ICRC DATA STRATEGY
A PRACTICAL GUIDANCE FOR TRANSFORMATION AND IMPACT

International Committee of the Red Cross

Digital Transformation and Data
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1. Introduction

**Background**

Data in the ICRC was traditionally viewed as something that is embedded into the landscape of IT systems supporting its various organizational units. There was limited demand for and focus on combining this data to gain informational value beyond the scope of a specific institutional process. As a result, insights generated via an integration of broader data remains a less pronounced driver in management decisions. Similar types of data are often not standardized across organizational units and mechanisms and techniques aiming at ensuring standardization and integration are only beginning to evolve.

**Purpose**

This document outlines strategies to ensure that the ICRC makes the most use of the available data and information it processes via its technology platforms, and to process this data and information in the most efficient way possible.

Treating data as an important asset, providing easier access to these assets, and leveraging their potential through analytics, help the ICRC deliver its mandate by learning how to make better, timelier and more evidence-based decisions. It is a prerequisite for the ICRC for responding to the ever-changing and fast evolving needs of its stakeholders, partners and collaborators and for delivering on these requirements with a high degree of automation and a minimal amount of manual work involved.

**Outlook**

Improving on the ICRC’s systematic leverage of data/information cannot happen overnight. It requires a journey involving the implementation of different strategies and capabilities, as well as the transformation of institutional processes at all levels of the organization. This journey therefore requires the continued participation of stakeholders at all levels of the organization.

**Collaboration partners**

The strategies described in the ICRC Data Strategy have been aligned with the departments and initiatives most directly involved in or impacted by them. Key partners include ICT as the driver of the technology strategy and co-sponsor and supplier of ICRC’s evolving Data and Analytics capabilities, RES as the driver of the global shared services strategy and Operations/DigitOps as a significant actor in technology and process transformation.
2. Scope

This ICRC’s primary consumers of information are comprised of a wide variety of stakeholders such as field staff, field managers and managers at headquarters. Information consumers at all levels receive valuable information, either verbally or in written form, from their colleagues or from different types of interlocutors. Many of these information flows cannot be systematized and automated. Information consumers also rely on data and information, which is captured in technology systems, and which can therefore be provided to them on a regular basis and in a consistent fashion. It is predominantly this second category that the ICRC Data Strategy focuses on.

The ICRC Data Strategy generally seeks to cover information consumers and data-related processes and capabilities across all métiers, and at all levels of the organization. Consideration is also given to requirements and opportunities related to the exchange of data/information with external stakeholder such as donors, components of the RC/RC Movement, as well as other humanitarian actors and partners.

The ICRC Data Strategy does not describe specific transformation efforts – e.g. the optimized handling of a given Master Data Management data concept – as such specifics are covered within the scope of each strategic initiative.

The ICRC Data Strategy does not explicitly reiterate but seeks to be in conformity with the following topics, which are already regulated or are already in progress:
- Data protection policies
- Data classification policies
- Innovation strategy
- Technology strategy

It also does not represent a digital strategy describing how ICRC plans to respond to an increasingly digital global environment in terms of interaction channels and services.

While taking a rather long-term view of 3-5 years in terms of driving factors and current challenges, the transformative initiatives outlined in this document, some of which are already up and running, seek to deliver impact on a continuous basis.
3. Vision and related objectives

VISION:
In response to a shifting technological landscape where connected audiences expect to gain and access information, the ICRC has an ability to securely and efficiently manage and analyze data. Management and operational processes in the ICRC benefit from a high level of visibility on progress being made or issues being faced across different environments.

Integrating and analyzing internal and external data (including macro-economic trends, feedback from staff and beneficiaries) from reliable and diversified sources, the ICRC produces, shares and preserves information and knowledge. Data and information enhance the ICRC’s ability to be hyper-aware and to gain important perspectives that contribute to making better and more informed decisions, which in result, allow for a quick responsiveness to emerging needs, for impact-driven partnerships, and, importantly, for a preservation of the organization’s position as a trusted organization and as a trusted manager of information of the people and communities it serves.

The organisation adequately protects confidential and strictly confidential information in line with applicable frameworks such as the Data Protection Rules and the Information Handling Typology. The ICRC manages its data and information as an important acknowledged prerequisite for the institution’s agility and effectiveness. It does so via a compact and streamlined technology, data and process landscape, minimizing operating costs and complexity.

This vision translates into the following nine objectives:

**a) Maximum contribution of data to management and operational decisions**
ICRC staff can leverage relevant up-to-date data, both internal and external, with as little effort as possible to reach timely and well-informed decisions.

**b) Due consideration to all of ICRC’s data/information consumers**
The ICRC’s automated mechanisms and tools, which provide data and information to its data/information consumers account for, and are responsible towards, all internal stakeholders, ranging from operational field staff through their respective management channels, to external stakeholders such as donors and partners.

**c) First-rate user experience when interacting with data**
ICRC staff consuming and managing data benefit from tools and processes that offer a first-rate user experience, independent of their proficiency level in technology and data.

**d) Harnessing the full potential of data**
The ICRC harnesses the full potential of the data stemming from its own core system and partly from 3rd party sources by connecting them optimally. It maximizes the potential of deriving additional
insights by employing modern analytics and data science techniques frequently referred to as “big data”, “artificial intelligence” or “machine learning”.

e) Data quality on an automated basis
The ICRC’s data environment provides for quality data/information by ensuring that data is captured as accurately as possible and that common reference points allow for an integration of data arriving from different sources. Any deficiencies requiring manual work to reach required quality levels are minimized.

f) Transparency on what data is available
ICRC staff must have access to robust institutional directories covering all types of data assets including datasets (e.g. tables) and content sets (e.g. news articles).

g) Easy access to / sharing of data assets across and at different levels of the organization
ICRC staff must be able to contribute to the sharing and consumption of different types of data assets, e.g. reports but also individual datasets and content sets, across the organization with due consideration to applicable data protection rules.

