
Problem Demarcation

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Problem demarcation

How to proceed?

1. Starting point
2. Means-ends analysis
3. Several problem statements
4. Objectives trees + System boundaries
5. Compare & Choose

1. Choose one issue as a starting point

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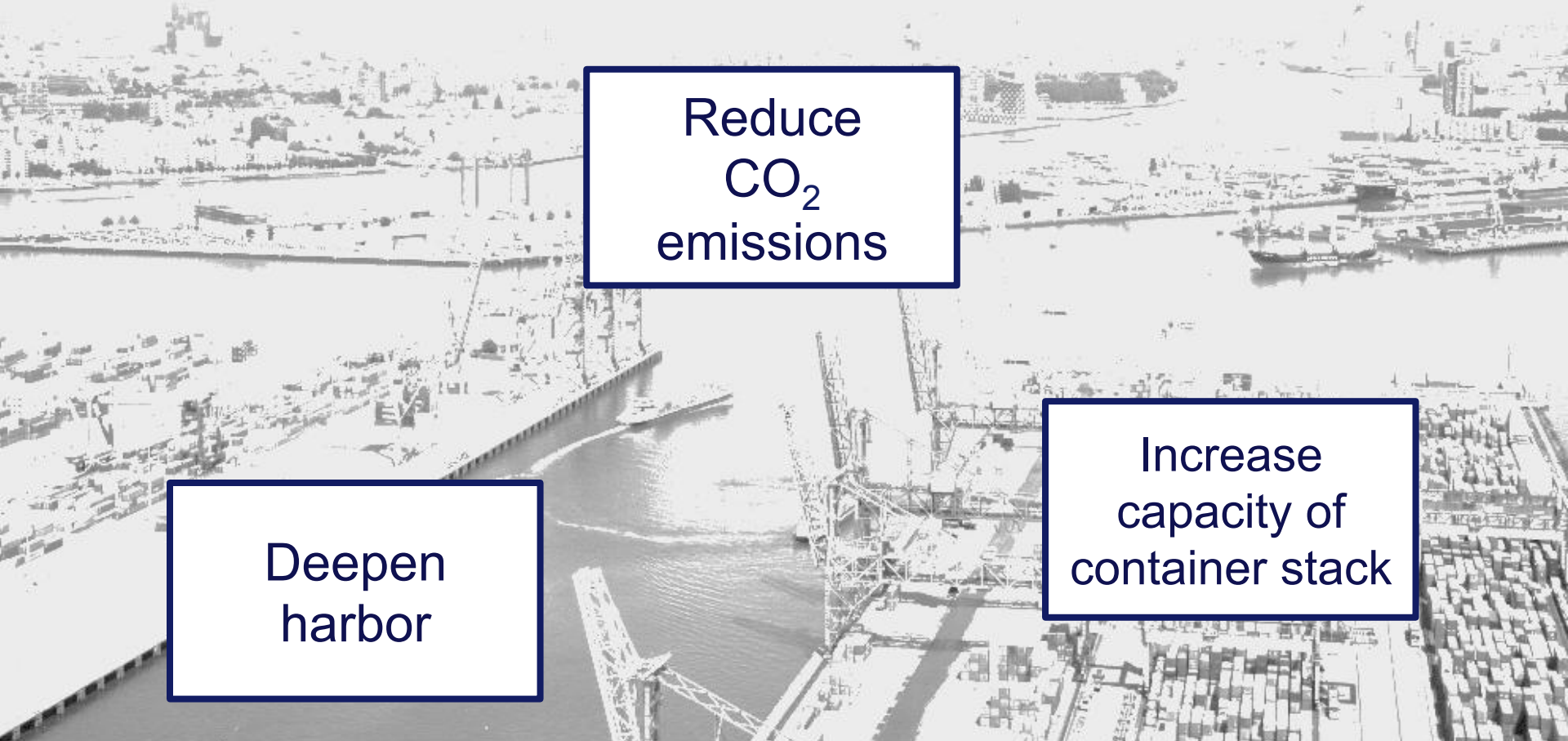


