An Architect's Framework for Navigating Complexity

Deven Gengan
Enterprise Architect – Standard Bank Group

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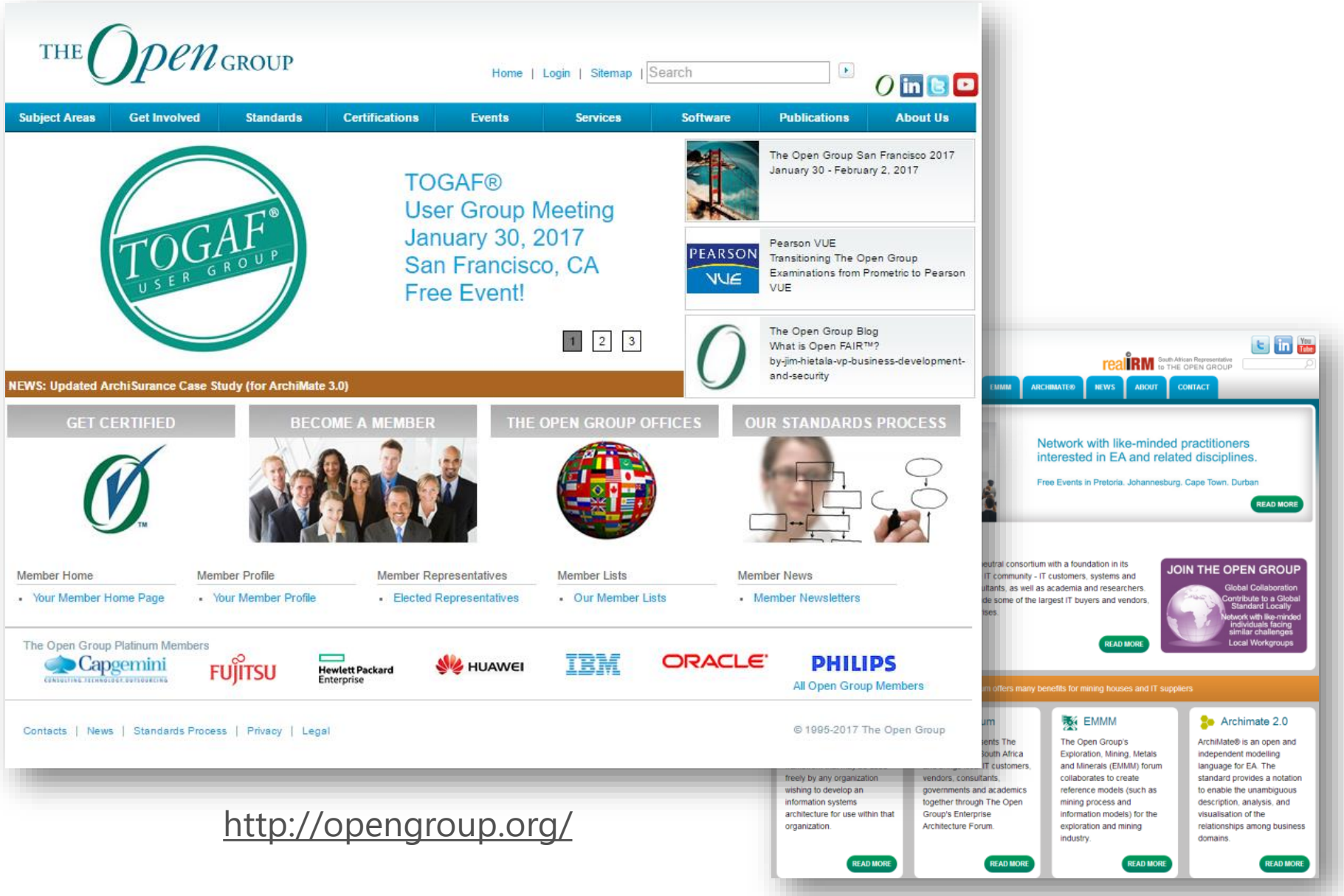

