Don’t Fear the Crisis

Living through a Critical Situation

z/VM Development

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Abstract

My worst fear used to be a critical situation, but now it's a middle seat on a 12-hour flight. I still have a healthy respect for crit sits, but I don't fear them. Sort of like 7th grade, I've been through it, so I know I can do it. In IBM, ‘crit sit’ has a specific meaning. This presentation applies to a general ‘IT crisis’, not just an IBM crit sit.

The speaker will review various hints and tips about how to live through a crisis or maybe even avoid it. While many of the stories will be z/VM related and there will be some specifics for collecting data in a z/VM environment, a lot of the information and discussion will apply to IT crit sits in general.

This presentation is often used for conferences with both z/VM Customers and IBMers in attendance. There are points and references that are applicable to both audiences.

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Introduction

This presentation makes references to a famous crit sit involving Apollo 13 that was intended to be NASA's third manned mission to the moon, but it became a fight for survival after an oxygen tank exploded two days into the journey.

With ingenuity from both astronauts and Mission Control, they overcame challenges and splashed down safely four days after the incident.

The mission, though a "successful failure", showcased human resilience and teamwork under the extreme pressure of a crit sit.

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Agenda

- Brief Look at IBM formal Critical Situation
- Avoiding a critical situation
- Impact of critical situations
- Dealing with a critical situation
  - Problem Definition
  - Communication
  - Analysis
  - Other hints and Tips

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IBM Complaint Process

- Complaint Management Process (CMP)
  - Not a bypass to the normal service process (Salesforce case)
  - Invoked when the NORMAL business processes and escalations have been applied and failed to resolve the issue or have not progressed quickly enough.

- Registered complaints, based on business impact and/or source of the problem
  - Proactive: opportunity exists to resolve an issue before the client formally complains
  - Complaint: on behalf of a client or business partner who is dissatisfied.

- A complaint can be flagged as “Critical” (Crit Sit) and receive IBM executive focus when either of the following is true:
  - The issue has caused the client’s business operations to be seriously impacted.
  - IBM has determined that failure to resolve the issue will cause irreparable damage to the relationship between IBM and the client.

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CMP Terms

- Complaint Management Tool (CMT) – how complaint is registered and tracked
- Resolution Owner (RO) - assigned and acknowledges complaint to client; ensures communication with client continues until closure; builds team according to complexity.
- Resolution Team Leads (RTLs) – owns the technical resolution and manages the team. Part of the client satisfaction team.
- Resolution Assistant (RAs) – assistants from various components as needed

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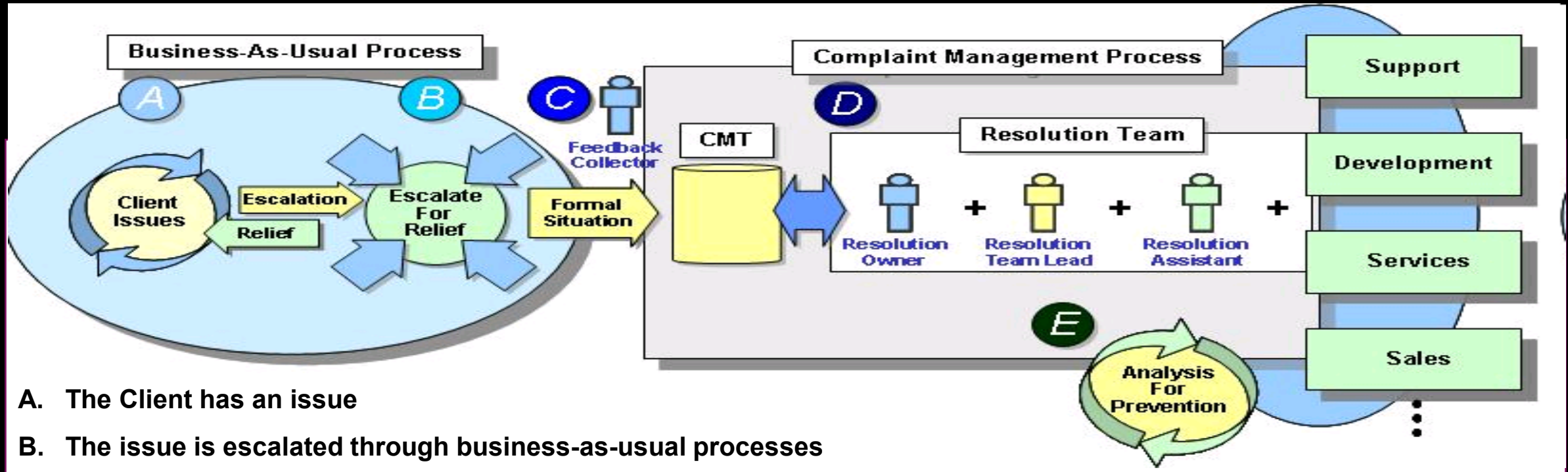
IBM Process



