

The Problem

Traditional team decision-making processes are flawed and limiting

- Every organization has intelligence and expertise
- But still, teams struggle to collaborate optimally and fail to maximize their potential
- Especially when it comes to making key decisions that require accurate evaluations, forecasts, and selections.

The Cost

- We have the best and brightest minds working on critical problems, but they fail to collaborate effectively and fall short.
- We make the wrong decision wrong product, wrong hire, wrong plan, etc. – when the right one was in front us.
- We allocate resources to the wrong priorities and put ourselves at a strategic disadvantage.
- The next breakthrough is at our fingertips, but we miss it.

Artificial Swarm Intelligence or Swarm AI[®] Makes Teams Smarter Together

- Empowers teams to access and amplify their collective intelligence
- Producing significantly more accurate evaluations, forecasts, and predictions
- Leading to better decisions that consistently outperform individuals and groups.

People are Smart



How can we harness and amplify the intelligence of human groups for enhanced collaboration and optimized decisions?

"Wisdom of Crowds"

Groups can be smarter than individual members \rightarrow (1906) Sir Francis Galton (~800 villagers guess the weight of an ox)

Current methods haven't changed much → aggregate data from isolated individuals (polls, surveys, prediction markets, etc.)

The "crowd" only exists in a database → intelligence amplification (small boost, narrow uses → forecasting)

Can we do better?

Swarm Intelligence in Nature

Nature evolved an optimized method for amplifying the Intelligence of groups

Nature does NOT:

- take <u>votes</u> or <u>polls</u> or <u>surveys</u>
- analyze historical <u>data-sets</u> (big data)

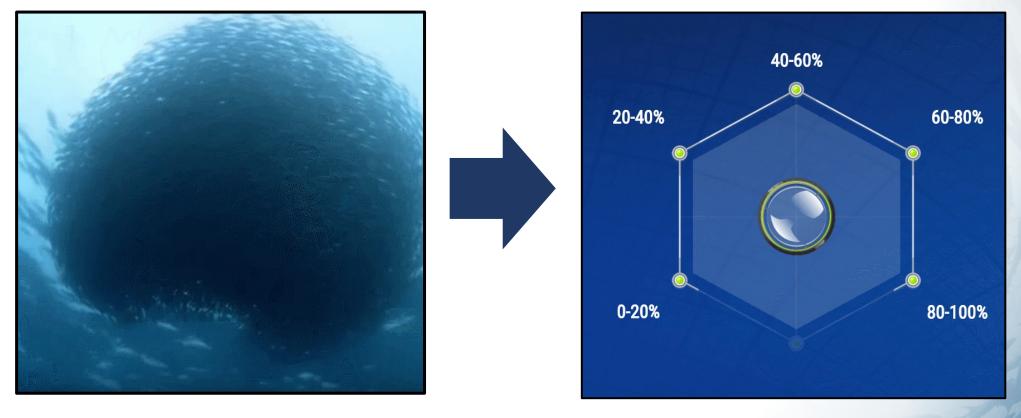
Nature forms SYSTEMS:

- Real-time systems with feedback loops that enable groups to converge on optimal solutions
- Biologists call this Swarm Intelligence
- It's why <u>birds flock</u>, <u>fish school</u>, and <u>bees swarm</u>
- They're smarter together than alone.



Swarm Intelligence

Enabling Human Swarming



Natural Swarm

Artificial Swarm

Swarm is a real-time system with participants <u>acting</u>, <u>reacting</u> and <u>interacting</u>, revealing the <u>strength of their convictions</u> to the underlying algorithms.

UNANIMOUS

What USERS see is SIMPLE: What the AI sees is DEEP: 40-60% 40-60% 60-80% 20-40% 20-40% 0-20% 80-100% 80-100% 0-20% ■ Interpolated Solution = 67%

Participants **BEHAVE** in real time

The Al assesses user **CONFIDENCE** and **CONVICTION** in real time

Used by leading companies around the world



... and top academic institutions





UNIVERSITY OF









London

Imperial College

Massachusetts Institute of Technology













UNIVERSITY OF **TORONTO**





HARVARD BUSINESS SCHOOL











Swarm AI + Conversational Deliberation

Swarm[®]

- Optimized for Evaluations, Selections, and Decision Making
- Focused on structured questions with a fixed set of options
- Choosing among a defined range of possible answers

GOAL: Combine the <u>Intelligence Amplification</u> benefits of Swarm Al with the flexibility of <u>Conversational Deliberation</u>

Enable → Open-Ended Questions & Unstructured Problems

Capture → Subjective Reasoning / Justifications behind Solutions

Convergence → Consensus Answers

The Power and Limitations of Conversational Deliberation

CONVERSATIONAL DELIBERATION is the most important collaboration method for evaluating problems, generating ideas, surfacing insights, and finding solutions that harness the combined knowledge, wisdom, and insights of the group.