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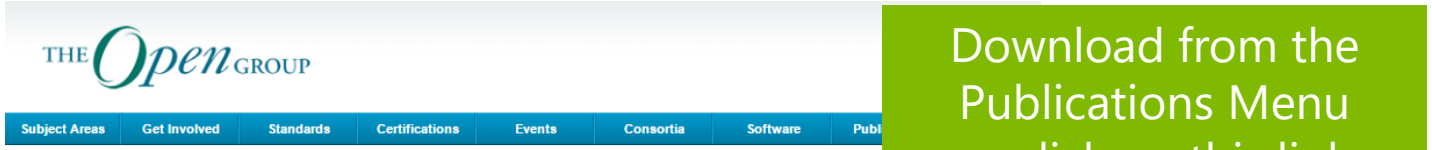

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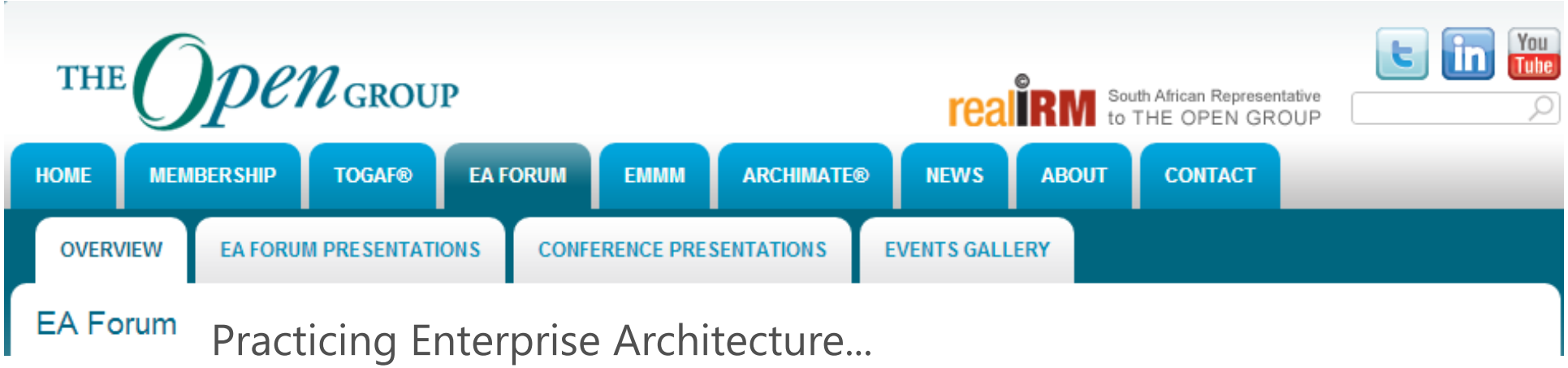

Practicing Enterprise Architecture...

Deven Gengan

Practicing Enterprise Architecture in any organisation is challenging due to the frequently changing market conditions in both the internal and external environments. Cloud, DevOps, continuous development and other elements add to the complexity that Architects need to navigate through. Thus, it is critical for Architects to use effective decision-making approaches that are adaptable and match the complexity of each situation.

Deven Gengan is an Enterprise Architect at Standard Bank, navigating complexity across SAP ERP, SaaS and Cybersecurity. He is very passionate about architecture frameworks and their applications in real world scenarios. Deven also leads the agile architecture transformation in Standard Bank. He holds a HDE(UKZN), BSc(UNISA), BSc HONS(UNISA) and is TOGAF certified.

