STS
INTERNATIONAL

PROCESS MAPPING

A Sociotechnical Systems Primer for Process Mapping, it's integration and use in System Design.

WHO'S ON FIRST???

Lou: I love baseball. When we get to St. Louis, will you tell me the guys' name on the team so when I go to that St. Louis ball park I'll be able to know them?

Bud: All right. but you know, strange as it may seems, they give ball players nowadays very peculiar names, nick names, like "Dizzy Dean." Now on the St. Louis team we have Who's on first, What's on second, I Don't Know is on third –

Lou: That's what I want to find out. I want you to tell me the names of the fellows on the St. Louis team.

Bud: I'm telling you. Who's on first, What's on second, I Don't Know is on third –

Lou: You know the fellows' names?

Bud: Yes.

Lou: Well, then who's playin' first.

Bud: Yes.

Lou: I mean the fellow's name on first base.

Bud: Who.

Lou: The fellow playin' first base for St. Louis.

Bud: Who.

Lou: The guy on first base.

Bud: Who is on first.

Lou: Well, what are you askin' me for?

Bud: I'm not asking you -- I'm telling you. WHO IS ON FIRST.

Lou: I'm asking you -- who's on first?

Bud: That's the man's name!

Lou: The guy on first.

Bud: Who.

Lou: The first baseman.

Bud: Who is on first.

Lou: Have you got a first baseman on first?

Bud: Certainly.

Lou: (pause) When you pay off the first baseman every month, who gets the money?

Bud: Every dollar of it. And why not, the man's entitled to it.

Lou: Who is?

Bud: Yes.

Lou: So who gets it?

Bud: Why shouldn't he? Sometimes his wife comes down and collects it.

Lou: Who's wife?

Bud: Yes. After all the man earns it.

Lou: Who does?

Bud: Absolutely.

Lou: Well all I'm trying to find out is what's the guys name on first base.

Bud: Oh, no, no, What is on second base.

.....*(later)*.....

Lou: Now I throw the ball to first base, whoever it is grabs the ball, so the guy runs to second.

Bud: Uh-huh.

Lou: Who picks up the ball and throws it to what. What throws it to I don't know. I don't know throws it back to tomorrow -- a triple play.

Bud: Yeah. It could be.

Lou: Another guy gets up and it's a long fly ball to center. Why? I don't know, he's on third, and I don't give a darn.

Bud: What did you say.

Lou: I said "I don't give a darn."

Bud: Oh, that's our shortstop!

Lou: ABBOTT!

Adapted from "Who's on First" – Bud Abbott and Lou Costello

PROCESS MAPPING
AN OVERVIEW

Who º What º When

Most of us have been almost as confused as Lou Costello about just ***Who*** is doing ***What***, ***When*** within our business processes. Often the essential ***Whats*** get confused with bureaucratic ***Hows,*** confusing the ***Whos*** and turning ***When*** into an endless ***Tomorrow***. The key is being able to see, understand and continually redefine the process so the ***Right Whats*** are done by the ***Right Whos*** at the ***Right When***. Mapping this process can help us see and understand what is going on to arrive at a better process.

Within the classical Socio-Technical approach to system design are two specific frameworks which focus on the processes at work in both the Technical and Social areas. The Technical System analysis brings a way of clearly understanding how the "product" of the system is created through the transformation of "inputs" into "outputs." This analysis is not concerned with who or which department is accomplishing the "work" but rather investigates only how the product components come together, how their characteristics vary, and what results are required. The Social System analysis investigates how people and groups communicate in the transformation process and in order to control the process. Bringing these two systems together for optimal a "fit" is the goal the design process.

Process Mapping is a analytical framework which integrates key components of these two Socio-Technical elements in order to help you quickly and straightforwardly understand your current processes, clarify the real results needed, and streamline the process within the principles of effective organizational design. Simply, it identifies who does what, when(***Who º What º When)***. It can act as a precursor to formal Socio-Technical analysis, or as an adjunct to the Social System analysis. It's usage has become more important in understanding and designing complex networked systems of information transfer, cross-functional and cross-company collaborations, and service sector design.

