

Data, Information, & Knowledge Management

ENSE 805 with Tim Maciag



University
of Regina



FACULTY OF ENGINEERING
& APPLIED SCIENCE
Software Systems Engineering



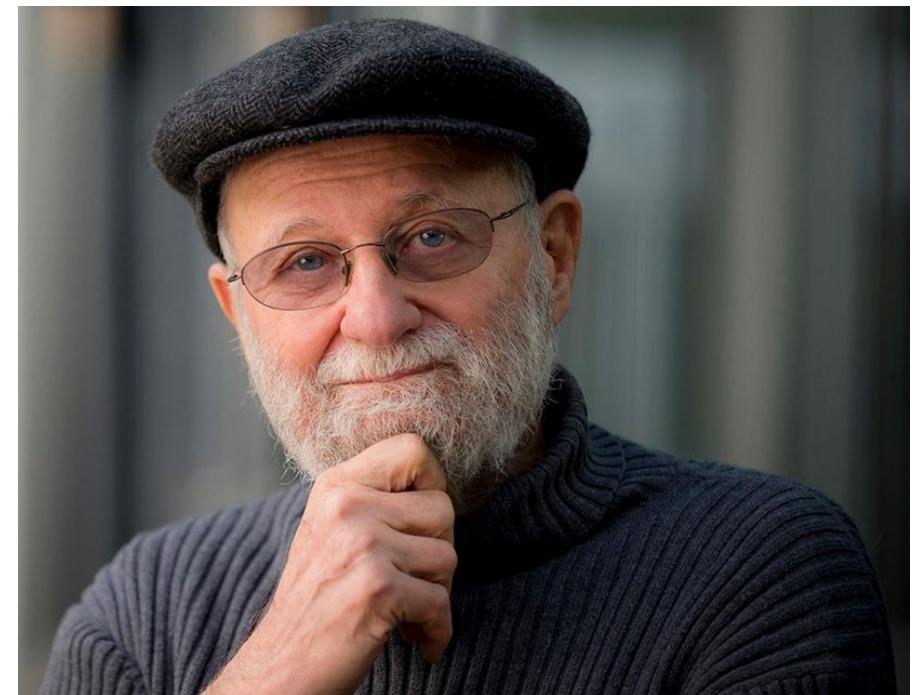
Outline

- Towards “knowing”
- Data management
- Information management
- Knowledge management
 - & it's methods, frameworks
- CoPs, digital habitats, & KM
 - & bringing it back full circle

A story

A friend kindly let me borrow his car. [...] Just before I was about to leave, I found a note waiting for me: "I should have mentioned that to get the key out of the ignition the car needs to be in reverse." The car needs to be in reverse! If I hadn't seen the note, I never could have figured that out. [...] If the driver lacks that knowledge, the key stays in the ignition forever

– Don Norman, 1988



- D. Norman. *The Design of Everyday Things*. Basic Books. 2013

Towards “knowing”

- “A fluid mix of framed experiences, values, contextual information, and expert insight that provides [a way] for evaluating and incorporating new experiences and information”



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- P.F. Drucker. *Knowledge Worker Productivity*. California Management Review, 41(2). 1999

Towards “knowing”

- “A fluid mix of framed experiences, values, contextual information, and expert insight that provides [a way] for evaluating and incorporating new experiences and information”
- Peter Drucker & Knowledge Workers
 - Willingness for life-long learning
 - Strive to innovate
 - Have a willingness to teach
 - Focused on quality



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 - Focused on quality
- Maps quite nicely to the “Programmer’s Oath”



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Our job as tech stewards, designers, & developers

- We are
 - Knowledge (Knowing) managers



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- Keeping it “Dry”
 - “Every piece of knowledge must have a single, unambiguous, authoritative representation within a system”



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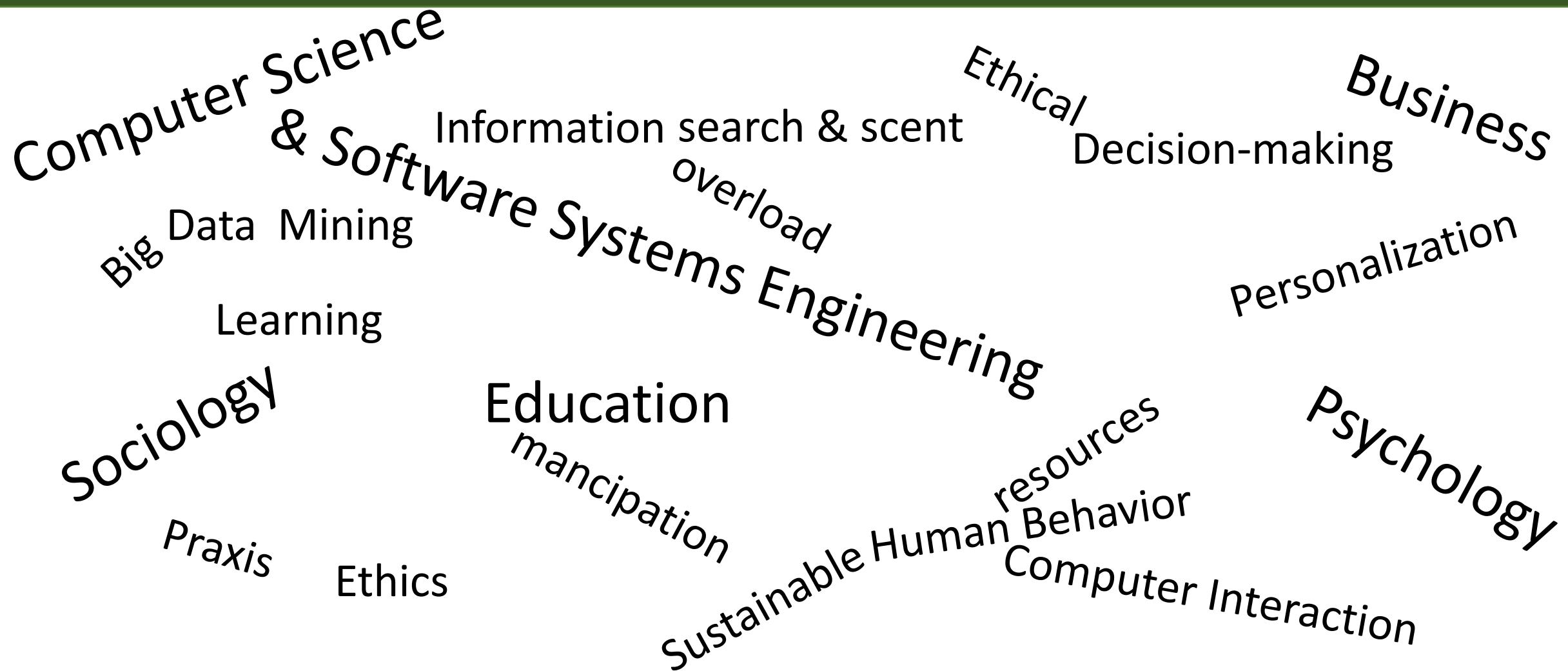


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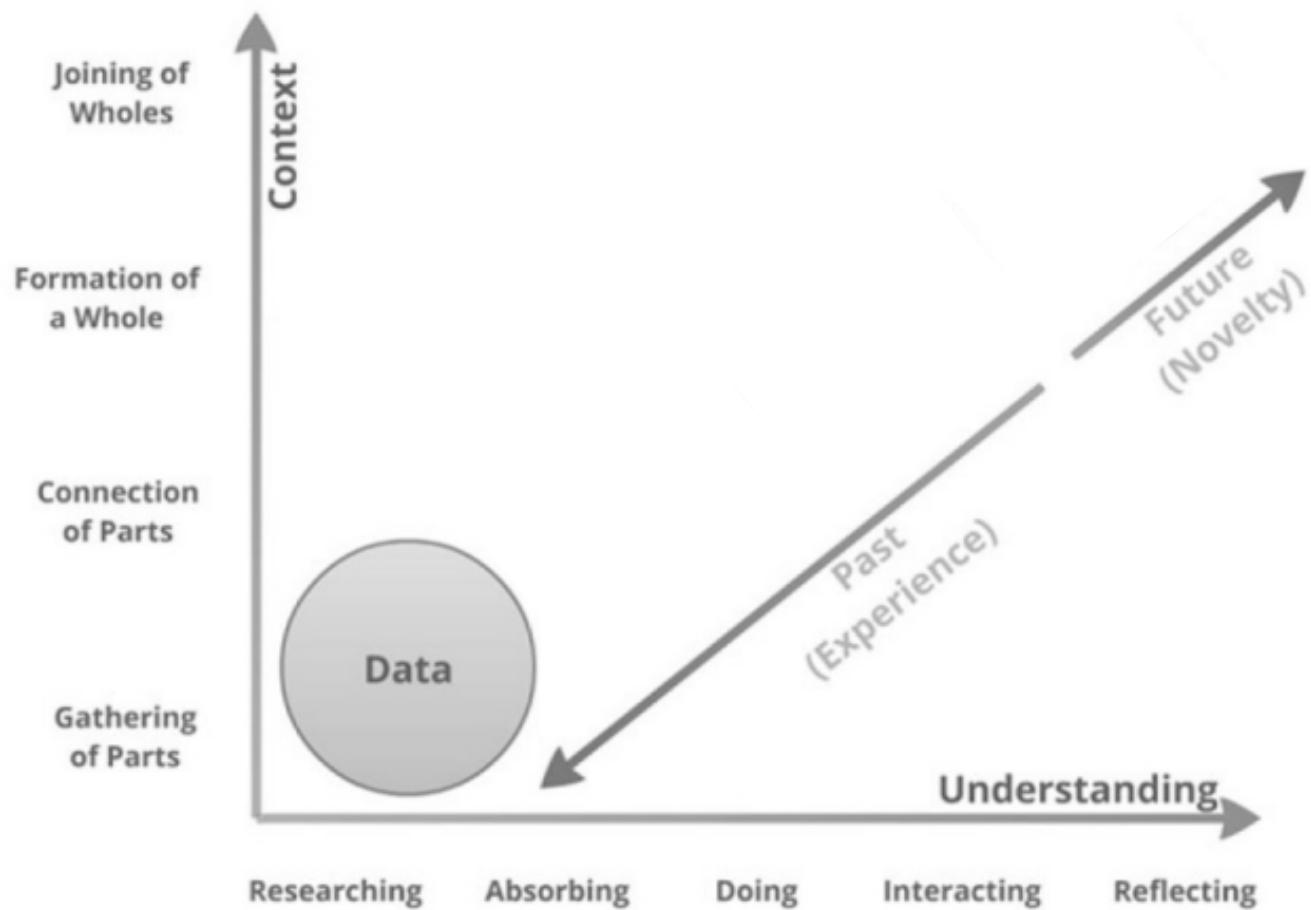
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KM can be messy



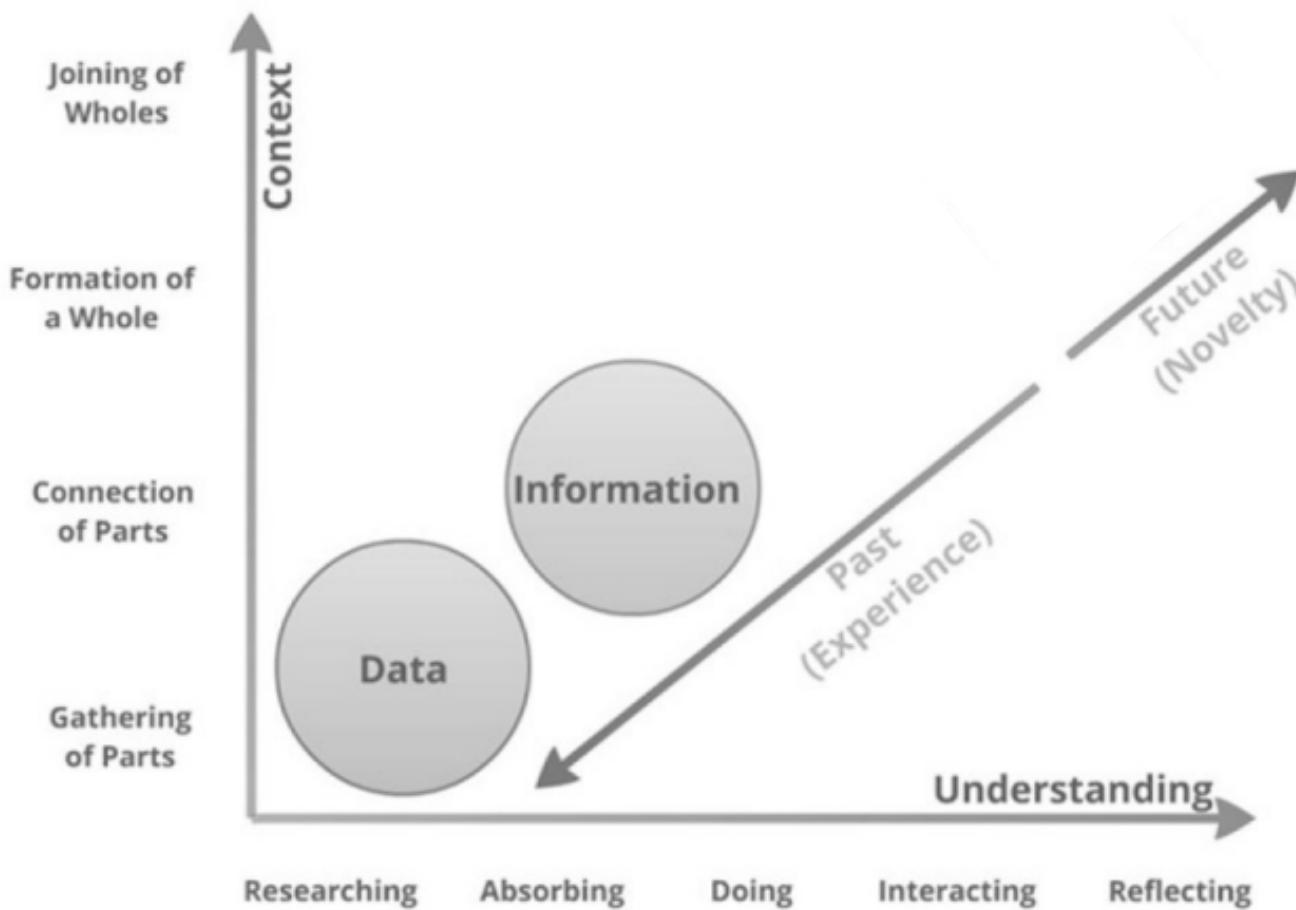
From data to knowledge



- Data

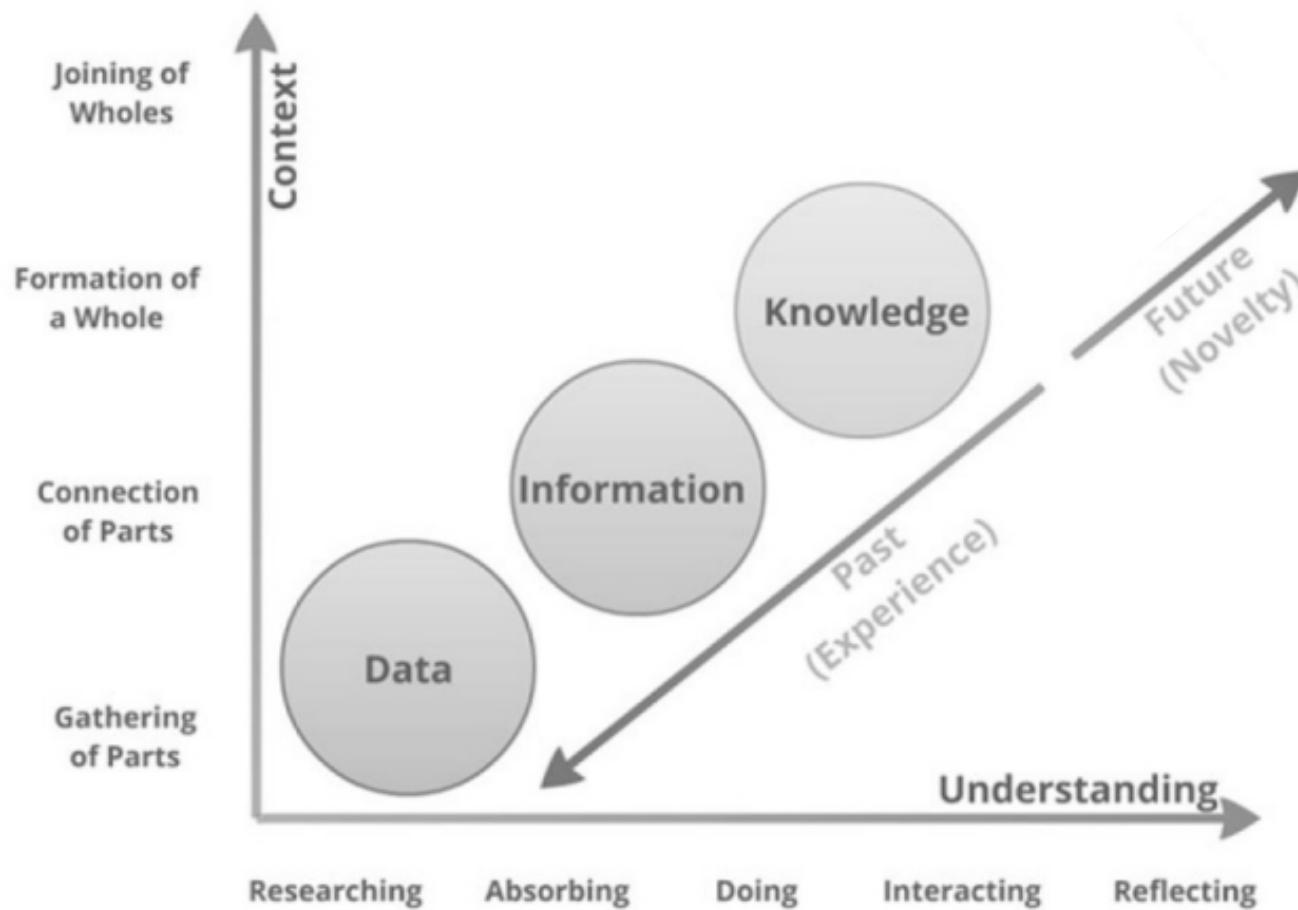
- Unstructured (raw) to structured (cooked)
 - Tim Berners-Lee, [The Next Web](#)
 - [Metadata from “Constructing DHs”](#)

