2013 40-Day Journey
Japan, Hawaii, California

• Osaka, Kyoto, and Narita, Japan

• Oahu, Hawaii
  – University of Hawaii Architectural meetings

• Newport Beach, California
Green Architecture & Environmental Design using Rapid-Prototyping Social-Networking Sandbox Tools followed by Professional Architectural Software

2013 Asian Conference on Sustainability, Energy and the Environment, Osaka, Japan

Joseph T. Wunderlich PhD, Elizabethtown College, PA, USA
Joseph John Wunderlich
Joseph Wunderlich
Elizabethtown College, USA

Dr. Joseph Thomas Wunderlich has designed two neurocomputers and part of an IBM supercomputer operating system. He's Ph.D. (UDE) and M.Eng (Penn State) are in Electrical and Computer Engineering. He's conducted robotics research and taught a Ph.D. course at the University of Trento in Italy. He's taught 31 courses including eight new ones. He also has a BS in Architectural Engineering (UTexas), and an almost-completed 2nd BS in Urban-Planning/Environmental-Design (UCSD). He has Project Director experience for ~$70Million USD of architectural projects in Texas, California, and Pennsylvania, experience as a San Diego County Environmental Planner and as a San Francisco Engineering Consultant (including EPA certifications). Recently he created the Elizabethtown College Sustainable Design Engineering program and the Architectural Studies Minor.

Mr. Joseph John Wunderlich is the designer of several hundred buildings throughout many virtual worlds in Minecraft, and has presented his work on several occasions in Dr. Wunderlich's courses.


In 2012 the United Nations UN-Habitat’s Sustainable Urban Development Network partnered with sandbox-game developers of the social-networking block-by-block building software Minecraft to upgrade 300 public spaces worldwide by 2016 by pairing professional designers with local inhabitants in virtual world simulations. This work is similar to the authors' research since early 2010 where a Minecraft server and concurrent database server were configured for peaceful architectural development by players worldwide, and in five college engineering and architectural courses. Students build green homes, plant gardens, and raise livestock in green villages, or on a virtual college campus within ecosystems containing simulated weather, terrain, biomes, and A/E-reinforced animals. Student avatars interact to design. Social-media scrolls across the screen so everybody can be heard. Student homes have active & passive solar, thermal mass, natural daylighting, mitigation of cold northern winds, and an overall architectural aesthetic. Students create gardens, livestock areas, pizzaz, markets, parks, and a Wellness center with indoor pool and activity rooms. Credit is given for using the software’s electrical, mechanical, and logic design features. Selected students are invited to develop professional architectural drawings LEED (Leadership in Energy and Environmental Design) concepts are incorporated throughout. Future goals include implementing these methods in new architectural studio courses and at universities abroad helping extend the UN/Minecraft concept to develop countries and merging this research with the author’s research in robotics & machine intelligence, including interactive environmental maps communicating with real-time robots. Long-term goals include on-line virtual-reality classrooms and laboratories with real-time language translation and lifelike avatars.
J. Wunderlich Ph.D.
Biography

½ Computer Engineer

½ Architect and Urban Designer
Photo taken by son from other podium
Audience of approximately 200 people
Conference Banquet
AGENDA

- Inspiration & modeling intro
  - United Nations

- Foam-board alternative

- Design in Social-net
  - Small-scale crowdsourcing
  - Ongoing Charette

- Professional tools
  - Flamingo, Rhinoceros, Revit

- Future
Minecraft to aid UN regeneration projects

Development plans for 300 places around the world are being modelled in Minecraft so residents can help decide how the locations will change.

Called Block by Block, the programme is part of a collaboration between Minecraft-maker Mojang and UN Habitat.

Urban locations will be recreated on computer using Minecraft allowing residents to take a virtual tour.

Residents will be able to take a virtual stroll around the Minecraft models.

They will also be able to change the model and help decide how regeneration cash should be spent.