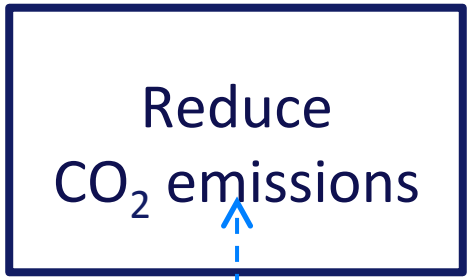
Reduce CO_2 emissions

Deepen harbor

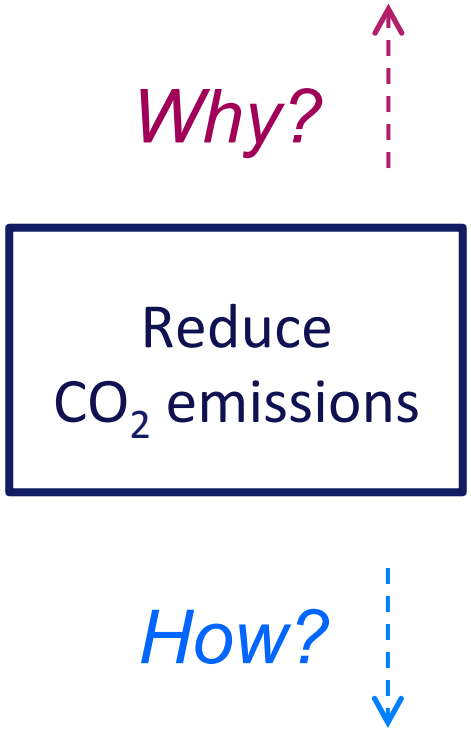
Increase capacity of container stack

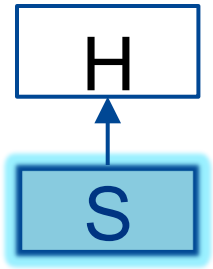
2. Perform a means-ends analysis

“means-ends box”

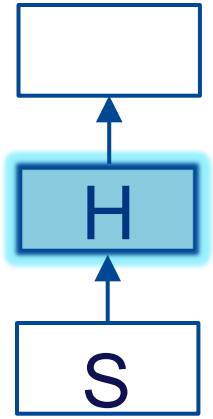


a single verb phrase

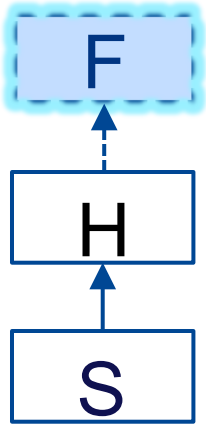

Why?
Reduce
CO_2 emissions
How?



Why?

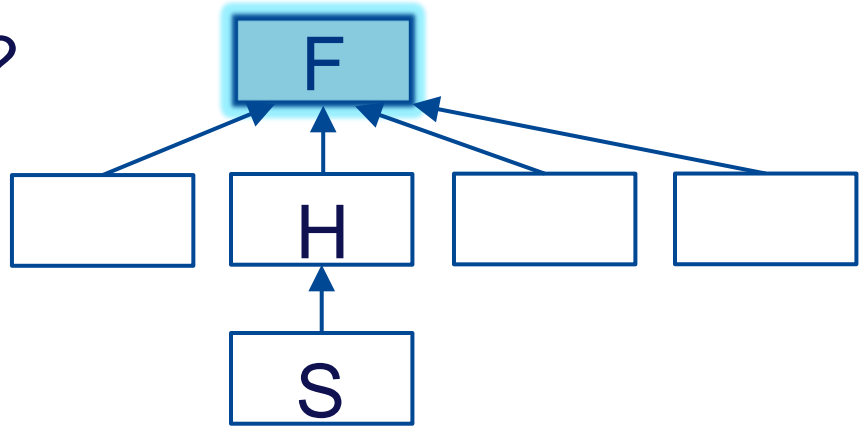


Why?

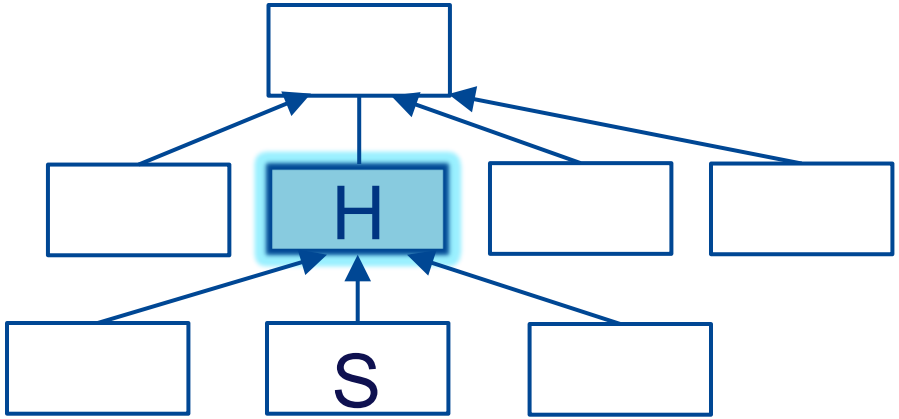


Why? *(and so on)*

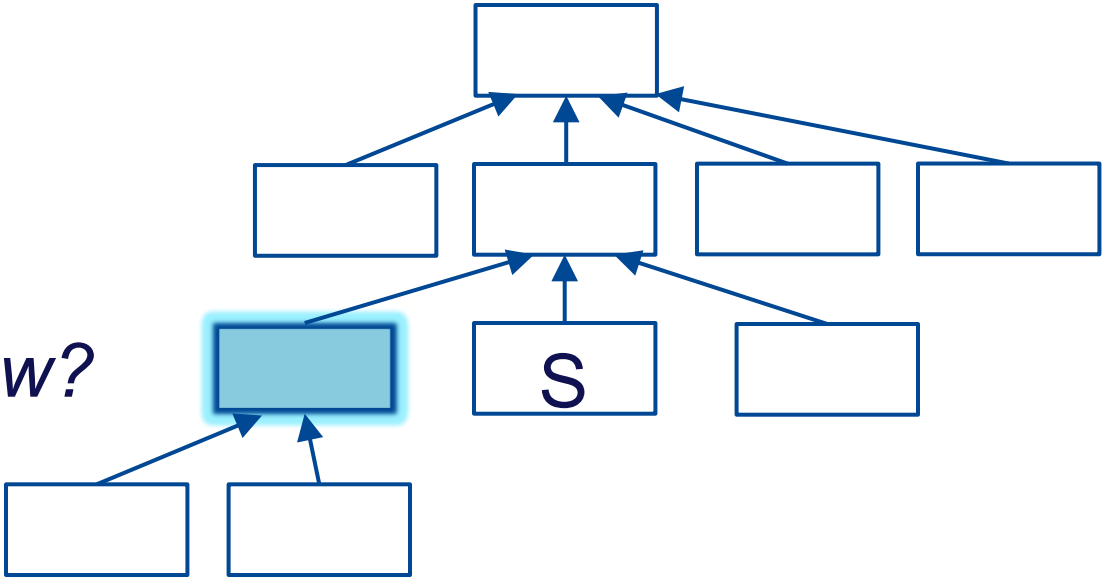
How?



