

Superminds

The surprising power of people and computers
thinking together

Thomas W. Malone

MIT Center for Collective Intelligence











WIKIPEDIA
The Free Encyclopedia

[Main Page](#)

[Talk](#)

[Read](#)

[View source](#)

[View history](#)



Welcome to **Wikipedia**,

the [free encyclopedia](#) that anyone can edit.

3,975,036 articles in [English](#)

- [Arts](#)
- [History](#)
- [Society](#)
- [Biography](#)
- [Mathematics](#)
- [Technology](#)
- [Geography](#)
- [Science](#)
- [All portals](#)

[Main page](#)

[Contents](#)

[Featured content](#)

[Current events](#)

[Random article](#)

[Donate to Wikipedia](#)

▼ [Interaction](#)

[Help](#)

[About Wikipedia](#)

[Community portal](#)

[Recent changes](#)

[Contact Wikipedia](#)

▶ [Toolbox](#)

▶ [Print/export](#)

Today's featured article



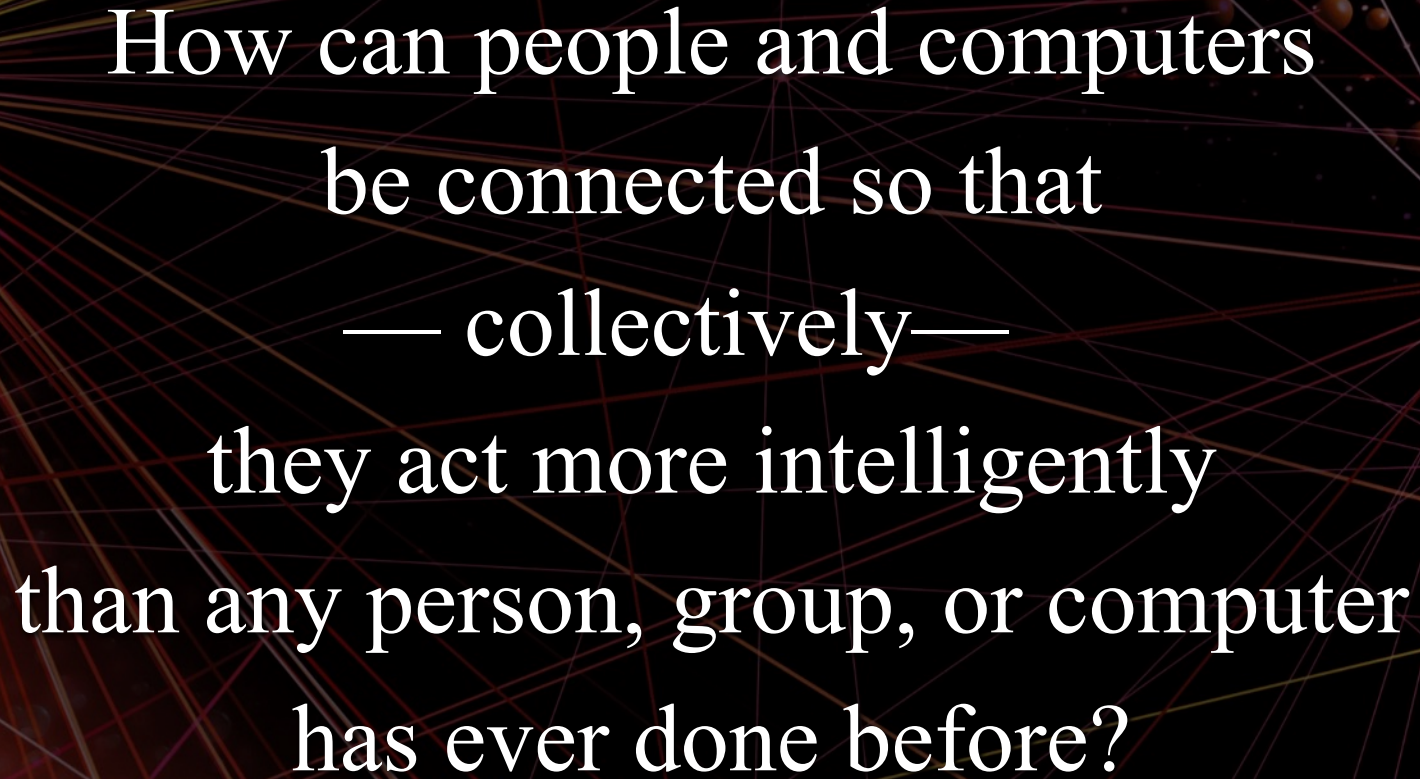
Vidkun Quisling (1887–1945) was a Norwegian politician. On 9 April 1940, with the [German invasion of Norway](#) in progress, he seized power in a Nazi-backed [coup d'état](#). From 1942

to 1945 he served as [Minister-President](#), working with the [occupying forces](#). His government, known as the [Quisling regime](#), was dominated by ministers from *Nasjonal Samling*, the party he had founded in 1933. The [collaborationist](#) government participated in Germany's [Final Solution](#). Quisling was put on trial during the [post-war legal purge in Norway](#) and found guilty of charges including [embezzlement](#), [murder](#) and [high](#)

In the news

- [Liu Yang](#) becomes the first Chinese woman in space, following the launch of [Shenzhou 9](#).
- The Supreme Constitutional Court of Egypt [dissolves](#) the country's parliament (*[Egyptian coat of arms](#) pictured*).
- NASA's [Nuclear Spectroscopic Telescope Array](#) is launched.
- More than 90 people are killed in a [series of car bombings](#) across Iraq.
- [Jon McGreor](#) wins the [International](#)





How can people and computers
be connected so that
— collectively—
they act more intelligently
than any person, group, or computer
has ever done before?



Measuring collective intelligence





Collective intelligence *is* correlated with

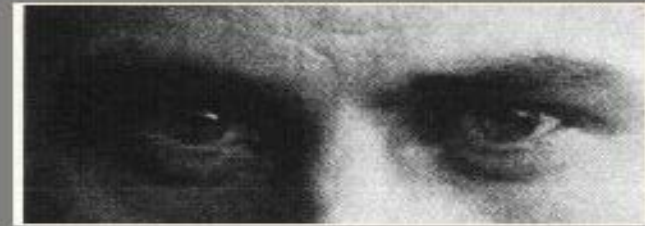
- “Social intelligence” of group members



Test of social intelligence



- joking flustered desire convinced



- joking insisting amused relaxed

“Reading the Mind in the Eyes” (RME) Test
(Baron Cohen, et al, 2001)

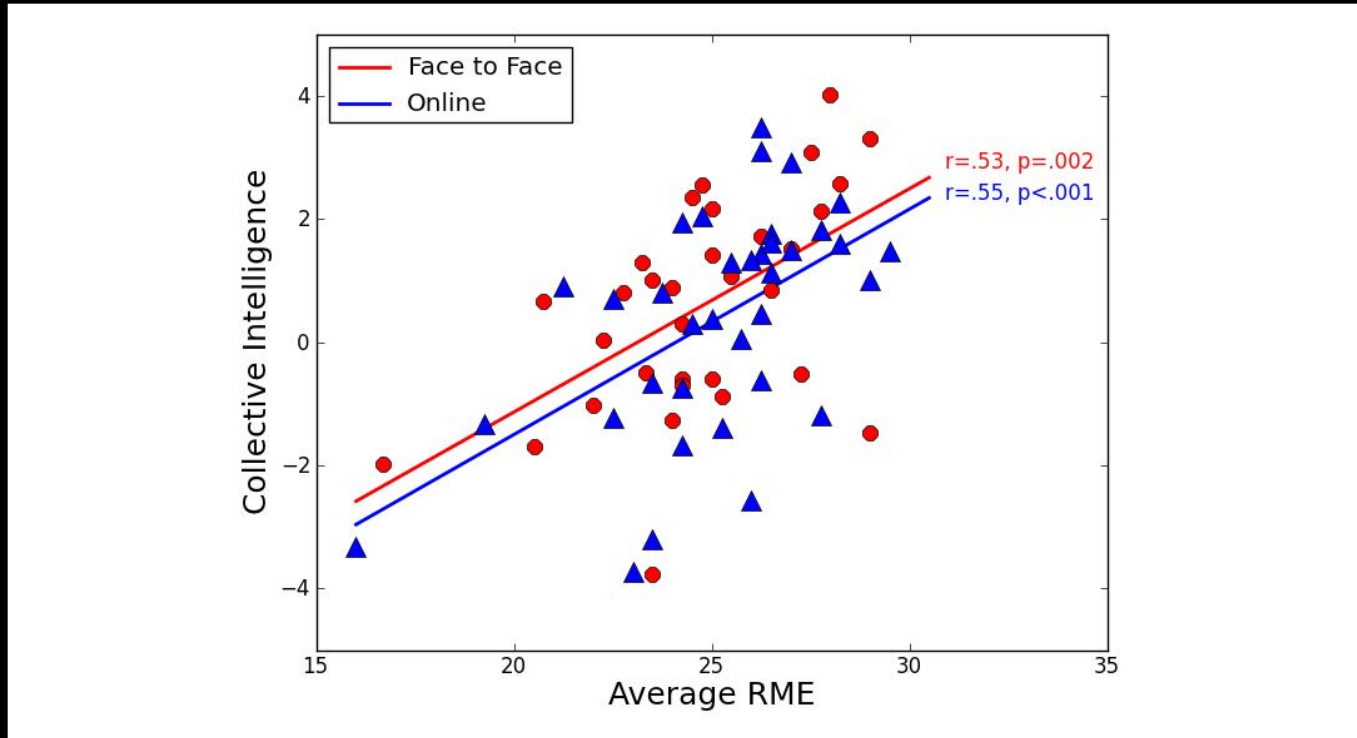
Collective intelligence *is* correlated with

- “Social intelligence” of group members
- Equality of participation in conversation
- Proportion of women in group

Largely explained by “social intelligence”



Social intelligence predicts collective intelligence



Engel, Woolley, Jing, Chabris, & Malone, 2014.

