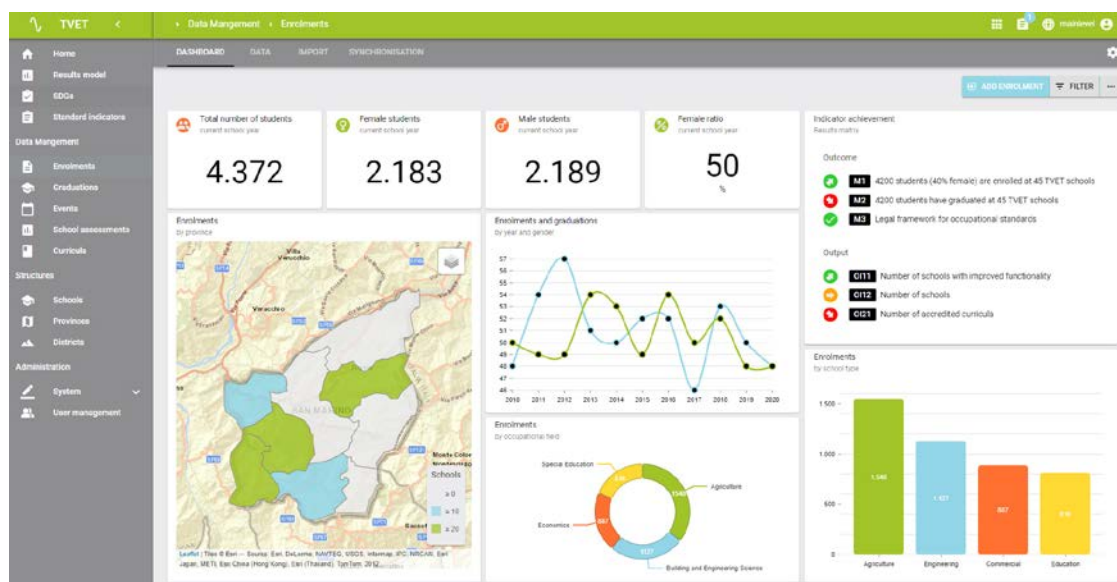


»»» (Remote) Management Information Systems (R/MIS)



Example of a screenshot of an R/MIS provided by www.mainlevel.de

Relevance of this Tool Type within the Project Cycle



R/MIS are useful for tracking infrastructure quality and the progress of complex projects and/or those that involve many sites. Ideally, activity data is connected to indicators (outcome/impact) and risks.

Definition

An R/MIS is a web-based or desktop software system used to systematically collect, validate, store, manage, monitor, aggregate, process, analyze, visualize, and/or publish data and information on a project, a portfolio, or the core processes of an organization for monitoring and management purposes. It often offers interfaces to mobile data collection tools.

How to select an R/MIS?

Step 1: Check the Digital Principles

Before designing / selecting any R/MIS, the nine *Principles for Digital Development* should be considered: www.digitalprinciples.org

Step 2: What Information Do I Need?

Which type of information is required, with which frequency? Is the main purpose monitoring and/or management? The information needs determine R/MIS modules and functionalities:

- Data collection (web/mobile, GPS-location, time stamp, pictures)

- Data management (data relations/validations)
 - Data processing and analysis (aggregation/contribution to goals)
 - Data visualization and publishing (dashboards, charts, maps)
 - Import/export of data (manual/programming interfaces)
- Who has access to which parts of the R/MIS also needs to be defined (the license model of the R/MIS must ensure sufficient access to the system).

Step 3: Which Institutional Approach to Select

Before the selection of an adequate R/MIS software and the design of the Terms of Reference, a decision is needed about which of the following three cases is applicable:

Case A: A new R/MIS is designed as a (long-term) system to digitalize the core processes of the Project Executing Agency (PEA) as part of a digitalization/eGovernance project. This includes generating the information relevant to the specific project(s).

Case B: The extension or integration of an already existing R/MIS of the PEA is designed to additionally manage or monitor the specific project(s).

Case C: A new R/MIS is designed solely for the monitoring or management purposes of the specific project(s) and separately from existing PEA systems.

After selecting the institutional approach, you need to consider the following options and requirements:

Types of Hosting

- Hosting on the PEA/consultant's own server
- Cloud-based hosting of the R/MIS (Software-as-a-Service, SAAS)

Software cost structure model:

Is an initial, one-time payment with no/low ongoing (license) costs preferred? Can ongoing (license) costs be covered beyond the project period? Are customizations possible? It must be decided which software category is appropriate for the setup of the R/MIS. In all three categories, open-source and proprietary solutions are available. In general, **open-source solutions are preferable** > RMMV Guidebook Section 2.2.2.

a) Customized software

Tailor-made solutions meeting the specific needs and requirements of a project, portfolio, or organization.

- + Customized to reflect the exact needs, structures, and features
- + Suitable for complex project setups with a high number of users and access/approval levels
- + Connectors for exchange with other tools can be programmed
- + Usually lower or no licensing costs (none if open source)
- Usually higher costs for (initial) setup (compared to off-the-shelf tools)
- Setup requires IT expert resources
- Usually longer implementing period
- Ongoing costs for support and maintenance

Potentially suitable for Case B (if existing R/MIS is already customized or self-developed), Case C (if complex project, many users), Case A (if complex procedures, many users, AND no good sector-specific, off-the-shelf solutions exist).

b) Modifiable off-the-shelf software (MOTS)

Standard tools that can be modified on software source code level.