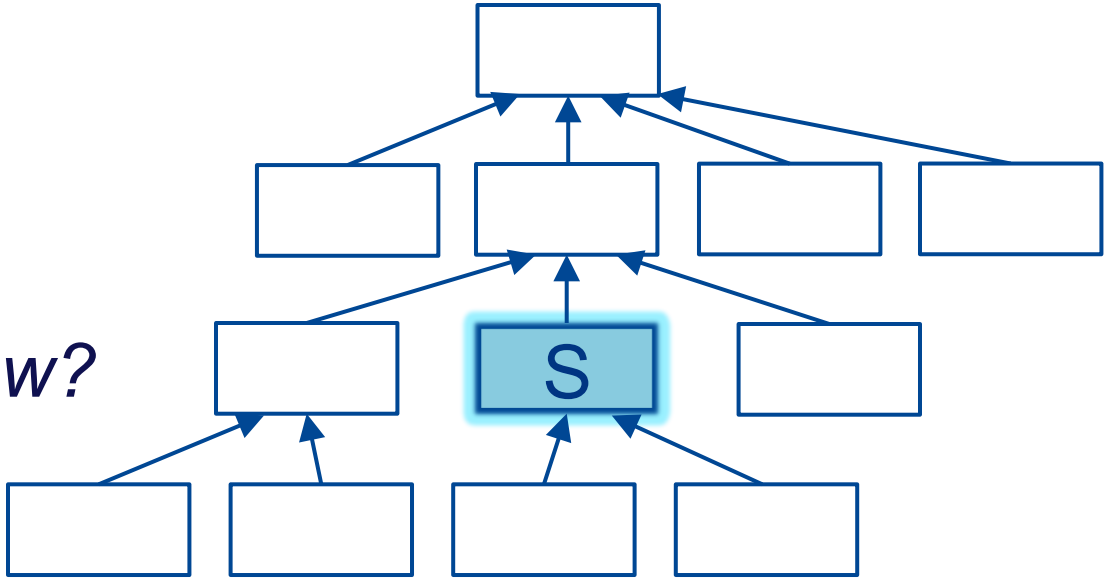
How?



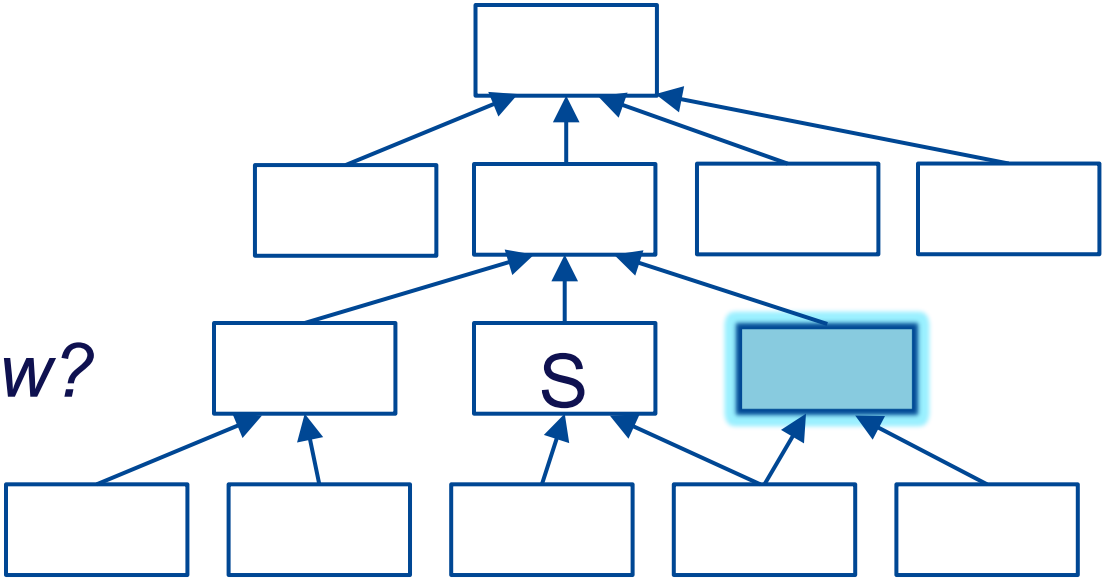
How?



