EFFECTIVE COMMUNICATIONS

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AIA LEARNING OBJECTIVES

- List the three aspects of communication
- Define the meaning of "effective communication"
- Describe the communication barrier called "technological multi-tasking & absorbency"
- Describe communication techniques that contribute to more effective communication

AGENDA

01

HOW HAS COMMUNICATION CHANGED?

02

HOW DO WE COMMUNICATE TODAY?

03

INFORMATION & DATA OVERLOAD

04

FACILITIES O&M COMMUNICATION

05

KEYS TO EFFECTIVE COMMUNICATION

06

BARRIERS TO EFFECTIVE COMMUNICATION

07

THE NEED FOR EFFECTIVE COMMUNICATION

08

ENSURING EFFECTIVE COMMUNICATION

HOW HAS COMMUNICATION CHANGED?

- 50 years ago modern communications equipment consisted of:
  - Telegraph
  - Telephones (as in land lines/POTS)
  - Radio (AM, FM, HAM)
  - Broadcast TV (ABC, NBC, CBS & maybe some UHF stations)
  - Billboards, Signs, Flyers, etc
- Newspapers were written on paper & delivered once per day at best
- Letters were written on paper and took days to get delivered and days more to get a response
- Libraries were brick & mortar buildings full of books, globes, maps, encyclopedias, etc.

HOW DID WE COMMUNICATE 15 YEARS AGO?

- Traditional
  - Telegraph all but non-existent
  - Landlines supplemented with cell phones (flip phones, etc) with caller ID & inboxes
  - Radio (AM, FM, HAM + Satellite subscriptions)
  - Cable TV (hundreds of stations)
  - 24-hour news, sports and movie stations
- Digital Communications
  - Email
  - Pagers (some with limited texts)
  - Websites (with ads) including online news
  - Instant messaging (IM)
  - Electronic Calendars

HOW DO WE COMMUNICATE TODAY?

As I wrote this presentation I had:

- Laptop with 3 computer screens
    - 2 internet browsers
    - 17 open windows, tabs, sheets, apps, websites
    - Email (including SPAM, Phish, Ads, etc)
    - Webinars, Web Meetings, Blogs, etc
- Smart Phone
    - Phone calls with voicemail, caller ID, pre-programmed text responses ("sorry I can't talk now")
    - Email, texts, Twitter, Snapchat, Messenger, etc
    - Breaking news from EVERYWHERE!

HOW DO WE COMMUNICATE TODAY?

- TVs & Streaming Video
  - News & shows on-demand
  - Record multiple shows concurrently
  - Satellite, cable, Fios, etc
- Automated Assistants
  - Siri, Alexa, etc
  - On-Star driver assistance
  - Cars notify drivers of status, problems, maintenance, etc
- Advertisements everywhere
  - Gas pumps
  - Video screen billboards

INFORMATION OVERLOAD

The trend is continuing

- Internet of Things (IoT)
- Edge Computing
- 5G Compatibility

Information overload is the new normal

- More is NOT better!
- Much of the information is worthless
  - Has little or no value from a practical standpoint
  - Some is false, erroneous/inaccurate or outdated
  - Some is dangerous (viruses & malware)
  - Consider SPAM, pop-ups, robocalls, targeted ads, etc.

It's like everyone and everything wants your attention all the time!