- + Fast setup as MOTS are based on available software solutions with existing modules
- + Customizations possible by the purchaser or by another party (if open source)
- Customizations possible only by the vendor (if proprietary)
- Setup and customizations require IT expert resources
- Ongoing costs for support and maintenance
- License costs based on time, user numbers, and support (if proprietary)

Potentially suitable for all cases if the project's/PEA's procedures being digitalized/established are not too complex and do not require too much customization.

c) Commercial off-the-shelf software (COTS)

Standard tools that can be used "as is" without the option to be modified on software source code level.

- + Available "out of the box" with basic functionality
- + Suitable for simple project setups that do not require customization

- Processes and procedures need to be compatible with tool design
- Usually setup and configuration by the purchaser (lower costs, but requires resources)
- Usually proprietary solutions with ongoing license costs per user
- Usually many clients on one (cloud) vendor server (data protection)

Potentially suitable for Case C (simple project, not too many users), Case B (if existing R/MIS is already COTS-based), Case A (if an excellent sector-specific COTS-solution exists).

Interoperability Requirements

In which formats and structures should data be stored in the R/MIS to allow for an exchange with others relevant to the project/organization? In general, the R/MIS must fit into the already existing IT architecture and with the existing IT knowledge of the PEA and country. The following data standards should be considered as part of the setup of any R/MIS:

- Consider (project-specific) required file formats (e.g., CSV, XLS, KML, JSON) or Application Programming Interfaces (API) for data import and export
- KfW requires the export of geo-referenced project data (in KML or XLS) according to a new template (> [Links to Further Sources](#)) as part of its regular reporting. This template also ensures compatibility of the reporting with the International Aid Transparency Initiative (IATI) Standard.
- The IATI standard is an XML-based set of rules and guidance for publishing data of development and humanitarian organizations to improve their coordination, accountability, and effectiveness and to increase the transparency of information on resources flowing into developing countries. All BMZ-funded projects must provide IATI-compatible data to KfW.
- Open Data Kit (ODK) is an XLS-based standard format for exchanging data between R/MIS, mobile data collection, and other compatible tools.
- Sector-specific open data standards also must be considered, if they are applicable (e.g., EPA standard for environmental data; www.epa.gov/data-standards).

Legal Aspects

Data Security: If a desktop software system is used, data security should be warranted by ensuring:

- ✓ that the data are protected against unauthorized or accidental destruction, accidental loss, technical defects, falsification, theft, unlawful use, unauthorized modification or duplication, and other forms of unauthorized access and use by technical means
- ✓ regular backup of data
- ✓ appropriate security of hardware

If the software is provided as web-based service (SaaS), the provider should be contractually obliged to take appropriate organizational and technical precautions to prevent disruptions to the availability, integrity, authenticity, and confidentiality of their IT systems, components, and processes essential to the functioning of the critical infrastructures they operate. The provider should implement data backup concepts, ensuring the protection of data against loss due to system-related failures.

Data protection: Wherever possible, the collection of personal data by the R/MIS-owner (data controller) should be avoided. If this is impossible, the main principles of data protection must be adhered to, that is, personal data shall:

- ✓ be processed lawfully, fairly, and in a transparent manner in relation to the person
- ✓ be used only for the legitimate purpose in relation to the project
- ✓ be limited to what is necessary in relation to the purposes for the project
- ✓ be accurate and, where necessary, kept up to date
- ✓ not be kept longer than is necessary for the purposes of the project
- ✓ be securely stored, including protection against unauthorized or unlawful processing and against accidental loss

In case KfW (or persons acting on behalf of it) are (also) processing personal data, the privacy check in > [RMMV Guidebook Section 2.3.1](#) must be followed.

If R/MIS tools allow **tracking of employees**, legal restrictions on the use of such tools may arise from applicable local laws. Some privacy laws will give discretion to employers as to how far they can go with their employee monitoring programs. In other cases, employers will have to inform employees who are likely to be monitored or even require employees to consent.

Project Examples / Use Cases

- In the project [Fond d'Achat \(FANiger; PN: 28336\)](#) in Niger, a Health-MIS (HMIS) was created to visualize, monitor and manage financial data and billing. The HMIS was based on the national system and additional data collected via tablet.
- In the [Regional Infrastructure Fonds KhyberPakhtunkhwa \(RIF-KP; PN: 30272\)](#), an RMIS was set up to get real time information on the implementation progress regarding physical completion of works and use of funds.
- In the [Hydropower and Renewable Energy Project \(HRE; PN: 27138\)](#) in Pakistan, an RMIS/Utility Information System (incl. power generation sensors & mobile revenue & maintenance data collection) was installed.

Links to Further Sources

- How to calculate total software cost:
<https://digitalprinciples.org/resource/howto-calculate-total-cost-enterprise-software>
- Frequently used data analysis tools
<http://impacttrackertech.kopernik.info/data-analysis-tools>
- About the International Aid Transparency Initiative (IATI) Standard:
<https://iatistandard.org/en/about/iati-standard/>
- How to link offline data collection to an MIS:
<https://getodk.github.io/xforms-spec/>
- KfW Terms of Reference for project geo data collection
> [RMMV Guidebook Annex 3](#)
- Health management information system:
www.openimis.org

Linkages to other tool types



Further information on how to use this tool type in an RMMV context can be found here:

