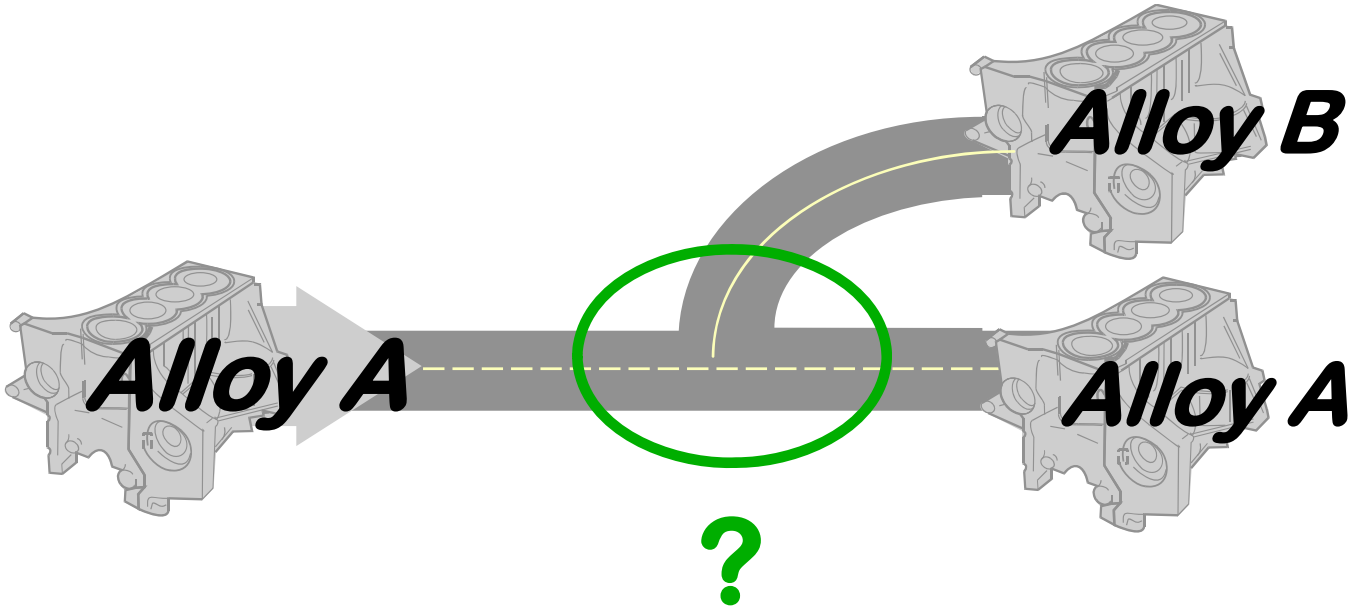
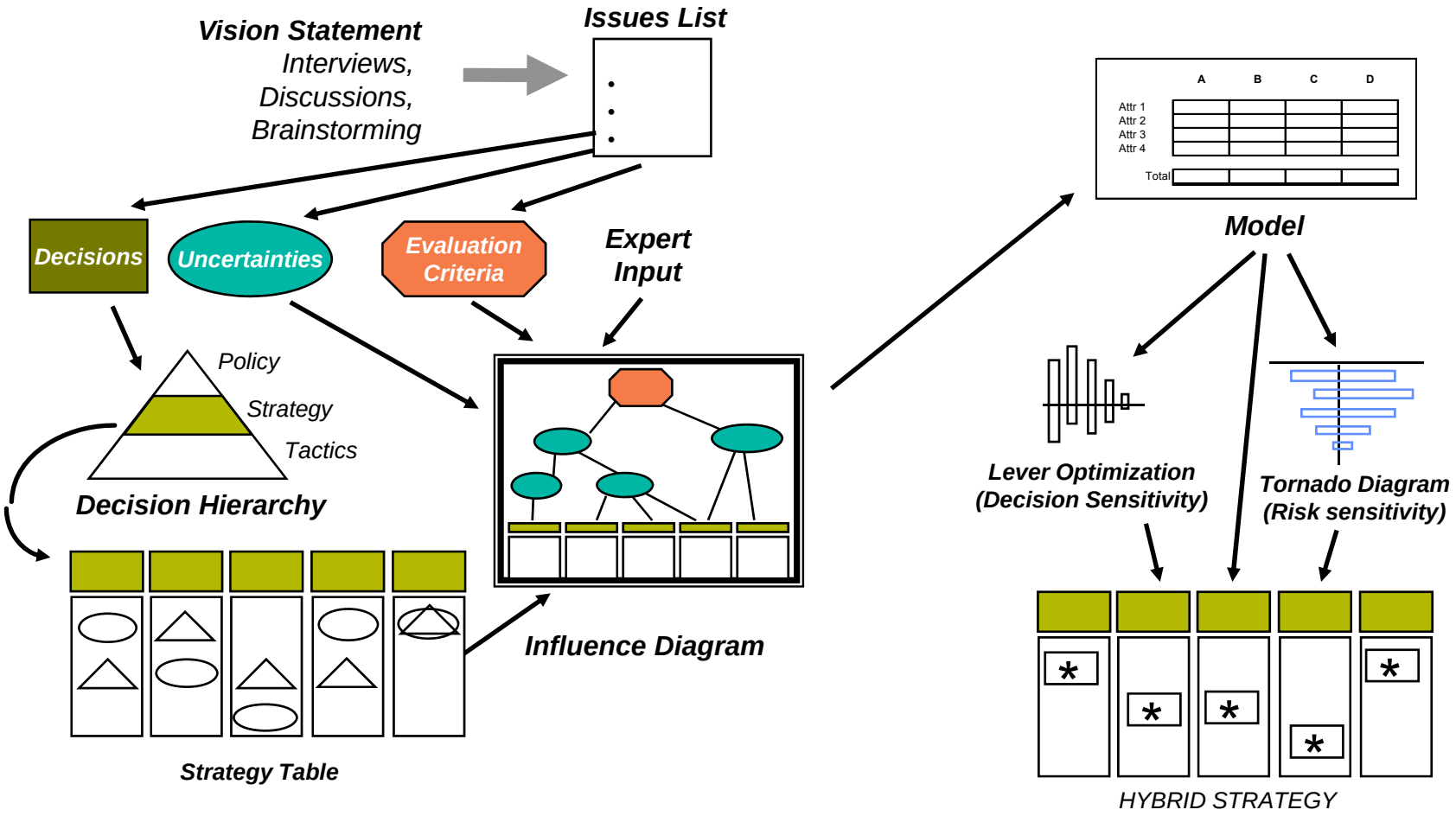
A Right Way to Do a Project Selection of An Aluminum Alloy