From data to knowledge



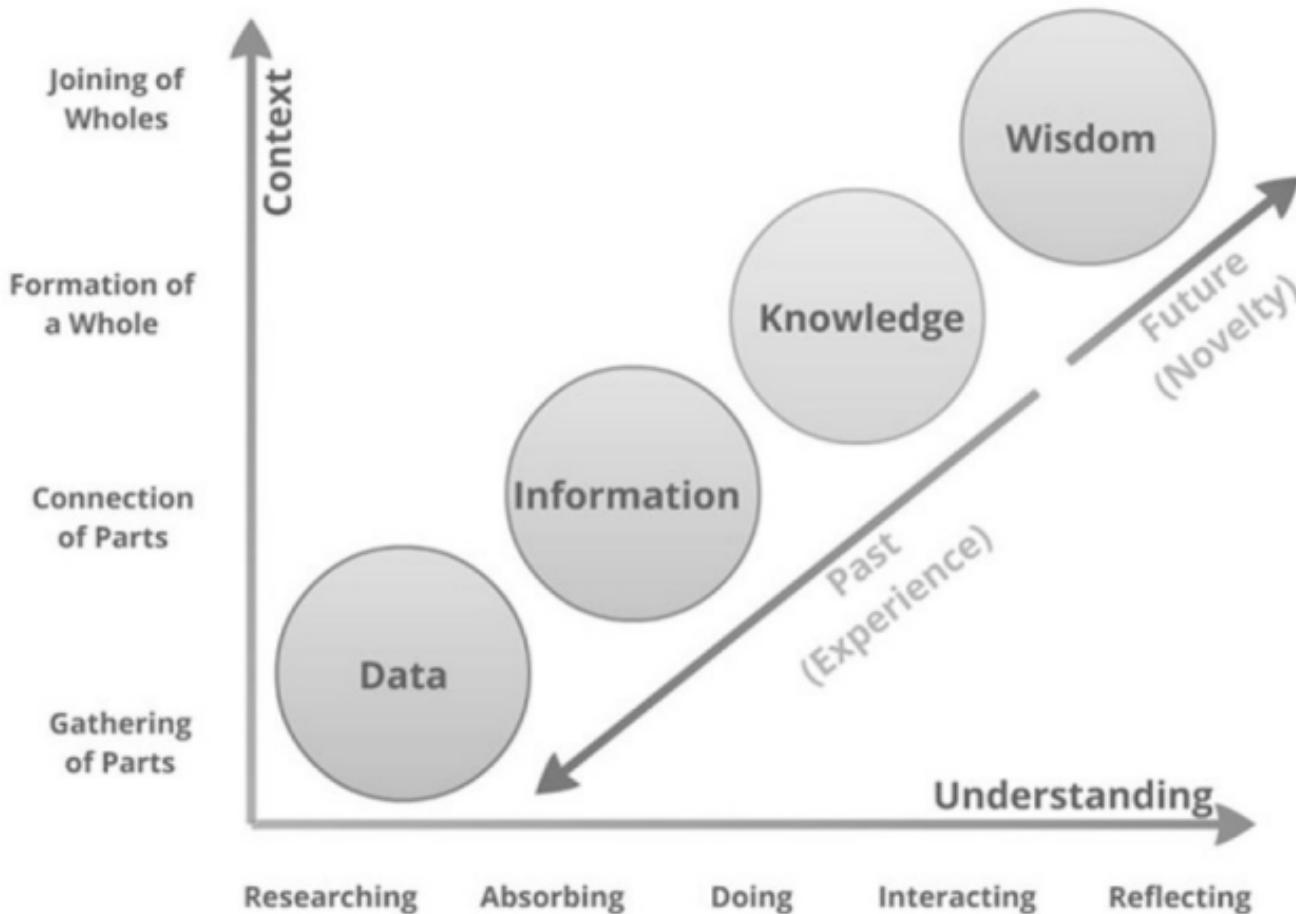
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- **Information**
 - Contextualize, categorize, calculate, correct, condense

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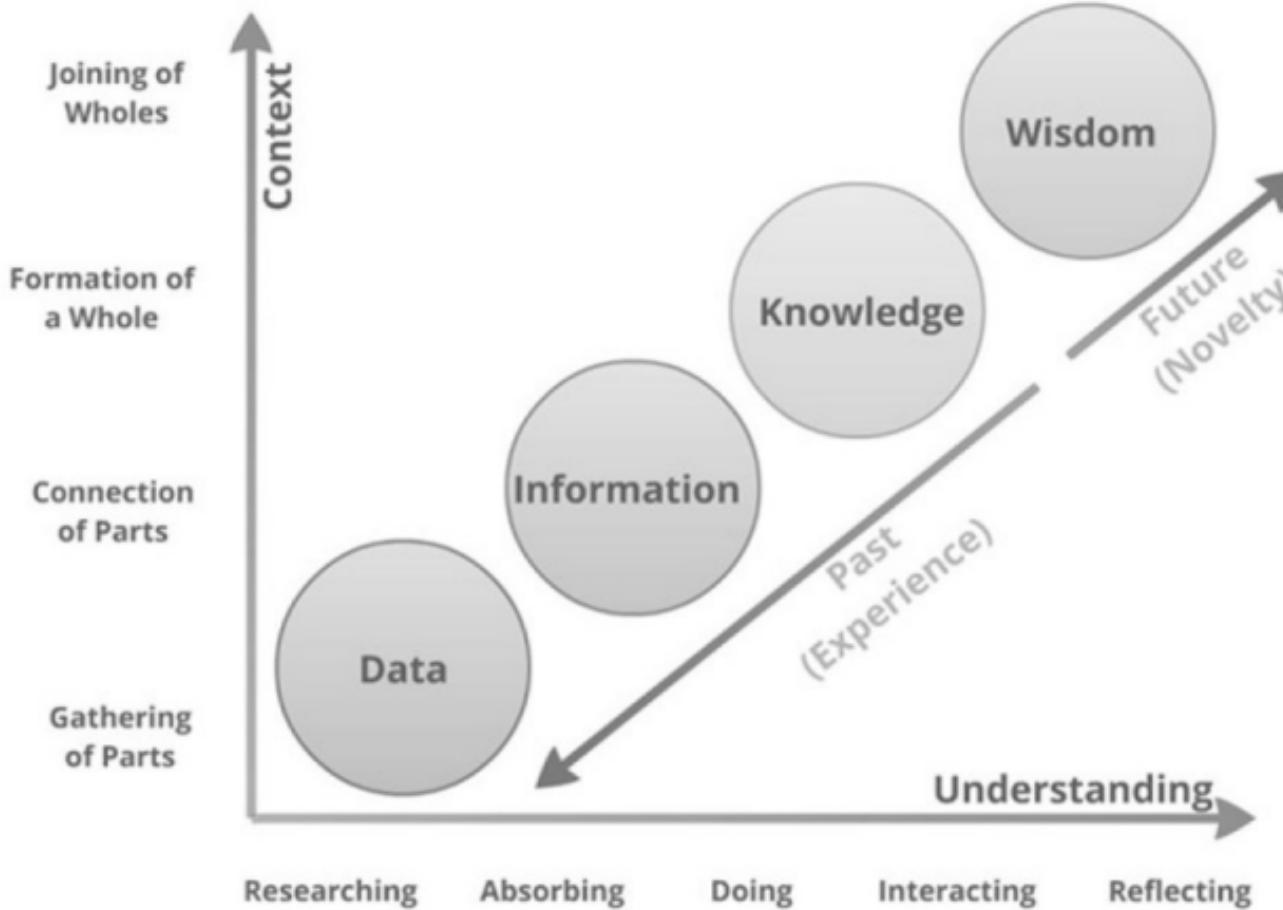
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 - Deeper meaning (I find this dumb)

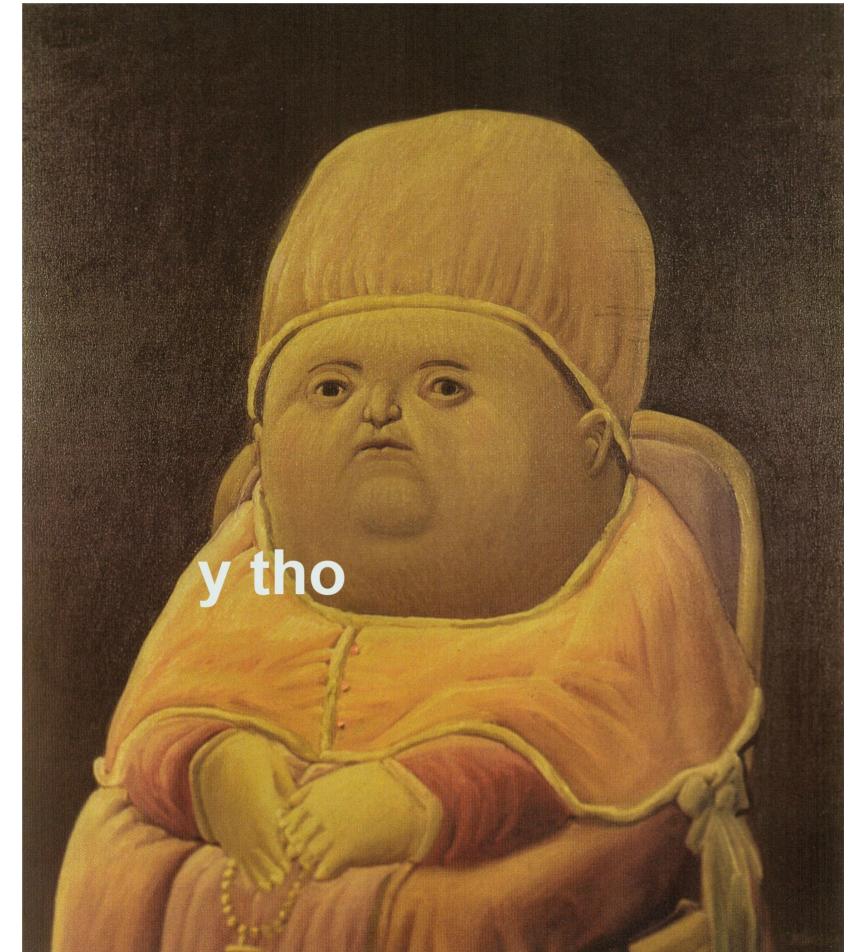
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- **Gandalf the grey/white © Tim**

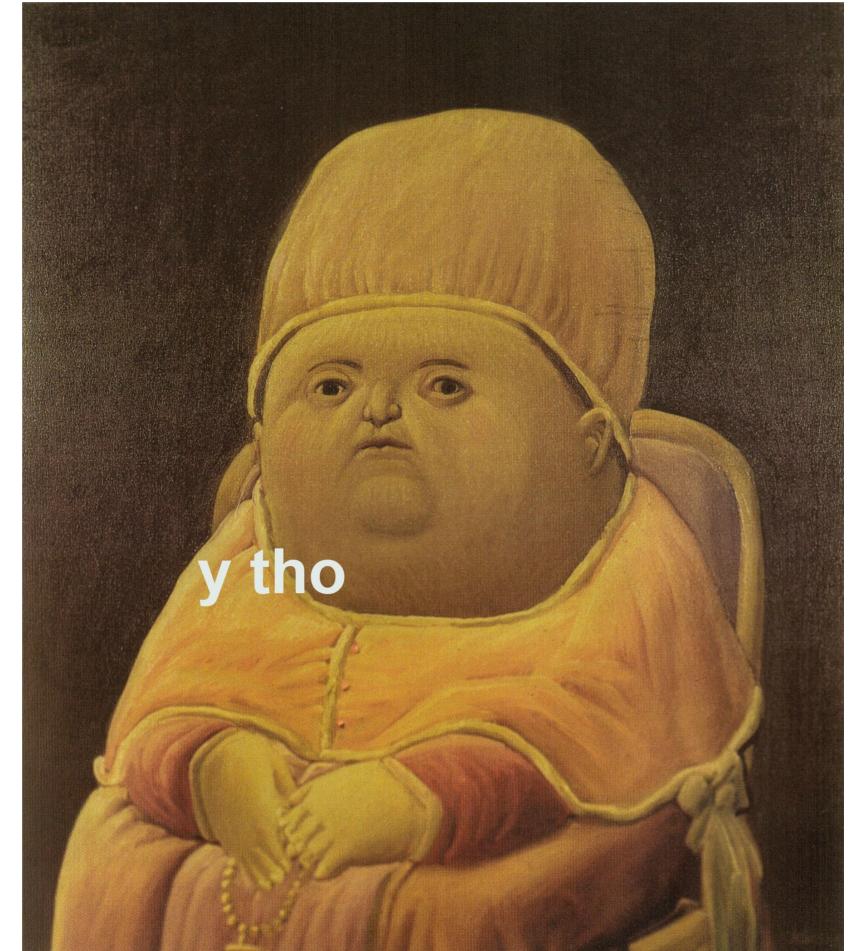
Why KM?

