

# **The Continuous Combinatorial Auction Architecture**

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On-Line Appendix

## Interfaces

The interfaces presented here reflect what we have learned about what bidders want to know, aided by strategic considerations from game theory. When observing individual behavior in experiments, we follow the principle that the individual is an optimizer subject to perception of conditions and options available. Behavior that is not consistent with the incentives that we know exist are viewed as mistakes or misperceptions that the properly designed interfaces should prevent.

The interfaces produced in the illustrations below reflect the experience gained from experiments. The best way to explain interfaces seems to be to simply show them. The next seven pages are screen shots and explanations of the major functions and how they relate to bidder decisions. The illustrations begin with the home screen and provide a map to the other screens. [Illustrations 1-7]

# Illustration 1. Bids, Provisional Winners, Clocks

Watch the Clocks

Real Time or Paused

View the Offers

(Provisional Winners, Complete Offer List)

Fashion Your Offer

The screenshot shows an auction interface with several key sections:

- Left Panel:** Contains a 'Fashion Your Offer' section with a table of 'run number' values (101-209) and a 'Submit Offer' button.
- Top Center:** A 'Clocks' section with a 'Real Time or Paused' status indicator.
- Right Panel:** A 'View the Offers' section displaying a table of 'Provisional Winners' and a 'Complete Offer List'.

new PIC Offer	new PIC Offer	new PIC Offer	new PIC Offer
101 12 15100	106 89 14500	107 12 15000	108 12 15100
109 78 15100	110 78 15000	111 ** 15000	112 78 15000
113 12 15000	114 89 15100	115 ** 15000	116 ** 15000
117 90 15000	118 84 14600	119 12 15000	120 ** 15000
121 12 15000	122 ** 15000	123 12 15100	124 12 15000
125 12 14670	126 ** 15000	127 89 15000	128 ** 15000
129 ** 15000	130 ** 15000	131 ** 15000	132 ** 15000
133 ** 15000	134 ** 15000	135 ** 15000	136 ** 15000
137 13 15000	138 ** 15000	139 ** 15000	140 ** 15000
141 ** 15000	142 ** 15000	143 ** 15000	144 ** 15000
145 ** 15000	146 ** 15000	147 ** 15000	201 ** 14500
202 78 14450	203 78 14450	204 ** 14500	205 ** 14500
206 ** 14500	207 ** 14500	208 ** 14500	209 ** 14500
210 ** 14500	211 ** 14500	212 ** 14500	213 ** 14500
214 ** 14500	215 ** 14500	216 ** 14500	217 ** 14500
218 ** 14500	219 ** 14500	220 ** 14500	221 ** 14500
222 ** 14500	223 ** 14500	224 ** 14500	225 ** 14500
226 ** 14500	227 ** 14500	228 ** 14500	229 ** 14500
230 ** 14500	231 ** 14500	232 ** 14500	233 ** 14500
234 ** 14500	235 ** 14500	236 ** 14500	237 ** 14500
239 ** 14500	239 ** 14500	240 ** 14500	241 ** 14500
242 ** 14500	243 ** 14500	244 ** 14500	245 ** 14500
246 ** 14500	247 ** 14500	248 ** 14500	249 ** 14500
250 ** 14500	251 ** 14500	252 ** 14500	253 ** 14500
254 ** 14500	301 ** 10500	302 ** 10500	303 ** 10500
304 ** 10500	305 ** 10500	306 ** 10500	307 ** 10500

## Illustration 2. Fashion and Submit an Offer

The screenshot shows a bidding interface with the following elements:

- Top Bar:** "new bid: 00:56", "new winner: 07:56", and a green "live" indicator.
- Form Fields:** "Price" (15150), "Bid #", and "Items" (123).
- Buttons:** "-", "+", "min 15150", "min 15400", "Show Bid as Winning", "remove item", "Clear All", "Show Intersecting Bids", "Submit Offer", "Send Query", "Add Items to Watch List", "Add Items to Bid", "Clear", "Add".
- Navigation Links:** "Complete Submission Form", "Watch List Submission Form", "Offer Modification Form", "Complete Offer List".
- Table:** A table with columns "run number" and rows of numbers from 101 to 201. Row 123 is highlighted in red.