h) Maximum efficiency in data management
The data management is performed at maximum automation levels, reducing operating costs and manual processing.

i) Appropriate levels of data protection
Confidential data and information is protected according to the personal data protection framework in furtherance of the ICRC’s overall trust value proposition with the affected population and other stakeholders.
4. Strategic pillars

To reach the objectives outlined in the previous chapter, four strategic focus areas (referred to as “strategic pillars”) are deemed as prerequisites to success in a sustainable fashion:

1. Simplify and Strengthen Data Capabilities
2. Standardize and Consolidate ICRC’s Data Assets
3. Optimize Data Management Processes
4. Govern Data Topics

![Figure 1 - Objectives and strategic pillars]

4.1. Simplify and strengthen the ICRC’s Data and Analytics capabilities architecture

Data processing for Data and Analytics purposes requires a variety of functionalities (“capabilities”) to support aspects such as data capture, data transformation, data storage for reporting purposes, transparency on data, and reporting.

Although these capabilities are rather standard, they have been implemented in different ways across various parts of the organization to serve local requirements. These parallel implementations make it difficult, if not impossible, to standardize the way data is organized (e.g. how a data concept is represented/modelled or how a reporting indicator is calculated). It also creates considerable inefficiencies in that these different variants of the same capabilities must be maintained individually.
The resulting complexity of the ICRC’s systems landscape leads to significantly higher cost levels, more difficult and time-consuming maintenance and a lower agility rate.

4.1.1. Central Data and Analytics capabilities

Central Data and Analytics capabilities are capabilities, which exist once in the institution and which tend to be hosted on ICRC’s own internal data center. They can support users at all levels of the organization in a standardized fashion. However, depending on the quality of the local infrastructure, responsiveness may lead to suboptimal user experience at some field locations.

4.1.1.1. Data warehousing and business intelligence capabilities

The ICRC has invested in constructing centralized Business Intelligence capabilities to address the reporting needs of the HQ level métiers and cross-métier management units. The institutional data warehouse and several reporting databases – referred to as “data marts” – now serve as the basis for a considerable share of management information needs at the ICRC.

<table>
<thead>
<tr>
<th>Strengths and achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reporting databases (“data marts”) established as the basis for much HQ-centric reporting;</td>
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<tr>
<td>• Service-based report and dashboard delivery available to HQ-level consumers across most métiers;</td>
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<tr>
<td>• Self-service reporting available to business intelligence teams and users across most métiers;</td>
</tr>
<tr>
<td>• Finance’s unstable, end-of-life 3rd party reporting solution transitioned onto new standard shared data warehouse infrastructure;</td>
</tr>
<tr>
<td>• ICRC’s data warehouse and reporting databases serve as important tools in converging on a simplified and standard set of reporting metrics to help reduce confusion and data quality issues;</td>
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<table>
<thead>
<tr>
<th>Current weaknesses</th>
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<tbody>
<tr>
<td>• Except for Finance, the various reporting databases (“data marts”) are set up independently and do not share common aspects, which result to inefficiencies and numerous connected issues;</td>
</tr>
<tr>
<td>• Use of the reporting databases (“data marts”) currently centers around HQ-based data/information consumers;</td>
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<table>
<thead>
<tr>
<th>Overall opportunities</th>
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<tbody>
<tr>
<td>• Better time-to-market of change projects;</td>
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<tr>
<td>• Lower cost due to a simpler Data and Analytics architecture;</td>
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<tr>
<td>• Better support for field-level data/information consumers;</td>
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<td>• Better leverage of investment by extending coverage footprint;</td>
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<table>
<thead>
<tr>
<th>Strategic approach</th>
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<tbody>
<tr>
<td>• Optimize architectural efficiency through a reduction of complexities and an elimination of parallel implementations; ¹</td>
</tr>
<tr>
<td>• Increase the support coverage of DTD_DATA’s Center-of-Excellence to audiences in the field; ²</td>
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¹
²
4.1.1.2. Master and reference data management capabilities

Connecting different data on an automated basis across métiers and levels requires data to “fit” together, i.e. it requires common reference points and universal definitions to be used across the board. These reference points – referred to as “Master Data” or “Reference Data” – include data concepts such as institutional objective, project, national society, place of service delivery, cities, countries, et cetera. If such common reference points are not available or if the underlying definitions are not sufficiently matched, manual processes may be required to facilitate integration, which result in inefficiencies, higher costs and delays.

Figure 2 - The central master data management capability
### Strengths and achievements
- ICRC’s original master data management capability (RADAR) equipped with additional features which were repositioned architecturally;
- Data validation workflow architecture and tools in process of being piloted on geospatial concepts via the “OMD – Operational Master Data initiative” (DigitOps);
- A more progressive approach on master data management that is being developed via the “EI - Entity Intelligence” initiative, which seeks to align – and ideally combine – the master data handling across several new project investments including PAM, 4D and CIF – and to treat certain master data concepts as an interconnected network of entities;

### Current weaknesses
- The ICRC’s master data management capability is lacking in functionality related to the effective prevention of duplicate records, support for validation workflows and efficient interaction with upstream and downstream systems;
- Insufficient architectural “firepower” to ensure strategic development of related architectures, and to enforce true architectural adherence of ICT change projects;
- Leverage of master data capabilities is generally focused on the ICRC’s core systems with only limited leverage through the desktop toolsets frequently used in the field;

### Overall opportunities
- Continuing to embed the master data management capability shared reference points will deliver a wide range of benefits for the ICRC including the following:
  - Lower cost due to a reduction of manual work related to data preparation/correction and data reconciliation;
  - Lower cost resulting from a more compact systems landscape with fewer data flows;
  - Better and faster information through easier and automated integration of data from different areas;
  - Improved ability to share data with external parties due to a convergence of common reference points within the ICRC;
- If successful, extend the progressive approach to master data management as piloted with “EI - Entity Intelligence” initiative, where certain data concepts are being treated as an interconnected network to deliver the following benefits:
  - Reduced investment and maintenance cost due to fewer implementations of the same;
  - Sharing of master data across different areas and use cases;
  - Ability to attach “knowledge” to instances of master data concepts by incorporating insights gained via analytics and data science methods;
  - More comprehensive intelligence on master data concepts (e.g. interlocutors or suppliers) due to richer and deeper information about them (“knowledge”);
  - Further improved ability to share data with external parties due to the incorporation of external reference points;

