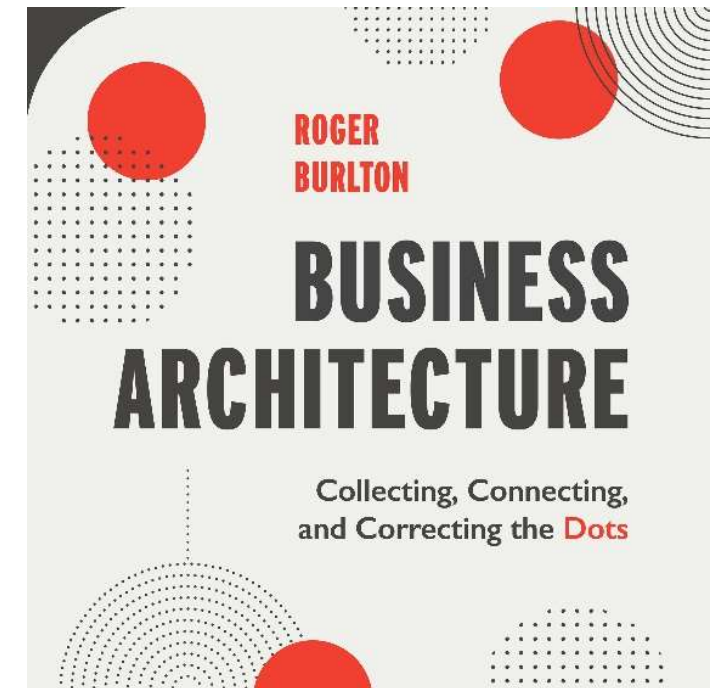**PROCESS RENEWAL GROUP**

Knowledge-Driven Business Architecture & Analysis

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ROGER BURLTON

BUSINESS ARCHITECTURE

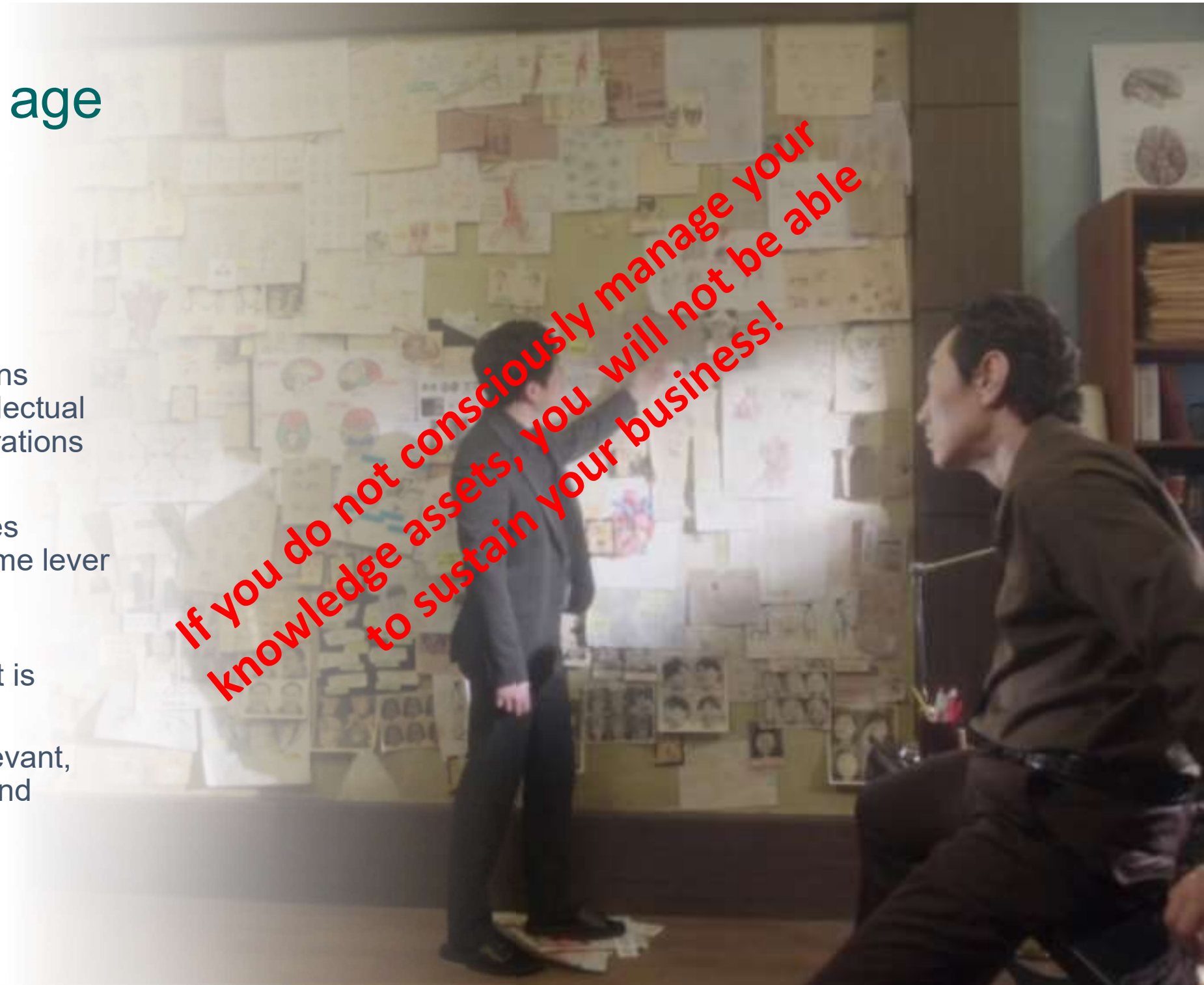Collecting, Connecting, and Correcting the Dots

Revolution or Evolution

- Business architecture and analysis has been fundamental to business progression since the onset of business automation.

