In this diversity case we conclude that computer software is a good within the Uniform Commercial Code; in the circumstances here a non-exclusive requirements contract complies with the statute of frauds; and expert testimony on future lost profits based on prior projections is suspect when actual market performance data are available. Because the district court ruled that the Code did not apply, we will grant a new trial on a breach of contract claim. We also decide that a parent corporation is privileged in disrupting prospective contractual negotiations of its subsidiary with another party and therefore will affirm a judgment in favor of the defendant on a tortious interference count.

Plaintiff, Advent Systems Limited, is engaged primarily in the production of software for computers. As a result of its research and development efforts, by 1986 the company had developed an electronic document management system (EDMS), a process for transforming engineering drawings and similar documents into a computer data base.

Unisys Corporation manufactures a variety of computers. As a result of information gained by its wholly-owned United Kingdom subsidiary during 1986, Unisys decided to market the document management system in the United States. In June 1987 Advent and Unisys signed two documents, one labeled “Heads of Agreement” (in British parlance “an outline of agreement”) and, the other “Distribution Agreement.”

In these documents, Advent agreed to provide the software and hardware making up the document systems to be sold by Unisys in the United States. Advent was obligated to provide sales and marketing material and manpower as well as technical personnel to work with Unisys employees in building and installing the document systems. The agreement was to continue for two years, subject to automatic renewal or termination on notice.

During the summer of 1987, Unisys attempted to sell the document system to Arco, a large oil company, but was unsuccessful. Nevertheless, progress on the sales and training programs in the United States was satisfactory, and negotiations for a contract between Unisys (UK) and Advent were underway.

The relationship, however, soon came to an end. Unisys, in the throes of restructuring, decided it would be better served by developing its own document system and in December 1987 told Advent their arrangement had ended. Unisys also advised its UK subsidiary of those developments and, as a result, negotiations there were terminated.

Advent filed a complaint in the district court alleging, inter alia, breach of contract, fraud, and tortious interference with contractual relations. The district court ruled at pretrial that the Uniform Commercial Code did not apply because although goods were to be sold, the services aspect of the contract predominated.
A jury found for Unisys on the fraud count, but awarded damages to Advent in the sum of $4,550,000 on the breach of contract claim, and $4,350,000 on the count for wrongful interference with Unisys U.K. The district court granted judgment n.o.v. to defendant on the interference claim but did not disturb the verdict awarding damages for breach of contract.

On appeal Advent argues that the Distribution Agreement prohibited Unisys from pressuring its UK subsidiary to terminate negotiations on a corollary contract. Unisys contends that the relationship between it and Advent was one for the sale of goods and hence subject to the terms of statute of frauds in the Uniform Commercial Code. Because the agreements lacked an express provision on quantity, Unisys insists that the statute of frauds bans enforcement. In addition, Unisys contends that the evidence did not support the damage verdict.

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II. SOFTWARE AND THE UNIFORM COMMERCIAL CODE

The district court ruled that as a matter of law the arrangement between the two parties was not within the Uniform Commercial Code and, consequently, the statute of frauds was not applicable. As the district court appraised the transaction, provisions for services outweighed those for products and, consequently, the arrangement was not predominantly one for the sale of goods.

In the “Heads of Agreement” Advent and Unisys purported to enter into a “joint business collaboration.” Advent was to modify its software and hardware interfaces to run initially on equipment not manufactured by Unisys but eventually on Unisys hardware. It was Advent’s responsibility to purchase the necessary hardware. “[I]n so far as Advent has successfully completed [some of the processing] of software and hardware interfaces,” Unisys promised to reimburse Advent to the extent of $150,000 derived from a “surcharge” on products purchased.

Advent agreed to provide twelve man-weeks of marketing manpower, but with Unisys bearing certain expenses. Advent also undertook to furnish an experienced systems builder to work with Unisys personnel at Advent’s prevailing rates, and to provide sales and support training for Unisys staff as well as its customers.

The Distribution Agreement begins with the statement, “Unisys desires to purchase, and Advent desires to sell, on a non-exclusive basis, certain of Advent hardware products and software licenses for resale worldwide.” Following a heading “Subject Matter of Sales,” appears this sentence, “(a) Advent agrees to sell hardware and license software to Unisys, and Unisys agrees to buy from Advent the products listed in Schedule A.” Schedule A lists twenty products, such as computer cards, plotters, imagers, scanners and designer systems.

Advent was to invoice Unisys for each product purchased upon shipment, but to issue separate invoices for maintenance fees. The cost of the “support services” was set at 3% “per annum of the prevailing Advent user list price of each software module for which Unisys is receiving revenue from a customer.” Services included field technical bulletins, enhancement and maintenance releases, telephone consultation, and software patches, among others. At no charge to Unisys, Advent was to provide publications such as installation manuals, servicing and
adjustment manuals, diagnostic operation and test procedures, sales materials, product brochures and similar items. In turn, Unisys was to “employ resources in performing marketing efforts” and develop “the technical ability to be thoroughly familiar” with the products.

In support of the district court’s ruling that the U.C.C. did not apply, Advent contends that the agreement’s requirement of furnishing services did not come within the Code. Moreover, the argument continues, the “software” referred to in the agreement as a “product” was not a “good” but intellectual property outside the ambit of the Uniform Commercial Code.

Because software was a major portion of the “products” described in the agreement, this matter requires some discussion. Computer systems consist of “hardware” and “software.” Hardware is the computer machinery, its electronic circuitry and peripheral items such as keyboards, readers, scanners and printers. Software is a more elusive concept. Generally speaking, “software” refers to the medium that stores input and output data as well as computer programs. The medium includes hard disks, floppy disks, and magnetic tapes.

