RESO
CHICAGO
REAL ESTATE STANDARDS ORGANIZATION
2015 SPRING CONFERENCE
JUNE 2-4, 2015 • CHICAGO, ILLINOIS

Rob, your wizard hat has arrived.

Shout out to
Ed Newman.

CRT

CENTER FOR
REALTOR®
TECHNOLOGY

PODCASTS

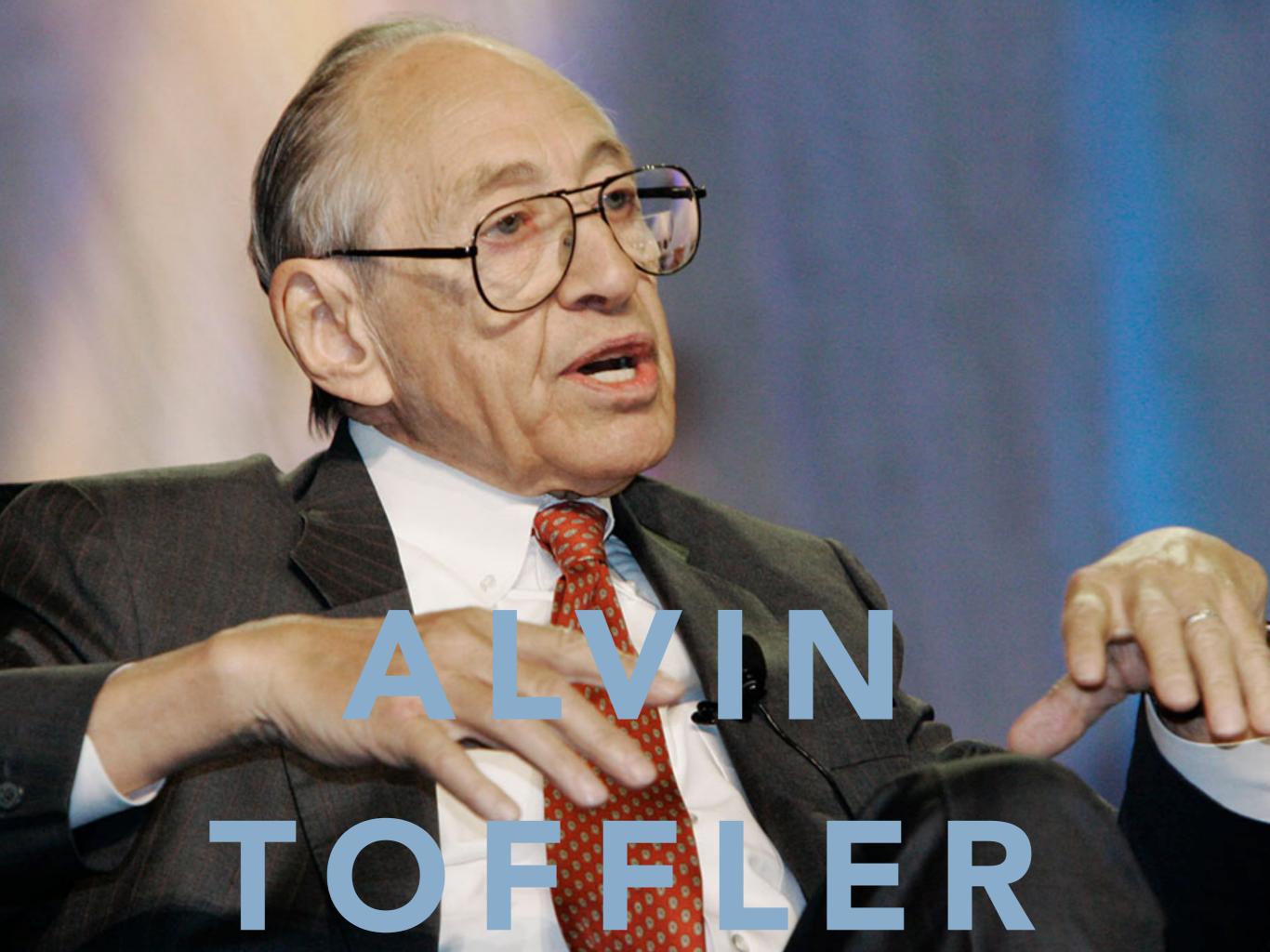# A Look Ahead & We Learned Some Things

CENTER FOR REALTOR® TECHNOLOGY

R & D
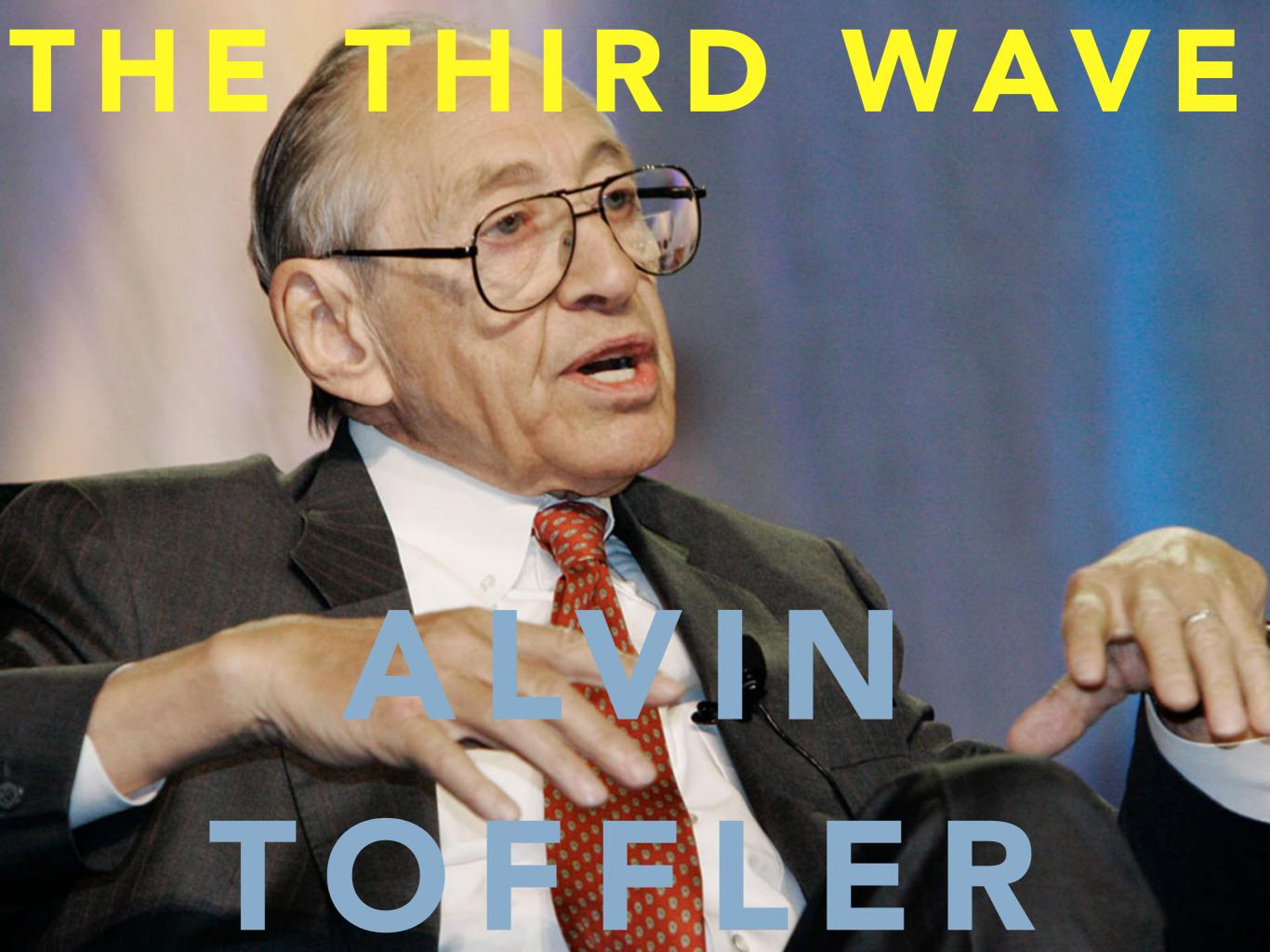