- Our core responsibility is to comprehend and articulate business needs in a world that's constantly evolving.

- Successful architects and analysts are at the forefront, embracing new opportunities in response to emerging change drivers.

- Once again, we have an opportunity to lead!

The dawn of the age of Knowledge Capital

- When industrial organizations spend more money on intellectual activities than physical operations and material assets.

- 'Knowledge Capital' replaces traditional assets as the prime lever of differentiation.

- Incorporating Knowledge Management into our toolkit is essential
  - making knowledge relevant, accessible, scalable, and reusable

If you do not consciously manage your knowledge assets, you will not be able to sustain your business!

Agenda

- Why Knowledge Again

- The structure of Knowledge

- The management of Knowledge

- Knowledge and business architecture

- Knowledge in modern process designs

- Knowledge Management for architects and analysts

So - Why is Knowledge Management Critical Today?

Discuss

- Super-fast changes in market
- Customer expectations and personalization
- Accelerated innovation and competitive edge sustainment
- Need for rapid decision making
- New technologies (AI and digital) opportunities
- Compliance and mitigation of risk
- Distributed workforces
- Workforce demographics changes
- Employee retention and succession

How can we look at Knowledge in business?

Data:

Structured facts, values of parameters and measures, usually without significant context.

Information:

Data in context with meaning to the business or someone associated with it.

Knowledge:

That which guides humans and technologies in their use of information and data to make judgments, take decisions and to do work.

Wisdom:

Trustworthy confidence in one's knowledge or decision making, usually gained through experience.

*Data and Information are **what** we consume and / or produce in operational work*

*Knowledge and Wisdom are **how** we process Data and Information*

'Without relevance, one person's Knowledge is another's Information'

Knowledge characteristics and complexities

Knowledge Stores:

- Knowledge can be **_embodied_** within humans **_(tacit)_** *

- Knowledge can be **_embedded_** in products, processes, services, tools or in documents **_(explicit)_** *

- Interaction between both are required for knowledge quality and growth

Business view:

- For knowledge to have value in a business, it must support action towards an intended result
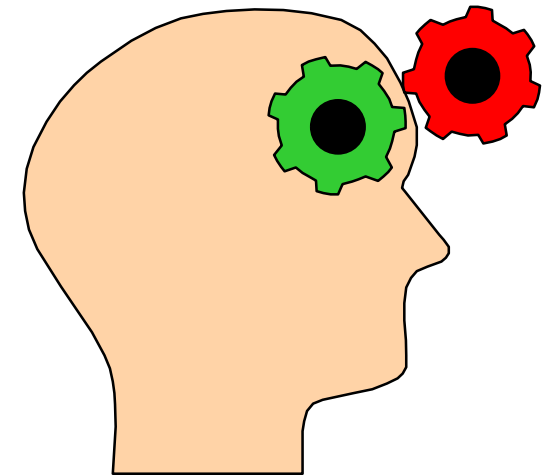
* Epistemological Dimensions - M. Polanyi

