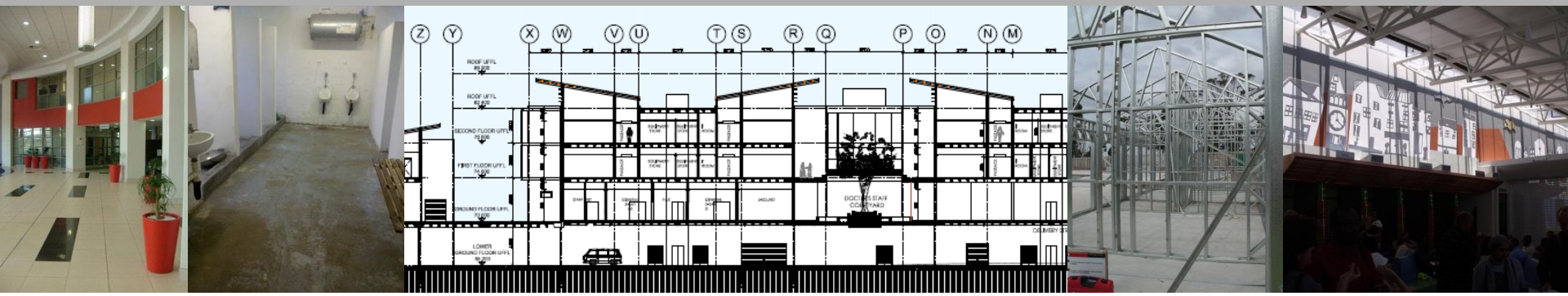
09 - 10 October 2012

Real Problems Relevant Solutions



Infrastructure: Healthy buildings for the NHI.

Peta de Jager, Geoff Abbott and Nsindiso Hlatswayo

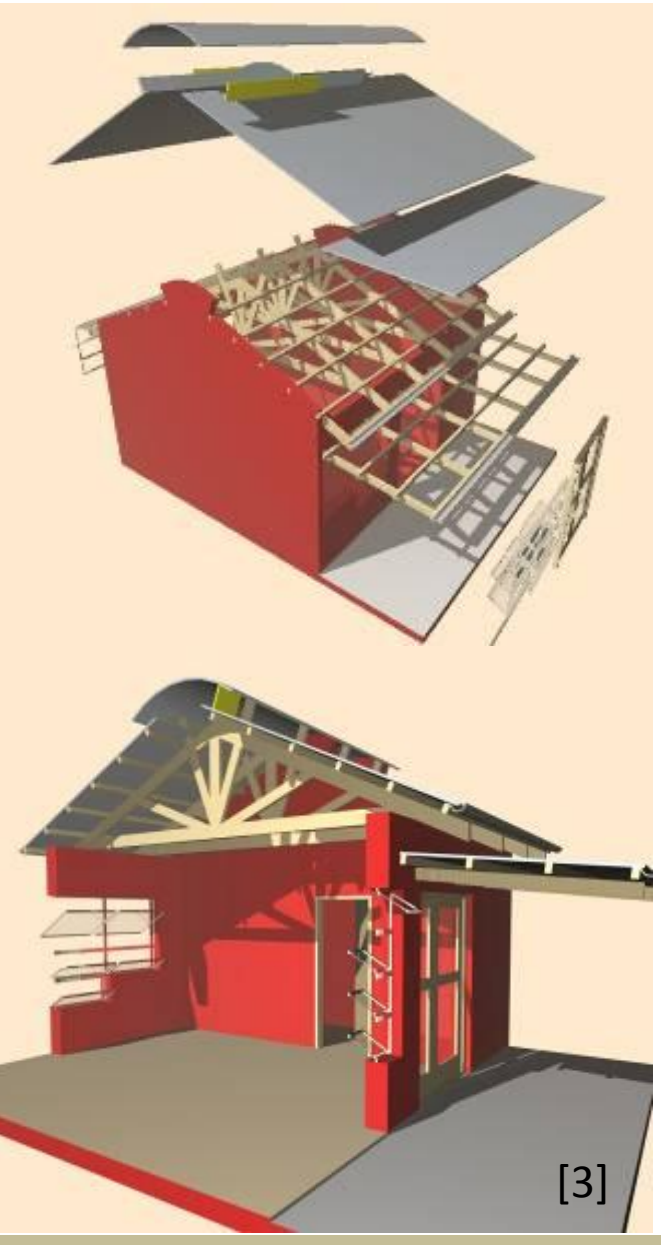
MILESTONE	TIME ALLOWANCE	
Project identification	0	
Site identification	4	Months from identification of project
In principle clearance to build on site	3	Months from identification of site
Site Development Plan, EIA - approval LA	12	Months from identification of site
Preparation of Business case	3	Months from LA approval
Approval from Provincial Health, Treasury	2	Months from submission of business case
Approval from National Health and Treasury	2	Months from submission to National
Request for service(RFS) to Implementing Agent	1	Months from receipt of approval
Appointment of Consultants	3	Months from RFS
Confirmation of Brief/Scope	1	Month after consultants appointment
Design development and PIP to client	12	Months after Scope
PIP approved	3	Month after submitted
Tender Documentation completed	3	Months after PIP
Tender advertising	1	
Tender closing	2	
Tender award	2	
Contract start date	1	
Site handover/Access date	1	7 Months after tender docs completed
SUB TOTAL OF MONTHS FOR PLANNING	**54**	**Months**

[1]

South Africa’s oldest hospital:

Somerset Hospital. Circa 1890

Photo: Etienne du Plessis [2]


[3]

Why this matters

Service delivery in the healthcare sector is profoundly affected by the built infrastructure provided to support it

The built environment can undermine health and healing and aid or cause ill-health, or promote wellness and healing