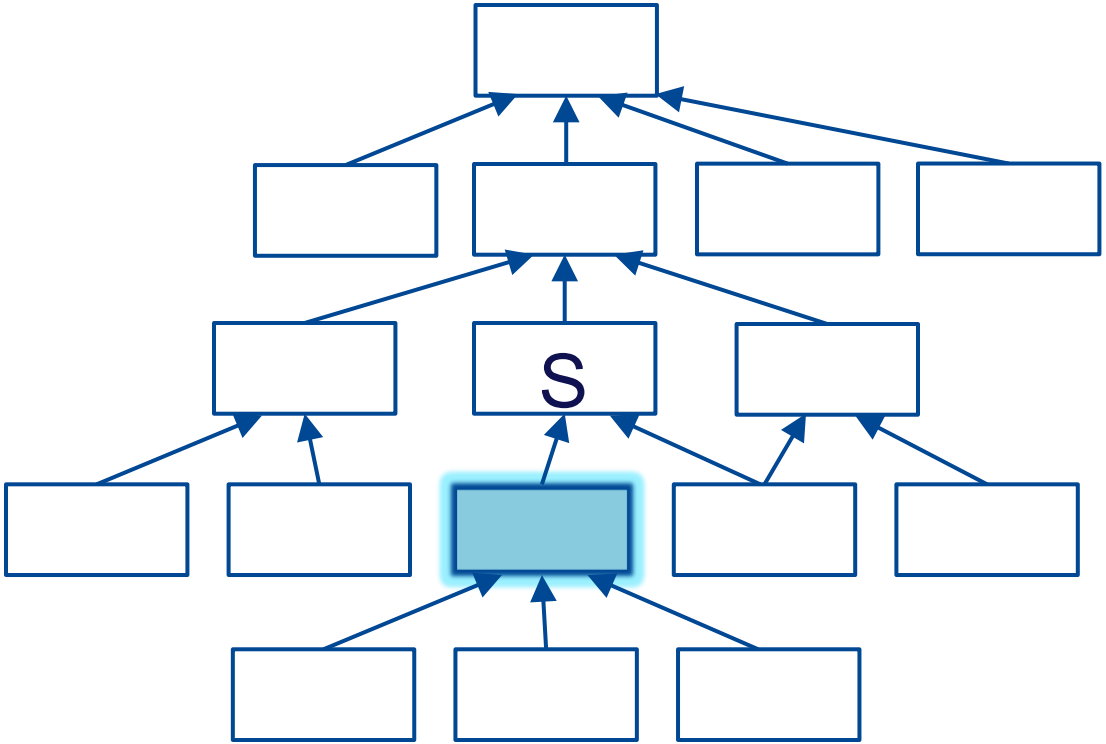
How?



How?

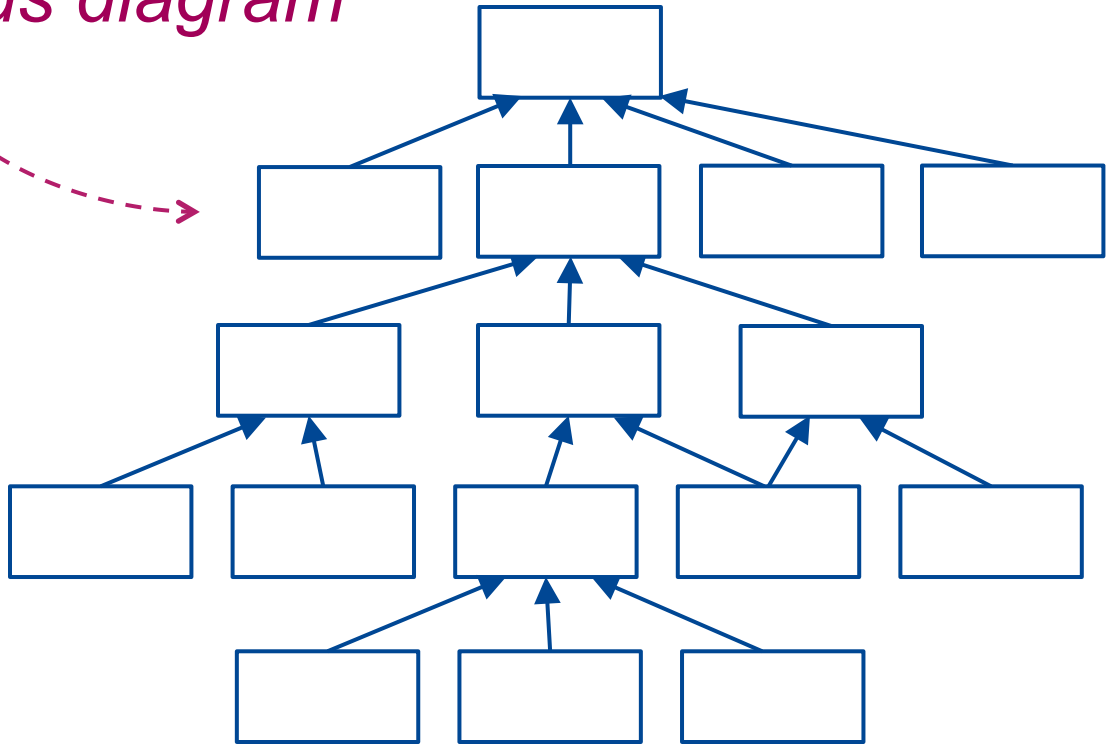


How?