A. The Client has an issue

B. The issue is escalated through business-as-usual processes

C. Any IBMer can submit the issue through the Complaint Management Tool to formally request a complaint be opened on behalf of the client

D. The Resolution Owner is assigned to take ownership of the complaint and engages others as needed to help in resolution

E. The feedback from the client and from the process itself is analyzed to provide improvement in the business and the process

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Avoiding Crisis Situations

- Build your Proof of Concept as if you will live with it forever
- Do not skimp on System Review Process
- Change management system
- Test like your job depends on it - Performance and Quality Engineering
- Have a strategy for keeping software and hardware current. Linear service helps here!
- Subscribe to z/VM Red Alert page http://www.vm.ibm.com/service/redalert/index.html
- Find friends – local user groups, mailing lists, conferences

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The Impact of Critical Situations

"With all due respect, sir, I believe this is going to be our finest hour."

– Gene Kranz, NASA Flight Director,
in reference to the Apollo 13 mission prior to lift off

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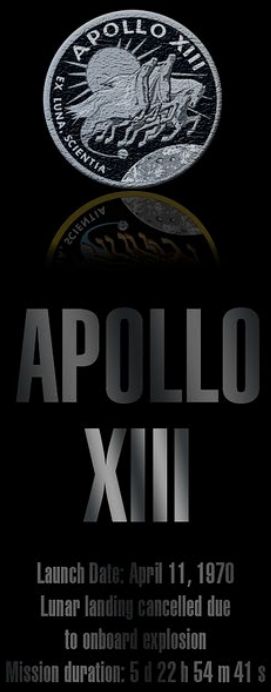
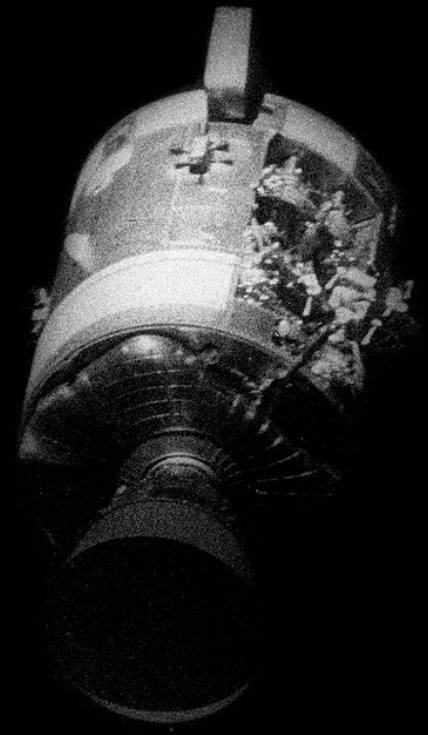
Problem Definition

"Houston, we've had a problem."

– Jim Lovell, NASA Apollo 13 Flight Commander





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Problem Definition

- Avoid the urge to rush into a solution prior to understanding the problem
- What is wrong?
- What is the business impact?
  - Client's impact & IBM's impact
- Is there more than one problem?
- When did it go wrong?
  - Did it go wrong all at once, or gradually?
- Is it an "expectations" mismatch?
  - How were the expectations set?
- What constitutes correct?
  - Criteria for resolution or "Go home" criteria
- Prioritization / Triage
  - Getting to root cause vs. stabilizing the system
- Getting agreement from all parties on the problem

