Looking at Tomorrow, Today
The Future is coming...
John F. Kennedy

Change is the law of life and those who look only to the past or present are certain to miss the future.
We can’t live today like it will be like yesterday nor tomorrow like it will be like today.
John Scully, former CEO Apple

"Only through a radical shift in our thinking can we succeed in the new era. It calls for nothing but complete break with tradition-bound leaders and managers."
Tom Cook, CEO Apple

“Anything can change, because the smartphone revolution is still in the early stages.”
Today's change is not just: More rapid, more complex, more turbulent and more unpredictable...

Today's change is unlike any encountered before. The surprising fact is that change itself has changed
"We can't solve problems by using the same kind of thinking we used when we created them."
HOW OLD WILL YOU BE?

- 2015: 5 YEARS
- 2020: 10 YEARS
- 2025: 15 YEARS
- 2030: 20 YEARS
- 2035: 25 YEARS
- 2040:
Pompeii
August 24, 79 A.D.
Naples, Italy
Pop. 961,257 (2010)

Mt. Vesuvius
San Andreas Fault
Los Angeles
Pop. 3.9 Million
2012
San Francisco
Pop. 825,863
2012
Today is not like yesterday

nor will tomorrow be like today
New Orleans
Pop. 369,250
2013
October 2012

Hurricane Sandy

7.9 million businesses and households are without electric power in 15 states and the District of Columbia.
Tokyo, Japan
Pop. 13.4 million
May 1, 2014
We walk on thin ice
If we live as though today will be like yesterday or tomorrow will be like today.
We cannot plan our future looking only in the rear view mirror.
Two Concurrent Phenomena

1. Childhood Mortality 10X
   Life span has changed
   - 1800
   - 1850
   - 1900
   - 1950
   - 2000

2. Frequency of major technological change in any given field
   - Once every 2-3 generations
   - Constant and continuous

   - Infinite Computing
   - Sensors & Networks
   - Robotics
   - 3D Printing
   - Synthetic Biology
   - Digital Medicine
   - Nanomaterials
   - Artificial Intelligence
We are computing, calculating and consuming more than any other time in history.
Moore's Law - 2005

Moore’s Law - 2005

Source: Intel
Exponential Growth of Computing

Exponential Growth of Computing
Twentieth through twenty first century

Calculations per Second per $1,000

Year

1900 1920 1940 1960 1980 2000 2020 2040 2060 2080 2100

10^-5 10^-4 10^-3 10^-2 10^-1 10^0 10^1 10^2 10^3 10^4 10^5 10^6

Logarithmic Plot

All Human Brains
One Human Brain
One Mouse Brain
One Insect Brain

Singularity.com
Curve shows "Moore's Law" Transistor count doubling every two years

6,400,000.............................. in 2014
A computer chip that contained 2,000 transistors cost...
$1,000 in 1970
$500 in 1972
$250 in 1974
$0.97 in 1990
$0.02 in 2015
Computer chips will become ubiquitous
Communication Power Increases as Computing Power Grows
Communication Power Increases as Computing Power Grows

Brain Chip Helps Quadriplegics Move Robotic Arms with Their Thoughts*

*Technology Review 5/16/12
Brain Chip Helps Quadriplegics Move Robotic Arms with Their Thoughts

It's the first study to show that brain chips can assist paralyzed people to perform complex real-world tasks.

Reach out: In a clinical trial, a woman used a brain-chip system to control a robotic arm with her thoughts and reach for a drink of coffee.

