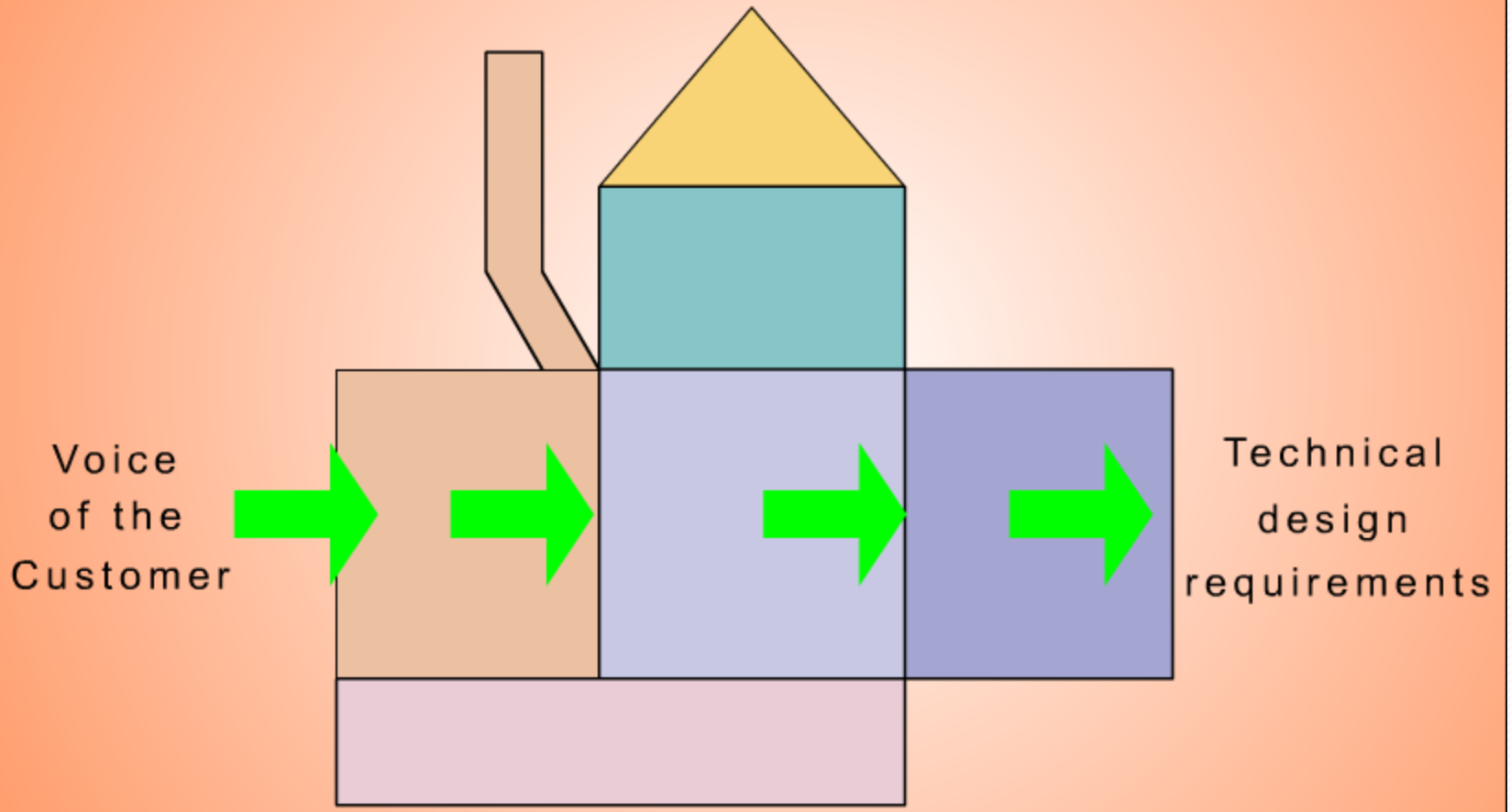
Quality Function Deployment

House of Quality for a steam iron

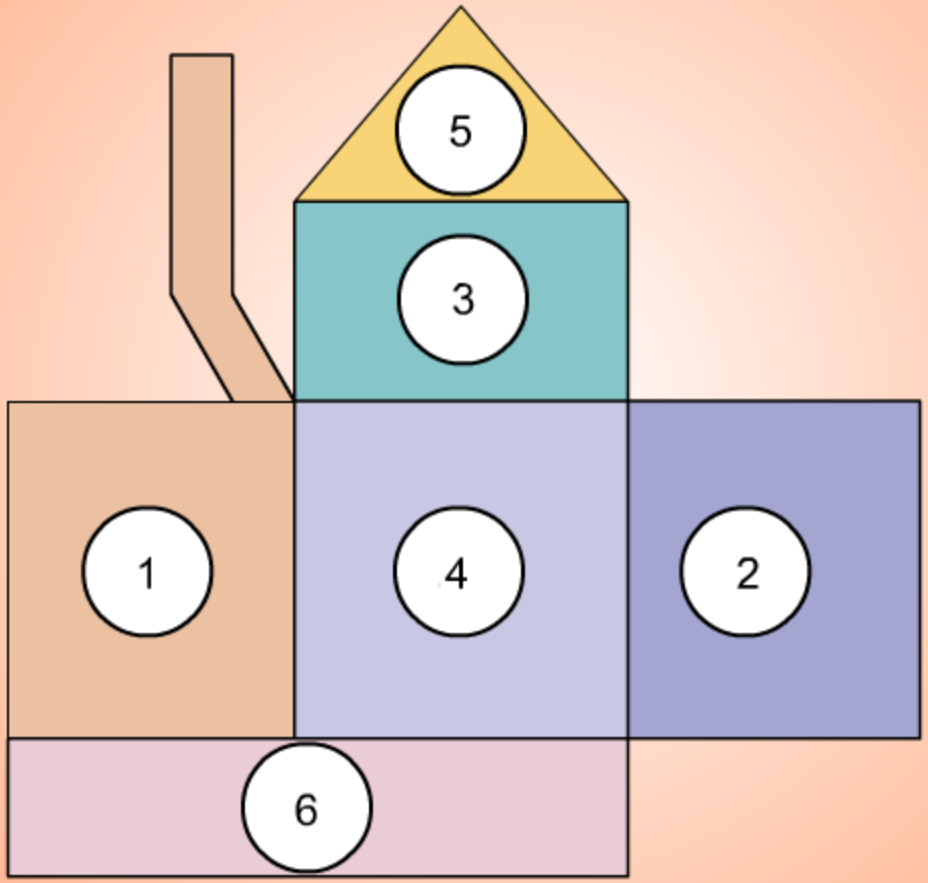
Quality Function Deployment

- Working Simultaneously but separately……
- Two Engineers working on two components of a car sunroof.
  - Insulation and sealing Engineer
  - Handles Knob and levers engineer.
- Formal method to make sure design objectives are met.
- *QFD is a structured process that will translate the voice of the customer into technical specifications at every stage of design and manufacture.*
- *House of Quality is one of the matrix diagrams used fot QFD*