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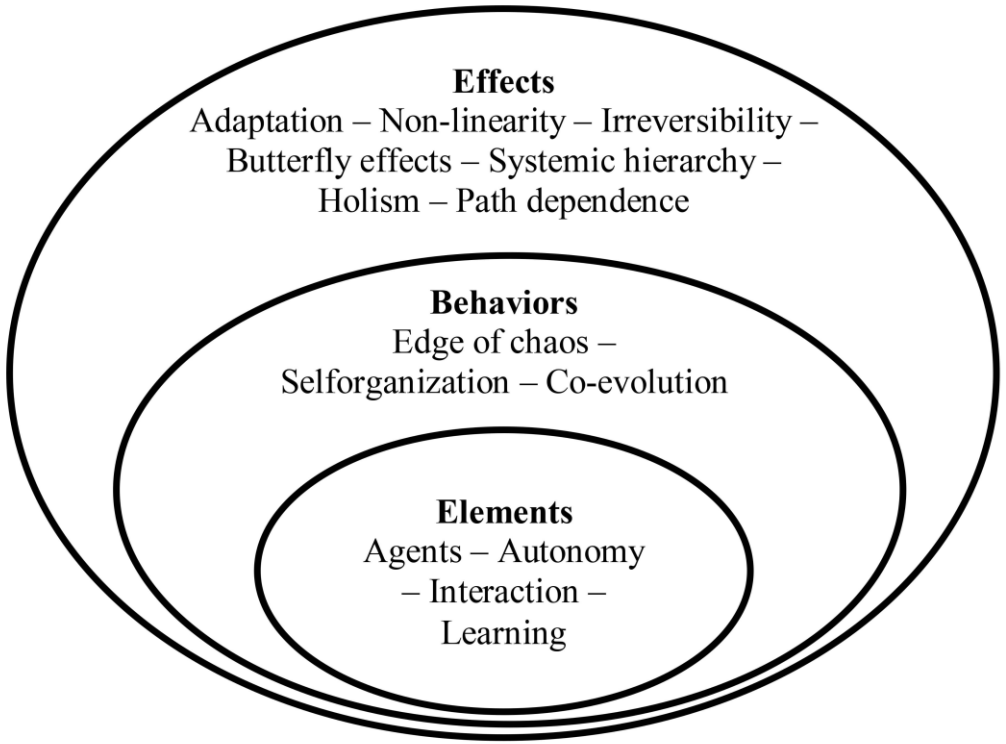
Complexity

Introduction

One of the most highly developed skills in contemporary Western civilization is dissection: the split-up of problems into their smallest possible components. We are good at it. So good, we often forget to put the pieces together again
(Toffler, 1984)

Complex Adaptive Systems - Introduction



"*A* dynamic network of many diverse agents constantly acting and reacting to what other agents are doing. Control is highly dispersed and decentralized. Coherent behaviour varies from competition and cooperation from agents themselves. Simple and individual agent activities gives rise to complex behaviour"

Source: https://doi.org/10.1093/heapro/dar089.

Characteristics

- Interaction
- Autonomy
  - Laws, rules, norms. Intents
- Emergence
  - Attain a goal over time, common behaviour
- Far from Equilibrium
  - Frequent disruptive events
- Nonlinear
  - Insignificant input amplified (butterfly effect)
- Self-organization
  - When disruptive events occur
- Co-evolution
  - Co-evolve with the environment