(and so on...)

“means-ends diagram”

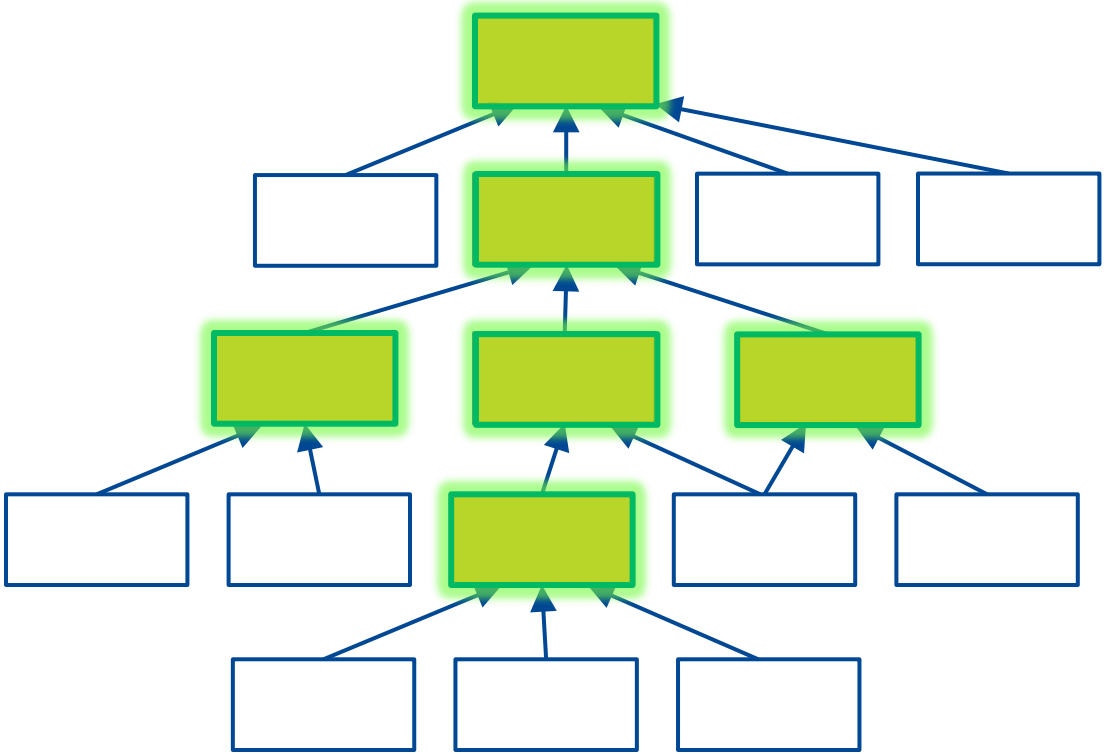


problem 1

problem 2

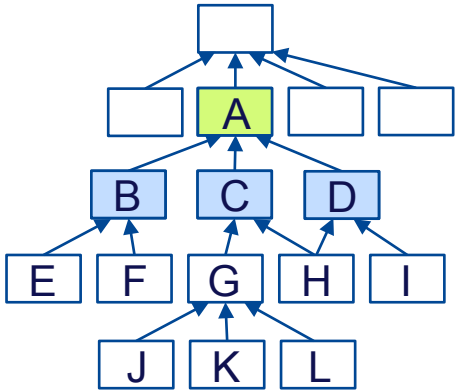
problem 3, 4, 5

problem 6



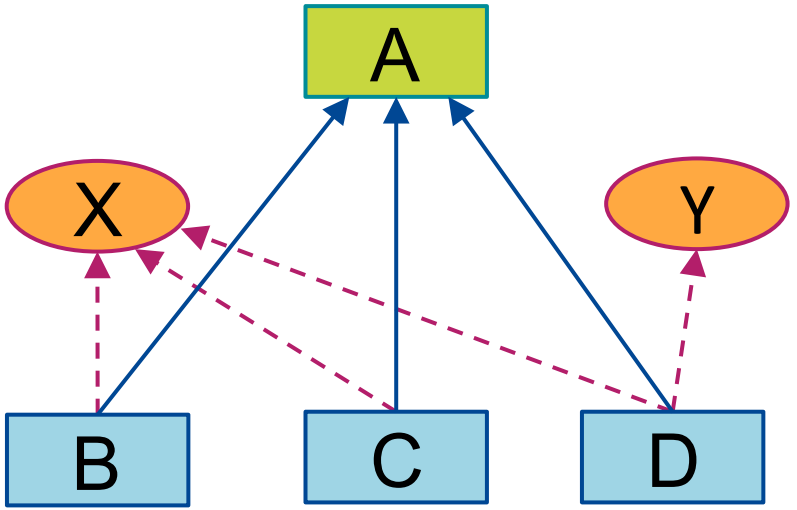
3. Problem statements for *several* "focal means/ ends"

means-ends diagram:



"focal objective"

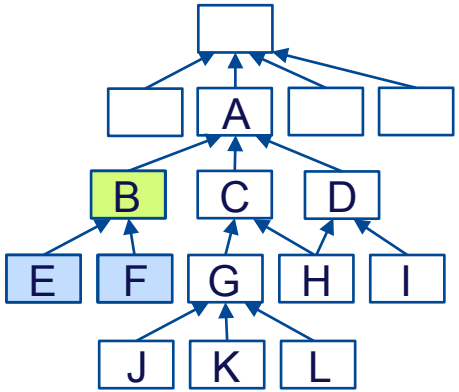
undesirable side effects of means



problem statement:

(1) "How can the client achieve A without (too much) X or Y ?"

means-ends diagram:



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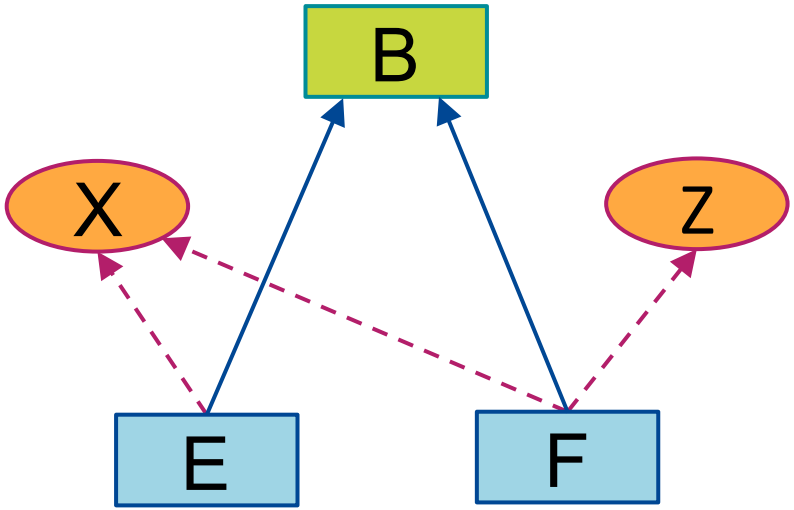
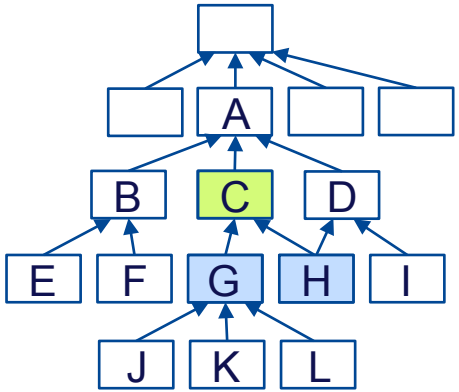


problem statement:

(2) "How can the client achieve B without (too much) X or Z ?"

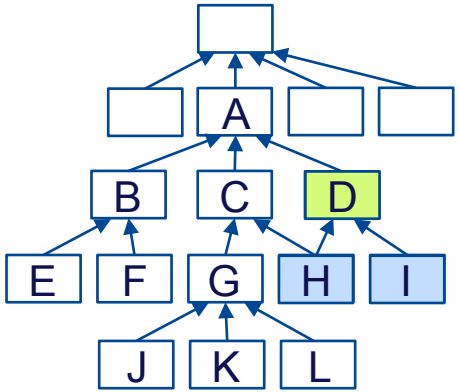
means-ends diagram:



undesirable side effects of means **G** *and* **H**

(3) "How can the client achieve C without (too much) … ?"

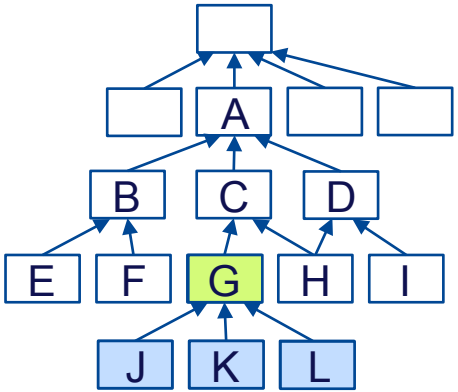
means-ends diagram:



undesirable side effects of means **H** *and* **I**

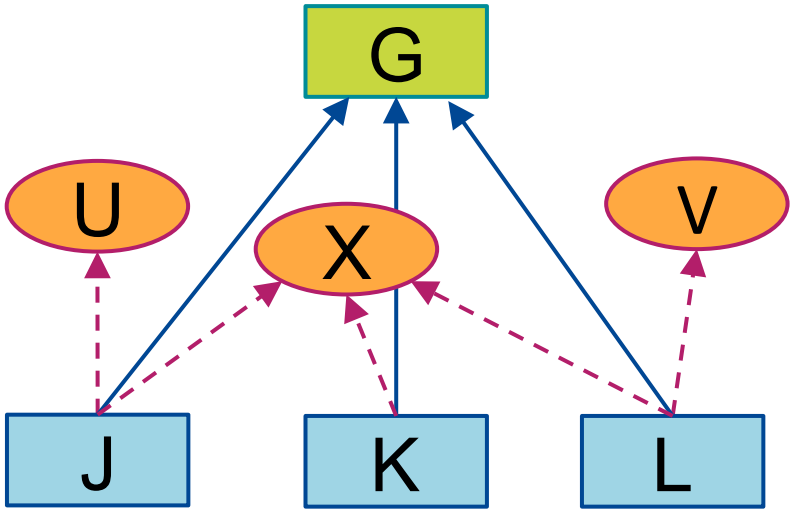
(4) "How can the client achieve D without (too much) … ?"

