# Understanding IT Systems Over The Long Term

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**Enterprise Architecture Specialist Group**

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#BCS
#BCSEASG
#EASGAC2022

# Challenges in Understanding IT Systems – over 20+ years

1. Increasing Technical Complexity And Coverage
   - HW, SW, cabling, network, storage, security systems, operations support systems, IoT, cloud/hybrid cloud, user devices
2. Constant Change
   - Additions and retirements of data centres, HW, SW, instances, etc.
   - People – turnover, sourcing
   - Organisational and sourcing changes
   - Acquisitions, divestitures, supplier failure
   - External forces, e.g., green technology, privacy, regulation, cloud, remote work
3. Limited Transparency
   - Decision makers often don’t trust data, advice or empower
   - Infrastructure information is hard to obtain, maintain and often not “owned”

# The Telecommunications Industry Association

The USA Telecommunications Industry Association (TIA) brings together communities of interest across -- Technology, Government Affairs, Standards, and Business Performance. Members include ICT manufacturers and suppliers, network operators and service providers, distributors and systems integrators.

TIA is accredited by the American National Standards Institute (ANSI). TIA collaborates with the International Telecommunication Union (ITU), the International Organization for Standardization (ISO), and the International Electrotechnical Commission (IEC).

TIA operates nine engineering committees that develop guidelines for private radio equipment, cellular towers, VOIP equipment, structured cabling, satellites, telephone terminal equipment, accessibility, data centers, mobile device communications, vehicular telematics, smart device communications, and smart utility mesh networks. More than 1,000 individuals - representing network equipment manufacturers, service providers, government entities, and end users - currently serve on TIA's Engineering committees.

In 2020 the TR-60 ICT Life Cycle Management committee was formed to develop the framework focused on long term management of ICT infrastructure. In August 2022 the first standard to be approved for development was announced as TIA-5077.1 - Information management of ICT Infrastructure.

# Personal Summary – David Cuthbertson

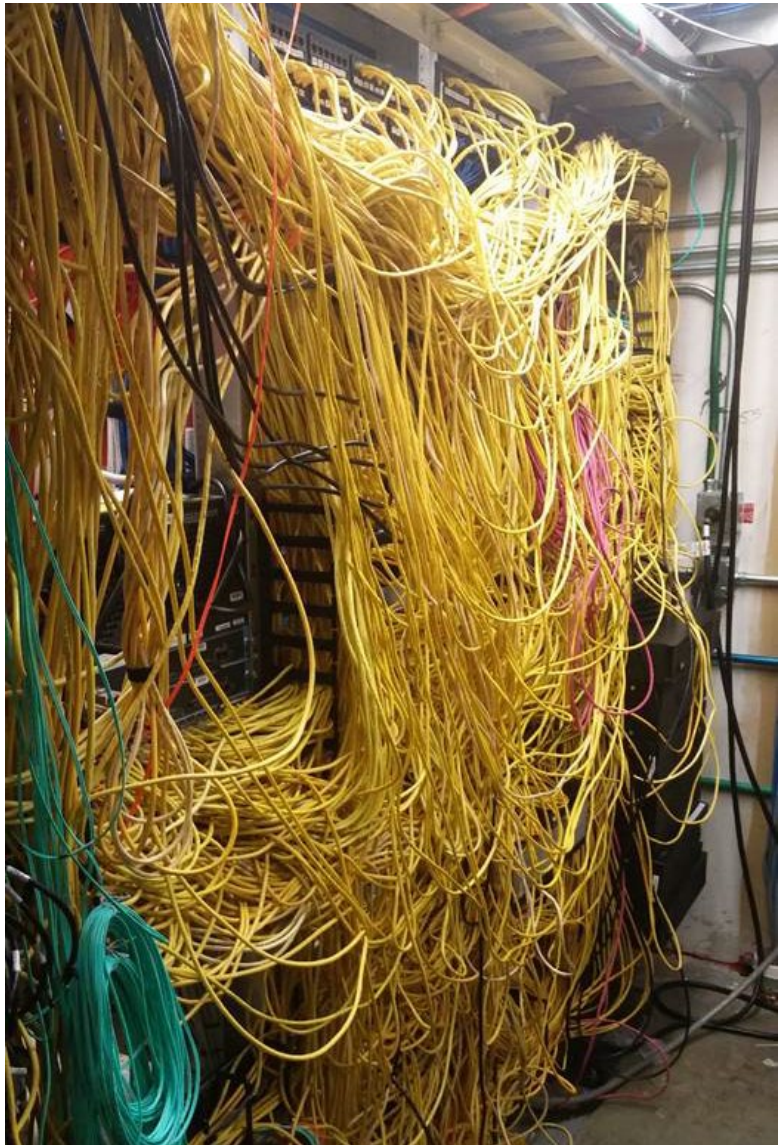
- Developing and implementing AssetGen software and Visio automation software to document and map complex enterprise, service provider and government IT environments. From low level physical components and connectivity to applications, cloud, data flows and business processes.
- Provide services for infrastructure documentation, auditing, baselining and Visio automation training. Often involving frameworks or standards such as ITIL, CoBit, NIST CSF, 27001, BICSI, TIA

