

# Discovering Aspects in Requirements with Repertory Grid

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# Outline

- ⇒ Introduction
  - ↳ Early aspects
  - ↳ Repertory grid technique
- ⇒ Example
  - ↳ Goal-oriented
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- ⇒ Related work
- ⇒ Concluding remarks

# Aspects in Requirements

⇒ dominant decomposition

↳ NL, UC, VP, goal, SRS, etc.

⇒ aspectual req.s

↳ broadly scoped CCCs

↳ impacts on other req.s or concerns

⇒ from early aspects to late req.s

# Assumptions

## ⇒ Assume

↳ there exists a relatively well-organized set of req.s derived from some dominant decomposition criterion

## ⇒ Aim

↳ develop a systematic & effective method to support analysts for viewing & manipulating req.s models to expose how entities relate to one another, thereby facilitating aspectual req.s identification & conflicts detection

# Repertory Grid Technique (RGT)

⇒ George Kelly (1955), psychotherapy

⇒ verbalize how people construe certain factors within the area of interest

↳ verbalizations: constructs (bipolar in nature)

↳ factors: elements

⇒ triad: two elements to be seen as similar and thereby as different from a third

# RGT Example

## ⇒ Information sources

↳ TV, Newspaper, Radio, NewsGroup, Web, etc.

↳ elements in RGT

## ⇒ Triad: (A) TV (B) Newspaper (C) NewsGroup

↳ construct: many focuses (A,B) vs. single focus (C)

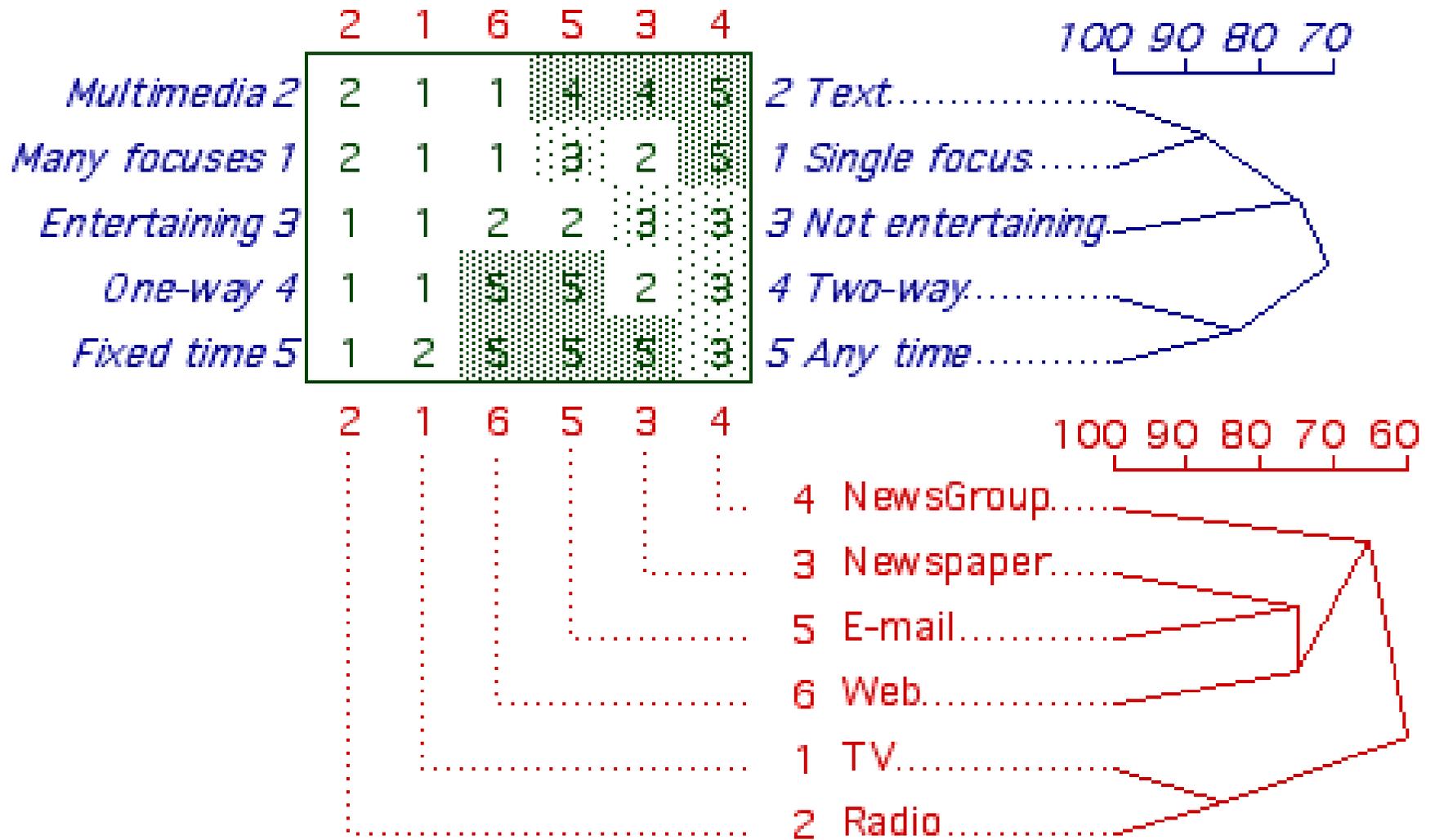
↳ as a rating scale (1-5), and each element is assigned a rating on that construct

