



How to reduce risk in major R&D projects





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SEND US YOUR QUESTIONS DURING THE WEBINAR

Question control is in the lower left corner

- There is a Q&A at the end
- We may also answer some during the presentation

Webinar video replay will be uploaded later today.



Speakers



Dan Adams
President
The AIM Institute



Kelly Lawrence
President
Lawrence Innovation

How to reduce risk in major R&D projects



1. Uncover your landmines

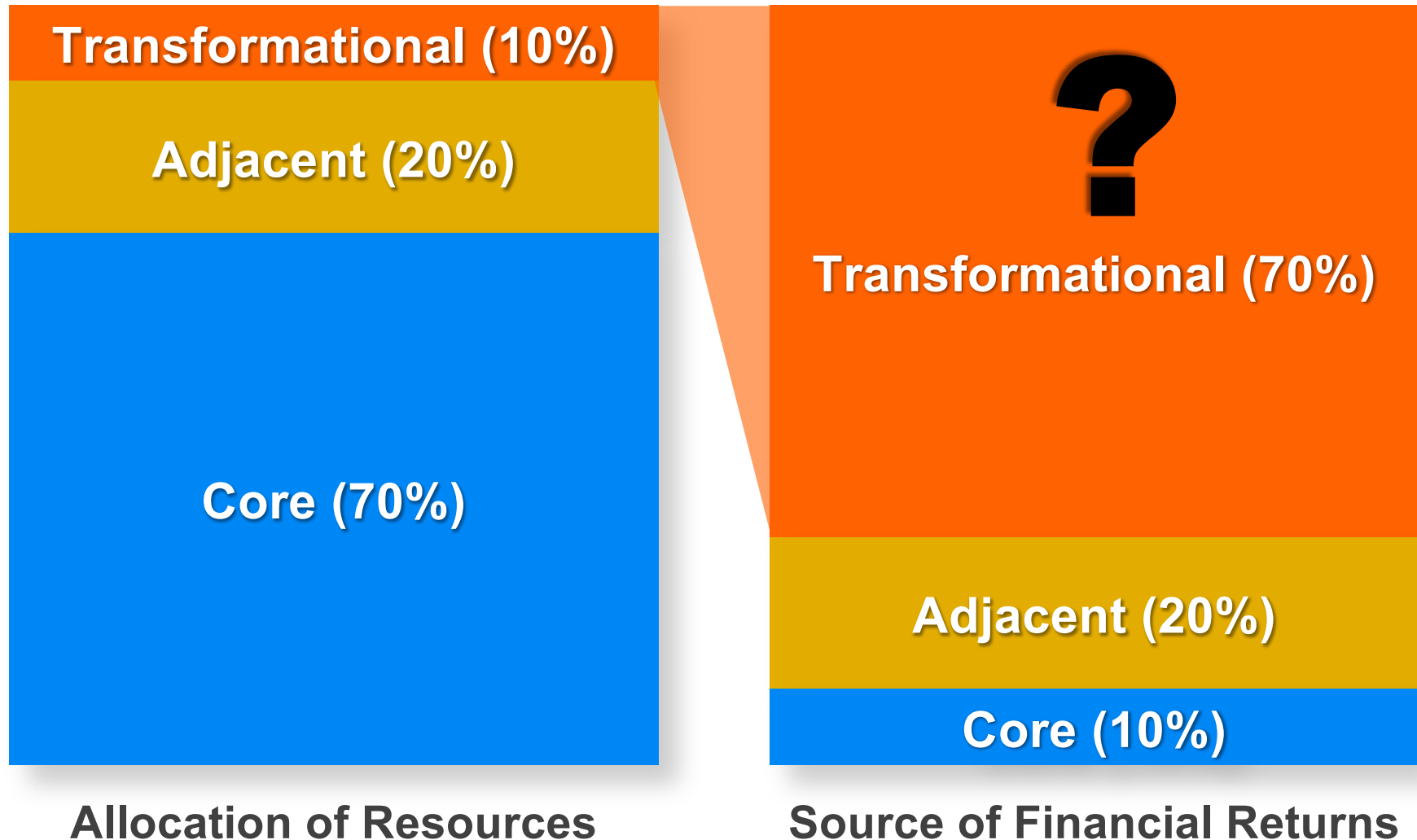
2. Risk vs. uncertainty

3. A case story of de-risking

4. Four steps to de-risking

5. A new management conversation

Innovation Portfolios of Top Performers



“We spend most of our time trying to prove we’re wrong.”

“We run at all the hardest parts of the problem first.”

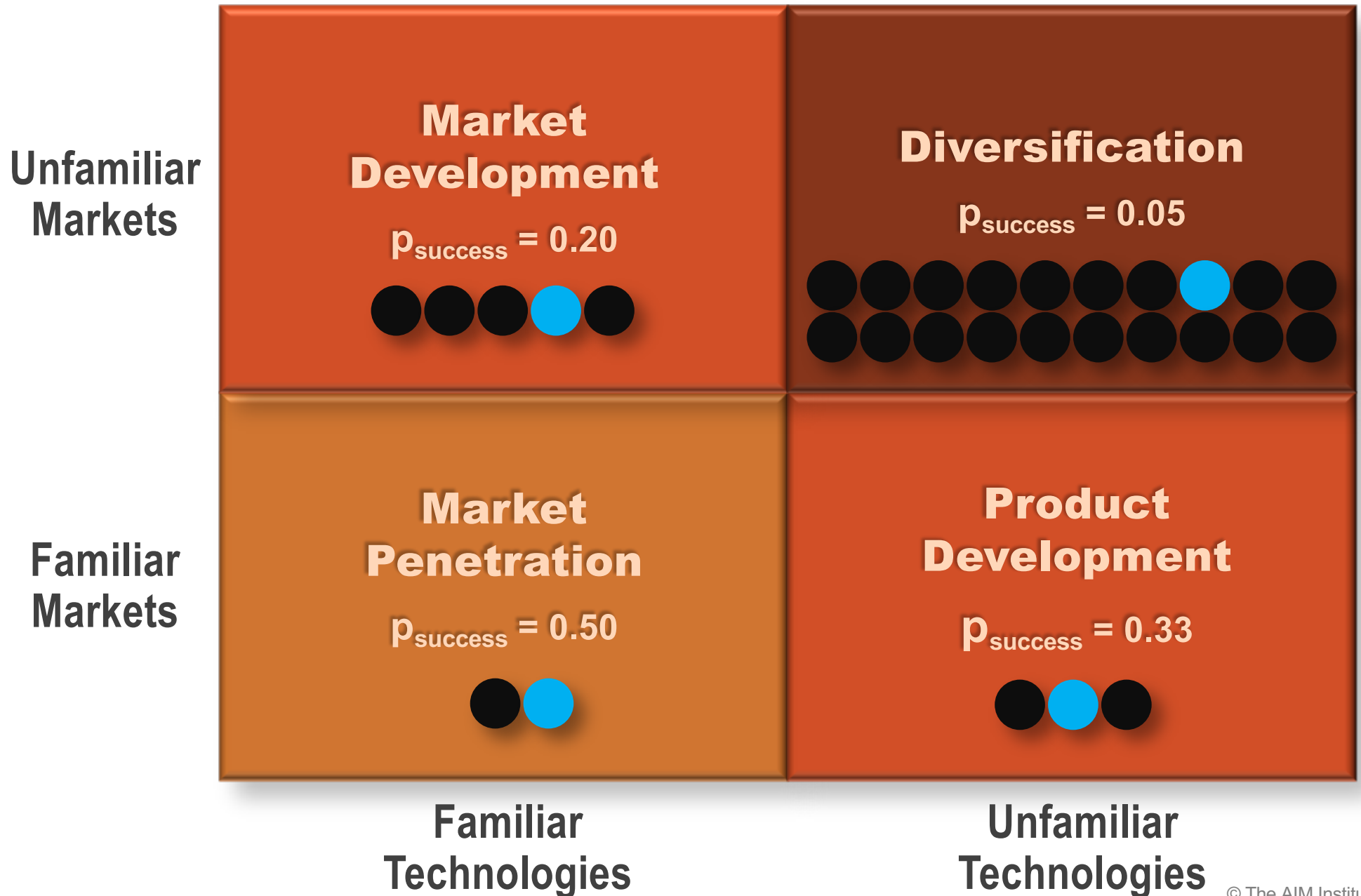
We cheer... “Hey... how are we going to kill our project today?!”