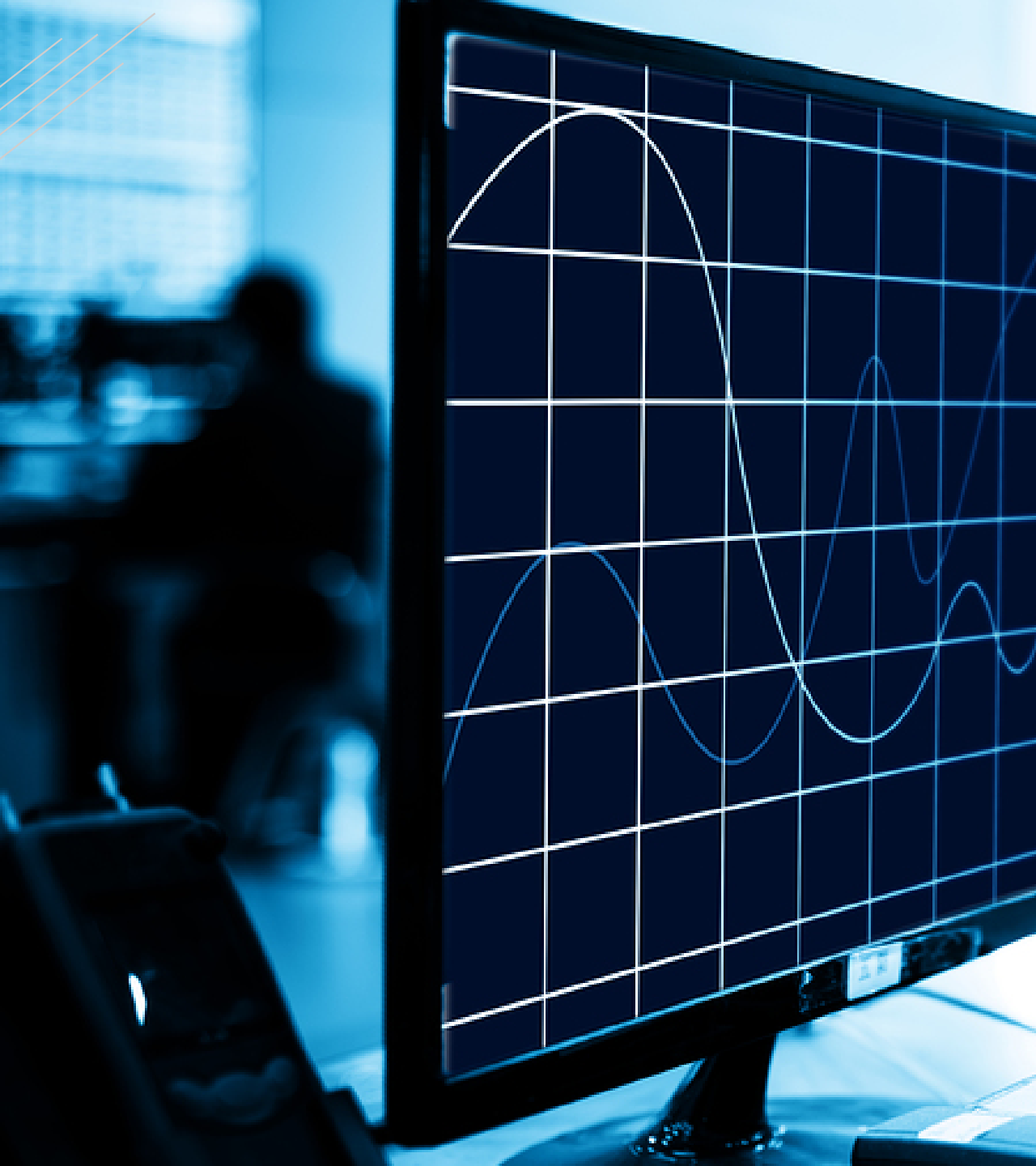# FACILITIES O&M INFORMATION OVERLOAD

Amount of data generated is astounding

- Equipment (chillers, generators, RTUs, etc) have onboard PLCs & communication capabilities