# Sample Repertory Grid

	1	2	3	4	5	6	
<i>Many focuses 1</i>	1	2	2	5	3	1	<i>1 Single focus</i>
<i>Multimedia 2</i>	1	2	4	5	4	1	<i>2 Text</i>
<i>Entertaining 3</i>	1	1	3	3	2	2	<i>3 Not entertaining</i>
<i>Two-way 4</i>	5	5	4	3	1	1	<i>4 One-way</i>
<i>Any time 5</i>	4	5	1	3	1	1	<i>5 Fixed time</i>

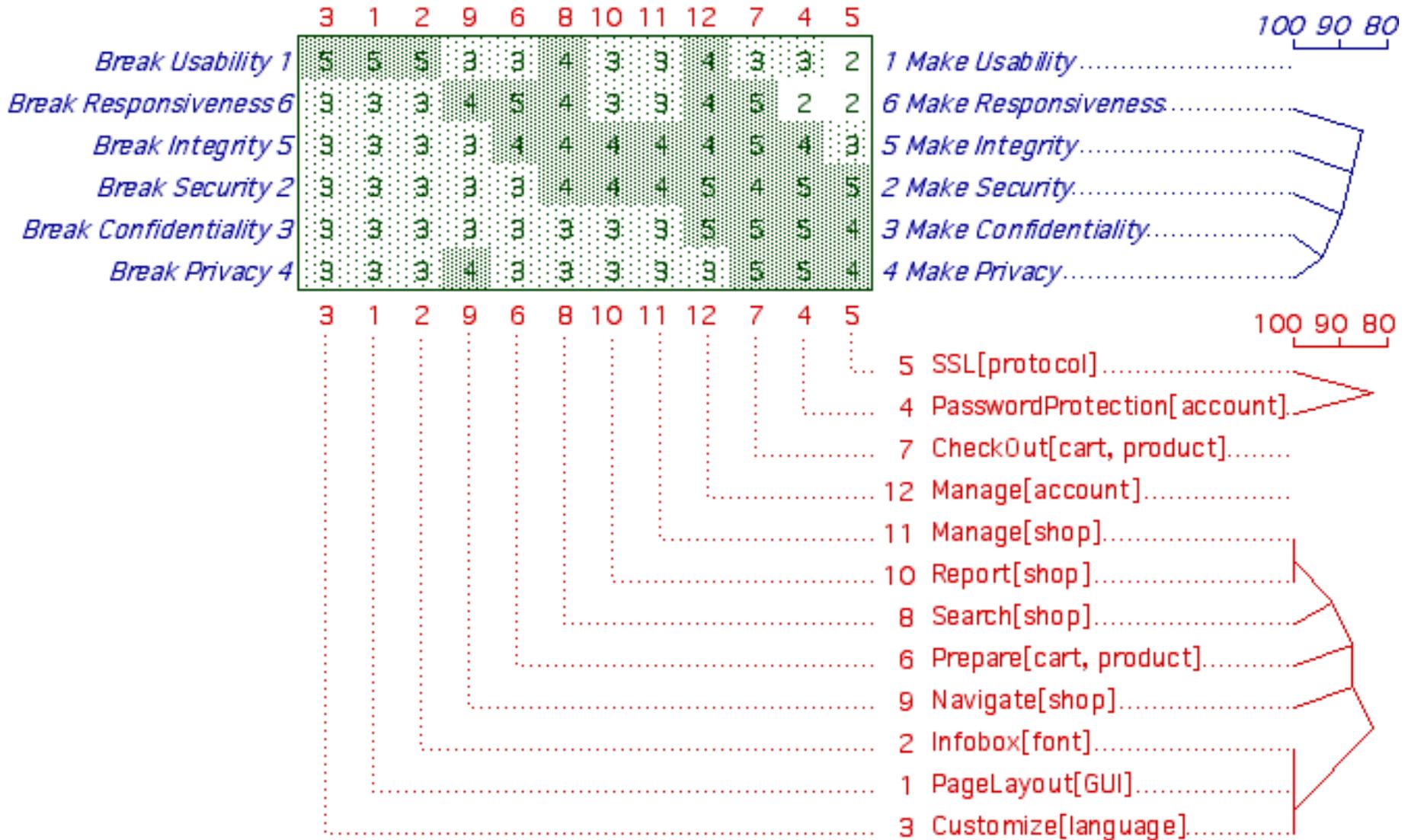


# Cluster Analysis

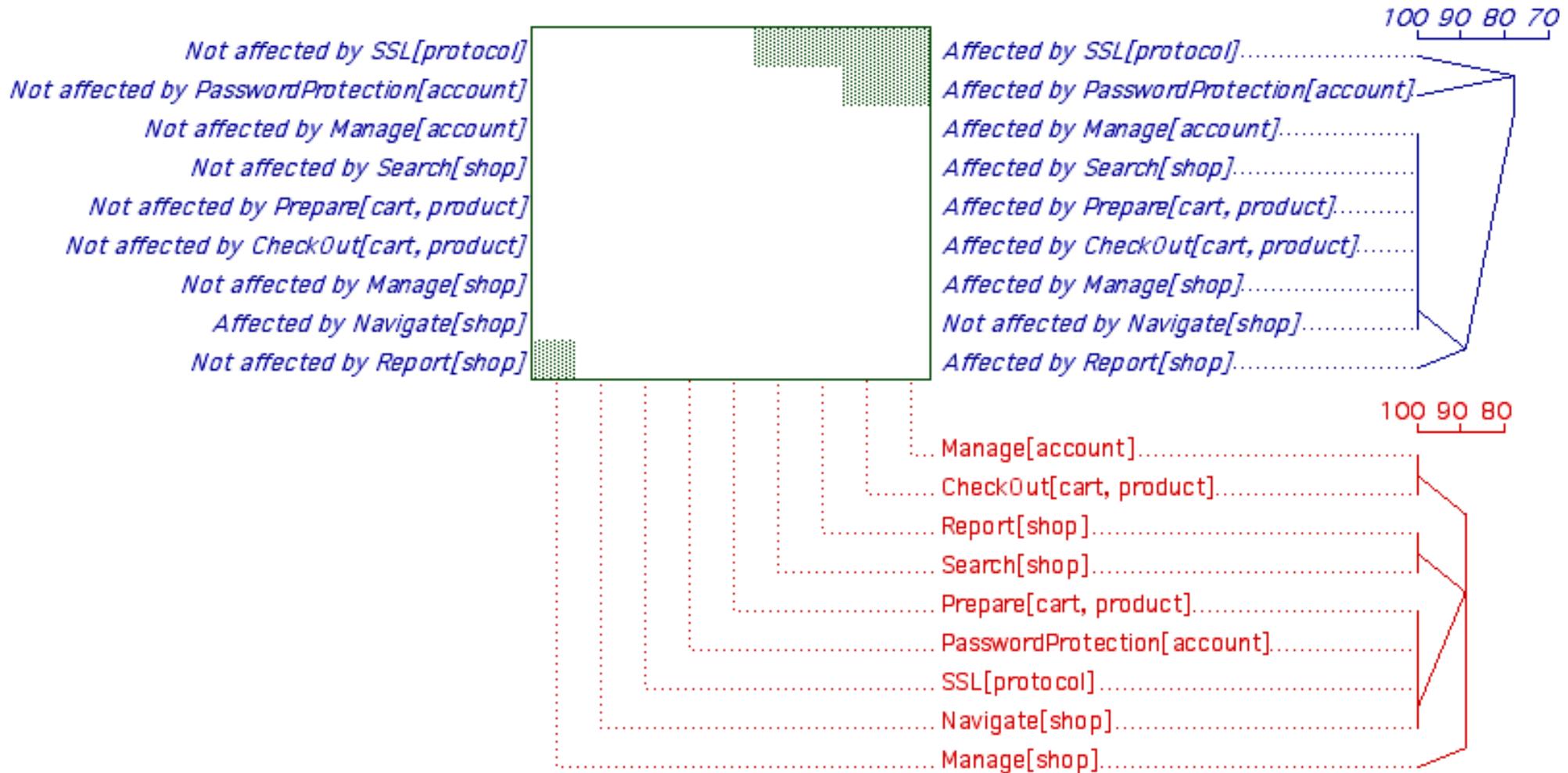




