



## **Excellence in Internal Client Encounters**

A series of training and workshop sessions  
for Intel France, May to September 2021

Session 4

1

*What do you remember most ?*

2

## What is there to find out?

Facts and figures about things

Products, projects, technology, ...



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Perceptions, concerns and expectations

How A feels about B,

what X thinks about Y, ...

3

## Encourage the Client to Talk

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.. then listen to them *actively*.

"No-one ever listened themselves out of a job."

Calvin Coolidge, US President (1872-1933)

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4

*What do you really **DO**  
when listening actively?*

As many answers as you  
like to the Chat please ...



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5

## Empathetic Listening

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- Using my own emotional apparatus in order to understand the feelings of my client
  - Must maintain a sufficient psychological distance
  - Empathy is not sympathy
- Advantages:
  - Allows me to understand what really matters to a client
  - Has a strong, positive effect on the relationship
- Requires an effort of imagination
  - I have to imagine myself in someone else's position
- Avoid 'making it about me'

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6

## Playback

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- An indication that I understand will :
  - Allow the client to see if his/her message was understood.
  - Prompt him/her to offer additional information.
  - Demonstrate that I am listening.
  
- Need to understand both Facts and Feelings
  - My playback should cover both.

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7

## Playback Question

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To revisit Question Types for a moment – a simple “and” gives me an excellent way to combine Playback and Question. e.g:

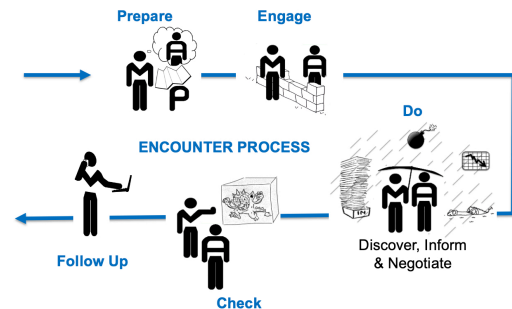
- Customer: “Our current solution is working fine”
- Me: “So your current solution is working fine, **and** are you expecting to keep it for, say, the next 3 years?”
- ...
  
- Customer: “Your router always leaves some sort of mess that I have to clear up by hand - it’s very annoying!”
- Me: “The router result is not complete, which is annoying. **And** are there situations where it does complete correctly?”
- ...

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8

## Wrap up on Plans and Learning Discovery

- Plans: the value is in the NING !
- Engage: Sync up then transition with PAGE
- The “Do” step starts with Learning Discovery
  - Vary your questions to get good coverage
  - Listen actively and Playback (factual, emotional)



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9

## Preparing Pitches & Presentations

The TWO-MINUTE MESSAGE

(some slides are included that were not seen in the session)

10

# Presentation Contest

Which is the best of the following 3 presentations?

- Votes for Sample #1:
- Votes for Sample #2:
- Votes for Sample #3:

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11

<h3>Outline</h3> <ul style="list-style-type: none"> <li>• STA – Introduction</li> <li>• Understanding and describing clocks</li> <li>• Constraining a design             <ul style="list-style-type: none"> <li>– I/O constraints</li> <li>– Timing exceptions</li> <li>– Analyzing min and max operating conditions</li> <li>– Precedence</li> <li>– PrimeTime/SDC translation</li> </ul> </li> <li>• Static Timing with latches (time borrowing)</li> <li>• Advanced topics             <ul style="list-style-type: none"> <li>– Estimating Wire Delay</li> <li>– OCV and Crosstalk</li> <li>– Multimode and Multicorner</li> </ul> </li> </ul>	<h3>Static Timing Analysis (STA)</h3> <p>What is our circuit timing requirement?</p> <p>Data Cannot Change Within These Windows</p> <p>Setup Requirement Hold Requirement</p> <p>IBM's Hitchcock (70's) observed that you could exhaustively test all behaviors within a single clock cycle</p> <p>Early Required Time Late Required Time</p>
<h3>Dynamic Timing Analysis (DTA)</h3> <ul style="list-style-type: none"> <li>• A series of vectors over time are applied during a simulation run</li> <li>• Simulation calculates the logic value and delays over time</li> </ul> <p>Clk = 1 @ 100      Data = 45H @ 150      Clk = 0 @ 150      Clk = 1 @ 200      Data = 83H @ 250      Clk = 0 @ 250      Clk = 1 @ 300</p> <p>Your chip</p> <p>Output: 9, 12H at 168, 273</p>	<h3>Identifying Logic and Timing Levels</h3> <p>Q. How many levels of logic are in this design?</p> <p>Q. How many timing levels are in this design?</p> <p>HINT: Determine the nodes first      HINT: Timing Levels = 2 * Logic Levels + 2</p>