- To supplement (organizational) learning and decision making



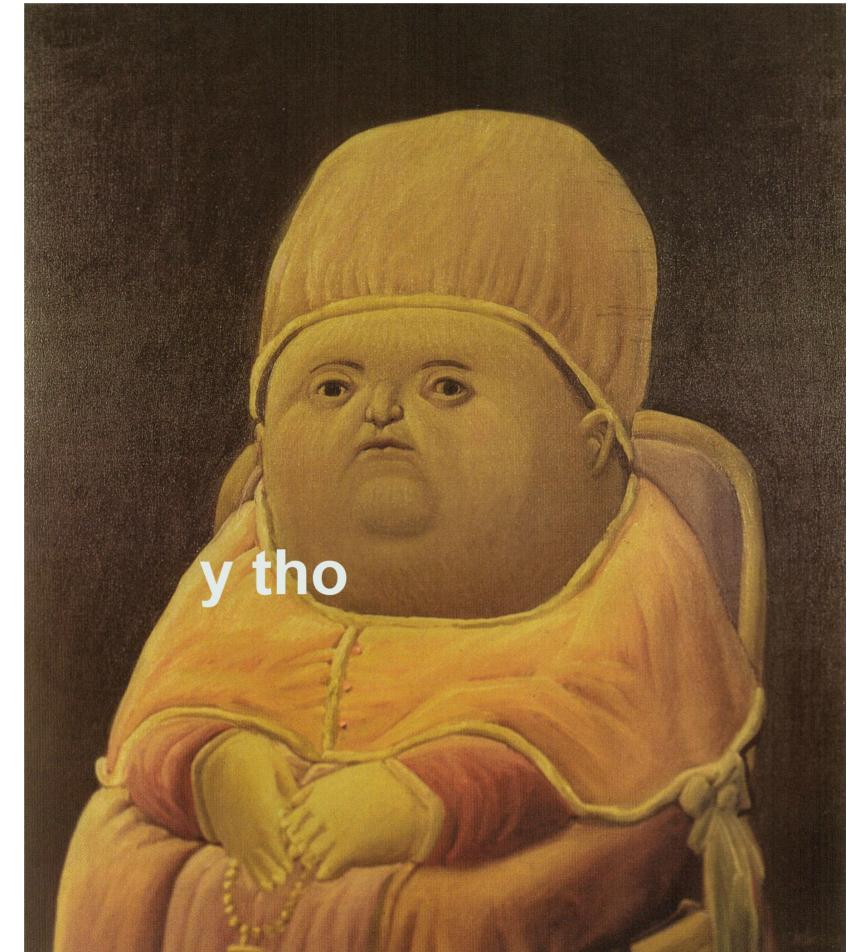
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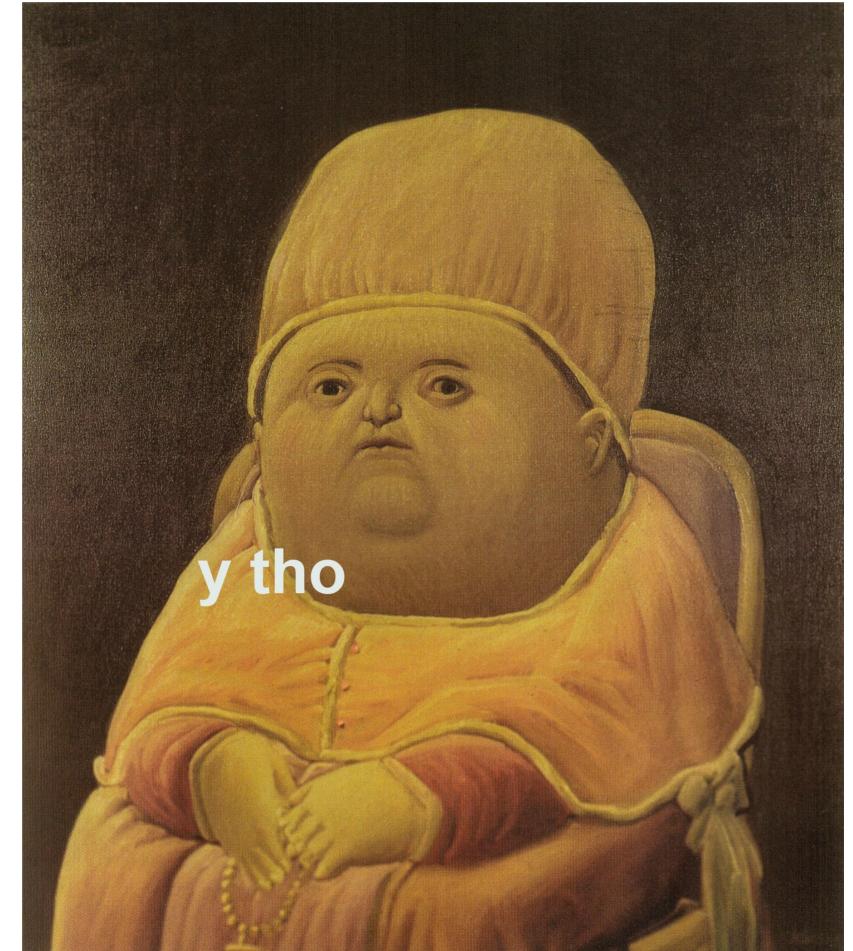
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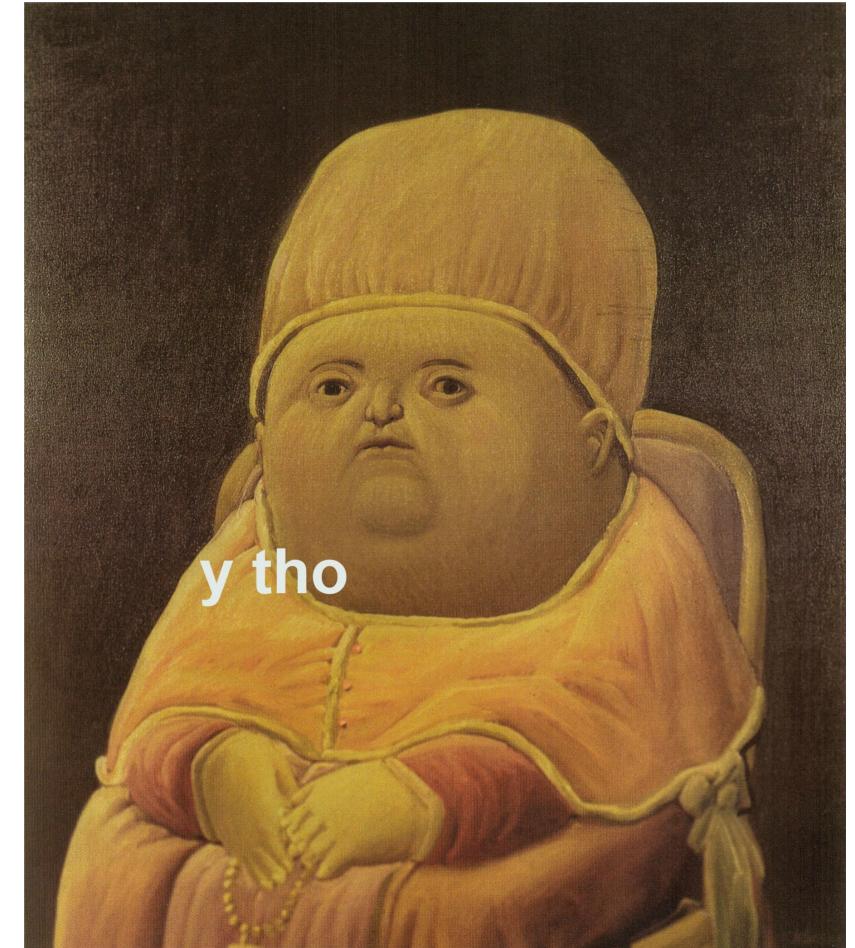
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- Develop capability to create, enhance, and share intellectual capital



Beginning with data

- A subjective grouping of distinct objective facts
 - Content that is directly observable or verifiable

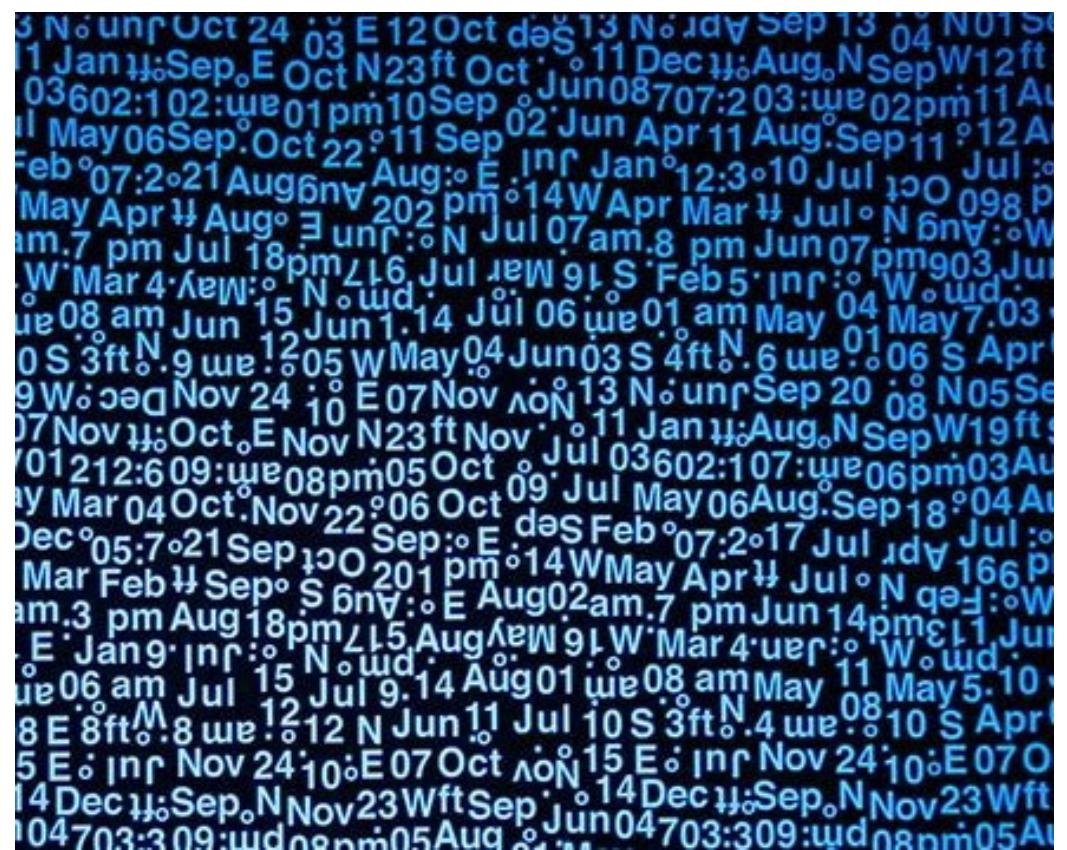


The more of your data I gather,
the more I understand
what it means
to be *human*.

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Beginning with data

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 - Content that is directly observable or verifiable
- “Raw data”
 - Data not defined by an existing model or structure

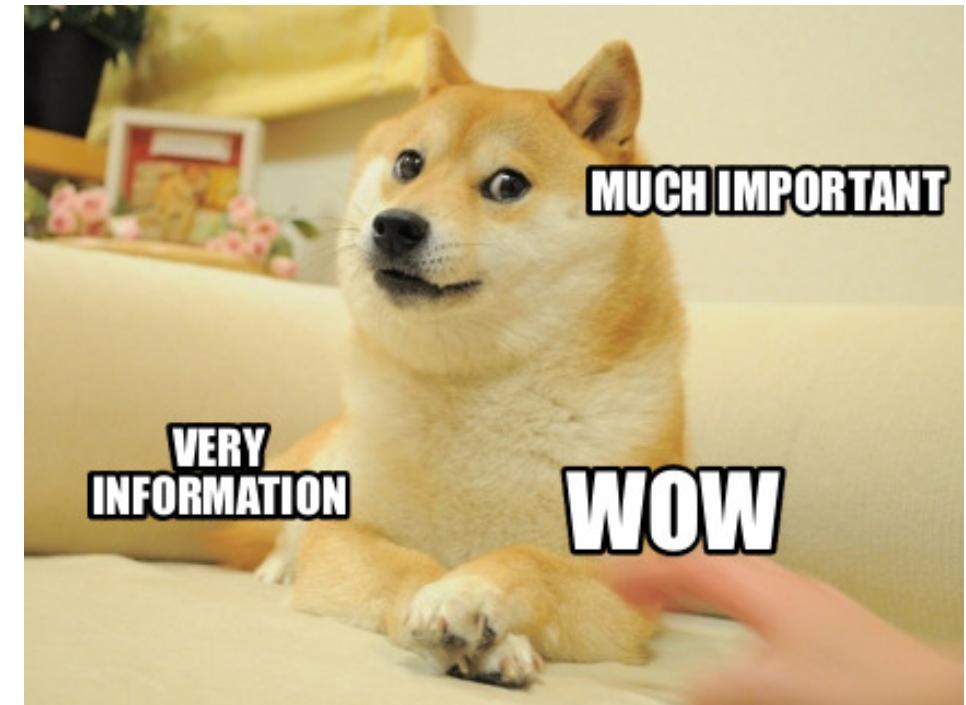


The image contains a large, faint watermark-like grid of numbers and letters, appearing in blue and white. The grid consists of approximately 10 columns and 10 rows of data, which is too faint to be read clearly. It appears to be a matrix or a barcode.

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 - Drucker: “Data endowed with relevance and purpose”



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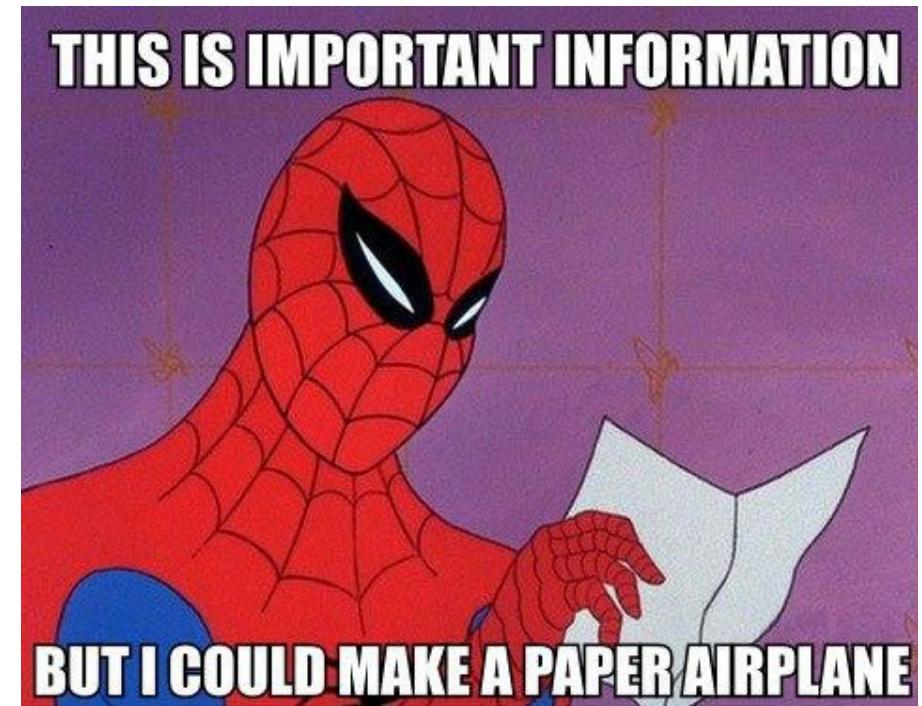
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 - Start of metadata (more on this later)



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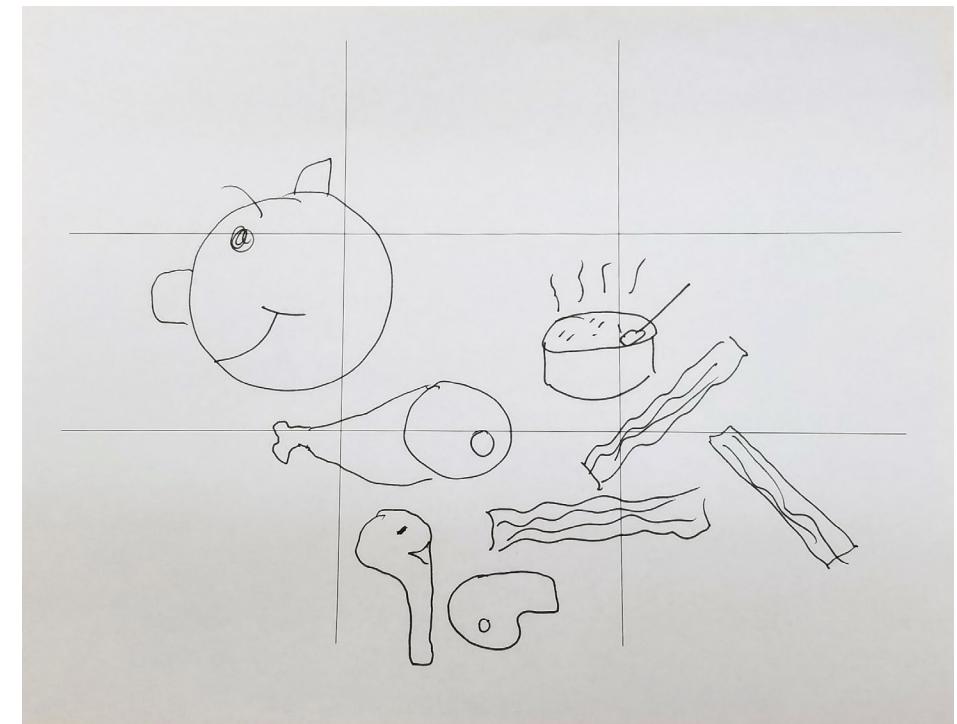
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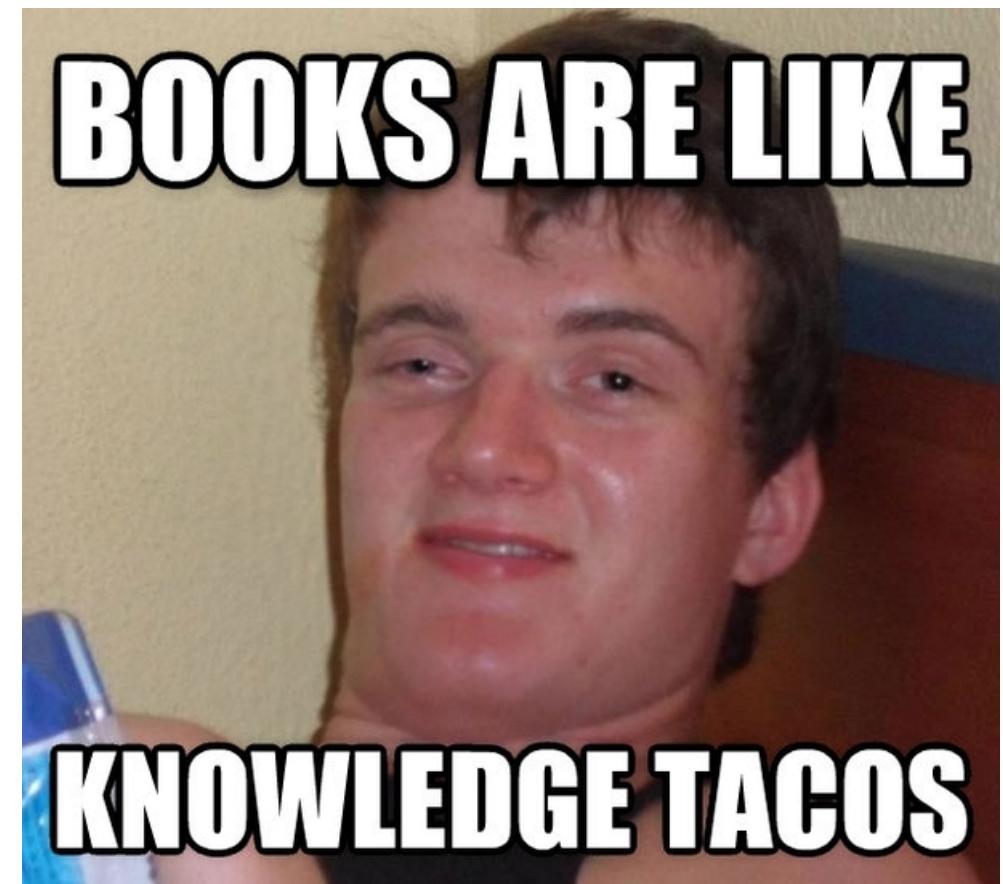
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- Data is transformed into information by
 - Contextualizing to understand purpose
 - Categorizing to distinguish key features
 - Calculating to derive deeper meaning
 - Correcting to exclude errors and bias
 - Condensing to add focus



