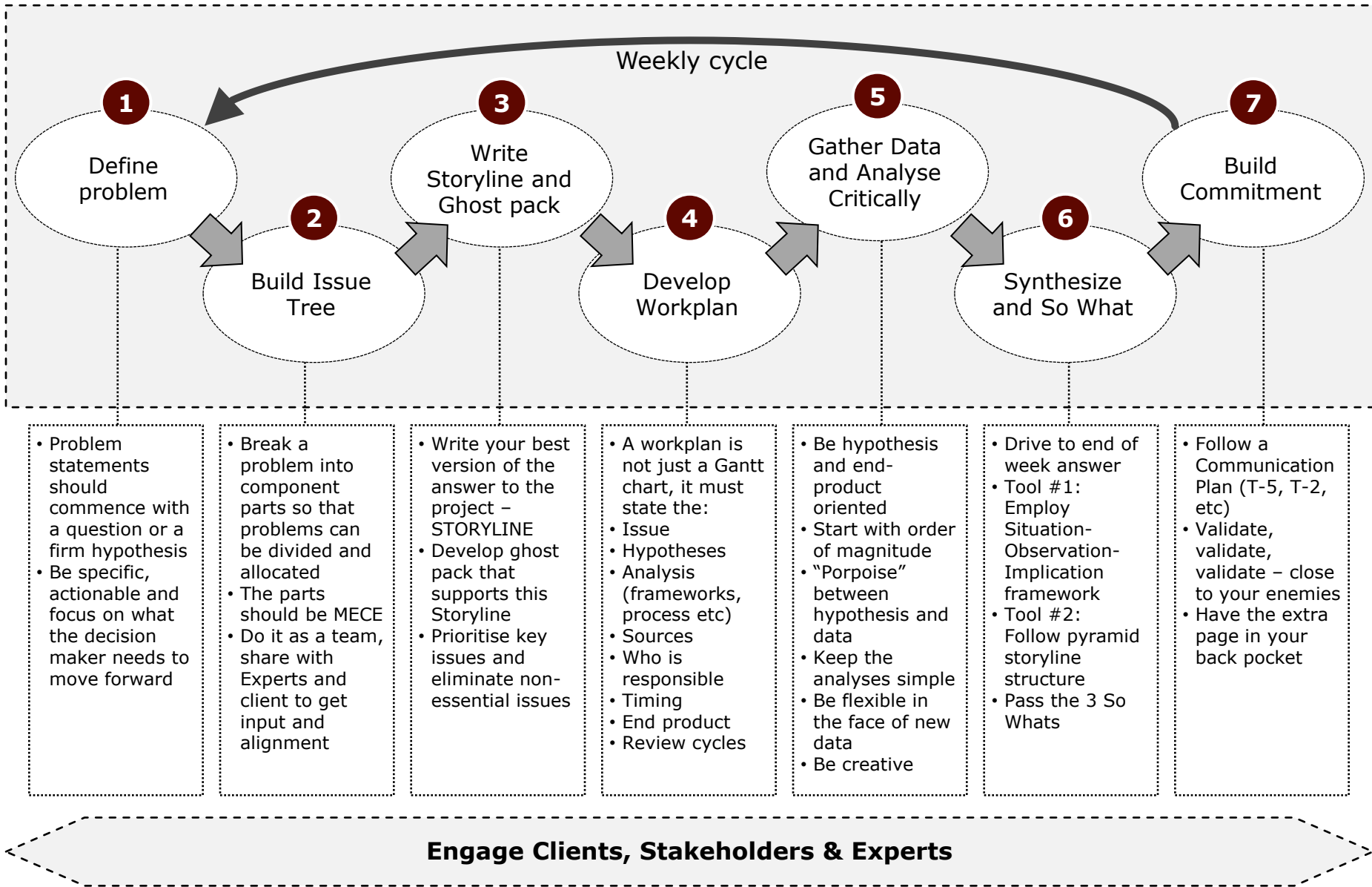# Problem Solving Grand Slam:
7 Steps to Master

Any Industry, Any Problem, <u>Every Project</u>
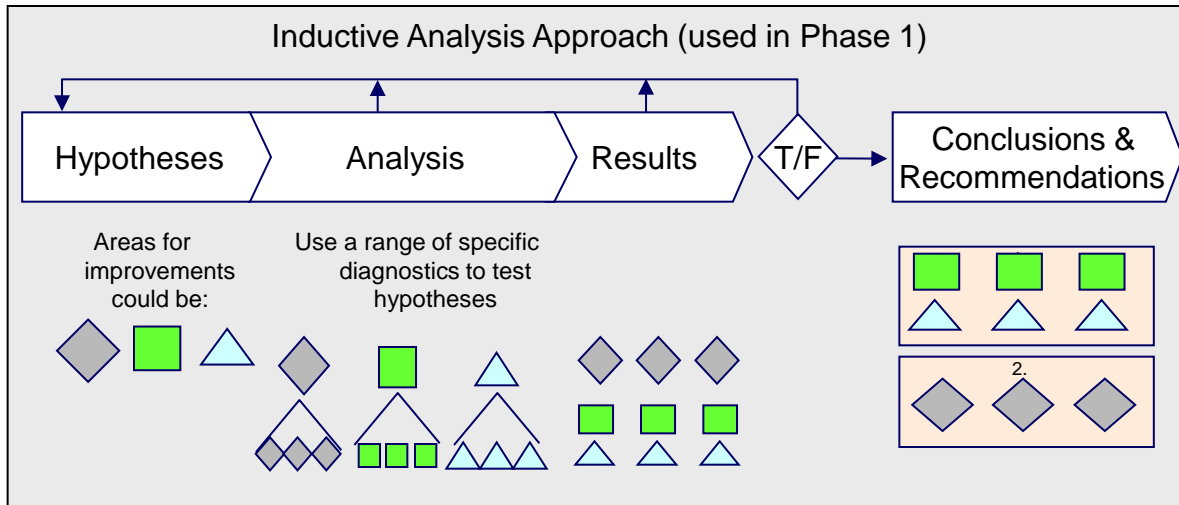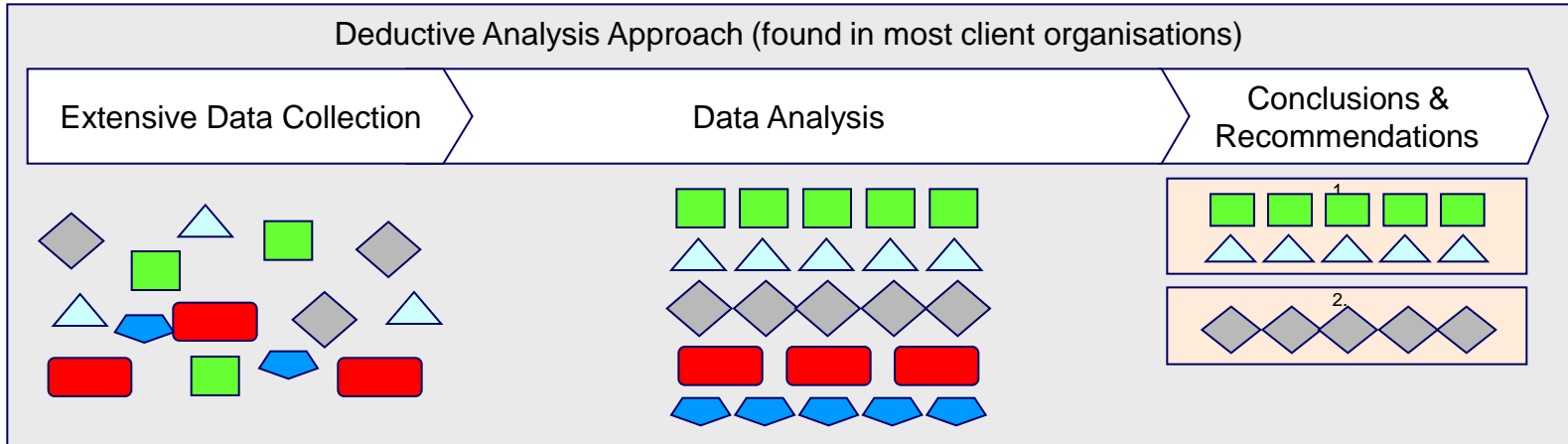
Summer 2013