October 1997

= Alloy A was the momentum direction;
however,
some believed that Alloy B would be a better way to go



= A team was put together to analyze which alloy would be better. They decided to use the DDP process

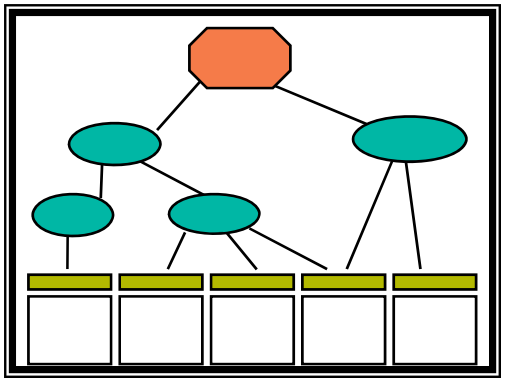


= The team spent valuable time synthesizing individual viewpoints into a shared understanding

At the beginning of the project, each person had their own implicit understanding.

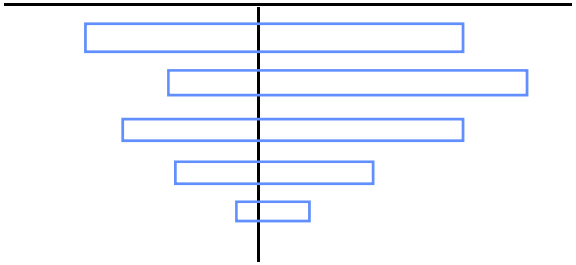
By the end of the project, the group had an explicit, shared understanding.

