Cone of Uncertainty

- It is a way to look into the future
  - Often used as a technology foresight technique
    - What’s that?
      - Consider registering for:
        IFSC 4301 Information, Computing and the Future
        Next Fall, Mondays 6-8:40 P.M.

- Let’s try to understand the basic idea...

From: Stephan Magnus, adventurerfuture.wordpress.com/2012/04/16/six-rules-of-forecasting
Cone of Uncertainty
Illustrating It by Example

- What is the temperature outside now?
  - Let’s crowd source that now with a vote

Slightly modified from: desktop-weather.en.softonic.com
Cone of Uncertainty
Illustrating It by Example II

- What will the temperature outside be in one hour?
  - Let’s crowd source that the same way

Cone of Uncertainty
Illustrating It by Example II

- What will the temperature outside be in three hours?
  - Let’s crowd source as before
Cone of Uncertainty
Illustrating It by Example III

- What will the temperature outside be in 1 year?
  - (Same day & time)
  - Let’s crowd source as before

![Current Temperatures Map](image)
Cone of Uncertainty
Illustrating It by Example IV

- Let’s graph uncertainty in temperature over time
  - Note: actual temperature value predictions are totally irrelevant!

Source: Reddit (voodoobunny77), http://i.imgur.com/DsI6P.jpg
Summary:

- What does a cone of uncertainty show?
Cone of Uncertainty

From: Stephan Magnus, adventurefuture.wordpress.com/2012/04/16/six-rules-of-forecasting

Is there anything wrong with this figure?
Cone of Uncertainty: the Basic Idea

- It is harder to know the state of the world (or whatever) in the far than the near future
  - Long term prediction is thus harder than short term

- Think about this in the context of one’s life story

From: Stephan Magnus, adventurefuture.wordpress.com/2012/04/16/six-rules-of-forecasting
Cone of Uncertainty: Hurricanes

Cone of Uncertainty: Software engineering

From: www.construx.com/Thought_Leadership/Books/The_Cone_of_Uncertainty
Influential figure: Variations are all over the web & in print

Source: McConnell, Software Estimation, page 28
Cone of Uncertainty: Software engineering II

Cone of Uncertainty: Foresight

Modified slightly from: J. Mahaffie, “Foresight illustrated: The mother of all futures diagrams,”
http://foresightculture.com/2008/04/22/the-mother-of-all-futures-diagrams
Cone of Uncertainty: Foresight II

Cone of Uncertainty: Foresight III

- Rule # 1 for “effective forecasting”:
  - “Define a cone of uncertainty”
      www.usc.edu/schools/annenberg/asc/projects/wkc/pdf/200912digitalleadership_saffo.pdf (see image therein)

- “... the primary goal of forecasting is to identify the full range of possibilities, not a limited set of illusory certainties.”
In-Class Team Exercise: Cone of Uncertainty

- Your team project goal is a scenario of the future
  - Pick two future time points of your choice
    - Example: in 5 years and in 20 years
  - Describe the range of scenarios possible (including but not limited to your project)
    - Use the whiteboard if possible!
  - Does the range increase for more distant future times?
- Explain to the class
In-Class Individual Exercise: Cone of Uncertainty

- Your individual project goal is also a scenario of the future
  - Pick two future time points of your choice
    - Example: in 5 years and in 200 years
  - Describe the range of scenarios possible (including but not limited to your project)
  - Does the range increase for more distant future times?
- Explain to the class as concisely as possible