Collective intelligence depends on:

1. How well the individuals perform the basic tasks
2. How well the individuals work together





How will people and computers
work together?

Specialized
intelligence

the ability to achieve specific
goals in a given environment

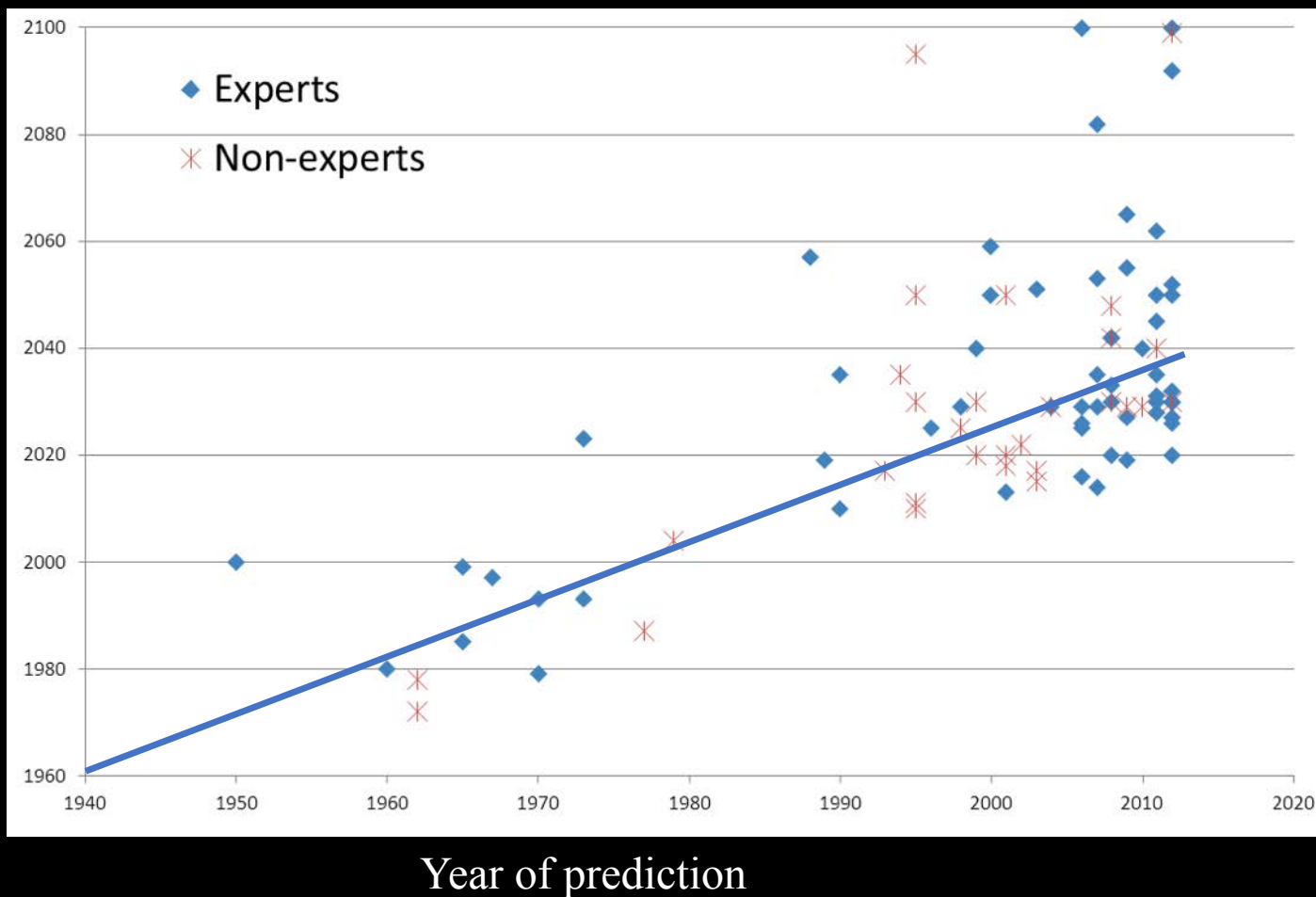


General
intelligence

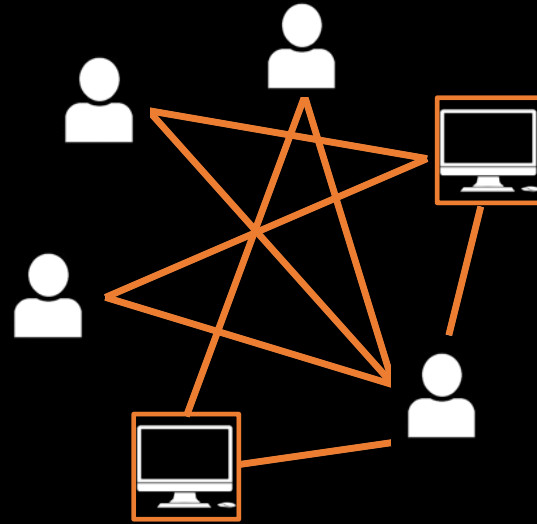
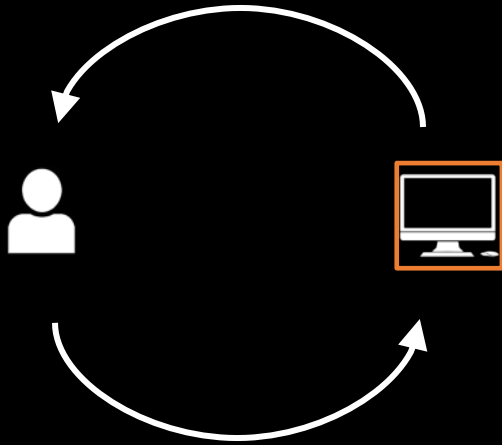
the ability to achieve a wide range
of goals in different environments



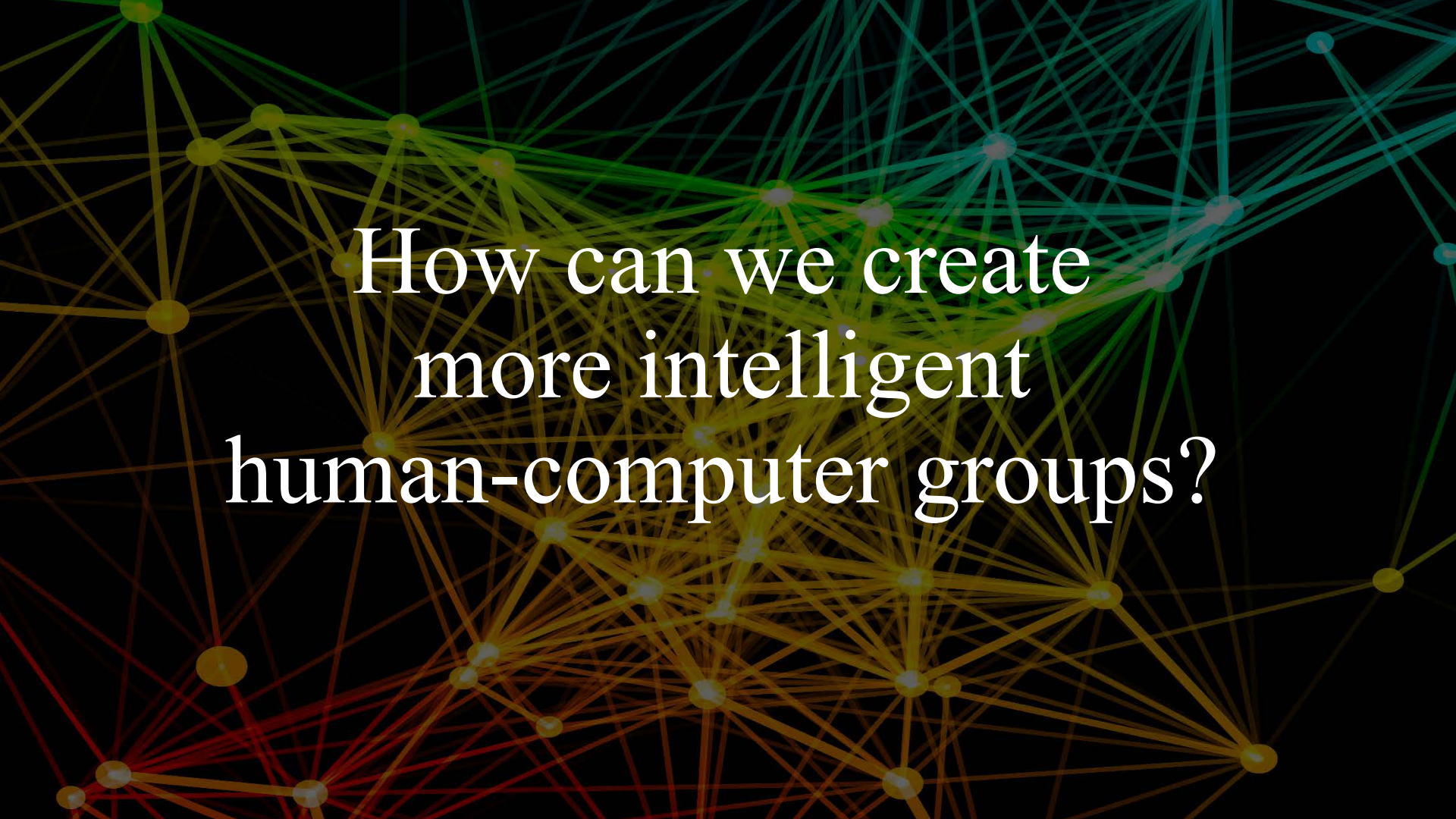
Median estimate for year of human-level AI



From: Stuart Armstrong and Kaj Sotala, “How We’re Predicting AI—or Failing To,” <https://intelligence.org/files/PredictingAI.pdf> [trend line added].

