

# The South African EA Forum



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27 May (JHB)  
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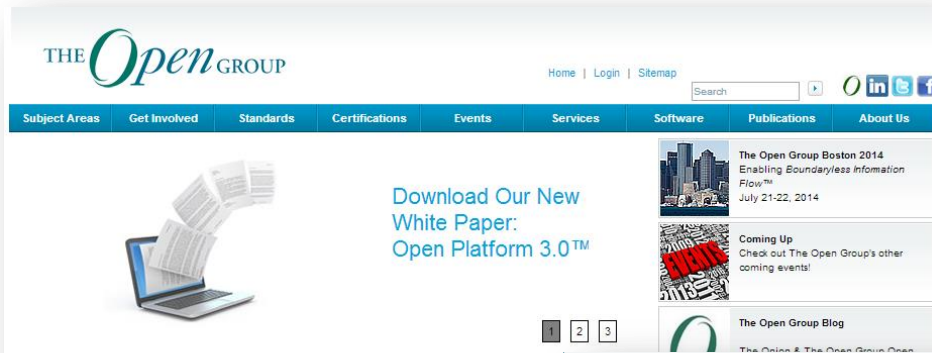
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# Open Platform 3.0™ Forum

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## The Open Group Open Platform 3.0™ Forum

### What is Open Platform 3.0™?

The Open Group Open Platform 3.0 Forum focuses on new and emerging technology trends converging with each other and leading to new business models and system designs. These trends currently include:

- Mobility
- Social networks and social enterprise
- Big data analytics
- Cloud computing
- The Internet of Things (networked sensors and controls)

Other technologies may be taken on board as the Platform develops.

These convergent forces - united by the growing consumption of technology and the resulting evolution in user behavior - offer the potential to create new business models and system designs. However, they also pose architectural issues and structural considerations that must be addressed for businesses to benefit.

The Open Group Open Platform 3.0™ Forum will advance The Open Group vision of Boundaryless Information Flow™ by helping organizations take advantage of the convergence of these modern technologies.

There is a recognized convergence of technologies by industry analysts and practitioners creating the opportunity for a new federated architecture model. Gartner identified this as a 'Lexus of Forces', while IDC is calling it the 3rd Platform. At The Open Group, we are referring to the convergence as Open Platform 3.0

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- Mobility
- Social networks and social enterprise
- Big data analytics
- Cloud computing
- The Internet of Things (networked sensors and controls)

## Publications

### Open Platform 3.0™



This White Paper foreshadows the development of The Open Group Open Platform 3.0™ standard. It is published to inform customers and suppliers of IT products and services, enterprise architects, and IT architects of current thinking and direction on a set of new platform capabilities that will help enterprises to reap the

business benefits of Cloud Computing, Big Data Analytics, Internet of Things, Social Networks, and Mobile Computing.

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### Bibliographic Details

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Type : White Papers (See more like this)

<https://www2.opengroup.org/ogsys/catalog/w147>

## EA Forum

### Frameworks of the IBM Systems Journal

The IBM Systems Journal is a seminal publication that records the outstanding research achievements of the IBM Research Laboratories. At this month's EA Forum events, Adriaan Vorster will take us through two of their very prominent framework articles.

The first is the renown Zachman Framework. Initially published in the IBM System Journal in 1987 as "A Framework for Information Systems Architecture", it has evolved into a true Enterprise Framework.

The newer Cynefin Framework, which was published in the IBM Systems Journal in 2003, is rapidly gaining ground. Whereas the Zachman Framework can be seen as a classification scheme, the Cynefin Framework is seen as a "sense-making" framework.

Adriaan will present the features, similarities and examples of the uses for these frameworks.

Adriaan Vorster, Industry Consultant at Gijima, has worked in the ICT industry for 23 years. He served as CIO at the University of Johannesburg and subsequently at the Mvelaserve Group where, in both positions, he was responsible for the entire ICT domain.

# The Zachman and Cynefin Frameworks.

## Two analytical Frameworks from the IBM Systems Journal

Zachman, John A, *A Framework for Information Systems Architectures*.  
IBM Systems Journal, Vol. 26. No. 3,. 1987.

Kurtz, C. & Snowden, D. 2003, *The New Dynamics of Strategy: Sense-making in a  
Complex-Complicated World*,  
IBM Systems Journal, vol. 42, no. 3, pp. 462–83.

Adriaan Vorster  
November 2014

# Outline

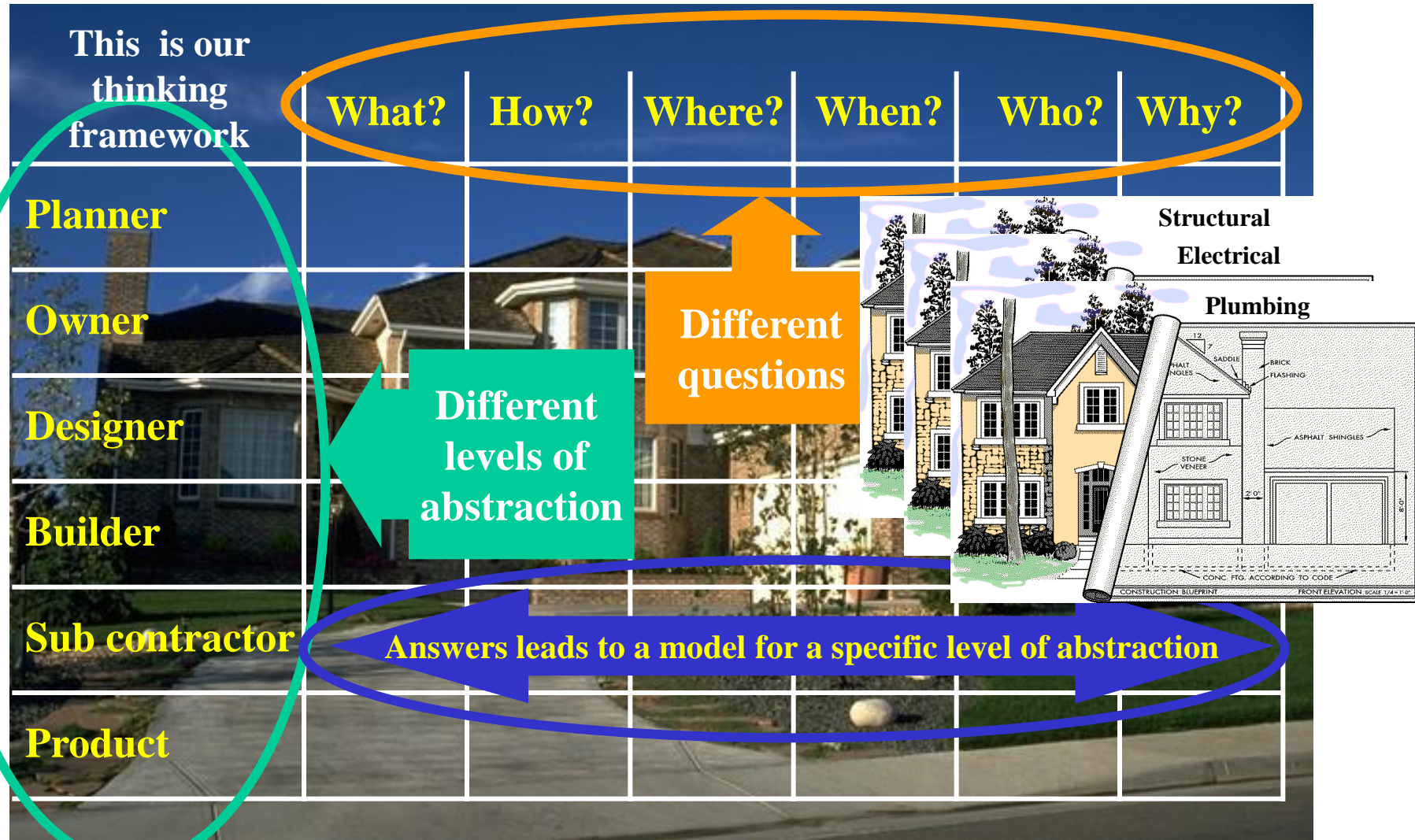
- Complex systems
- The Zachman Framework
- The Cynefin Framework
- From Sense Making to Classification
- Brooks and Lehman
- Entropy
- Cynefin examples
- Conclusion
- Questions

# Complex systems

- Complex systems inherently exhibit non linear behavior.
- These responses are the result of the product of the interactions of the parts, not the sum of the interactions.
- Complex systems can not be analysed by taking them apart and treating each component in isolation.
- Locally optimising parts of complex systems invariably leads to the sub-optimisation of the whole system.
- The only way to handle complex systems is to concentrate on the components whilst maintaining a sense of the contextual alignment of the components.

# Let us build something complex like a house

We begin by establishing a representative model.



By combining all the models we have established an architecture!



# The Zachman Framework

Systems Architecture	What	How	Where	Who	When	Why	
<b>Planner model</b>	List of things important to business.	List of processes the business performs	List of locations where business operates	List of users / groups / units of the business	List of business events / cycles	List of business goals / strategies	<b>Strategic scope model</b>
<b>Owner model</b>	Entity relationship diagram.	Business processes.	Logistics network.	Organization chart.	Business event / trigger char	Business plan.	<b>Business model</b>
<b>Designer model</b>	Data architecture	Application architecture	Distributed systems architecture	User interface architecture	State transition diagram	Business rules	<b>Conceptual systems model</b>
<b>Builder model</b>	Data design	Application design	Hardware systems design	User interface design	State transition design	Knowledge design	<b>Technology model</b>
<b>Sub-contractor model</b>	Data definition	Program	Network architecture	Access architecture	Timing / interrupts	Rule definition	<b>Detailed representations</b>
<b>Product model</b>	Data	Application	Communication	Users	Schedules	Rules / strategy	<b>Functional systems</b>
	<b>Data</b>	<b>Function</b>	<b>Network</b>	<b>Users</b>	<b>Time</b>	<b>Motivation</b>	<b>IS Architecture</b>

This is where you want to go

This is the domain you have to address

This is where you are

# How to build legacy or “throw away” systems

Systems Architecture	What	How	Where	Who	When	Why	
Planner model	List of the business processes	List of business processes		List of business processes			Strategic
Owner model	Business process	Business process		Business process			Business model
Designer model	Business process	Business process		Business process			Conceptual systems model
Builder model	Business process	Business process		Business process			Technology model
Sub-contractor model	Data definition	Program		Business process			Business process
Product model	Data	Application	Communication	Users	Schedules	Rules / strategy	Functional systems
	Data	Function	Network	Users	Time	Values	IT Architecture

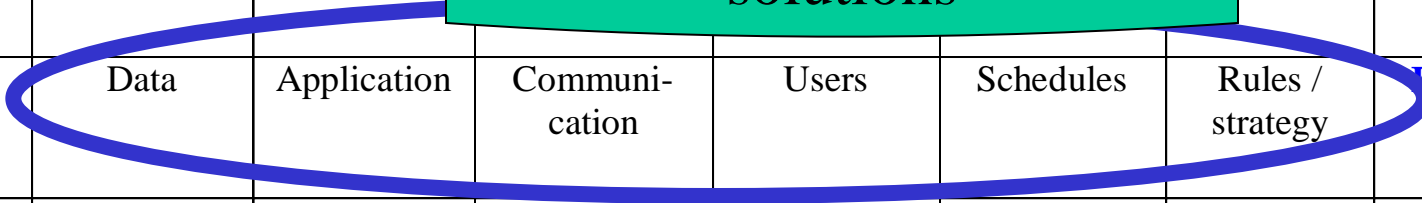
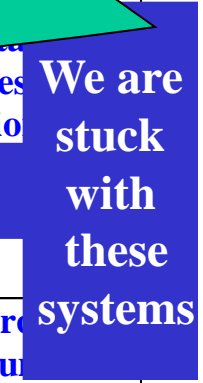
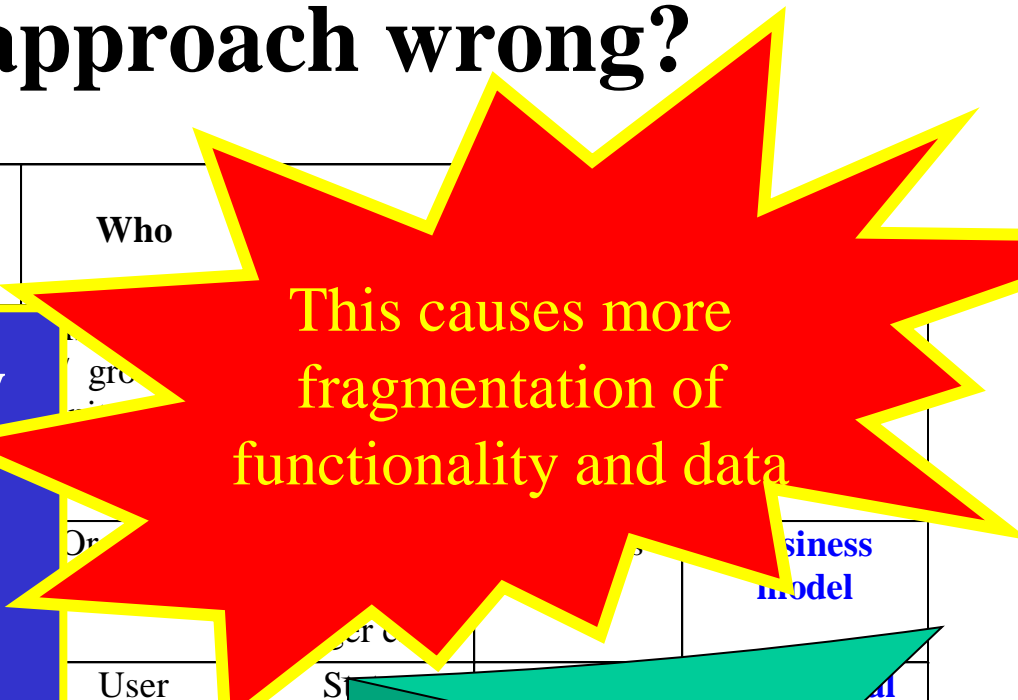
Do not build models

Fix situations by fire fighting

Concentrate on this tier

# Why is the previous approach wrong?

Systems Architecture	What	How	Where	Who			
Planner model	<p><b>Management constantly changes strategy as business constantly changes to meet new requirements</b></p>			gro			
Owner model				Dr		Business model	
Designer model	archite			User interface	S		
Builder model	Data design					Technology	
Sub-contractor model	Data definition					definition	representation
Product model	Data	Application	Communication	Users	Schedules	Rules / strategy	
	<b>Data</b>	<b>Function</b>	<b>Network</b>	<b>Users</b>	<b>Time</b>	<b>Values</b>	<b>IT Architecture</b>



# What is a framework used for?

This is our thinking framework	What?	How?	Where?	When?	Who?	Why?
<b>Planner</b>	<p>A framework is a classification scheme that enables focused concentration on selected aspects of a subject or object while retaining a sense of the contextual, or holistic, perspective.</p> <p>J A Zachman - 1987</p>					
<b>Owner</b>						
<b>Designer</b>						
<b>Builder</b>						
<b>Sub contractor</b>						
<b>Product</b>						

# Some observations

- Your enterprise has all of the Zachman models.
- You have a business rule model.
- You have a process model.
- You have a data model.
- You have a geographic dispersion model.
- You have a temporal model.
- You have a people model. (Form follows function)
- All these models are always present at every level of abstraction.
- Even if you chose not to make them explicit.
- Even if you ignore the models they do not go away, you simply wind up not knowing where to look when disaster strikes.

# More observations

- All the models are orthogonal, ie there is NO natural projections between them.
- You could make business rules in isolation that are unenforceable.
- You could design business processes in isolation that are unsupported.
- You could design a data model that does not relate to the enterprise.
- Only by considering all six columns at a specific level of abstraction could you design a complete model for that level of abstraction, understanding the constraint set, compromises and trade-offs that are required.
- Hence the orthogonality of the Zachman Framework actually represents a six dimensional hypercube!
- And this is why Enterprise Architecture is a complex field.
  - You are working with complexity beyond the human capability to reduce to one simple diagram or model.

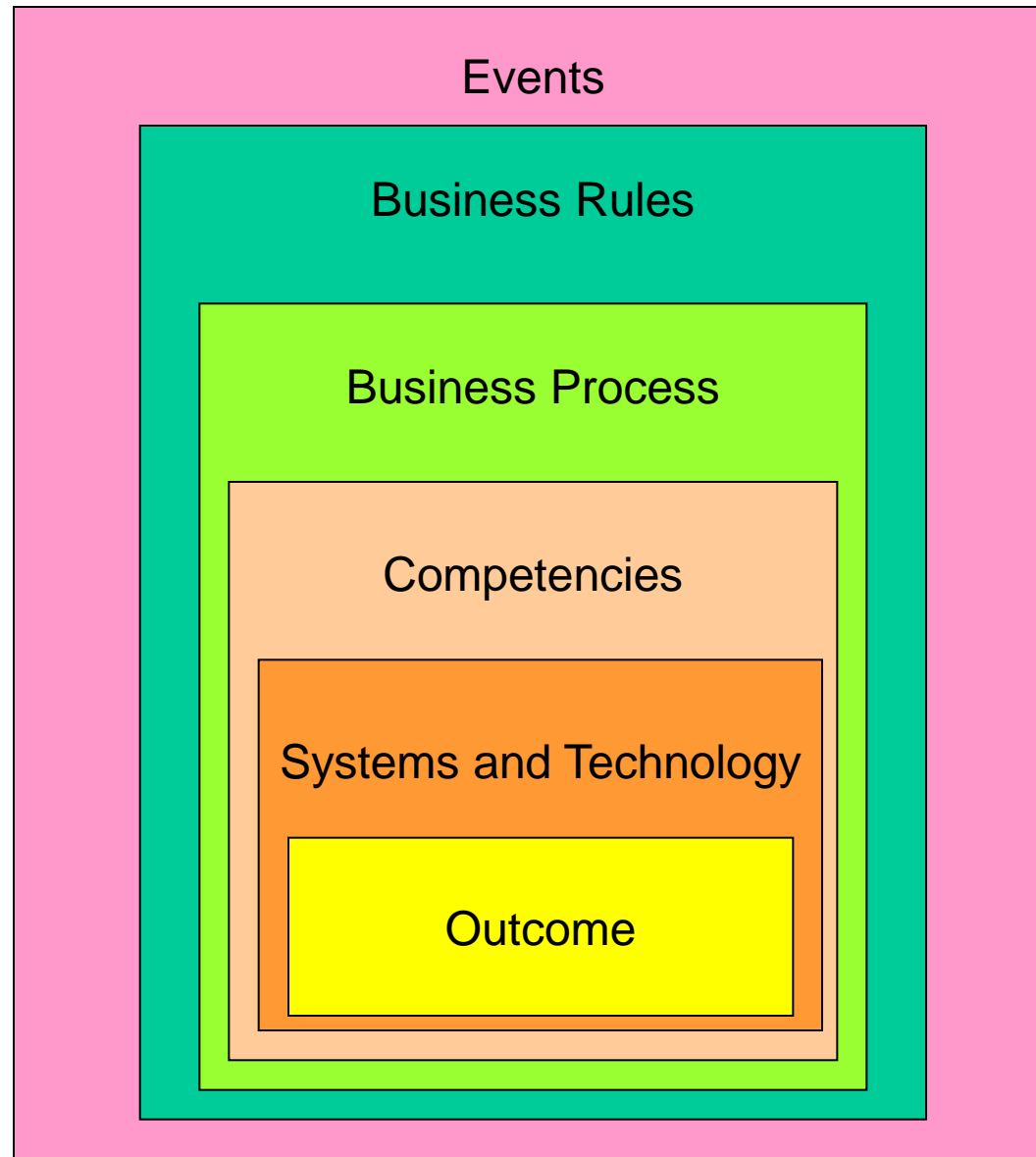
# Check out the linkages!

## The Zachman Framework for Enterprise Architecture™ The Enterprise Ontology™

Version 3.0



# Causality principles in information systems





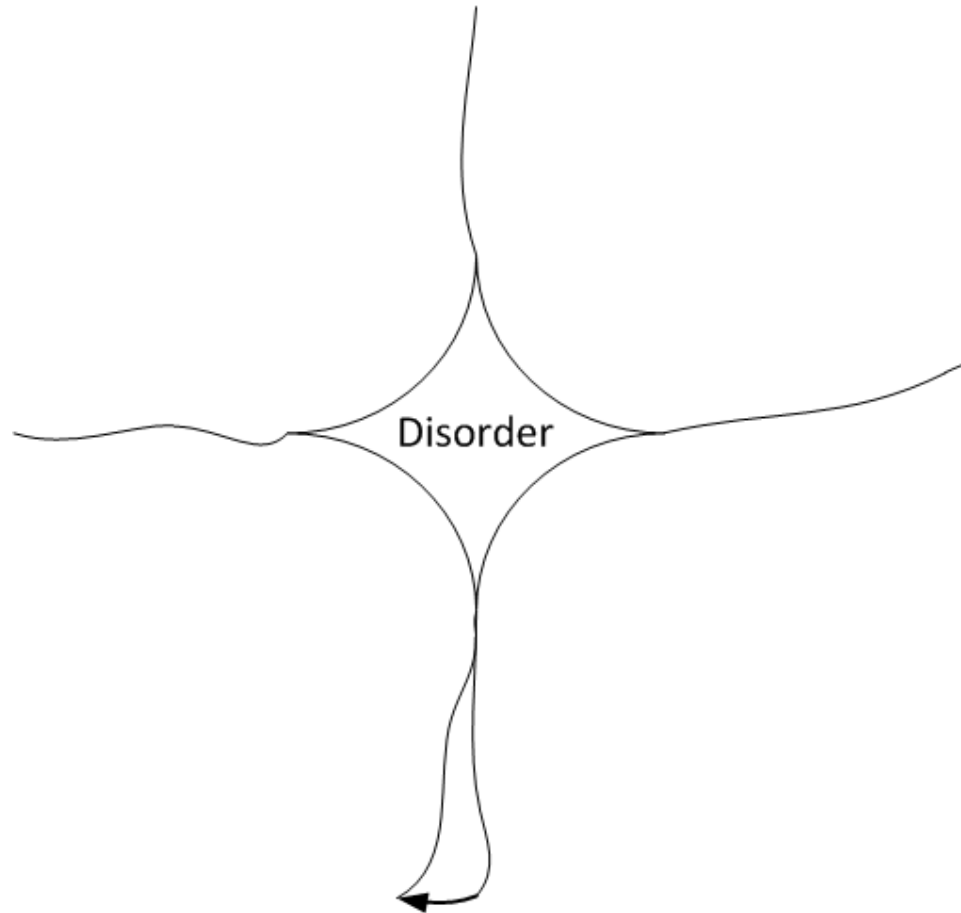
# Some Causal Relationships in Data Quality

- The BUSINESS RULE provides the containing structure for the BUSINESS PROCESS
- The BUSINESS PROCESS gets the work done and sets the COMPETENCY requirements
- The COMPETENCY requirements allows for the deployment of a SYSTEM
- The SYSTEM and TECHNOLOGY will generate the OUTCOME which is DATA.
- EVENTS will invoke new rules
- The above is a set of absolutely causal links in the DATA QUALITY CHAIN.
- Violate any of these, get unskilled users to make up their own rules, deploy lots of spreadsheets, and use any business process, and you WILL GENERATE DUFF DATA!

# The Cynefin Framework

- In contrast to the Zachman Framework, which is a Classification schema, the Cynefin Framework is a Sense Making schema.
- In a Classification schema the framework precedes the data.
  - The Framework presents pigeon holes in which similar artefacts can be grouped according to predetermined decision criteria.
- The Cynefin Framework, being a sense making framework has the data preceding the framework
  - The situation is observed and then the analysis is done according to the features presented by the data.
  - In many instances the analysis could span several of the Cynefin framework domains and hence the name Cynefin which is a Welsh term literally meaning a place of many belongings.
  - It is traditional to start from a point of disorder and then to examine the features of the environment to determine the analysis.
- Are these two frameworks disjointed?
  - No! The reality is that we always move from sense making to classification to sense making to classification to ....

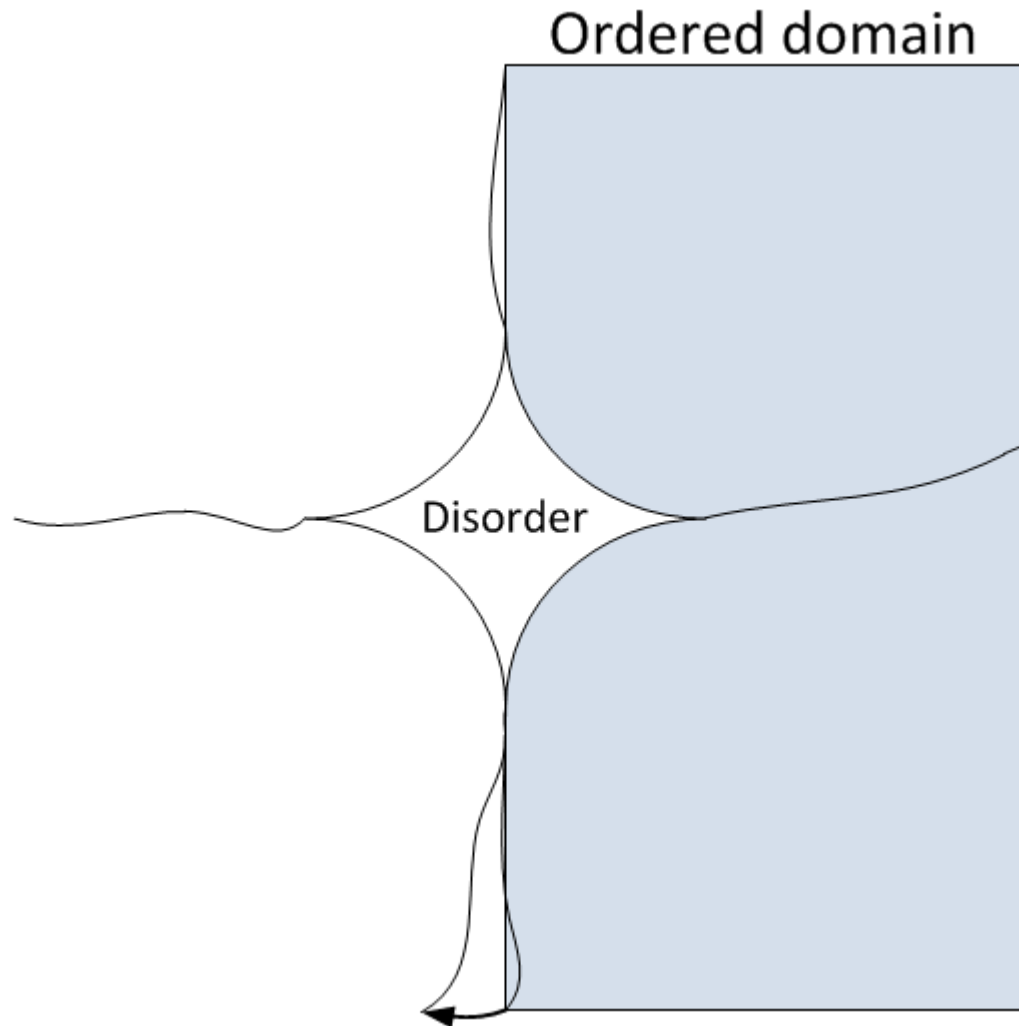
# The Cynefin Framework



Just a word of warning concerning the “boundaries” of the Cynefin Framework. They are NOT hard, clear, static at all, and are subject to the situation under review but shown that way for convenience only.

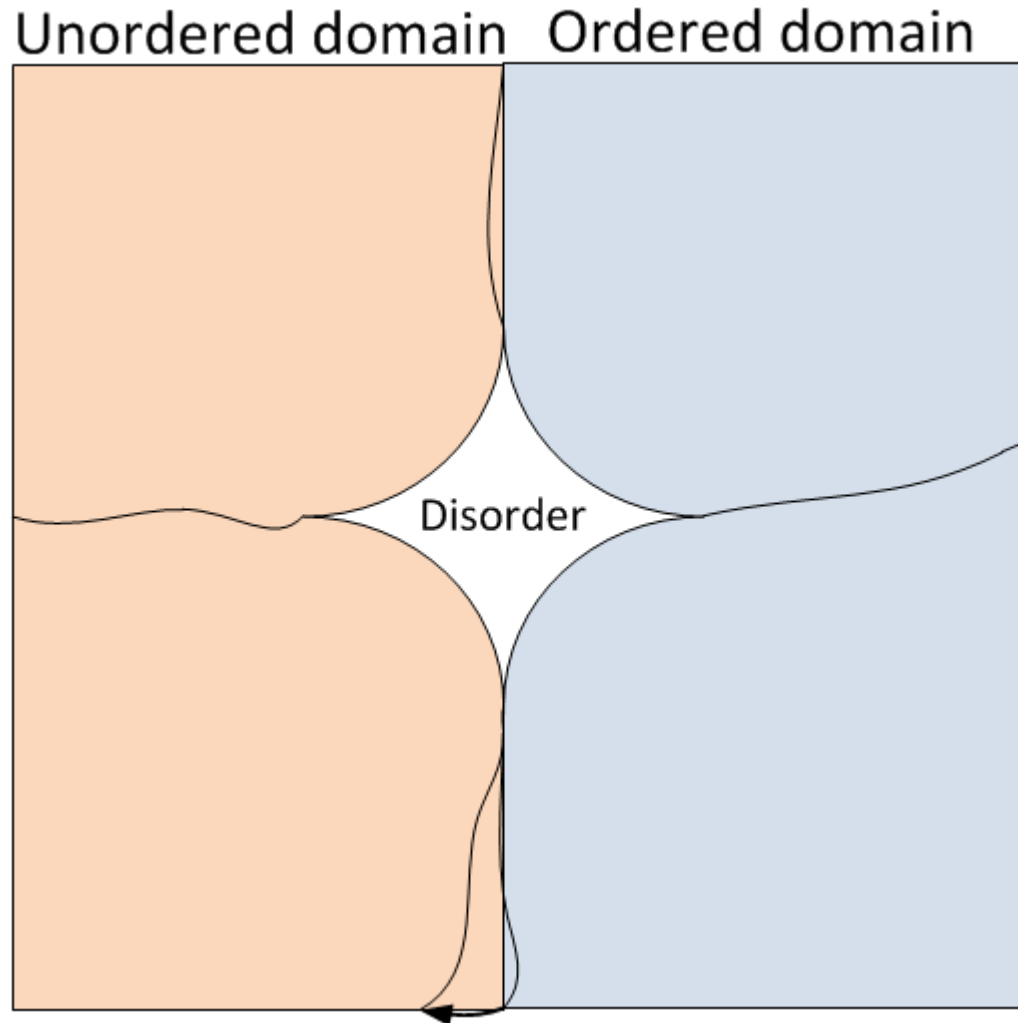
# The Ordered Domain

In the Ordered Domain there are discernible cause and effect relationships

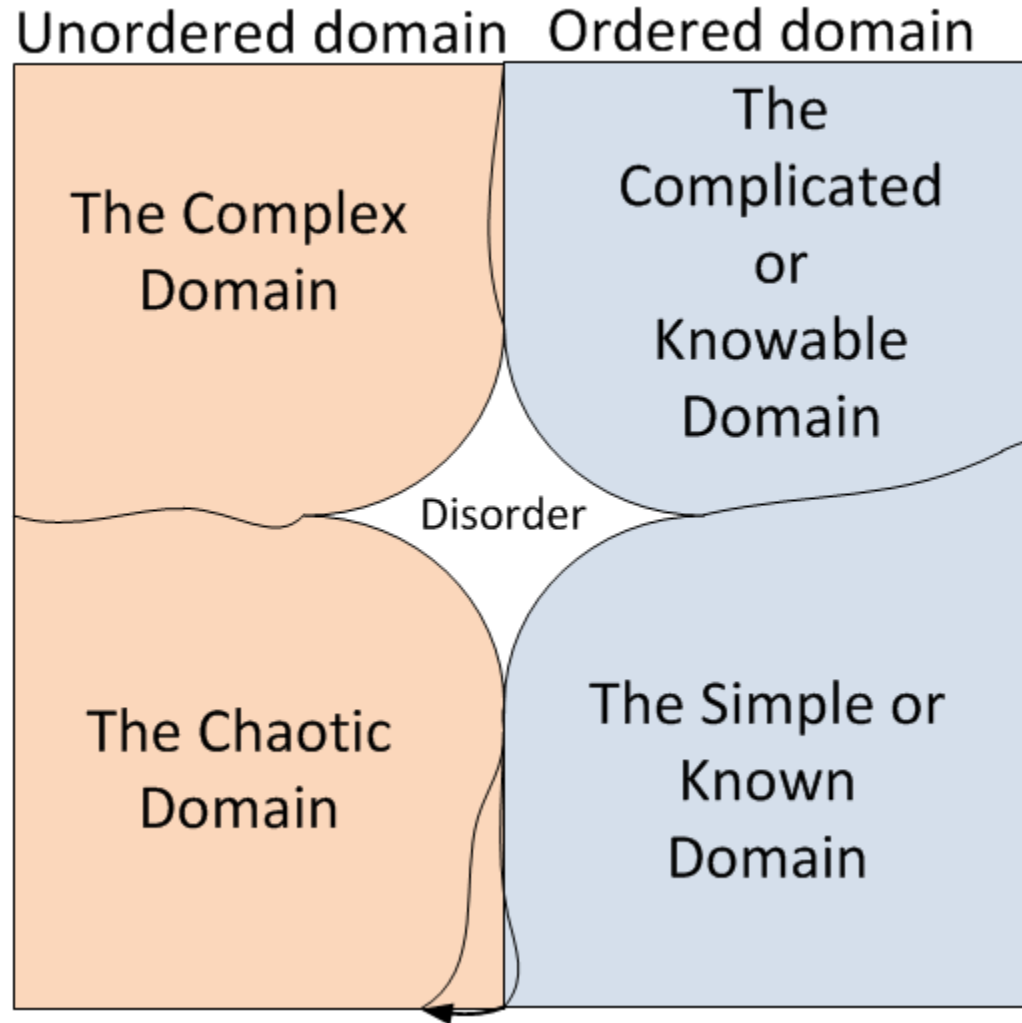


# The Unordered Domain

In the Unordered Domain the cause and effect relationships are minimally known, frequently in hindsight only, or absent.

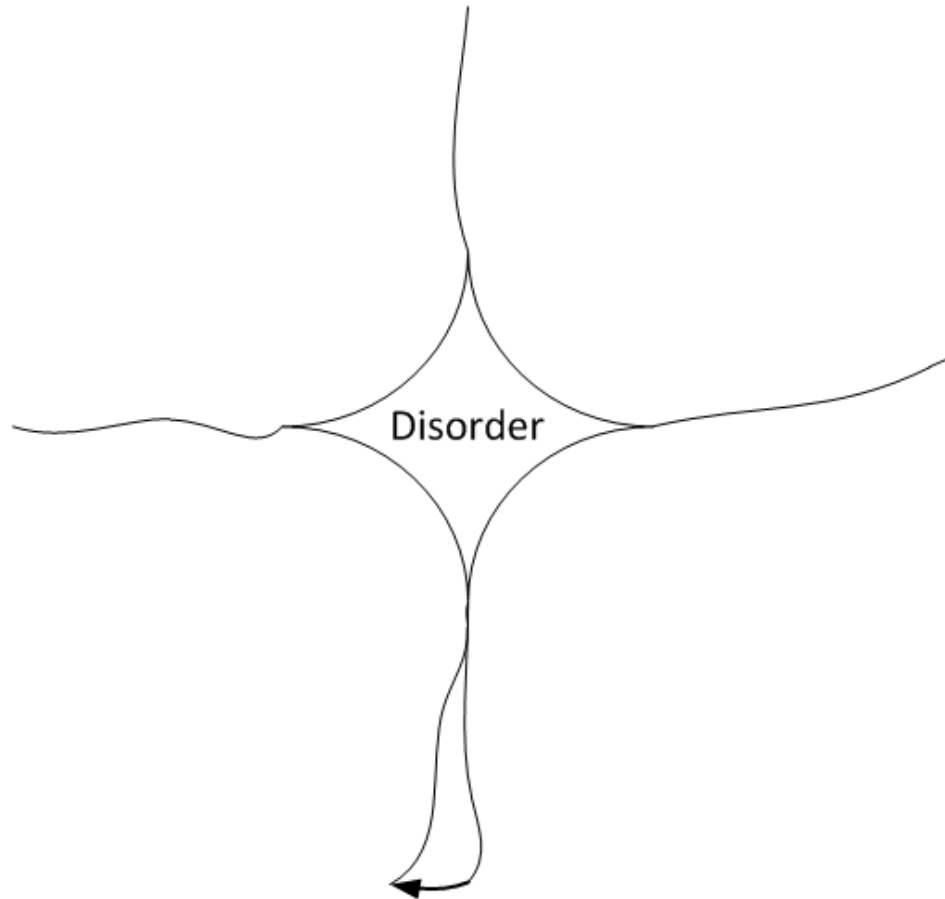


# All the Domains



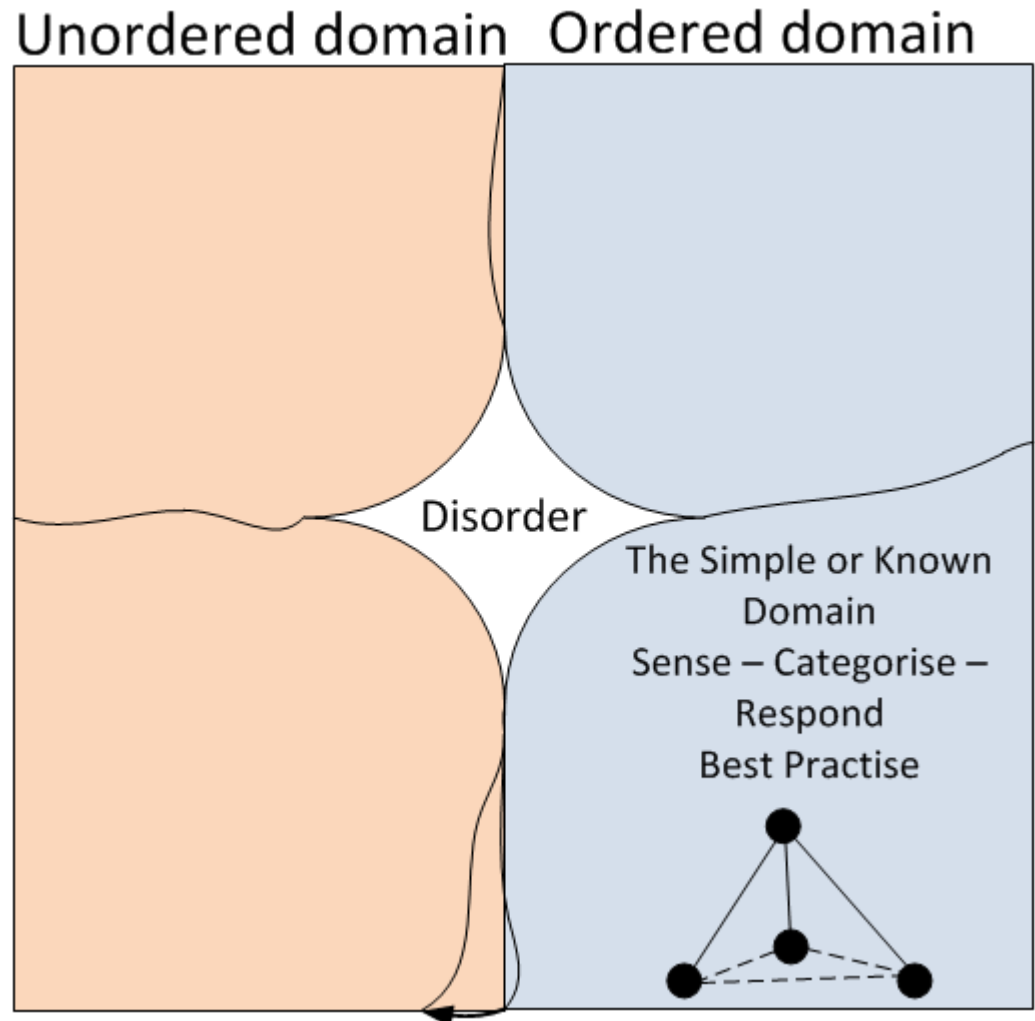
# Disorder

- When in Disorder there is no knowledge of the existence of any causality and this destructive state has to be guided into one of the other four domain that could be addressed



# The Simple or Known Domain

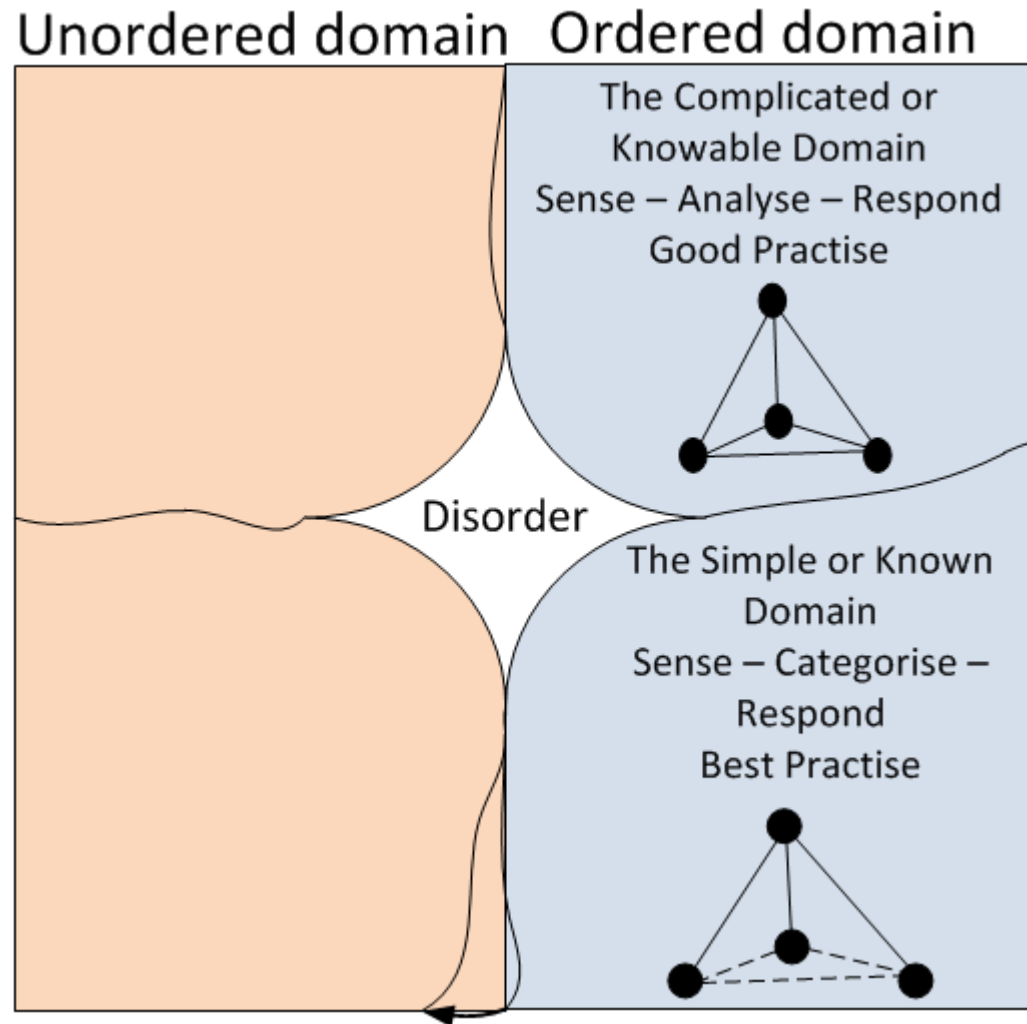
- The relationship between cause and effect is known to all.
- The approach to this domain is to *Sense – Categorise – Respond*.
- This domain is characterised by strong centralised control with weak distributed linkages and represents a bureaucratic way of working.
- This is the domain of Best Practise.