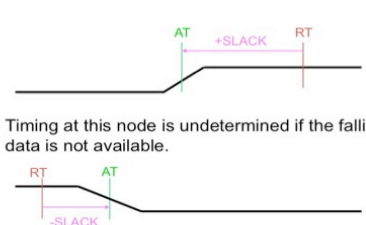
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12

<h3 style="text-align: center;">Outline</h3> <ul style="list-style-type: none"> <li>• STA – Limitations and Challenges</li> <li>• Constraints             <ul style="list-style-type: none"> <li>– Analyzing min and max operating conditions</li> <li>– Precedence</li> <li>– PrimeTime/SDC translation</li> </ul> </li> <li>• Time borrowing</li> <li>• Estimating Wire Delay</li> <li>• OCV and Crosstalk</li> <li>• Multimode and Multicorner</li> </ul>	<h3 style="text-align: center;">Terminology</h3> <p>What does OCV mean to you?</p> <ul style="list-style-type: none"> <li>– Process, Voltage and Temperature (PVT) Conditions affect the delay of cells and wires</li> <li>– It is physically possible that two different regions of the chip are at slightly different PVT conditions</li> <li>– This effect is called “On Chip Variation” of PVT conditions, or “OCV” for short</li> <li>– The worst timing does not necessarily occur when all delays are at the extreme characterized corners</li> <li>– The effect of OCV has the biggest impact on the clock paths</li> </ul>																																										
<h3 style="text-align: center;">Terminology</h3> <p>Which possibilities do you have for – OCV analysis and optimization?</p> <ul style="list-style-type: none"> <li>– Path based OCV, is the OCV analysis engine             <ul style="list-style-type: none"> <li>• The value used for common path pessimism (CPRP) is the accurate one for the given pair of launch/capture flops in a path</li> <li>• This is only feasible for path reporting (CPRP is applied at the time of reporting)</li> <li>• Path based OCV cannot be used for optimization since the runtime would be prohibitive</li> </ul> </li> <li>– Margin based OCV, is one way of OCV optimization             <ul style="list-style-type: none"> <li>• Margins are calculated for each endpoint by OCV analysis and determining the delta between the derated and un-derated delays</li> <li>• Since only one pair (rising and falling edge) of margins per endpoint is stored for setup and one pair for hold, this approach is necessarily pessimistic, as only the worst margin that leads to the most critical timing can be stored per endpoint</li> </ul> </li> <li>– Native or Marginless OCV is a new feature introduced with the 2005.03 version. This new algorithm combines OCV analysis and optimization to overcome the limitations of path based- and margin based OCV</li> </ul>	<h3 style="text-align: center;">CPRP - Setup</h3> <div style="text-align: right; border: 1px solid blue; padding: 2px; display: inline-block;">Multi point criteria</div> <p>MPP for different effects</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Mode</th> <th>Case</th> <th>Xtalk</th> <th>OCV</th> <th>Common point match</th> <th>Expected Result</th> </tr> </thead> <tbody> <tr> <td>Setup</td> <td>Both</td> <td>-</td> <td>OFF</td> <td>exact_clock_edge</td> <td>Natively removed pessimism will be due to OCV only</td> </tr> <tr> <td>Setup</td> <td>Both</td> <td>ON</td> <td>ON</td> <td>edge/node</td> <td>MPP removal for OCV</td> </tr> <tr> <td>Setup</td> <td>Both/Single</td> <td>ON</td> <td>OFF</td> <td>exact_clock_edge</td> <td>Natively removed pessimism should be NIL for different edge checks (Single cycle/multicycle setup checks)</td> </tr> <tr> <td>Hold</td> <td>Both</td> <td>OFF</td> <td>ON</td> <td>edge/node</td> <td>Natively removed pessimism will be due to OCV and Xtalk</td> </tr> <tr> <td>Hold</td> <td>Both</td> <td>OFF</td> <td>OFF</td> <td>edge/node</td> <td>MPP removal for OCV</td> </tr> <tr> <td>Hold</td> <td>Both/Single</td> <td>ON</td> <td>OFF</td> <td>edge/node</td> <td>Natively removed pessimism should be actual MPP due to Xtalk</td> </tr> </tbody> </table>	Mode	Case	Xtalk	OCV	Common point match	Expected Result	Setup	Both	-	OFF	exact_clock_edge	Natively removed pessimism will be due to OCV only	Setup	Both	ON	ON	edge/node	MPP removal for OCV	Setup	Both/Single	ON	OFF	exact_clock_edge	Natively removed pessimism should be NIL for different edge checks (Single cycle/multicycle setup checks)	Hold	Both	OFF	ON	edge/node	Natively removed pessimism will be due to OCV and Xtalk	Hold	Both	OFF	OFF	edge/node	MPP removal for OCV	Hold	Both/Single	ON	OFF	edge/node	Natively removed pessimism should be actual MPP due to Xtalk
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13

