

Technology Driven Changes in Senior Living

**PACAH FALL
CONFERENCE 2018**



Ravi Bala

Session Objectives

- Discuss how technology will impact the level of care and type of services available to seniors in the future.
- Understand the strategic business models that could be induced or disrupted by technology in the next decade.
- Examine ways to leverage technology to improve current operations and plan for future market realities.



SOME FIRST
DAY ON THE
JOB...



Future...



**The Future is already
here – it is just not
evenly distributed.**

William Gibson



Topics to Discuss

- What does the future look like?
- What are the major pitfalls that you need to watch out for? / Consequences.
- How do we plan to minimize risk?
 - Examples of Short term checklist implementation vs a foundation to change resident experience
- Cost justification - ROI model (Offline)

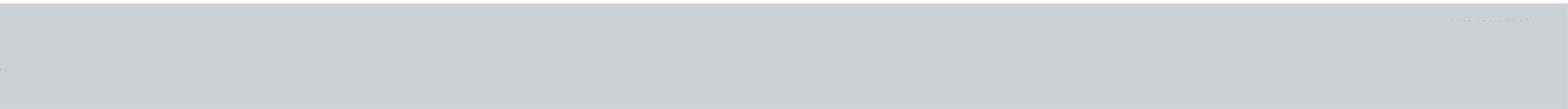
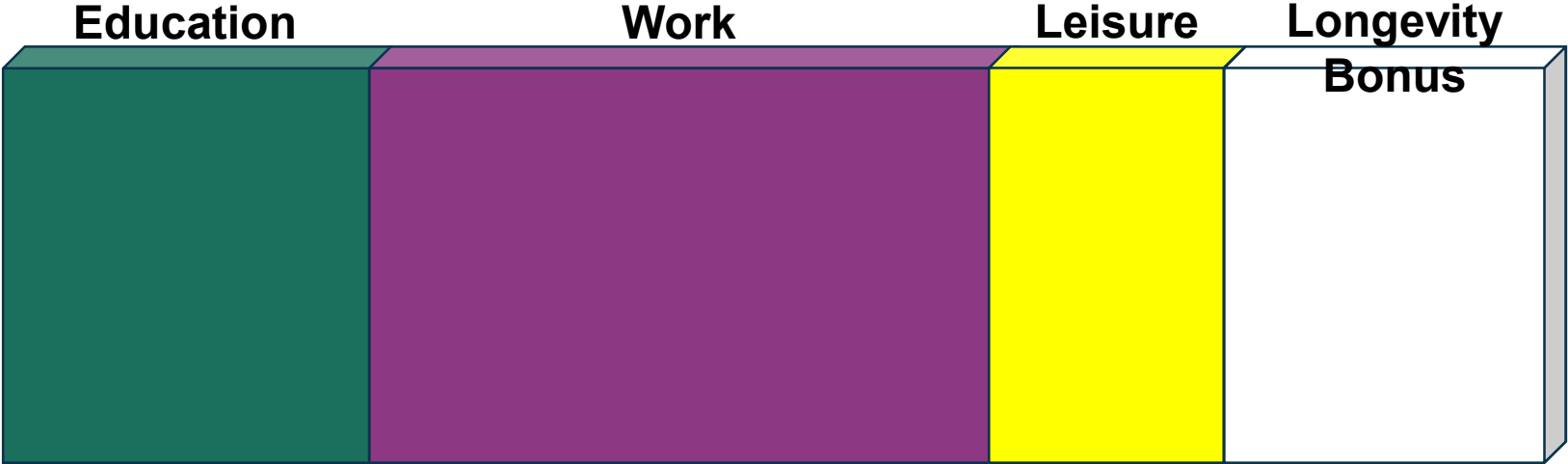


LIFESPAN MEGATREND

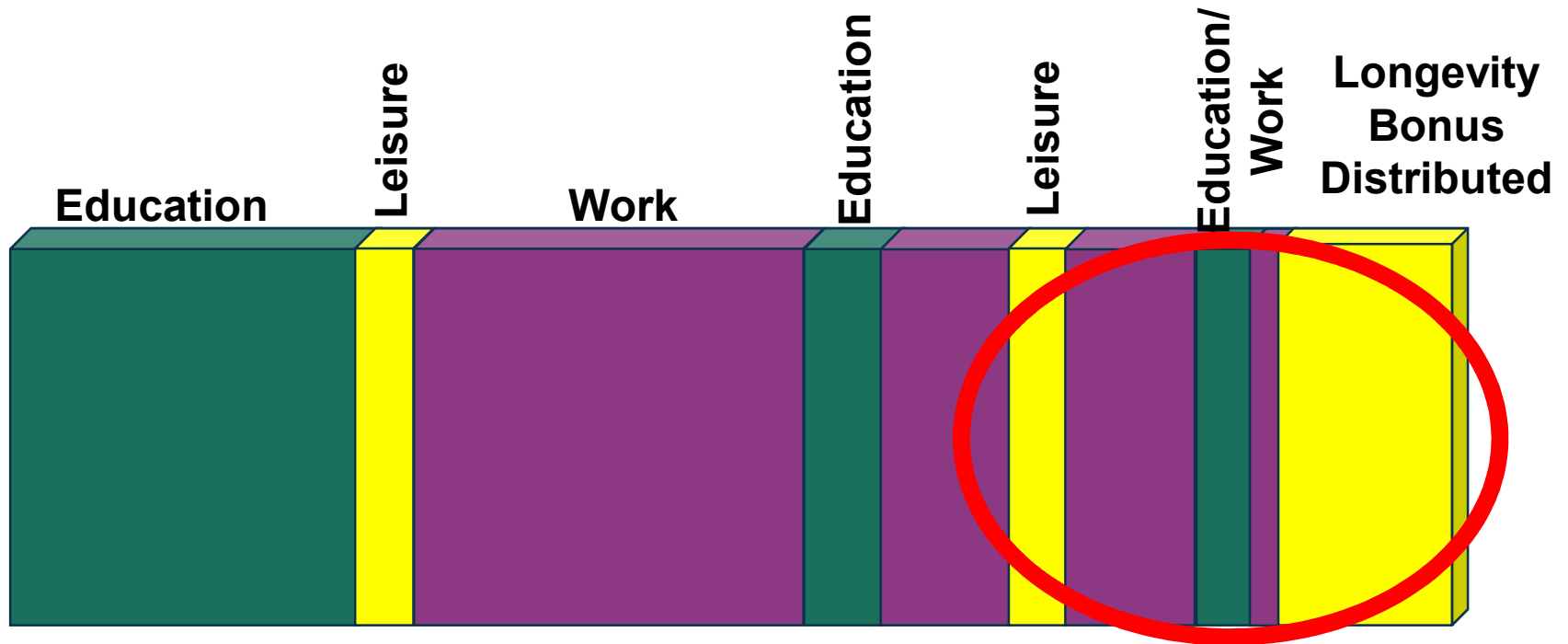
- Life Expectancy increased 3 yrs. for every Decade!
 - Avg now is about 79 yrs.
 - By 2030 it should be 85 yrs.
 - Looks like 2X-3X rate with new medical breakthroughs
- Longevity Bonus



The Linear LifePlan



The Cyclic LifePlan





Our Mission

Encore.org is building a movement to tap the skills and experience of those in midlife and beyond to improve communities and the world.

