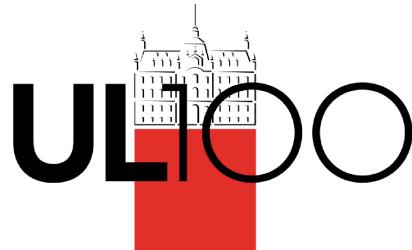


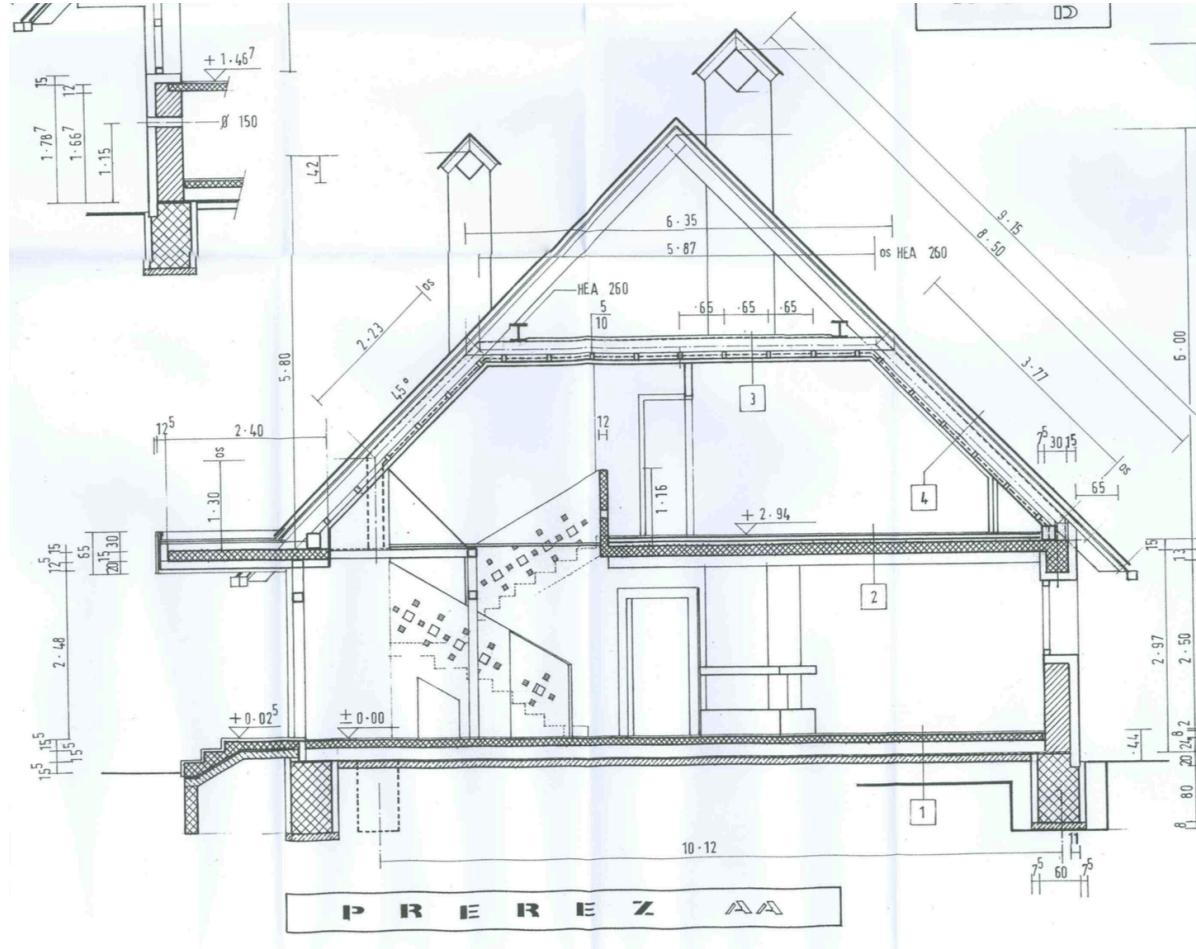
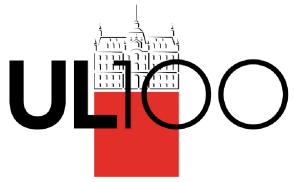
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Faculty of *civil and geodetic engineering*



# Digitalno modeliranje in navidezna resničnost

Katedra za gradbeno informatiko  
Fakulteta za gradbeništvo in geodezijo

# Načrti



# Iz načrta v realnost

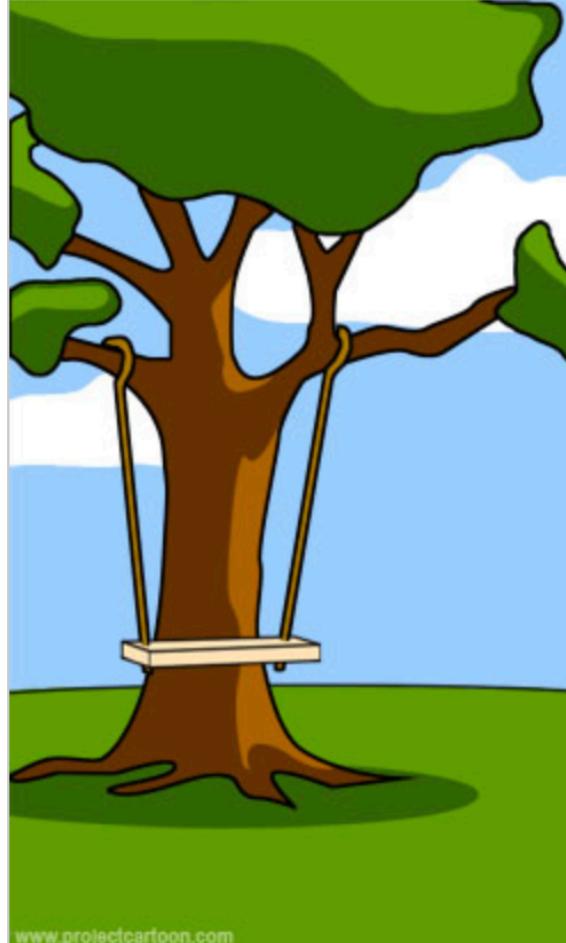


vir slike: <http://wytekconstruction.us/wp-content/uploads/2016/09/Wytek-Construction-House-Blue-Prints-Ideas.jpg>

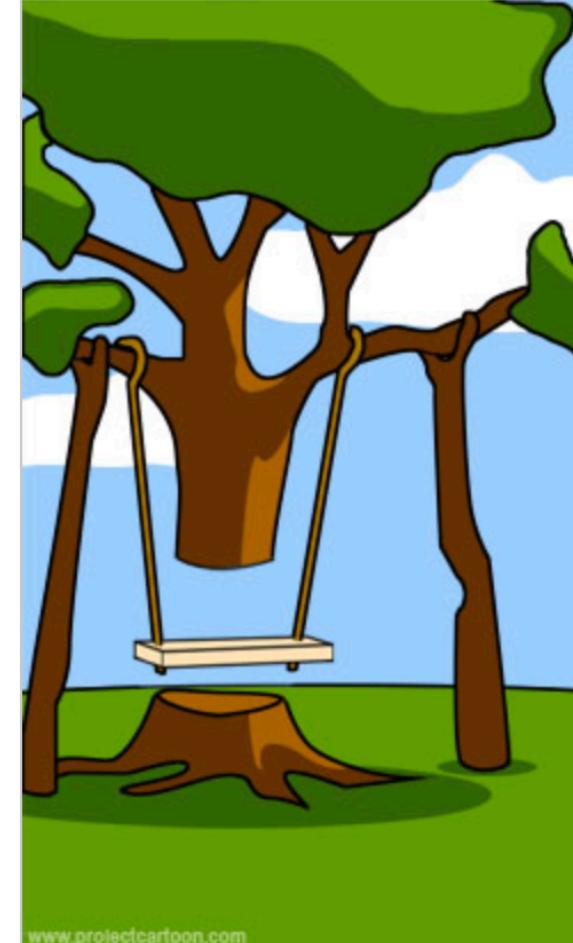
# Razlike o dojemanju načrtov



Kako je investitor opisal zahteve.

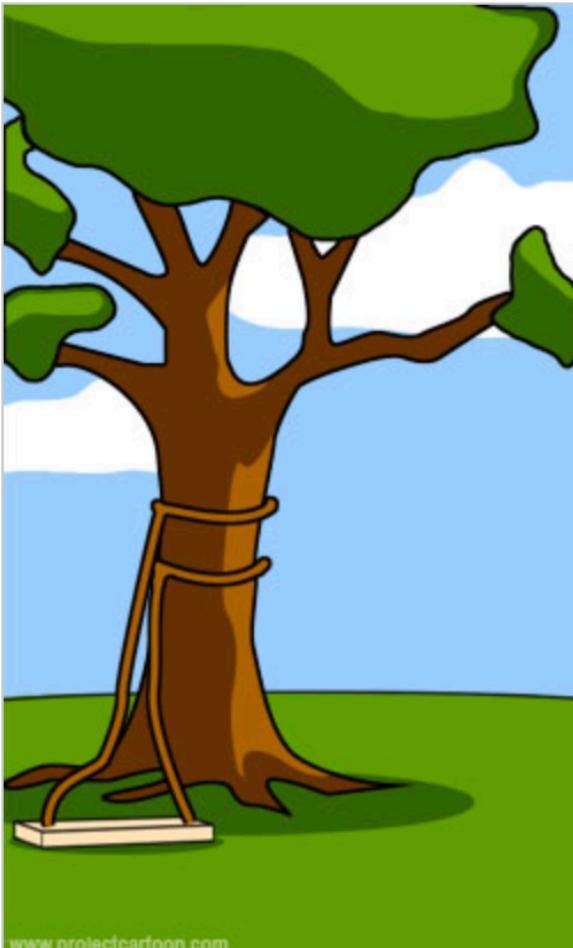


Kako je arhitekt investitorja razumel.



Kako je statik projekt zasnoval.

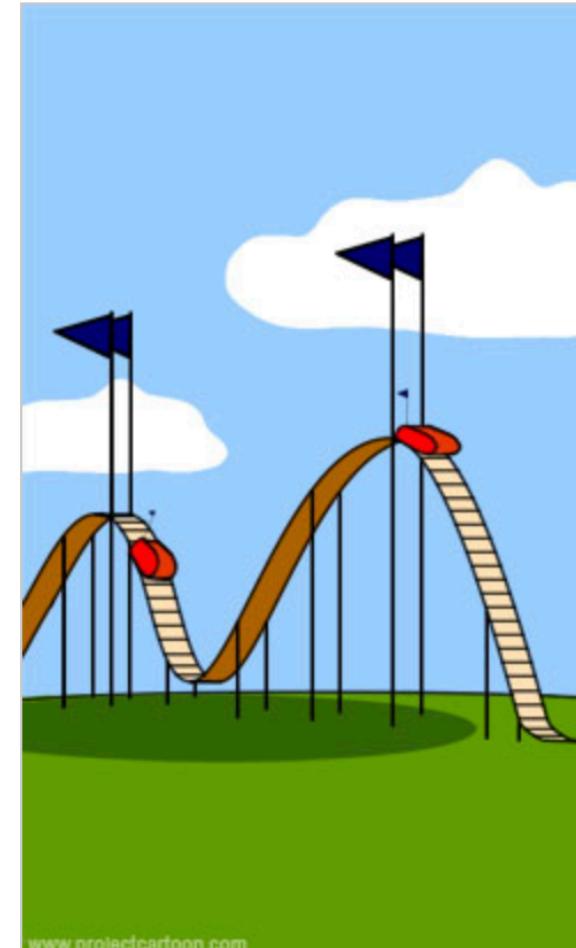
# Razlike o dojemanju načrtov



Kako so izvajalci projekt izvedli.



Kaj je investitor v resnici želel.



