A. INFORMATIVENESS

Determined by the question: *Did you find the content you were looking for?*

Potential causes for bad informativeness:

    I.   bad index quality (desired result[s] not present on page)
    II.   bad ranking quality (desired result[s] not present or ranked too low)
    III.   desired result not clearly identifiable:
        A. inappropriate title and/or abstract
        B. too many other results
        C. too much content other than results

Corresponding countermeasures:

1. improve index quality
2. include more results in index
3. provide search suggestions / related search terms
4. improve ranking quality (e.g., by using models to better predict relevance)
5. improve title/abstract quality
6. reduce number of results per page
7. clarify layout:
    a. clearly mark different types of results (text, images, products etc.)
    b. clearly separate results from other content such as ads
    c. reduce amount of content other than results
    d. find optimal length for result abstract
    e. improve information architecture (e.g., inverted pyramid, http://en.wikipedia.org/wiki/Inverted_pyramid)
    f. improve scanability of search results
8. provide semantic results (e.g., info boxes that answer queries directly on the page)
9. ~~provide contextual results (e.g., based on location)~~

B. UNDERSTANDABILITY

Determined by the question: *Could you easily understand the provided content?*

Potential causes for bad understandability:

    I.   results presented in wrong language
    II.   poor title/abstract quality
    III.   use of ambiguous language
    IV.   use of ambiguous icons without textual explanation

V.   use of counterintuitive interactions (e.g., missing affordances of non-underlined links)

Corresponding countermeasures:

1. provide option to choose language/region
2. provide translation option
3. improve title/abstract quality
4. improve understandability based on corresponding heuristics (e.g., avoid use of ambiguous language)
5. provide alternative texts (e.g., tooltips) along icons
6. follow web conventions (e.g., common color codes, standard icons) for SERPs; ideally following the users previous experience

C. CONFUSION

Determined by the question: *Were you confused while using the webpage?*

Potential causes for confusion:

I.   (types of) results not clearly identifiable
II.   too much content other than results
III. poor understandability (e.g., use of ambiguous language)
IV.   poor readability (e.g., weak verbs, sentences with >20 words, overuse of passive voice)
V.   use of ambiguous icons without textual explanation
VI.   important settings not easily reachable / hidden from user
VII. too many options (e.g., for filtering results)

Corresponding countermeasures:

1. ~~clearly highlight results and mark other content as such~~
2. ~~clearly mark different types of results~~
3. improve contrast of different elements using gestalt laws (e.g., color, position, form grouping)
4. reduce amount of content other than results
5. improve understandability based on corresponding heuristics (e.g., avoid use of ambiguous language)
6. provide alternative texts (e.g., tooltips) along icons
7. ~~clearly highlight important settings; make them reachable in as few clicks as possible~~
8. provide help; make it reachable in as few clicks as possible
9. provide search suggestions / related search terms

_D._ DISTRACTION

Determined by the question: _Were you distracted by elements of the webpage?_

Potential causes for distraction:

    I.   too much content other than results
   II.   ~~animated content~~
  III.   ~~too many images~~
  IV.   ~~strongly highlighted content other than~~ non-results more salient than results
   V.   overloaded results (e.g., displaying secondary information, social media buttons etc.)

Corresponding countermeasures:

   1. reduce amount of content other than results
   2. ~~reduce amount of animated content~~
   3. ~~reduce amount of images~~
   4. option to collapse potentially distracting content such as ads
   5. ensure that results are more salient than ~~stand out against~~ other content
   6. reduce results to: title, URL, abstract
        a. make additional, secondary information available through "more" link (or similar)

_E._ READABILITY

Determined by the question: _Did typography and layout add to readability?_

Potential causes for bad readability:

    I.   too small font size
   II.   too small line height
  III.   wrong line length
  IV.   wrong font
   V.   text not properly grouped (e.g., via white space or separation lines)
  VI.   bad contrast
 VII.   inconsistent alignment of results and/or other elements of the page

Corresponding countermeasures:

   1. increase font size
   2. increase line height
   3. adjust line length to display ~66 characters per line
   4. try different fonts

5. ~~add white space~~ improve grouping of:
    a. ~~between~~ title, URL and abstract of result
    b. ~~between results~~
    c. ~~between results and other content~~
6. use better contrast (very dark grey on very light grey is best for reading)
7. align results and other elements of the page consistently
8. ~~provide option to change or adjust layout~~

F. INFORMATION DENSITY

Determined by the question: *Was there too much information presented on too little space?*

Potential causes for high information density:

I. too many results per page
II. too long result abstracts
III. too much content other than results
IV. ~~too little white space~~
V. missing visual hierarchy with salient results ~~different types of content not clearly marked; results don't stand out~~
VI. overloaded results (e.g., displaying secondary information, social media buttons etc.)

Corresponding countermeasures:

1. reduce number of results per page
2. find optimal length for result abstract
3. reduce amount of content other than results
4. ~~add white space~~ improve grouping of:
    a. ~~between~~ title, URL and abstract of result
    b. ~~between results~~
    c. ~~between results and other content~~
5. ~~clearly mark~~ introduce contrast and visual hierarchy to separate results from content other than results
6. ~~ensure that results stand out against other content~~
7. ~~avoid infinite scrolling~~
8. provide browsing experience for long result list (e.g., jump to different dates)
9. provide users with possibility to adjust amount of results per page
10. provide filter mechanism to reduce list of results without touching the search quality
11. reduce results to: title, URL, abstract
    a. make additional, secondary information available through "more" link (or similar)

G. REACHABILITY

Determined by the question: *Was your desired content easily and quickly reachable (concerning time and distance)?*

Potential causes for bad reachability:

I.   too much scrolling effort for user:
   A.   too much content other than results, especially above results
   B.   too many results per page
   C.   too long result abstracts
   D.   bad ranking quality (desired result[s] not present or ranked too low)
   E.   no additional browsing possibilities (e.g., jump navigation)
II. desired result(s) not immediately identifiable:
   A.   non-optimal title and/or abstract
   B.   missing visual hierarchy
   C.   missing contrast between results and other content
   D.   ~~results not clearly highlighted / don't stand out~~
   E.   ~~content other than results not clearly marked as such~~

Corresponding countermeasures:

1.   reduce scrolling effort:
   a.   reduce amount of content other than results, especially above results
   b.   reduce number of results per page
   c.   provide browsing functionality
   d.   provide customizable number of results per page (e.g., from 10 to infinite scrolling)
   e.   find optimal length for result abstract
   f.   improve ranking quality (e.g., by using models to better predict relevance)
   g.   ~~avoid infinite scrolling~~
2.   better highlight results / improve result presentation:
   a.   improve title/abstract quality
   b.   introduce contrast and visual hierarchy to separate results from content other than results
   c.   ~~ensure that results stand out against other content~~
   d.   ~~clearly mark content other than results~~
3.   use Ajax technology to reduce navigation efforts