

# QFDcapture

**International TechneGroup Incorporated**



**NORTHROP GRUMMAN**

**Agilent Technologies**



**Anthem**



*Johnson & Johnson*



**Honeywell**

**Baxter**

**HSBC**

**PHILIPS**



**BOISE**



**PRAXAIR**

**TEXTRON**

**DUPONT** *The miracles of science*



**tyco**

**Bank of America** *Higher Standards*

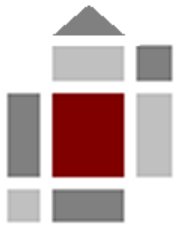
**Cordis**  
*a Johnson & Johnson company*



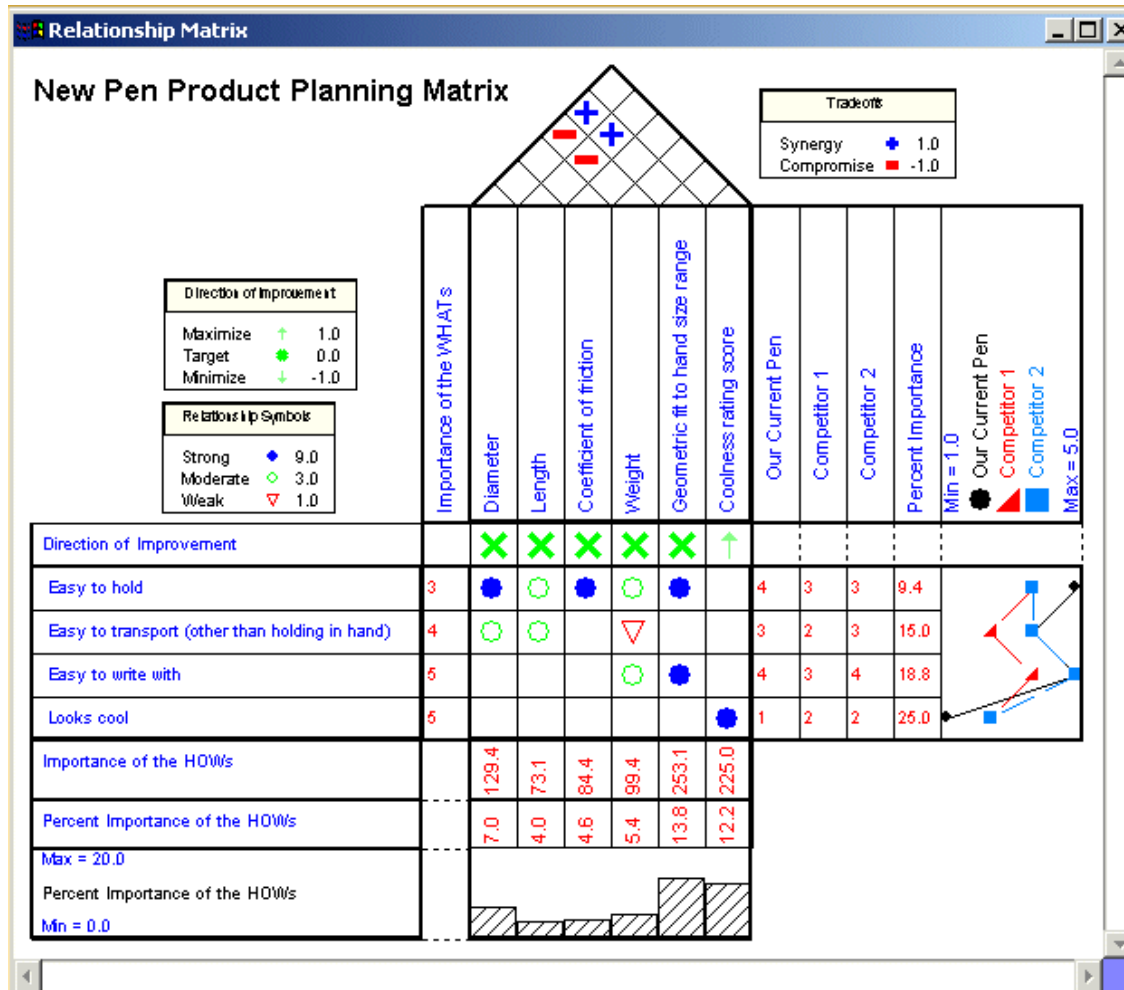
**Solar Turbines**  
*A Caterpillar Company*