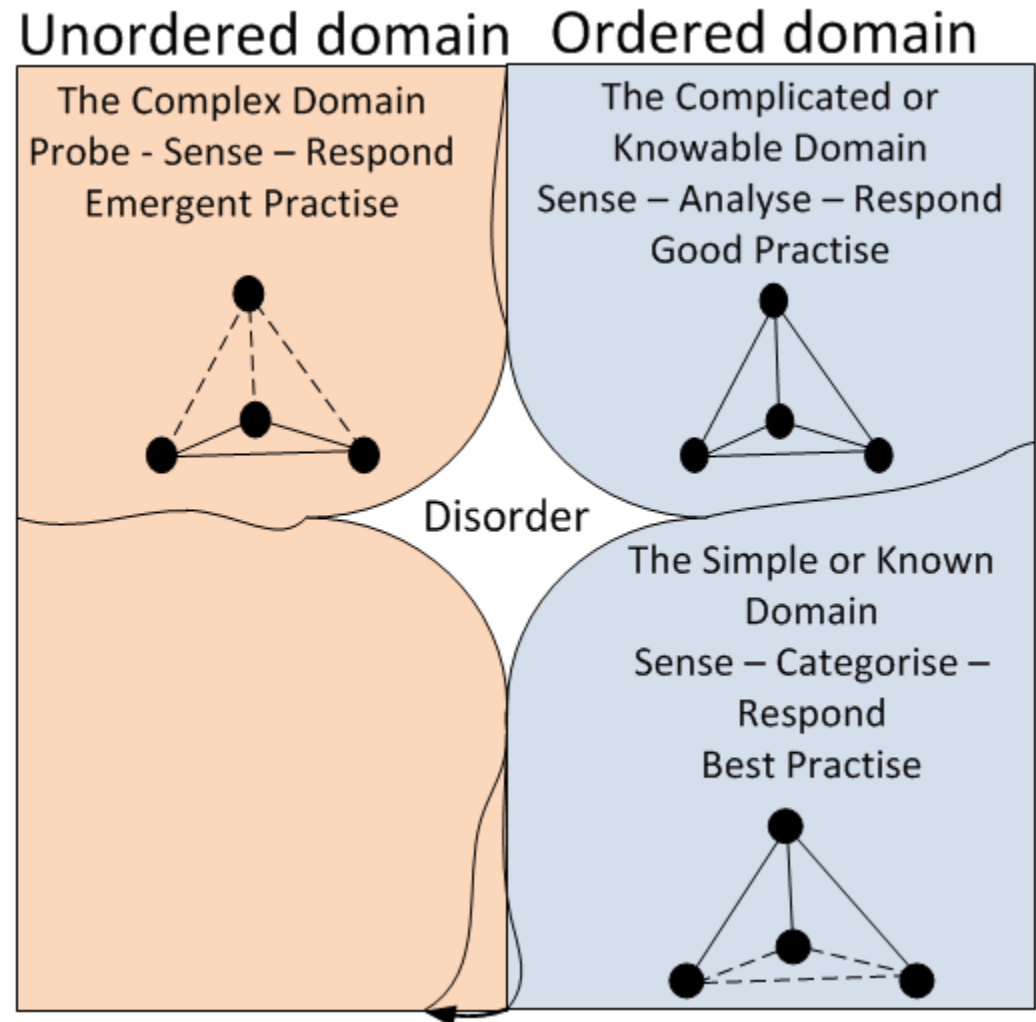
# The Complicated or Knowable Domain

- In this domain the relationship between cause and effect requires analysis or some form of expert knowledge.
- The typical approach is Sense – Analyse – Respond.
- This domain is the realm of most scientific research and matrix organisational structures.
- This is the domain of good practise.
- The control model is one of strong central with equally strong mutual linkages.



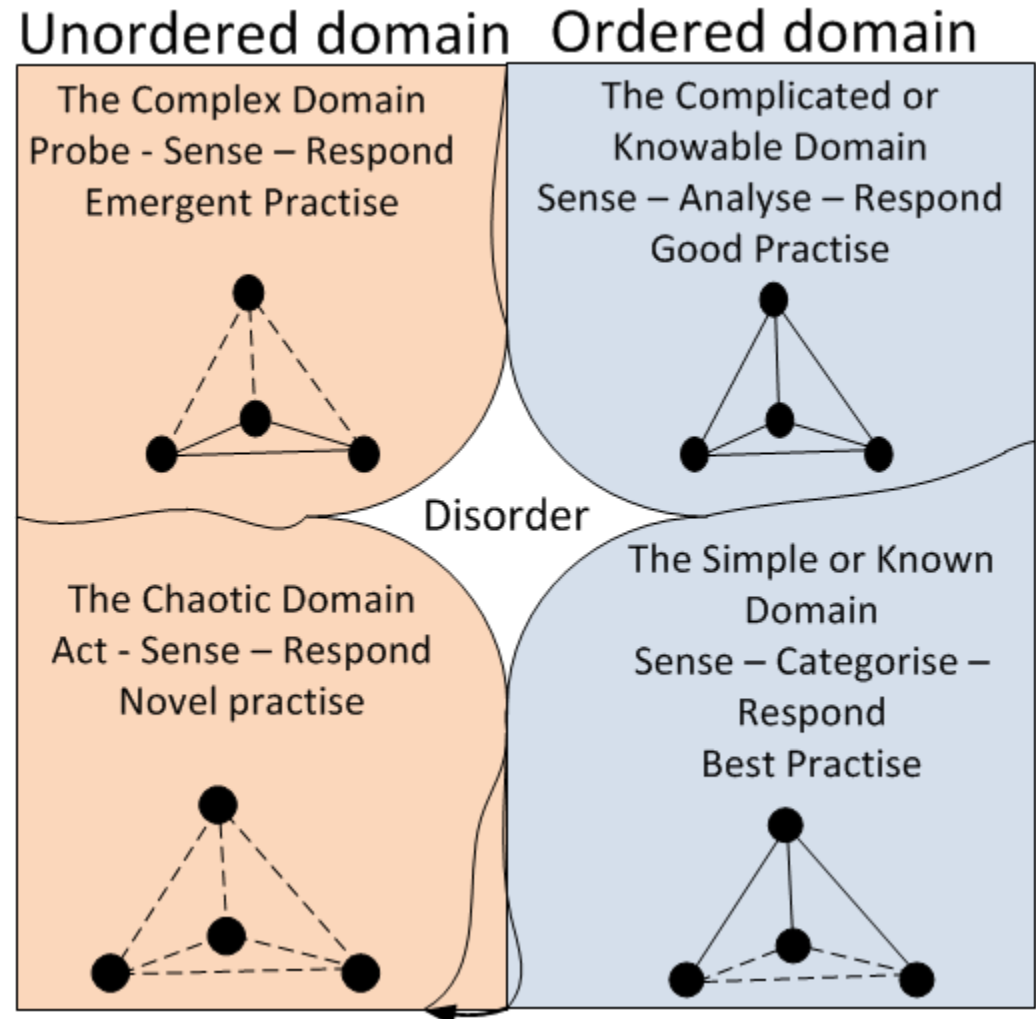
# The Complex Domain

- In this domain the relationship between cause and effect is only known in retrospect, not in advance.
- The typical approach is Probe – Sense – Respond.
- This domain is the realm of complexity theory.
- This is the domain of emergent practise.
- The control model is one of weak central with strong mutual linkages.



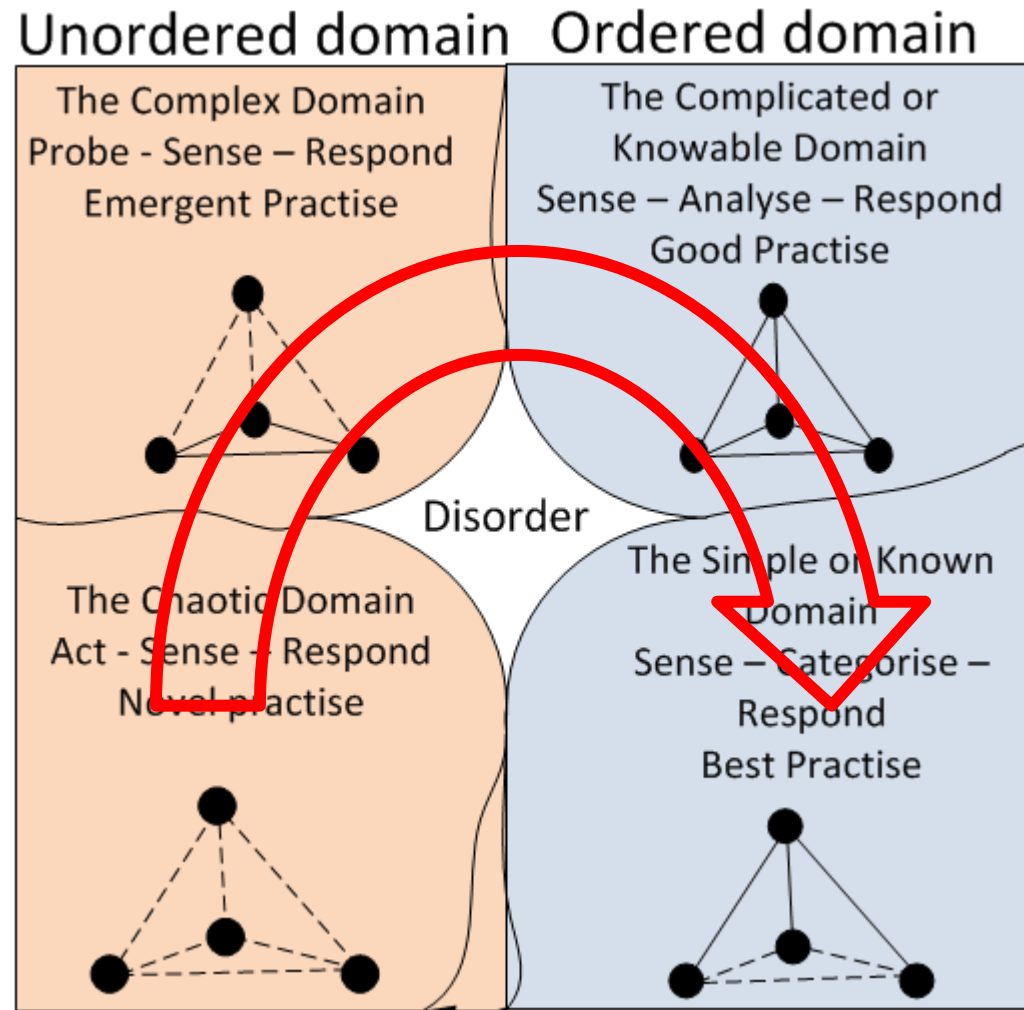
# The Chaotic Domain

- In this domain there is no relationship between cause and effect at systems level.
- The typical approach is Act – Sense – Respond.
- This domain is the realm of chaos theory.
- This is the domain of novel practise.
- The control model is one of weak central with weak mutual linkages.



