

List of Contributions

The list below, where the numbers correspond to chapters, gives for each chapter the contribution on which it is based. The contributions have generally undergone only minor editing in their transformation to chapters; in the few cases where the original contributions have undergone substantial editing, this editing is described here.

The terminology in the temporal database community has evolved somewhat during the eight-year period covered by the contributions. In the transformation to chapters, no attempts were made to modify the terminology originally used. The chapters explain their terminology, and no confusion should occur. Reference [29] in Chapter 1 offers a consensus glossary of terminology.

1. This first chapter, “Introduction to Temporal Database Research,” has been written to serve as a brief introduction to the area covered by the publication. I have reused some material, in edited form, from a joint paper with Richard T. Snodgrass (“Temporal Data Management,” *IEEE Transactions on Knowledge and Data Engineering*, Vol. 11, No. 1, January/February 1999, pp. 36–44). The present chapter reflects consistently my personal views and preferences regarding the subject matter, and should be considered as new.
2. Jensen, C. S. and R. T. Snodgrass, “Semantics of Time-Varying Information,” *Information Systems*, Vol. 21, No. 4, 1996, pp. 311–352.
Because Section 3 of this paper concerns temporal database design, which is covered separately in Part IV, that section has been omitted from the chapter, and the chapter has been revised to reflect this omission.
3. Jensen, C. S. and R. Snodgrass, “Temporal Specialization and Generalization,” *IEEE Transactions on Knowledge and Data Engineering*, Vol. 6, No. 6, December 1994, pp. 954–974.
4. Clifford, J., C. Dyreson, T. Isakowitz, Jensen, C. S. and R. T. Snodgrass, “On the Semantics of “Now” in Databases,” *ACM Transactions on Database Systems*, Vol. 22, No. 2, June 1997, pp. 171–214.
5. Torp, K., C. S. Jensen, and R. T. Snodgrass, “Modification Semantics in Now-Relative Databases,” manuscript submitted for publication.

6. Jensen, C. S., M. D. Soo, and R. T. Snodgrass, "Unifying Temporal Data Models via a Conceptual Model," *Information Systems*, Vol. 19, No. 7, December 1994, pp. 513–547.
7. Busatto, R., M. Böhlen, and C. S. Jensen, "Point versus Interval-based Temporal Data Models," in *Proceedings of the Fourteenth IEEE International Conference on Data Engineering*, Orlando, Florida, February 23–27, 1998, pp. 192–200.
8. Skyt, J., C. S. Jensen, and L. Mark, "A Foundation for Vacuuming Temporal Databases," manuscript submitted for publication.
9. Snodgrass, R. T., I. Ahn, G. Ariav, D. S. Batory, J. Clifford, C. E. Dyreson, R. Elmasri, F. Grandi, C. S. Jensen, W. Käfer, N. Kline, K. Kulkarini, T. Y. C. Leung, N. Lorentzos, J. F. Roddick, A. Segev, M. D. Soo, and S. M. Sripada, "A TSQL2 Tutorial," in *ACM SIGMOD Record*, Vol. 23, No. 3, September 1994, pp. 27–33.
10. Snodgrass, R. T., C. S. Jensen, C. E. Dyreson, W. Käfer, N. Kline, and J. F. Roddick, "A Second Example," Chapter 4, pp. 49–73, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
11. Jensen, C. S. and R. T. Snodgrass, "The Surrogate Data Type," Chapter 9, pp. 153–156, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
12. Jensen, C. S., R. T. Snodgrass, and M. D. Soo, "The TSQL2 Data Model," Chapter 10, pp. 157–240, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.

TSQL2 adopted as its data model a previously proposed conceptual model, presented in detail in Chapter 6. To avoid overlap with this chapter, Sections 10.5.3 and 10.6–10.8 of the present contribution are omitted from Chapter 12, which is based on the present contribution. In addition, mainly parts of the introduction and summary have been revised to reflect these omissions.
13. Snodgrass, R. T., C. S. Jensen, and M. D. Soo, "Schema Specification," Chapter 11, pp. 241–243, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
14. Snodgrass, R. T., C. S. Jensen, and F. Grandi, "The From Clause," Chapter 12, pp. 245–249, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
15. Hsu, S., C. S. Jensen, and R. T. Snodgrass, "Valid-Time Selection and Projection," Chapter 13, pp. 251–298, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.