Photo Credit: UNDESA DSPD

Technology Megatrends



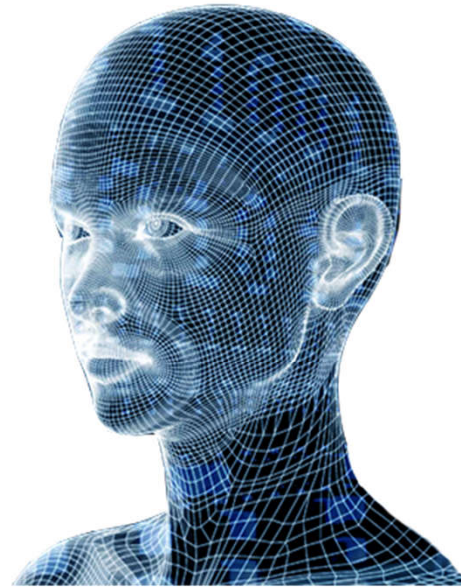
Technology Megatrends



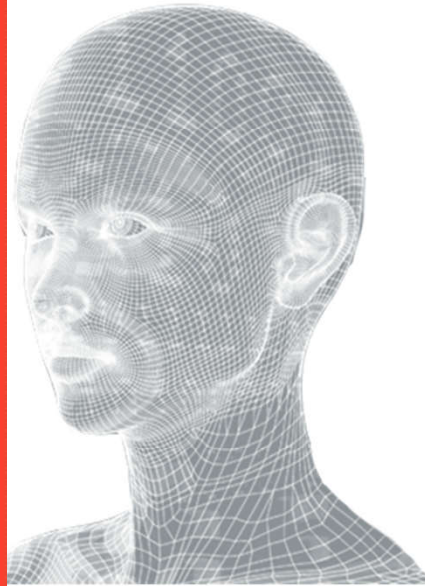
CARING

Bob Hillis, CEO, DirectSupply – Nic Fall Conference

Technology Megatrends



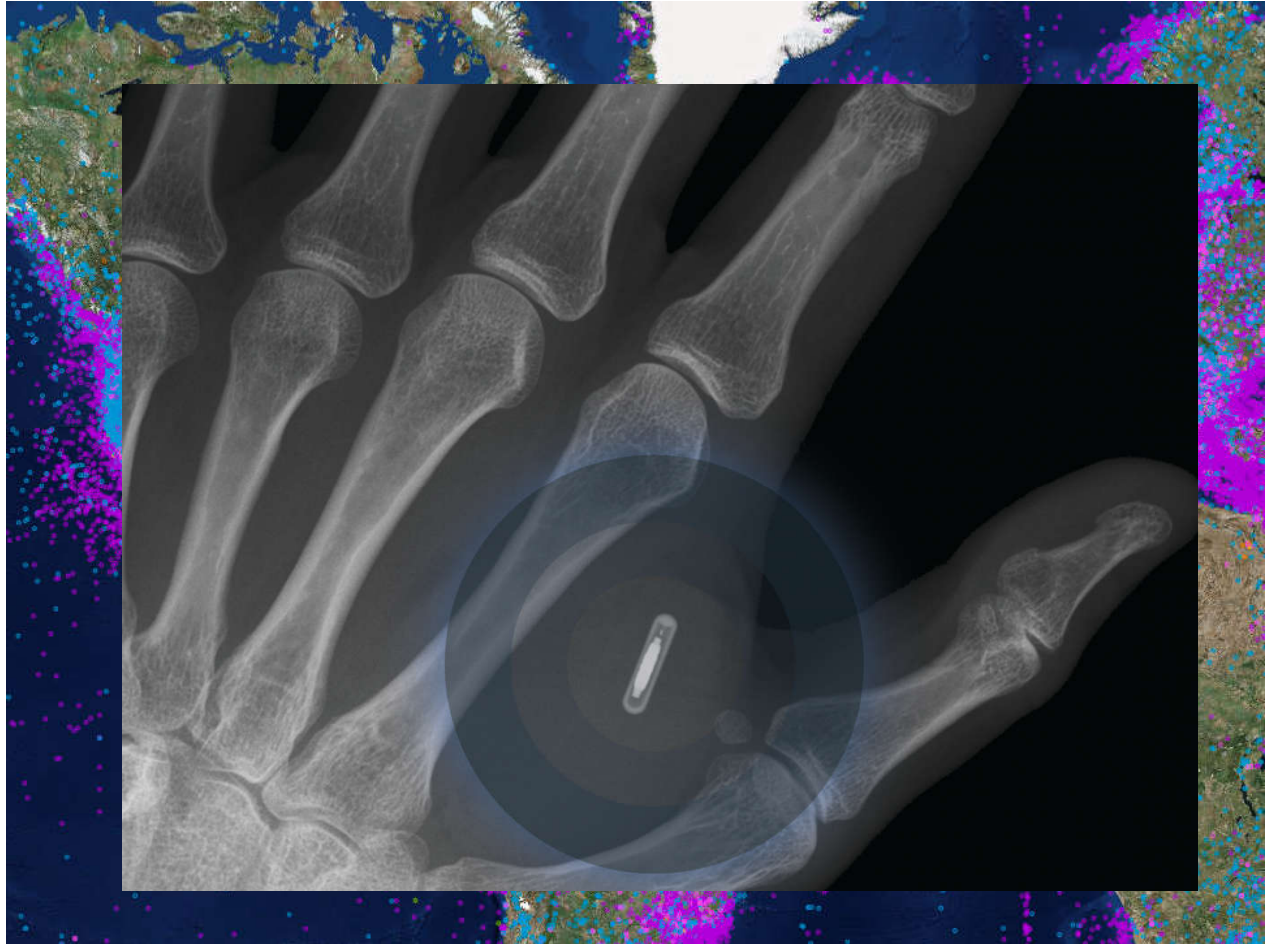
Mobility



2007 Forbes Cover



**First
implantable
mobile phone
will become
commercially
available by
2025.**



Source: Business Insider: 21 technology tipping points we will reach by 2030; Cadie Thompson

