

## Foreword and Acknowledgements

After the publication of the 4th edition at the end of 2001, I continued updating of my documentation work as a retiree at home – not for any 5th edition – but rather for eventual electronic update versions of the book.

The website documentation of the “**history**,” i.e. the 1st chapter of the book, presents a considerable update of the version published in the 4th edition [enlargement from 150 to 634 (Jan. 8, 2007), to 635 (Apr. 11, 2007), to 642 (July 4, 2007), to 649 (Oct. 1, 2007), to 677 (Feb. 7, 2008), to 682 (April 4, 2008) to 703 (July 1, 2008) to 732 (Oct. 2, 2008), to 742 (Jan. 4, 2009), to 756 (April 2, 2009), to 768 (July 1, 2009), to 800 (Oct. 1, 2009), to 815 (January 2, 2010), to 825 (April 1, 2010), to 841 (July 1, 2010) to 857 (Oct. 1, 2010), to 883 (January 1, 2011), to 896 (April 1, 2011), to 905 (July 4, 2011) to 915 (Oct. 13, 2011), to 928 (Jan. 02, 2012), to 956 (July 25, 2012), to 971 (Oct. 16, 2012), to 979 (Jan. 3. 2013), to 992 (April 02,2013), to 1002 (July 01, 2013), to 1017 (Oct. 1, 2013), to 1033 (Jan. 2, 2014), to 1048 (April 1, 2014), to 1056 (July 4, 2014), to 1074 (Oct. 1, 2014), to 1090 (January 6, 2015) to 1095 (April 1, 2015), to 1104 (July 1, 2015), to 1116 (Oct. 01.2015), to 1126 (Jan. 16, 2016) to 1135 (April 4, 2016) to 1148 (July 2, 2016), to 1157 (Oct. 1, 2016) to 1163 (Jan. 2, 2017) to 1179 (April 1, 2017), to 1188 (July 3, 2017) to 1196 (Oct. 1, 2017), to 1204 (Jan. 2, 2018) to 1212 (Apr. 3. 2018), to 1221 (August 1, 2018), to 1226 (October 1, 2018), to 1235 (January 1, 2019), to 1236 (April 1, 2019), to 1240 (July 1, 2019), to 1248 (October 14, 2019), to 1253 (January 6, 2020), to 1264 (April 1, 2020) to 1267 (July 1, 2020), to 1271 (October 1, 2020), to 1281 (January 2, 2021), to 1290 (April 5, 2021), to 1293 (July 5, 2021) to 1298 October 11, 2021), to 1301 January 3, 2022, to 1303 April 4, 2022, to 1308 July 5, 2022.

The intent is to provide the reader with context information and historic background on some topics of technology introduction in spaceflight. The **thematic approach** led also to multiple mentioning of instruments, missions, observation techniques and/or technologies in various contexts of the documentation. Hopefully to a better overview and understanding of the subject matter. The history is told in a very condensed (almost abstract) fashion to keep it manageable to all involved.

In spite of all efforts – I am quite aware of the fact that my history is incomplete and a bit lopsided in favor of the western spacefaring nations. In particular, it does not reflect properly the accomplishments of the Soviet/Russian space program in the field of Earth observation. This is definitely not intended. The unavailability (and/or non–existence) of documentation on the Russian space program with regard to sensor developments is the prime reason for this deficit. My requests for reviews, for critical comments and for background information on particular topics were only of very limited success. The language barrier, the secrecy of the past political system, the heritage of a military–dominated space program, and the working habits of the Russian research community are at the root of the problem. The nature of any reliable history depends, however, on access to multiple information sources for checks and cross checks for verification.

*A further intent of this electronic version of the history is to get in contact with the reader community. A feedback could certainly help to eliminate some errors and to update those topics in obvious need of correction/elaboration. However, experience with the first electronic version in the first 3–month period resulted in a total return of two e–mails (out of over 6000 website contacts).*

I am aware of the fact that the history alone contains more than two thousand references. Many of them are simply URL (Uniform Resource Locator) labels of the Internet and as such rather unreliable sources. They may be changed or deleted by the provider – making them eventually inaccessible to the reader. The situation reflects actually the fast–changing environment of today. Sometimes this is the only access available to me (I always try to get published references). I am also aware of the vast amount of acronyms used in the text. Well, this is the way things are conveyed today among the people involved. For this reason, I

have added Appendix B “Acronyms and Abbreviations” that should provide a fairly reliable look–up source in case of need. Frequent use of the history should give the reader a certain degree of familiarity with the acronyms and the language of the global survey. In addition, a “Glossary” (100+ pages) has been added as of April 11, 2005.

In November 2003, I was very fortunate in receiving an offer of financial support from ESA/ESRIN (Gunther Kohlhammer). The objective is to continue updating of my extensive documentation database in Earth observation and to place the mission and instrument descriptions successively onto the Earth Observation Portal of ESA/ESRIN (whenever the information is sufficiently stable and verified). I am grateful for these new developments and hope to be of service to the reader community.

**In July 2009, the “Current Table of Contents” was retired and will not be updated anymore.** The reason: I am encountering lately problems in file handling on my desktop. I suspect, these problems are due to the fact of different format widths that I am using for publishing a book – and for publishing the project files for the eoPortal (and the generation of a new Table of Contents requires the standard book format in the current version).

*The online service of the eoPortal was not available in the timeframe March 27 to July 24, 2012. In this period, ESA upgraded its system hardware and software and modernized the access schemes. Throughout this period, I was able to continue my documentation work, submitting over 130 files with updates and to add some new missions.*

March 26, 2014: The eoPortal website has been updated and the site is now on a single platform. The previous content remains, and the new site offers an upgraded interface and new features including a search function. <sup>252)</sup>

**As of the end July 2022, I am going to retire at age 83. For the last 32 years, I have been trying to document Earth Observation as well as many other aspects of spaceflight. In January 2004, I started my work on the eoPortal of ESA. My thanks go to all people who were involved and contibuted in this long–lasting endeavor.**

Gilching, 05 July 2022

Herbert J. Kramer

<sup>252)</sup> <https://eoportal.org/web/eoportal/news/content/–/article/eoportal–website–updated>

After 11 years of documentation work on the eoPortal for ESA in early 2015, I am realizing that my “history”, with quarterly updates loaded, has become rather sketchy throughout the years. Updates are required everywhere.

Well, I started out with my desktop “history” already in the mid–1990s, kept as a private archive to collect EO events, measurement techniques, and the introduction of new technologies on a global scale. The archive gave me more and more orientation and context whenever I was confronted with a new situation in writing up a description of a new mission.

The first history was published in the 4<sup>th</sup> edition of my book as chapter 1, containing 150 pages. I felt that my private “history of technology introduction” should also be part of the eoPortal, to be available to the reader community; hence, I kept updating this document until it reached a volume of ~1100 pages in 2015.

Naturally, the updating of the history has suffered quite a bit during the past years because the documentation and updates for the EO missions grew ever more in the number of missions to be covered as well in the investment of my time. I have invested 70 hour weeks on a continuous basis as long as I am working for the eoPortal of ESA in my retirement. A lot of dedication and interest in the subject is needed to continue on this basis.

*I am realizing, that the history itself has become a fulltime job to be done in an orderly way. On the other hand, I still need the history as a resource for myself to find context and to be sure that I am in the right ballpark when introducing a new topic. At my current advanced engagement, I will try to continue to update the history, but to a lesser degree. Hence, the reader community must live with this growing deficiency.*

**Table 12:** A note to the reader community regarding the “history of technology introduction“

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