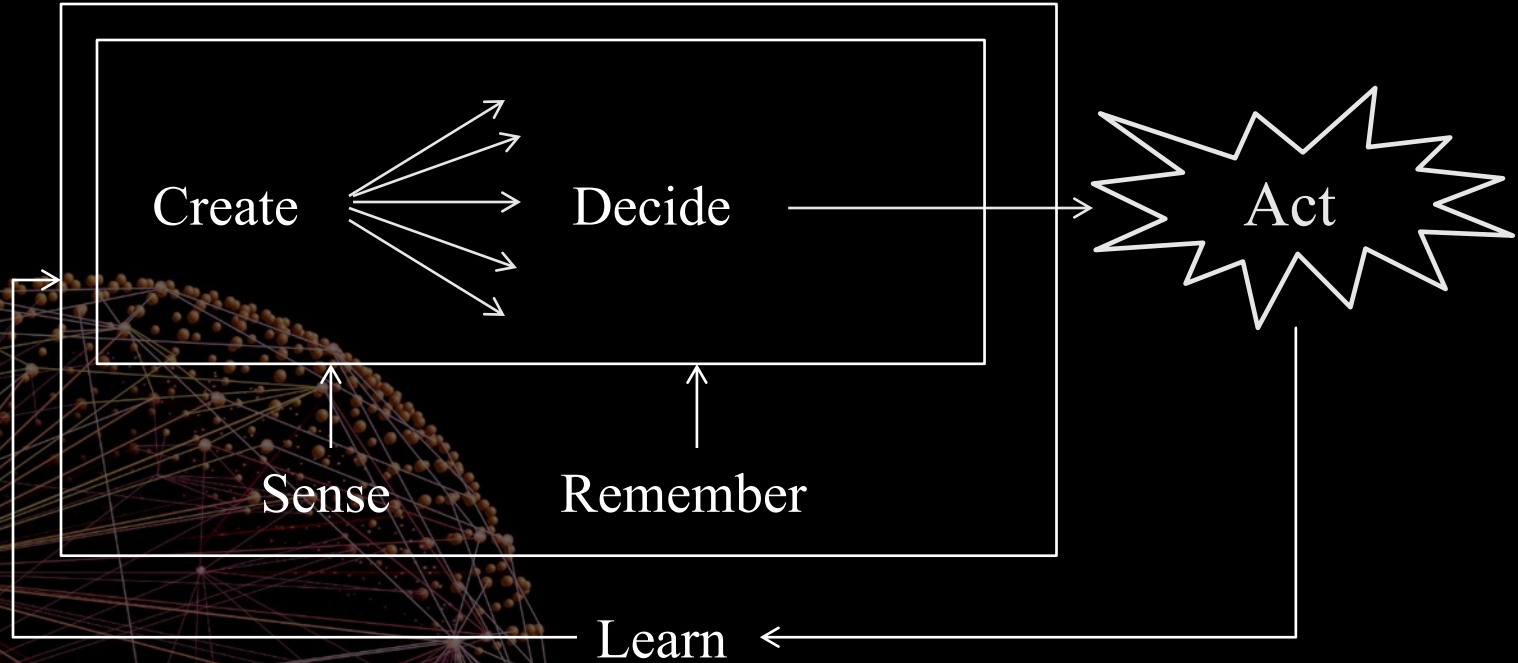


From humans in the loop . . . to computers in the group

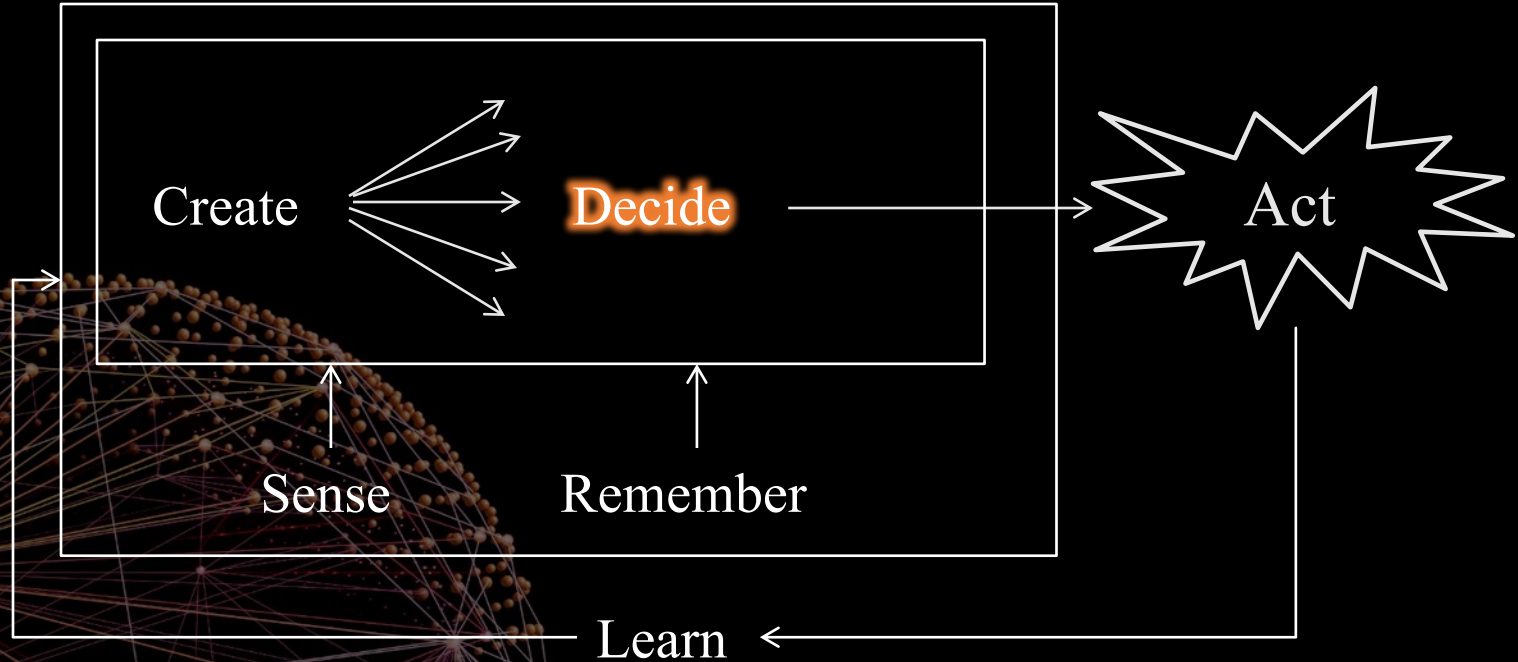


How can we create
more intelligent
human-computer groups?

Cognitive processes



Cognitive processes



Superminds for decision-making



Hierarchies



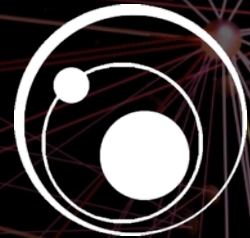
Democracies



Markets



Communities



Ecosystems

Superminds for decision-making



Hierarchies



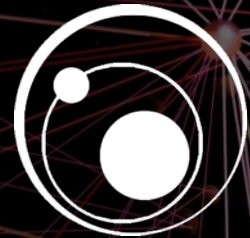
Democracies



Markets



Communities



Ecosystems

Liquid democracies



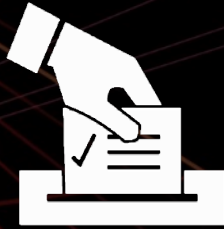
Martin Haase,
Germany's Pirate Party

By Alexander Klink [CC BY 3.0 (<http://creativecommons.org/licenses/by/3.0>)], from Wikimedia Commons.
https://commons.wikimedia.org/wiki/File:Martin_Haase_26C3_2.jpg.