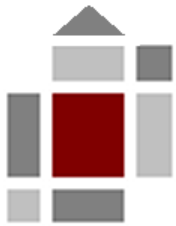
**CATERPILLAR**

**Raytheon**

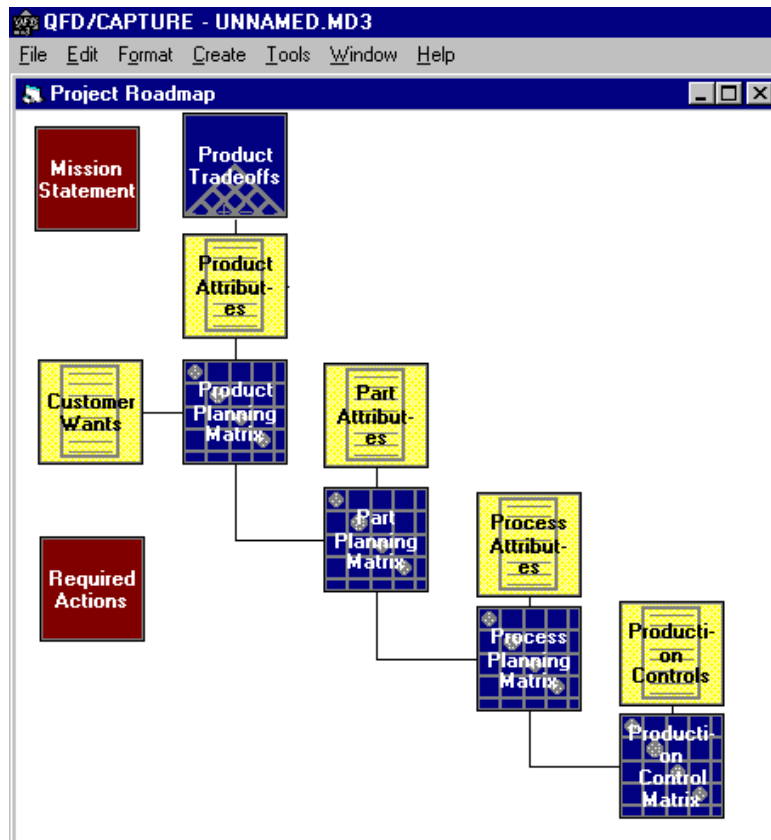


# QFD Matrix

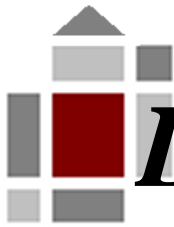




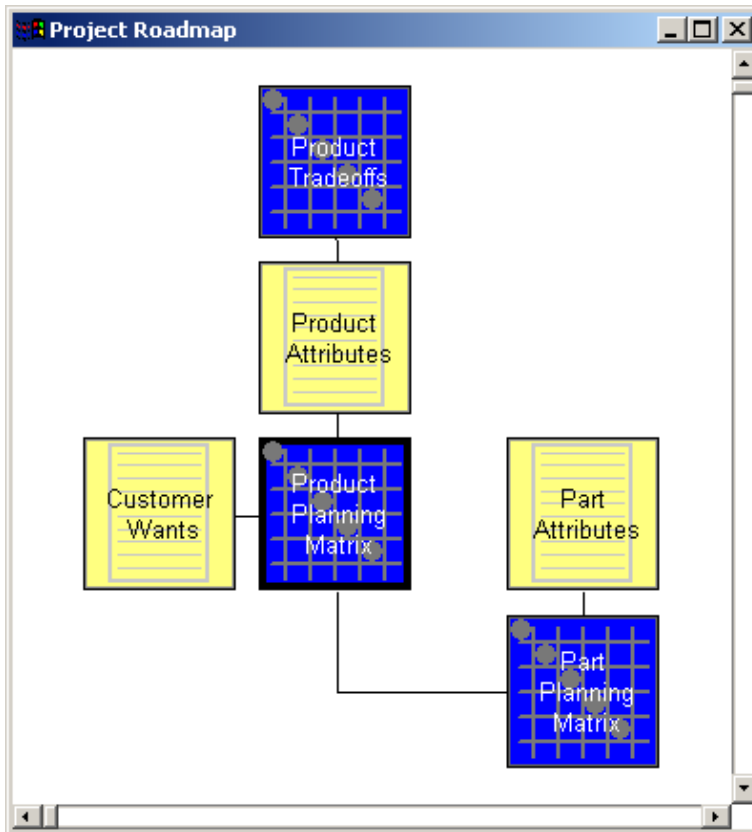
# QFDcapture Project Map



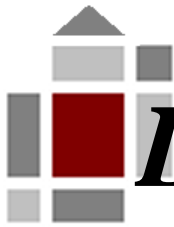
Four Phase  
Roadmap Template



# Linking Matrices



- Matrices are linked when they have a List in common
- Here “Product Attributes” forms the columns of the “Product Planning Matrix”
- It also forms the rows of the “Part Planning Matrix”



# Linking Matrices

**Product Planning Matrix**

	Importance to the Customer	Weight of Portion	Percent Nutrition Provided	Percent Carbohydrate Provided	Time to Prepare	Number of Dishes Used	Cost of Ingredients	Number of Measured Ingredients
<b>Direction of Improvement</b>		↑	↑	✗	↓	↓	↓	↓
Fills us up	5.0	●	○	○				
Is nutritious	4.0	○	●	▽			○	
Tastes good	3.0			●			○	
Is easy to make	4.0				●	●		
Is easy to clean up	2.0			▽	○	●		▽
Sticks with us	4.0	●		○				
Is inexpensive	1.0	▽	▽	▽			●	
Is clean	2.0				○	○		●
<b>Importance of Product Attributes</b>		94.0	52.0	61.0	48.0	60.0	30.0	20.0

**Matrix Relationships**

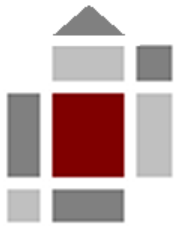
- Strong ● 9.0
- Moderate ○ 3.0
- Weak ▽ 1.0

**Part Planning Matrix**

	Formulation	Weight of Ingredients (By Ingredient)	Nutritional Contribution of Ingredients (By Ingredient)	Solubility of Ingredients (By Ingredient)	Cost of Ingredients (By Ingredient)	Packaging	# Components in Package	Cost of Packaging	% Recyclable Materials Used By Weight	Importance of Product Attributes
Weight of Portion		●								94.0
Percent Nutrition Provided		▽	●		○					52.0
Percent Carbohydrate Provided		▽	●	○						61.0
Time to Prepare				●			○			48.0
Number of Dishes Used							●			60.0
Cost of Ingredients		▽	○		●			○	○	30.0
Number of Measured Ingredients							●			20.0
<b>Importance of the Part Attributes</b>		989.0	1107.0	615.0	426.0		864.0	90.0	90.0	

**Matrix Relationships**

- Strong ● 9.0
- Moderate ○ 3.0
- Weak ▽ 1.0



# Text Documents

**Document Contents**

Document Title  
Mission Statement

Document Contents

**MISSION STATEMENT**

At the direction of [Sponsor's Name], this team has been chartered to define the Functional Specification for the [Product or Service Name].

The milestones to which we will work include:

- o Identification of Customer and Competitors by (Date)
- o Identification of WHATs list by (Date)
- o Documentation of WHATs Importance and Competitive Perceptions by (Date)
- o Definition of HOWs to address the WHATs by (Date)
- o Definition of Relationships in Correlation Matrix by (Date)
- o Completion of Benchmarking by (Date)
- o Setting of Target Values by (Date)
- o Documentation of Required Actions by (Date)

Approved by: \_\_\_\_\_

Date: \_\_\_\_\_

Print Document... Spell Check OK Cancel

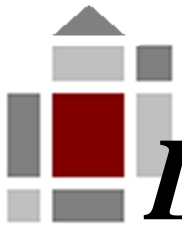
- Can be used to record general project information
- Document has title which appears in the document block on the roadmap
- The content is unformatted text of unlimited length
- Document is stored in the QFDcapture database



# *Lists*

- Lists are the building blocks of a project
- Types of lists may include:
  - Customer requirements
  - Product characteristics
  - Product concepts/alternatives
  - Product functions
  - Internal business requirements
  - Internal production requirements
  - Part characteristics
  - Regulatory requirements
  - etc...
- Relating one list to another list forms a matrix





# List Window

Contents of the currently selected cell.

Each related data entry column contains a particular type of data.

		0	1	2	3	4
0			Importance of the Requirements	Competitive Analysis	Our Current Pen	Competitor 1
1	Easy to hold		3		4	3
2	Easy to transport (other than holding		4		3	2
3	Easy to write with		5		4	3
4	Looks cool		5		1	2
5	Doesn't leave smudges on paper or		3		2	4
6	Lasts a long time		1		3	4
7	Easy to tell that it is mine		4		1	1

Rows are the members of the list called list entries.

Columns contain data used to prioritize the list entries.