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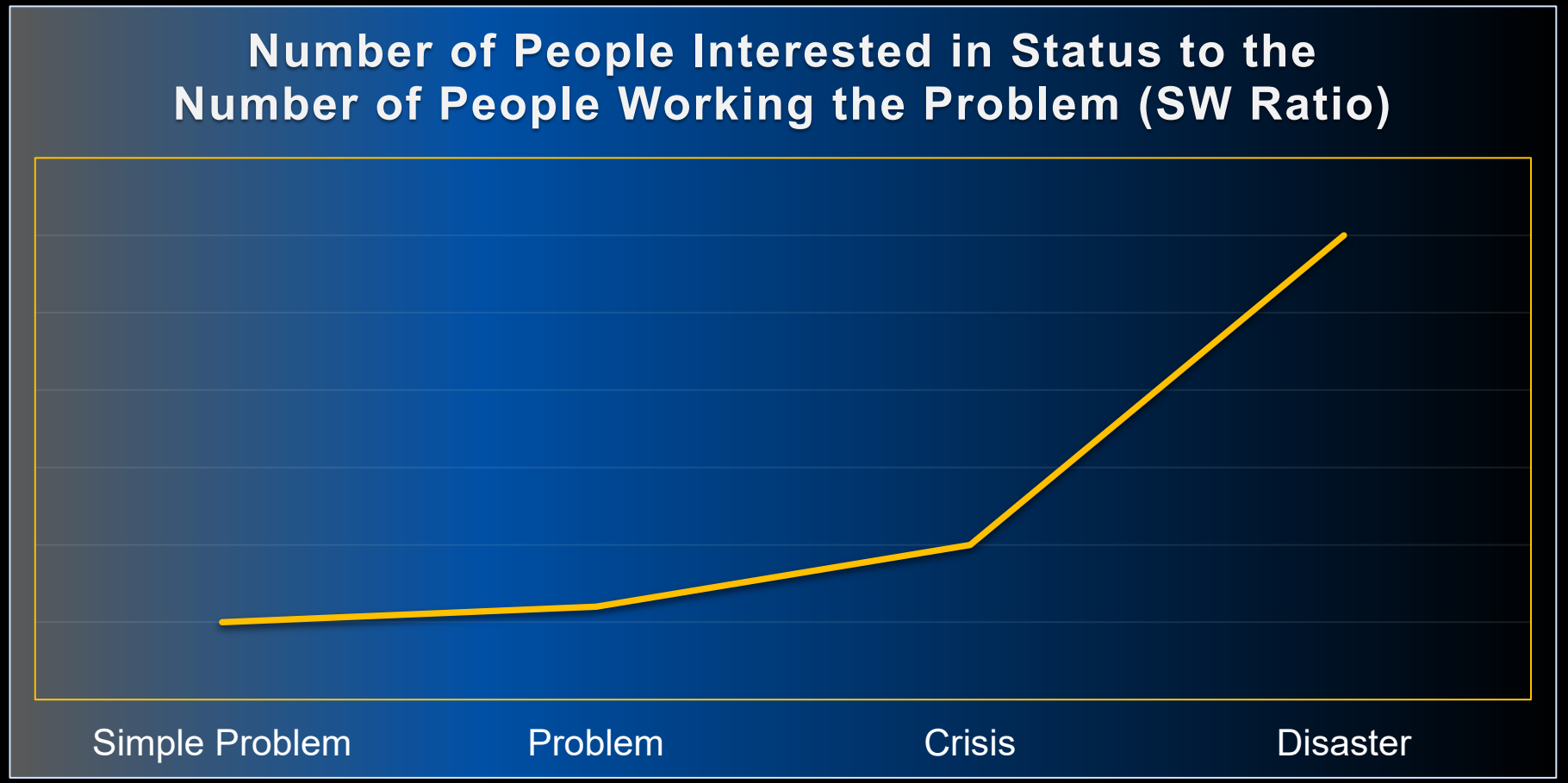
Stages of Communication



Not to be confused with SWR in radio engineering (Standing Wave Ratio), though the relationship is interesting.

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What is the Objective of Communication?

