Perfecting Workflows tool development to empower designers Linda Kruse the Good Evil GmbH

> GAME DEVELOPERS CONFERENCE MARCH 18–22, 2019 | #GDC19







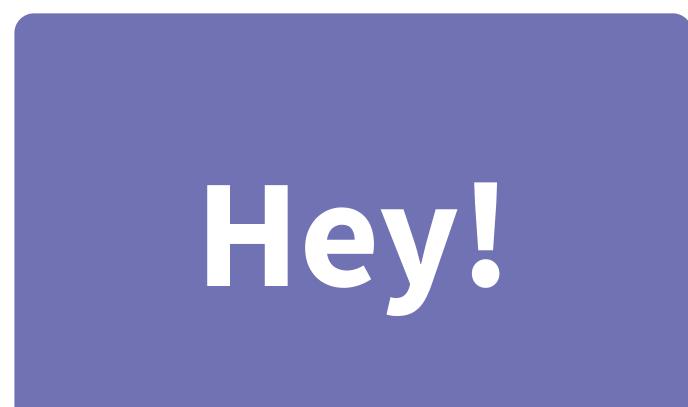


GDC

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Vice Chairwoman of the Board game – the German Games Industry Association

GAME DEVELOPERS CONFERENCE MARCH 18–22, 2019 | #GDC19





Best practices

EvilSystem





Best practices

- flexible & maintainable system
- In the end of the e
- independent of specific game mechanics + support content













We create games to make the world a better place!

82013 **3 People** educational games

mobile / web console / desktop sustainable business model





2019 6+ People educational games

mobile / web console / desktop sustainable business model





















WM









Landeszentrale für politische Bildung Nordrhein-Westfalen







ZNE Deutsches Zentrum für Neurodegenerative Erkrankungen in der Helmholtz-Gemeinschaft









Some of our clients.

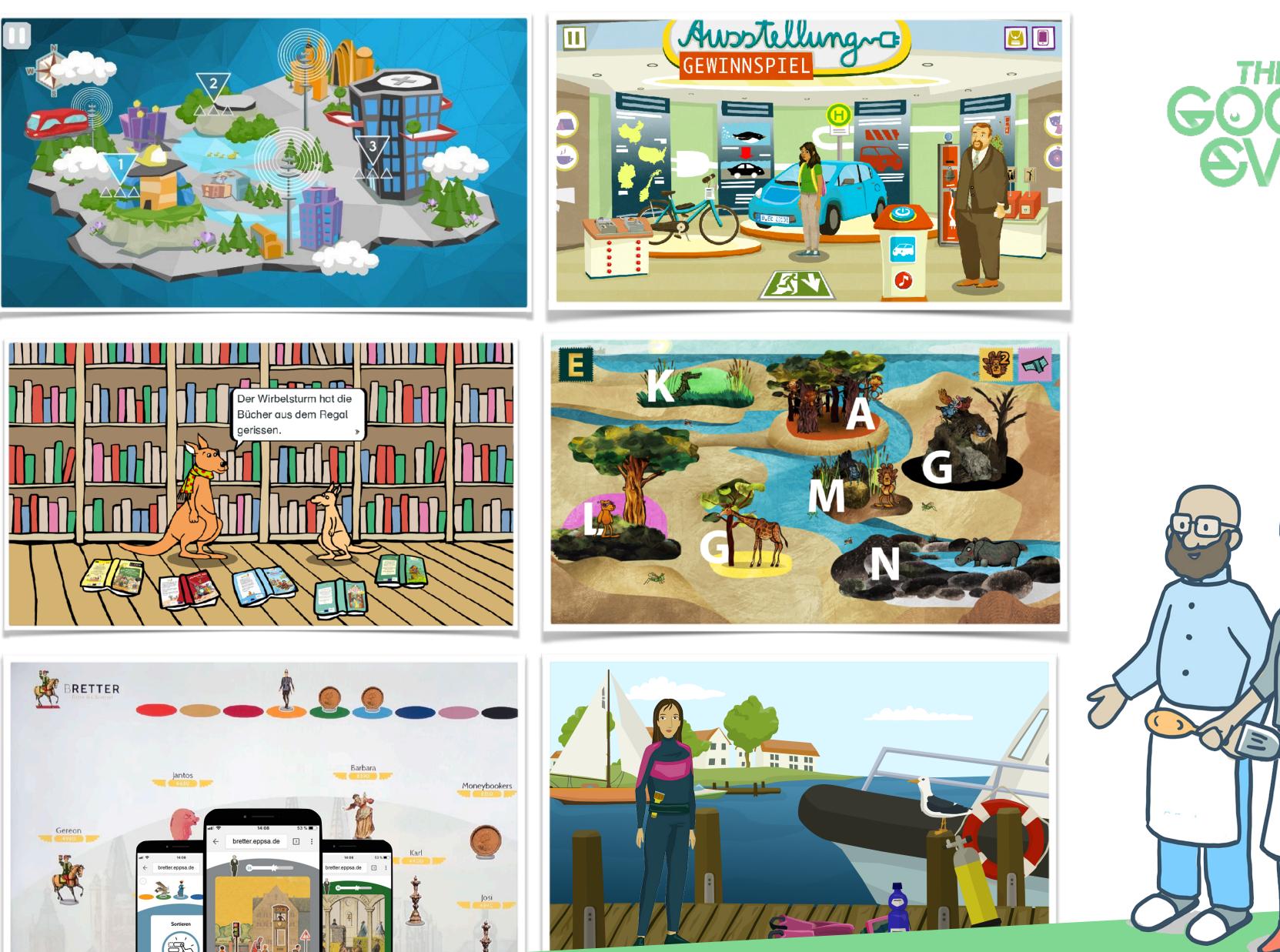






















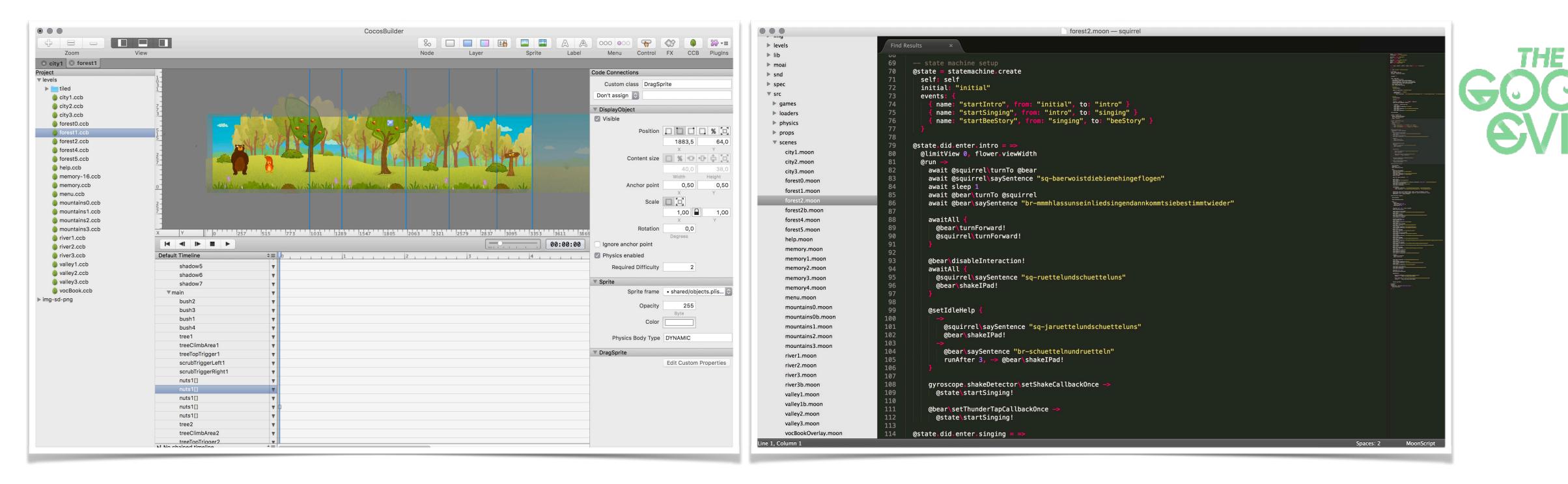






Squirrel & Bär: Learn English





artist

creates assets + animations

programmer

creates core functions, scripting gameplay, feedback, UI

game designer

rebuilds levels, asset setup, scripting, writes dialogues make build

testing









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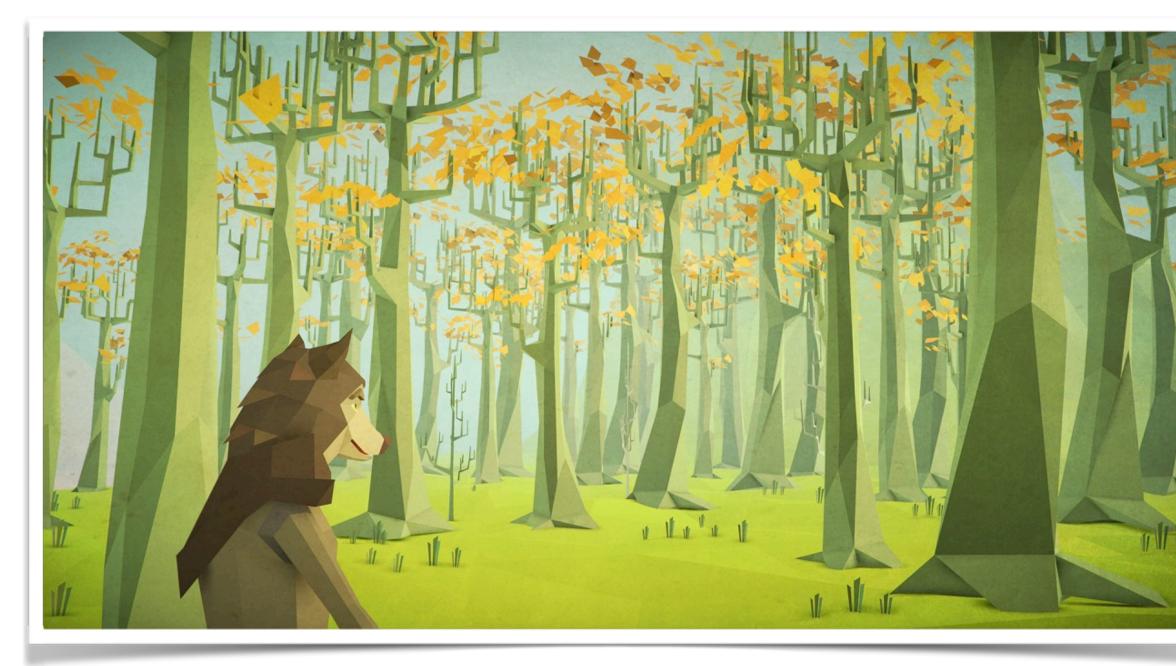


Problems of 3rd party tools (Unity):

- build for "beginners"
- no unified file management
- tedious setup (content!)

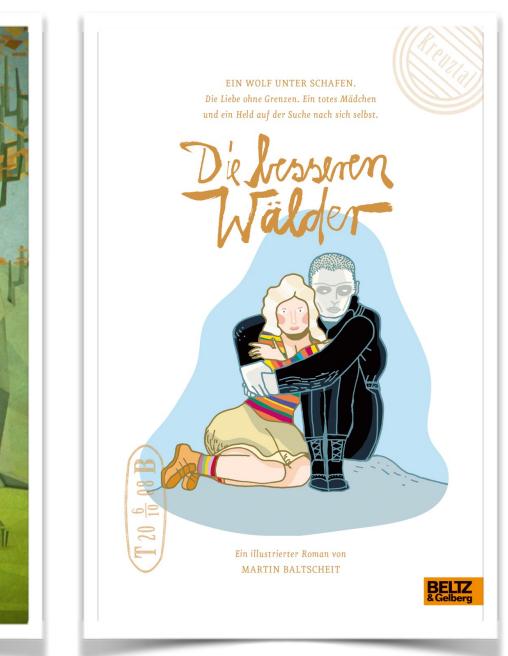
Basel 1610 • SOS Ostsee





Problems of 3rd party tools:

- only for "standard mechanics"
- dependent on support / hard to maintain
- conflicts between tools

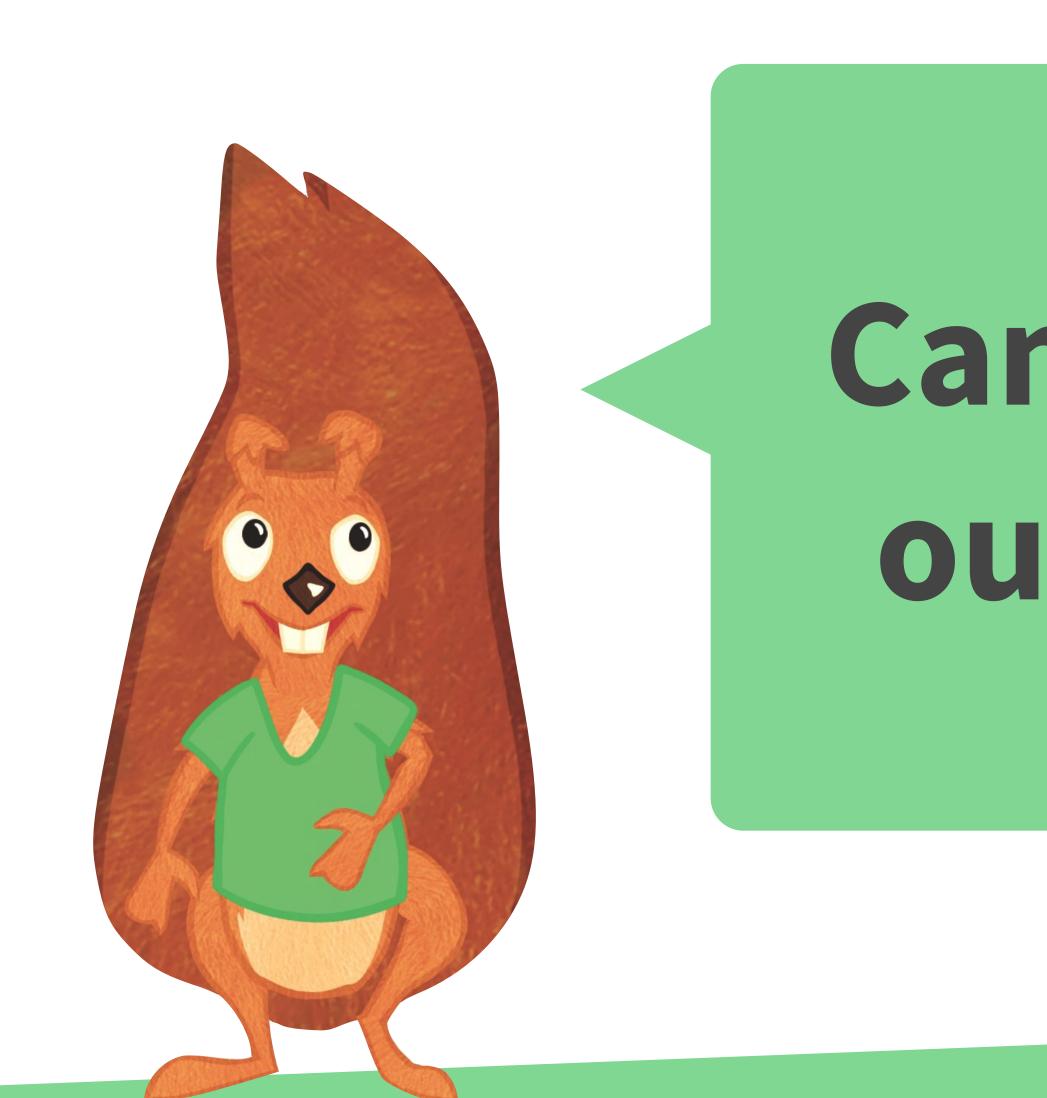




the Greener Woods









Can we optimize our workflow ?