# *Related Data Columns*

- Related Data columns contain data that can be used to prioritize the list entries
  
- Typical Related Data columns include:
  - Customer importance ratings
  - Ratings of competitive products
  - Level of improvement needed
  - Calculated priority values
  - Direction of optimization
  - Target values
  - Benchmark test results
  - Pareto graphs and Line graphs of other data columns



# Formatting Related Data Columns

More About Related Data - Importance to the Customer

**Contents**   **Format**   Calculation   Graph   Symbols

**Data Type**

- Calculation
- Graph
- Number
- Text

**Data Value Format**

- Symbols
- Integers
- Real Numbers

Number of Decimal Places:

**Chart Location**

- Next to List Names
- Away from List Names

**Name Color on Chart**

Foreground:

Background:

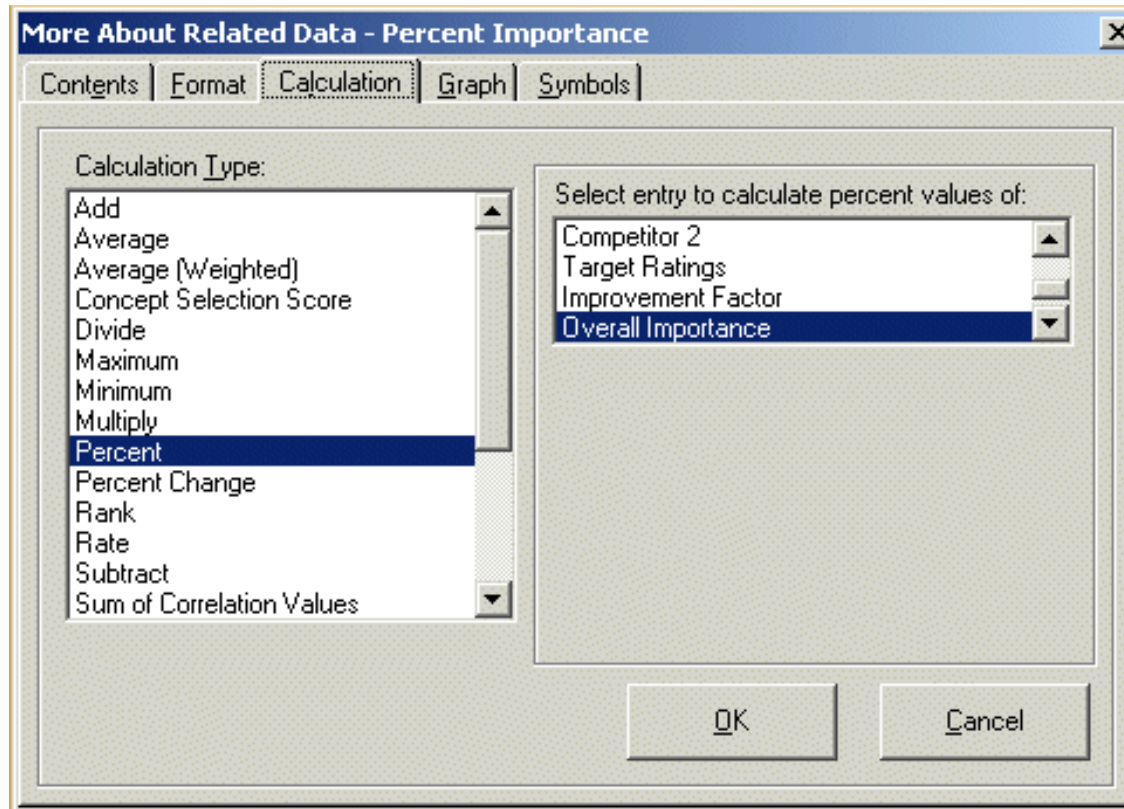
**Data Value Color on Chart**

Foreground:

Background:



# Setting up Calculations





# *Types of Calculations*

- Add
- Average
- Average (Weighted)
- Concept Selection Score
- Divide
- Maximum
- Minimum
- Multiply
- Percent
- Percent Change
- Rank
- Rate
- Subtract
- Sum of Correlation Values
- Sum of Minuses
- Sum of Pluses
- Sum of Sames
- Technical Importance
- User Defined



# Technical Importance

Tells how important each characteristic is for satisfying the list of customer requirements.

Example Calculations:

Customer Importance Rating

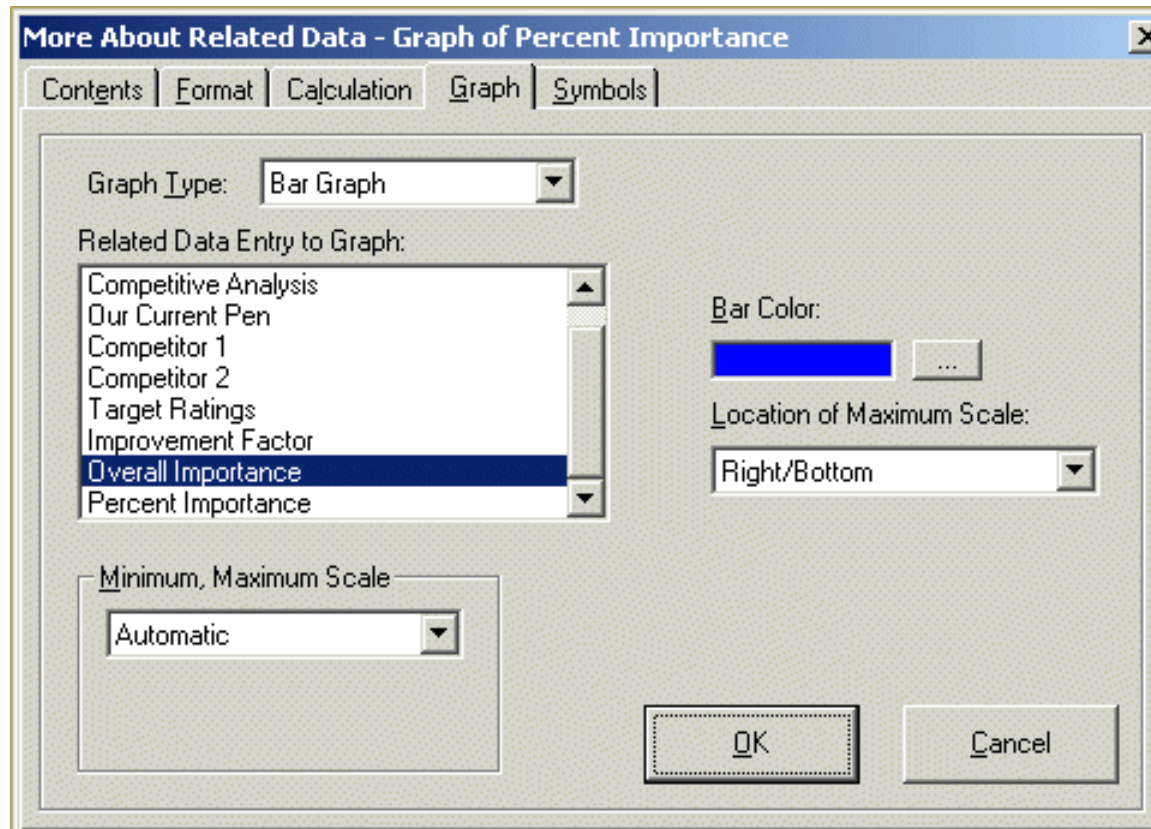


Requirement 1	6.0	△ 6.0		● 54.0	
Requirement 2	9.0		○ 27.0	△ 9.0	● 81.0
Requirement 3	4.0	● 36.0	△ 4.0		
Technical Importance	42.0	31.0	63.0	81.0	