Today's Nursing Home Industry and *The "Default Factor"*



~~70%~~



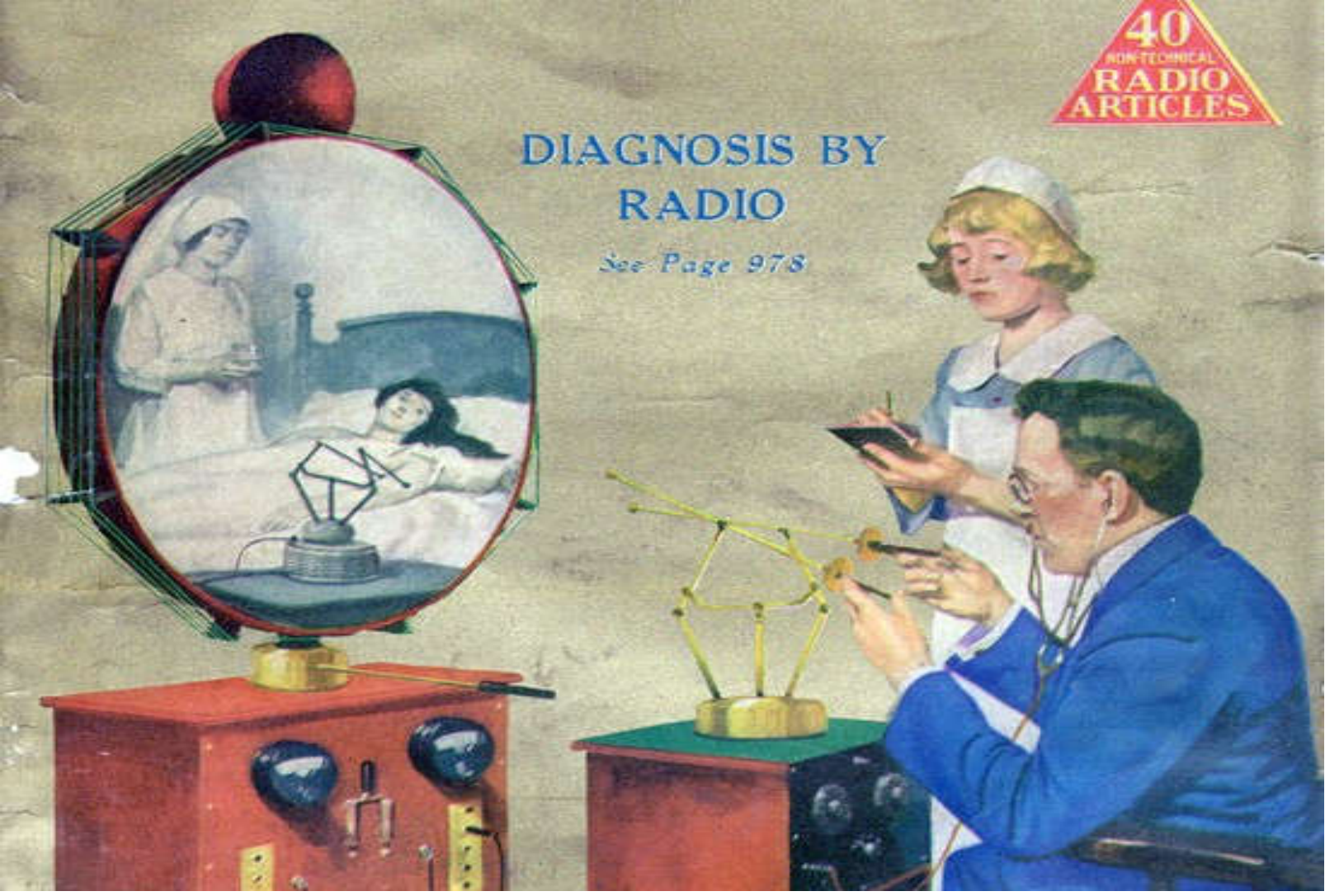
Solution –Virtual Physician Services



40
NONTECHNICAL
RADIO
ARTICLES

DIAGNOSIS BY RADIO

See Page 978



1925
Vision

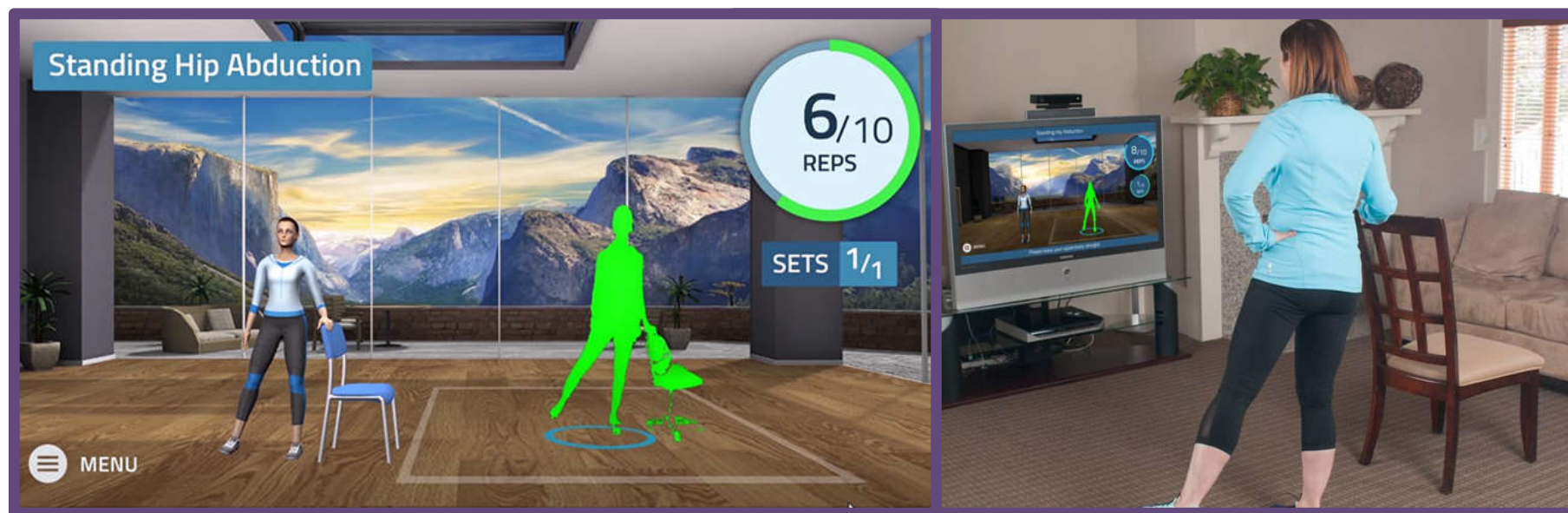


Results

- New York Study:
 - 350 bed SNF
 - 91 avoided admissions in one year
 - \$1.3 million savings for the Medicare Program
 - Increased net revenue for the SNF almost double the cost of the service
- CMS Study in Florida
 - 4 Florida SNFs participating
 - After 4 months, first facility recorded “24 avoided admissions”
 - 72 annual projection
 - \$720,000 savings to Medicare (from 1 facility)
 - Increased net revenue for facility far exceeded cost



REFLEXION HEALTH - THERAPY



Current State

Home Health
~\$3,500 - \$4,400

+

Outpatient
~\$600 - \$1,200

~\$4,100 -
\$5,600



Patients **have** to travel
Intermittent visibility into
home environment

Future State



VERA

+

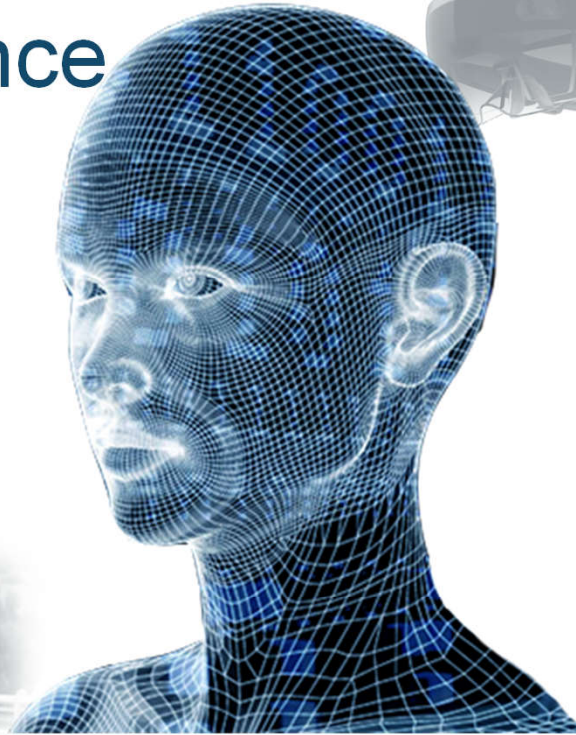
PT
Navigator

Up to 85% cheaper



Patients **don't** have to
travel as often
Continuous visibility into
home environment

Artificial Intelligence



AI PROGRESS

1997



2011



2016



[NEW]: Self-Taught AlphaGo Zero
Vanquishes Its Predecessor



“This technique is more powerful than previous versions of AlphaGo because it is no longer constrained by the limits of human knowledge.”





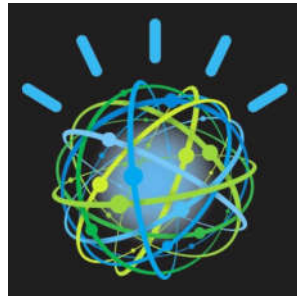
Google's Machine Learning Software Has Learned to Replicate Itself



