



Carnegie Mellon University

Structuring Unstructured Problems

Agenda

- Questions
- Consulting lifecycle
- Unstructured problems
- Differentiating
Problems/Opportunities from
Solutions

Structuring Unstructured Problems

An overview,
Done graphically
on whiteboard.



(You will do this step by
step over the next couple
weeks.)

Client Application

- Your starting place is a request that is provided by the client.
- The actual wishlist question:
 - What are the issues, problems, ideas, or projects that your organization would like to explore with the student consultant? You may be as specific or general as you would like.

Example Request

- We deal with swaths of student data--anywhere from home addresses to most recent assessment scores. I would like an exploration of our current systems and the development of a framework to design a better system. There is possibly an existing database that can handle this but we are not aware of such a tool. We would like guidance.

Example Request

- We currently use Wordpress for our website, Salesforce for our membership database, Quickbooks for our bookkeeping, Formsite for our online forms, and Constant Contact for community outreach. We are interested in updating our website, customizing Salesforce to fit our specific needs, potentially merging Quickbooks with Salesforce and making sure that staff is up to date with our technology and its features. We're especially interested in assessing the way we use to technology within the regular workflow of our staff and volunteers. We need technology systems to support our work maintaining donor relationships, and also to improve our understanding of members' activist activity, such as attending rallies or volunteering in our office.

Example Request

- We lost the individual who did our web site and no one knows how to update the HTML. We are looking to move to a CMS. We don't update it frequently, but when we do it changes a lot. We want the site to be responsive so that it works on mobile. We want to have a login capability so members can access private information.

Example Request

- Help!

Structuring Unstructured Problems

- Request == unstructured
- Scope of Work == structured

Scope of Work

- A clear articulation of the work that will be done
- Scope of Works are used in:
 - Proposals
 - Contracts
 - Memoranda of Understanding
 - Terms of Reference

Scope of Work Contents

- A clear articulation of the problem being solved, or opportunity being sought.
- A persuasive case for why that problem or opportunity is important
- A description of the proposed solution
- A persuasive case for why that is the most appropriate solution.

Eg: Dress for Success Pittsburgh

- Request
 - We have a bunch of Excel spreadsheets in a lot of places and want to compile this into one database.

DFSP - Scope of Work

With the increased emphasis on fundraising to sustain the organization's growth, DFSP had been reaching to larger contributors to provide funding. Here, they were running into difficulty with the process of compiling key statistics, such as volunteer hours or client job history, required by these larger contributors. While DFSP was able to produce these statistics, their decentralized method of data management made the process difficult, slow, and more subject to human error.

DFSP - Scope of Work (cont.)

Different information, like contact lists for donors or referral partners were often kept in separate Excel spreadsheets on separate computers, where linking them to determine key statistics would be impossible.

Often, simple tasks like compiling the data and creating reports took up a substantial amount of time. This then took time away from tasks that were more central to the mission, like finding new sources of funding or working with referral partners.

DFSP - Scope of Work (cont.)

This not only made staff time less efficient, but also led to frustration.

Wendy, as part time contractor, is only paid for a set number of hours. She found that some of these data management tasks take away her time and often forced her to work on her own time so that crucial deadlines could be met.

DFS Worldwide had been working on the issue of data management and was looking to implement a Worldwide database solution free for all affiliates.

DFSP - Scope of Work (cont.)

This software will be custom designed by ETapestry, who is known for donor database management products and would be free for DFS affiliates. It is intended to first address the problem of donor management, and then later address some of the other problems like matching up clients and referral agencies.

While the Pittsburgh affiliate was included in group of affiliates that will receive the database first, the client-referral agency piece would not be available for approximately a year.

DFSP - Scope of Work (cont.)

Because of this delay, Wendy had decided that a data management solution that could help fix the client-referral agency problem was amongst the highest priority problems that the organization faced.

This data is crucial to their fundraising and there is no guarantee that the Worldwide database will sufficiently solve the problem. The data management solution should be flexible enough to take on the short-term donor management challenge as well.

DFSP - Scope of Work (cont.)