- To gather information
- To share information
- Reduce confusion
- Make progress on a joint effort
- Ensure agreement
- Let people know you’re actively working the problem

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Communication Challenges

- No one knows who to include
  - or who was missing from list
- Assumptions made about what people already know
- Too much information all at once
- Not sure which communication vehicle(s) to use
- Fear of saying the wrong thing

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Ways to Improve Communication

- Identify Focal Points
  - Customer & IBM
- Who's who – document
- Distribution Lists
  - IBM vs. Client vs. ISV (vendor) vs. Everyone
  - Technical vs. Management vs. Executive
  - This will need to be dynamic
- Email, instant messaging, data repositories, Slack, IBM Box
- Terminology
  - IBM & Client – acronyms, naming conventions
  - Language differences

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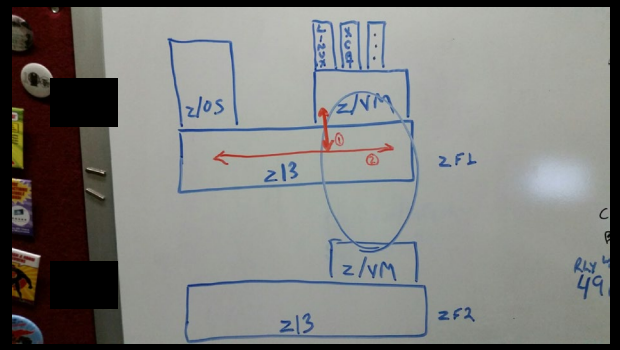
Tools/Techniques to Improve Communication

- Email - use meaningful “Subject”
  - Include customer name or PMR or some distinguishing handle as some people may have more than one problem at a time
  - “Respond by …”
  - “**IBMers Only**”
  - “Test Results” vs. “March 5 z/VM Test Results – Adjust Share Settings”

- Shared Tools
  - IBM Box, OneDrive, etc.
  - Slack – Customers can be added to IBM Slack channels, but takes time for approval
    If customers don’t use Slack for their day-to-day, they may not check it!
  - Make sure customers can access it through their firewall!

- Group Chats
  - MS Teams meeting chat persists if same meeting ID is used

- Whiteboard Pictures



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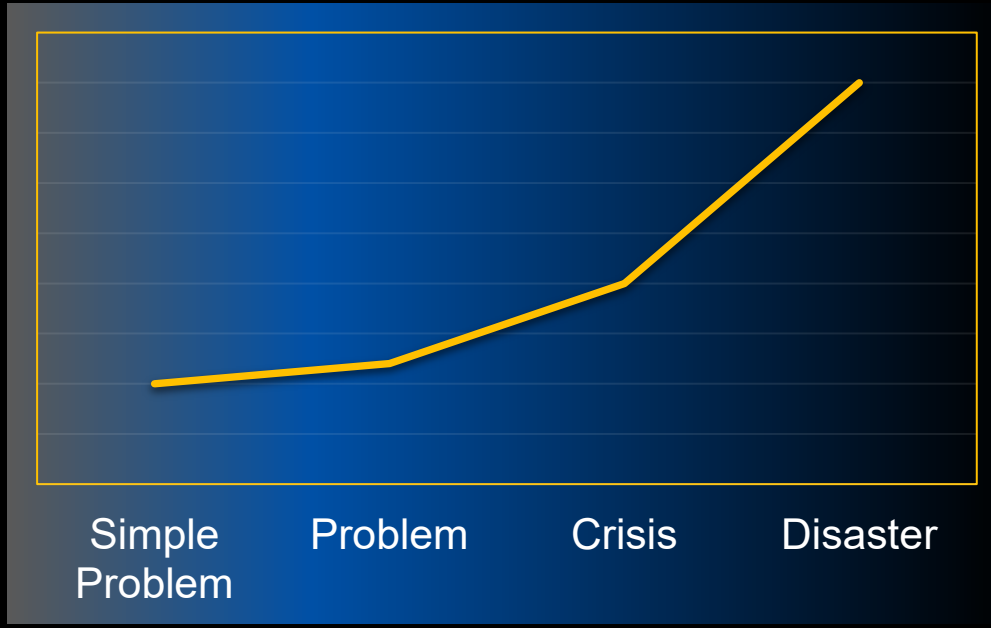
Address Communication Challenges

- Problems tend to span areas:
  - HW
    - Processor
    - Memory
    - Network
  - z/VM
  - Linux
  - Middleware
  - Applications

- Think about the exponential growth in email traffic as you move out on the curve

- When do people get introduced to situation?
  - When did YOU learn what?