The Connected Neighborhood

CENTER FOR REALTOR® TECHNOLOGY

Accelerating IoT in the Midwest

ITA Internet of Things Council

THE FIRST
THIRD
WAVE

ALVIN TOFFLER

AGRICULTURE

ALVIN
TOFFLER

INDUSTRIAL

ALVIN

TOFFLER

INFORMATION

ALVIN TOFFLER
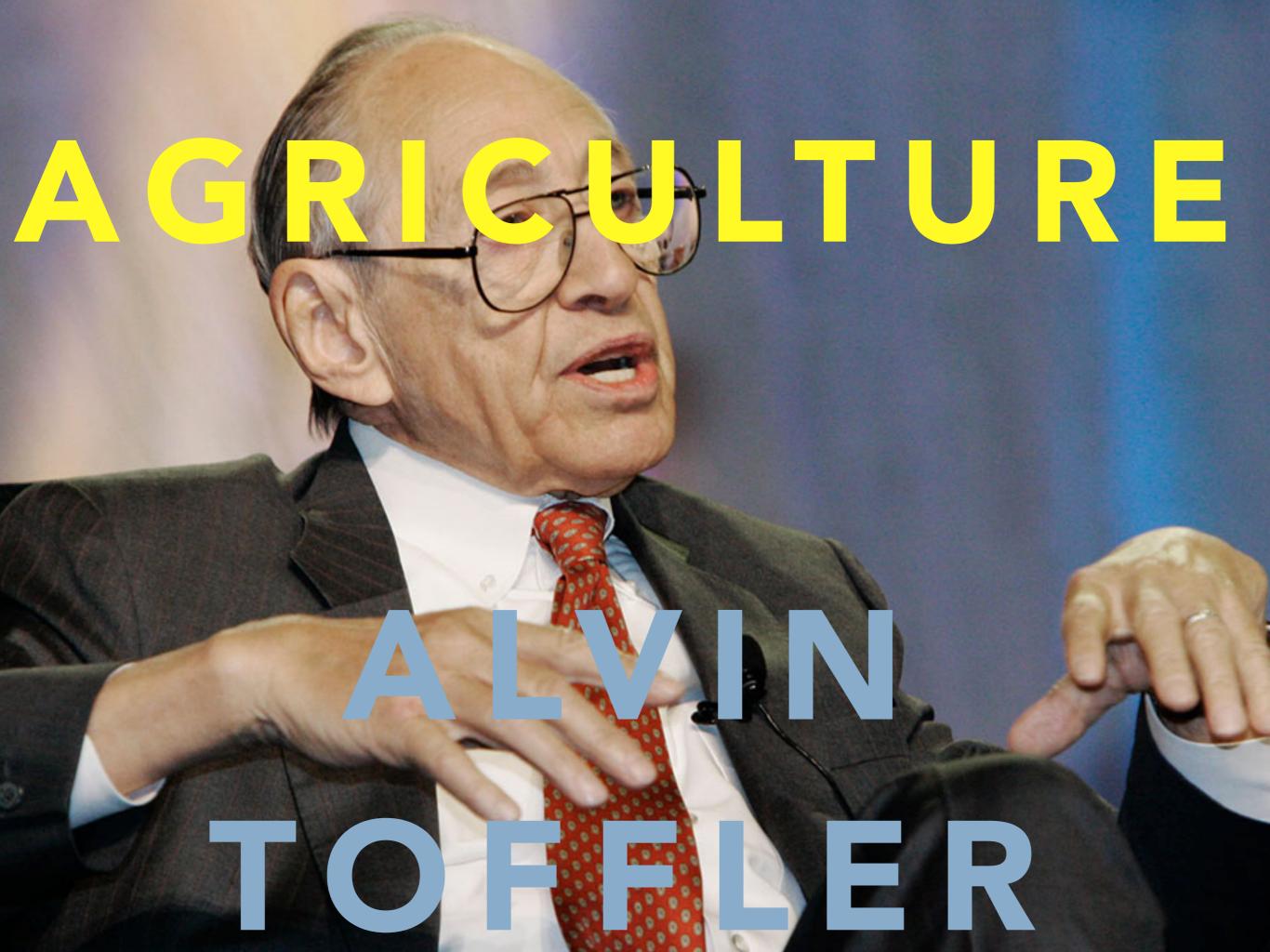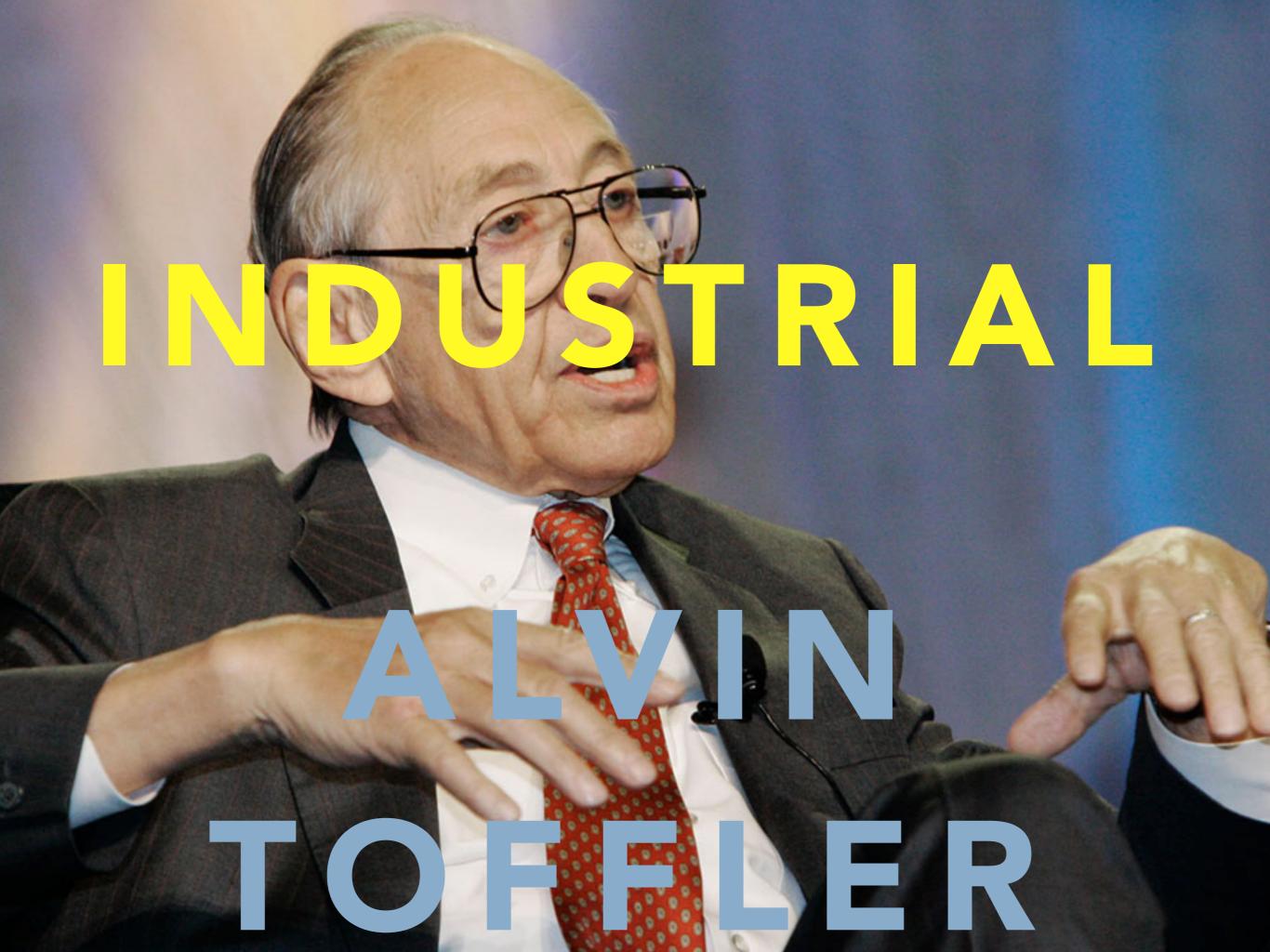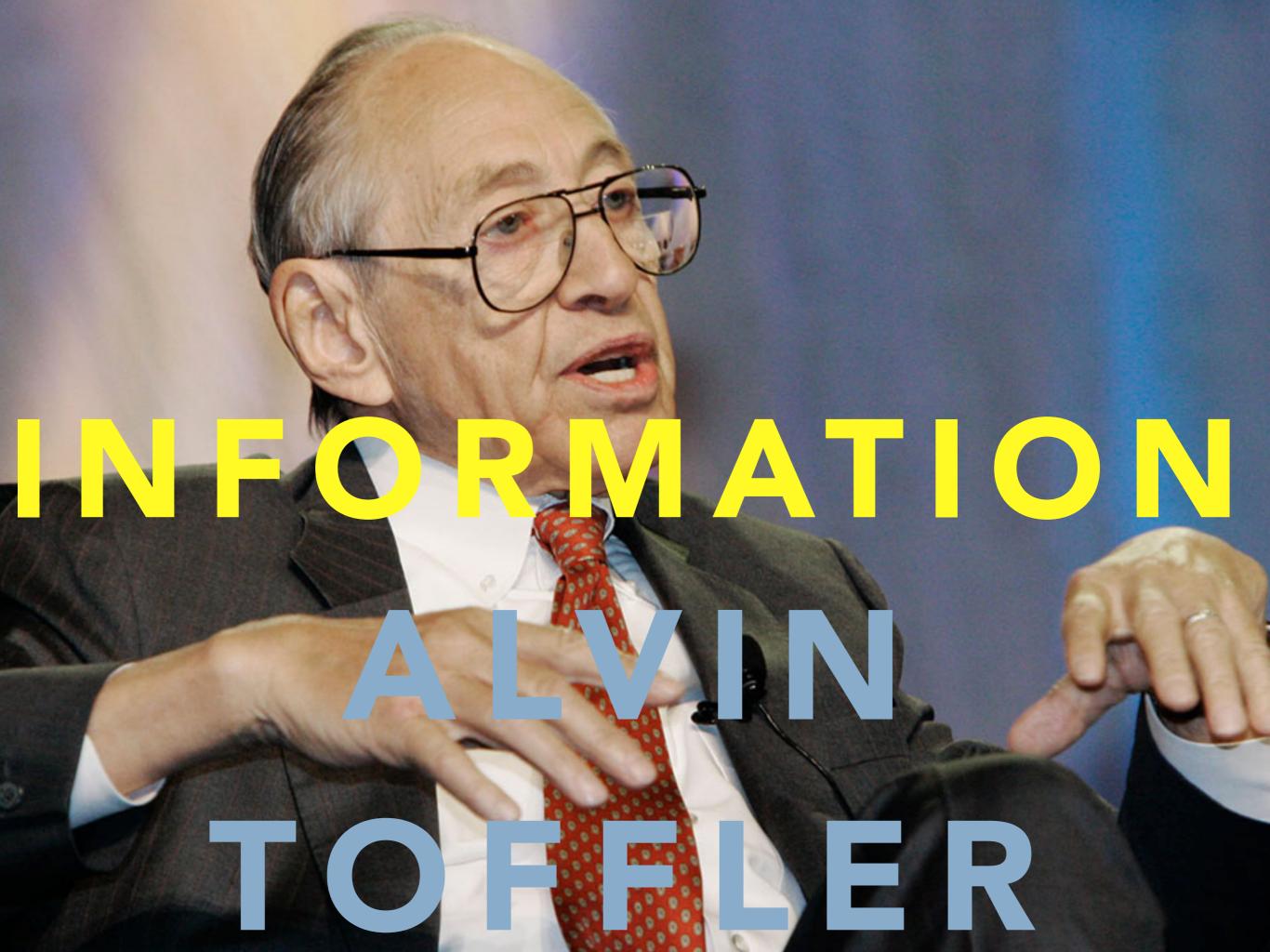
THE ~~SECOND~~ THIRD WAVE