The 7-Steps to master problem solving
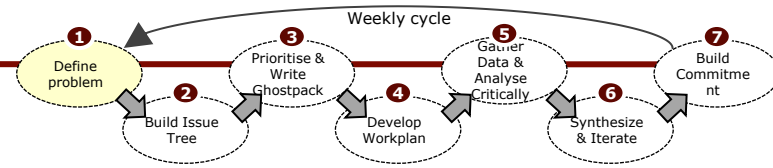
Weekly cycle

1 Define problem

2 Build Issue Tree

3 Write Storyline and Ghost pack

4 Develop Workplan

5 Gather Data and Analyse Critically

6 Synthesize and So What

7 Build Commitment

- Problem statements should commence with a question or a firm hypothesis
- Be specific, actionable and focus on what the decision maker needs to move forward

- Break a problem into component parts so that problems can be divided and allocated
- The parts should be MECE
- Do it as a team, share with Experts and client to get input and alignment

- Write your best version of the answer to the project – STORYLINE
- Develop ghost pack that supports this Storyline
- Prioritise key issues and eliminate non-essential issues

- A workplan is not just a Gantt chart, it must state the:
- Issue
- Hypotheses
- Analysis (frameworks, process etc)
- Sources
- Who is responsible
- Timing
- End product
- Review cycles

- Be hypothesis and end-product oriented
- Start with order of magnitude
- "Porpoise" between hypothesis and data
- Keep the analyses simple
- Be flexible in the face of new data
- Be creative

- Drive to end of week answer
- Tool #1: Employ Situation-Observation-Implication framework
- Tool #2: Follow pyramid storyline structure
- Pass the 3 So Whats

- Follow a Communication Plan (T-5, T-2, etc)
- Validate, validate, validate – close to your enemies
- Have the extra page in your back pocket

Engage Clients, Stakeholders & Experts

Why hypothesis-based approach?

Weekly cycle

❶ Define problem
❷ Build Issue Tree
❸ Prioritise & Write Ghostpack
❹ Develop Workplan
❺ Gather Data & Analyse Critically
❻ Synthesize & Iterate
❼ Build Commitment

Deductive Analysis Approach (found in most client organisations)

Extensive Data Collection → Data Analysis → Conclusions & Recommendations

Inductive Analysis Approach (used in Phase 1)

Hypotheses → Analysis → Results → T/F → Conclusions & Recommendations

Areas for improvements could be:

Use a range of specific diagnostics to test hypotheses

Speed, Effort, Risk & Stakeholder Engagement

time

Define problem

Weekly cycle

① Define problem
② Build Issue Tree
③ Prioritise & Write Ghostpack
④ Develop Workplan
⑤ Gather Data & Analyse Critically
⑥ Synthesize & Iterate
⑦ Build Commitment

Evaluation

X bank is losing money on broker introduced business and needs a plan to fix it

Statement of fact

How should X bank restructure its broker relationships to make better returns
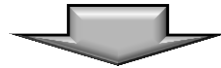
Not disputable and too general

What set and sequence of initiatives should X bank implement to cement its more profitable broker relationships and to change the laws of remunerating the larger number of unprofitable relationships?

Specific, actionable

Gaining an accurate understanding of the problem is the first priority

'So, Andre! . . . the king wants to know how you're coming with St George and the Dragon'

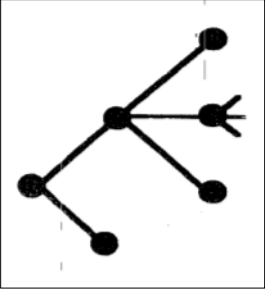# Clear documentation of the problem is equally important

How the customer explained it

How the Project Leader understood it

How the Analyst designed it

How the Programmer wrote it

How the Business Consultant described it

How the project was documented

What operations installed

How the customer was billed

How it was supported

What the customer really needed
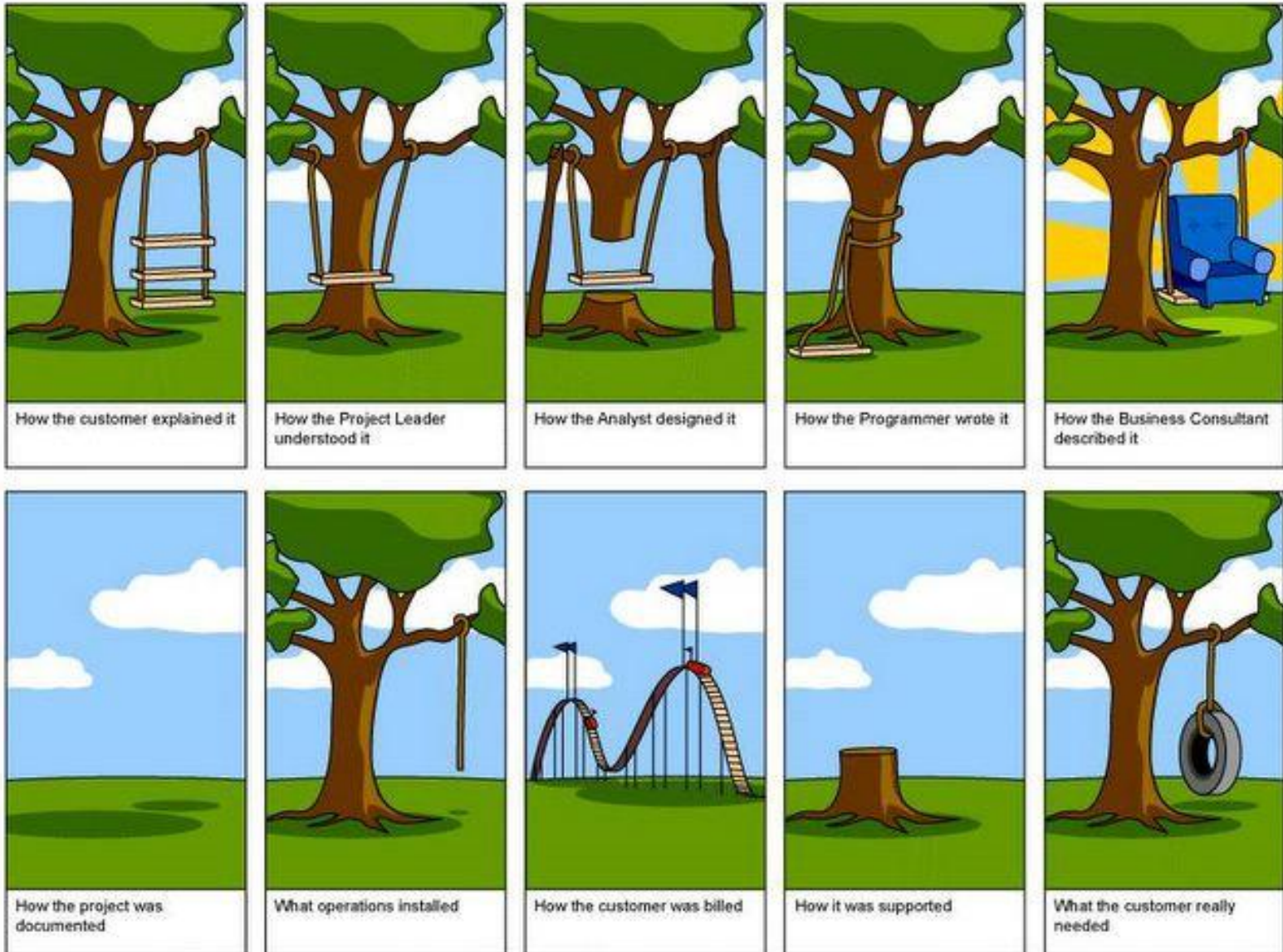
Build the logic/issue tree

