The Future of BIM in Cast-in-Place Concrete

ACI BIM Committee
April 14, 2015
Kansas City

Dr. Julian Kang
Texas A&M University

*“In May 2014, we reported on **Andrey Rudenko** who, with a background in architecture and engineering, had developed his own concrete 3D printer and had already begun 3D printing large scale structures. At the time, Rudenko had drawn up a sketch of castle that he’d planned to print and had even begun 3D printing a test shape for it. Suddenly, like a wildfire, pictures of his completed 3D printed castle sprung up all over the Internet as the Minnesotan man has just completed his first, complete, large-scale structure.”*

Michael Molitch-Hou
Editor-In Chief of 3D Printing Industry

Image source: http://3dprintingindustry.com

3D printing is quickly creating new trends in building technology. California-based architecture firm **Emerging Objects** recently presented the **Quake Column**, an innovative pillar of 3D printed concrete able to withstand earthquakes. The design is inspired by an ancient masonry technique.

- Lavinia
http://freshome.com/

Image Source: http://freshome.com

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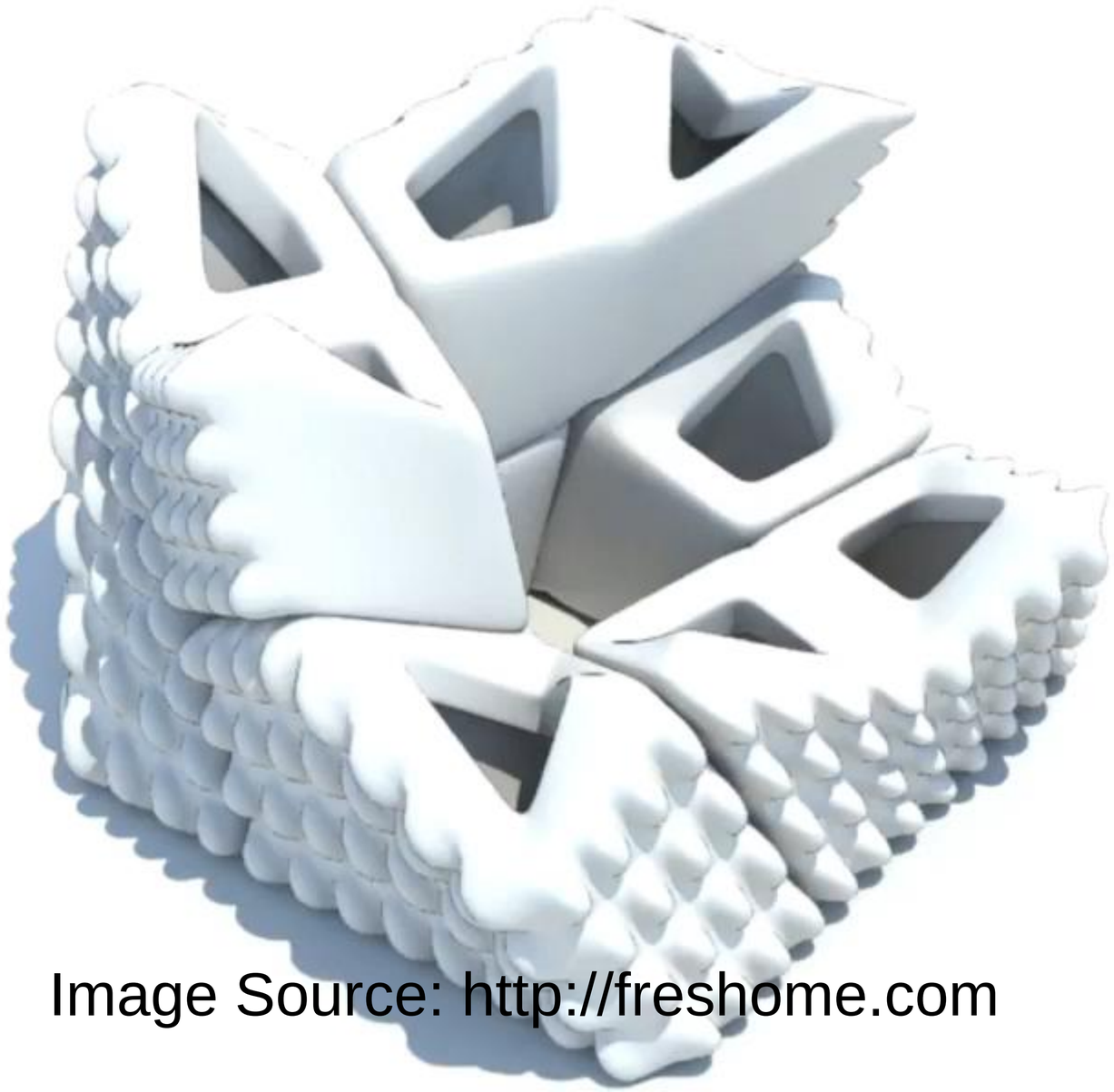