Workflow analysis

Customer Journey with team:

- * Are there any repetitive tasks? Can they be automated? * What steals our creative time?
- * Defining "overlapping tasks" (between departments).
- * What applications are we using? Are they working?
- * What are the teams most "hated" tasks?





design considerations EvilSystem







EvilSystem design considerations

- represent full workflow (design / art / code / qa) - dialogue handling (branching / localisation)



designers

power/access for game designers (content / logic)

EvilSystem design considerations

- maintainable & independent (Unity / 3rd party tools) - **flexible** (features / mechanics / iterations) - unified file management (one place)



cocers

EvilSystem design considerations

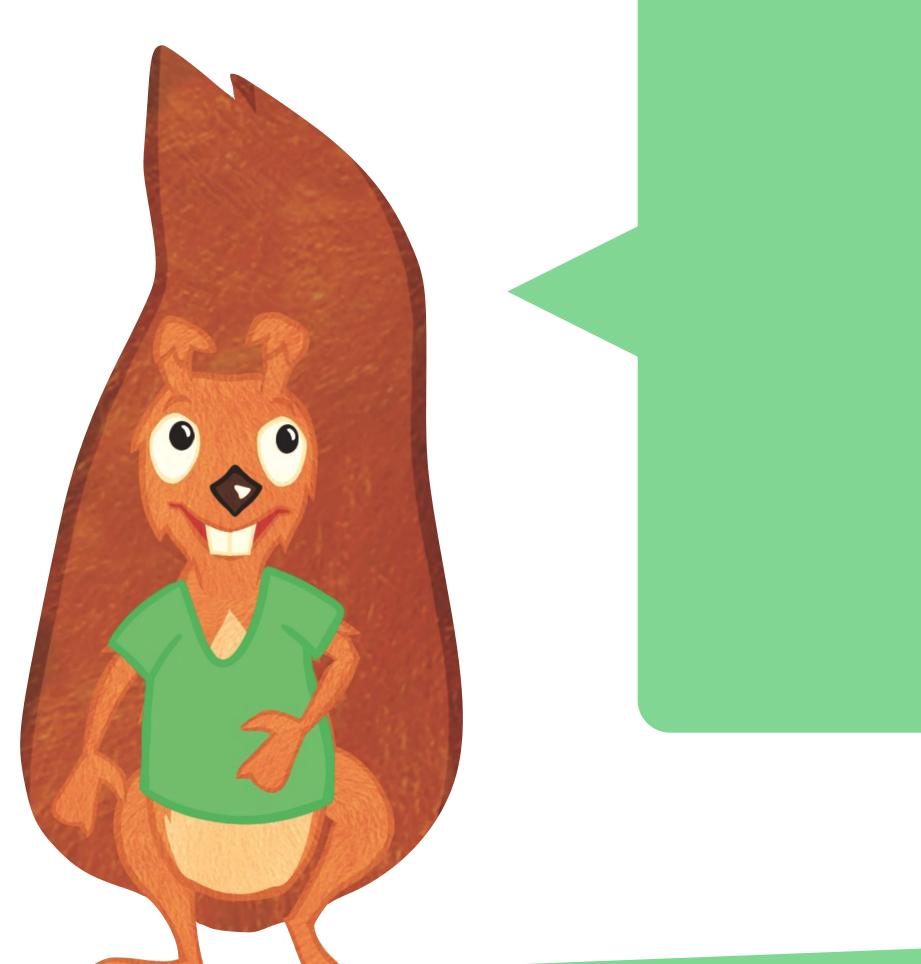
- read- & writeable logic (source code) - independent of specific mechanics



important



designers





I can change everything on my own!

coders



One accessible place!

important

Love to reuse for future projects!





implementation EvilSystem







EvilSystem

Content Management

Unity

Visual Scripting

additional Utilities













EvilSystem

Content Management

Unity

Visual Scripting

additional Utilities





Content Management

content model saves entities as "abstract entity contents"

- entities can receive
 - string, integer or bool variables
 - GameObjects on runtime
 - different "states" use "behaviors" (e.g. door <u>open</u> or door <u>closed</u>)



	1	-	Entities	VarEnitites	VarSets Categories	Rooms	
Scen	e Object	_	Name Only		Batch		Selection
Add To Room Prefab	<select room=""> <none></none></select>						
				÷			
➤ Forest1							
► Title							
► Forest2							
► Forest3							
BeeMemory							
Forest4							
▶ River1▶ River2							
River3							
► Valley3							
► Valley2							
► City1							
▼ City3							
BakeryDownArea_City	/3						
BakeryUpArea_City3							
BakeryExitArea_City3							
TrashCansArea_City3							
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► TrashCans_City3							
Streetlights_City3							
► Truck_City3							
Car_City3							
 HospitalArea_City3 							

Content Management

- entities can be added to categories
- entities manage
 - scene representation

 (e.g. rooms & closeups)

 Ulelements



l	#Scene	C Game	📲 Animator	†‡† Audio Mixer	Sprite Editor	S Dialogue Lines	Scontent Editor	S Flow Editor	S Task Editor		
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L		Dragables_(City1								
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L	City5										
L	 Mountain2 Mountain3 										
L	Mountain4										
L	Forest5										
L	► City2										
L	► Valley1										
L	Mountain1										
L	Stickers										
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A flexible & maintainable system!





- 2,5D adventure
- gameplay driven
- multiplatform
- ~sequential levels
- dialogues (voice!)
- puzzles







Squirrel & Bear: Europe (in development)







Content Management

Unity

EvilSystem

Visual Scripting

additional Utilities

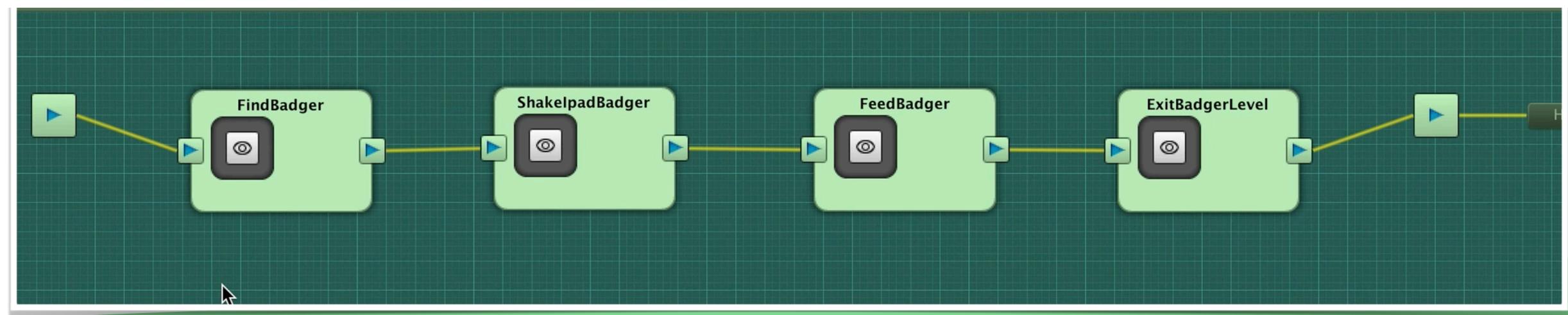




Visual Scripting

node editor defines game flow

- game flow follows one node after the other on runtime
- nodes follow hierarchy of nested elements (!lower level) _

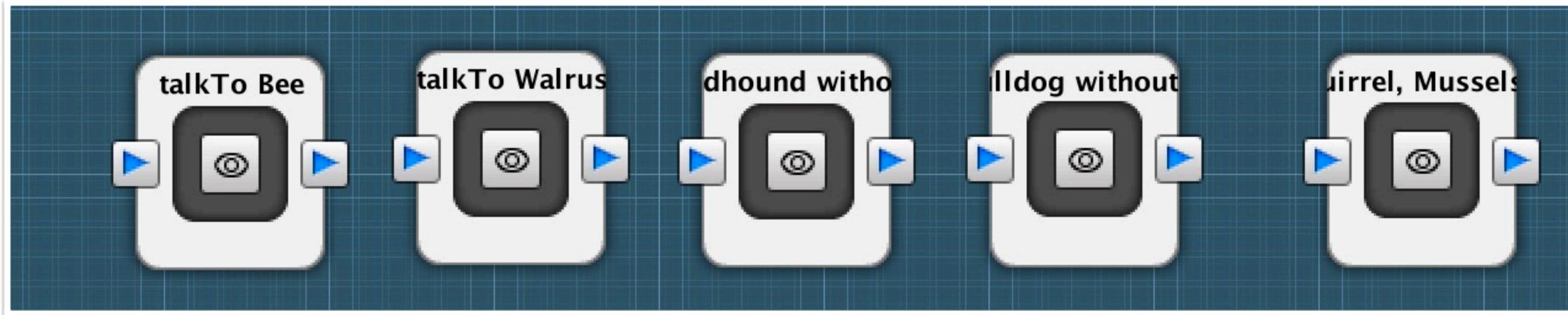




Visual Scripting

game flow

- calls tasks / UI elements
- reacts to GameEvents / conditions







Setup

#1

Flow Editor

(logic setup / game design)

Task Editor

#2



Scene Editor

(visual setup / level design)

Setup

#1

Flow Editor

(logic setup / game design)

Task Editor

#2



Scene Editor

(visual setup / level design)



Position	Story	Task	Animal	Learning	Have to	Can do
1	SQB arrive outside of Bruges with plane. Plane can slide on screen first, then SQB can walk in (if easier).	SQ to set task: find Bee (follow pollen dust).	SQ+B	How does Landscape outside Bruges look like	x	

5	SQ loves climbing up towers, churches and other things.	 SQ: Follow pollen dust SQ: climb up to find bee. Find hidden facts about Belfry (and his bell). 	SQ, Bee	Hidden Facts (1,2)	X	X
6	SQ found bee. Translation Bee, Happy to see SQB (Bee savers). Happy to help. Wants to fly into SQ ear, but its too small. Need to fly into B ear. Bee flies down. SQ has to follow.	SQ: Tap bee to talk.	SQ+B, Bee	Bee can only translate through Bear.	X	

Squirrel & Bear: Europe • level design: Bruges, BE



- create new flow element "FindBee" for Bruges scene _
- only Squirrel can reach Bee _
 - If **Squirrel** can **reach Bee** start dialogue else trigger help dialogue of Squirrel