### Strategic approach
- Continue to extend functionalities provided by the data management capability;
• Continue to drive convergence on shared reference points across the organization based on a continuous reassessment of priorities;

<table>
<thead>
<tr>
<th>Related project investments and activities</th>
<th>MDM – Master Data Management ¹ ²</th>
<th>DTD_DATA</th>
<th>2019, 2020, 2021+</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMD – Operational Master Data Management</td>
<td>DIGITOPS</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>EI – Entity Intelligence ¹ ⁴</td>
<td>DTD_DATA</td>
<td>2020 (, 2021?)</td>
<td></td>
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</table>

¹ Note that this pertains to the capability (functional) aspects delivered by this initiative and not any transformation work related to master and reference data concepts
² Focuses on a large set of data concepts based on periodic prioritization
³ Focuses on data concepts “Recipient place”, “Beneficiary” and “Populated place”
⁴ Focuses on generic data concepts “Person”, “Organization” with an initial scope of 4D, PAM and CIF

4.1.1.3. Other shared Data and Analytics capabilities

While the data warehouse and reporting capabilities satisfy a considerable portion of the needs of ICRC’s data/information consumers, there are other needs, which they do not cover. Examples include the following:

- Finding out which data assets are available to data/information consumers (data sources, reports, datasets, content sets, reports, dashboards);
- Accessing (e.g. downloading) datasets and content sets that are already available;
- Sharing datasets and content sets / making them available to others and other processes;
- Configuring the automated acquisition of external datasets and content sets in a self-service fashion or via a configuration service;
- Construction of analytics or data science routines in a self-service fashion, which meets the needs of both regular and advanced users;
- Leveraging on common internal data services such as language detection, text translation, information extraction from natural language text, name matching, semantic matching, geospatial functions, ...

The fact that these needs are not being met through standard shared capabilities has resulted in a proliferation of different independent and siloed processing stacks across the organization. Data processing capabilities that essentially perform the same functions are implemented many times over, in different ways, based on different technologies and requiring different skills to build and operate.

Adding additional shared Data and Analytics capabilities to our capabilities architecture will allow for a simplification of ICRC’s systems environment, and will enforce a wide range of use cases to be supported in a standardized fashion.

New central shared capabilities required include the following:

A. **Data and Content Acquisition** for acquiring different types of internal and external content via different data transfer methods;
B. **Data Lake** for storing and keeping available discrete/independent datasets and content sets regardless of whether they undergo subsequent analytical processing or are the result of analytical processing;

C. **Extended Data Dictionary “Red Pages”** for providing information about a wide range of aspects relevant to users of the Data and Analytics platform;

D. **Data Science Environment** for data science teams of varying sophistication levels to construct and maintain analytical processing routines to satisfy specific information requirements;

E. A **Specific-Purpose Analytical Processing** capability for performing the automated execution of analytics routines built via the Data Science Environment;

F. **Shared Processing Services**, a collection of common services that are accessible to, and shared across, processing patterns and development lifecycle stages of analytics routines (e.g. text translation);

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**Figure 3 - Additional central shared Data and Analytics capabilities**

<table>
<thead>
<tr>
<th>Strengths and achievements</th>
<th>N/A – Proposal in process of being prepared</th>
</tr>
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<tbody>
<tr>
<td>Current weaknesses</td>
<td>Absence of several capabilities required by data/information consumers across the ICRC (see points above); Limited ability for DTD_DATA, ICT and DTD_TRAK to address the needs of data/information consumers in an efficient way, resulting to spot solutions</td>
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</table>
or – worse – non-sanctioned solutions via desktop and cloud implementations with no integration into standard capabilities, no/limited sharing, higher costs, potential non-compliance with various policies, significant manual processing levels, among others;

- Multiple parallel implementations of the same stack of capabilities across the ICRC resulting to higher costs, no/limited sharing, no integration into standard capabilities, significant manual processing levels, etc.;

**Overall opportunities**

- Lower cost through a consolidation of parallel implementations of similar Data and Analytics stacks;
- Higher quality capabilities due to an increased focus on resources, particularly on specific capabilities more specialized skill sets;
- Increased agility resulting from a more compact systems landscape with fewer interdependencies, fewer data flows, etc.;
- Better support for data/information consumers across multiple levels, mainly on:
  - Transparency on internal and external data sources deemed as relevant for the ICRC;
  - Transparency on which data assets are available across the ICRC – datasets, content sets, reports, dashboards;
  - Transparency on definitions and representations (models) of data assets and information types relevant/available across the ICRC;
  - Easier ways to acquire external datasets and content via a standard “acquisition” capability with self-service functionality for expert teams;
  - Access to datasets and content sets available across the ICRC via a standard “data lake” capability;
  - Ability to share datasets and content sets with others via a standard “data lake” capability;
  - Support for both regular and advanced users to construct their own analytics and data science routines via a standard “data science environment” capability;
  - Support for simple, operational analytics and data science routines built in a shared “data science environment” via a standard “specific-purpose processing” capability;

**Strategic approach**

- Establish shared central capabilities in addition to the existing data warehouse and reporting capabilities – see “SDCE” initiative and project “External Data Portal”;
- Prioritization and initial build-out scope of each new capability to be driven by concrete current use cases (as opposed to a “big bang” implementation approach);
- Slightly reposition the existing data warehouse capability in terms of architecture as only one of several processing paradigms (as opposed to the sole processing paradigm);

**Related project investments and activities**

<table>
<thead>
<tr>
<th>SDCE – Shared Data Capabilities Evolution ¹</th>
<th>DTD_DATA, ICT</th>
<th>2020, 2021+</th>
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<tbody>
<tr>
<td>External Data Portal ²</td>
<td>DTD_TRAK</td>
<td>2020, 2021</td>
</tr>
<tr>
<td>FDX – Field Data Experience ³</td>
<td>DTD_DATA</td>
<td>2021+</td>
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</table>
4.1.2. Field-level Data and Analytics capabilities

Although the ICRC’s core systems are subject to a continuous evolution, they do not always support all aspects of the organization’s processes to the full extent. Missing features or insufficient responsiveness result to the field staff relying on spreadsheets and other desktop solutions to support them in their work.