Making Knowledge continuously useful

- Continuous interplay (learning) between explicit and tacit forms of knowledge *
  - **Externalization** – publishing what people know
  - **Combination** – distills information that is already available
  - **Internalization** – learning that comes from a set of discoverable sources
  - **Socialization** – sharing of what we have learned
- New sources are continually required to sustain knowledge effectiveness and growth
- Our challenge is to accelerate the cycle
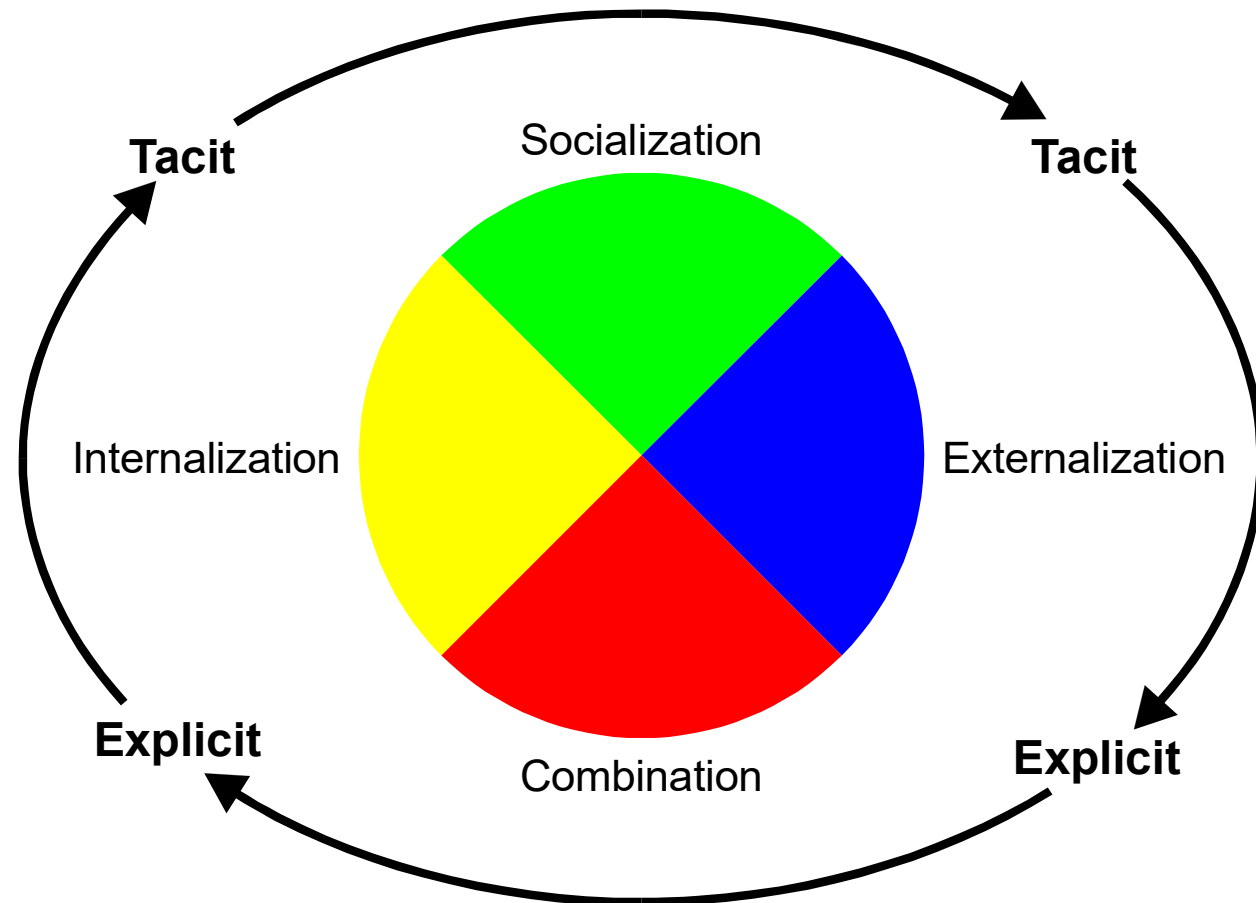
Knowledge growth: the source becomes more comprehensive and is continually renewed: The Helix
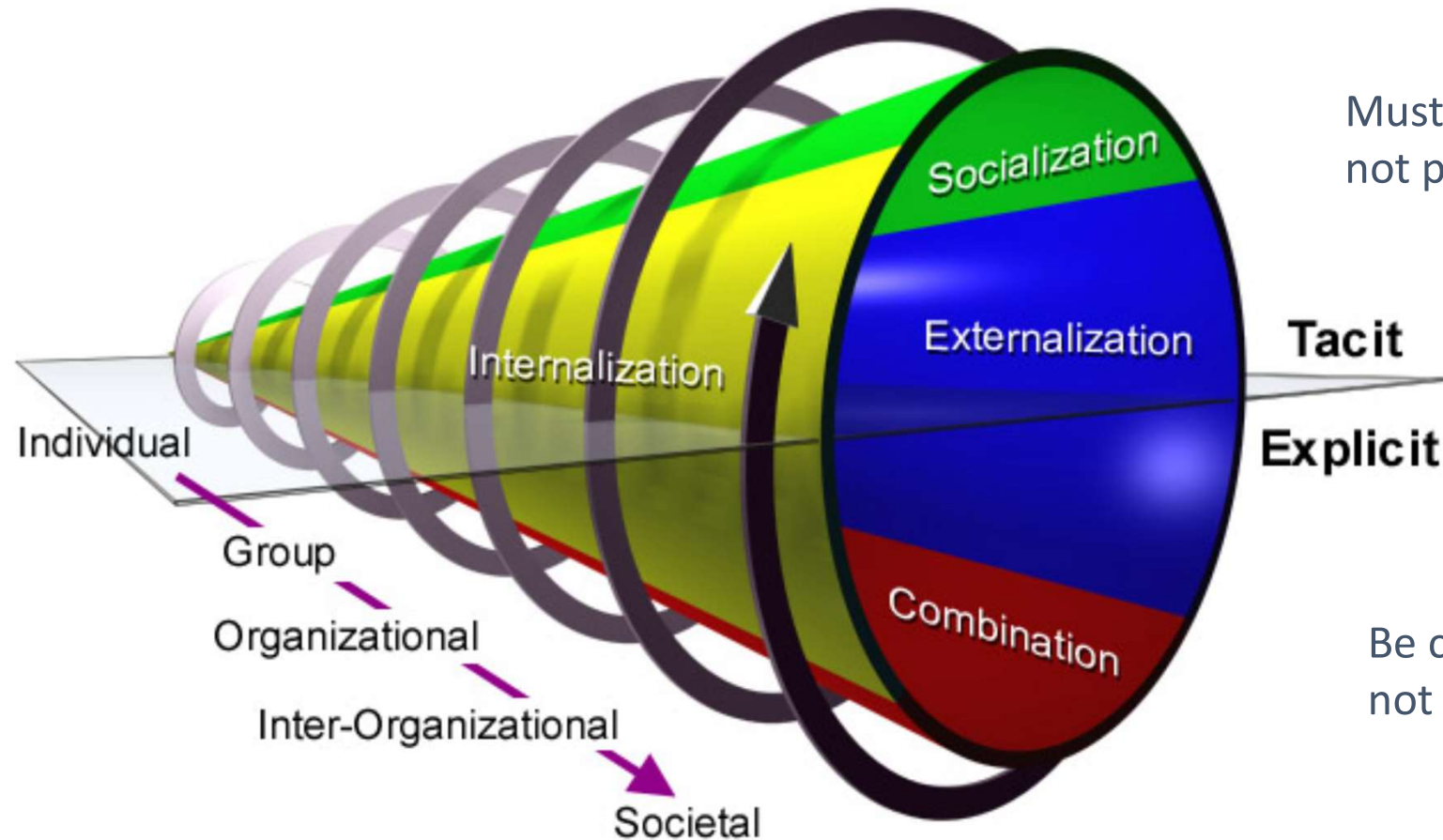
Must keep adding new knowledge and not pollute the sources