Weekly cycle

1 Define problem
2 Build Issue Tree
3 Prioritise & Write Ghostpack
4 Develop Workplan
5 Gather Data & Analyse Critically
6 Synthesize & Iterate
7 Build Commitment
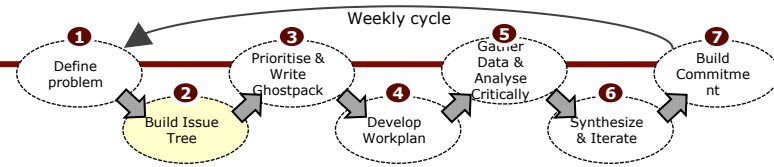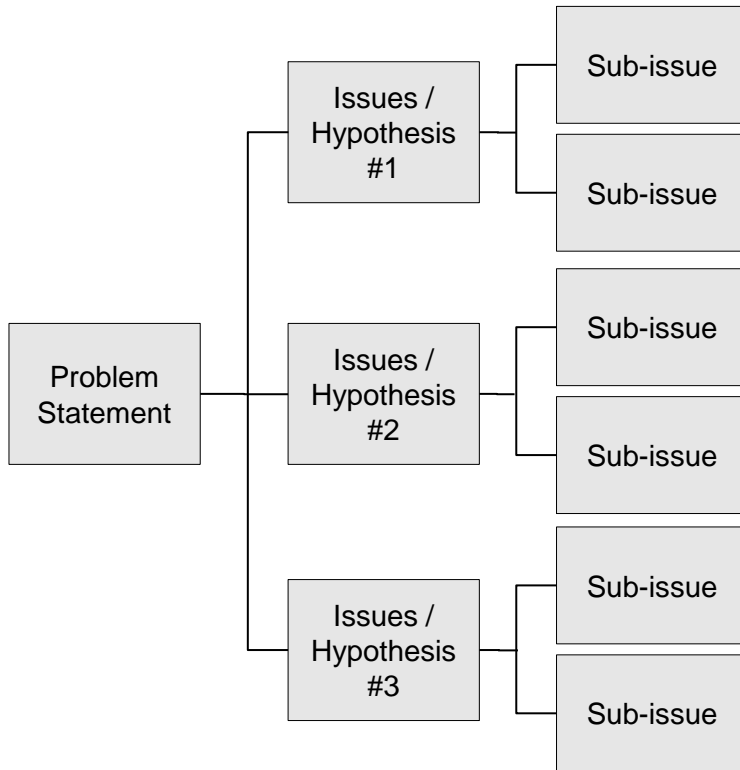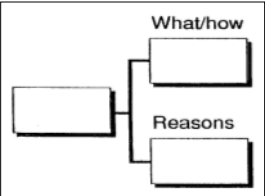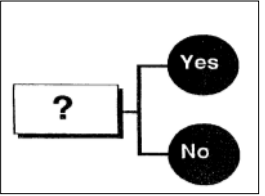
Logic/Issue Tree

Why use logic or issue trees?

1. To break a problem into component parts so that:
   - Problem solving work can be divided into intellectually manageable pieces
   - Priorities can be set between the parts
   - Responsibilities can be allocated to individuals

2. To ensure that the integrity of the problem solving is maintained
   - Solving the parts will really solve the problem
   - The parts are mutually exclusive and collectively exhaustive (ie. No overlaps, no gaps)

3. To build a common understanding within the team of the problem solving framework

4. To help focus use of organising frameworks and theories

Three types of logic/issue tree

Weekly cycle

❶ Define problem ❷ Build Issue Tree ❸ Prioritise & Write Ghostpack ❹ Develop Workplan ❺ Gather Data & Analyse Critically ❻ Synthesize & Iterate ❼ Build Commitment
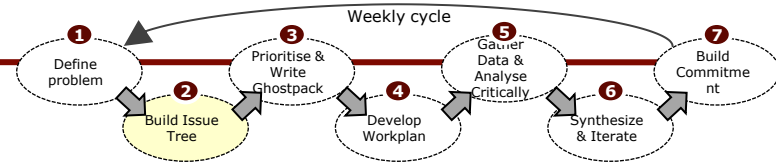
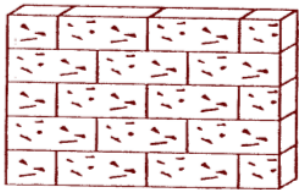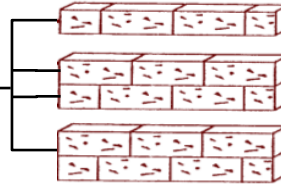| Type of Tree	Description	Elements in Splits	When to Use
Deductive	Starts with problem definition and divides it into components	Actions, assertions, questions, categories	• Early on, when you don't know much OR • When mathematical completeness is important (eg. ROIC Trees)
Hypothesis Driven	Postulates a solution hypothesis and develops a necessary and sufficient rationale to validate or disprove it	Reasons / Questions	• At any point in the process
Issue Map	Phrases key issues so that they can be answered yes or no, and sequence them in a logical order showing the dependent action	Questions	• Use issue maps to frame options, usually later in the process

There are many ways to disaggregate a problem

Weekly cycle

1 Define problem
2 Build Issue Tree
3 Prioritise & Write Ghostpack
4 Develop Workplan
5 Gather Data & Analyse Critically
6 Synthesize & Iterate
7 Build Commitment
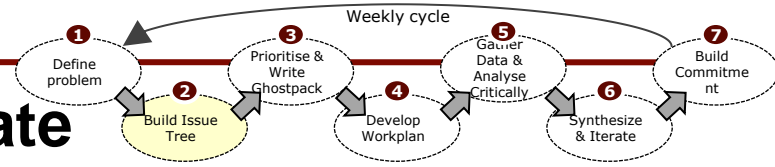
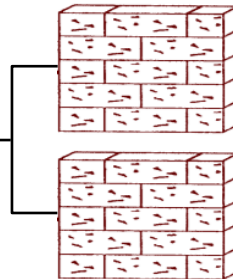Process Flow-Out

Prepare Land	Get Materials	Lay Bricks

Horizontal Characteristics

Vertical Characteristics

Criteria
- Suitable bricks
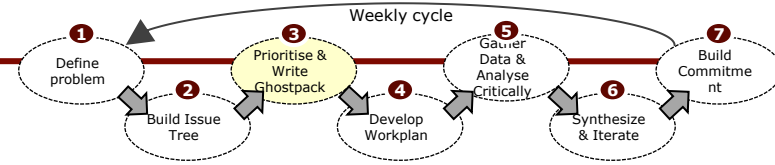- Properly mixed mortar
- Skilled labour
- Good weather

① Define problem
② Build Issue Tree
③ Prioritise & Write Ghostpack
④ Develop Workplan
⑤ Gather Data & Analyse Critically
⑥ Synthesize & Iterate
⑦ Build Commitment

Logic tree tips
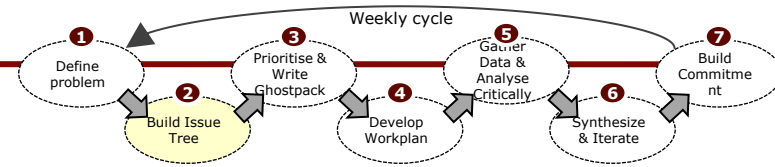
Principle	Why
• Use your whole team, not lone wolf approach	• Rough and tumble hypothesis sessions tap everyone's creativity, tend to get better answers and are fun
• If stuck, try building them backward (from the 'twigs') in addition to forward (from the 'trunk'')	• It is sometimes easier to think up sub-issues and analysis and then to group them, than to work linearly
• Try multiple trees and constantly update and revise	• Different trees provide new perspectives on the problem
• Use frameworks to guide your questions	• Leverages previous experience