While some of the data maintained in such disconnected spreadsheet environments is subsequently uploaded or input into the ICRC’s core systems, much of it remains isolated and does not flow into the ICRC’s central data warehouse.

To help resolve these various issues, the ICRC’s current central Data and Analytics capabilities and related Center-of-Excellence services must be extended to the field to better support field staff in providing the data and information that are needed there.

However, the combination of ICRC’s core systems and central Data and Analytics capabilities will only satisfy a portion of the needs for data and information in the field and may not provide the responsiveness required for a satisfactory user experience.

A “toolbox” of new shared field-level capabilities is thus needed to satisfy field needs and to improve user experience while – through tight coupling with the ICRC’s central Data and Analytics capabilities - resolving downstream issues at the higher levels of the organization, such as information gaps and the need for manual data management work.

Although further analysis is required, said field-level “toolbox” is likely to comprise the following:

A. **Data exchange interface** for ensuring a continuous and bidirectional exchange of data – e.g. master and reference data – between the ICRC’s central Data and Analytics capabilities and the field instance of a Data and Analytics platform;

B. **Local and reduced version of a Data Lake** for storing and keeping available discrete/independent datasets and content sets regardless of whether they undergo subsequent analytical processing, or are the result of analytical processing;

C. **Local and reduced version of a Data Dictionary** for providing information about a wide range of aspects relevant to users of the local Data and Analytics platform;

D. **Local and reduced version of a Data Science Environment** for data science teams of varying expertise levels to construct and maintain analytical processing routines to satisfy specific information requirements;

E. **Specific-Purpose Analytical Processing** capability for performing the automated execution of analytic routines built via the Data Science Environment;
**Strengths and achievements**

- N/A – Proposal in process of being prepared

**Current weaknesses**

- Absence of analytical capabilities required by data/information consumers in the field;
- Gaps in terms of operational processes not covered by ICRC’s core systems or not covered with sufficient responsiveness, e.g. due to network challenges;
- A range of resulting issues including:
  - Excessive levels of manual work resulting from an absence of a variety of crucial analytical capabilities;
  - Poor basis for standardization of datasets, both local and across the ICRC, due to a limited use of common reference points;
  - Frustration of field staff resulting from inefficient data management processes, limited sharing of information and the need to operate complex spreadsheet setups regardless of their technical proficiency;
  - Suboptimal availability of information due to the difficulty and the challenge of sharing and connecting information;
  - Data does not flow into ICRC’s central Data and Analytics capabilities, e.g. Institutional Data Warehouse and Data Marts;
  - Increased risk of not meeting institutional requirements such as data protection, anti-corruption, etc.;
- Multiple parallel implementations of the same stack of capabilities across the ICRC resulting in higher costs, no/limited sharing, no integration into standard capabilities, significant manual processing levels, etc.;
- Certain standard data-related activities performed in the field, even though they could be performed anywhere;

**Overall opportunities**

- Lower cost and improved institutional agility through the elimination of manual work at all levels, which is the result of deficiencies in terms of

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**Figure 4** - A “toolbox” approach to providing Data and Analytics capabilities in the field

![Diagram of Data & Analytics Platform](image)
capabilities;
• Lower cost through transitioning certain data-related activities (e.g. data visualization) into service-based delivery via ICRC’s standard service catalogue for data-related activities;
• Improved user experience in the field by eliminating menial, repetitive and frustrating tasks;
• Better support for field-level operational and management reporting needs by providing fresher information on an automated and consistent basis;
• Plugging of data gaps in the central reporting capabilities and acceleration information flows;
• New options for field units to access expert capacities via the catalogue of data-related services;
• Reduced risk levels in terms of ICRC regulations such as data protection, anti-corruption, etc.;

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<tr>
<th>Strategic approach</th>
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| • Establish shared field-level Data and Analytics capabilities, which can be delivered as instances of a single “toolbox” of capabilities to multiple field entities (e.g. delegations);
| • Ensure tight coupling with central capabilities to foster the bidirectional exchange of key datasets (e.g. master and reference data);
| • Further analysis of field-level operational processes to confirm assumptions and guide solution approaches;
| • Low-risk approach through prototyping of concepts by focusing on 1-2 delegations, 1-2 métiers and only basic prototype implementations of capabilities; |

<table>
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<th>Related project investments and activities</th>
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<tbody>
<tr>
<td>FDX – Field Data eXperience</td>
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4.1.3. Leverage of future cloud infrastructure

The ICRC’s plans to leverage its cloud-based infrastructure, cloud-hosted applications and cloud-based services in future. Further analysis and architecture work is required to establish appropriate architectures.

As far as ICRC’s central Data and Analytics capabilities platform is concerned, a future architecture may involve two instances comprising of a standard on-premise instance and a cloud-based instance. Maintaining the two instances of the same architectural design would ensure compatibility and efficiency. Any data hosted on cloud infrastructure or leaving ICRC’s on-premise infrastructure is subject to the rules outlined in ICRC’s data protection policies. Any data exchanged between on-premise environment and the cloud-based environment is subject to protection techniques such as tokenization and encryption.
An increased leverage of cloud-based offerings will result in certain core systems moving onto cloud infrastructure in an “as is” fashion or transitioning into software-as-a-service (SaaS) offerings. Regardless of whether there will be a cloud-based instance of ICRC’s central Data and Analytics capabilities platform, the standard on-premise instance of this platform will need to support interfaces with this resulting collection of cloud-based core systems. The platform’s architecture will support such interfaces via its standard “Data and Content Acquisition” capability by treating cloud-based applications as external data sources. However, this capability may need to be extended with encryption and tokenization features, which would not apply to standard external data sources.
4.2. Standardize and consolidate ICRC’s data assets

Key objectives of the ICRC, especially when it comes to its data management, include increasing the efficiency with which the organization manages and governs its data, and maximizing the value of data/information in supporting management and operational decisions.