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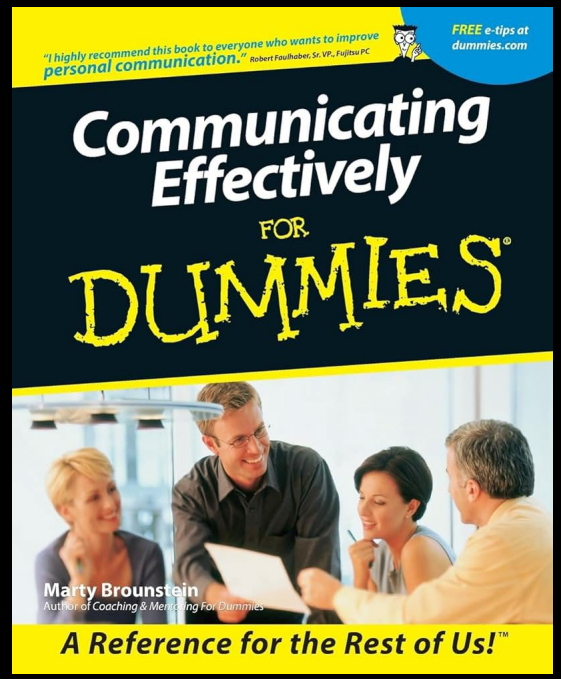
Situation for Dummies

- Quick guide to avoid explaining things over and over and over again
- Problem summary
  - Agreed solution criteria
- Outline General configuration
  - How many CPCs? How many z/VM partitions? How many other systems? Etc.
  - Basic diagram
  - Other Frequently Asked Questions
- Who is who?
- Chronology
- Steps/Recommendations done so far
- Pointers to where data resides



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Consistent, Concise, Clear

- Status email and other documentation benefit from these three C words

- Consistent – Status Notes
  - Keeping the same format trains people to focus on content, not search for information
  - Covering:
    - What was done
    - What was learned
    - What is plan for next steps

- As SWR increases so does the amount of email, a concise one-page email is more likely to be read

- As SWR increases, more important to be clear, especially when looking for specific people to do something
  - Call out names
  - Consider using bold font to highlight different people

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Conference Calls

- Be on time / End on time
- Establish how roll call will be done. MS Teams simplifies this but identify phone numbers with no name.
- Avoid back-to-back calls
- Use different conference IDs for IBM and IBM/Client.
- Say who is speaking.
  - People can be on their cell phones and it might not be clear who is speaking
  - The more people there are, the more important this is.
- Remember the audience for different calls may have different levels of technical background
  - Taking time to establish terminology or background as necessary
- Prep calls before the real calls
  - Are valuable in some cases (not so much in others).
  - Helpful to establish the flow of the dialogue in terms of content / speaker
  - What to be prepared to deal with
- Every hour spent talking about what people need to do, is an hour they can’t spend on doing what they need to do.

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Other Communication Tips

- Take notes
  - Your memory is not as good as you remember
  - The worst situations go on for a long time, and that's when the notes are most valuable
- Listen
- Force people to listen if necessary
  - A crisis tends to make people think they have to multi-task all the time
- Establish how long it will take to do the next analysis step and schedule an update at that point in time and let people do the work.
- Agree on realistic checkpoints. Is every hour, or even every day, enough time to get a meaningful update?

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Data Gathering

- You'll often need data at various levels of the system
  - List: what data, who on client side sends data, who on IBM side receives data
  - Have "Must Gather" data lists ready to go
- When asking for data, be prepared to describe exactly how that information is gathered.
- Can you even get data? Are there security or privacy roadblocks? GDPR?
- Ensure data covers same span of time and granularity
- Establish who will send and receive data
- What constitutes complete data? Validate and confirm

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More Data Gathering

- Establish naming conventions and document (index) what data is what
- Know the time zone of each piece of data
- Establish where data will be kept and who will have access
- Sometimes data and tools have to go both ways. Have a process.
- One of the most common problems is z/VM data that IBM can't read when it gets it
  - Typically recommend packing via COPYFILE or VMARC
    - Ensures end of record for variable length files retain structure
  - Transmit packed file as binary
    - Avoids numerous problems
  - Files that are fixed length and binary do not necessarily need packing (compression) though that can help with network transmit time

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Filling the Sky with IBMers

- Deciding when to go on-site
  - Usually more effective in office
  - Sometimes it is invaluable to be on-site
    - Understand situation
    - Focus on working towards a solution
    - Showing love
- Attitudes of teamwork on both sides makes it a mission rather than a hostage situation
- IBMers things to take:
  - Publications – download a “collection kit” for the z/VM version the customer is using.
  - “Situation for Dummies” information
  - Phone numbers of your life-lines
- Other considerations
  - Normal travel procedures
  - Customer’s Site Security:
    - What can you bring onto their site? What can you take out?
  - Connectivity
- Did you get a round-trip ticket? ☺

