Beyond the Knowledge Base: Turning Data into Wisdom

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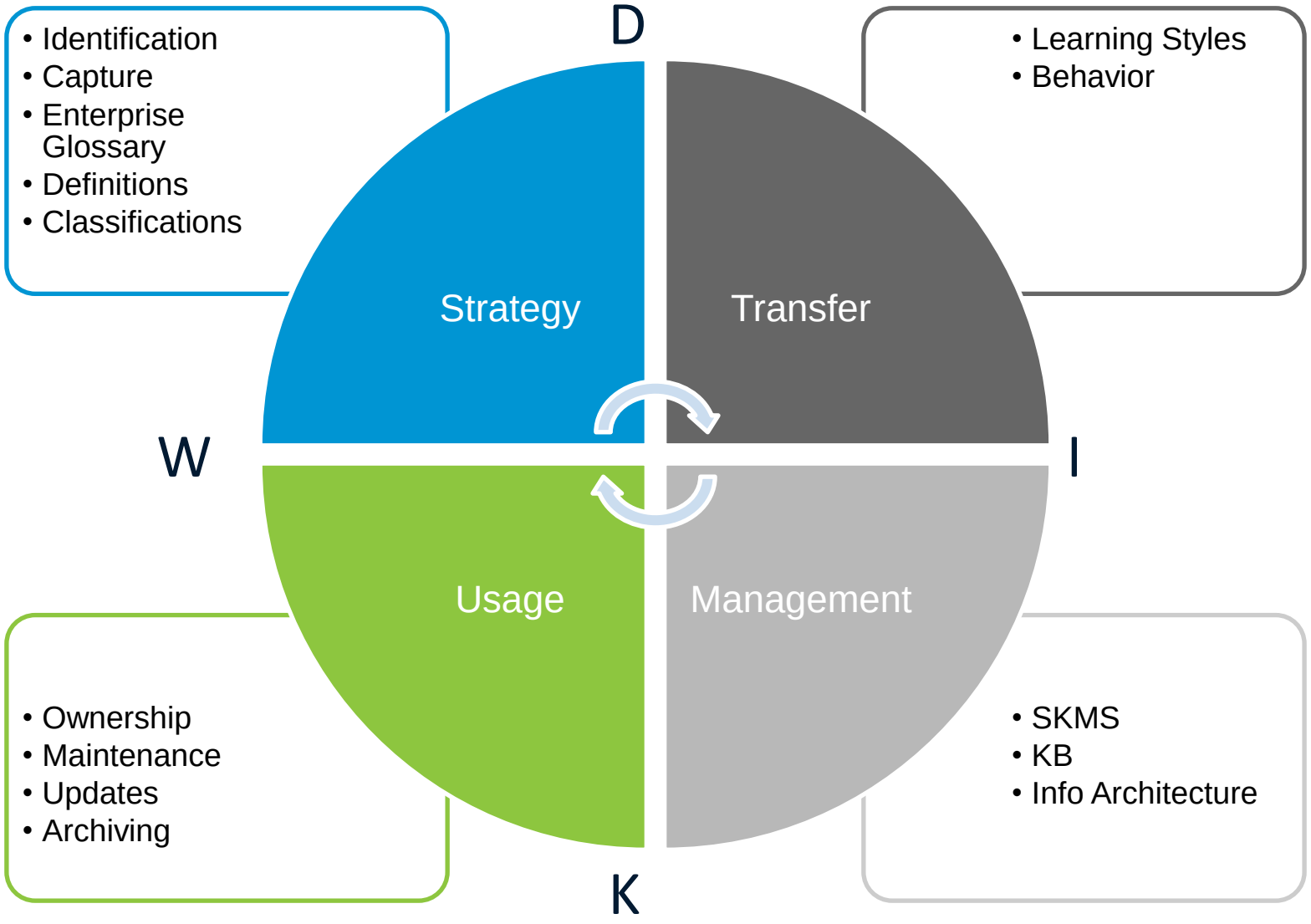
Todays' Points

- Knowledge Management (KM) and Data-Information-Knowledge-Wisdom (DIKW)
- Learning Loops
- Systems Thinking
- Effective Questioning
- Bringing it Together