Be careful that data sets and LLMs do not drink their own bathwater

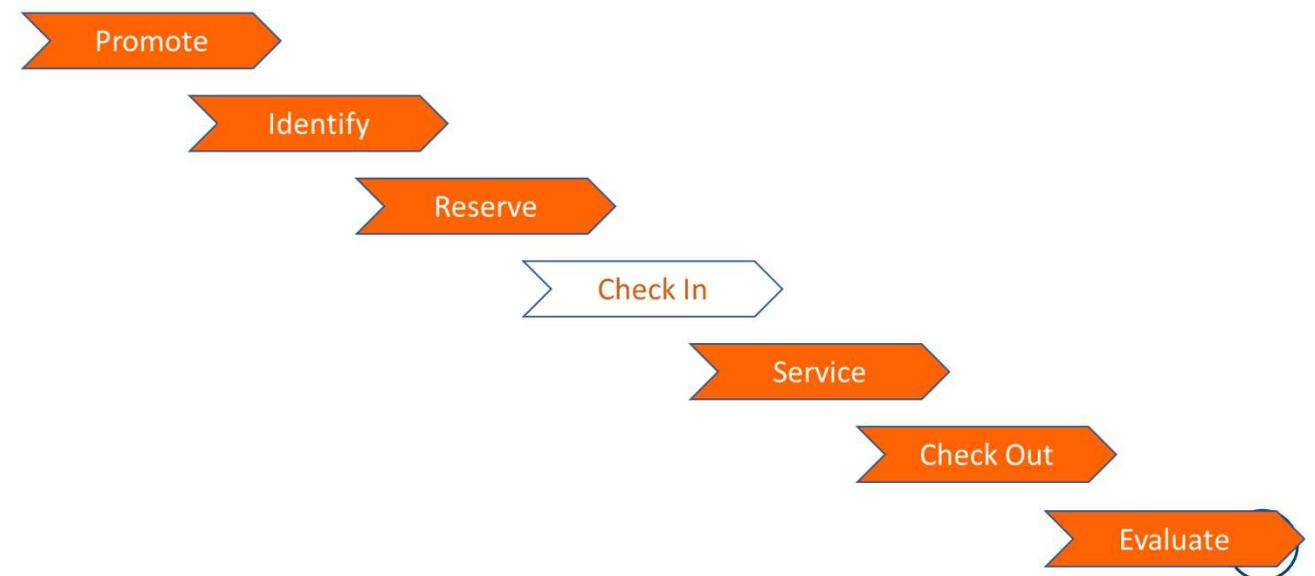# The Structure of Knowledge: Business Concepts & Business Processes

Knowledge Structure

- same as the semantic <u>business concepts model</u>
  - *'tell me all about something'* – **the what**
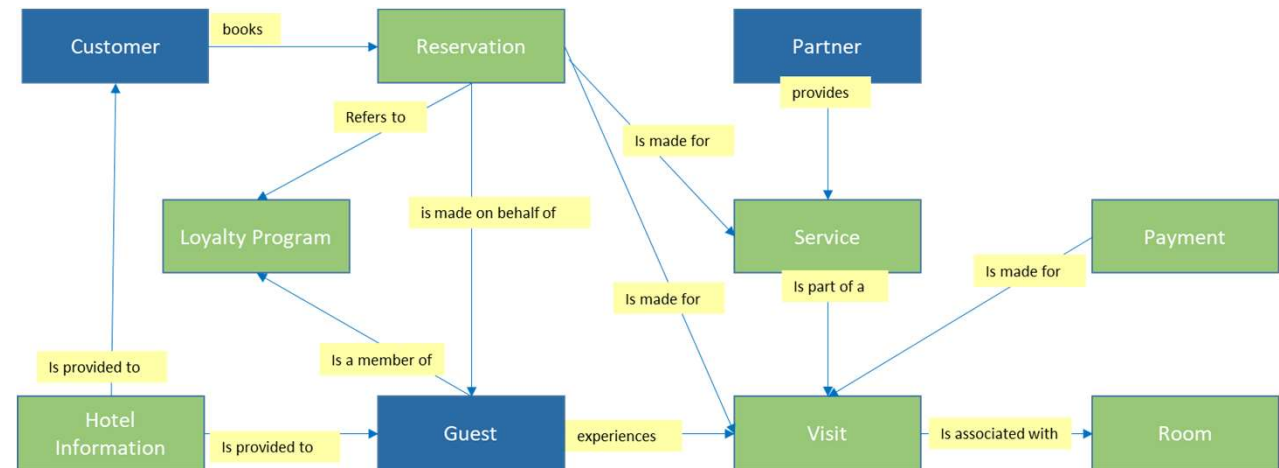
Knowledge Application