“The unexpected benefit of celebrating failure” Astro Teller (Head of Google X)
TED talk (May 2016): <https://www.youtube.com/watch?v=2t13Rq4oc7A>

Risk and the Ansoff Matrix

Consider past projects...



When you look back at failed projects...

- Can you identify any “Landmines”?
 - ... that blew up budgets, schedules or reputations
- Were they detectable before they blew up?
- What would have happened if spotted earlier?

Landmine Principles

- Landmines offer 3 choices... **S**tep on, **S**top, **S**idestep.
- No one steps on a landmine they can **see**.
- Landmines are a greater danger in unfamiliar terrain.
- We avoid unhappy thoughts. Landmines are not happy.
- The sooner we spot a landmine, the greater our **options**.

Risky Projects

Late Projects



How do we spot landmines earlier in transformational projects?

But first...Is uncertainty different than risk? Does it matter?

Inkjet Insight

Inkjet Assumptions:

- Landmines are a greater danger in unfamiliar terrain
- Unfamiliar terrain =
 - New markets where inkjet penetration <15% of printing
 - Markets that are new to our business
 - e.g., we print labels & are expanding to flex pack
 - 3D shapes vs. rolls or sheets
 - New substrates
 - New consumable ingredients
 - New or unfamiliar production processes

To grow inkjet and **reduce risk** in our major R&D projects, we must understand what **must be true** in **all** areas of unfamiliar terrain.



Risk ≠ Uncertainty

Probability

NPV

Eliminate uncertainty
cheaply & early

Undue stress
Overcommit
Avoid opportunities

Is it risky to cross an unfamiliar chasm?

Risk: You know enough to assign a probability.

Uncertainty: You simply don't know yet.