● = 9  
○ = 3  
△ = 1



# Setting up Bar Graphs





# Setting up Line Graphs

More About Related Data - Graph of Percent Importance

Contents | Format | Calculation | **Graph** | Symbols

Graph Type: Line Graph

Available Related Data Entries:

- Importance of the Requirements
- Competitive Analysis
- Target Ratings
- Improvement Factor
- Overall Importance
- Percent Importance

Graph Setup Table

Entry(s) to Graph	Line Style	Symbol	Color
Our Current Pen	Solid	●	Black
Competitor 1	Dashed	▲	Red
Competitor 2	Dashed	■	Blue

Minimum, Maximum Scale: Automatic

Location of Maximum Scale: Right/Bottom

OK Cancel





# Setting up Related Data Symbols

More About Related Data - Direction of Improvement

Contents   Format   Calculation   Graph   **Symbols**

Symbol Set Name:  
Direction of Improvement   delete symbol set

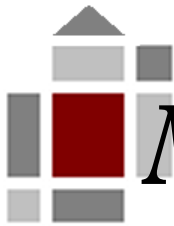
Label	Symbol	Color	Value
Maximize	↑	Blue	1.00
Target	✕	Green	0.00
Minimize	↓	Red	-1.00

Delete Row   OK   Cancel



# *Matrices*

- A matrix relates one list to another list
- Types of matrices may include:
  - Customer requirements vs. Product characteristics
  - Product characteristics vs. Product concepts
  - Product characteristics vs. Product functions
  - Internal business requirements vs. Product characteristics
  - Internal production requirements vs. Product characteristics
  - Product characteristics vs. Part characteristics
  - Regulatory requirements vs. Product characteristics
  - etc...



# Matrix Window - Spreadsheet View

Contents of the currently selected cell.

Columns are the members of the output list.

	0	5	6	7	8	9
0		Length	Coolness rating score	# innovative appearance features	Ink storage capacity	Drying rate of ink
1	Easy to hold	○				
2	Easy to transport (other than holding in hand)	○				
3	Easy to write with					▽
4	Looks cool		●	●		
5	Doesn't leave smudges on paper or hands					●
6	Lasts a long time				●	

Rows are the members of the input list.

Columns contain symbols and/or values representing the relationships between the input entry rows and the output entry columns.



# Creating or Modifying a Matrix

**Format**

Charts | List | **Matrix** | Preferences | Documents

Matrix Name:  View:

Input List(s):  
Customer Wants  
Product Attributes  
Part Attributes  
Process Attributes  
Production Controls

Output List(s):  
Customer Wants  
Product Attributes  
Part Attributes  
Process Attributes  
Production Controls

Symbol Set Name:

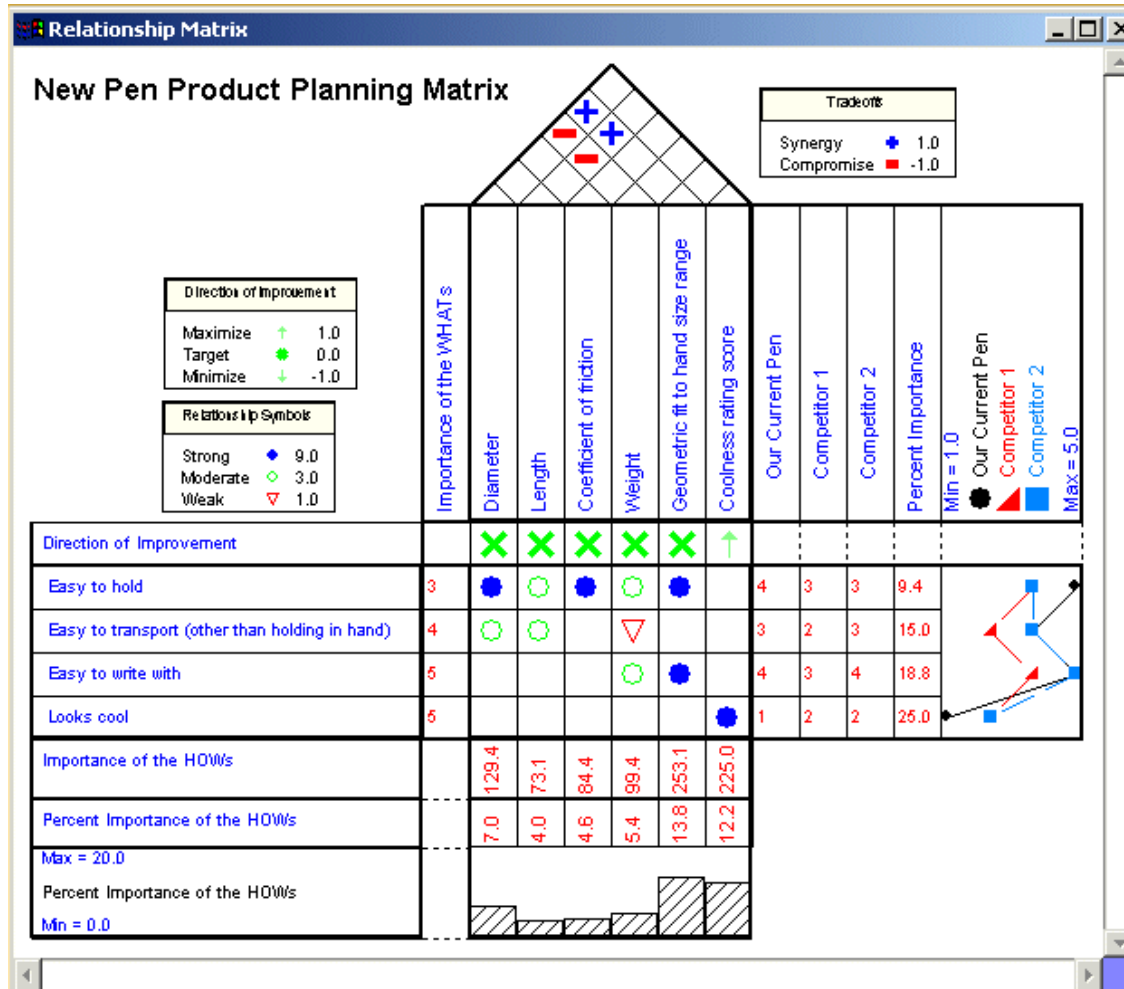
Label	Symbol	Color	Value
Strong	●	Blue	9.00
Moderate	○	Green	3.00
Weak	▽	Red	1.00