And validation of work since 2011
“Block by Block”

A collaboration between the United Nations and Mojang, the developers of Minecraft
Frank Lloyd Wright’s Robie House
Illinois, USA
Rapid Modeling
(two hours in 2011)
by Joseph John Wunderlich
Rapid Modeling
(two hours in 2011)
by Joseph John Wunderlich
Rapid Modeling
(two hours in 2011)
by Joseph John Wunderlich
Rapid Modeling
(two hours in 2011)
by Joseph John Wunderlich
Wunderlich Residence, 2000 Foam-board Modeling
Pennsylvania, USA
Wunderlich Residence

Foam-board Modeling

by J. Wunderlich, PhD
Wunderlich Residence

Foam-board Modeling
(several weeks in 2000)
by J. Wunderlich, PhD
Wunderlich Residence

Built House (early 2000’s)
by J. Wunderlich, PhD
and Joseph John Wunderlich
Wunderlich Residence

by J. Wunderlich, PhD
and Joseph John Wunderlich

Built House
(early 2000’s)
Wunderlich Residence

Built House
(early 2000’s)
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Built House
(early 2000’s)

by J. Wunderlich, PhD
and Joseph John Wunderlich
Wunderlich Residence

Built House
(early 2000’s)
by J. Wunderlich, PhD
and Joseph John Wunderlich
Rapid Modeling
(facade in one hour in 2013)
by Joseph John Wunderlich
Wunderlich Residence

Rapid Modeling

(facade in one hour in 2013)

by Joseph John Wunderlich
Wunderlich Residence

Rapid Modeling

by Joseph John Wunderlich
Wunderlich Residence

Rapid Modeling

by Joseph John Wunderlich
Wunderlich Residence

Rapid Modeling

by Joseph John Wunderlich
Wunderlich Barn in 2013 may become a College lab
LEED Analysis (academic) in 2013 for College course “Green Architectural Engineering”
LEED Analysis (academic) in 2013 for College course “Green Architectural Engineering”