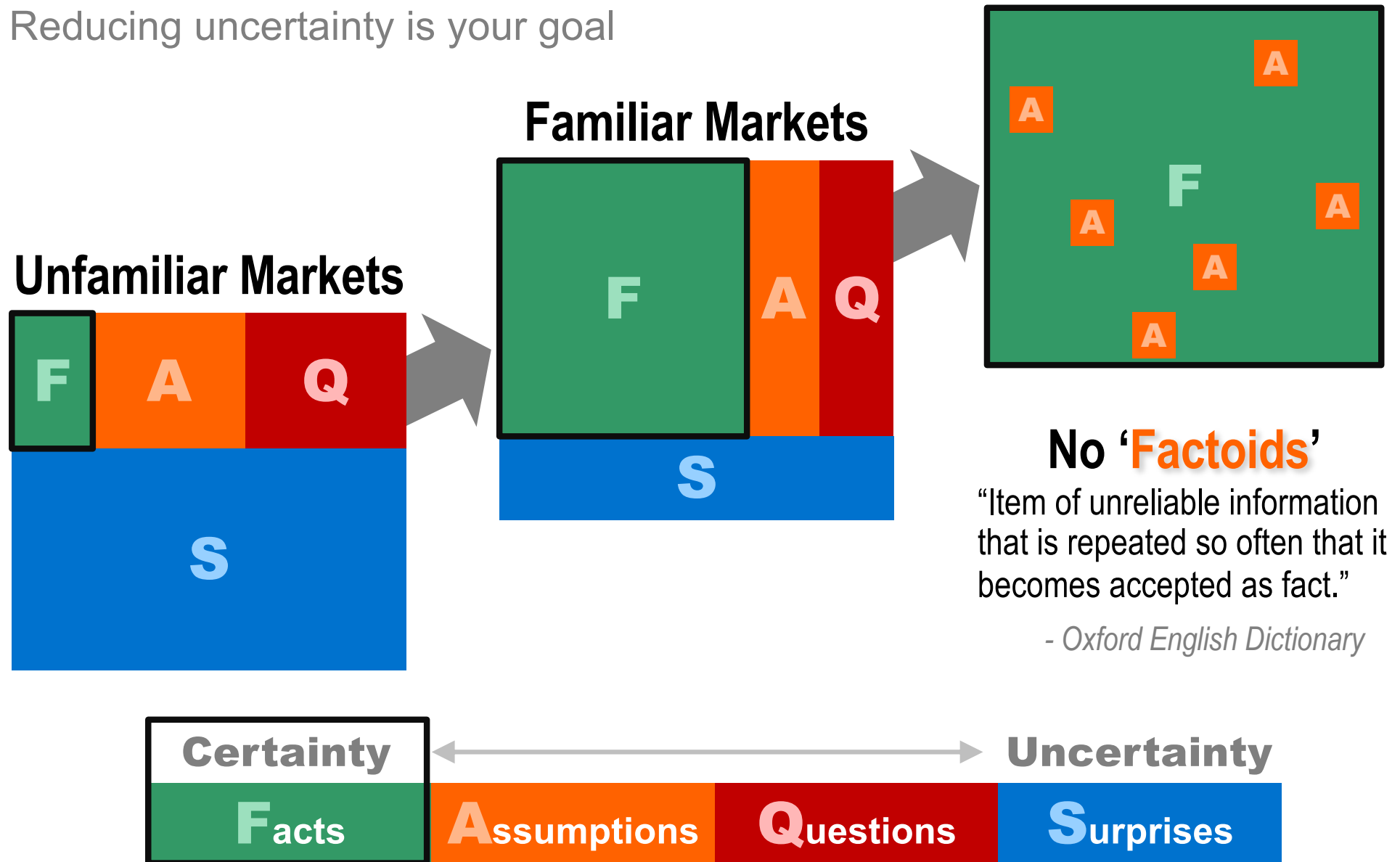
The FAQs Map

Reducing uncertainty in B2B innovation

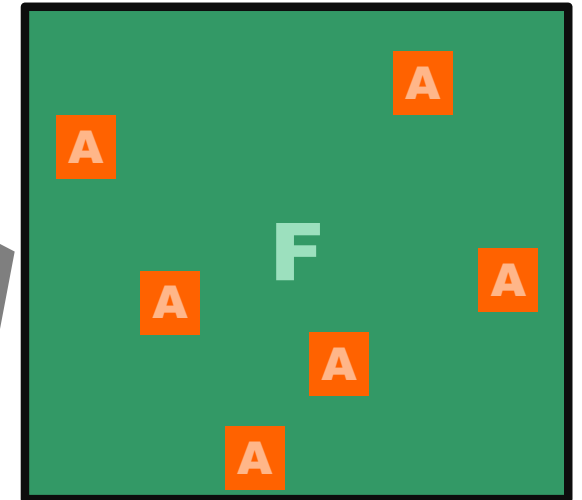


The FAQs Map

Reducing uncertainty is your goal



Your Goal



No 'Factoids'

"Item of unreliable information that is repeated so often that it becomes accepted as fact."

- Oxford English Dictionary



Front-End Goal: Convert Assumptions, Questions & Surprises into Facts

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Welcome to Acme Composites...



Recycled Plastic
+
Wood Fibers



Packaging

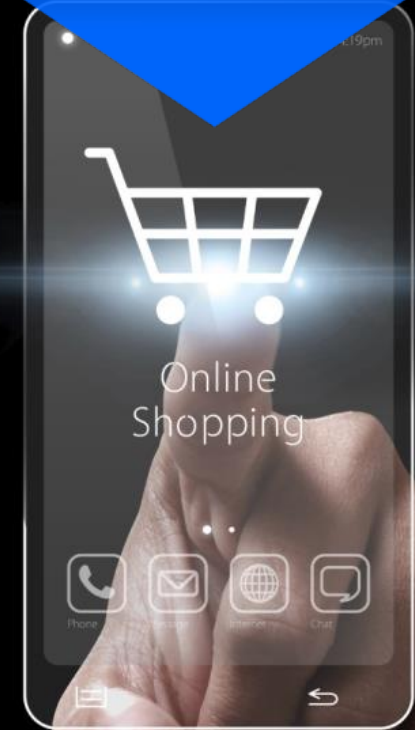
Water Resistance
Stacking Strength
Abrasion Resistance



Acme
Composites



Amazon
L.L.Bean
Zappos



e-Commerce



amazon

Acme Composites will consider all points in the value chain...



Blank Production



Box Filling



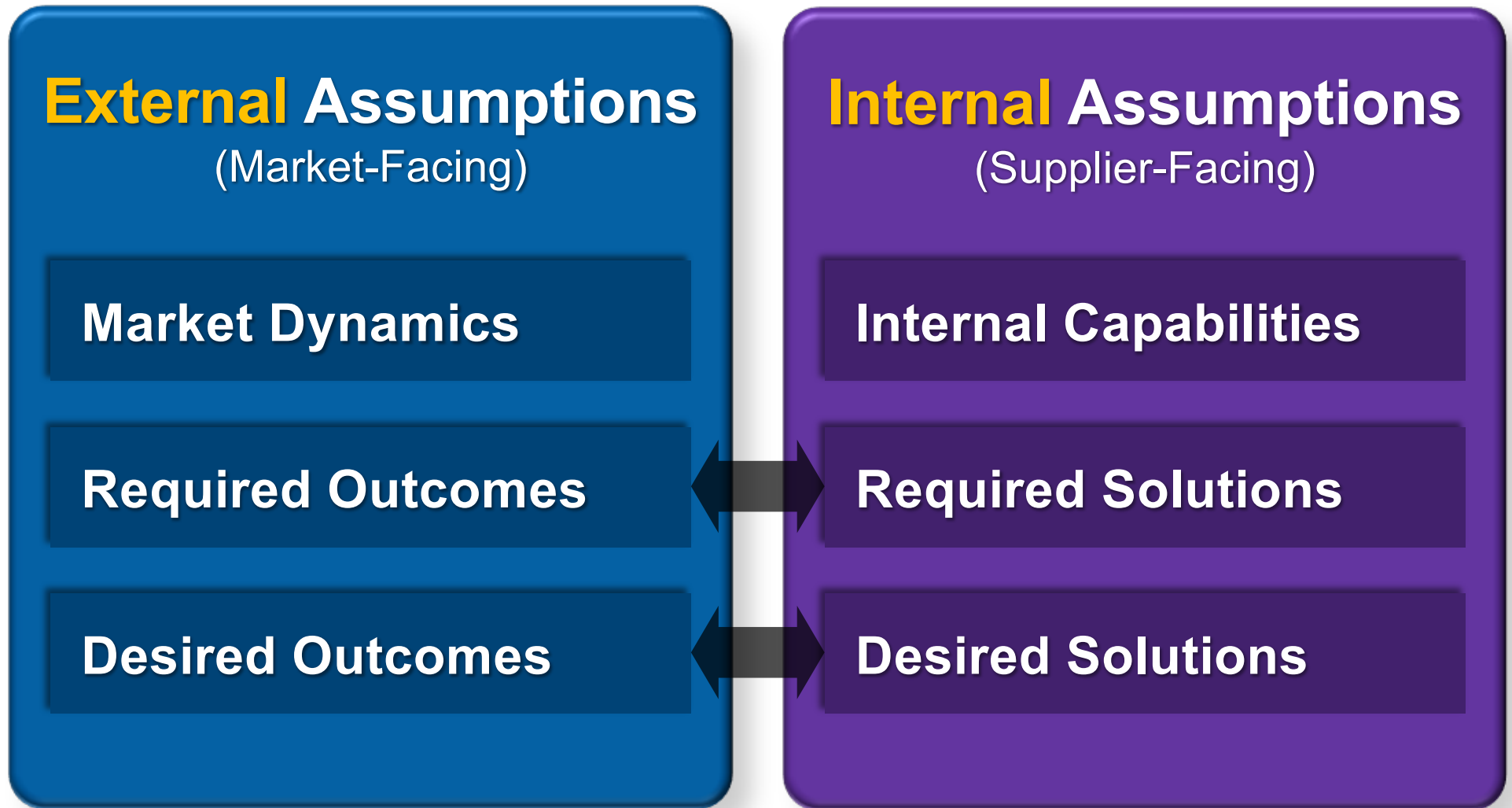
Box Delivery



Box Opening

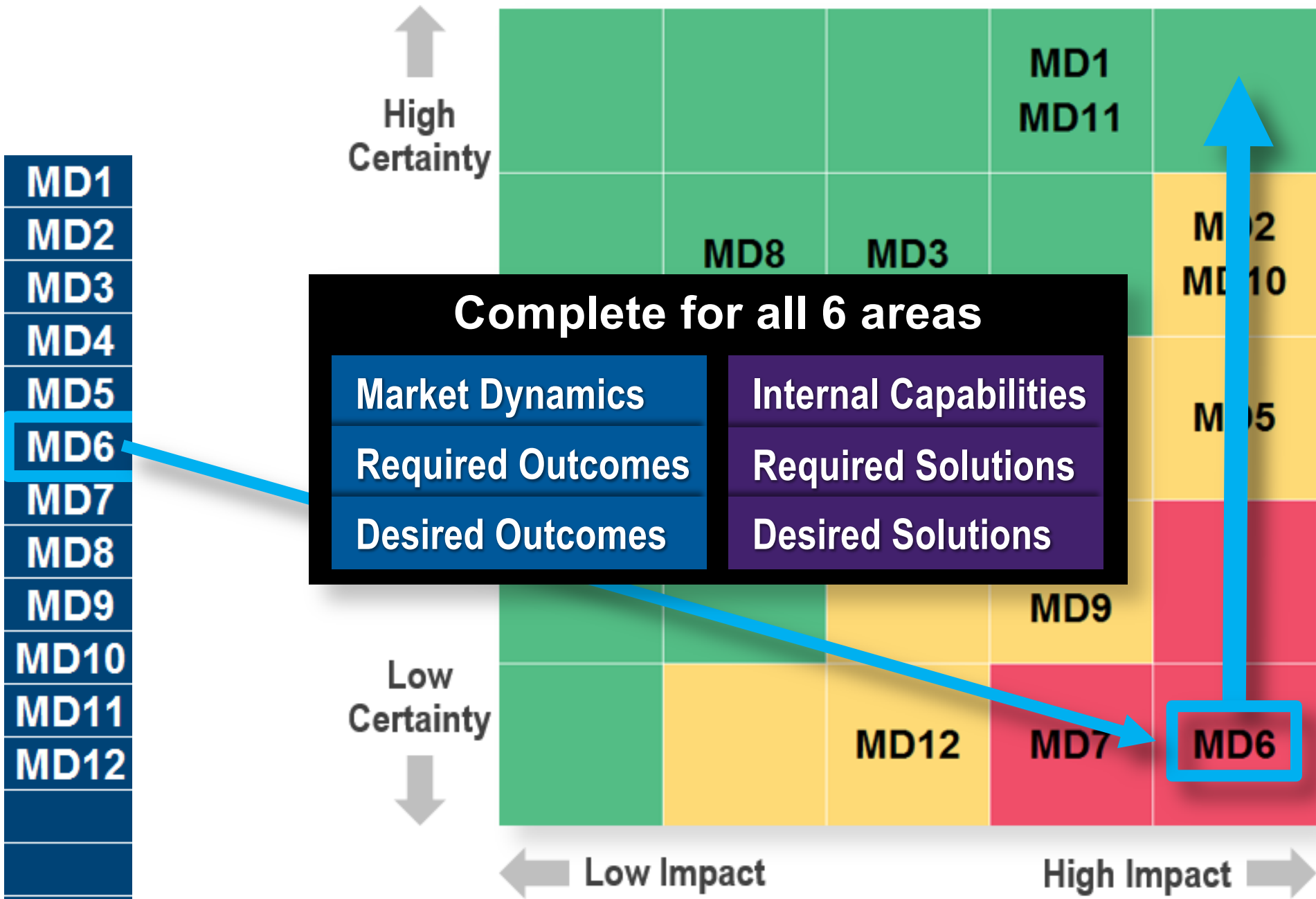
There are 6 Areas of Uncertainty to Manage:

Using Minesweeper[®] project de-risking software



The team must focus on assumptions with **high impact & low certainty**

The Certainty Matrix

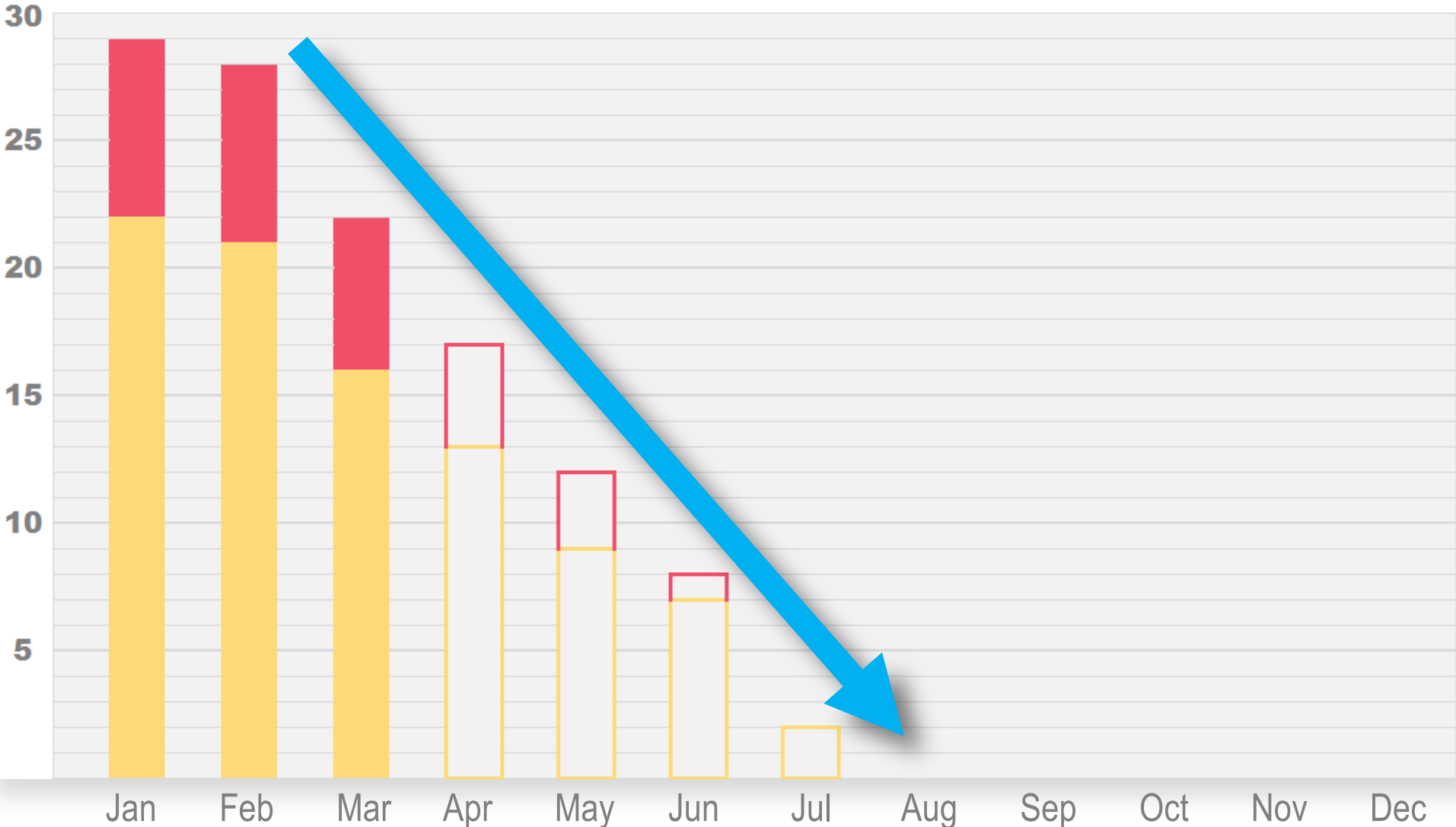


Number of Assumptions by Month

Caution

Danger

Goal



The team builds a **CheckPoint Plan** to systematically drive to certainty.

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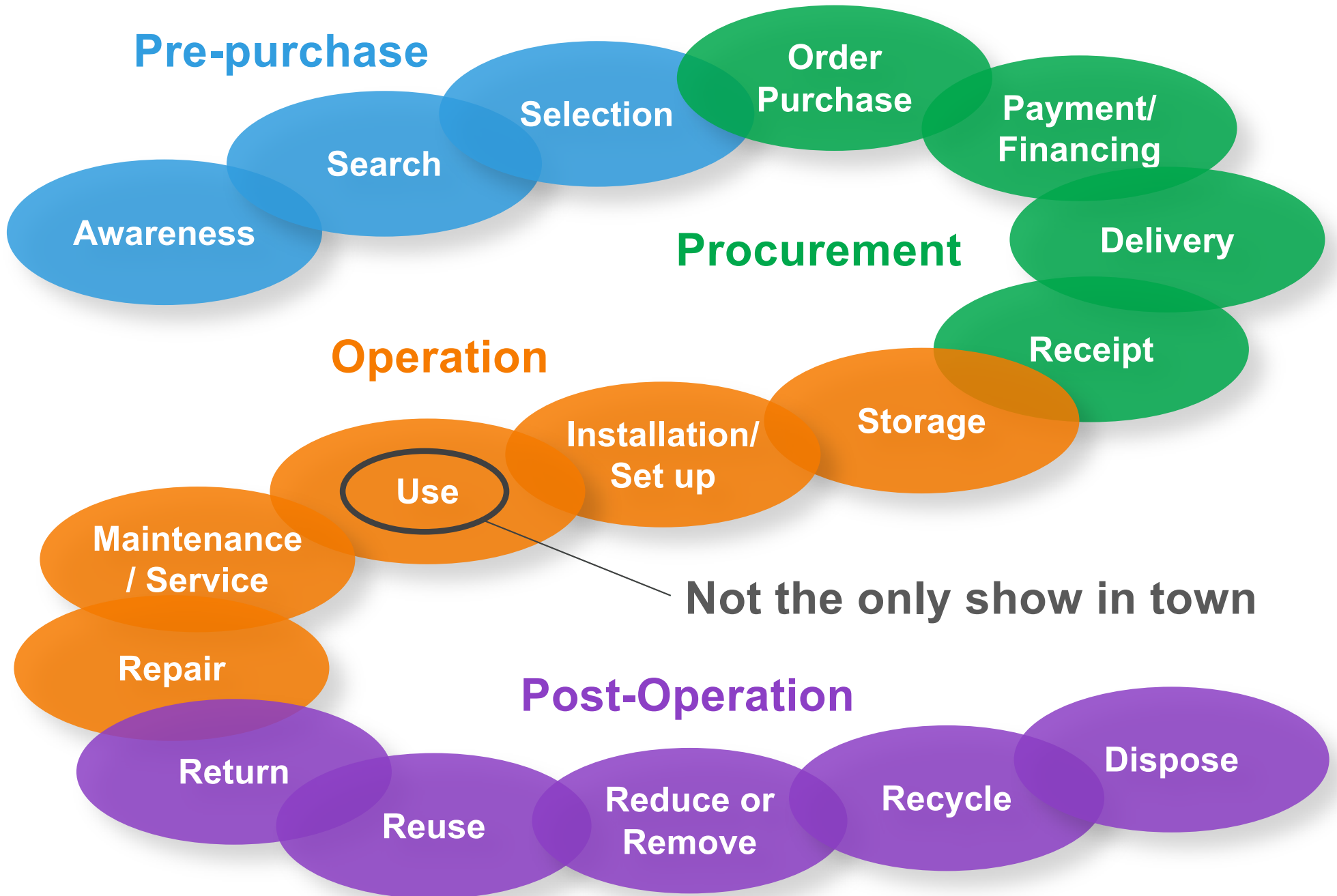
4 De-risking steps

1. Generate assumptions
2. Rate assumptions
3. Investigate assumptions
4. Report to management

The screenshot displays a project management interface with a grid of assumptions. The grid is organized into three columns and two rows. The top row (purple background) contains three assumptions: 'Produce our offering at acceptable levels of consistency' (ID 22), 'Provide necessary customer support' (ID 23), and 'Provide necessary technical support' (ID 24). The bottom row (light blue background) contains three assumptions: 'Be assured of a backup source of supply for our product', 'Maintain existing lead times when ordering our product', and 'Have no increase in box weight'. A modal dialog box is open in the center, titled 'We must meet customers' requirement to...'. It has a 'Required' tab selected (circled in red) and a 'Desired' tab. The dialog contains a text input field with the text 'Maintain existing rates of box filling'. To the right of the dialog, there are navigation controls including a 'Next »' button and the number '27'. A small 'x' icon is visible in the top right corner of the dialog. In the background, other assumption cards are visible, including one with ID 27 and another with ID 30, both marked with a red 'R' in a circle.

