



GITOC

Government Information on Technology Officers' Council

Integrating Government through Enterprise Architecture & Standards

By

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(EA Practitioners Conference – JHB)



Agenda

- ❖ Introduction – “The Integration Problem”
- ❖ Interoperability through EA
- ❖ Challenges & Conclusion

Introduction – The Integration Problem

*“One's mind, once stretched by a new idea,
never regains its original dimensions.”
- Oliver Wendell Holmes*

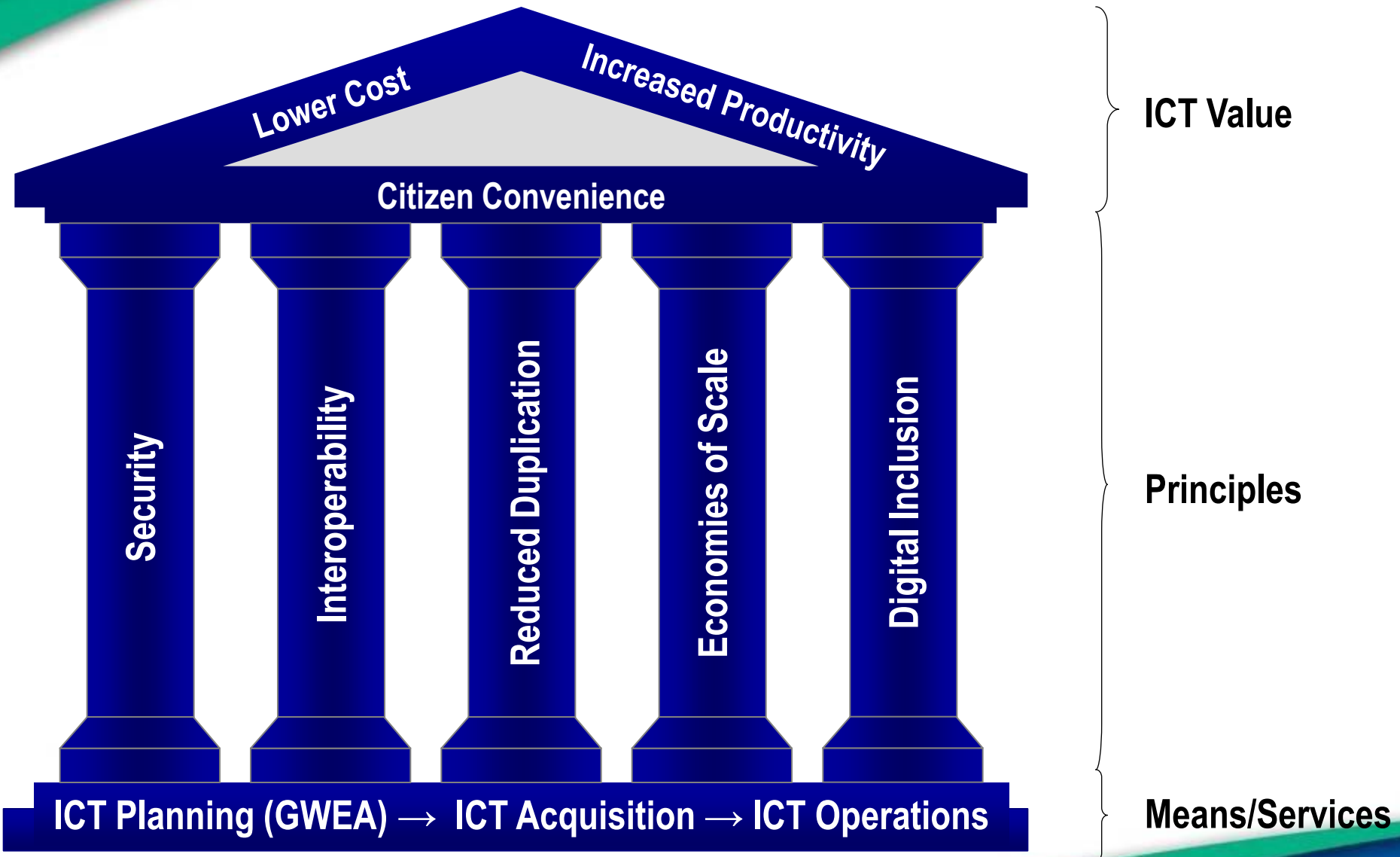
Talk to each other



“Government IT systems must talk to each other” ...

Minister Public Service & Administration,
7 October 2000

Government ICT House of Values*



* From e-Government Policy, SITA Regulations & SITA Act (amended)

Regulatory drivers*



❖ Chap 1, Part III:B,C – Strategic Planning

- Define **Core Objectives**
- Describe **Core and Support Activities**
- Specify the **Functions & Structures**
- Specify the **Main Services** to customers



❖ Chap 1, Part III.E – Information Planning

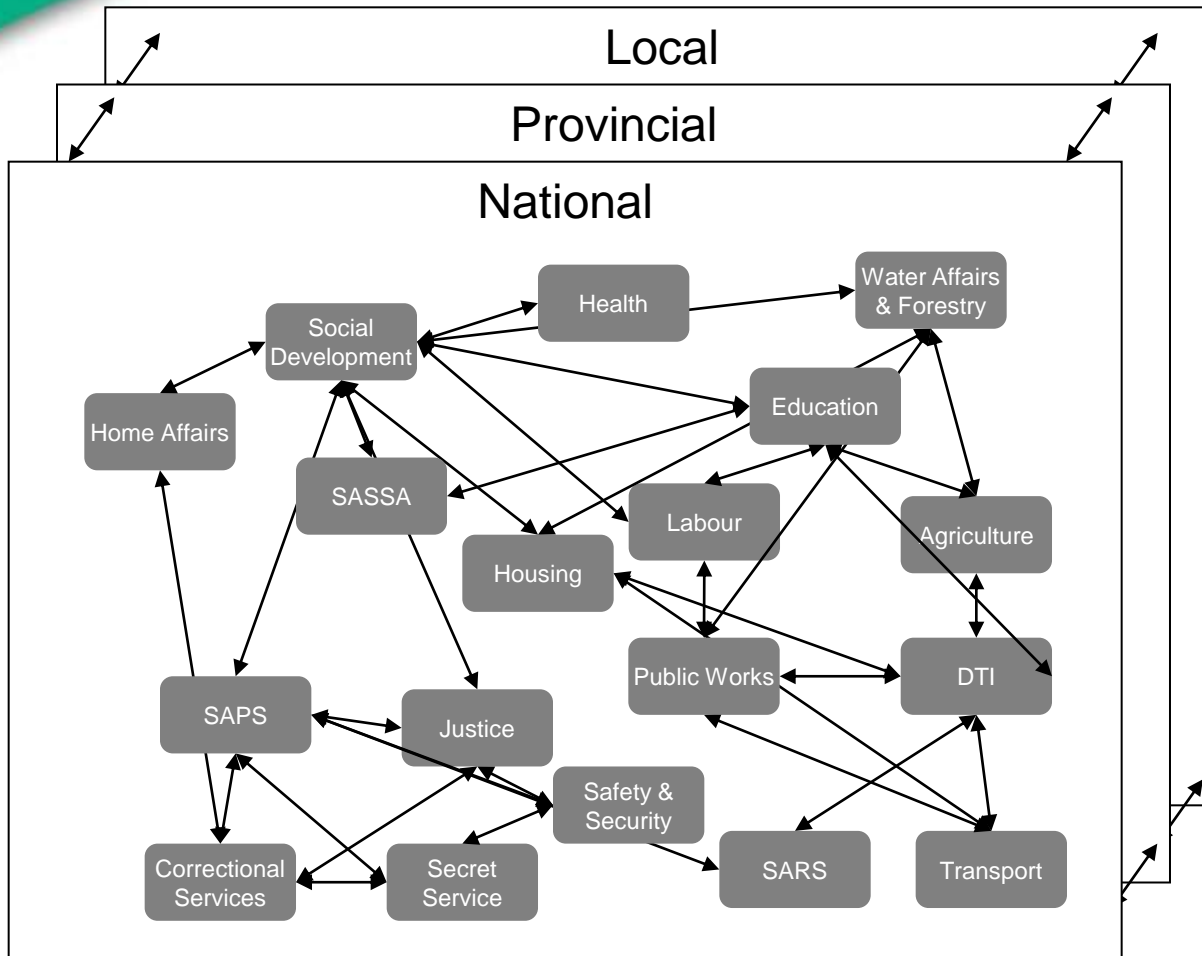
- Establish an **Information Plan**
- Establish an **Information Infrastructure Plan**; and
- Establish an **Operational Plan** to implement the above