means-ends diagram:



"focal objective"

undesirable side effects of means

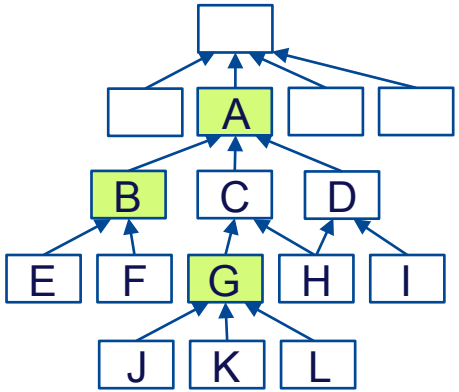


problem statement:

(5) "How can the client achieve G without (too much) U, X or V ?"

3. Problem statements for *several* “focal means/ ends”

means-ends diagram:



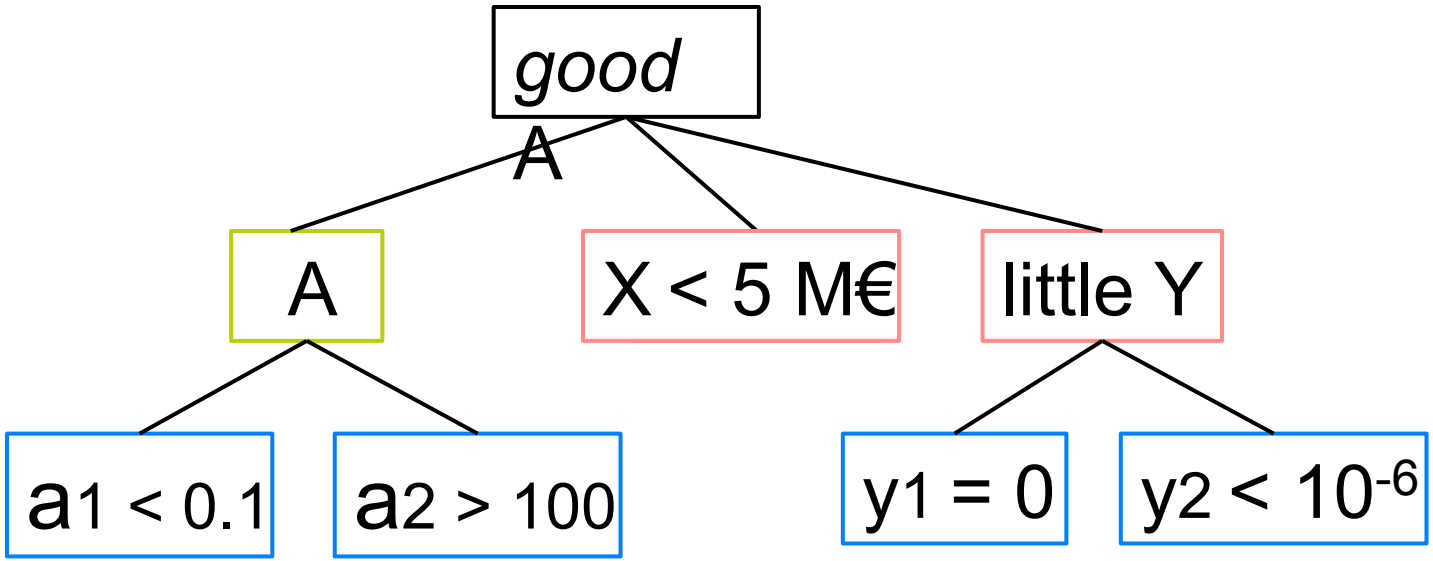
(1) “How can the client achieve **A** without (too much) **X** or **Y** ?”

(2) “How can the client achieve **B** without (too much) **X** or **Z** ?”

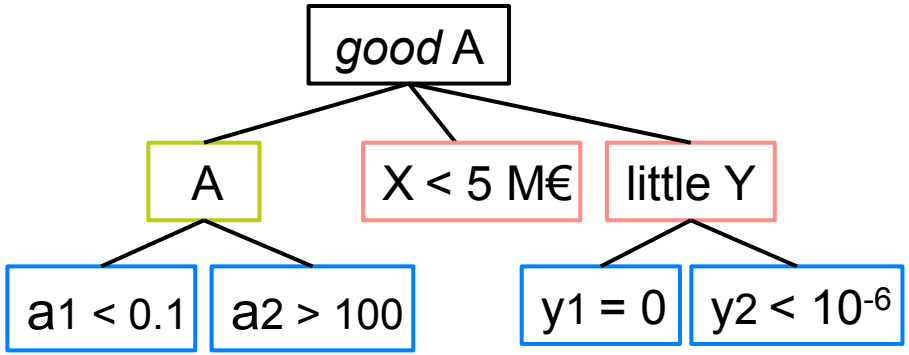
(5) “How can the client achieve **G** without (too much) **U**, **X** or **V** ?”