From information to knowledge

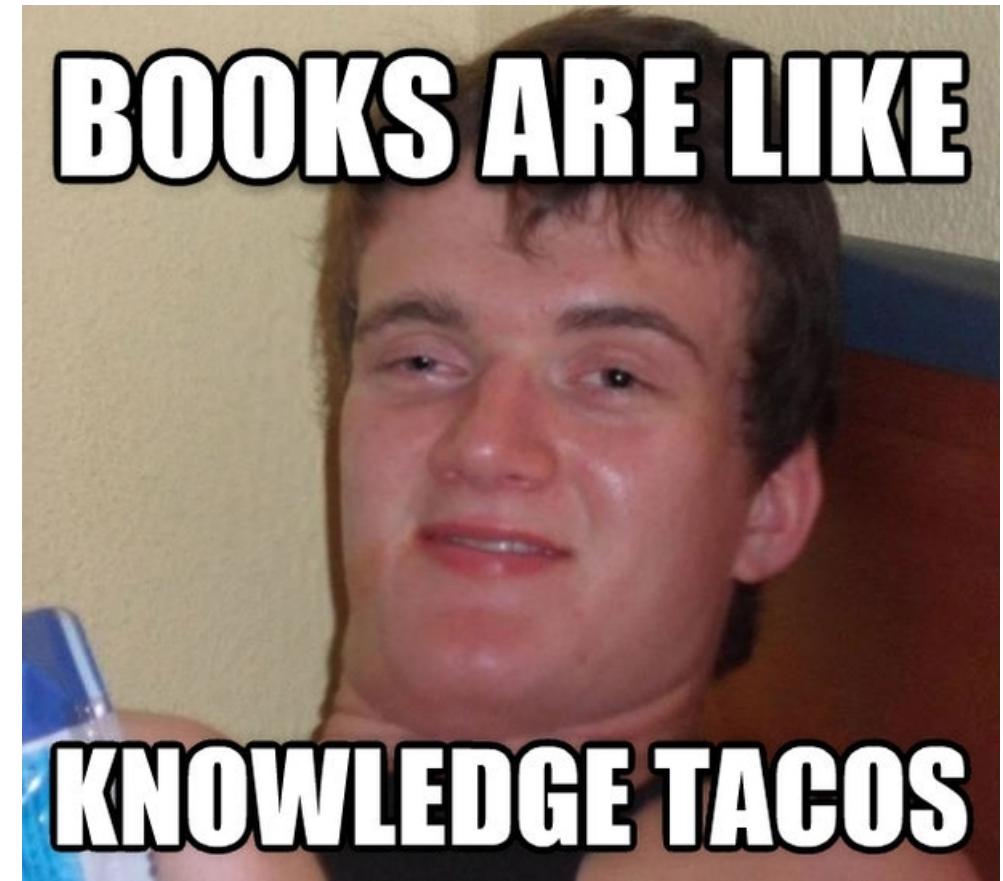
- Note IM and KM



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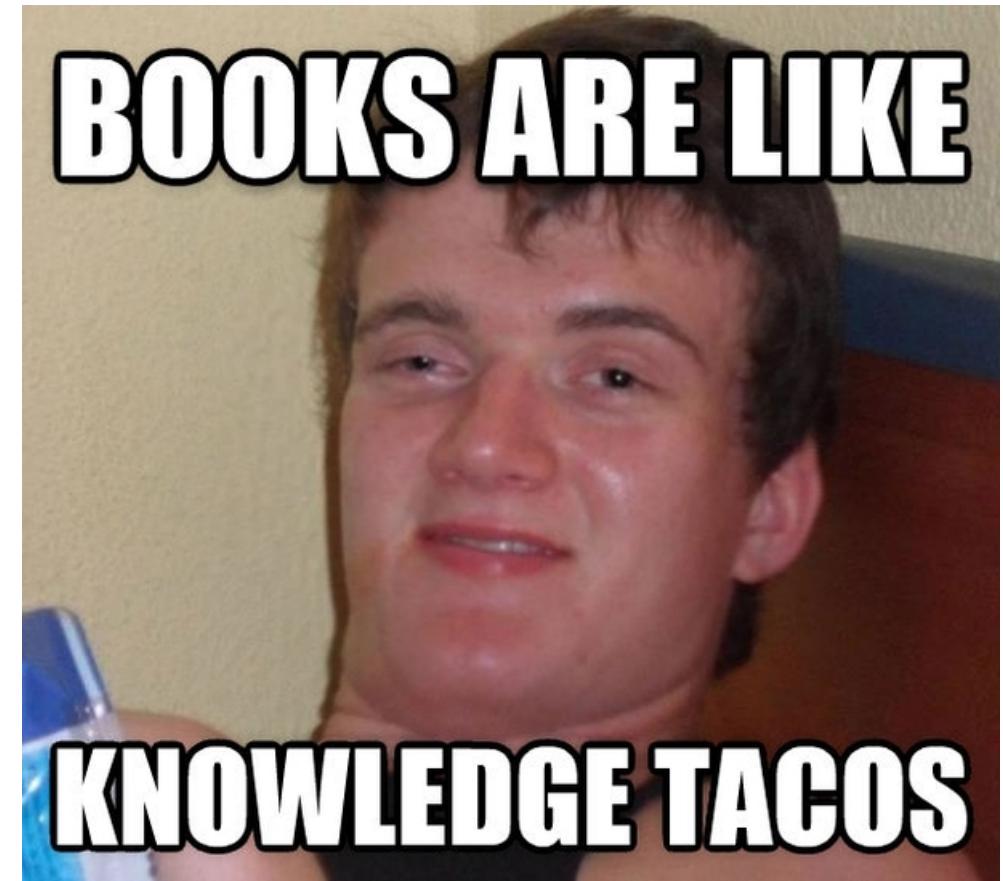
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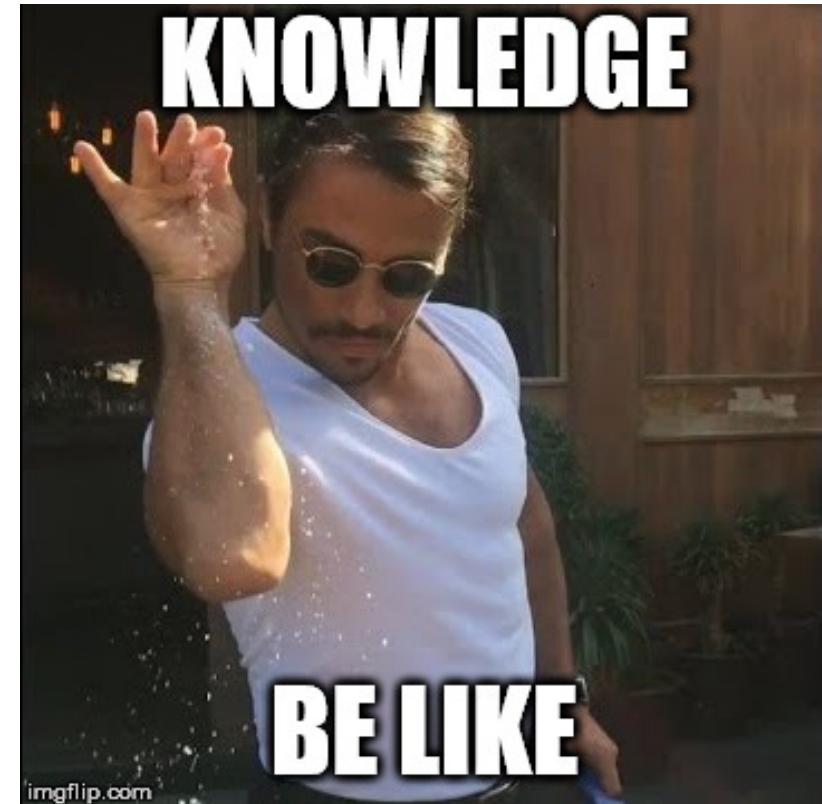
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 - Metadata helps even more now!



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- Evolves the receiver’s experiences, interactions, and decision outcomes
 - Metadata helps even more now!
- Knowledge appears when people
 - Compare past and current experiences
 - Observe & analyze consequences of decision & action
 - Make connections (sources or people)
 - Converse & share (learned experiences)



Bringing it together

Data

- 20112015
- 51624328
- 1014194900
- 14035628468

Bringing it together

<u>Data</u>	<u>Information</u>
• 20112015	• 20/11/2015
• 51624328	• \$516,243.28
• 1014194900	• DL:1014194900
• 14035628468	• 1-403-562-8468

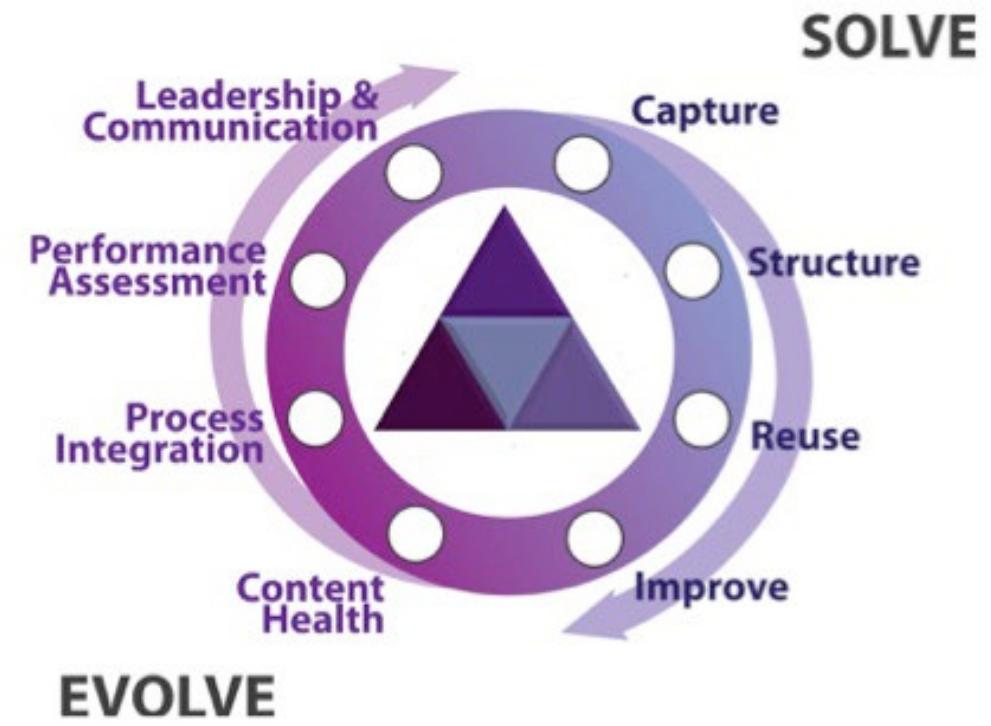
Bringing it together

<u>Data</u>	<u>Information</u>	<u>Knowledge patterns (metadata)</u>
• 20112015	• 20/11/2015	• GlobeAndMailSubscriptionStart
• 51624328	• \$516,243.28	• DailyFoodSales
• 1014194900	• DL:1014194900	• DigitalLibraryBookID
• 14035628468	• 1-403-562-8468	• AlbertaPhoneNumbers

KCS & ISO 30401:2018

- Knowledge Centered Support (KCS)
 - Consortium for Service Innovation

KCS Double Loop Process

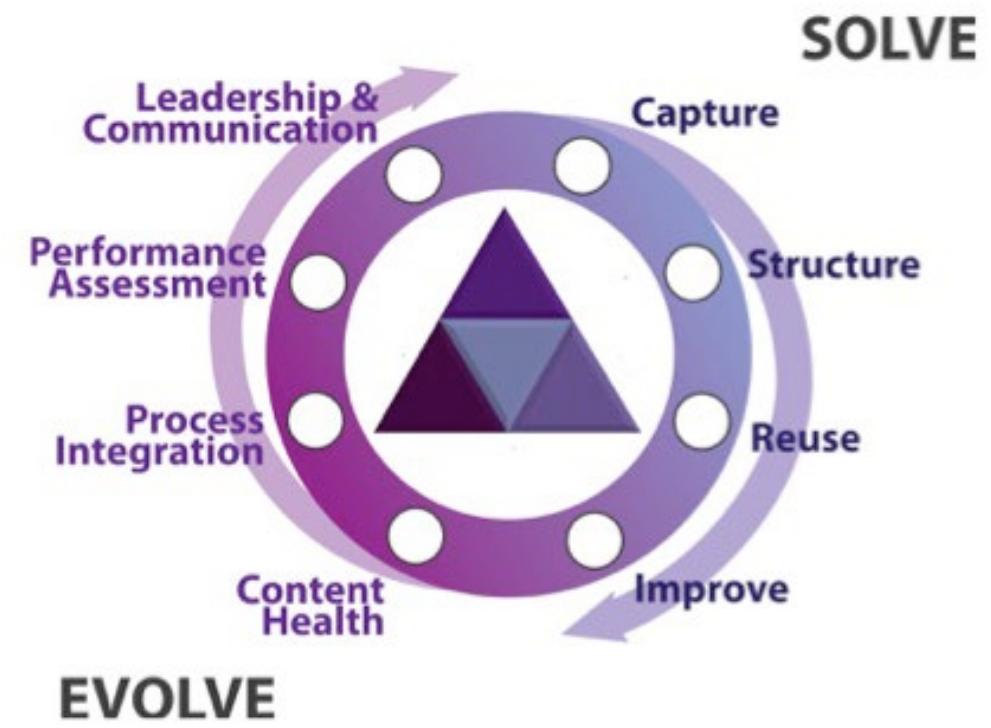


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KCS & ISO 30401:2018

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- UFFA
 - Use captured knowledge
 - Flag knowledge for improvement
 - Fix knowledge to adhere to standards
 - Add knowledge to knowledge base