    - Many are essentially small, specialized computers

    - Touchscreens, EPROMS, settings, configurations, etc

    - Trends, logs, alerts/alarms, setpoints, etc

    - Some equipment have literally hundreds of settings, configurations, etc
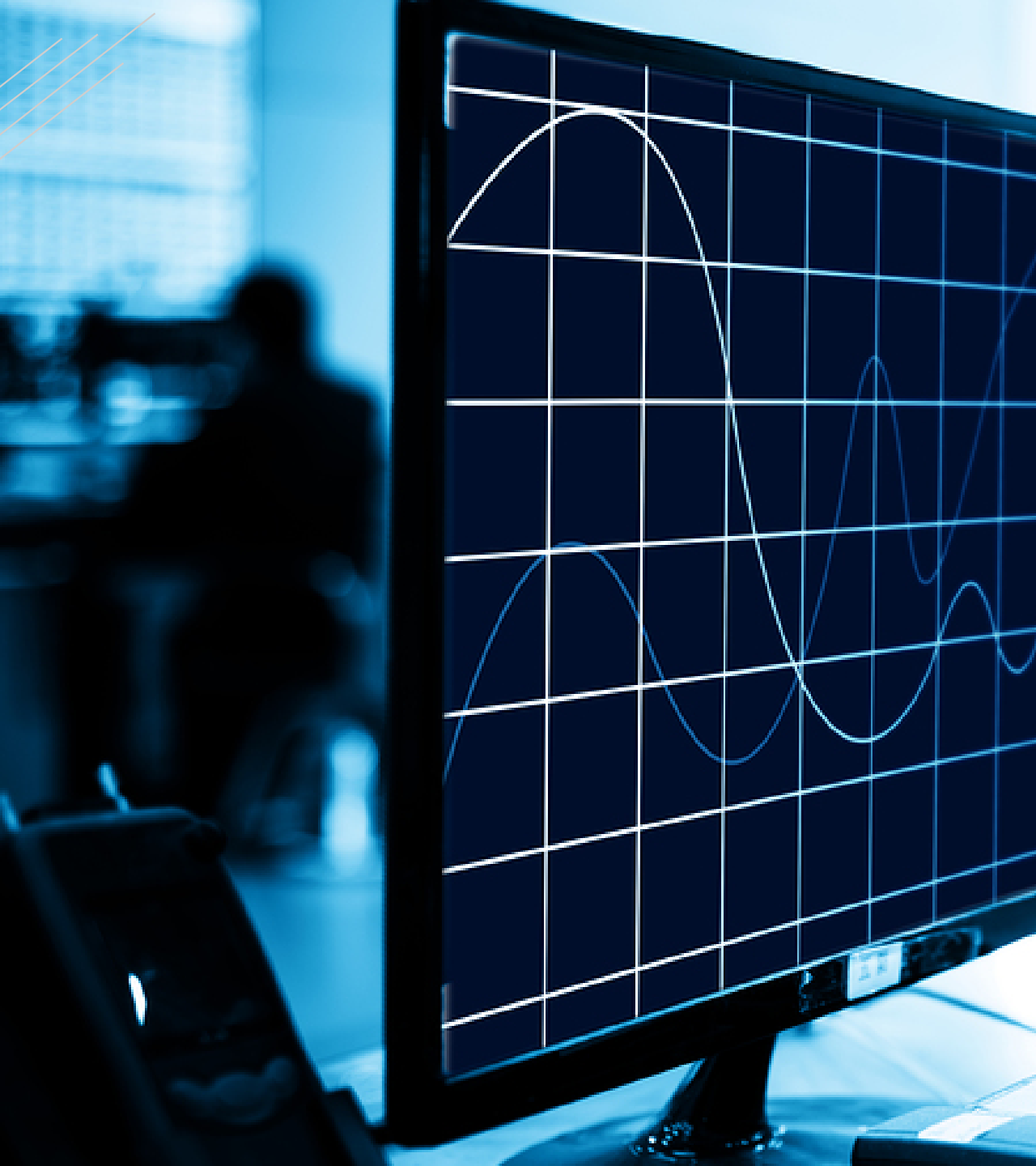
FACILITIES O&M INFORMATION OVERLOAD

- Facilities automation systems receive, compute, sort, filter, display, monitor, archive & transmit data
  - BMS/BAS
  - EPMS
  - DCIM
  - NOCs, FCCs, SCCs, Control Rooms, etc
- Monitoring systems can no longer rely on desktop PCs & now need servers (production & archive)
- Some FCCs & SCCs now have small server rooms to support data centers