Relationship Data Format:

- To create a matrix
  - Select Create-Matrix
- To modify a matrix
  - Select the matrix block on the roadmap -or- open the matrix window
  - Select Format-Matrix



# Matrix Window - Chart View





# Concept Selection Mechanics

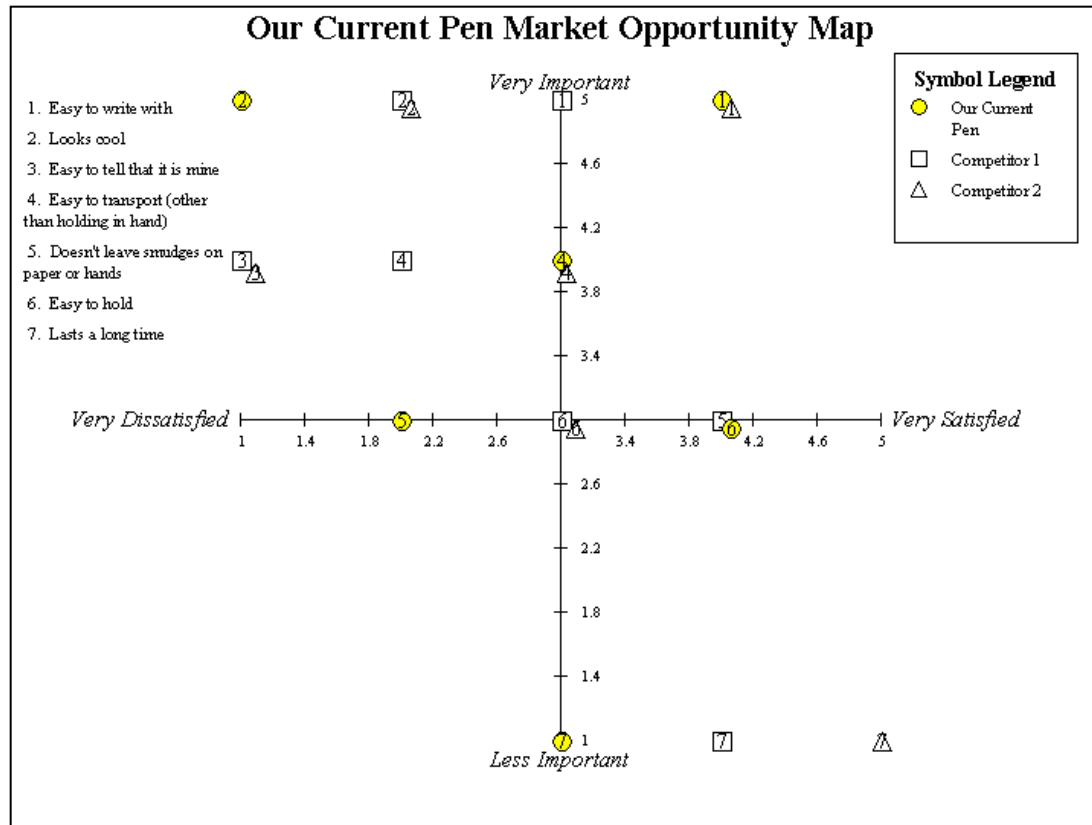
	Capped Pen	Click Pen	Wide Body Pen	Percent Importance of the CTQ's	Percent Importance of the CTQ's
Diameter	✓	+	+	7.0	
Length	✓	✓	✓	4.0	
Coefficient of friction	✓	+	+	4.6	
Weight	✓	+	■	5.4	
Geometric fit to hand size range	✓	+	+	13.8	
Coolness rating score	✓	+	+	12.2	
Concept Score	0.0	72.8	170.2		

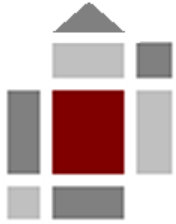
- One concept is used as the “Baseline” concept
- Other concepts are compared to the baseline for each criteria or requirement
- A score is determined by multiplying the importance of the criteria by the relationship values
- The concept with the highest Concept Score is the best fit solution – given the priorities of the criteria



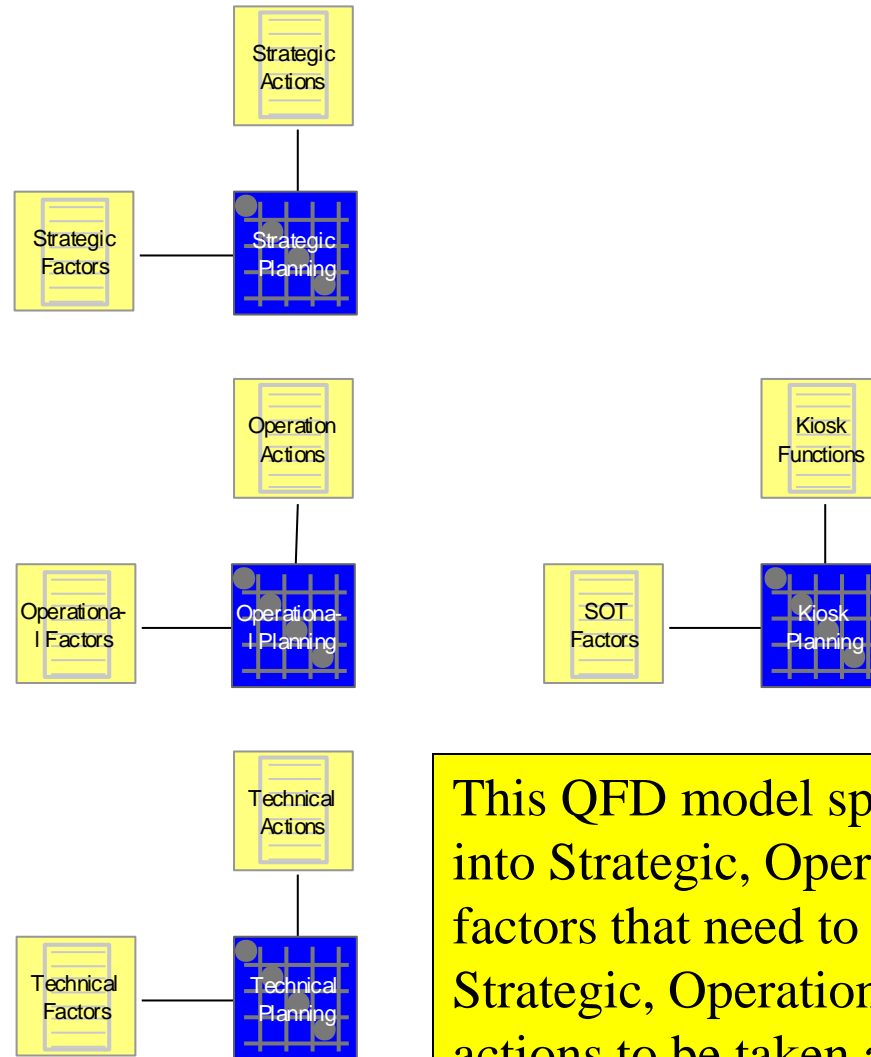
# Market Opportunity Map

- Generates pair-wise comparison surveys to gather importance and ratings for requirements