❖ Chap 5 – e-Government Compliance

- Comply with “**ICT House of Values**”
- Comply with **MISS (Security Standard)**
- Comply with **MIOS (Interoperability Standard)**

The Interconnectedness of Government



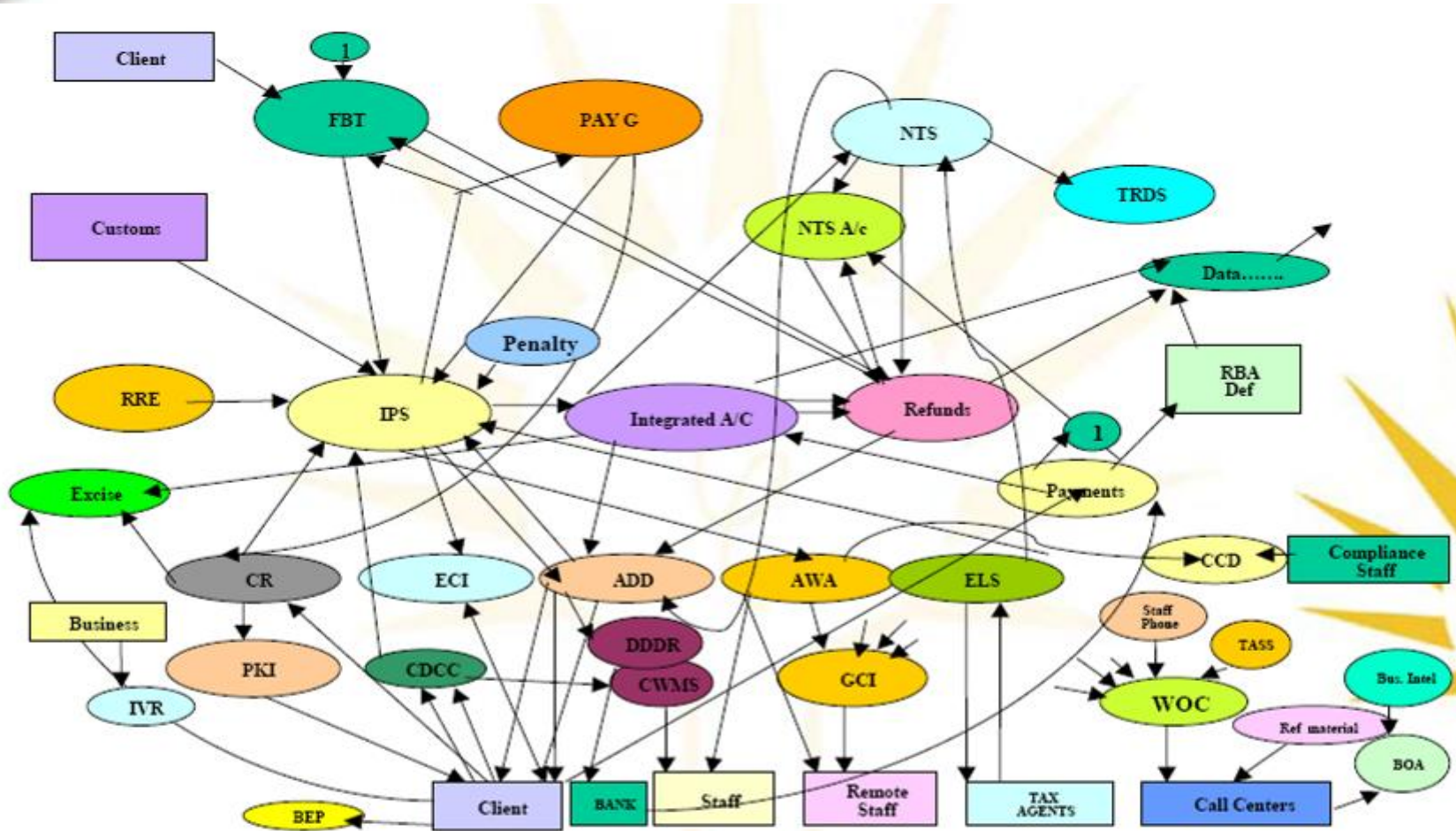
- ❖ Activities in Government do not occur in isolation
- ❖ Government is large, complex and interconnected
- ❖ Its systems are large, complex but **disconnected**

The disconnected nature of systems within Government has a major impact on the lives of its Citizens and the quality and efficiency of the services