South Africans have the Constitutional rights to:

- an environment that is not harmful to their health or well-being; and
- access to - health care services

"NHI is a process not an event"

Motsoaledi

Equity

Accessibility

Sustainability

Solidarity

Public sector strengthening

Prevention

Accreditation of facilities

Primary health care model

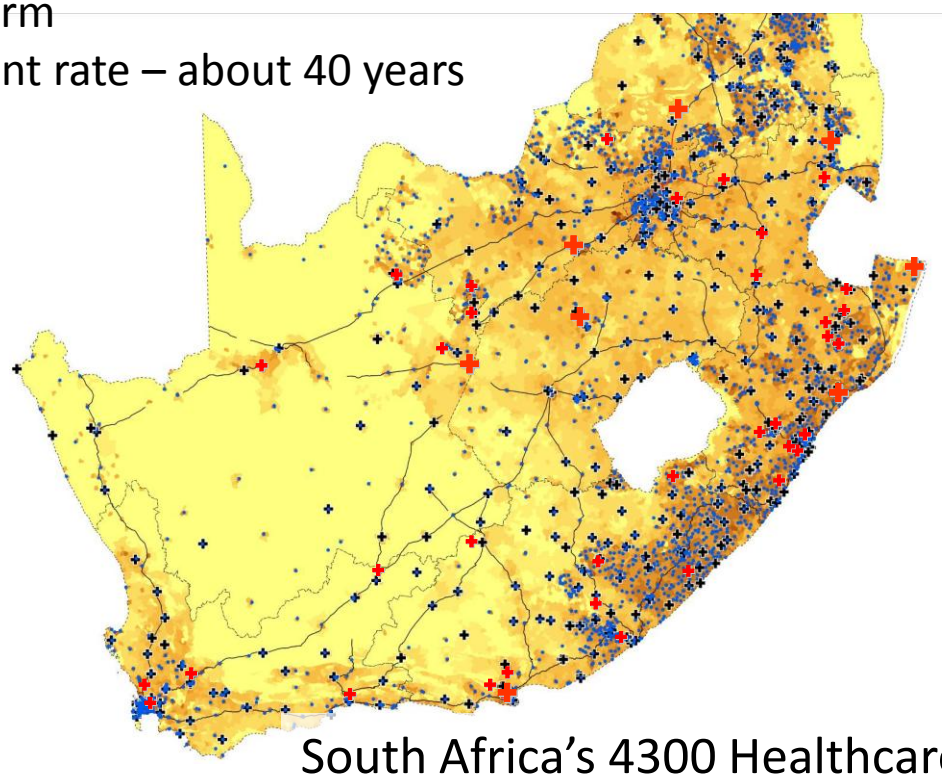
Earmarked funding

Transformation is necessary for equity

Resource constraints

Severe staffing constraints (healthcare and built environment)
Legacy service platform
Very slow replacement rate – about 40 years

Portfolio and enterprise management is crucial to affordability and sustainability



South Africa's 4300 Healthcare Facilities [5]

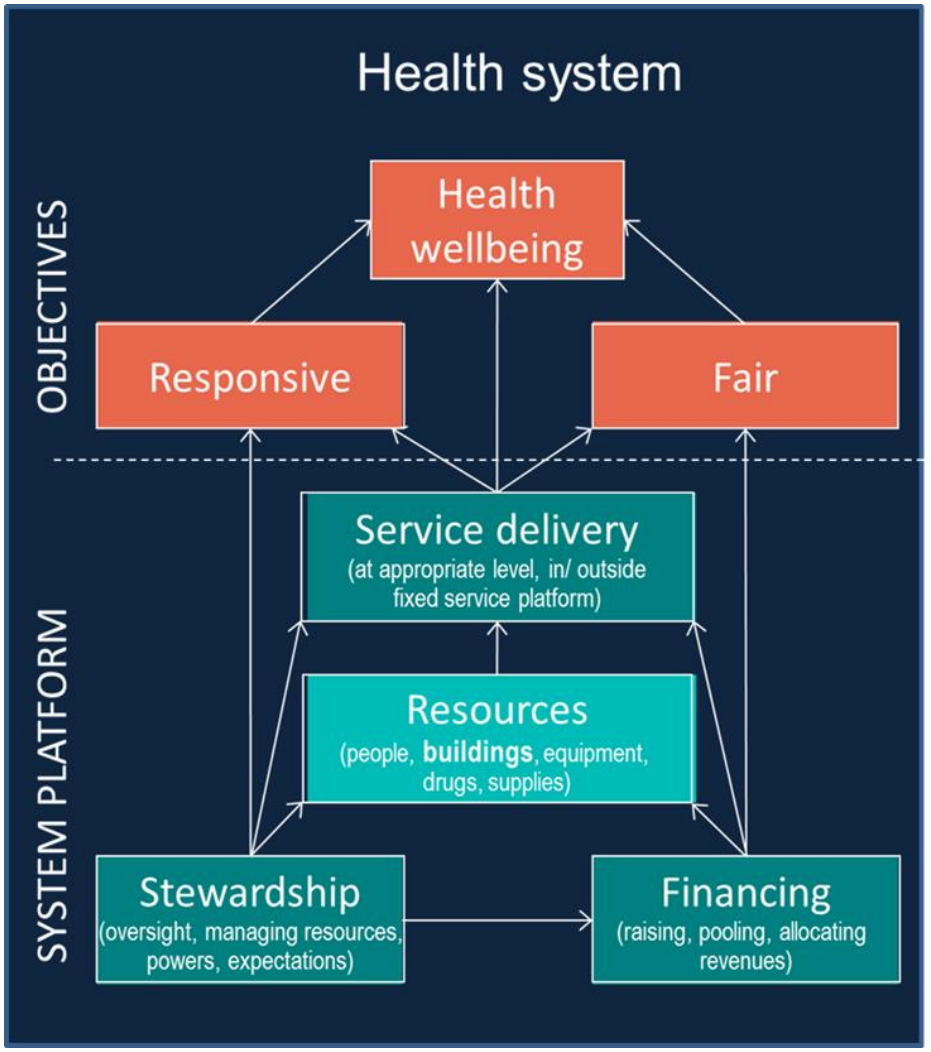
IUSS Norms and Standards

health
Department:
Health
REPUBLIC OF SOUTH AFRICA
Infrastructure Unit

Supported by
CSIR
Council for Scientific and Industrial Research
DBSA
Development Bank of Southern Africa