<table>
<thead>
<tr>
<th>Indoor Environmental Quality</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prereq 1 Minimum IAQ Performance</td>
<td>ATTIC TEMP-CONTROLLED FANS, PLENUMS FOR OPTIMAL AIR-FLOW</td>
</tr>
<tr>
<td>Prereq 2 Environmental Tobacco Smoke (ETS) Control</td>
<td>MASKS, NEGATIVE PRESS CONTAINMENT, AND VENTILATION/FANS ALWAYS</td>
</tr>
<tr>
<td>Credit 1 Outdoor Air Delivery Monitoring</td>
<td>CONTAINMENT AND VENTILATION</td>
</tr>
<tr>
<td>Credit 2 Increased Ventilation</td>
<td>WATER-BASED WHEN POSSIBLE</td>
</tr>
<tr>
<td>Credit 3.1 Construction IAQ Management Plan, During Construction</td>
<td>LOW-VOC’S (Volatile Organic Compounds), PAINTS WATER-BASED</td>
</tr>
<tr>
<td>Credit 3.2 Construction IAQ Management Plan, Before Occupancy</td>
<td>ALL WOOD, MINIMAL VOC’S</td>
</tr>
<tr>
<td>Credit 4.1 Low-Emitting Materials, Adhesives &amp; Sealants</td>
<td>ALWAYS ATTEMPTED MINIMAL VOC’S — NEED TO CHECK RECORDS</td>
</tr>
<tr>
<td>Credit 4.2 Low-Emitting Materials, Paints &amp; Coatings</td>
<td>RADON TESTED, CO2 MONITORED, INCREASED VENTILATION</td>
</tr>
<tr>
<td>Credit 4.3 Low-Emitting Materials, Flooring Systems</td>
<td>NOT YET, BUT DAILY FAMILY LIGHTING-MINIMIZATION PLAN</td>
</tr>
<tr>
<td>Credit 4.4 Low-Emitting Materials, Composite Wood &amp; Agrifiber Products</td>
<td>SEVERAL PROGRAMMED ZONES (ARTIFICIAL INTELLIGENCE PLANNED)</td>
</tr>
<tr>
<td>Credit 5 Indoor Chemical &amp; Pollutant Source Control</td>
<td>PROGRAMMED ZONES; DEHUMIDIFICATION</td>
</tr>
<tr>
<td>Credit 6.1 Controllability of Systems, Lighting</td>
<td>NOT YET</td>
</tr>
<tr>
<td>Credit 6.2 Controllability of Systems, Thermal Comfort</td>
<td>EXTENSIVELY OPTIMIZED</td>
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<tr>
<td>Credit 7.1 Thermal Comfort, Design</td>
<td>EXTENSIVELY OPTIMIZED</td>
</tr>
<tr>
<td>Credit 7.2 Thermal Comfort, Verification</td>
<td>EXTENSIVELY OPTIMIZED</td>
</tr>
<tr>
<td>Credit 8.1 Daylight &amp; Views, Daylight 75% of Spaces</td>
<td></td>
</tr>
<tr>
<td>Credit 8.2 Daylight &amp; Views, Views for 90% of Spaces</td>
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<table>
<thead>
<tr>
<th>Innovation &amp; Design Process</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit 1.1 Innovation in Design: Provide Specific Title</td>
<td>EXTRA INSULATION, VAPOR &amp; MOISTURE BARRIERS; NORTH BINDER BUNDLED SPACES</td>
</tr>
<tr>
<td>Credit 1.2 Innovation in Design: Provide Specific Title</td>
<td>OVERALL BUILDING HAS LOW SURFACE-AREA TO VOLUME RATIO</td>
</tr>
<tr>
<td>Credit 1.3 Innovation in Design: Provide Specific Title</td>
<td>STRUCTURAL REINFORCING OF OLD HOUSE WITH NEW FOUNDATIONS</td>
</tr>
<tr>
<td>Credit 1.4 Innovation in Design: Provide Specific Title</td>
<td>99% CONSTRUCTION OWNED &amp; HIDDEN TOOLS, 79 YARDS DIRT WORKSHIPE</td>
</tr>
<tr>
<td>Credit 1.5 Innovation in Design: Provide Specific Title</td>
<td>121 NEW TREES, PASSIVE-SOLAR, WIND BLOCK, NOISE CONTROL, BIRDS</td>
</tr>
<tr>
<td>Credit 2 LEED® Accredited Professional</td>
<td>OWNER PREPARING TO TAKE LEED GA EXAM</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Regional Priority</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>Credit 1.1 Regional Priority: Provide Specific Title</td>
<td>PRESERVING EXISTING FARMHOUSES AND BARNs</td>
</tr>
<tr>
<td>Credit 1.2 Regional Priority: Provide Specific Title</td>
<td>5 TO 4 WORKING GARDENS PER YEAR — AGRICULTURAL ZONING</td>
</tr>
<tr>
<td>Credit 1.3 Regional Priority: Provide Specific Title</td>
<td></td>
</tr>
<tr>
<td>Credit 1.4 Regional Priority: Provide Specific Title</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Project Totals (pre-certification estimates)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 Points</td>
<td>ADD 15 POINTS WHEN SOLAR, WIND, &amp; AI ZONES DONE</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Pre</th>
<th>Post</th>
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<tbody>
<tr>
<td>11</td>
<td>110</td>
</tr>
</tbody>
</table>

Certified 40-49 points Silver 50-59 points Gold 60-79 points Platinum 80-110 points
Wunderlich Barn in 2013 may become a College lab
“WUNDEResin EAST”
Rapid Prototyping of Cities
(30+ buildings in a few weeks in 2011)
by Joseph John Wunderlich
Rapid Prototyping of Cities
(30+ buildings in a few weeks in 2011)
by Joseph John Wunderlich
Joseph's Kingdom
(built off-line)

Rapid Prototyping of Cities
(30+ buildings in a few weeks in 2011)
by Joseph John Wunderlich
Rapid Prototyping of Cities

(30+ buildings in a few weeks in 2011)

by Joseph John Wunderlich

Josephs Kingdom

(built off-line)
Rapid Prototyping of Cities
(30+ buildings in a few weeks in 2011)
by Joseph John Wunderlich