Image Source: http://freshome.com

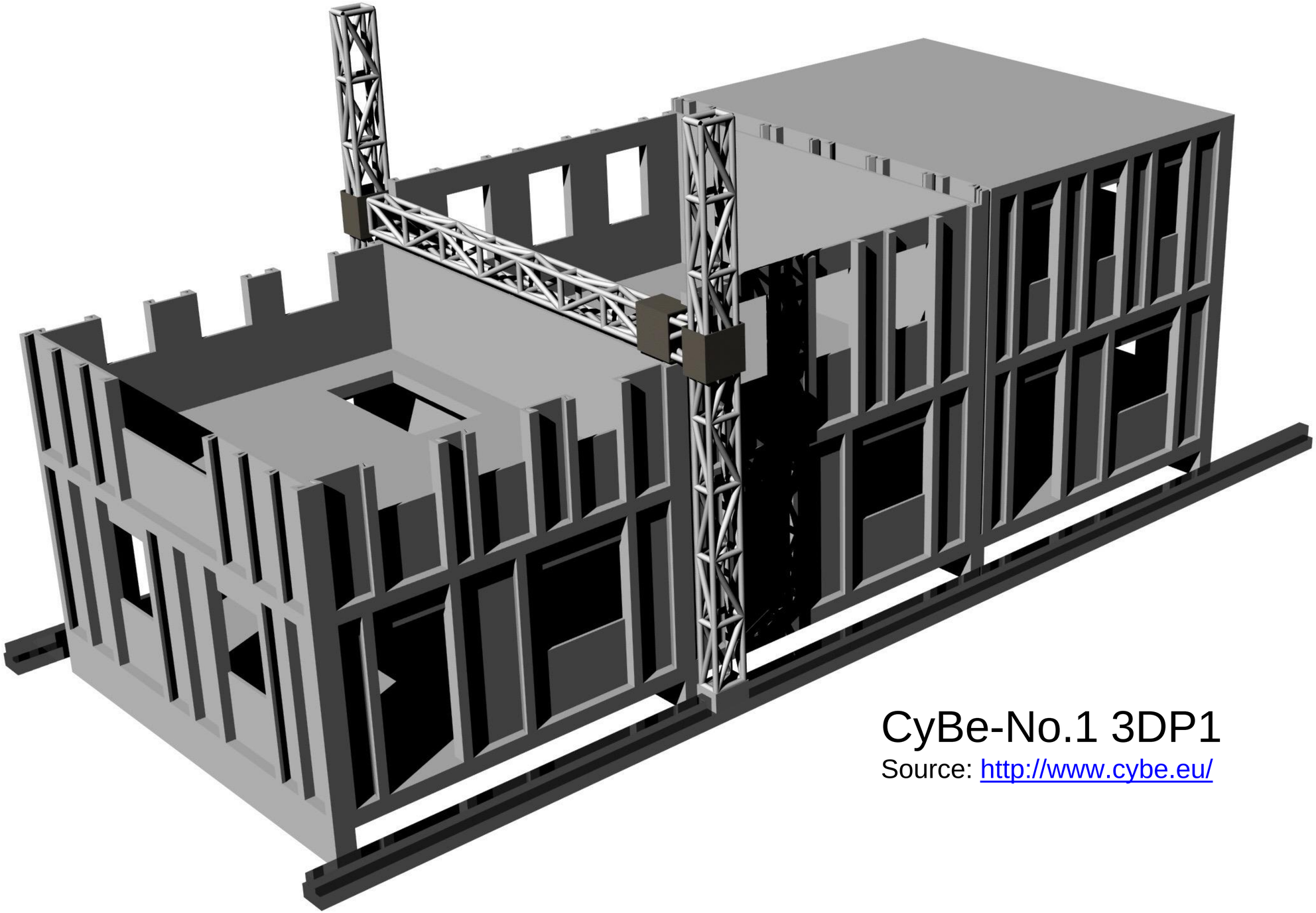
“The exterior cladding of 3D Printed House 1.0 will be constructed 3D printed using a special 3D printed fiber reinforced cement polymer, developed by Emerging Objects. The variegated pattern allows for views and light to pass through in some areas of the wall, but not in others. The quality of light and shadow constantly changes across the surface with the passing of the day. Major structural components of the house will be comprised of cast in place concrete, plastered white”.