Information Sharing in Government Today

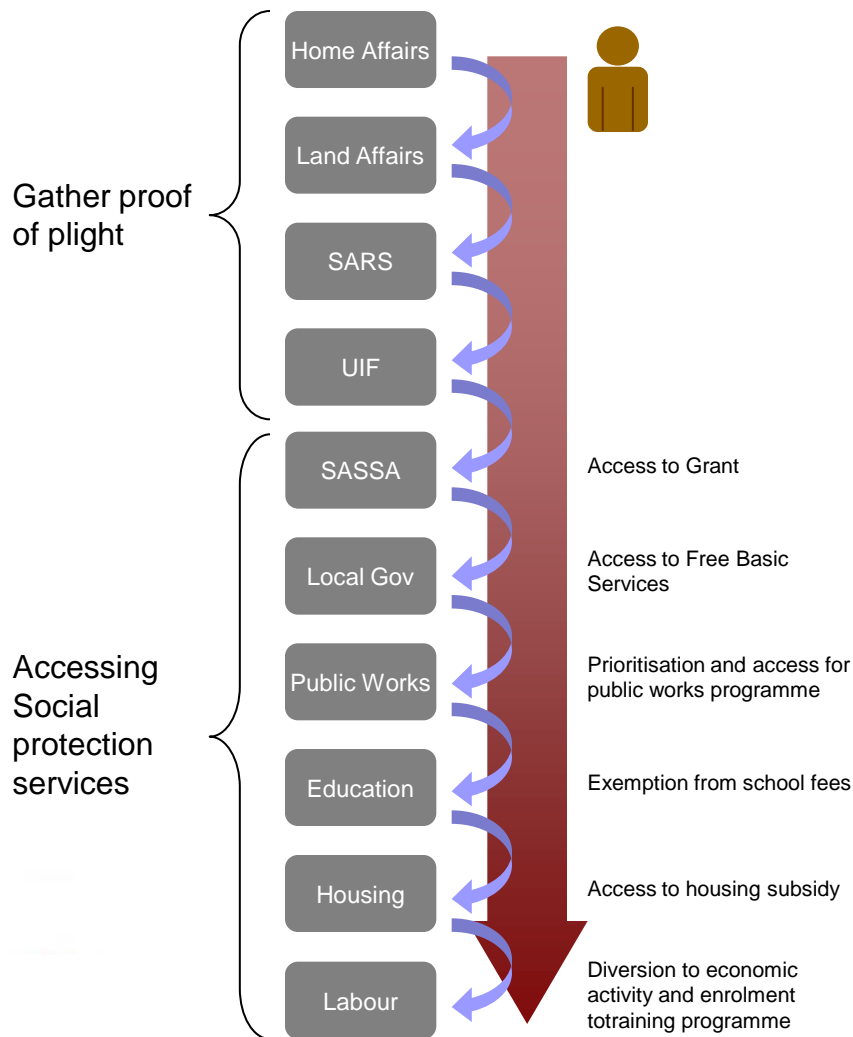
- ❖ Limited 'integration' is based on exchange of flat-files established on an as-needed basis:
 - Requires time consuming negotiations with individual organisations
 - Entities not set-up for information sharing (no established infrastructure or dedicated and skilled resources)
 - Have to redefine mechanisms from scratch
 - No use of standards
 - No consistency across government
 - Based on 'make-do' infrastructure
 - No reusability
 - Tends to be batch based with long update cycles

The Integration “Rat’s Nest”



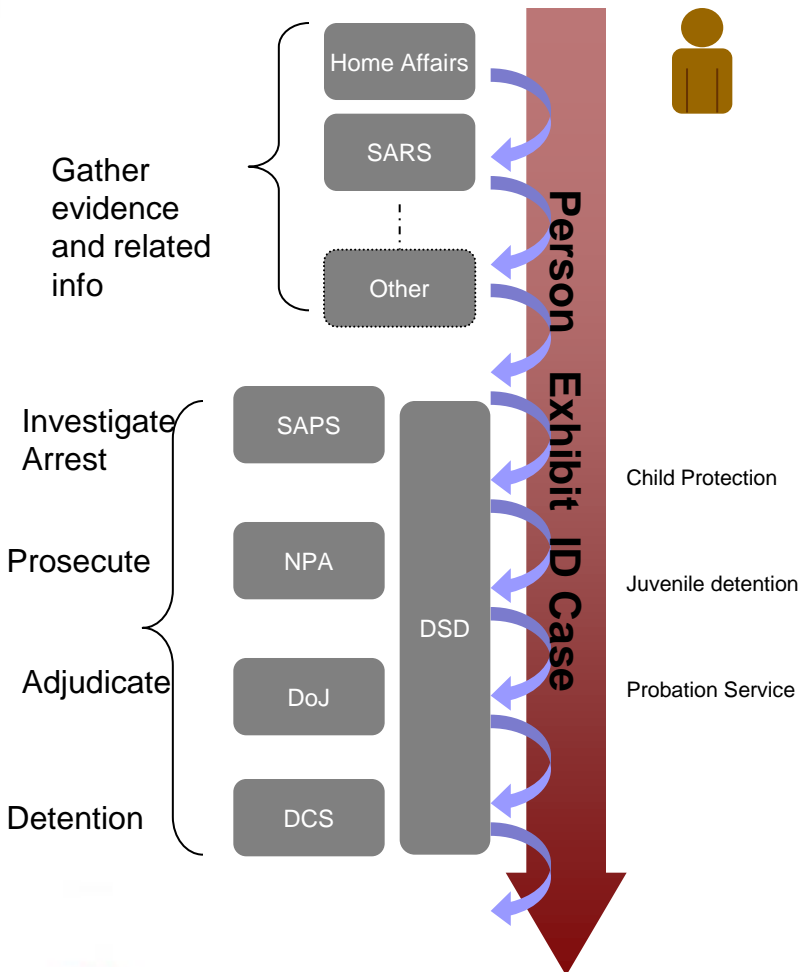
End result is a hodgepodge of poorly managed information exchange

Disconnectedness - Social Cluster Example



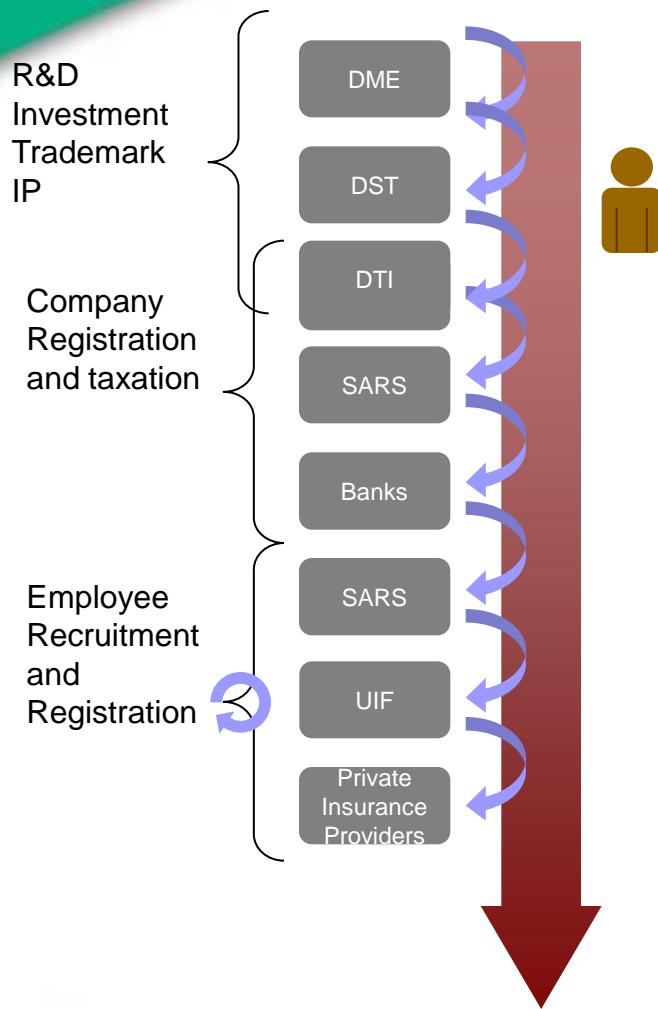
- ❖ Tackling poverty remains one of Government's top moral and political imperatives yet getting help from Government remains difficult
- ❖ Citizen has to 'integrate' Government by following arduous administrative processes
- ❖ Gathering proof-of-eligibility alone can often take up to 24 months
- ❖ Other impacts include:
 - Duplication of administrative processes
 - Fraud and double-dipping

Disconnectedness - Justice Cluster Example



- ❖ The justice system is still plagued with inefficiencies
- ❖ Crime reporting and response is a nightmare for citizens
- ❖ Evidence gathering and collaboration for prosecution a challenge (missing dockets etc)
- ❖ Prisoner Identity swapping
- ❖ Children in conflict with the law imprisoned with hardened criminals
- ❖ Cases involving child abuse not reported to social workers
- ❖ Inadequate probation services

Disconnectedness – Economic Cluster Example



- ❖ Co-ordination of economic activities a challenge
- ❖ High burden on business hindering economic development
- ❖ Compliance with company, taxation and labour legislation is still a challenge

So what can be done?