Kaj so investitorju zaračunali.

# Načrte moramo smiselno ovrednotiti!

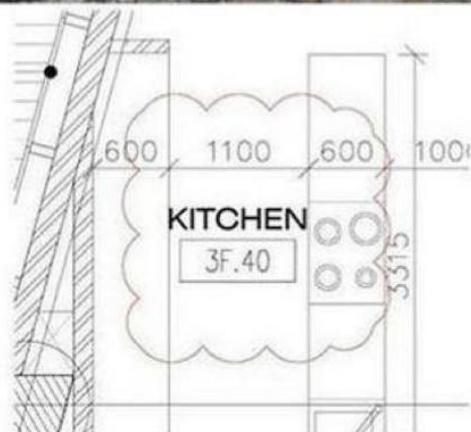
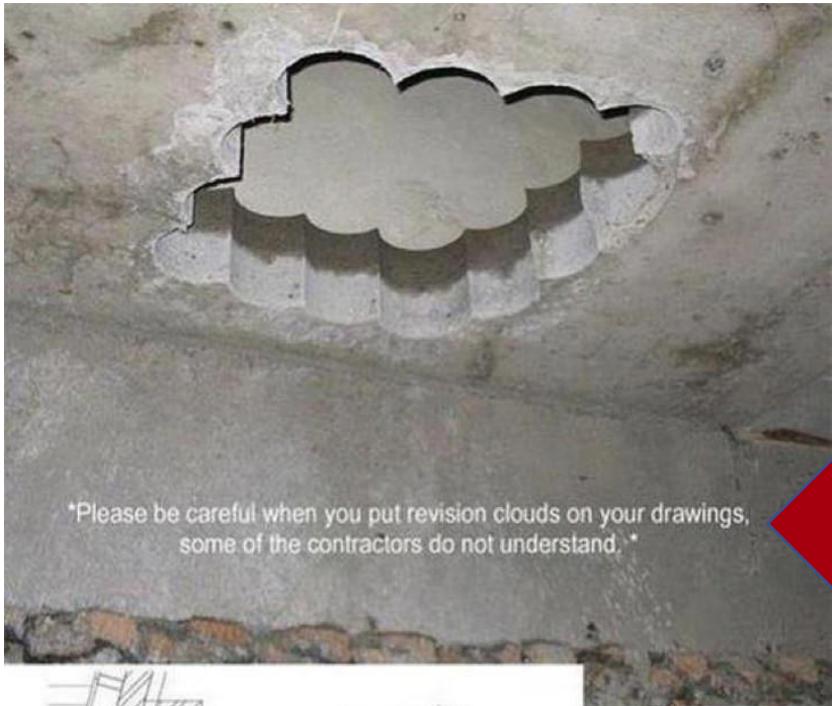


vir slike: <https://blog.miragestudio7.com/construction-mistakes/1443/>



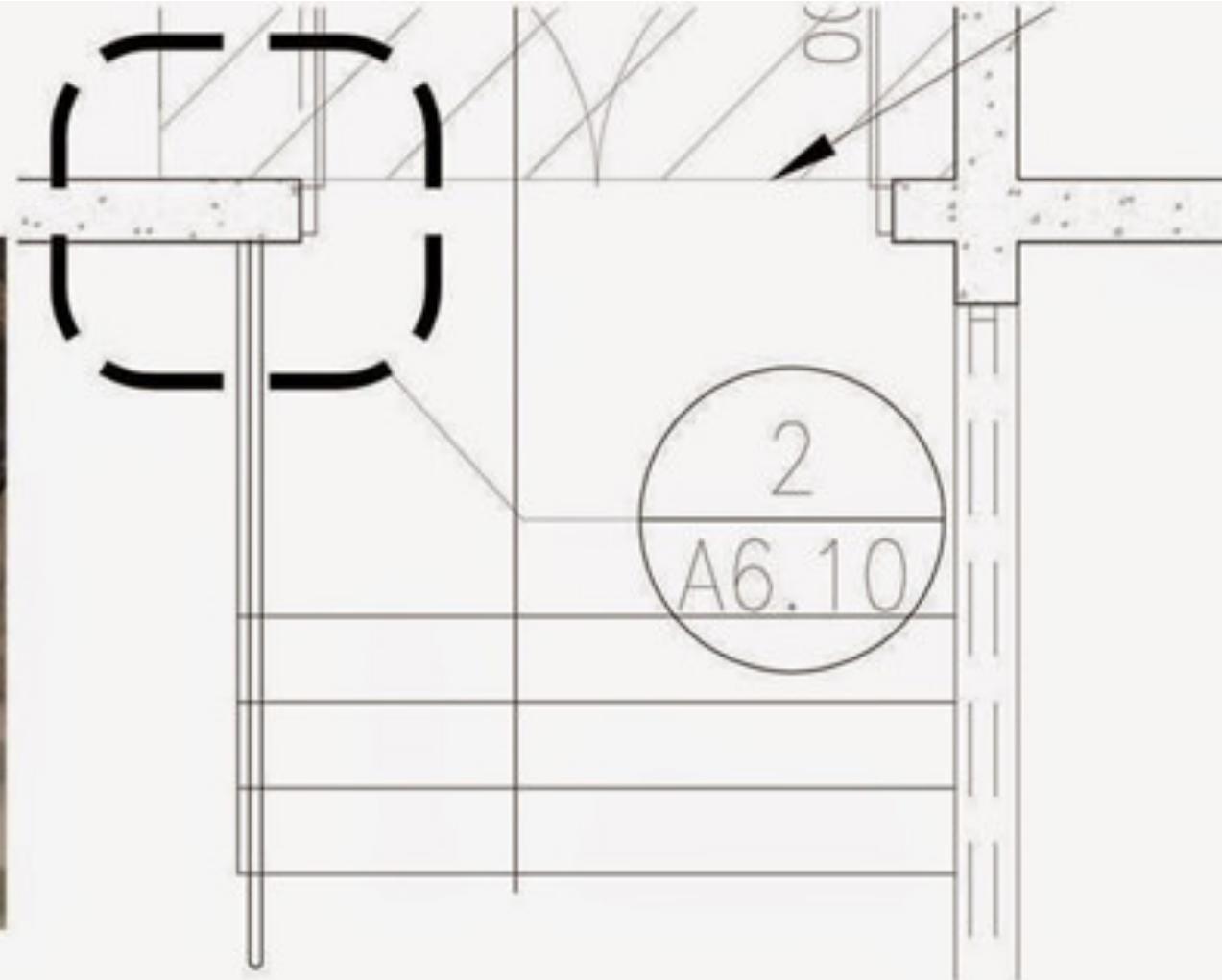
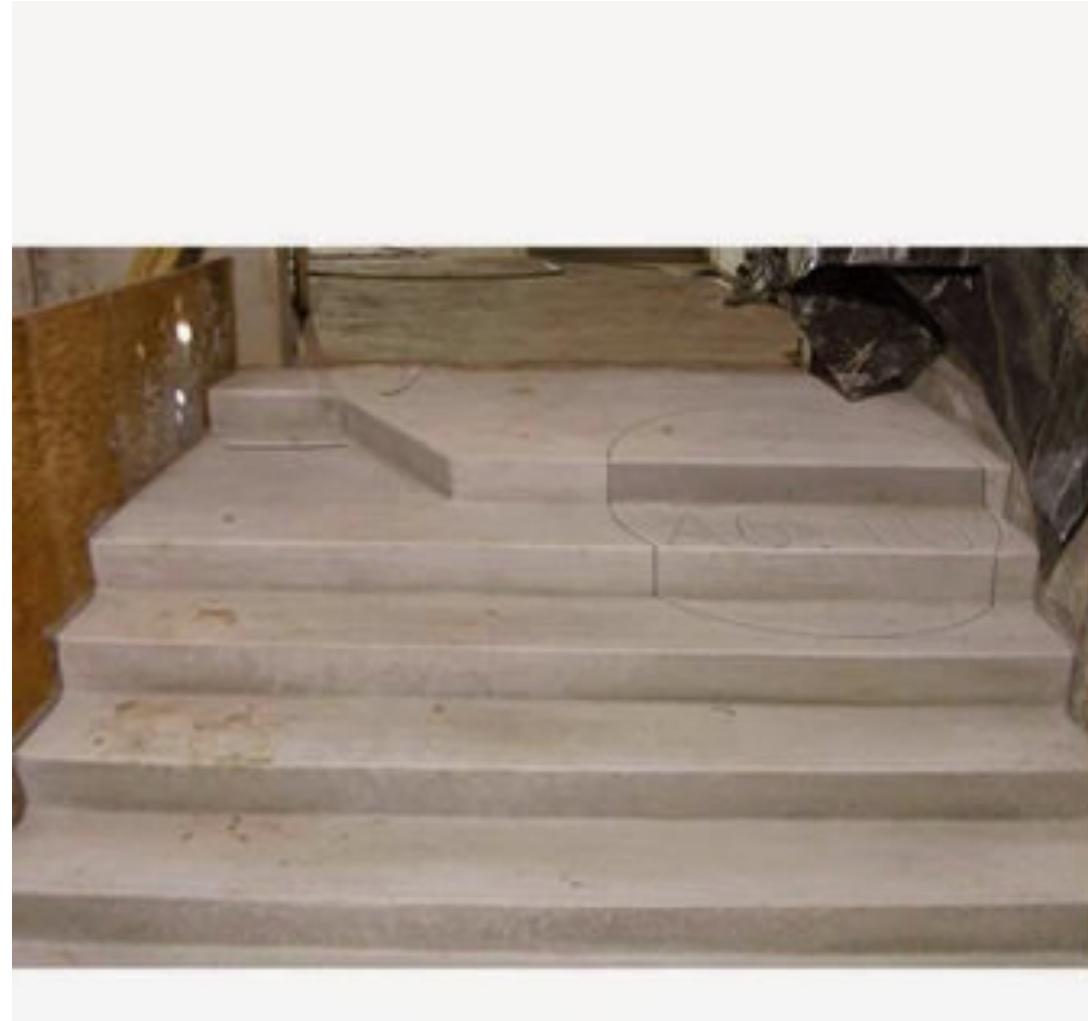
vir slike: <https://blog.miragestudio7.com/construction-mistakes/1443/>

# Načrte moramo znati brati!



Prosim, bodite pozorni pri  
uporabi oznak za  
spremembe, saj jih nekateri  
podizvajalci ne razumejo.