= The team created a model and estimated data with ranges of uncertainty



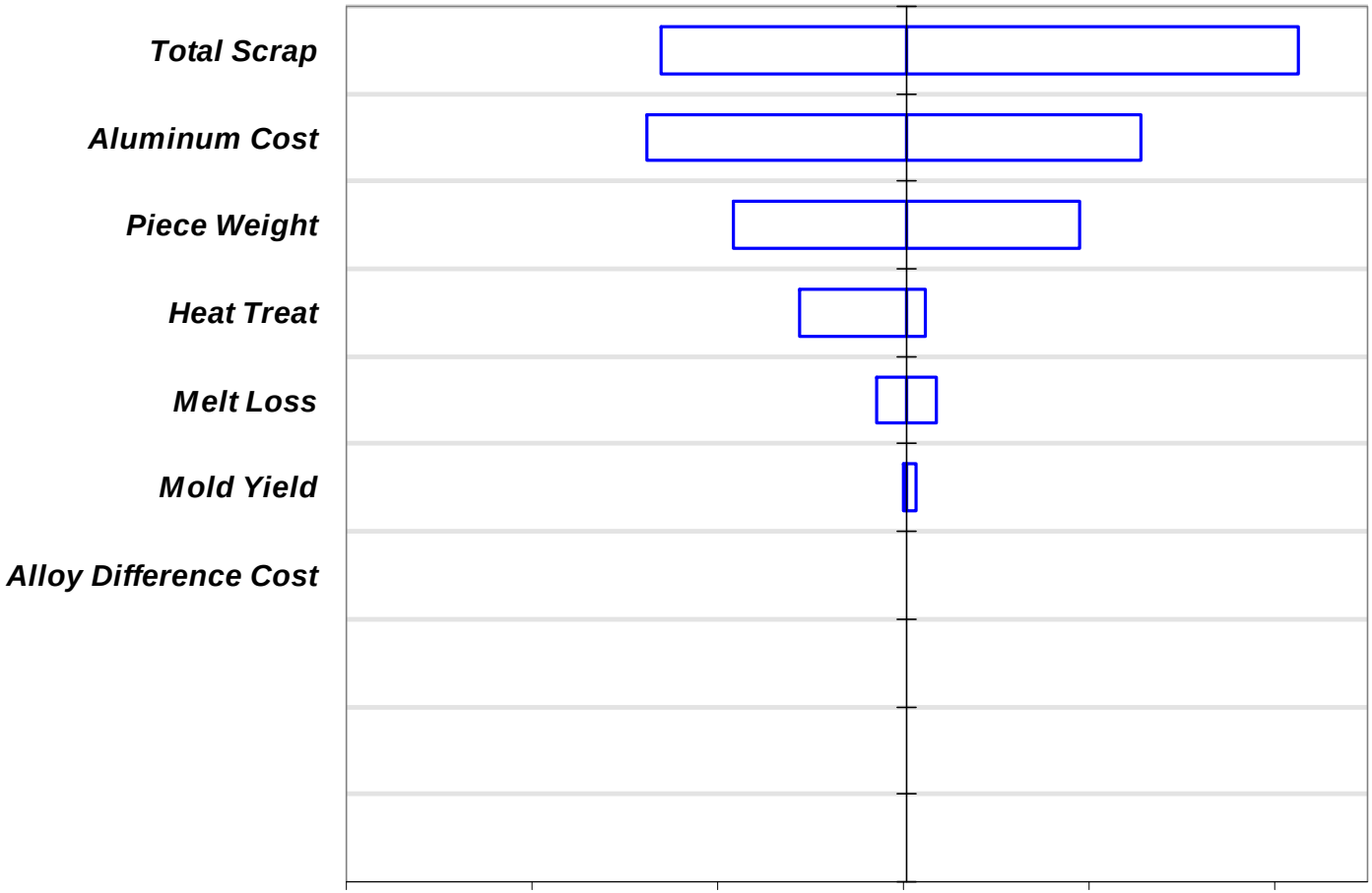
Influence Diagram

	A	B	C	D
Attr 1				
Attr 2				
Attr 3				
Attr 4				
Total				

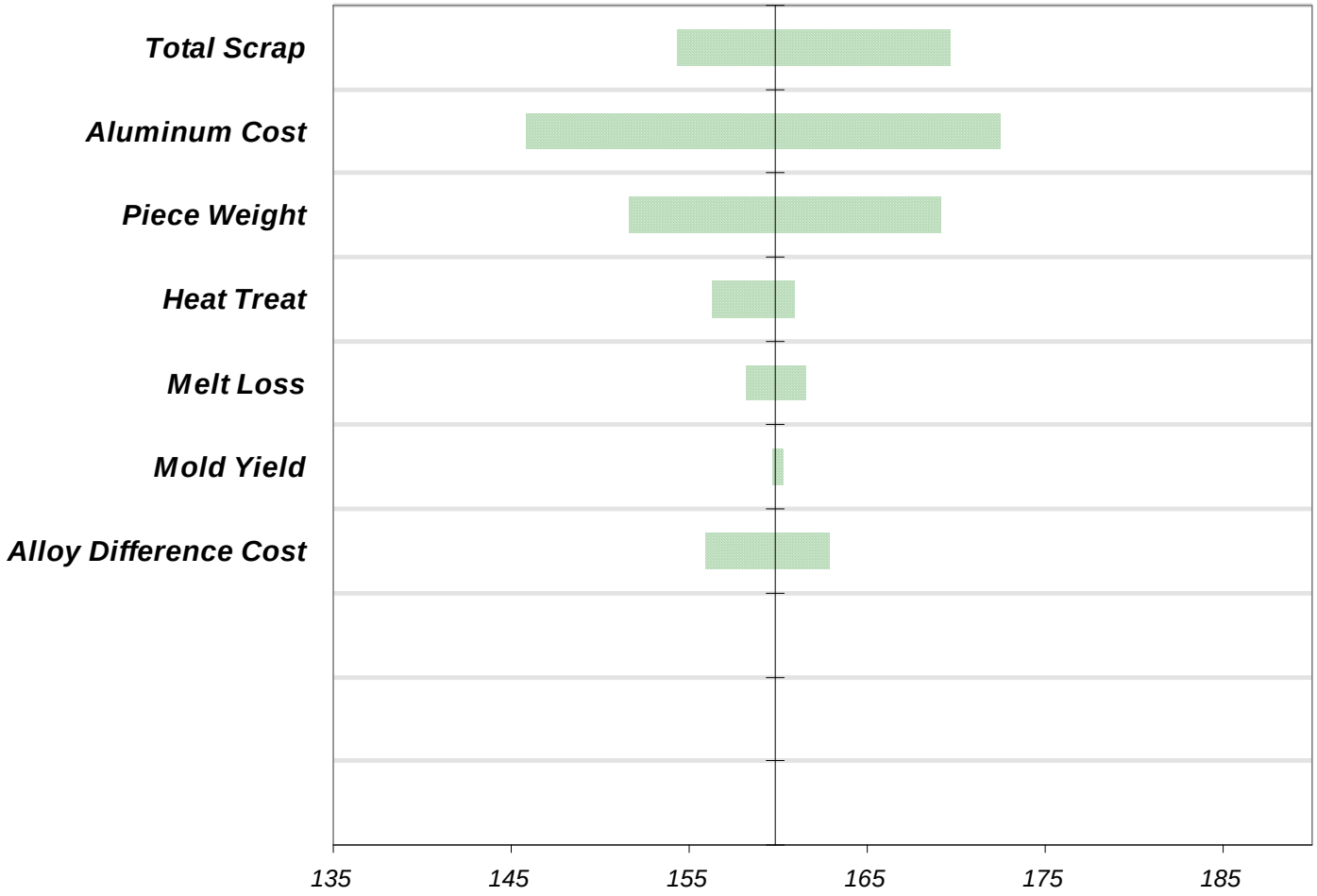


Tornado Diagram
(Risk sensitivity)

= ...Tornado charts were generated and shown to the team - *Alloy A - Initial Results*