“The significant problems we face cannot be solved at the same level of thinking we were at when we created them.”

Albert Einstein

Interoperability In Government

“All models are wrong, but some are useful”

George Box, Edward Deming

More than a technical challenge

- ❖ Objective: *Sell more Cola in Middle East*
- ❖ Challenge: *Language* בְּרִאשֹׁחַת בְּרֹא אֱלֹהִים אֶת 1
הַשָּׁמַיִם וְאֶת הָאָרֶץ: 2 וְהָאָרֶץ
- ❖ Solution: *Use Pictures*



- ❖ Outcome: *Drop in Cola \$ales*
- ❖ Why: *They read from **RIGHT-TO-LEFT***

An EA Capability/Function

❖ EA Process

- EA Development Process
- EA Logic (Meta-Model of deliverables)
- EA Methods (Techniques, Notation)

❖ EA People

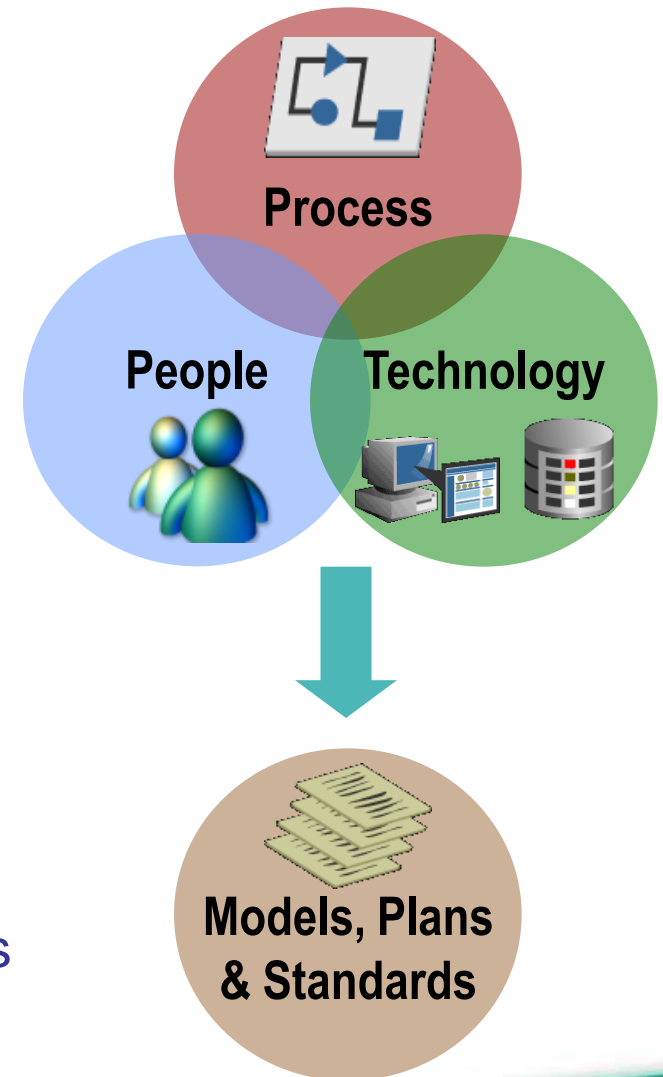
- Governance structures
- Roles & Responsibilities (RACI Charts)
- Competencies

❖ EA Information System (EA Tools)

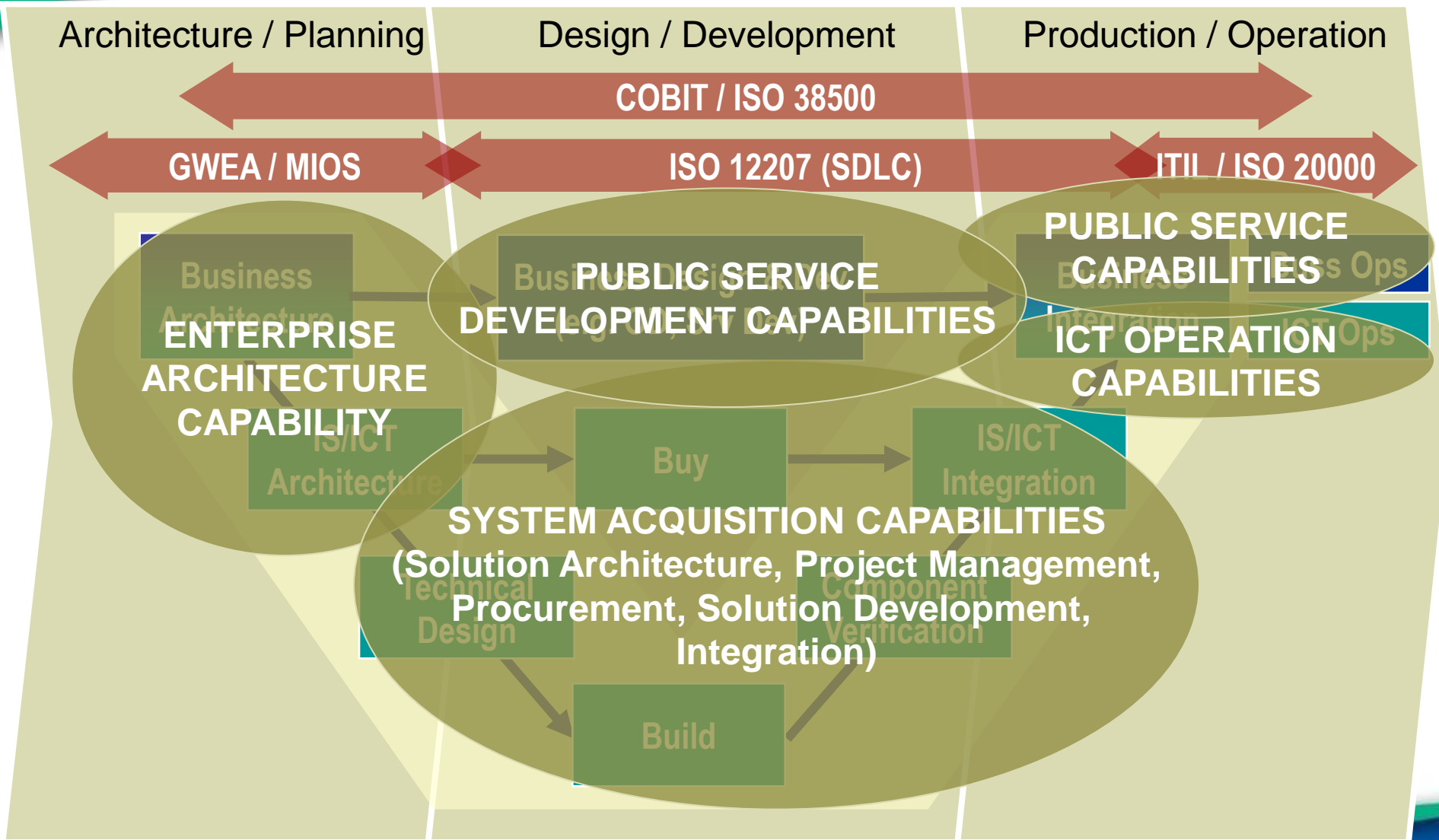
- Planning & Modelling Software
- EA Data Repository
- ICT Infrastructure