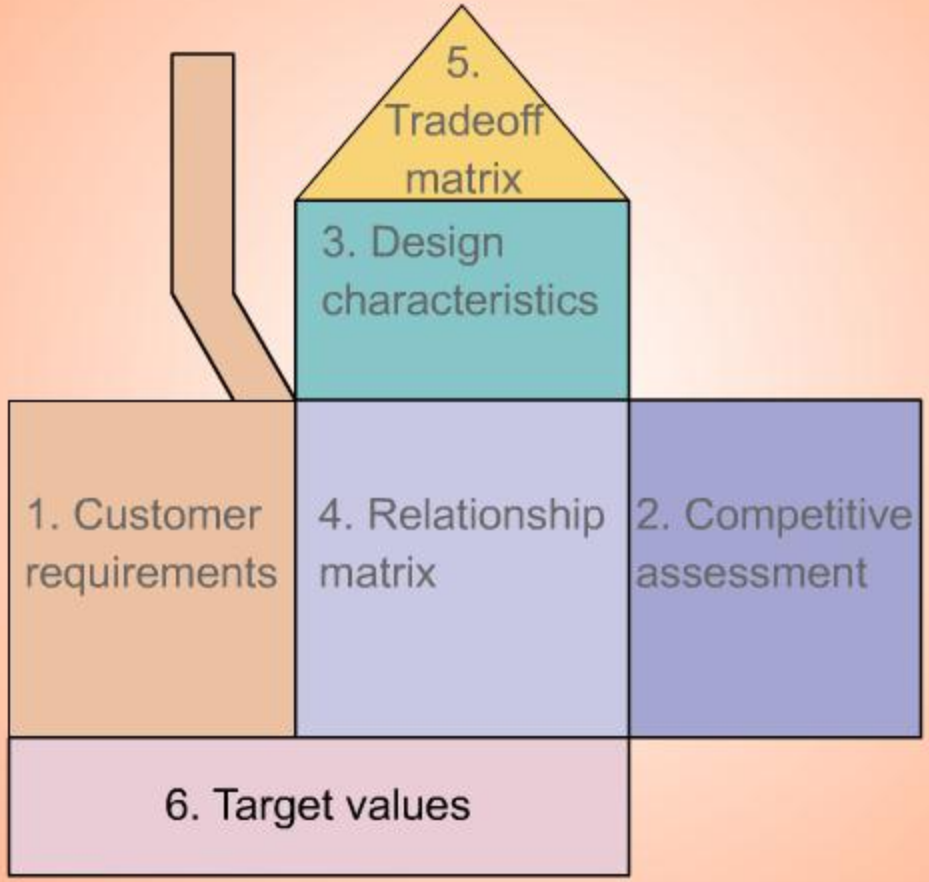
House of Quality

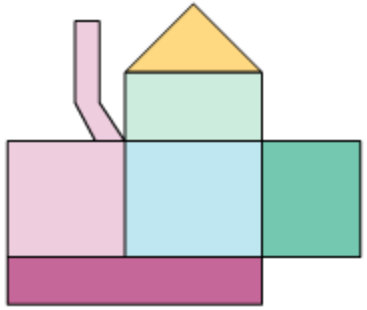


House of Quality

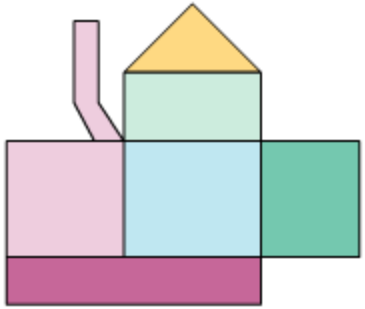


House of Quality



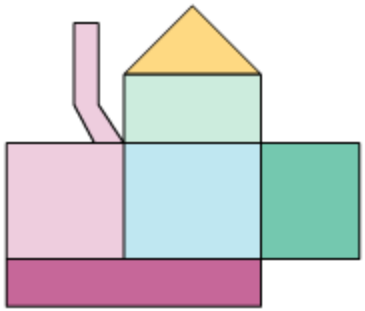


Irons well		
	Presses quickly	
	Removes wrinkles	
	Doesn't stick to fabric	
	Provides enough steam	
	Doesn't spot fabric	
	Doesn't scorch fabric	



Irons well	Presses quickly	9
	Removes wrinkles	
	Doesn't stick to fabric	
	Provides enough steam	
	Doesn't spot fabric	
	Doesn't scorch fabric	9

House of Quality for a Steam Iron



Irons well	Presses quickly	9
	Removes wrinkles	8
	Doesn't stick to fabric	6
	Provides enough steam	8
	Doesn't spot fabric	6
	Doesn't scorch fabric	9
Easy and safe to use	Heats quickly	6
	Automatic shut-off	3
	Quick cool down	3
	Doesn't break when dropped	5
	Doesn't burn when touched	5
	Not too heavy	8

House of Quality for Steam Iron

Competitive Assessment

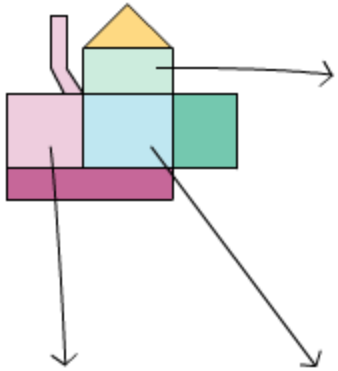
		1	2	3	4	5
Presses quickly	9		B	A	X	
Removes wrinkles	8		A	B	X	
Doesn't stick to fabric	6		X		B	A
Provides enough steam	8			A	B	X
Doesn't spot fabric	6			X	AB	
Doesn't scorch fabric	9			AXB		
Heats quickly	6		X	B	A	
Automatic shut-off	3					ABX
Quick cool down	3			X	A	B
Doesn't break when dropped	5		A	B	X	
Doesn't burn when touched	5	ABX				
Not too heavy	8		X			A B