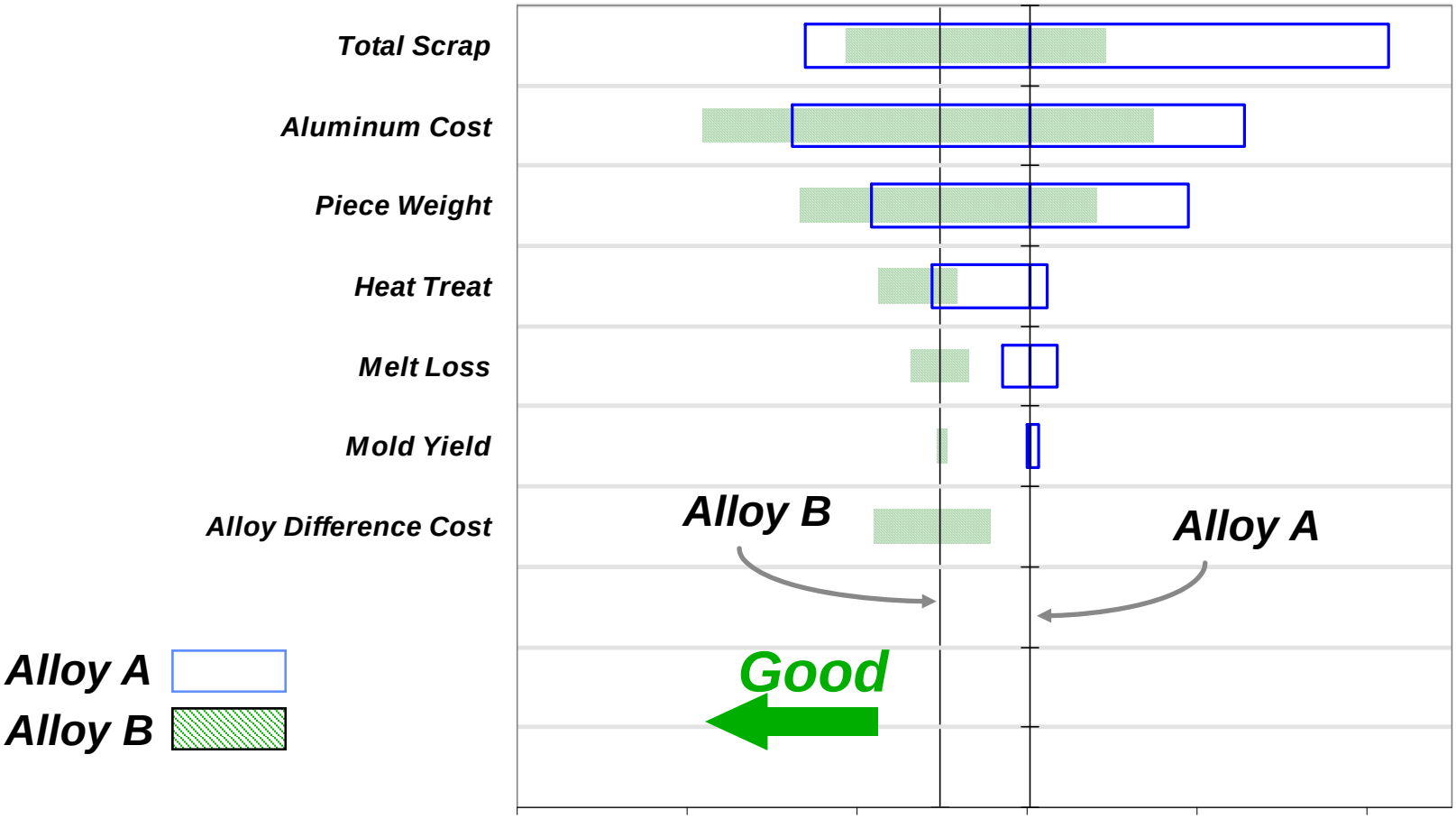


= A comparable tornado for Alloy B was generated
- Initial Results



To determine how Alloy B and Alloy A compare, you need to look at both tornadoes

= It is clear when the tornadoes are compared that the uncertainties are much larger than the nominal difference - Initial Results