❖ EA Deliverables (“Content”)

- EA Reference Models / Blueprints / Plans
- Interoperability Standards



EA Context



GWEA Framework composition

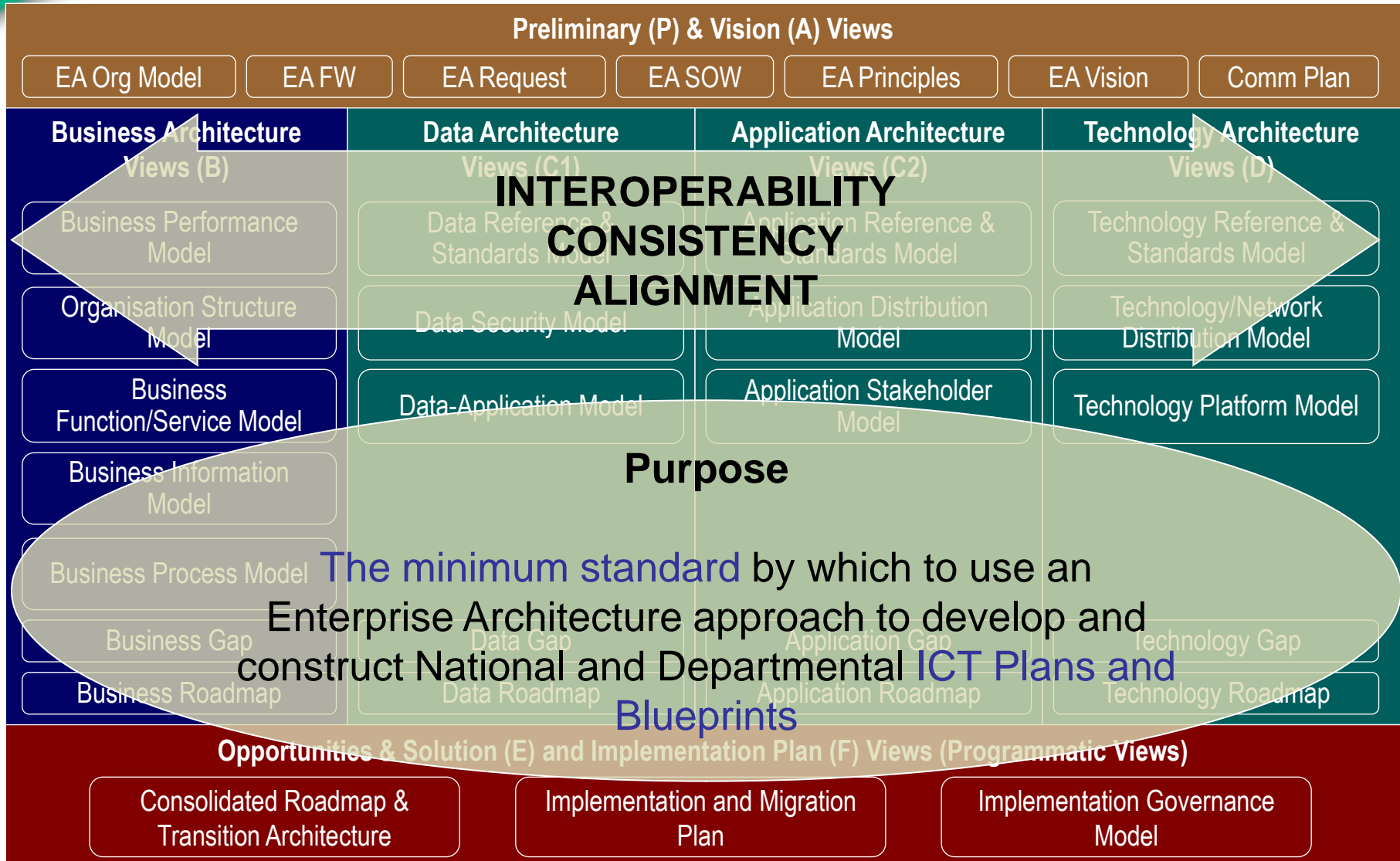
TOGAF ADM Phase	TOGAF-9	GWEA 1.2
Prelim: FW & Contract	5P+1A = 6	3P = 3
A: Vision, Scope & Principles	6P+2A = 8	3P+1A = 4
B: Business Architecture	3P+(2x17)A = 39	2P+(2x5)A = 12
C1: Data Architecture	3P+(2x9)A = 21	2P+(2x3)A = 8
C2: Application Architecture	3P+(2x14)A = 31	2P+(2x3)A = 8
D: Technology Architecture	3P+(2x8)A = 19	2P+(2x3)A = 8
E: Opportunities/Solutions	5P	1P
F: Migration Planning	10P	2P
TOTAL DELIVERABLES	38P+99A = 137 (89 Non-Duplicated)	17P+29A = 46 (32 Non-Duplicated)

❖ P = Project Deliverables (e.g. Charters, Contracts, Analysis Reports, Schedules)