IoT EMERGING AS THE NEXT MEGA-TREND

ernet of Things (IoT) is emerging as the third wave in the development of the Inter
Personal lives, workplace productivity and consumption will all change.

DEVICES CONNECTED TO THE INTERNET

1 BILLION

INTERNET

Smart

Internet of

6 BILLION

'20

28

'20

TERNET OF THINGS

IoT EMERGING AS THE NEXT MEGA-TREND

ernet of Things (IoT) is emerging as the third wave in the development of the Inter
Personal lives, workplace productivity and consumption will all change.

DEVICES CONNECTED TO THE INTERNET

MOBILE

1 BILLION

6 BILLION

'20

Smart

Internet of

28 B

'20

IoT EMERGING AS THE NEXT MEGA-TREND

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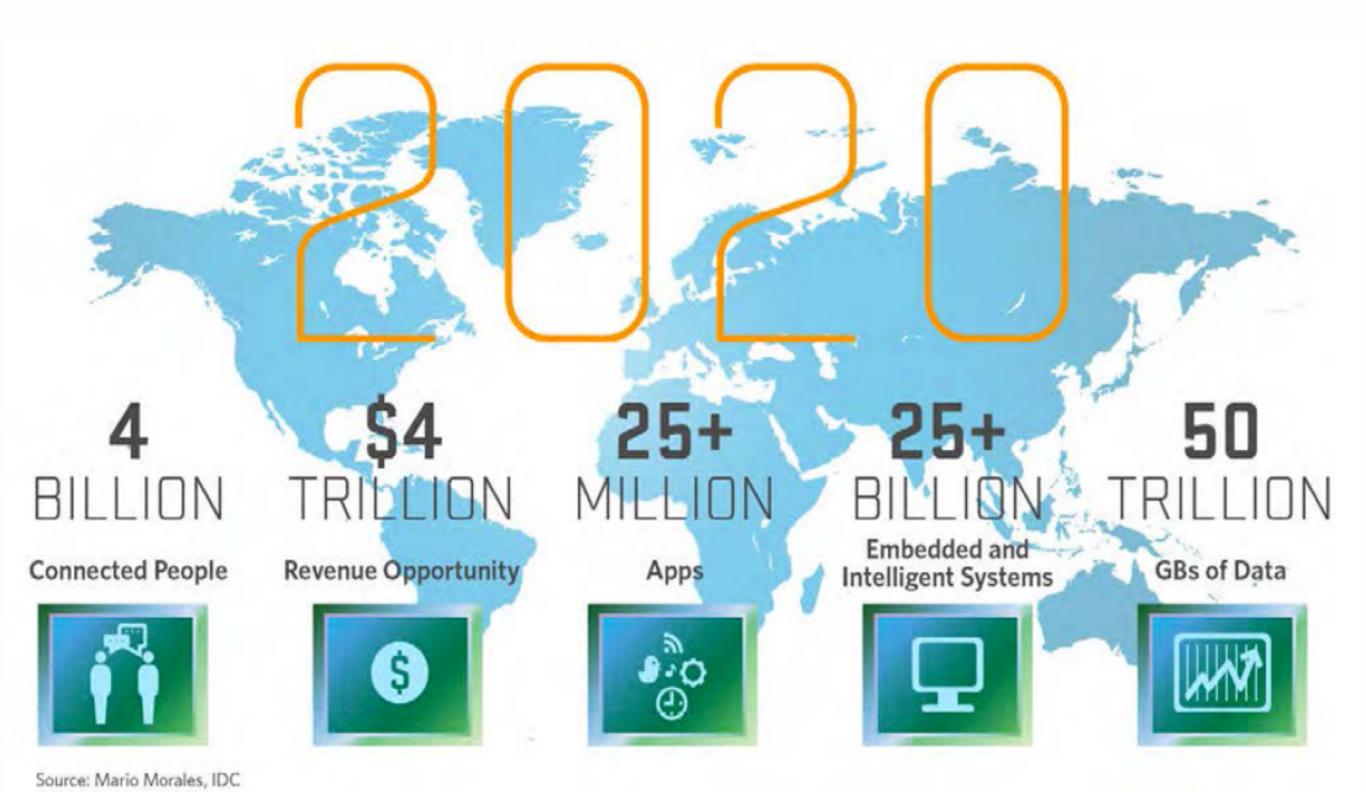
DEVICES CONNECTED TO THE INTERNET

1... BILLION

'20

6 BILLION

'20

28 B...

'20

Smart...