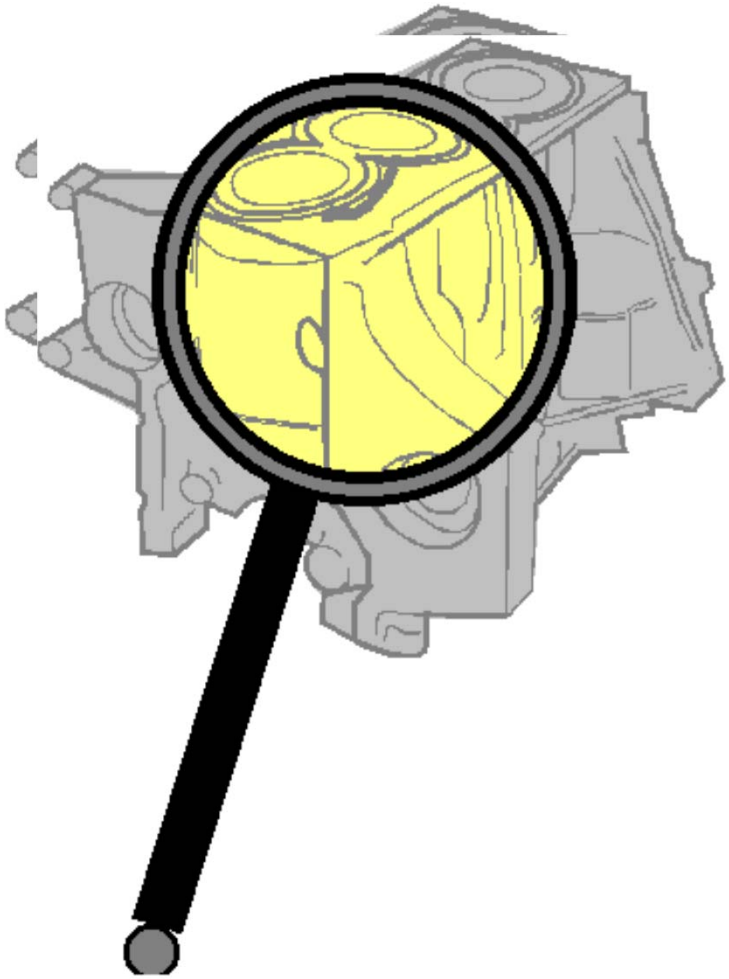
Without considering uncertainty, Alloy B would have been picked over Alloy A. The team commissioned research on scrap.