First the team generates all the assumptions that “must be true” for project success... in three “buckets”

The Consumption Chain



4 De-risking steps



Minesweeper 3.0

080

Assumption R03

We **must meet** customers' requirement to...

Maintain existing rates of box filling

CERTAINTY OF OUTCOME: How certain are you that customers would rate impact the way you did? (*Your impact rating is essential*)



< Previous

Next >

1. Generate assumptions
2. Rate assumptions
3. Investigate assumptions
4. Report to management

Avoid “group think”

Then each assumption is rated for Impact and Certainty. This is done first by each individual... and then together as a team.

4 De-risking steps

1. Generate assumptions
2. Rate assumptions
3. Investigate assumptions
4. Report to management

External Assumptions related to:

Market Dynamics

Required Outcomes

Desired Outcomes

Internal Assumptions related to:

Internal Capabilities

Required Solutions

Desired Solutions

Click note numbers to update assumption ratings...

DS1	■ Increase box-filling rates
DS2	■ Increase box strength for taller stacking of boxes
DS3	■ Reduce slippage of robotic "hand" against box surface
DS4	■ Reduce "washboarding" (rippling) of box surface
DS5	■ Increase water resistance to lower damaged goods
DS6	■ Increase tear resistance of boxes
DS7	■ Increase fade resistance in sunlight
DS8	■ Increase crush-resistance in high-humidity conditions
DS9	■ Increase abrasion resistance of box surface

DESIRED SOLUTIONS

Greater CERTAINTY ↑

Greater IMPACT →

- Possible Landmine
- Probable Landmine
- Confirmed Landmine (Project Killer)

After individual ratings, the project team discusses and agrees on Impact and Certainty ratings for each assumption.

Rules of engagement for team ratings

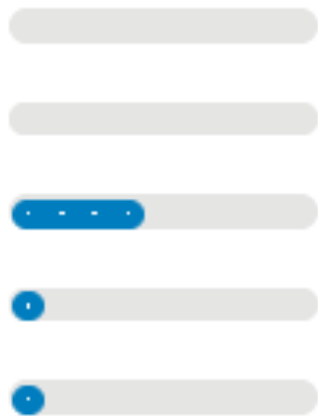
- Three phases of discussion
 - Share my knowledge
 - Share my opinion
 - Repeat my opinion
- How to “move on”
 - Use the most “cautious” voice on the team
 - This is highest Impact and lowest Certainty rating
 - This avoids “false greens” (which are not investigated)

Time to “move on”



IMPACT RATING:

Individual Votes



How important is it to your project's success that this assumption is true?

- Irrelevant** - It doesn't matter if this is true or not
- Helpful** - This could boost project success if true
- Important** - This will have a real impact on project success
- Crucial** - Without this, project success is in serious doubt
- Essential** - Without this, the project will definitely fail

More Cautious

CERTAINTY RATING:

Individual Votes



How certain are you that this is true and that your impact rating is correct? *(Use lower rating if different.)*

- Certain** - We are completely sure of this
- Confident** - There is a better than 90% probability
- Probably** - There is a 50-90% probability
- Perhaps** - This might be true, but we don't know
- Unknown** - We really don't know at all

More Cautious

4 De-risking steps

1. Generate assumptions
2. Rate assumptions
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The team then creates a “CheckPoint” action plan to investigate the red (danger) & yellow (caution) assumptions.

Inkjet Insight - Example



Inkjet Insight

- Acme Composites

- used De-Risking and had a checkpoint plan
- a key assumption required the composition chain to be validated

- Acme Composites realized they needed to account for printing BEFORE they entered the new to them corrugated packaging market

- What could have happened if Acme Composites not utilized the de-risking process?

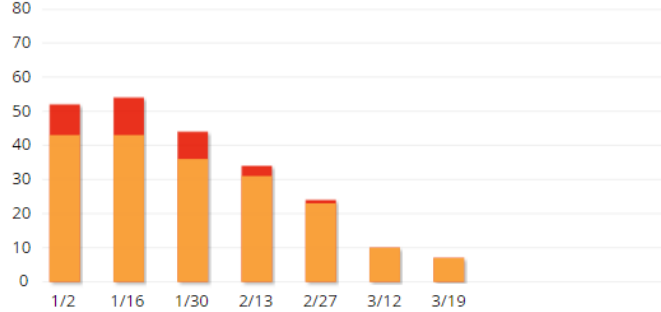
4 De-risking steps

DEMO Acme Composites (after workshop)

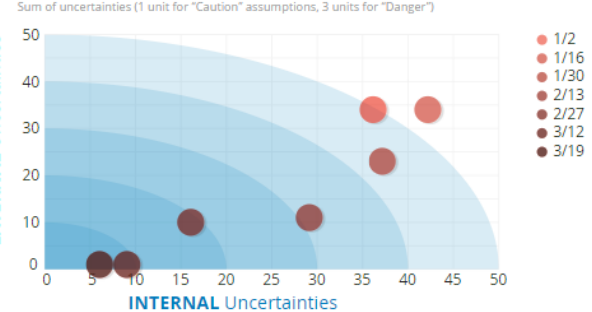
Demo project cannot be saved

1. Generate assumptions
2. Rate assumptions
3. Investigate assumptions
4. Report to management

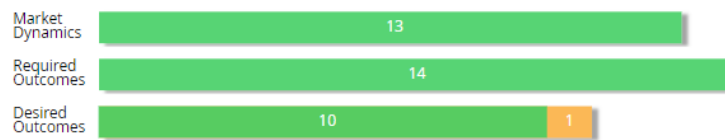
UNCERTAINTY TIMELINE



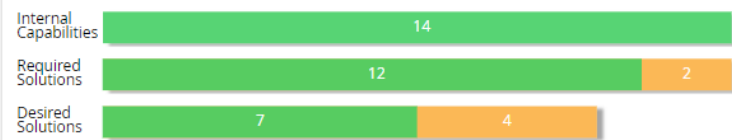
LEARNING PATH



EXTERNAL ASSUMPTIONS



INTERNAL ASSUMPTIONS



■ DANGER
■ CAUTION
■ SAFE



Market Dynamics
Required Outcomes
Desired Outcomes
Internal Capabilities
Required Solutions
Desired Solutions

MARKET DYNAMICS

Assumption	Count	Status
MD1	3, 6, 11	MIXED
MD2	2, 10, 12	MIXED
MD3	1, 4, 5, 8, 9, 13	MIXED
MD4	7	MIXED

- MD1 ■ Customers are willing to pay a fair price premium for value
- MD2 ■ Customers will make buying decisions in a timely fashion
- MD3 ■ The entire value chain can be convinced to change in sync
- MD4 ■ Entrenched competitors cannot block our market entry

The team reviews its de-risking progress... and provides regular updates to management.

