# Methodology for Ranking Health Systems' Readiness for Digital Health

## – Country & investment opportunities -

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# First Principles of Digital Health

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# Definitions of Digital Health and Health Interoperability

## **Digital Health** is

- (1) the usage of ICT-based applications in health systems – be it for prevention, acute care, long-term care, public health, administration & management, or research.

or (alternative definition):

- (2) the application of ICT-facilitated systems, services and solutions which benefit health, be it at the level of individuals, population health, or public health/society.

**Health** is “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO)

## Digital Health Interoperability

- facilitates sharing, understanding, and collaborative acting on patient and other health information by medical professionals, health workers, patients and other actors within and across health systems.

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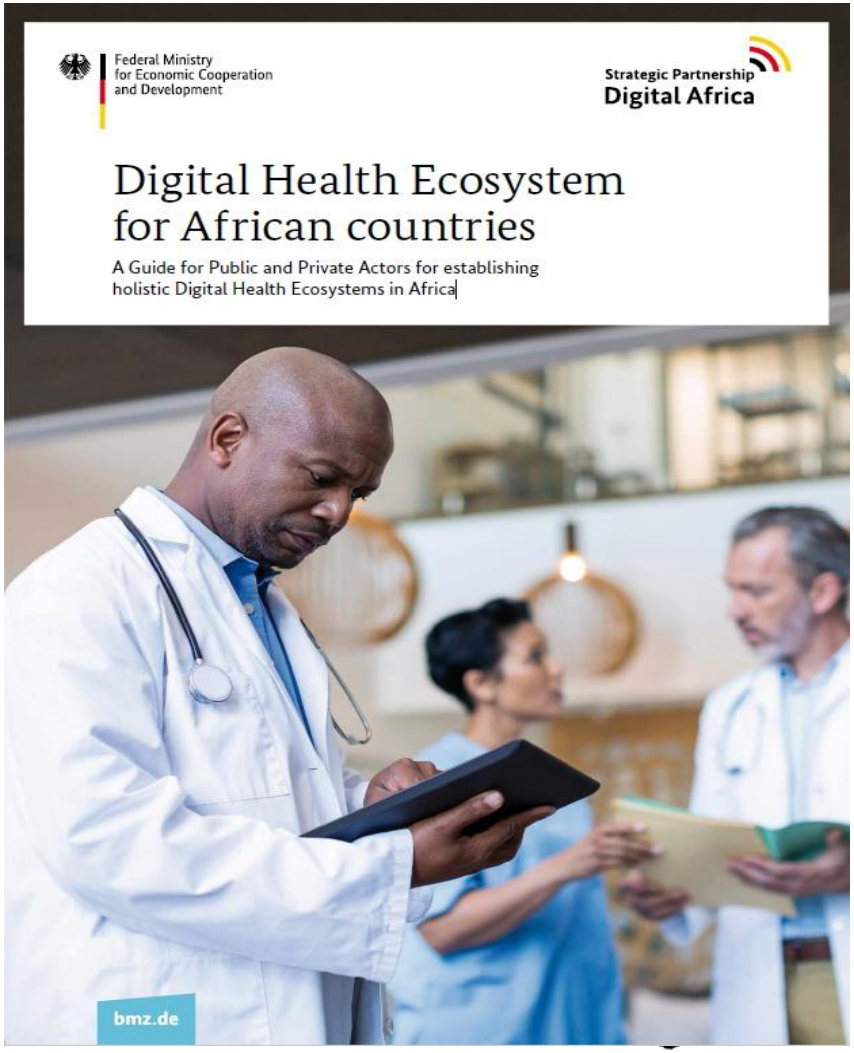
# The “Why” and “How” of Digital Health

- **Why:**
  - Improvement of health & care
  - Increase in patient safety
  - Reduction in cost / efficiency gains
  - Facilitation of secondary usage of health data (Public Health, Big Data, AI…)
- **How:**
  - Improvement of data gathering, exchange, access, analysis
  - Support for collaboration (work flow/integrated care)
  - Knowledge generation, decision support