Development objective

- Principal objective
  - The development of a **sustainable** set of **universally adopted** South African national **norms, standards, guidelines** and **benchmarks** for **all levels of healthcare facilities** related to **all stages** of the healthcare **infrastructure lifecycle** from strategic planning through to operation and eventual disposal
- Strategic context
  - **Equitable** and **optimised** balance between **need**, **service delivery model** and **place of service**
  - Balance infrastructure development within **current delivery framework** and the **needs of NHI**

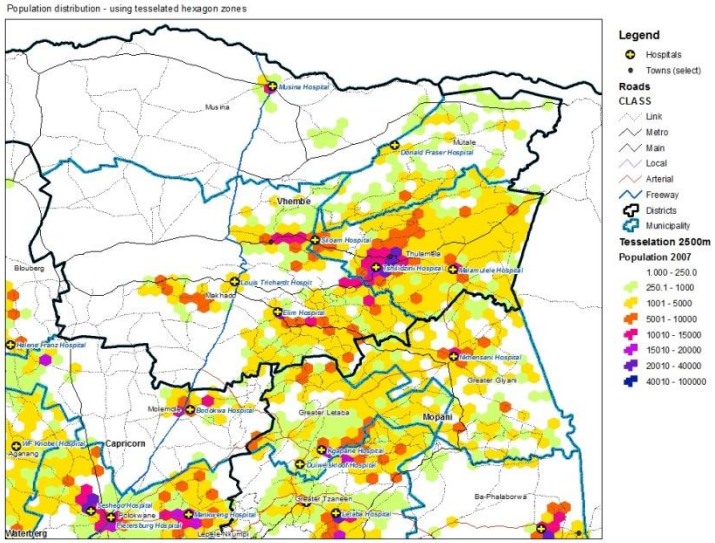


[6]

Accessibility

- Inclusive environments and barrier-free design
- Location and proximity to need, and right sizing
- Telemedicine
- Taking the service into the community

[7]



[8]

[9]

There is a sectorisation of healthcare provision with distinctive characteristics:

PRIVATE SECTOR	PUBLIC SECTOR

• Market driven (brand-conscious, attract HCW and patients); ⇧
• Must remain viable: ⇩
  • Economic imperative to minimise **capital cost**;
  • Replicates successes;
  • "In-house" capability;
• Agile (selects its services);
• Formerly legislated with reference to minimum standards (R158).
	• Complex institutional split between custodial and user departments;
	• Economic imperative to minimise operating costs:
	  • Maintenance averse;
	  • Roster-based professional selection;
	• Inert;
	• Formerly legislated with reference to maximum area and cost norms (SAHnorms)

48.5% of spend (R 120.8-billion) 16.2% of the population 8.2-million	49.2%* of spend (R 122.4-billion) 84% of the population 42-million people

[10]* excludes works on health infrastructure

Is (should) NHI be a rebranding opportunity?

IUSS Norms and Standards

Cost modelling tool

- Order of Magnitude
  - Hospital and PHC estimators available, updated regularly
  - Extensively work-shopped with peer group
- Departmental and elemental cost model
  - Progressive detail through project development
- Simple interface, sophisticated modelling.

Infrastructure Unit Support Systems Project
An initiative of the
Department of Health: Infrastructure Unit
Supported by CSIR DBSA

ORDER OF MAGNITUDE ESTIMATOR FOR NEW HOSPITALS DATE: 12/09/2012

Notes High level strategic estimate, minimum input
Estimate approximate - may vary by 15% more or less
This cost estimator excludes residential, crèche and extra ordinary service requirements
This cost estimator should only be used up to Business Plan stage

NAME OF PROPOSED HOSPITAL:	IUSS
PROVINCE:	Eastern Cape
LOCATION:	IUSSville
DISTANCE FROM SUPPLY:	2 - Major town or more than 20km and less than 50km from build
INLAND/COASTAL:	Coastal
SINGLE OR MULTI STOREY:	Multi storey

DETAIL OF BEDS INTO SERVICE LEVELS		
	SUB ACUTE	
	LEVEL 1	100
	TB (NOT MDR OR XDR)	
	LEVEL 2	
	SPECIALISED: Psychiatry	
	MDR or XDR TB	
LEVEL 3:	Tertiary 1	
	Tertiary 2	
	Tertiary 3	
TOTAL NUMBER OF BEDS:		100

PROJECT STAGE	01 - Project Identified
Start date of construction on site	Mar-17
Completion date of construction	Apr-20
Commissioning date of facility	Jul-20
Construction area	8 400

FINANCIAL IMPLICATIONS			Per bed	Per m²
Estimated building cost including VAT		R 179 058 143	R 1 790 581	R 21 316.45
Estimated professional fees including VAT		R 32 230 466	R 322 305	R 3 836.96
Total building cost if completed	Sep-12	R 211 288 608	R 2 112 886	R 25 153.41
Health Technology cost in	Sep-12	R 25 028 073	R 250 281	R 2 979.53
Commissioning cost	Sep-12	R 750 842	R 7 508	R 89.39
Total current project cost	Sep-12	R 237 067 524	R 2 370 675	R 28 222.32
Provision for Escalation		R 218 683 375	R 2 186 834	R 26 033.74
TOTAL COST INCLUDING ESCALATION	Jul-20	R 455 750 899	R 4 557 509	R 54 256.06

