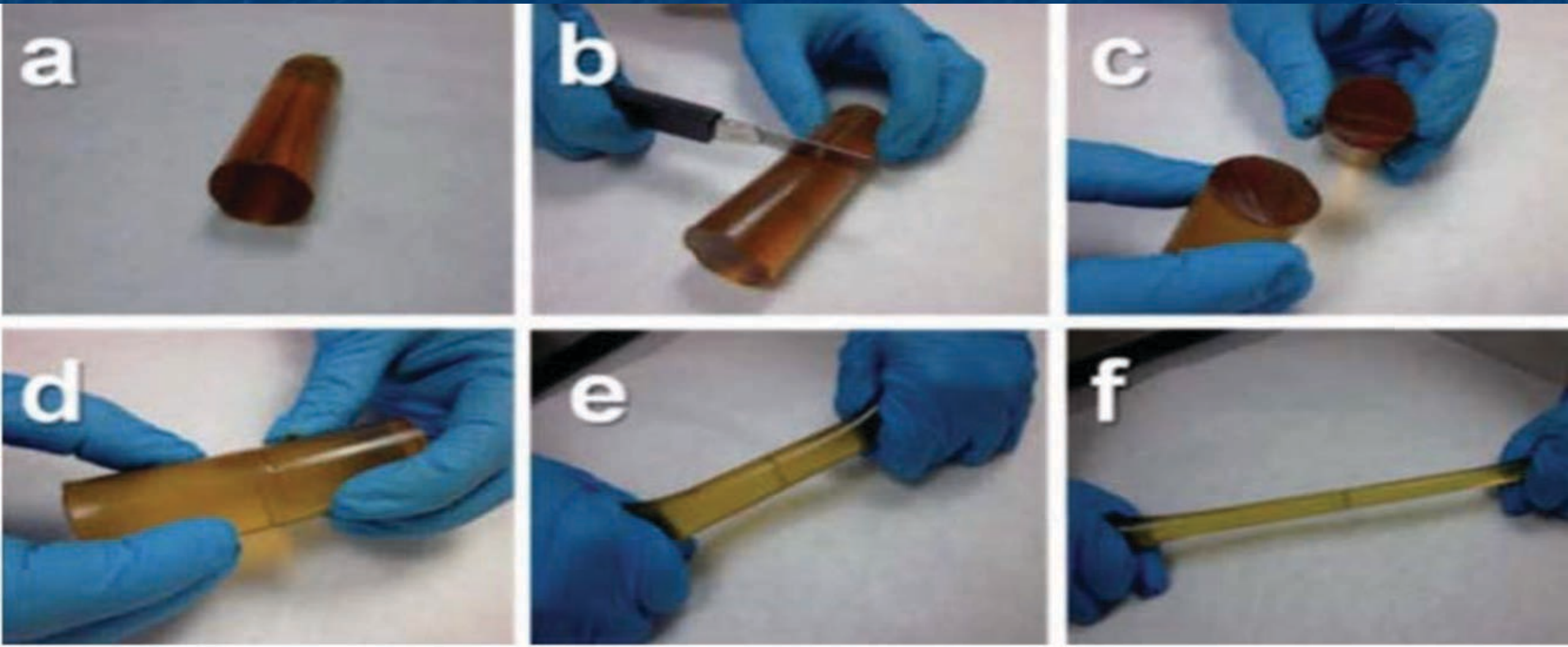

newstory

10 new buildings built in China
in 1 day . . .

a revolution in construction is beginning.

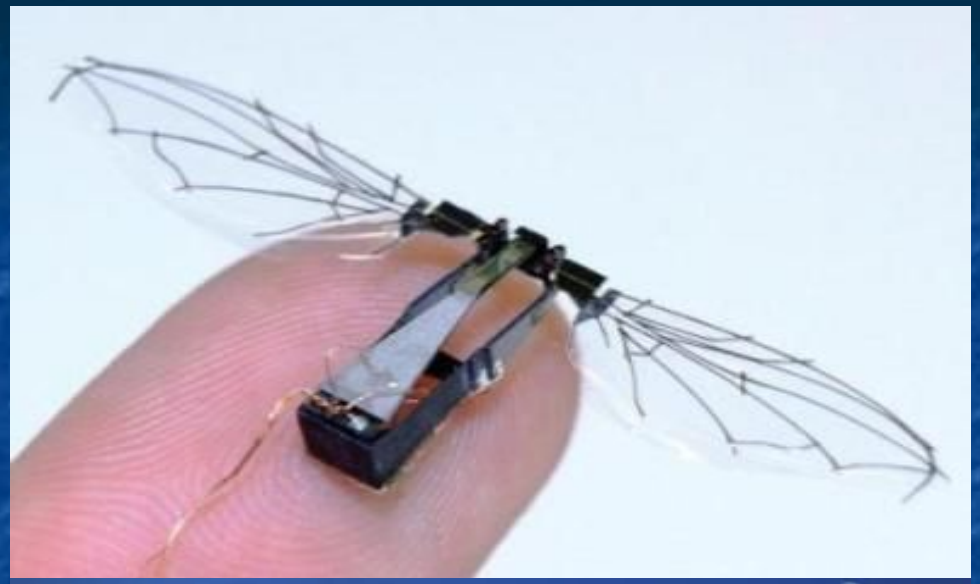
A new generation of "self-healing polymers" permit structures and products to magically "heal themselves."



The self-healing polymer devised at CIDETEC can mend itself without a catalyst (Photo: Royal Society of Chemistry)

PHOTOS TAKEN AT ROOM TEMPERATURE

What is the future of drones in business?




amazon


Prime Air


CNN Money

Large-scale drones

Multi-drone
rescue applications.

We can't talk about the future of business without talking about intelligent robotics . . .

