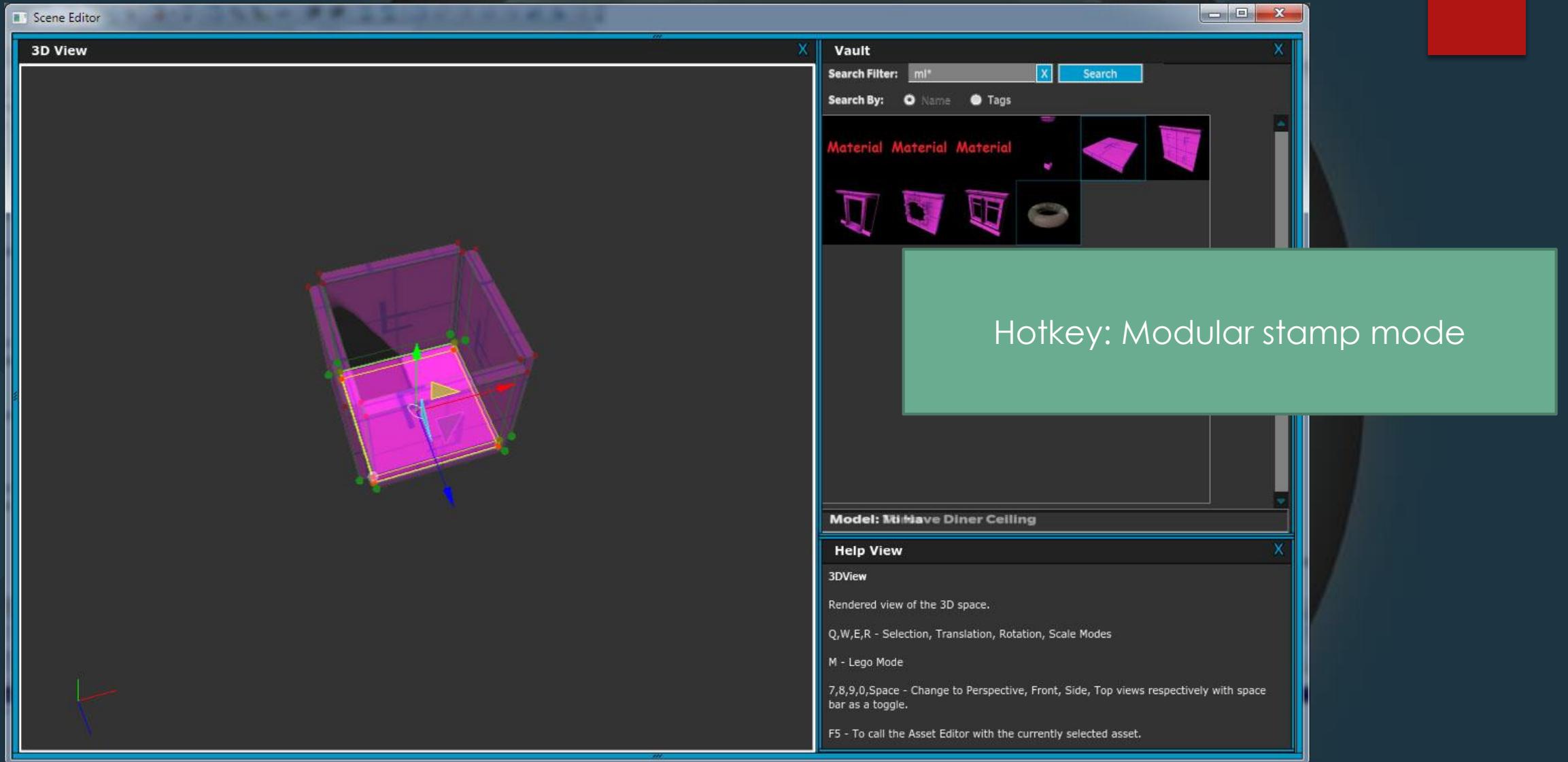


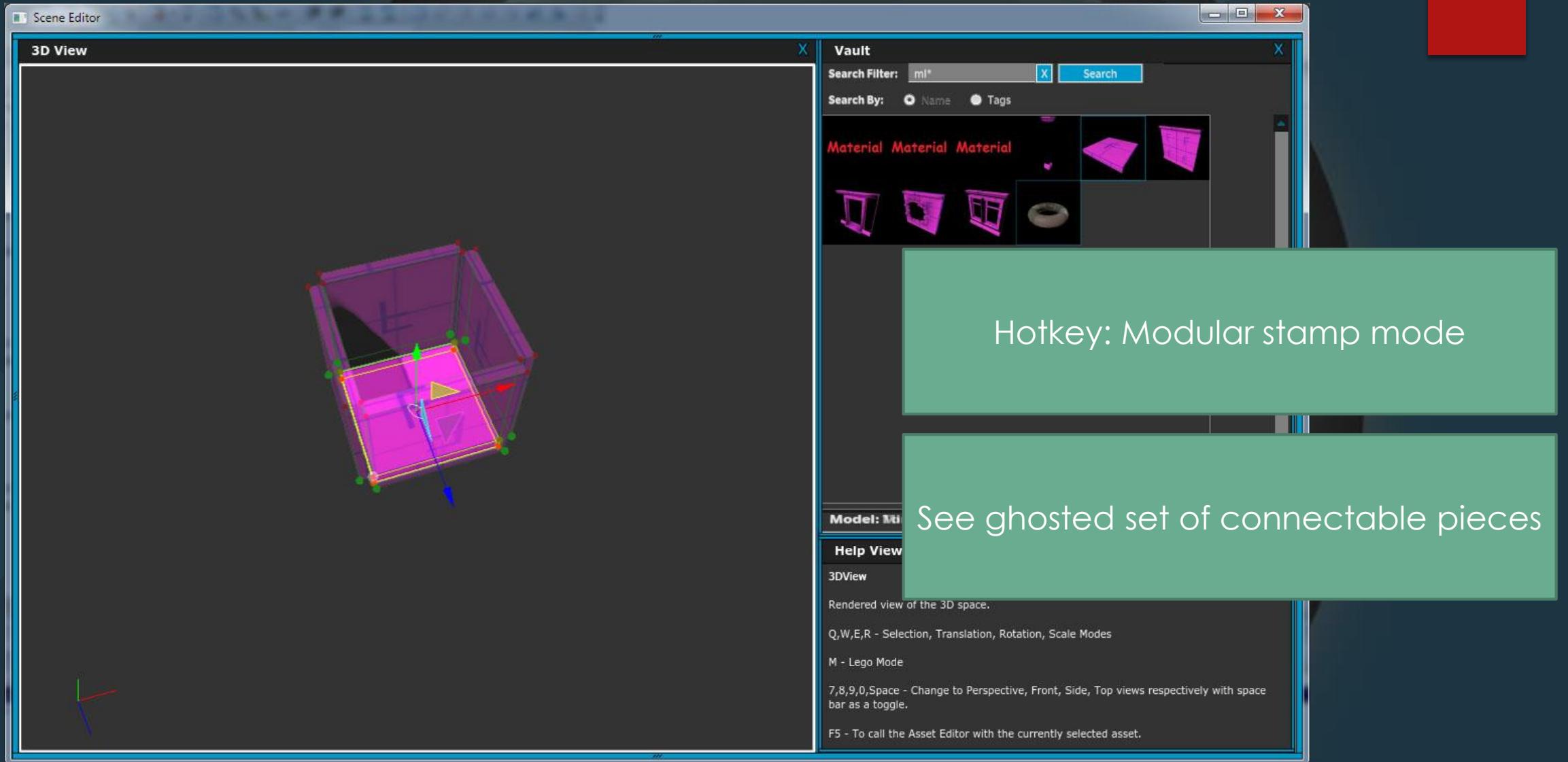