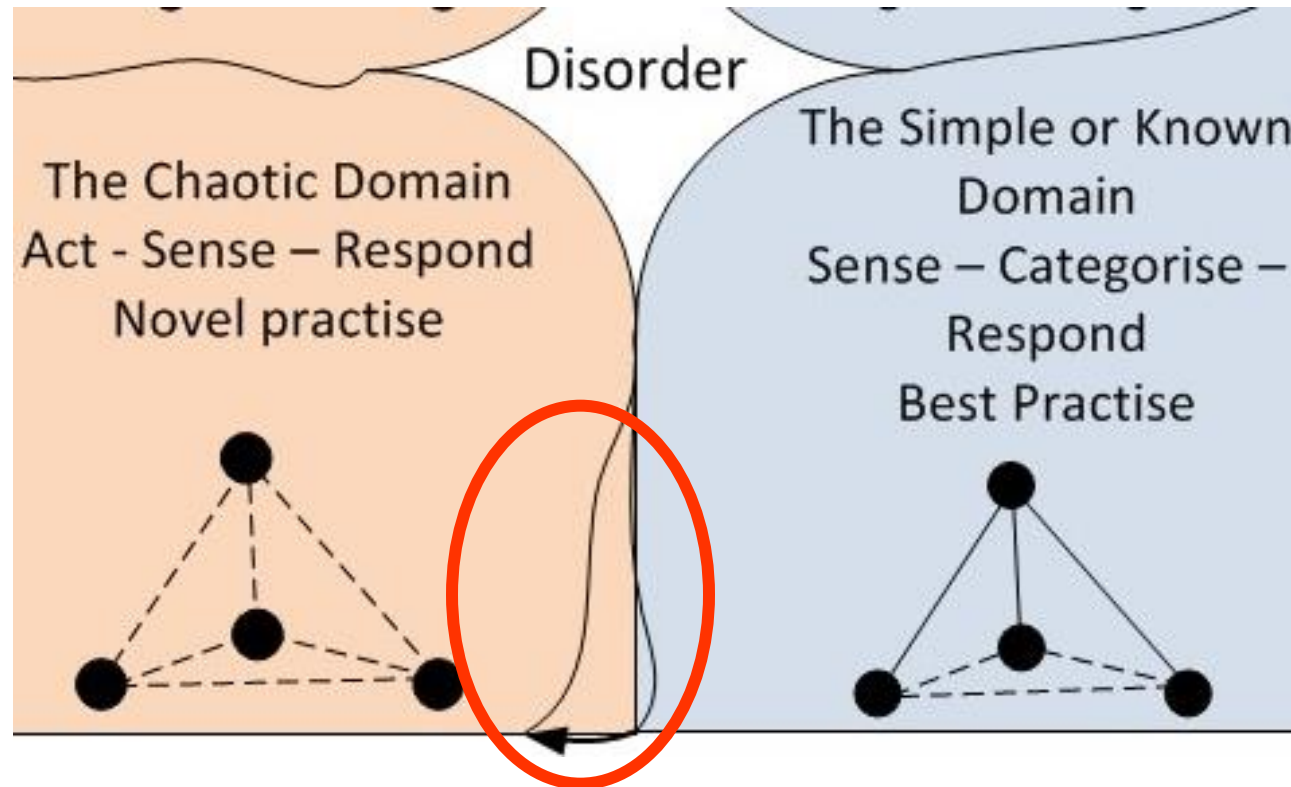
# Using the Cynefin Framework

- It is quite normal to move from the Disorder state to the Chaotic state and then to the stability of the Simple state.
- But there is a severe danger of again entering the Chaotic state.
- This has to do with two drivers, the human desire to simply matters to the extreme and a surprising feature of the Cynefin Framework that we will next discuss.



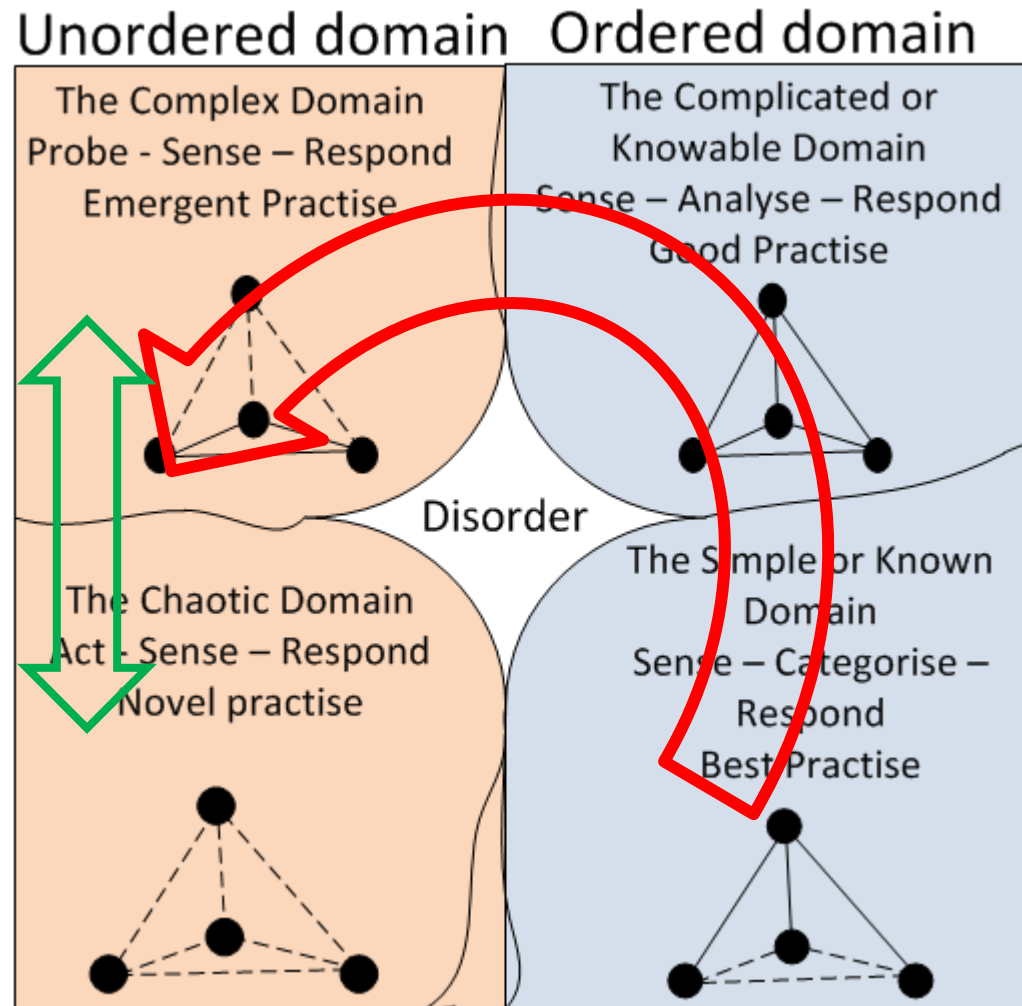
# Sliding into Chaos

- The Cynefin Framework has a slope from the Simple to the Chaotic domain.
- The Simple domain is at a higher level which means that movement will naturally occur from the Simple towards the Chaotic domain.
- Does this ever occur in real life?
- You bet it does!
- Everybody that has been through an ERP implementation will tell you of the functional training that users typically endure, leaving them functionally capable but business process unaware, able to mess up results with no real clue as to their inabilities.
- In the words of Einstein: Things should be made as simple as possible, but not simpler!



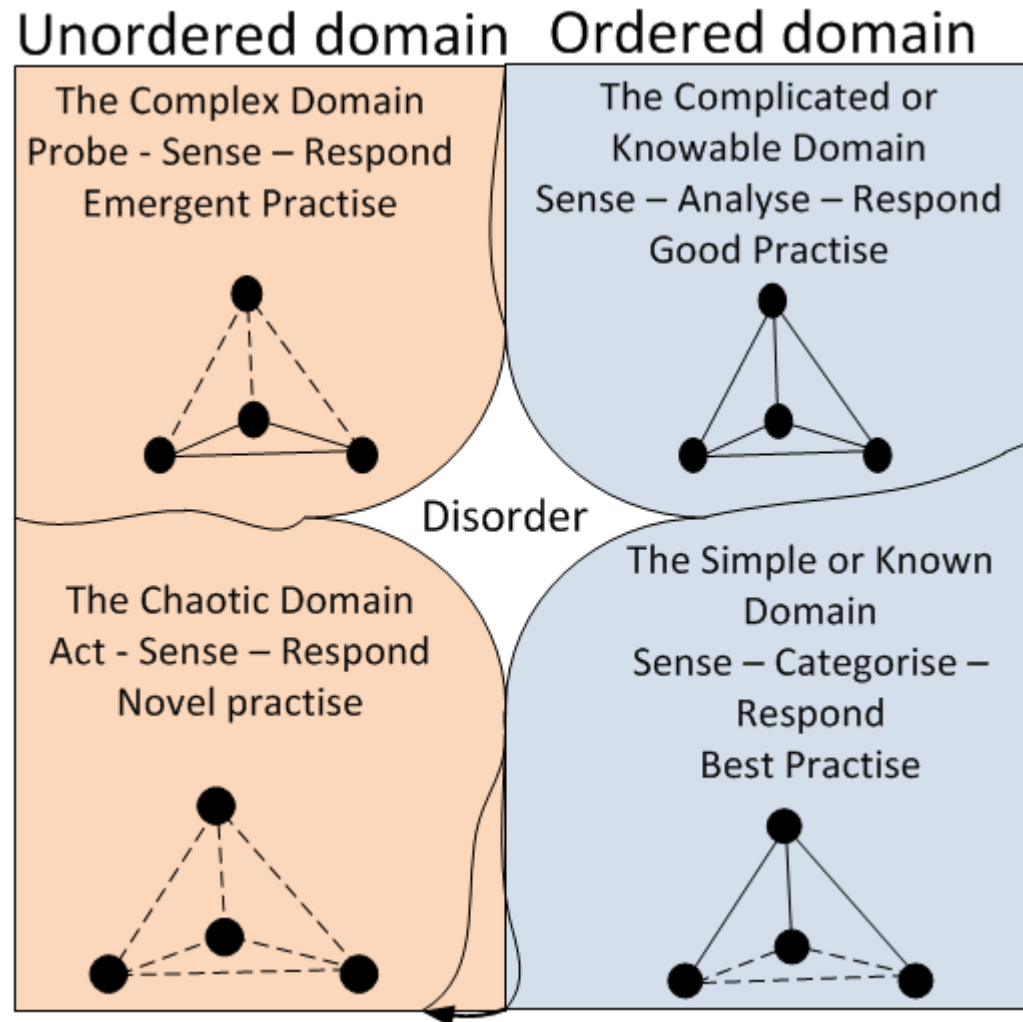
# Strategizing and Prototyping

- When developing strategies it is possible to move from the known into the Complicated and Complex domains to evaluate new options and possibilities.
- This is denoted by the red arrow.
- Prototyping could require entry into the Chaotic domain.
- Because this is an unknowable domain we need to set the boost or cull parameters before entry.
- We then cautiously enter the domain, ready to boost or cull the efforts according to the environmental responses.
- The preferred domain of Management is in the upper two regions, the Complex and Complicated domains.
- A slavish adherence to Best Practise is OK for Simple problems but could get you into Chaos!