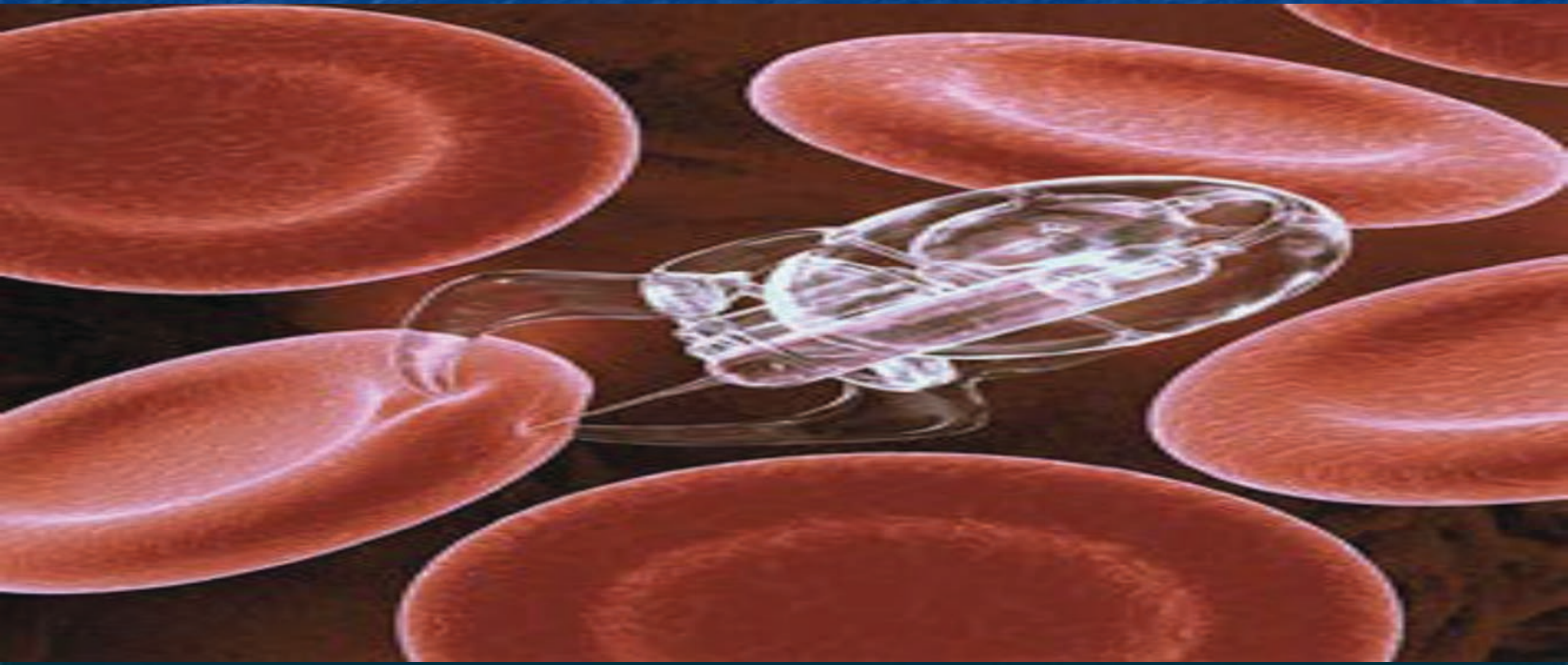

IRID TOSHIBA


TU/e

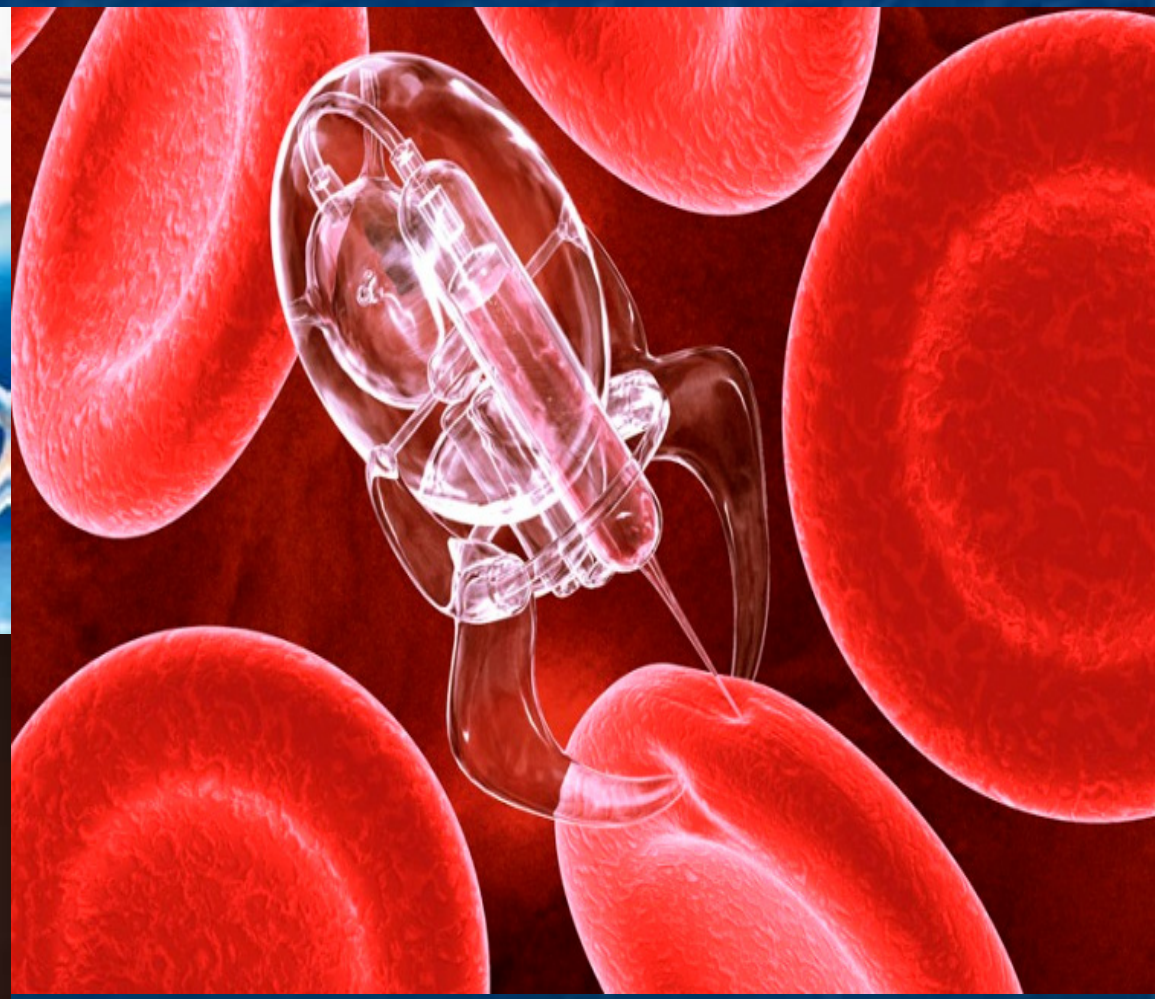
1st Intelligent indoor/outdoor fire-extinguishing robot:
Senses change in temperature, dispatches to fire and extinguishes.