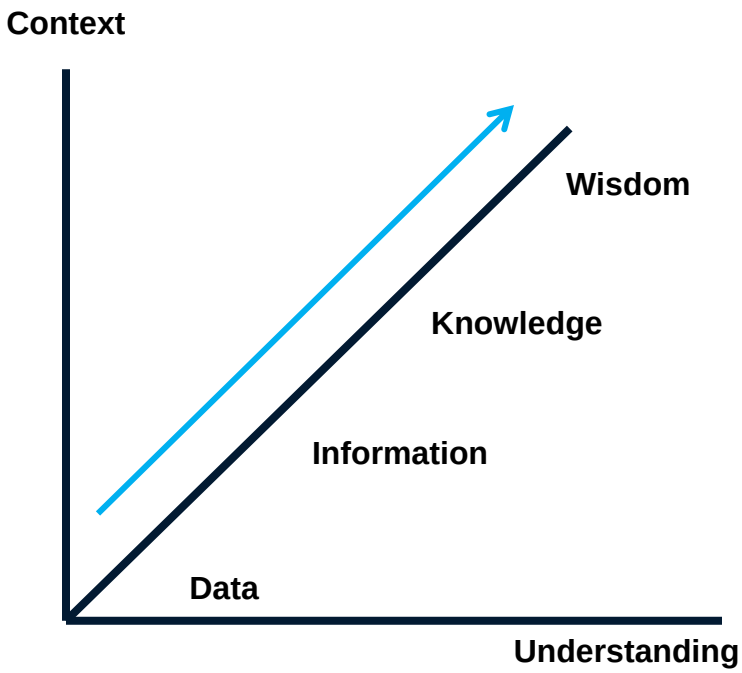
Knowledge Management and DIKW

KM is More than the KB



DIKW

- Data
  - A set of discrete facts
- Information
  - Contextualized and organized data
- Knowledge
  - Critical thinking, analysis, experience, insights, value and judgments applied to information for use in decision making
- Wisdom
  - ”Double Loop Learning” applied to knowledge