<h3 style="text-align: center;">Outline</h3> <ul style="list-style-type: none"> <li>• STA – Introduction for Wireless Designs</li> <li>• Benefits &amp; Comparisons</li> <li>• Workflow</li> <li>• Issues &amp; Challenges</li> <li>• Examples</li> <li>• Conclusion</li> </ul>	<h3 style="text-align: center;">Static vs. Dynamic Timing Analysis</h3> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <h4>STA Advantages ☺</h4> <ul style="list-style-type: none"> <li>✓ Automatically exhaustive in nature.</li> <li>✓ Does not require a vector set</li> <li>✓ More efficient than DTA in memory and CPU resources</li> </ul> </div> <div style="width: 45%;"> <h4>DTA Features ☹</h4> <ul style="list-style-type: none"> <li>• Requires an exhaustive set of vectors to test all possibilities</li> <li>• Mixes functional and timing problems together, may be difficult to discern the true cause of failure</li> <li>• Requires more memory and CPU resources over STA</li> </ul> </div> </div>
<h3 style="text-align: center;">STA Basics</h3>  <ul style="list-style-type: none"> <li>• Timing at this node is undetermined if the falling event data is not available.</li> <li>• If this is the falling edge, the falling edge slack is negative and timing is not met. <span style="color: green;">SLACK = RT - AT</span></li> </ul>	<h3 style="text-align: center;">Summary: Static Timing Concepts</h3> <ul style="list-style-type: none"> <li>• Automatically exhaustive in nature</li> <li>• Does not require a vector set</li> <li>• More efficient than traditional, dynamic approach             <ul style="list-style-type: none"> <li>✓ uses less memory</li> <li>✓ more efficient use of CPU resources</li> </ul> </li> <li>• Recommended approach for advanced technologies</li> </ul>

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14

## ***Presentation Contest***

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Which is the best of the following 3 presentations?

- Votes for Sample #1:
- Votes for Sample #2:
- Votes for Sample #3:

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15

## **Rule #1**

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Identify My Objectives and Audience!



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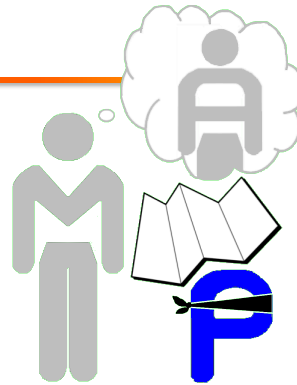
16



## Rule #2

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Plan blindfold!!



- When reusing stuff that exists, **start planning without it!**
  - Consider your own ideas first
  - Avoid being influenced by incoming material

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17

## No GPS!

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Get  
~~PowerPoint~~  
Slides

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18

## Two Minute Message (TMM)



- Define My objectives and Audience, then write the TMM (Plan)
- A TMM is a synopsis encompassing the main points of an idea. It consists of four statements (ACS, KS, SS, CS):
  - Audience Context Statement
  - Key Statement
  - Supporting Statements
  - Closing Statement

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Useful ref: [www.twominutemessage.com](http://www.twominutemessage.com)

19

## Audience Context Statement

- Captures the audience – grabs their attention
- Sets the context – explains WHY it is worth listening
- I do NOT mention:
  - My company
  - My products or services
  - My ideas
  - Me
- Allows me to establish contact with the audience
  - Get acknowledgement before continuing

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20

## Key Statement

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- The main message or concept being presented
- Singular!
  - Careful of “and” – it usually means that I have two Key Statements!
- A KS is also important in content-oriented presentations
  - e.g. product presentations, training courses and manuals
  - State the purpose and main advantage
    - ‘This three-hour presentation will give you a broad overview of the main features of the architecture—enough for design planning, but not enough for detailed implementation work.’
    - ‘This software automates the process of ASIP design, making it as easy to design an ASIP-based system as it is to build a traditional core-based one.’