Rules to follow	How to get our thinking going
Hypotheses are statements that: • identify a client organisation's weakness, gap or opportunity • we believe are likely to be true • are (sometimes) based on our knowledge of the client's industry • can be validated or refuted by analysis during the Phase 1 • if validated, are likely to represent a significant business case element • can be translated into project streams for Phase 2	**What is the issue?** • What is not working? • Where is the process broken? *… x is not optimal …* **What do you think is causing the problem?** • What are the key drivers of the issue? *… due to …* **What is the effect?** • Why do we care? • Where is the opportunity? *… resulting in …*

Create a ghost pack

Weekly cycle

1 Define problem
2 Build Issue Tree
3 Prioritise & Write Ghostpack
4 Develop Workplan
5 Gather Data & Analyse Critically
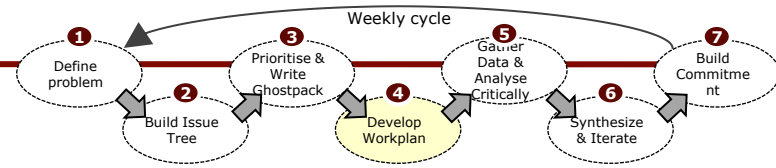6 Synthesize & Iterate
7 Build Commitment

Headline (top line on each powerpoint slide)	Content (of each slide)
The Payments Transformation program is delivering to its original plan	• Diagram showing progress of work including Hub I and vendor gap assessment (June?)
Results from the vendor gap assessment and initial architecture design suggests the cost to implement would exceed original estimate	• Gap assessment (June?) • TIBCO diagram (David?)
We intend to work harder to make the Fundtech/SOA solution fit the original budget…	• Analysis showing "how" at a conceptual level (David?) • Perhaps a portfolio approach it IT assets?
To date, the business justification for payments transformation is centered on "unraveling the spaghetti to deliver systems robustness"	• Use the old spaghetti diagram turning into the SOA construct in 2 stages (Ed?)
We haven't yet told you about the other half of the story…the ambition of delivering a truly transformational program for customers, shareholders and employees	• Schematic showing what we mean by more value to the three stakeholder groups (Ed coordinate input from Paul, James and Roger?)
Our vision is to be ahead of the game by 2017	• Framework to rate Westpac against other banks (now and in the future) – James/Ed?
…deliver a richer set of functional capabilities to enrich customer experience, increase value to them, thereby earn heir "stickiness"	• Current vs future • Overview of functional limits today • Picture of the end-state in terms of functionality (June?) • Value added services?
…increase our capability to serve the specific needs of different segments	• Current vs future • Modular product set specific to each segment, channel access, information? (Paul?)
…reduce total cost of ownership by reducing errors and adopting a portfolio approach to systems replacement	• Current vs future (Roger/Phil/Ed?)
…align the scale of IT against customer segment need	• Current vs future • David?
…locate functions in the right geographies (in terms of cost and capability	• Current vs future • Ed/James?
…compliance?	• Current vs future • June?
…systems robustness?	• Current vs future • David?
…straight through processing, tracking capability?	• David?
…SOA	• David?
Our strategy is to better utilize Westpac investment budget	• $50m used to used on technology • $43m on other • We need to be more specific here
Our roadmap to get there	• Align each work package with deliverables and outcomes to Westpac • Define this in terms of customer experience and shareholder value • Include Hub 1, DE remediation to give sense of progress

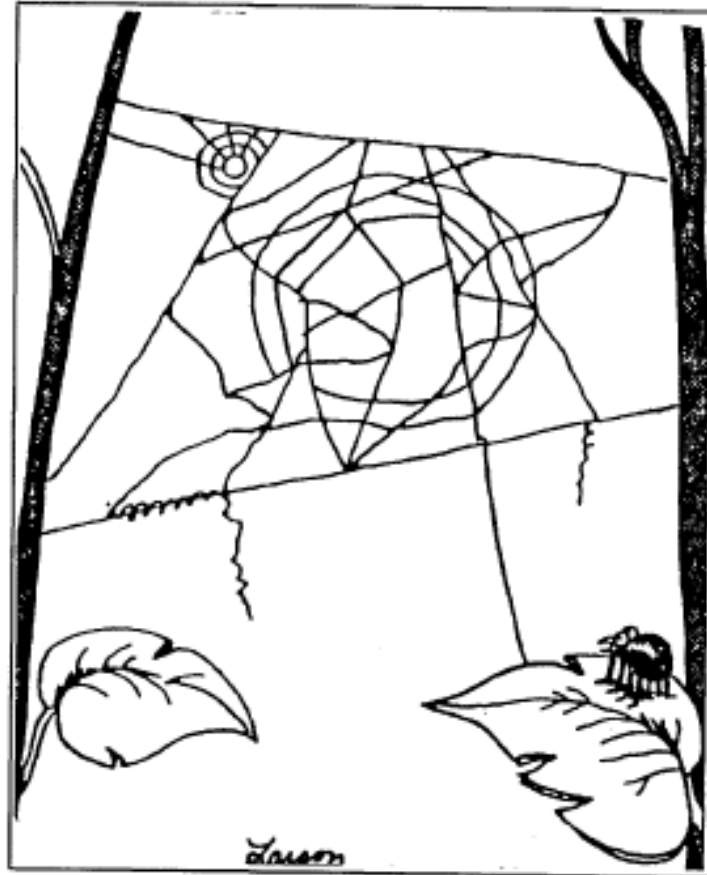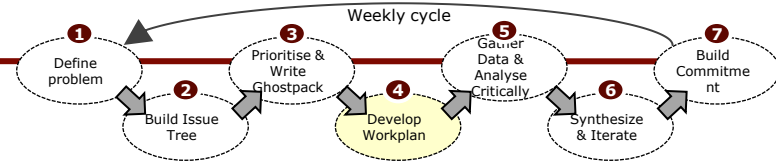## Why create ghost pack when you haven't even started looking at the data?

1. Enables you/your team to be output oriented
2. Forces you to think about the analyses you could need to conduct, and the data you need to gather (avoiding risk of trying to "boil-the-ocean" or be buried in too much data)
3. Brings greater alignment between the analyses you plan to conduct and the client's expectations
4. Enables you to assign slides to team members
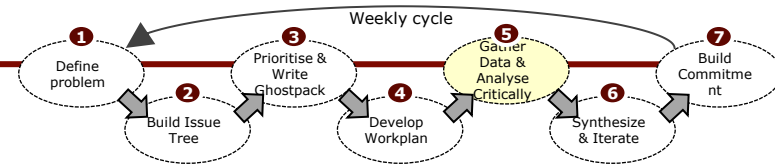5. Helps identifies gap in logic and storyline early

Build a specific workplan

Weekly cycle

1 Define problem
2 Build Issue Tree
3 Prioritise & Write Ghostpack
4 Develop Workplan
5 Gather Data & Analyse Critically
6 Synthesize & Iterate
7 Build Commitment

	Issue	Hypothesis	Analysis	Source	Responsibility/ Timing	End Product
Definition	• May start with end points from logic tree. An issue varies from an important question to an unresolved question. It is phrased so that it can be answered yes or no and on which a specific action depends	• The hypothesis is a statement of the likely resolution of the issue. It includes the reason for answering yes or no.	• Which 'models" will be explored in order to prove or disprove the hypothesis, and hence resolve the issue	• The source identifies the likely location or means of obtaining data to undertake analysis.	• Responsibility identifies the person who will obtain the data and undertake the analysis.	• The end product is a statement of the output from the analysis.
Action	• Make sure each issue is stated in detail • Define sub-issues where necessary	• List all hypotheses use all ideas. • Discuss with team members, refine hypothesis, readjust priorities for analysis	• Identify decision making. • Determine extent of analysis required.	• Identify readily available data. • Decide on methodology.	• Decide who will help collect the data and do analysis. • Decide on time frame, with milestones.	• Draw ghost packs. • Develop story line.