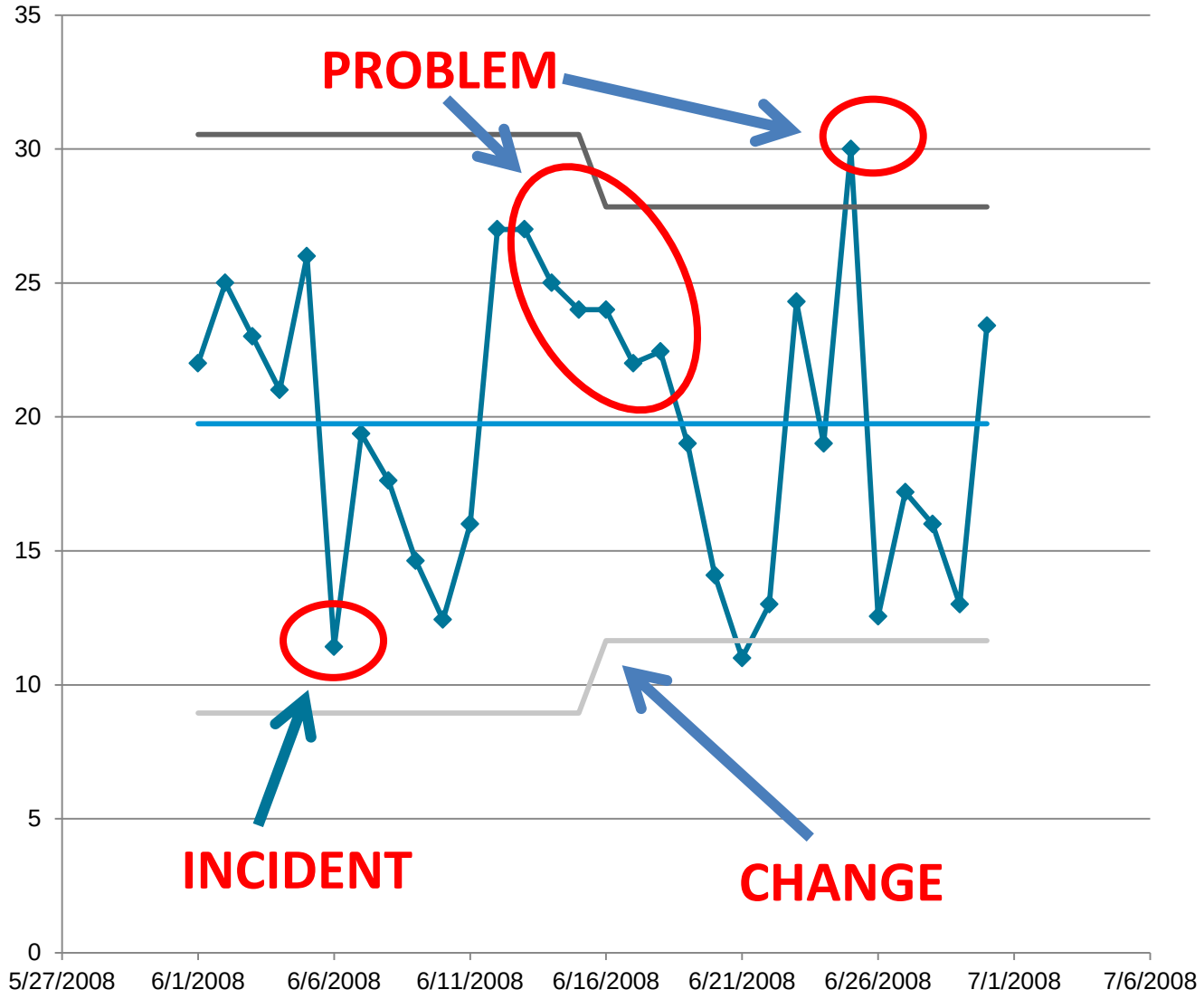
Data and Information

Week Ending	Weekly Opened	Weekly Closed	Production Calls	Work Days	Average Daily Opened	Average Daily Closed	Average Daily Production Calls
3-Apr	51	15	27	3	17.00	5.00	9.00
10-Apr	58	29	19	6	9.67	4.83	3.17
17-Apr	70	66	19	5	14.00	13.20	3.80
24-Apr	49	32	11	5	9.80	6.40	2.20
1-May	59	49	13	6	9.83	8.17	2.17
8-May	93	59	31	6	15.50	9.83	5.17
15-May	78	76	31	6	13.00	12.67	5.17
22-May	80	84	19	6	13.33	14.00	3.17
29-May	47	45	6	4	11.75	11.25	1.50
5-Jun	58	61	8	6	9.67	10.17	1.33
12-Jun	68	59	7	6	11.33	9.83	1.17
19-Jun	68	94	8	5	13.60	18.80	1.60
26-Jun	71	125	11	5	14.20	25.00	2.20
3-Jul	12	13	1	4	3.00	3.25	0.25
10-Jul	42	48	2	5	8.40	9.60	0.40
17-Jul	69	64	3	5	13.80	12.80	0.60
24-Jul	59	50	3	6	9.83	8.33	0.50
31-Jul	51	54	10	5	10.20	10.80	2.00
7-Aug	64	71	14	5	12.80	14.20	2.80
14-Aug	59	75	18	6	9.83	12.50	3.00
21-Aug	69	74	11	5	13.80	14.80	2.20

Data

Info

Knowledge



"How" did these incidents occur?

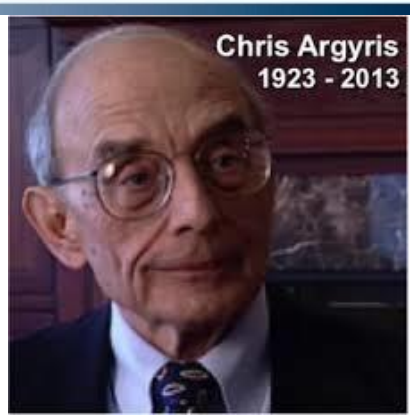
"Why" did these incidents occur?

Wisdom

- The key to Wisdom (and Knowledge Management) is “learning” and making decisions and taking actions based on what we learned
- Avoid “assumptions” or “opinions” without factual validation and verification
  - “Is that fact or opinion?”

