emerging perspectives for transforming sustainable built environment

presented by:
Bryant Lu, Vice Chairman
Ronald Lu & Partners
insight
Smartphone Miracle

first iPhone 2G announced in January 2007

number of device owners

source: comScore
CONVERGENCE

TECH/ PROCESSING POWER

OPEN SOURCE/ KNOWLEDGE SHARE

CAPACITY/ CONNECTIVITY

USERS
Moore’s Law
chip performance doubles every 18 months

source: R Kurzweil, DFJ
processing speed

2016  iPhone 7

1

1983  Apple IIe

>3,300
NOT just processors
BUT also sensors, camera, musical player, etc

there are 6 sensors built into iPhone7

proximity sensor
ambient light sensor
motion sensor / accelerometer
moisture sensor
Gyroscope sensor
compass
CONVERGENCE

TECH/PROCESSING POWER

OPEN SOURCE/KNOWLEDGE SHARE

CAPACITY/CONNECTIVITY

USERS
applications + cloud
customised functions based on users’ needs + connection
CONVERGENCE

TECH/PROCESSING POWER

USERS

OPEN SOURCE/KNOWLEDGE SHARE

CAPACITY/CONNECTIVITY
FREE and OPEN-SOURCE SOFTWARE (FOSS) empower user customisation and voluntary improvement
sharing of recipe **NOT** cake

**FLUFFY SPONGE CAKE**

-recipe-

5 EGGS

1+ 1/2 CUPS FLOUR

1 TSP BAKING POWDER

4 TBLS OIL

PINCH OF SALT

2 TBLS COCOA

3/4 CUPS SUGAR
smartphone miracle

user centric
uptake
number of Green Buildings in USA 2016 (LEED + Energy Star)

88% Non-Certified
30,912 buildings

4% Both
1,374 buildings

2% LEED
601 buildings

7% Energy Star
2,401 buildings

source: CBRE
green building miracle

**MATERIALS**
Focuses on materials to get a better understanding of what's in them and the effect those components have on human health and the environment.

**PERFORMANCE BASED**
Takes a more performance-based approach to indoor environmental quality and improved occupant comfort.

**SMART GRID**
Brings the benefits of smart grid thinking to the forefront with a credit that rewards projects for participating in demand response programs.

**WATER EFFICIENCY**
Provides a clearer picture of water efficiency by evaluating total building water use.
uptake can **Green Building Miracle** be possible?
CONVERGENCE

- TECH/PROCESSING POWER
- USERS
- OPEN SOURCE/KNOWLEDGE SHARE
- CAPACITY/CONNECTIVITY
wearable technologies

- processor + sensor
- logging real-time data
- behaviour
- preference
- exposure to light, pollutants
- others
smart analytics
building learns from and
responses to users
SMART BUILDING
CONVERGENCE

TECH/PROCESSING POWER

OPEN SOURCE/KNOWLEDGE SHARE

CAPACITY/CONNECTIVITY

USERS
autonomous car
smart mobility re-shaping the city
...more efficient use of urban space

Piloted parking means cares means use space more efficiently, which leaves room to make better use of the urban environment.

For example, the extra space created can be turned over to green spaces, seating areas and much more besides.3

source: nuTonomy (above)/Audi(right)
ON SITE
10,000 audiences

LIVE
21.45 million audiences

VR
88,000 audiences

全球VR直播时间：
2016年12月30日 20:00

售票开始时间：
2016年12月26日 17:00

王菲幻乐一场 演唱会VR门票
12月26-27日购买，即可获得王菲纪念版VR眼镜1个。
augmented reality
users to visualize
for decision-making
in design and operation

source: Point Advisory
real-time visualisation
reduce carbon footprint and emissions from travelling

source: Fox News
CONVERGENCE

TECH/PROCESSING POWER

OPEN SOURCE/KNOWLEDGE SHARE

CAPACITY/CONNECTIVITY

USERS
lower barriers of time, cost, skills, resources desirable and affordable design for most people

Open Source House

Five months, over 3,000 architects, almost 250 building plans

In 2007 Enviu launched the Open Source House challenge. Architects from all over the world were given the assignment to design a single family house for the emerging middle class in Ghana on a plot within Cape Coast, Ghana. Within five months 3100 architects from 45 different countries submitted 247 designs for a sustainable house.
Wiki-House is an open source project to reinvent the way we make homes. It is being developed by architects, designers, engineers, inventors, manufacturers and builders, collaborating to develop the best, simplest, most sustainable, high-performance building technologies, which anyone can use and improve.

Our aim is for these technologies to become the new way of building, the bricks and mortar of the digital age.

*ship recipes rather than cakes give power to fine tuners*
digital platform for knowledge share
trans-disciplinary process & innovations

microclimate
passive design & active system integration
adaptable space & systems
biophilia
design for IEQ
design for smart facility management
design for smart occupant engagement
uptake

Can we have a Smart Building miracle?
Thank you