

Brontosaurus Tower

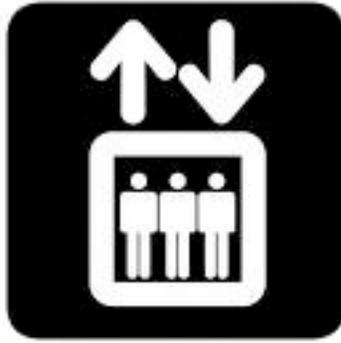


A PROBLEM

In the heart of Gotham City's financial district stands the glistening new 73-story Brontosaurus Tower. Even though this architectural masterpiece is not yet fully occupied, the elevator service has been found to be woefully inadequate by the tenants. Some tenants have actually threatened to leave if the service isn't improved, and quickly.

A few facts of the case are as follows:

- (1) The building primarily houses offices doing business during the weekday hours of 9am to 5pm.
- (2) Nearly everyone using the building is associated in some way with the financial world.
- (3) The occupants are fairly uniformly distributed over the 73 floors, and so is the elevator traffic.
- (4) The owner has invested heavily in advertising in an attempt to rent the remaining office space.
- (5) Discouraging words spread like lightning in the tight little world of the financial district.



***WHAT IS TO BE DONE
ABOUT THIS SITUATION?***



Some solutions?

A number of ideas spring into mind immediately, such as:

- (1) Speed up the elevators.
- (2) Add elevators by cutting new shafts through the building.
- (3) Add elevators by constructing outside shafts.
- (4) Stagger working hours to spread the rush hour load over a longer period.
- (5) Move occupants to different floors to reduce total passenger traffic within the building.
- (6) Restrict the number of people entering the building.
- (7) Replace existing elevators with bigger cars stretching two or three stories.
- (8) Provide more services locally on each floor to reduce floor-to-floor traffic.
- (9) Reschedule the elevators with special local and express arrangements, as needed.

Having followed out natural problem-solving tendencies, we have rushed right into solutions. Perhaps it would be wise to ask a few questions before stating answers.

What sort of questions?

Who has the problem?

What *is* the problem?

Or, at this juncture, just what is *a problem*?

Consider the question, “Whose problem is it?” This question attempts to:

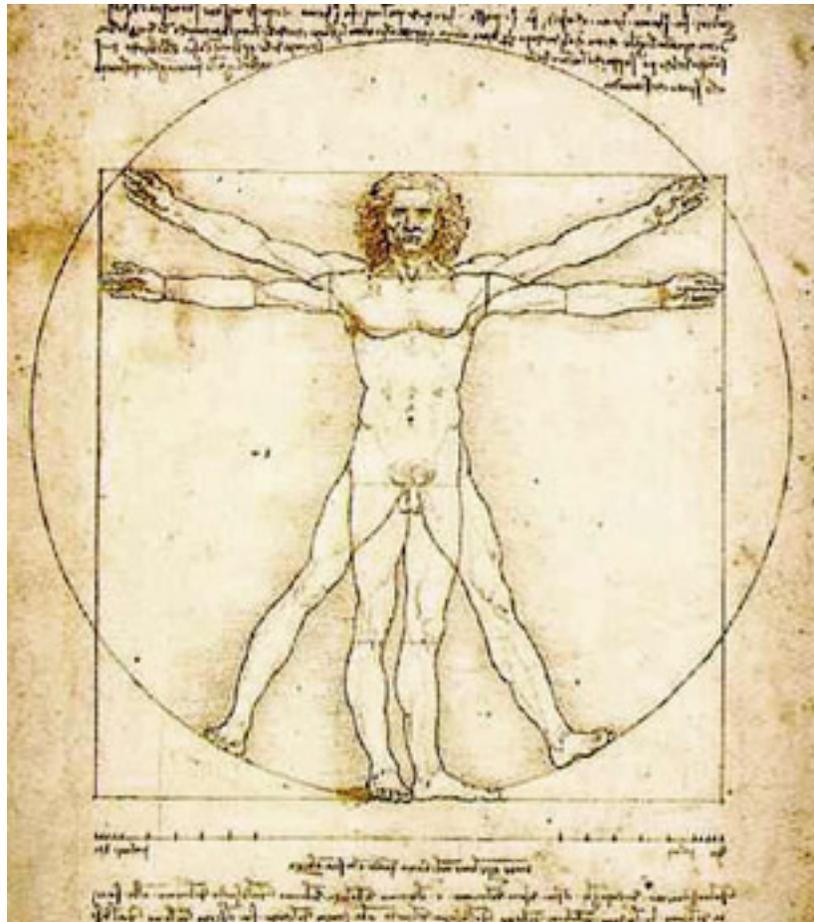
- (1) determine who is the client - that is, who must be made happy.
- (2) establish some clues that may lead to appropriate solutions.