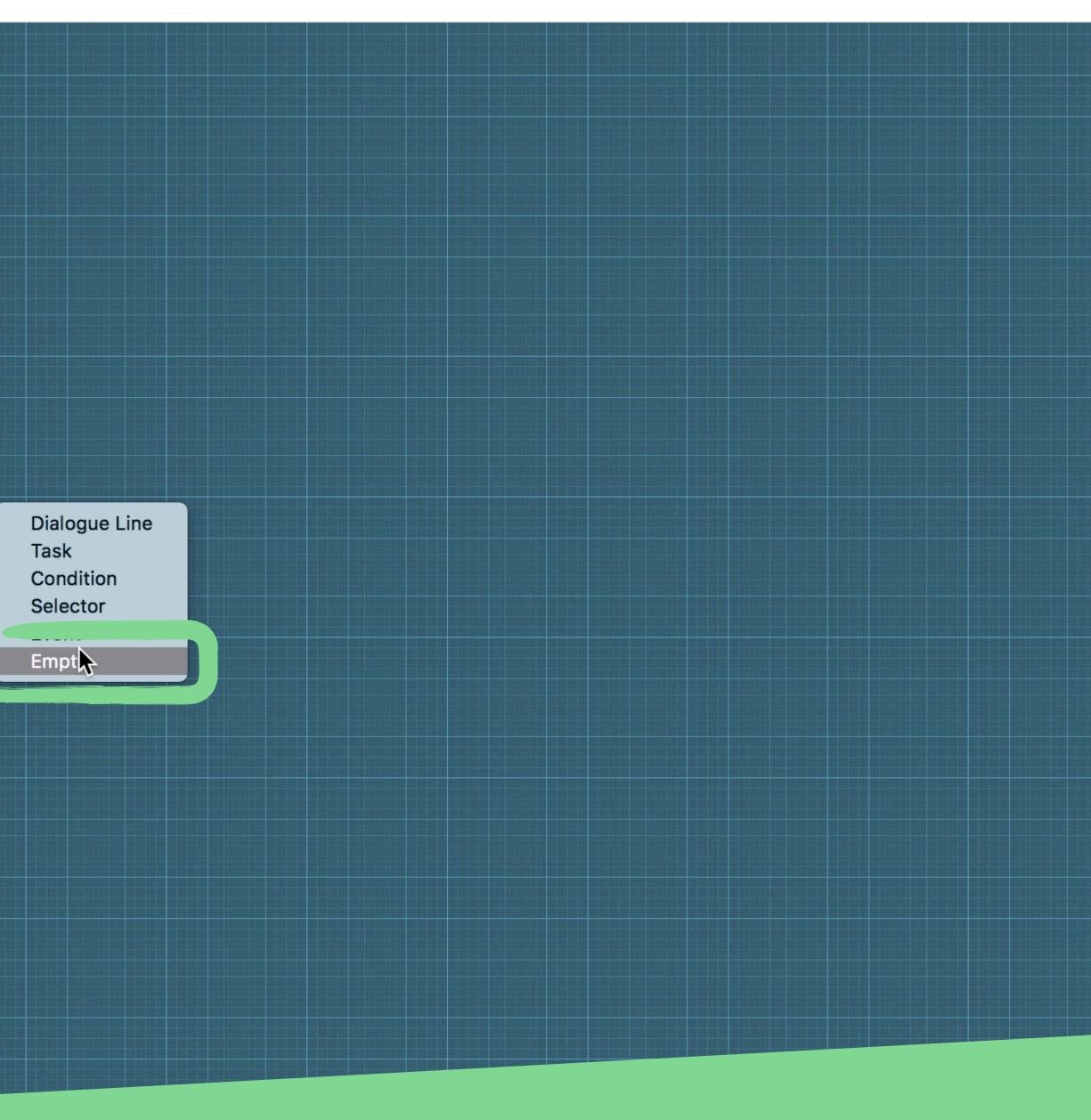


trigger dialogue when **Squirrel**,,talks to" Bee (click on Bee)

Flow Editor

(logic setup / game design)

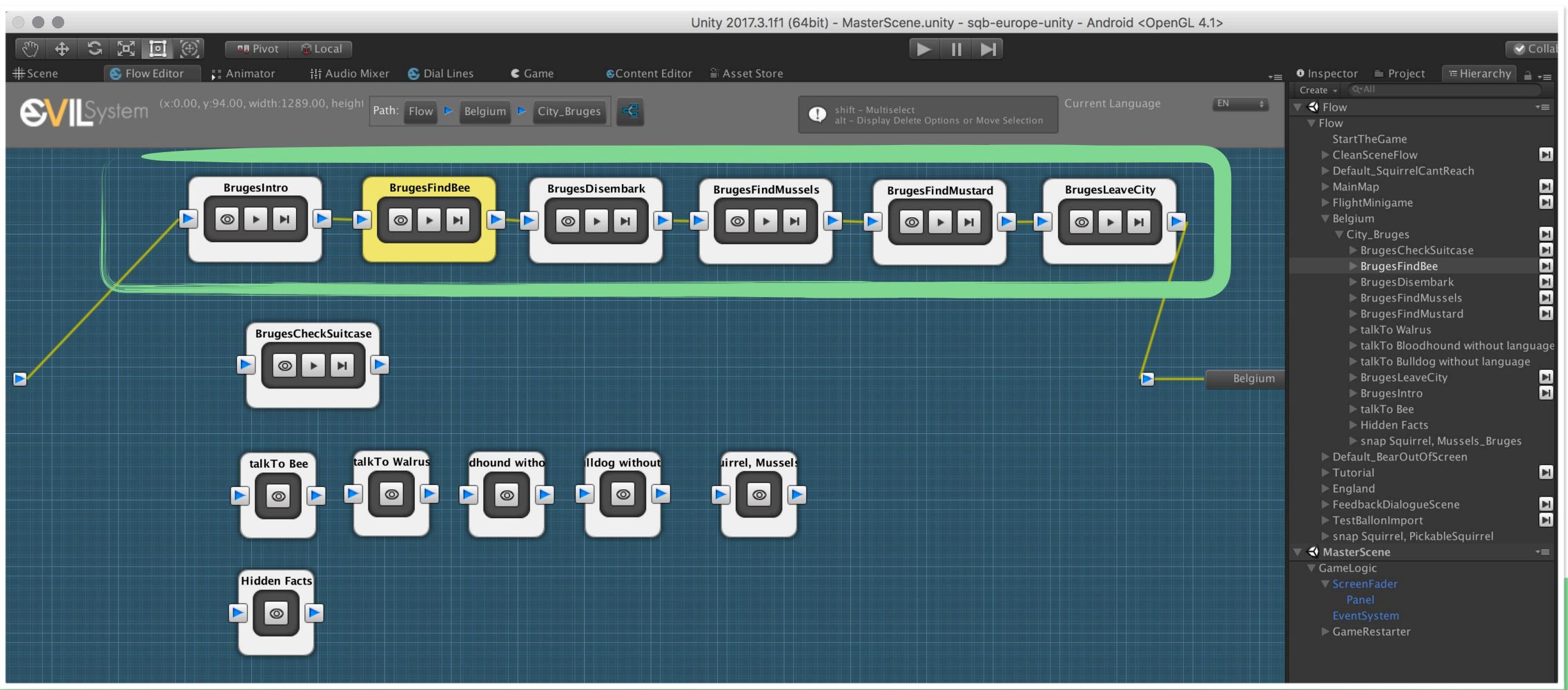
Create Selection



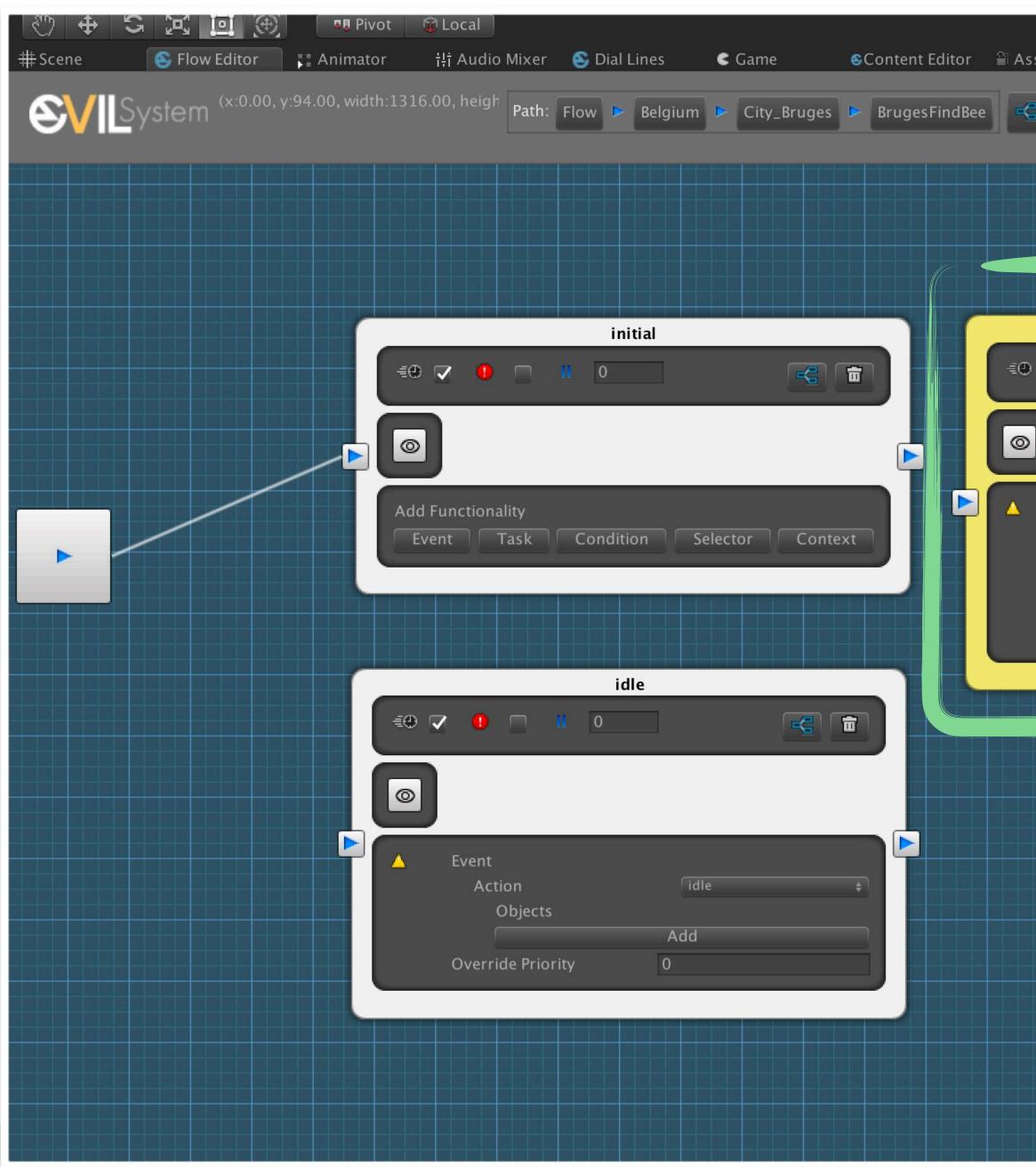
Flow Editor (logic setup)



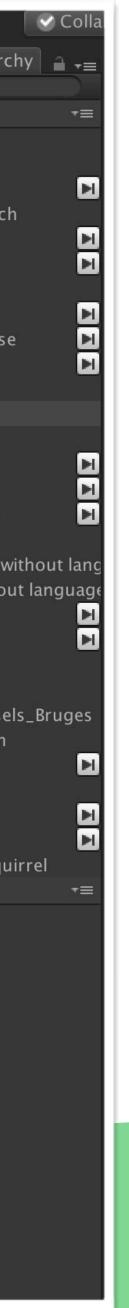








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	alt – Display Delete Options or Move Selection	▼ Flow
		StartTheGame
		► CleanSceneFlow
		Default_SquirrelCantRead MainMap
		► FlightMinigame
		▼ Belgium
		City_Bruges
		► BrugesCheckSuitcas
talkTo B	Bee	▼ BrugesFindBee
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		► talkTo Walrus
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Action	talkTo +	► talkTo Bulldog witho
Objects	3r	ugesDise > BrugesLeaveCity
Entity/Bee		► BrugesIntro
	Add	► talkTo Bee
Override Priority	Add	► Hidden Facts
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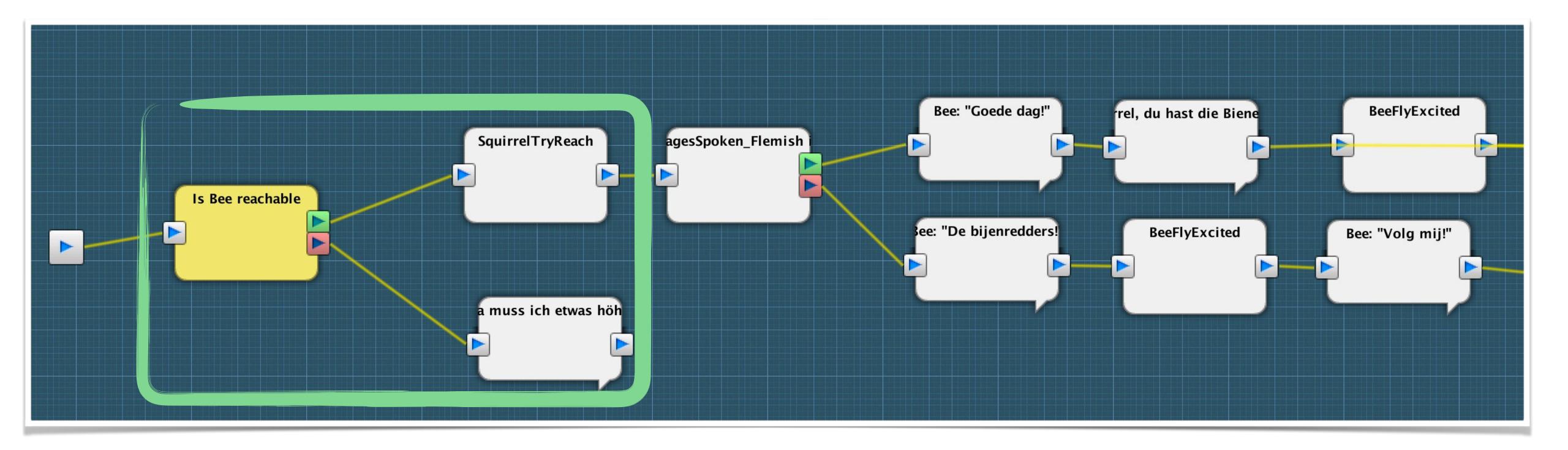




- create new flow element "FindBee" for Bruges scene
- only Squirrel can reach Bee
 - If **Squirrel** can **reach Bee** start dialogue else trigger help dialogue of Squirrel



trigger dialogue when Squirrel,,talks to" Bee (click on Bee)





Flow Editor · Conditions



	SquirrelTryReach
Is Bee reachable by Squirrel?	Task!
	Squirrel: "Da muss ich etwas höher klettern."



Task Editor

S Task Editor

<mark>⋕</mark>Scene

S Flow Editor

System 3

Appearance

Parallel Is Horizontal

Show Blocking

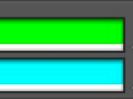
Show All Tasks

 \checkmark

Collapse All Tasks

Hide Controls

Resize Controlarea



/ Sequence / Parallel

Create

Sequence

Parallel

Save

Save As...