PROBLEM:

Conversation is only viable for use in small groups

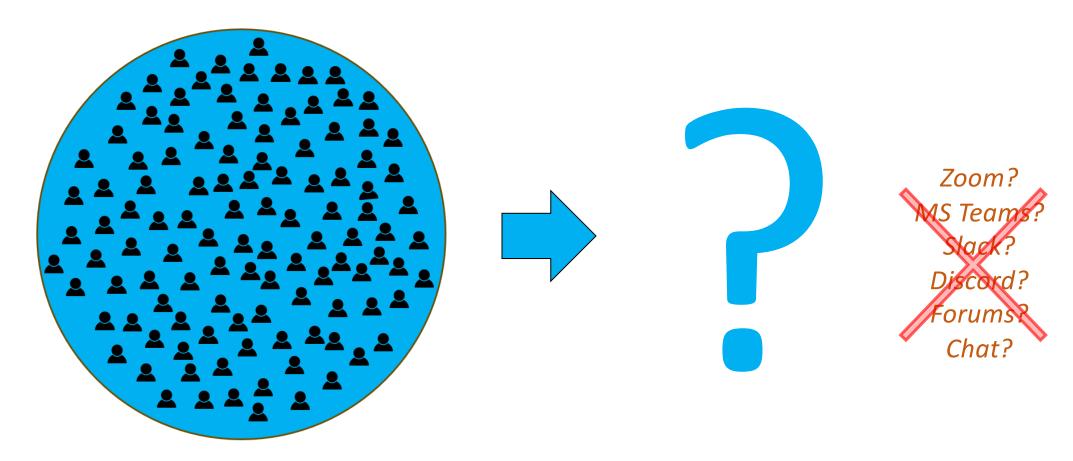
IDEAL SIZE:

4-7 people airtime per person wait time to respond

ABOVE 12 people it's just speeches

ABOVE 20 people it's chaos

The Problem



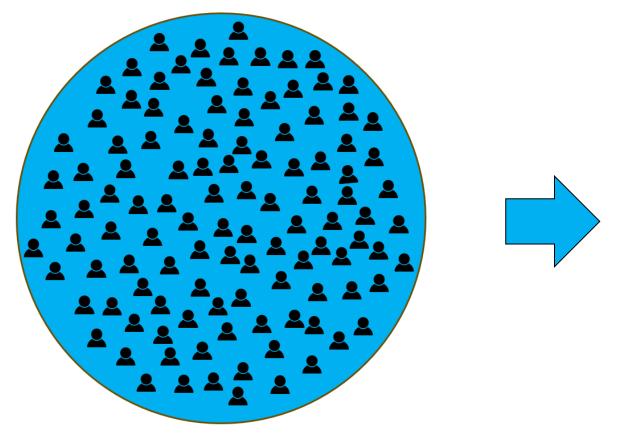
What if you have a LARGE group?

25 people 50 people 500 people

How do you hold a thoughtful and productive real-time conversation?

The Problem

CONVERSATIONAL DELIBERATION is <u>impossible for large distributed groups</u>, and yet most organizations have more than a handful of stakeholders, experts or contributors.



What if you have a LARGE group?
25 people 50 people 500 people

We Solved this!