4. Problem statement → objectives tree

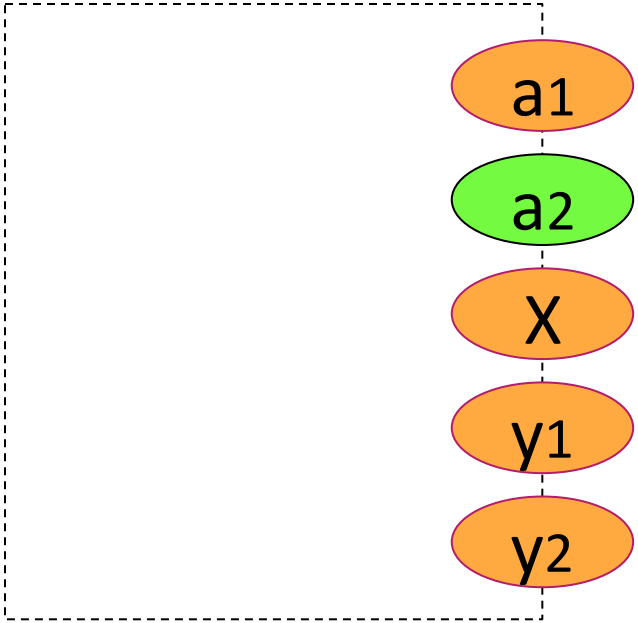
(1) “How can the client achieve **A** without (too much) **X** or **Y** ?”



4. Objectives tree → system diagram

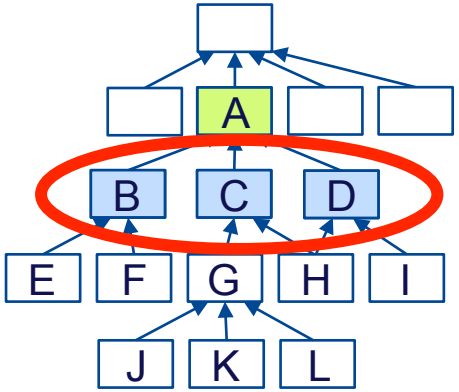


objectives tree

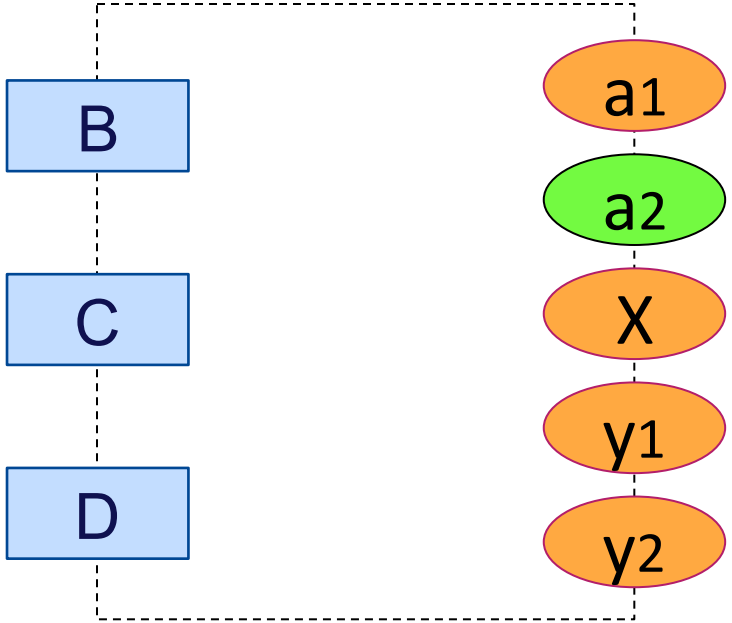


criteria

4. Add means to system diagram



means-ends diagram

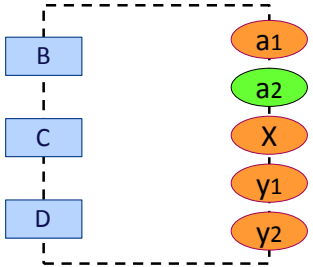


means

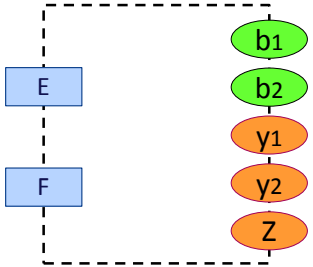
criteria

5. Choose one problem + associated system

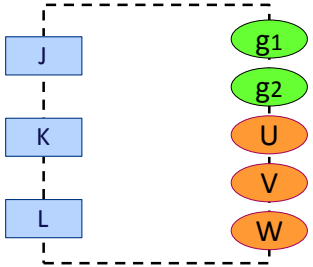
(1) “How can the client achieve **A** without (too much) **X** or **Y** ?”



(2) “How can the client achieve **B** without (too much) **Y** or **Z** ?”



(5) “How can the client achieve **G** without (too much) **U**, **V** or **W** ?”



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Involve your client in this process!