Operating within Complex Adaptive Systems

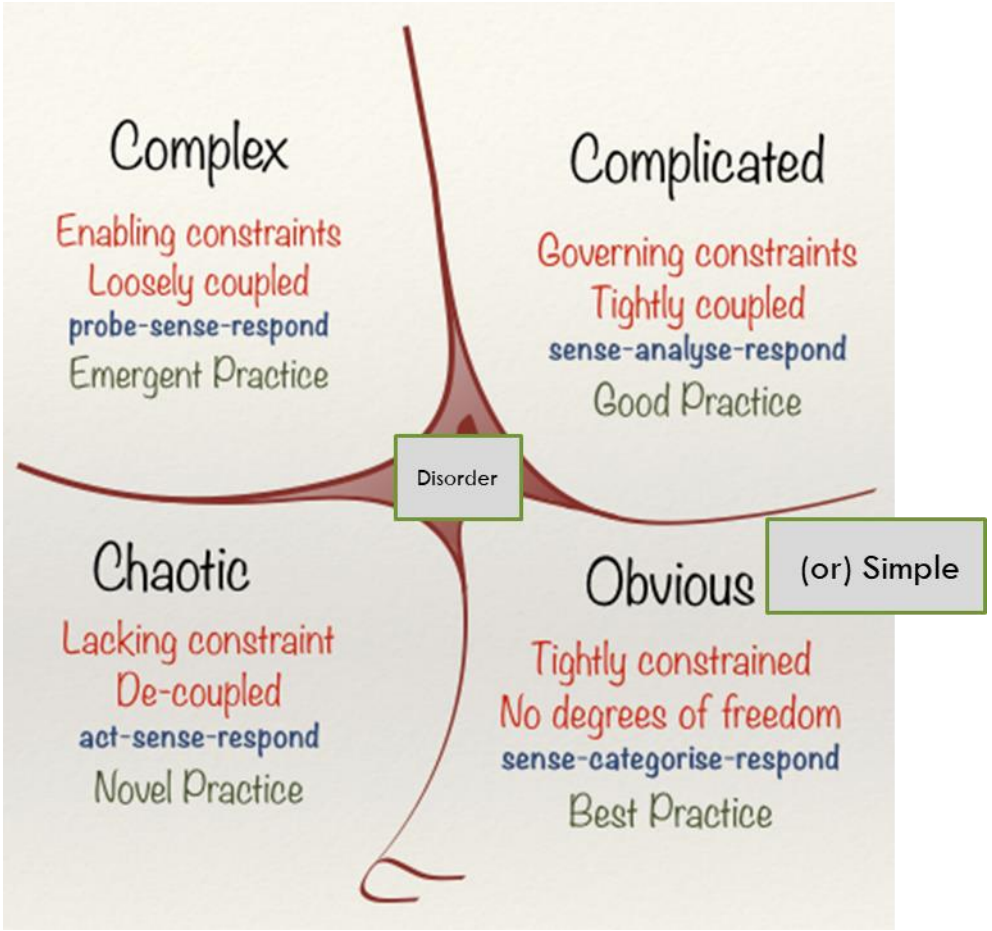
- Multi-strategy approach
- Contextualise to the situation
- Shared mental models: Values, beliefs, experiences
- Sense making framework

- Multiple experiences: personal, cultural and business
- Adaptive resulting in problem solving styles suited to the context.

- Be the change you seek !!