Internet of...

INTERNET OF THINGS

2020

4 BILLION
Connected People

$4 TRILLION
Revenue Opportunity

25+ MILLION
Apps

25+ BILLION
Embedded and Intelligent Systems

50 TRILLION
GBs of Data

Source: Mario Morales, IDC

By 2020, the Internet of Things will have achieved "critical mass". Linking enormous intelligence in the cloud to billions of mobile devices and having extremely inexpensive sensors and tags embedded in and on everything, will deliver an enormous amount of new value to almost every human being. The full benefits—in terms of health, safety and convenience—will be enormous.
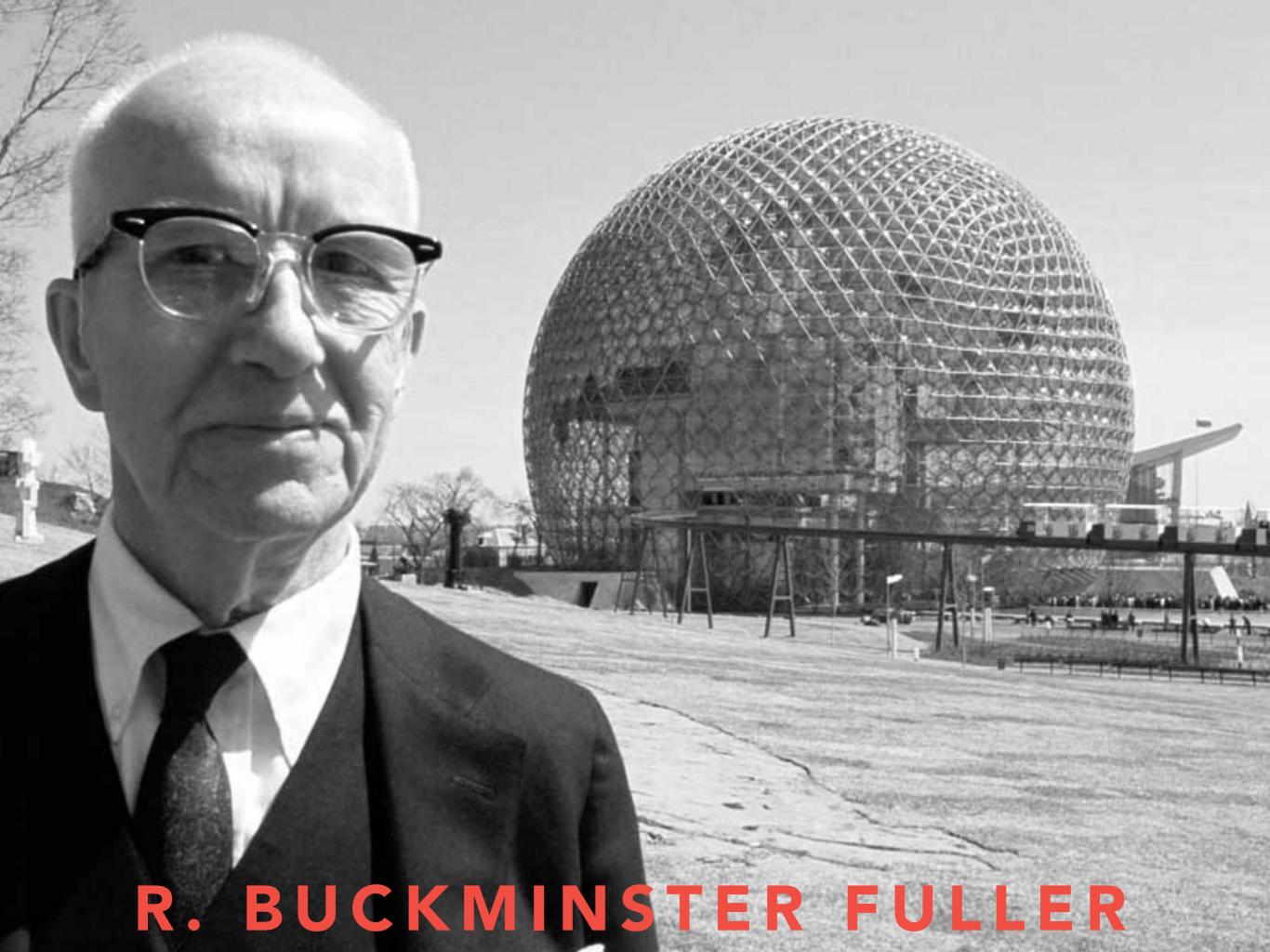
THE
THIRD
THIRD WAVE

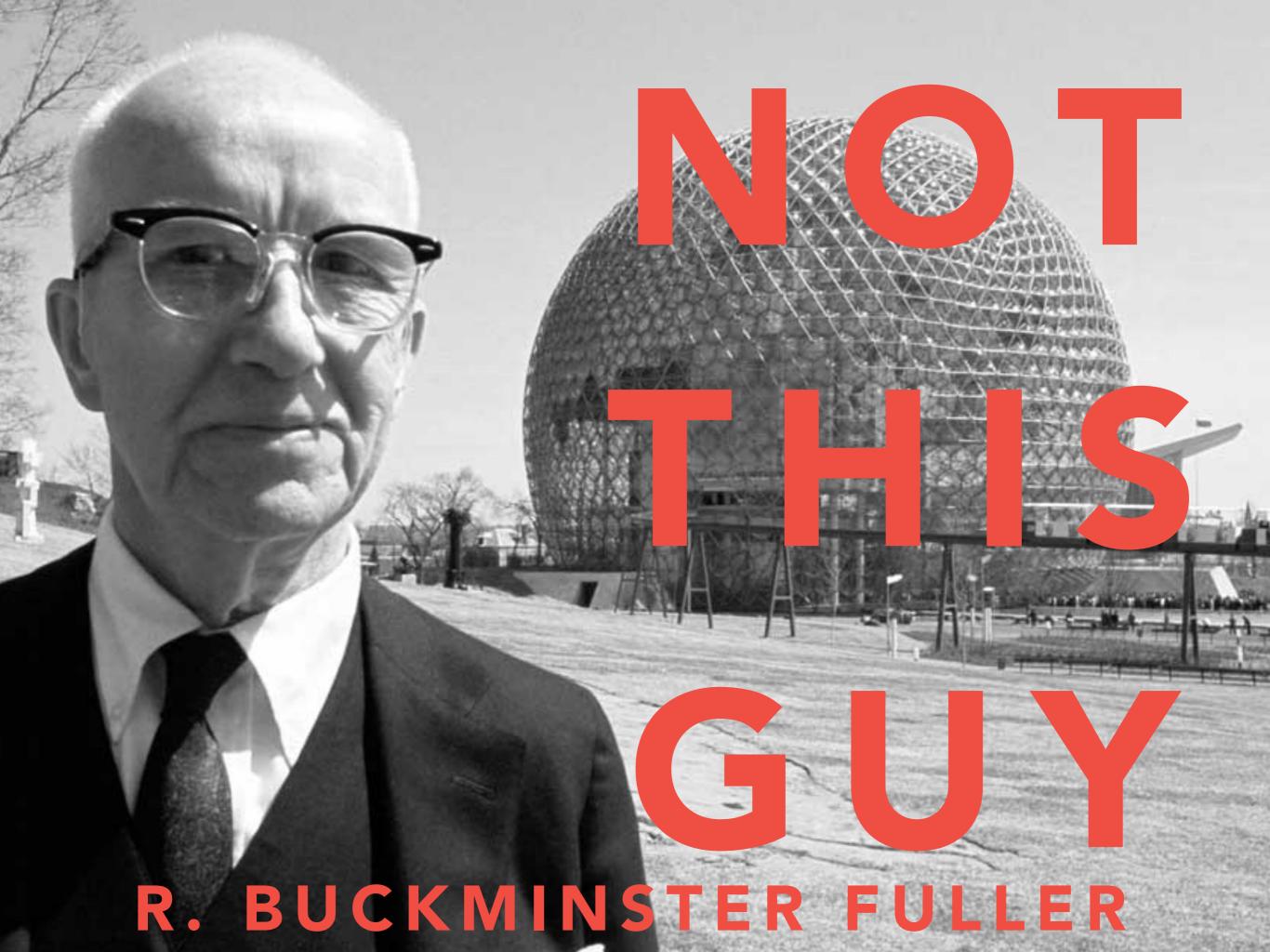# CONNECTED HOME

CONNECTED NEIGHBORHOOD

WHAT DOES THE HOME OF THE FUTURE LOOK LIKE?