- follow the actions in a <u>process model (or journey)</u>
  - *'tell me how to do something'* – **the how**
    (embedded or embodied)

Leveraging Business Knowledge (Hotel example)

Guest

Reservation

Loyalty Program

Hotel

Visit

Room

Knowledge Areas
based on concepts

Promote

Identify

Reserve

Check In

Service

Check Out

Evaluate

Business Processes

RECEPTION

Knowledge Leverage

- Identification and verification rules
- Registration process
- Room assignment guidelines
- Payment processing rules
- Additional fees policies
- Key cards or room keys procedures
- Amenities and services reference
- Safety and security policy
- Welcome and assistance protocol

Knowledge Requirements

How can AI help? - Generative AI

- Generative AI focuses on creating new content or data using LLMs, often in the form of text, images, or other media.

- LLMs are enormous 'next token (bits of words) prediction systems' – they do not work on language but on statistical relations between encoded numeric tokens

- GPT only calculates the most likely next token with a level of randomness (temperature) that user can select

- Has zero understanding and cannot do logic, reasoning or math - everything is a hallucination

- Not traceable or explainable

- LLMs can be local for local knowledge

- Chat GPT is eloquent and can be convincing but be cautious …

- Prompt engineering and the right context is critical

- Can be a good analysis co-pilot

Delivers Guidance

How can AI help? - Domain-specific AI

- **Narrow AI** is designed and trained for a specific task or a narrow set of tasks.
  - within a limited context
  - image and speech recognition systems
- **Machine Learning (ML)** involves the development of algorithms and statistical models that enable computers to improve their performance on a task
  - based on experience feedback
- **Neural Networks are** a type of machine learning with recommendation algorithms inspired by the structure and function of the human brain
  - often the basis for the other types of domain specific AI
- **Expert Systems**
  - mimic the decision-making abilities of a human expert in a particular domain
  - use a knowledge base of human expertise and an inference engine to draw conclusions and make decisions

Delivers Enablement
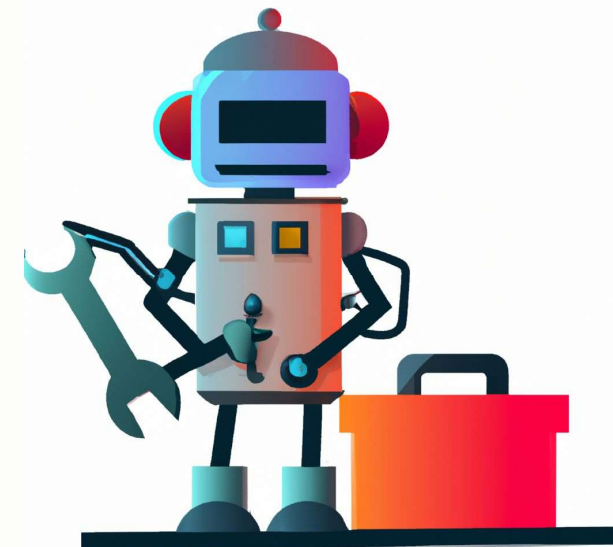
How can AI help? - Intelligent IT Operations

- Automated Monitoring and Analysis

- Predictive Analytics

- Incident Management

Delivers Foundation

- Automation and Orchestration

- Capacity Planning and Optimization

- Continuous Improvement in IT environment

- Integration with ITSM

- Real-time IT System Visibility
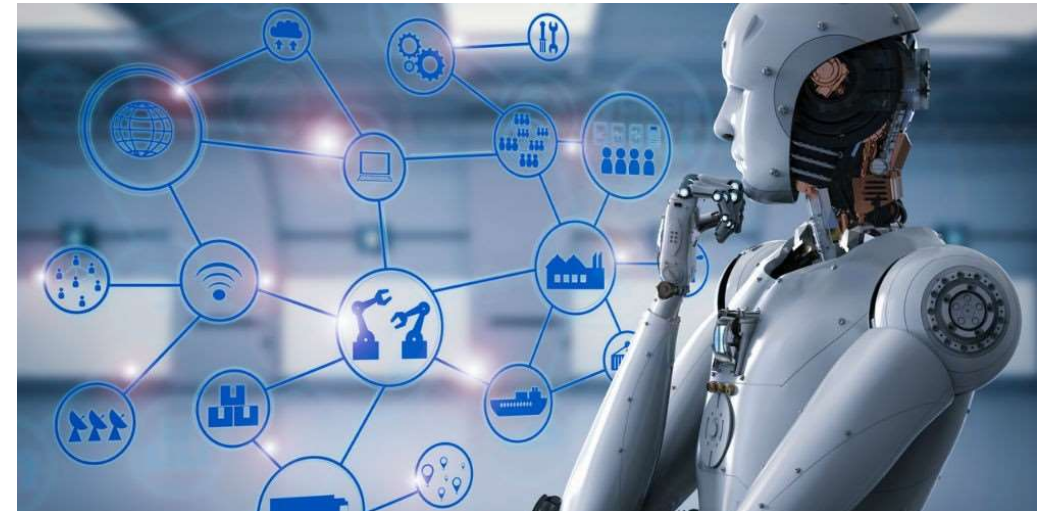
Making Processes Smarter