= Summarizing results after initial information

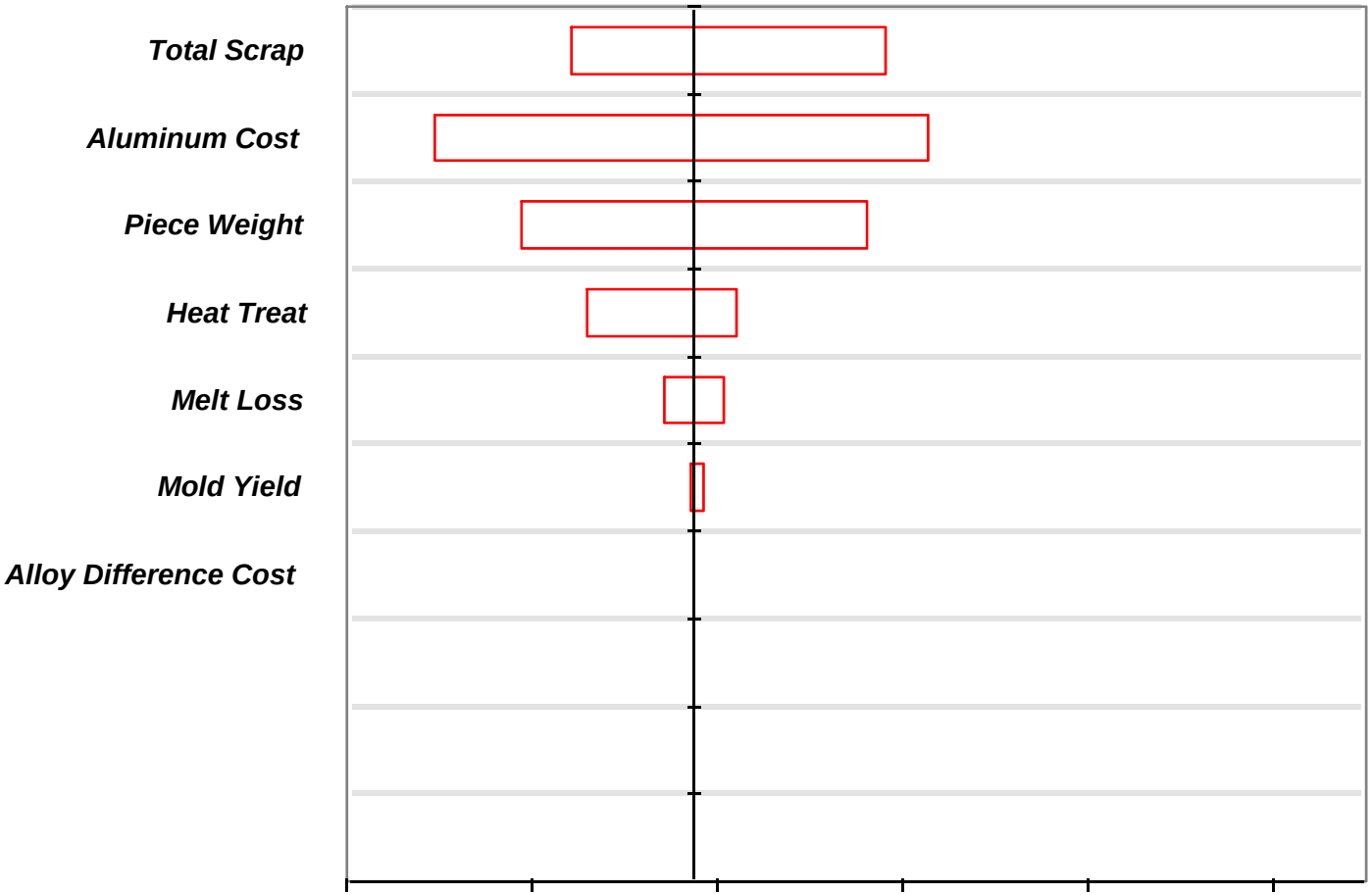
- Scrap by far is the major uncertainty on which information is needed in order to make the decision between Alloy A and Alloy B
- The remaining large uncertainties (Aluminum cost and Piece Weight) are not decision sensitive and would not impact the decision (i.e. the decision is consistent at 10, 50 and 90 points)
- Core team commissioned primary research on scrap

= The team conducted primary research to learn more about scrap, the largest uncertainty