2-Page De-risking Report

De-risking Report: Composites for Packaging Update, March 1, 2020

1. Project Overview

What is our intended offering, what technology will we employ, and how will we protect intellectual property?

What market will be served (including geographies), and what value will we provide to customers in this market?

What customer alternatives will we replace?

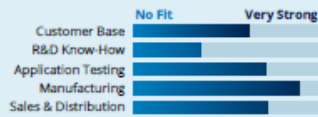
How does this fit with our strategy and existing competencies?

Any other useful background information?

Best-estimate sales range
\$25-50 Mil/yr

Best-estimate launch timing
Early 2022

Fit with current...



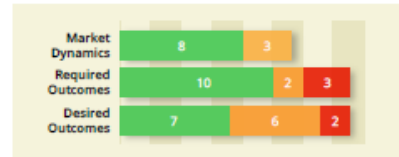
Project Team

★ Team Leader

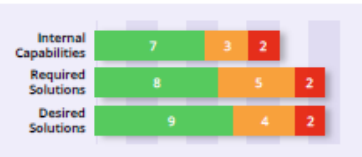
★ John Aaron,
Jeff Ball, Nancy Calloway, Mike Dempsey,
Carol Everhardt, Sue Hampton

2. Uncertainty Profile

Number of EXTERNAL Assumptions

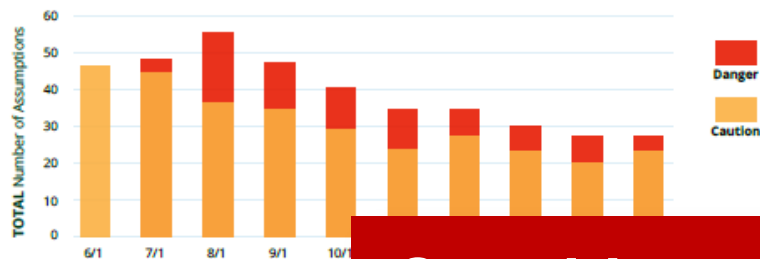


Number of INTERNAL Assumptions



Safe Caution Danger

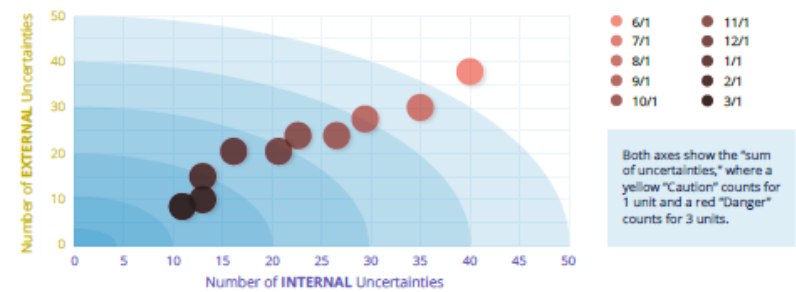
3. Uncertainty Timeline



Consider providing updates to management on a set schedule.

De-risking Report: Composites for Packaging Update, March 1, 2020

4. Learning Path



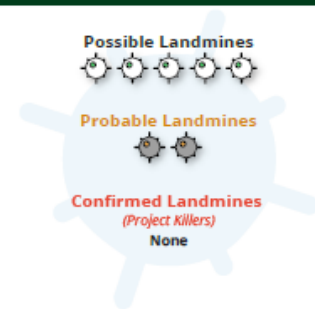
5. Status

What is the most important work we have completed since the last review?
(Consider referring to the Learning Path.)

What remaining untested external and internal assumptions do we think will have the greatest impact on this project?

How are we addressing possible and probable landmines?

What else should management know about our current status?



6. Recommendations

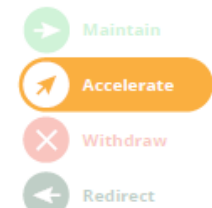
What are the most important activities our team intends to pursue next?

What do we recommend for this project?... Maintain (continue current course), Accelerate (add resources to speed project), Withdraw (shelve project) or Redirect (change course).

Does our team need any other management decision at this time?

When will we need a decision from management (e.g. for a larger investment)?

Recommended Path



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Two Types of Decisions...