This entails certain requirements regarding quality and currency as well as standardization on how these data assets are described, organized and governed.

4.2.1. Master and reference data

Master and Reference Data describes data concepts that are relevant to multiple areas of the ICRC should be aligned in terms of reference identifiers, definitions, descriptions and representations (i.e. data models).

Examples of such shared data concepts include the following:

- “General objective” and “Strategic objective”
- “Project”
- “National society”
- “Recipient place”
- “Country”

Ensuring that different units of the ICRC share a common semantic understanding of these shared data concepts and that they attach their data to a common system of reference points makes data integration possible at different levels on an automated basis.

| Strengths and achievements | Progress has been made via the “MDM – Master Data Management” initiative on aligning definitions and representations of a first set of high-priority master data concepts and on streamlining their implementation via the strategic master data management capability, delivering a range of benefits for the ICRC including
|                           | • Lower cost due to a reduction of manual work related to data preparation/correction and data reconciliation
|                           | • Lower cost resulting from a more compact systems landscape with fewer data flows
|                           | • Better and faster information through easier and automated integration of data from different areas
|                           | • A more progressive approach on master data management is being piloted with the “EI - Entity Intelligence” initiative, which treats certain master data concepts as an interconnected network of entities
| Current weaknesses        | The work of converging on common master and reference data concepts, which includes agreeing on common definitions and representations/models and transforming current implementations into strategic implementations is only approx. 10-15% complete
|                           | • Limited governance in terms of common definitions for master data concepts and an architecturally sound transformation of existing data |
concept implementations

- Insufficient architectural “firepower” to ensure true architectural adherence of change projects

### Overall opportunities

- Continuing the journey of converging on shared reference points will deliver a wide range of benefits for the ICRC including the following:
  - Lower cost due to a reduction of manual work related to data preparation/correction and data reconciliation
  - Lower cost resulting from a more compact systems landscape with fewer data flows
  - Better and faster information through easier and automated integration of data from different areas
  - Improved ability to share data with external parties due to a convergence of common reference points within the ICRC
- If successful, extend the progressive approach to master data management as piloted with “EI - Entity Intelligence” initiative, where certain data concepts are being treated as an interconnected network to deliver the following benefits:
  - Reduced investment and maintenance cost due to fewer implementations of the same
  - Sharing of master data across different areas and use cases
  - Ability to attach “knowledge” to instances of master data concepts by incorporating insights gained via analytics and data science methods
  - More comprehensive intelligence on master data concepts (e.g. interlocutors or suppliers) due to richer and deeper information about them (“knowledge”)
  - Further improved ability to share data with external parties due to the incorporation of external reference points

### Strategic approach

- Continue to drive convergence on shared reference points across the organization based on a continuous reassessment of priorities

### Related project investments and activities

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<td>DIGITOPS</td>
<td>2020</td>
</tr>
<tr>
<td>EI – Entity Intelligence</td>
<td>DTD_DATA</td>
<td>2020 (, 2021?)</td>
</tr>
</tbody>
</table>

1. Note that this pertains to the transformation work related to master and reference data concepts effected by this initiative and not to any capability (functional) aspects delivered by it
2. Focuses on a large set of data concepts based on periodic prioritization
3. Focuses on data concepts “Recipient place”, “Beneficiary” and “Populated place”
4. Focuses on generic data concepts “Person”, “Organization” with an initial scope of 4D, PAM and CIF

### 4.2.2. Enterprise data models

Data models at the enterprise level represent a single integrated definition of data independent of any system or application. They unite, formalize and represent the things important to an organization.
Although the ICRC does not pursue the establishment of such Enterprise Data Models in a way that would cover all components of the ICRC systems landscape, it does seek the establishment of common data models for shared data concepts in two areas:

- Master and Reference Data concepts, which are referenced by multiple ICRC core systems and Data and Analytics capabilities (see chapter XXX)
- The data model of the Institutional Data Warehouse, which describes shared data concepts – MDM or not – in an abstract fashion, which rises above the details of an individual applications

| Strengths and achievements | Initiative “DWH – Institutional Data Warehouse” has delivered a first cut of an enterprise data model within ICRC’s data warehouse for the area of Finance, which is detached from the data models within the underlying source systems and which serves as the basis for downstream financial reporting |
| Current weaknesses | As of September 2020, the data model underpinning ICRC’s data warehouse only covers the area of Finance – In order to further extend efficiencies in the ICRC’s reporting architecture, it must be extended to include data concepts relevant to other métiers as well as data concepts shared across multiple métiers |
| Current weaknesses | Limited governance in terms of common definitions and models for data concepts |
| Current weaknesses | Insufficient architectural “firepower” to ensure data model design according to long established industry standard approaches |
| Overall opportunities | Lower cost and improved agility by establishing a common data basis / a common data model for all downstream reporting vehicles to draw from and by simplifying data flows, eliminating parallel implementations of business and transformation logic and converging on well-defined standard definitions and models for data concepts |
| Overall opportunities | Reduced need for manual processes and resulting lower cost due to a much reduced likelihood of discrepancies between reporting databases (“data marts”) and reports |
| Strategic approach | Continue the journey of establishing an institutional data warehouse model to deliver a wide range of benefits for the ICRC including cost savings, elimination of manual processes, and increased agility |
| Strategic approach | Rewire the sourcing of all existing reporting databases (“data marts”) to ensure all data is sourced from the common data warehouse as opposed to ICRC’s core systems in a direct fashion and to therefore significantly decrease the number of data flows |
| Strategic approach | Strengthening of transparency on data by exposing information about the overall data model via the central shared “Red Pages” Extended Data Dictionary Capability |

| Related project investments and activities | IDWH – Institutional Data Warehouse | DTD_DATA | 2019, 2020 |
| Related project investments and activities | IDWHE – Institutional Data Warehouse Evolution | DTD_DATA | 2020+ |

4.2.3. Datasets and content sets

Historically, datasets and content sets at the ICRC are viewed as something of a temporary nature, and serves as input into a type of analytical processing such as data warehousing. This ignores the fact that datasets and content sets are data assets on their own, which may be of interest and value to data/information consumers as they are. Also, moving towards an open collection of shared capabilities, in which transparency on data assets plays a strong role, means that datasets must be registered and must be stored in a way to enable sharing for multiple purposes.