Refresh List

Load

SquirrelTake

SquirrelTryReach

SquirrelUnblockAndSetDefault

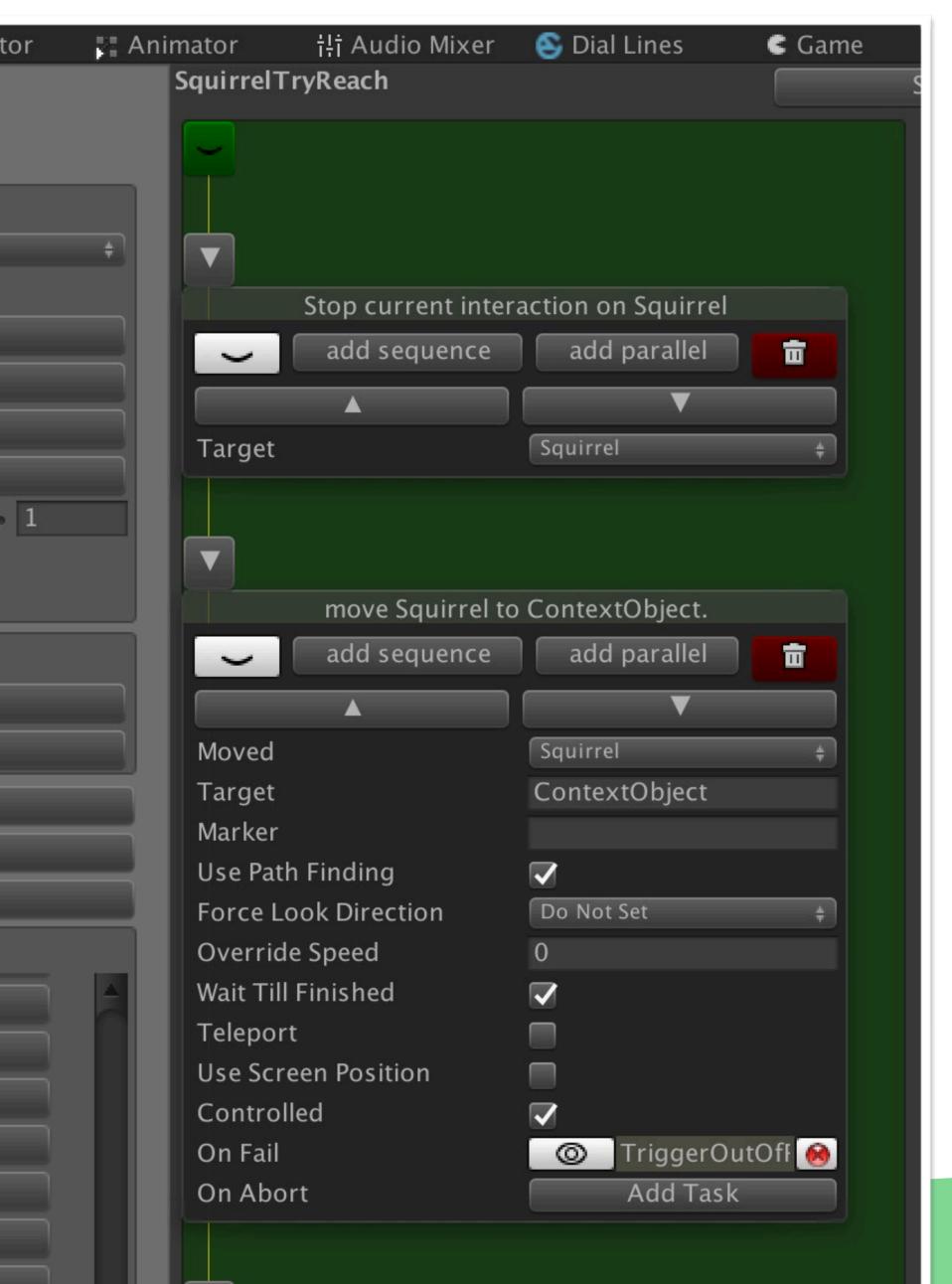
SquirrelUnClimbBear

SquirrelWalkAndTalkToNPC

SquirrelWave

StartFixedCameraSkippable

StepLeft



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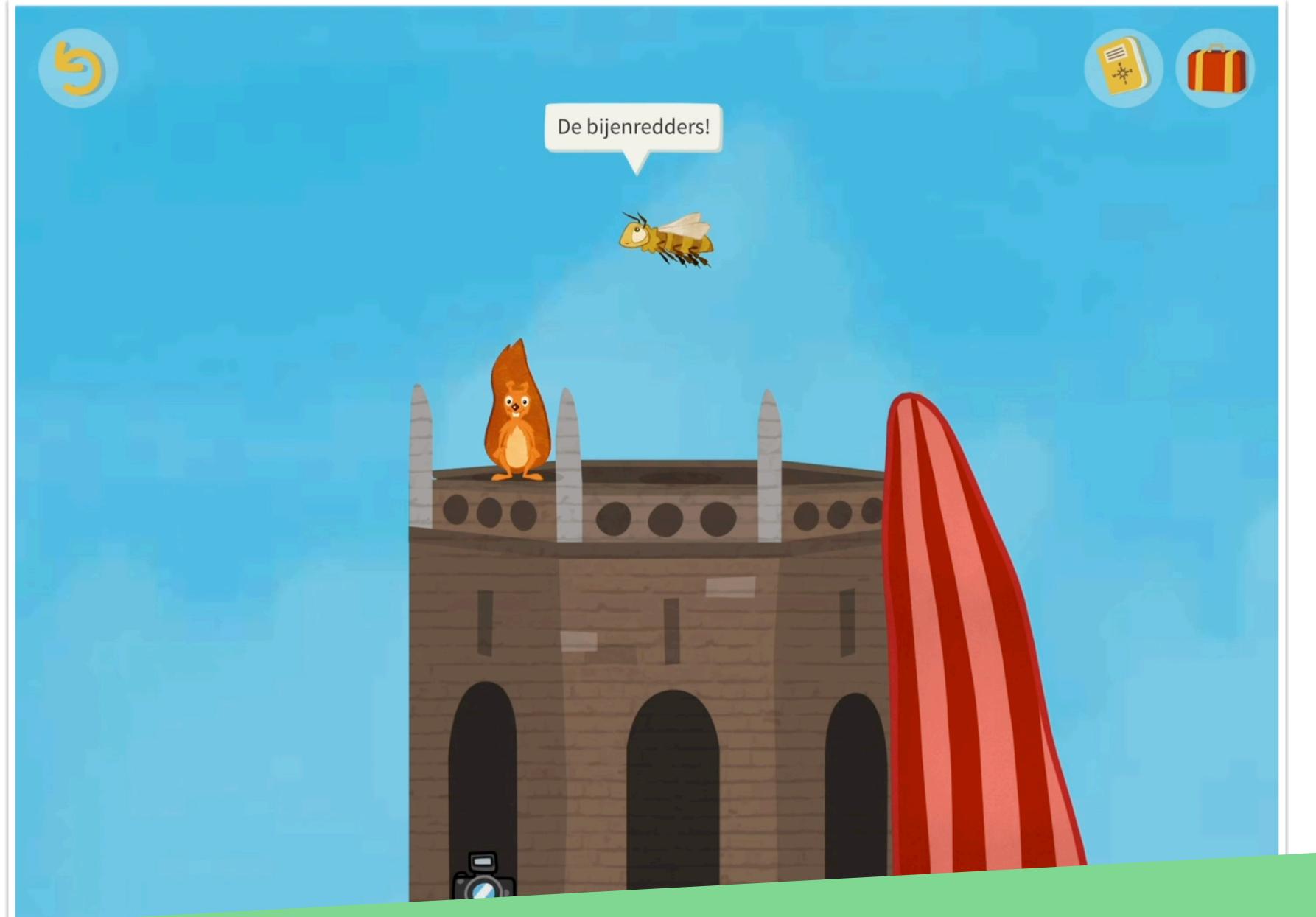




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Squirrel & Bear: Europe (in development)

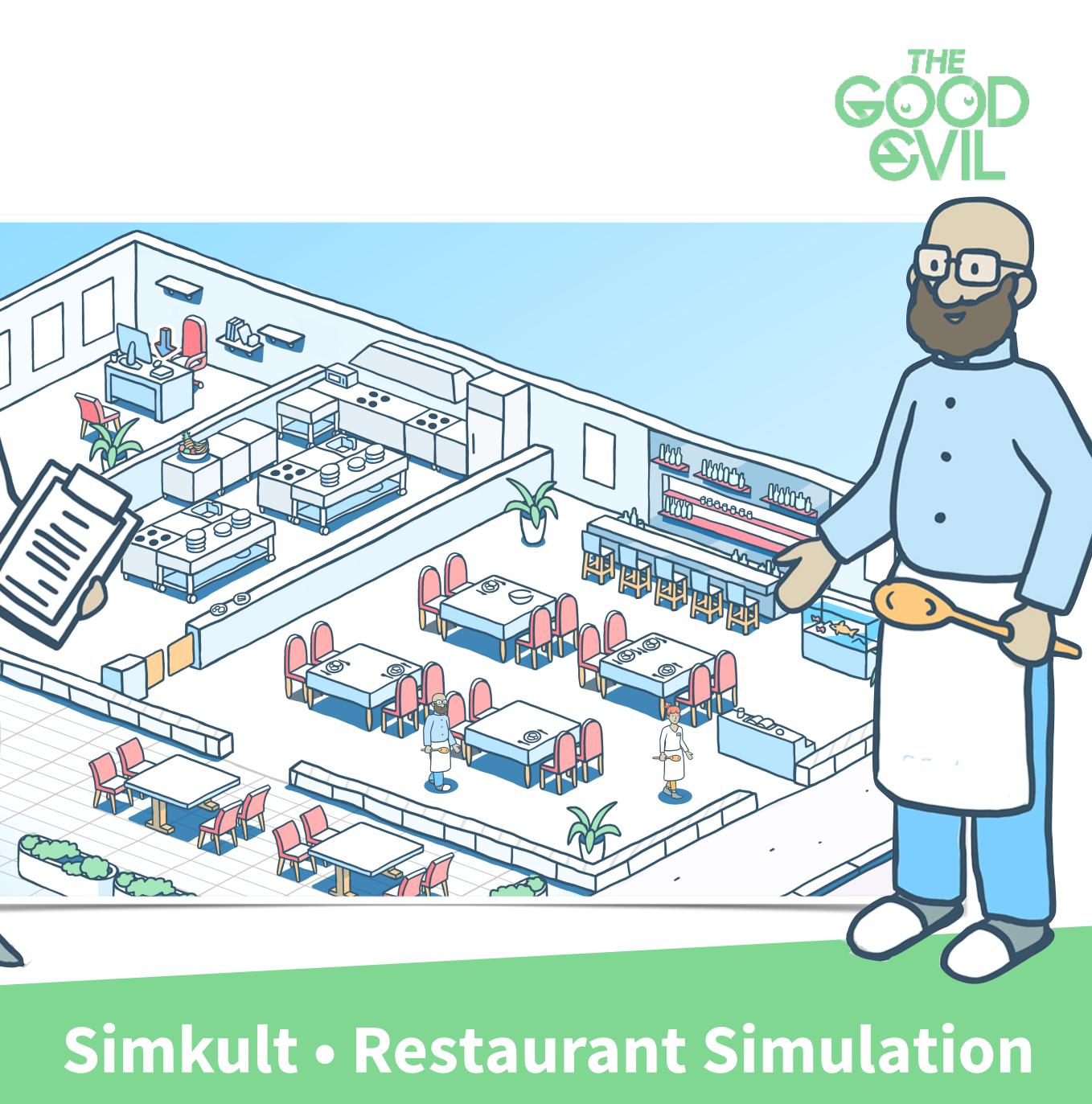


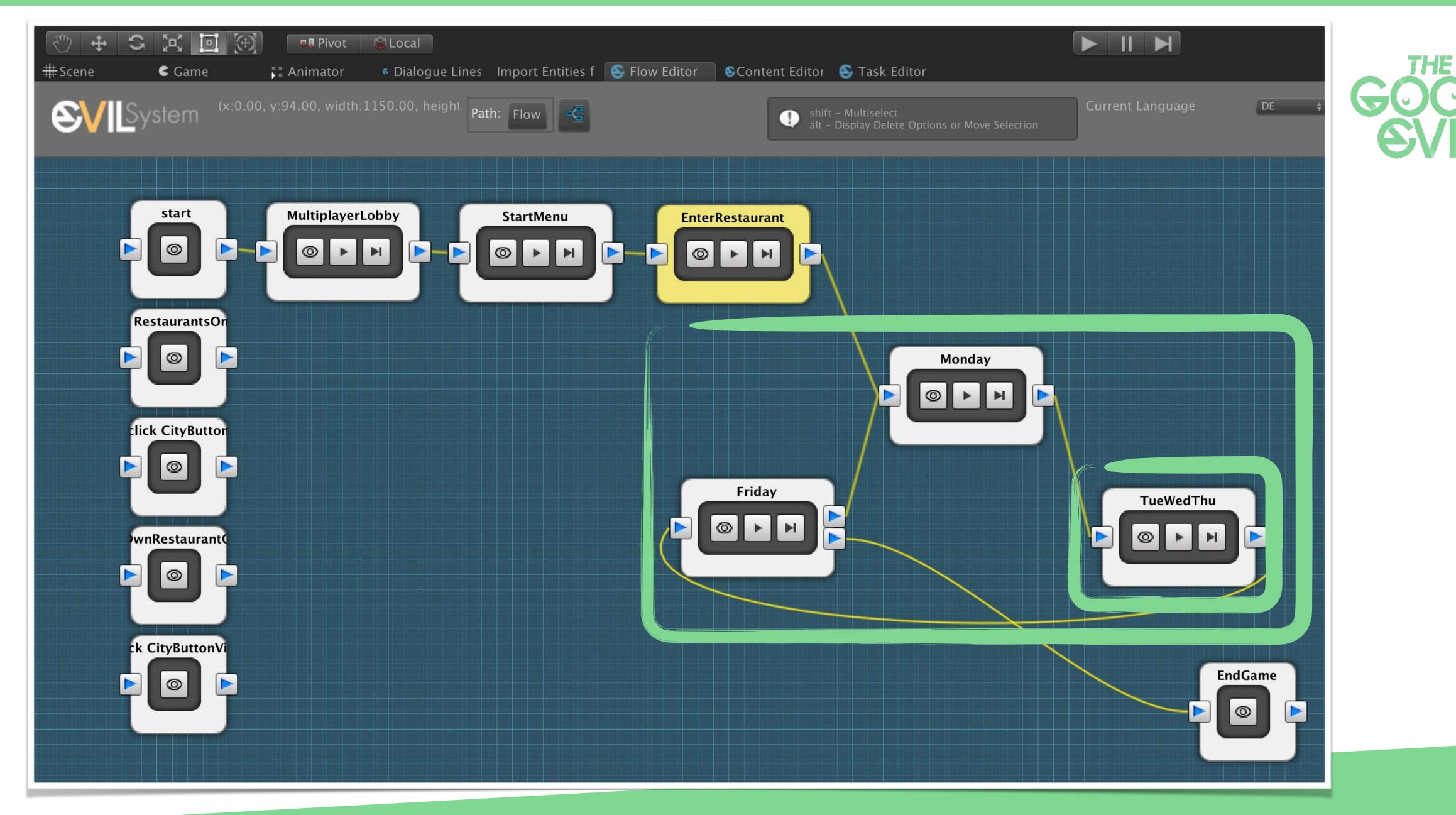


Readable setup of games flow & its logic!



