Summary The clinical outcome in radiooncological treatment of malignant tumors such as glioblastomas and non-small-cell lung cancer is disappointing. In order to obtain a better local tumor control and survival rates, dose escalation seems to be an appropriate way. Especially in those anatomical sites where radiosensitive tissues surround the tumor a further increase of the total radiation dose with conventional radiotherapy is critical. In numerous studies 3-D treatment planning and its clinical realization as conformal radiotherapy demonstrated an improvement in dose distribution for the target volume as well as the surrounding radiosensitive tissues compared with 2-D conventional treatment planning. The high-dose region was very well conformed to the tumor. Outside the tumor the radiation dose decreased steeply. For prostate cancer it has been shown that an increase of the total dose is tolerable. The number of normal tissue complications remained low. We expect that 3-D treatment planning and conformal radiotherapy may substantially improve the therapeutic ratio. There is no doubt that oncology in general, and especially radiooncology, may profit from this new technology in the near future. Continued clinical research, however, is necessary to take full advantage of this promising method.