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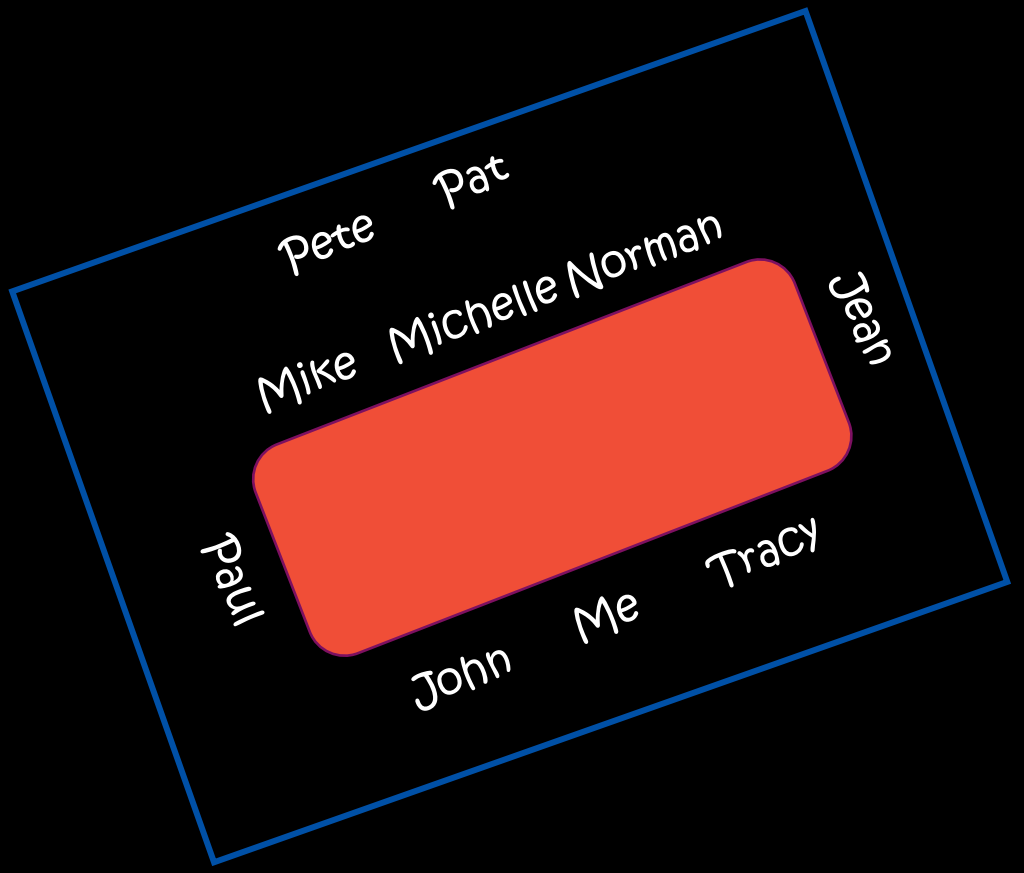
Face to Face Meetings

- Be on time
- Think about where you are sitting
  - What's your role?
  - Seeing the players involved?
  - Who is most likely to be the most upset?
- Diagram the meeting so you remember later who was who
- Take notes
  - Laptop vs. pen & paper
- Stay focused



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Processes – Giving Instructions

- Think about the level of detail the person **executing** the instructions needs to do it right
  - Perhaps get someone to review that doesn't know anything
- Steps that are numbered and can be checked off
- MS Teams or other way to share screen so you can see if they make a typo or are on the wrong screen
- If you feel you don't have time to walk through the procedure, it's most likely you don't have time to get the procedure wrong.
- Avoid overwhelming the customer with documentation. Be clear what steps are client's role, and which are IBM's role.