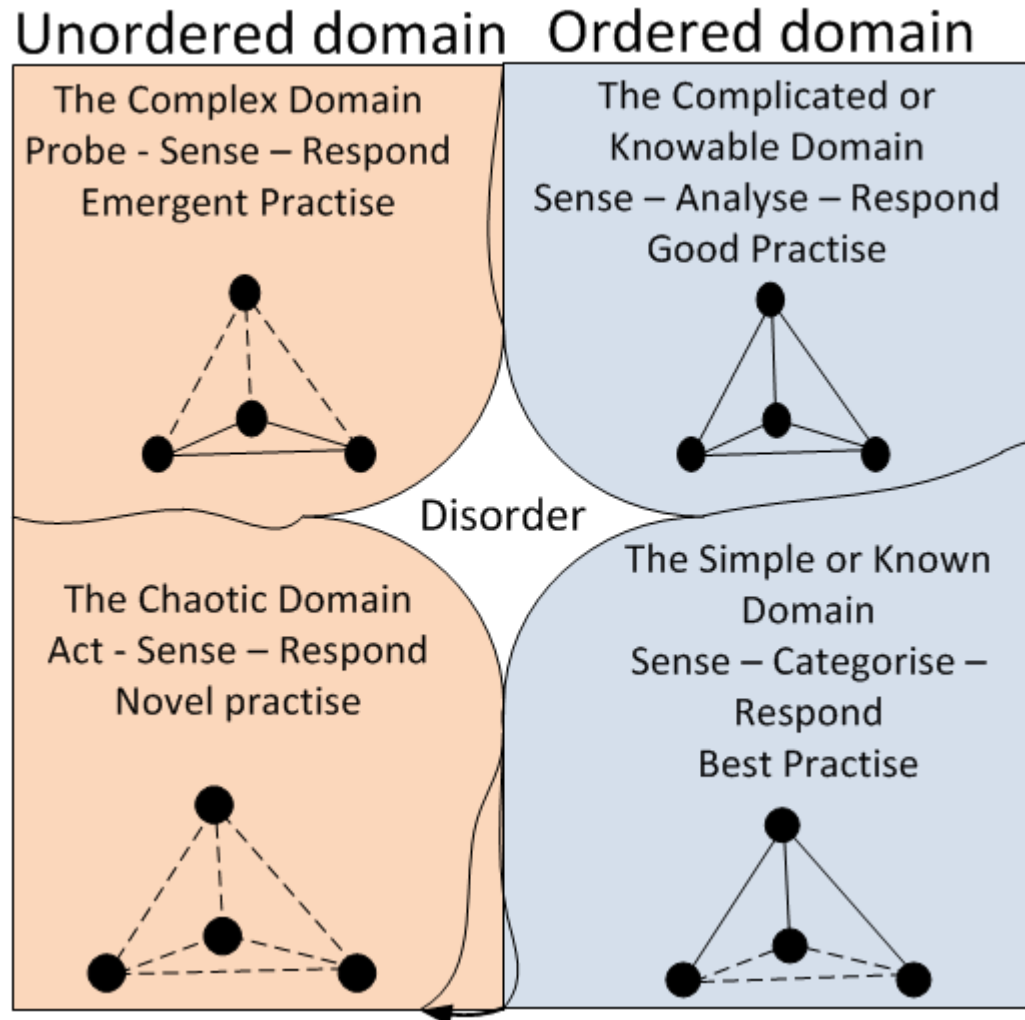
# A word of comfort

- You never, or very rarely, will have a situation that is domiciled in only one of the Cynefin domains
- As with the Zachman Framework you will typically find all of the domains being represented all of the time.
- This again speaks to the porous demarcation of the domain boundaries in real life.



# My (personal) take on Cynefin

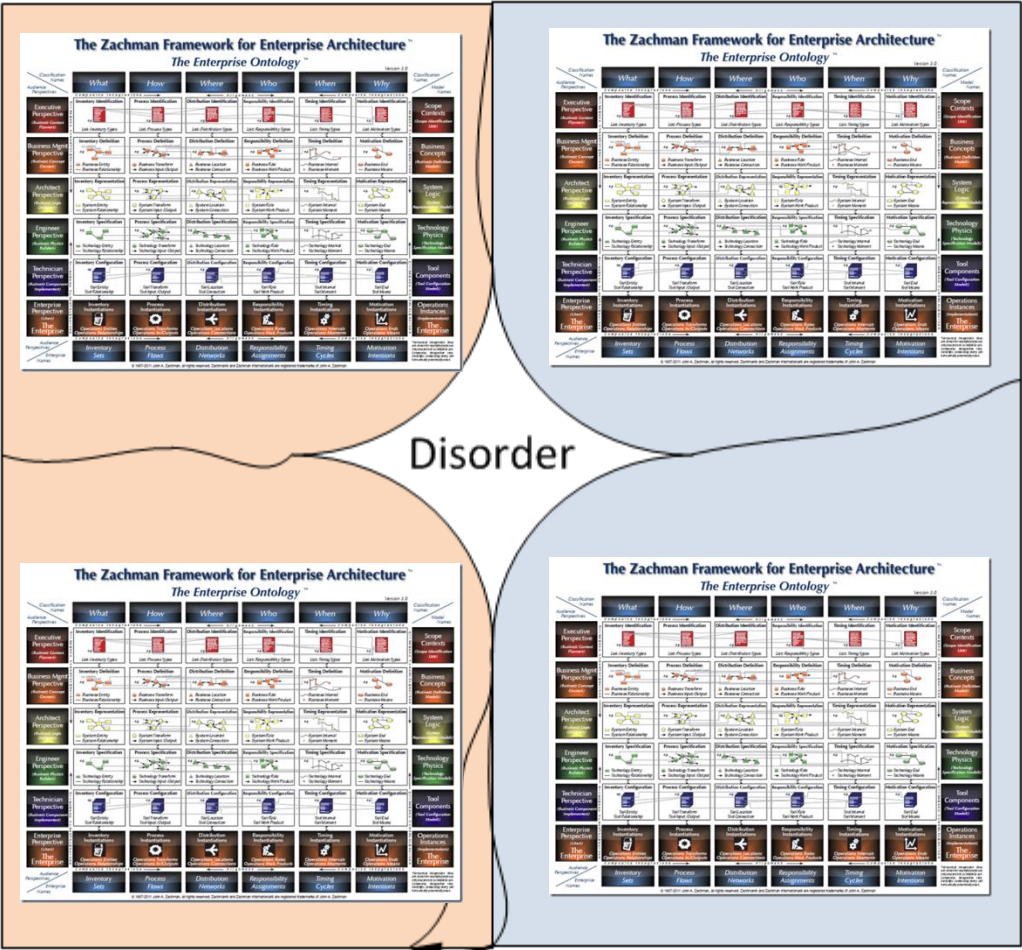
- As a horribly dyslexic person I have great difficulty in writing the correct sequence of letters as dictated by accepted spelling rules, Best Practise, hence I battle with the Simple domain.
- The Complicated or Knowable domain represents sentences to me. There is more than one way to construct a sentence, Expert Knowledge and Good Practise required.
- The Complex domain represents conversations to me where voice tone and body language imparts information beyond the spoken word, Emergent Practise.
- The chaotic domain represents a foreign language to me where I have to have a control strategy before I act and, based on the response will either damp or boost the action.