To implement this solution, the following approach was taken:

- Work with Wendy and Stacey to create a list of requirements for the data management solution. These requirements included performance features such as what information it should be able to keep track of or the reports that it should be able to generate.
- Decide on a commercial or open source database software package that fits the immediate needs of DFSP.
- Obtain or create the data management solution decided upon and set up the solution using the data DFSP has stored in Excel spreadsheets.
- Work with the staff to add contacts and generate reports so that they are able to use the solution effectively and comfortably.

DFSP - Scope of Work (cont.)

To implement this solution, the following approach was taken:

- Work with Wendy and Stacey to create a list of requirements for the data management solution. These requirements included performance features such as what information it should be able to keep track of or the reports that it should be able to generate.
 - Decide on a commercial or open source database software package that fits the immediate needs of DFSP.
 - Obtain or create a solution that can be used upon and set up a database that can be stored in Excel spreadsheets.
 - Work with the solution provider to ensure that they are comfortable with the solution.
- Once they got to this step, they found that the best solution was to continue to use Microsoft Excel, but take advantage of the *pivot tables* capability.
- The client was ****very**** happy with the result.

Problem, opportunity, solution

- A **solution** is an approach to solving a problem or realizing an opportunity.

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- A **problem** is something that is hindering the full attainment of the organization's mission.
 - An **opportunity** is a new alternative for attaining the organization's mission.

Problem, opportunity, solution

- **Problems** and **opportunities** are two sides of the same coin..
- E.g.
 - Problem: We lose donors because of poor communication.
 - Opportunity: We could keep more donors with better communication.
- A **solution**, however, is different.
 - It is often one of a set of alternatives to:
 - Solve a problem
 - Realize an opportunity
 - E.g. An email newsletter could address our communication problem with our donors.

Problems, opportunities, solutions

- So how do you transform that *wishlist* to a scope of work
- Your most persuasive scope of work is one that proposes a **solution** to a **problem** or **opportunity** in order to better meet the organizations **mission**.
- Your client most often articulated their needs in terms of a **solution**.

Your job is to:

- Articulate the CP's view of the problem
- Articulate the CP's idea for a solution
- Understand for yourself the problem and how it impacts the organization's mission.
- Consider alternative solutions
- Validate for yourself the choice of solution
- Come to a common agreement with the CP on the choice of solution
 - That may likely be what the CP was thinking
 - You might suggest a better alternative

Example

1. Articulate the CP's view of the problem
 - I understand you don't have a donor database
2. Articulate the CP's idea for a solution
 - And you would like to create one in Salesforce
3. Understand for yourself the problem and how it impacts the organization's mission.
 - Errors in managing donor information leading to lower donations and wasted staff time makes for fewer resources to <do mission>
4. Consider alternative solutions
 - Customize a solution in Salesforce
 - Implement a small Access database
 - Adopt DonorPro
5. Validate for yourself the choice of solution
 - Lower TCO, more functions
6. Come to a common agreement with the CP on the choice of solution.

And as you are figuring this out:

- Be helpful!

Problem/Opportunity or Solution?

- Volunteer management system
- Make donating to us simpler
- Help our organization develop a website
- Assist us to develop more efficient front desk applications

Problem/Opportunity or Solution?

- We are unable to generate good reports from the existing database.
- We have problems updating the content on our website.
- Need assistance and minor training for staff using different software correctly.