Learning Loops

Chris Argyris

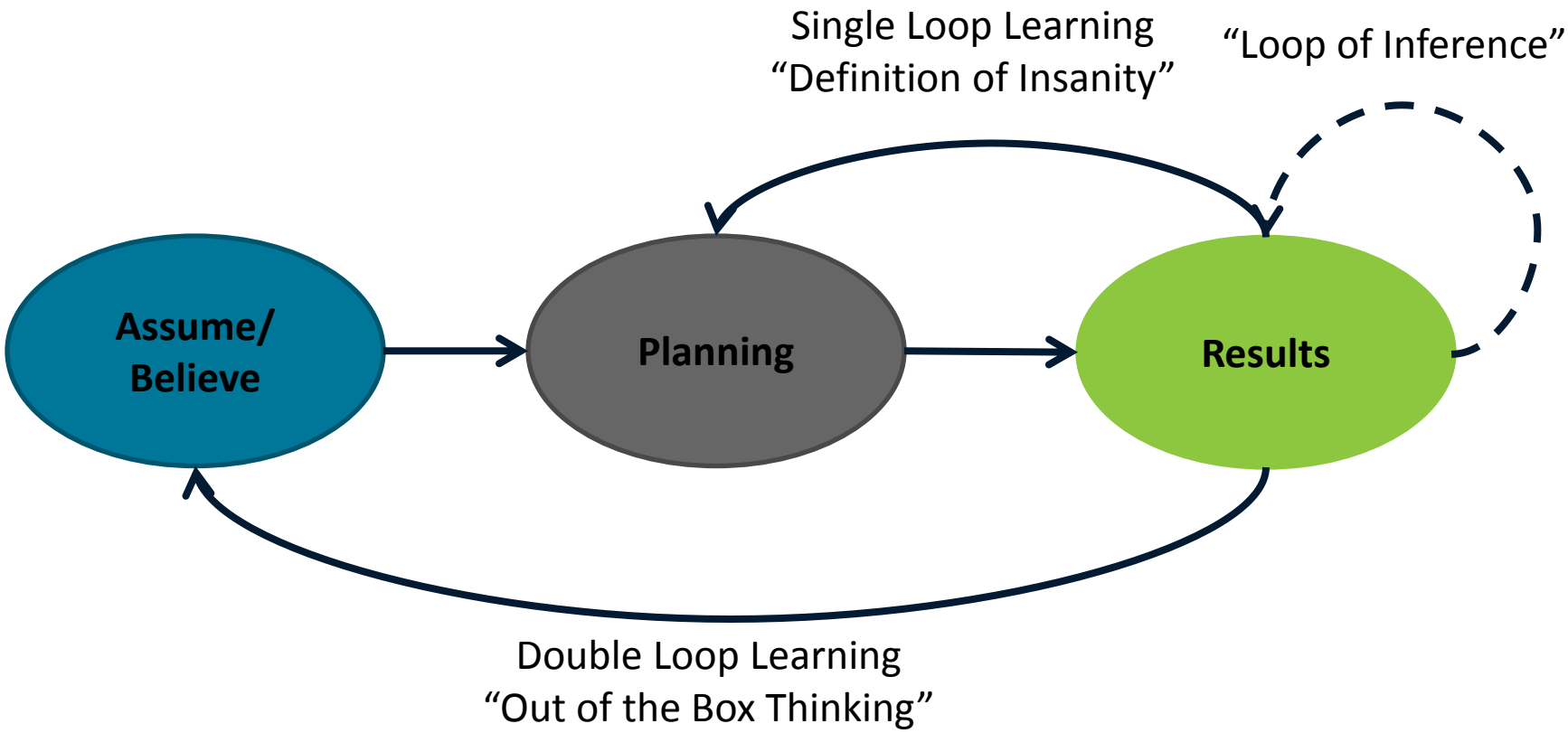


- Professor Emeritus-Harvard Business
- Co-Founding Father of concepts of Organizational Development and Learning Organizations
- Connection to Service Management
  - Theory of Action
    - The study of how human beings design their actions in difficult situations.
  - Double Loop Learning
    - The modification or rejection of a goal in the light of experience. DLL recognizes that the way a problem is defined and solved can be a source of the problem.

Theory of Action

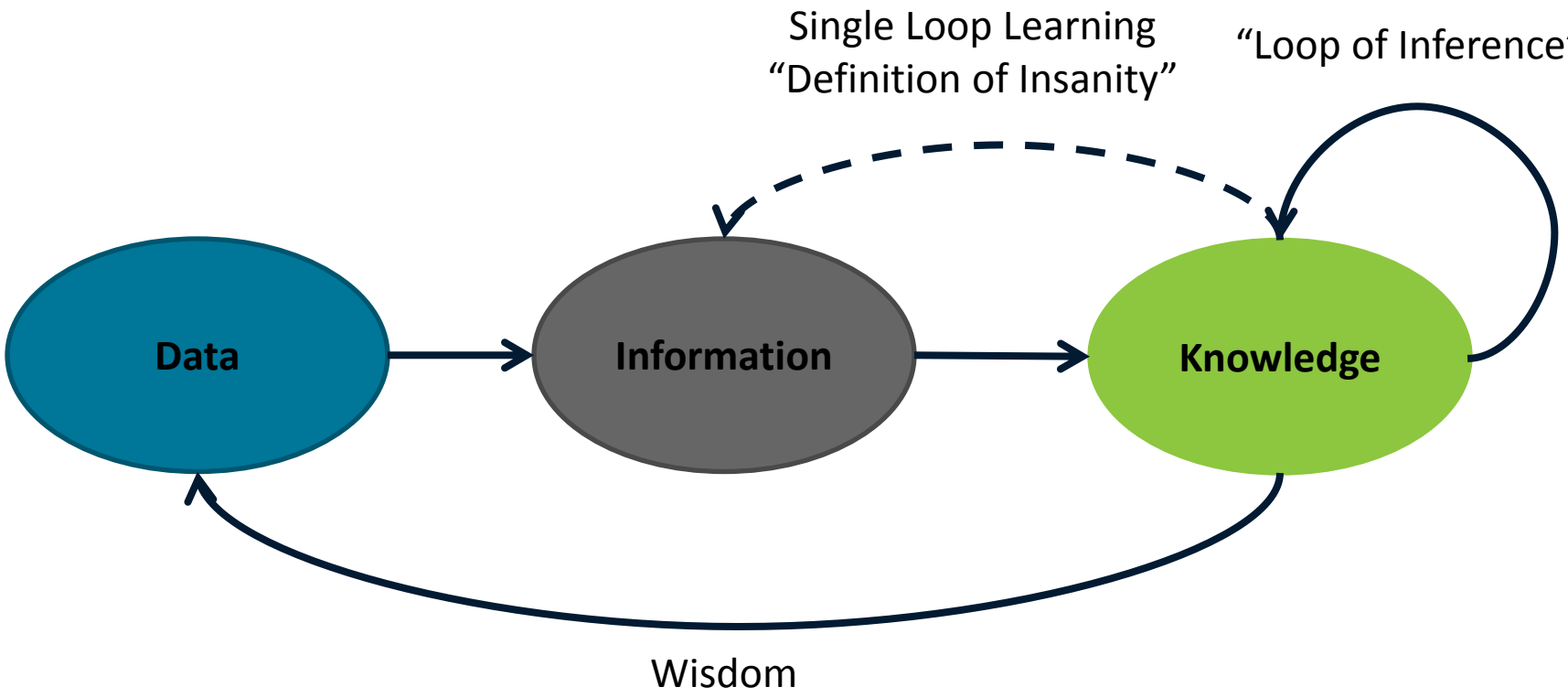
- Espoused Theory *(What we tell others)*
  - The world view and values people believe their behavior is based on.
    - "I am a law abiding citizen"
- Theory-in-use *(What we actually do)*
  - The world view and values implied by their behavior, or the maps they use to take action.
    - "Police will not ticket you if you are just a little above the speed limit"