Josephs Kingdom
(built off-line)
Rapid Prototyping of Cities
(30+ buildings in a few weeks in 2011)
by Joseph John Wunderlich

Josephs Kingdom
(built off-line)

Working Railways
Rapid Prototyping of Cities

(30+ buildings in a few weeks in 2011)

by Joseph John Wunderlich
Building on public servers

Unfortunately much destruction on many public servers

Design in Social-net

(much built in 2011)

by Joseph John Wunderlich
To avoid being “Griefed,” build forts in remote locations.

Building on public servers

Design in Social-net

(much built in 2011)

by Joseph John Wunderlich
Design in Social-net
(much built in 2011)
by Joseph John Wunderlich

Building on public servers
Or join a “Faction Server,” build a fortress, then build an army

Is_Nerd joined the game.
<Tsojin [Member] skye.jacob> joe theirs a enderman on the wall
<=>Tsojin [Member] Joe,jin> i know
<=>Tsojin [Member] Joe,jin> im gonna get him with an arrow
<Tsojin [Member] cameronwight> Shh this i my secret bit@D
<Tsojin [Member] cameronwight> Ok
ariellerules26 joined the game.
<Tsojin [Member] cameronwight> Thats the tour
<=>Tsojin [Member] Joe,jin> k
<Tsojin [Member] cameronwight> Say bye joe
<=>Tsojin [Member] Joe,jin> byebye
<=>Tsojin [Member] Joe,jin> take it easy guys
Wunderlich Tsojin Server

BETTER SOLUTION: Create our own “Creative Server”!

Design in Social-net (in 2011)
by Joseph John Wunderlich and J. Wunderlich PhD
Wunderlich Tsojin Server

All initial-world architecture, and player ranking system by Joseph John Wunderlich

Two good friends from public servers helped found Tsojin:
**Eve** (Canada) and **Cameron** (England)

Server configuration, hosting, maintenance, and some moderating by J. Wunderlich PhD

Design in Social-net

(in 2011)
Concurrent database server implemented to allow rollback of “Griefing”

Also implemented foul-language censorship, and disabled features such as fire-spread, placing lava, and TNT
For a more powerful server, a “BUKKIT” server mod “CRAFTBUKKIT” used to allow:

1. **PLAYER RANKING**: Ours are: *Guest, Builder, Architect, Master, Admin, and Grandmaster* -- each having many accumulated commands. Bukkit plug-ins “ESSENTIALS,” “PERMISSIONS,” “CHAT,” and “GROUPMANAGER” were configured.

2. **SQL DATABASE SERVER** and plug-in “LOGBLOCK” for logging player activity to allow rolling-back of “griefing” (destruction or construction by un-invited or misbehaving players). The initial release of Tsojin Server was public. Unfortunately, due to griefing (including organized griefing teams), Tsojin was made private.

3. **MULTI-WORLD plug-in** to allow concurrent worlds (and teleportation & gateways between). Tsojin has six worlds.

4. **Many other plug-ins** (foul-language censorship, establishing monetary systems, allowing aircraft and vehicles to move, locking tool chests, sign-posting, etc.).
Tsojin and **Sturz** Servers in five College courses:

- EGR280 Engineering Research
- PH275 Cognitive Science
- FYS100 First Year Seminar: Scientific Modeling for Sport
- EGR332 Computer Organization & Architecture
- EGR343 Green Architectural Engineering course

“Sturz” Server created by Wunderlich student Ricky Sturz

Modeling in Social-net (in 2012)
Built in only two hours by 16 students!
(only the footprint was created in advance)
EGR280 Engineering Research
FYS100 First Year Seminar: Scientific Modeling for Sport
Built in only two hours by 16 students!
(footprint created in advance)

**Four Team Leaders set standards**
(and toured actual buildings before team-build)

These chosen four developed skills on Tsojin during the summer before their Freshman year
Built in only two hours by 16 students!

