

3D data v GIS III

KMA/AGI

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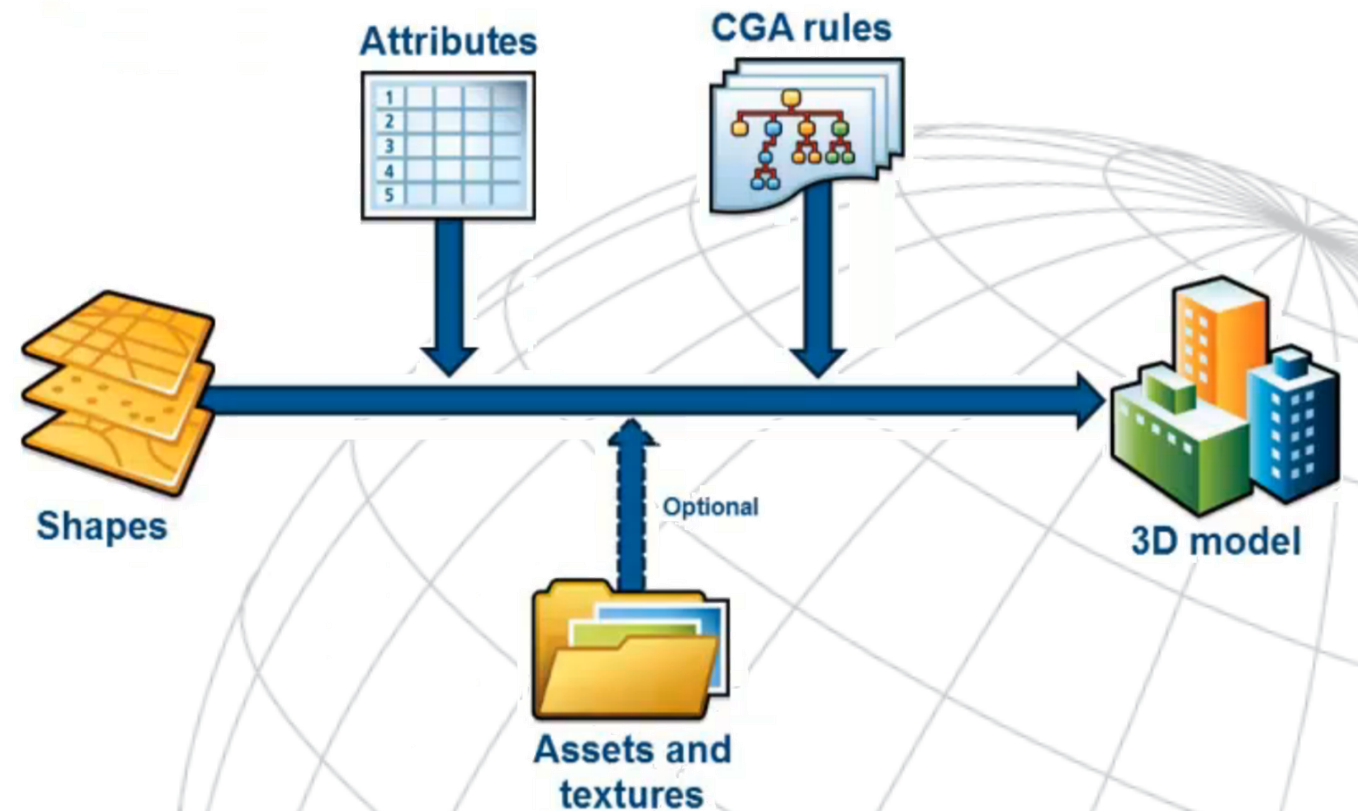
Koncept CityEngine

- Workflow pro tvorbu 3D modelu
 - Organizace datové základny (~ project driven)
 - Procedurální modelování
 - Komunikace s GIS
-
- Zdroje k semestrálkám
 - Jak získat přístup k CityEngine?