Type 1

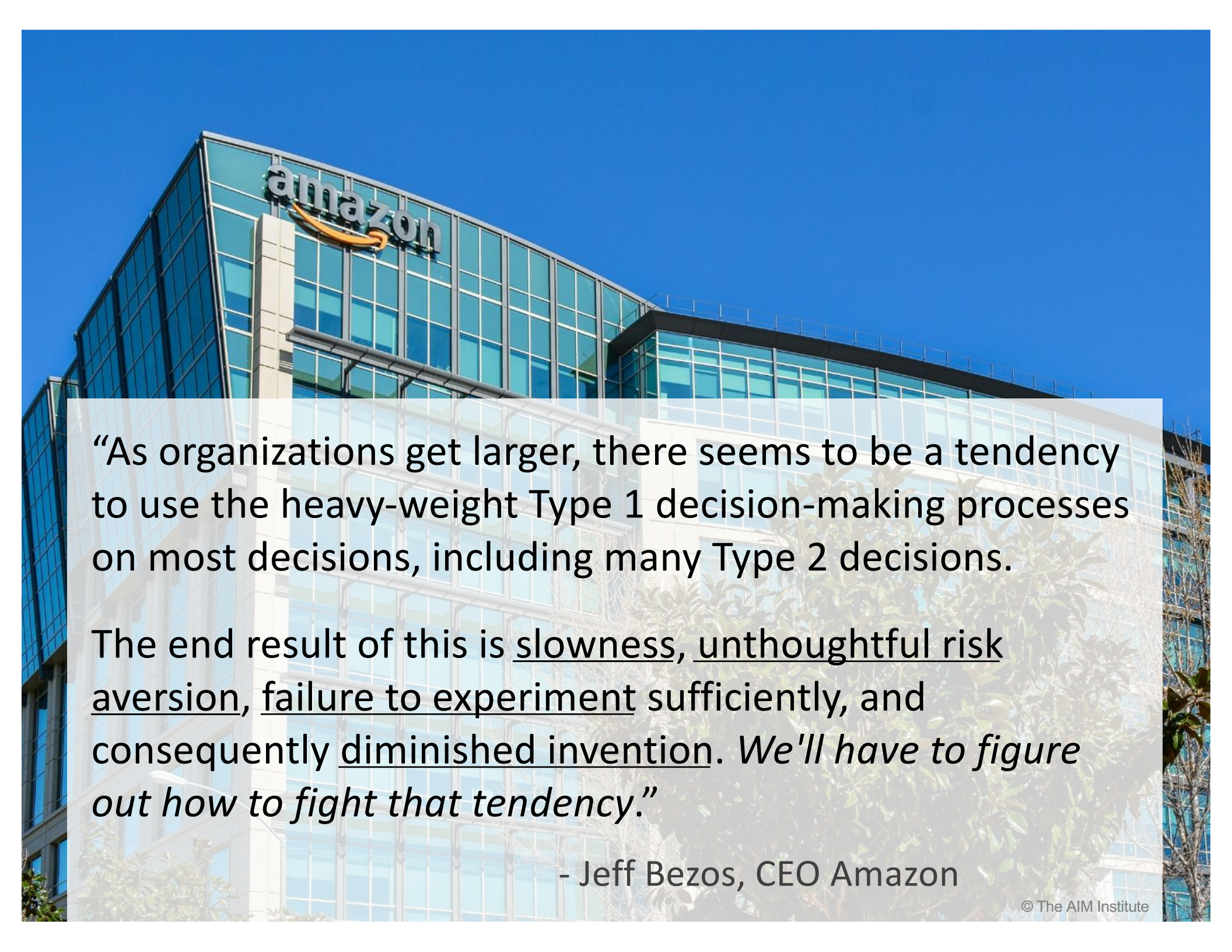


Big “all-or-nothing” bets
with major consequences

Type 2



Small “sampling” bets...
low cost and easy to exit.

A photograph of a modern Amazon office building with a glass facade and the Amazon logo on top. The building is set against a clear blue sky. A semi-transparent white box is overlaid on the lower half of the image, containing text.

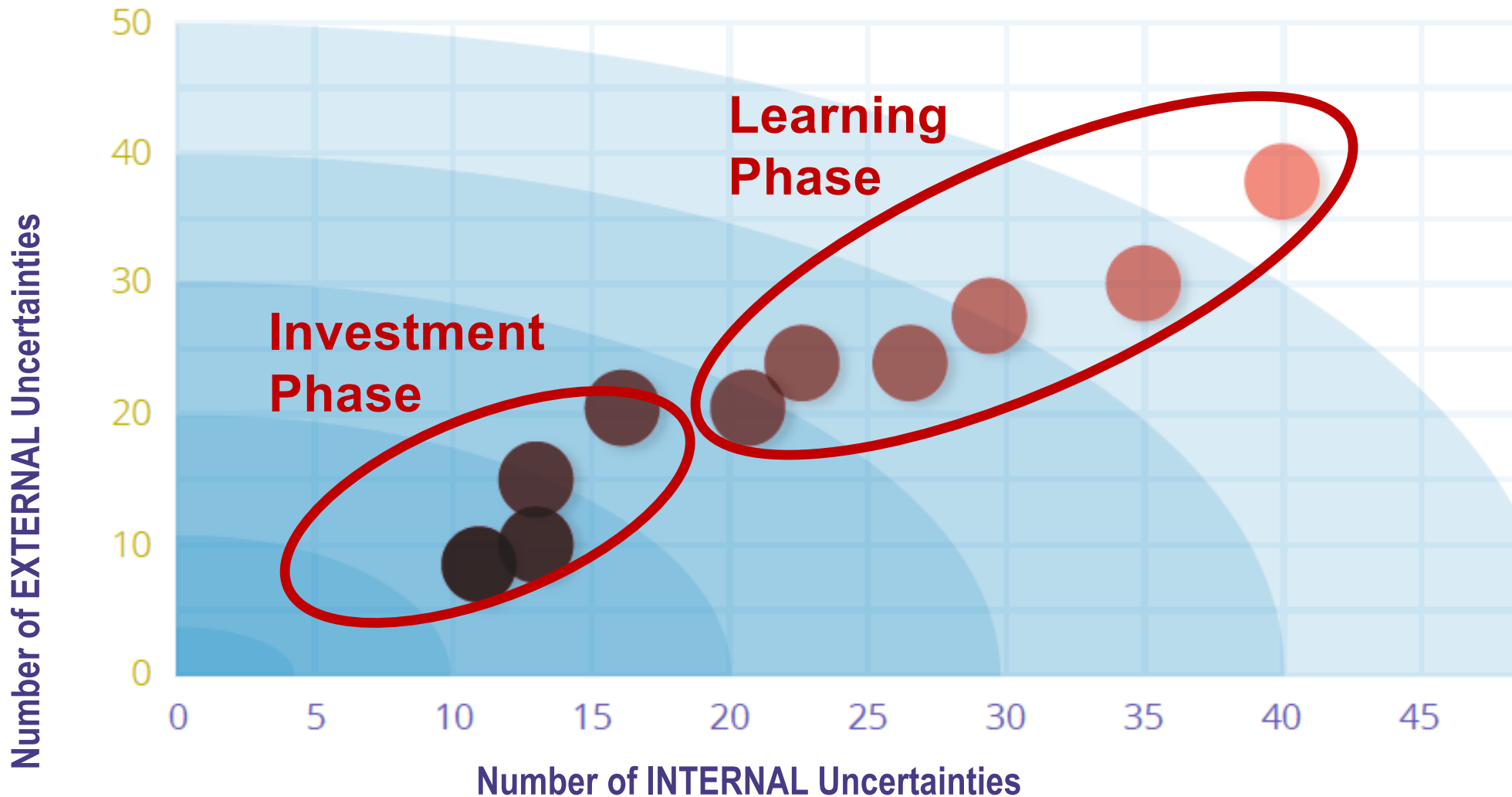
“As organizations get larger, there seems to be a tendency to use the heavy-weight Type 1 decision-making processes on most decisions, including many Type 2 decisions.

The end result of this is slowness, unthoughtful risk aversion, failure to experiment sufficiently, and consequently diminished invention. *We'll have to figure out how to fight that tendency.*”

- Jeff Bezos, CEO Amazon

Make it clear what you expect in your reviews...

4. Learning Path



Change the dynamics of your project reviews...

- Don't confuse all but the CTO by slide #3
- Separate *your* success from the project's
 - This project *may* not deserve to continue
 - But we'll tell you as soon as possible
- Differentiate “updates” from “decisions”
- Show you're following an intelligent plan
 - This is like a “Gantt Chart for Risk”
- Let them *join* your team... not *judge* it
- Result: Less micro-managing & second-guessing. More management patience.

Before we take QUESTIONS...

Free tools to drive your growth: www.AimInstitute.com

- 3 Free growth tools
 - B2B Growth Diagnostic
 - B2B MarketView (B2B Index)
 - 16 FutureScenes® sheets
- Free learning resources
 - Research reports
 - White papers
 - E-books
 - Video series
- www.AimInstitute.com

See our [previous webinar](#) on Inkjet Insight



Understanding
Customer Needs
Without a Plane Ride
**Virtual Voice of
the Customer**

June 28, 2022



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Thank you!

Questions?

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