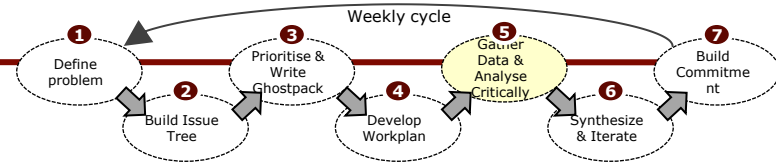# A little disciplined, early workplanning can go a long way in problem solving

Weekly cycle

1 Define problem
2 Build Issue Tree
3 Prioritise & Write Ghostpack
4 Develop Workplan
5 Gather Data & Analyse Critically
6 Synthesize & Iterate
7 Build Commitment

'Whoa! . . . that can't be right'

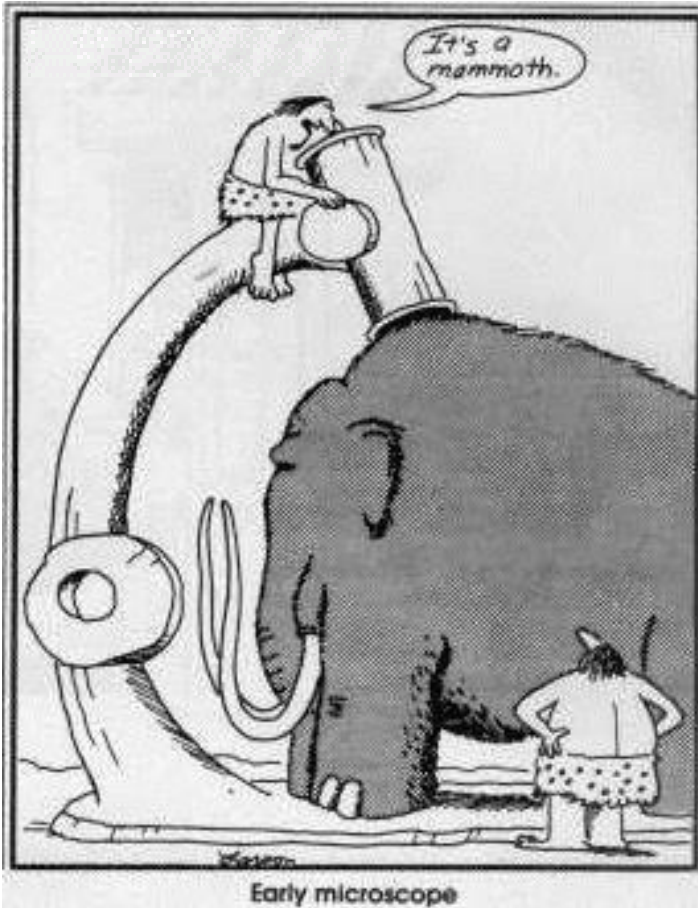# Gather data and analyse critically

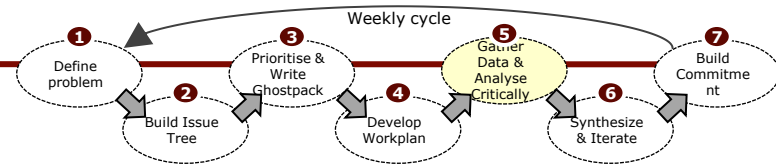| Principles	Comment
• Be hypothesis-driven, and end-products oriented	• Don't just "run the numbers" – ask "what question am I trying to answer?"
• "Porpoise" frequently between hypothesis and data	• Don't chase your tail
• Keep the analyses as simple as you can	• Be suspicious of huge linear programs and their ilk
• Do order of magnitude estimates before you start detailed analyses	• Keep your eye on the forest
• Use 80/20 and back-of-envelope thinking	• Beware of "polishing dirt"
• Use experts as data sources	• Often give clearer direction than "library data"
• Be flexible in the face of new data	• Remember your hypothesis is there to disprove
• Share good ideas with the team	• (and test your thinking)
• Anticipate obstacles	• Keep one eye out in front of you
• Don't be afraid to be creative	• Look for breakthrough thinking

ASHESI

Weekly cycle

① Define problem
② Build Issue Tree
③ Prioritise & Write Ghostpack
④ Develop Workplan
⑤ Gather Data & Analyse Critically
⑥ Synthesize & Iterate
⑦ Build Commitment

Where possible, choose simple approaches…

…and avoid complicated, indirect, or inferential methods

Early microscope

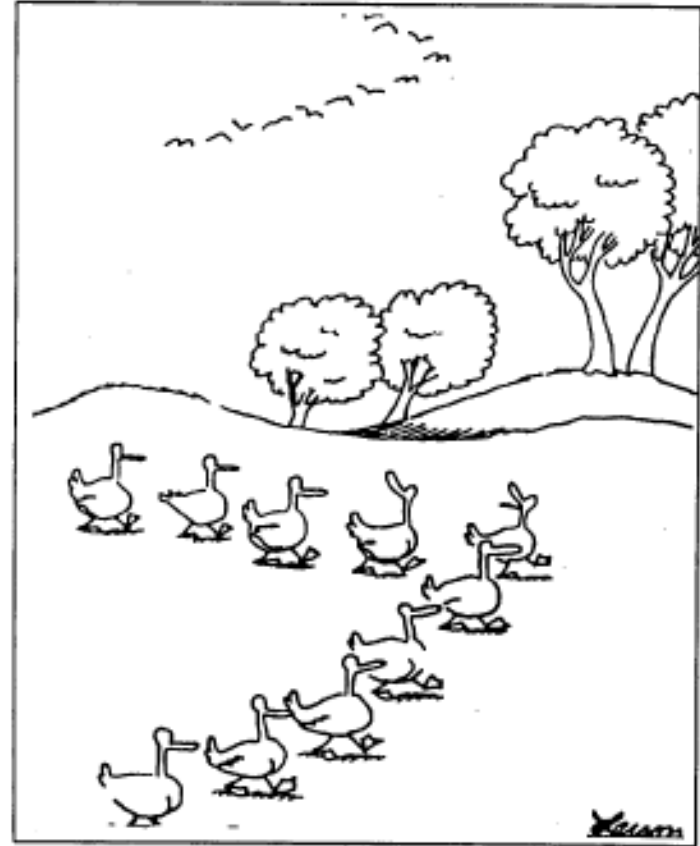"I say fifty, maybe a hundred horses . . . What you say, Red Eagle?"

Weekly cycle

① Define problem
② Build Issue Tree
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⑤ Gather Data & Analyse Critically
⑥ Synthesize & Iterate
⑦ Build Commitment

Aim for "sufficient precision" – often perfection

Be sure to fully leverage the experience of others …

'Well, shoot . . . I can never tell whether these things are done or not'

'Say . . . look what they're doing'

Weekly cycle

① Define problem
② Build Issue Tree
③ Prioritise & Write Ghostpack
④ Develop Workplan
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⑥ Synthesize & Iterate
⑦ Build Commitment
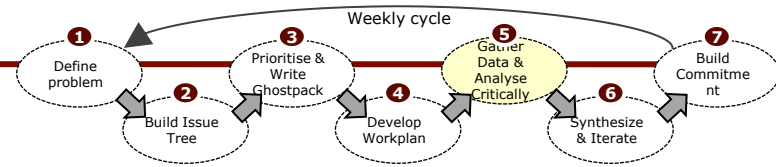
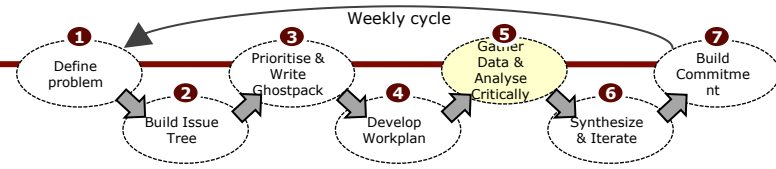**… and always look for experts to help guide your analyses**