Koncept CityEngine

- Workflow pro tvorbu 3D modelu



Koncept CityEngine

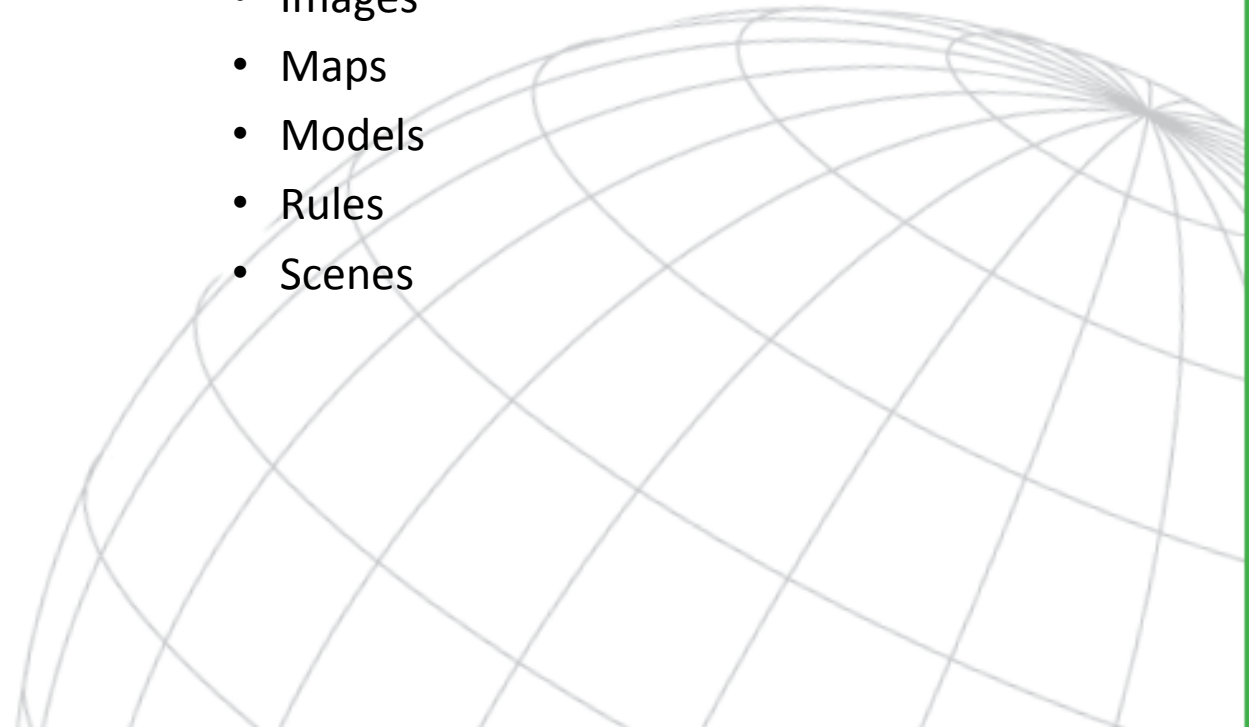
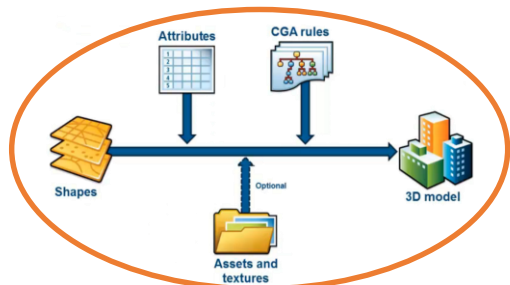
Organizace datové základny

– Project1

- Assets (textury)
- Data (GIS data)
- Images (captured snapshots)
- Maps (Imagery, Rasters ~ LandUse, Terrain)
- Models (exports: *.3ws, ...)
- Rules (*.cga)
- Scenes (*.cej)