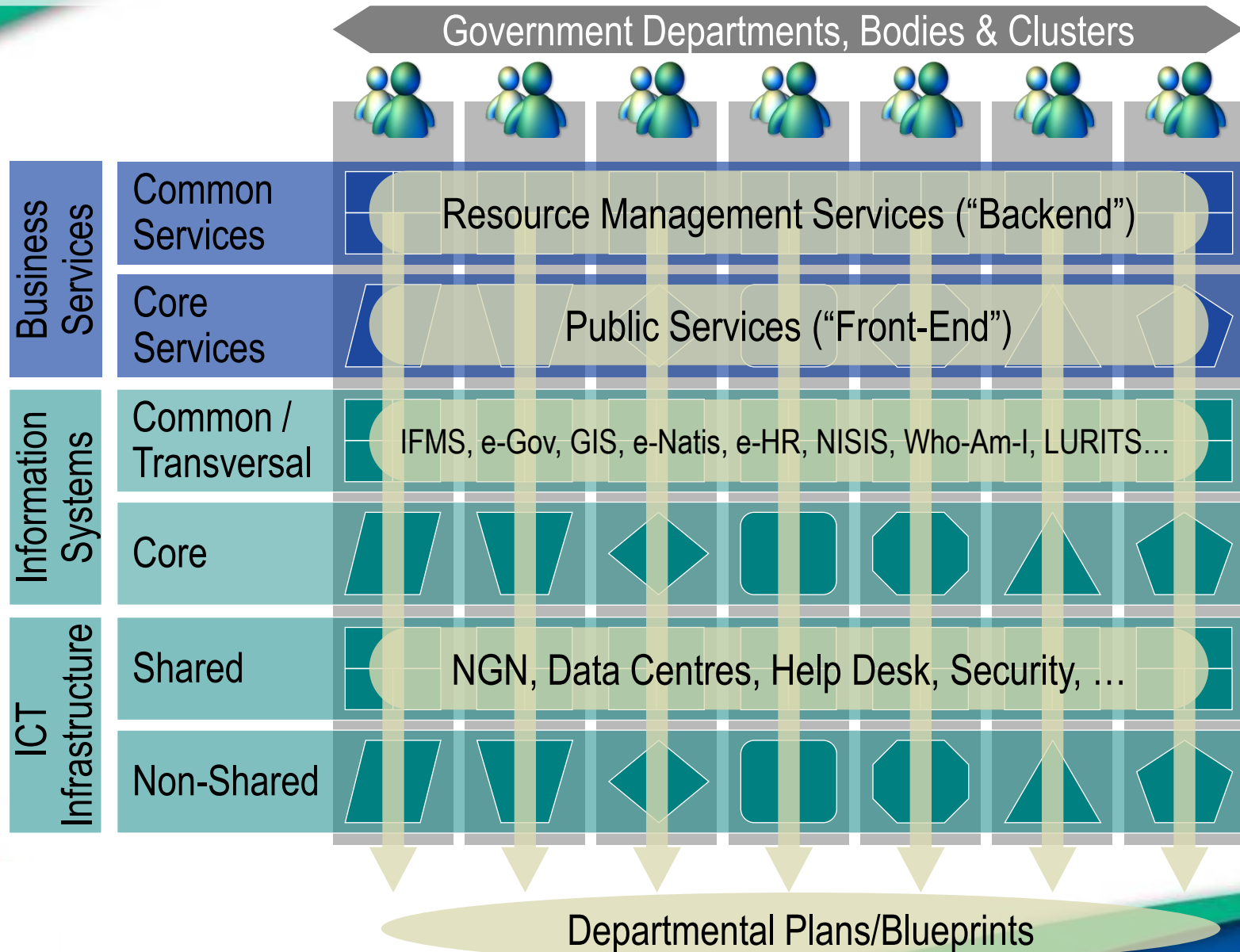
❖ A = Architecture Deliverables (e.g. Models, Diagrams, Matrices, Catalogues)

❖ Non-Duplicated = As-Is or To-Be models of the same format

GWEA Framework



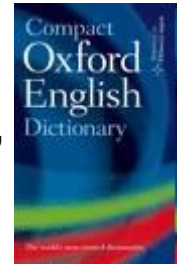
EA Planning concept



Interoperability – [Re-]defined

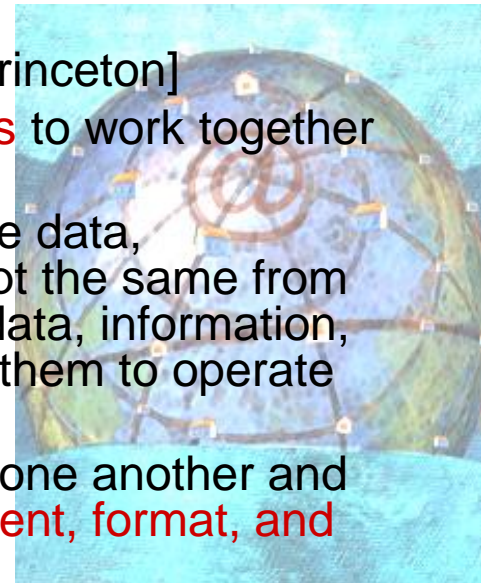
❖ Interoperable (Dictionary)

- adj; **able to operate in conjunction** [Concise Oxford Dictionary, 9th Edition]



❖ Interoperability (from the Web)

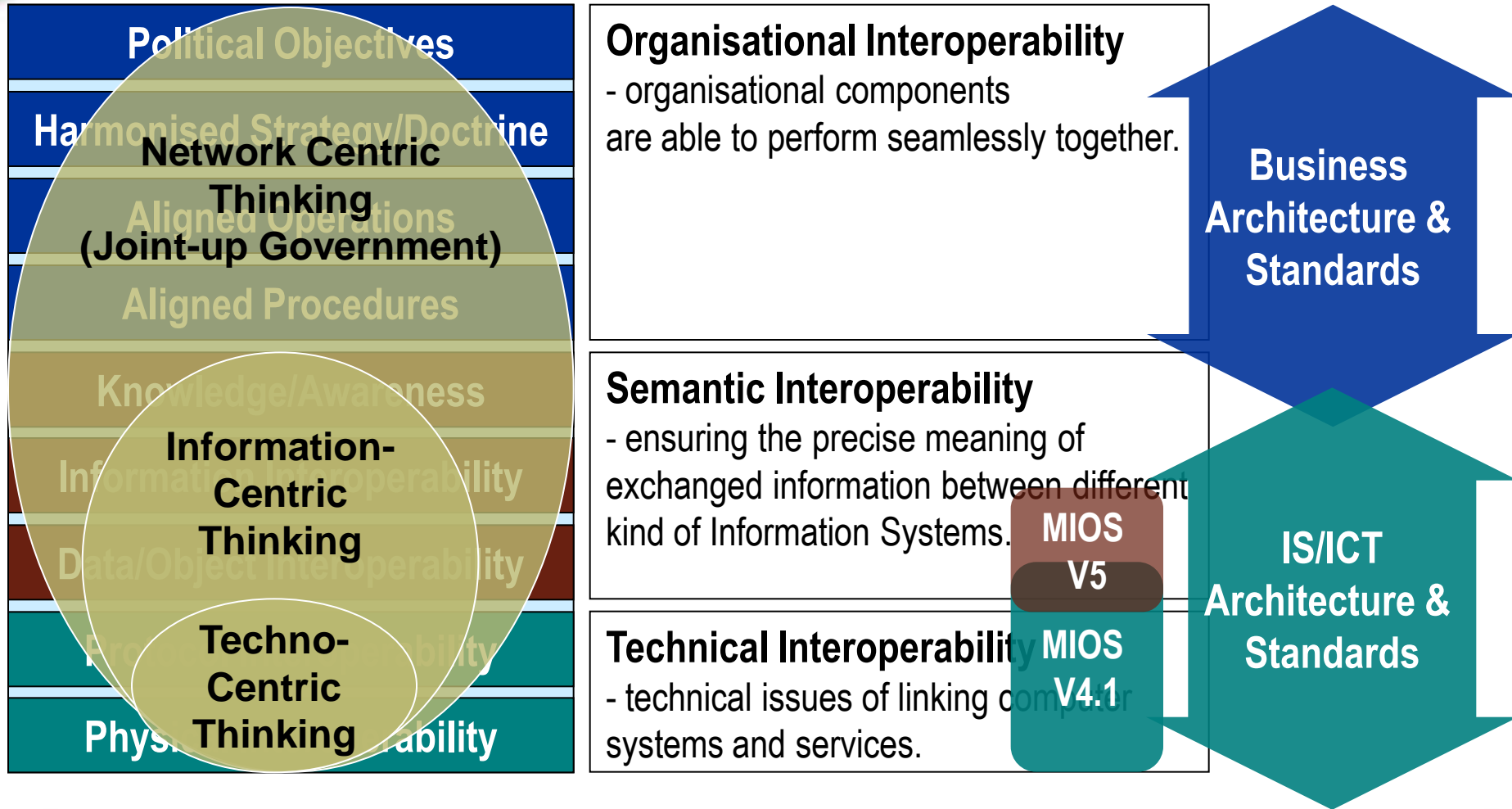
- The ability to **exchange and use** information. [Princeton]
- The ability of diverse **systems and organizations** to work together (interoperate). [Wikipedia]
- The ability of **systems, units, or forces** to provide data, information, materiel, and services to and accept the same from other systems, units, or forces, and to use the data, information, materiel, and services so exchanged to enable them to operate effectively together. [US DoD, DoDD 5000.1]
- The capability of systems to communicate with one another and to exchange and use information including **content, format, and semantics** [NIST]