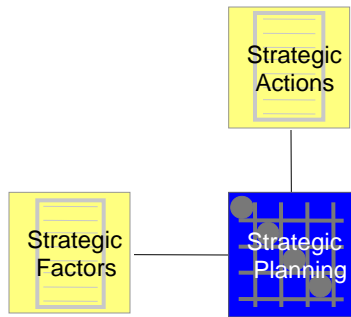
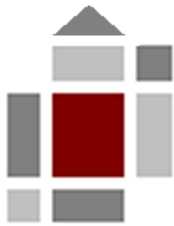
# QFD Model



This QFD model splits the Requirements into Strategic, Operational and Technical factors that need to be translated into Strategic, Operational and Technical actions to be taken along with what function should be in the Kiosk.



# Strategic Planning



	1	2	3	4	5	6	7	8	9	10		1	2	3	4	5		1	2	3	4	5		
Fast and integrated business processes					○		●			○	5.42	○	○	○	○	+	+							
Expansion of current markets			●	●		●		●			5.31	○	○	○	○	+	+							
Increasing revenues	○		●	●	●	○	○	○			5.29	○	○	○	○	○	○							
Availability of resources	●	●			▽	▽			●		5.28	■	○	○	○	○	○							
Flexible workforce	●	●			▽						5.15	○	○	○	○	○	○							
Flexible organisational structure	●	●			▽						5.08	○	○	○	○	○	○							
Importance	155.46	139.60	95.38	95.38	79.35	68.94	64.63	63.66	47.56	16.26														
Max = 155.5																								
Importance																								
Min = 16.3																								
	1	2	3	4	5	6	7	8	9	10														

**Standard 9-3-1**

- Strong ● 9.0
- Moderate ○ 3.0
- Weak ▽ 1.0

**Delivery Quality**

- Very Good + 9.0
- Good ⊕ 7.0
- Ok ○ 5.0
- Bad ■ 3.0
- VeryBad ∩ 1.0

Treating e-commerce as a business project (not just a technological project)

Project team reflecting various related functional areas

Cheaper than alternatives

Building trust on brand name

Integrating different channels

Expanding existing markets

Business integration

New products and services

Top management support

Re-engineering processes to web-enable them

Importance

Brink and Mortar Branch

Check Smart

Credit Challenged

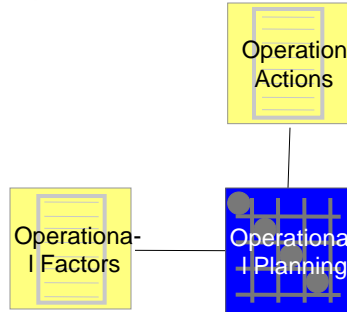
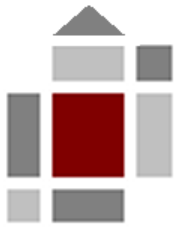
Wal-Mart

Max = 5.4

Importance

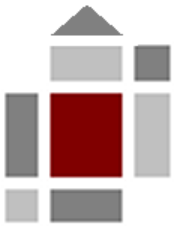
Min = 5.1

# Operational Planning

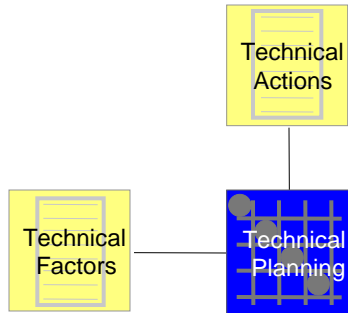


Standard 9-3-1	
Strong	● 9.0
Moderate	○ 3.0
Weak	▽ 1.0

		Simplifying and integrating basic services						Delivery Quality					Max = 5.6 Importance Min = 5.2	
		1	2	3	4	5	6	Importance	Brink and Mortar Branch	Check Smart	Credit Challenged	Wal-Mart		
Fast responsive customer service (better than usual)	1	○	●	○				5.60	○	+	-	+		1
All time availability of services	2	●		▽				5.45	■	○	-	+		2
Rapid delivery of services	3	○		▽				5.45	■	○	-	+		3
Information about consumer purchasing behaviour	4			●				5.40	+	■	-	+		4
Information about customers	5		○		▽			5.26	+	■	-	+		5
Incentives for customers	6		○		●	●	●	5.22	-	○	-	○		6
Importance	1	82.23	81.86	76.28	52.23	46.97	46.97							
Max = 82.2														
Importance														
Min = 47.0														
		1	2	3	4	5	6							

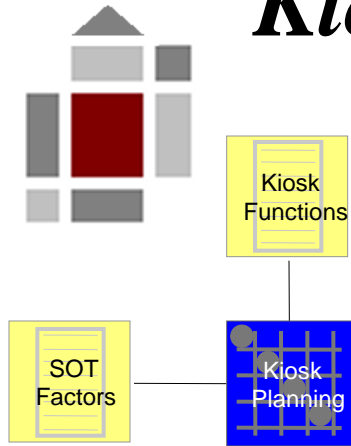


# Technical Planning



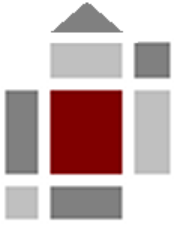
		Standard 9-3-1						
		Strong ● 9.0 Moderate ○ 3.0 Weak ▼ 1.0						
		Systems security	Integration of technology	User-friendly web-interface	Upgrading existing infrastructure	Personalisation and customisation capabilities	Importance	Importance
		1	2	3	4	5	Max = 6.0	Min = 5.1
User-friendly website	1	○		●		○	5.95	1
Secure website and other related systems	2	●	○		●		5.87	2
IS integration	3		●		○		5.29	3
Personalising services	4		▼	○		●	5.10	4
Importance	1	70.66	70.34	68.81	68.70	63.70		
Max = 70.7								
Importance								
Min = 63.7								
		1	2	3	4	5		