R. BUCKMINSTER FULLER

NOT THIS GUY

R. BUCKMINSTER FULLER

JOHN COUGAR MELLENCAMP

THIS
GUY

JOHN COUGAR MELLENCAMP

THIS IS THE HOUSE OF THE FUTURE

Mobile Data Terminal Relational Database Structure

MDT Manufacturer Contact Information

MDT Mfg Rec ID
MDT Mfg ID
MDT Mfgr Name
MDT Mfg Address 1
MDT Mfg Address 2
MDT Mfg Address 3
MDT Mfg City
MDT Mfg State/Prov
MDT Mfg Mail Code
MDT Mfg Country
MDT Mfg
MDT Mfg
MDT Mfg
MDT Mfg contact name
MDT Mfg contact e-mail
MDT Mfg web site
Edit Date

Mobile Data Terminal Specifications Information

Description
MDT Spec Rec ID
MDT Mfg ID
MDT Model Name
MDT Model ID
Dim L-H-D
Weight
Enclosure
Processor
ProcsrMfgr
ProcSpd
OS
Display
Dspl
Dspl
Dspl
Keypad/Input

Y/N
Y/N
Y/N

Smt Card
Interfaces
No RS-232C bse
No CF slots bse
No USB prts bse
No Opt RS-232C
No of Opt CF
No of Op USB
Base memory
SDRAM bse
Flash bse
BatteryRAM
Expanded memory
SDRAM expnd
Flash expnd

Audio out
Audio in
GPS Channels
GPS-8
GPS-12
GPS-16
GPS-20
Internal modem
RM 4800
RM 9600
Comm_M
T/B/D

Cellular public data modem
900/1800/1900 MHz GSM/ GPRS Eu
GSM/GPRS-CDMA-iDEN
T/B/D
Mobile power supply
Volts
Amps
Portable power supply
Re Ni-MH
Re Li-Poly
T
C
Min ops tem
Max ops tem
Min RH
Max RH

Edit Date

Prod/Srvc Information

Description
ITS Prod-Srvc ID
ITS Splr ID
ITS Prod-Srvc Name
ITS Prod-SrceType
ITS Prod-Srvc Dscrptn
Edit Date

ITS Supplier Contact Information

ITS Splr Rec ID
ITS Splr ID
ITS Splr Name
ITS Splr Address 1
ITS Splr Address 2
ITS Splr Address 3
ITS Splr City
ITS Splr State/Prov
ITS Splr Mail Code
ITS Splr Country
ITS Splr Phone
ITS Splr Fax
ITS Splr e-mail
ITS Splr contact name
ITS Splr contact e-mail
ITS Splr web site
Edit Date

Transit Agency Contact Information

NAME

NAME
JOBTYPE
POSITION NAME
TRANSIT
AGENCY
TA BRAND
DEPARTMENT
ADDRESS1
ADDRESS2
ADDRESS3
CITY
STATE
ZIPCODE
ZIP4
C
P
F
EMAIL1
EMAIL2

SITE
TYPE
DE
FW REGION
KEYWORDS
ORGSIZE
MODE CODE
FUND CODE
#FR BUSES
#DR VEH
#RAILCARS
UZACODE
?MDT Y/N
?AVL Y/N
?APC Y/N
?EPS Y/N
?GIS Y/N
h Y/N
T1
COMMENT2
Edit Date

Transit Agency Survey Information

Responses to short form Temp file

1

2

ponses to
rm

Consolidated survey responses

Functions

(MS ACCESS 2003)

| Table Design | Input Forms | Queries | Standard Reports |

SC-08 A-1-4

1

INTERNET

ACTIONABLE
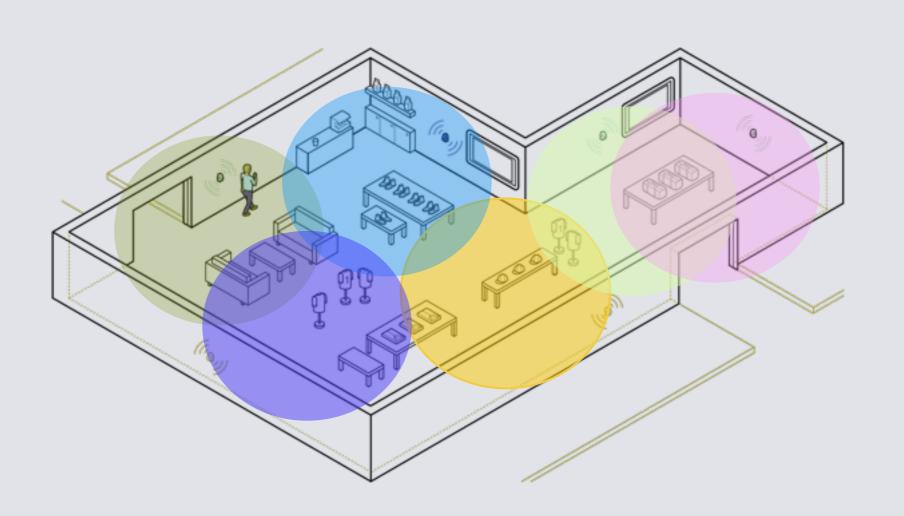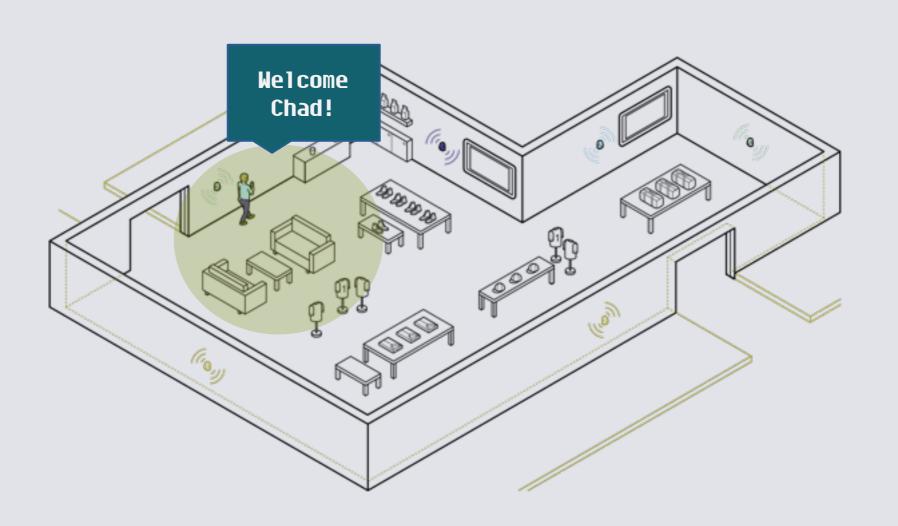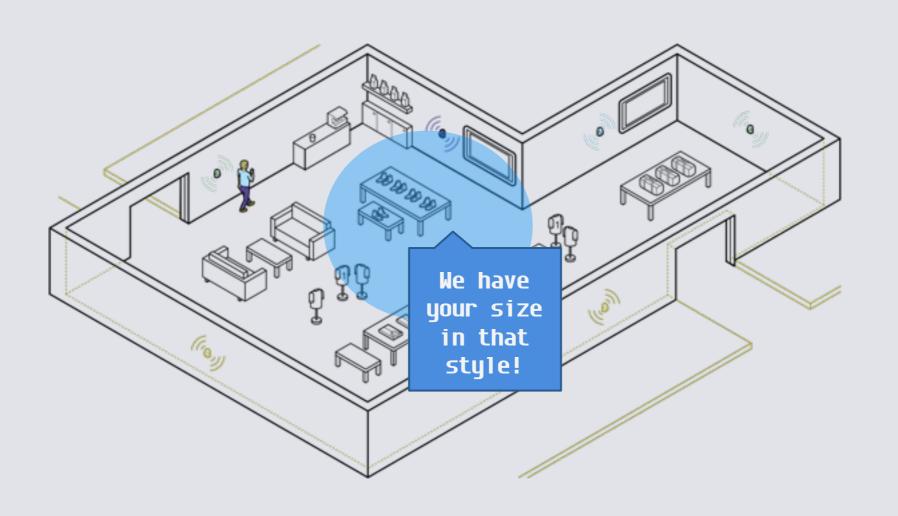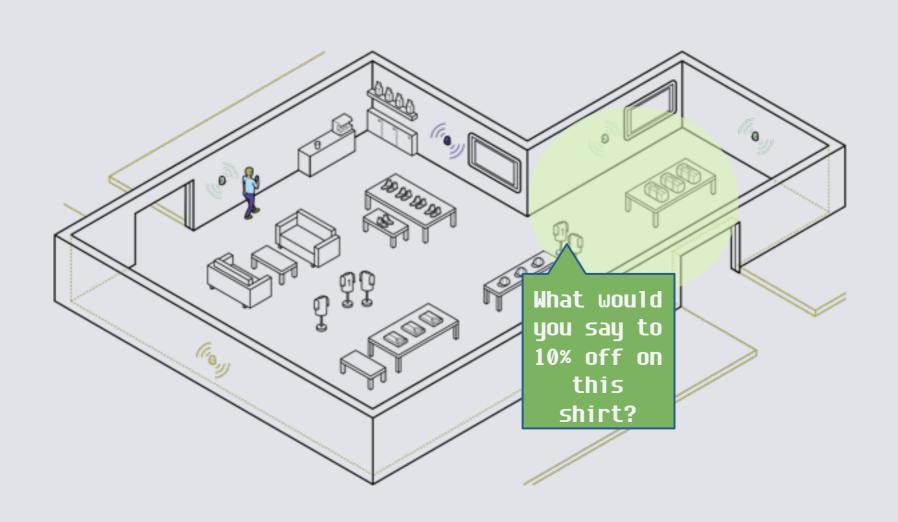
THE FIRST WAVE:
BEHAVIORAL & HOME PERFORMANCE