(footprint created in advance)

Modeling in Social-net
2012 Hackman Apartments Team-build
Built in only two hours by 16 students!
(footprint created in advance)
Built in only two hours by 16 students!

(footprint created in advance)

Modeling in Social-net 2012 Hackman Apartments Team-build
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Modeling in Social-net

2012 Hackman Apartments Team-build
Built in only two hours by 16 students!

(footprint created in advance)

Modeling in Social-net

2012 Hackman Apartments Team-build
Built in only two hours by 16 students!
(footprint created in advance)

Peer Mentoring

Modeling in Social-net
2012 Hackman Apartments Team-build
Built in only two hours by 16 students!
(footprint created in advance)

Modeling in Social-net
2012 Hackman Apartments Team-build

VIDEO
Built in three hours by 40 students (~50% of interior complete)
(footprint and section of facade created in advance)

EGR280 Engineering Research
PH275 Cognitive Science
FYS100 First Year Seminar: Scientific Modeling for Sport
EGR332 Computer Organization & Architecture
EGR343 Green Architectural Engineering course

2012 Masters Center Team-build

10 Team Leaders set standards
(and toured actual building before team-build)
Footprint and part of façade by Ricky Sturz as part of EGR280 Engineering Research

Modeling in Social-net

2012 Masters Center Team-build
Built in three hours by 40 students (~50% of interior complete)
(footprint and section of facade created in advance)
Built in three hours by 40 students (~50% of interior complete) (only footprint and section of facade created in advance)

Modeling in Social-net

2012 Masters Center Team-build
Built in three hours by 40 students (~50% of interior complete)
(only footprint and section of facade created in advance)
Modeling in Social-net

2012 Masters Center Team-build

Built in three hours by 40 students (~50% of interior complete)
(only footprint and section of facade created in advance)
Built in three hours by 40 students (~50% of interior complete) (only footprint and section of facade created in advance)

Modeling in Social-net

2012 Masters Center Team-build
Built in three hours by 40 students (~50% of interior complete)
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Modeling in Social-net

2012 Masters Center Team-build
Six Tsojin Worlds

- Main World
- Survival World
- Digital Design World
- FYSworld (four GREEN towns)
- Two private worlds

Design in Social-net

(in 2012)

by Joseph John Wunderlich and J. Wunderlich PhD
Six Tsojin Worlds

- Main World

All players initially enter in town-center in Main World
Six Tsojin Worlds

- Main World

They’re then directed to bulletin board building and various portals to other Tsojin worlds.
Six Tsojin Worlds

- Main World

Bulletin board building

Design in Social-net

(in 2012)

by Joseph John Wunderlich and J. Wunderlich PhD
Six Tsojin Worlds

- Main World

Bulletin board

Design in Social-net (in 2012)
by Joseph John Wunderlich and J. Wunderlich PhD
Six Tsojin Worlds

- Main World

Portals to other Tsojin worlds
Default Minecraft mode is “survival” in this world, so all food & materials must be hunted or gathered (including mining); and tools and other materials are crafted.

**Initial hunting and gathering is with no tools**

Animal behavior driven by Artificial Intelligence
- Flocking, herding
- Predators and prey
- They reproduce
- They can be tamed
Six Tsojin Worlds

- Digital Design World

Combination lock by student Tom Gorko in EGR332 Computer Organization & Architecture

(using built-in Minecraft circuit-design and logic gates)
Six Tsojin Worlds

- 
- 
- FYSworld (Four GREEN towns)

This world dedicated to 16 students in the First Year Seminar (FYS) course “Scientific Modeling for Sport”