Indicative cash flow for Budget purposes	Total	Fees	Construction/HT
MTEF 2012/2013	R -	R -	R -
MTEF 2013/2014	R -	R -	R -
MTEF 2014/2015	R 613 914	R 613 914	R -
MTEF 2015/2016	R 3 683 482	R 3 683 482	R -
MTEF 2016/2017	R 3 683 482	R 3 683 482	R -
MTEF 2017/2018	R 116 381 327	R 10 749 845	R 105 631 482
MTEF 2018/2019	R 116 381 327	R 10 749 845	R 105 631 482
MTEF 2019/2020	R 187 330 718	R 35 818 895	R 151 511 823

[1]

IUSS Norms and Standards

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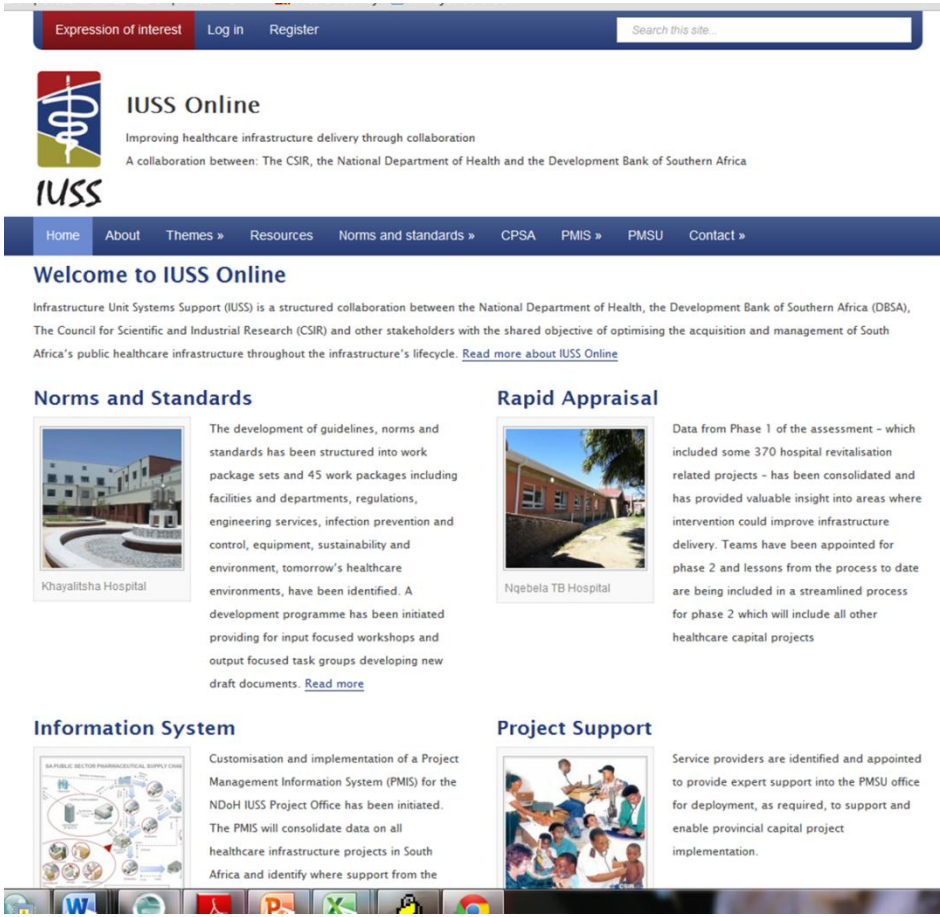
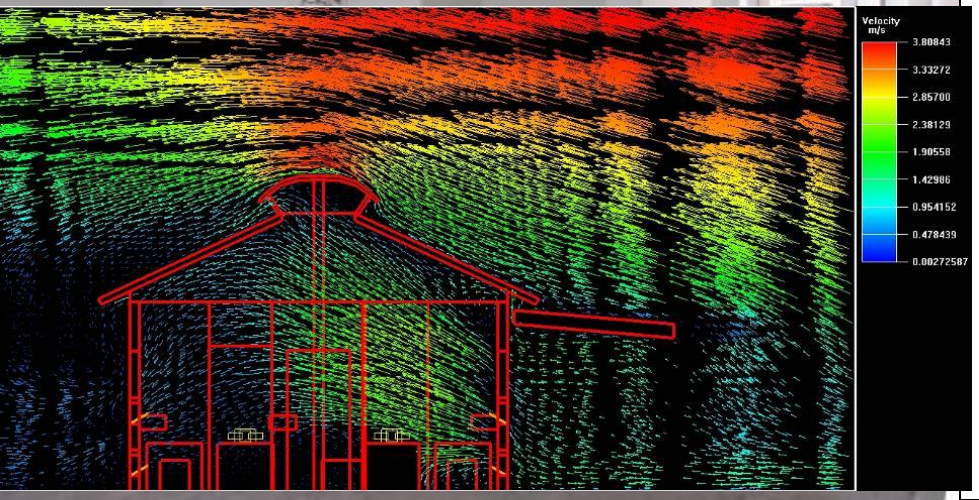
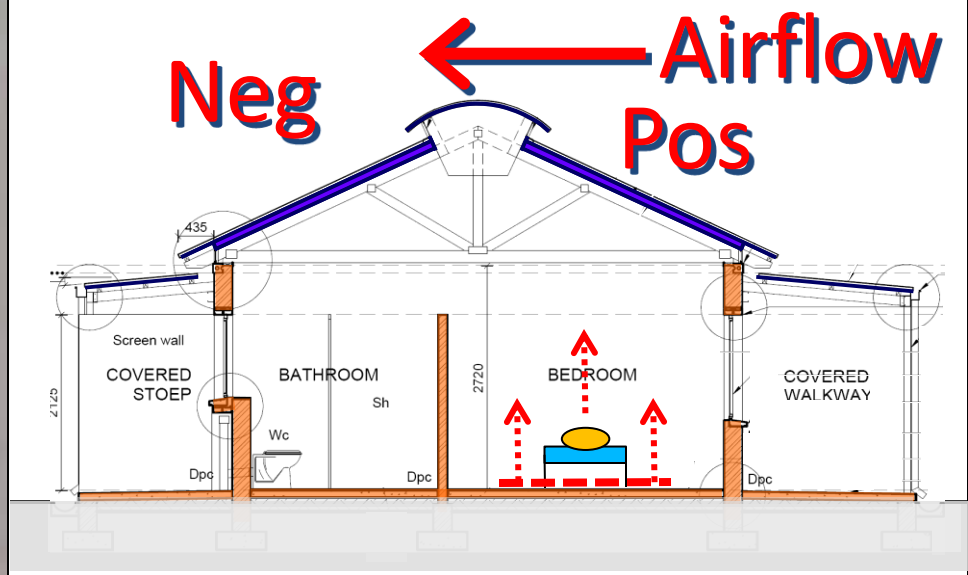
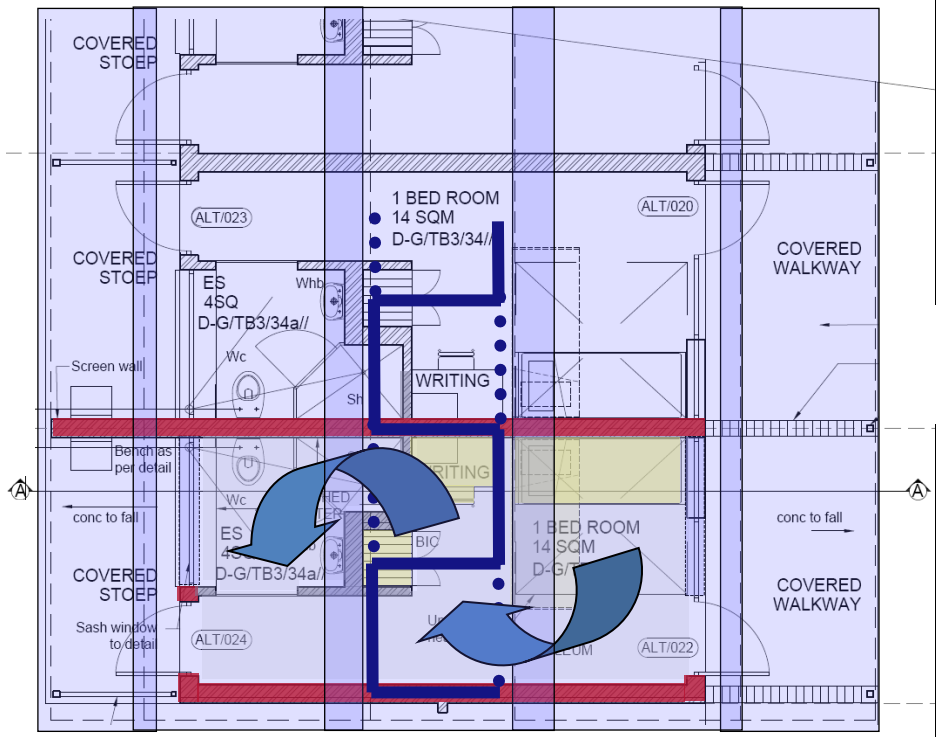
IUSS online – www.iussonline.co.za

- Objectives
  - Information dissemination
  - Site where all IUSS norms & standards, guidelines, documentation can be accessed and downloaded
  - Mechanism for anyone in SA health infrastructure community to provide feedback into development of guides
  - Information resource for health care facility planners/ designers engaged in public/ private health projects




Velocity
m/s
3.80843
3.33272
2.85700
2.38129
1.90558
1.42986
0.954152
0.478439
0.00272587


Neg
Airflow
Pos
435
Screen wall
COVERED STOEP
BATHROOM
Sh
Wc
Dpc
Dpc
2720
BEDROOM
COVERED WALKWAY
Dpc


COVERED STOEP
ALT/023
1 BED ROOM
14 SQM
D-G/TB3/34//
ALT/020
COVERED WALKWAY
COVERED STOEP
ES
4SQ
D-G/TB3/34a//
Whb
Wc
Screen wall
WRITING
Sh
Bench as per detail
conc to fall
Wc
ES
D-G/TB3/34a//
1 BED ROOM
14 SQM
conc to fall
COVERED STOEP
COVERED WALKWAY
Sash window to detail
ALT/024
ALT/022

Modimolle XDR-TB unit

Clinical services

- Inpatient Services
- Laboratories
- Mental Health Services
- Critical Care
- Accident and emergency
- Obstetrics and gyneacology
- Oncology
- Outpatient services
- Paediatrics
- Pharmacy
- Primary health care
- Diagnostic radiology
- Rehabilitation services
- Sub-acute services
- Surgery
- TB

Support services

- Admin & related
- General hospital support
- Catering services
- Laundry and linen
- Mortuary
- Nursing colleges
- Health facility residential
- Sterile supply
- Clinical training
- Waste disposal

Healthcare environment/ crosscutting issues

- Generic room data
- Hospital design principles
- Engineering design principles
- Environment and sustainability
- Materials and finishes
- Future healthcare environments
- Healthcare technology
- Inclusive environments
- Infection prevention & control
- Health informatics
- Regulations

Procurement and operation

- Integrated infrastructure planning
- Project planning and briefing
- Space guidelines
- Cost guidelines
- Procurement liaison
- Commissioning
- Maintenance
- Decommissioning
- Capacity development

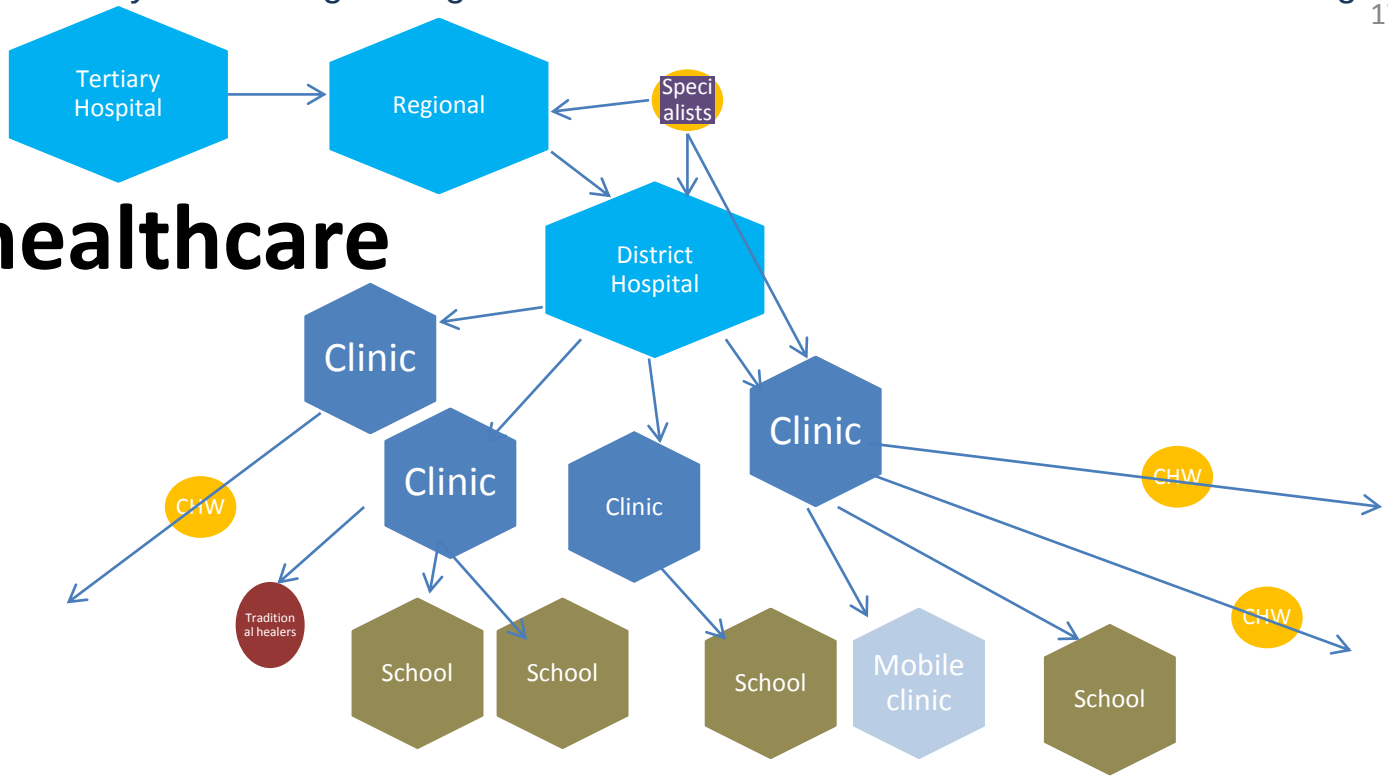
[12]

