



Tutorial notes: Scoping your analysis

→ Scoping the problem

- ↳ How do you stop looking for bigger problems to solve?

→ Scoping the solution

- ↳ How do you stop yourself from computerizing everything?

→ Two case studies:

- ↳ Hotel checkout system
- ↳ Computer Books by Mail



Scoping decision I

→ Decide the scope of the **problem**:

- ↳ E.g. Bookstore example:
 - "Textbooks are often not ordered in time for the start of classes"
 - ↳ But that's just a symptom. (So you ask the manager "why?")
 - "Because we don't receive the booklists from instructors early enough"
 - ↳ Is that just a symptom of some other problem? (...so ask the instructors "why?")
 - "Because the instructors aren't allocated to courses early enough"
 - ↳ Is that just a symptom of some other problem? (...so ask the UG office "why?")
 - "Because we never know who's available to teach until the last minute"
 - ↳ Is that just a symptom of some other problem? (...so ask the dept chair "why?")
 - "Because there's always uncertainty about who gets hired, sabbaticals, etc."
 - ↳ Is that just a symptom of some other problem? (...so ask the dept chair "why?")
 - "Because instructors we want to hire don't accept our offers early enough"
 - ↳ Is that just a symptom of some other problem? (...so ask the new recruits "why?")
 - "Because some other universities seem to wait for ages before making offers"
 - ↳ Is that just a symptom of some other problem? (...so ask U of Waterloo, etc. "why?")
 - "Because it takes our department a long time to reach consensus on hiring"
 - ↳ Is that just a... ..oh wait... ..maybe we can develop a decision support system for faculty hiring at U of Waterloo, and that will help us get our textbooks for the start of class...



How to scope the problem

→ Difficulty:

- ↳ Every problem can be seen as as symptom of some other (larger) problem
- ↳ You can keep on tracing root causes forever if you're not careful

→ Approach: (...ask yourself these questions...)

- ↳ Is there a reasonable expectation that this problem can be solved? (...independently of the larger problem?)
- ↳ Is there a reasonable expectation that solving this problem will help? (...without also solving the larger problem?)
- ↳ Is this a problem that the stakeholders want solved? (do the "local experts" think this problem is the one that matters?)
- ↳ Is this a problem that someone will pay you to solve? (Hint: a feasibility study should quantify the return on investment)



Scoping Decision II

→ Decide the scope of the **solution**

- ↳ Say you decided that *delay in processing booklists from instructors* is the right level of problem to tackle.
 - > "So, let's computerize the submission of textbook forms from instructors"
- ↳ But while we're at it:
 - > "it would help if we also computerized the submission of orders to the publishers"
- ↳ ...and of course:
 - > "we ought to computerize the management of book inventories too, so we can quickly check stock levels before ordering new books"
- ↳ ...and in that case:
 - > "we might as well computerize the archives of past years booklists so that we can predict demand better"
- ↳ ...and therefore:
 - > "it would also make sense to provide a computerized used book exchange, because that has a big effect on demand for new books"
- ↳ ...and then of course there's ... oh, wait, this is going to cost millions!
 - > Bookstore manager: "tell me again how this automated used book exchange will help me order books faster?"



How to scope the solution

→ Difficulty:

- ↳ We could keep on throwing more technology at the problem forever
- ↳ It's hard to decide when to stop adding extra "bells and whistles"

→ Approach (...select among alternatives carefully...)

- ↳ Is there a reasonable expectation that this alternative can be implemented?
(...independently of all the other options?)
- ↳ Is there a reasonable expectation that implementing this alternative will (help to) solve the original problem?
(...without also having to address other aspects of the problem?)
- ↳ Is this a solution that the stakeholders can live with?
(do the "local experts" think they would use all these functions?)
- ↳ Is this a solution that someone will pay you to build?
(Hint: a feasibility study should quantify the return on investment for each alternative)



Example: A Hotel Checkout System

→ Current system:

- ↳ The customer's account is updated twice a day with charges including:
 - room charge per day,
 - room service charges (for such things as snacks delivered to one's room)
 - room movie charges (if the customer uses the room's pay-TV)
 - restaurant charges (if the customer dines in the hotel's restaurant and charges the bill to her room)
- ↳ When the customer leaves she is supposed to mention any recent charges, which are then added to the bill and the bill is paid in full.

→ Hotel management want to change it because:

- ↳ there are often billing errors, such as:
 - customers leaving without paying some charges;
 - sometimes customers are double-billed because they declare a certain charge, for which they have already been billed.
- ↳ management expects business to grow
 - a major extension to the hotel is being built
 - manual updates of customer records will become problematic
- ↳ So they'd like continuous on-line updates of customer accounts from:
 - the hotel catering service (responsible for room service)
 - the pay-TV system (charge a customer as soon as she starts viewing a movie)
 - and the hotel restaurant (assume there is only one).



Analysis

→ What are the problems?

→ What are the alternatives?

→ What are the selection criteria?

→ What recommendation would you make?



Computer Books by Mail (CPM)

→ Current situation

- ↳ Established 12 years ago, CPM's business has been to act as book-jobber:
 - receiving orders from librarians for books about computers
 - ordering the books from the appropriate publisher, at a discount
 - filling the order on receipt of the books from the publisher.
- ↳ Invoices are produced by a service bureau computer from forms filled out by CBM staff.
- ↳ Business currently running at about 100 invoices per day
 - each with average of 4 book titles and average value per invoice of \$150.

→ CBM Corp. recently acquired by a holding corporation

- ↳ New management plans to expand the operation considerably:
 - improving service levels by holding stocks of the 100 most frequently ordered book titles
 - allow all professionals (not only librarians) to order by calling a toll-free number, 1-800-372-6657 (800-DP-BOOKS, of course) as well as by mail, as at present.
- ↳ This will mean some new functions will be needed:
 - credit checking
 - an inventory control system of some sort.
 - rapid access to a catalog of books for phone sales staff to verify authors and titles and to be able to advise callers what books are available on any given topic.



Analysis

→ What are the problems?



→ What are the alternatives?



→ What are the selection criteria?



→ What recommendation would you make?