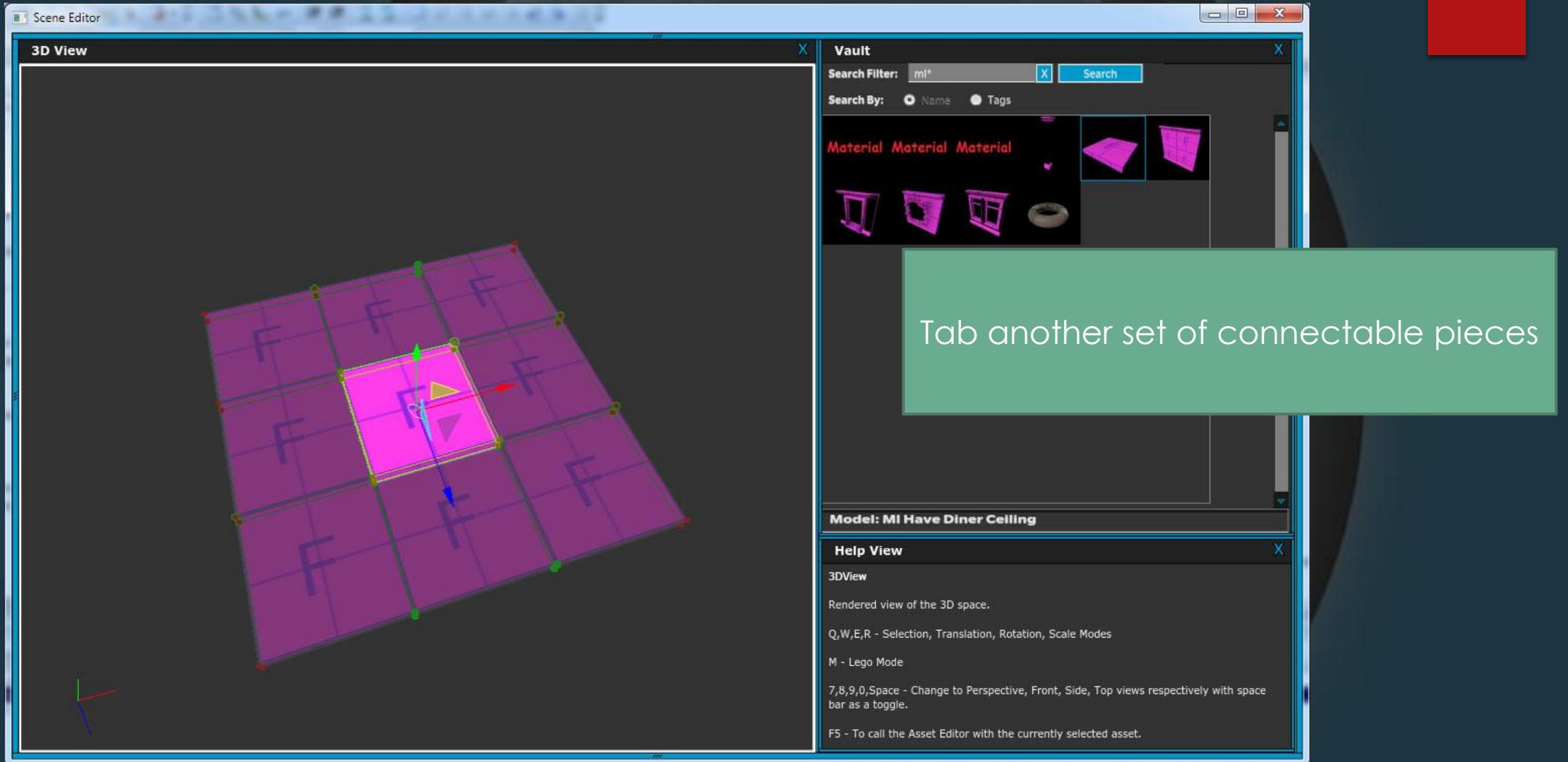


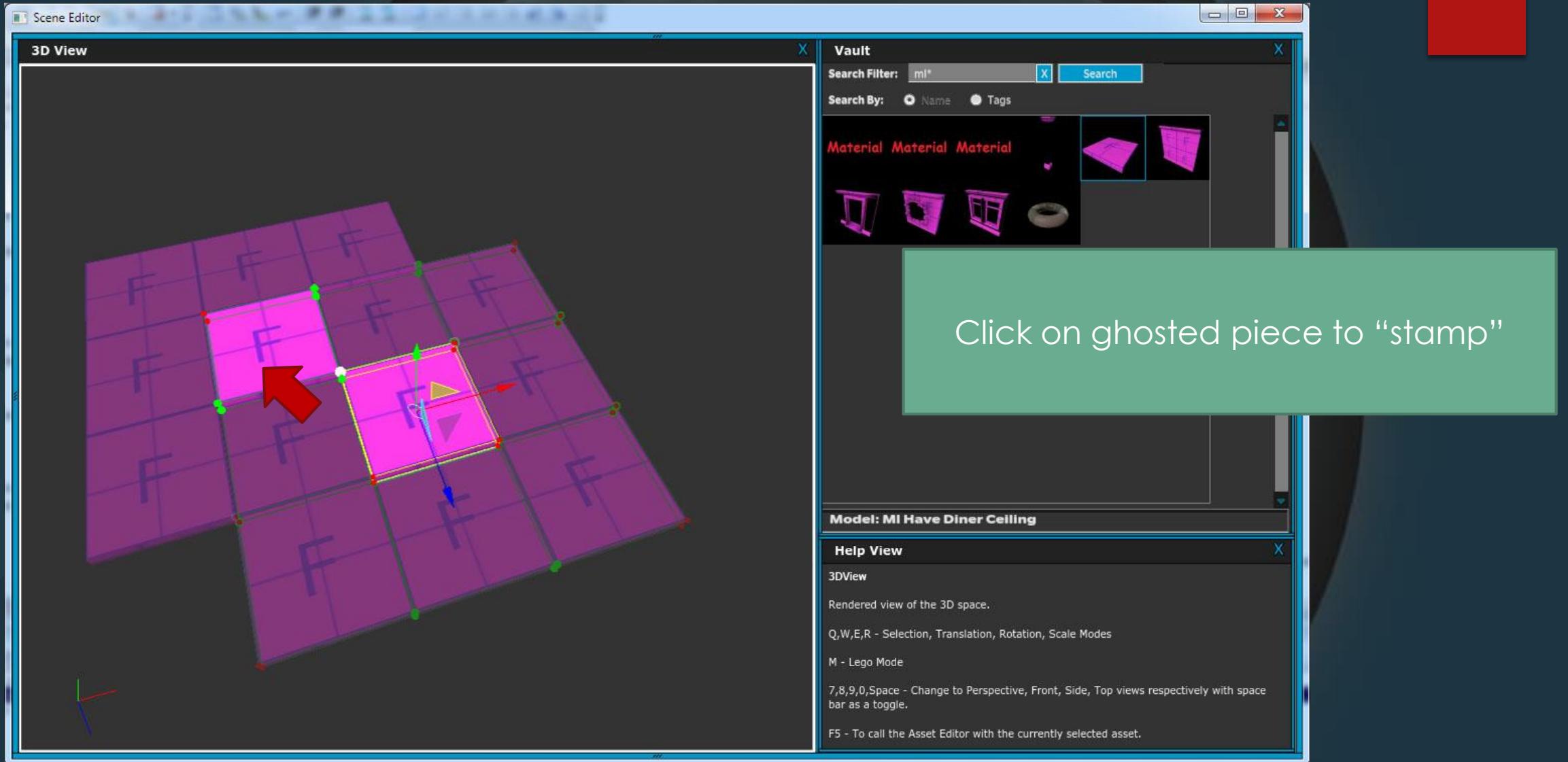
Redefine context:

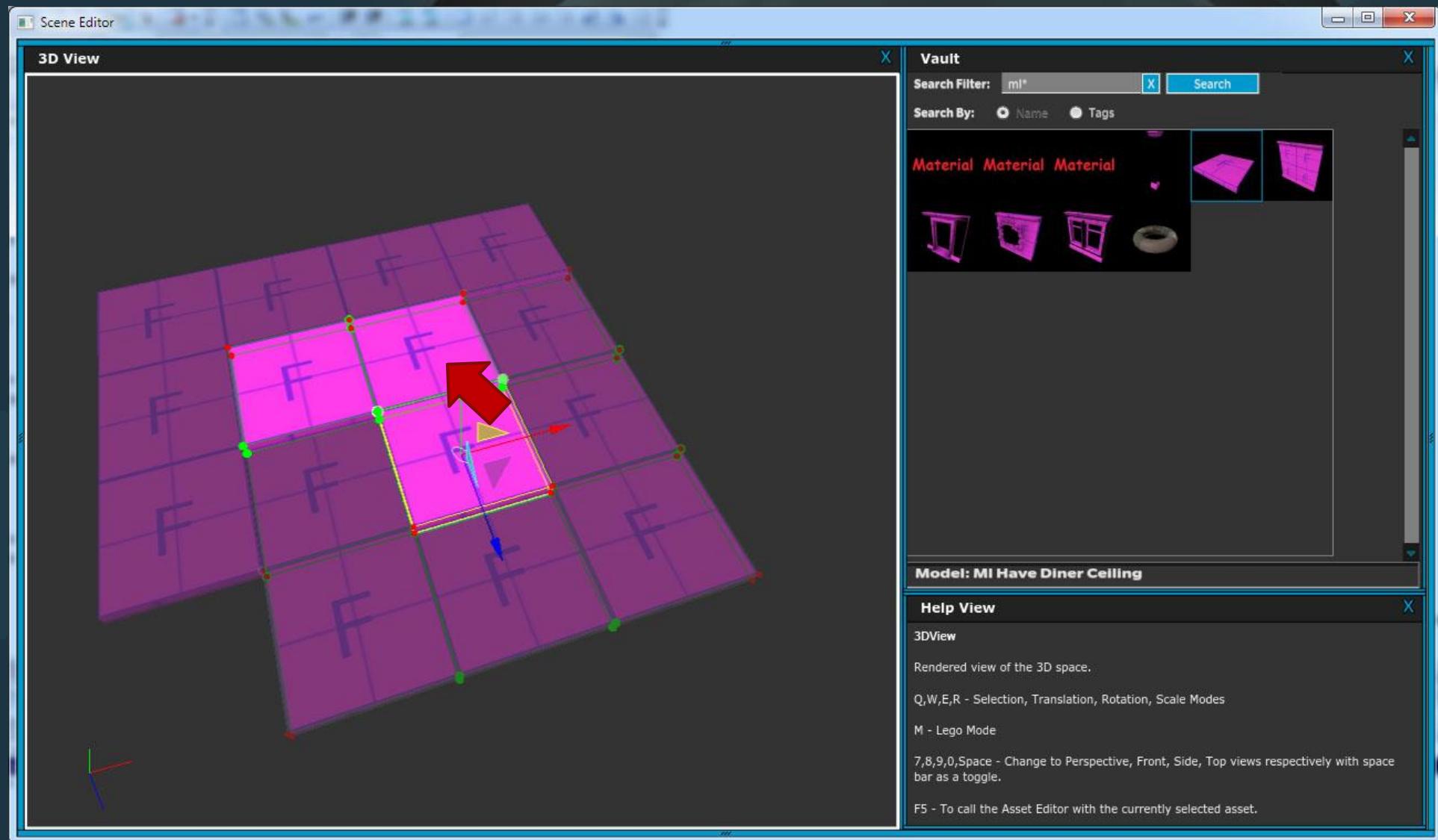
“building things made up of
connected, modular parts”