BEACONS

WHAT DO THEY DO?

WHAT DO THEY DO?

Welcome Chad!

WHAT DO THEY DO?

We have
your size
in that
style!

WHAT DO THEY DO?

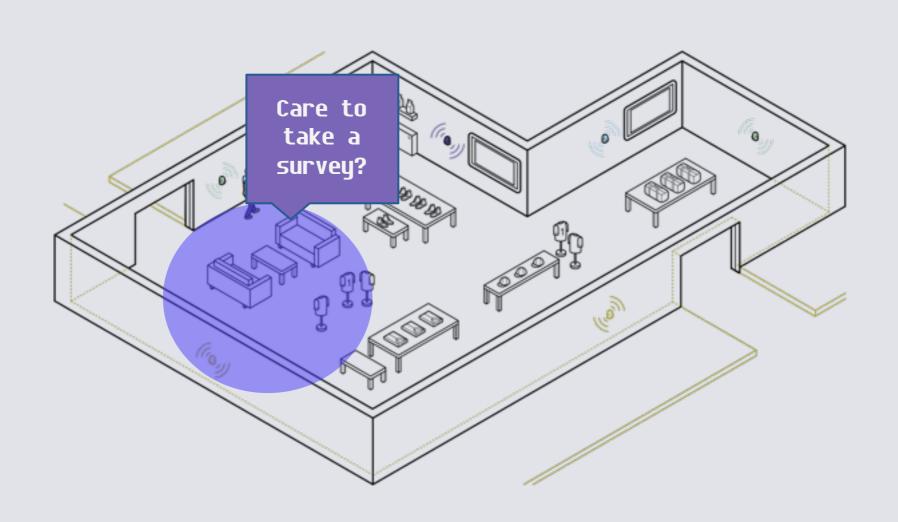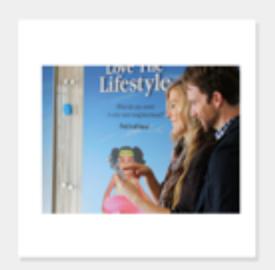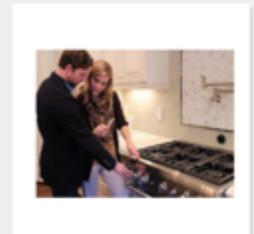# WHAT DO THEY DO?
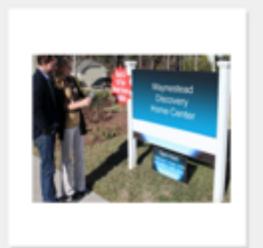

Bag stats:

- Made in US.
- $100

BEHAVIOR

BEAMLY

SALES & DISCOVERY CENTERS

Bring your sales centers and models to life by adding mobile interactivity at every marketing touch point. Focus buyers on your features, listings and more.
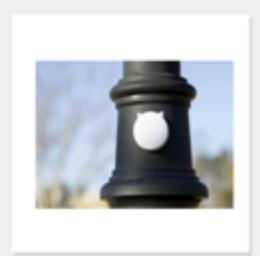
PROPERTY & HOME TOURS

Offer special promotions, highlight unique features for agents and buyers, showcase finish options. The possibilities are endless.

OUTDOOR SIGNAGE

SMS and QR codes are yesterday's news. Beamly can bring your "For Sale" signs to life and make tour requests effortless.

COMMUNITY AMENITIES

To promote community amenities (think pool, golf, fitness center, etc), Beamly can deliver targeted notifications and content to prospects.

HOME
PERFORMANCE

ENERGY EFFICIENCY

LIGHT QUALITY

AMBIENT

REALTOR AS A DOCTOR FOR THE HOME

IOT ISSUES:
STANDARDS & SECURITY

ISSUE 1: STANDARDS

BUILDING ENERGY MANAGEMENT OPEN SOURCE SOFTWARE

BEMOSS

Open Source Architecture

BEMOSS is an open source operating system that is built upon VOLTTRON – a distributed agent platform developed by Pacific Northwest National Laboratory (PNNL).

VOLTTRON™

Linux

Python

ubuntu

django

Cost Effective

BEMOSS is built upon a robust open source platform that can operate on a low-cost single-board computer, such as Beaglebone. This feature can contribute to its rapid deployment in small- or medium-sized commercial buildings.

beagleboard

pandaboard

Manufacturer Friendly

BEMOSS is designed to make it easy for hardware manufacturers to seamlessly interface their devices with BEMOSS.

Developer Friendly

BEMOSS is also designed to allow software developers to easily contribute to the platform by adding additional BEMOSS functionalities and applications. Software developers can add new Apps to BEMOSS App Store.

Interoperability

BEMOSS is designed to work with load control devices from different manufacturers that operate on different communication technologies and data exchange protocols. These include both new commercially available products that operate on Ethernet, WiFi and Zigbee, as well as legacy devices that operate on serial communications using Modbus RTU and BACnet MS/TP protocols.

Currently, BEMOSS supports the following prevalent communication technologies: Ethernet (IEEE 802.3), Serial (RS-485), Zigbee (IEEE 802.15.4) and WiFi (IEEE 802.11).
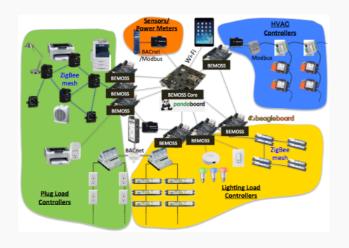

Supported data exchange protocols include: BACnet, Modbus, Web, Zigbee API, OpenADR and Smart Energy (SE) protocols.

BEMOSS

Scalability and Ease-of-deployment

With its multi-layer architecture, BEMOSS can be initially deployed in one zone, and easily expandable to the entire building.

Plug and Play

BEMOSS is designed to automatically discover supported devices in a building. Once discovered, devices can be monitored and controlled for the desired function.