# Kiosk Planning

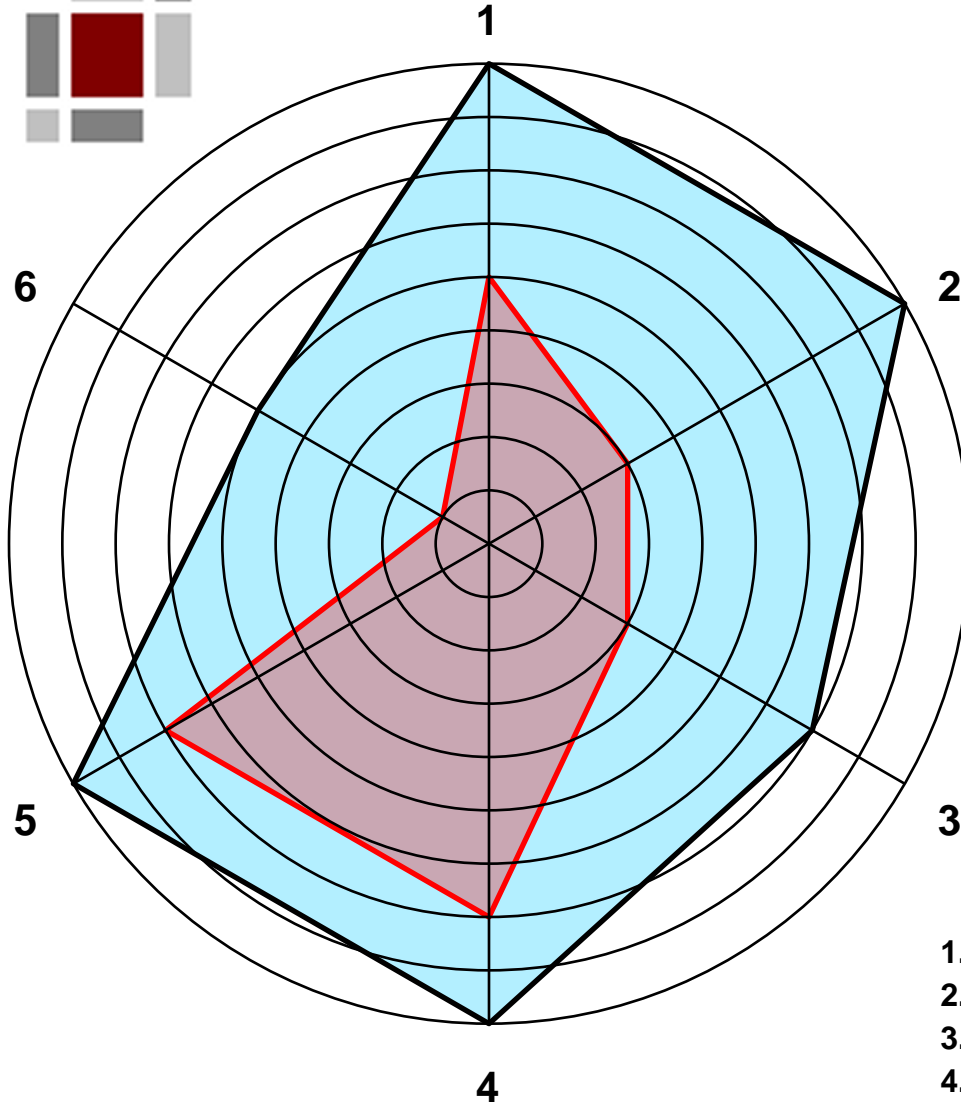


Standard 9-3-1	
Strong	● 9.0
Moderate	○ 3.0
Weak	▼ 1.0



	Internet Banking	New Accounts	Bill Payment	Deposit Acceptance	ATM Cash Dispensing	Payroll Check Put On Debit Card	Payday Loans	Check Cashing	Check Advance	Check Smart	Money Transfers	Overdraft Protection	Priority	Max = 5.9	Priority	Min = 5.1
	1	2	3	4	5	6	7	8	9	10	11	12	1			
User-friendly website	●		○	▼	○	○	○	○	○	○	○	○	5.95			
Secure website and other related systems	●												5.87			
Fast responsive customer service (better than usual)	▼	▼	○	▼	○	○	○	○	○	○	○	○	5.60			
All time availability of services	●	●	●	●	●	●	●	●	●	●	●	●	5.45			
Rapid delivery of services	●	●	●	●	●	●	●	●	●	●	●	●	5.45			
Fast and integrated business processes	○	▼	▼	○	○			○					5.42			
Information about consumer purchasing behaviour		●	●		▼	●	○						5.40			
Expansion of current markets	●	○		●	●			●			○	●	5.31			
IS integration	○	○		▼				▼			○		5.29			
Increasing revenues	○	●	▼	●	○	○	○	▼	○	▼	▼	●	5.29			
Availability of resources	●	▼											5.28			
Information about customers	○	●	●		▼	▼	●		●				5.26			
Incentives for customers						○							5.22			
Flexible workforce	●	▼											5.15			
Personalising services	●	○											5.10			
Flexible organisational structure	●	▼											5.08			
Priority	1	507	315	239	227	223	218	212	207	184	138	131	111			
Max = 507.1																
Priority																
Min = 111.3																