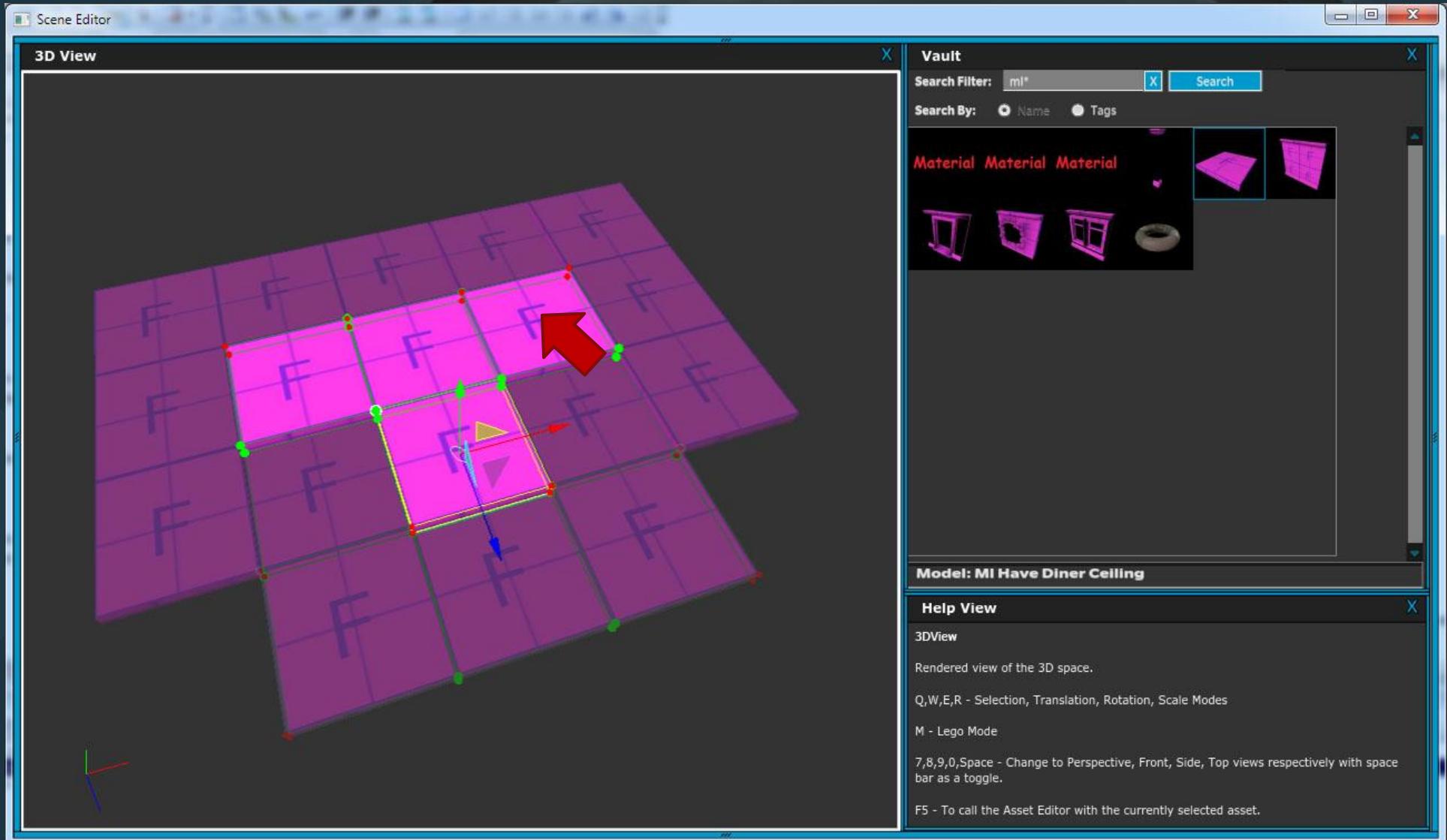


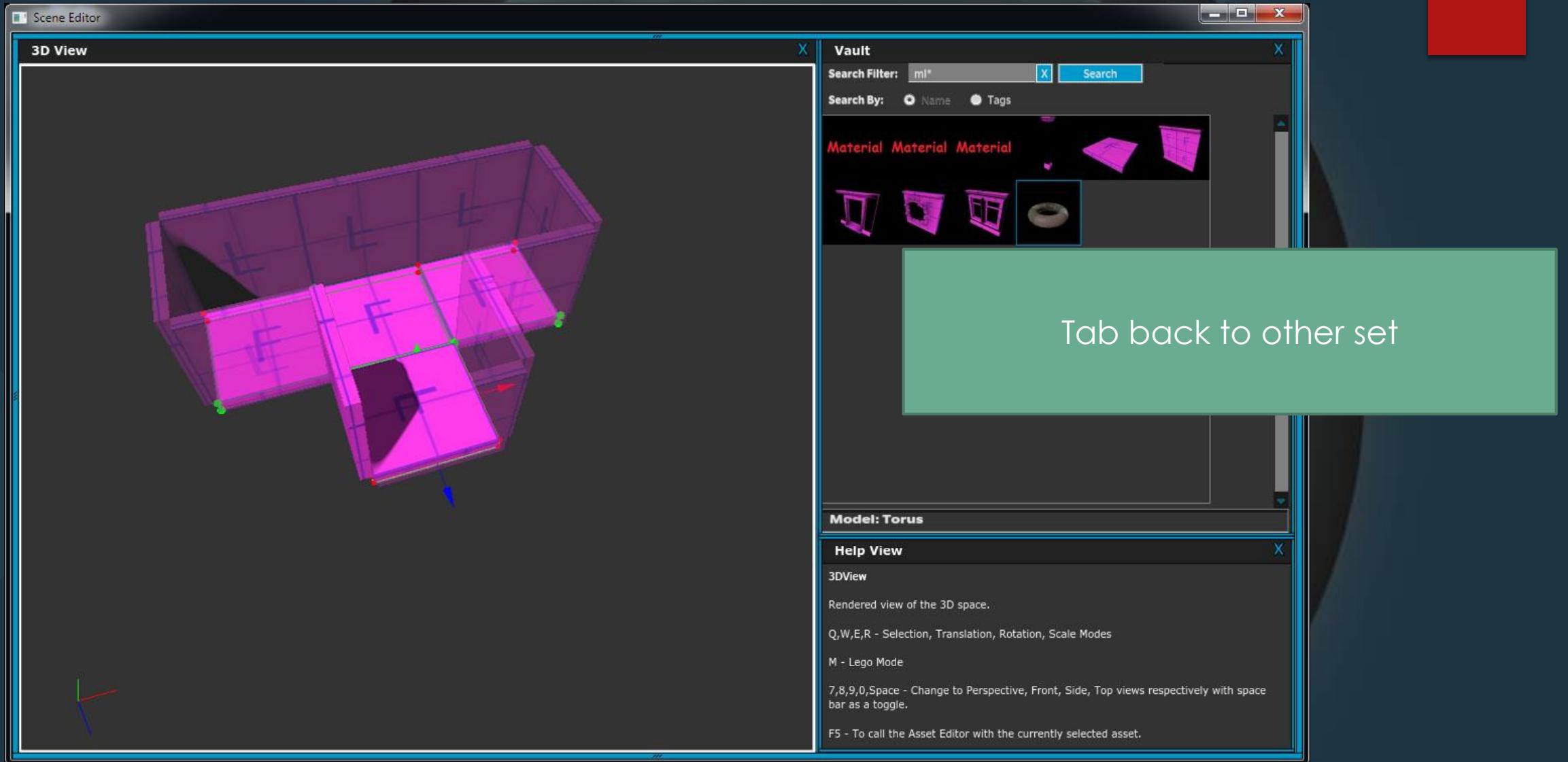


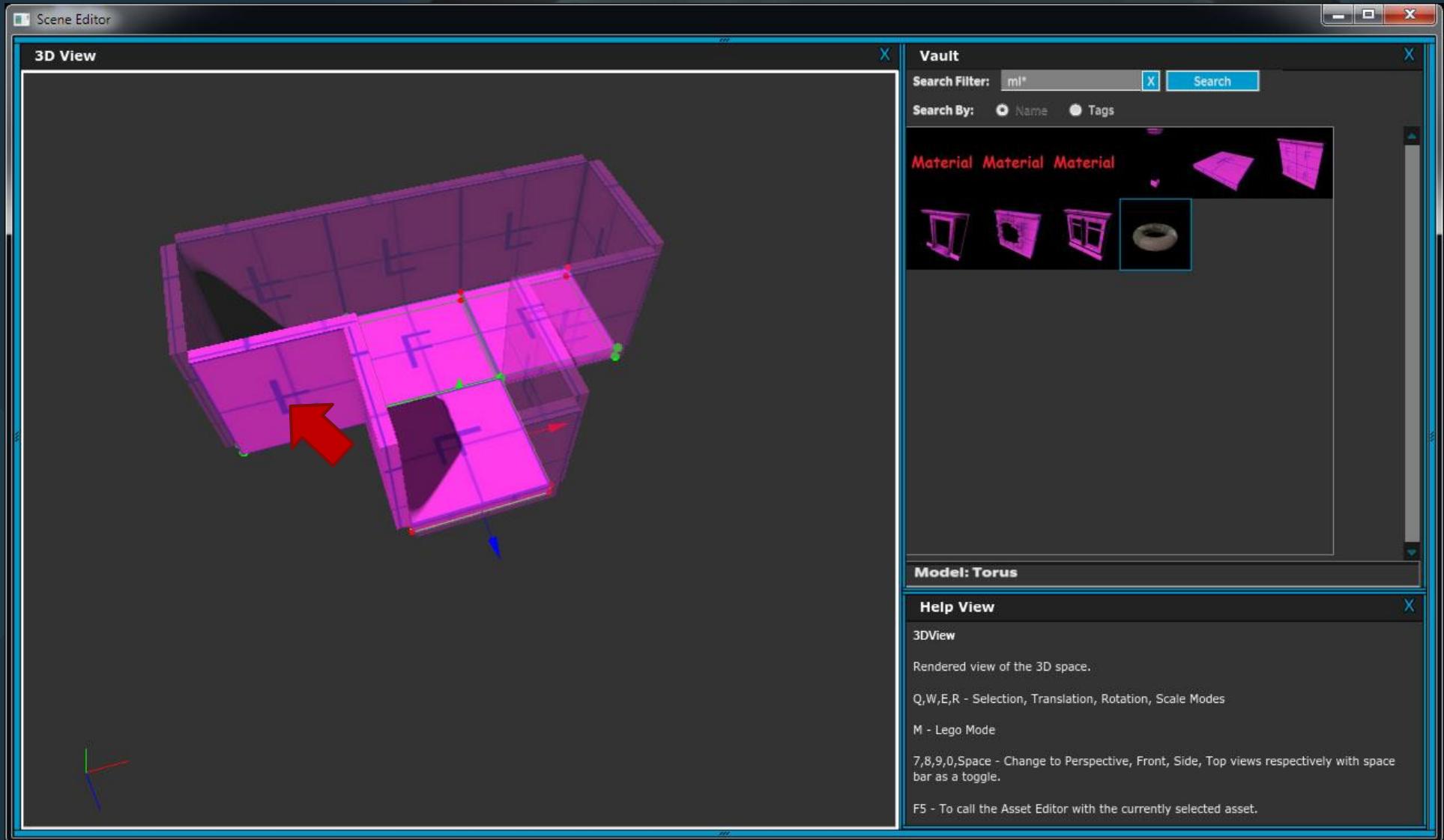


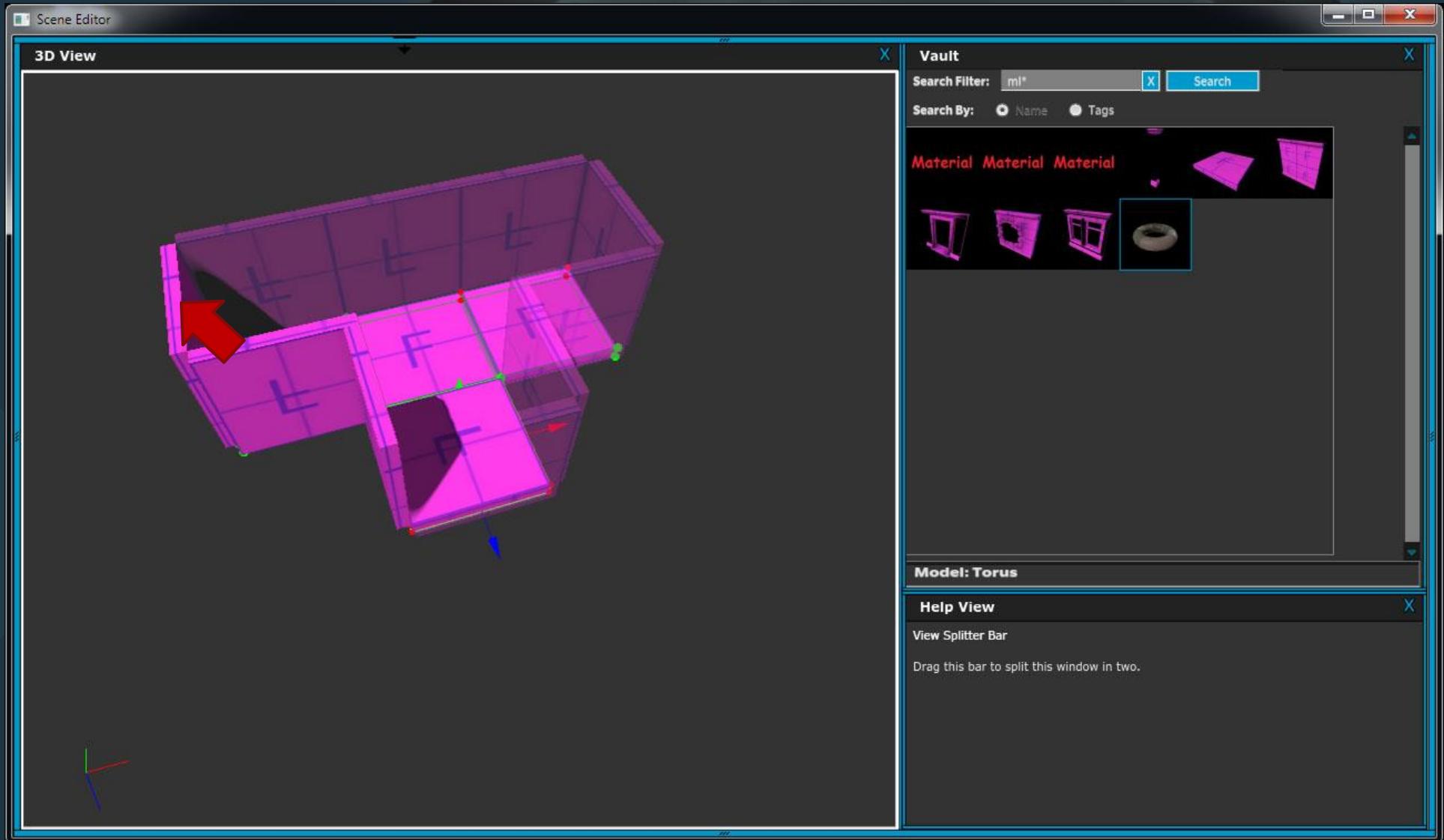


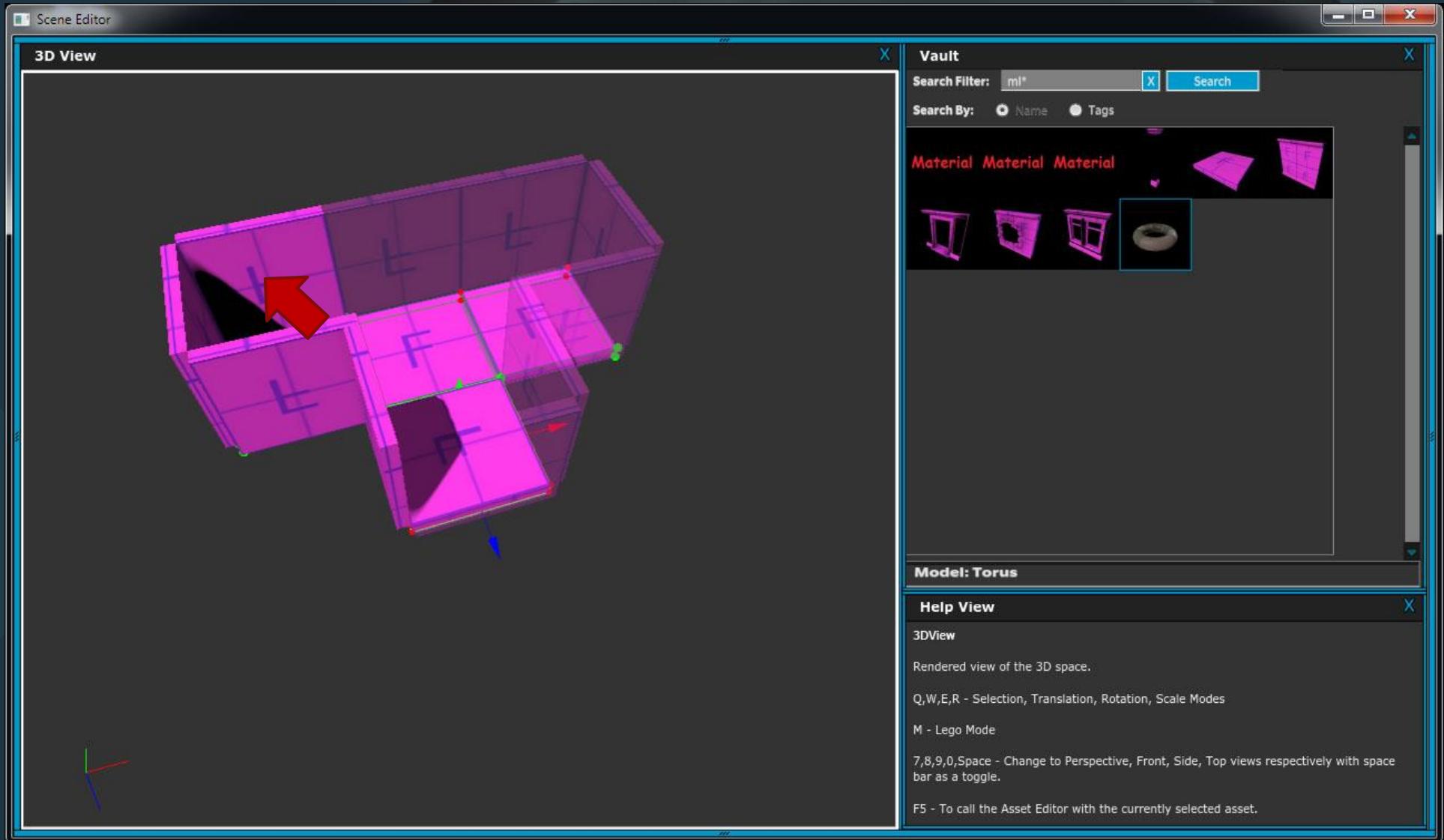


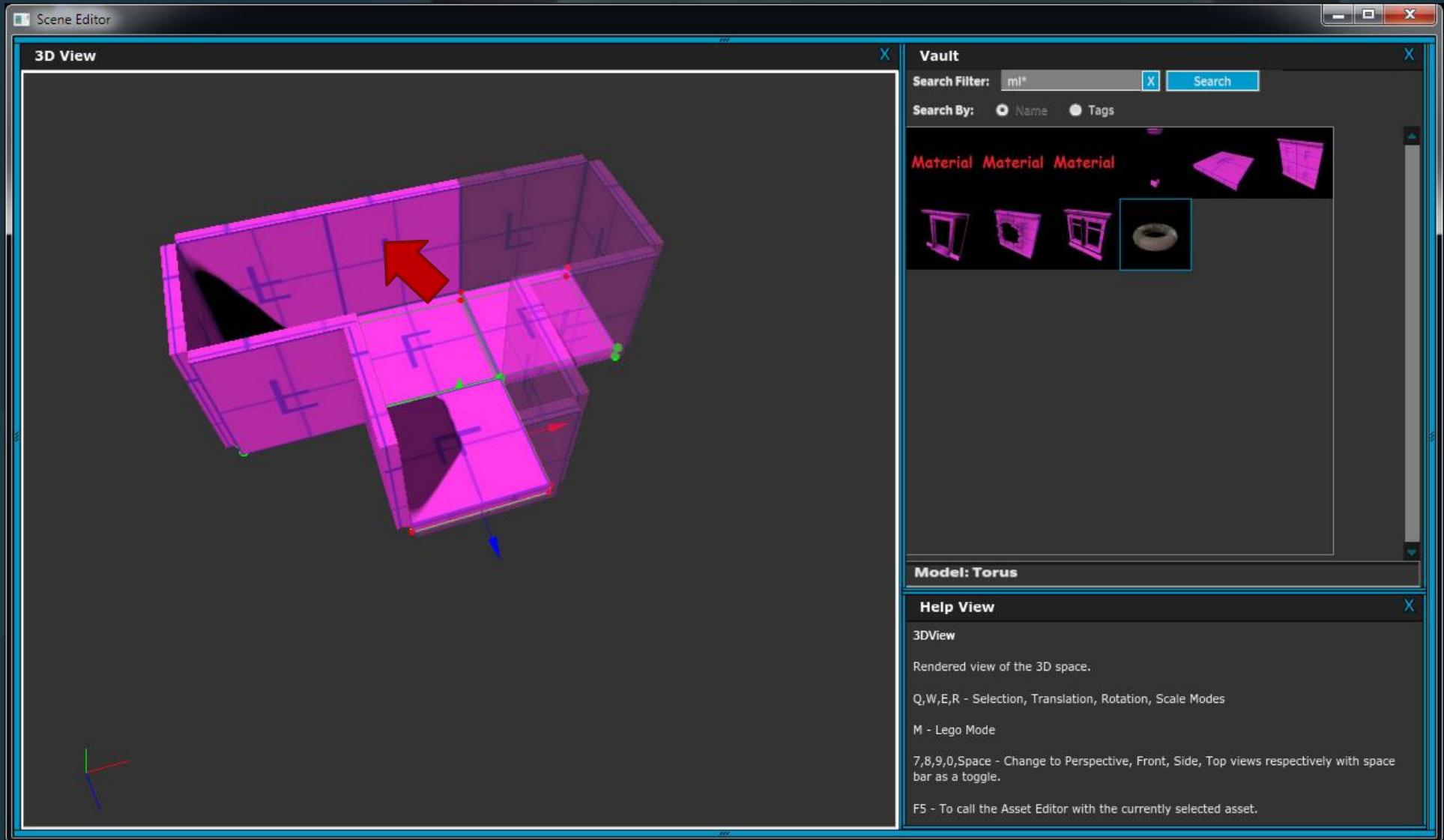


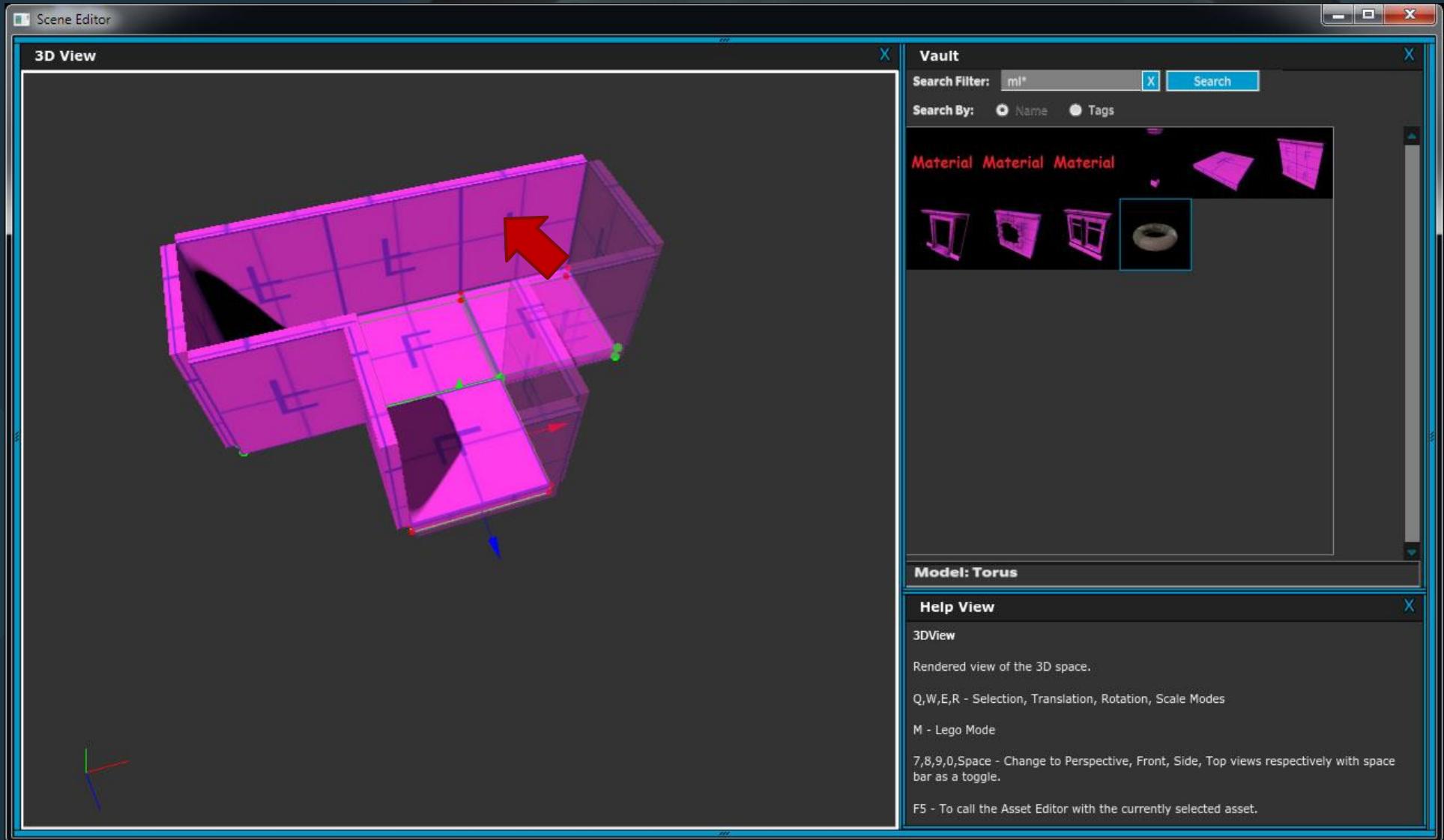


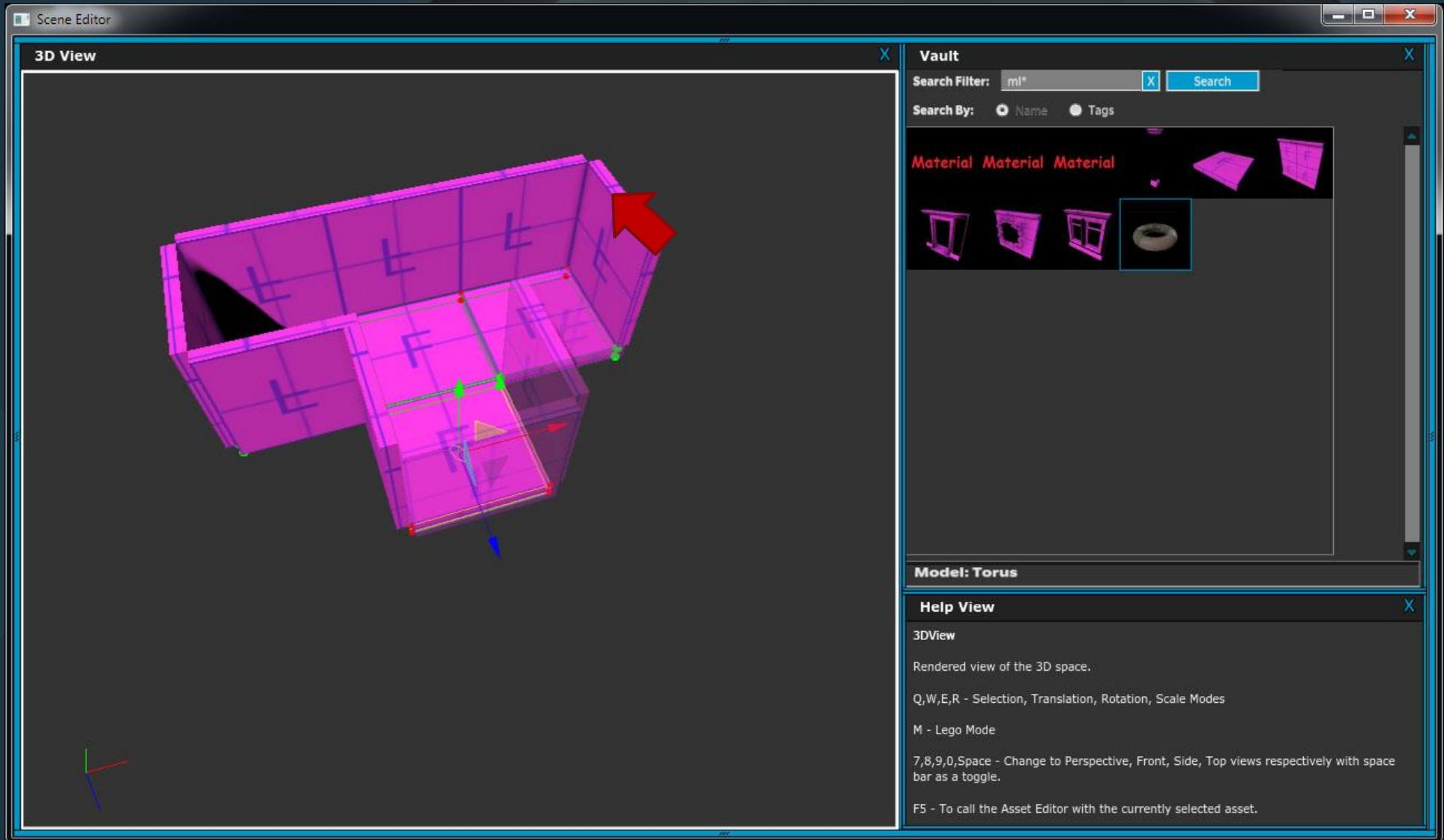


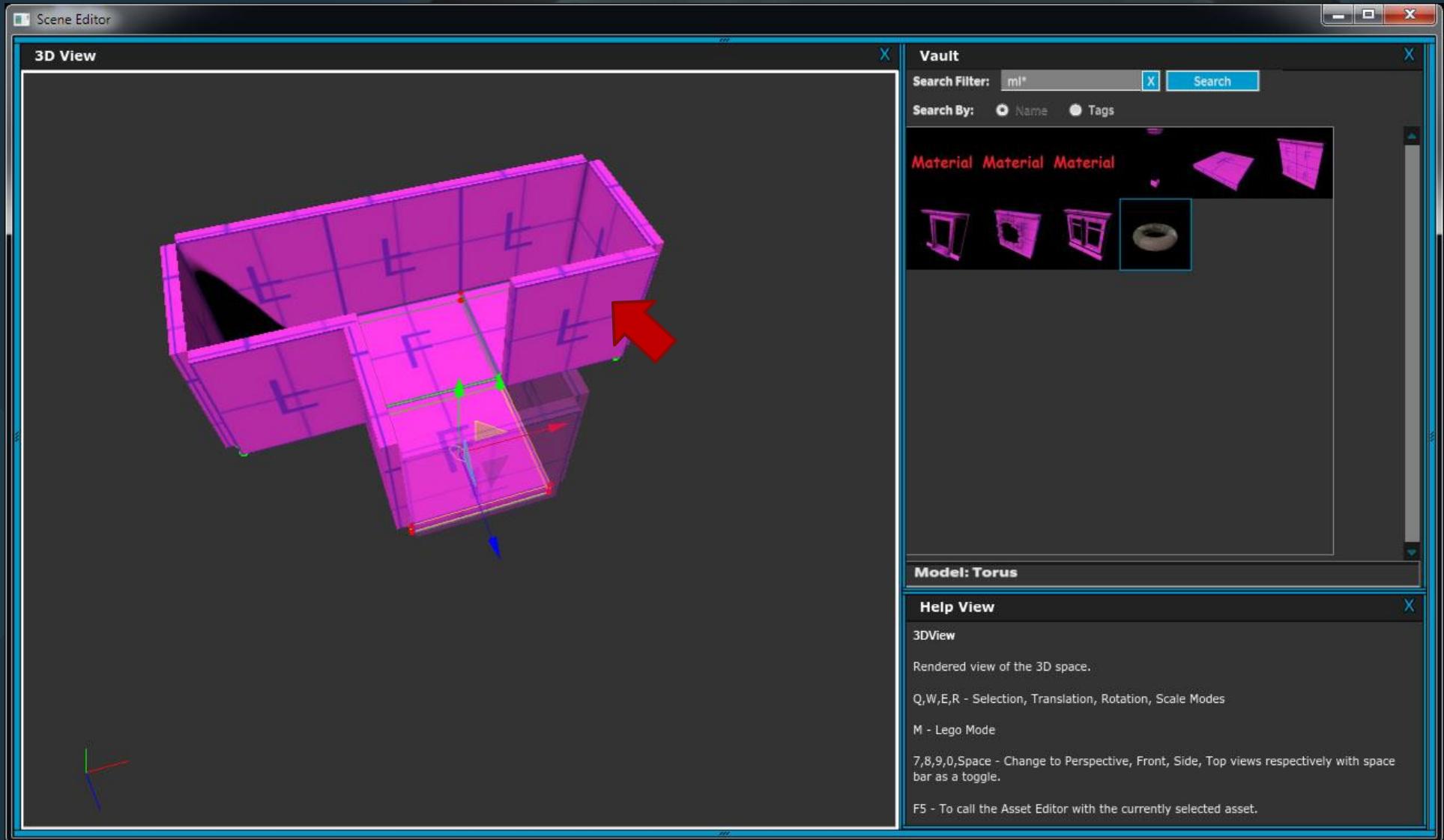


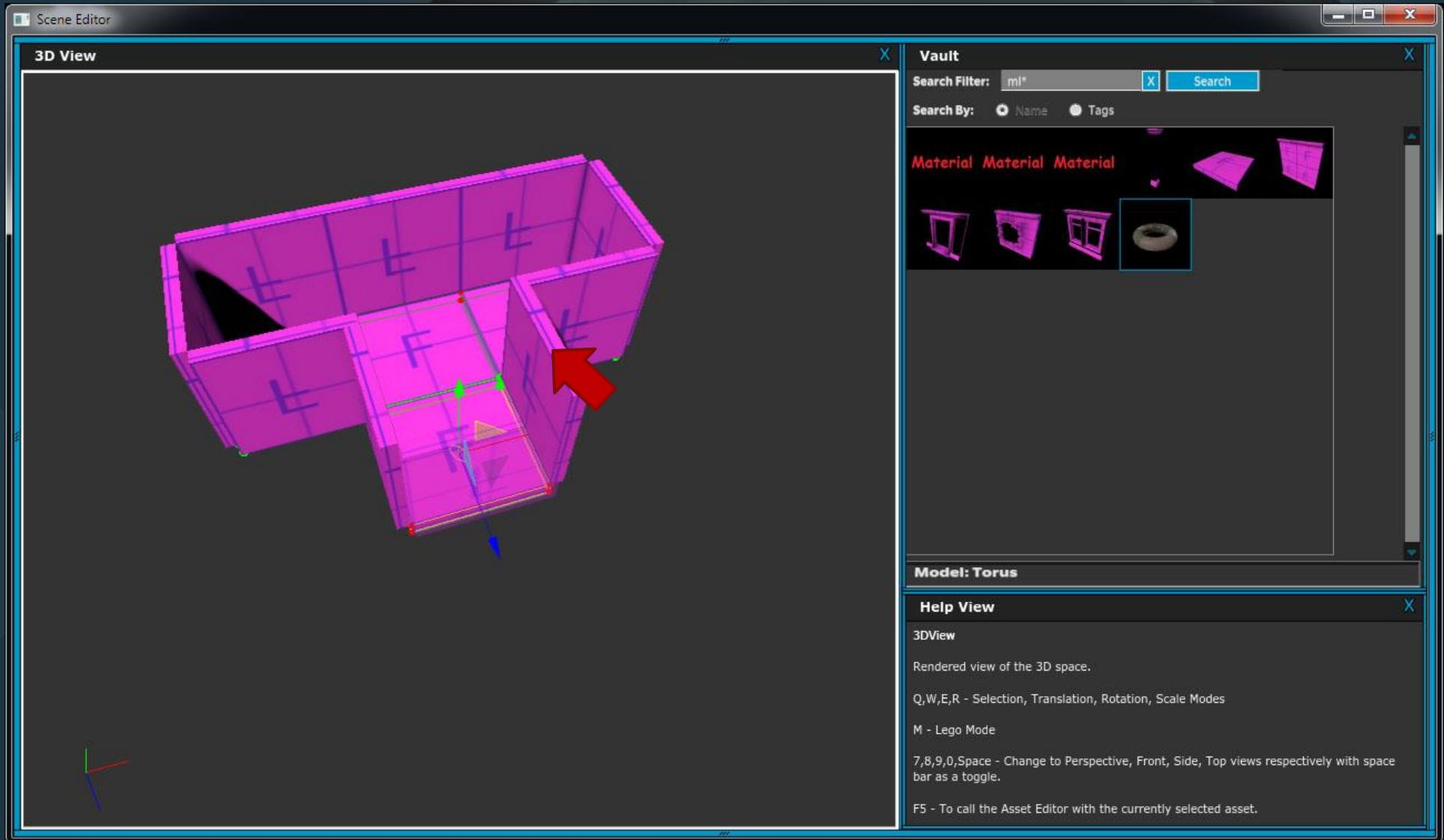


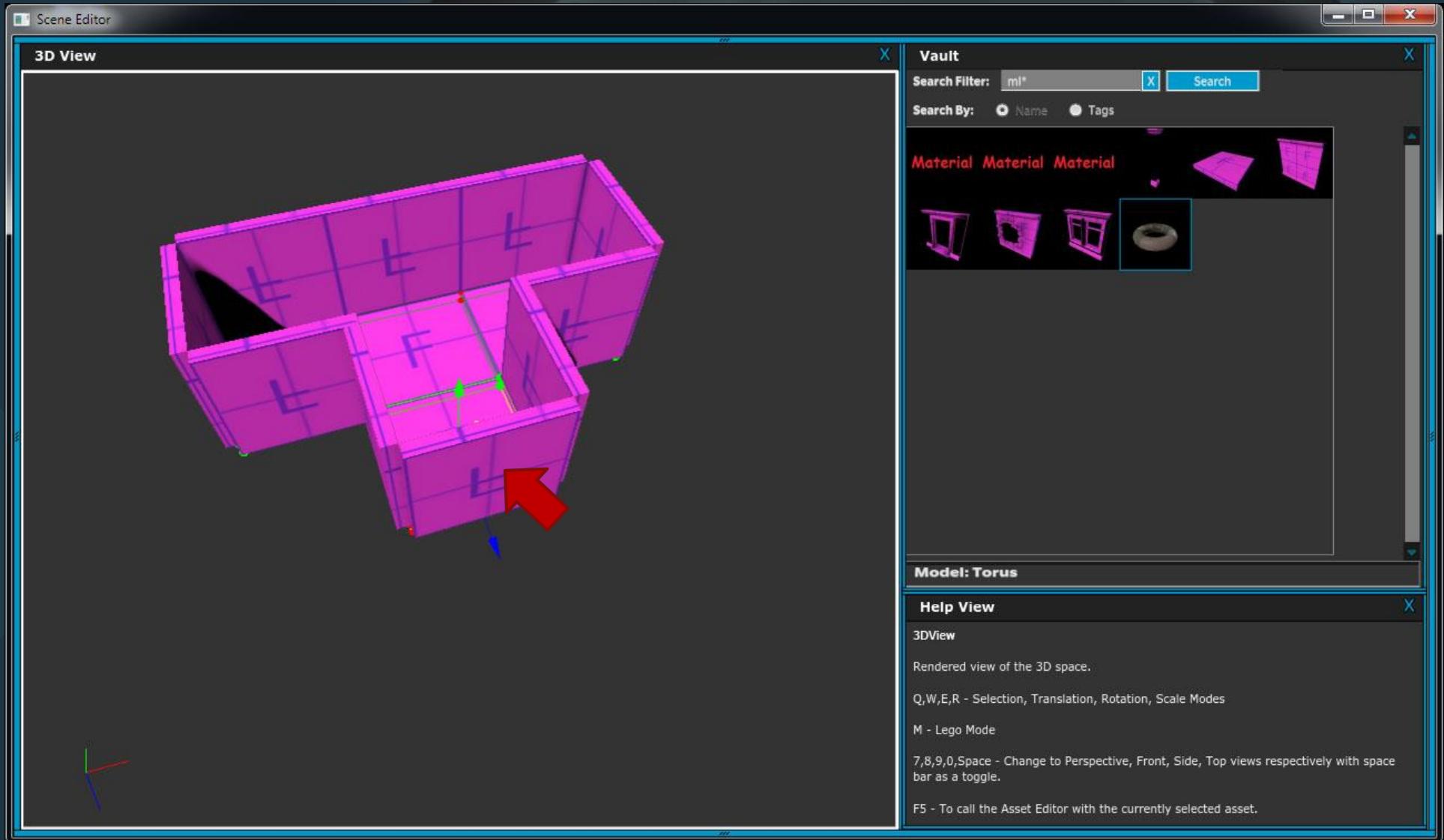












Example 4: Stamp mode

- ▶ What happened?

Example 4: Stamp mode

- ▶ What happened?
- ▶ More specific context

Example 4: Stamp mode

- ▶ What happened?
- ▶ More specific context