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21

## Supporting Statements

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- The statements that *support* the Key Statement
- No limit to the number
  - Adapt the presentation to circumstances by including the appropriate Supporting Statements

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22

## Closing Statement

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- I end with the beginning in mind. That is:
  - Refer to the Audience Context Statement
  - Reinforce the Key Statement
  - Lead the audience to Next Steps

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23

## TMM Example

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- Audience
  - 3 Design Managers in Analog Solutions Inc.
- My objective
  - Arouse interest in our PC accelerator board. Discover potential applications in their company. Obtain an agreement to demonstrate the product to a larger audience.
- Audience Context Statement
  - Physical effects that were negligible in IC technologies above 65nm are now extremely important. They make detailed simulation of many analog circuits extremely challenging.

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24

## TMM Example

- Key Statement
  - The MaxiCalc board is > 100x faster than standard simulators, making it possible to accurately characterise analog cells for weird, layout-dependent effects in a reasonable time.
- Supporting Statements
  - An easy to use plugin to a PC (still the preferred workhorse of analog designers).
  - Direct interface to graphics processor, for rapid, high-definition visualisation of modelling results.
- Closing Statement
  - So, this accelerator technology can help you deal with the effects seen in 65n and below. We have a Product Engineer in the area next week – perhaps he could come and talk to your engineers?

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25

## Brief Exercise

### Challenge

To write a part of a Two Minute Message ... collectively.

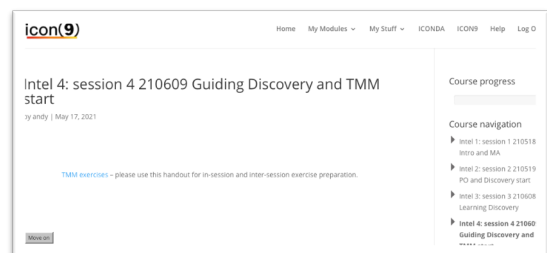
### Scenario

Your Great Aunt lives alone

You believe she will benefit from a smartphone.

Her hearing is poor, and she often doesn't hear her telephone (which is « fixed »).

She is quite active, and is often out of the house when you want to contact her.



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26

## Notes on the TMM

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- Procedure is simple – but good results require discipline!
- Complete, grammatically correct sentences
  - Not bullet points: they can be difficult to interpret later
  - TMM should be readable
- The first three sections must be orthogonal
  - No overlaps between the ACS, KS and SS!
- When I produce a presentation or document *in response to someone's* request, the context is defined by that request
  - The ACS acknowledges and plays back the request
  - Just like Playback in Discovery

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27

## Plan ≠ Implementation

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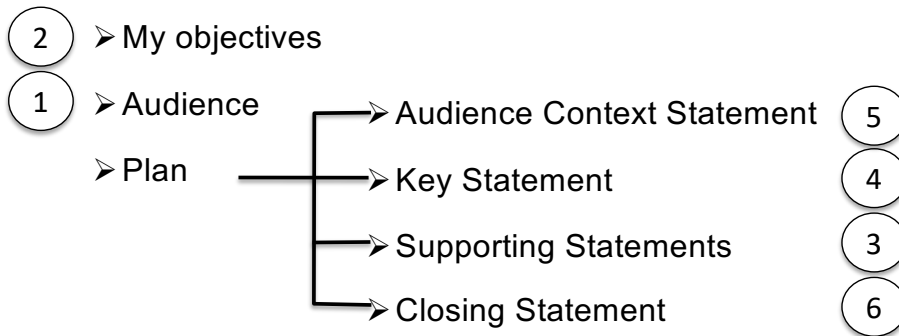
- Plan = structured concepts, ideas, etc.
- Implementation = Presentation or Pitch
  - e.g. in PowerPoint, on whiteboard, verbal, video, etc.

