# Appendix D

## 1 SRDB Industrial Initiatives

[20] summarized the functions to be provided by an SRDB. Nevertheless, prior to this work, [24] observed that, in the past, no distinction had to be made between the source database and the run-time data used to encode and decode TMTC data. However, practitioners have observed that a number of drawbacks would be added to applications using TMTC data such as MCS and FOP:

- Editors that are not easy to develop and that need to be integrated into MCS and FOP software.
- Complex code to maintain in addition to the complexity of MCS and FOP systems.

Quickly, source and run-time database have been separated which led to the development of SRDB applications and SRDB data exchange formats we explored above. Usually, SRDB implementation relies on commercial software such as Oracle to store and manage TMTC data [24].

[6] has summarized the features to be provided by SRDB software. However, to the best of our knowledge, we have not found any comprehensive review of existing implementations of SRDB software. We only found the work by Fischer et al. [16] who have briefly reviewed very few SRDB implementations but without much detail.

To fill in this gap, we have summarized existing SRDB implementations that we managed to identify in the literature in Table **??**. This table provides four pieces of information for each identified SRDB:

1. The references of the SRDB identified
2. Whether or not the identified SRDB orgnizes its data in an Space System Model (SSM) compliant model. The SSM is an ECSS-standardized model to organize the definition of TM/TC data to leverage flixibility and reuse.
3. The list of supported data exchange formats between the identified SRDB and its ecosystem
4. The implementation technology used to store TM/TC data.

| **SRDB name** | **SSM supported** | **Supported data exchange formats** | **Data storage technology** |
|---|---|---|---|
| Virtual Satellite [15, 17] | Yes | Yes | Eclipse Modeling Framework (EMF)[44] |
| CCDD[7, 27, 32] | No | XTCE | postgreSQL[26] |
| CTDB[37] | No | XTCE | SQL Server |
| InControlTM[23] | No | XTCE | NOSQL |
| BEST-NG[25] | No | XTCE | |
| VSD [41, 20] | Yes | | |
| SDB Next [4] | | Yes | EMF |
| RDB[14, 1, 31] | Yes | XTCE, MIB, EGS-CC | EMF |
| OCEAN[5] | Yes | XTCE, MIB, EGS-CC | |
| ECHO[2] | No | MIB | |
| RAMSES[45] | No | MIB | MSAccess |
| XML-Spy [21, 43] | No | XTCE | XML |
| CCTsdB [33] | No | XTCE | |
| Open Preparation Environment OPEN [47] | | EGS-CC | |
| Space Information Base Application (SIB) [3] | Yes | MIB | Relational database |
| SpaceMaster(`https://www.sea-gmbh.com/en/products/spacemaster/`) and [30] | | | |
| HK DB [19] | | | XML database |
| Pure MIB files [42, 39] | | MIB | Text files |
| Database Manager (DBM) (`https://tgss.terma.com/data-base-manager/`) | No | MIB | Access database |
| IDEHAS[18] | Yes | MIB | MySQL relational database |
| FLP SRDB [29] | No | MIB | MySQL relational database |
| In-house Java SCC [28] | | | XML database |

| | | | |
|---|---|---|---|
| DABYS[8] | | MIB | Access database |
| SatV(`https://bit.ly/3naJ6zD`) | | MIB | MS SQL Server |
| JWST-DB[9, 22, 21] | SSM-like structure | XTCE | XML |
| Spacecraft command and telemetry storage framework [38] | No | XML | XML |
| Spacecraft Information Base 2 (SIB2) [35, 34] | | MIB | |
| FOST [31, 13] | | ACID[39] | |
| Satellite Information System (SIS)[12, 40] | | MIB and ACID[39] | Oracle database |
| Herschel/Planck System Data Base (HPSDB)[46, 36, 10, 11] | | MIB | |

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