Mentally ill prison inmates & Y2K

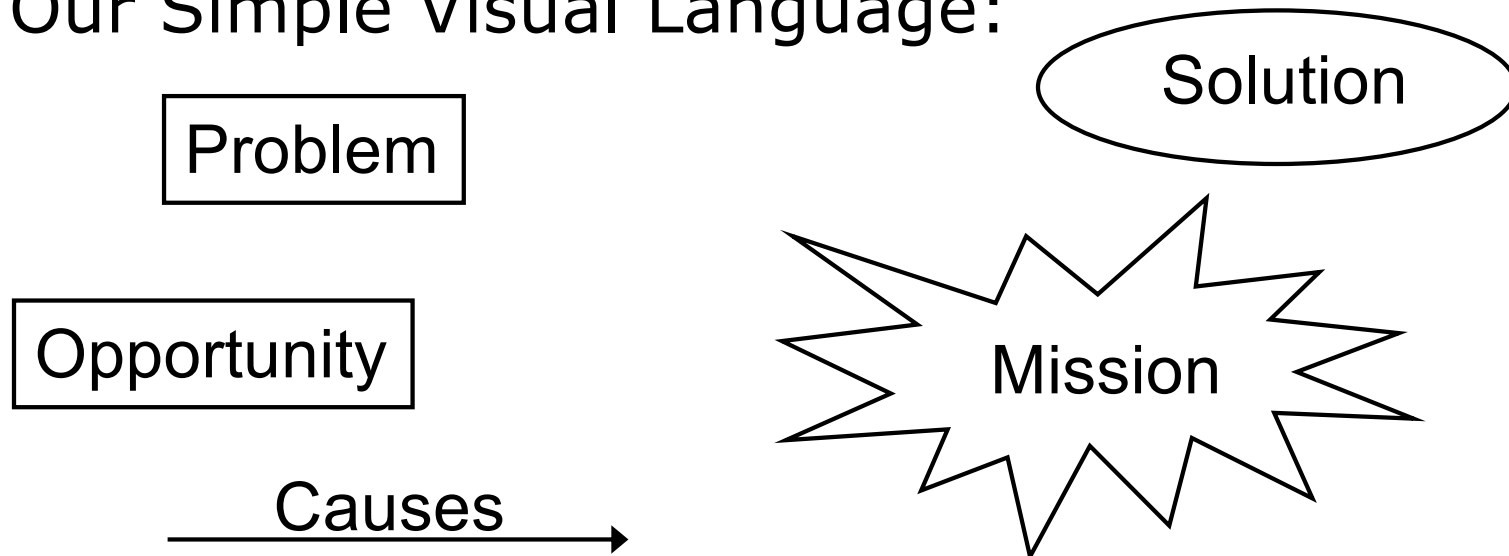
How did the problem of data field size representing 'year' (I.e. the Y2K problem) contribute to the doubling of inmates of the psychiatric ward of the county jail?

Diagrams & prose

- Which works better?
- How do they complement each other?
- If you were writing a proposal to develop information systems for the county, how could you use Horn's mess map?