With a little help from Mother Nature

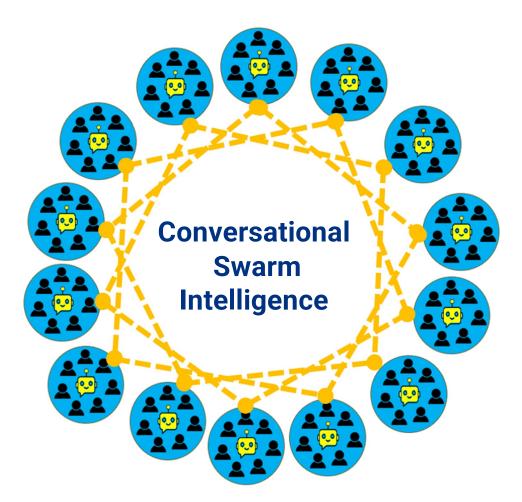
More Inspiration from Nature

Fish Schools

- Thousands of members → function as Super-Organism
- Communicate using special organ → "Lateral Line"
- Each fish interacts with <u>small subgroup</u> near them
- Subgroups overlap, so <u>information propagates</u> globally
- This combines benefits of <u>Local Deliberation</u> with the benefits of large scale real-time <u>Collective</u> <u>Intelligence</u>



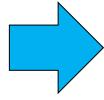
How can we do this with LARGE GROUPS?



Conversational Swarm Intelligence enables real-time deliberations among groups of any size and amplifies their combined intelligence.

Conversational Swarm Intelligence





Rooms Visualizer 20 Thinkscape Al Engine **es** 112 3

Biological Swarm Intelligence

Conversational Swarm Intelligence (CSI)

Estimation Experiment (2023) → Gumballs in a Jar → 250 people



Average Individual: 55% ERROR

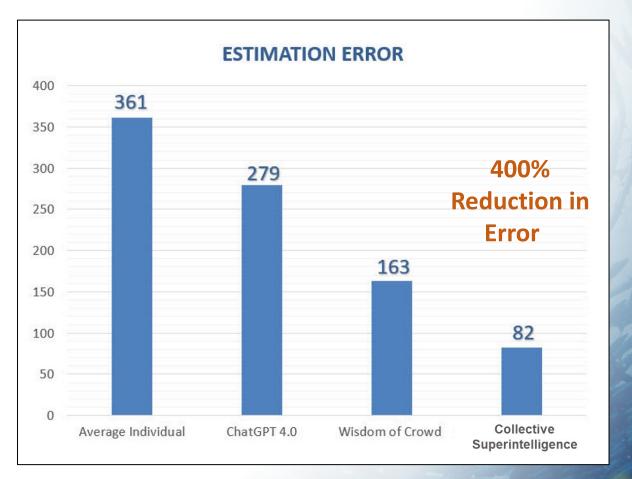
GPT-4 (Pure AI): 42% ERROR

Wisdom of Crowd: 25% ERROR

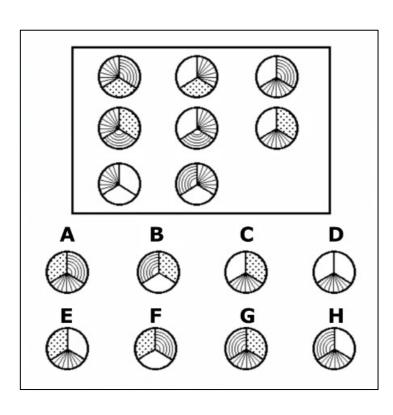
Collective Superintelligence: 12% ERROR

Estimation Experiment (2023) → Gumballs in a Jar (using ~250 people)



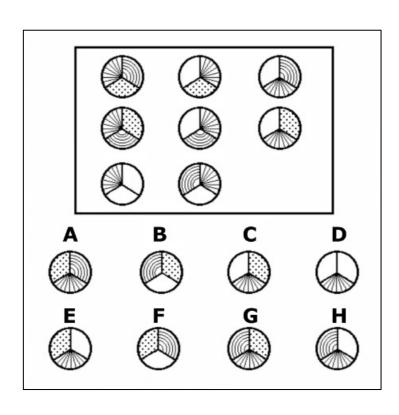


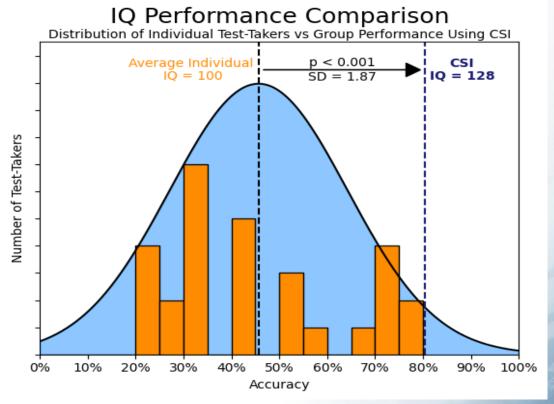
IQ EXPERIMENT (2024) → STANDARDIZED IQ TEST → 35 people