CYNEFIN - Introduction

<Ku-nev-in>



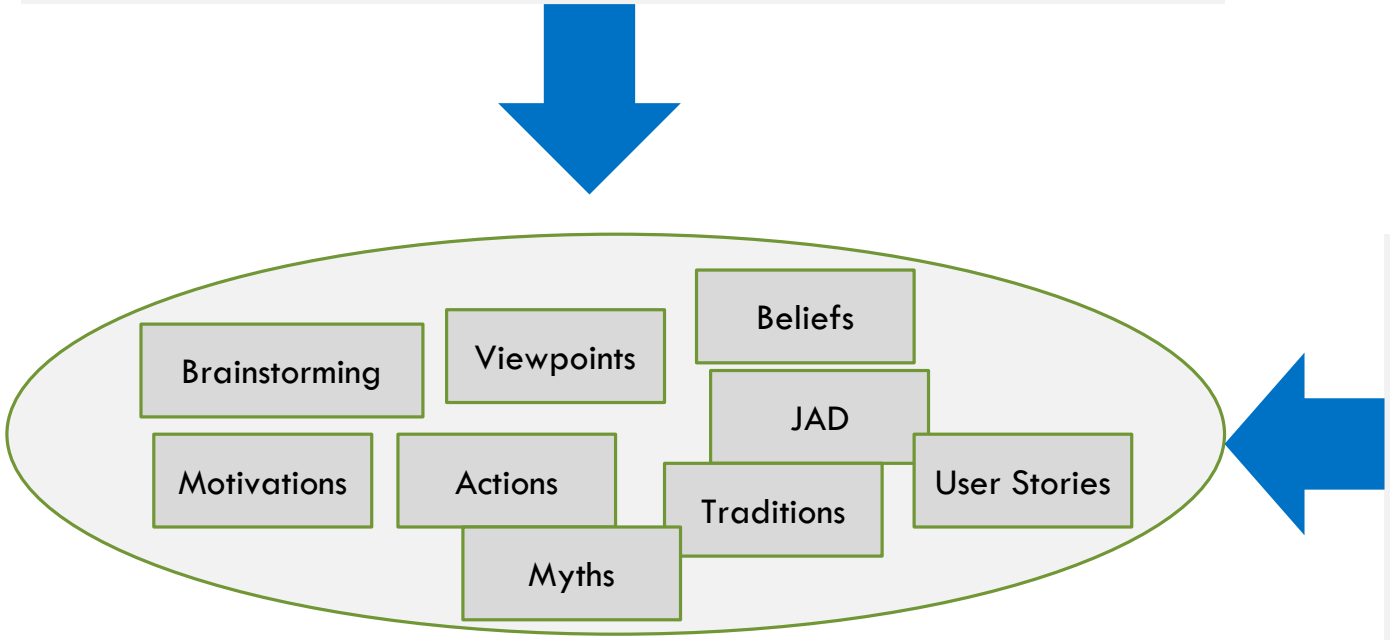
Basics

- Five contexts based on cause and effect

- Obvious/Simple
  - Sense – categorise - respond
- Complicated
  - Sense – analyse - respond
- Complex
  - Probe – sense - respond
- Chaotic
  - Act – sense - respond
- Disorder
  - No clarity – decompose and move to another context