Check to be sure conclusions match up with all the facts…
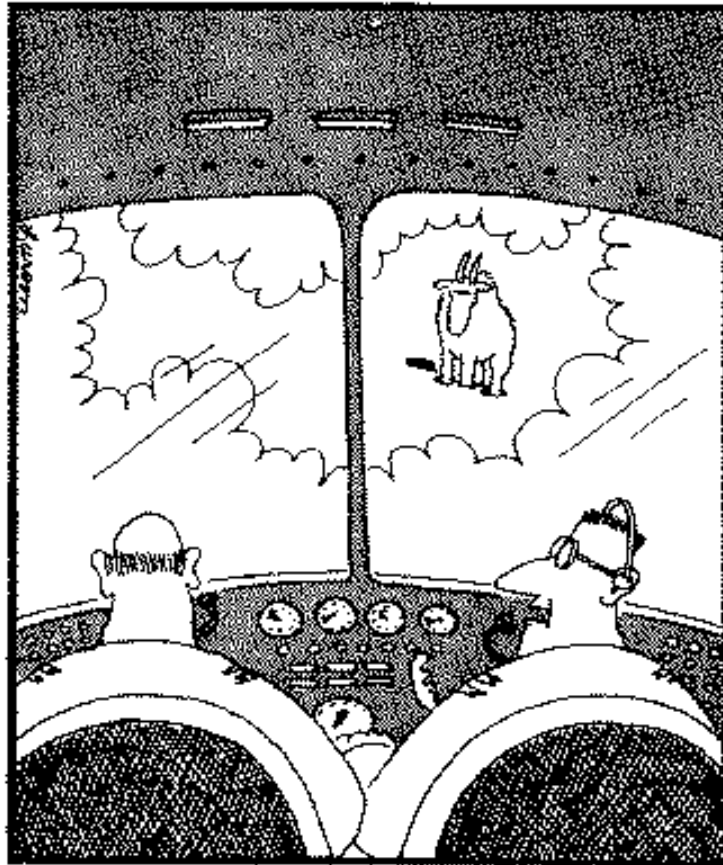

'Freeze! . . . okay, now . . . who's the brains of this outfit?'

'And the murderer is . . . the butler! Yes, the butler . . . who I'm convinced, first gored the Colonel to death before trampling him to smithereens'

Weekly cycle

① Define problem
② Build Issue Tree
③ Prioritise & Write Ghostpack
④ Develop Workplan
⑤ Gather Data & Analyse Critically
⑥ Synthesize & Iterate
⑦ Build Commitment

ASHESI

… and be prepared to revise your hypothesis as evidence accumulates

Always look for creative approaches…

"Say . . . what's a mountain goat doing way up here in a cloud bank?"

Synthesize findings and build argument and recommendation

Weekly cycle

❶ Define problem
❷ Build Issue Tree
❸ Prioritise & Write Ghostpack
❹ Develop Workplan
❺ Gather Data & Analyse Critically
❻ Synthesize & Iterate
❼ Build Commitment
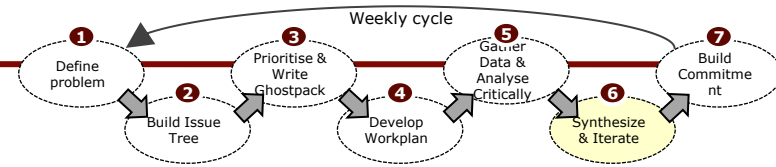
So what…

- Throughout your analysis, you should be asking yourself "so what" three times:

  1. **So what** does this mean?
  2. **So what** does this mean for the client?
  3. **So what** does the client do about this?

Answering these questions will lead you to useful and practical recommendations.

Use the pyramid logic structure to present recommendations and supporting arguments. The model is:

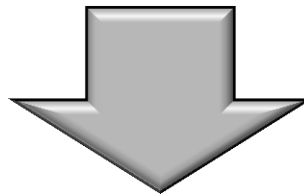| Situation	Situation
Complication	Opportunity
Question	Recommendation
Recommendation	
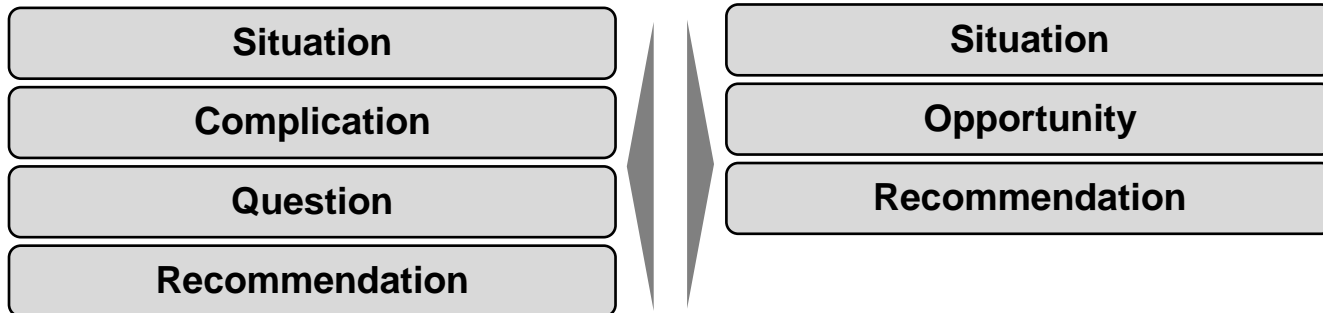
Forming recommendations
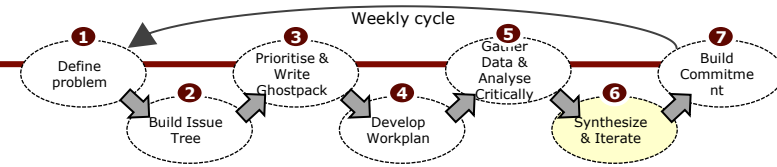
- Ensure recommendations are thought through in terms of implications. Keep asking yourself, "*If I was the client what would I do about this?*" Are the findings and recommendations useful? Discuss your initial findings and the implications informally with the client – your aim is to have no surprises when the answer is finally presented. Your insights are likely to stimulate client thinking. In turn clients may then broaden the scope of the project to include additional sources of information, additional analysis, or consideration of a broader range of options.

- Push beyond the first (and sometimes obvious) good answer. What are we missing? Where can we add greater value?

- Ensure that all the work being done by all the team members is brought together as a whole. You will probably be confident in your own work, but you also need to have confidence in the quality of work that has been done by team members.

- Before putting the final recommendations in front of the client you should test (at least a sample of the work done by others) for quality:
  - Are the conclusions based on logical analysis and accurate data?
  - What process was used to interpret the data?
  - What were the sources of the important pieces of data? Check for confirmation from a secondary source.
  - Have we used someone else's conclusions or opinions as facts?

