OMG MDA Implementers' Conference

Cost Aware MDA: Modeling to Assess Value and Return on Investment

- David Fado, May 2003

Toward MDA to Assess Investment

- MDA can help address problems of modeling investment decisions by providing a more accurate picture of economic assets.
- MDA can provide a picture to help determine how to handle shared assets and the “problem of the commons” in a firm.
- MDA may or may not deliver lower production costs, but can show the key management issues to address to make investment decisions successful.
- Information, properly summarized and presented, is power.

The Goal is the Spreadsheet

- Gather information on platform options.
- Make estimation and assumptions clear.
- Provide mechanism for linking actual data to the estimates.

Platform One	Mean	Median	Mode	Stan Dev	Kurtosis	Skewness	Min	Max
Writing Instrument	81	5	4	499	49	7	2	3500
Letter	50	45	55	26	25	4	22	200
Check	9	7	3	6	-1	0	1	23
Bank	132	130	130	5	10	3	130	155
Ink	2	1	1	2	17	4	1	12
Total	292	199	197	496	44	7	167	3843

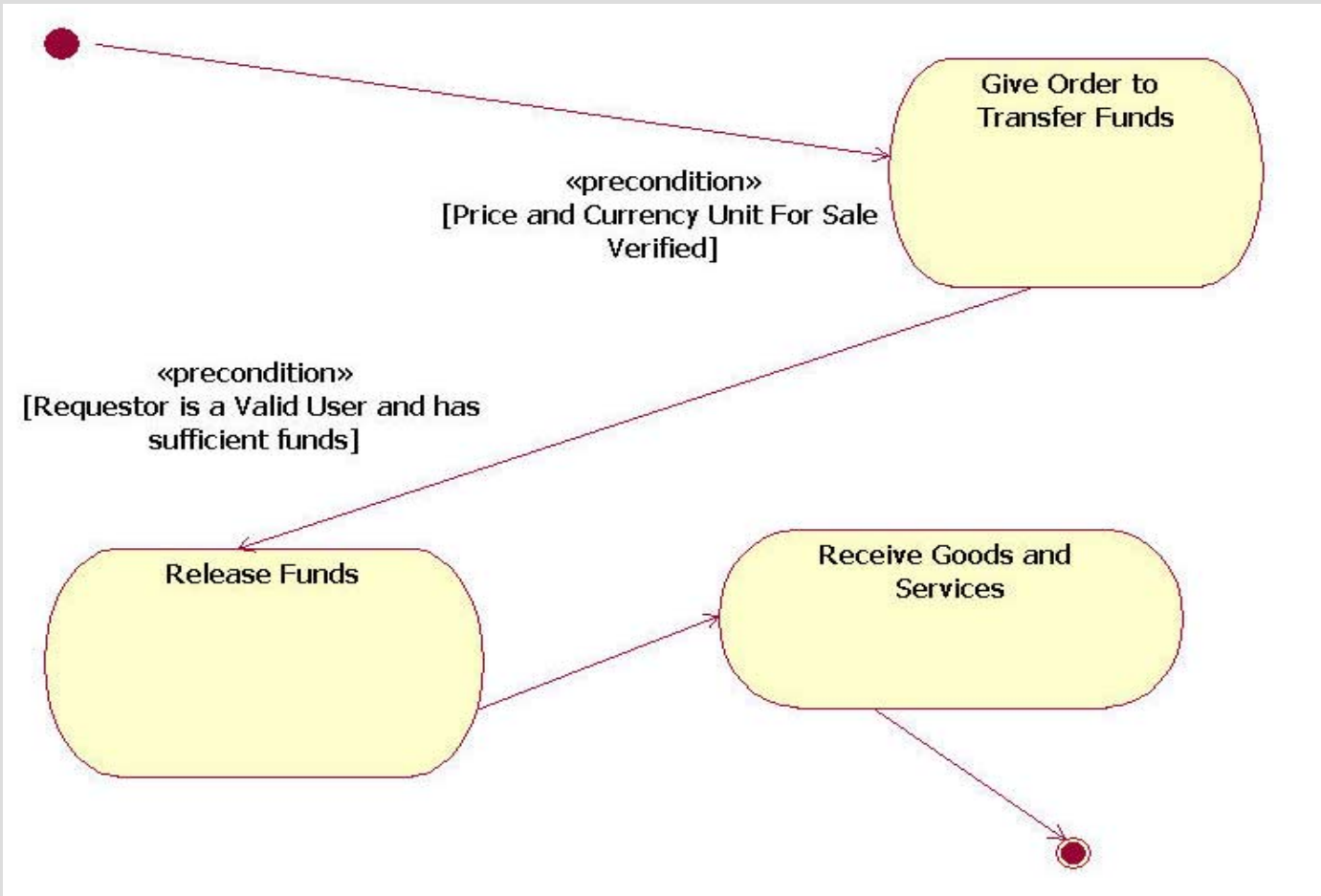
Platform Two	Mean	Median	Mode	Stan Dev	Kurtosis	Skewness	Min	Max
Computer	92	4	2	499	48	7	1	3500
Internet Connection	38	14	14	88	37	6	4	600
Electricity	4	4	3	2	-1	0	2	7
Bank	132	130	130	5	10	3	130	155
Total	309	162	152	522	35	6	141	4236