SIMPLE SENSORS + AI



\$20



- Change in patterns of Toileting
- Avamere (Oregon)



amazon.com

facebook



Microsoft

AI will be a
serious
force in
Senior
Living



Partnership on AI
to benefit people and society



DeepMind

Google

OpenAI

IBM

Internet of Things

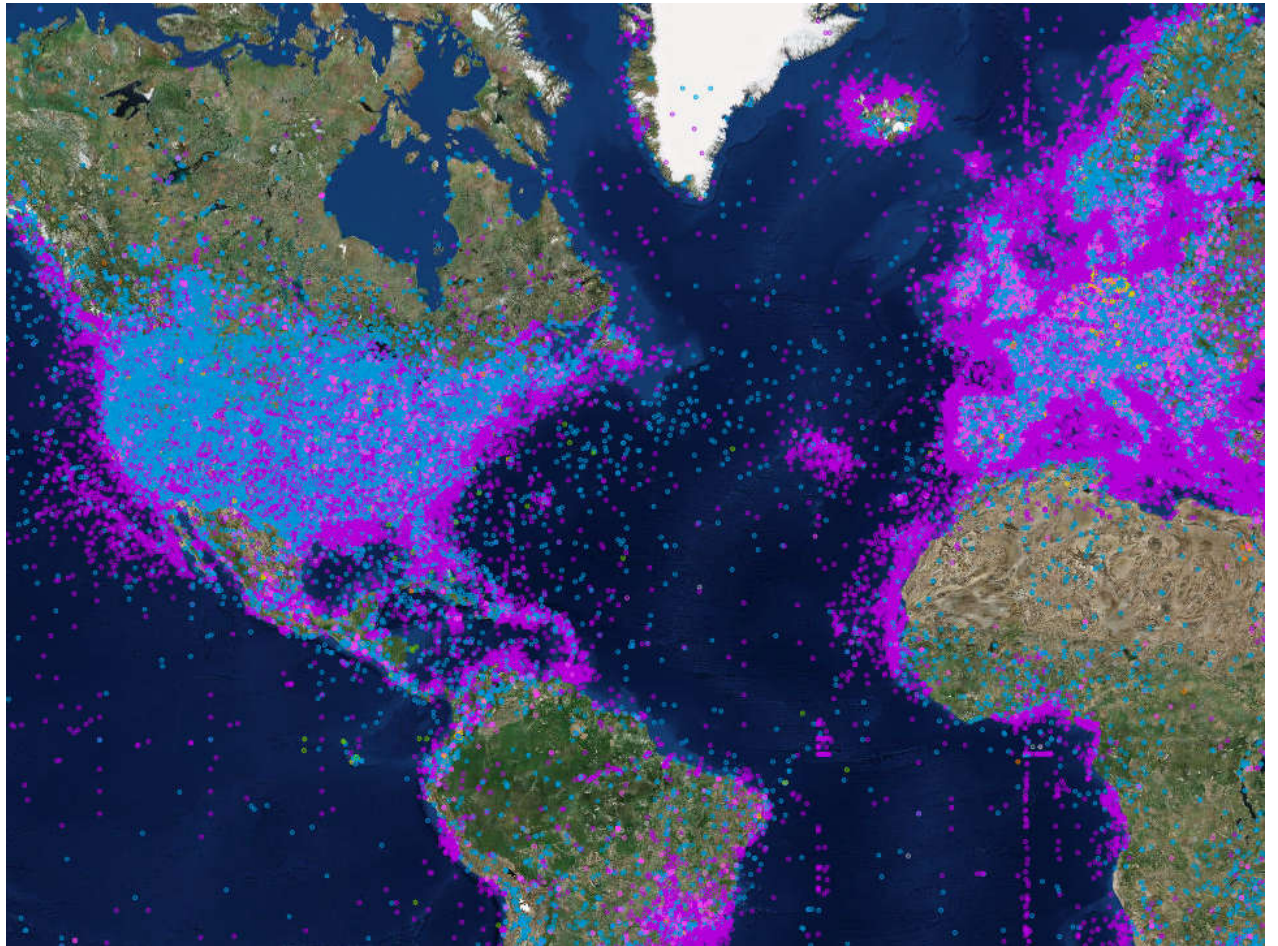


The Internet of Caring Things

A Network of Connected Objects Brought to Life by a Clear Mission: To Actively Care for Consumers – Their Physical and Mental Wellbeing, Homes, Loved Ones and More..



**1 Trillion
sensors will be
connected to
the internet by
2022.**



Source: Business Insider: 21 technology tipping points we will reach by 2030; Cadie Thompson

Voice Interface



Amazon Echo Devices – Personal/home organizer

- Amazon Echo Show

- Voice control of smart home devices
- Timers, Alarms, To-Do Lists, Reminders
- Responds with visual content as well as audio
- Video calling capabilities



“Alexa, call Wendy”

“Alexa, when do the Wizards play next?”

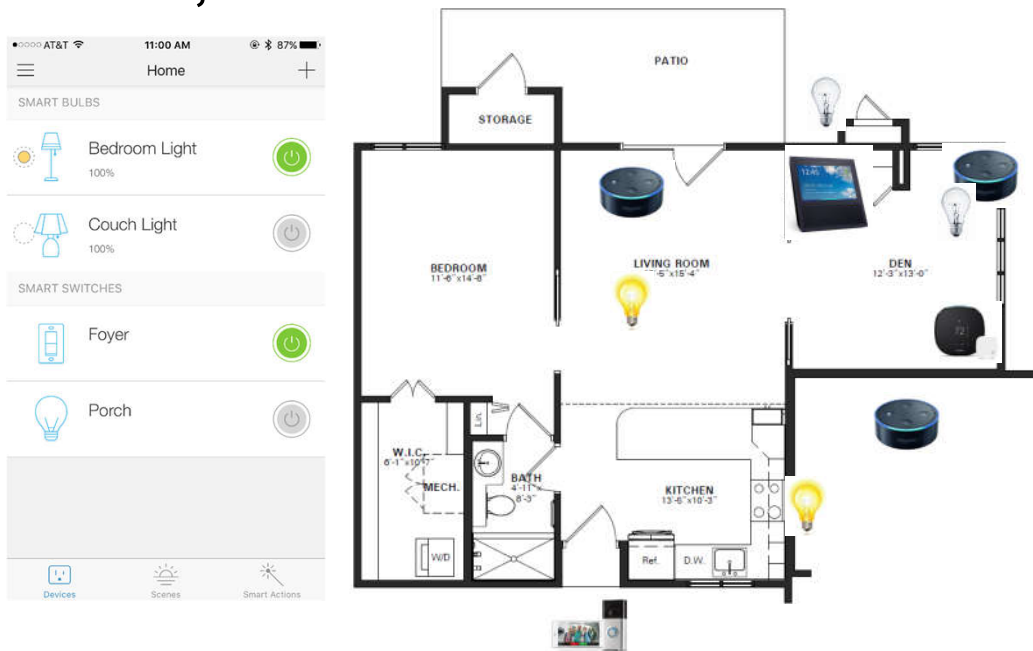
- Amazon Echo Dot

- Smaller footprint
- Great for kitchens and bedrooms



Scenes

“Alexa, I’m Home”



“Alexa, remind me to call my doctor tomorrow at 8”

“Alexa, set oven timer for 30 minutes”



Enhanced Security

- Ring - Door Answering System
 - Integration with Amazon Echo
 - Replaces current doorbell
 - Video monitoring of doorstep
 - Two-way communication via Ring app



“Alexa, who is at the *Front Door?*”



Green Technology

- Ecobee4
 - Smarter thermostat
 - Integrated Echo command (It has an Echo inside)
 - Remote sensor to help even out cold or hot areas
 - Fully programmable
 - Remote control via Ecobee App



“Alexa, what is the temperature in the house?”