# Načrte moramo znati brati!



vir slike: <https://blog.miragestudio7.com/construction-mistakes/1443/>

# Načrti morajo biti smiseln!

---



# Načrti morajo biti smiseln!



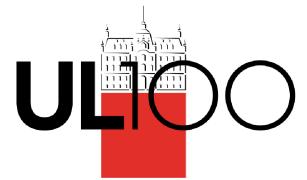
# OI Sochi 2014

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# OI Sochi 2014

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**Tweet Boston Sports** @BostonSports\_T1 · 2h  
How is this even possible... #SochiProblems  
[pic.twitter.com/hdqTsDnFjo](https://pic.twitter.com/hdqTsDnFjo)



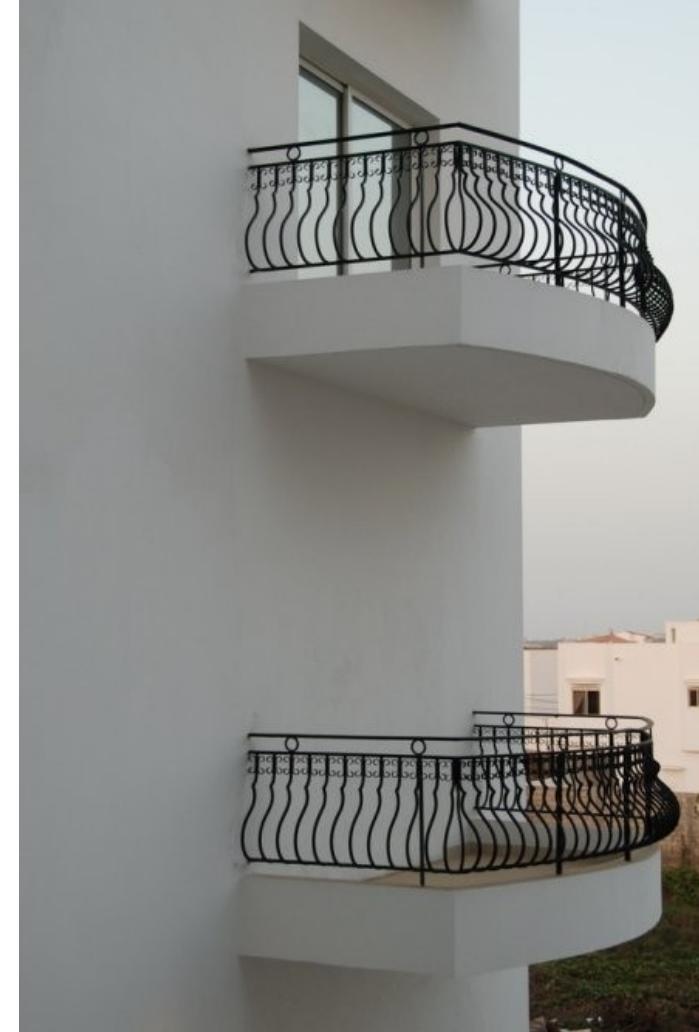
**Sochi Problems** @SochiProblems · Feb 4

Who wants front row seats? Not the gold medal but it's close enough.  
#Sochi2014 #SochiProblems [pic.twitter.com/0sqqJDFQmc](https://pic.twitter.com/0sqqJDFQmc)



# Načrti morajo biti smiseln!

---



# Načrti morajo biti smiseln!

---



# Načrti morajo biti smiseln!

---



# Napake so lahko smešne



tipična  
inženirska  
rešitev

# Lahko so tragikomične ...

---



# Lahko so zelo zelo drage!

---

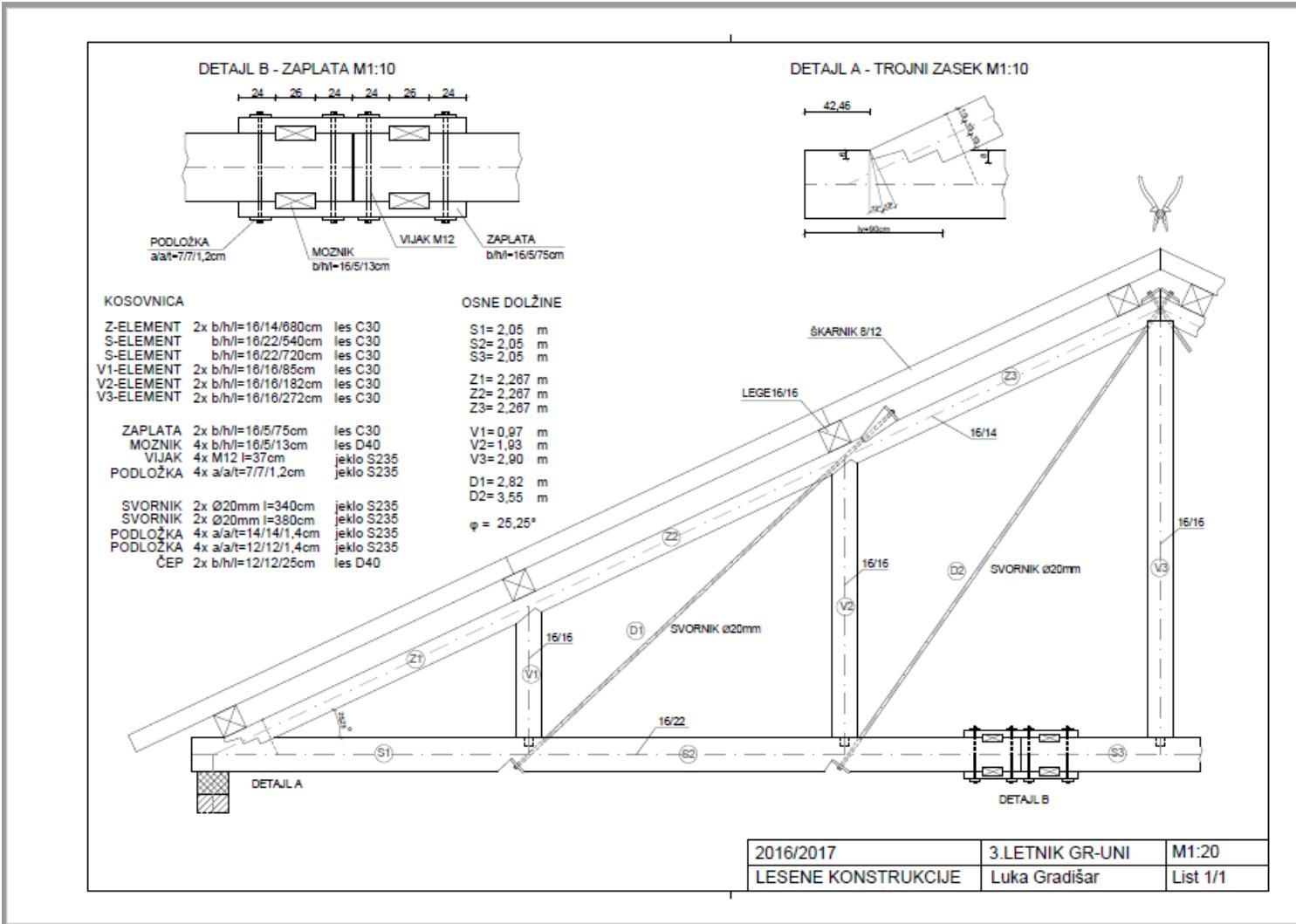


# Lahko pa tudi zelo nevarne

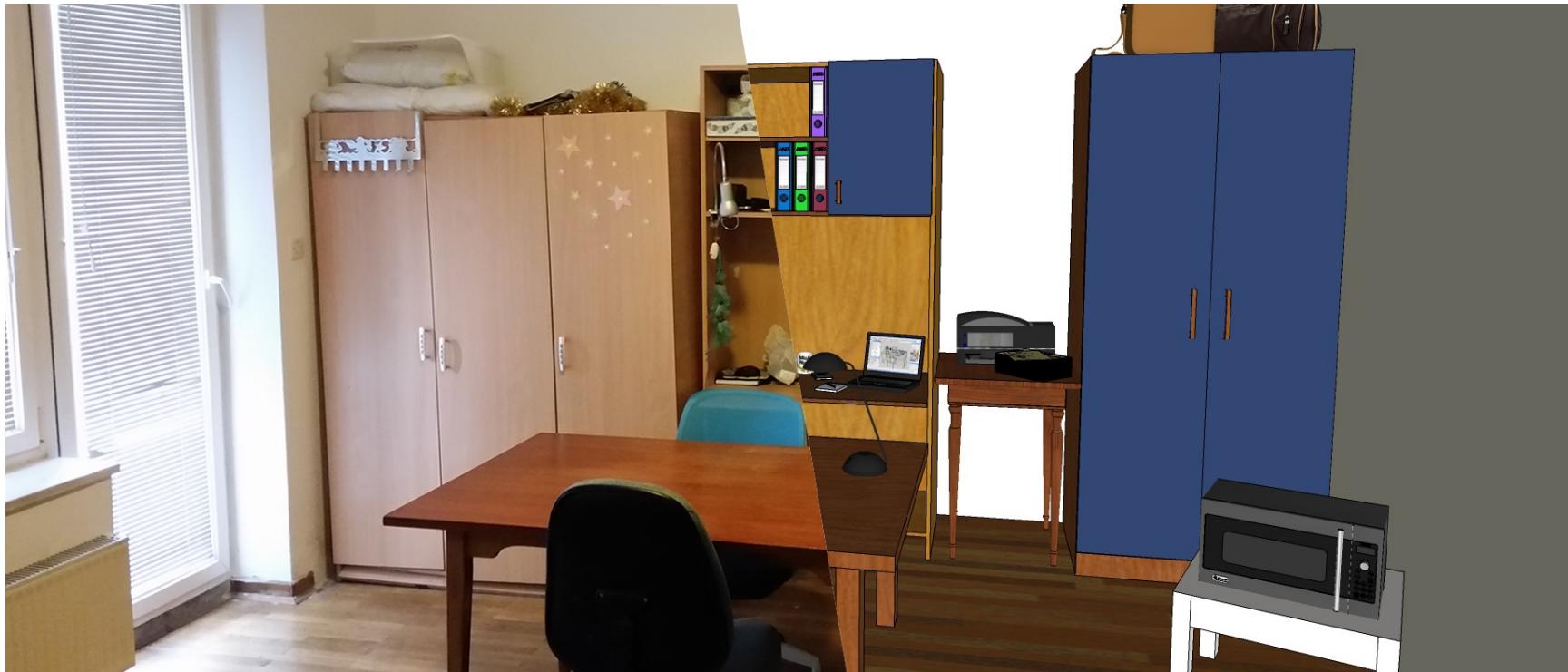
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# 2D načrt