- Allow complex mathematical calculations outside system.

Example Problem: Writing a Check

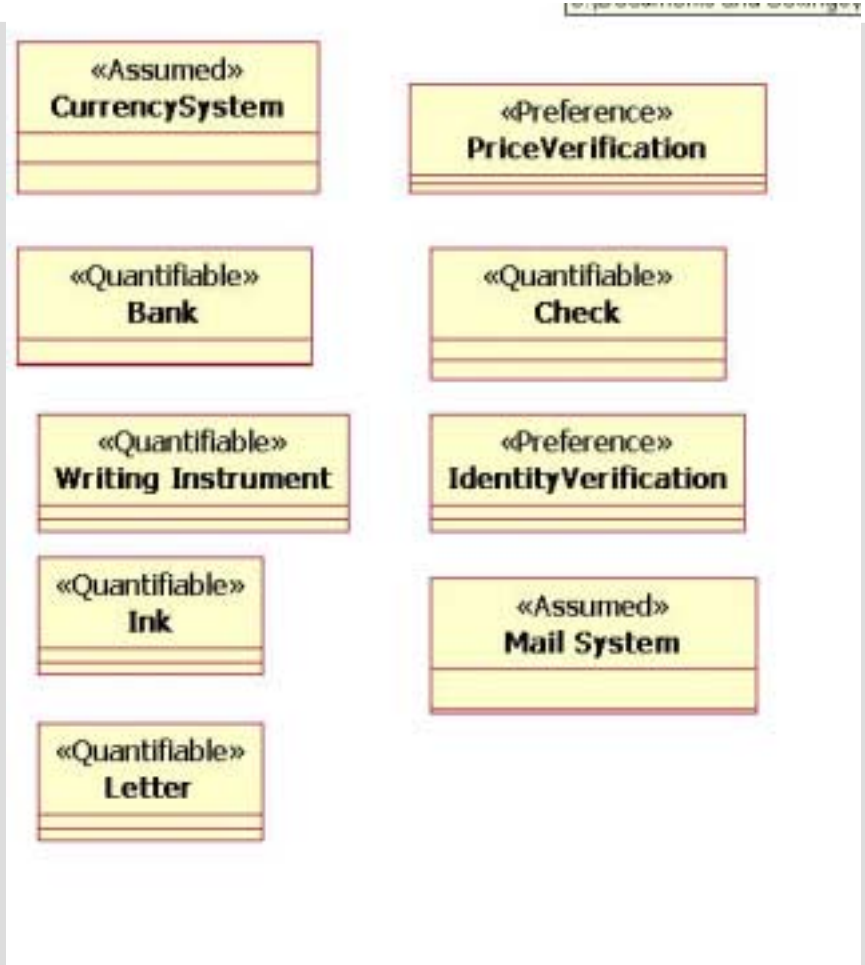
- Simple problem to illustrate process.
- Even a simple problem gets complex when fully spelled out.