Superminds for decision-making



Hierarchies



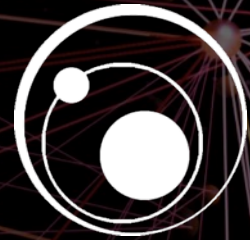
Democracies



Markets



Communities



Ecosystems

Prediction markets

- Participants buy and sell predictions about future events
 - E.g., buy a “share” predicting sales in Sept. between 1500 and 1600 units
 - If correct: get \$1.
 - If wrong: get \$0
- Prices reflect “average” probability estimates.
- Prediction markets are often more accurate than other forecasting methods for product sales, elections, etc.

- ★ [Featured](#)
- + [New Arrivals](#)
- ↕ [Biggest Movers](#)
- ⚡ [Trending](#)
- 👁 [Most Predicted](#)
- ⚠ [Closing Soon](#)

Will Donald Trump be impeached in his first term?

Latest Price: 44¢ + 1¢



Buy Yes

Click to match Offers starting at **47¢**, or to make your own, lower Offer.

Buy No

Click to match Offers starting at **56¢**, or to make your own, lower Offer.

U.S. Elections

U.S. Politics

World

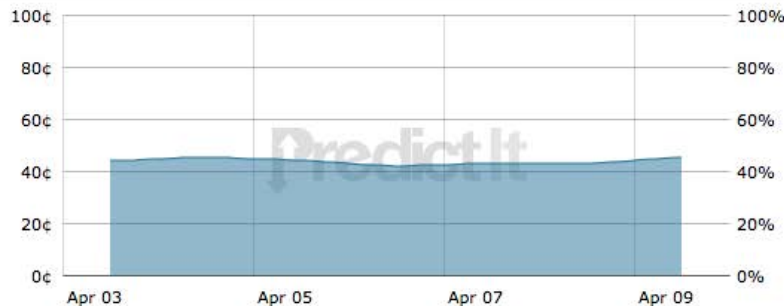
If this prediction comes true, Predictit will redeem all Yes shares at \$1. Shares in No will have zero value. If this prediction does not come true, Predictit will redeem all No shares at \$1. Shares in Yes will have zero value.

Data

Rules

Prices

Symbol:	IMPEACH.TRUMP.1STTERM
Start Date:	07/28/2017
End Date:	01/20/2021 11:59 PM (ET)
Shares Traded:	242,193
Today's Volume:	799
Total Shares:	65,871
Today's Change:	-1¢ ↓





Prediction errors



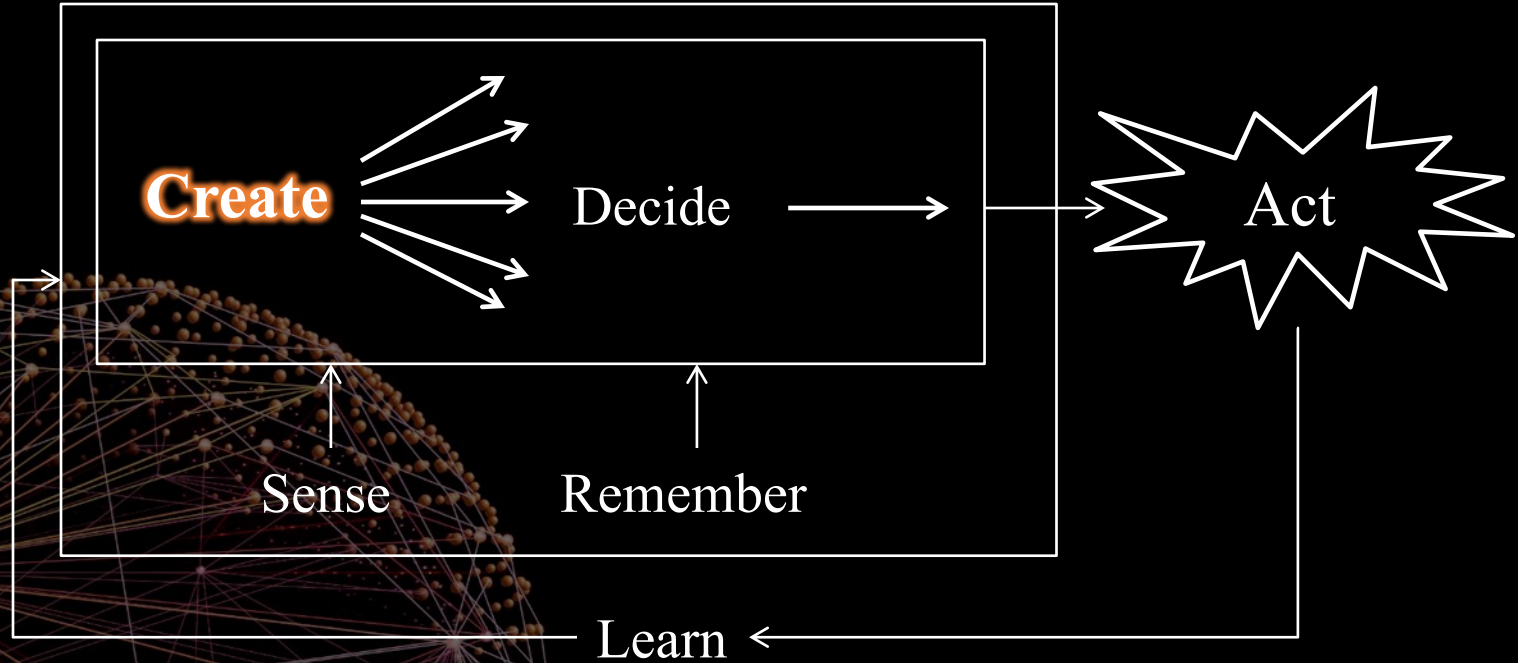
Humans and computers combined are more accurate than either alone.

Nagar & Malone, 2011.

* All differences significant, $p < .05$

Copyright 2018 Thomas W. Malone. All Rights Reserved.

Cognitive processes



In the Climate CoLab, you can work with people from all over the world to create proposals for what to do about climate change.

[LEARN MORE](#)
[GET INVOLVED](#)


The Climate CoLab is a project of the [MIT Center for Collective Intelligence](#) in collaboration with [many other organizations](#)

Check out:

[Prior Contest Winners](#)
[2013 Crowds & Climate Conference](#)

Featured contests [see all contests](#)



Shifting behavior for a changing climate

How can we shift perceptions, values, norms, and attitudes to inspire individuals and institutions to take action on climate change?

Top News

See Climate CoLab's recent features in [Grist](#), [Discovery News](#), [Popular Science](#), [Guardian](#), and [PBS NOVA](#).

Jun 20. [30 days until 15 contests close!](#)

Jun 18. [Registration open: Webinar on the Land Use contest](#)

Jun 9. [Climate CoLab hits 12,000 members](#)

May 28. [Spotlights on the community](#)



Proposal for [Energy-Water Nexus 2015](#) by SunSaluter

SunSaluter: a low-cost, passive solar tracker that produces clean water

DESCRIPTION

IMPACT

CONTRIBUTORS 2

COMMENTS 5

EVALUATION

POINTS

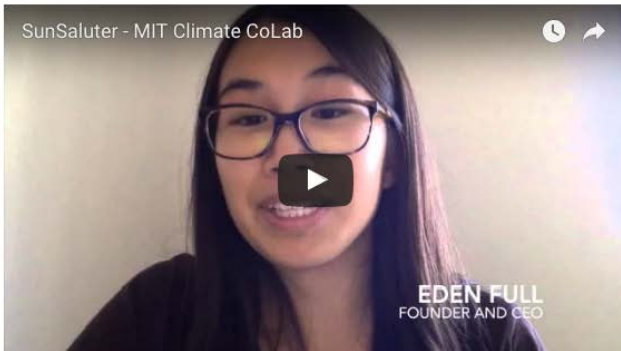
Show history

Pitch

The SunSaluter is a low-cost solar panel rotator which boosts efficiency by 30% and produces four liters of clean drinking water each day!

Description

Summary



1.5 billion people lack access to electricity, and 750 million have no clean water. These groups often overlap, leaving hundreds of millions of individuals without life's most basic necessities. There are technologies capable of remedying these issues, but none are simple nor affordable enough. Solar panels are too expensive, and clean water products frequently fail because they are not user friendly.

257 votes

26 supporters

Support Proposal



Subscribe

Share via CoLab messaging



PROPOSAL SUMMARY

SunSaluter: a low-cost, passive solar tracker that produces clean water

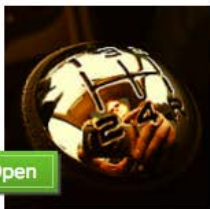
Team Proposal: Only members listed on the Proposal's Contributors tab will be able to edit this Proposal. Members can request to join the Proposal team on the Contributors tab. The Proposal owner can open this Proposal for anyone to edit using the Admin tab.

By: SunSaluter

Contest: [Energy-Water Nexus 2015](#)

What immediate actions can we take to address energy-water nexus challenges?

Spring 2016 contests are now accepting proposals! Winners will be invited to MIT and eligible for a \$10,000 Grand Prize. You can also win cash awards for being a part of climate action plans built on the site later this year. [Read more...](#)

[Open](#)

Shifting Behavior for a Changing Climate

How can we mobilize individuals and society to shift behaviors in order to address climate change?

48 Proposals 230 comments

[Open](#)

Energy Water Nexus 2016

What actions can address interdependent water-energy challenges, and drive us toward a secure water and energy future?

12 Proposals 14 comments

[Open](#)

Energy Supply

What initiatives, policies and technologies can significantly reduce greenhouse gas emissions from the electricity sector?