- Trade Associations - Developing best practices and encouraging process maturity

| | |
|---|---|
| – BCS Service Management SG | ITIL Service management and change |
| – BCS Configuration Management SG | ITAM, service mapping, application development |
| – BICSI UK Committee | Physical infrastructure design and operation |
| – TIA TR60.B Sub-Committee Chair | TR-60 Life Cycle Management |

# What Do You Have To Change To Prevent This?

1. Design
2. Implementation
3. Operations
4. Life cycle planning
5. Culture
6. Baseline fix (cost/risk/time)



**Which benefit would you choose?**

1. Reduce planning time
2. Avoid accidents
3. Reduced cost of change
4. Easier to document and audit
5. Change impact clarity
6. Simpler to decommission
7. Easier knowledge transfer
8. Meet cyber security controls

# Why An ICT Life Cycle Management Framework?

1. Ensure adequate resources, expertise, documentation, and knowledge transfer to improve productivity and efficiency in managing increasingly complex ICT infrastructure.
2. Enable fast, flexible, and secure implementation of new technologies to deliver maximum value and enable rapid digital transformation with reduced risk.
3. Enhance transparency, coordination, and decision making to eliminate costly duplication and inconsistencies across distributed and multi-site/organisational teams.
4. Establish clear, unambiguous management and control requirements for all internal and external stakeholders and third-party service providers.
5. Enable targeted planning and investment to support ICT infrastructure change that reduces risk, capital and operational expenditure.

# How Is TR-60 Life Cycle Management Structured

Five process areas

Six practice areas

**Release Schedule**

Phase 1 TIA-5077.1

Phase 2 TIA-5077.2 / 5077.3

Phase 3 TIA-5076.1 / 5078.1 / 5079.1 /5080.1

**TR-60.B Sub-Committee**

Chair David Cuthbertson

Vice Chair Gary Patton

TR-60.TSB

| Practice Areas | | Process Areas | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| | | Planning | Information Management | Design | Implementation | Operations |
| | | TIA-5076 | TIA-5077 | TIA-5078 | TIA-5079 | TIA-5080 |
| 60.1 | Technology | TIA-5076.1 | TIA-5077.1 | TIA-5078.1 | TIA-5079.1 | TIA-5080.1 |
| 60.2 | Governance | TIA-5076.2 | TIA-5077.2 | TIA-5078.2 | TIA-5079.2 | TIA-5080.2 |
| 60.3 | Security | TIA-5076.3 | TIA-5077.3 | TIA-5078.3 | TIA-5079.3 | TIA-5080.3 |
| 60.4 | Logistics | TIA-5076.4 | TIA-5077.4 | TIA-5078.4 | TIA-5079.4 | TIA-5080.4 |
| 60.5 | Procurement | TIA-5076.5 | TIA-5077.5 | TIA-5078.5 | TIA-5079.5 | TIA-5080.5 |
| 60.6 | Human Resources | TIA-5076.6 | TIA-5077.6 | TIA-5078.6 | TIA-5079.6 | TIA-5080.6 |

TIA-5075

# TIA-5077.1 Information Management Of Technology

- All technical infrastructure involved in using or supporting data communications
  - Buildings, rooms, OSP, IT, IoT, security, cabling, etc.
  - Passive, active and virtual components (servers, networks, storage, user, etc)
  - Not directly in scope are data, applications, data processing, services, etc.
- Information set guidelines for life cycle planning, projects, operations, implementation
- Common language, terms, data, formats, symbology, structure
- Naming, labelling, dependencies, ownership, formats, metadata
- Processes around information ownership, use, roles, access, classification
- Auditable – self audit and external checks

# Daily Challenges To Solve

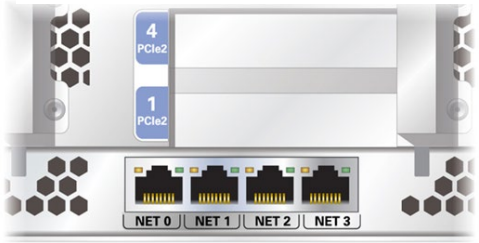
## 1. Name that port

1 or 01 or 001?

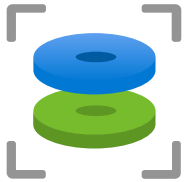
2/1 2\1 2/01 SL2/1 Port 2/1 Gig 2/1 Fe2/1 Slot 2/09

Mgmt MGT Con Console ILO Net Mgmt

NIC 1 Eth A Net 0 hba0 bge1 12F1 primary




## 2. Guess the symbol



Disk Snapshot

Data Box Edge

Simple Notification Service

AWS IoT Greengrass

## 3. Find the latest version

Which host / laptop / VM / dropbox / USB stick
File share / drive folder
Sharepoint or CMS location
Embedded in document / page
Email