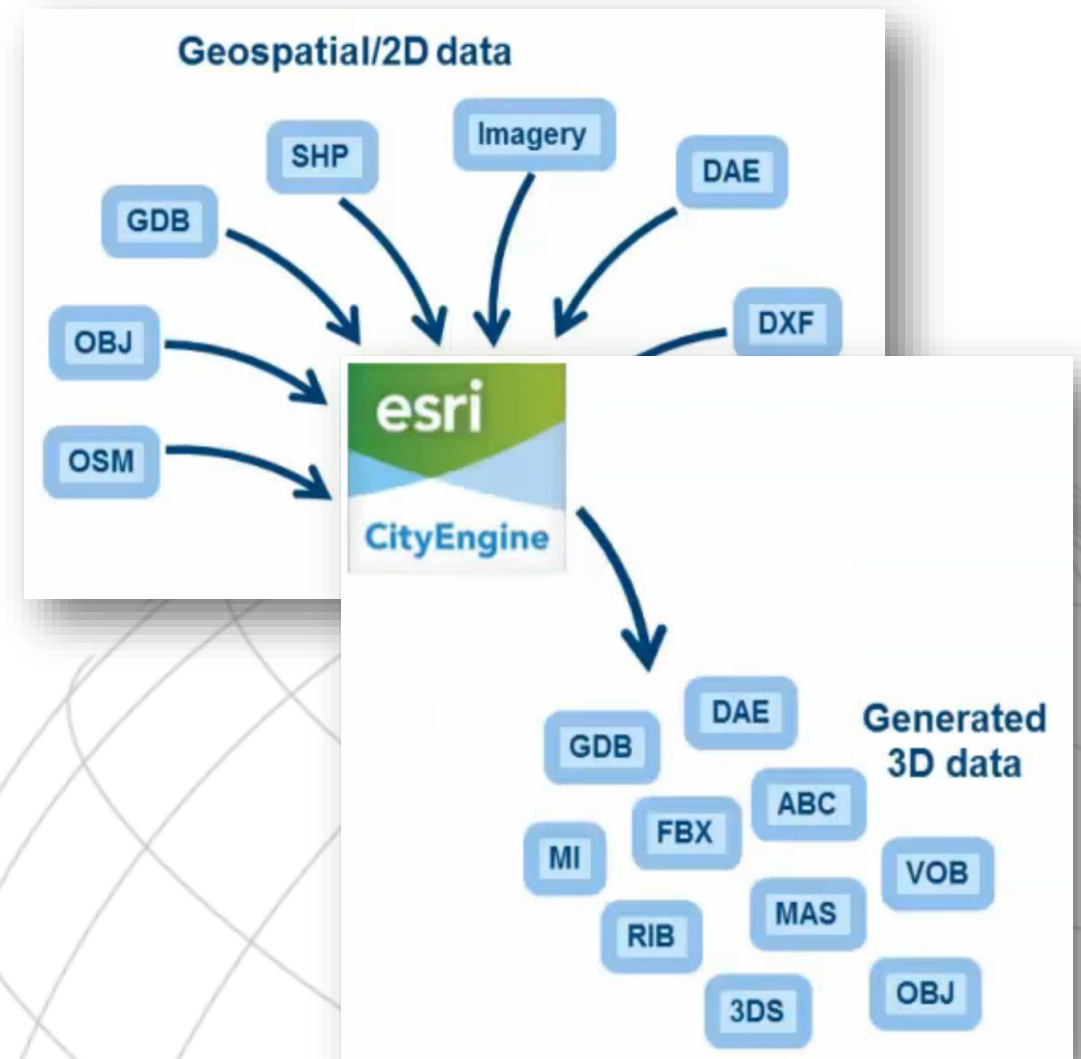
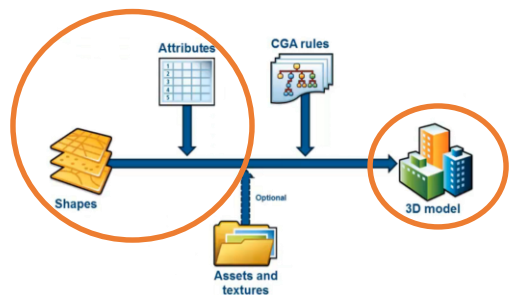
– Project2

- Assets
- Data
- Images
- Maps
- Models
- Rules
- Scenes



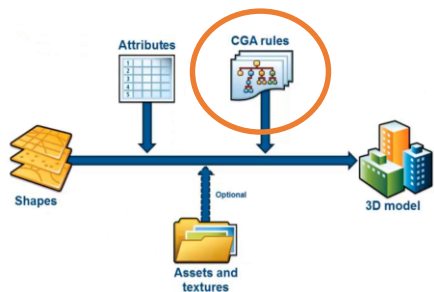
Koncept CityEngine

- Organizace datové základny
 - Vstupní a výstupní formáty



Koncept CityEngine

- Postaven na procedurálním modelování
 - Geometry + Attribute + Rules = 3D Scene



- 3D model creation using rules/algorithms



Step 1

Geodatabase/2D
Information



Step 2

3D Streets, Blocks
and Parcels (import
or creation)



Step 3

3D Extrusion, Roof
Generation and
Street Furniture



Step 4

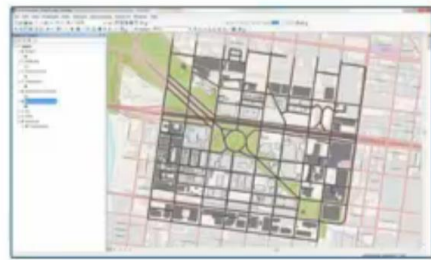
Texturing and
Façade Creation
(details)