In simplistic terms, programs are codes prepared by a programmer that instruct the computer to perform certain functions. When the program is transposed onto a medium compatible with the computer’s needs, it becomes software. The process of preparing a program is discussed in some detail in Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc., 797 F.2d 1222, 1229 (3d Cir. 1986), cert. denied, 479 U.S. 1031 (1987), and Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 (3d Cir. 1983), cert. dism’d, 464 U.S. 1033 (1984); see also Andrew Beckerman-Rodau, Computer Software: Does Article 2 of the Uniform Commercial Code Apply?, 35 EMORY L.J. 853, 864-74 (1986).

The increasing frequency of computer products as subjects of commercial litigation has led to controversy over whether software is a “good” or intellectual property. The Code does not specifically mention software.

In the absence of express legislative guidance, courts interpret the Code in light of commercial and technological developments. The Code is designed “[t]o simplify, clarify and modernize the law governing commercial transactions” and “[t]o permit the continued expansion of commercial practices.” 13 PA. CONS. STAT. ANN. § 1102 (Purdon 1984). As the Official Commentary makes clear:

This Act is drawn to provide flexibility so that, since it is intended to be a semi-permanent piece of legislation, it will provide its own machinery for expansion of commercial practices. It is intended to make it possible for the law embodied in this Act to be developed by the courts in the light of unforeseen and new circumstances and practices.

Id. cmt. 1.

The Code “applies to transactions in goods.” 13 PA. CONS. STAT. ANN. § 2102 (Purdon 1984). Goods are defined as “all things (including specially manufactured goods) which are moveable at the time of the identification for sale.” Id. at § 2105. The Pennsylvania courts have recognized that “‘goods’ has a very extensive meaning” under the U.C.C. Duffée v. Judson, 251

Our Court has addressed computer package sales in other cases, but has not been required to consider whether the U.C.C. applied to software per se. See Chatlos Systems, Inc. v. National Cash Register Corp., 635 F.2d 1081 (3d Cir. 1980) (parties conceded that furnishing the plaintiff with hardware, software and associated services was governed by the U.C.C.); see also Carl Beasley Ford, Inc. v. Burroughs Corp., 361 F. Supp. 325 (E.D. Pa. 1973) (U.C.C. applied without discussion), aff’d, 493 F.2d 1400 (3d Cir. 1974). Other Courts of Appeals have also discussed transactions of this nature. RRX Industries, Inc. v. Lab-Con, Inc., 772 F.2d 543 (9th Cir. 1985) (goods aspects of transaction predominated in a sale of a software system); Triangle Underwriters, Inc. v. Honeywell, Inc., 604 F.2d 737, 742-43 (2d Cir. 1979) (in sale of computer hardware, software, and customized software goods aspects predominated; services were incidental).

Computer programs are the product of an intellectual process, but once implanted in a medium are widely distributed to computer owners. An analogy can be drawn to a compact disc recording of an orchestral rendition. The music is produced by the artistry of musicians and in itself is not a “good,” but when transferred to a laser-readable disc becomes a readily merchantable commodity. Similarly, when a professor delivers a lecture, it is not a good, but, when transcribed as a book, it becomes a good.

That a computer program may be copyrightable as intellectual property does not alter the fact that once in the form of a floppy disc or other medium, the program is tangible, moveable and available in the marketplace. The fact that some programs may be tailored for specific purposes need not alter their status as “goods” because the Code definition includes “specially manufactured goods.”

The topic has stimulated academic commentary with the majority espousing the view that software fits within the definition of a “good” in the U.C.C.

Applying the U.C.C. to computer software transactions offers substantial benefits to litigants and the courts. The Code offers a uniform body of law on a wide range of questions likely to arise in computer software disputes: implied warranties, consequential damages, disclaimers of liability, the statute of limitations, to name a few.

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The importance of software to the commercial world and the advantages to be gained by the uniformity inherent in the U.C.C. are strong policy arguments favoring inclusion. The contrary arguments are not persuasive, and we hold that software is a “good” within the definition in the Code.

The relationship at issue here is a typical mixed goods and services arrangement. The services are not substantially different from those generally accompanying package sales of computer systems consisting of hardware and software. See Chatlos Systems, Inc. v. National Cash Register Corp., 479 F. Supp. 738, 741 (D.N.J. 1979); Beasley Ford, 361 F. Supp. at 328.

Although determining the applicability of the U.C.C. to a contract by examining the predominance of goods or services has been criticized, we see no reason to depart from that practice here. As we pointed out in De Filippo v. Ford Motor Co., 516 F.2d 1313, 1323 (3d Cir.), cert. denied, 423 U.S. 912 (1975), segregating goods from non-goods and insisting “that the Statute of Frauds apply only to a portion of the contract, would be to make the contract divisible and impossible of performance within the intention of the parties.”

We consider the purpose or essence of the contract. Comparing the relative costs of the materials supplied with the costs of the labor may be helpful in this analysis, but not dispositive. Compare RRX, 772 F.2d at 546 (“essence” of the agreement) with Triangle, 604 F.2d at 743 (“compensation” structure of the contract).

In this case the contract’s main objective was to transfer “products.” The specific provisions for training of Unisys personnel by Advent were but a small part of the parties’ contemplated relationship.

The compensation structure of the agreement also focuses on “goods.” The projected sales figures introduced during the trial demonstrate that in the contemplation of the parties the sale of goods clearly predominated. The payment provision of $150,000 for developmental work which Advent had previously completed, was to be made through individual purchases of software and hardware rather than through the fees for services and is further evidence that the intellectual work was to be subsumed into tangible items for sale.

We are persuaded that the transaction at issue here was within the scope of the Uniform Commercial Code and, therefore, the judgment in favor of the plaintiff must be reversed.

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REVERSED AND REMANDED.