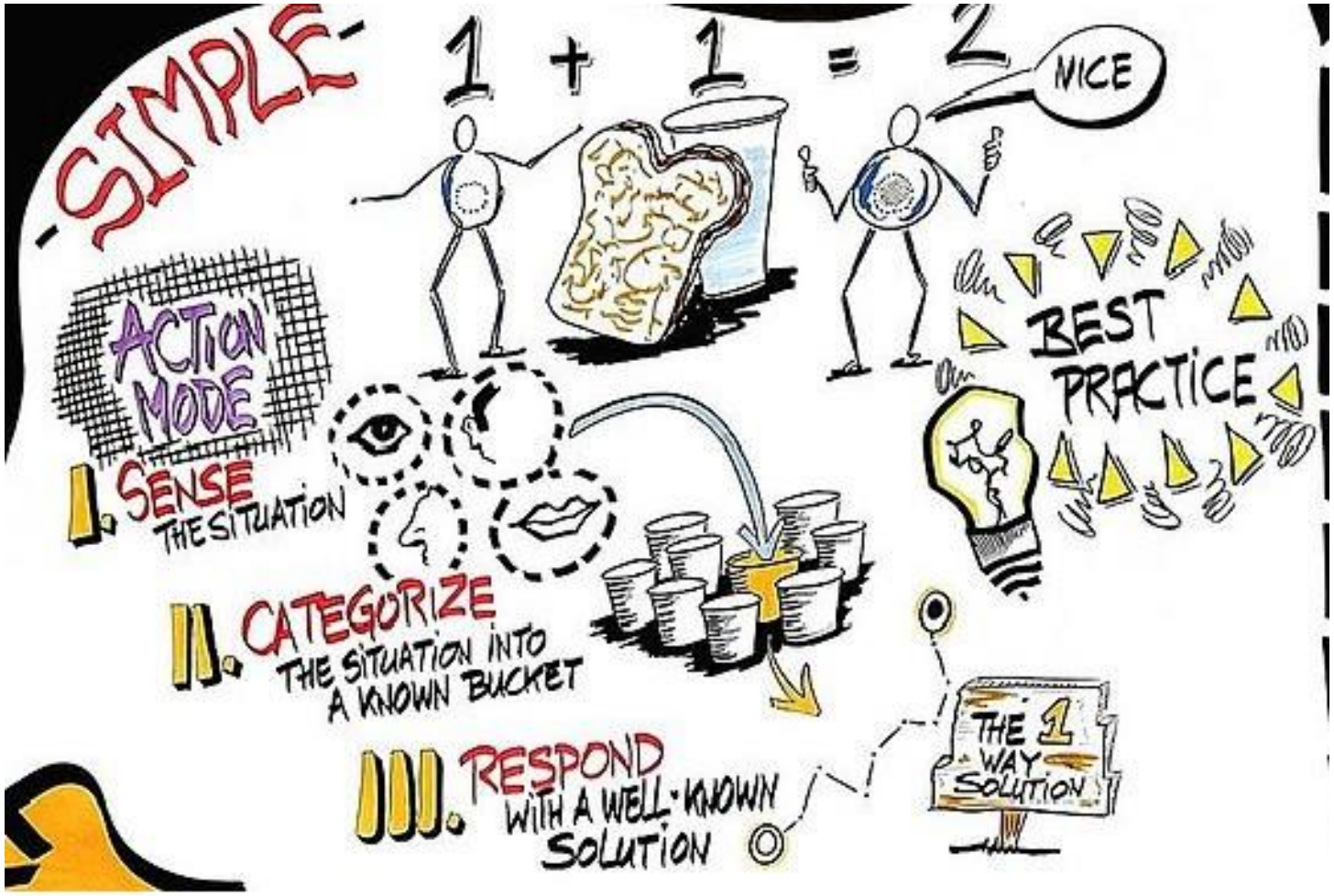
CYNEFIN – How to use it

- Contextualization: collective sense-making as a consequence of discourse….
- Sense making framework: you ideally want to move from one context to another



- Diverse-multiple perspectives to emerge
- Concrete- move away from existing beliefs

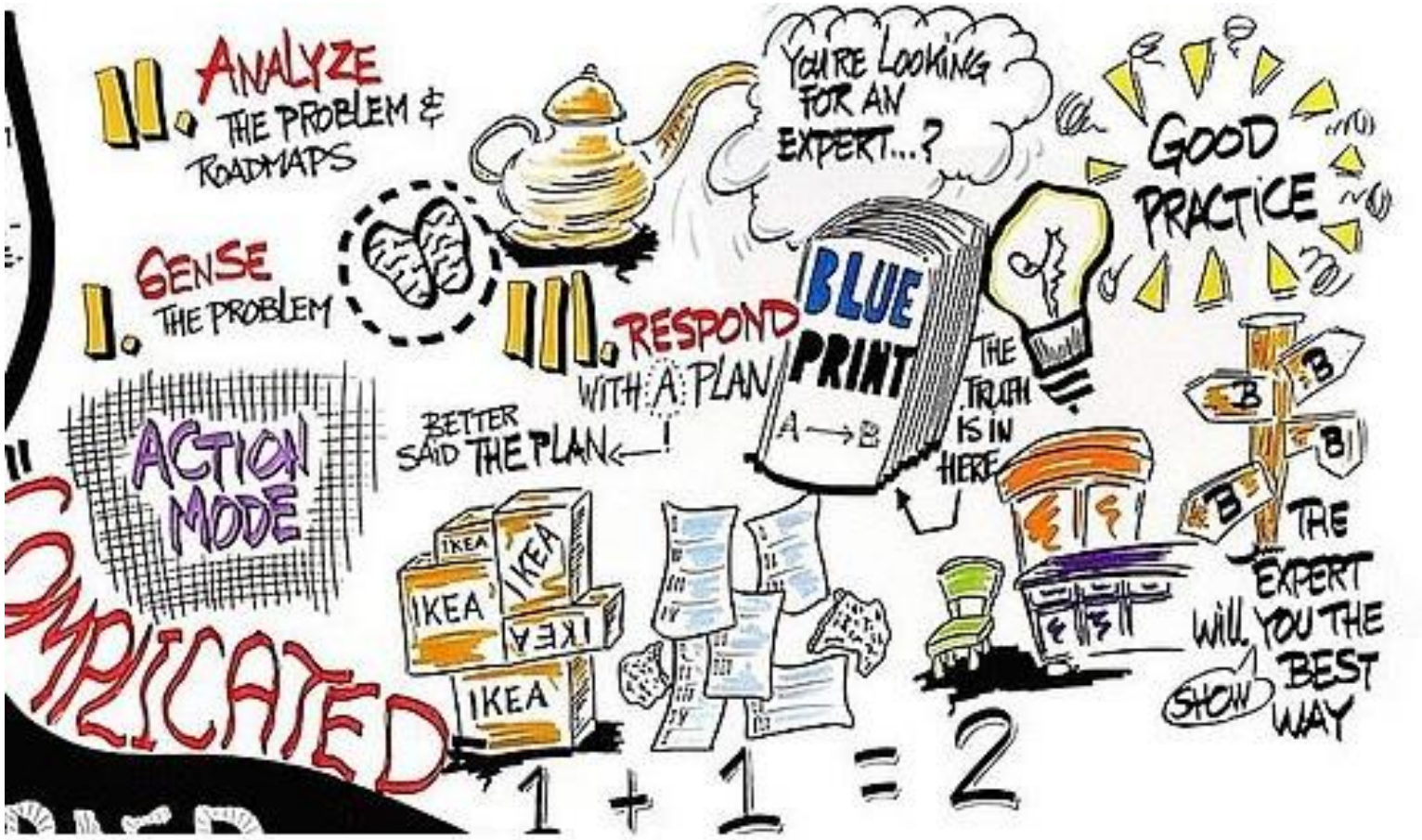
CYNEFIN-How to shift your style (1a/4)