**Creation of a Learning Health System**

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# Digital Health: From Data Silos to Interoperability

- **“The deployed systems are in silos and there is no system that is integrated with another**
- **There is no timely information for easy and quick decision making**
- **Due to the silos of systems patient records are only limited to the health facility visited**
- **Multiple reporting systems make it difficult to access data for evidence-based decision-making**
- **There is no proper interoperability framework in place for all these systems. They were developed on different platforms and data stored in legacy systems**
- **This has resulted in considerable duplication of effort and difficulty to access and consolidate data”**

*Source: Ministry of Health of Rwanda (2018). Request for Expression of Interest - Enhancement of Rwanda National Digital Health Care System “Smart Health”*

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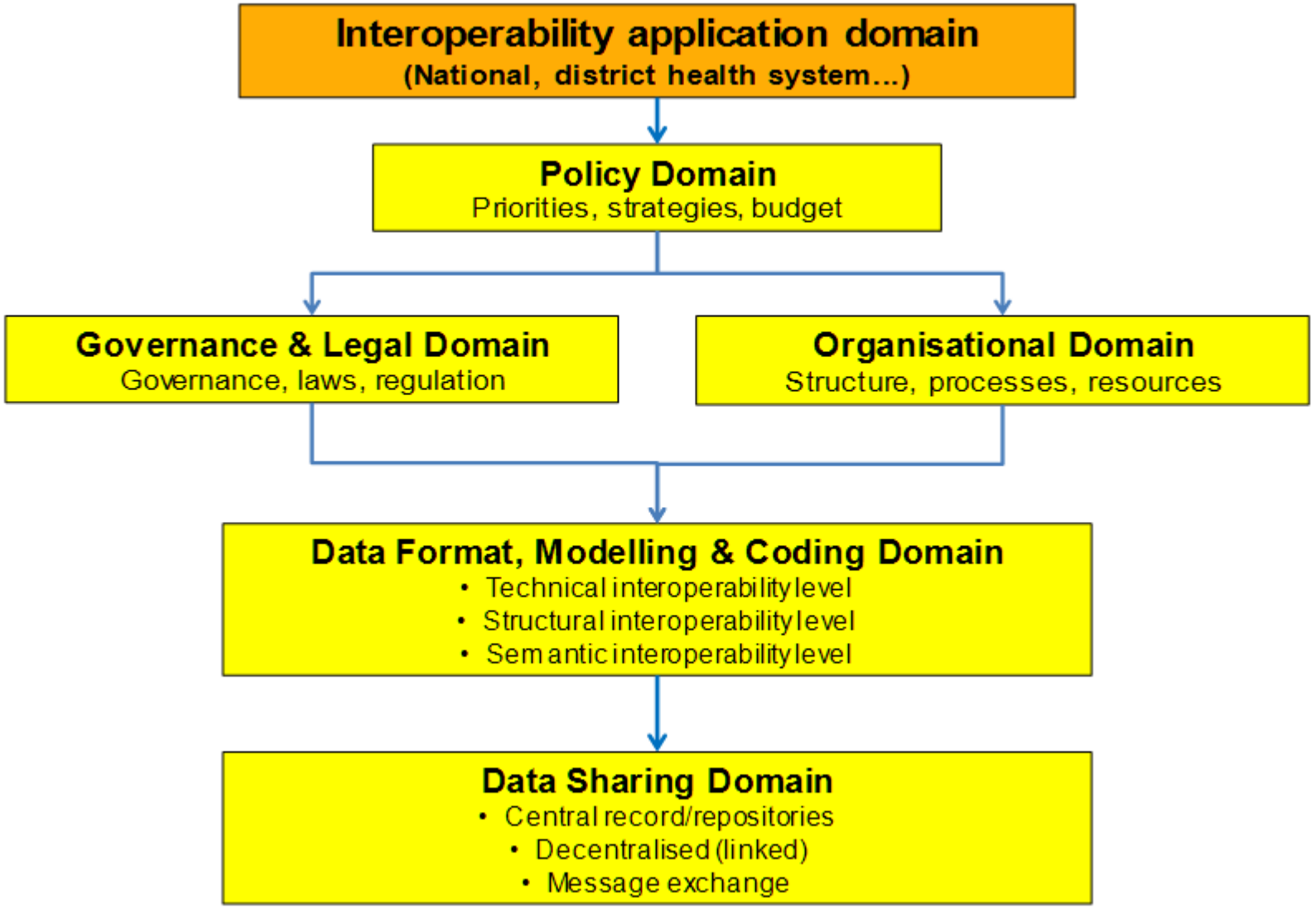
# Digital Health Domains for Action