- isometric game
- restaurant simulation
- multiplayer
- gameplay driven
- math heavy

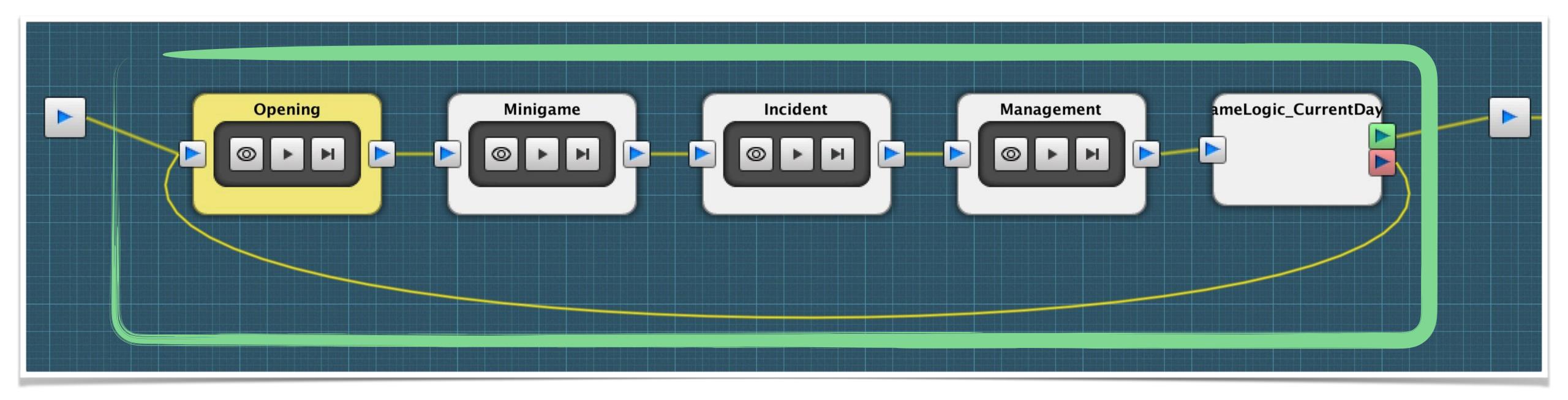






EvilSystem flow editor • game logic & loop



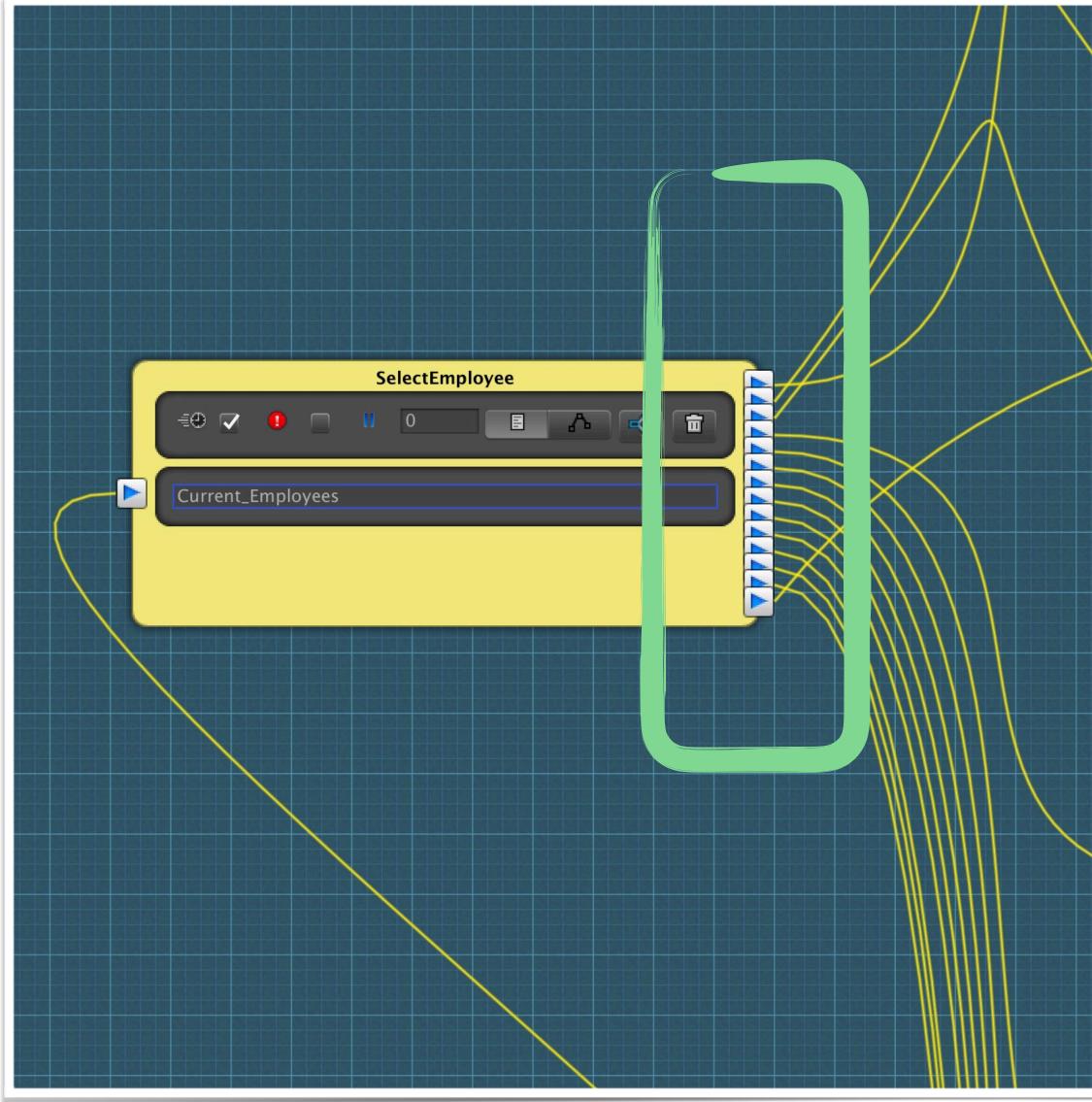






EvilSystem flow editor • core game loop





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	FabianReinhoff	
		e
	Add Functionality Event Task Condition Selector Context	
\backslash	HerbertBurghardt	
	Add Functionality Event Task Condition Selector Context	
	KlausBachmeier	
	Add Functionality	
	Event Task Condition Selector Context	

EvilSystem flow editor • core game loop





Serious Game zur Teamentwicklung im Unternehmen. Mit TU Dresden für IAG.

iOS / Android / PC / Mac





Independent of specific game mechanics!

Setup

#1

Flow Editor

(logic setup / game design)

Task Editor

#2

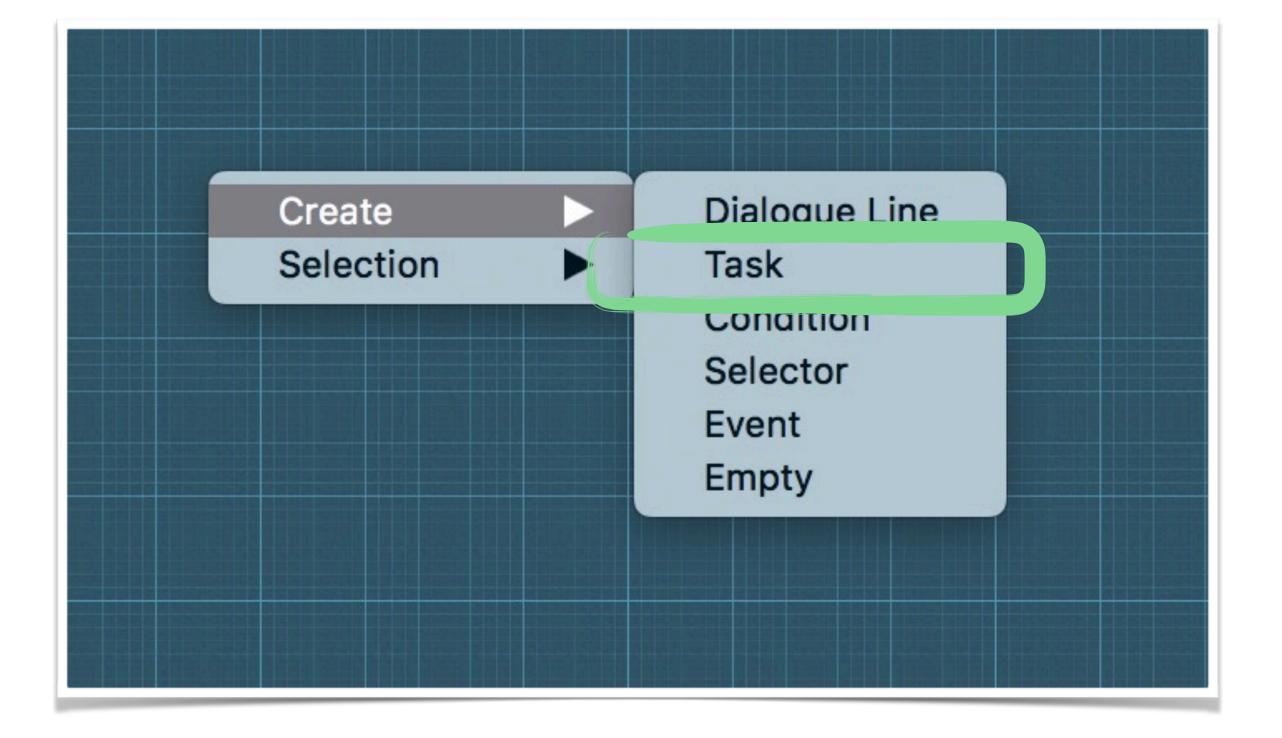


Scene Editor

(visual setup / level design)

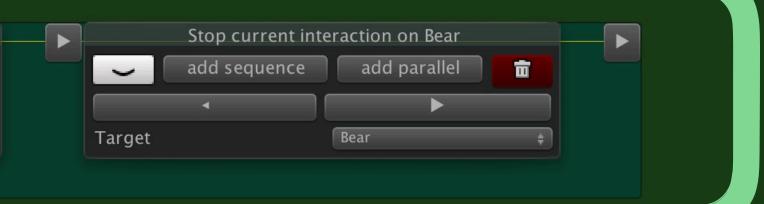
Task Editor

(cut sequences/ recurring tasks)





S Task Editor 🛛 🛱 Scene S Flow Editor	Animator TeamDa r		€ C
System			
		Stop current interaction on Squirrel	
Appearance Parallel Is Horizontal		add sequence add parallel 💼	
Show Blocking	÷		
Show All Tasks		Target Squirrel	ŧ
Collapse All Tasks			
Hide Controls			
Resize Controlarea			
1			
/ Sequence		wait: 0.1 s.	
Parallel	~	add sequence add parallel	
Create			
Sequence	Secs	0.1	
Parallel			
Save			
Save As			
Refresh List			
Load			
SquirrelTake			
SquirrelTryReach		Squirrel play animation Action_Dance_A	
SquirrelUnblockAndSetDefault		add sequence add parallel	
SquirrelUnClimbBear			
SquirrelWalkAndTalkToNPC			
SquirrelWave			
StartFixedCameraSkippable		Squirrel play animation Action_Dance_A	
StepLeft		add sequence add parallel	
StepRight			
TeamDance		Target Squirrel	
TeamWalkAndTalkToNPC		Animation Name Bear_Front_Controller/Activ	÷
TransportationVehicleEnter		Animator Name Squirrel_Front_Controller	
TransportationVehicleExit		Wait For Animation	
TriggerOutOfReachAndUnblock		Animator Triggers To Set	
TutorialBearWaveAtBadgerKid		Size 0 Animator Bools To Set	
TutorialCameraPosition		Size 0	
TutorialSquirrelJumpFromTree			
TutorialSquirrelPointAtBee	¥ I		



Parallel

<u> </u>			Play Sou	nd SuccessSQB
			add sequenc	e add parallel
			•	
		Aud	lio Clip	SuccessSQB
Bear play anim	ation Action_Dance_A	Use	d Mixer Group	
🛛 🔘 📄 add sequenc	e add parallel 💼	Wait		
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			uted Groups	
add sequence	ation Action_Dance_A ce add parallel			
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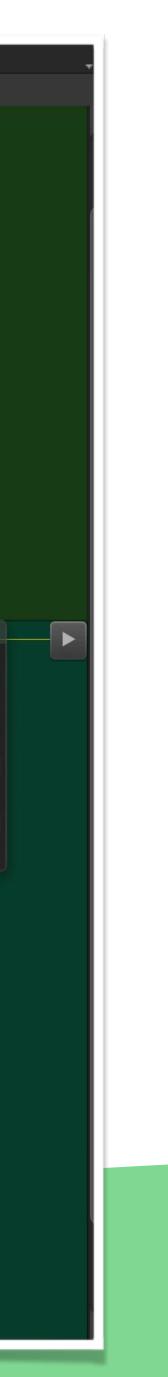
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Parallel Is Horizontal		
Show Blocking Show All Tasks	Target	Squirrel +
Collapse All Tasks		
Hide Controls		
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SquirrelUnblockAndSetDefault		
SquirrelUnClimbBear		
SquirrelWalkAndTalkToNPC		
SquirrelWave		
StartFixedCameraSkippable	Squirrel pla	ay animation Action_Dance_A
StepLeft	add se	quence add parallel 📅
StepRight		
TeamDance	Target	Squirrel
TeamWalkAndTalkToNPC	Animation Name	Bear_Front_Controller/Action
TransportationVehicleEnter	Animator Name	Squirrel_Front_Controller
TransportationVehicleExit	Wait For Animatio	
TriggerOutOfReachAndUnblock	▼ Animator Trigg Size	o
TutorialBearWaveAtBadgerKid	Animator Bools	
TutorialCameraPosition	Size	0
TutorialSquirrelJumpFromTree		
TutorialSquirrelPointAtBee		

t Editor 🛛 🖀 Asset Store

Stop current interaction of	n Bear 📃 🕨
add sequence add g	arallel 💼
Target Bear	+