FACILITIES O&M COMMUNICATIONS

- Documentation tools have evolved:
  - Traditional documentation = hard copies
    - Binders of O&M manuals
    - Full size blueprints on stick files
    - Parts, catalogues, paper warranties, bulletins, submittals
  - Typical of today = electronic copies
    - Systems operations & maintenance manuals (SOMMs)
    - CDs (drawings & specifications) & shop drawings
    - Manufacturer/vendor tech manuals, parts catalogues, submittals, etc

FACILITIES O&M COMMUNICATIONS

- Documentation tools have evolved:
    - BIM (building information management) systems
    - 3-dimensional imagery w/VR goggles
    - Tablets accessing BIM databases
        - Bar codes, QR codes
        - Instant field access to work orders, operating procedures, O&M manuals, etc

Access to necessary info is less of a problem now; the new problem is identifying the necessary info from all the extraneous data that inundates us!

EFFECTIVE COMMUNICATION

EFFECTIVE COMMUNICATION OCCURS WHEN THE MESSAGE SENT IS THE SAME AS THE MESSAGE RECEIVED IN A TIMELY MANNER

Simply speaking, there are 3 parts to communication:

- The original message
- The transmission
- The message received

COMMUNICATION FAILURE

Communication failures occur as a result of problems at any part of the "communication"

- Original message:
  - Vague, poorly constructed, garbled
  - Lacks important info/incomplete
- Transmission:
  - Poor connectivity
  - SPAM/junk folder
  - "Lost in the translation"
- Reception:
  - Hearing impairment
  - Illiteracy
  - Distraction/lack of attention

BARRIERS TO EFFECTIVE COMMUNICATION

Research has categorized barriers to effective communication to include:

- Physical barriers (loud equipment rooms)
- Physiological (poor hearing or eyesight)
- Ambiguity (words with 2 meanings or lack of context)
- Linguistic ability (reading comprehension, vocabulary, fluency, etc)
- And a new category….

BARRIERS TO EFFECTIVE COMMUNICATION

And a new category….

TECHNOLOGICAL MULTI-TASKING & ABSORBENCY

Occurs when someone is in a state of cognitive multi-tasking as they receive a near constant barrage of unrelated reminders, alerts, messages and information vying for attention

BARRIERS TO EFFECTIVE COMMUNICATION

Many of today's unsolicited messages are designed to grab attention

- Condensed for maximum impact or effect
- Attention-grabbing techniques
    - Controversial-worded headlines
    - Flashing lights or text
    - Flashy colors, provocative pictures
    - Catch-phrases
    - Electronic beeps, sirens, ringtones, etc
    - Anything to distract your attention away from whatever else you might be focused on

THE NEED FOR EFFECTIVE COMMUNICATION

*ELIMINATE
(OR AT LEAST MITIGATE ANY BARRIERS TO COMMUNICATION)*

Work environments, and especially where critical decisions, activities, or directions occur need to be conducive to effective communications.

THE NEED FOR EFFECTIVE COMMUNICATION

EXAMPLE

THE 1979 SNL "PEPSI SYNDROME"

(ACTUALLY THE SKIT CALLED THE AMAZING COLOSSAL PRESIDENT):

As the senior Reactor Operator retires, he cautions his peers as he leaves the nuclear plant control room for the last time

"Remember, you can never put too much water in the reactor."

And then someone spills a Pepsi on the control panel….

THE NEED FOR EFFECTIVE COMMUNICATION

One operator interprets the caution to mean you should put as much water in the reactor as possible since "you can never put **TOO** much water in the reactor", in other words, the more the better.

Another operator interprets this to mean you should not put water into the reactor since "you can **NEVER** put too much water in the reactor", in other words, the worst thing you can do is over fill the reactor.

THE NEED FOR EFFECTIVE COMMUNICATION

The problem with multi-tasking (especially cognitive multi-tasking) is no task gets 100% attention

Multi-tasking coupled with information overload is a recipe for **Human Error!!!**

Couple multi-tasking and info overload with the increasingly complex and ever-evolving technology of today's facilities and human error becomes more likely.