- Average Individual: 100 IQ, 50th Percentile
- Wisdom of Crowd: 115 IQ, 81st Percentile
- Collective Superintelligence:

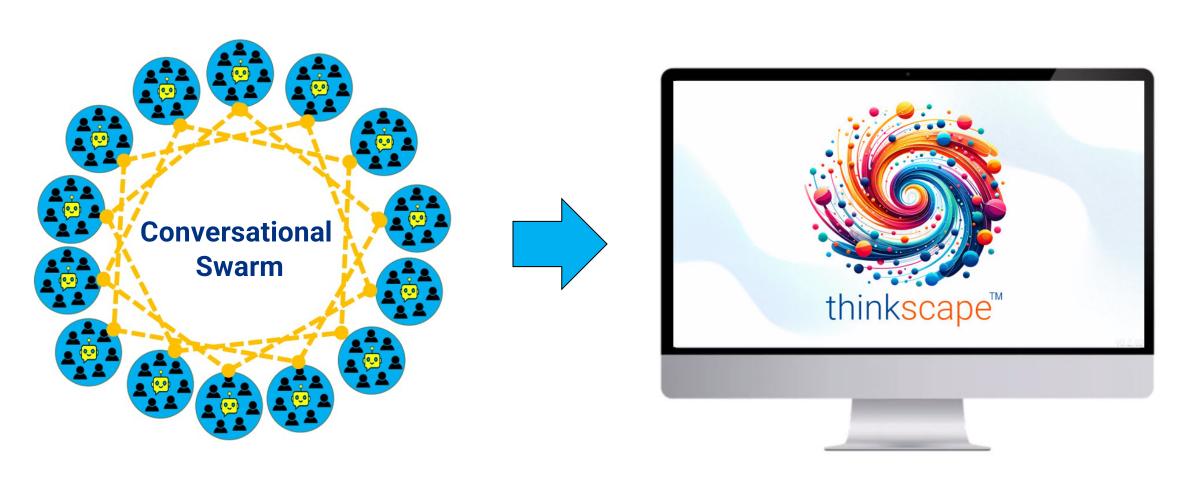
IQ EXPERIMENT (2024) → STANDARDIZED IQ TEST → 35 people





100 IQ → 128 IQ

Conversational Swarm Intelligence



Collective Superintelligence

Thinkscape Platform

Introducing Thinkscape[™]

Thinkscape is a real-time collaboration environment that delivers **Al-powered Deliberative Insights**

- Not just answers and preferences but a deeper understanding of "the Why" that shapes opinions
- Unstructured problems
- Free-flow discussion and deliberation
- Identification of key issues and rationale
- Convergence and consensus on optimal choices



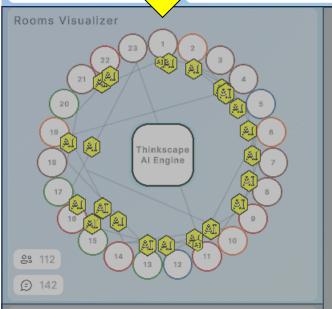
Conversational Deliberation at Scale

🍏 thinkscar

Which of these snack brands is most associated with novelty, and why?