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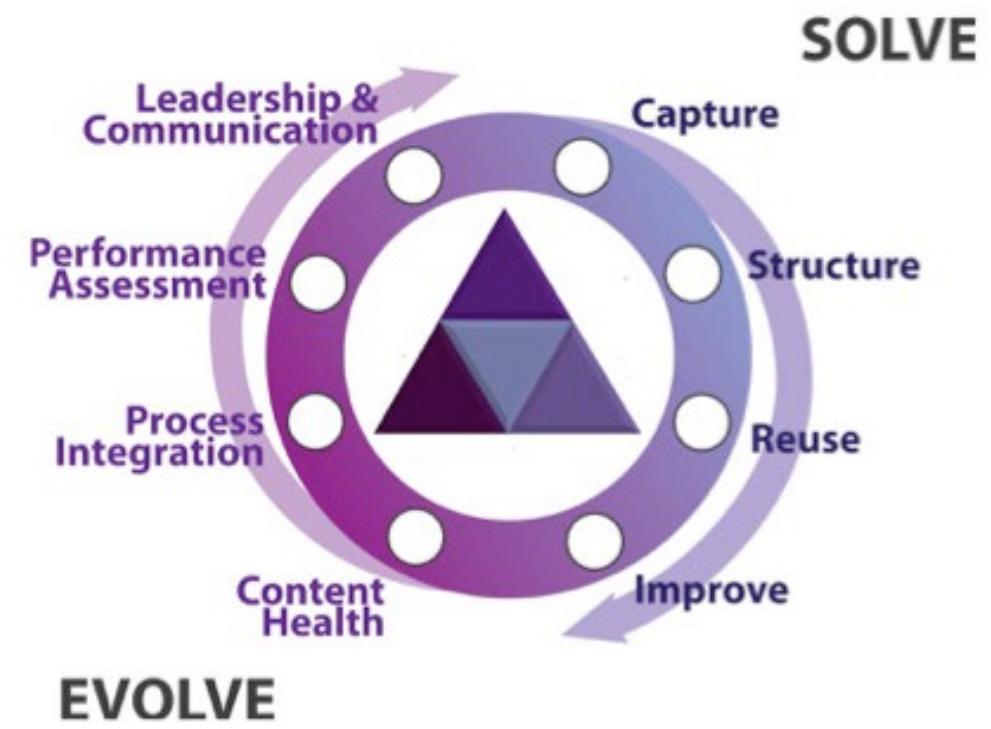


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 - Frame knowledge
 - Assure knowledge (quality step)

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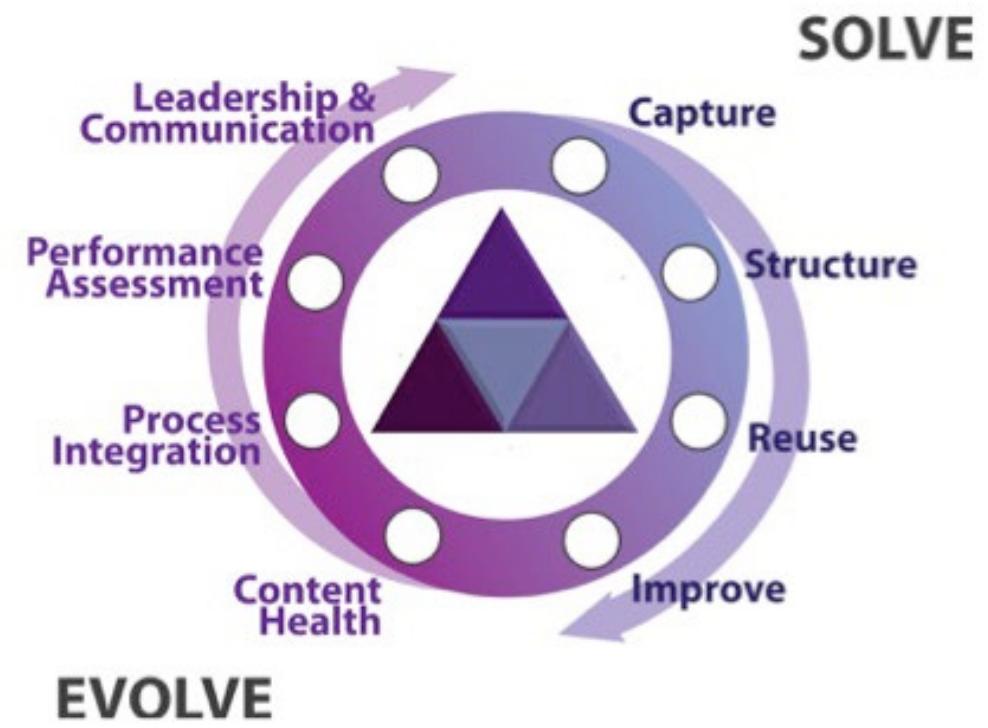


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 - Some controversy

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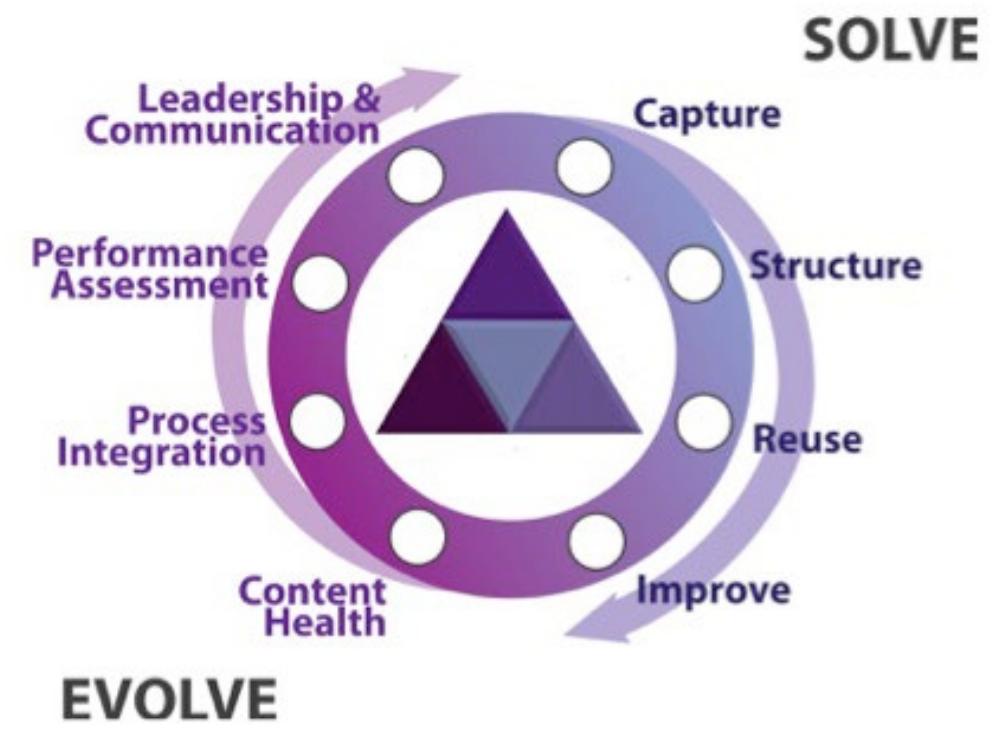


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- Both geared more towards Information Management?

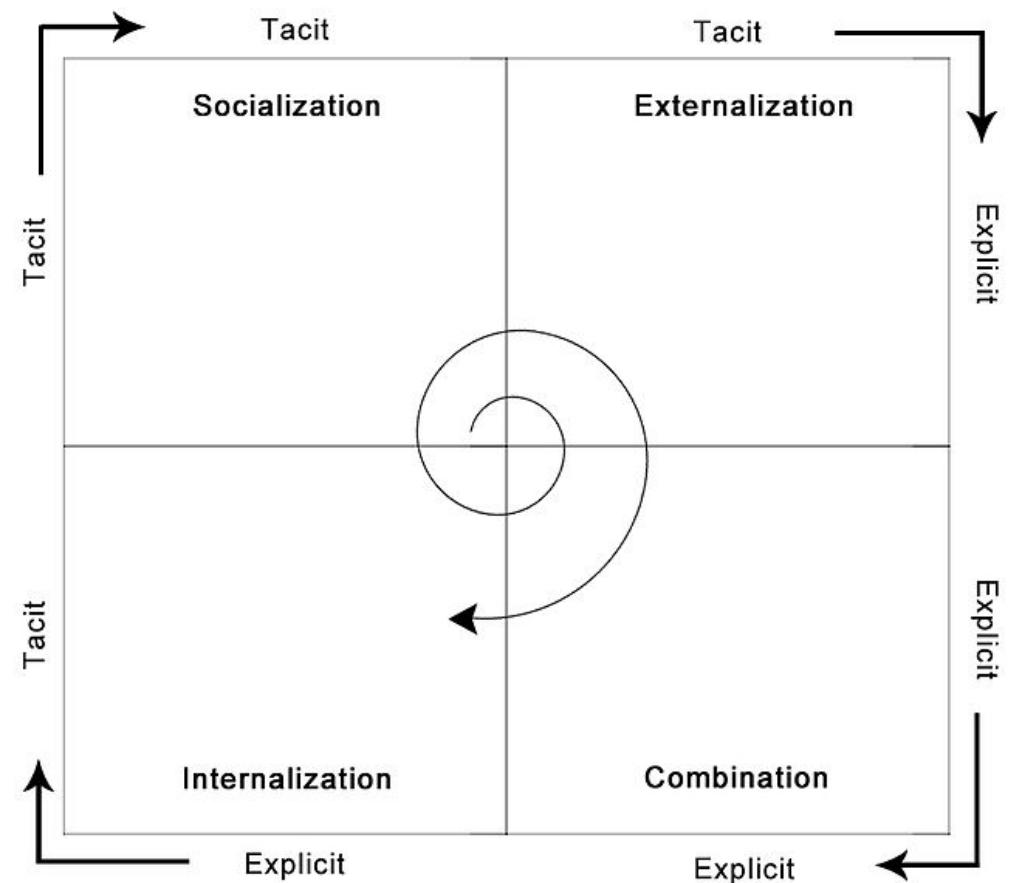
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SECI

- SECI
 - Socialization
 - Externalization
 - Combination
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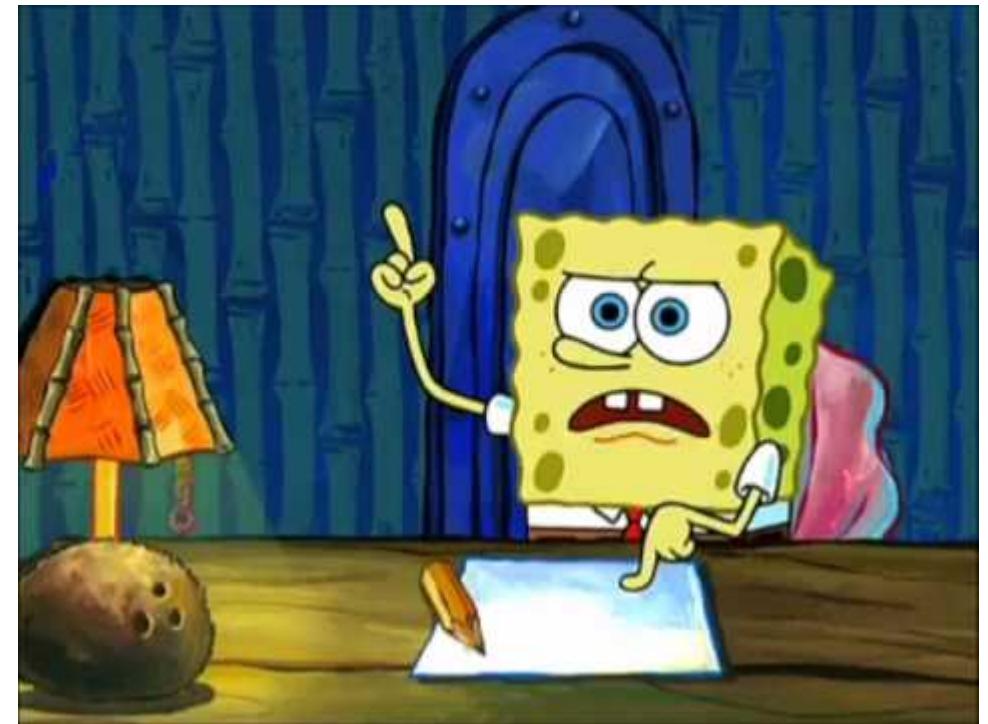
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- **Explicit knowledge**
 - That which can be documented/written (codified)



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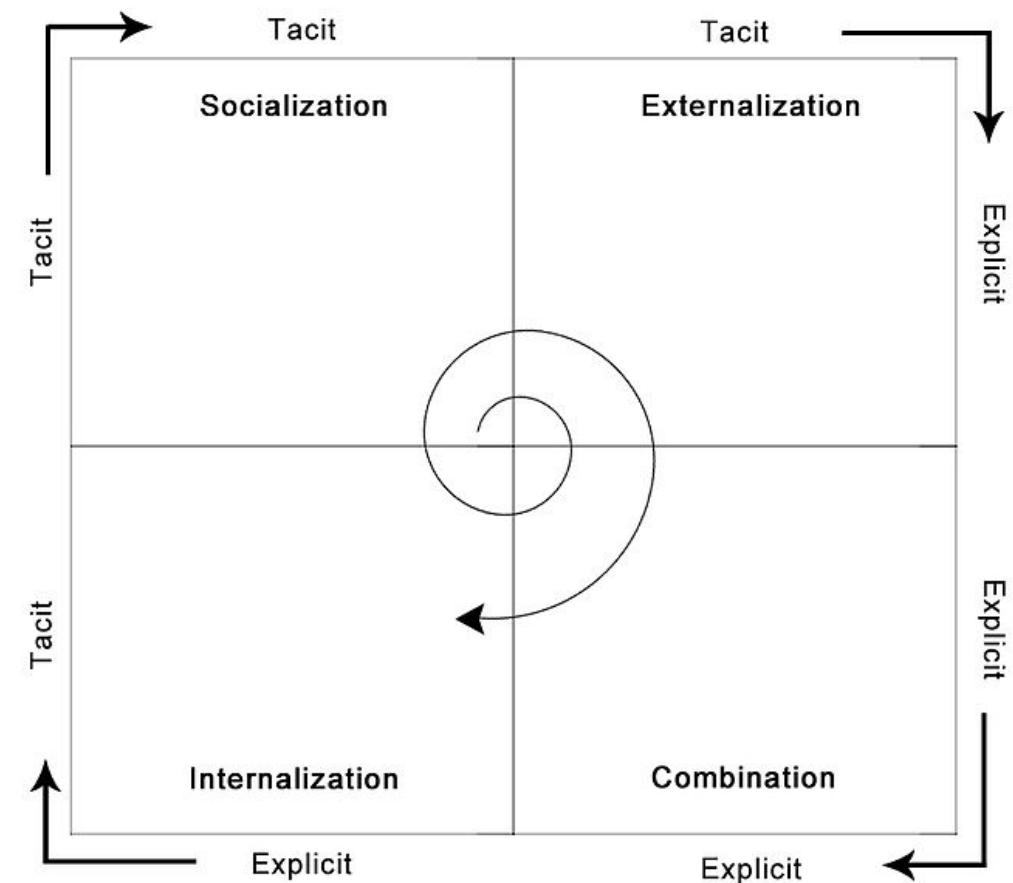
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- Tacit knowledge
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 - The difficulty
 - “We can know more than we can tell” (Polanyi)
 - “We always know more than we can say, and we will always say more than we can write down” (Snowden)
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Knowledge capabilities

- KM as a Human Resource (HR) activity
 - HR spans an organization
 - KM is often a silo within IT



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- Ability to access knowledge, skills, experience
 - E.g. eHealth hiring google search activity



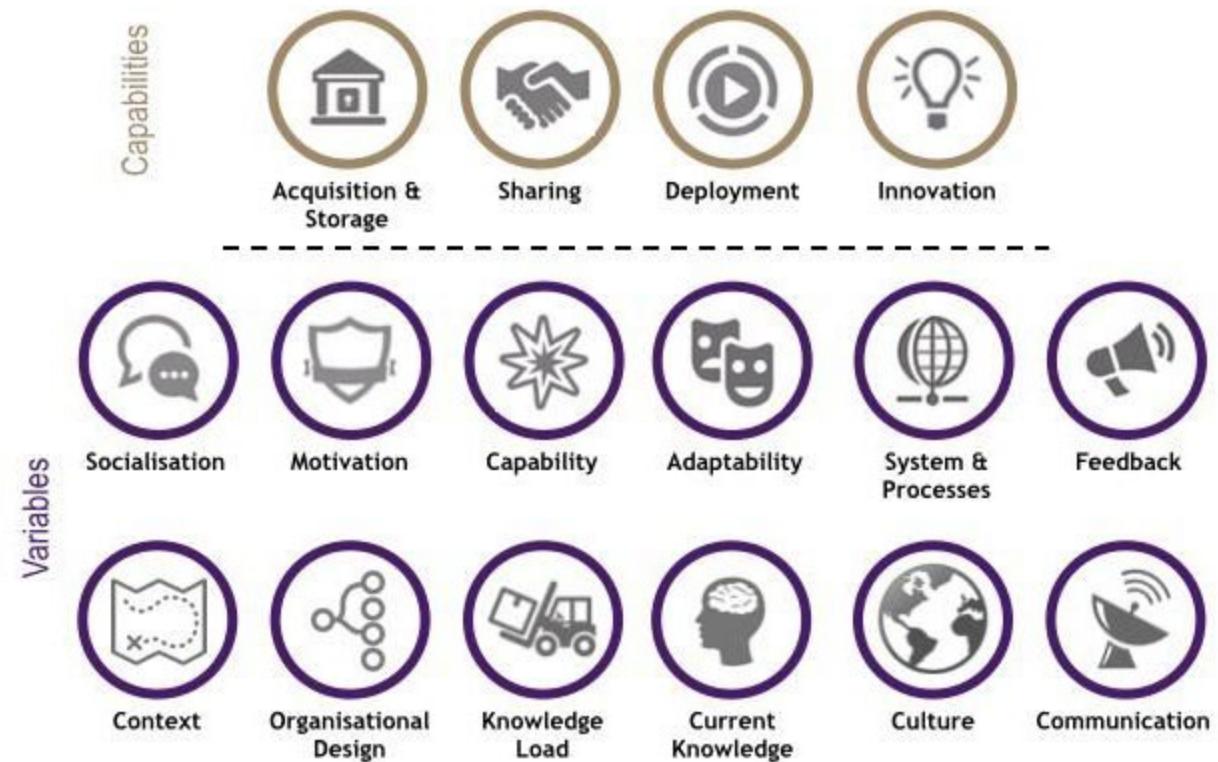
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 - Innovation – more than just documentation and expertise!