BEMOSS

COMMERCIAL
&
RESIDENTIAL

ISSUE 2: SECURITY

Our Goals for the "Internet of Things"

- 👁 FOCUS effort towards crowd-funded, small commercial and bootstrapped vendors
- ❤ BUILD partnerships and goodwill between IoT vendors and the security community
- ✔ COORDINATE efforts to incentivize security researchers for reporting vulnerabilities
- ☑ CURATE informational resources to help educate vendors on security best practices
- 👤 PRESENT research at relevant events and be a point of contact for press inquiries
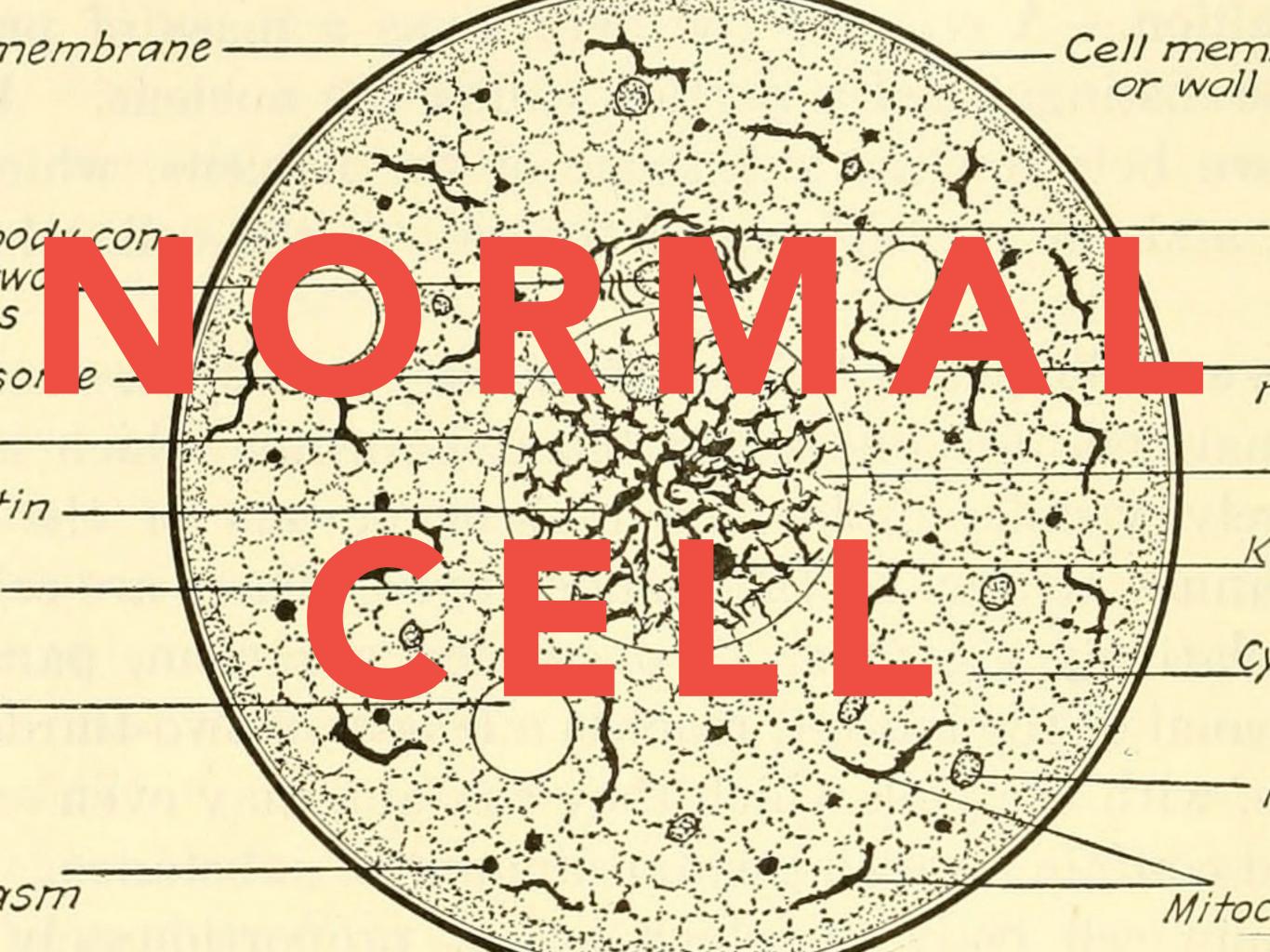
DATA
MICRO
&
MACRO