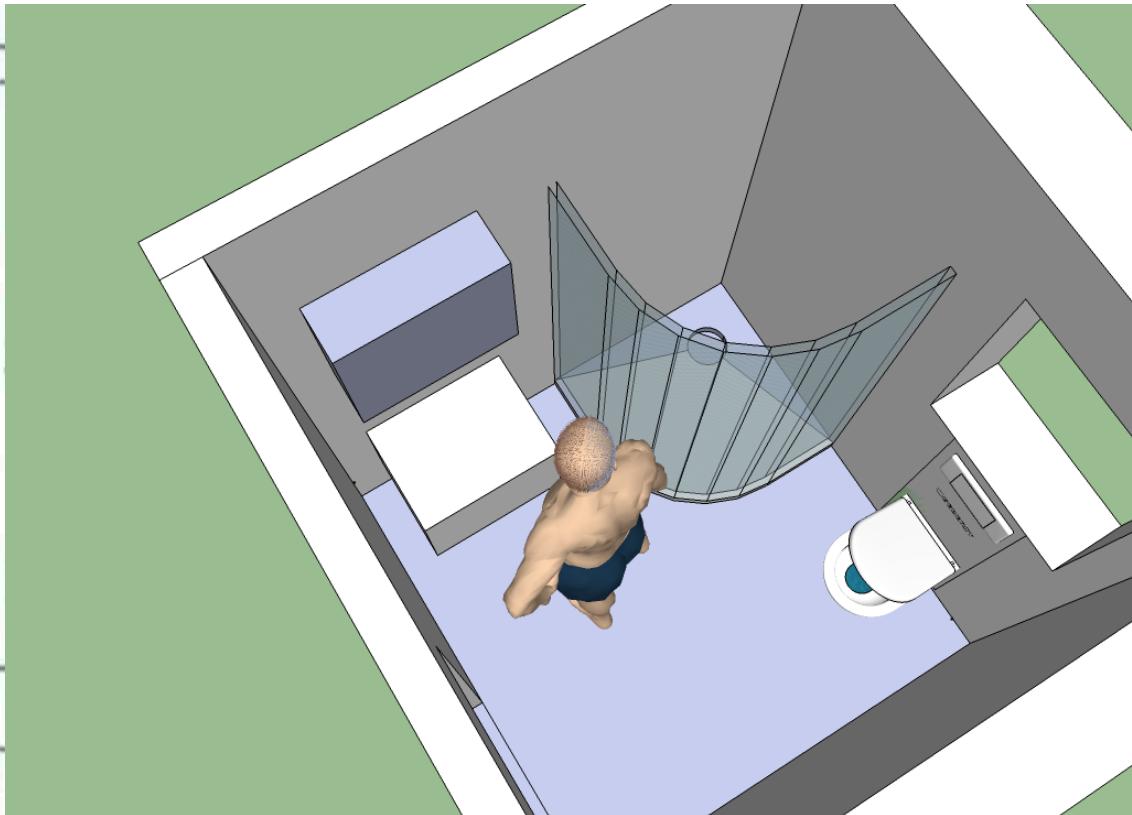
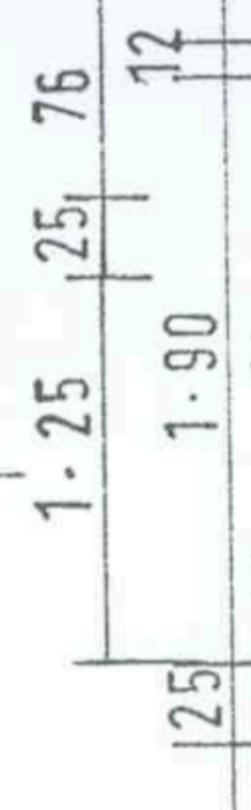
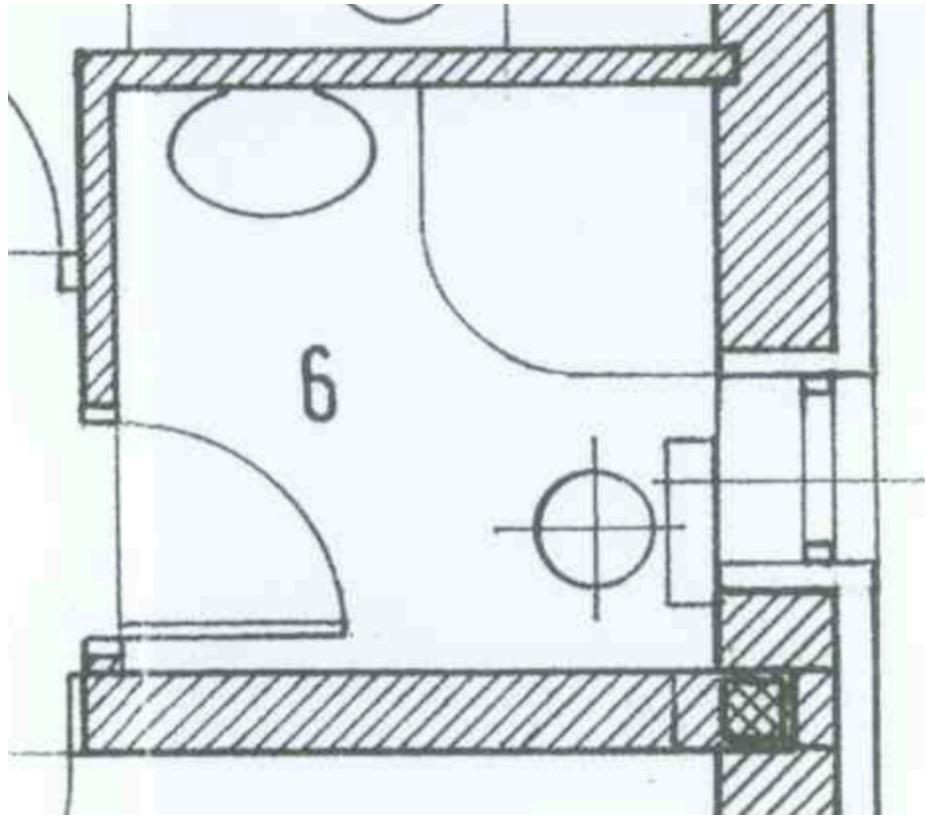


# 3D geometrijski model



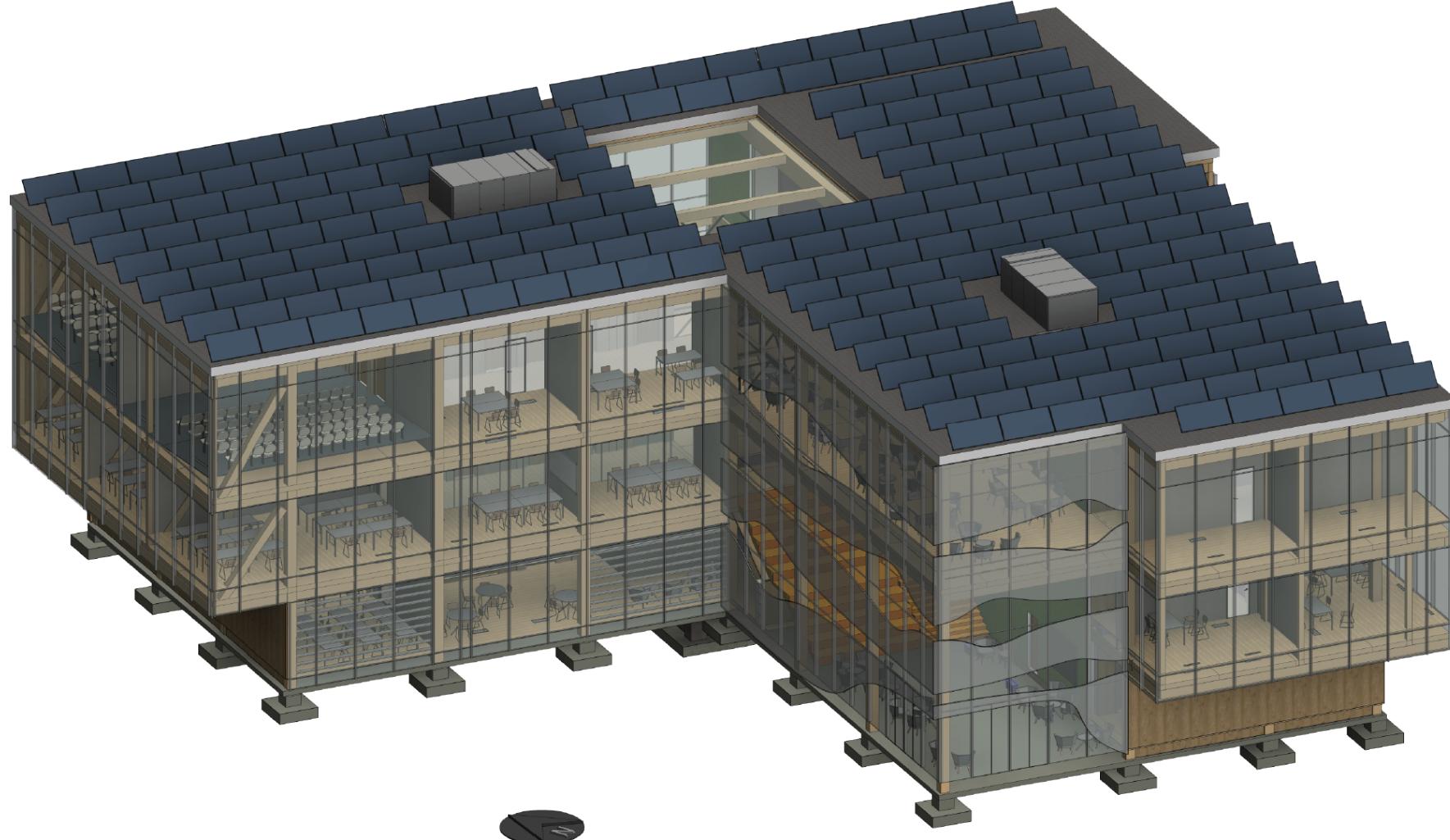
vir slike: Nico Gamboc, študent pri predmetu Inženirska komunikacija (2017)

# Percepcija 2D → 3D



# 3D objektni model (BIM)

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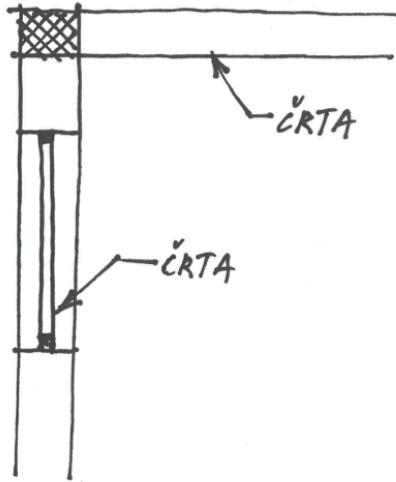
# Kaj je BIM?

---

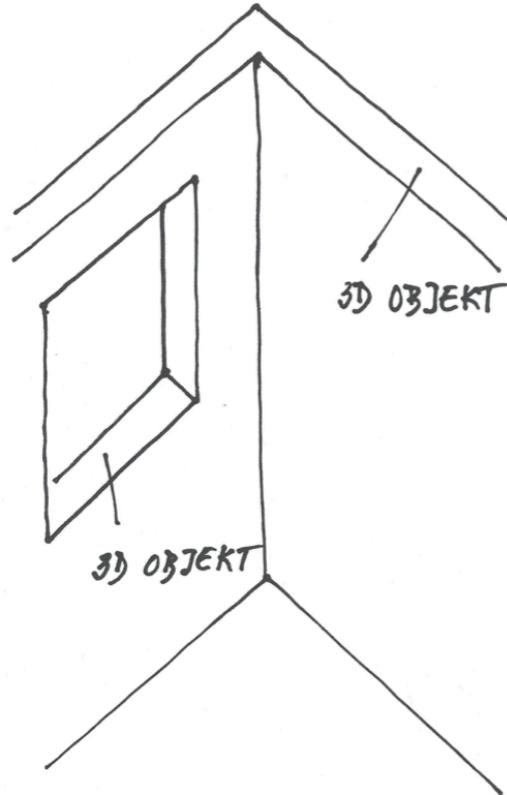
- **Building Information Model(ling)**
  - proces, model, orodje, upravljanje, filozofija, ...
- **Informacijsko modeliranje**
  - stavb
  - zgradb
  - gradenj