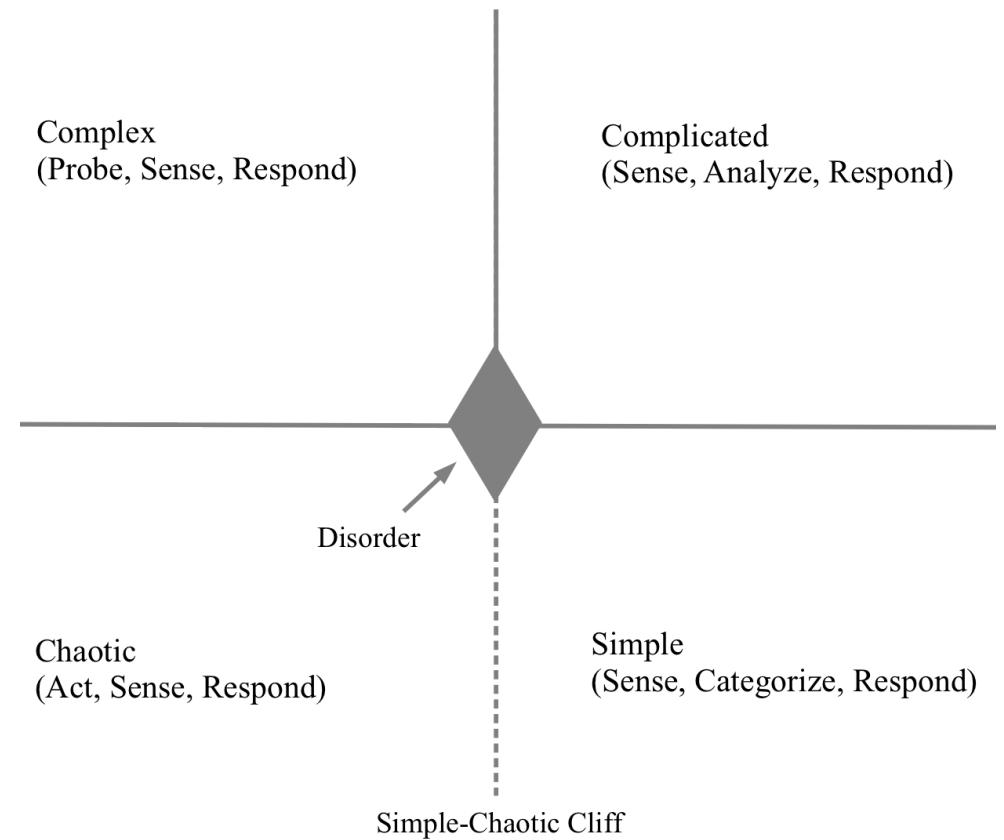
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 - Innovation – more than just documentation and expertise!
- Ability to acquire, share, deploy, develop, innovate
 - About providing meaning and value to people (Griffiths, 2021)



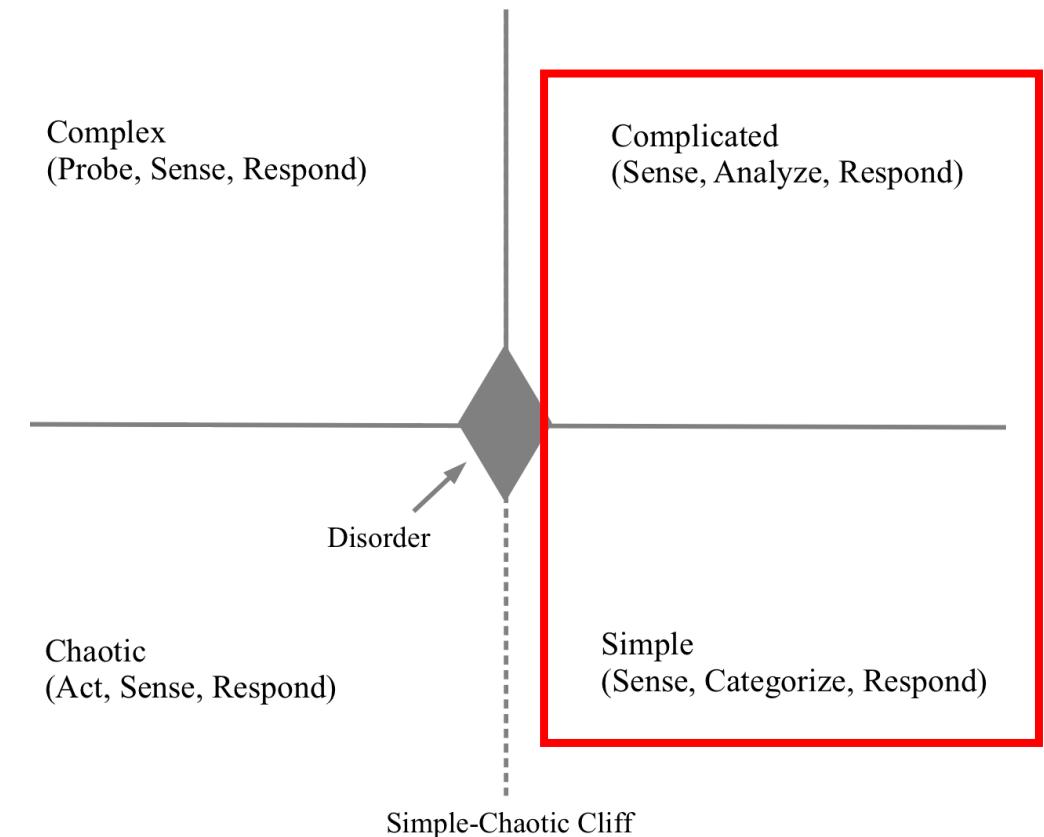
Cynefin & beyond

- Cynefin



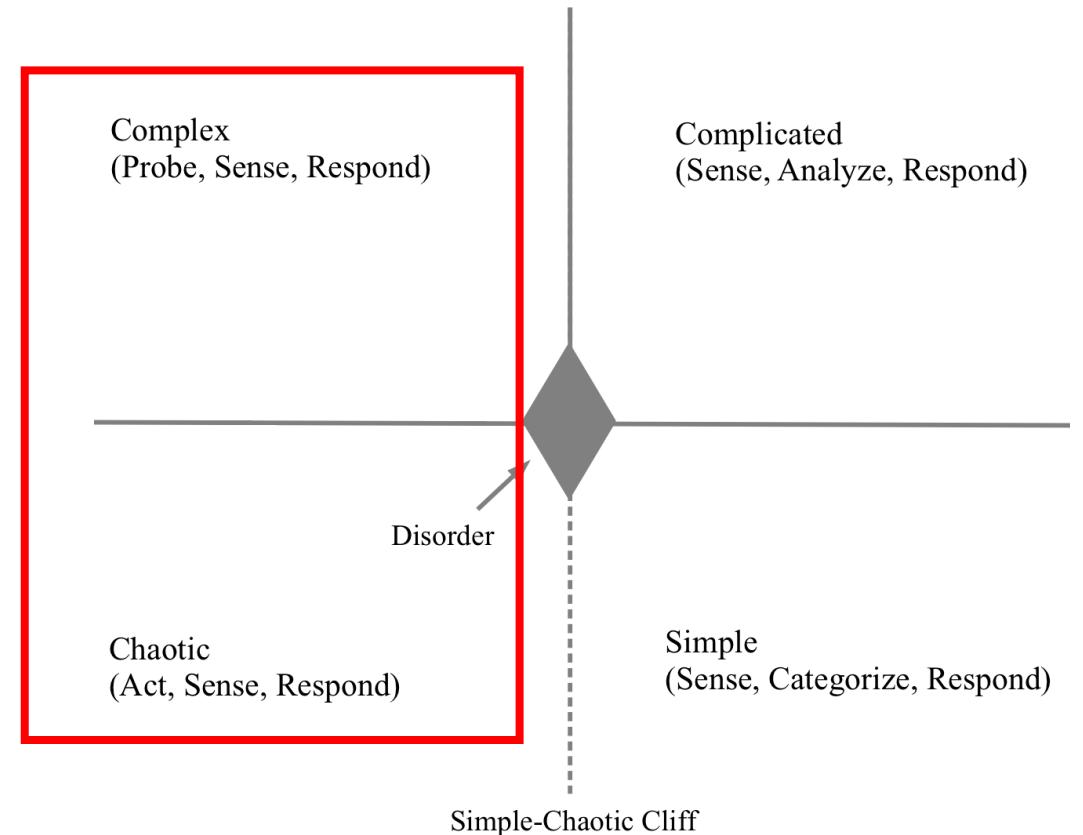
Cynefin & beyond

- Cynefin
 - Ordered (Simple, Complicated)



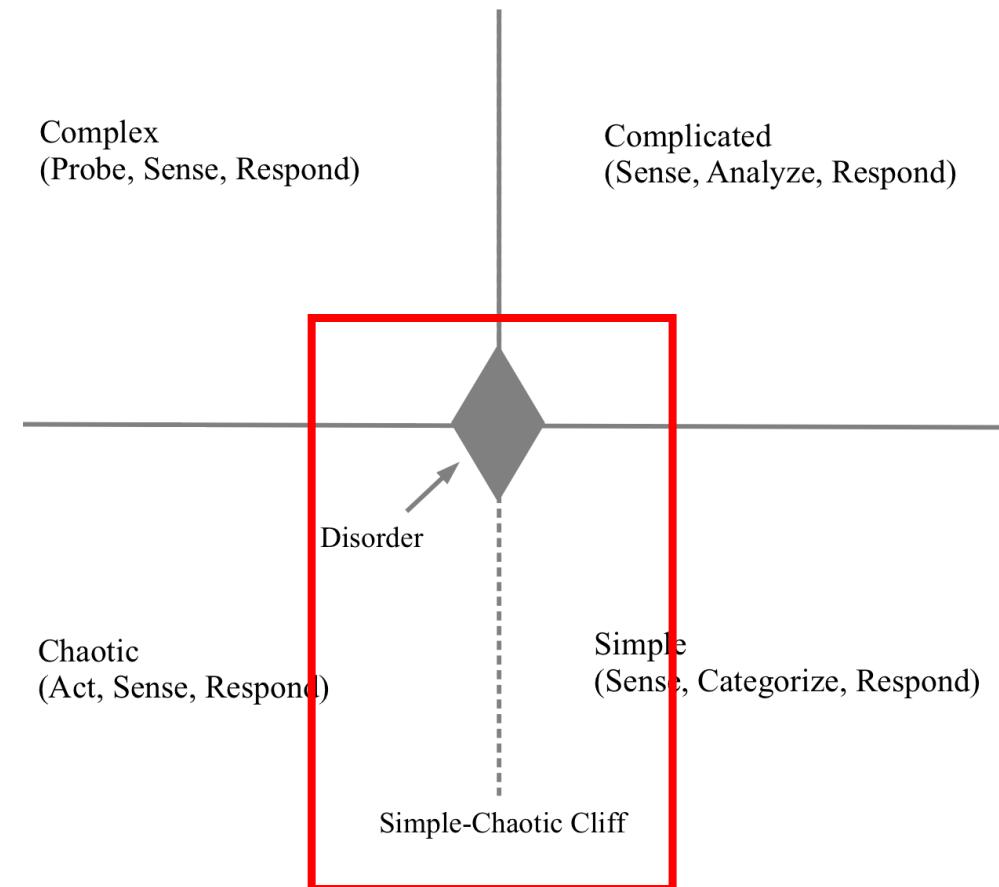
Cynefin & beyond

- Cynefin
 - Ordered (Simple, Complicated)
 - Unordered (Complex, Chaos)



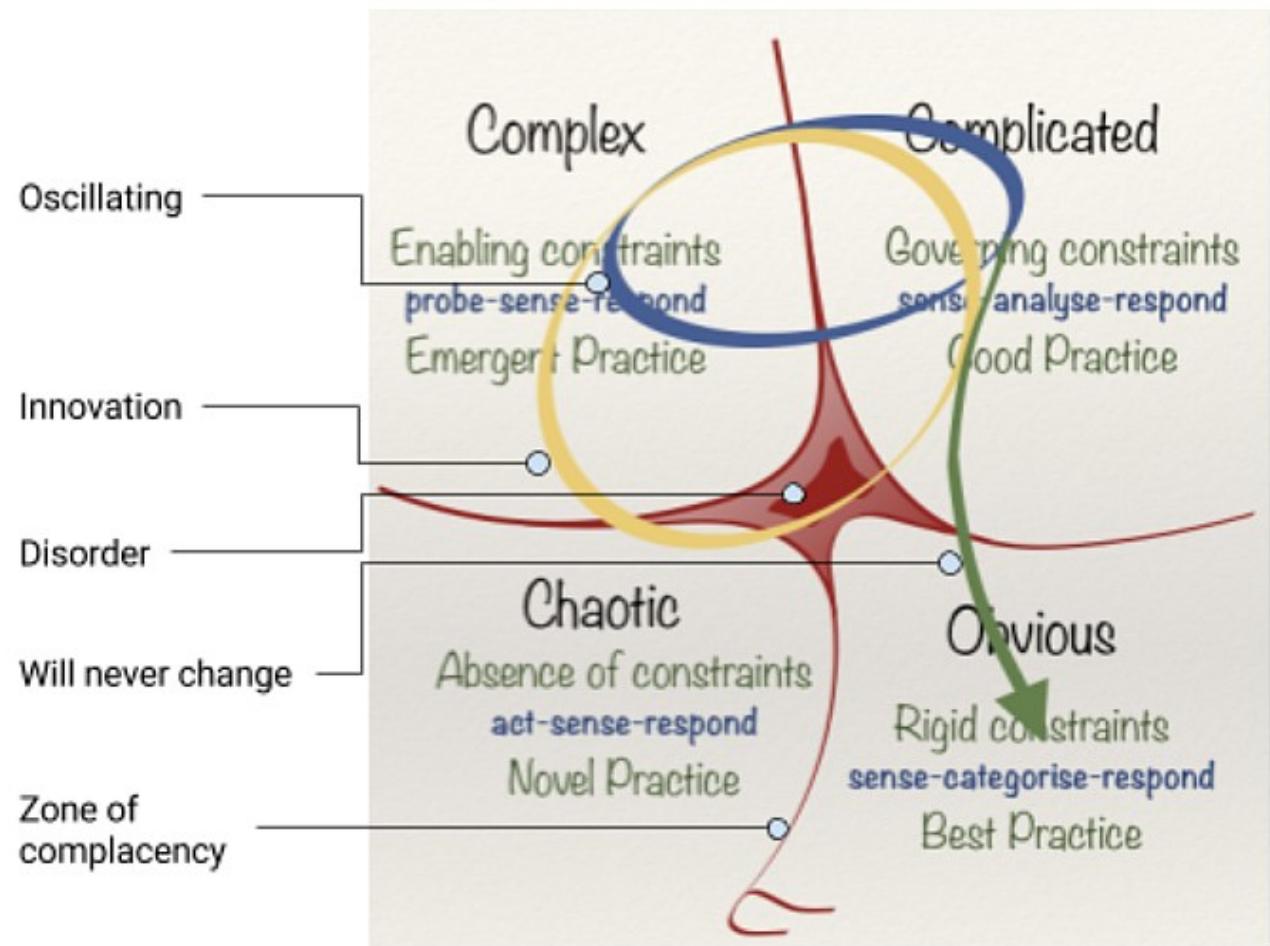
Cynefin & beyond

- Cynefin
 - Ordered (Simple, Complicated)
 - Unordered (Complex, Chaos)
 - Disorder& simple-chaotic cliff