Causal flow diagrams

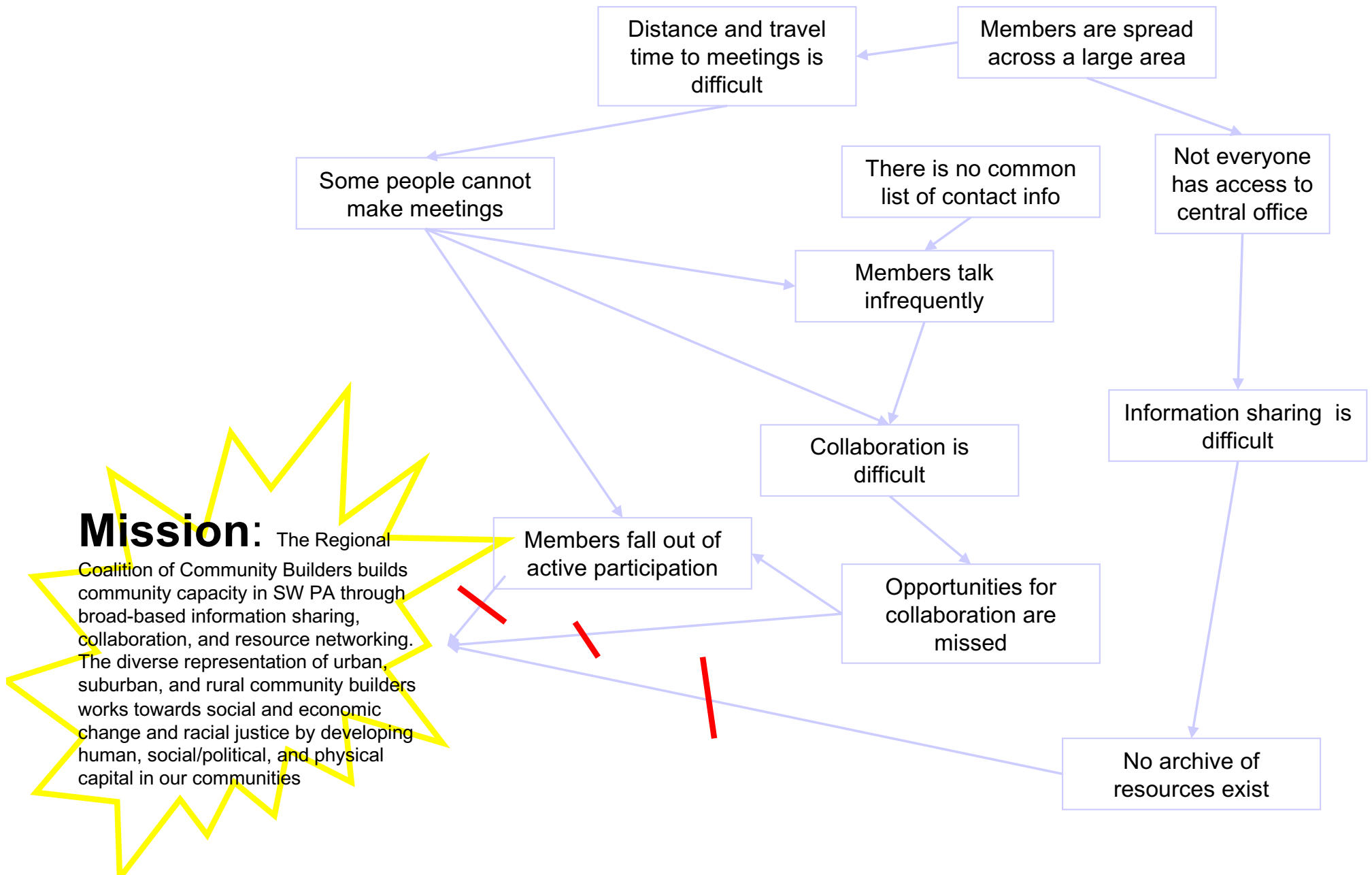
- Purpose: to gather information & analyze the relationship among
 - Mission
 - Problems / Opportunities
 - Solutions
 - Complex environment the technology exists in.
- Our Simple Visual Language:



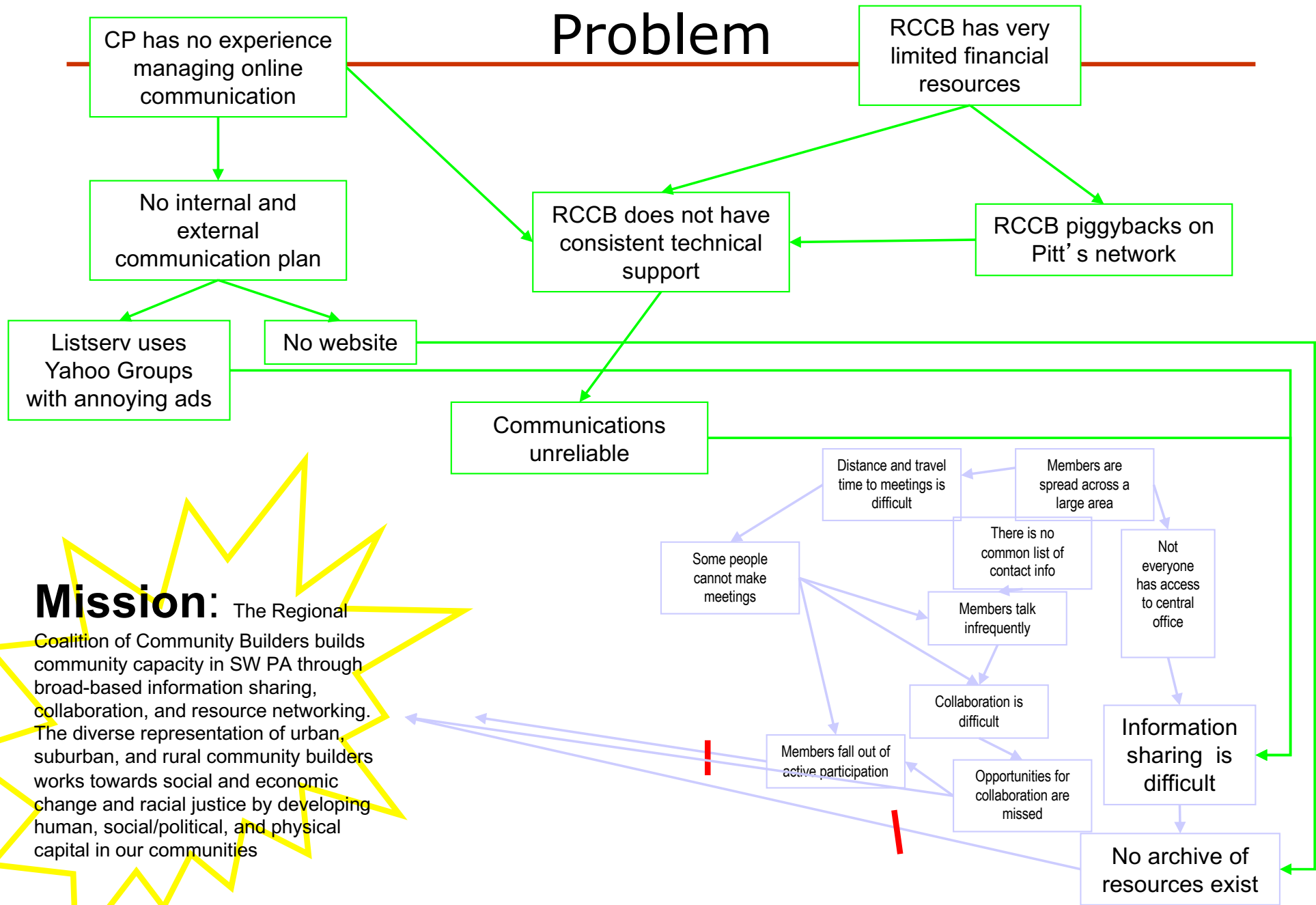
E.g. Mission

Mission: The Regional Coalition of Community Builders builds community capacity in SW PA through broad-based information sharing, collaboration, and resource networking. The diverse representation of urban, suburban, and rural community builders works towards social and economic change and racial justice by developing human, social/political, and physical capital in our communities

External Communication problem



Technology Infrastructure & Management Problem



Analyzing work processes

- Modeling your client's work processes is another way to analyze and understand their underlying problems and opportunities.
- There are many perspectives by which work can be analyzed
 - E.g. Perspective of the clients
 - E.g. Perspective of the data

For more info, see: Contextual Design: Defining Customer-Centered Systems
By Hugh Beyer, Karen Holtzblatt, Morgan Kaufmann Publishers, 1997

Work models - artifacts

- How artifacts are created, modified, and used
 - E.g. from a candidate's intention of applying for a job through extending them a job offer.

Work models - people

- Diagram the flow of people
 - E.g. how customers buy food at Au Bon Pain in the CUC.

Work models - step sequence

- Detailed steps to perform the work
 - E.g. person entering application information into a database

Work models - communication

- How people communicate and coordinate
 - E.g. how a job recruiter, candidate, hiring supervisor, HR rep, etc. communicate through the hiring process.

Work models - policy

- How culture and policy directs work
 - E.g. A foundation giving scholarships has a policy that requires collecting extensive parent work-history data to identify truly needy applicants.
 - E.g. Scholarship applicant finds that the application form requires too much personal information and decides to quite the process

Work models - physical space

- How the physical environment is used
 - E.g. how an after-school computer lab is configured and how children and instructors interact in the space