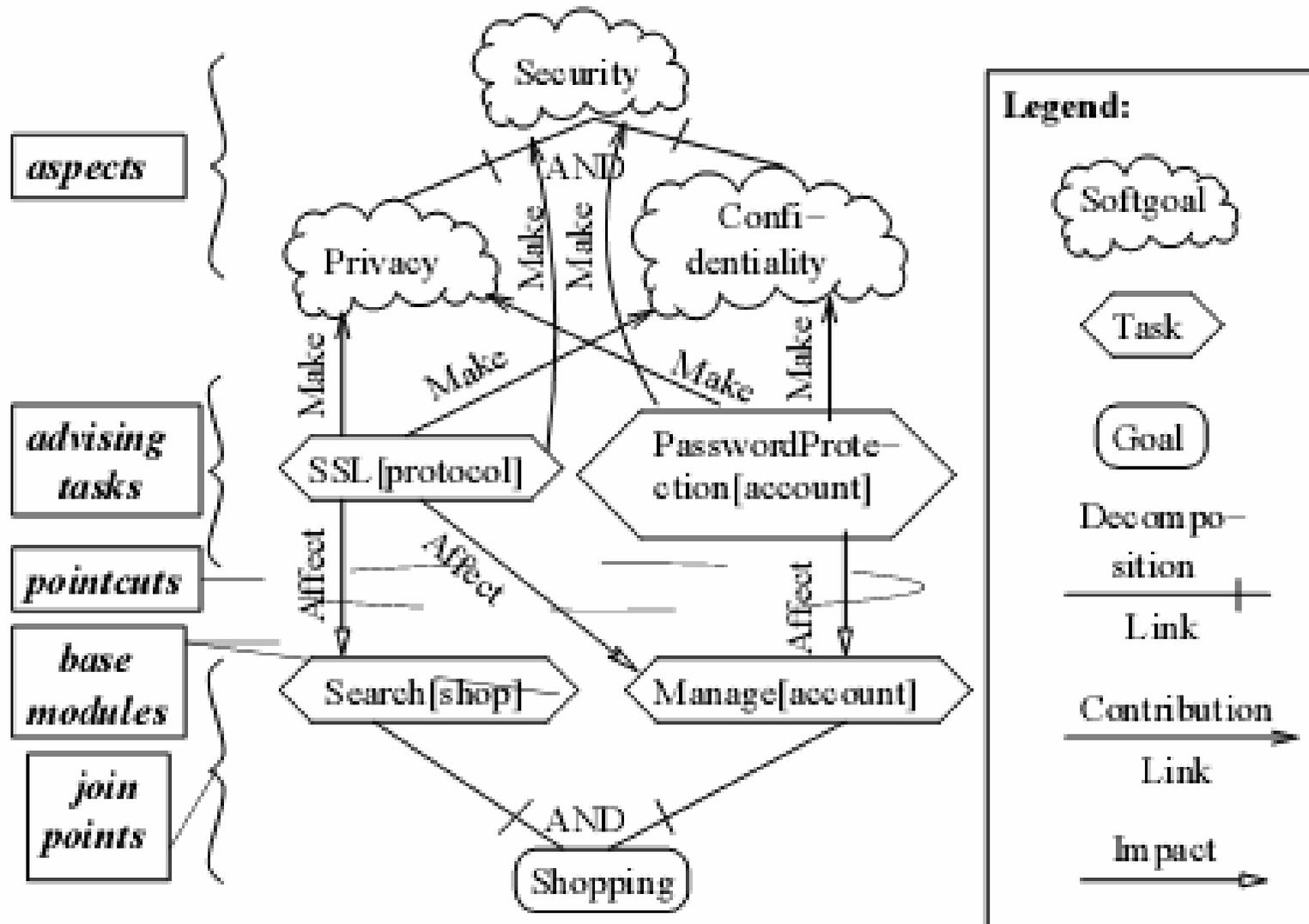
# Cluster Analysis



# Dichotomized Repertory Grid



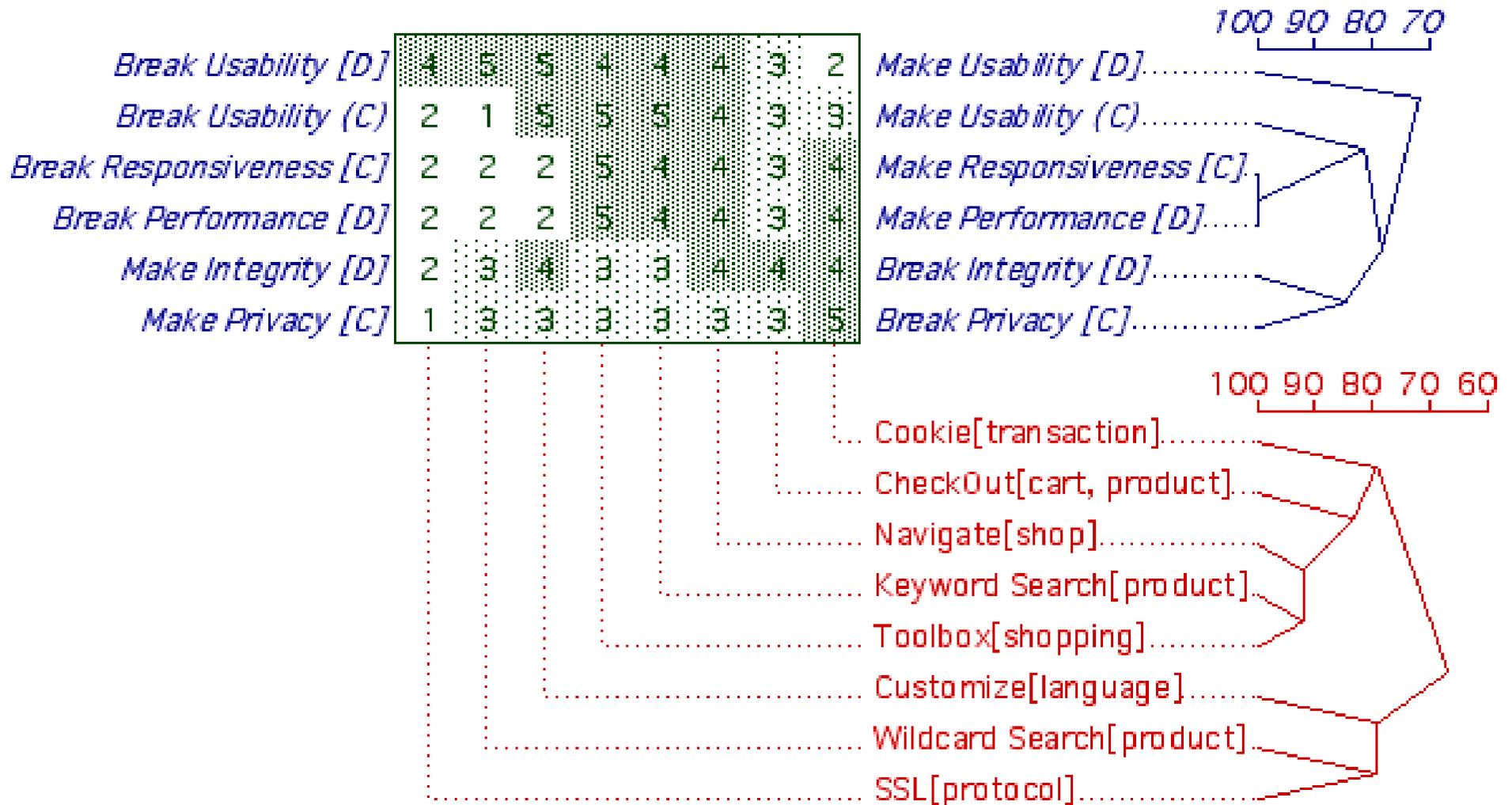
# Aspects in Goal Model



# Viewpoint-Based Models

		<i>Terminology</i>	
		Same	Different
<i>Concepts</i>	Same	<p><b><u>Consensus</u></b></p> <p>Stakeholders use terminology and concepts in the same way</p>	<p><b><u>Correspondence</u></b></p> <p>Stakeholders use different terminology for the same concepts</p>
	Different	<p><b><u>Conflict</u></b></p> <p>Stakeholders use same terminology for different concepts</p>	<p><b><u>Contrast</u></b></p> <p>Stakeholders differ in terminology and concepts</p>

# Cluster Analysis



# Related Work

⇒ Baniassad *et al* [IEEE SW'06]

↳ aspect terms + impact req.s + scattered concerns

⇒ NLP-based (Mining EAs)

↳ corpus vs. well-organized req.s models

↳ meaning: relationship between signs and actions

⇒ Goal-oriented [Yu'04]

↳ handle multiple viewpoints and conflicting concerns

↳ more sensible and enlightening

# Concluding Remarks

- ⇒ Summary: RGT as an EA identification method
  - ↳ NOT using triad
  - ↳ Examples of goal- & viewpoint-based req.s
  - ↳ Conceptual resolution throughout the lifecycle
- ⇒ Future work
  - ↳ Comparison study (benchmark; accuracy, coverage, etc.)
  - ↳ Conflicts resolution and req.s prioritization
  - ↳ Aspects evolution

# Final Words on RGT

All in all, the repertory grid is truly a technique: A grid of itself is nothing more than a matrix of blank cells.

It is only limited by the users' imagination.

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