**Numbered Callouts:**

1. Make sure you are on one of these (points to navigation links)
2. Select the Item(s) (points to the "Add Items to Bid" button)
3. Add selected to your offer (points to the "Add" button at the bottom of the table)
4. Inspect selected before proceeding (points to the "Add Items to Bid" button)
5. Choose price (points to the "Price" field)
6. Short cut to price selection: a. Query for amount, b. choose minimum or winning (points to "Send Query" and "Show Bid as Winning")
7. **Submit Offer** (points to the "Submit Offer" button)

run number			
101	102	103	104
105	106	107	108
109	110	111	112
113	114	115	116
117	118	119	120
121	122	123	124
125	126	127	128
129	130	131	132
133	134	135	136
137	138	139	140
141	142	143	144
145	146	147	201

### Illustration 3. View the Offers (Provisional Winners)

run#, PIC making offer

1. Make sure you are here

**Purple**  
Provisional Winner of a single

**Blue PIC**  
Provisional Winner of a package offer

**Black price**  
high single offer (not winning due to a package offer)

**Gold** means you are the Provisional Winner

Red dot is a new Provisional Winner

Black dot is new non-winning offer

Provisional Winners			Watch List	Complete offer list							
run#	PIC	\$Offer	run#	PIC	\$Offer	run#	PIC	\$Offer	run#	PIC	\$Offer
101	12	17850	102	85	15550	103	12	15050	104	12	15150
105	12	15100	106	89	15550	107	12	15000	108	78	15150
109	78	15100	110	78	15000	111	**	15000	112	78	15000
113	12	15000	114	85	15150	115	**	15000	116	**	15000
117	90	15000	118	85	14950	119	12	15000	120	**	15000
121	12	15000	122	**	15000	123	12	15100	124	12	15000
125	12	14950	126	**	15000	127	85	15000	128	**	15000
129	**	15000	130	**	15000	131	**	15000	132	**	15000
133	**	15000	134	**	15000	135	**	15000	136	**	15000
137	13	15000	138	**	15000	139	**	15000	140	**	15000
141	**	15000	142	**	15000	143	**	15000	144	**	15000
145	**	15000	146	**	15000	147	**	15000	201	**	14500
202	78	14450	203	78	14450	204	**	14500	205	**	14500
206	**	14500	207	**	14500	208	**	14500	209	**	14500

## Illustration 4. Ending the Auction

Watch the clocks

Each new bid resets the new bid clock to three minutes (unless otherwise announced).

Each new Provisional Winner resets the new winner clock to ten minutes (unless otherwise announced).

The auction ends when either the new bid clock or the new winner clock counts down to zero. Time on both clocks means that the auction is still open for bidding on all items. When the auction ends the Provisional Winners become the Auction Winners.

The screenshot shows an auction interface with the following elements:

- Time Remaining:** Two clocks are circled in red: "new bid: 02:56" and "new winner: 09:56".
- Price:** A field with a "+" button.
- Bid #:** A field with a "min" button.
- Items:** A field with a "win" button.
- Buttons:** "remove item", "Clear All", "Show Intersecting Bids", "Submit Offer", "Send Query", and "Show Bid as Winning".
- Provision Table:** A table on the right side of the interface.

run#	PI
101	3
105	3
109	7
113	4
117	3
121	3
125	2
129	2
133	*
137	1
141	1
145	*
202	7

## Illustration 5. Offer Management ([Offer Modification form](#))

**1. Make sure you are here**

**2. Cancel a non Provisional Winning offer:**  
a. Select the offer  
b. Cancel Selected Bids

**3.1 Modify an offer:** a.

**3.2 Modify an offer:**  
b. Select a new price or c. Change package d.

**4. Return to [Offer Submission Form](#)**

Total dollars for your provisional winners

bid#	price	items	modify
1279	15000	127	<input type="radio"/>
1278	15100	123	<input type="radio"/>
1267	15100	105	<input type="radio"/>
1266	45800	102 114 118	<input type="radio"/>
1265	48300	101 103 106	<input type="radio"/>
<b>total</b>	<b>60800</b>		

## Illustration 6. View the Offers ([Complete Offer List](#))

1. Make sure you are here

2. Return to [Provisional Winners](#) screen

[Complete Offer List](#)

[Provisional Winners Watch List](#)