“Alexa, set *master bedroom* temperature to 74 degrees”



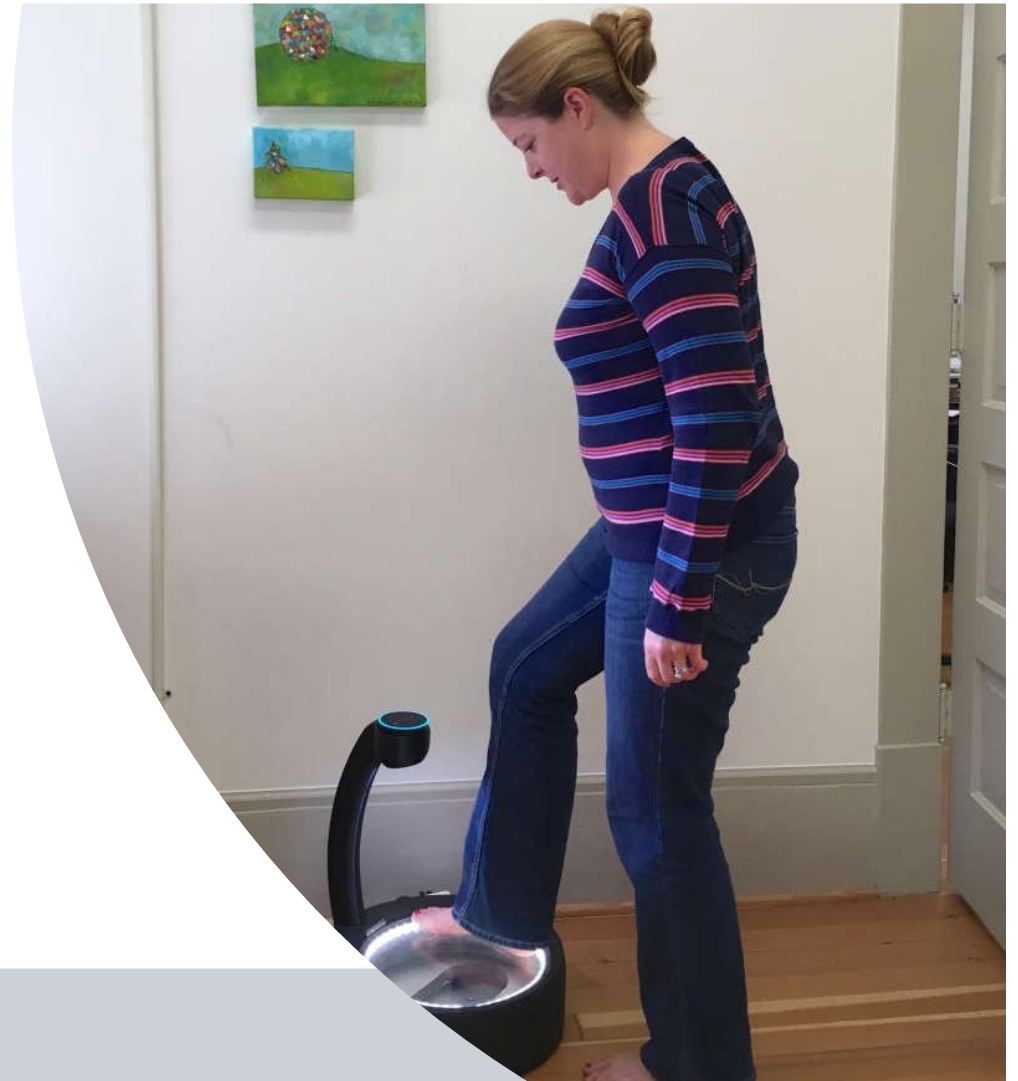
Home Protection

- EcoNet EBV105 Water Shutoff Leak Sensor
 - No plumbing required
 - No hub or connection to Alexa
 - Remote floor sensors to auto-shutoff