Design in Social-net (in 2012)

by Joseph John Wunderlich and J. Wunderlich PhD
Six Tsojin Worlds

- FYSworld

Four GREEN towns

Design in Social-net (in 2012)
by 16 College Freshmen
Six Tsojin Worlds

- FYSworld

GREEN town
Goodville

Library and rapid-transit system

Community garden center and livestock pasture
Six Tsojin Worlds

- FYSworld

GREEN town

*Sheckardville*

**Design in Social-net**

(in 2012)

by 4 College Freshmen

Community garden

Very walkable town
Six Tsojin Worlds

- FYSworld

GREEN town
Williamsville

Design in Social-net
(in 2012)
by 4 College Freshmen

Community farm

Community garden in bio-dome
Six Tsojin Worlds

- FYSworld

GREEN town Davallaville

Design in Social-net (in 2012) by 4 College Freshmen

Community garden and livestock

Hydroelectric power
Six Tsojin Worlds

• FYSworld

All sixteen homes in GREEN towns required to have many sustainable features

Design in Social-net (in 2012)
by 16 College Freshmen

Maximum natural daylighting
Six Tsojin Worlds

- FYSworld

All sixteen homes in GREEN towns required to have many sustainable features

Active and passive solar

Creative use of thermal mass

Design in Social-net (in 2012) by 16 College Freshmen
Six Tsojin Worlds

- FYSworld

Design in Social-net
(in 2012)
by 16 College Freshmen

Each GREEN town needed a dedicated lot for 24 visiting high school students to build a Wellness Center with Activity Room, lockers, and an indoor pool – all in one hour!
Rendering Software

by Bryan Kuppe 2006
EGR280 Engineering Research

“Rhinoceros” and “Flamingo” software for Elizabethtown College Steinman Building Lobby Renovations
Rendering Software

by Bryan Kuppe 2008
EGR280 Engineering Research

“Rhinoceros” and “Flamingo”
software for Elizabethtown College Wunderlich Robotics & Machine Intelligence Lab
“Rhinoceros” and “Flamingo” software for Elizabethtown College Gym Renovations

by Bryan Kuppe 2008
EGR280 Engineering Research

Rendering Software
Rendering Software

by Bryan Kuppe 2010
EGR280 Engineering Research

“Rhinoceros” and “Flamingo” software for NASA Space Station
“Revit” software for LEED redevelopment of family’s New Jersey vacation property destroyed in 2012 by hurricane Sandy.

Professional Software with Data-Base of detailed specifications tied to all graphics elements (i.e., ”BIM” – Building Information Modeling)

“Before Hurricane Sandy August 2009”

“After Hurricane Sandy November 1, 2012”

by Emily Vogel 2012

EGR343 Green Architectural Engineering
“Revit” software for LEED redevelopment in Philadelphia, PA, USA

Professional Software with Data-Base of detailed specifications tied to all graphics elements (i.e., ”BIM” – Building Information Modeling)

by Vaclav Hasik 2012
EGR343 Green Architectural Engineering
“Revit” software for new Engineering & Physics Dept. Shop Extension

Professional Software with Data-Base of detailed specifications tied to all graphics elements (i.e., ”BIM” – Building Information Modeling)

by Kaylee Werner
EGR280 Engineering Research
Modeled entire campus in only one semester using Minecraft, including his proposed Field-House/Wellness-Center that he’s now using Revit software on.
2nd ANNUAL ELIZABETHTOWN COLLEGE SYMPOSIUM ON SUSTAINABILITY
Tuesday, April 23, 2013 Gibble Auditorium 9:30am to 12:30pm (Posters at 1:15pm in Lobby)

------------------- Session 1 -------------------

#1 9:30 AM “High-end Phoenix Contact Technologies for International Green Initiatives” by James Kelly

#2 9:40 AM “Reflections from 16 Months of Interdisciplinary/Multicultural Collaboration on a West African Social Business Start-Up” by Jillian Casey, Jennifer Hughes, Eleanor McCarthy, Joshua Rowlands, Emily Vogel, Julia Ward, and Nicholas Young

#3 10:00 AM “Next Steps in Continuing Work Toward West African Social Business Start-Ups – New Product Development” by Anthony Fraccica, Joshua Frey, and Courtney Warlick

#4 10:15 AM “Family EcoRise” by Vaclav Hasik

#5 10:30 AM “Proposed Design to Replace a New Jersey Vacation Home Destroyed by Hurricane Sandy” by Emily Vogel
#6 11:00 AM “SWOT Analysis of a Sustainable Entrepreneurial Ecosystem in Costa Rica”
by Kyle McNulty and Derek Znicc