# Core success factor: Identifying data needs in detail

- Identify first the domain, within which interoperability is to be achieved (a country, a single hospital, …)
- Identify data and information needs:
  - ✓ Who
  - ✓ For which intervention, analysis, decision, …
  - ✓ Which specific data or information
  - ✓ In which form (document, text, picture, video, structured, quantitative, semantically coded)
  - ✓ Which data at which level of detail (from electronic "paper" documents to very detailed data models and data elements with semantic coding and value sets)
  - ✓ In which quality
- Assess benefits versus costs
- Long-term activity (needs policy guidance, governance, organisational infrastructure)

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# Objectives for Ranking

# Ranking Digital Health Readiness

- **Objectives**:
  - **Identify those SSA countries**
  - **With the highest probability that a national (and/or disease-specific) eHealth platform will indeed have a positive impact on the quality and safety of healthcare**
  - **That this impact can be sustained in the medium- to long-term**
- **Caveat**:
  - **All initial ranking scores reflect measurements of the past**
  - **For a concrete implementation, the analysis needs to be complemented by**
    - **an up-to-date, (subjective) assessment (by experts) of the**
      - ✓ **present status & outlook for the country selected**
      - ✓ **core aspects of the implementation envisaged**

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# Ranking Approaches & Methods

**Countries**

**Concrete Investments**

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# Approach (I)

- **Unique Methodology for Ranking Interoperability Readiness & eHealth Impact Probability**
- **Outcome:**
  - **NOT the absolute status of a country**
  - **Focus on what has been achieved so far**
  - **Result: ranking as to their relative position to each other**

***The ranking algorithm should be – on the one hand – comprehensive, and reflect the reality in the respective countries, and – on the other hand – easy enough to produce a relatively simple, but all-encompassing single, unifying ranking***

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# Approach (II): 4 Steps

- **1st: Initial ranking based on country-wide data (48 SSA countries) of the social, economic and health system situation (public sources only)**
  **Outcome: Selection of 28 countries**
- **2nd: In-depth surveys (own questionnaire, on-site data gathering by team members of the ISAES consortium)**
  **Outcome: Subset of 16 most promising countries)**
- **3rd: If a certain threshold was reached, further assessment of the anticipated high level stakeholder engagement to politically and substantially promote and support eHealth platforms and applications**
  **Outcome: Ranking of these 16 countries**
- **4th: Detailed analysis of concrete, "ready-to-go" investment opportunities**

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# Scoring Criteria Step 1

**Simple algorithm to add up scores of global surveys on**

- **Economic**
- **Social**
- **IT Infrastructure**
- **Health System**

**From initially 48 SSA countries 28 were selected for further analysis**

***Base: Large data base collected from a multitude of sources: UN, UN Agencies, WHO, World Bank, WEF (Davos), etc.***

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# Scoring Criteria Step 2

**Additionally, a questionnaire was developed for on-the-spot data gathering in the 28 countries. Scoring items:**

1. **Political and Governance stability (15%)**
2. **Political eHealth leadership and support (15%)**
3. **Strong driver/promoter of implementation present, good management (15%)**
4. **Initial (platform) services already successfully implemented (10%)**
5. **A reasonable financial base exists (10%)**
6. **Baseline communications infrastructure (15%)**
7. **Considerable interest at healthcare provider level to expand eHealth service provision (10%)**
8. **Population impact/complexity (10%)**