Examples of such datasets and content sets include the following:

- ICRC’s basic hierarchy of institutional objectives
- A list of humanitarian actors operating in a given geography published by a National Society
- A table of disease outbreaks by country published by Johns Hopkins University

Creating a common repository for such datasets and content sets and providing means for data/information consumers across the ICRC to locate available information in a user-friendly fashion help foster the use of common datasets and content sets and helps in reducing data quality issues and related manual processes.

<table>
<thead>
<tr>
<th>Strengths and achievements</th>
<th>• N/A – Proposal in process of being prepared</th>
</tr>
</thead>
</table>
| Current weaknesses         | • Datasets and content sets not treated as data assets in their own right but as undocumented temporary representation states  
• No transparency for data/information consumers on existing datasets and content sets or their definitions |
| Overall opportunities      | • Reduce the information environment’s complexity and prevent data quality issues by fostering sharing of common datasets and content sets used across the ICRC and by reducing the number of datasets/content sets used  
  – Reduced potential for discrepancies  
  – Lower costs due to a reduction in manual efforts (e.g. for reconciliation)  
  – Lower costs due to a simplified information landscape  
  – Increased agility due to a simplified information landscape |
| Strategic approach         | • Prevent an unmanaged proliferation of datasets and content sets by strengthen transparency on what already exists via the central shared “Red Pages” Extended Data Dictionary Capability – This includes the following:  
  – Name  
  – Description  
  – Links to data domains / information types  
  – Lineage (both backward- and forward-looking)  
• Actively manage the library of datasets and content sets and challenge the need for reports that have not been accessed over a long period of time |
• For datasets and content sets established via ICT or the services provided by DTD_DATA’s Center-of-Excellence: Push back on requests if identical or similar datasets and contents already exist
• Help reduce data discrepancies and resulting manual resolution work by allowing for certain datasets and content sets to be issued a quality stamp to help data/information consumers make the preferred choice

<table>
<thead>
<tr>
<th>Related project investments and activities</th>
<th>IDWH – Institutional Data Warehouse</th>
<th>DTD_DATA</th>
<th>2019, 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDCE – Shared Data Capabilities Evolution</td>
<td>DTD_DATA, ICT</td>
<td>2020, 2021+</td>
<td></td>
</tr>
<tr>
<td>Services provided by DTD_DATA’s CoE</td>
<td>DTD_DATA</td>
<td>(ongoing)</td>
<td></td>
</tr>
</tbody>
</table>

1) Subject to project funding
2) In this case related to service “Business Intelligence / Report and Dashboard Delivery”

4.2.4. Reports and dashboards

Because of the Business Intelligence initiative, the past few years have seen the construction of a series of Data Marts at the ICRC along with a sizable library of reports and dashboards supporting most métiers.

An unmanaged proliferation of reports and dashboards is not desirable as it increases the likelihood of confusion at a unit or institutional level about which reports are correct and raises the risk of discrepancies between reports and of manual work being expended to analyze and resolve such issues. A large library of reports also becomes more difficult and expensive to update, test and migrate in case the underlying system of Data Marts changes. ICRC’s Data Strategy therefore seeks to limit such proliferation via multiple strategies.

<table>
<thead>
<tr>
<th>Strengths and achievements</th>
<th>• For the share of reporting that relies on strategic technology Tableau, transparency on reports exist for the category of “published” reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current weaknesses</td>
<td>• For any reporting outside of Tableau, no transparency exists about which reports and dashboards exist</td>
</tr>
<tr>
<td></td>
<td>• No transparency on reports and dashboards beyond the built-in catalogue functionality of the predominant reporting technology</td>
</tr>
<tr>
<td></td>
<td>• Lack of clarity about at a unit or institutional level about which version of a report is correct or should be used over others</td>
</tr>
<tr>
<td></td>
<td>• Risk of discrepancies between reports and of manual work being expended to analyze and resolve such issues</td>
</tr>
<tr>
<td></td>
<td>• Limited sharing as a large portion of reports remain hidden to most data/information consumers elsewhere in the organization</td>
</tr>
<tr>
<td></td>
<td>• A large library of reports and dashboards is difficult and expensive to update, test and migrate</td>
</tr>
</tbody>
</table>
**Overall opportunities**

- Reduce the information environment’s complexity and prevent data quality issues by fostering sharing of common reports across and dashboards at the ICRC and by reducing the number of reports and dashboards
  - Reduced potential for discrepancies
  - Lower costs due to a reduction in manual efforts (e.g. for reconciliation)
  - Lower costs due to a simplified information landscape
  - Increased agility due to a simplified information landscape

**Strategic approach**

- Prevent an unmanaged proliferation of reports and dashboards by strengthening transparency on datasets and content sets by exposing information about them via the central shared “Red Pages” Extended Data Dictionary Capability – This includes the following:
  - Name
  - Description
  - Links to data domains / information types
  - Lineage (both backward- and forward-looking)

- Actively manage the library of reports and dashboards and challenge the need for reports that have not been accessed over a long period of time

- For reports and dashboards established via the métiers’ Business Intelligence teams or via the services provided by DTD_DATA’s Center-of-Excellence: Push back on requests if identical or similar reports already exist

- Help reduce data discrepancies and resulting manual resolution work by allowing for certain reports and dashboards to be issued a quality stamp to help data/information consumers make the preferred choice

**Related project investments and activities**

<table>
<thead>
<tr>
<th>SDCE – Shared Data Capabilities Evolution</th>
<th>DTD_DATA, ICT</th>
<th>2020, 2021+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services provided by DTD_DATA’s CoE</td>
<td>DTD_DATA</td>
<td>(ongoing)</td>
</tr>
</tbody>
</table>

1 Subject to project funding
2 In this case related to service “Data Enrichment”

4.2.5. Reporting metrics

ICRC’s growing library of reports and dashboards as described in the previous chapter translates into a considerable number of reporting metrics and indicators being used across the various métiers. Many of these reporting metrics only apply to a specific métier; others are shared across métiers.