# A Few Current Information Sets To Consider…

**Requirements**
Conceptual
Approach and sequencing
Assessment of current state
Proposals
Roles and responsibilities

**Design**
High level design (HLD)
Solutions design
Approval / signoff
Resilience
Low level design (LLD)
Capacity
Contractual

**Implementation**
Team / Role specific view
Roll back/recovery
Connection paths
Work instructions
Sequencing
Location awareness
Contractual

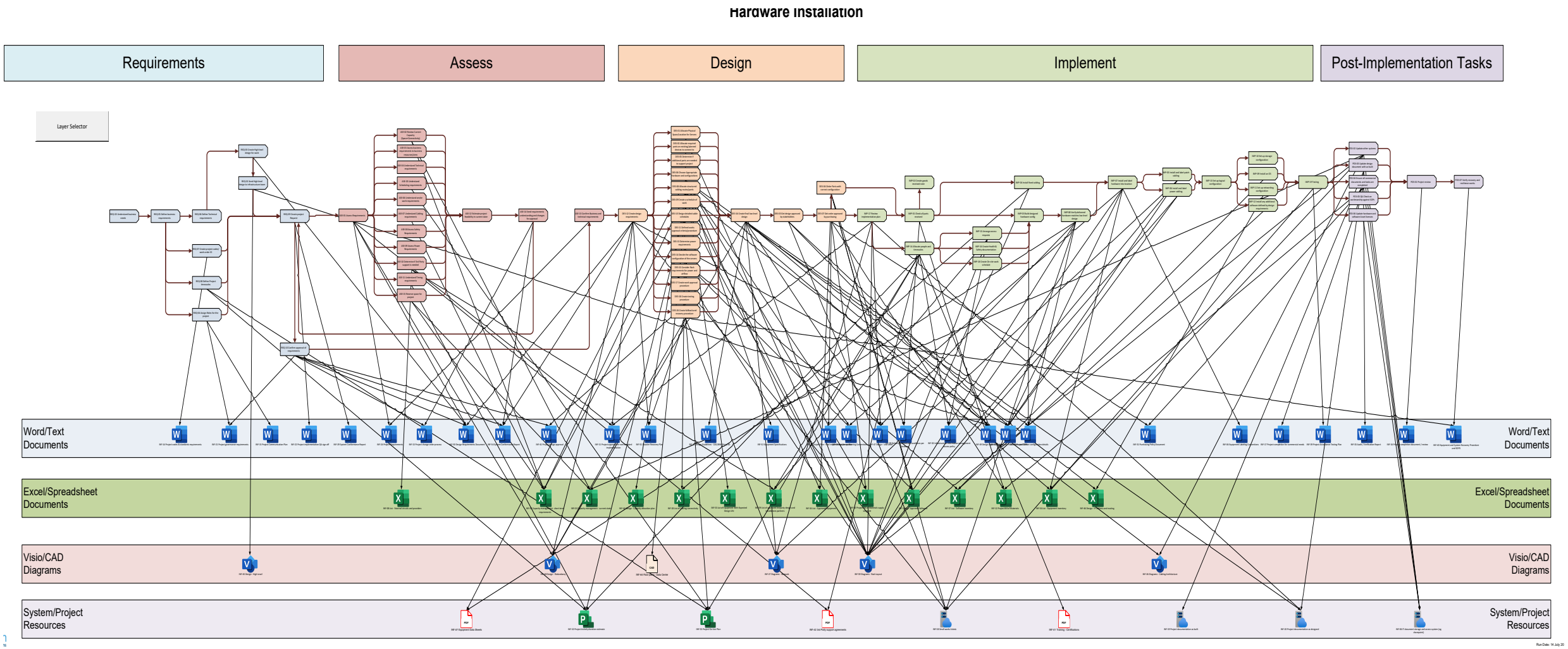
**Operations**
Fault resolution
Failover
Centralised control
Recovery options
Locations
Service dependencies
Functional dependencies
Monitoring

**Risk**
Change impact
Environment management
Risk profiling
Resilience
DR/Recovery planning
Security zoning
Data encryption
Regulatory

**Objectives**

- Easier
- Simpler
- Consistent
- Faster
- Relevant
- Controllable

# Mapping Project Processes To Information Sets




Telecommunications Industry Association

# What Does This All Mean To Enterprise Architects

- Develop EA standards and processes for communication
- Every design / solution will evolve and be replaced
  - Changing technology
  - Changing business needs
  - External regulations and marketplace needs
  - Retain and pass on knowledge gained during discovery and analysis
- Should be easier for EA to understand underlying infrastructure and constraints for risks, dependencies, business use and migration options
- Consider participating or volunteering the EA perspective on life cycle management during public consultation.

# Further Reading And Contacts

**TIA Website** www.TIAOnline.org

Membership, committee participation, events, news, press releases

**TR-60** https://tiaonline.org/committee/tr-60-ict-lifecycle-management/

Brochures, case studies and other materials being developed

My details David Cuthbertson – on linkedin

www.squaremilesystems.com

Infrastructure mapping software with Visio automation

Data centres, networks, applications, systems, data flows, etc.