Iterative refinement



Koncept CityEngine

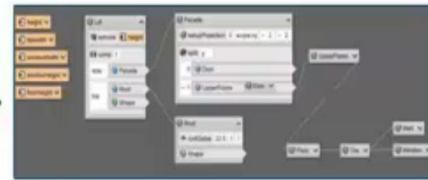
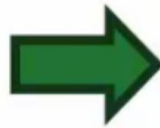
- Tvorba 3D scény procedurálním modelováním



Geometry

ID	Name	Area	Perimeter	Volume	Height	Color	Material	Texture	Light
1	Building	1000	4000	10000	10	Grey	Concrete	None	None
2	Street	100	1000	100	2	Black	Asphalt	None	None
3	Park	500	2000	500	5	Green	Grass	None	None
4	Water	200	800	200	1	Blue	Water	None	None

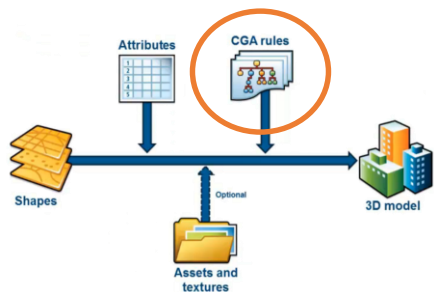
Attributes



Rules



- Rule-based 3D cities

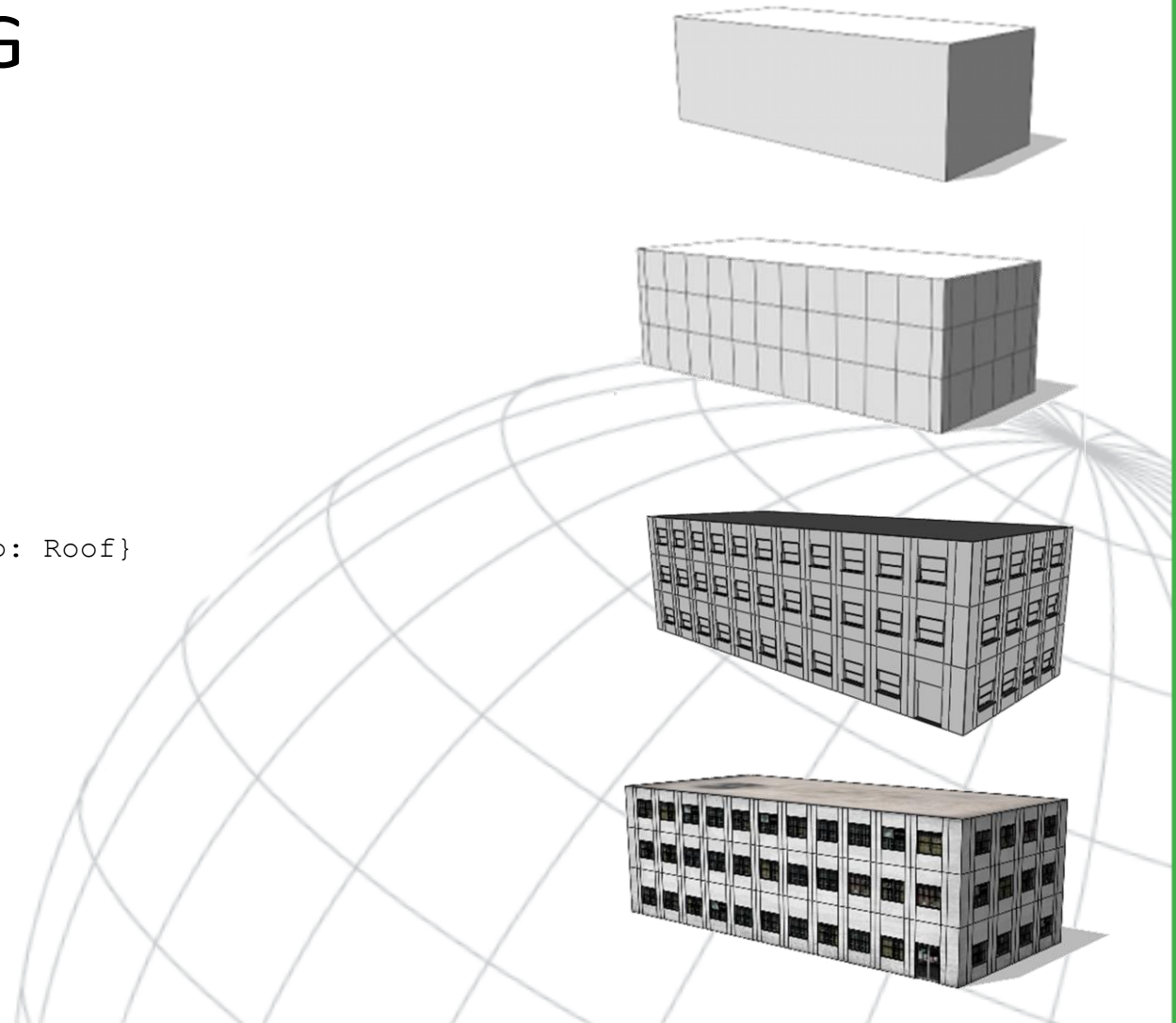
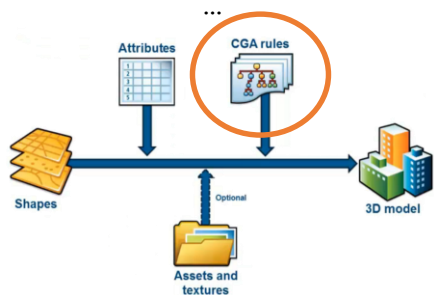