Our first list of solutions, diverse as they were, all shared a single point of view-that the elevator *users* were the people with the problem. Suppose we try taking the view of Mr. Diogenes Diplodocus, the landlord. With him as our client, we might develop a rather different list, such as:

- (1) Increase the rents, so fewer occupants will be needed to pay off the mortgage.
- (2) Convince the occupants that Brontosaurus Tower is a terrific, leisurely place to work *because* of the elevator situation.
- (3) Convince the occupants that they need more exercise-which they could get by walking the stairs rather than riding the elevators-by posting walking times and calorie consumption estimates over well-traveled routes.
- (4) Burn down the building and collect the fire insurance.
- (5) Sue the builder
- (6) Steal elevator time from the next-door neighbor.

These two lists, though not necessarily mutually exclusive, do show somewhat different orientations. This difference should arrest out natural tendency to produce hasty solutions before asking:

WHAT IS THE PROBLEM?



Man is the measure of all things: of things which are, that they are, and of things which are not, that they are not
- Protagoras

Homo Sapiens

- (1) We think visually not logically.
- (2) A user doesn't necessarily expect his programs to always do the right thing, but he does expect that they do clearly communicate what they do.
- (3) A user does not expect a program to make him understand computer terms and concepts, but he does expect that it communicate in terms and concepts that are familiar to him.
- (4) A user expects that programs will not judge his use of them, but will help him overcome his problems in using them.
- (5) A user expects to feel that he is in control of both the computer and the task.
- (6) A user expects to communicate in specific terms and concrete examples rather than general terms and abstractions.
- (7) A user doesn't want the programs external structure to intrude into the external interface.
- (8) A user expects that his programs will be no more complicated to understand than the task they are doing for him.
- (9) A user is focused on the task he is trying to do, not on the mechanics of doing it.

Design Methodology

I. Initial Analysis

- A. Audience definition - a complete description of the user audience
- B. Task profile - a description of the functionality of the system (semantic level)
- C. Development Platform Analysis - a description of the tools that will be used to develop the software and user interface
- D. Interaction Platform Analysis - a description of the devices and technologies employed by user to interact with the system
- E. Media Analysis - a description of the intended uses for media, along with an indication of the needs for media components
- F. Documentation Analysis - a statement of the needs for documentation in the system

II. Detailed Analysis

- A. Usability Guidelines Analysis - a collection of existing guidelines appropriate for the user audience and task
- B. Usability Specification Analysis - specification of usability attributes, measuring techniques, and acceptance levels
- C. Detailed Task Analysis - a detailed description of the exact steps necessary for a user to accomplish tasks in the system e.g. GOMS (semantic/syntactic level)

III. Initial Design

- A. Visual Design Demonstration - a software prototype or paperboard mock-up of the user interface featuring key screen sequences
- B. Media Production Plan - plan for production of media, e.g. video, animations, graphics, sound, etc.
- C. Implementation and Evaluation Plan - a statement of how and when the system will be developed, featuring checkpoints for evaluation
- D. Documentation Plan - a statement of how and when the documentation will be developed

IV. Iterative Design -

An iterative process involving evaluation at pre-determined checkpoints

- A. Implement a portion of the system up to a checkpoint
{feedback}
- B. Evaluate - users provide feedback into features of the system and interface
(Continue steps A and B until all criteria are met or the system must be released)
- C. Deliver the Product

V. Follow-up

- A. Evaluation of the system providing data for future version and revisions

Why involve users?

- Understand user needs and goals (intent)
- Test assumptions about users
- Assess user skill level
- Understand context of use
- Understand domain area
- Create an architecture that supports the user's needs

Why involve users?

- Plan and prioritize our work around the customer's needs
- Obtain an ultimate measure of project completion
- Build something that truly addresses the user's needs using an optimized delivery mechanism
- Fewer support calls
- Affect towards product (e.g. loyalty)

User-Centered Process In a Nutshell...

- Start with the user and work your way back to the product (and never lose touch with the user).
- My favorite quote:
 - "You can use an eraser on the drafting table or a sledgehammer on the construction site."
 - Frank Lloyd Wright

User Analysis

Test assumptions

- Who are the users? (brainstorming)
- Build a user/task matrix or a user/characteristics matrix
- Technical competence?
- Domain expertise?
- Demographics (age, gender)
- Reading levels ?
- Motivation ?
- Frequency of use ?
- Training opportunities ?
- Experience ?
- Vocabulary ?
- Physical differences ?
- Users are very similar/dissimilar

User analysis

Methods :

- Questionnaires
- Visits
- Other corporate sources (be careful)
 - Support
 - Trainers
 - Sales/marketing

Task Analysis

- Understand user goals
- Understand workflows
- Job analysis
- Look for patterns
- Task hierarchies
- Task inventories
- Task linking