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28

# Order of Attack for MAP and TMM

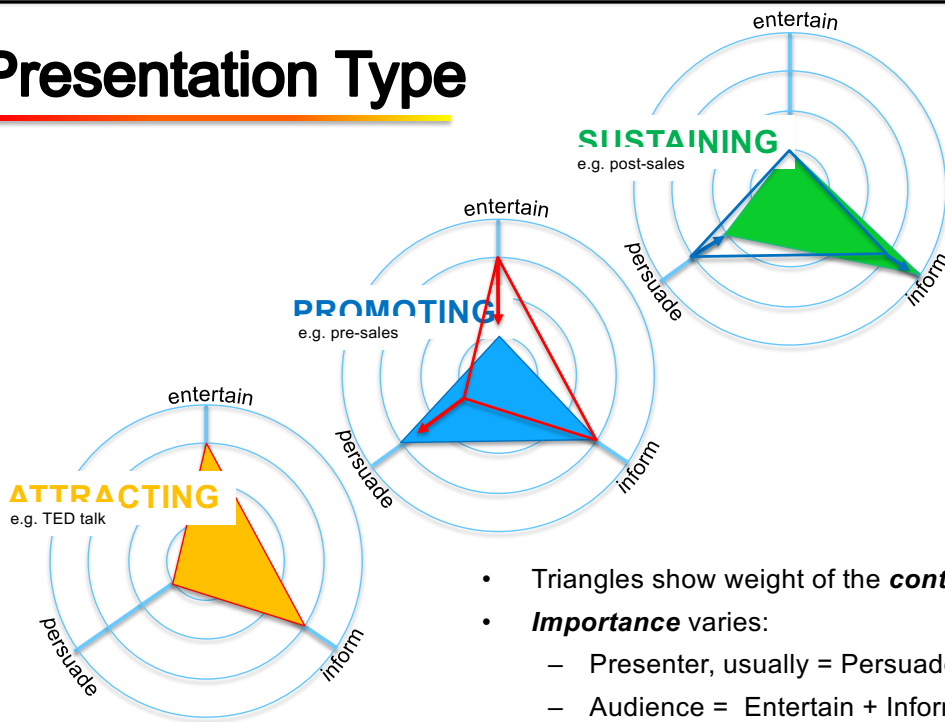
- In the Prepare step of the Encounter Process:



\* = possible order of attack

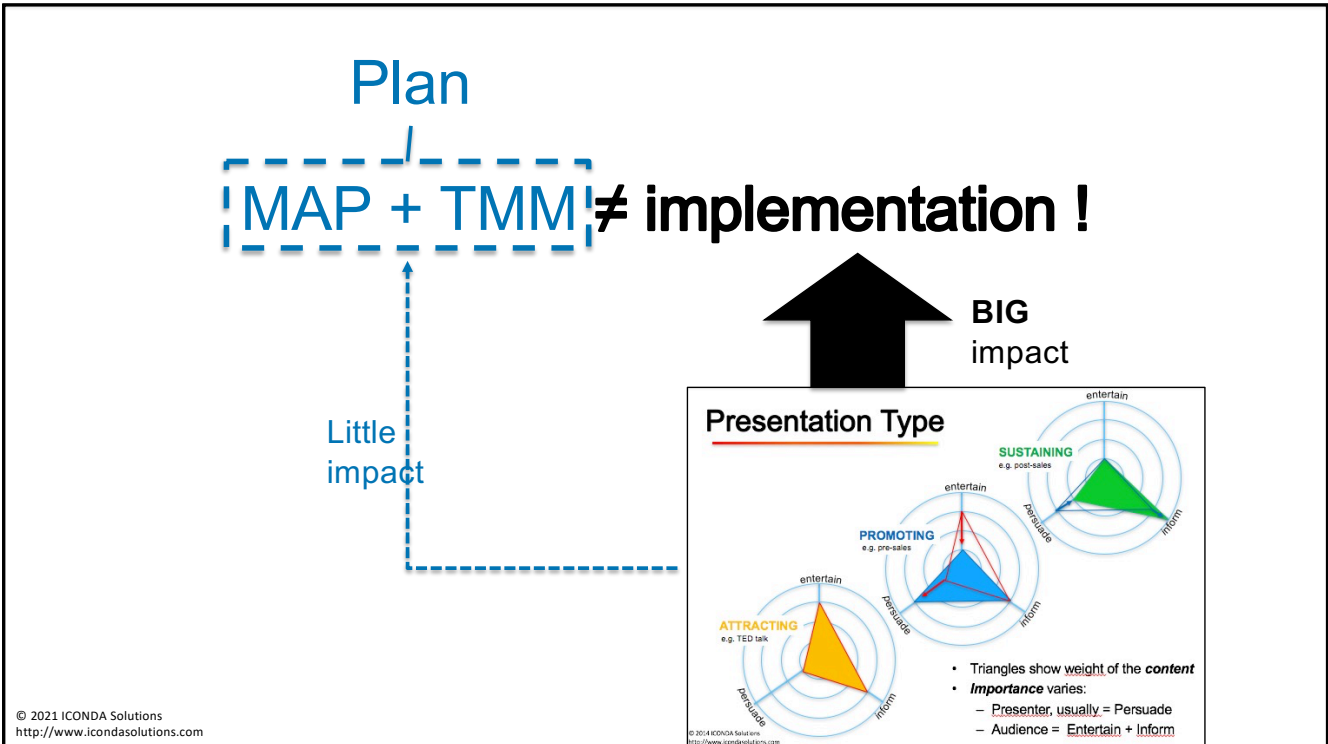
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# Presentation Type