KEY ELEMENTS OF PROCESS MAPPING

Effective process mapping relies on framework of several elements:

- Process Identification

  If our intent is to map a current process in use and improve it, then it is important to clarify:
  - What departments/functions are involved and impacted by the process
  - What is the primary desired result
  - Who "owns" or has primary responsibility for it's effectiveness
  - Who are the stakeholders or are served by the process

- Multi-Functional Participants

  Analysis of the process must be accomplished by a small but cross-functional group of individuals including persons with primary responsibility and areas which are strongly impacted by the process.

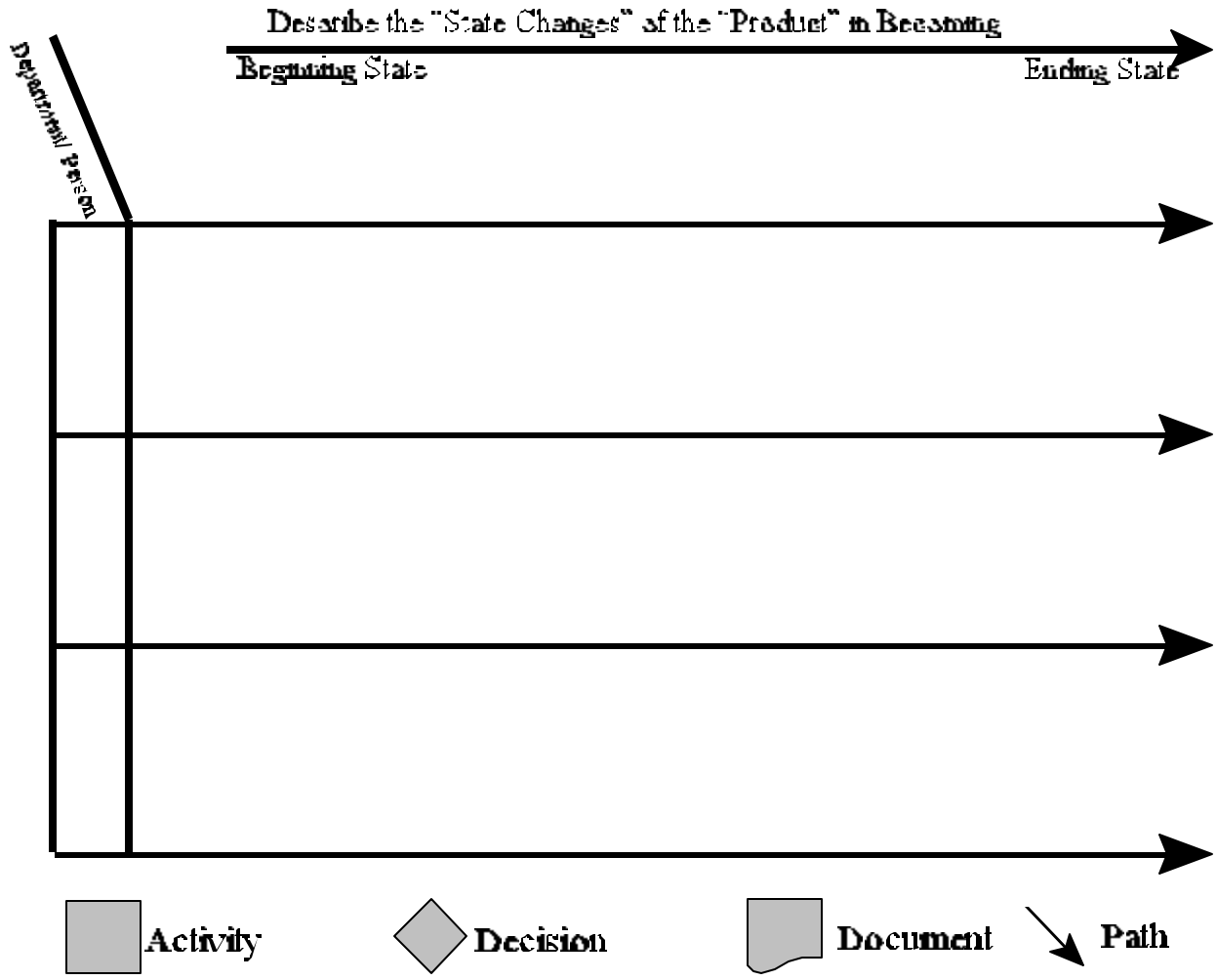
- Identification of State Changes

  Processes transform something over time. Manufacturing processes take raw materials and build them into final products. Communications processes take input and information, connect it to other information and service, and deliver information, services or products to an end user. In each case, the "state" or characteristics of the "product" changes because of both time and activity. A product is advertized ° it is an order ° it is a confirmed order ° it is a delivered order ° it is a paid order, and so forth. It is vital that the group to be able to clearly identify the characteristics of each "state change" which the process effects.

- Create a Visual Map

  The more visual and easily changeable you make the actually mapping process the better. Don't tie yourself to a sheet of paper on a table – or a single easel sheet. Often we try so hard to do it "right" the first time so we don't have to erase something that we miss important connections. We like to use a whole wall and really layout the process map so that things can be moved around and put up "out-of-order" if that's when the idea comes up. My sample wall would be laid out something like this:

Process Mapping Framework



As you can see – at the top of the chart is a place to describe only the state changes of the process. On the left hand side we identify the departments or, st times, specific people involved with the process flow. Then we use symbols with written descriptions to identify the specific steps, activities, work, agreements, meetings, etc. which people are involved with in completing the process. The process moves in time from left to right and as it is mapped you will usually find duplications, repeats, and unnecessary steps which may eventually be adjusted to improve the process.

Remember – mapping the process is not the time to "tweak" it. It is important to get an accurate view of all the process and how the elements interact before jumping to solutions.

Although expert "process mappers" have a myriad of specific "symbols" to differentiate the types of process steps which occur, we have found that simplicity combined with the multi-functionality of the group makes the process work better. Therefore we focus on mapping only three types of process steps:

- Activities – a broad area in which all the "action" steps taken by people, departments, functions or other groups.
- Decisions – the points at which the process could go more than one way. Actually a "decision" which must be made is considered an activity for this chart. The Decision symbol is used to show that the result of a decision could have multiple paths. Usually the decision is either Yes or No. The Yes decision continues the process in one direction, the No decision usually returns to an earlier part of the process to re-clarify or complete the process. But there could be more than one option at times.
- Document – indicates that there is a form, outline, procedure, etc. which must be used or referred to in accomplishing this process step.

- Redesign – Try it – Improve it!!

  Streamlining and redesigning the process may be a matter of simply reducing duplications and eliminating steps. Often, however, organizational structure and accountabilities must also be changed in order to make significant improvement. Several Socio-Technical design principles apply directly to this activity and should be considered to achieve optimal results. These principles were formulated by Albert Cherns are included on the following page.

- Review and Account for Results

  It's not enough to change the process and hope it will be better. We need to establish a regular opportunity to evaluate the new process, account for it's expected and unexpected results, and continue to improve our system.

SUMMARY

There is another guideline which we like to remember. It's a simple reminder stating: ***"Don't Do Dumb Stuff."*** Many of the processes which have simply "grown" within our organizations will have "dumb" elements when we actually view the activities together. It takes significant courage to step up to a "politically correct" and long time "way we've always done it," identify it as "dumb," and change it. But that's usually where the improvement is!!

Process Mapping is not a "cure" for every process, it is a way to see the process, evaluate the need of our activities and get clear on ***Who*** should do ***What***, ***When.*** Agreeing on a new process and agreeing to account for that new process ***and it's results*** on a regular basis is the essence of continual improvement. We will not only know ***Who's on First***, but who all the players are and they will have agreed on how we will play and win.

Cherns' Work Design Principles

1. Compatibility

- The way in which the design is carried out should be compatible with the design's objective.
- All organization members participate toward the same objectives, no one can be omitted.
- The degree to which this principle is respected greatly influences long-term commitment to the design.

2. Minimal critical specification

- Identify only what is essential and specify as little as possible about how the work is to be done.
- In defining roles, tasks, objectives or boundaries only the key minimum requirements should be specified so as to not close off options and possible improvements by those who will do the work.