- This is not about BPMN and flow

- It's about the IGOE alignment

GUIDES
What policies, knowledge and rules constrain
or guide what the process can do

INPUTS
What the process transforms

A Process

OUTPUTS
What the process produces

ENABLERS
What resources the process uses (and re-uses)
e.g. people, software, facilities
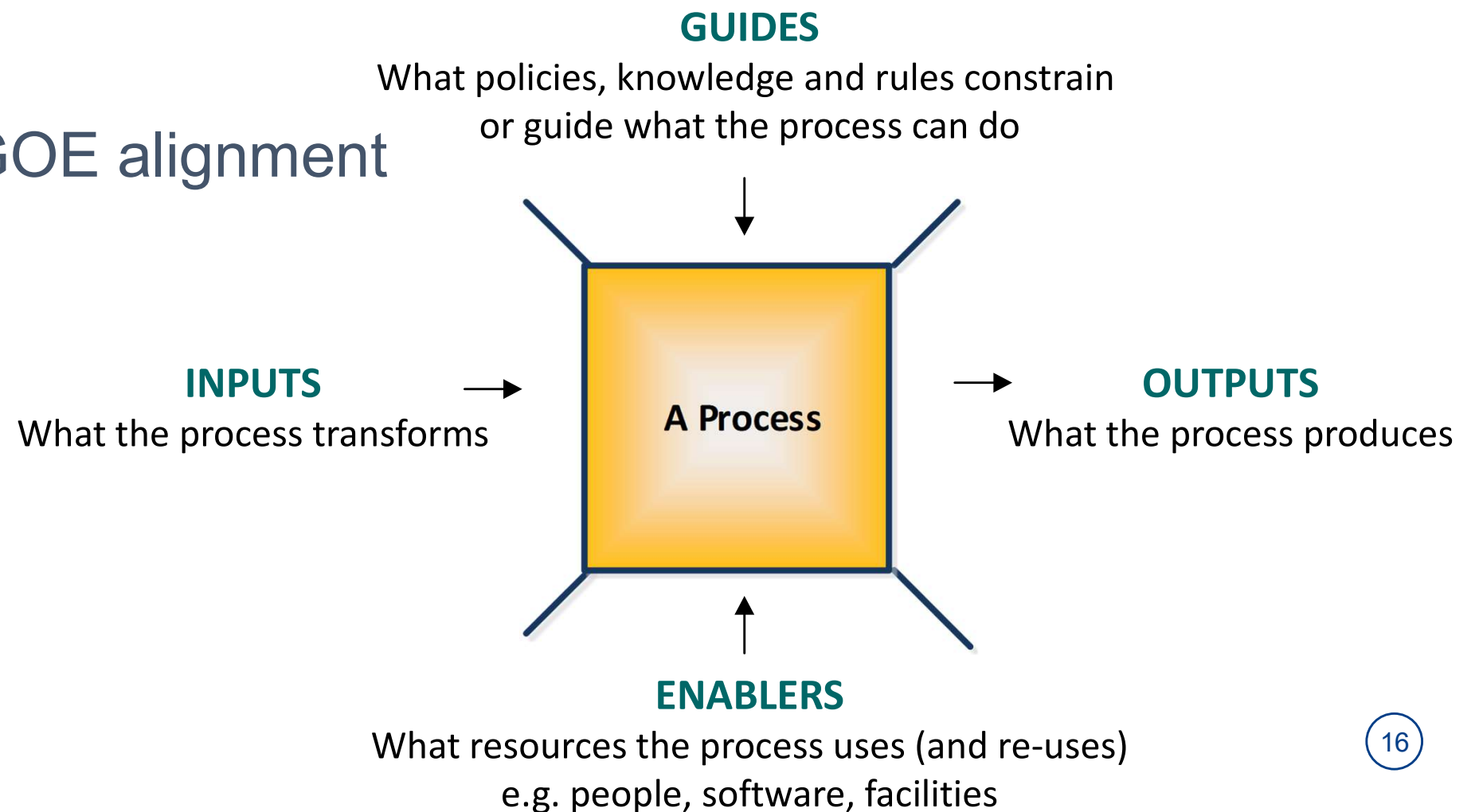
Knowledge Considerations for Architects and Analysts

- *guidance* and enablement for work – <u>socializing and internalizing</u>
  - Advice to practitioners from peers
  - Policies, guidelines and best practices
  - Rules in executable software
  - Generative AI

- *product* of work – <u>externalizing and combining</u> the knowledge for others
  - Educating students
  - Selling a book
  - Automated solution for use