❖ Mathematician's definition

$$\ln \left(\lim_{z \rightarrow \infty} \left(\left(\left(X^T \right)^{-1} - \left(X^{-1} \right)^T \right) + \frac{1}{z} \right)^2 \right) + \sin^2(p) + \cos^2(p) = \sum_{n=0}^{\infty} \frac{\cosh(q)^n \sqrt{1 - \tanh^2(q)}}{2^n}$$

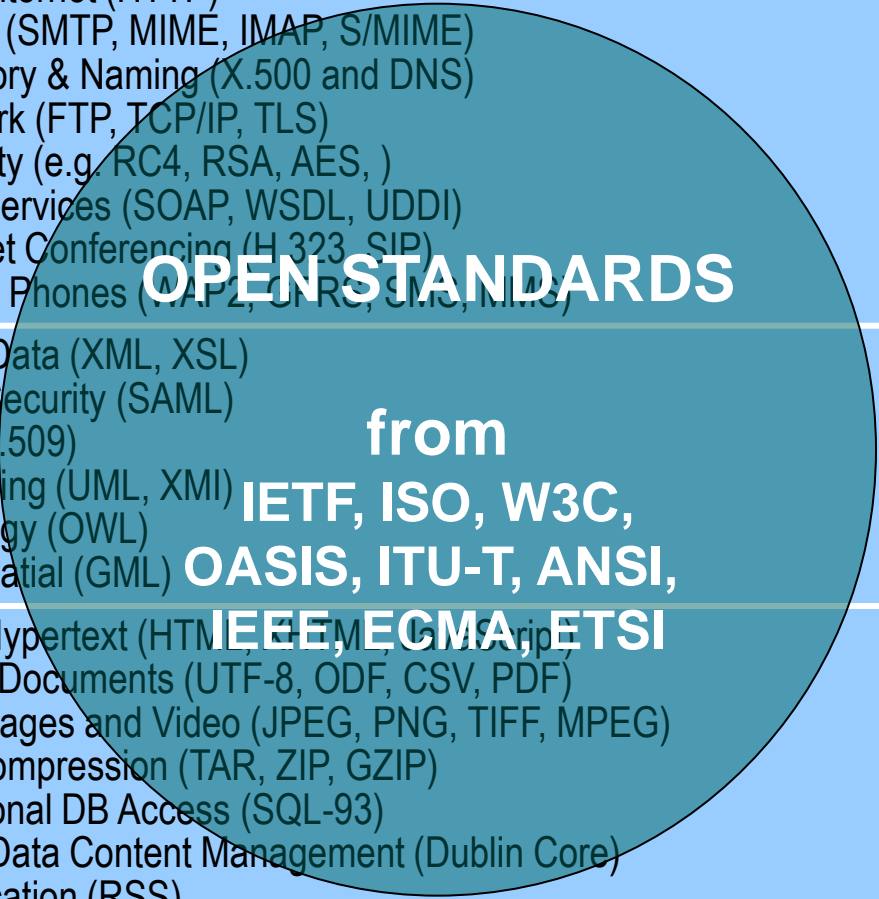
Interoperability levels*



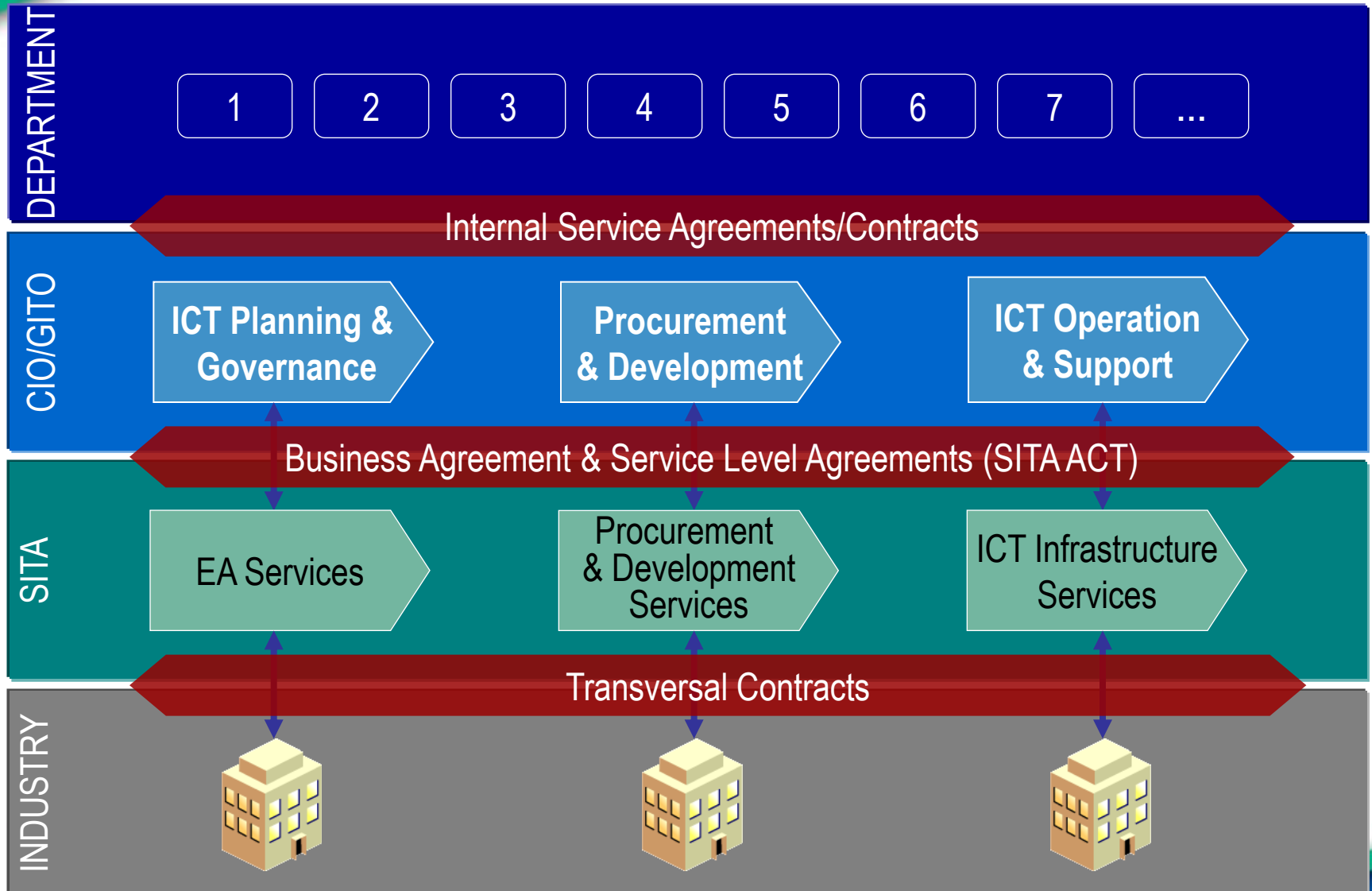
* Tolks, Andreas. "Beyond Technical Interoperability
 – Introducing a Reference Model for Measures of Merit for Coalition Interoperability.