PIC	bid#	price	items	time entered
6	1280	15000	141	Sat Jun 22 08:07:35 2002
85	1279	15000	137	Sat Jun 22 07:41:23 2002
85	1278	15100	123	Sat Jun 22 00:40:45 2002
78	1277	15000	137	Fri Jun 21 14:17:05 2002
12	1276	15000	119	Wed Jun 19 21:09:28 2002
12	1275	60458	104 107 113 121	Wed Jun 19 21:05:52 2002
82	1274	78400	101 105 123 124 125	Wed Jun 19 21:05:00 2002
12	1273	15050	103	Wed Jun 19 21:03:39 2002
11	1272	15000	107	Wed Jun 19 20:40:09 2002
90	1271	15000	117	Wed Jun 19 19:57:30 2002
89	1270	15550	106	Wed Jun 19 18:13:04 2002
88	1269	60950	106 108 121 123	Wed Jun 19 15:42:15 2002
88	1268	60600	106 108 121 123	Wed Jun 19 15:41:40 2002
85	1267	15100	105	Wed Jun 19 09:46:51 2002
85	1266	45800	102 114 118	Wed Jun 19 09:30:27 2002
85	1265	48300	101 103 106	Wed Jun 19 09:27:50 2002
78	1264	44300	112 202 203	Tue Jun 18 18:52:52 2002
78	1263	15550	102	Tue Jun 18 18:48:35 2002
78	1262	45500	102 103 112	Tue Jun 18 18:47:27 2002
78	1261	29150	202 203	Tue Jun 18 18:46:02 2002
78	1260	43500	202 203 205	Tue Jun 18 18:40:16 2002
78	1259	58000	202 203 204 205	Tue Jun 18 18:36:16 2002
78	1258	30200	109 110	Tue Jun 18 18:31:53 2002

PIC of bidder making the offer,  
Bid number, Offer price,  
Items in offer,  
Time entered

Gold

You are Provisional Winner

Yellow

Provisional Winner

White

Currently non Provisional Winner

# Illustration 7. Strategy Tools



new bid: 00:00    new winner: 00:00    **paused**

Price 4250    -    +    min    max

Bid #    Show Bid as Winning

Items 109 113 117

remove item    Clear All    Show Intersecting Bids

Submit Offer    Send Query

[Complete Submission Form](#)    [Offer Modification Form](#)  
[Watch List Submission Form](#)    [Complete Offer List](#)

Add Items to Watch List    Add Items to Bid    Clear

run number			
101	102	103	104
105	106	107	108
109	110	111	112
113	114	115	116
117	118	119	120
121	122	123	124
125	126	127	128

Your offer if submitted

This offer remains a Provisional Winner

Your offer bumps them

Offer was out and remains out

A partner used to bump packages with your offer

Query Results: 110 114 123 127

run#	PIC	\$Offer	run#	PIC	\$Offer	run#	PIC	\$Offer	run#	PIC	\$Offer
101	76	17850	102	78	15550	103	12	15050	104	12	15150
105	85	15100	106	89	15550	107	12	15000	108	78	15150
109	76	15100	110	100	15000	111	100	14950	112	78	15000
113	12	15000	114	100	15150	115	100	14950	116	100	14950
117	90	15000	118	100	14950	119	71	15000	120	71	14950
121	12	15000	122	100	14950	123	12	15100	124	71	15000
125	100	14950	126	100	14950	127	100	15000	128	100	14950
129	100	14950	130	100	14950	131	100	14950	132	100	14950

PIC	bid#	price	items	time entered
86	1280	15000	141	Sat Jun 22 08:07:35 2002
85	1279	15000	127	Sat Jun 22 00:41:23 2002
85	1278	15100	123	Sat Jun 22 00:40:45 2002
13	1277	15000	137	Fri Jun 21 14:17:05 2002
12	1276	15000	119	Wed Jun 19 21:09:28 2002
12	1275	60450	104107 113 121	Wed Jun 19 21:05:52 2002
12	1274	78400	101 105 123 124 125	Wed Jun 19 21:05:00 2002
12	1273	15050	103	Wed Jun 19 21:03:34 2002
11	1272	15000	107	Wed Jun 19 20:40:09 2002
90	1271	15000	117	Wed Jun 19 19:51:30 2002
89	1270	15550	106	Wed Jun 19 16:13:04 2002
88	1269	60950	106 108 121 123	Wed Jun 19 15:42:15 2002
88	1268	60600	106 108 121 123	Wed Jun 19 15:41:40 2002
87	1267	15100	105	Wed Jun 19 09:46:51 2002
84	1266	45800	107 114 118	Wed Jun 19 09:30:22 2002