Koncept CityEngine

- Procedurální modelování ~ CSG

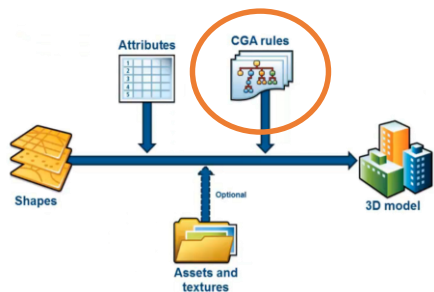
```

attr groundfloor_height = 4
attr floor_height = 3.5
attr tile_width = 3
attr height = 11
attr wallColor = "#fefefe,,
// geometries
window_asset = "facades/window.obj,,
Lot -->
extrude(height) Building
Building -->
comp(f){ front : FrontFacade | side : SideFacade | top: Roof}
FrontFacade -->
split(y){ groundfloor_height : Groundfloor |
{ ~floor_height: Floor }* }
  
```



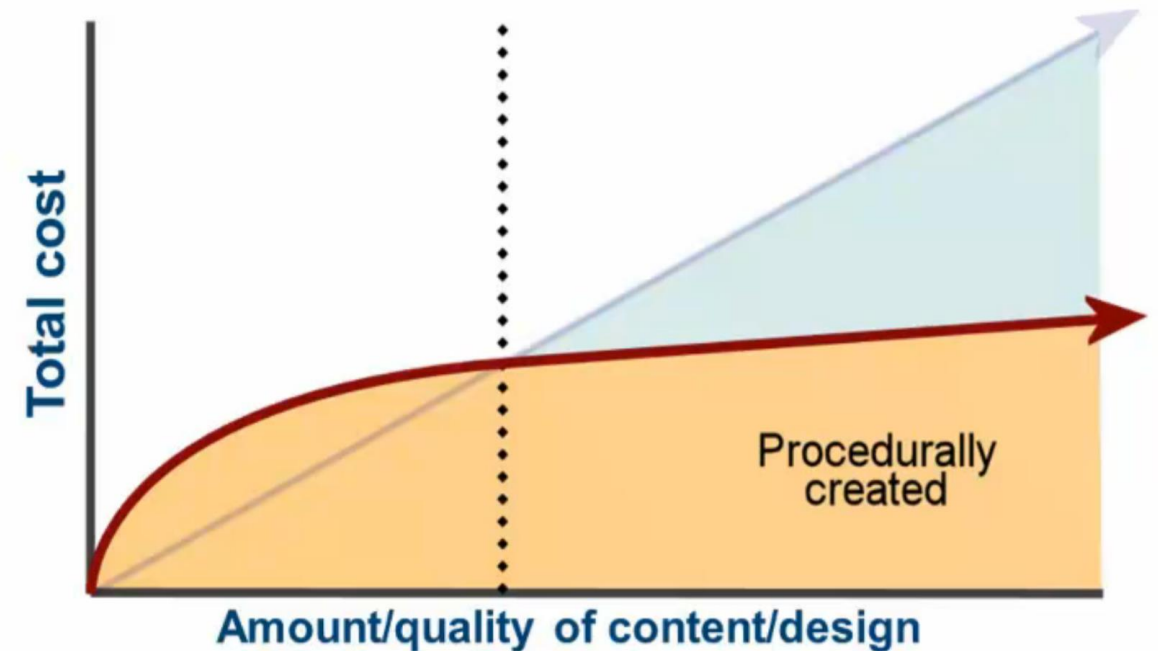
Koncept CityEngine

- Proč procedurální modelování?



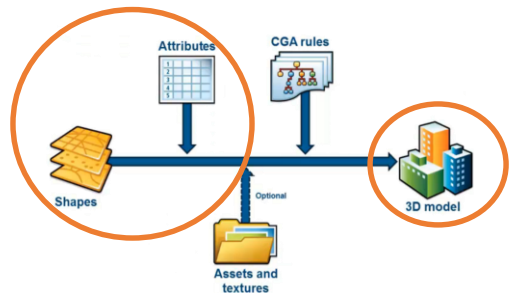
Benefits of procedural modeling

- Time savings
- Flexibility

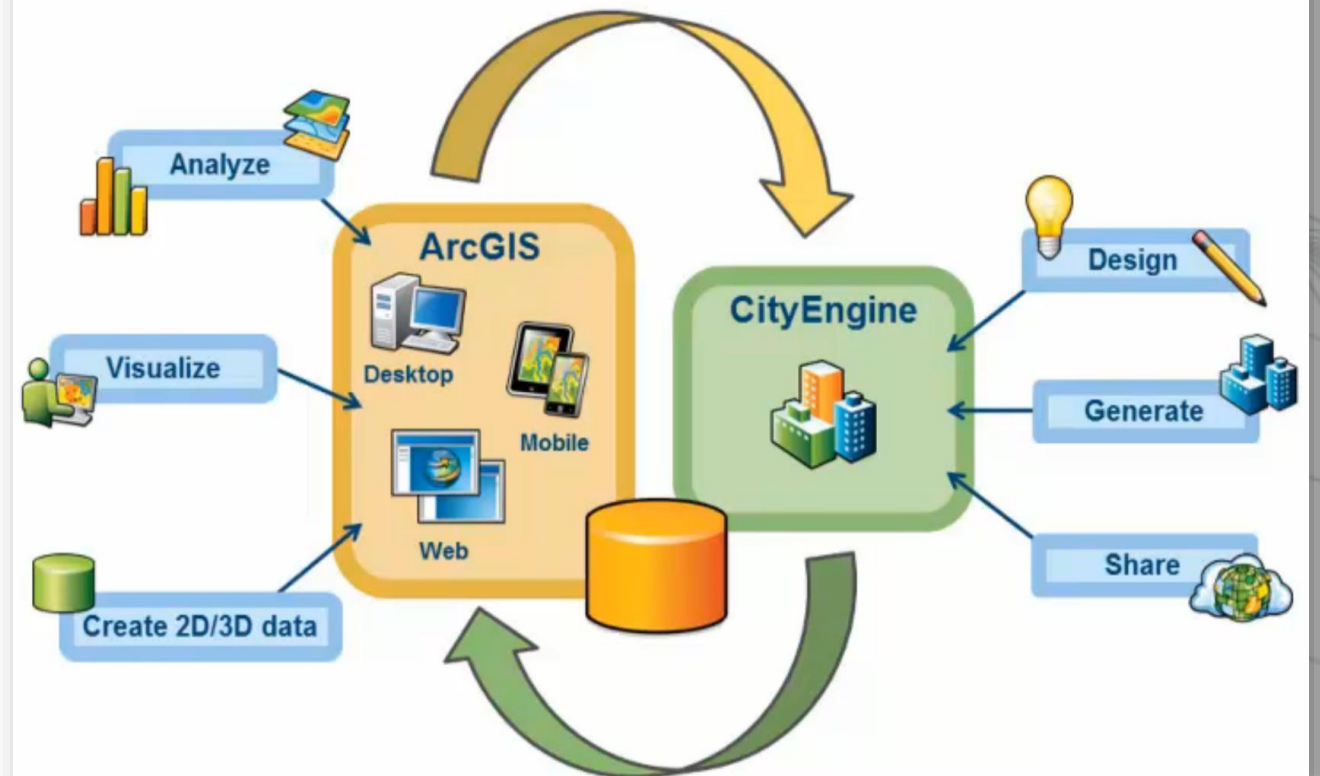


Koncept CityEngine

- Komunikace s GIS
 - Rozdělené role, ale
 - sdílená datová základna!