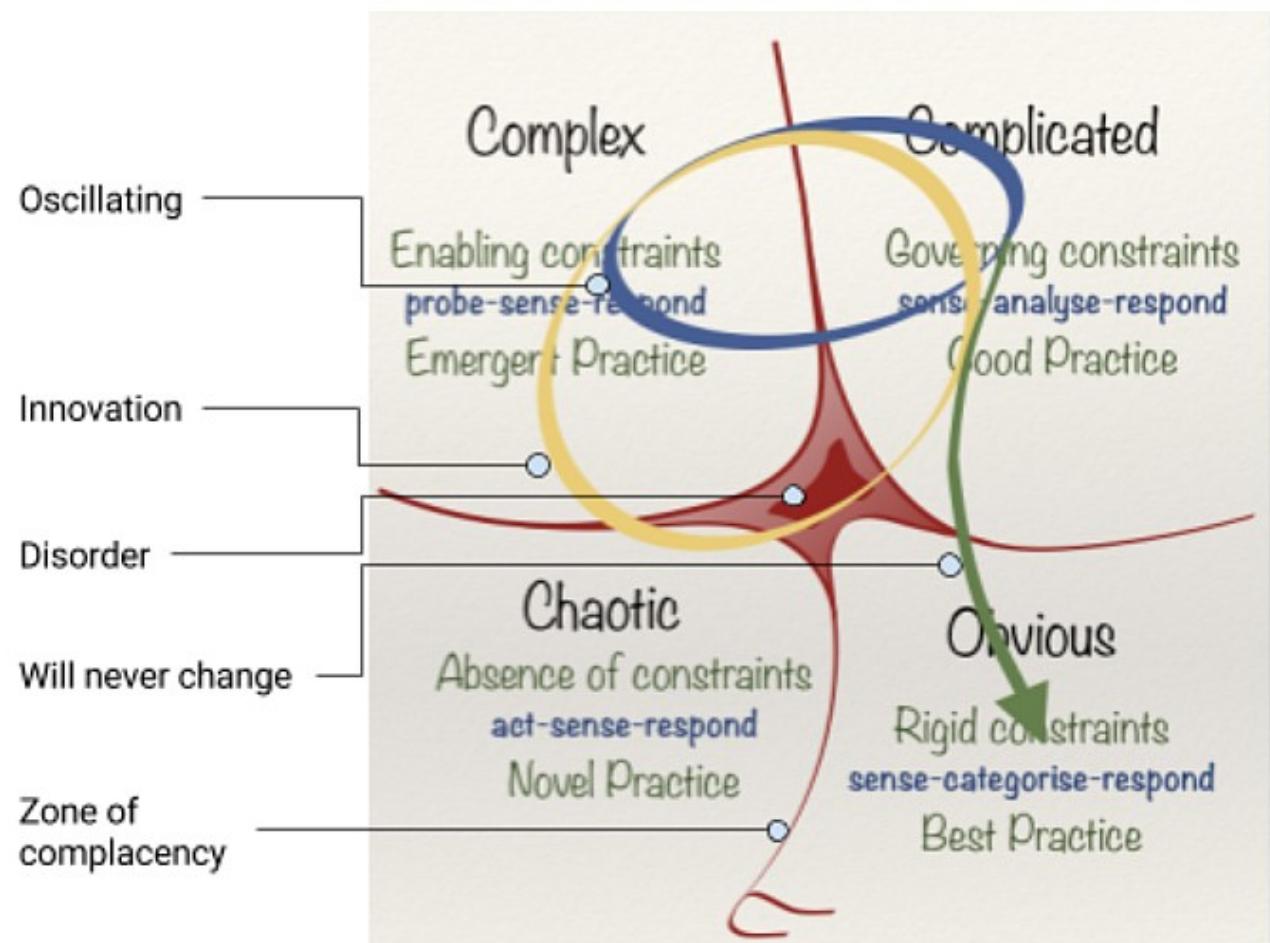
Cynefin & beyond

- Cynefin
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 - Unordered (Complex, Chaos)
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- Liminal cynefin

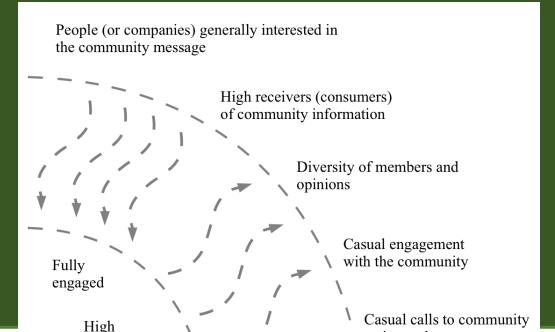


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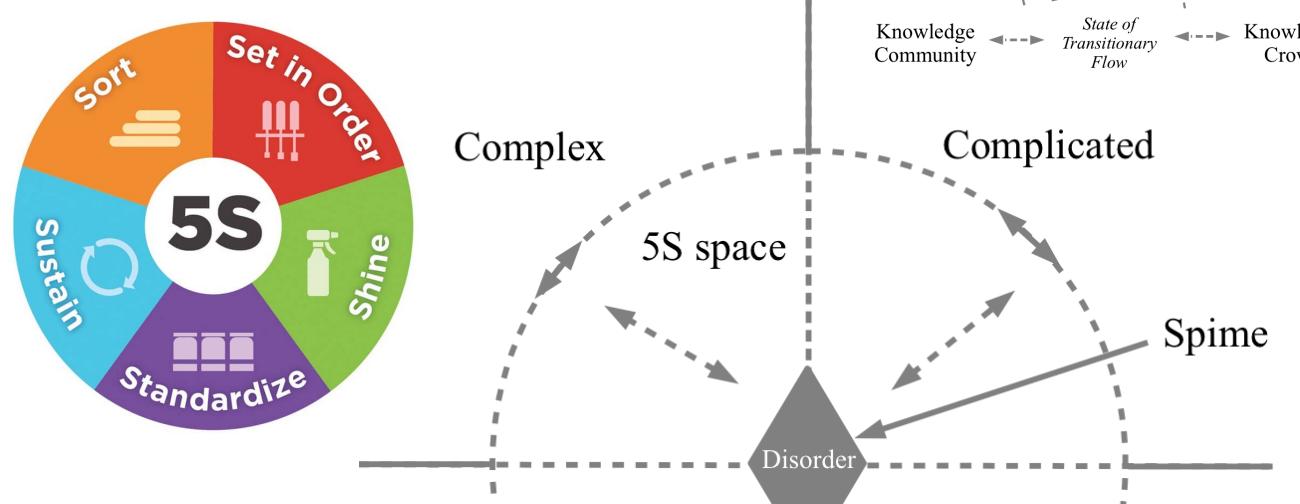
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Cynefin & beyond



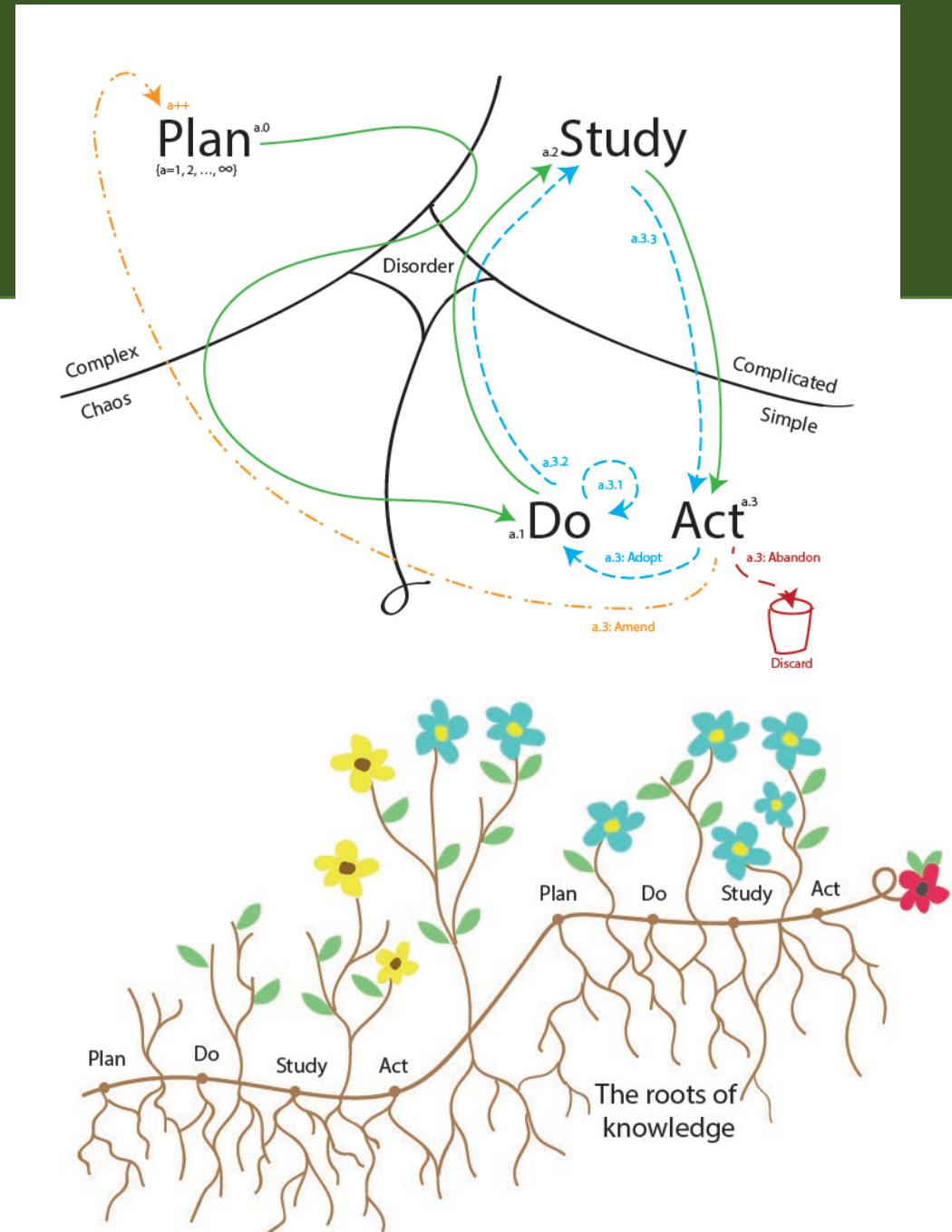
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- SpiCE
 - Spime wrangle, CoP, Ethical decision-making
 - With a CoP (people-process-technology)
 - MOOC
 - Network (weak) ties
 - Cluster (strong) ties



Stakeholder	Well-being	Autonomy	Fairness
Stakeholder (1)			
Stakeholder (2)			
Stakeholder (3)			
Stakeholder (4)			

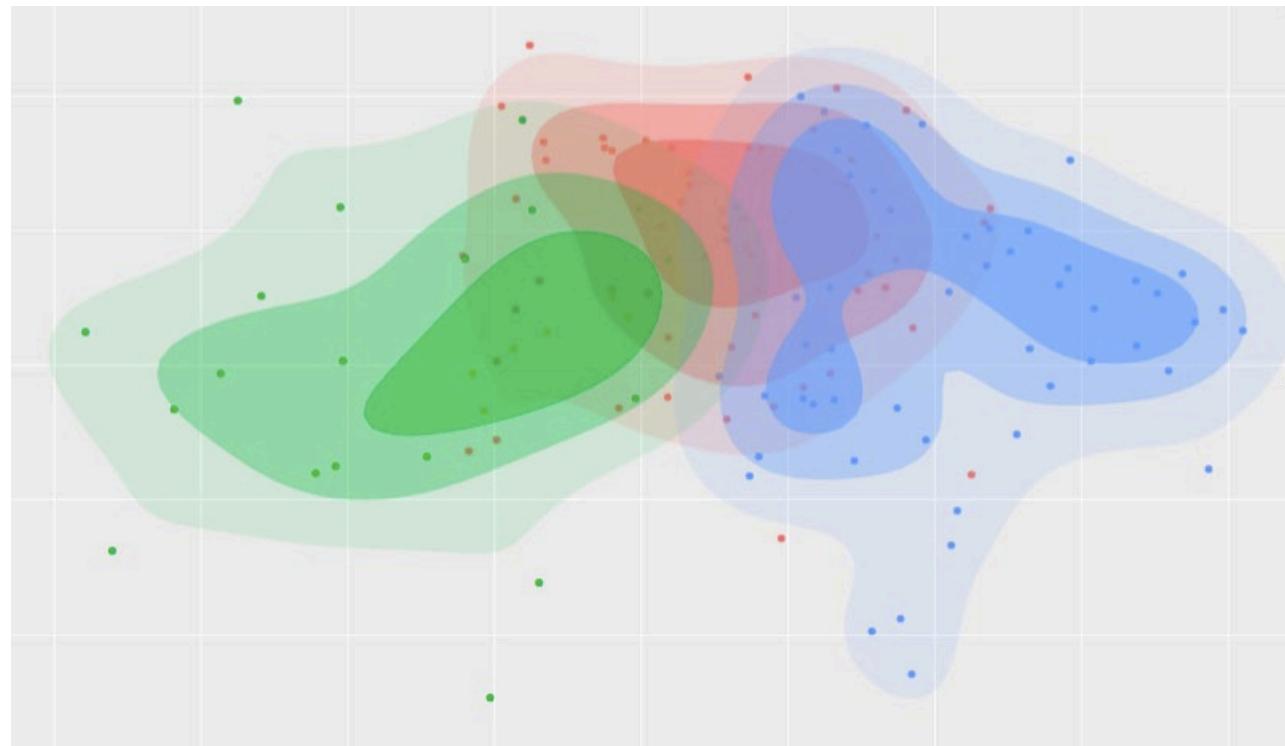
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- PDCA cynefin – ORhiDeCy?? ☺
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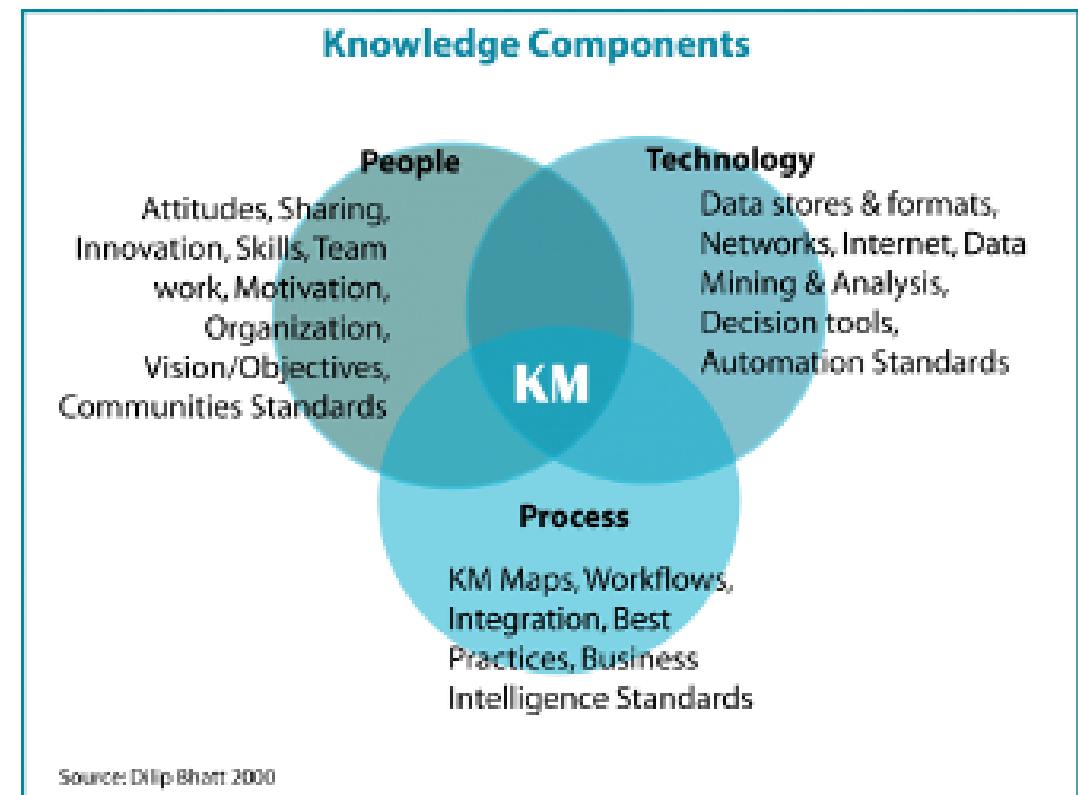
Cynefin & beyond

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 - With a CoP (people-process-technology)
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 - Network (weak) ties / Cluster (strong) ties
- PDCA cynefin – ORhiDeCy?? 😊
 - With SpiCEy things (peop-pro-tech)
- Dave Snowden (2018)
 - ["We have to empower people...comes from the power to interpret your narrative"](#)