CYNEFIN-How to shift your style (1b/4)

	Context Properties	Your Job	Danger Signals	Response to Danger Signals
Simple	Repeating patterns and consistent events Clear cause and effect, right answer exists to all Known Knowns Fact-based management	Sense, categorize, respond Proper processes in place Delegate Communicate, clear, direct ways	Complacency and comfort Desire to make complex problems simple Entrained thinking No challenge of wisdom Overreliance on best practice if context shifts	Communication channel to challenge orthodoxy Stay connected without micromanaging Don't assume things are simple Recognize value and limitations of best practice

CYNEFIN-How to shift your style (2a/4)



CYNEFIN-How to shift your style (2b/4)

	Context Properties	Your Job	Danger Signals	Response to Danger Signals
Complicated	Expert diagnosis required Cause-and-effect relationships discoverable but not immediately apparent to everyone; more than one right answer possible Known unknowns Fact-based management	Sense, analyze, respond Create panels of experts Listen to conflicting advice	Experts overconfident in their own solutions or in the efficacy of past solutions Analysis paralysis Expert panels Viewpoints of nonexperts Excluded	Encourage external and internal stakeholders to challenge expert opinions to combat entrained thinking Use experiments and games to force people to think outside the familiar

CYNEFIN-How to shift your style (3a/4)

CYNEFIN-How to shift your style (3b/4)

	Context Properties	Your Job	Danger Signals	Response to Danger Signals
Complex	Flux and unpredictability No right answers; emergent instructive patterns Unknown unknowns Many competing ideas A need for creative and innovative approaches Pattern-based leadership	Probe, sense, respond Create environments and experiments that allow patterns to emerge Increase levels of interaction and communication Use methods that can help generate ideas: Open up discussion ; set barriers; stimulate attractors; encourage dissent and diversity; and manage starting conditions and monitor for emergence	Temptation to fall back into habitual, command-and control mode Temptation to look for facts rather than allowing patterns to emerge Desire for accelerated resolution of problems or exploitation of Opportunities	Be patient and allow time for reflection Use approaches that encourage interaction so patterns can emerge

CYNEFIN-How to shift your style (4a/4)

CYNEFIN-How to shift your style (4b/4)

	Context Properties	Your Job	Danger Signals	Response to Danger Signals
Chaotic	High turbulence No clear cause-and-effect relationships, so no point in looking for right answers Unknowables Many decisions to make and no time to think High tension Pattern-based leadership	Act, sense, respond Look for what works instead of seeking right answers Take immediate action to re-establish order (command and control) Provide clear, direct Communication	Applying a command-and-control approach longer than needed "Cult of the leader" Missed opportunity for innovation Chaos unabated	Set up mechanisms (such as parallel teams) to take advantage of opportunities afforded by a chaotic environment Encourage advisers to challenge your point of view once the crisis has abated Work to shift the context from chaotic to complex

Questions

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