Double Loop Learning



We infer that our assumptions, conclusions, beliefs, experience hold true for all time, when in reality they do not

ITSM Loop Learning



We infer that our assumptions, conclusions, beliefs, experience hold true for all time, when in reality they do not

NASA Findings

- Management decisions made during Columbia's final flight reflect missed opportunities, blocked or ineffective communications channels, flawed analysis, and ineffective leadership.
- …In fact, their management techniques unknowingly imposed barriers that kept at bay both engineering concerns and dissenting views, and ultimately helped create "blind spots" that prevented them from seeing the danger the foam strike posed.

-NASA Report of Columbia Accident Investigation

NASA Loop of Inference

"The organizational causes of this accident are rooted in the Space Shuttle Program's history and culture, including the original compromises that were required to gain approval for the Shuttle Program, subsequent years of resource constraints, fluctuating priorities, schedule pressures, mischaracterizations of the Shuttle as operational rather than developmental, and lack of an agreed national vision. Cultural traits and organizational practices detrimental to safety and reliability were allowed to develop, including: *reliance on past success as a substitute for sound engineering practices (such as testing to understand why systems were not performing in accordance with requirements/specifications)*; *organizational barriers* which prevented effective communication of critical safety information and stifled professional differences of opinion; *lack of integrated management* across program elements; and the evolution of an *informal chain of command and decision-making processes* that operated outside the organization's rules."

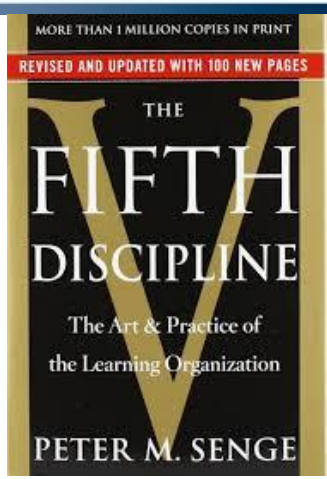
-NASA Report of Columbia Accident Investigation

Service Management Application and Usage

- Bring Theory in Practice in line with Espoused Theory
- Go back to your pool of data (even if just to validate accuracy and relevance)
- Is that “Fact”[data] or “Opinion”[assumption]?
- Make decisions on data, information and knowledge, not long standing assumptions

Systems Thinking

Peter Senge



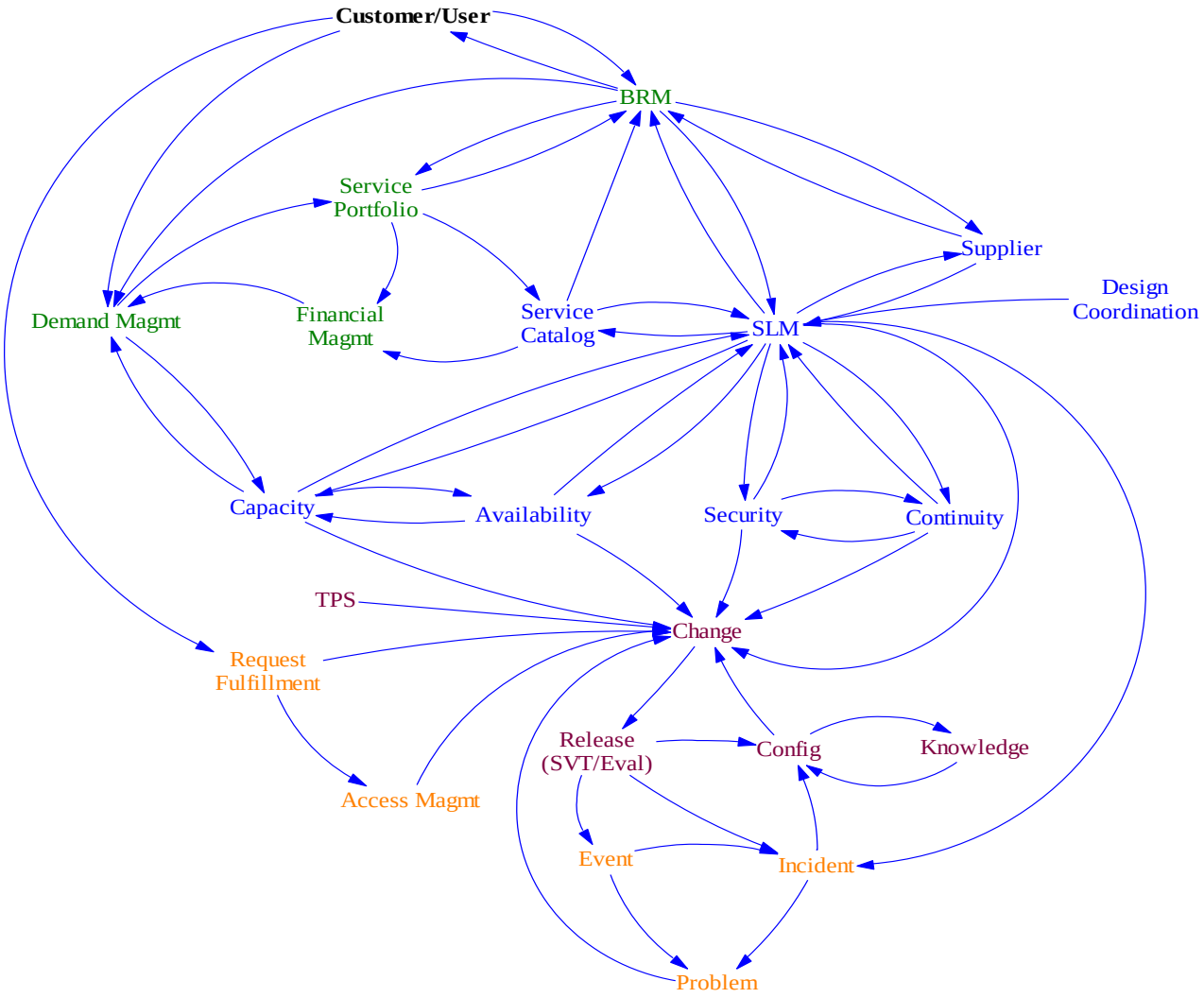
- MIT-Sloan School of Management
- Systems Thinking
  - An approach to problem solving, where “problems” are parts of overall “systems”, rather than relating to specific parts, elements, processes, peoples, technologies, or DIKW [ala W. Edwards Deming]
- Connection to Service Management
  - Seeing all stages, processes and DIKW as interconnected parts of a “system”
  - An operational issue may be caused by a faulty design