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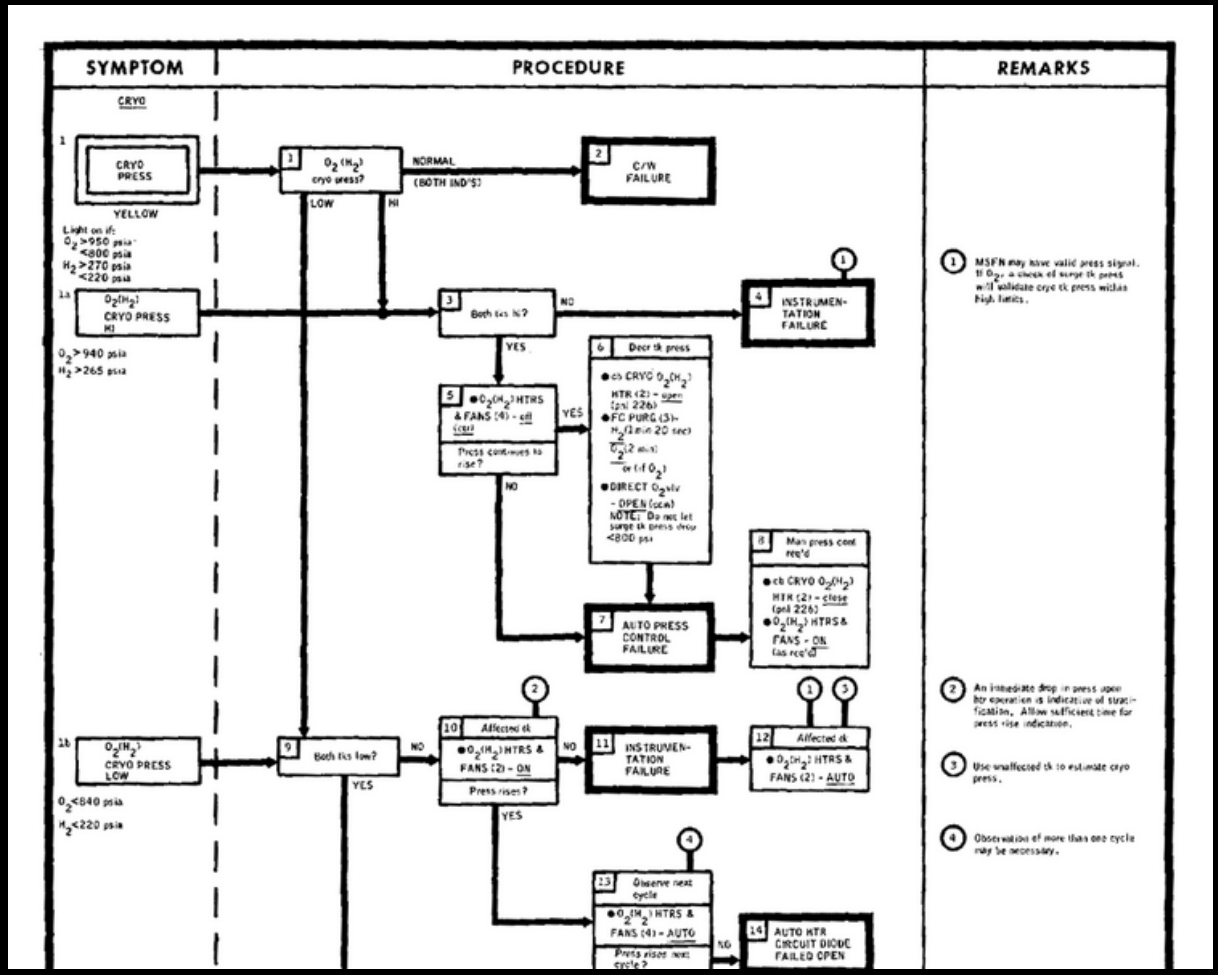
Problem Solving & Analysis



The official NASA Apollo 13 procedure for dealing with the high-pressure indication on the cryogenic oxygen tank.

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Attitude

- You must be focused on solving the problem, not just proving you're not to blame.
  - Be part of a team
- IBMers: Treat customers like people, because they are.
- Customers: Treat IBMers like people.
- IBMers: Customers forgive mistakes, they don't forgive excuses
  - If my first response is to be defensive, that's a flag for me to think more before I start to speak.

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Don’t be too Distracted by Design

> “I don’t care about what anything was designed to do; I care about what it can do.”
>
> – Gene Kranz (movie: Apollo 13)

- There are times where we can’t trust documentation and design
- Having the experts and code and validating can be critical
- Need to validate fixes and corrective actions
  - In a crisis, risk aversion becomes even more heightened

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Conjecture vs. Fact

"Okay, let's everyone keep cool … Let's solve the problem, but let's not make it any worse by guessing."