Platform Independent Fragment



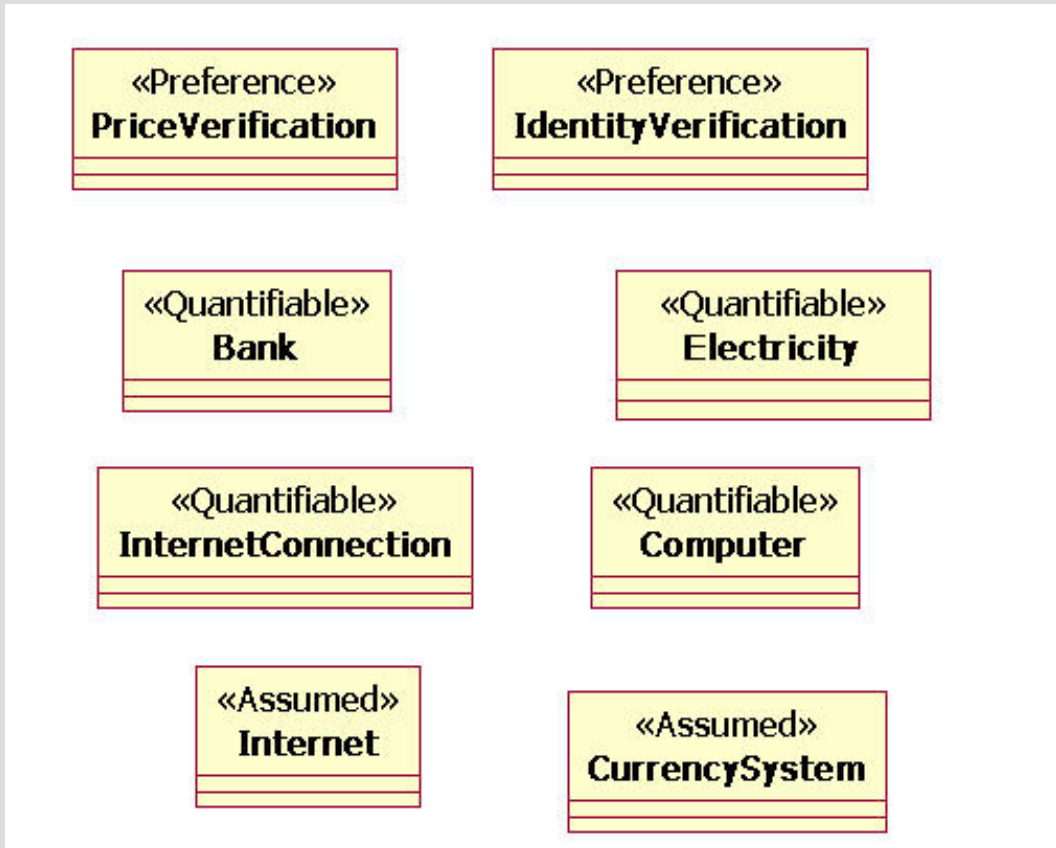
Participating Elements One

- These are the elements needed for implementation with paper checks



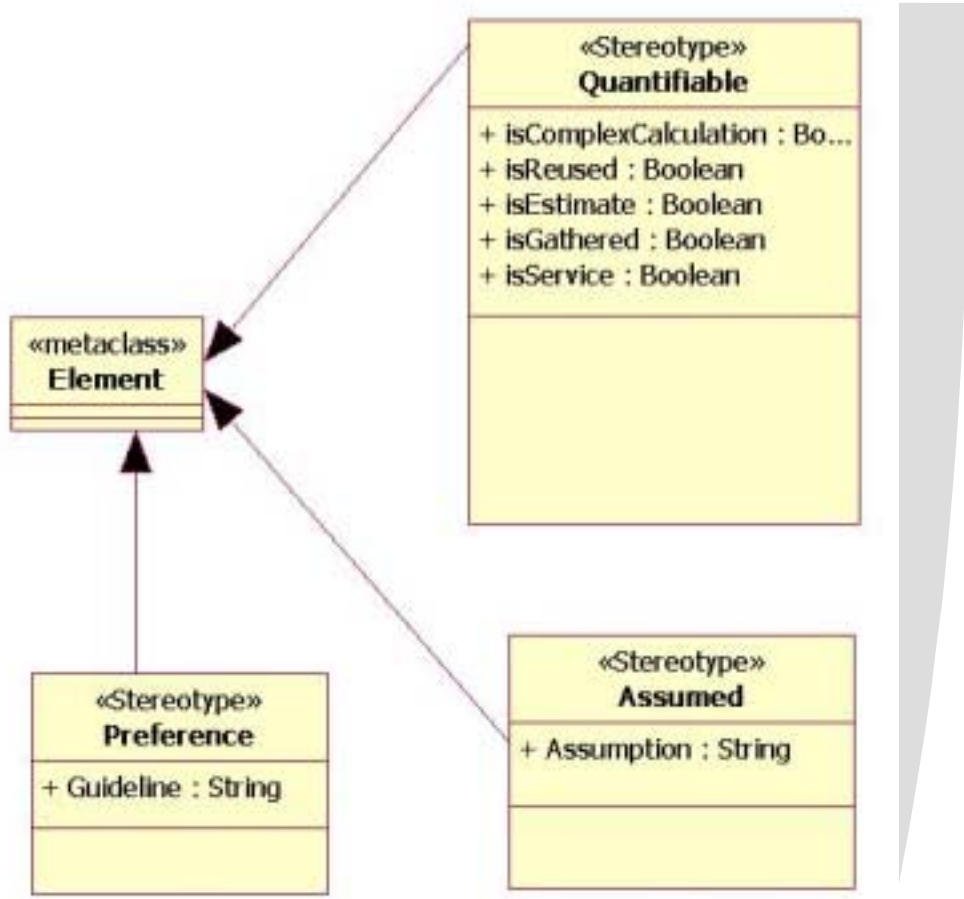
Participating Elements Two

- These are the elements for the solution that will use the internet to write checks.



Profile Elements

- A very simple set of attributes, not meant to be a complex profile.
- Relies on UML 2 feature for multiple stereotypes on an element.



Platform One Initial Spreadsheet

	A	B	C	D	E	F	G	H
1	**Quantifiable Elements**	Complex Calculation	Reused	Estimate	Gathered	Service		
2	Writing Instrument	No	Yes	Yes	No	No		
3	Letter	Yes	No	Yes	Yes	Yes		
4	Check	No	No	Yes	Yes	No		
5	Bank	Yes	Yes	Yes	Yes	Yes		
6	Ink	No	No	Yes	No	No		
7								
8	**Assumptions**						Assumption	
9	Mail System						Mail system will deliver mail to the right place within three days	
10	Currency System						Vendors will accept US Dollars	
11								
12								
13	**Preferences**							Guideline
14	Price Verification							Human Verification
15	Identity Verification							Low security needs
16								
17								

Platform Two Initial Spreadsheet

	A	B	C	D	E	F	G	H
1	**Quantifiable Elements**	Complex Calculation	Reused	Estimate	Gathered	Service		
2	Computer	Yes	Yes	No	No	No		
3	Internet Connection	Yes	No	Yes	Yes	Yes		
4	Electricity	No	No	Yes	Yes	No		
5	Bank	Yes	Yes	Yes	Yes	Yes		
6								
7	**Assumptions**						Assumption	
8	Internet						Internet will be available with basic security at all times	
9	Currency System						Vendors will accept US Dollars	
10								
11								
12	**Preferences**							Guideline
13	Price Verification							Human Verification
14	Identity Verification							Low security needs
15								