# BIM ni 3D model

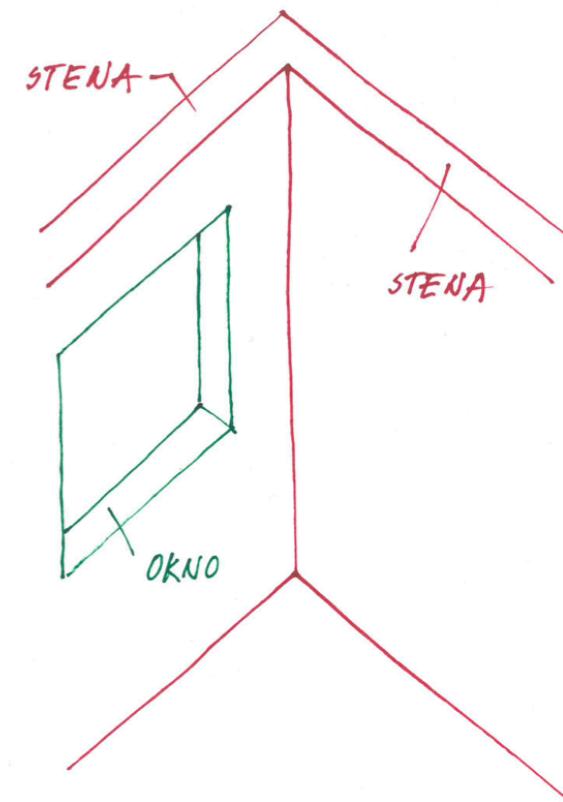
CAD



3D CAD



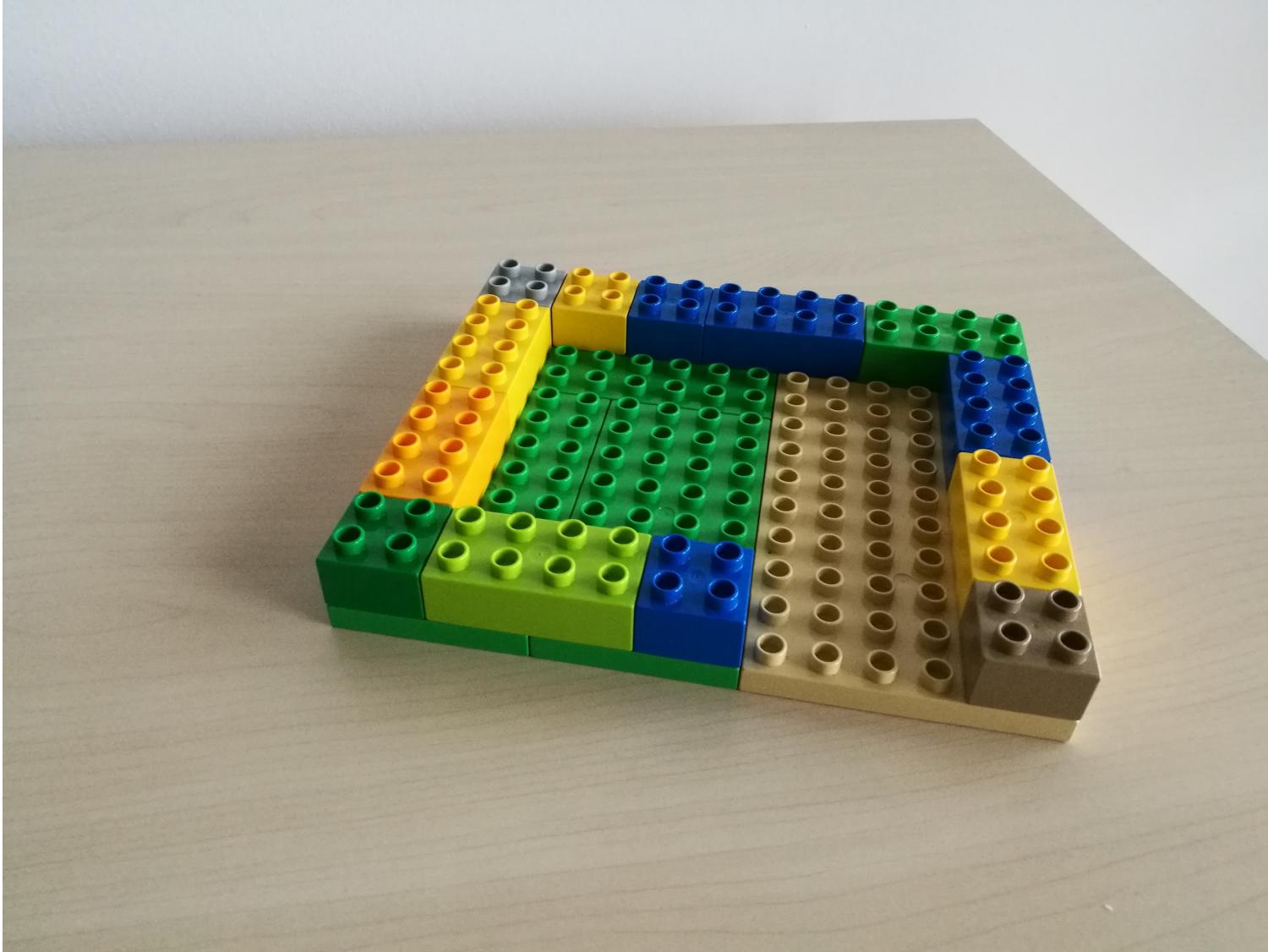
BIM



vir slike: Matevž Dolenc

# Lego CAD

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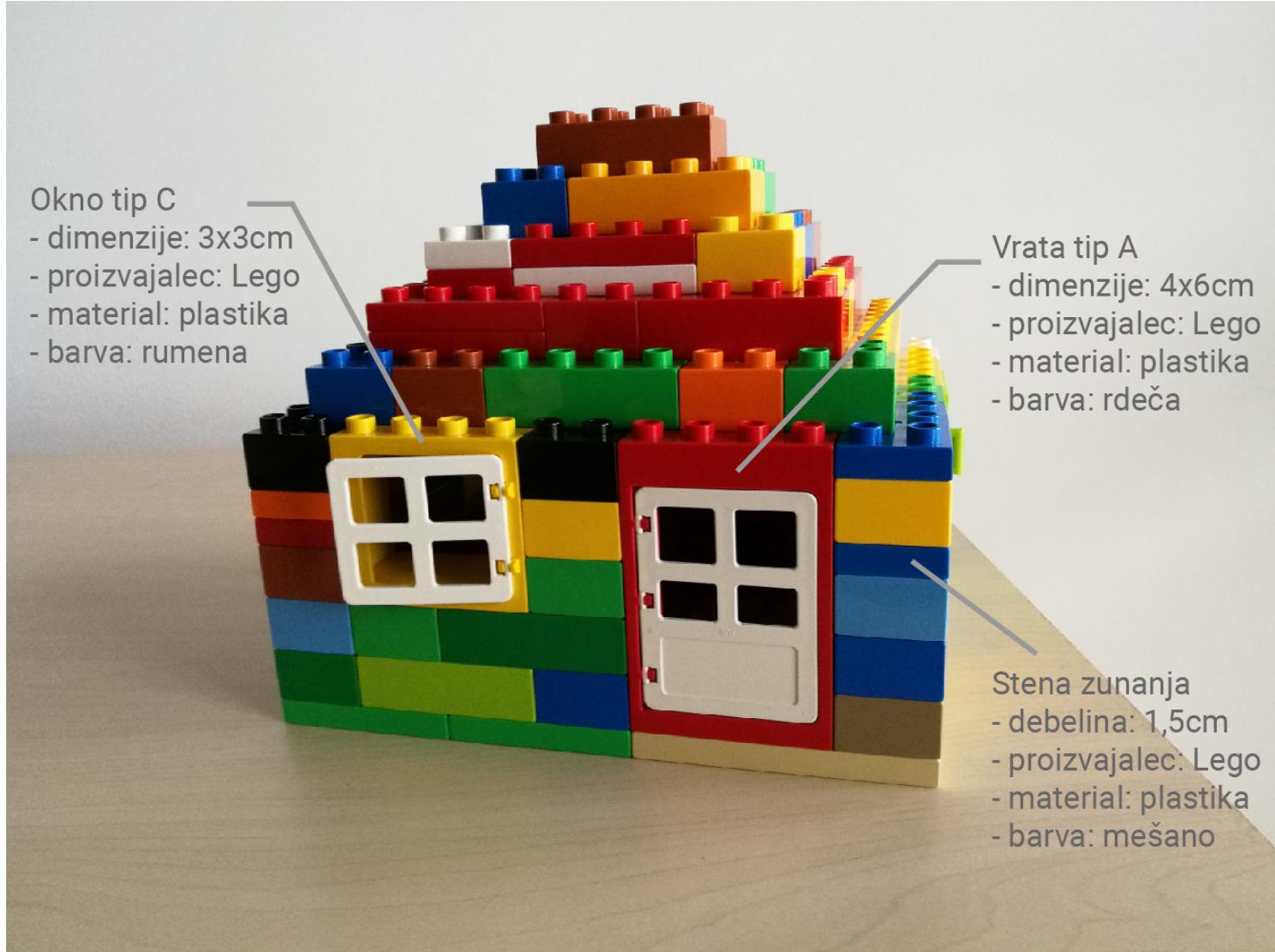
# Lego 3D