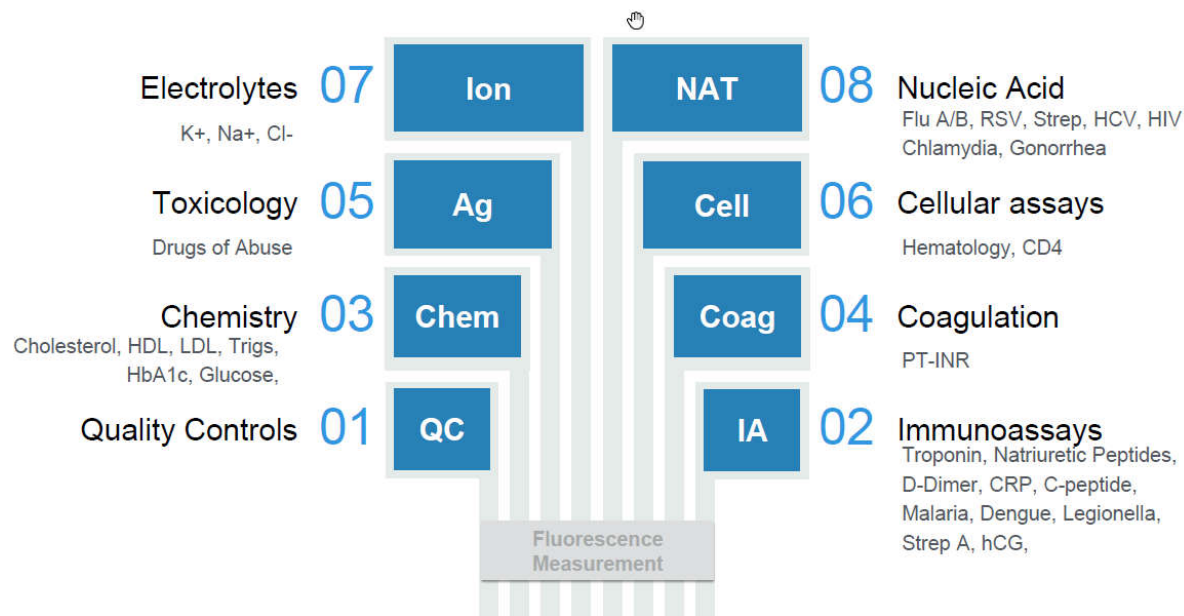


ALEXA-SUGARPOD by WELLPEPPER

- Scale
- Foot Scanner
- Assessment
- Education
- Messages



Laboratory Quality Results in Minutes



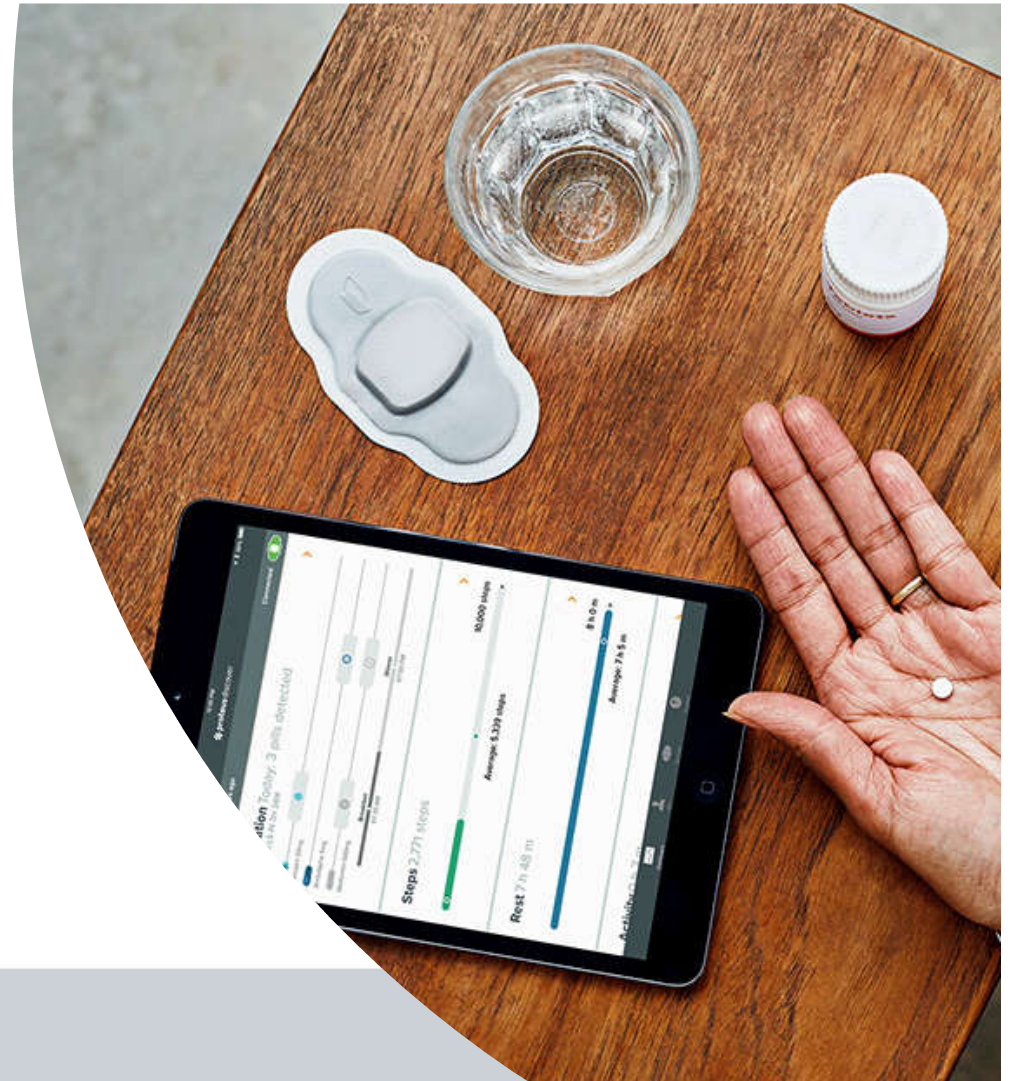
Biometric Monitoring

- Home biometric monitoring
 - Heart rate
 - Heart rate variability, recovery
 - Respiration, Temperature
 - Posture, activity, exercise
 - Algorithms to detect A-Fib, falls risk, with others in development
- Wear and forget
 - Thin and flexible, waterproof
 - Daily or week disposable
- Seamless mobile connectivity
 - Continuous monitoring
 - Activity and Biometrics
 - Enhanced data capture on alert
 - Actionable real time information



Ingestible Sensors in Pills

PROTEUS DIGITAL



Monitoring – Smart Watches

Patient



Nurse

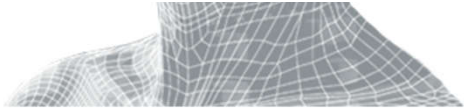


Technology Megatrends

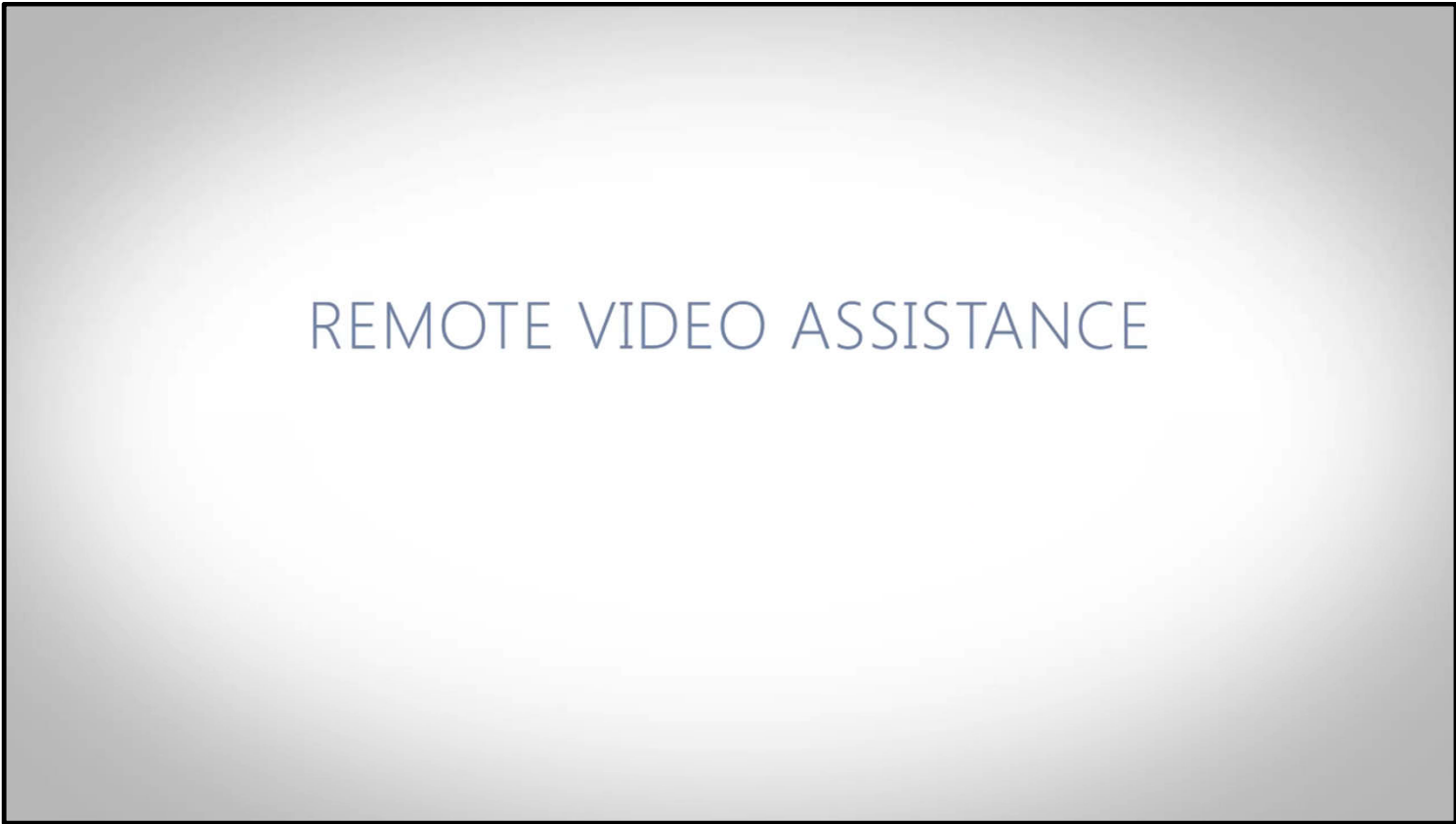


CARING

Augmented / Virtual Reality



AR - Maintenance



REMOTE VIDEO ASSISTANCE



RENDEVER – Virtual Tours

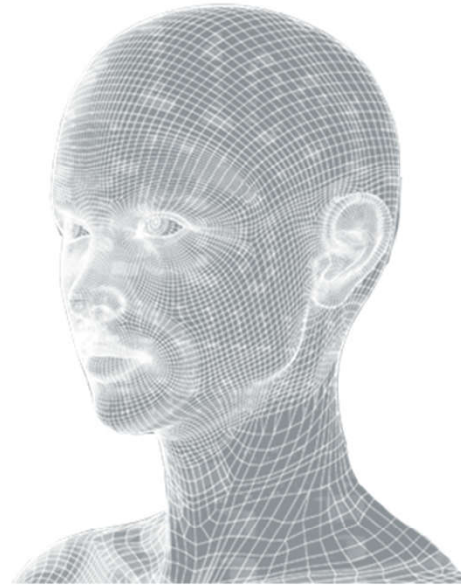




\$199 - This Next Year!

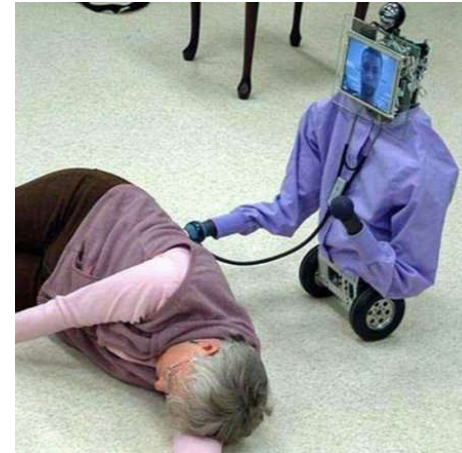


Robotics



Mobile Robots

- Mobile Video Conferencing



Robotic Aides!



Robotic Wheelchairs



Robotic Companions





Dr. Naira Hovakimyan of the University of Illinois with a small drone that may eventually be able to carry out household tasks, like retrieving a bottle of medicine, for older adults. Daniel Acker for The New York Times.





**The first
robotic
pharmacist
will arrive in
the US 2021.**



Source: Business Insider: 21 technology tipping points we will reach by 2030; Cadie Thompson

I'd like to see the Pharmacy Cart for this one...