Automated robotic lawnmowers for continuous, unassisted vegetation management!
Ideal for remote facilities.

Watch for AI powered nanobots.

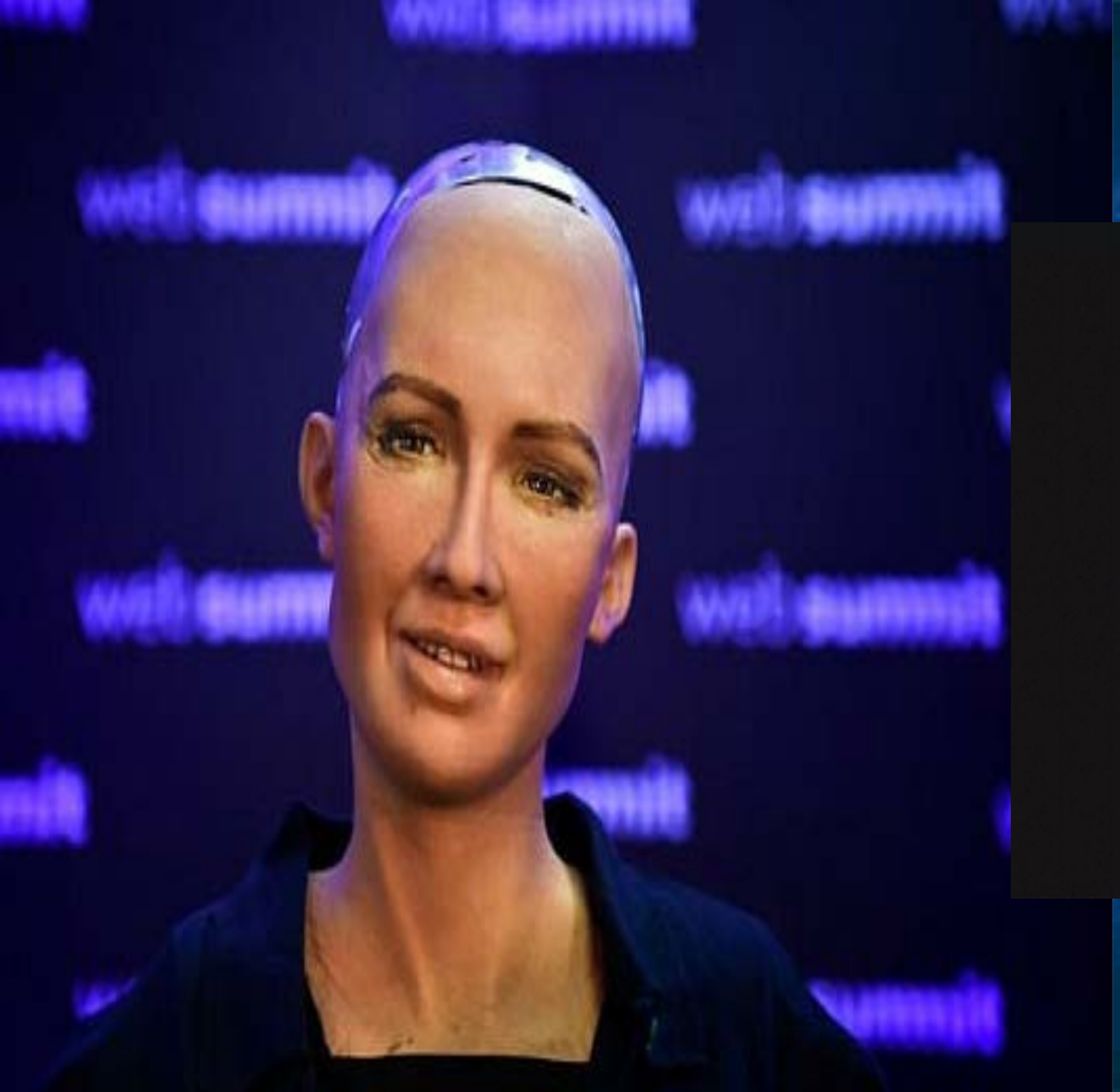


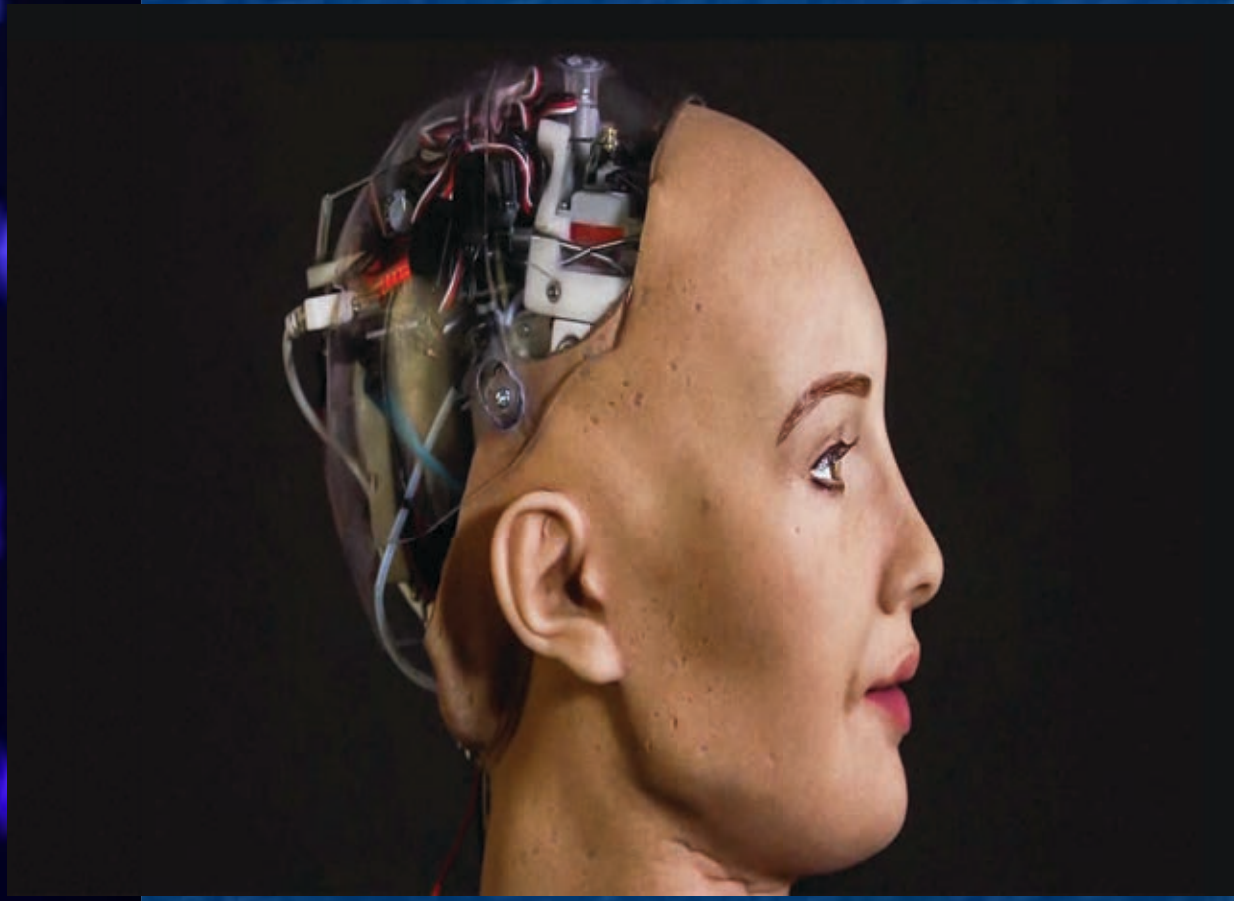
Nanobots being tested for diagnosing and curing illness from the inside.



In lieu of pesticides, antibiotics, etc . . .

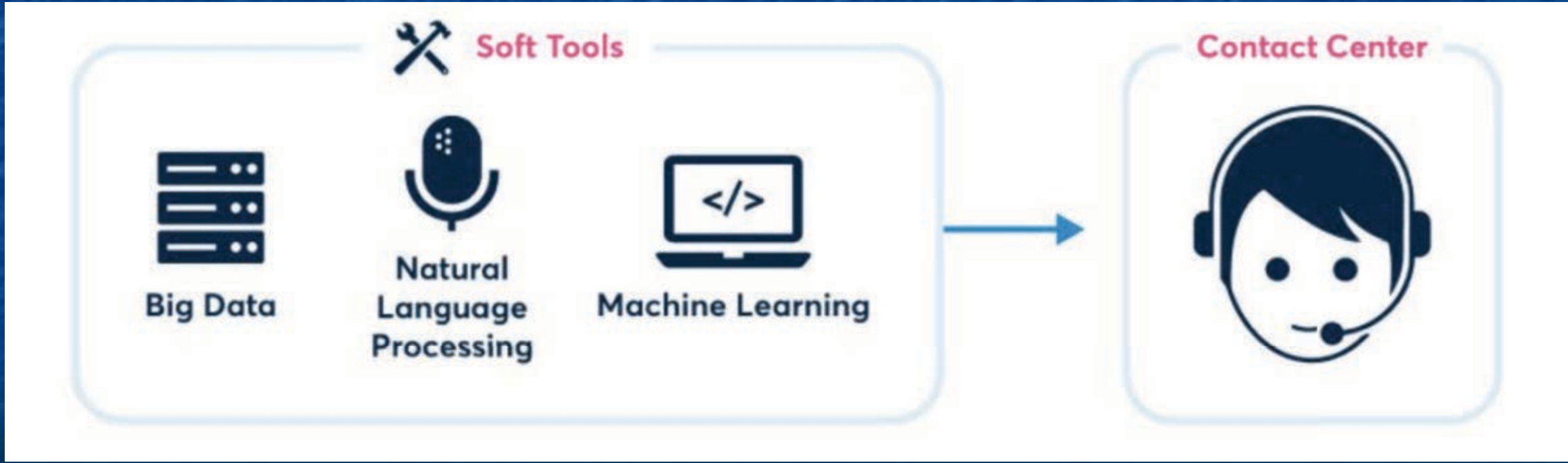
Sophia, the first AI driven humanoid. . .


web summit




Artificial Intelligence

Between 2017 and 2021 number of customer interactions handled entirely by AI will grow to over 40%.



AI by the Numbers

- 250+ million smart speakers (Amazon Echo, Google Home) installed by end of 2019. Revenues up +63% in 2018.

- 47% businesses have *embedded at least one AI application*.
  30% are currently piloting AI.
  20% will deploy AI across their business in 2019.

- 58% businesses claim *less than one-tenth of their digital budget* allocated for AI.
  71% plan to increase AI budget.
  15% of businesses have appointed an in-house central AI leader.

- 51% businesses use AI/machine learning to increase productivity.
  46% use AI to manage risk, fraud, cybersecurity.
  88% agree AI has made their business more competitive.

- 70% obtain AI via the Cloud.
  65% use Cloud-based development services to create AI applications.