CityEngine and the ArcGIS system



CityEngine Resources

Training

Main
Training Catalog
My Training
News
Certification
Common Questions

Welcome, Kare

Training Catalog Search Results

7 training options found.

Use the filters on the right to modify your search. Numbers in parentheses indicate how many training options are available.

Showing 1 to 7 of 7 results.

[New search](#)

Sort by: Relevance ▼	
<p><u>Esri CityEngine Essentials 1: Getting Started</u></p> <p>▶ Show Overview</p>	<p>Format: Web Course Duration: 1 module (60 minutes) Price: Free ArcGIS Version: 10.2</p>
<p><u>Modeling a City Using Esri CityEngine</u></p> <p>▶ Show Overview</p>	<p>Format: Web Course Duration: 1 module (3 hours) Price: \$32 USD ArcGIS Version: 10.1, 10.2, 10.3</p>
<p><u>Getting Started with Esri CityEngine</u></p> <p>▶ Show Overview</p>	<p>Format: Training Seminar Duration: 60 minutes Price: Free ArcGIS Version: 10.1</p>

CityEngine Resources



CityEngine

80-SECOND VIDEOS

EVENTS

FEATURED SPEAKERS

INDUSTRIES

PRODUCTS

<p>01</p>  <p>Tutorial 1: Essential Skills</p> <p>In this video, you will learn the very basics: Creating new projects, Navigation,</p>	<p>02</p>  <p>Tutorial 2: Terrain and Dynamic City Layouts</p> <p>This video is about the creation of terrains and gives an overview over</p>	<p>03</p>  <p>Tutorial 3: Map Control</p> <p>In this video you learn how to use image files in map layers to drive CGA</p>	<p>04</p>  <p>Tutorial 4: Street Import</p> <p>In this video you learn how to import street center lines. Please find</p>
<p>05</p>  <p>Tutorial 5: Import Initial Shapes</p> <p>In this video you learn</p>	<p>06</p>  <p>Tutorial 6: Basic Shape Grammar</p> <p>In this video, you learn the</p>	<p>07</p>  <p>Tutorial 7: Facade Modeling</p> <p>This video gives a short</p>	<p>08</p>  <p>Tutorial 8: Mass Modeling</p> <p>This video shows the</p>

Zdroje k semestrálkám

- Obecné
 - [CityEngineHelp](#)
 - [Tutorial 1: Essential Skills](#)
 - [\(Tutorial 2: Terrain and Dynamic City Layouts\)](#)
 - [\(Tutorial 3: Map Control\)](#)
 - [Tutorial 5: Import Initial Shapes](#)
- Procedurální modelování
 - [Tutorial 06: Basic Shape Grammar](#)
 - [Tutorial 7: Facade Modeling](#)
 - [Tutorial 8: Mass Modeling](#)
 - [Advanced Shape Grammar](#)
 - [Tutorial 13: Facade Wizard](#)
- Webové experty
 - [Tutorial 15: Publishing Web Scenes](#)
- Modelování
(body, linie, plochy)
 - [No. 20: 3D Modeling Tools](#)
 - [Tutorial 14A: Basic Polygonal Modeling](#)
 - [Tutorial 14B: Advanced Polygonal Modeling](#)
 - [Tutorial 14C: Combining Polygonal Modeling](#)
 - [\(25\) How to turn your 2D features into 3D and have them sit nicely](#)
 - [Modern Streets](#)

Jak získat přístup k CityEngine?

- V učebně 234 v. 2015, jinde 2014
- 30 denní trial
- Studentský kód / zapůjčení licence



City Engine Prakticky

- Stáhněte si ...
- Prozkoumejte adresářovou strukturu projektu
- Přidejte terén
- Přidejte vrstvu na terén
- Přidejte 3D vrstvu bez ohledu na terén
- Přidejte 3D model
- Nakreslete 3D model
- Aplikujte procedurální pravidla
- Exportujte do webové scény



Zdroje

- Zdroje jsou doplněny formou odkazů přímo do snímků