---



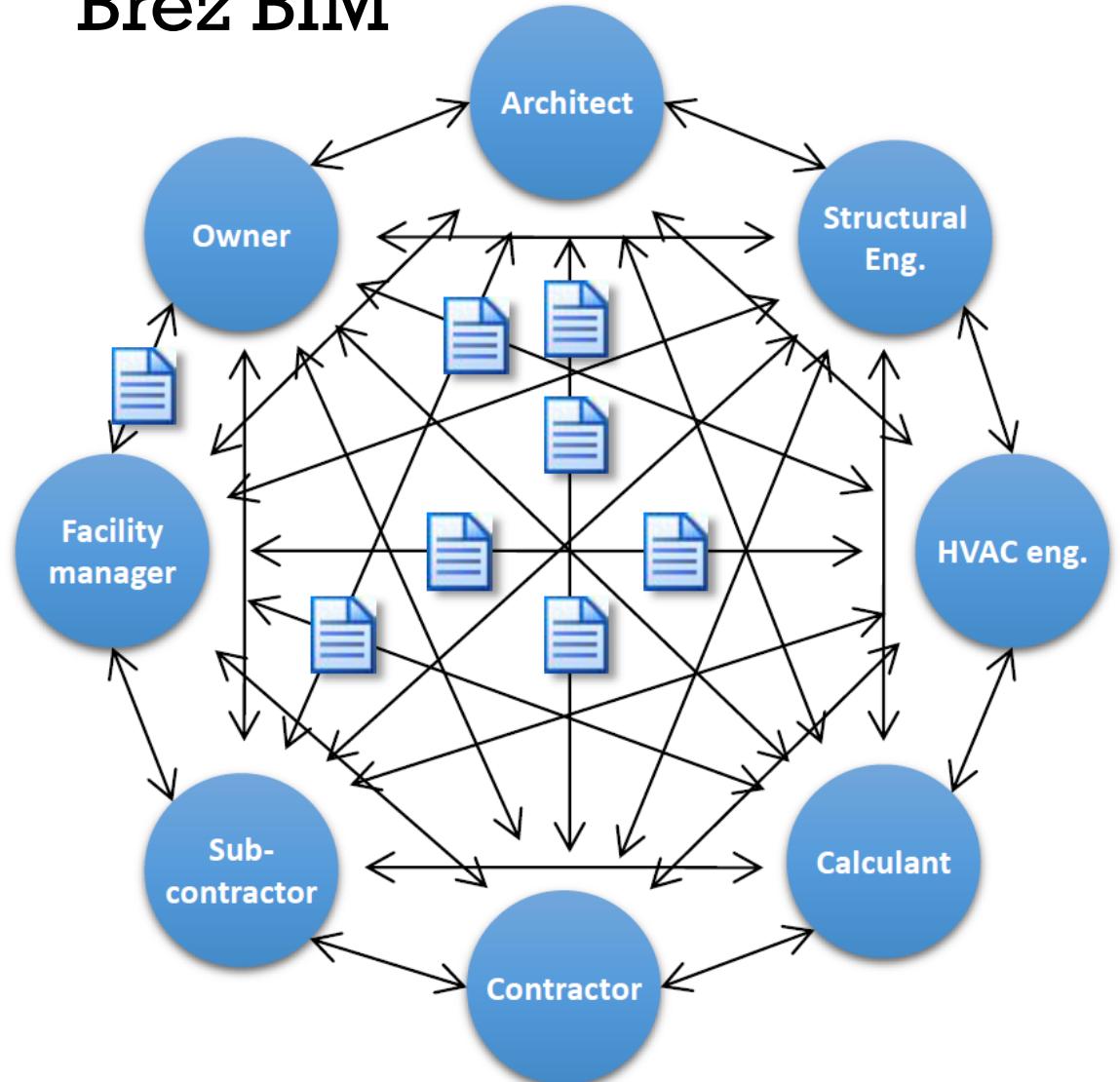
# Lego BIM

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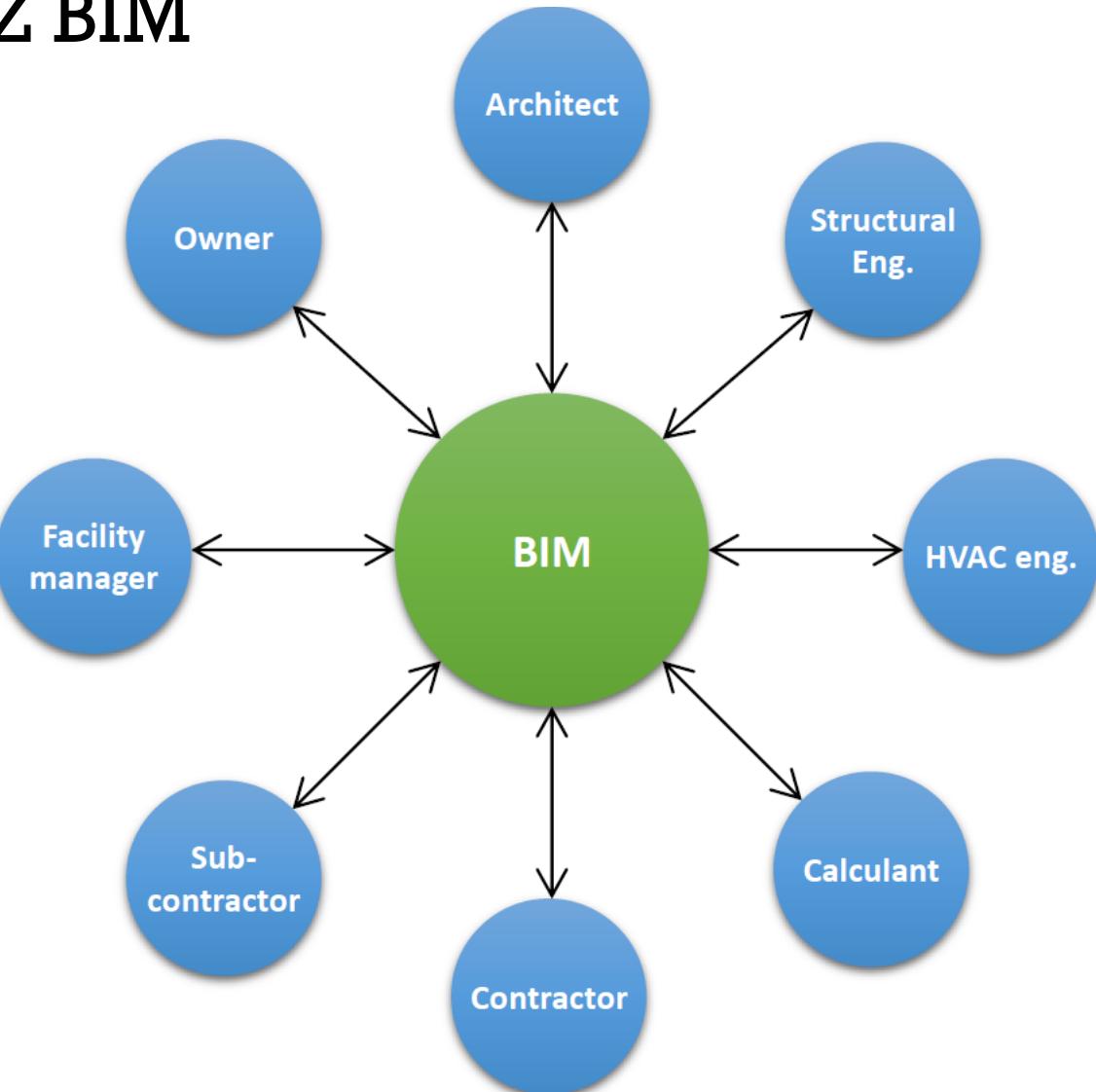


# Komunikacija zelo pomembna

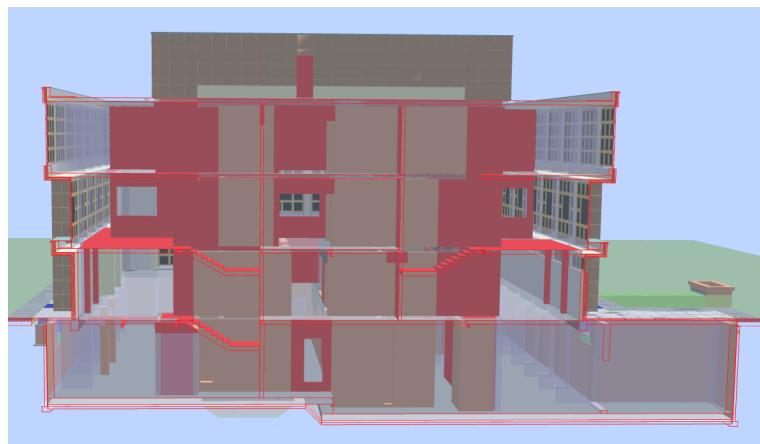
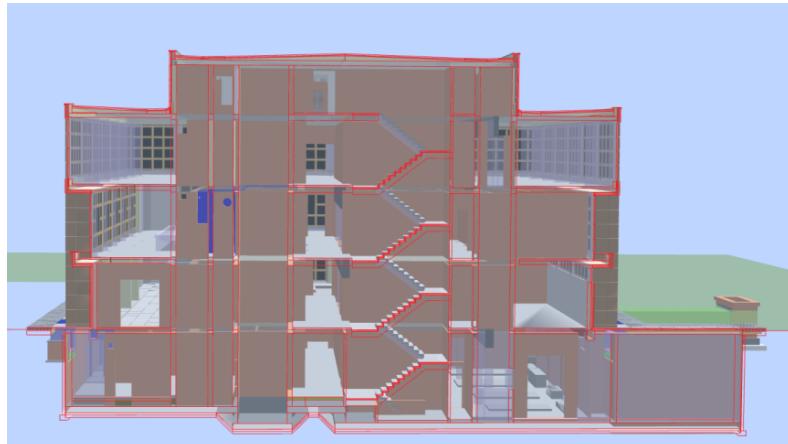
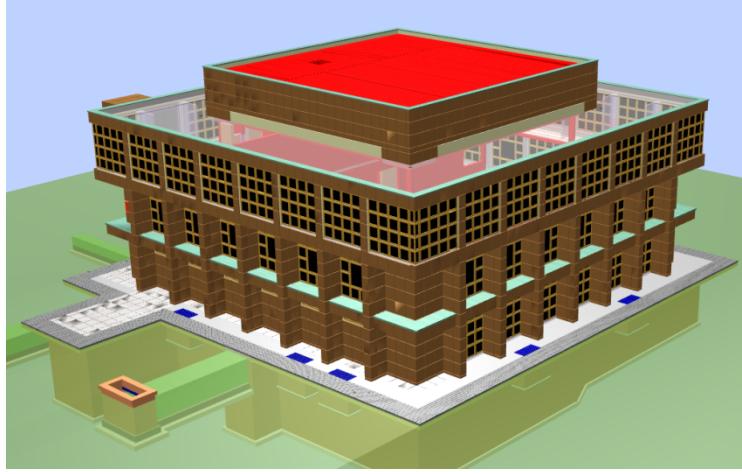
Brez BIM



Z BIM



# BIM: digitalna gradnja PRED gradnjo



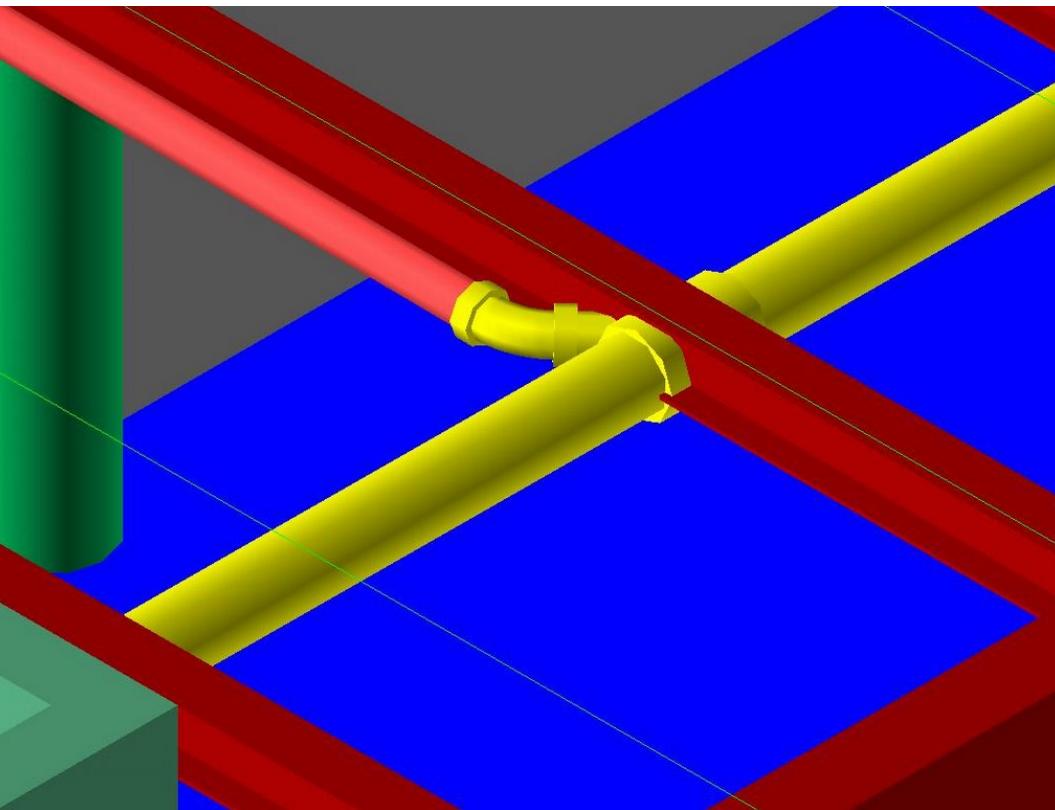
vir slike: EU projekt ISES (2015)

# Prednosti v praksi

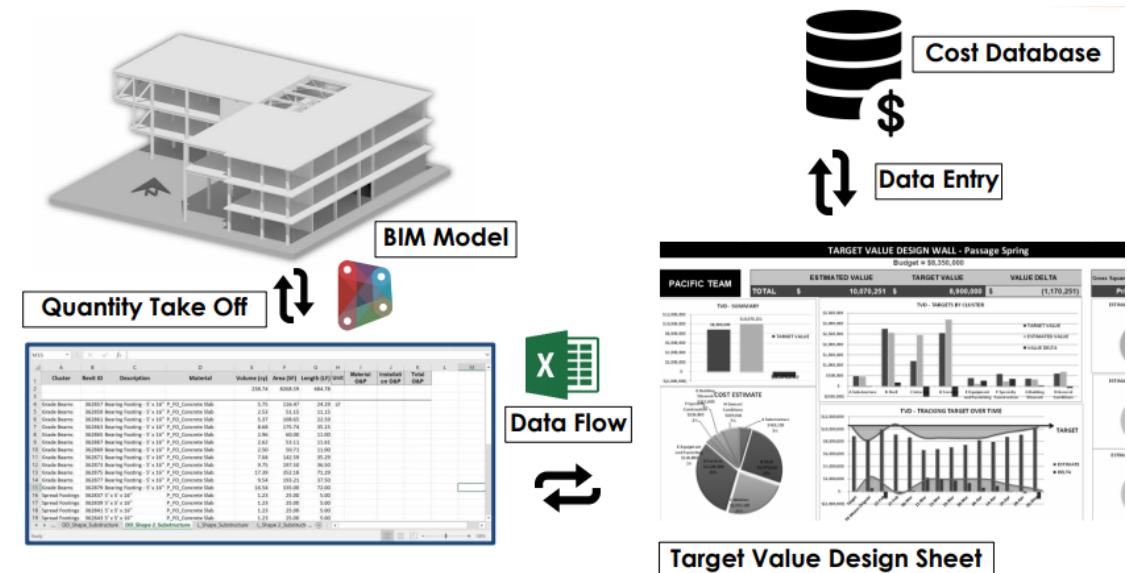
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# BIM omogoča več