CSIR flagship

Blueprints for the future…

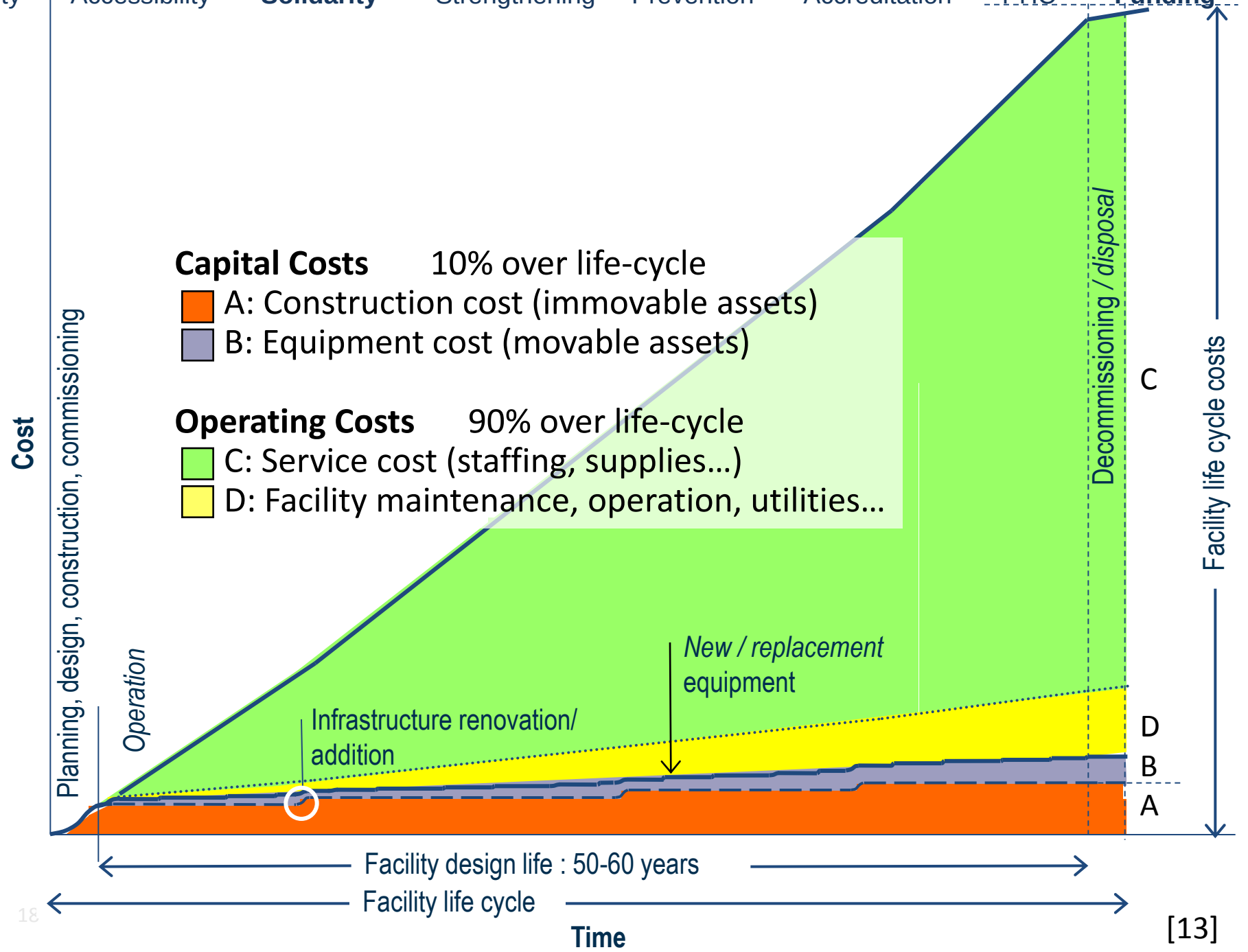
Standardised clinic design for improved quality and standardised procurement

Primary healthcare



- Portability and continuity of care
- Support and continuing development for community health workers
- Monitoring and evaluation

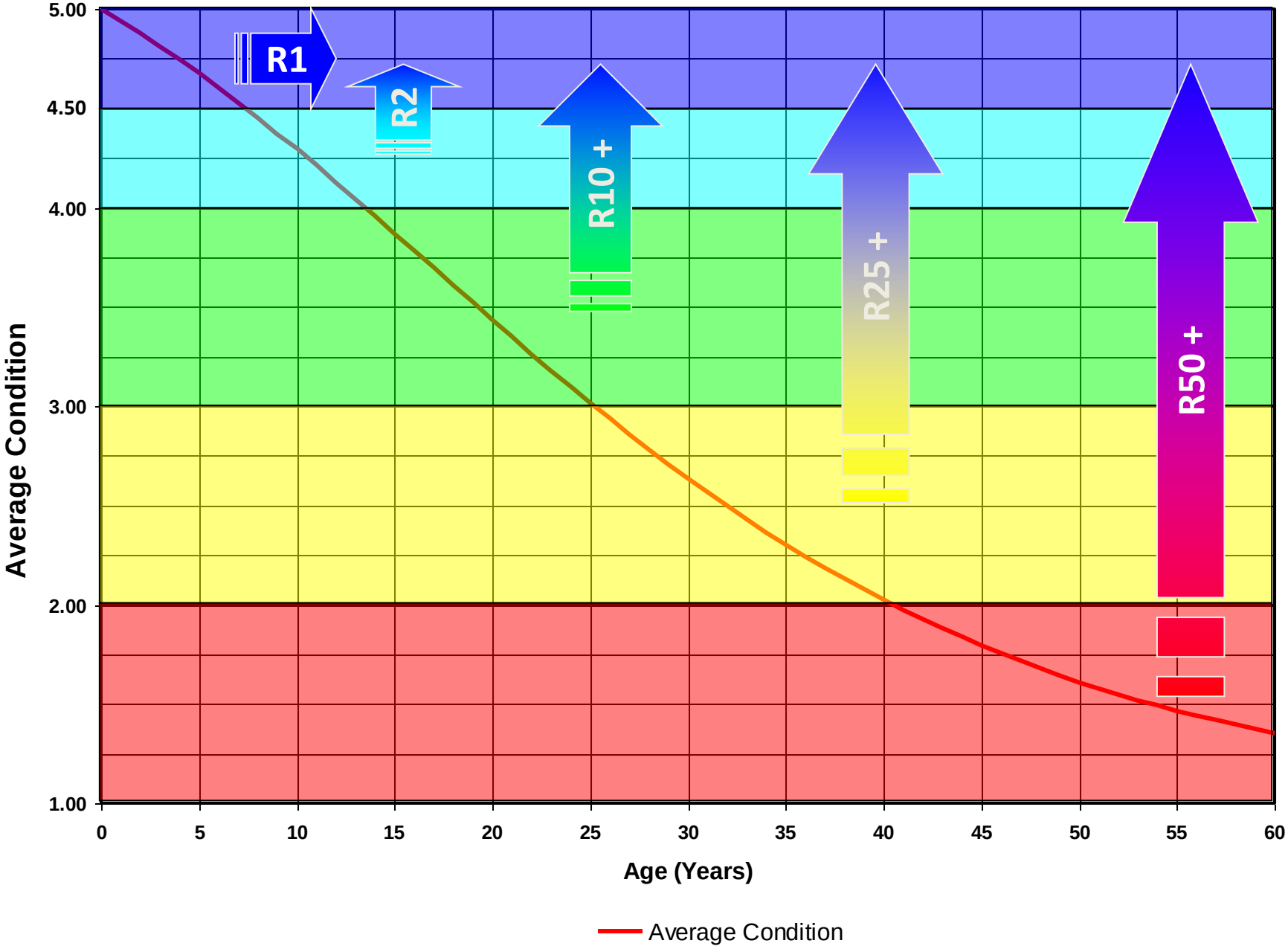
Referral networks – KZN pilot (EOH)