3D Printed House 1.0
RAEL SAN FRATELLO

Image source: www.rael-sanfratello.com

CyBe Additive Industries in the Netherland developed an industrial, mobile, and modular 3D printer together with printable materials,like concrete. They’ve created the ProTo R 3DP, along with CyBe mortar (a proprietary mixture of cement), which they currently use to experiment with 3D printing various concrete products. The properties of these products are currently tested on durability, strength, and flexibility.

By Andrew Wheeler,
January 7, 2015
3D Printing Industry
(www.3dprintingindustry.com)

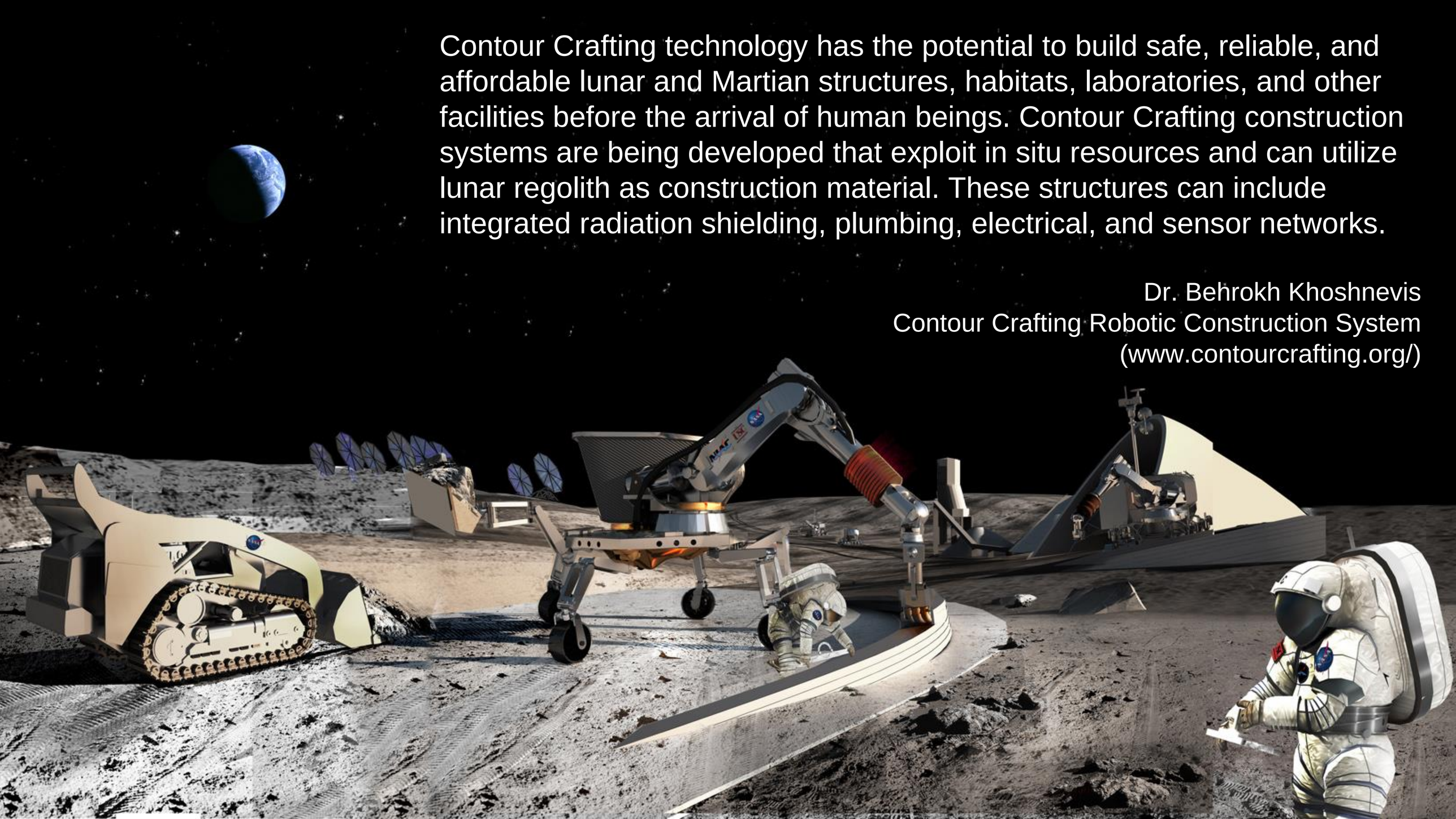


CyBe-No.1 3DP1

Source: http://www.cybe.eu/

Contour Crafting technology has the potential to build safe, reliable, and affordable lunar and Martian structures, habitats, laboratories, and other facilities before the arrival of human beings. Contour Crafting construction systems are being developed that exploit in situ resources and can utilize lunar regolith as construction material. These structures can include integrated radiation shielding, plumbing, electrical, and sensor networks.

Dr. Behrokh Khoshnevis
Contour Crafting Robotic Construction System
(www.contourcrafting.org/)



ACI BIM Committee Panel Discussion

3D Printing

Contour Printing

5 mins

What opportunities do we have with this technology?

Any challenges?

Any actions we need to make?


12:30 PM
Lunch
Farm Table
tomorrow
JFK
SFO
Virgin Airlines
Flight 23
10:31 AM