Synthesize findings and build argument
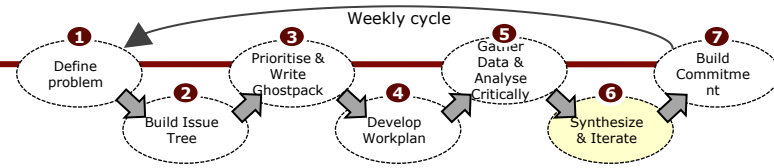
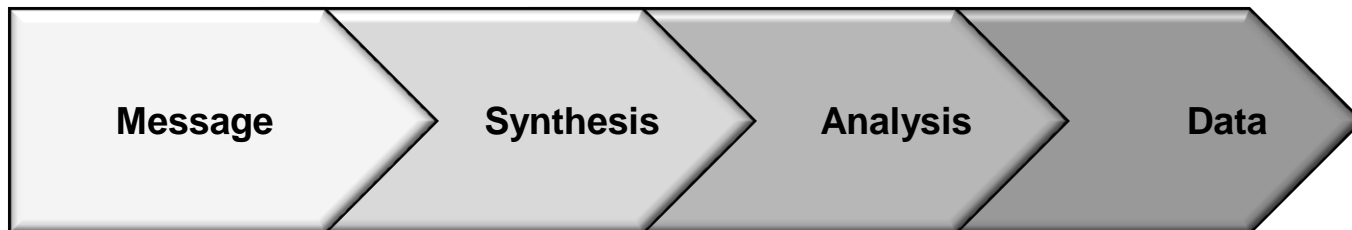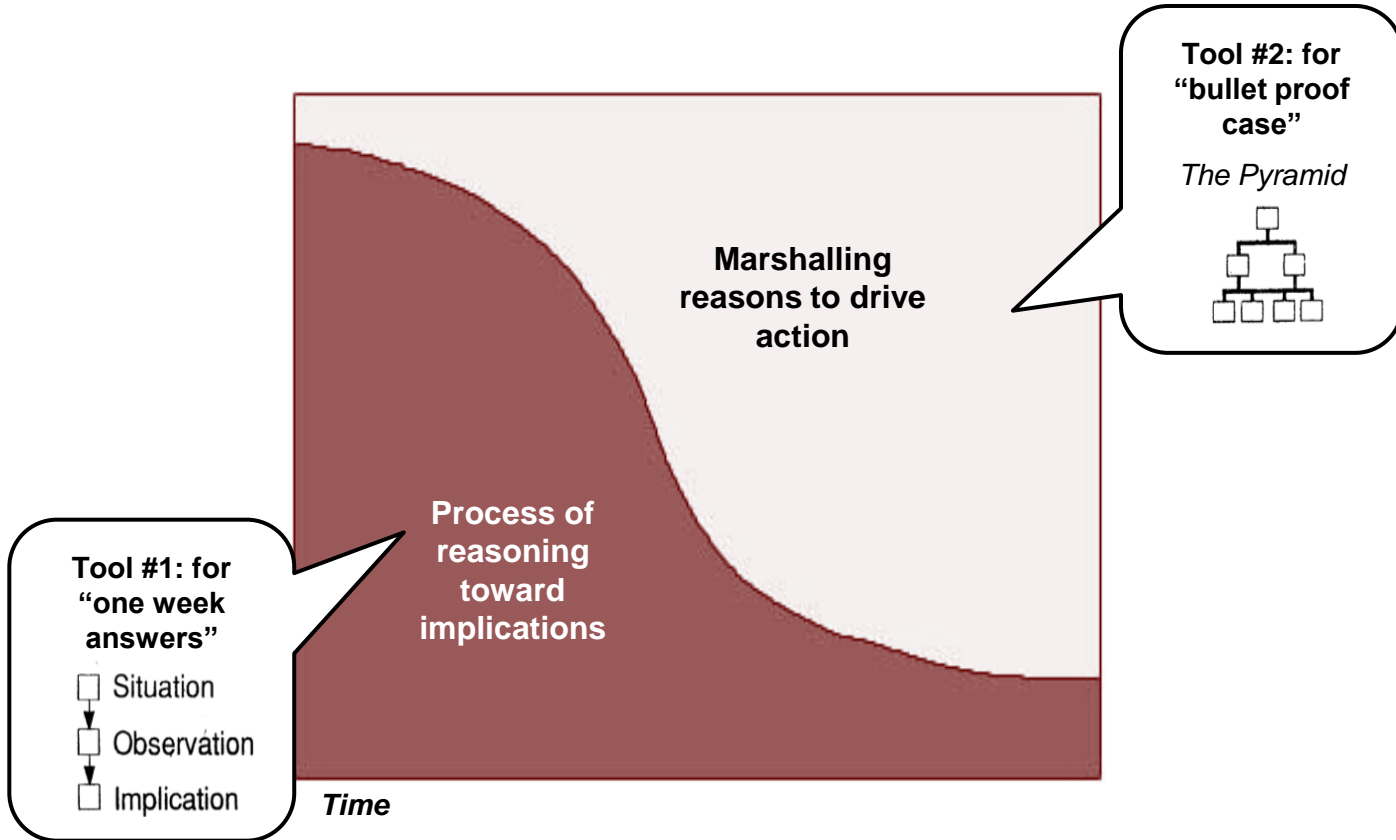## Work in Two Modes

Solve the problem

| Data | Analysis | Synthesis | Message |

Communicate the answer

| Message | Synthesis | Analysis | Data |

Our task is not to do analysis, but to provide compelling, well-supported recommendations

There are two main tools to synthesize and build your case

Weekly cycle

① Define problem
② Build Issue Tree
③ Prioritise & Write Ghostpack
④ Develop Workplan
⑤ Gather Data & Analyse Critically
⑥ Synthesize & Iterate
⑦ Build Commitment

Tool #2: for "bullet proof case"

The Pyramid

Marshalling reasons to drive action

Process of reasoning toward implications

Tool #1: for "one week answers"

☐ Situation
↓
☐ Observation
↓
☐ Implication

Time
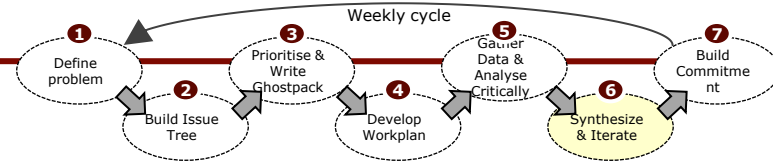
Tool #1: Week one answers drive the project

Define problem ① → Build Issue Tree ② → Prioritise & Write Ghostpack ③ → Develop Workplan ④ → Gather Data & Analyse Critically ⑤ → Synthesize & Iterate ⑥ → Build Commitment ⑦
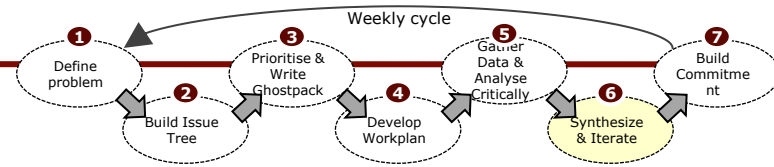
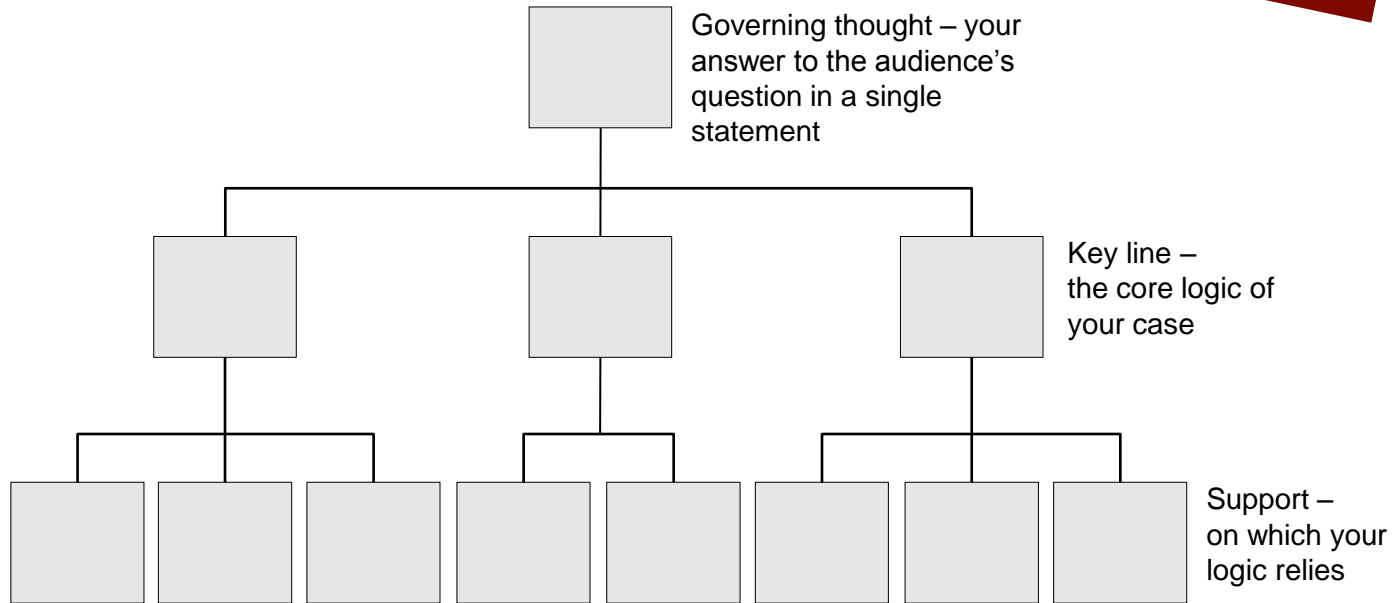|	**This**	**Not This**
Situation	The problem or opportunity at the core of the decision-maker's dilemma	Company history or masses of facts unrelated to core opportunity / problem
Observation	The critical insight or leverage point is that is emerging The "logical highground"	Vague description of complication (re-hash of problem statement) or another bunch of facts masquerading as insight
Implication	What set of actions is implied What options do we see at this point	"The" one and only answer Unsupported prejudices/ preconceived ideas not related to steps 1 and 2

