Prediction Markets for Program and Project Management

PMI WDC Tools Seminar

Tom Erickson
17 April 2012
Agenda

• The Wisdom of Crowds
• Prediction Markets
• An Audience Participation Demo
• Prediction Market Characteristics
• A Real Prediction Market
• Prediction Markets for Knowledge Areas
• Lessons Learned
“The Wisdom of Crowds”¹

• How Many Jelly Beans?
• Average of answers from a large population will be more accurate than most of the individual answers.
• A diverse collection of independently-deciding individuals is likely to make certain types of decisions and predictions better than individuals or even experts².

The Problem
What Is a Prediction Market?³

We can look to a popular television show to explain what prediction markets are:

In “Who Wants to be a Millionaire,” when contestants get stuck, they have three lifelines:

» 50/50
   Eliminate two of the four answers

» Phone a friend
   Call whoever you want to get help

» Ask the audience (93% accurate)
   Use the highest percentage answer from the audience

A prediction market is like “asking the audience.”
The Nebit IPL

• Potentially earth-shaking new consumer product
• Initial, simultaneous, multi-site initial product launch (IPL) pending
• Initial product runs successful (more or less)
• Mahogany row has high expectations
• What could go wrong?

Vote your confidence in the IPL’s success.
The Nebit IPL Prediction Market

How successful will The Nebit IPL be?

Text a **CODE** to 22333  Submit responses at **PollEv.com/Nebit**

- It will go viral. Execs will be qiddy.
- It will do well. Execs will be happy.
- It will meet projections. Execs will be mildly dissatisfied.
- It won't quite meet projections. Execs will start asking questions.
- It will flop. Heads will roll.

298810  298815  298816  298817  298818

Total Results: 0
Prediction Market Characteristics

• Prediction market systems:
  – Can assess the consensus of large (selected) populations efficiently, on a real-time basis
  – Are usually web-based
  – Pose questions about future events
  – Can look and feel like stock markets, complete with ‘play money’, buys and sells
  – Can assess multiple future outcomes in parallel; i.e., they can include many questions on many topics at the same time
  – Often include tools for statistical and trend analysis
  – Frequently allow users to pose their own questions
Surveys vs Prediction Markets

Typically if a company wants to understand people’s opinions they conduct a survey or poll. A prediction market is different from a survey or poll.

- Surveys and polls typically ask what a person wants to happen “Who will you vote for?”
- Surveys and polls are snapshots in time. A person cannot change their answer once they have answered it

- A prediction market asks what a person predicts will happen whether they want the outcome to happen or not “Who do you think will be elected?”
- A prediction market gives an ongoing view in to what people think will happen and allows people to change their mind based on external events or new information
## Wise Crowds

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Diversity of opinion</td>
<td>Each person should have private information even if it's just an eccentric interpretation of the known facts.</td>
</tr>
<tr>
<td>Independence</td>
<td>People's opinions aren't determined by the opinions of those around them.</td>
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<tr>
<td>Decentralization</td>
<td>People are able to specialize and draw on local knowledge.</td>
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<tr>
<td>Aggregation</td>
<td>Some mechanism exists for turning private judgments into a collective decision.</td>
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You are the shipping manager and you heard through the grapevine that one of your shippers has just won another major contract that will use all their spare capacity, and then some.
Example: Inkling Public Markets

[Image of Inkling Public Markets platform]

**Who will be the Republican VICE Presidential Candidate?**

- **Make a prediction**
- **Other** currently leads with a chance of 33.96%
  - Up $1.01 today

[Graph showing prediction results]
News Flash

During a production staff meeting the industrial engineers monitoring the production statistics reported a 20% improvement in throughput over the initial production run, but this news won’t be reported up the chain until the next monthly PMR.
# Project/Program Knowledge Areas

<table>
<thead>
<tr>
<th>The Standard for Project Management</th>
<th>The Standard for Program Management</th>
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<tbody>
<tr>
<td>Integration Management</td>
<td>Integration Management</td>
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<tr>
<td>Scope Management</td>
<td>Scope Management</td>
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<td>Time Management</td>
<td>Time Management</td>
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<tr>
<td>Cost Management</td>
<td>Cost Management</td>
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<tr>
<td>Quality Management</td>
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<td>Human Resource Management</td>
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<td>Communications Management</td>
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<td>Risk Management</td>
<td>Risk Management</td>
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<td>Procurement Management</td>
<td>Procurement Management</td>
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<td></td>
<td>Financial Management</td>
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<td></td>
<td>Stakeholder Management</td>
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<td>Program Governance</td>
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## Prediction Market Questions