A proliferation of reporting metrics increases the likelihood of confusion at a unit or institutional level about which reports are correct and raises the risk of discrepancies between reports and of manual work being expended to analyze and resolve such issues. The ICRC Data Strategy therefore seeks a convergence across the ICRC on a limited set of reporting metrics, which are well defined and described. Information about these metrics should be accessible to all data/information consumers.

**Strengths and achievements**

- For the share of reporting currently supported by DTD_DATA’s Center-of-Excellence, a low-moderate level if transparency about reporting metrics
exists in the form of spreadsheet-based data dictionaries
  • Certain métiers maintain similar data dictionaries

| Current weaknesses                          | • In general, little transparency exists about reporting metrics on an integrated basis  
  |                                             | • Even if available, definitions and descriptions of reporting metrics are not exposed directly on the reports that carry them  
  |                                             | • Too much variety of similar reporting metrics / too many “flavors” of the same reporting metric  
  |                                             | • Risk of discrepancies between reporting metrics shown on reports and of manual work being expended to analyze and resolve such issues |

| Overall opportunities                      | • Reduce the information environment’s complexity and prevent data quality issues by fostering sharing of common reporting metrics across the ICRC and by reducing the number of reporting metrics  
  |                                             | − Reduced potential for discrepancies  
  |                                             | − Lower costs due to a reduction in manual efforts (e.g. for reconciliation)  
  |                                             | − Lower costs due to a simplified information landscape  
  |                                             | − Increased agility due to a simplified information landscape |

| Strategic approach                         | • Prevent an unmanaged proliferation of reporting metrics by strengthening transparency on what has been defined and what is available via the central shared “Red Pages” Extended Data Dictionary Capability – This includes the following:  
  |                                             | − Name  
  |                                             | − Description  
  |                                             | − Calculation rules  
  |                                             | • Actively manage the library of reporting metrics and challenge the need for metrics that have not been accessed over a long period of time  
  |                                             | • For reports and dashboards established via the métiers’ Business Intelligence teams or via the services provided by DTD_DATA’s Center-of-Excellence: Push back on requests if identical or similar reports already exist  
  |                                             | • Help reduce data discrepancies and resulting manual resolution work by allowing for certain reports and dashboards to be issued a quality stamp to help data/information consumers make the preferred choice |

| Related project investments and activities  | SDCE – Shared Data Capabilities Evolution ¹  
  |                                             | DTD_DATA, ICT  
  |                                             | 2020, 2021+ |

|                                             | Services provided by DTD_DATA’s CoE ²  
  |                                             | DTD_DATA  
  |                                             | (ongoing) |

¹ Subject to project funding  
² In this case related to service “Business Intelligence / Report and Dashboard Delivery”
4.3. Optimize ICRC’s data management processes

Data processing at the ICRC entails a variety of activities performed daily by staff across all métiers and at all levels of the organization.

It is important to note that a portion of these activities represents symptoms of deficiencies in other areas such as Data and Analytics architecture, core systems coverage, infrastructure quality and data asset standardization. In such cases, service optimization may deliver some benefits but will not resolve underlying issues or contribute significantly to the overarching goals of the ICRC Data Strategy.

Some data-related activities are more established and have been operating as functions in different parts of the organization. Examples of such services include the following:

- GIS services (OPS)
- Human research services (DTD_TRAK)
- Business Intelligence services (most métiers, DTD_DATA, regional level, in some cases delegation level)
- Data science services (DTD_TRAK, regional level)

The ICRC Data Strategy pursues the establishment of a standard catalogue of data-related services based on the needs of the organization and the feasibility of providing the respective data-related activities as services.

The current service framework, which is being piloted out of DTD_DATA with a small set of Business Intelligence services already established at the ICRC, aims to address well-known needs and is being established in close coordination with the Global Shared Service Strategy initiative. It is structured as a collection of well-defined individual services, which are grouped together into service families.

![Service catalogue envisioned by DTD_DATA Center-of-Excellence](image)

Services, as intended by this framework, are entirely independent of the locations from which they are provided. This means that service consumers should access each service through its respective service interface and should not concern themselves with, where the teams which ultimately deliver the work, reside. Depending on their nature, services can be structured to rely on delivery capacities at different levels of the organization ranging from HQ to the field. Capacities may be provided via ICRC’s core organization, via ICRC’s shared service facilities such as Manila or Belgrade, or 3rd party...
service providers. At HQ level, services may be set up in a “hub and spoke” fashion, meaning that HQ level service capacities may be implemented as a combination of central teams (“hubs”) and teams within métiers (“spokes”).