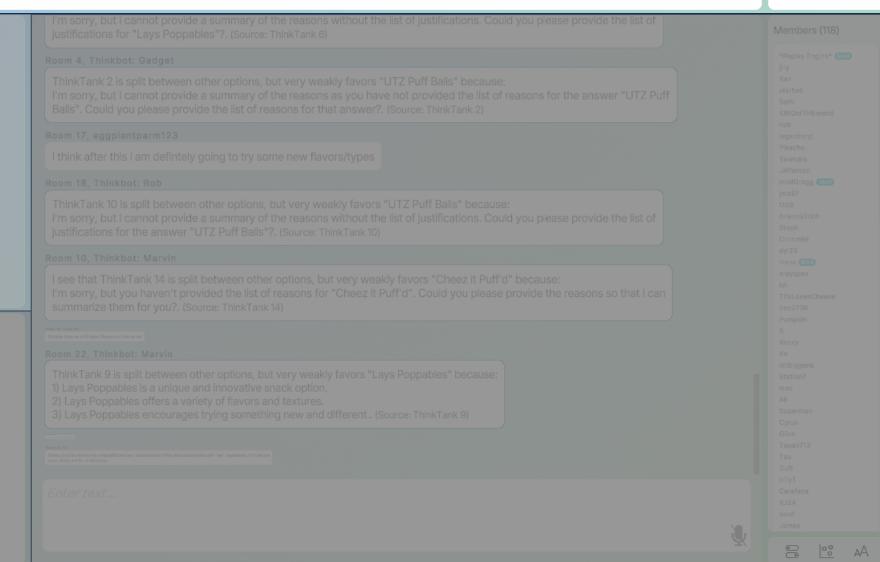
2:02 / 4:58

Moderator View



Snack Brands Clear

Time: Tue, 26 Mar 2024 11:54:38 GM



Conversational Deliberation at Scale



Which of these snack brands is most associated with novelty, and why?

2:04 / 4:58

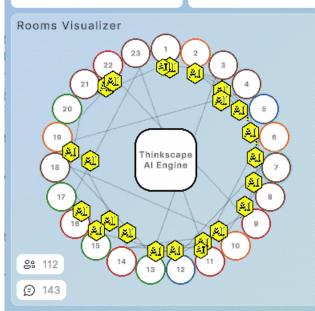
ThinkTank 7

Replay Engine Mod legendaryj

Members (7)

billy1 Cameron

bp2341 Rosie



Snack Brands Clean

Time: Tue, 26 Mar 2024 11:54:38 GMT Moderator Notes: None

Cameron

I again think cheez it puffs are rather new, I have not seen anything new or different from c heetos puffs.

Moderator: UAIChris

And also remember that our discussion prompt is novelty,

Thinkbot: Rosie

FYI, ThinkTank 9 is split between other options, but very weakly favors "Lays Poppables" because: 1) Lays Poppables has many flavors to choose from.. (Source: ThinkTank 9)

legendaryj

I like the cheetos puffs and cheez it puff'd - the cheez it puff'd are more flavorful and are something I enjoy. The cheetos are more nostalgic and remind me of younger days

Rae

I would say Lay's because they are fairly new.

Cameron

I just wish the new cheez it puff'd snack would put out more flavours like thy have for the regular cheez its

billy1

cheetos puffs also just feel like youre eating alot with one bite.

Thinkhot: Rosie

ThinkTank 12 is split between other options, but very weakly favors "Pirate's Booty" because:

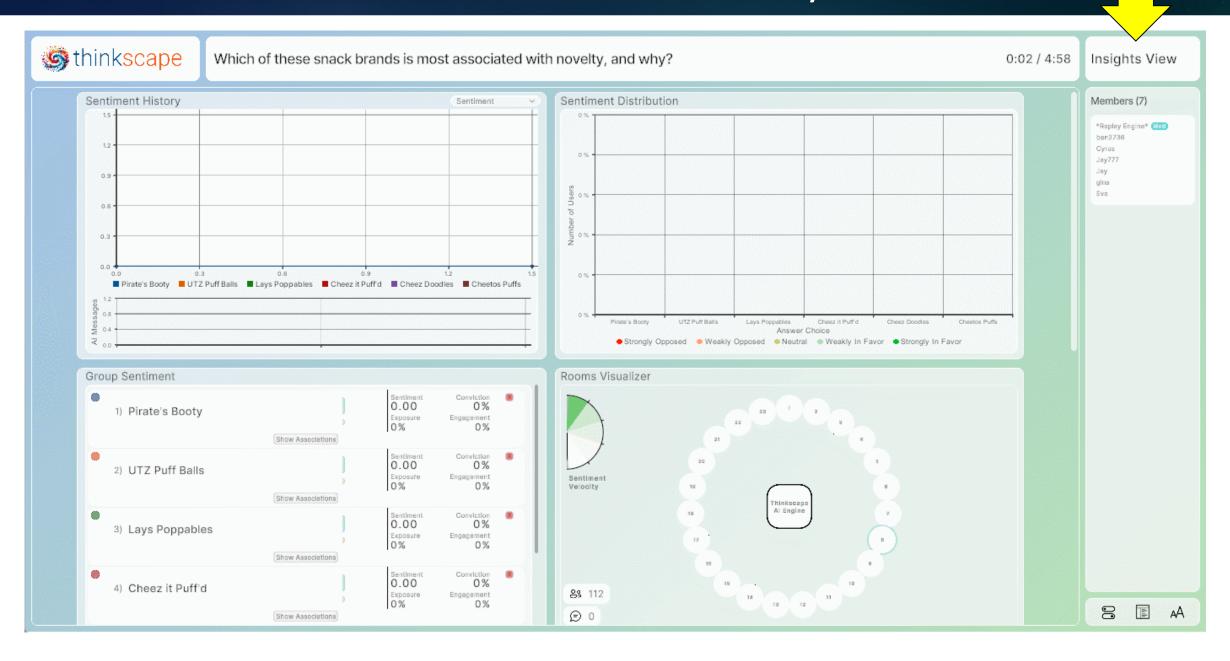
- 1) Pirate's Booty has a mature flavor beyond the normal orange flavor.
- 2) It is a brand that participants have never tried before, so it would be shaking up their routine.. (Source: ThinkTank 12)