Source: MIT
NTT Japan has successfully tested a fiber optic cable that pushes....... 14 trillion bits per second down a single strand of fiber
That's 210 million phone calls every second

Per strand of fiber
It is currently tripling every 6 months and is expected to do so for the next 20 years.
The Future Will Bring Seismic Change To The Present and Future
'Cool' invention wins first place at MADMEC
Thermoelectric bracelet that helps people maintain a comfortable body temperature takes home $10,000 from MIT's annual materials-science design competition.
Rob Matheson, MIT News Office

3-4 degree of comfort (cool/heat)
6 CHARACTERS REBOOTING MEDICINE AND HEALTH 0, 1, A, C, G, T

Accelerating Digital Technology

Super-Convergence

Reboot

64M

16M

4M

1M

250K

2

Number of sequenced Human Genomes

PREVENTION

PREDICTION

MANAGEMENT

DIAGNOSIS

DISEASE

Based on the work of Dr. Eric Topol, author of "The Creative Destruction of Medicine: How the Digital Revolution WILL Create Better Health Care"
Army Eyes 3-D Printed Food for Soldiers

"Liquid matrices" that are nutrient "dense." And you print them?!
How will we do work, tomorrow and beyond?
What does tomorrow's Rating, Testing and Diagnostics look like?
Our infrared camera of tomorrow
Paul Eremenko, who heads the team working on Project Ara, cites some examples. A company in the US already working on a module that will pair with a Project Ara phone to offer consumers ability to test the purity of water or contamination in blood. Then there are modules that can measure oxygen level in blood or pollution in air around a user.

http://indiatoday.intoday.in/technology/story/faq-everything-you-need-to-know-about-google-project-ar arab/1/400823.html
Star Trek Tricorder

Tricorder: 2260's

- A small, rectangular machine
- A handle for carrying
- A display screen
- Controls for operation
- A case for protection

Function:
- Medical diagnosis
- Environmental analysis
- Communication with other species

Features:
- Portable
- Multifunctional
- Ergonomic design

Usage:
- Used by medical officers
- Essential for space exploration

Accessories:
- Case for storage
- Manual for operation
Our Home Tricorder
NC State University
Cyborg Moth

http://www.giantfreakinrobot.com/?s=North+Carolina+State+University
Will a roach do your next takeoff?
2 MAJOR AREAS OF CHANGE

Climate

Energy
1. MONEY
2. EXCELLENCE
Baby Boomers Population Map, U.S. County Data

77.3 Million

10,000 retire every day for the next 19 years

www.governing.com
http://www.boomerslife.org/
baby_boom_population_us_census_bureau_by_state.htm
INCOME GENERATION

Boomer:

ARE...
...of the U.S. population 44%

HAVE...
...of U.S. disposable income 70%

PURCHASE...
...of all consumer-packaged goods 49%

MAKE UP...
...of U.S. wireless customers 41%

Source: Generation Group
Money

- They spend 2 trillion dollars a year
  - 80% of leisure travel
  - 48% of luxury car sales
  - 60% of health care products
  - 70% of the wealth is now controlled by individuals over 50

THEY ARE THE ECONOMY
Moving Intentions

63% do not plan to move

"Age in Place"

62% have lived in current home for 10+ years

85% staying in current home by choice

Source: 2013 Demand Institute Housing & Community Survey

2. EXCELLENCE
EXCELLENCE

Strong Strategy

Code Changes
Capturing Market
PERFORMANCE
Well Trained
Effective Communication
Sustainable
PROCESS

Wise Choices

SUPERIOR
- PRODUCTS
- SERVICES

Desirability
Capability
Availability

Journey to Excellence
Strong Strategy

Code Changes

Capturing Market

PERFORMANCE

Well Trained

Effective Communication

PEOPLE

Sustainable

-Effective

-Efficient

PROCESS

DET ERI/HERS
Code Changes

Capturing Market

PERFORMANCE

Well Trained

Effective Communication

PEOPLE

Sustainable

- Effective

- Efficient

PROCESS

DET ERI/HERS
Wise Choices

SUPERIOR
- PRODUCTS
- SERVICES

Desirability
Capability
Availability
SUPERIOR

- PRODUCTS
- SERVICES
Is the view worth the climb?
Rethink workflows, big data, sensors and Rater

Builder

Appliance

Utilities

Appraiser

Banking

Medical

Insurance

Realtor

Lifestyle

Conveyor

Corporation
Few will have the greatness to bend history itself; but each of us can work to change a small portion of events, and in the total of all those acts will be written the history of this generation.

Robert F. Kennedy
It's our time to run!