- ▶ Better information density

Example 4: Stamp mode

- ▶ What happened?
- ▶ More specific context
- ▶ Better information density
- ▶ Fast and simple message creation

Example 4: Stamp mode

- ▶ What happened?
- ▶ More specific context
- ▶ Better information density
- ▶ Fast and simple message creation
- ▶ Immediate message translation and response

Example 4: Stamp mode

- ▶ What happened?
- ▶ More specific context
- ▶ Better information density
- ▶ Fast and simple message creation
- ▶ Immediate message translation and response
- ▶ Forgot: Muscle memory

Example 4: Stamp mode

- ▶ What happened?
 - ▶ More specific context
 - ▶ Better information density
 - ▶ Fast and simple message creation
 - ▶ Immediate message translation and response
 - ▶ Forgot: Muscle memory
- When in doubt, be like Maya**

Example 4: Stamp mode

- ▶ What happened?
- ▶ More specific context
- ▶ Better information density
- ▶ Fast and simple message creation
- ▶ Immediate message delivery
- ▶ Forgot: Muscle memory

When in doubt, be
like Maya

The more different something is, the bigger
the bridge to the old way needs to be.

Review



Review

- ▶ The only way is to watch it live

Review

- ▶ The only way is to watch it live
- ▶ Choice is bad

Review

- ▶ The only way is to watch it live
- ▶ Choice is bad
- ▶ Choice is good

Review

- ▶ The only way is to watch it live