# Wal-Mart vs Brick and Mortar

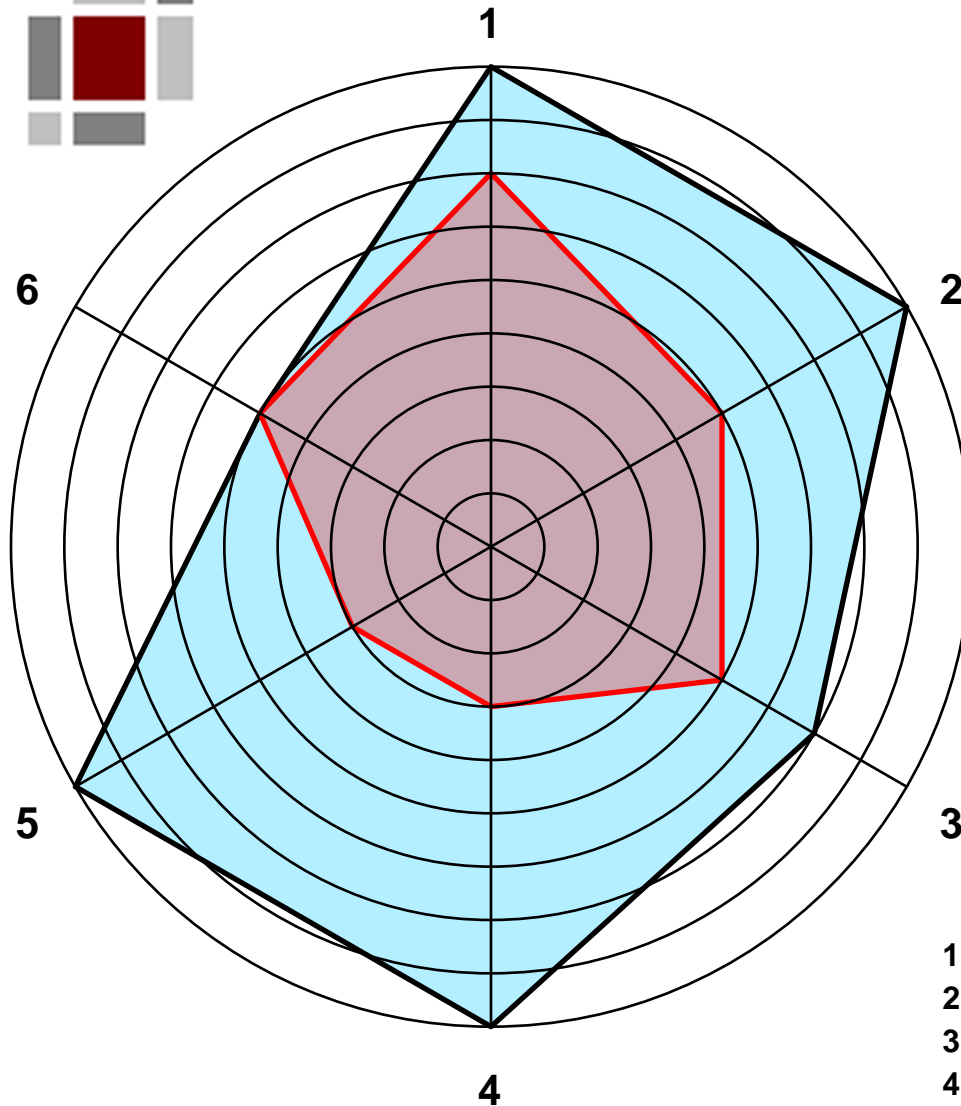
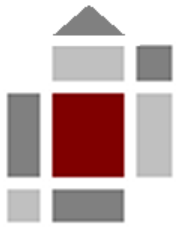


How Wal-Mart competes with a bank branch office.

Selected Related Data	
	Wal-Mart
	Brink and Mortar Branch

1. **Fast responsive customer service (better than usual)**
2. **All time availability of services**
3. **Rapid delivery of services**
4. **Information about consumer purchasing behaviour**
5. **Information about customers**
6. **Incentives for customers**

# Wal-Mart vs Check Smart

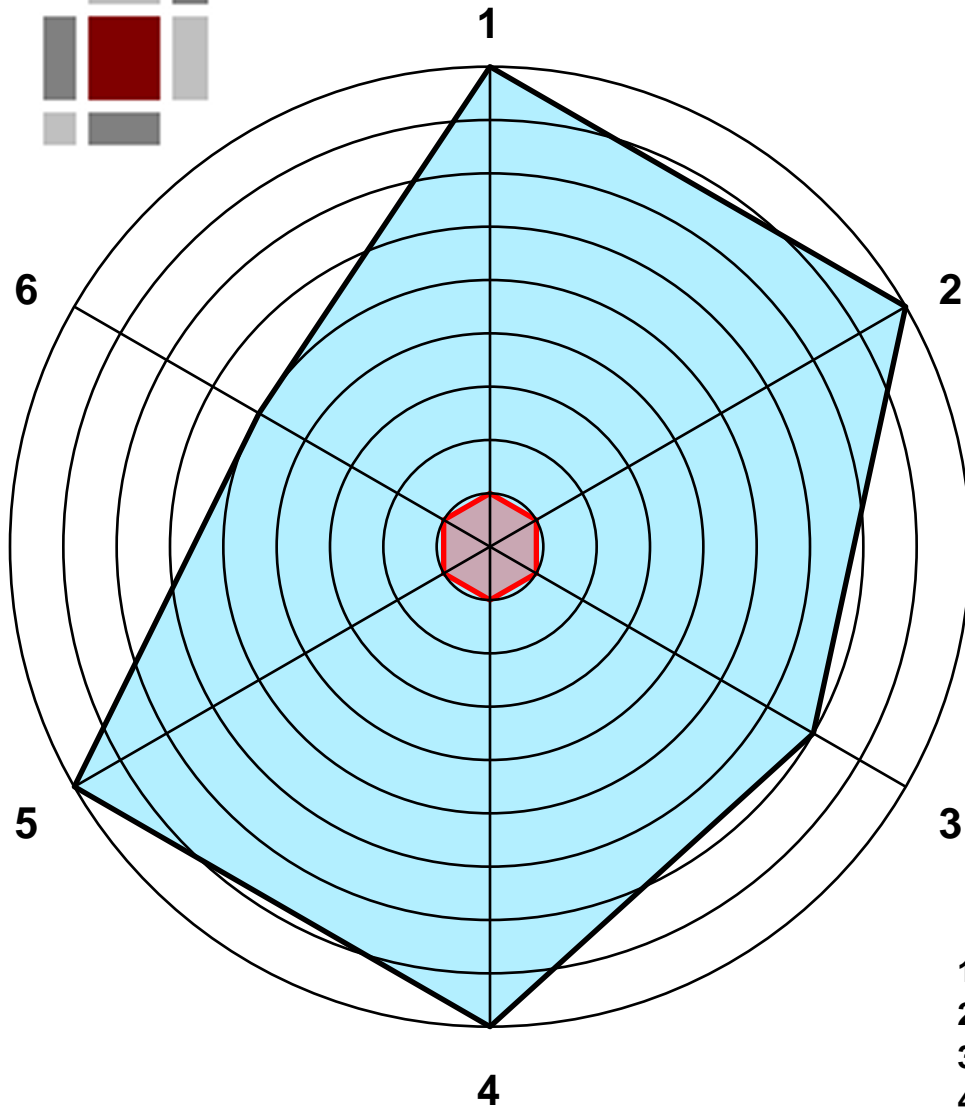
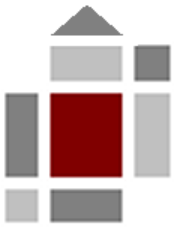


How Wal-Mart competes with a Check Smart office.



Selected Related Data	
	Wal-Mart
	Check Smart

1. **Fast responsive customer service (better than usual)**
2. **All time availability of services**
3. **Rapid delivery of services**
4. **Information about consumer purchasing behaviour**
5. **Information about customers**
6. **Incentives for customers**

# Wal-Mart vs Credit Challenged



How Wal-Mart competes with a Credit Challenged Operation like Pay Day Check Cashing.

Selected Related Data	
	Wal-Mart
	Credit Challenged

1. **Fast responsive customer service (better than usual)**
2. **All time availability of services**
3. **Rapid delivery of services**
4. **Information about consumer purchasing behaviour**
5. **Information about customers**
6. **Incentives for customers**