Summary Spreadsheet

Platform One	**Mean**	**Median**	**Mode**	**Stan Dev**	**Kurtosis**	**Skewness**	**Min**	**Max**
Writing Instrument	81	5	4	499	49	7	2	3500
Letter	50	45	55	26	25	4	22	200
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Bank	132	130	130	5	10	3	130	155
Ink	2	1	1	2	17	4	1	12
Total	292	199	197	496	44	7	167	3843
Platform Two	**Mean**	**Median**	**Mode**	**Stan Dev**	**Kurtosis**	**Skewness**	**Min**	**Max**
Computer	92	4	2	499	48	7	1	3500
Internet Connection	38	14	14	88	37	6	4	600
Electricity	4	4	3	2	-1	0	2	7
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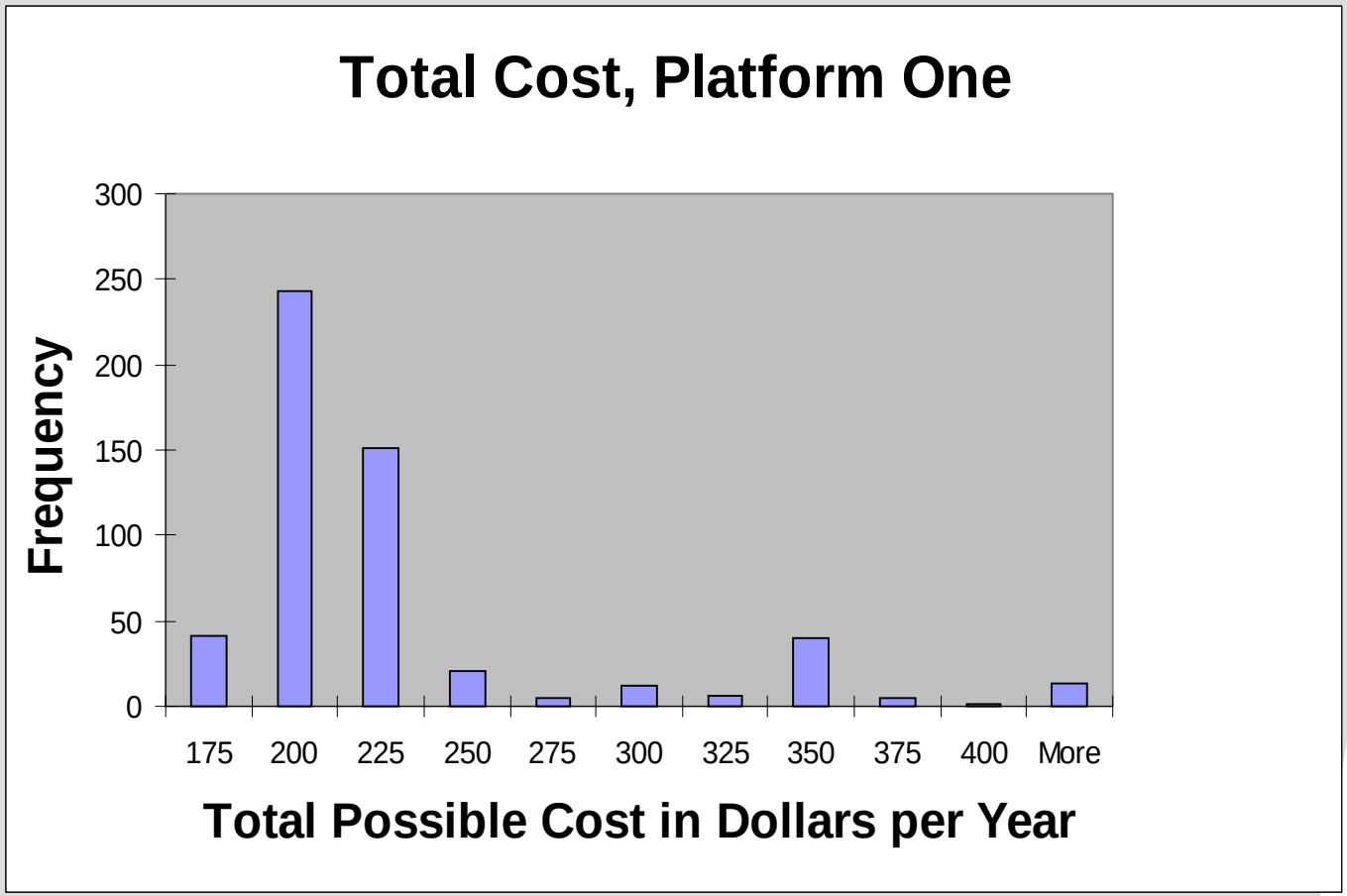
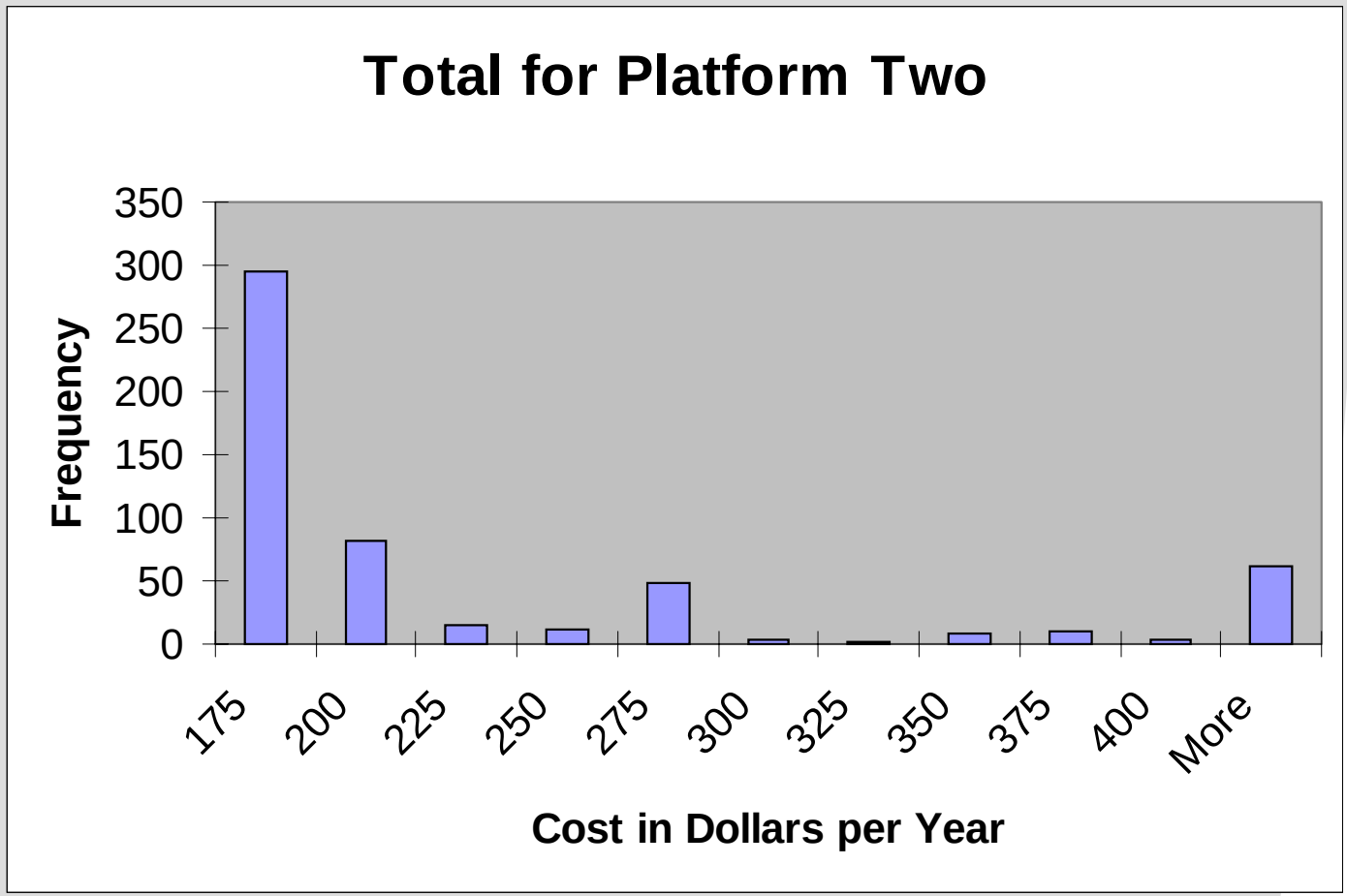
Histogram for One

- In estimation, the cases of high risk are those that move the curve to the right.
- Management should focus on controlling these risks for those costs.



Histogram for Two

- While two has a higher mean, the chart has more weight on the left and more on the far right.
- Properly managed, platform two could be the better solution.



Assessment

- Under current estimates, platform two will cost more than platform one on average.
- If the platform two solution can manage the cost of the computer and the internet connection, then it is the cheaper solution.
- This is only an INPUT into the decision. It will be matched with preferences, reviewed assumptions, and management strategies implemented based on risk for the final decision.

Next Steps

- With connections into the IT infrastructure, actual data can be collected to track real costs versus the estimated scenarios.
- The key is to provide flexibility and the ability to fully understand the impact of a change in the implementation environment or the cost politics of that environment.
- Method can also be used to assess other decisions or as an input to complex hierarchical decision frameworks.
- Also need ways to assess cycle time, performance, or non-cost quantifiable elements.

Conclusion

- MDA offers a lot of information for cost analysis.
- With a minimum of thought, modelers can add features to provide very helpful input into business modeling.
- With additional thought, models can also set up methods for providing actual data on expenses and performance.