The Continuous Process of Knowledge Management: Making Processes smarter
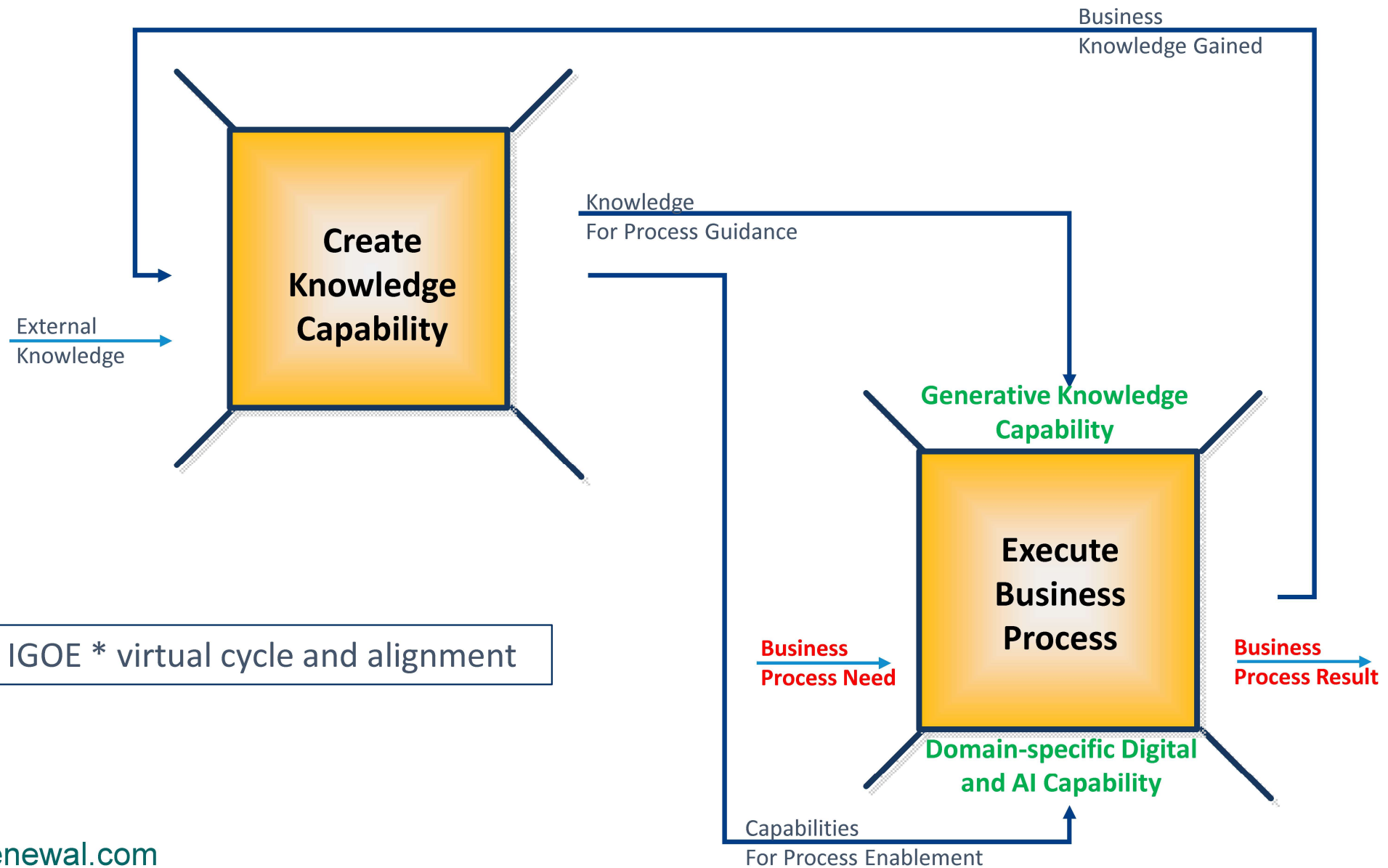

Create Knowledge Capability

External Knowledge

Knowledge For Process Guidance

Business Knowledge Gained

Generative Knowledge Capability

Execute Business Process

Business Process Need

Business Process Result

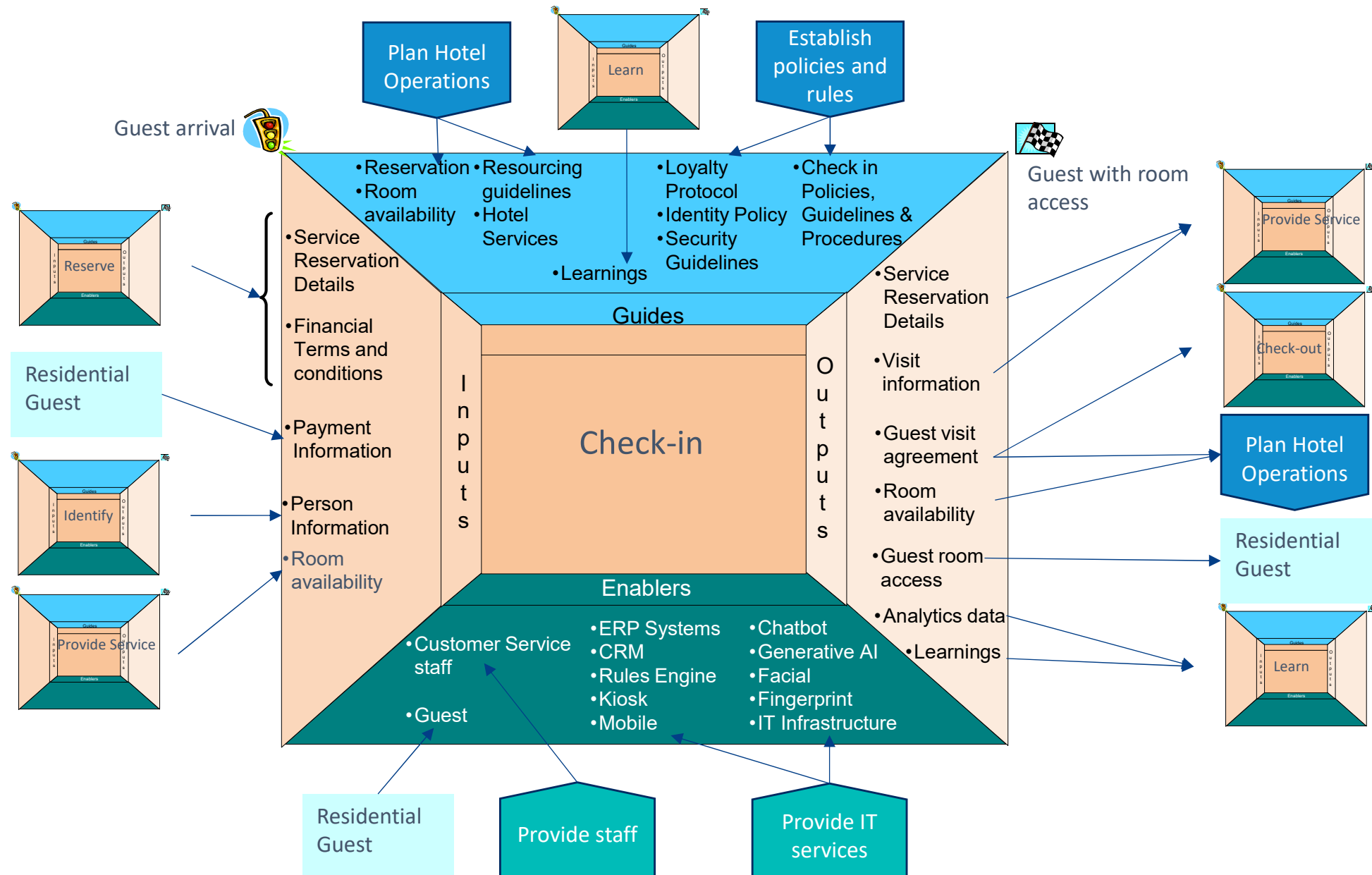**Domain-specific Digital and AI Capability**