“Systems“ Defined

- A system is composed of parts
- All the parts of a system must be related (directly or indirectly), else there are really two or more distinct systems
- A system is encapsulated (has a boundary)
- The boundary of a system is a decision made by an observer, or a group of observers
- A system can be nested inside another system
- A system can overlap with another system
- A system is bounded in time, but may be intermittently operational
- A system is bounded in space, though the parts are not necessarily co-located
- A system receives input from, and sends output into, the wider environment
- A system consists of processes that transform inputs into outputs
- A system is autonomous in fulfilling its purpose (a car is not a system. A car with a driver is a system)

After Peter Senge-Fifth Discipline et al

ITSM as a “System”



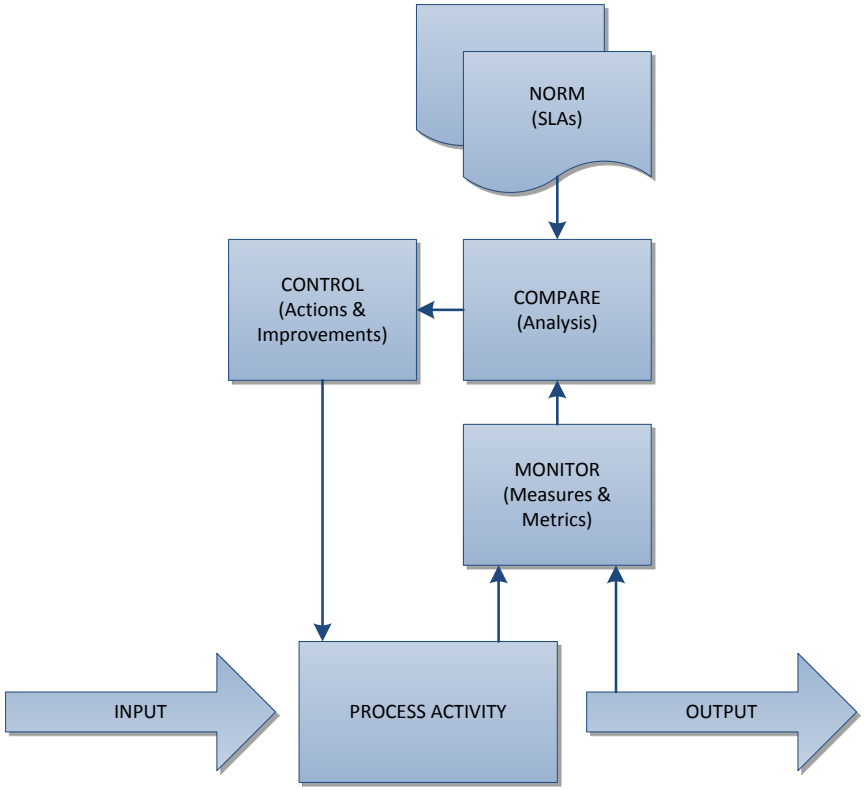
Systems Thinking

- Personal mastery (DATA)
  - “A discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively."
- Mental models (INFORMATION)
  - “Deeply ingrained assumptions, generalizations, or even pictures of images that influence how we understand the world and how we take action."
- Building shared vision (KNOWLEDGE)
  - “A practice of unearthing shared pictures of the future that foster genuine commitment and enrollment rather than compliance."
- Team learning (WISDOM)
  - “Starts with dialogue, the capacity of members of a team to suspend assumptions and enter into genuine thinking together."
- Systems Thinking (KM AND SERVICE MANAGEMENT)
  - “The Fifth Discipline that integrates the other four."