- Triangles show weight of the **content**
- **Importance** varies:
  - Presenter, usually = Persuade
  - Audience = Entertain + Inform

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31

# Implementation Advice #1

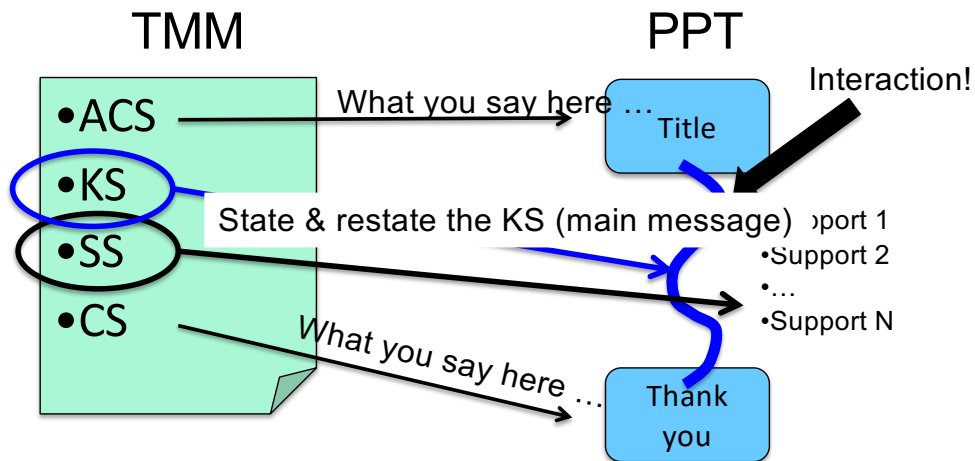
	ATTRACTING	PROMOTING	SUSTAINING
Example ->	TED talk, learned conference	Pre-sales, sales conference	Regular or crisis post-sales meeting
<b>Audience Context Statement</b>	Aim for Impact	Aim for Resonance	Aim to Reassure
<b>Key Statement</b>	Delivery sometimes deferred – audience attention sustained by entertain/inform	Need to get to the point straight away. Maximum impact is often here.	Often in the form of an executive summary style synthesis
<b>Supporting Statements</b>	If KS is deferred, then the SS provide a build up		No special comment
<b>Closing Statement</b>	Always lead to some kind of next step, even if this is not stated explicitly		

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32



## Implementation Advice #2



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33

## Key Points

- Rule 1
  - Identify **M**y objectives and **A**udience (**MA**p)
- Rule 2
  - **P**lan blindfold!! (ma**P**)
    - i.e. plan by creating a synopsis on a blank piece of paper, NOT by looking at existing material
    - The TMM provides a good way to do this ...

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34

## Limitations of Learning Discovery

- Asking questions won't work if the client can't answer them
  - The situation is complex/unclear?
  - They have difficulty disclosing certain information?
  - Other...?
- We often receive superficial/incomplete answers
  - Don't short-circuit by making suggestions straight away!
- « Quick and easy » has low value
  - Careful questioning augments the value of any proposed solution

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35

## Learning versus Guiding Discovery

### Learning Discovery

- Get as much data as possible
  - Present: circumstances and problems
  - Past: history and things tried in the past

### Guiding Discovery

- Uncover the deeper problems and needs
  - Go beyond the superficial, *implied* needs and problems
  - Goal = « Real Needs »
- Does NOT try to find solutions !



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36

# Inter-session exercise prep



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## Intel 4: session 4 210609 Guiding Discovery and TMM start

by andy | May 17, 2021

[TMM exercises](#) - please use this handout for in-session and inter-session exercise preparation.

Move on

### Course progress

### Course navigation

- ▶ Intel 1: session 1 210518  
Intro and MA
- ▶ Intel 2: session 2 210519  
PO and Discovery start
- ▶ Intel 3: session 3 210608  
Learning Discovery
- ▶ **Intel 4: session 4 210609**  
**Guiding Discovery and TMM start**