Capital Costs 10% over life-cycle
A: Construction cost (immovable assets)
B: Equipment cost (movable assets)
Operating Costs 90% over life-cycle
C: Service cost (staffing, supplies…)
D: Facility maintenance, operation, utilities…
Cost
Planning, design, construction, commissioning
Operation
Infrastructure renovation/ addition
New / replacement equipment
Decommissioning / disposal
C
D
B
A
Facility life cycle costs
Facility design life : 50-60 years
Facility life cycle
Time

[13]

NEGLECTING MAINTENANCE IS VERY COSTLY = UNSUSTAINABLE

(vs cost to retain in "VERY GOOD" condition)



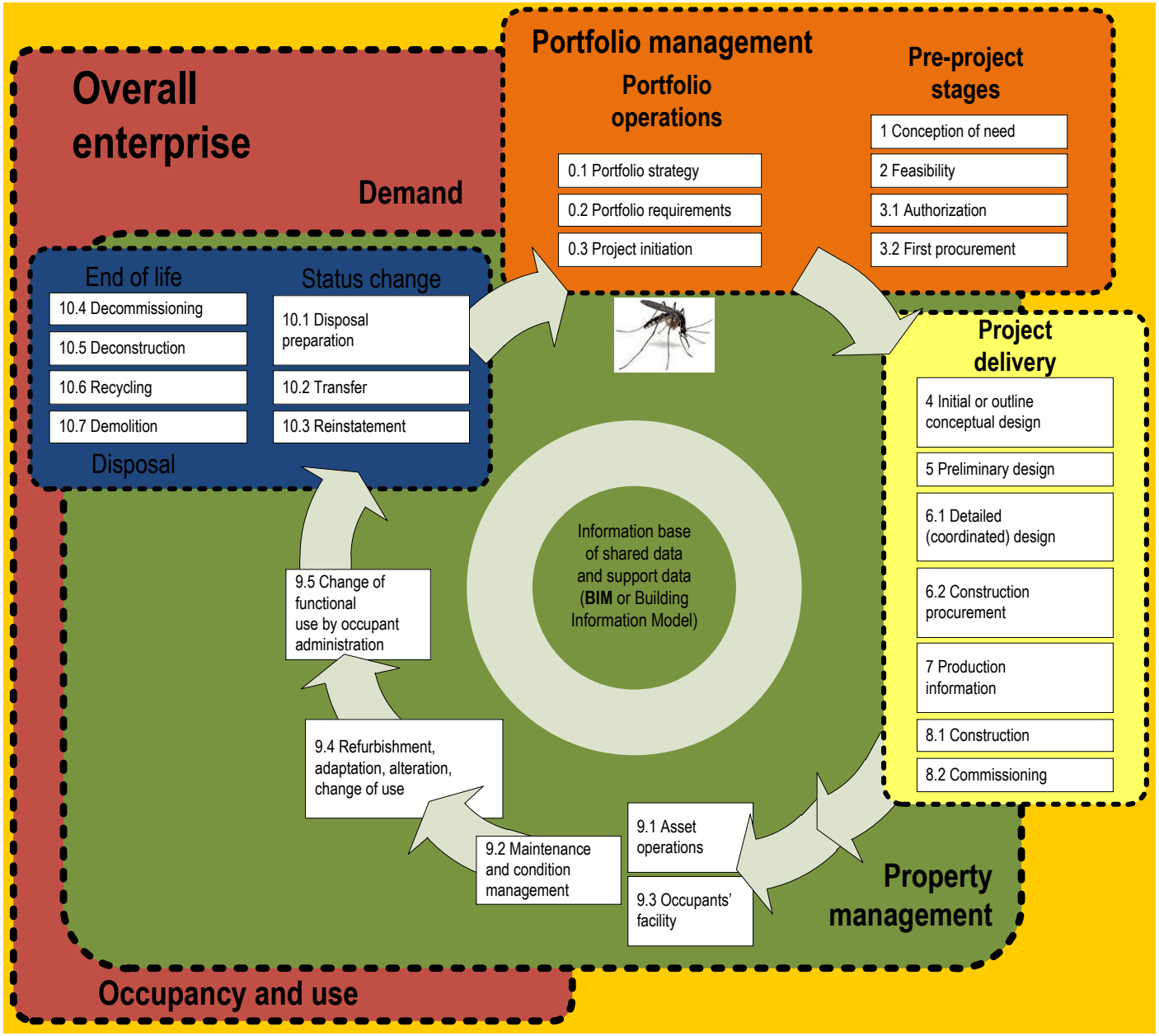


Figure 1: Schematic diagram of phases and stages in the whole life [14]

Equity - Accessibility - Solidarity - Strengthening - Prevention - **Accreditation** - PHC - Funding

Acknowledgements

CSIR (especially the Architectural Engineering Research Group)
National Department of Health, CDC, Department of Science and Technology, DBSA),
IUSS stakeholders in public and private service frequently on a voluntary basis and appointed experts

References

[1] IUSS. 2012. *Order of Magnitude Cost Estimator*. http://www.iussonline.co.za/

[2] Photo: Etienne du Plessis http://www.flickr.com/photos/8270787@N07/6929028745/

[3] Conradie, D. 2011. *TB concept ventilation drawings*.

[4] WHO

[5] Bole, S. and Abbott, G. 2012.

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