Peter Senge-Fifth Discipline

Service Management Application and Usage

MONITOR-CONTROL LOOPS



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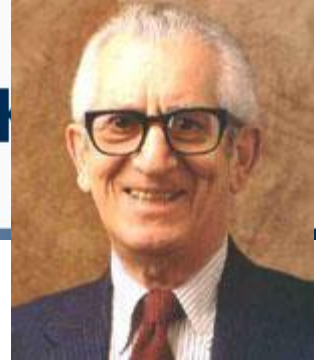
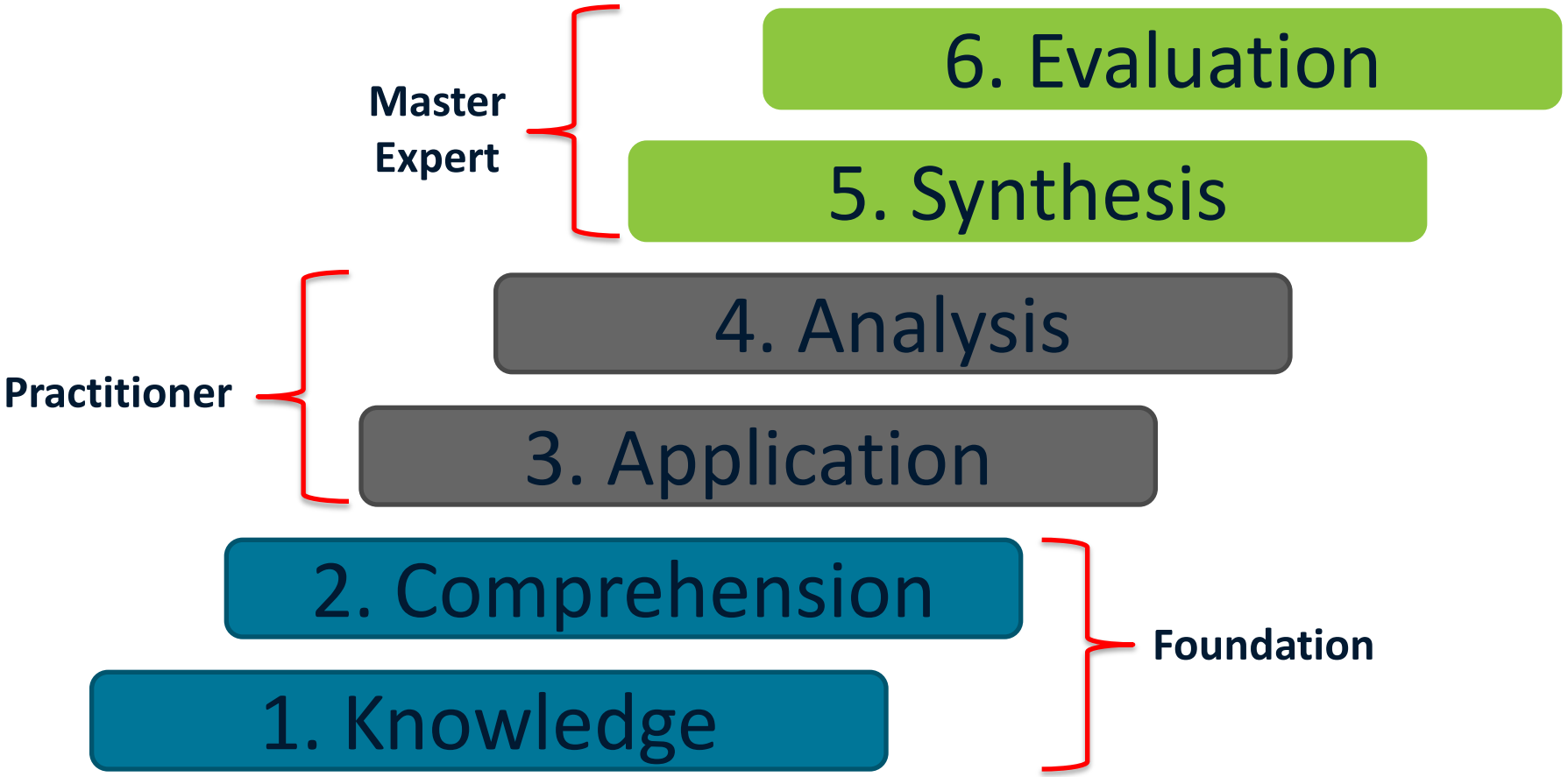
Effective Questioning