# Sense making to Classification

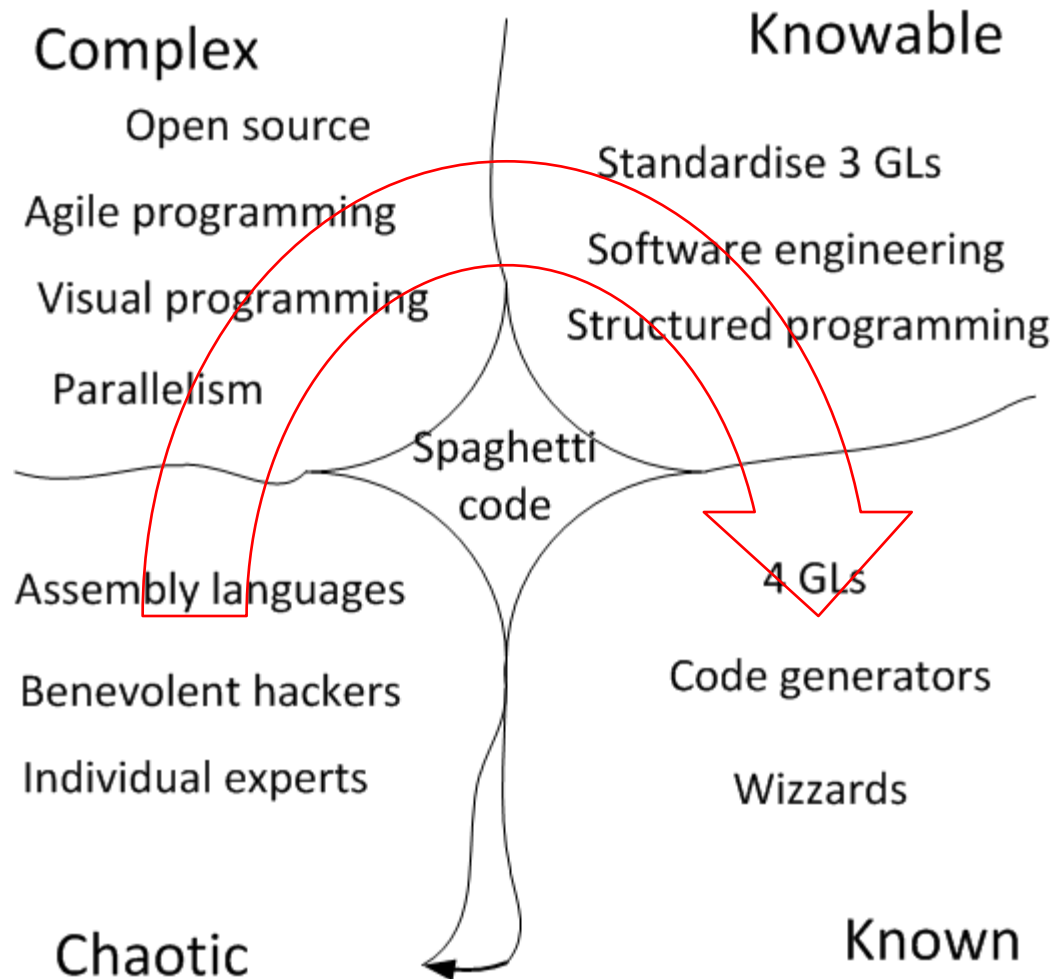
Unordered domain    Ordered domain



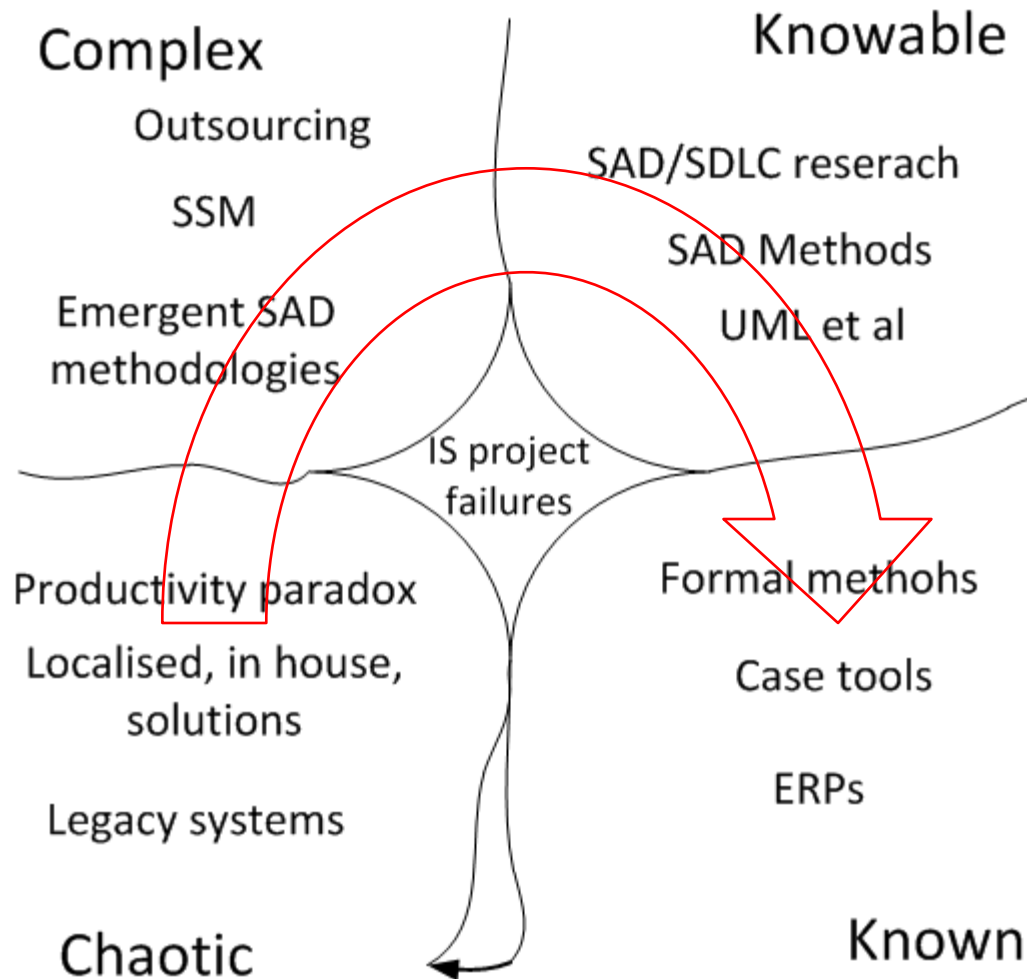
# Software Development

- As an electrical systems engineer I have always found software, and systems, development a fascinating field, largely due to the requirement to map almost infinite, constantly evolving, complexity to simple lines of code and will now spend some time groping in this darkness.

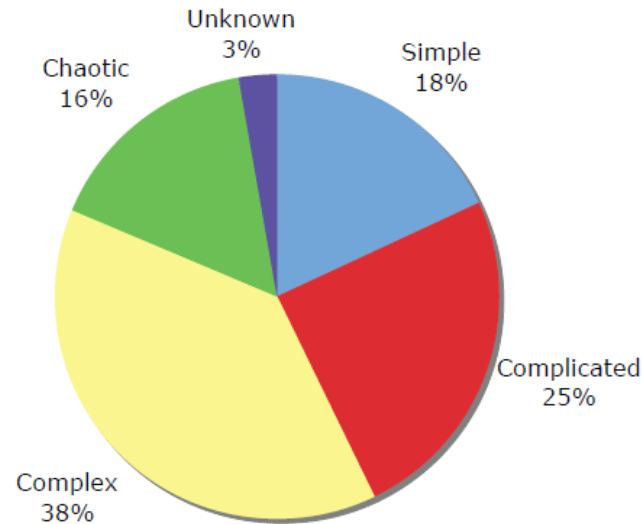
# Cynefin and Software development



# Cynefin in Information System Development



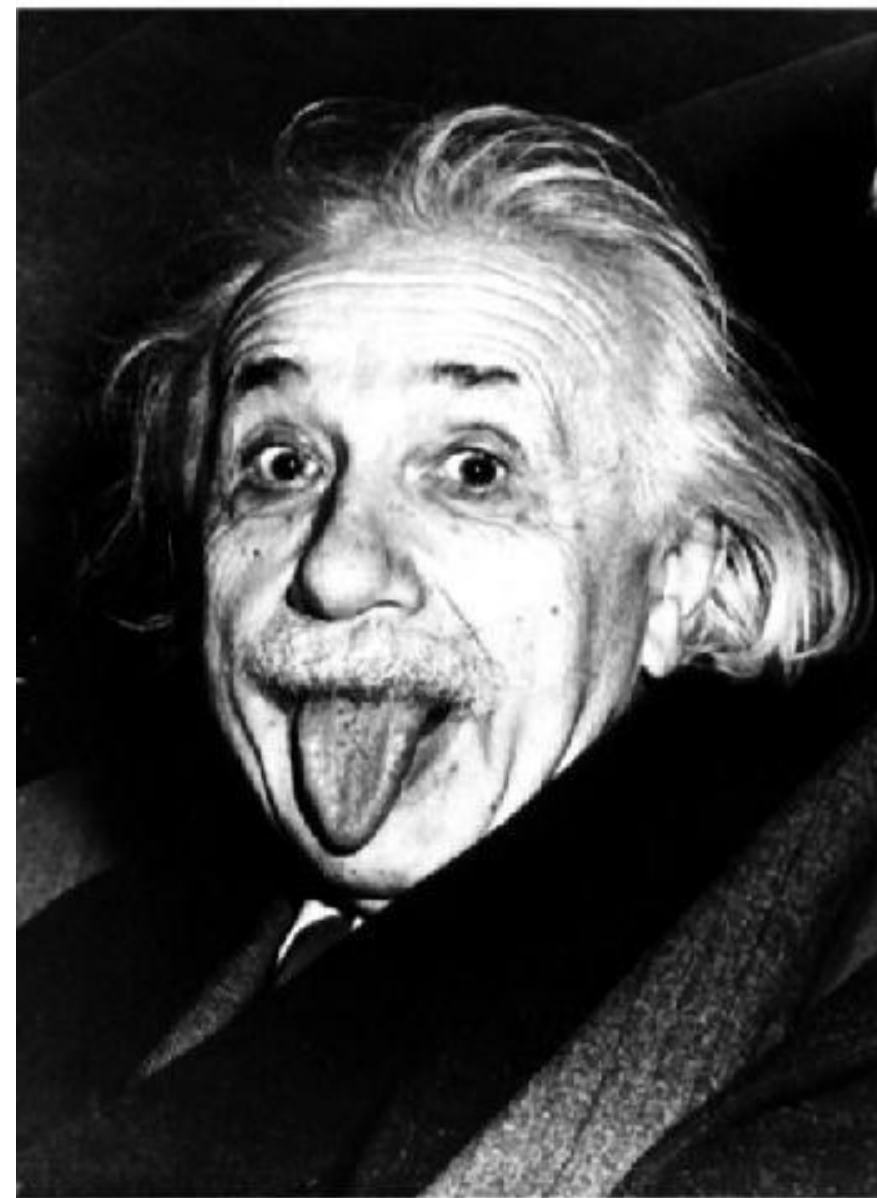
# Typical Activities in Software Development



<b>Simple</b>	<b>Complicated</b>	<b>Complex</b>	<b>Chaotic</b>	<b>Unordered</b>
Knowing when a task is done	Ambitious (political) time-line	Changing requirements	Arguing about coding standards	No release deadline
Monitoring actual time spent	Fixing the build	Countering a belief in magic	Retrospectives without consequence	Resource shortage
Featuritis	Finding who to talk to	Task Estimation	Project volume too big	Lack of trust

# Conclusion

- Firstly there is whole lot more about both the Zachman and the Cynefin Frameworks than this very brief surface skim.
  - Please visit both John Zachman and David Snowden's web sites to learn more about Cynefin and the use of narrative techniques
- The Cynefin Framework does provide a new lens through which to view the increasingly complex Enterprise environment.
- As part of a Sensemaking – Classification analytical dance the Cynefin Framework provides a new ability to contextualise environments.
- Whilst I remain a dyed in the wool Zachman Framework bigot, I like the Cynefin Framework a lot!



The significant  
problems we face  
will not be solved  
by the same level  
of thinking that  
caused them

*A. Einstein*

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- <http://eaps4.mit.edu/research/Lorenz/publications.htm>





Special report: Celebrating 50 years of the IBM Journals

A framework for information systems architecture by J. A. Zachman

Award plaque



With increasing size and complexity of the implementations of information systems, it is necessary to use some logical construct (or architecture) for defining and controlling the interfaces and the integration of all of the components of the system. This paper defines information systems architecture by creating a descriptive framework from disciplines quite independent of information systems, then by analogy specifies information systems architecture based upon the neutral, objective framework. Also, some preliminary conclusions about the implications of the resultant descriptive framework are drawn. The discussion is limited to architecture and does not include a strategic planning methodology.

Originally published:

IBM Systems Journal, Volume 26, Issue 3, pp. 276-292 (1987).

Significance:

This paper describes a fundamental conceptual framework on which to build an architecture for information systems which support complex business enterprises. Using concepts commonly understood in the design and construction of buildings, a framework for describing data, processes, and networks is shown for models of the business, information system, technology, and the implementation of the technology. This framework indicates the differing views of the architecture and shows the relationship of business models to models of information systems.

**This paper is one of the most highly cited papers ever published in the IBM Journals.**

<http://researchweb.watson.ibm.com/journal/50th/applications/zachman.html>

Questions?