Sequencial

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▼			4	
		Aud	io Clip	SuccessSQB
	ation Action_Dance_A	Used	d Mixer Group	
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		M	uted Groups	
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Animator Name	Bear_Front_Controller #			
Wait For Animation				
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Size	0			
Size Animator Bools To Se				



Setup

#1

Flow Editor

(logic setro / game desi

Task Edit



#2

Scene Editor

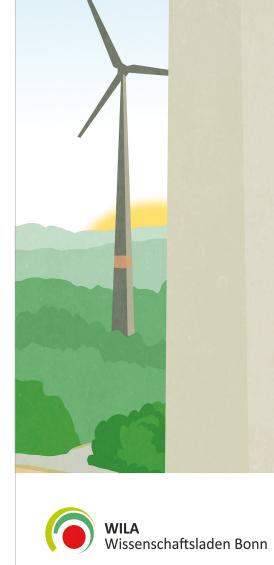
(visual setup / level design)





- research project
- educational game
- multiplatform
- content heavy



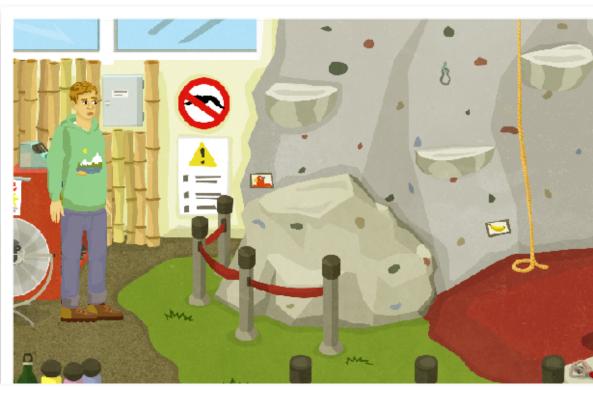




und der abgebrochene Flügel.

GÖÖD

www.serenasupergreen.de







Serena Supergreen and the broken blade

für Bildung





Setup

#1

Flow Editor

(logic setup / game design)

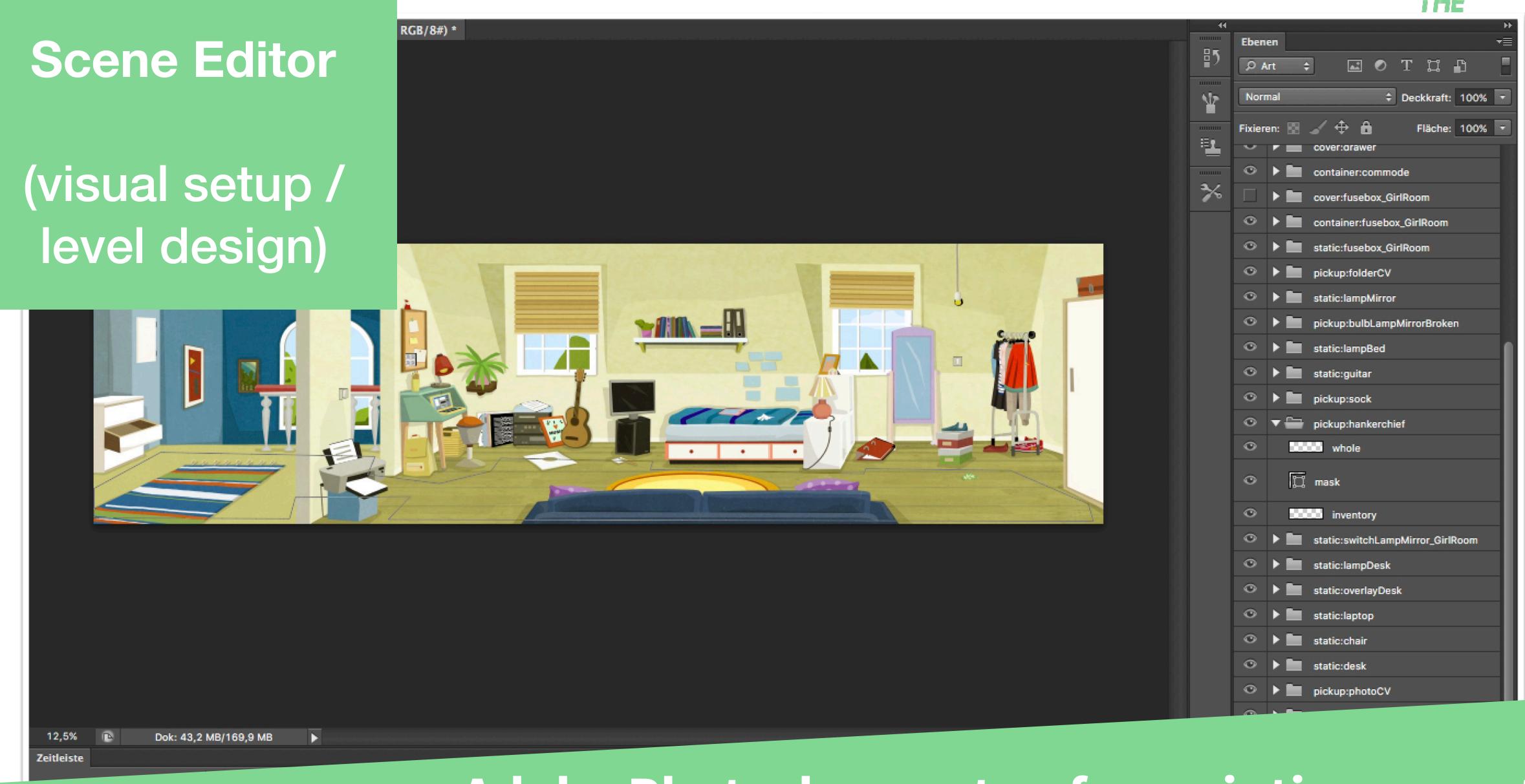
Task Editor

#2



Scene Editor

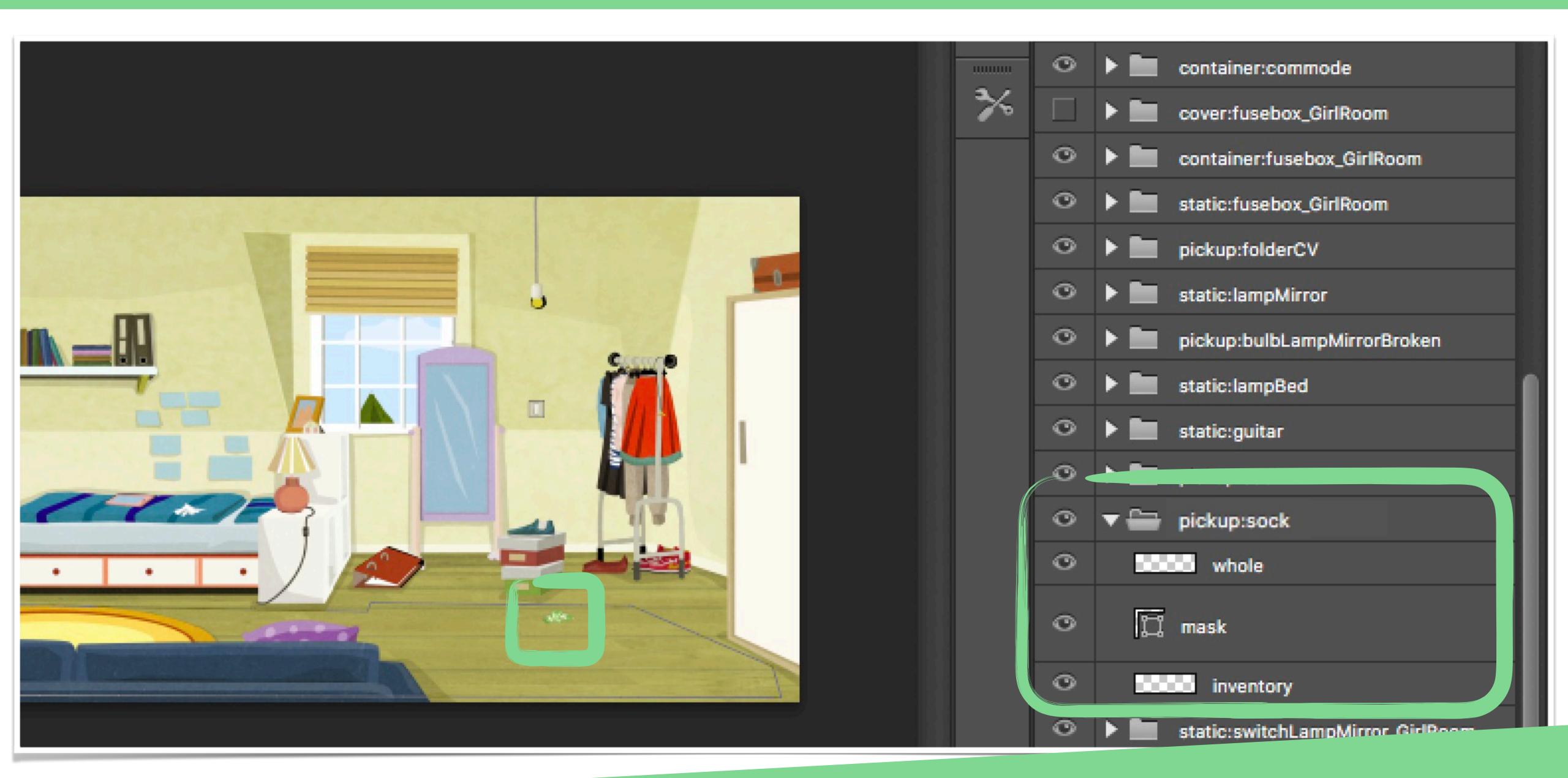
(visual setup / level design)



THE

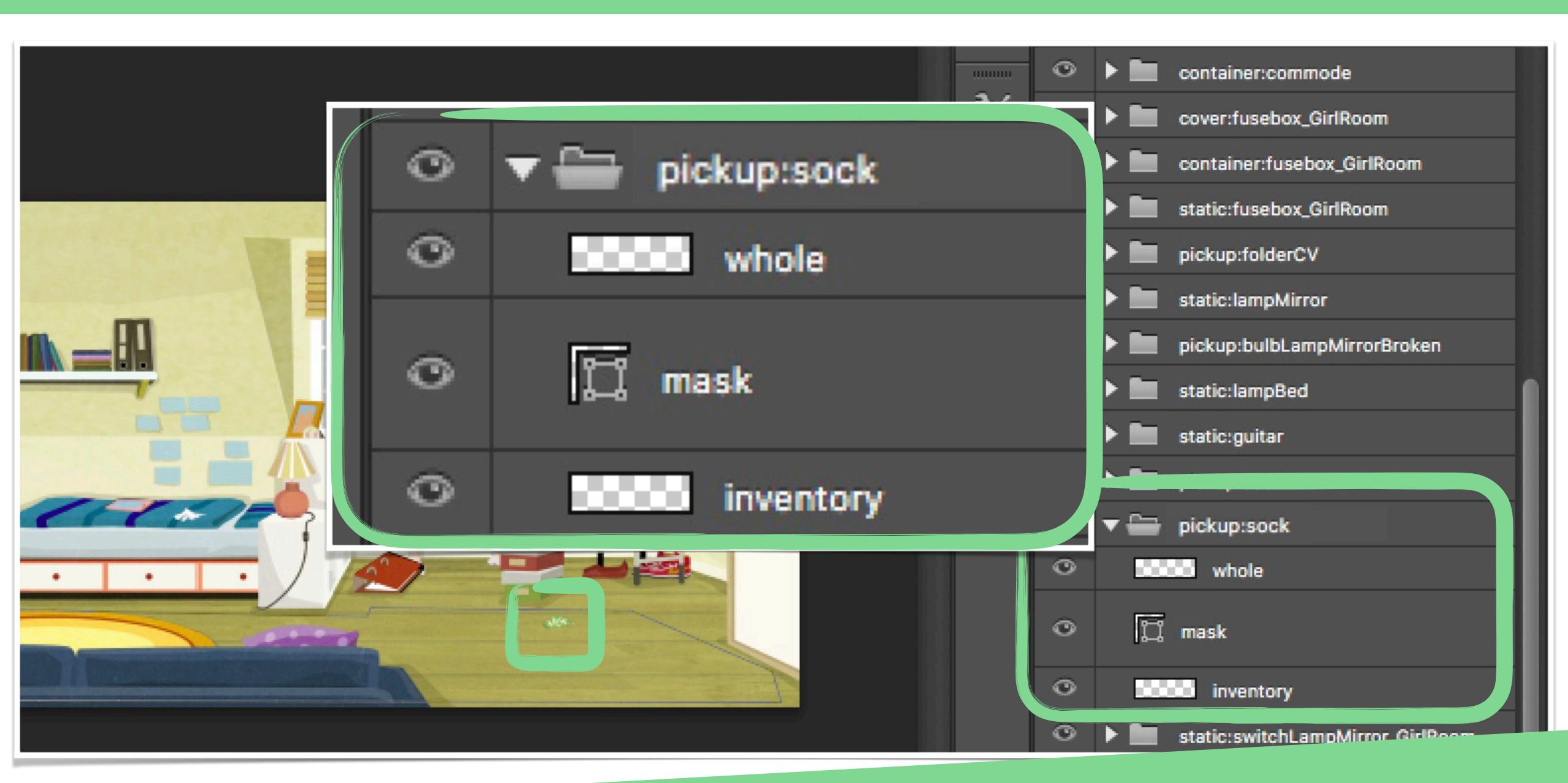
Adobe Photoshop: setup for scripting export