Glasgow pharmacy.. — in [Kirkintilloch](#).

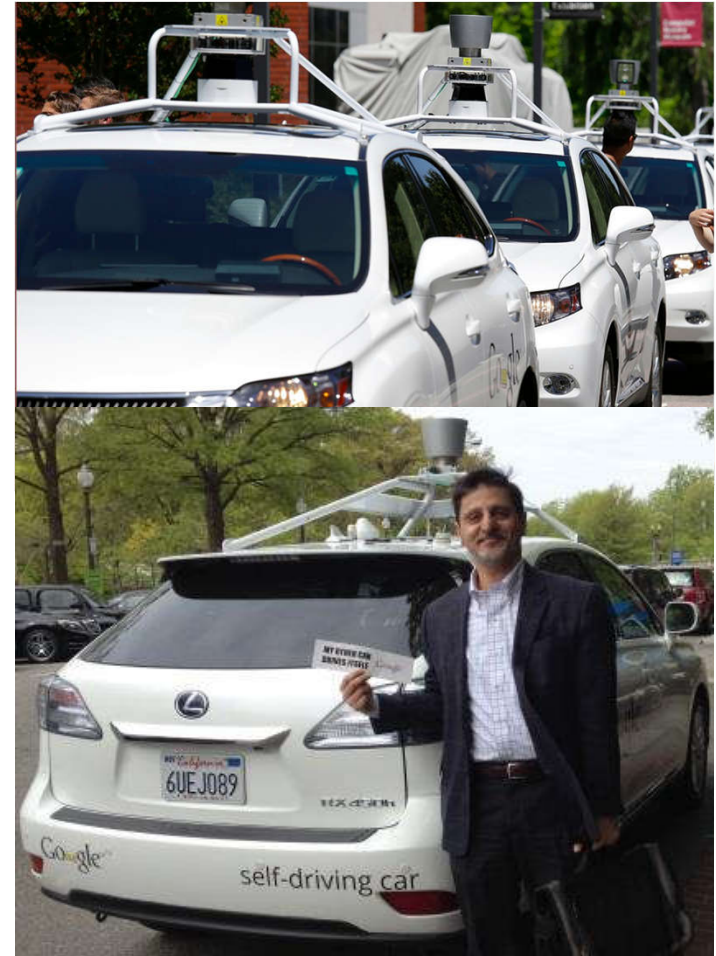


Self Driving Cars



Assisted/Self-Driving Cars!

Driverless cars
will account
for 10% of all
cars in the US
by 2026.



POLICY & LAW

US & WORLD

TRANSPORTATION

Autonomous cars without human drivers will be allowed on California roads starting next year

42 companies are now testing 285 self-driving cars in the Golden State

by [Andrew J. Hawkins](#) | [@andyjayhawk](#) | Oct 11, 2017, 12:11pm EDT



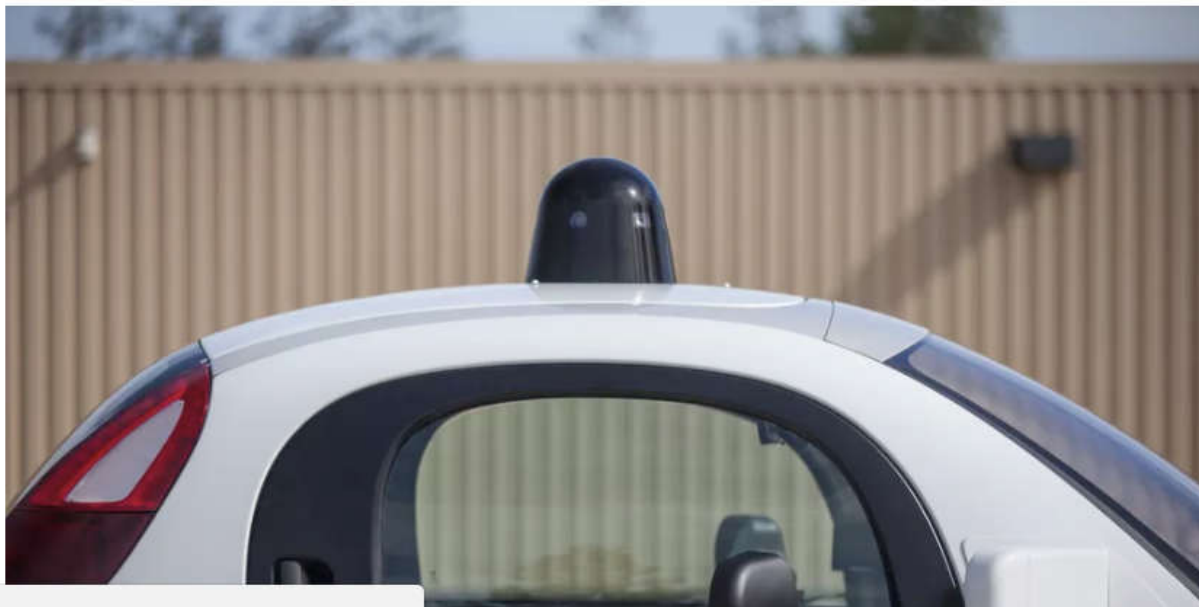
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TWEET