<table>
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<tr>
<th>Knowledge Area</th>
<th>Prediction Market Questions</th>
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</table>
| Integration Management  | • How many changes will the Charter go through during the project?  
                          | • Will the Program Management Plan get signed off before CDR?  
                          | • Will all class 1 changes become resolved before IOC?                                                         |
| Scope Management        | • How much will requirements increase before PDR?  
                          | • How many errors will the audit find in the WBS?  
                          | • How many errors will the functional configuration audit find?                                               |
| Time Management         | • What percent of the project activities will turn out to be on the critical path?  
                          | • How many activities will be added to the schedule during final design?  
                          | • Will FQT complete on schedule?                                                                                |
# Prediction Market Questions

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| Cost Management                       | • When will the overall program CPI exceed 5% of baseline?  
• How long will it take to complete the next rolling wave budget?  
• Will the cost variance at IOC exceed 15%? |
| Quality Management                    | • Will the customer approve the QMP in time for CDR?  
• Will Program XYZ successfully pass Phase 2 PCA?  
• How many process escapes will occur during low rate initial production? |
| Human Resource Management             | • Will we meet the project start up 100-day staffing levels?  
• What percentage of the staff will complete time accounting training before the next timecard audit?  
• How many key personnel will leave by FAT? |
## Prediction Market Questions

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| Communications Management         | • How many stakeholders will attend the PDR?  
• What will be the score from the next communications survey with the team? With the stakeholders?  
• How many staff hours will it take to prepare for the next quarterly status review?                                                                                          |
| Risk Management                   | • What will be the score of the next business resiliency exercise?  
• Where is the next unforeseen problem most likely to occur?  
• How many opportune uncertainties will the staff identify in the next quarter?                                                                                                      |
| Procurement Management            | • Will the contract get signed before the deadline for ordering long-lead materiel passes?  
• How much will the contract mod backlog grow before CDR?  
• How many of our sole source suppliers will we lose during low rate initial production?                                                                                     |
## Prediction Market Questions

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| Financial Management    | • Will this year’s program ROIC exceed expectations?  
                          | • How much will our cost of capital change this fiscal year?  
                          | • Which program will exceed expected cash flow? |
| Stakeholder Management  | • Will the COO approve the stakeholder management/communications plan?  
                          | • How many stakeholders will decline the next semi-annual program review?  
                          | • Which key stakeholders will be most difficult to schedule for one-on-ones? |
| Program Governance      | • Which program benefits expected this year will not appear?  
                          | • Which functional area will generate the most audit findings this year?  
                          | • How much will quality escapes erode program profits in the next five years? |
A member of the West Coast marketing team overhears one of the retailers at a conference describe The Nebit to a competitor. It is one week until IPL.
Lessons Learned

• Need diverse mix of participants
  – Different levels
  – Different organizational areas
• Traders must have some knowledge or frame of reference of at least 3-4 questions being asked in the marketplace
• Maintain anonymity among peers
• Don’t try to force organizational structure on marketplace
• Users will self-select what to trade in
• People take the fantasy currency seriously
Lessons Learned (cont.)

• Prizes don’t work that well. Here are some alternatives:
  – Reward participants with exclusive access to people and information
  – Create a competitive environment between groups
  – Create a community of practice
  – Let people ask their own questions. Make the marketplace feel organic, not forced from above

In addition to incentives, proper management of the marketplace is the #1 indicator of success vs. failure
The Nebit IPL Prediction Market

What has been happening?
Final Results

How successful will The Nebit IPL be?

- It will go viral. Execs will be giddy. **18%**
- It will do well. Execs will be happy. **16%**
- It will meet projections. Execs will be mildly dissatisfied. **24%**
- It won't quite meet projections. Execs will start asking questions. **27%**
- It will flop. Heads will roll. **16%**

This poll has received the maximum number of votes

Total Results: **250**
Conclusions

• Prediction Markets can provide the capability to efficiently engage the “wisdom of crowds” phenomenon.

• Prediction Markets can support all Project/Program Knowledge Areas.

• Prediction Markets are not suitable for all projects and populations.
Questions?
Acknowledgments

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Backup
Prediction Market Systems

• Commercial Systems
  – Consensus Point
  – Gexid
  – Hollywood Stock Exchange (HSX)
  – Inkling Markets, Inc.
  – InTrade/TradeSports
  – Lumenogic
  – Nosco
  – Pro:kons

• Open Source Systems
  – Conversocial
  – IdeaFutures
  – MarMix
  – Serotonin
  – USIFEX
  – Zocalo