Tool #2: Pyramid Structure to build bullet-proof case

Weekly cycle

① Define problem
② Build Issue Tree
③ Prioritise & Write Ghostpack
④ Develop Workplan
⑤ Gather Data & Analyse Critically
⑥ Synthesize & Iterate
⑦ Build Commitment
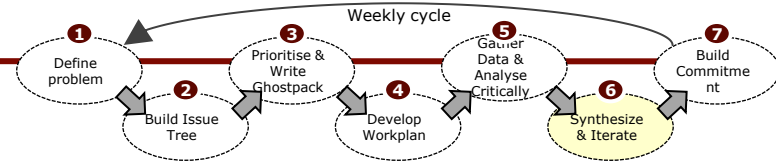
Use this when you have enough analysis and fact to begin to build a well supported case

Governing thought – your answer to the audience's question in a single statement

Key line – the core logic of your case

Support – on which your logic relies

Influence the client

Weekly cycle

1 Define problem
2 Build Issue Tree
3 Prioritise & Write Ghostpack
4 Develop Workplan
5 Gather Data & Analyse Critically
6 Synthesize & Iterate
7 Build Commitment
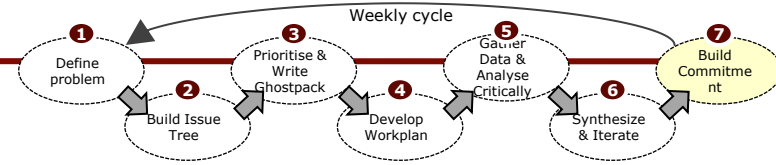
- Powerful communication of findings and recommendations, along with supporting arguments is vital to the success of a project. This communication is usually a powerpoint pack – started at the workplanning or data gathering stage

- All packs are headed with a compelling story line and have a one to two page executive summary up front which explains "what the pack says"

- Other charts that might be useful to present supporting evidence are set out on subsequent slides

- Allow lots of lead time to prepare packs, enlist the help of management services staff who may have access to previous packs and templates

- Socialise key messages with broad range of stakeholders and start gaining their commitment towards the recommendations/changes

"The picture's pretty bleak, gentlemen. ... The world's climates are changing, the mammals are taking over, and we all have a brain about the size of a walnut."

Why does this simple, common sense process go wrong?

"Oh, you wanted me to get data!"

- Yes, this does happen! Consultants come back with lots of war stories but NO DATA
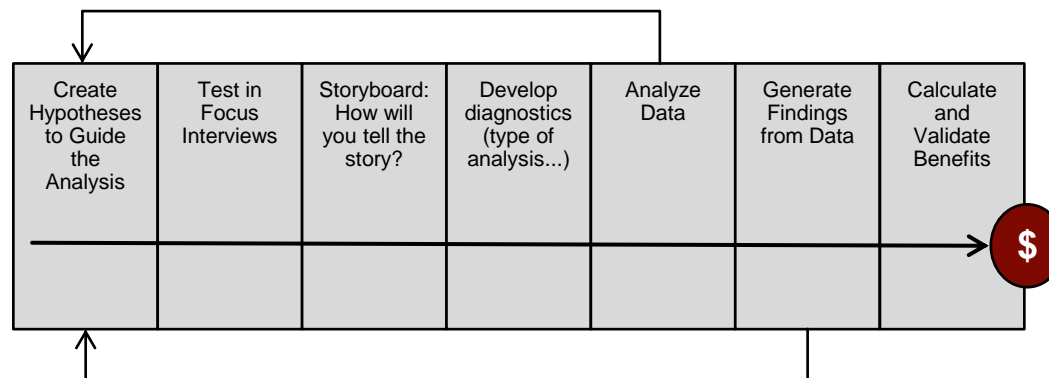
"There is no data!"

- That sometimes means that the consultant does not know what data looks like
- More often it means the consultant is too complacent to roll his / her sleeves up and plough through reams and reams of paper to get at the data
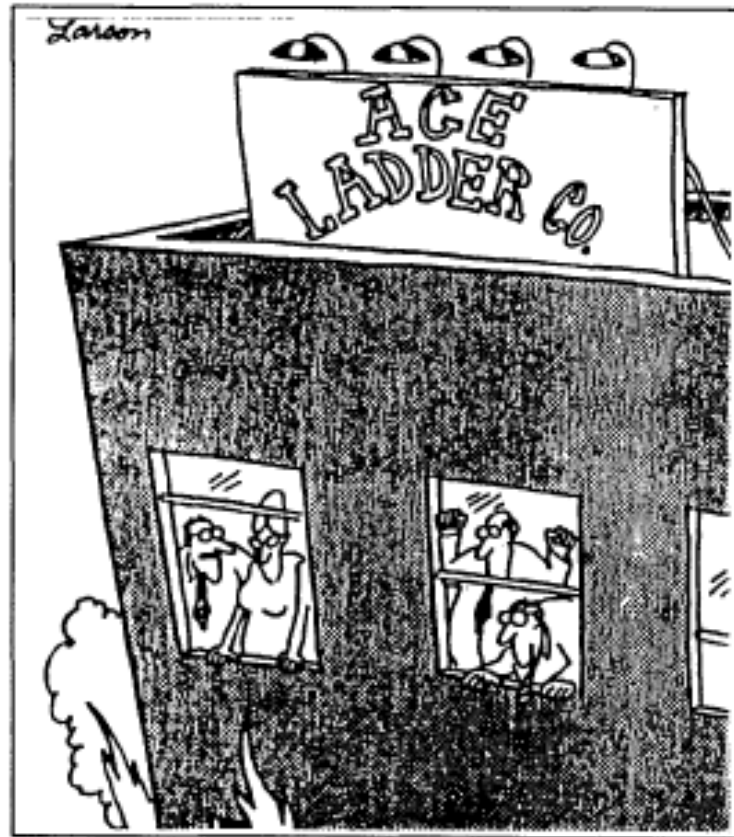
Stating the obvious

- "Increasing margins will improve profits"
- We are looking for the 'So-whats' - keep on digging until you find it

Validate, validate, validate - "Oh, does that mean I should have validated my analysis?"

- Consultants are validation averse hypothesis-driven doesn't mean fact-light

Create Hypotheses to Guide the Analysis	Test in Focus Interviews	Storyboard: How will you tell the story?	Develop diagnostics (type of analysis...)	Analyze Data	Generate Findings from Data	Calculate and Validate Benefits

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Good problem solving is very powerful!

"Wait a minute! Say that again, Doris! . . . You know, the part about, 'if only we had some means of climbing down'."