Benjamin Bloom



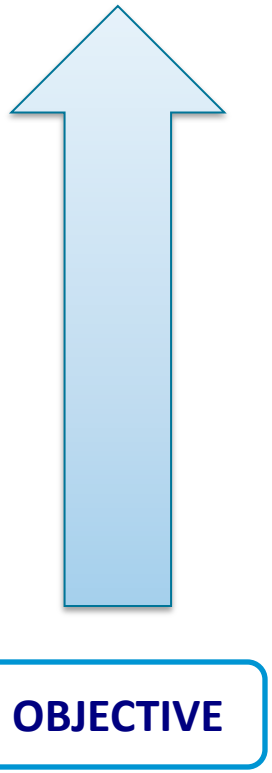
- Educational psychologist
- Developed theories around mastery-learning
- Knowledge=mastery of cognitive, affective, psychomotor domains
- Bloom's Taxonomy
  - Step model based on increasing levels of critical thought
  - Knowledge and mastery builds through the levels
  - Can be applied in many situations to gain data, information, knowledge and wisdom

Bloom's Taxonomy



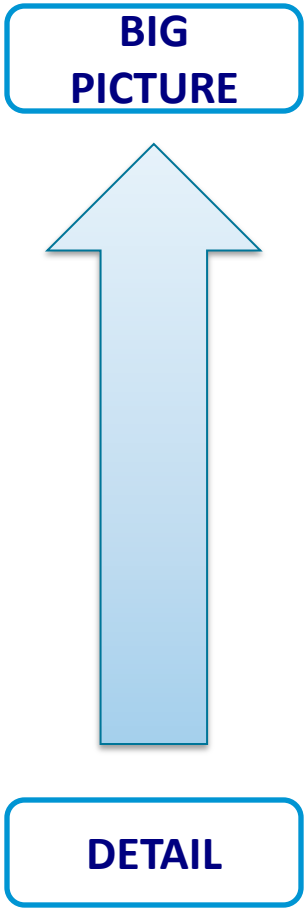
Using Bloom

6. Evaluation	• Judging outcomes or validating
5. Synthesis	• Bringing together new ideas
4. Analysis	• Breaking apart/deconstructing
3. Application	• Making use of data/information
2. Comprehension	• Confirming or translating
1. Knowledge	• Information gathering



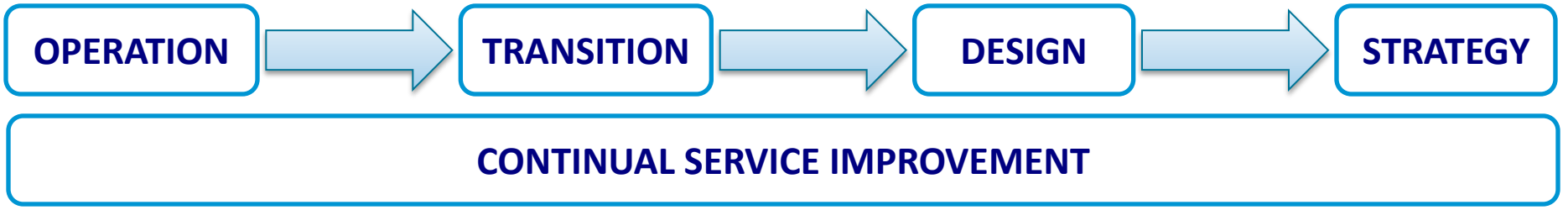
Using Bloom

6. Evaluation	• Wisdom
5. Synthesis	• Knowledge
4. Analysis	• Information/Knowledge
3. Application	• Information
2. Comprehension	• Data/Information
1. Knowledge	• Data



Bloom's Question Words

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Who	Explain	Apply	Analyze	Arrange	Why
What	Indicate	Build	Calculate	Assemble	Assess
Where	Locate	Demonstrate	Compare	Organize	Defend
When	Illustrate	Operate	How	Plan	Evaluate
Describe	Select	Employ	Deconstruct	Propose	Predict
Tell	Rephrase	Interpret	Examine	Prepare	Support
Identify	Recognize	Plan	Determine	Set Up	Estimate
State	Report	Use	Test	Develop	Value



Developing better ITSM Questions?

- Which Bloom level?
- Question Formula:

{Helper Word} + {Bloom Question Word}

+ {Process Word}

- Examples:

Can you describe the incident?

How would you identify utility?

How could we create a better strategy?

Will we comprehend the impact of the change?

Service Management Application and Usage

- Understand and Apply Bloom's Taxonomy to convert Data to Wisdom
- Ask effective questions using "question words" at the appropriate level
- Focus on "how" and "why" more than "what" and "where"

Bringing it together

In Summary

- KM=LEARNING
- Clarify KM definitions (DIKW)
- Use Double Loop Learning
- See KM and Service Management as “Systems”
- Ask effective questions to convert data to wisdom

Comments, Questions, Frustrations, Hostilities, Ponderings, Queries?

Thank You

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