34 Proposals 33 comments

[Open](#)

MIT Climate Mitigation Solutions

How can MIT demonstrate innovative climate mitigation solutions on campus?

10 Proposals 2 comments

[Open](#)

Buildings

What initiatives, policies and technologies can significantly reduce greenhouse gas emissions from the building sector?

18 Proposals 22 comments

[Open](#)

Transportation

What initiatives, policies and technologies can significantly reduce greenhouse gas emissions from the transportation sector?

20 Proposals 47 comments



Aviation

How can we design, operate, and power



Industry

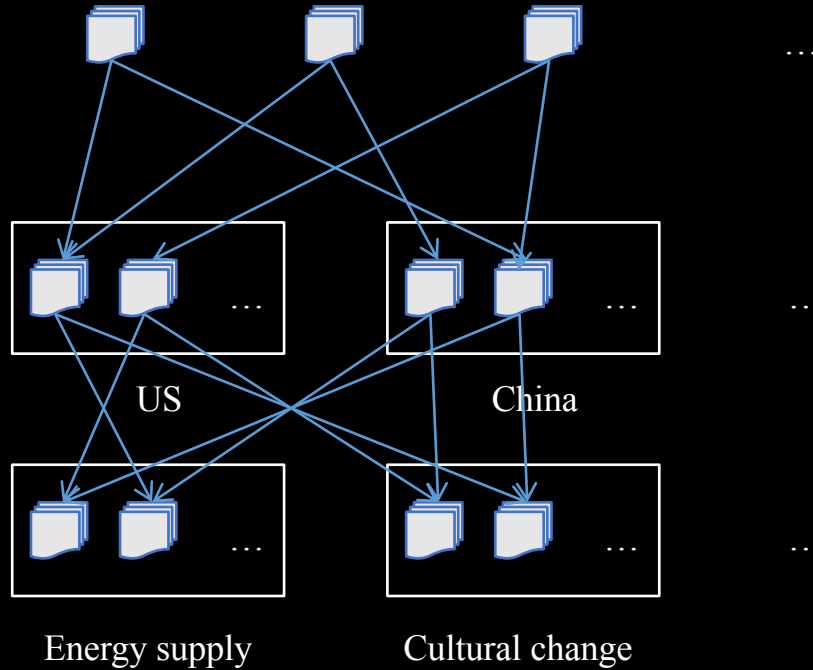
How can industry innovate to meet the

Contest webs

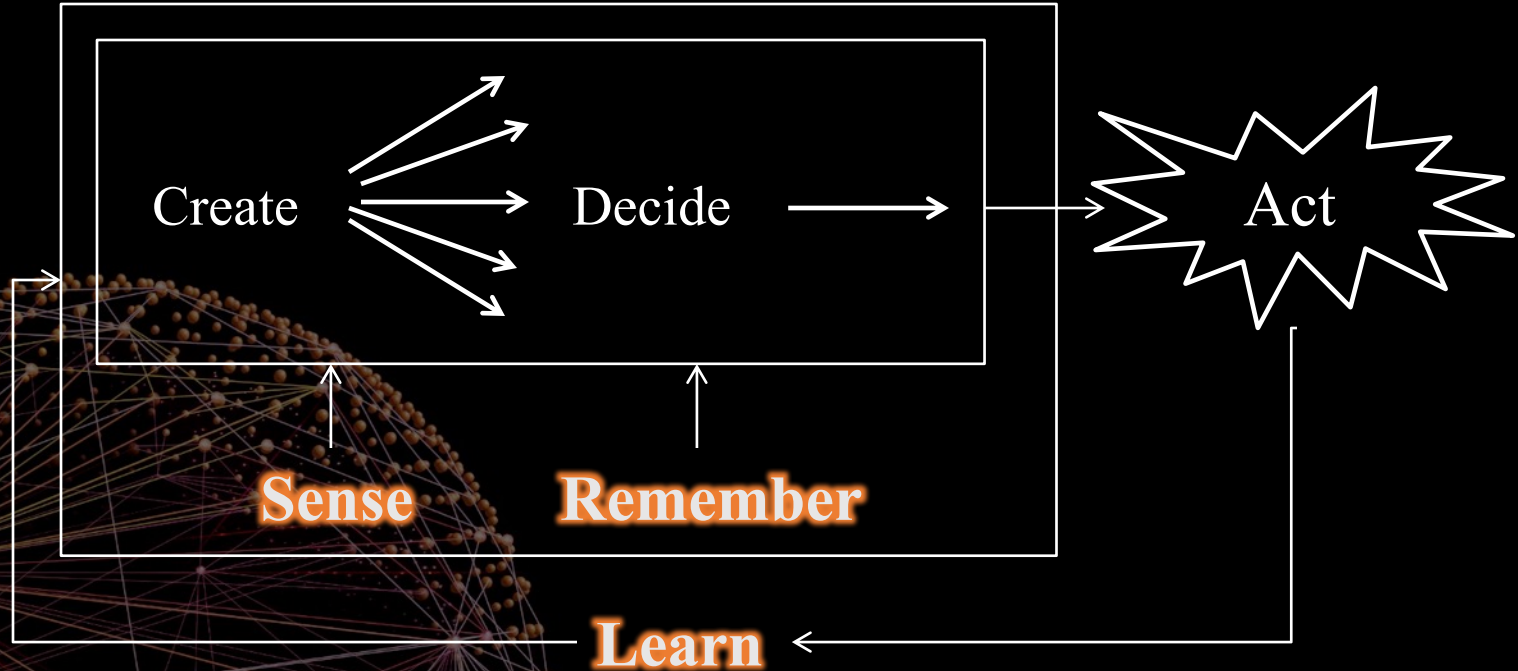
Global proposals

National proposals

Basic proposals



Cognitive processes



Human Diagnosis Project

[Edit case](#)

CASE SUMMARY

30F w/ no PMH c/o hand pain and rash. What tests should I order?