Work models - Summary

- Artifacts
- People
- Step sequences
- Communication
- Policy
- Physical space

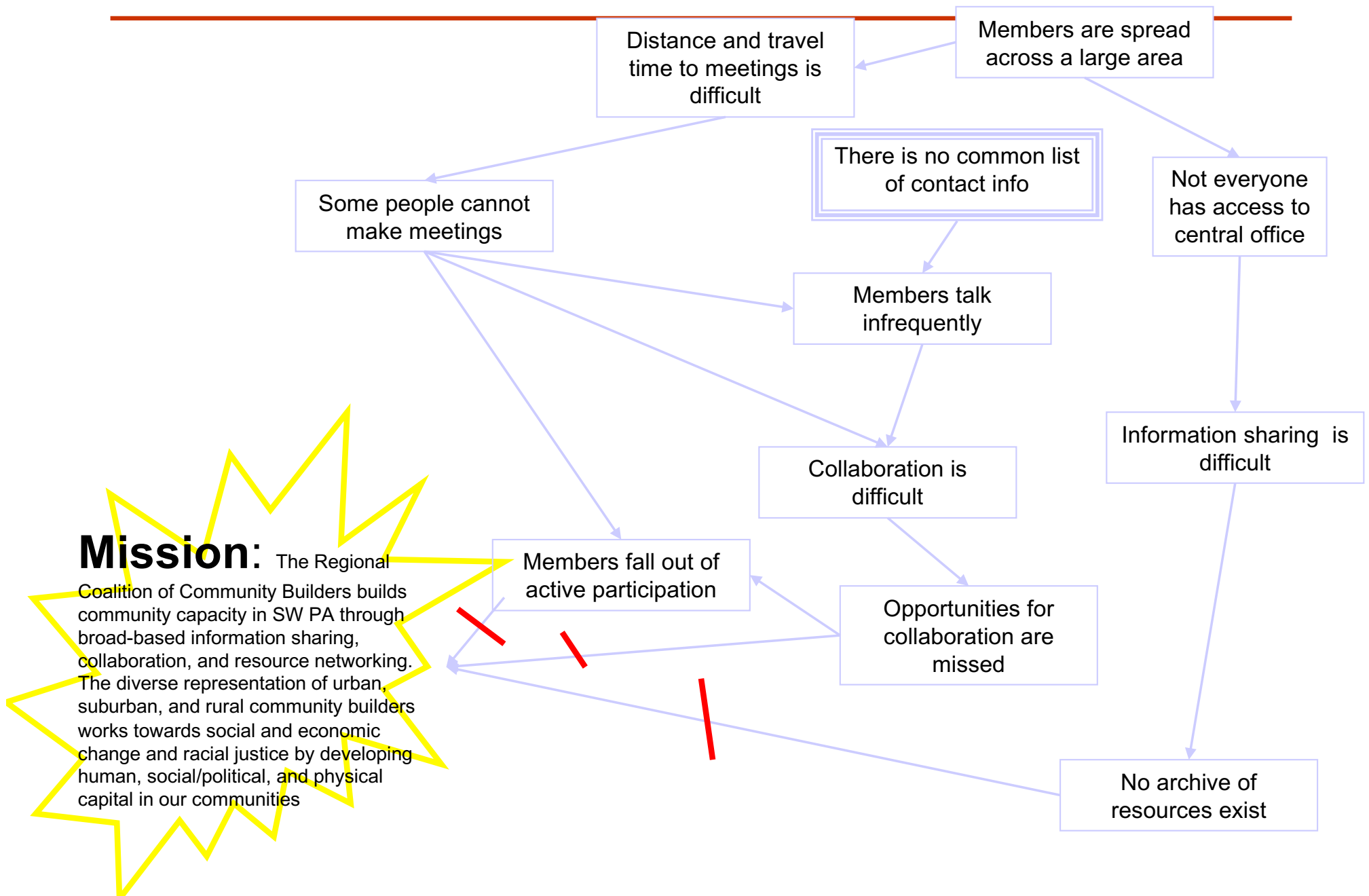
Work models - Summary

- Artifacts
- People
- Step sequences
- Communication
- Policy
- Physical space

Try it!

In pairs, build one
(very simple)
work model for
Starbucks.

Models help raise & answer questions



Why is there no common list...?