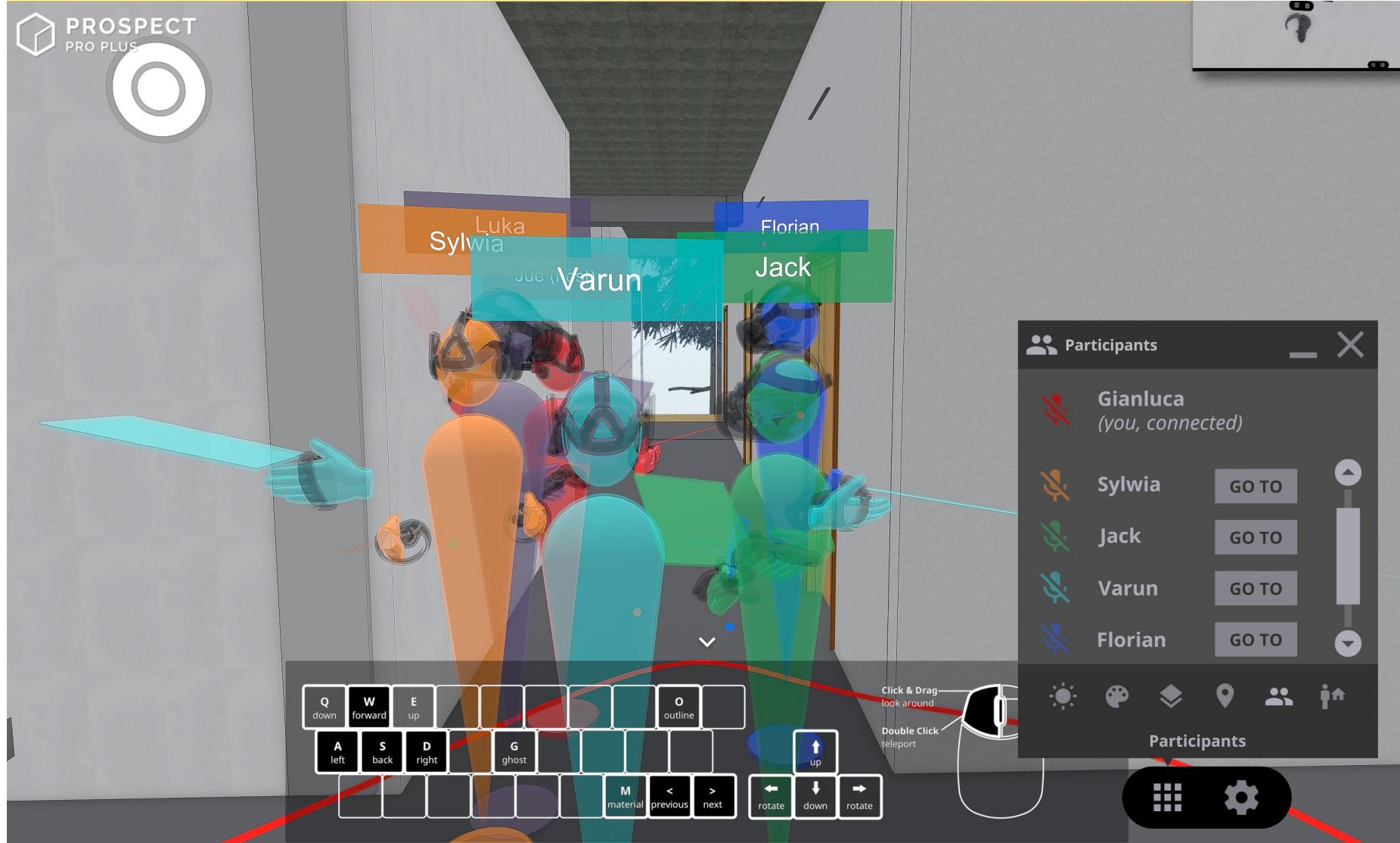
## Clash detection – iskanje kolizij Obdelava informacij in podatkov



**vir slike:** <http://pbl.stanford.edu/AEC%20projects/Year%202018-2019/Spring/Pacific-Spring2019.pdf>

**vir slike:** <http://therevitkid.blogspot.si/2009/11/cost-savings-of-bim.html>

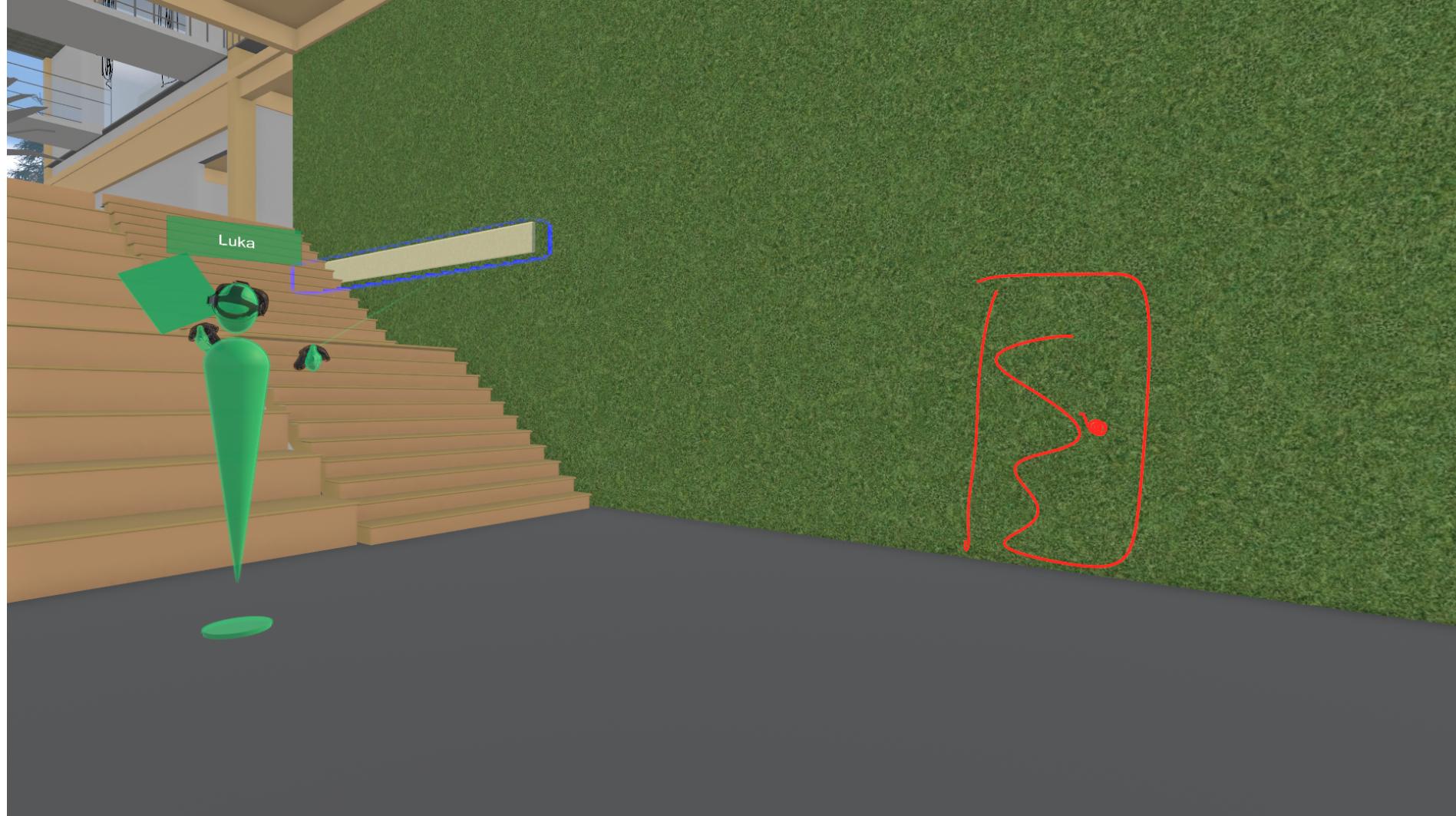
# Virtualna resničnost



vir slike: AEC2019, Team Pacific

Komunikacij  
a na daljavo

# Virtualna resničnost

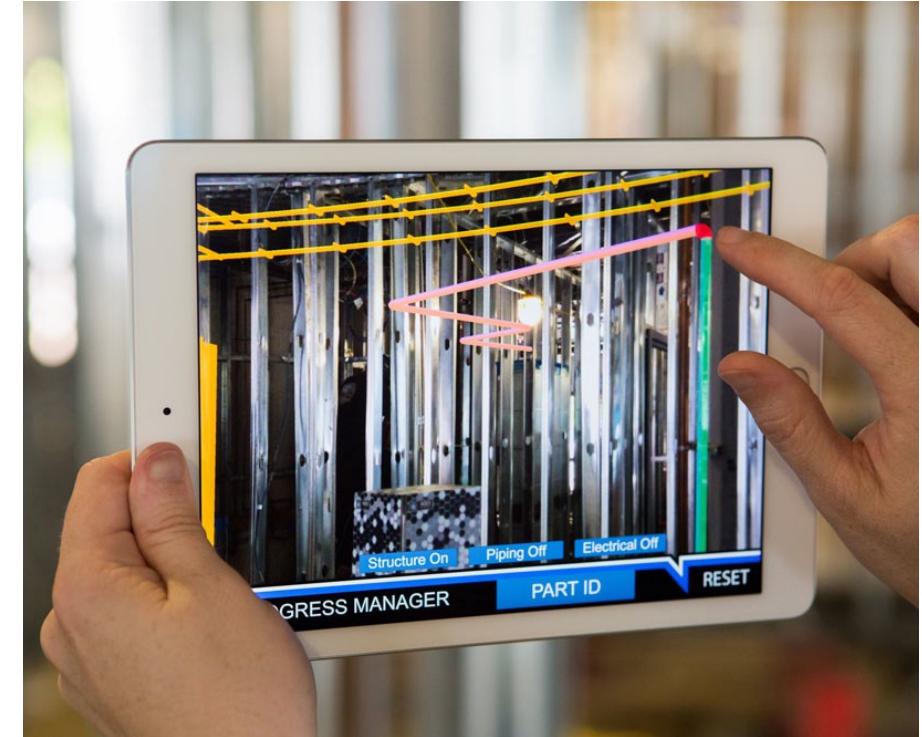


Reševanje  
problemov

# Navidezna resničnost



**vir slike:** <https://mixed.reality.news/news/trimble-brings-mixed-reality-construction-site-with-daqri-smart-helmet-0176463/>

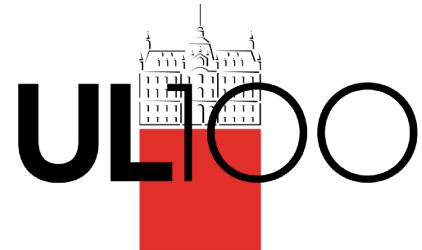


**vir slike:** <https://medium.com/@colbygee/augmented-reality-will-transform-bim-into-the-beast-it-was-always-meant-to-be-e170d7357ad9>