Enter text.





Real-time Sentiment Analysis



Automatic Reporting

Reports are generated within hours

- Executive summary
- Reasoning breakdown by answer choice
- Thematic sorting
- Cohort Analysis
- Statistical Tests



How can CSI be used in Energy?

Formats and Applications

Question Types

- Brainstorming
 - Selection
 - Ranking
 - Consensus / Convergence

Purpose

- Problem-solving
- Decision-making
 - Forecasting
- Risk Assessment

Thinkscape sessions can be

- executed as a standalone event
- incorporated into an established process
- included in an existing activity (such as a workshop or offsite) UNANIMOUS AL

General Public on Electric Vehicles

"What's the main reason that hybrids continue to sell well, while pure EV sales are down?"



General Public on Electric Vehicles

"What's the main reason that hybrids continue to sell well, while pure EV sales are down?"

Infrastructure

- Lack of charging locations, particularly in in rural areas
- Fears about finding charging stations on long trips

Costs

- Costs of powering EVs
- Price differential with hybrid and ICE

Hybrids as a transitional step

- Comfort of gas backup
- Measured adoption

108 consumers7 minutes675 comments72 Answers

General Public on Electric Vehicles

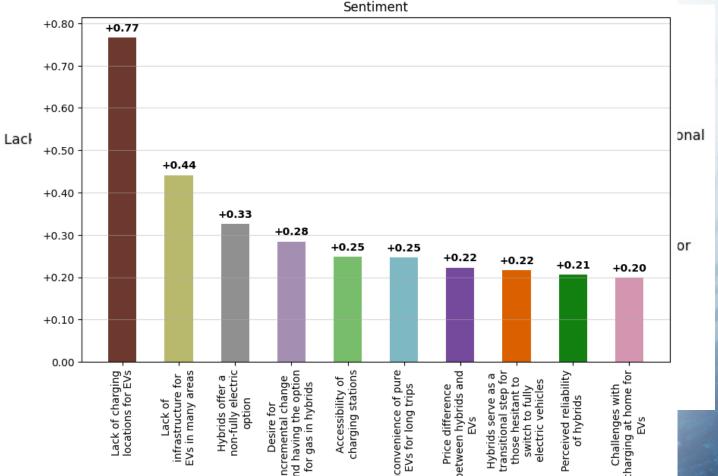
"What's the main reason that hybrids continue to sell well, while pure EV sales are down?"

Sentiment

Conviction

Engagement

Share of Conversation



From the Field

Imagine if at *CERAWeek*, *OTC*, or *E-World* conference, you could ask for 5 minutes of attention from everyone at the icebreaker to discuss a question or two:

"What is the most important issue facing energy system evolution in the next 10 years and what should be done?"

"What is the most promising low carbon emerging energy technology and why?"

"What is the most acceptable way to pay for energy system evolution or climate change mitigation and why?"



From the Team / Stakeholders

Imagine working with a distributed team that is working on planning for Hydrocarbon Field Development

"What is the most important objective of the project?"

"Which extraction strategy is most likely to be successful and why?"

"Which **methodology** will be most effective to rank exploitation scenarios during the concept selection stage and why?"

"Which variable should be weighted most heavily and why?"

"Which uncertainty is the biggest priority and why?"

What provocative questions would decision quality professionals ask to capture truly meaningful and actionable insights?



Conversational Reporting