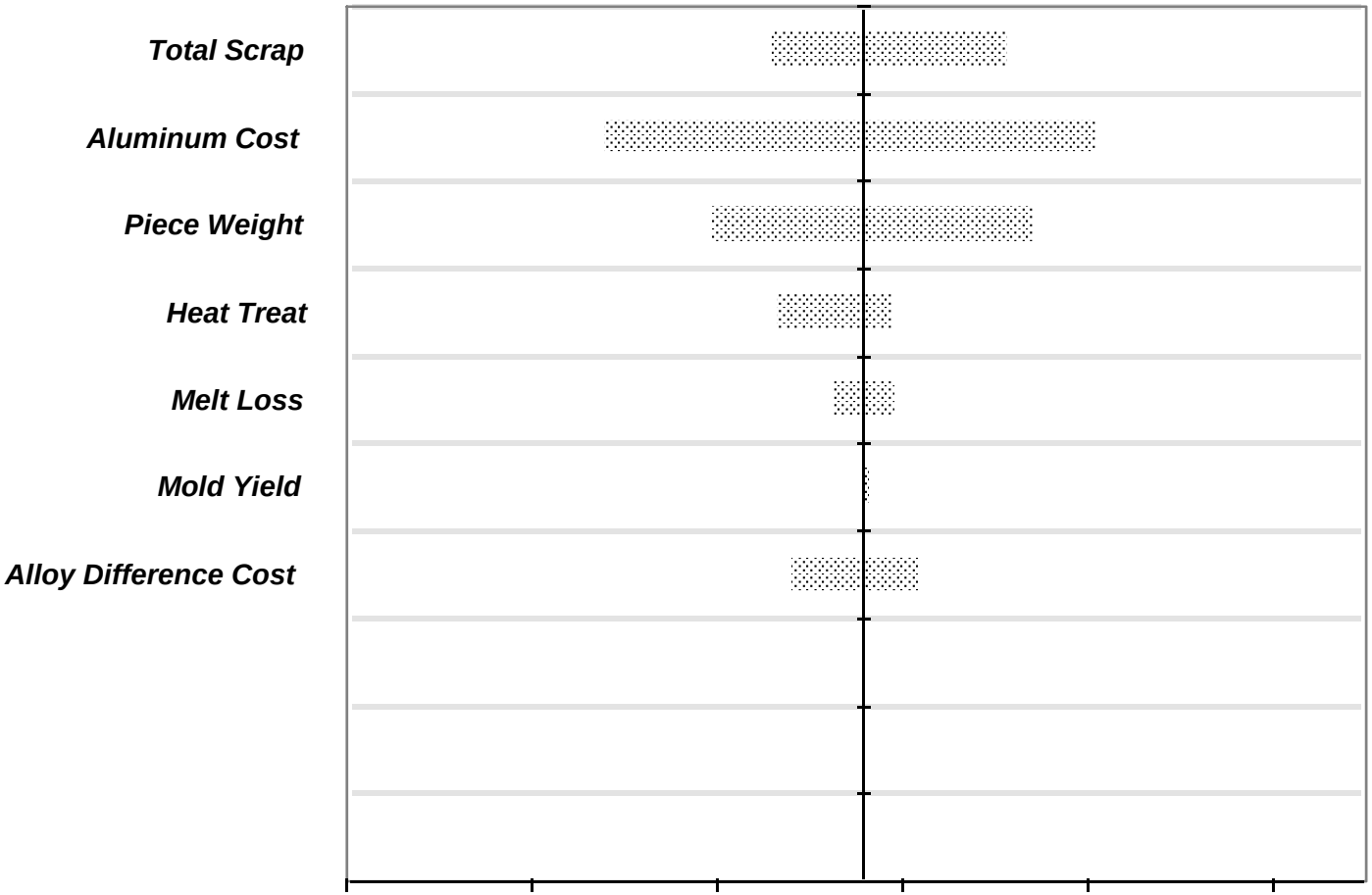
Research



= The final tornado for Alloy A shows significantly lower ranges of uncertainty especially for scrap



= The final tornado for Alloy B shows similar changes as the Alloy A tornado

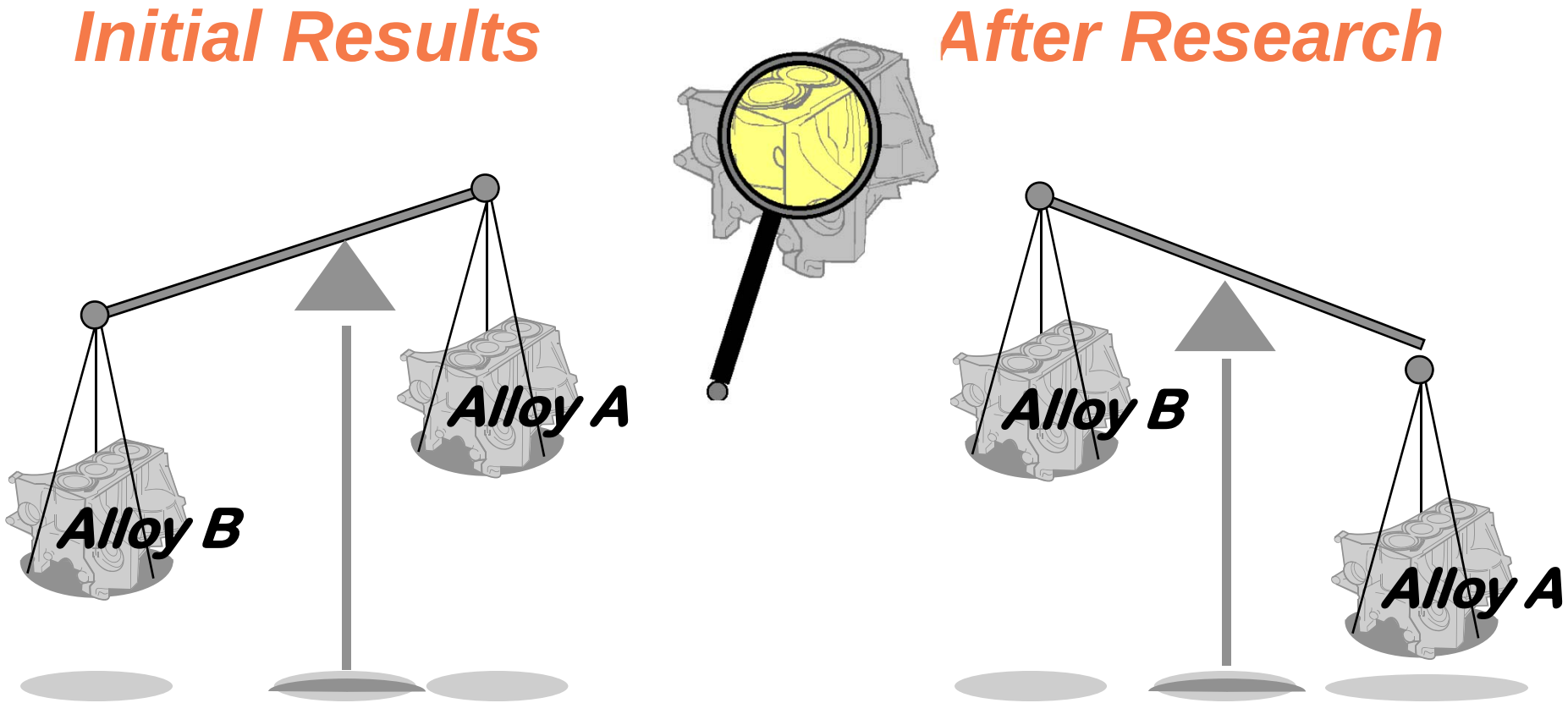


= The base (50 point) case shows that now Alloy A is superior to Alloy B. Uncertainties have less over lap.