– Gene Kranz (movie: Apollo 13)

- Conjectures or, opinions based on incomplete information, are not necessarily bad
- Believing conjecture to be fact **is** bad
- Be certain to identify whether what you're sharing is conjecture or fact
- If conjecture
  - On what is it based? Is there an experiment that can be done to verify it?

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Impulse to think it's the same thing you just saw

"We may have had an instrumentation problem, Flight."
– Sy Liebergot, NASA EECOM

- Normal impulse to assume something with similar symptoms is the same as you just saw
- Often seen in PTF recommendations
- Need to offer as a possibility and validate
- Be careful that this does not derail analysis in progress

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Correlation does not imply Causation

- Example: As ice cream sales increase, the rate of drowning deaths increases sharply. Therefore, ice cream consumption causes drowning.

- Things that are highly correlated give us good hints as to where to possibly investigate

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Combine Analysis Threads

- Complex problems often have many components or layers, each with an expert doing analysis
- Need to take time to combine the findings and discuss
- See earlier discussion on making people listen

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Learn why someone thinks a wrong answer is correct

- Progress is slowed when there is not agreement on the next step, or the information shared to date
- Take time to listen and understand why people feel an incorrect answer is right
- Most often
  - Confused terminology
  - A concept that is not fully understood
  - Old information

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You’re in my light

- Part of supporting a technical leader and team is to stay out of their light
  - Bringing up things already covered
  - Interrupting or diverting the current topic
  - Asking for updates outside of the agreed channels/times
  - Doing an end-around

- This also applies to data collection
  - E.g. TCP/IP dumps in middle of measurement

- To help avoid this, provide a time for brain-storming and fresh ideas

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Other Thoughts

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Transient Leadership

- While there may be project management leadership, there is often a need for a technical leader
  - Role may be driven by being the ‘right’ person, and not just a ‘title’
  - May shift from one person(s) to another during the situation
  - May also be the ‘voice’ of IBM on calls

- Three guides of transient leadership:
  - You must make decisions, or at least drive them
  - You will seek the best information going into a decision
  - You will communicate decisions made to all the team

- Mutual support

- Find ways to celebrate and encourage throughout the process

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Identify Actionable Items

- Ensure that critical actions will take place
  - E.g. Formal PTF applied when available to replace fix test or prototype
  - E.g. Add additional page volumes to be added

- Items directly related to the situation

- Items not directly related to the situation
  - Things noticed during the analysis that would be ‘good to do’
  - Things held off during the situation to avoid changing more than one thing at a time

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Create a “Lessons Learned”

- When a crisis is over, the last thing you’ll want to do is look back at it all. You’re just glad it’s over!
- Try to keep a note of things that really helped in the situation & what you wish had been done differently.
- If there are enough items, consider sharing and discussing.
- For items that didn’t work, can you change the process/system for next time?

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Other Thoughts

- Test LPAR: Having a simple or stripped-down system that you can easily bring up to try things.
- Guard against burn-out
- Guard against ‘A lack of seen activity is a lack of work’
  - Firing up a new test before the results of previous test are fully analyzed may be a waste of time
- How long a situation lasts depends, with SWR being a factor. But no one really knows how long it will take.
  - May impact work-life imbalance
  - May require you to have a back up for your role
- Optimize for production, not a benchmark
- IBM Z capability helps
  - Additional capacity dynamically

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IBM's role in the Apollo13 Crit Sit

- IBM created and managed the computing and data processing system that calculated every maneuver that Apollo 13 needed to the moon and back.

- During the crit sit, IBM Programmers Dave Proctor, Homer Ahr, and Gordon Myers (pictured – right) helped reconfigure Apollo 13's trajectory to return it safely to Earth.

- When asked about how he felt after the astronauts returned to Earth, Homer Ahr replied, "I'm glad I didn't screw that up."

- IBM's involvement helping to bring Apollo 13 home: https://newsroom.ibm.com/ahr-apollo13

- More info on Apollo 13: https://www.nasa.gov/mission/apollo-13/

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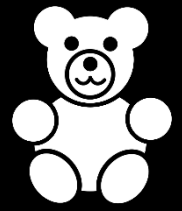

KEEP
CALM
AND
VIRTUALIZE
ON

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