On Time
tomorrow
80°
60°
30%
New York
72°


SIGHT SYSTEMS
25
FOODS
HOBBIES
SCORE: 000
DIFFICULTY: HARD
Daphne Willson
Is on a blind date... again! - Wish me luck!
WALL
INFO
PHOTO
Photos: 345
Friends: 134
Status: Single
Birthday: Classified
Gonras Kriss:
I like puppies! Will you adopt my puppy?
Eran:
She Yihiye lanu behatzlacha!
M.S:
Mamy! Get me some food... please...
O.L:
So Last night i was attacked by a nasty marine drop! but i killed them all using only my workers!
Dave: And I can't date a girl who's parents don't know she's gay bc those never turn out good . . She mad kuz I canceled our lunch date... *shrugs* oh well!. movie & dinner date with my big


CONSTRUCTIO
SCIENCE

Glass Video

FRANCIS HALL RENOVATION

TEXAS A&M UNIVERSITY


DAQRI Smart Helmet
SPAR 2015 Conference

ACI BIM Committee Panel Discussion

Mobile Devices

Augmented Reality

5 mins

What opportunities do we have with this technology?

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Image source: http://www.benchmarkarizona.com/

Robotic Total Station

3D Laser Scanner

Photogrammetry

5 mins

What opportunities do we have with this technology?

Any challenges?

Any actions we need to make?

Information Delivery Manual

5 mins

What opportunities do we have with this manual?

Any challenges?

Any actions we need to make?

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Have fun, Be amazing, Stay happy and Live long!

Concrete Printing:
An Innovative Construction Process