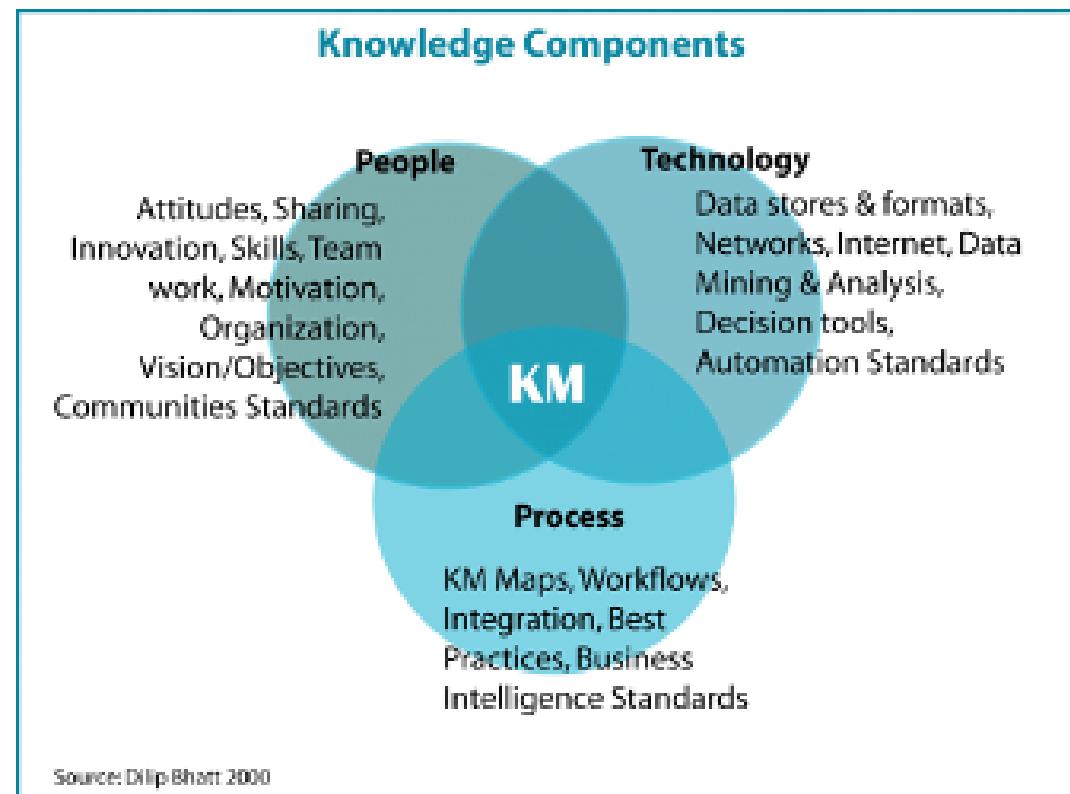
CoPs, digital habitats, & KM

- People, process, technology



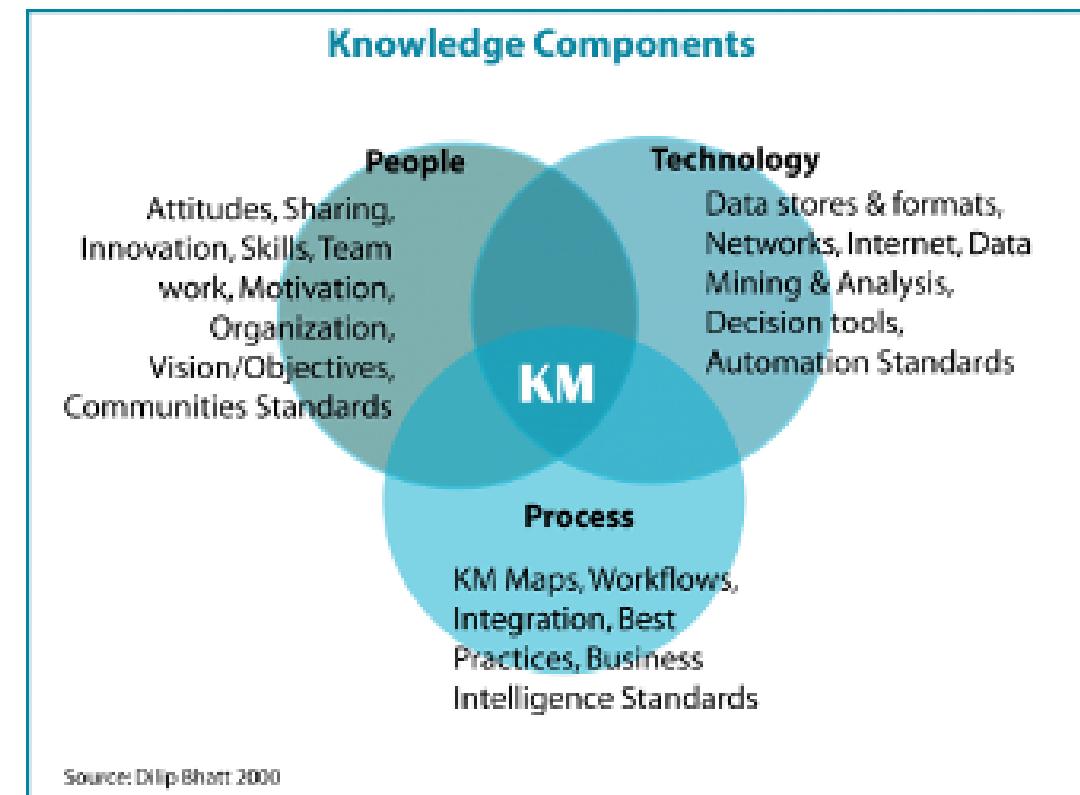
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- People, process, technology
- About explicit and tacit (implicit)
 - “Knowing is more important than knowledge” (Snowden, 2012)



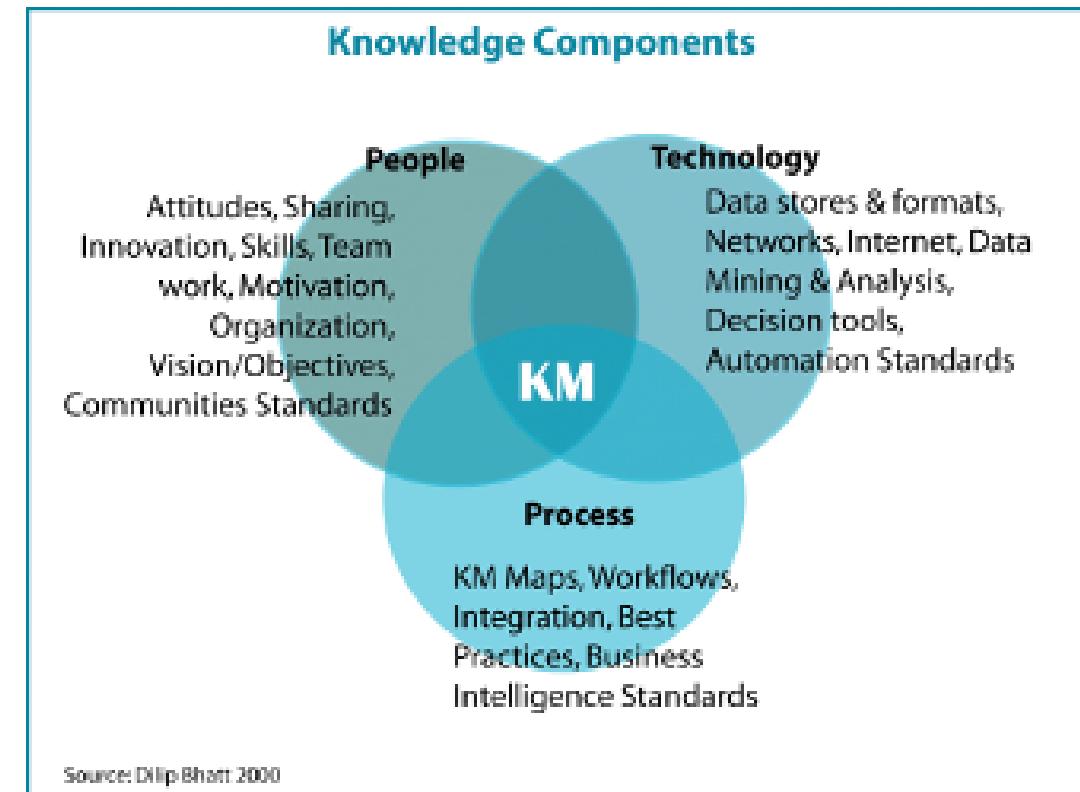
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- Cynefin (and its derivations?)
 - Empowering through narrative

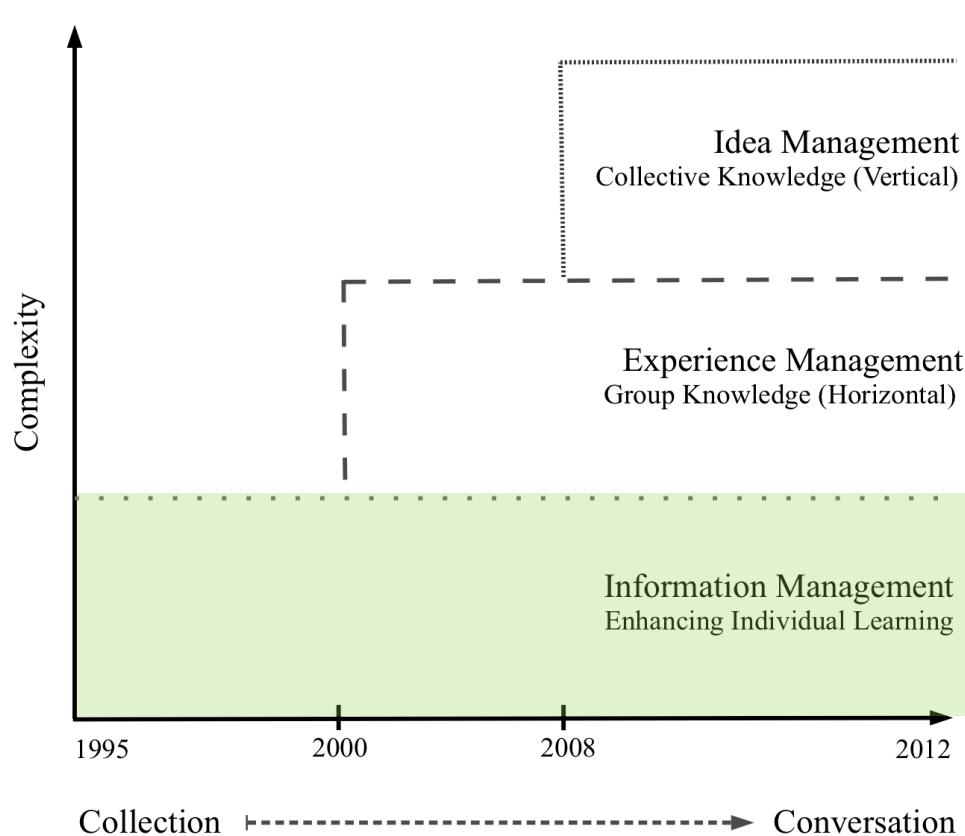


CoPs, digital habitats, & KM

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- Cynefin (and its derivations?)
 - Empowering through narrative
- Enable creation of impact!



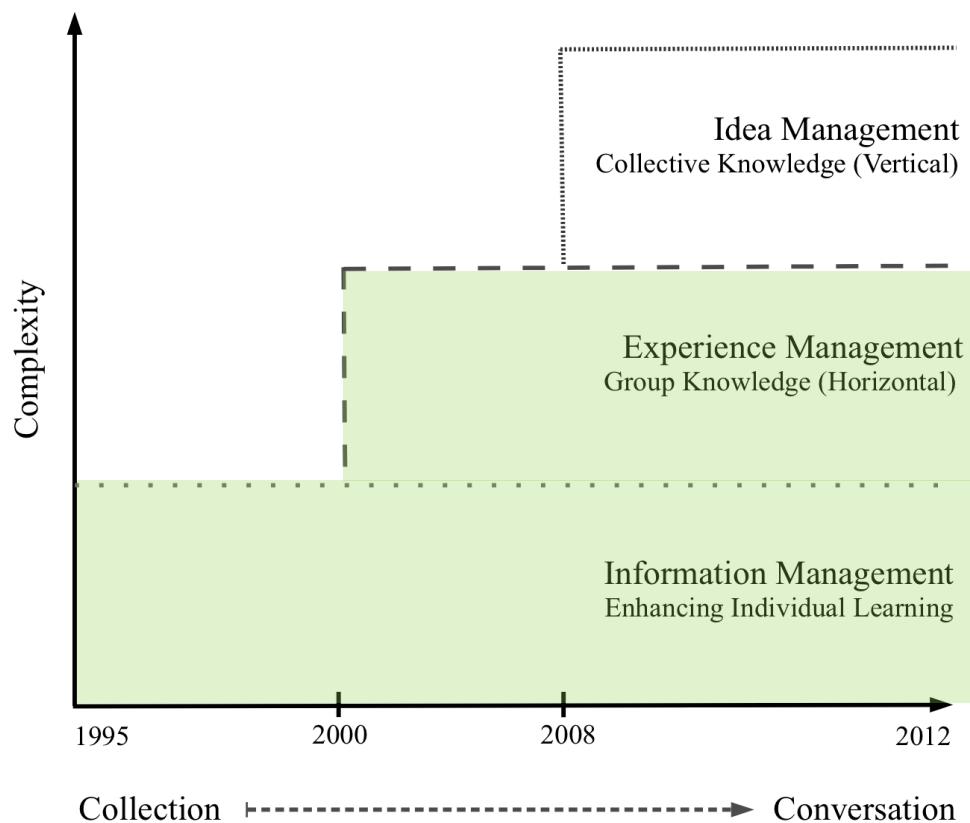
Eras of Knowledge Management (KM)



- First era of information management
 - Data to knowledge
 - E.g. KCS

- N. Dixon. Three Eras of Knowledge Management. (2012, Online) <http://www.nancydixonblog.com/2012/08/the-three-eras-of-knowledge-management.html> (Accessed May 2018)

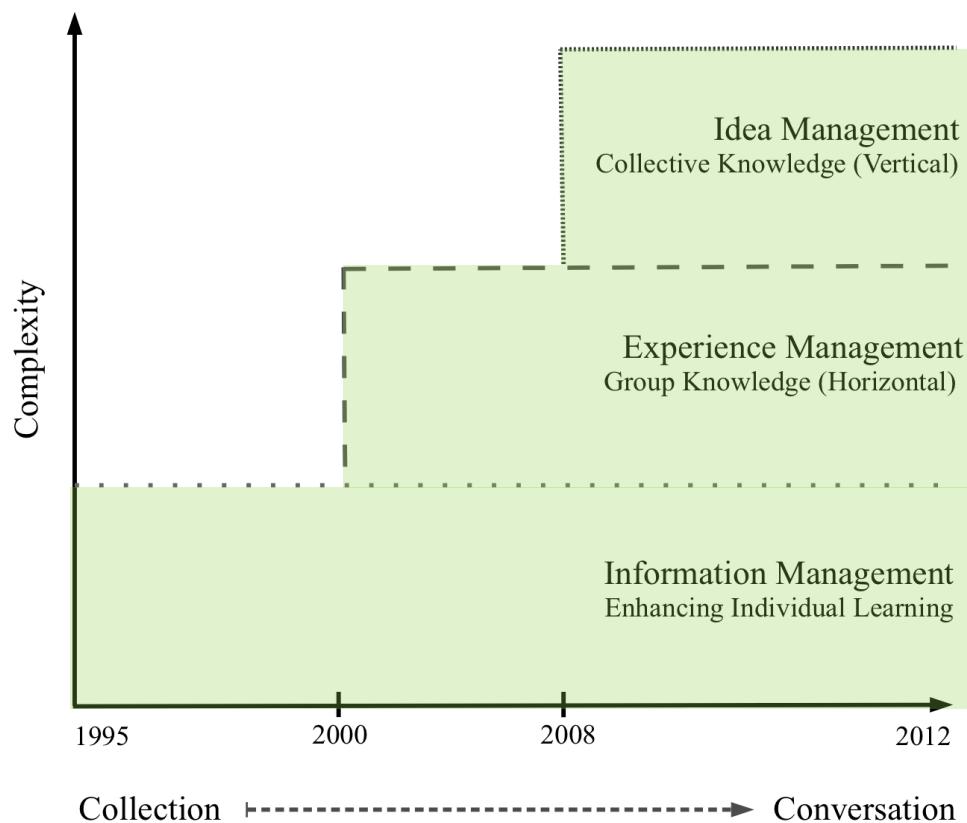
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Eras of Knowledge Management (KM)



- First era of information management
 - Data to knowledge
 - E.g. KCS
- Second era of experience management
 - Data to knowledge (social efforts)
 - E.g. SECI
- Current era of idea management
 - Creating meaning and value for people

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