Figure 8 - Service implementation example “Report and Dashboard Delivery”

<table>
<thead>
<tr>
<th>Strengths and achievements</th>
<th>In general, many functions at the ICRC are already being performed in a service-based fashion, particularly HR and Finance and ICRC’s Global Shared Service initiative is working on extending the scope of service-based delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Business process analysis work has taken place in several areas of the ICRC to inform process reengineering efforts, some of which is of value in terms of data-related activities</td>
</tr>
<tr>
<td></td>
<td>Various métiers have taken first steps towards transitioning some of their data-related activities into services by moving resources to the BSSC</td>
</tr>
<tr>
<td></td>
<td>DTD_DATA’s “Business Intelligence / report and dashboard delivery” service is currently in the process of transitioning from a traditional organizational unit performing project-based work into a service-based setup at the BSSC with additional data-related services being planned</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current weaknesses</th>
<th>Many data-related activities are symptoms of underlying issues (e.g. absence of common reference points across ICRC units) and should be addressed through a correction of such issues</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data-related activities are often viewed and restructured at too high a level for optimizing business processes</td>
</tr>
<tr>
<td></td>
<td>For data-related activities, a considerable amount of opportunity remains for activities to be transitioned into service-based delivery</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall opportunities</th>
<th>Business process analysis and optimization to uncover</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Indicators as to whether an activity is a symptom for an underlying issue</td>
</tr>
<tr>
<td></td>
<td>- Potential for service-based delivery taking into account relevant</td>
</tr>
</tbody>
</table>
contextual requirement (e.g. language, proximity)

- Elimination of activities through information about and a correction of underlying issues
  - Improved agility
  - Lower cost through more efficient/shorter processes
- More efficiency through improved business processes or a shift towards service-based delivery of common data-related activities
  - Reduced staff frustration
  - Improved agility
  - Lower cost through more efficient/shorter processes
  - Lower cost through the leverage of capacities at lower cost locations
- Improved standardization of processes, methods, data assets,...

| Strategic approach | • Continue to build the catalogue of data-related services provided by DTD_DATA’s Center-of-Excellence and proceed in a way, which retains flexibility to subsequently incorporate the resulting set of services into an overarching service organization
  | • Initiate or participate in focused reviews of business processes with a focus on data management aspects and propose (and potentially implement) measures such as the following:
  | - Process and activity restructuring
  | - Leverage of services to perform certain functions or activities
  | • Leverage of Data and Analytics capabilities (central or field-level) to eliminate or support data-related activities |

<table>
<thead>
<tr>
<th>Related project investments and activities</th>
<th>Services provided by DTD_DATA’s CoE 2)</th>
<th>DTD_DATA</th>
<th>(ongoing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDX – Field Data eXperience 1)</td>
<td>DTD_DATA</td>
<td>2021+</td>
<td></td>
</tr>
</tbody>
</table>

1) Subject proposal in preparation
4.4. Governance of data-related topics

Ensuring effectiveness of the three core strategic streams requires appropriate governance mechanisms to be in place. With the ICRC already employing a considerable number of governing bodies for various topics, maximum efficiency of such governance mechanisms is key.

Essential objectives for governance mechanisms include the following:

a) **All data-related aspects must be covered**
   - ICRC Data Strategy
   - ICRC data architecture, standards and principles
   - Changes to the systems landscape relating to data architecture (typically in the form of ICT projects)
   - Changes related to the definition of or interaction with data assets (via projects or business-as-usual maintenance)
   - Changes related to the definition of or interaction with data-related services via the service catalogue (via projects or business-as-usual maintenance)
   - Maintenance of transparency on data assets

b) **Governance mechanisms cover the whole of ICRC**, i.e. HQ and the field

c) **Governance mechanisms should be as compact as possible**, also to account for the fact that frequently the same individuals end up being involved

d) **Existing governance bodies should be leveraged** where feasible

e) Questions and issues should be resolved at the lowest possible level in the organization

f) **Only conflicts should be escalated** to higher governance levels

To provide governance across all topics in a way, which meets above criteria, the governance framework for data-related aspects is structured as follows:
Data Governance Arbitration Board

Chaired by the Chief Data Officer with representation from CIM, OPS, RES and DPO, this panel arbitrates issues related to the definition of data domains, which could not be resolved in the respective Data Governance Committees.

Under the lead of the Chief Data Officer, the Data Governance Arbitration Board also performs the function of monitoring the implementation of the ICRC Data Strategy and raises concerns and issues to the appropriate governance bodies such as the Technology and Data Board or the POM.

Technology and Data Board

Chaired by the Head of CIM, comprising a senior client representative as well as the roles of CFO, CIO and CDO, this panel assesses and decides on investment proposals relating to technology and data.

Platform for Organization and Management

Chaired by the Director-General, alongside the deputy directors of the Departments of Communication and Information Management, Financial Resources and Logistics, Human Resources, and Law and Policy, as well as the chiefs of staff of the Office of the Director of Operations, the Platform for Organization and Management (POM) was established by the Directorate in 2010. It tackles issues related to the organization’s internal functioning, such as assessing and deciding on organizational structures including the ICRC’s shared service structures, and is empowered to make
decisions on behalf of the Directorate concerning certain issues. It acts as the sounding board for the Directorate, especially in terms of analyzing situations, proposing options, as well as raising to the Directorate any risks it identifies.

Data Governance Committees

Chaired by a senior representative of the office of the Chief Data Officer with representation from subject matter experts across most métiers, panels of this type focus on the driving standardization within their focus areas (e.g. Business Intelligence or Master and Reference Data) and aim to reach common agreements on issues of definitions and representation/modeling relating to shared data domains. Subject matter experts may be data owners or data stewards within their respective métiers. Issues, which cannot be resolved at this level, are escalated to the Data Governance Arbitration Board. The office of the Chief Data Officer supports the Data Governance Committees with analysis, proposals and coordination through its strategic initiatives and its Architecture and Governance Support team.
5. Implementation roadmap

Currently, there are several initiatives sponsored by DTD_DATA as well as other units that aim to establish new Data and Analytics capabilities, or to optimize architectural designs of existing capabilities. Although structured as independent initiatives, they are generally tightly aligned with the overall ICRC Data Strategy and contribute to achieving the architectural target state.

Many of these projects are of a dual nature in that they contribute to the construction or modification of a Data and Analytics capability while also contributing to the standardization of data assets. For the purpose of this roadmap, these two aspects are treated separately.

![Figure 10 – High-level roadmap of DTD_DATA’s strategic initiatives and closely related initiatives driven by other units](image-url)