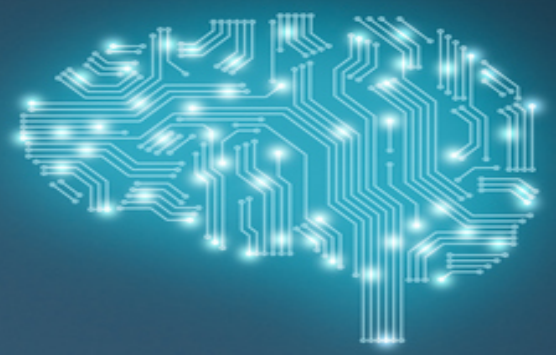
- 43% cite no clear AI strategy.
  42% experiencing shortage of AI talent.
  31% not confident can fill AI jobs in next 5 years.
  190% global increase in demand for AI skills from 2015 to 2017:
  primary growth in the area of analytics.

- 6,305 total AI start-ups.
  VC funding for AI companies increased 4.5x, 2013-2017. Growing exponentially.

How practical is the move to AI?
3 companies, 3 industries

COMPANY	EMPLOYEES	APPLICATIONS	SHORT-TERM GAIN
Tata Steel (manufacturing)	9,000	optimize production processes	- improved prod. yields - reduced raw materials - enhanced quality
Axis Bank (retail banking)	6,000	automate customer service	- respond to more service calls with fewer agents
Zymergen (biotech)	700	experiment recommend & automated wet lab	- higher labor productivity - shorter project duration - lower hiring rates

Some AI Uses



Customer Insights: customized pricing and services to customers based on preference, purchase and usage patterns.

Virtual Agents: automated call center response to consumer queries and security warnings based on changes in use pattern.

Load Forecasting: accurately predicts supply and demand peaks, optimizing load dispatch in real time.

Yield Optimization: automatic real time adjustments across all asset types.

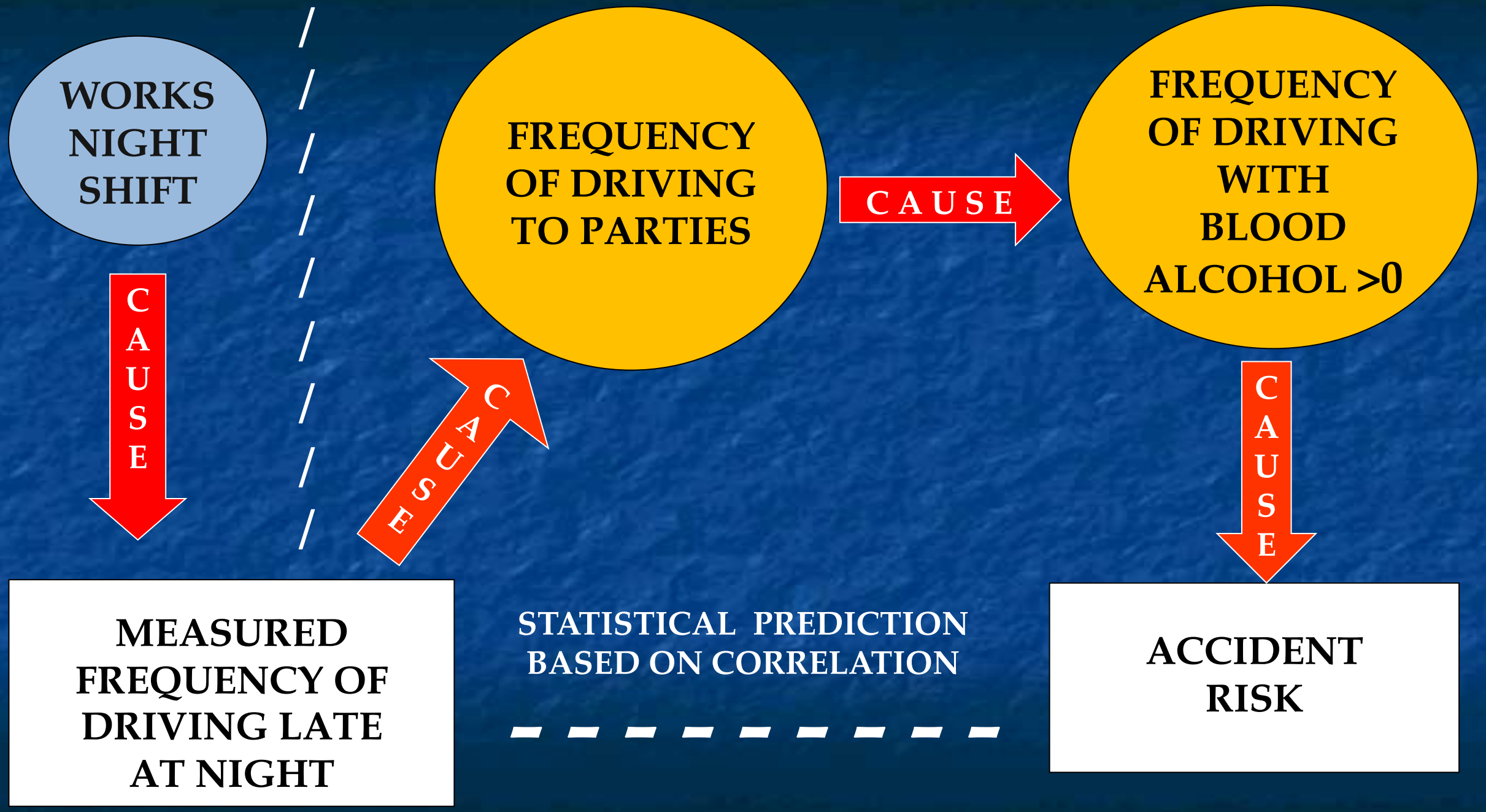
Predictive Maintenance: "deep learning" combined with continuous monitoring help to anticipate and preempt failures.

Demand Management: control consumer smart devices to guide and manage use.

Big Data Analytics, AI and Machine Learning are far from perfect . . .

The technology can suffer from “biases” inherent in the data it relies on, missing or unavailable data, and other challenges which skew outcomes.

It is necessary to take predaptive steps to compensate for known shortfalls.


WORKS NIGHT SHIFT
CAUSE
FREQUENCY OF DRIVING TO PARTIES
CAUSE
CAUSE
FREQUENCY OF DRIVING WITH BLOOD ALCOHOL >0
CAUSE
MEASURED FREQUENCY OF DRIVING LATE AT NIGHT
STATISTICAL PREDICTION BASED ON CORRELATION
ACCIDENT RISK

And finally,
within the next decade . . .