PRESENTATION

Age: 30 Year
Sex: Female





CASE

Symptom
Hand pain



COLLECTIVE OPINION



ASSESSMENT

Rheumatoid arthritis	
Osteoarthritis	
Lupus	
Parvovirus	

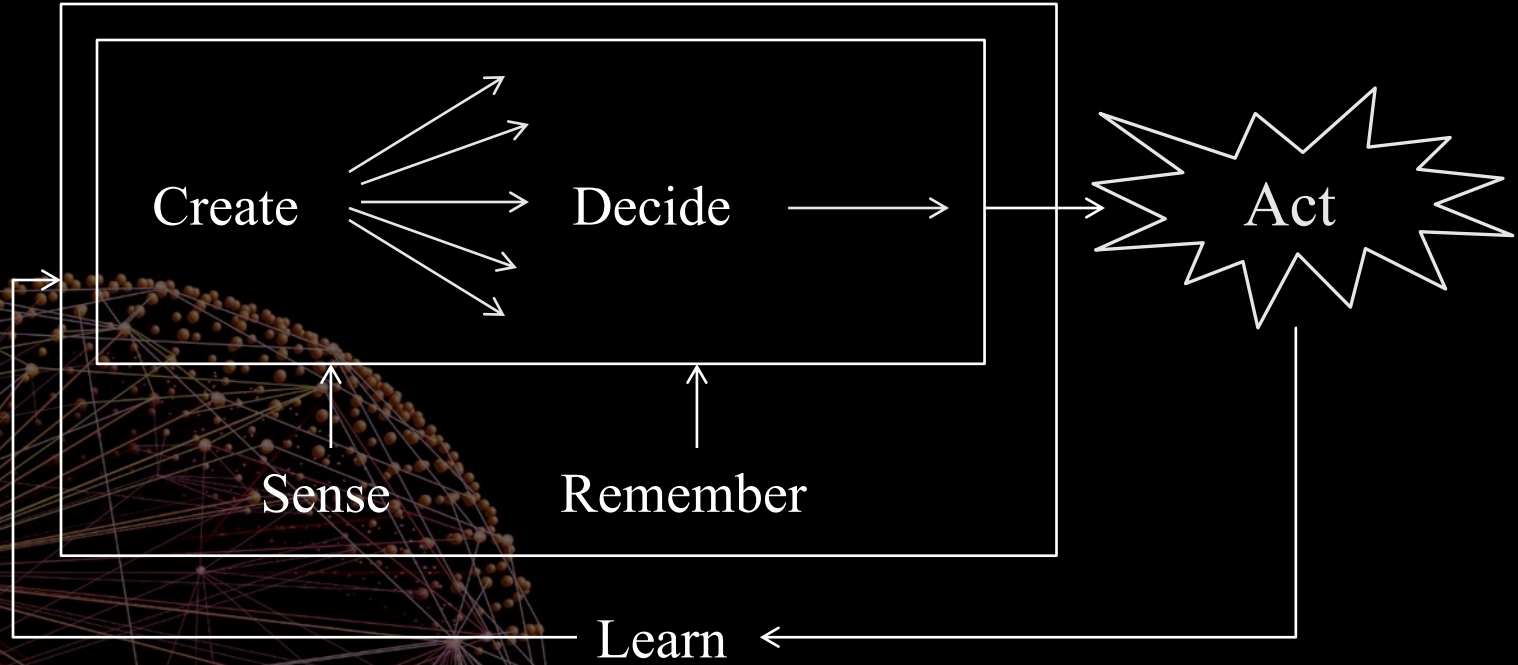
PLAN

No further workup required	
Hand xray	

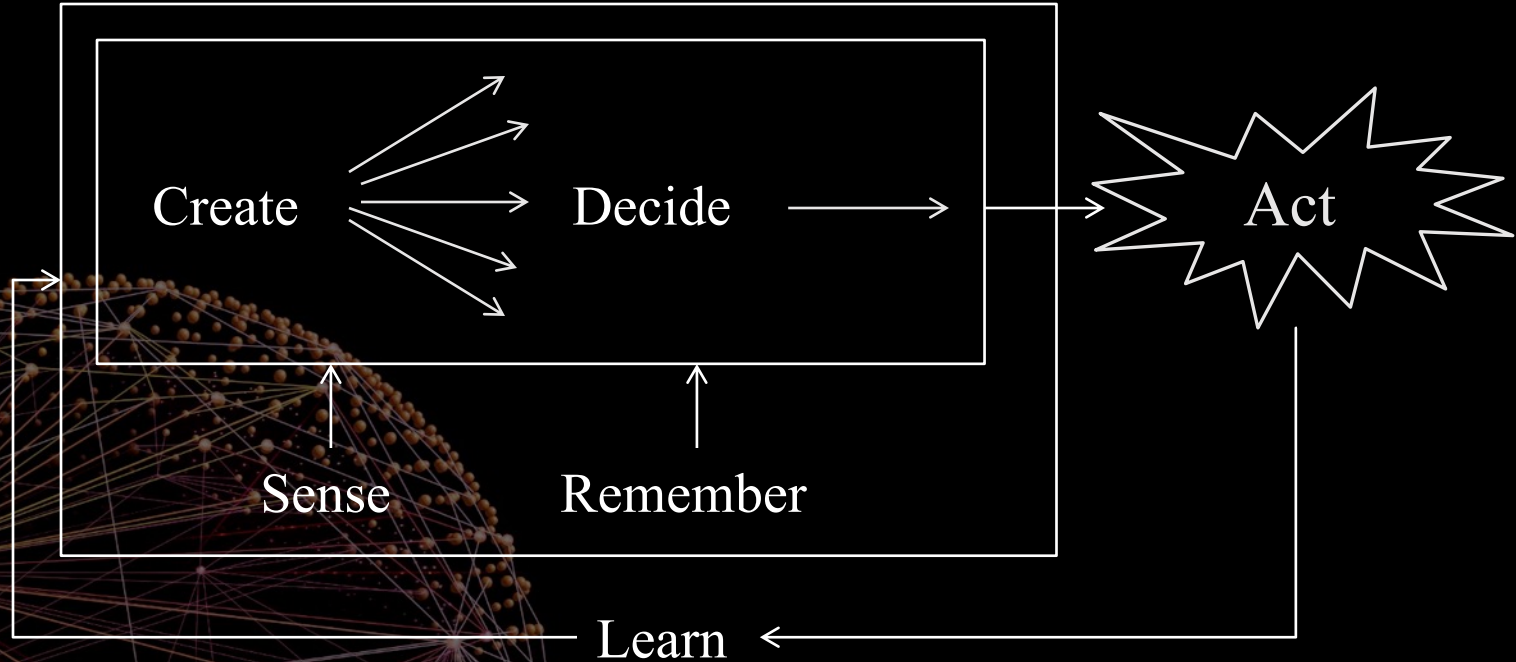
Potential uses

- Multiple opinions enhance clinical care
- Growing knowledge base helps diagnose common conditions

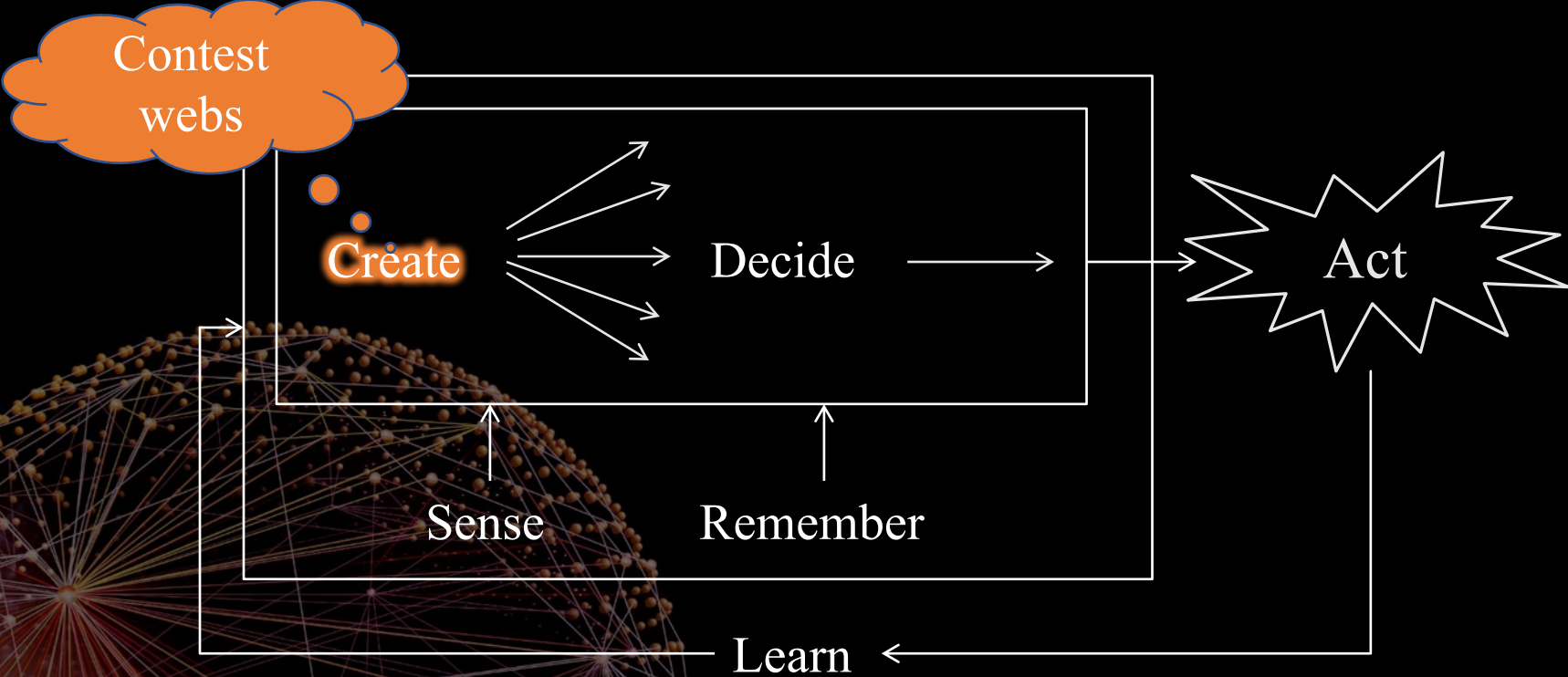
Cognitive processes



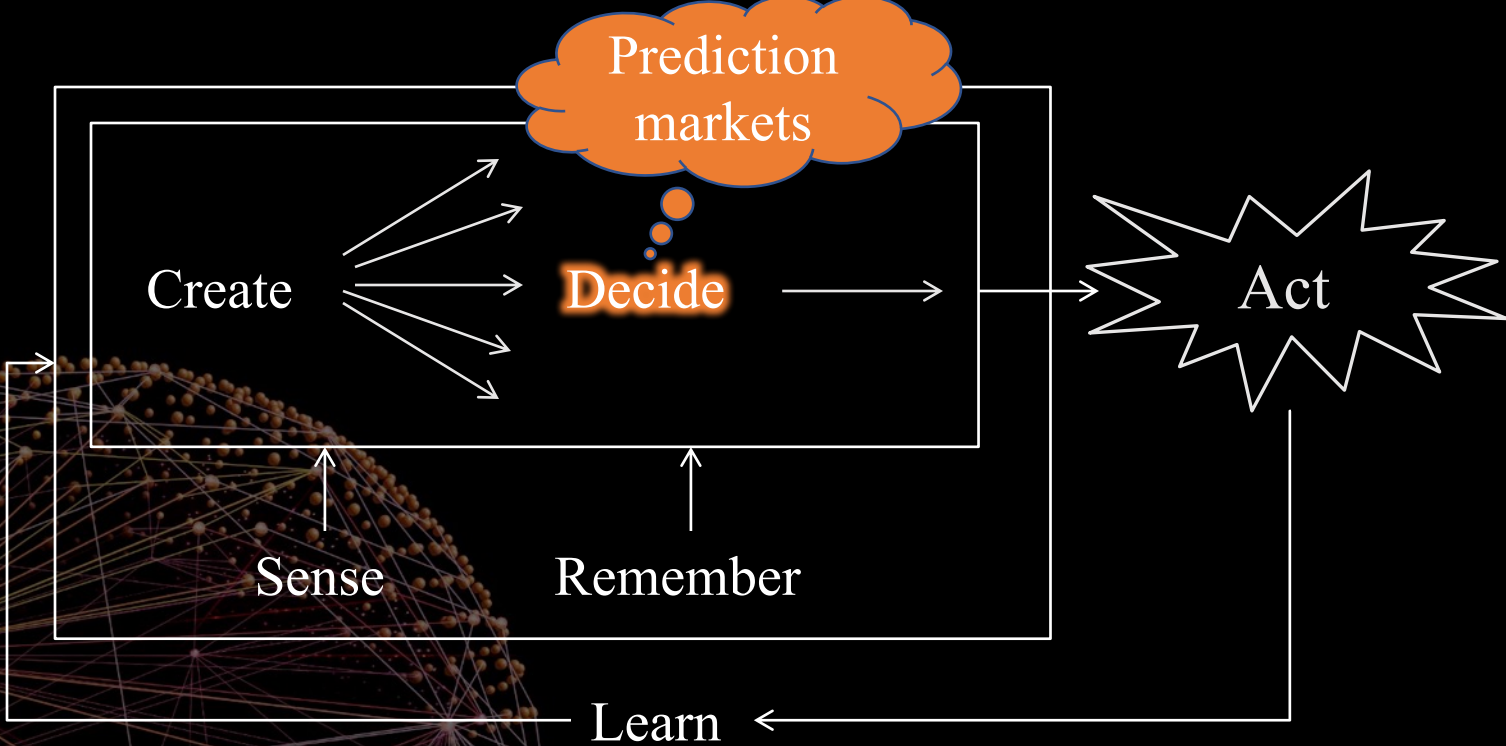
Cognitive processes in strategic planning