#7 11:15 AM “Computer Controlled Hydroponic Gardens”
by Sean Flannigan and Andrew Khela

#8 11:30 AM “Analyzing the Hydrological Impacts of a Proposed Sports/Recreation/Fitness Center at Elizabethtown College”
by Deborah Bartyczak, Josh Rowlands, Emily Vogel, and Nick Young

#9 11:45 AM “FEAST (Future Energies and Sustainable Technologies) Club Activities”
by James Annab, Jack Hess, Matt Klempa, and Anthony Fracocia

#10 12:00 PM “Social-networking, Crowd-sourcing Teamwork to Rapidly-Prototype Green Architecture and Communities”
by Ricky Sturz

#11 12:15PM “Solar Decathlon Charette” by Vaclav Hasik

(1:15PM in Lobby): “LEED (Leadership in Energy and Environmental Design) Architectural Design”
by Shane Waller, Kyle Wilt, Meghan Donahue, Emily Vogel, and Vaclav Hasik
Design in Social-net

- Rapid modeling and design
- Design in ever-changing biomes (including AI-enhanced animals)
- Grow crops, channel water, simulate flame-spread
- Interact with other designer-avatars
- Interact with non-designer-avatars (e.g., inhabitants)
- Recruit architectural and engineering students from young ages
- ~12 to ~30 year olds already live in Social Nets
- Participate from anywhere on earth
- An ongoing charette -- potentially earn LEED credits?
- Interdisciplinary collegiality and shared stewardship of earth
- Facilitate peaceful civilizations as well as the built environment
Design in Social-net

FUTURE

• Use methodology in Architectural Studios beginning 2014

• Propose methodology to Italian affiliates
  • University of Trento
  • Pantheon Institute in Rome

• Collaborate with U.N.

• Collaborate with Mojang

• Write “Mods” (change animal or weather behavior)

• Teach Massive Open Online Course (MOOC)

• Full-immersion virtual-reality classrooms & labs with real-time language translation, and lifelike avatars

• Minecraft/UN “Block by Block” concept in developed countries
Design in Social-net

New release of Tsojin server
Apartments built in two hours by 16 students (only footprint created in advance)

Field-House/Wellness-Center, Campus

Tsojin
FUTURE

Merge Modeling in Social Net with other research in Wunderlich Robotics & Machine Intelligence Lab and at WUNDEResin EAST
In 2014, one year after the 2013 Keynote talk in Japan (above), a shorter 20 minute talk was given in London England including updates of student Japanese towns built, plus many case studies.

**AGENDA**

- Case 1: United Nations Projects by Others
- Case 2: Initial Designs
- Case 3: Building on Public Servers in Creative Mode
- Case 4: Building on Public Servers in Survival Mode
- Case 5: Building on Public Faction Servers
- Case 6: Creating a Protected Creative Server
- Case 7: Creating a Protected Survival Server
- Case 8: Creating Sustainable Towns
- Case 9: Wellness Center Competition #1
- Case 10: Creating a Digital-Circuit Design World
- Case 11: Creating a Multi-World Server
- Case 12: Rapid Prototyping Real-World Architectures
- Case 13: Building College Campus
- Case 14: Group-build of two Dormitories in Two Hours
- Case 15: Group-build of Engineering Center in Two Hours
- Case 16: Visit to Australian Architectural Server
- Case 17: Creating a Japanese Group-Harmony Server
- Case 18: Creating Four Japanese Towns
- Case 19: Wellness Center Competition #2
- Case 20: Creating a European Architecture World
- Case 21: Creating a LEED and ISO Green World

• In 2020 Entire campus modeled in professional architectural software (Revit), and then interfaced with oculus rift VIRTUAL REALITY

https://www.youtube.com/watch?v=bLoIORrLi3o

• New course in Computer Game Design & Virtual Reality to be launched in the Fall of 2023