The switch from "classical computing" to *Quantum Computing*

Computation based on quantum mechanics:
atoms can exist in more than one state at the same time.

Classic Computing Operation	Quantum Computing Operation
101	000 001 010 011 100 101 110 111

How much faster?

2017, D-Wave Systems:
Quantum computing algorithm for
fastest route to Beijing airport, for 10,000 taxis.

Classic Computing Operation	Quantum Computing Operation
45 seconds	fraction of 1 second


"The secret to
getting ahead is
getting started."
- Mark Twain

We need a

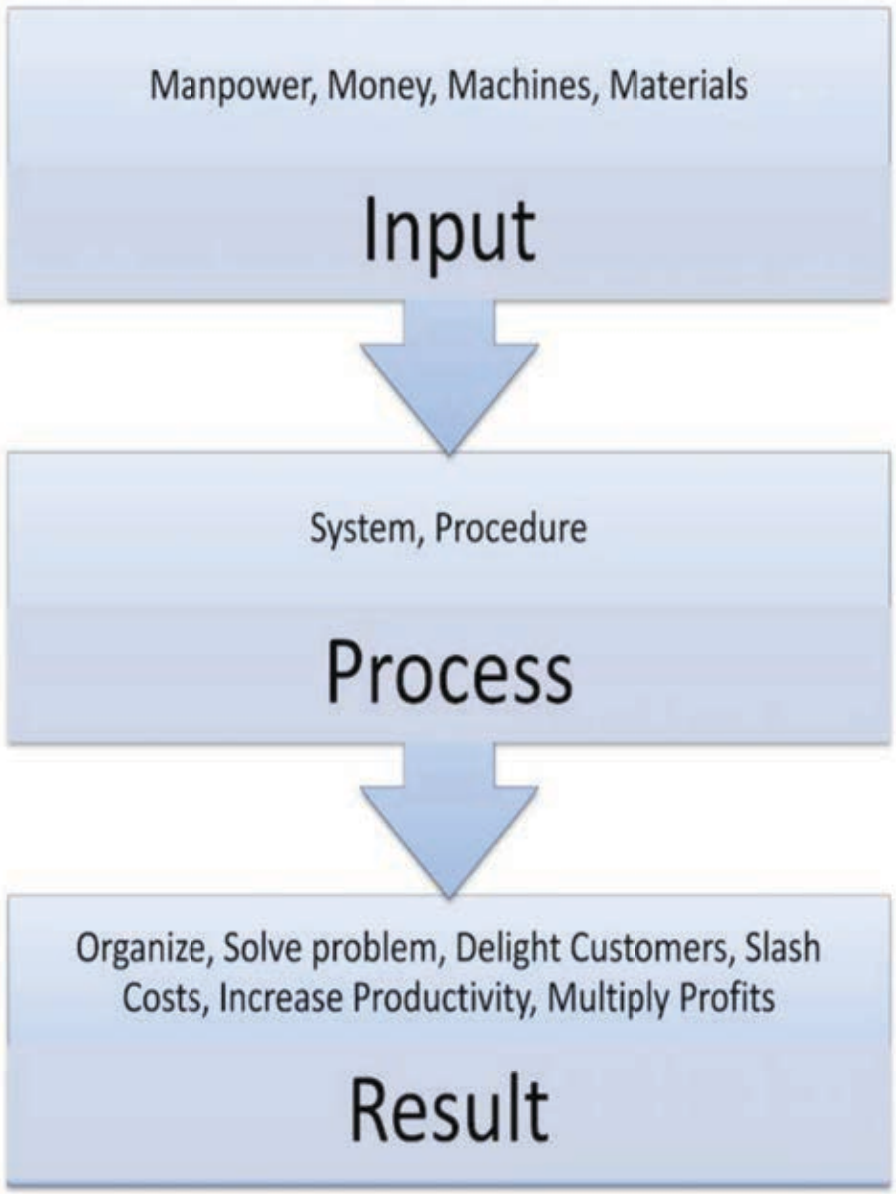
GAME PLAN

We are wired to REPEAT the things which previously made us successful even when those things no longer work as well, or stop working altogether.


How do we break a Pavlovian tendency
to repeat doing what has been successful in the past?
What does it take to become a predaptive organization?
How can we foster continuous innovation and leadership?

Like everything else in business,
innovation needs
a clear process.

A process that
can be repeated and
"INSTITUTIONALIZED"



1. Ongoing reconnaissance: stay informed about what's coming by building in-house "new ventures group," or subcontract to experts.

2. Development/resource partnerships, acquisitions, etc.: increases speed and efficiency of innovation (think Google, J&J)

3. Adopt models and technology from other industries. Example: Dole foods and hospital ER.

4. Separate processes, funding, staffing, timelines, expectations, etc., into "Market-Driven" and "Moonshot" innovation. Institutionalize.

5. Continuous Talent Recruitment

6. Evolve culture: accommodate risk and failure, flatten hierarchy, simultaneously pursue multiple, diverse options.

Categorize innovations into
MARKET-DRIVEN or **MOONSHOT**.

MARKET-DRIVEN:
answer **EXISTING** market need

MOONSHOT:
create **NEW** market

Moonshot = Leadership

APPLE	Personal computing, smart phones, etc.
UPS	Customer access to real-time tracking data.
ZARA	“Fast-fashion” – near market manufacturing.
DELL	Made-to-order, consumer-direct.
FED EX	Hub and spoke shipping.
TOYOTA	SMED: Single minute die exchange.

Why Both Matter. . .

ABOVE PARITY

TOMORROW'S MARKET:

MOONSHOTS = HIGH DIFFERENTIATION = HIGH MARGINS & MARKET LEADERSHIP

- 1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7

PARITY

TODAY'S MARKET

BELOW PARITY

FAST MARKET-DRIVEN INNOVATIONS
(price is de facto differentiator!)