LINKEDIN



NOW TREND





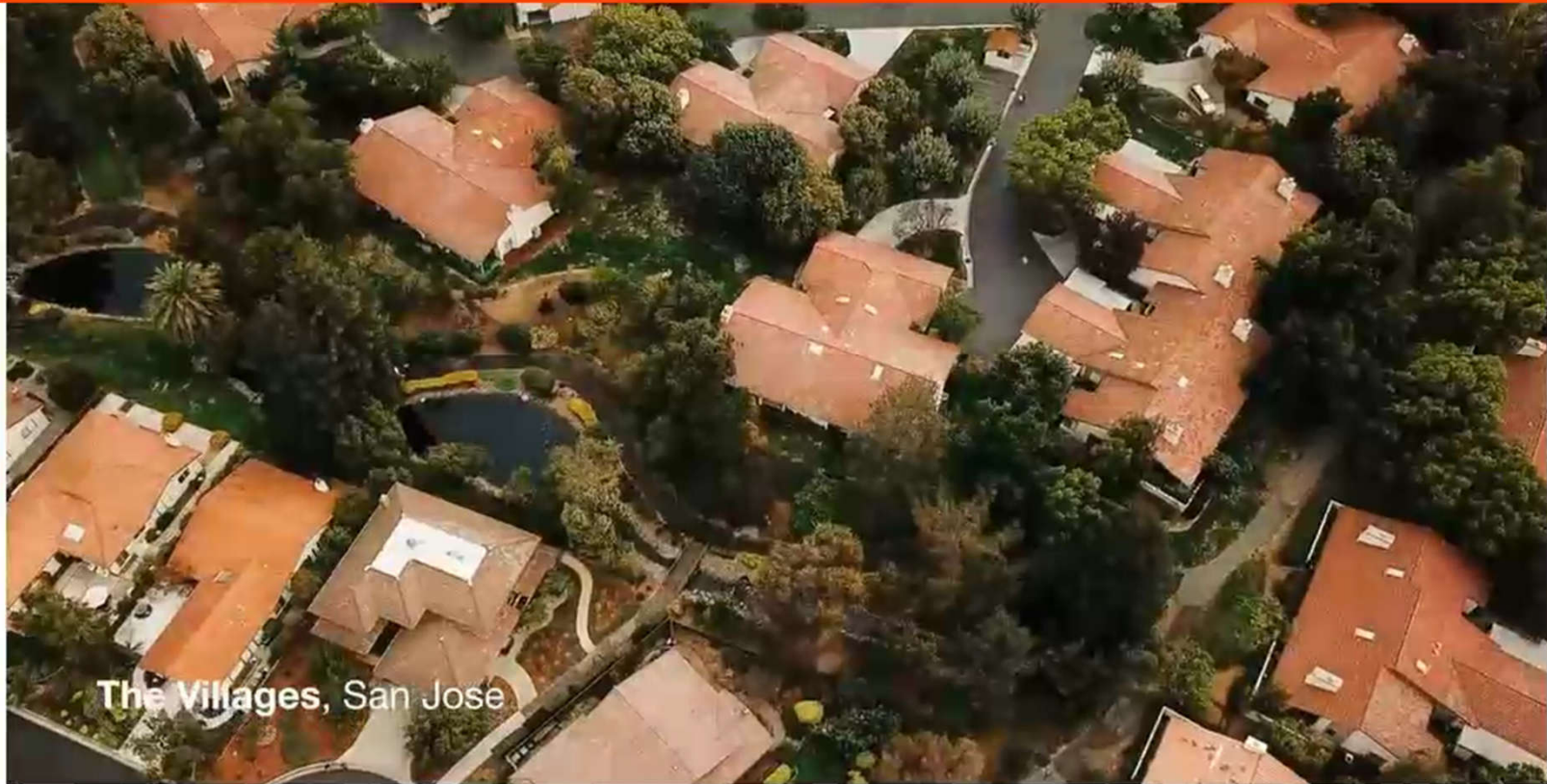
VOYAGE

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Get started



The Villages, San Jose



Business Model Impact

Home

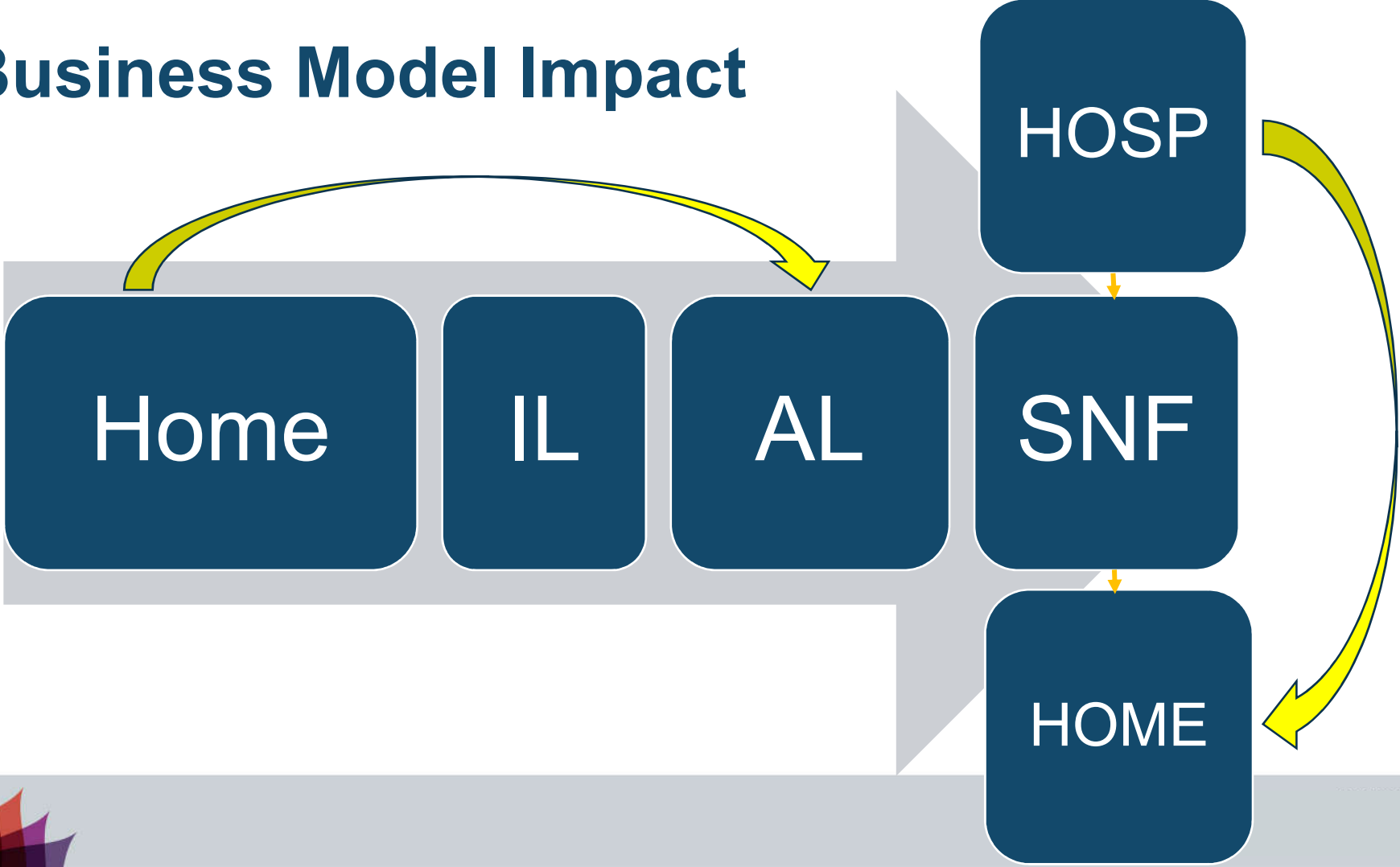
IL

AL

SNF



Business Model Impact





AirBnB for Elders



UBER without Smartphone



BUSINESS MODEL IMPACT

Integrated/ Coordinated Health Care	Community-Based Support Services	Real Estate Based
<ul style="list-style-type: none">+ Interoperable EHRs & HIE+ Remote Monitoring/ Telehealth+ Care coordination tools	<ul style="list-style-type: none">+ Interoperable EHRs & HIE+ Remote Monitoring/ Telehealth+ Care coordination tools	<ul style="list-style-type: none">+ Interoperable EHRs & HIE+ Remote Monitoring/ Telehealth+ Care coordination tools
	<ul style="list-style-type: none">+ Remote monitoring and assistive devices+ Wellness & quality of life	<ul style="list-style-type: none">+ Remote monitoring and assistive devices+ Wellness & quality of life+ Facility management



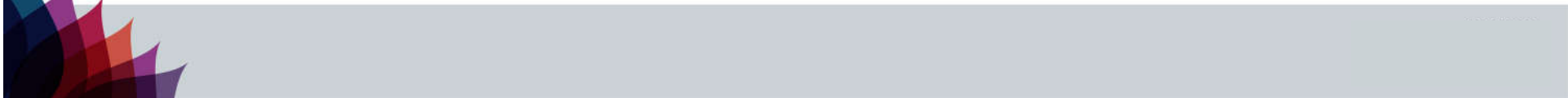
WHAT SHOULD I DO TODAY?



START WITH A STRATEGIC PLAN



DEFINE PARTNER, RESIDENT AND STAFF EXPECTATIONS.



IDENTIFY COMMON INFRASTRUCTURE NEEDS ACROSS BUSINESS SEGMENTS





**IDENTIFY STRONG
PARTNERS WHO
COMMIT TO YOUR
BUSINESS
OBJECTIVES**





OUR STORY..... from mHealth to Wi-Fi basics.

WIFI PROFESSOR TOP 10 MISTAKES



1. **Not focusing on business justification**
2. **Thinking too small. Its Wi-Fi + Phone + TV + Apps**
3. **Making this an IT only effort.**
4. **Not considering future needs.**
5. **Poor or nonexistent staffing.**

6. **Incorrect expectations – Staff and Residents.**
7. **Poor technology architecture.**
8. **Not focusing on security.**
9. **Poor project management.**
10. **Not addressing operations concerns early.**

Resources

- Facebook Group Senior Living Innovation Center – Public Group
 - <https://www.facebook.com/groups/SLIC1/>





Every decade our overall rate of progress is doubling. We won't experience 100 years of progress in the 21st century—it will be more like 20,000 years of progress (at today's rate).

Ray Kurzweil, 2001





"A true genius admits that he/she knows nothing."
Albert Einstein