MIOS v4.1 Composition*

Category	Component (Standards)
Connectivity	Web/Internet (HTTP) E-Mail (SMTP, MIME, IMAP, S/MIME) Directory & Naming (X.500 and DNS) Network (FTP, TCP/IP, TLS) Security (e.g. RC4, RSA, AES,) Web Services (SOAP, WSDL, UDDI) Internet Conferencing (H.323, SIP) Mobile Phones (GPRS, SMS, MMS)
Data Interoperability	Meta-Data (XML, XSL) Data Security (SAML) PKI (X.509) Modelling (UML, XMI) Ontology (OWL) Geospatial (GML)
Information Access & Content Standards	Web/Hypertext (HTML, XML, JavaScript) Office Documents (UTF-8, ODF, CSV, PDF) Still images and Video (JPEG, PNG, TIFF, MPEG) File Compression (TAR, ZIP, GZIP) Relational DB Access (SQL-93) Meta-Data Content Management (Dublin Core) Syndication (RSS)



Departmental Engagement Model



The road ahead (“for ICT”)...

- ❖ Promulgate GWEA Framework to standardise ICT Planning across government.
- ❖ Enhance the Minimum Interoperability Standards (MIOS)
 - Add compliance guidelines for Suppliers and Acquirers.
 - Add Transversal Data Standards and Schema’s (e.g. Health, Social, Safety, Finance, HR, SCM Data Schema)
- ❖ Constitute National EA Governing Body.
- ❖ Enhance Certification of ICT systems for compliance with MIOS.
- ❖ Validate conformance of Departmental EA against GWEA.
- ❖ Establish Training mechanisms for EA.
- ❖ Establish EA Tool & Repository.

Challenges & Conclusion

*“Sometimes when I consider what tremendous consequences come from little things... I am tempted to think there are no little things.”
- Bruce Barton*

Some challenges



Cooperation



Conflicting Policies

IME PREZIME AYISHA KHOMEINI DATUM / MLESTO RODENJA 02.12.1972. KIRKUK, IRAK JMBG 0212972335009 PRIHVALIŠTE ZAGREB DUBRAVA 27 PU ZAGREBAČKA DOZVOLI IZDAO U POTPIŠ 07.12.1975. DANA 06.12.2035. VREMEDI DO 0309123 BROJ POTPIŠ VOZAČA <i>Fabrizio Aguilera Khomeini</i>	A Motocikl datum polaganja B Vozila, osim vozila kategorije A, čija najveća dopuštena masa nije veća od 3.500 kg i koja nemaju više od osam sjedala, ne računajući sjedalo za vozača. 11.04.1991. datum polaganja C Vozila za prijevoz tereta čija je najveća dopuštena masa veća od 3.500 kg. datum polaganja D Vozila za prijevoz osoba, koja, osim sjedala za vozača, imaju više od osam sjedala. datum polaganja E Skupovi vozila čija vučna vozila spadaju u kategoriju B, C ili D, a priključna su vozila najveće dopuštene mase veće od 750 kg.
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Identity issues



Compliance Issues

An Integrated Government depends on ...

- ❖ Relevant **Legislation** to be enacted to make integration work.
- ❖ Strong ownership and responsibilities of **Business Architecture**.
- ❖ Appropriate **governance structures, performance and funding model**.
- ❖ A **Common Reference Model** to serve as reference for integration.
- ❖ Complete **Information System Inventory**
- ❖ A new set of **Semantic Interoperability** standards (e.g. XML Schema)
- ❖ Compliance to **Open Technical Standards** (non-functional requirement) as part of all acquisition processes.
- ❖ Require a cross government **“Integration Bus”**.
- ❖ Stronger **“Shared Service”** infrastructure
- ❖ Improved **“System Integration”** capabilities (skills, methods & tools).

A fully integrated government will remain a **Vision – a journey** that strives for higher levels of maturity in the Technical, Semantic and Organisational Interoperability areas.

Sometimes I think we try to ...

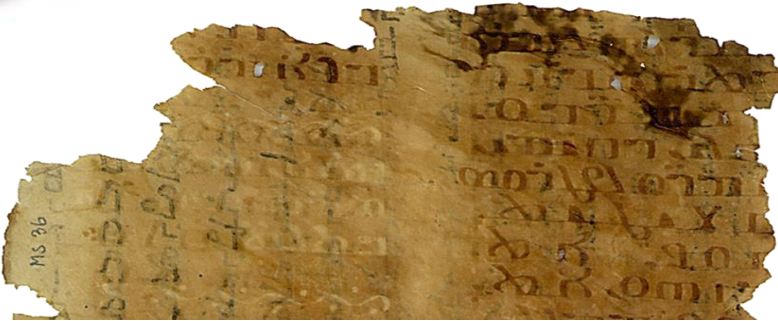
Force feed a pill to a cat,

Eat an Elephant,

Boil the Ocean,

Align the Planets.

A point to ponder



וַיֹּאמֶר יְהוָה, הֵן עַם אֶחָד וּשְׂפָה אַחַת לְכָל־אֶם,
זֶה, הַחֹלֶם לַעֲשׂוֹת; וְעַתָּה לֹא-יִבְצָר מֵהֶם
כִּלְאֲשֶׁר יִזְמוּ לַעֲשׂוֹת
זֶהְבָּה, נִרְדָּה, וְנִבְלָה שֵׁם, שְׂפָתֵם-אֲשֶׁר לֹא
יִשְׁמְעוּ, אִישׁ שִׁפְתֵי רֵעֵהוּ



Illustration of the "Tower Of Babel"

Genesis 11

6. The LORD said, "If as one people speaking the same language they have begun to do this, then nothing they plan to do will be impossible for them.

7. **Come, let us go down and confuse their language so they will not understand each other.**" - *The Bible (NIV)*



*Thank You
Dankie
Siyabonga
Ke a leboha
Siyathokoza*

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