2 distinct processes

MARKET DRIVEN

Rapid Development
Low or No Regulatory Req.
3 – 9 Mo. Dev /Known Outcomes
Low Failure /Low Risk
Low Investment
Fast Client Adoption
Quantifiable ROI and Market Impact
Minimal Margin Impact
Low or No Threat to Current Services
Reactive (chasing market)
Short-lived differentiator/advantage

MOONSHOT

Slow Development
Some Regulatory Req.
Undetermined Schedule/Outcomes
High Failure/High Risk
High Investment
Slow Client Adoption
Unquantifiable ROI / Markets
Commands Higher Margins
Cannibalize Existing Prod/Services
Preemptive Strike
Long-term differentiator/advantage

Align talent according to innovation type and predispositions

RACERS

Market-Driven Profile

Expert multi-tasker, impatient, verbal, intuitive, sociable, politically ambitious, seeks audience, high- energy, judgmental, opportunistic, visually-oriented, cross-cultural, holds meetings, competitive, performance-oriented, sometimes harsh, course-correct on the go, thrives on change, takes action, easily frustrated by process and protocol.

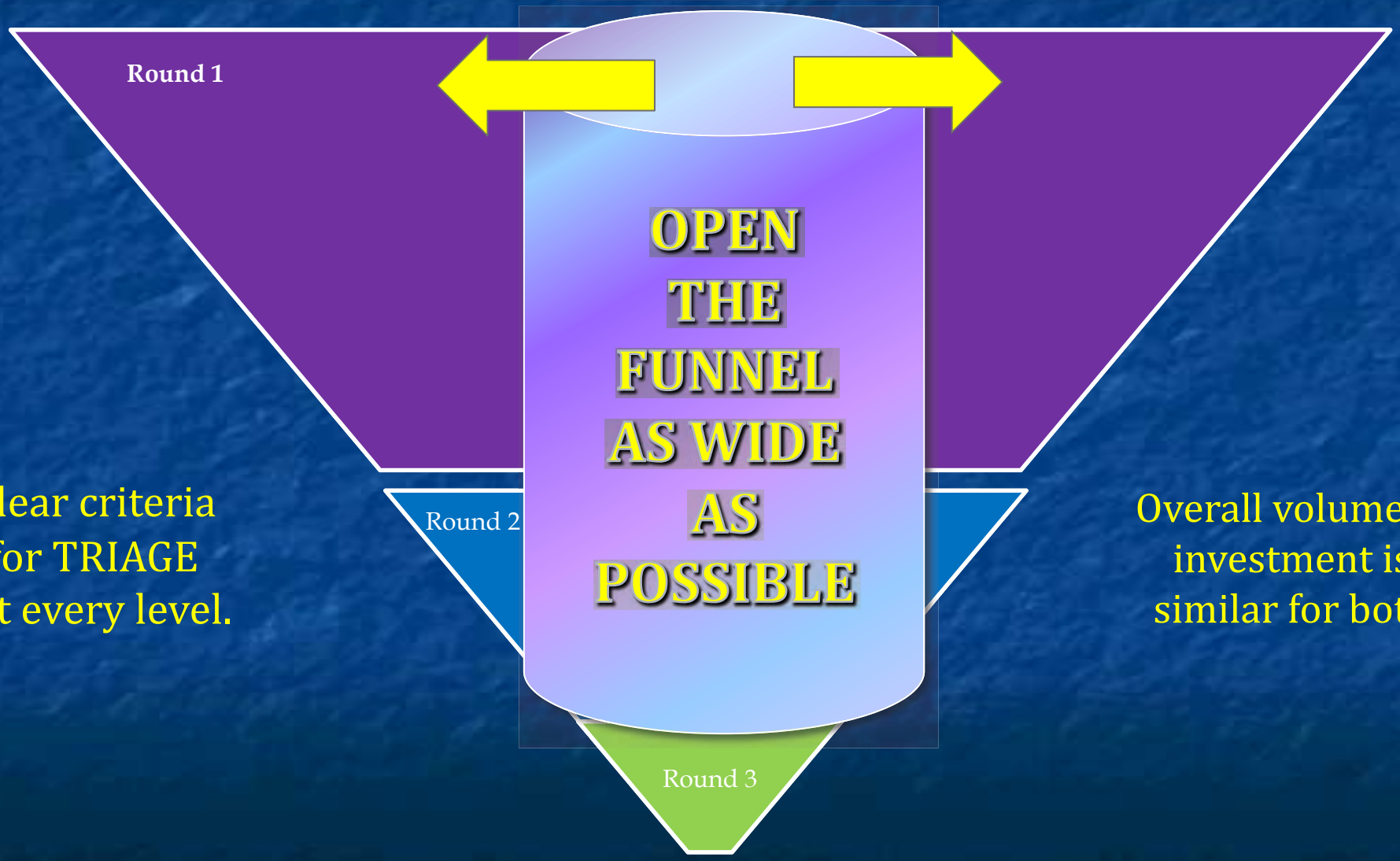
- V -

CLIMBERS

Moonshot Profile

Persistent, analytical, methodical, planner, future oriented, resilient, failure-tolerant, detail-oriented, focused, deep science/technical knowledge, high empathy, enjoys quiet, preference for written communications, thorough, nonpolitical, nurturing, loyal, evidence-driven, highly structured, prefers not to travel, process-focused, deliberate, rarely or never initiate meetings or conf. calls.

Can we afford risky Moonshots?
Here's how:



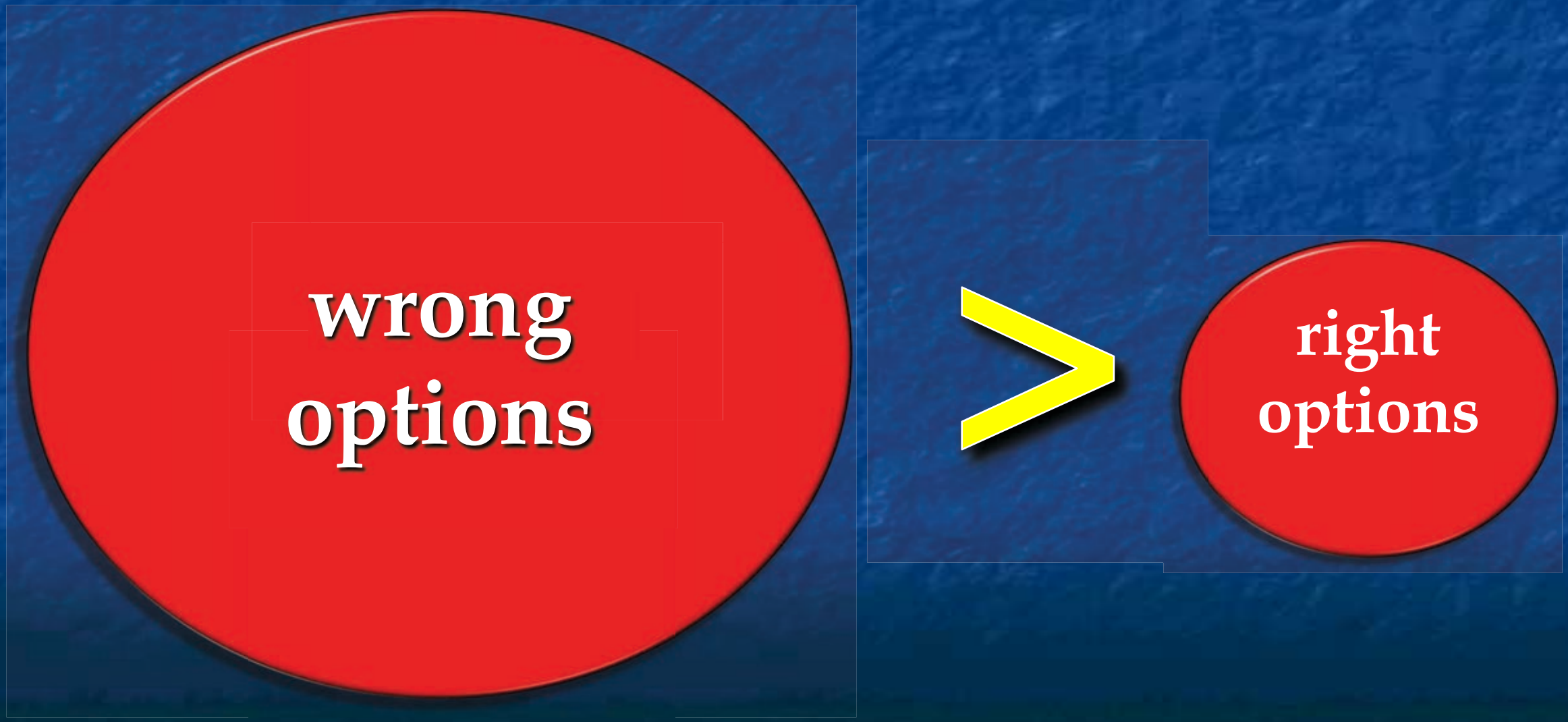
Clear criteria for TRIAGE at every level.

Overall volume of investment is similar for both

In a High Failure Rate Environment,

"Any drive toward singularity is a drive toward extinction."

Diversification is a business' best friend.



Expectation of Success:
even the most successful
venture capital companies
expect a 80-90 percent failure rate.
BUT the "wins" are so significant,
they more than compensate for the losses

A High Failure Rate Environment Success Story

A.J. Khubani, founder of Telebrands

10,000	prospective products
1,000	due diligence
100	test market
10	qualified for "As Seen On TV"

6 Types of Failure: by Dr. Jamer Hunt

ABJECT FAILURE: The worst kind. Mistakes you may not recover from. Loss of livelihood, life, reputation, brand. Example: mortgage-backed securities, Theranos, etc.

STRUCTURAL FAILURE: Cuts deeply, but does not permanently damage. Example: Windows Vista.

GLORIOUS FAILURE: Botched, exhilarating known blaze of glory! Example: Jamaican bobsled team.

COMMON FAILURE: Everyday errors, easy to recover from. Example: running late, over-cooking dinner, forgetting a phone call.

VERSION FAILURE: Small failures which lead to incremental improvements over time. Example: Linux operating system.

PREDICTED FAILURE: Failure that's recognized as an essential part of a process. Example: prototyping, children growing up.

How innovative is our organization?

1. How low in the organization is a person authorized to say "NO?" How high do they have to go to get a "YES?" Are decisions made by HIPPO?

2. Is risk-taking rewarded? Discouraged? How?

3. Are disruptive "Moonshots" required to meet the same ROI/risk standards as a "Market-Driven" ideas? Do both use a single process?

4. What infrastructure and talent is in place to lead/maintain forward-thinking?

5. How do we leverage customers, channels, and partners to garner insights? To leap ahead?

6. What is our innovation "metabolism rate?" How much innovation can we really handle?

In conclusion . . .

" The first person to live to be 1,000 years old is alive today. "

Dr. Aubrey de Grey
University of Cambridge

More People

More Data

More ways


The highest instrument of
our evolutionary inheritance:
to preview future outcomes and
act in the present
to avert danger and
get ahead of opportunity.

Predaptive technologies and strategies are changing the the future of business

Are you ready?


Thank You
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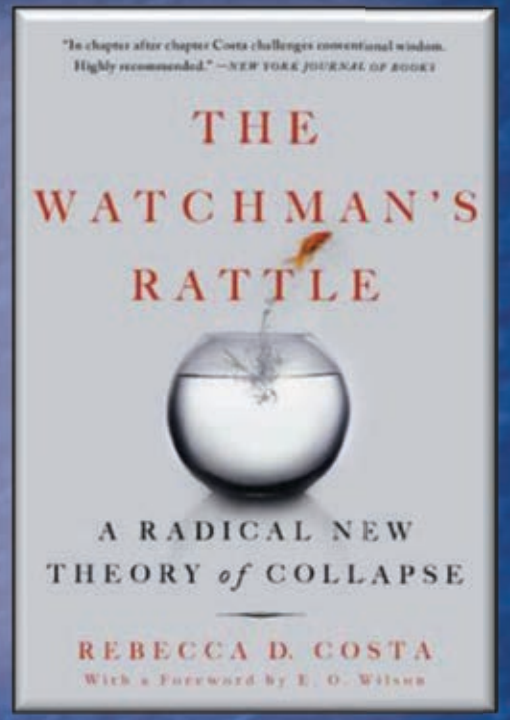

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