# Delo na daljavo



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# Študenti FGG in BIM

# 2014 projekt - »GSM project«

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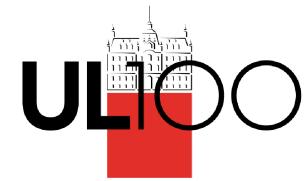
# 2014 projekt - »Elan«



vir slike: seminar pri predmetu Računalniško integrirana graditev

# 2014 projekt - »Gradbinčki«

University of Ljubljana  
Faculty of *civil and geodetic engineering*



vir slike: seminar pri predmetu Računalniško integrirana graditev

# 2014 projekt - »OutOfTheBox«

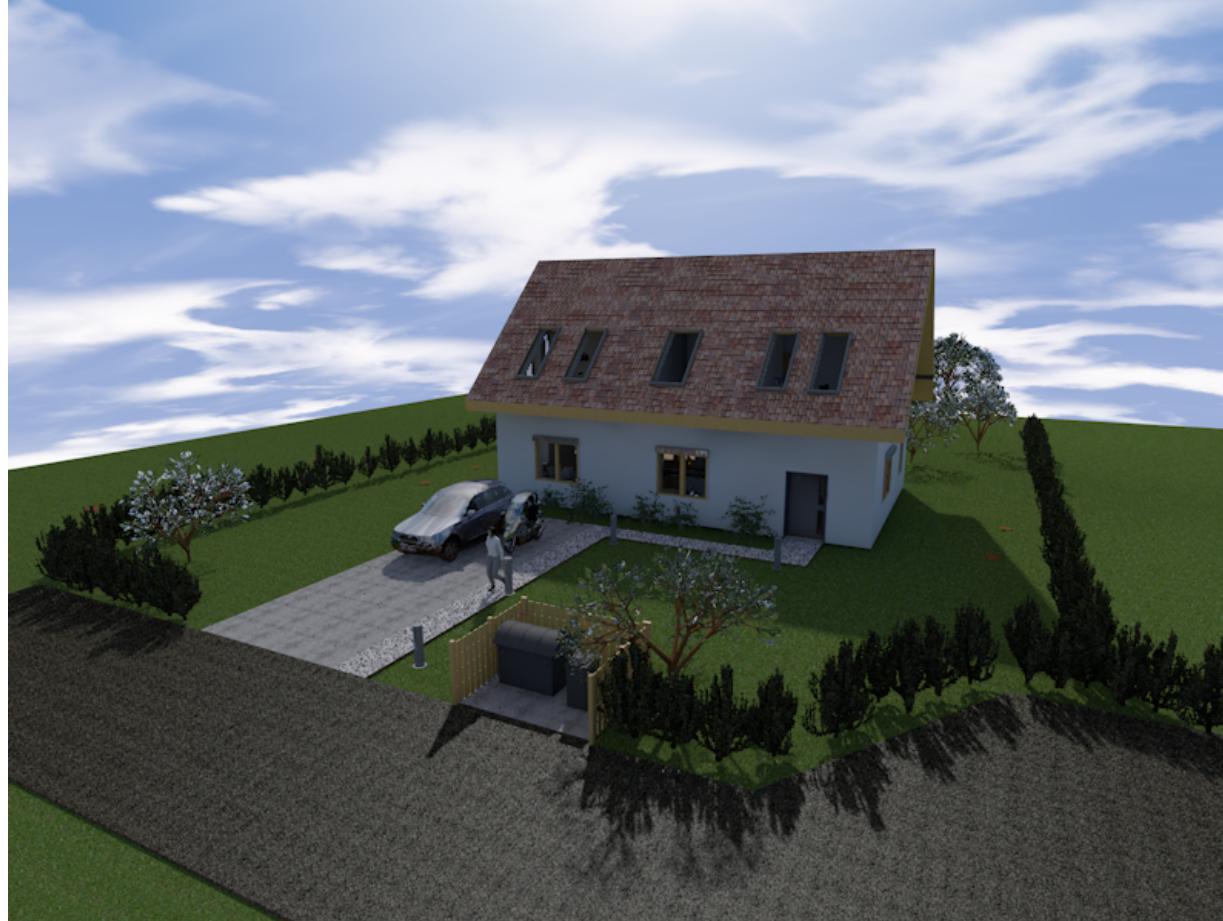
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vir slike: seminar pri predmetu Računalniško integrirana graditev

# 2015 projekt - »DBJ«

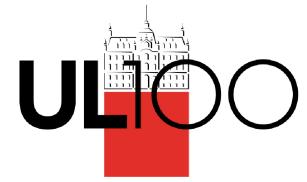
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**vir slike:** seminar pri predmetu Računalniško integrirana graditev

# 2015 projekt - »PRO design d.o.o«

University of Ljubljana  
Faculty of *civil and geodetic engineering*



vir slike: seminar pri predmetu Računalniško integrirana graditev

# 2017 projekt - »GRAditev«



vir slike: seminar pri predmetu Računalniško integrirana graditev

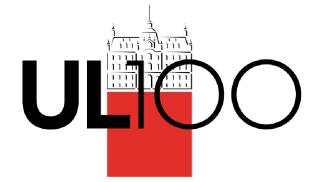
# 2017 projekt - »Temelj d.o.o«



vir slike: seminar pri predmetu Računalniško integrirana graditev

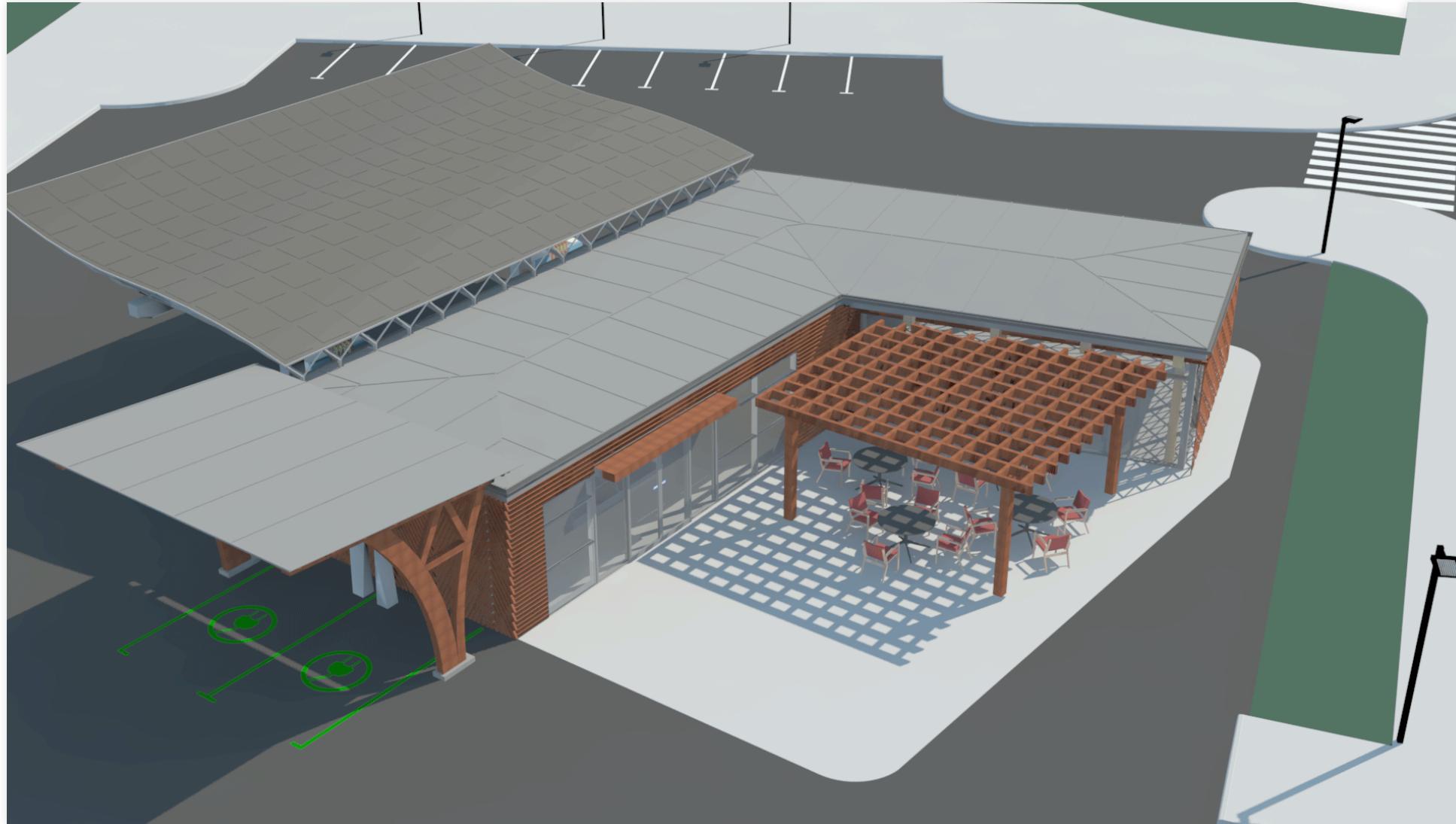
# 2018 projekt - »AAEngineering«

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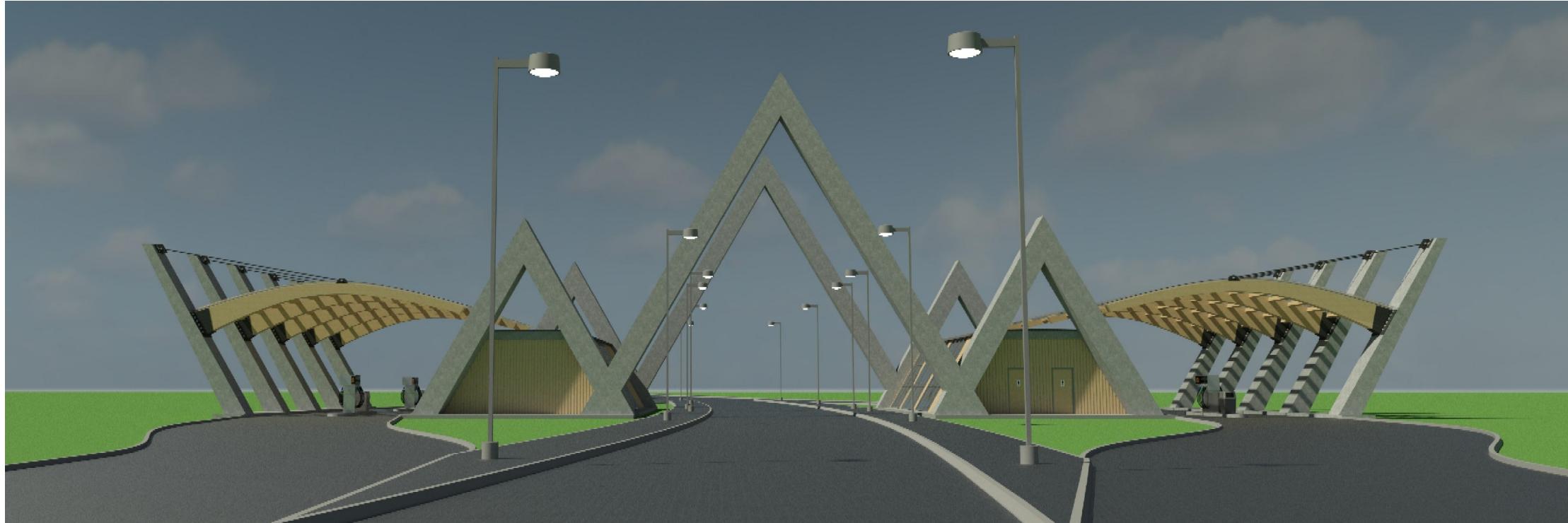
vir slike: seminar pri predmetu Računalniško integrirana graditev

# 2018 projekt - »Vaš odgovor«



vir slike: seminar pri predmetu Računalniško integrirana graditev

# 2018 projekt - »OFR«



vir slike: seminar pri predmetu Računalniško integrirana graditev

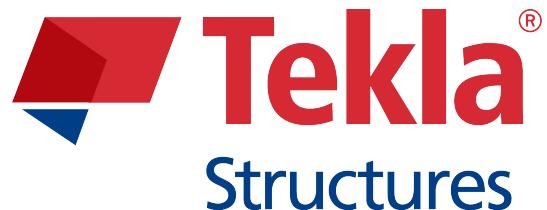
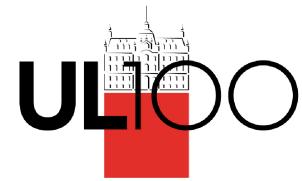
# Računalniška oprema na FGG



- 9 računalniških učilnic
- 159+ sodobnih računalnikov

# BIM programska oprema na FGG

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# Hvala za pozornost