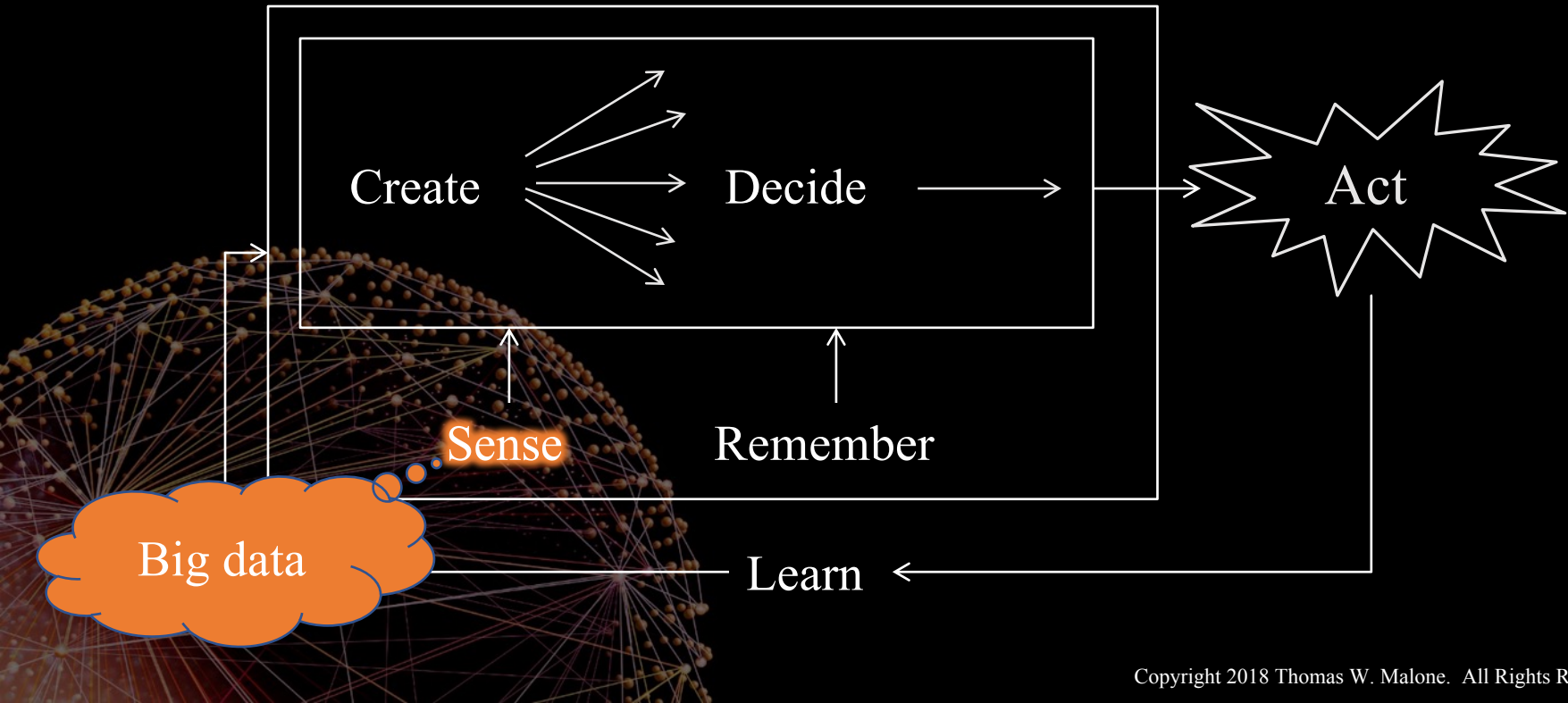
Cognitive processes in strategic planning



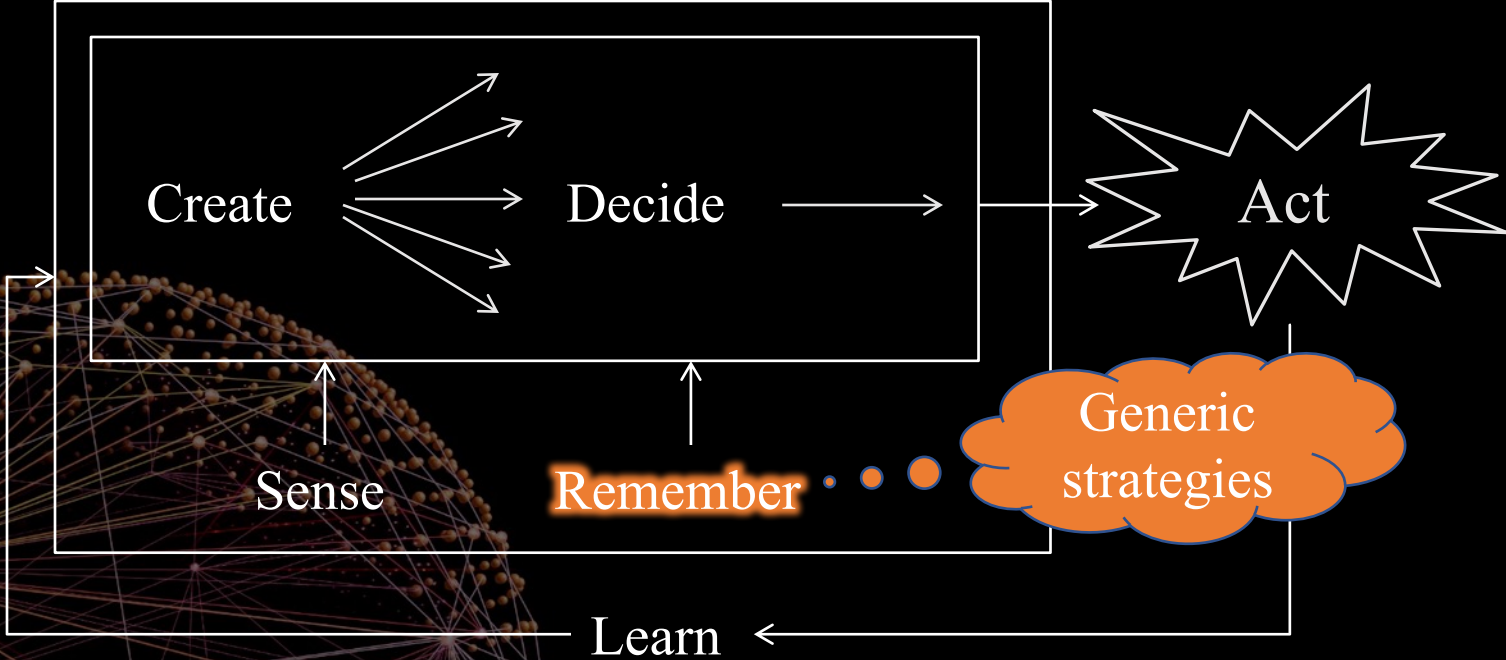
Cognitive processes in strategic planning