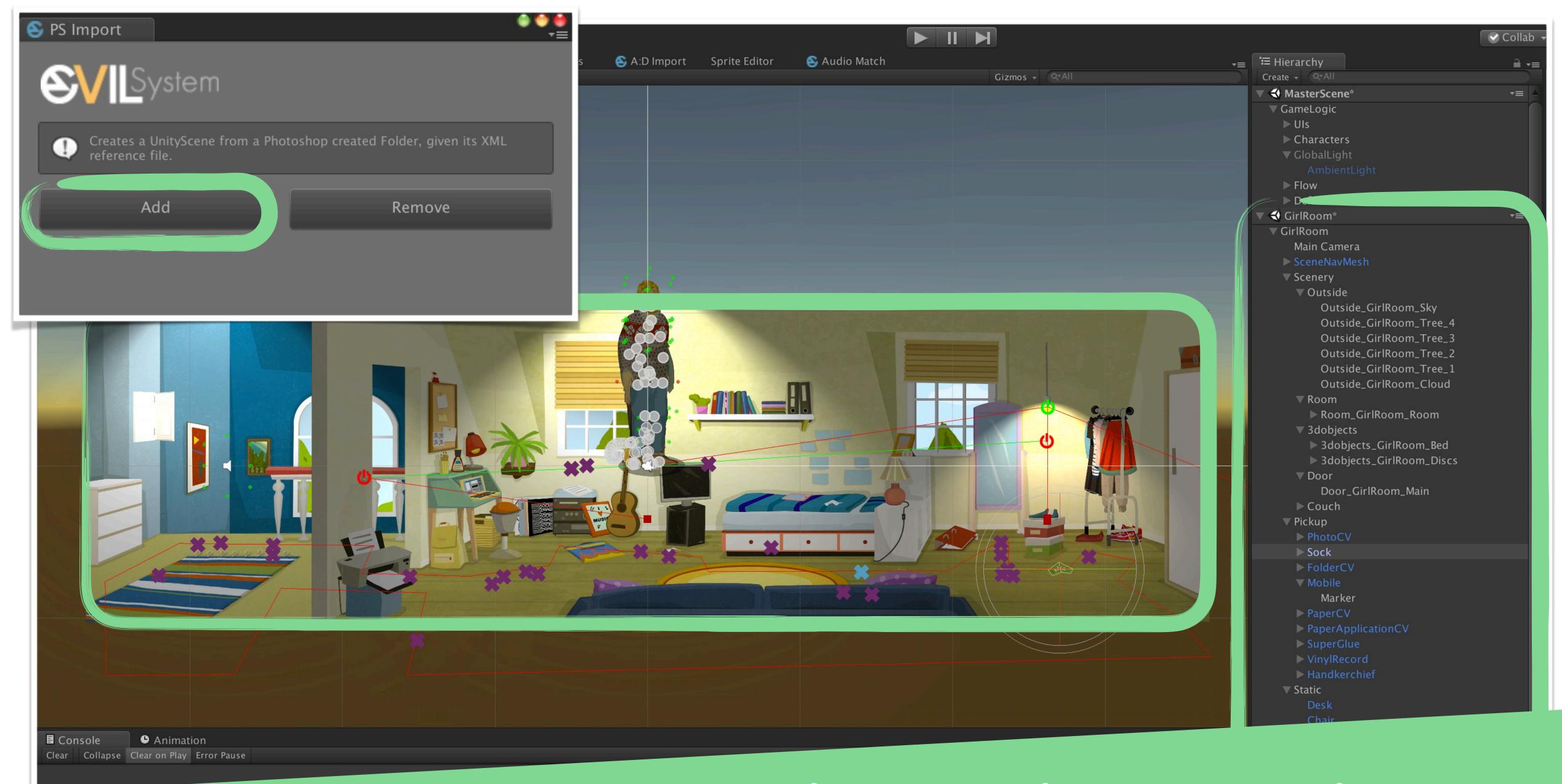
Adobe Photoshop: layer setup for batch export





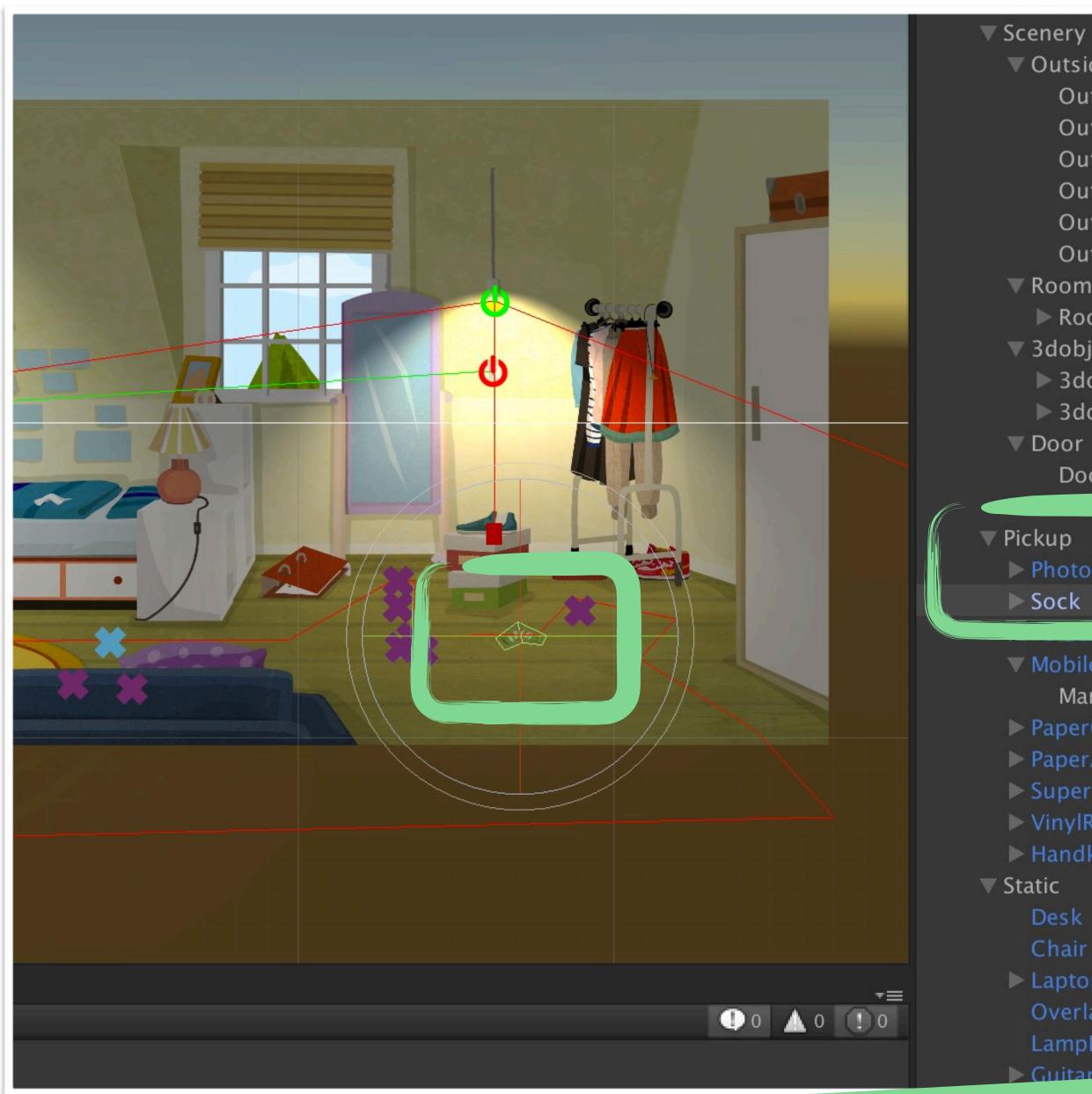
Adobe Photoshop: layer setup for batch export





Unity: batch import & entity setup





▼ Outside

- Outside_GirlRoom_Sky
- Outside_GirlRoom_Tree_4
- Outside_GirlRoom_Tree_3
- Outside_GirlRoom_Tree_2
- Outside_GirlRoom_Tree_1
- Outside_GirlRoom_Cloud

Room

- ▶ Room_GirlRoom_Room ▼ 3dobjects
 - ▶ 3dobjects_GirlRoom_Bed
 - ► 3dobjects_GirlRoom_Discs

▼ Door

Door_GirlRoom_Main

▶ PhotoCV

▶ Sock

▼ Mobile

- Marker
- ▶ PaperCV
- PaperApplicationCV
- ▶ SuperGlue
- ▶ VinylRecord
- ▶ Handkerchief

 - Desk
- ▶ Laptop
- OverlayDesk
- LampDesk

C# Pick Up (Script) System System \checkmark Suppress Grab Anima Action Before Dialogu 🗸 Stack Settings Stackable 🕜 **V** Polygon Collider 2D 凸 Edit Collider None (Physics Material 2D) Material Is Trigger Used By Effector **Used By Composite** Auto Tiling Offset Y 0 X 0 Points ▶ Info Photoshop Generated (Script) C# PhotoshopGenerated Script Pickup **Object Type** Updatable \checkmark

batch created pickable object "Sock"

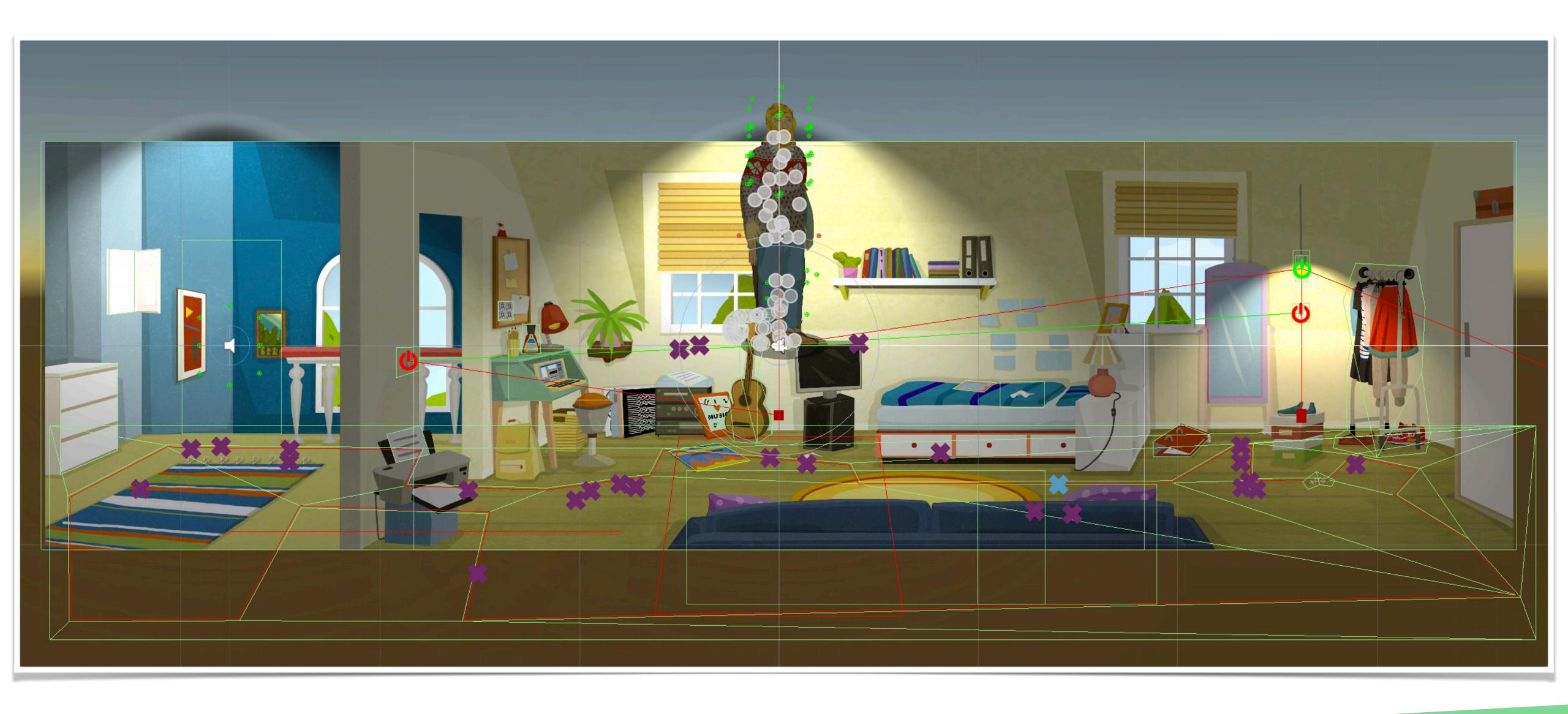
Sprites

Size

Element 0







batch created depth markers, colliders & nav mesh







Level setup through batch processing!