Mission: The Regional Coalition of Community Builders builds community capacity in SW PA through broad-based information sharing, collaboration, and resource networking. The diverse representation of urban, suburban, and rural community builders works towards social and economic change and racial justice by developing human, social/political, and physical capital in our communities

Members fall out of active participation

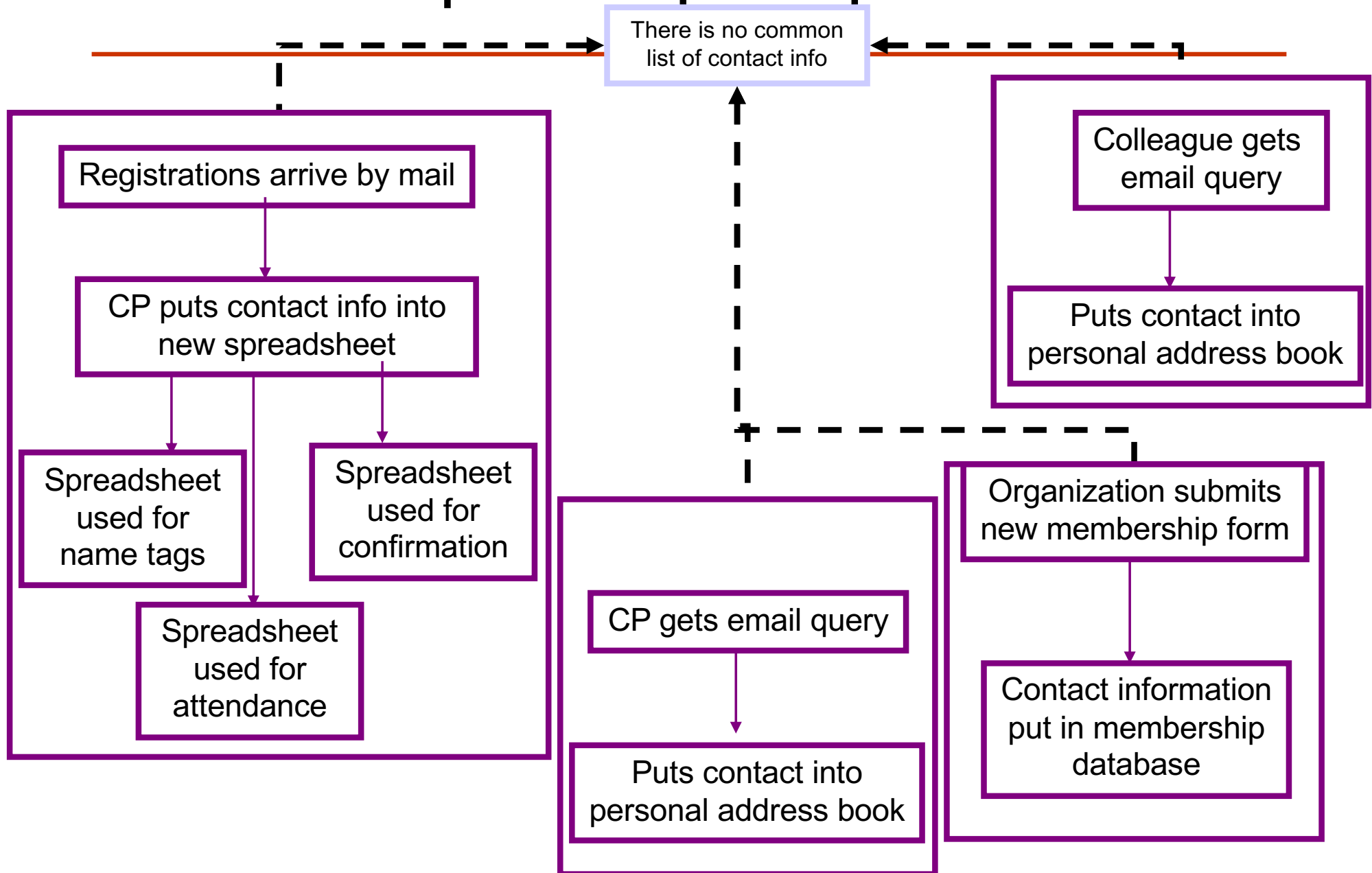
There is no common list of contact info

Members talk infrequently

Collaboration is difficult

Opportunities for collaboration are missed

Multiple step sequences



Review Calendar / Homework
