

Mark Rocha, PE, SE

- Viviana martinez: graduate of UT ARE, works in MEP and HVAC design
- Mark graduated during recession, joined HDR and then went back to get masters
- HDR founded in 1917, one of the largest employee owned companies in the world
- Structured into many different business groups like architecture and transportation
- Describes HDR as building the whole city (many different disciplines)
- Jackson rehab hospital: top rehab hospital in the world, very open
- Iribe Center for computer science and engineering: facade study, undulating brick
- Parametric design: relationships between data
- Rhino and grasshopper (visual programming) can be used together
- Most common pieces of parametric design: rhino and grasshopper, revit and dynamo, application programming interface (basically writing code)
- Dynamo is similar to grasshopper, but you can mine information within revit model
- API: writing code, Marks says to take coding / C sharp classes
- Parametric design is important → makes work less laborious
- Typical process in terms of structural engineering
 - BIM (revit) → Plug-in (Geometry / Beams and columns) → Analysis
 - BIM typical process: RAM → ISM → Revit
 - Gets very messy bc you go back and forth between BIMs
- BHoM: open source environment to collab between multiple software programs
 - Developed by Buro Happold
 - Process: BIM → BHoM → Analysis
 - Mark is sending us a link with information on how to use the BHoM
- Typical BHoM process
 - Generate Geometry in grasshopper
 - Create BHoM bars (create element that can be translated anywhere)
 - Robot: create analysis, not used a lot in US, use adapters to grab info
- How does HDR use parametric design?
 - Use data wrangler to analyze cost and floor areas, allows them to analyze space
 - TRIP - automated data translation tool instead of manual
- Example - Green street pedestrian bridge: won a lot of awards
 - Were able to solve many problems using parametric design
- Trip was designed to work with other software - used to verify loading calculations
- Historically, parametric design has been an architecture thing but now engineers use it as well, people working more efficiently, good skill set to have
- Viviana says HVAC design with Niki defined mechanical ARE student, good intro to the world of HVAC and other systems; solar energy in buildings was also great
- Kangaroo and Gallapogos are good structural plug-in tools for grasshopper
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