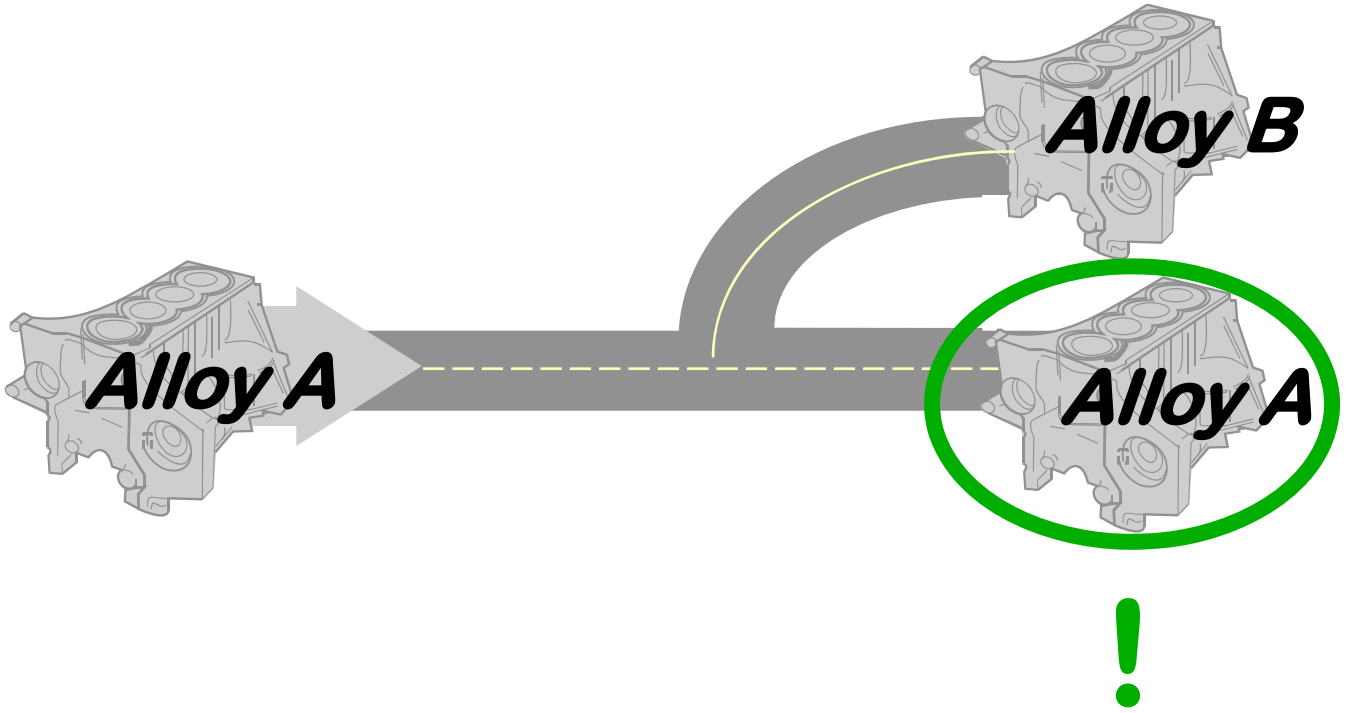
= Conclusions based on final tornadoes

- Alloy A became favorable to Alloy B
- Scrap bars became much shorter
- There is a low probability that Alloy B could be favorable to Alloy A
- Based on the criteria of Total Operating Cost, Alloy A is preferred to Alloy B

= The research conducted on the project changed which alloy is preferred



= The Review Board approved Alloy A



= Project was definitely worth doing

- **Momentum strategy was Alloy A**
  - Organization did not have a shared understanding of the differences in the two alloys
- **Some believed Alloy B should be used**
  - Initial results showed Alloy B favorable to Alloy A
    - Based on knowledge at the time, it was worth exploring Alloy B
  - Team used ranges of uncertainty to show their true understanding about the problem
    - If uncertainty was not considered, Alloy B would have been picked over Alloy A
- **Focused primary research was conducted**
  - Only on the largest uncertainty that would cause decision to switch
- **Final results showed Alloy A favorable to Alloy B**

= What good things happened relative to the project

- **Organization has agreement as to the best way to go**
  - Different groups now have a shared understanding
  - Key stakeholders were involved throughout the process
  - Peer reviews were used to validate information for critical uncertainties
- **Although calendar time was long, actual resource usage was efficient**
  - Quality time spent gaining shared understanding
  - Model was developed and run prior to scrap primary research
  - Sub groups used for detail issues
- **Energy of the core team has been maintained**
- **Subject matter experts owned project throughout**
- **Core team members learned much about the DDP decision process**