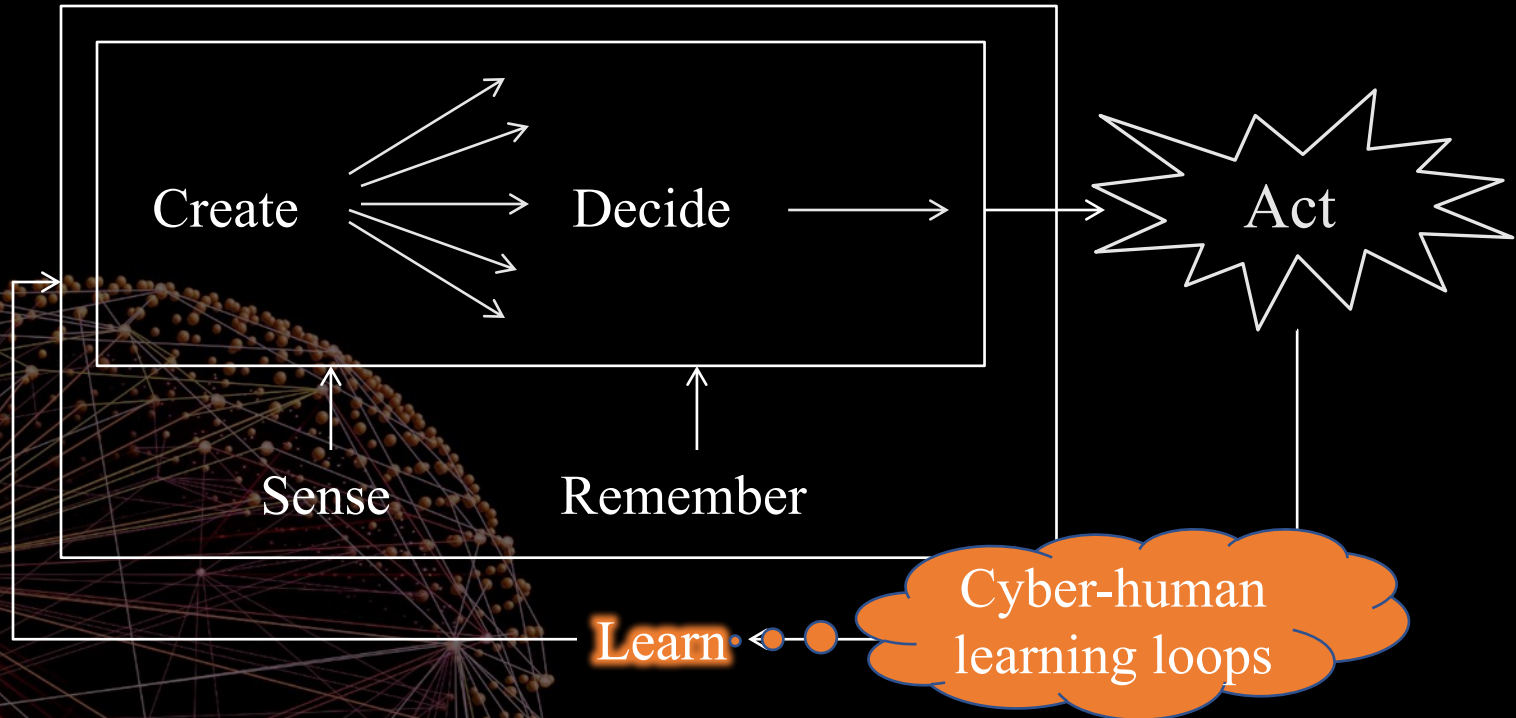
Cognitive processes in strategic planning



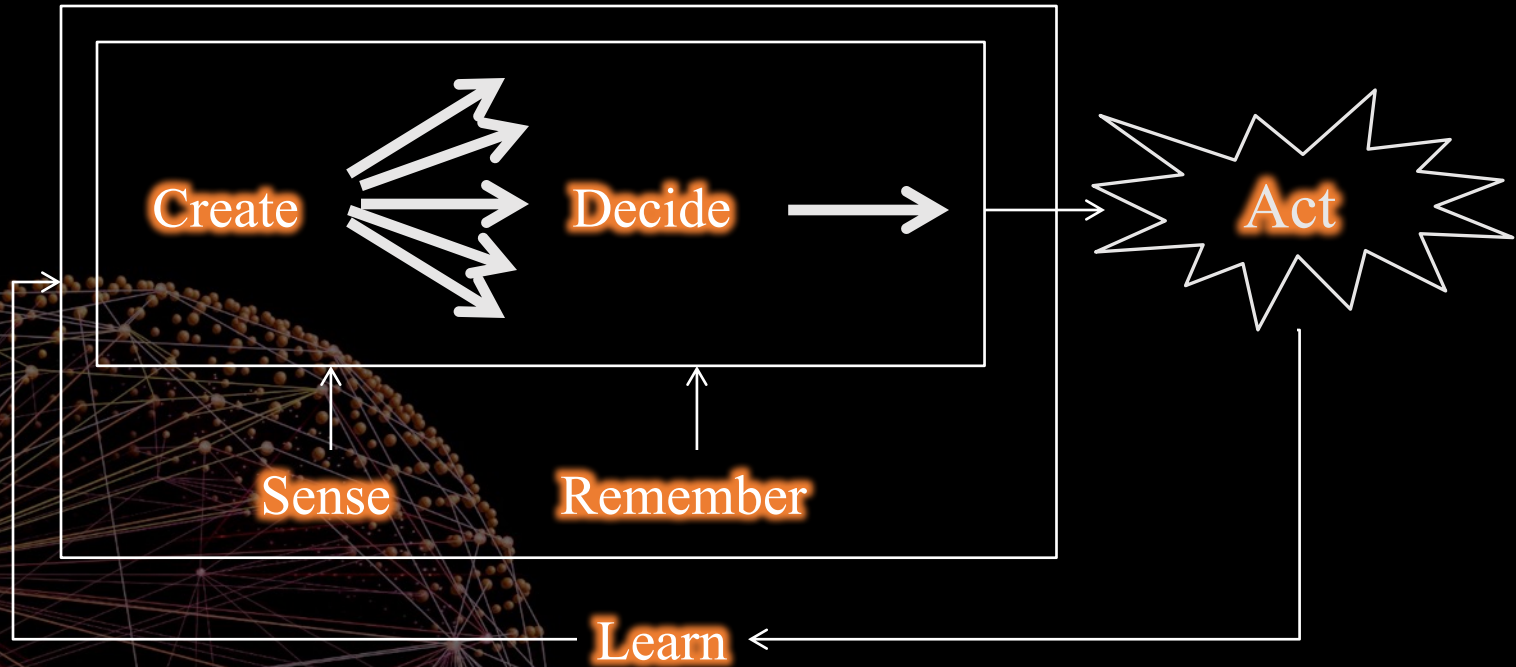
Cognitive processes in strategic planning



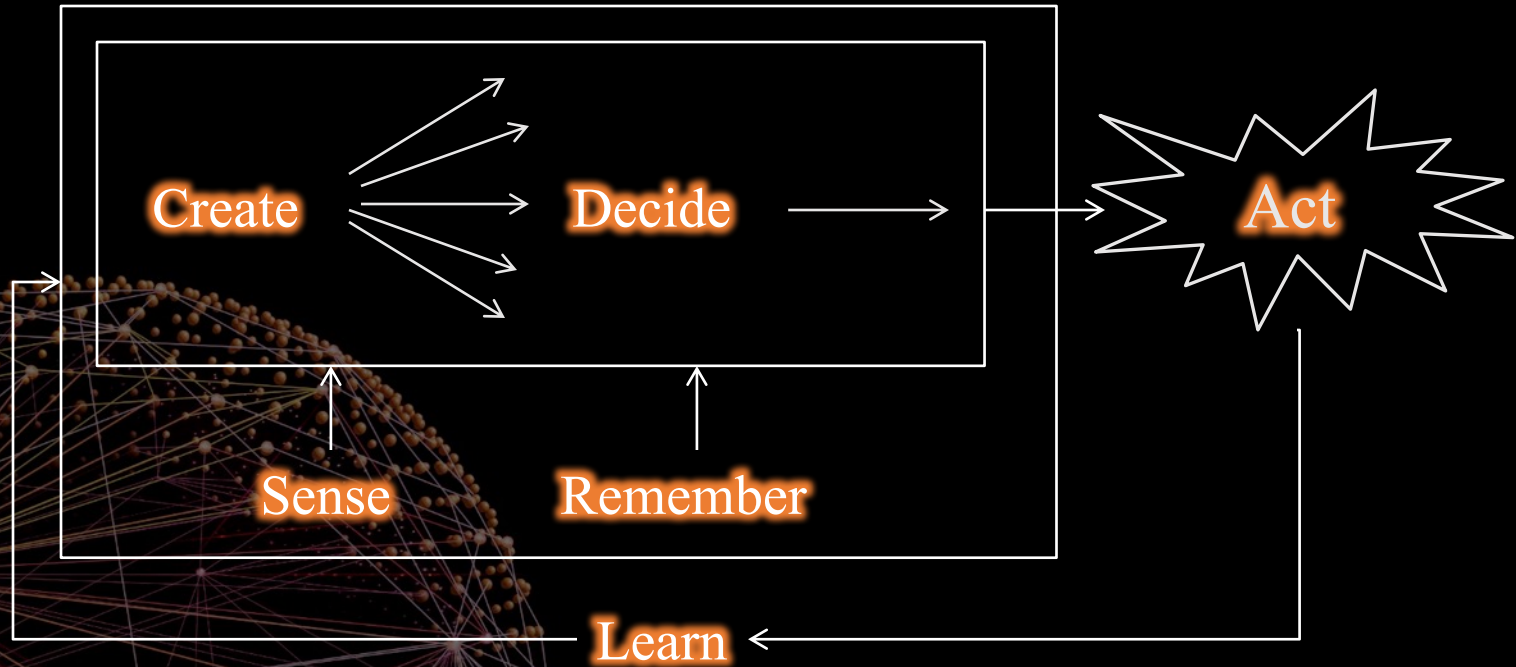
Cognitive processes in strategic planning



A cyber-human strategy machine



A problem-solving supermind





Superminds

The surprising power of people and computers
thinking together

Thomas W. Malone

MIT Center for Collective Intelligence