3. Variance Control

- Variances should not be exported across unit, departmental or other organizational boundaries.
- If they cannot be eliminated, they must be controlled as close as possible to their point of origin.
- Controlling variance at other than their source has the effect of trying to correct their consequences rather than preventing them.
- Control of variances is also greatly affected by the location of internal boundaries.

4. Boundary Location

- Determining internal organizational boundaries, i.e., the separation between units, sections, divisions, is critical in the design of any organization.
- Boundaries must not impede the sharing of information, knowledge and learning.
- Boundaries should be drawn so that:
  - members have access to and control over the variances that occur while performing work;
  - members can develop substantial control over their own activities in achieving the goals:
  - members have access to all the information they need to solve the unit's problems and assess its performance, i.e., they receive adequate feedback;
  - the unit can complete a whole transformation process, or produce an identifiable output, i.e., the boundary should not cut through the middle of a process;
  - coordination between activities and people can be accomplished **within** the unit, leaving integration with other units to boundary managers;
  - the unit contains all the skills and abilities needed to accomplish it's work:
  - the need for external control is minimized as the unit is given the means to regulate itself.

5. Information Flow

- Information processes allow the continual flow of information to a work unit and throughout the system.
- Information should be available quickly to those who require it.
- Blocks to information flow are not only horizontal, but vertical.
- Information systems that provide management with comprehensive and detailed information about the operations offer a virtually irresistible temptation to over-supervise and to intervene in subordinates' decisions. Under these circumstances, the individual or team cannot feel ownership of the unit's performance and cannot truly be held responsible for it.
- The key to designing effective information systems is to design them in cooperation with their primary users and to remember that primary users should always be the first to receive information needed to take action or control variances.

- Information required for record should be readily available for recall when needed. Information for the control of behavior is an element of the "old paradigm" design and, if considered at all in the new design, should be given directly to unit members or teams as part of their information base for self-management.

6. Power and Authority

- "Those who need equipment, materials, or other resources to carry out their responsibilities should have access to them and authority to command them.
- "In return, they accept responsibility for them and for their prudent and economical use."

7. The Multi functional Principle - Organism vs. Mechanism

- The traditional form of organization relies very heavily on the redundancy of parts and requires people to perform highly specialized, fractionated tasks. People are seen as a replaceable parts. Simple mechanisms are constructed on the same principle.
- Complex systems require a large repertoire of skills, abilities and knowledge from the participants.
- This flexibility allows both generalization and specialization within the organization.
- The Organization is more adaptive and less wasteful for each element to possess more than one function.
- The computer, for example, is a typical Multi functional mechanism.

8. Support Congruence

- The systems of social support should be designed so as to reinforce the desired results and culture.
- If, for example, the organization is designed on the basis of group or team operation with team responsibility, a pay system incorporating individual members would be incongruent with these objectives.
- Not only payment systems, but systems of selection, training, conflict resolution, work measurement, performance assessment, timekeeping, leave allocation, promotion, and separation can all reinforce or contradict the behaviors which are desired.
- Management philosophy should be consistent and that management's actions should be consistent with its expressed philosophy. Not infrequently a management committed to philosophies of participation simultaneously adopts systems of work measurement, for example, which are in gross contradiction.

9. Transitional Organization

- Starting up a new design entails a lot of stress.
- Transition activities and leadership must continually apply and observe the objectives and philosophy of the new design or the lack of resolve will undermine the change effort.
- Developmental and selection processes demonstrate the reality of the new phylosophy.

10. Incompletion or the Forth Bridge Principle.

- Design is a reiterative process. The closure of options opens new ones. At the end, we are back at the beginning. The new paradigm is that of an organization flexibly adapting to its environment. Although a certain degree of stability is necessary to operate, the organization must be prepared to review and revise its design. Being prepared means having mechanisms built into the structure of the organization at all levels to deal with changes it must make on a continuing basis. "Redesign is not the task of a special design team; it is the function of self-regulating operating teams provided with the techniques of analysis, ... and the principles of design." (A. Cherns)

(Adapted from "Principles of Sociotechnical 'Design Revisited" by Albert Cherns, 1992)