House of Quality for Steam Iron

Competitive Assessment

		1	2	3	4	5
Presses quickly	9		B A		X	
Removes wrinkles	8		A B			X
Doesn't stick to fabric	6		X		B A	
Provides enough steam	8			A B		X
Doesn't spot fabric	6			X	AB	
Doesn't scorch fabric	9			AXB		
Heats quickly	6		X		B A	
Automatic shut-off	3					ABX
Quick cool down	3			X	A B	
Doesn't break when dropped	5		A B		X	
Doesn't burn when touched	5	ABX				
Not too heavy	8		X			A B

House of Quality for Steam Iron



Product design characteristics

Customer requirements

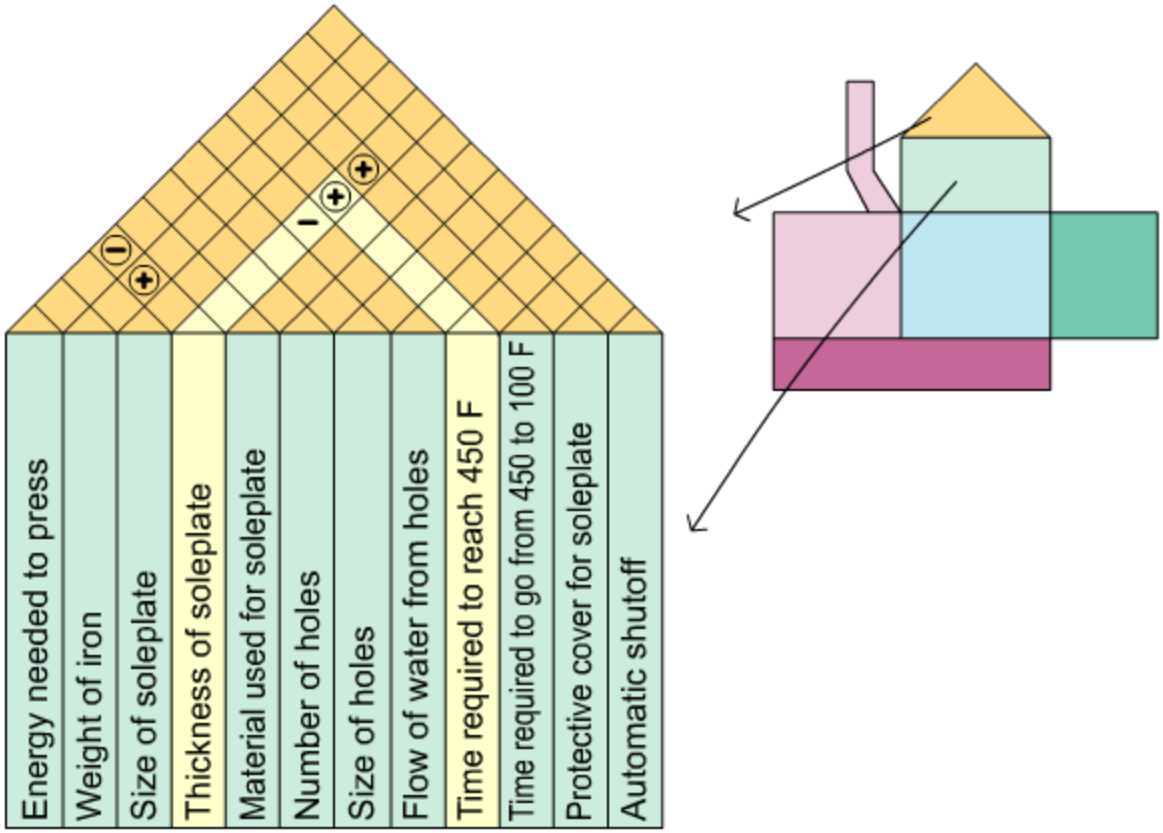
Customer requirements	Energy needed to press	Weight of iron	Size of soleplate	Thickness of soleplate	Material used for soleplate	Number of holes	Size of holes	Flow of water from holes	Time required to reach 450 F	Time required to go from 450 to 100 F	Protective cover for soleplate	Automatic shutoff
Presses quickly	−	⊖	+	+	+				−			
Removes wrinkles		⊕		+		+	+	+				
Doesn't stick to fabric					⊕			+		⊕	+	
Provides enough steam						+	+	+				
Doesn't spot fabric					+	−	−	⊖				
Doesn't scorch fabric				+	⊕			+	−	⊕		
Heats quickly			−	−					⊕			
Automatic shut-off										+		⊕
Quick cool down			−	⊖	+					⊕		
Doesn't break when dropped		+	+	⊕							+	
Doesn't burn when touched										+	⊕	+
Not too heavy	+	⊖	−	−	⊕						−	