16. Leung, T. Y. C., C. S. Jensen, and R. T. Snodgrass, "Modification," Chapter 14, pp. 299–304, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
17. Jensen, C. S., R. T. Snodgrass, and T. Y. C. Leung, "Cursors," Chapter 15, pp. 305–310, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
18. Clifford, J., C. E. Dyreson, R. T. Snodgrass, T. Isakowitz, and C. S. Jensen, "Now," Chapter 20, pp. 385–394, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
19. Jensen, C. S., "Vacuuming," Chapter 23, pp. 451–462, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
20. Soo, M. D., C. S. Jensen, and R. T. Snodgrass, "An Architectural Framework," Chapter 24, pp. 465–473, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
21. Soo, M. D., C. S. Jensen, and R. T. Snodgrass, "An Algebra for TSQL2," Chapter 27, pp. 505–546, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
22. Snodgrass, R. T., I. Ahn, G. Ariav, D. S. Batory, J. Clifford, C. E. Dyreson, R. Elmasri, F. Grandi, C. S. Jensen, W. Käfer, N. Kline, K. Kulkarini, T. Y. C. Leung, N. Lorentzos, J. F. Roddick, A. Segev, M. D. Soo, and S. M. Sripada, "Language Syntax," Chapters 28–38, pp. 549–631, in *The TSQL2 Temporal Query Language*, edited by R. T. Snodgrass, Kluwer Academic Publishers, 1995, 674+xxiv pages.
23. Böhlen, M., C. S. Jensen, and R. T. Snodgrass, "Evaluating the Completeness of TSQL2," pp. 153–172 in J. Clifford and A. Tuzhilin, editors, *Recent Advances in Temporal Databases*, Springer-Verlag, Workshops in Computing Series, 1993.
24. Bair, J., M. Böhlen, C. S. Jensen, R. T. Snodgrass, "Notions of Upward Compatibility of Temporal Query Languages," *Wirtschaftsinformatik*, Vol. 39, No. 1, February 1997, pp. 25–34.
25. Snodgrass, R. T., M. Böhlen, C. S. Jensen, and A. Steiner, "Transitioning Temporal Support in TSQL2 to SQL3," pp. 150–194, in O. Etzion, S. Jajodia, and S. Sripada, editors, *Temporal Databases: Research and Practice*, Lecture Notes in Computer Science 1399, Springer-Verlag 1998.
26. Snodgrass, R. T., M. H. Böhlen, C. S. Jensen, and A. Steiner, "Adding Valid Time to SQL/Temporal." ANSI Expert's Contribution, ANSI X3H2–96–501r1,

- ISO/IEC JTC1/SC21/ WG3 DBL MAD-146r2, *International Organization for Standardization*, November 1996, 77 pages.
27. Snodgrass, R. T., M. Böhlen, C. S. Jensen, and A. Steiner, "Adding Transaction Time to SQL/Temporal." ANSI Expert's Contribution, ANSI X3H2-96-502r2, ISO/IEC JTC1/SC21/WG3 DBL MCI-147r2, *International Organization for Standardization*, October, 1996, 47 pages.
 28. Böhlen, M. and C. S. Jensen, "Temporal Statement Modifiers," manuscript submitted for publication.
 29. Jensen, C. S., R. T. Snodgrass, and M. D. Soo, "Extending Existing Dependency Theory to Temporal Databases," *IEEE Transactions on Knowledge and Data Engineering*, Vol. 8, No. 4, August 1996, pp. 563-582.
 30. Jensen, C. S. and R. T. Snodgrass, "Temporally Enhanced Database Design," in *Object-Oriented Data Modeling*, edited by M. P. Papazoglou, S. Spaccapietra, and Z. Tari, MIT Press, 2000, to appear.
 31. Gregersen, H. and C. S. Jensen, "Temporal Entity-Relationship Models—a Survey," *IEEE Transactions on Knowledge and Data Engineering*, Vol. 11, No. 3, May/June 1999, pp. 464-497.
 32. Gregersen, H., and C. S. Jensen, "Conceptual Modeling of Time-Varying Information," manuscript submitted for publication.
 33. Gregersen, H., L. Mark, and C. S. Jensen, "From Temporal ER Models to Relations," manuscript submitted for publication.
 34. Soo, M. D., R. T. Snodgrass, and C. S. Jensen, "Efficient Evaluation of the Valid-Time Natural Join," in *Proceedings of the Tenth IEEE International Conference on Data Engineering*, Houston, TX, February 14-18, 1994, pp. 282-292.
 35. Torp, K., L. Mark, and C. S. Jensen, "Efficient Differential Timeslice Computation," *IEEE Transactions on Knowledge and Data Engineering*, Vol. 10, No. 4, July/August 1998, pp. 599-611.
 36. Bliujūtė, R., C. S. Jensen, S. Šaltenis, and G. Slivinskas, "R-Tree-based Indexing of Now-Relative Bitemporal Data," in *Proceedings of the 24th International Conference on Very Large Databases*, New York City, NY, August 24-27, 1998, pp. 345-356.
 37. Bliujūtė, R., C. S. Jensen, S. Šaltenis, and G. Slivinskas, "Light-Weight Indexing of General Bitemporal Data," manuscript submitted for publication.
 38. Torp, K., C. S. Jensen, and M. Böhlen, "Layered Temporal DBMSs—Concepts and Techniques," in *Proceedings of the Fifth International Conference on Database Systems for Advanced Applications*, Melbourne, Australia, April 1-4, 1997, pp. 371-380.

39. Torp, K., C. S. Jensen, and R. T. Snodgrass, "Supporting Temporal Data Management Applications via Stratum Approaches," in *Proceedings of the 1998 International Database Engineering and Applications Symposium*, Cardiff, Wales, U.K., July 8–10, 1998, pp. 4–13. IEEE Computer Society.
40. Torp, K., R. T. Snodgrass, and C. S. Jensen, "Effective Timestamping in Databases," *VLDB Journal*, Vol. 8, No. 4, February 2000, pp. 267–288.