THE
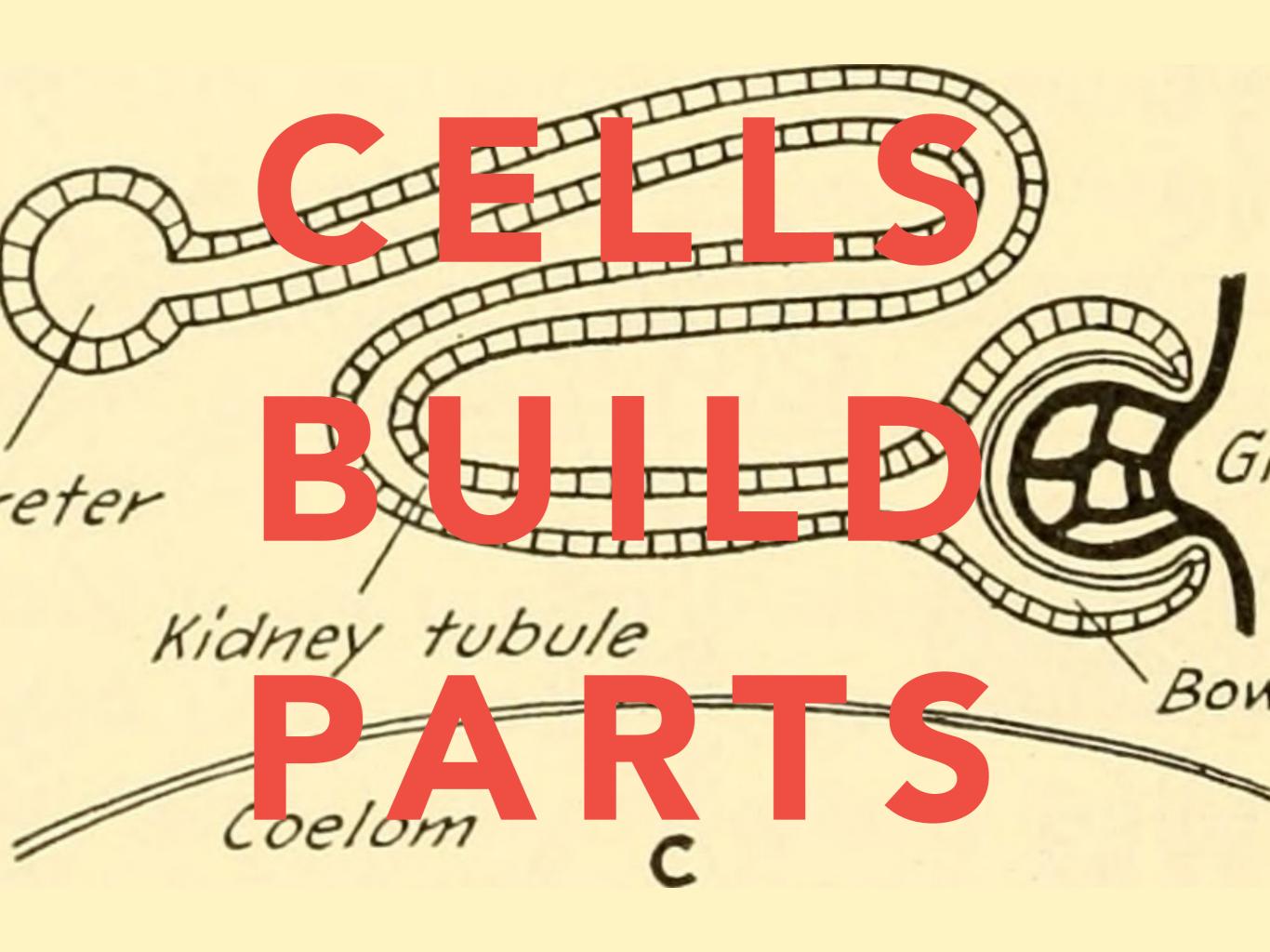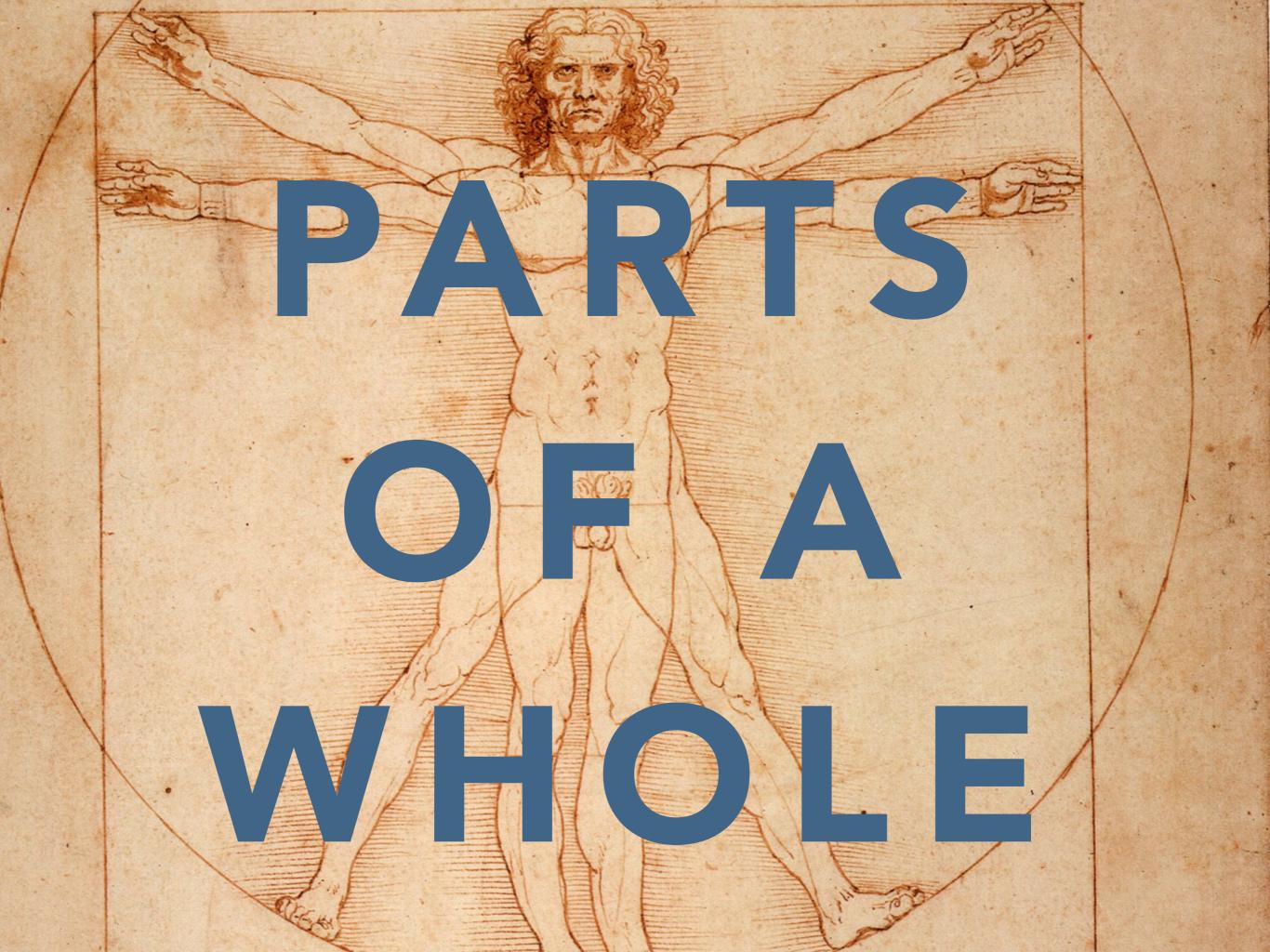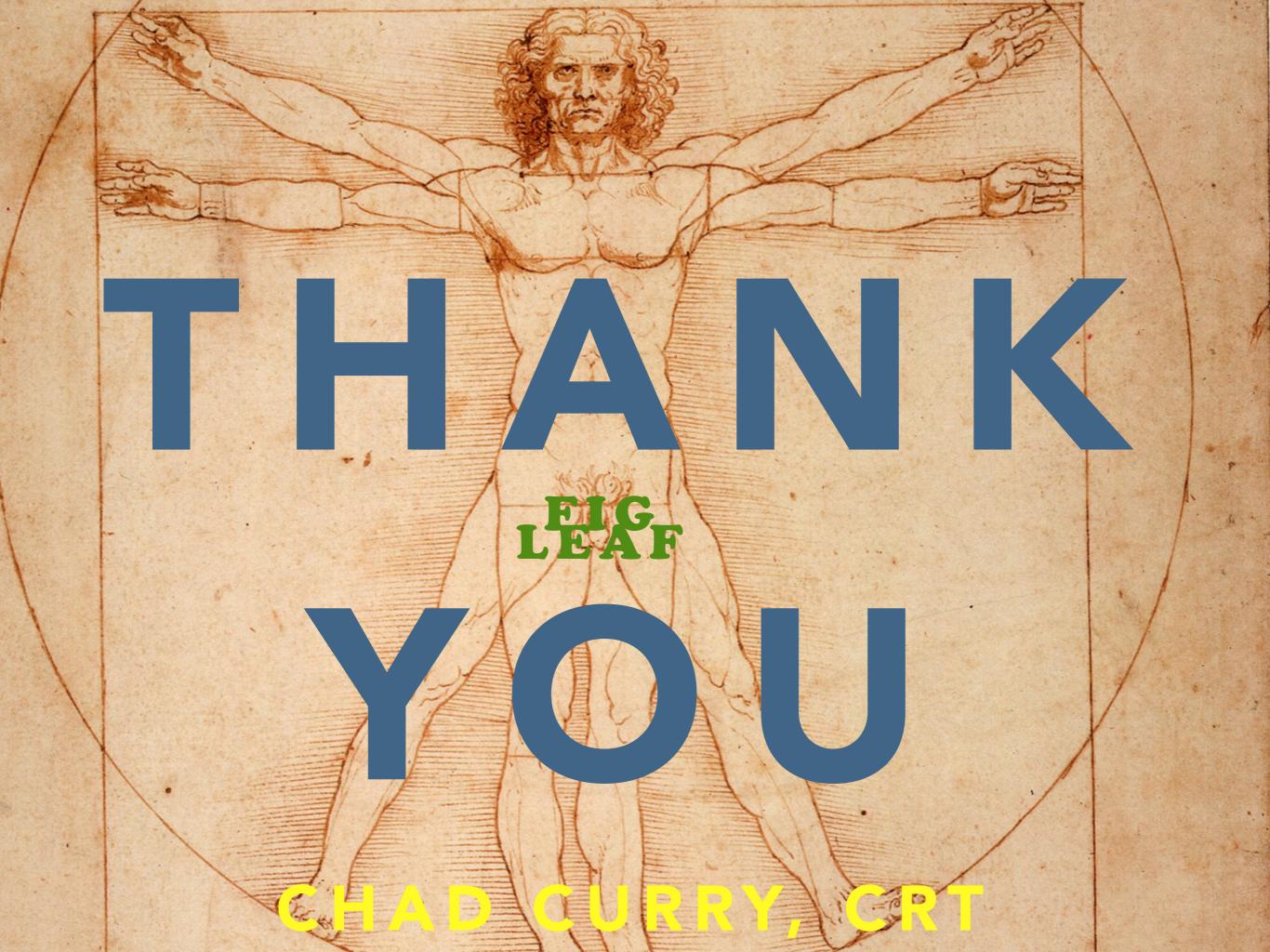# THIRD
WAVE

CONNECTED NEIGHBORHOOD

FITBIT FOR YOUR HOME & NEIGHBORHOOD

THIS DATA WITH MICRO & MACRO DATA CREATES A VIEW OF THE CITY LIKE NEVER BEFORE

A SYSTEM OF SYSTEMS

PARTS
OF A
WHOLE

CRT **CENTER FOR REALTOR® TECHNOLOGY**

@crtweet

crt.blogs.realtor.org