**Outcome: Ranking and selection of 16 countries for in-depth analysis**

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# Scoring Criteria Step 3

## Further evidence collected through in-depth local interviews on

- eHealth Platforms – Current situation of already deployed platforms
- eHealth Resources – Current availability of the resources needed to implement successfully an eHealth platform

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# Core Ranking Domains

**Based on the overall objectives of the research, the following *core ranking domains* are identified:**

- **Economic strength (measured as GDP per capita, comparison with respect to their economic respectively their health expenditure achievements)**
- **Relative priority of public health expenditures (health expenditure as % of GDP)**
- **eHealth readiness indicator (eHealth high level assessment score)**
  - ✓ **Availability of eHealth services and applications (Number of eHealth applications available per country)**
  - ✓ **Availability of eHealth necessary resources**

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# Scoring Weights

**Based on their assessed relative importance, the domains identified contribute the following percentage weight to the overall ranking score:**

- **Economic strength: 20%**
- **Relative priority of public health expenditures: 20%**
- **eHealth readiness: 35%**
- **Availability of eHealth services and applications: 10%**
- **Availability of eHealth necessary resources 15%**

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# Example: Overall eHealth Ranking Score

| Country | Economic strength | Relative priority of public health expenditures | eHealth readiness indicator | Availability of eHealth services and applications | Availability of eHealth necessary resources | Overall Ranking Score (ORS) |
|---|---|---|---|---|---|---|
| Botswana | 4,1 | 3,5 | 7,5 | 5,7 | 10,7 | **63** |
| Namibia | 1,9 | 2,3 | 8,0 | 7,9 | 10,8 | **60** |
| Rwanda | 0,4 | 0,5 | 8,5 | 11,4 | 9,8 | **58** |
| Ghana | 0,5 | 0,6 | 8,5 | 9,3 | 9,8 | **56** |
| Uganda | 0,4 | 0,3 | 7,3 | 14,3 | 9,5 | **56** |
| Tanzania | 0,4 | 0,3 | 7,5 | 12,9 | 9,3 | **54** |
| Kenya | 0,5 | 0,3 | 7,7 | 11,4 | 9,4 | **54** |
| Zambia | 0,4 | 0,7 | 8,3 | 9,3 | 8,6 | **54** |
| Lesotho | 0,5 | 1,1 | 7,2 | 10,0 | 9,8 | **53** |
| Mozambique | 0,3 | 0,3 | 7,2 | 9,3 | 8,8 | **49** |
| Zimbabwe | 0,1 | 0,0 | 6,5 | 9,3 | 9,4 | **46** |
| Cameroon | 0,7 | 0,6 | 6,3 | 7,9 | 9,0 | **46** |
| Senegal | 0,5 | 0,5 | 7,3 | 7,1 | 7,1 | **46** |

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# Scoring Criteria Step 4

## Methodology for Ranking the Identified Opportunity Implementation Scenarios:

- Country Readiness (20%)
- Benefits & impacts expected (20%)
- Timeline & Financing (20%)
- Sustainability and Scalability (20%)
- Reliability of Information (20%)

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# Outlook

# Key strategic insights

- A successful Digital Health Ecosystem must be build on a well-founded health policy, setting clear priorities for healthcare transformation
- Digital Health is a key enabler for health system transformation and meeting African goals and ambitions
- However, isolated digital applications do not meet the needs of tomorrow's health systems
- Better coordinated, integrated and sustained healthcare requires an "open" approach for full interoperability & connectivity
- Only interoperable, fully integrated infrastructures and applications – and not silos – will allow for the secondary usage of health data and thereby support public health surveillance, Big Data, Artificial Intelligence applications

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