- ▶ Choice is bad
- ▶ Choice is good
- ▶ 20 Questions is all you ever need

Review

- ▶ The only way is to watch it live
- ▶ Choice is bad
- ▶ Choice is good
- ▶ 20 Questions is all you ever need
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- ▶ One minute is worth 12 iterations

Review

- ▶ The only way is to watch it live
- ▶ Choice is bad
- ▶ Choice is good
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- ▶ Learning curve is good
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Review

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- ▶ 20 Questions is all you ever need
- ▶ Learning curve is bad
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Usability is triage

Review

- ▶ The only way is to watch it live
- ▶ Choice is bad
- ▶ Choice is good
- ▶ 20 Questions is all you ever need
- ▶ Learning curve is bad
- ▶ Learning curve is good
- ▶ One minute is wrong
- ▶ When in doubt, k

Usability is triage

To make things more usable, don't try to
maximize usability in everything

#README

- ▶ “A mathematical theory of communication”
-- Claude Shannon
- ▶ “The Design of Everyday Things”
-- Donald A. Norman
- ▶ “The Man Who Lied to His Laptop: What We Can Learn About Ourselves from Our Machines”
-- Clifford Nass and Corina Yen



Usability is not
random #gdc13

MACTON@INSOMNIACGAMES.COM

@MIKE_ACTON