Relationship matrix

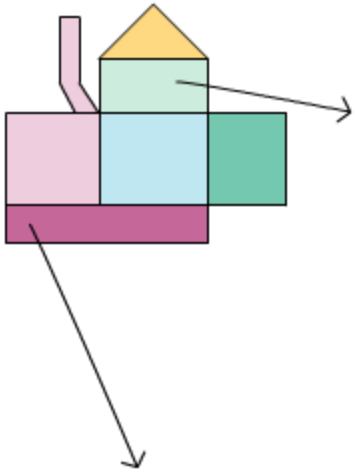
Relationships

- ⊕ Strong positive
- \+ Medium positive
- − Medium negative
- ⊖ Strong negative

House of Quality for Steam Iron

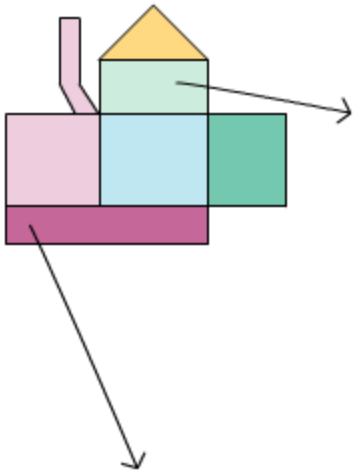


House of Quality for Steam Iron



Objective measures	Energy needed to press	Weight of iron	Size of soleplate	Thickness of soleplate	Material used for soleplate	Number of holes	Size of holes	Flow of water from holes	Time required to reach 450 F	Time required to go from 450 to 100 F	Protective cover for soleplate	Automatic shutoff
Units of measure	ft-lb	lbs	in.	cm	ty	ea	mm	oz/s	sec	sec	Y/N	Y/N
Iron A	3	1.4	8x4	2	SS	27	15	0.5	45	500	N	Y
Iron B	4	1.2	8x4	1	MG	27	15	0.3	35	350	N	Y
Our Iron (X)	2	1.7	9x5	4	T	35	15	0.7	50	600	N	Y

House of Quality for Steam Iron



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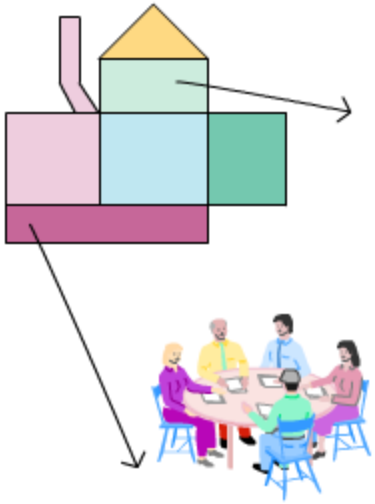
Objective measures	Units of measure	ft-lb	lbs	in.	cm	ty	ea	mm	oz/s	sec	sec	Y/N	Y/N
	Iron A	3	1.4	8x4	2	SS	27	15	0.5	45	500	N	Y
	Iron B	4	1.2	8x4	1	MG	27	15	0.3	35	350	N	Y
	Our Iron (X)	2	1.7	9x5	4	T	35	15	0.7	50	600	N	Y
	Estimated impact	3	4	4	4	5	4	3	2	5	5	3	0
	Estimated cost	3	3	3	3	4	3	3	3	4	4	5	2
	Target values		*	*	*	*	*			*	*		
	Design changes												

House of Quality for Steam Iron



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	Iron B	4	1.2	8x4	1	MG	27	15	0.3	35	350	N	Y
	Our Iron (X)	2	1.7	9x5	4	T	35	15	0.7	50	600	N	Y
Estimated impact		3	4	4	4	5	4	3	2	5	5	3	0
Estimated cost		3	3	3	3	4	3	3	3	4	4	5	2
Target values			1.2	8x5	3	SS	30			30	500		
Design changes			*	*	*	*	*			*	*		