THE NEED FOR EFFECTIVE COMMUNICATION

Look at meetings today:

- Many if not most/all participants have open laptops & a smartphone in front of them
- Questions have to be repeated because the recipient was multi-tasking (ie, not paying attention to the meeting discussion)

THE NEED FOR EFFECTIVE COMMUNICATION

Increasingly complex facilities equipment

- Equipment integral controllers can have over 100 settings, configurations, thresholds, etc not including the buried IT & advanced settings which can run into the hundreds of settings

- BMS/BAS (as well as EPMS, SCADA, etc) systems now communicate via a multitude of protocols (BACnet, LONworks, etc)

- VFDs can have over a hundred settings

- Typically even the best technicians need to refer to manuals, specs, bulletins, etc as well as continued training to stay proficient and execute site specific work

THE NEED FOR EFFECTIVE COMMUNICATION

Increasingly easy to perform critical & complex tasks with less effort, thought & time

- Swap-over an entire chiller plant with the click of a mouse

- Schedule, assign & track work orders remotely on laptops or even phone apps

- Adjust reset tables, setbacks, acknowledge/clear alarms, etc

- Enable/disable systems & equipment with the click of a mouse, etc

THE NEED FOR EFFECTIVE COMMUNICATION

A FUNNY TV COMMERCIAL EXAMPLE FOR YOU

A young man enters his kitchen wearing VR goggles waving his hands and:

- Tells the computer to order a pizza
- Tells the refrigerator to display the weather
- Tells the trash can to turn on the TV (which replies "my pleasure")
- Requests the ice maker find a dog sitter (and to make ice)

A pizza-delivery drone flies in, drops the pizza on the floor, announces "pizza delivered", while the man is oblivious wearing the VR goggles and still waving his hands.

ENSURING EFFECTIVE COMMUNICATION

Start with addressing situational awareness

- Make clear the distinctions between informal & social conversations vs. formal or official communications

- Eliminate (or at least mitigate) barriers:

  - Reduce background noise

  - Halt unrelated conversations

  - Turn off/put away phones, tablets, laptops, etc

  - Use simple & concise terms & phrases

  - Repeat/reiterate the important message(s)

AND MOST IMPORTANTLY

Solicit clear feedback from your audience on what message, directive or other communication was received to ensure it matches the intended message sent!

ENSURING EFFECTIVE COMMUNICATION

A somewhat "extreme" example is the requirement for "verbatim response" as used in some commercial nuclear power plants:

- Sr Reactor Operator (SRO) issues a command to "close valve A"
- Reactor Operator (RO) replies " I am being directed to close valve A"
- SRO confirms "that is correct"
- Operator closes valve A and informs the SRO "valve A has been closed"
- SRO replies "I understand valve A is closed"
- RO confirms "that is correct"

AIA LEARNING OBJECTIVES

List the three aspects of communication

- The original message
- The transmission/translation
- The message received

Define the meaning of "effective communications"

- Effective communication occurs when the message sent is the same as the message received and in a timely manner

AIA LEARNING OBJECTIVES

Describe the communication barrier called "technological multi-tasking & absorbency"

- Occurs when someone is in a state of cognitive multi-tasking as they receive a near constant barrage of unrelated reminders, alerts, messages & information vying for attention

Describe communication techniques that contribute to more effective communications

- Situational awareness: clear distinctions between informal/social conversations vs. formal/official communications

  - Reduce noise, halt unrelated conversations, turn off/put away phones, tablets, laptops, etc., use simple & concise language, repeat/reiterate the important message(s)

AND MOST IMPORTANTLY

Solicit clear feedback from your audience on what message, directive or other communication was received to ensure it matches the intended message sent!

QUESTIONS & ANSWERS OPEN FORUM

DON'T FORGET TO COMPLETE & RETURN THE EVALUATION FORM

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