Capabilities For Process Enablement

This is about the IGOE * virtual cycle and alignment

Knowledge, Technology and Process

Knowledge is a guide embedded in an enabler

Guest arrival

Plan Hotel Operations

Learn

Establish policies and rules

Guest with room access

Reserve

Residential Guest

Identify

Provide Service

- Service Reservation Details
- Financial Terms and conditions
- Payment Information
- Person Information
- Room availability

Inputs

- Reservation
- Room availability
- Resourcing guidelines
- Hotel Services
- Loyalty Protocol
- Identity Policy
- Security Guidelines
- Check in Policies, Guidelines & Procedures
- Learnings

Guides

Check-in

Enablers

- Customer Service staff
- Guest
- ERP Systems
- CRM
- Rules Engine
- Kiosk
- Mobile
- Chatbot
- Generative AI
- Facial
- Fingerprint
- IT Infrastructure

Outputs

- Service Reservation Details
- Visit information
- Guest visit agreement
- Room availability
- Guest room access
- Analytics data
- Learnings

Provide Service

Check-out

Plan Hotel Operations

Residential Guest

Learn

Residential Guest

Provide staff

Provide IT services

Knowledge/Digitalization partnership has become critical

Look at the whole process for opportunities

Improving performance by exploiting knowledge in combination with digital tools such as:

- Workflow
- Business rules
- Omnichannel
- Analytics (Interpretive and Predictive)
- Autonomous, real-time, and generative AI
- Public LLMs (Everyday generative AI)
- RPA
- Chatbots
- Biometric recognition (voice and facial)
- Mobile platforms
- Geo location
- IOT
- Drones
- …

Illustrations of enhanced Knowledge with Digital Processes

Knowledge Management serves as a critical part of changing your processes
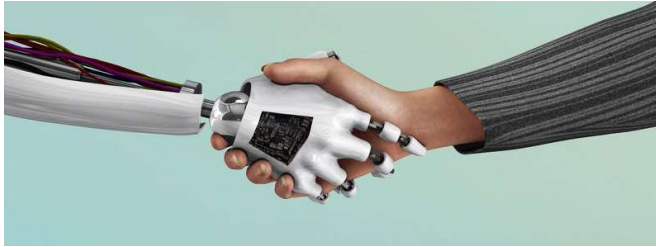
Wealth management hybrid advisory service – large Canadian bank

Underwriting, pricing and reporting – European re-insurance provider

Claims estimating – Auto and Property Insurer
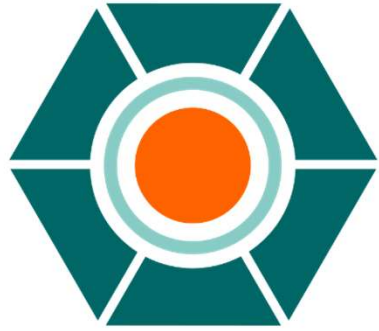
Maintenance scheduling and monitoring – Shell

Selecting risky inspections – technical safety regulator

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Conclusion

- All work can benefit from better and timely knowledge access

- Business Architects/Analysts should be Knowledge Engineers

- All initiatives should do a Digital and AI opportunity analysis

- AI – a means to and a knowledge end

- Chatbot generative tools – use as analysis co-pilot

- Make the knowledge loop relevant to the task at hand – keep ingested data sets fresh and focused for your enterprise

- Accelerate the knowledge loop for advantage

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BUSINESS ARCHITECTURE

Collecting, Connecting, and Correcting the Dots