Setup

#1

Flow Editor

(logic setro / game desi

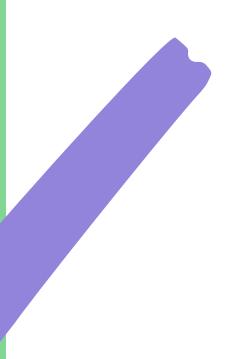
Task Edit



#2

Scene Editor

(visual setur / level design)





EvilSystem

Content Management

Unity

Visual Scripting

additional Utilities



Utilities: Setup

- create initial setup
- .csv import/export
- various logs / debug helper / monkey testing



Utilities: Dialogue

- import/export of dialogue database
- batch fetch **UI element texts**
- generate **debug voiceover audio**
- word modification editor
- RichText & Emoji markup specifier in dialogues



Dialogue Import

Copy & Paste

initial

Bear: In welchem Land wir wohl sind? Squirrel: Auf jeden Fall sind hier viele Leute auf der Straße! Bear: Und warm ist es hier! Uff. Squirrel: Lass uns Wasser trinken, Bär!

findBee

Bear: Squirrel, wo müssen wir hin? Squirrel: Die Biene finden. *POINT TO* Bear: Ich folge dir!

idle

Squirrel: Die Biene ist weit oben. *POINT TO* Bear: Wir müssen die Biene finden!

pickObject

Squirrel: <Objektname>. Dankeschön! Condition

text editor dialogue • import with C&P



SV System									
Audio Files Management		Filter SpokenLines							
		Speaker <pre></pre>							
		Content Text Language	none>						
		ID					¥.		
		UI							
		Has Translations	All DE			EN			
		Sort by Backwards	No Sorting				÷		
			Filter			Clear Filters			
				<u> </u>					
lmage 🗌		UI	Fixed Lang 🗌		DE 🔽	EN			
Lines per Page	20	<<< <<	< 0 / 1295 >>	· >>>	0		0		
Id	Speaker	DE		EI	N				
ld			+			+			
0×01000021000(Oh guck mal wer uns heute im Wald besuchen kommt.			+				
0x01000021000(Na wer bist du denn?				+			
0x01000021000(Schön, dass du da bist!				+			
0x01000021000(Begleitest du uns in den Wald?			+			
0x01000021000(Super.				+			
0x010000210000		Dann zieh mich mal mit deinem Finger zu dem Stein da vorne.				+			
0x01000021000(Turbosquirrel!				+			
0x010000210000		Großartig!				+			
0x01000021000(Zieh mich zu dem Stein.			+			
0x01000021000(Auf geht's!				+			
0x010000210000		Probier's mal aus!				+			
0x01000021000(Probier's mal aus!				+			
0x01000021000(Mich kannst du auch so be							
0x01000021000(Bear ‡	Zieh mich zu dem Baum d							



EvilSystem • Dialogue Database









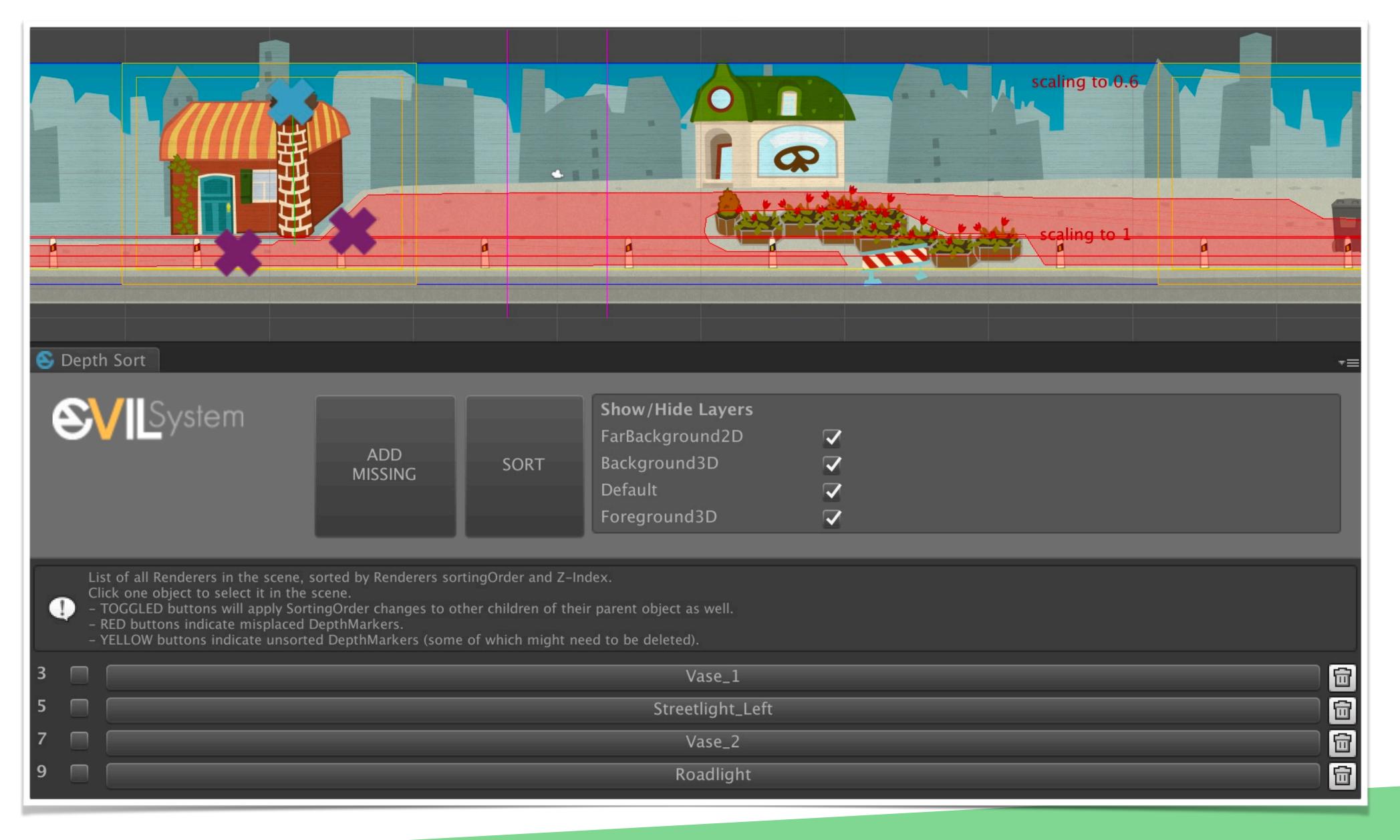
BackButton	Zurück		
Jump_To_Quest	Springe zu Quest		
Load_Slot	Lade Spiel von Slot		
LoadingScreen	LADE		
New	Neu		
New_Game_On_Slot	Starte Spiel auf Slot		
No	Nein		
Overwrite_Slot	Überschreibe Slot		
Pause_Quit_Button	Zurück zum Menü		
Pause_Resume_Button	Weiter spielen		
Pause_Save_Button	Speichern		
Pause_Settings_Back_Button	Zurück		
Pause_Settings_Button	Einstellungen		
Pause_Settings_Dubbing_Slider	Stimmen		
Pause_Settings_Music_Slider	Musik		
Pause_Settings_SFX_Slider	SFX		
Settings Dubbing			

EvilSystem Utilities • batch fetch UI text to .csv

Utilities: Art

- Adobe Photoshop & Illustrator import/update
- **Spine2D** import + setup
- batch **2D** depth sorting
- batch create random level elements





EvilSystem Utilities • 2D batch depth sorting





Create - Q A Sky	GothicStreet				
▶	Street Setup (Serialized)				
▼ ■ Prefabs	Script	d StreetSetup			
▼ 🔤 BuildingParts	Series Type	Street			
Decorations		Street			
General	Building Types				
BuildingsBackground	Size	1			
BuildingsBackgroundDetail	▼ Element 0				
BuildingsBackgroundDetailTile	Ratio	1			
BuildingsBackgroundTile	Setup	GothicBuilding (BuildingSetup)			
► Water	Max Same Color	0			
Location_Bruges CanalWall					
	Street Creation (Non Serialized)				
	Number of Elements	5			
FenceMetalBlack	Allow Interactable				
FenceMetalBlack	Elements SortingOrder	0			
FenceMetalBlack_Tile	Override Spacing	0			
		Create Street			
GothicBuildingBackground					
	Intersection Creation (Non Serialized)				
GothicStreetBackground	Intersection Angle	45			
Tamp	Cover Building Layer Offset	10			
🚭 Lamp		Create Intersection			
🚭 LampTile					
🚭 Riverside					
🚭 RiversideTile					
💗 RiversideWall					
Location_London					
Figure BackgroundCanalWall					

EvilSystem Utilities • random level asset generation

?

Ope



🕯 Inspector 🗀 Project 🖙 Hierarchy 🔒 🖡	= 🖿 Project EvilSystem.Text	EvilSystem.GitCł 😂 Evt Log 💿 Inspector
Create 📲 🔍	GothicBuilding	
Sky	GothicBuilding	
► ■ UI Materials		
Prefabs	Script	🖬 BuildingSetup
▼ ■ BuildingParts	▼ Allowed Parts	
Decorations	Size	12
▼ Ceneral	Element 0	Gothic_Wall (BuildingPart)
BuildingsBackground	Element 1	<pre>@ Gothic_Roof (BuildingPart)</pre>
🚭 BuildingsBackgroundDetail	Element 2	Gothic_Door (BuildingPart)
🚭 BuildingsBackgroundDetailTile	Element 3	<pre>Gothic_DoorNoPlatform (BuildingPart)</pre>
BuildingsBackgroundTile	Element 4	Gothic_Window (BuildingPart)
▶ 🕅 Water	Element 5	Gothic_WindowSill (BuildingPart)
▼ ■ Location_Bruges	Element 6	Gothic_WindowSillNoPlatform (BuildingPart)
👕 CanalWall 🍕 CanalWall	Element 7	Gothic_AnchorPlate (BuildingPart)
CanalWallTile	Element 8	<pre>@ Gothic_Pediment1 (BuildingPart)</pre>
FenceMetalBlack	Element 9	Gothic_Pediment2 (BuildingPart)
FenceMetalBlack	Element 10	Gothic_WindowGroundfloor (BuildingPart)
FenceMetalBlack_Tile	Element 11	G Canopy (BuildingPart)
GothicBuilding	Decorations	
🚭 GothicBuildingBackground	Size	3
◀ GothicStreet	▶ Empty	
GothicStreetBackground	WindowboxGreens	
↓ Lamp	▶ WindowboxPoppy	
 ✓ Lamp ✓ LampTile 	▼ Allowed Colors	
S LampTile S Riverside	Size	6
 ⊲ Riverside ⊲ RiversideTile 	Element 0	
₩ Riverside Hie	Element 1	
▼ ■ Location_London	Element 2	
► 👕 BackgroundCanalWall	Element 3	
🔻 💼 Buildings	Element 4	
🚭 ChelseaBuilding	Element 5	
🚭 KensingtonBuilding		
	▼ Allowed Materials	2
► 👕 Canal_Wall	Size	
Decorations	Element 0	Bricks
FenceStone_Victorian	Element 1	Bricks2
Taxi	Building Width	10
V Style_Gothic	Allow Interactable	
Gothic AncherPlan		











Leave repetitive tasks for the machine.









Content Management



Unity

EvilSystem

Visual Scripting

additional Utilities





Photoshop OR Illustrator 2D art assets + characters: pixel or vector (individual layers, naming guidelines, placement, functions, parallax effect)

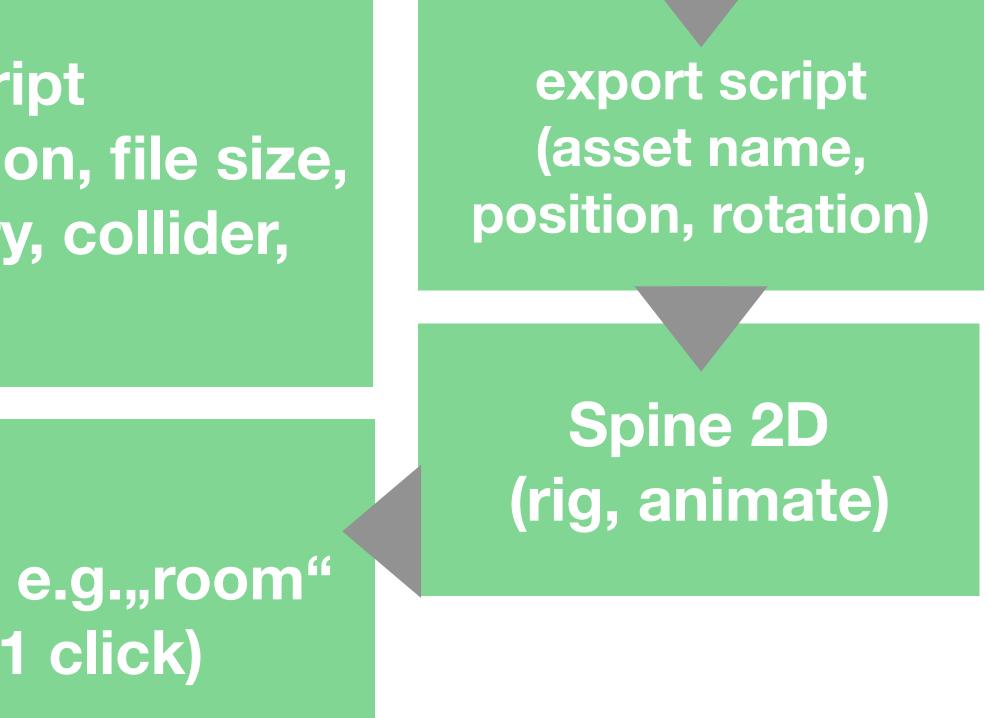
export script (asset name, function, file size, position, category, collider, pivot)

Unity (create new scene e.g.,,room" + import with 1 click)

Tech Art or Game Design

Artist





Text Editor write dialogues, trigger animations or "tasks", add pauses, do branching

EvilSystem Task Editor (add reoccurring tasks both parallel and sequential)

EvilSystem Entities (setup entities, if not created through import, use .csv to import, or batch selection)

Game Designer

EvilSystem Flow Editor

(import with 1 click into game logic, call tasks, modify entities)

(create game logic both linear or multilinear)



QA

Build, Test, Ship







In a nut shell...

What we











flexible & maintainable system



One accessible place!

enable efficient workflow + teamwork





I can change EVERYTHING on my own!

independent of specific game mechanics



Love to reuse for future projects!



Boost creativity within the design process.



Junior Tool Devs

Start use your tools early!

- * It will break. It hurts. It takes time.
- * Iterate: Don't rewrite, refactor!
- * Create a feature test project.
- * Analyse, review, priorities tool!
- * guidelines / git / good docs
- s time. tor! ct.





questions? answers!



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thank you

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