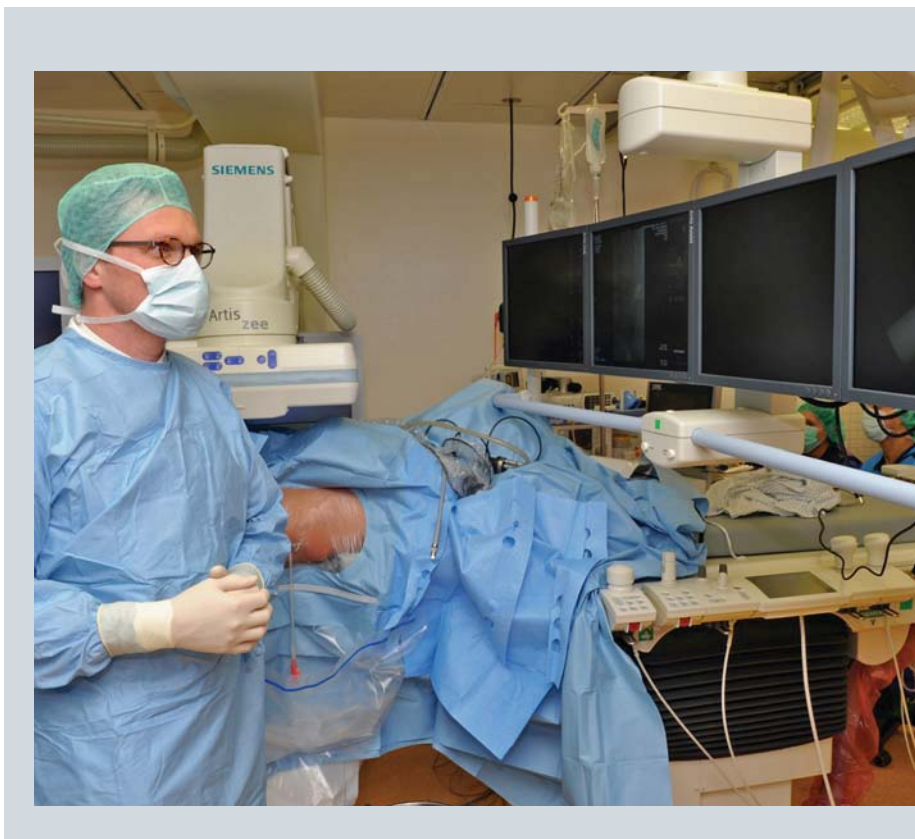


# Intuitive and Comfortable Reassimilations in Endourology

Prof. Maurice Stephan Michel, M.D., Head of the Urology Department at the University Hospital of Mannheim, is the first urologist worldwide using an Artis zee ceiling system. The system was launched in November 2011 and will be used mainly for kidney stone therapy. The imaging technology with the possibility of 3D reconstructions will be very helpful to detect small fragments and also perform interventions with the highest possible safety.



## How did you come up with the idea of using an 3D angiography system for urology?

After having implemented many innovations and developments in ultrasound technology over the last several years and decades, we noticed a standstill regarding X-ray imaging in urology. Configurations of tables and X-ray tubes were made but no noticeable progress was achieved, and we were in the situation that we needed a new X-ray system. Of course we wanted a system that evidenced progress in X-ray technology with better imaging that

could help us to achieve better clinical results for our patients.

So we looked at the Artis zee ceiling system and how it could be integrated in a urology department. After many discussions with Siemens and a visit to the headquarters in Forchheim, we finally found a way, together with the management board of the university, to implement the system and finance it. Professor Stefan Schönberg, M.D., Head of the Radiology Department at the University Hospital of Mannheim was involved from the start.

## What was most important to you regarding the system? Especially considering the fact that you can have 3D imaging with a CT or MRI system, too.

We need an interventional workplace. Interventional means to have access to the patient from all sides. That's why conventional CT technology did not apply. An MRI system especially in combination with ultrasound for prostate biopsies would have been another option. However, the development of the instruments and the methods of tracking metabolism pathways or a molecular



tissue analysis will need another 5-10 years to develop. We decided on Artis zee ceiling because of the fast and great image acquisition and that we can use the instruments we are used to.

**Could you please explain the history of the implementation? How long was the process from your initial thoughts to the execution of your plans?**

In 2008 we had the initial discussions, then the negotiations with the management board; so we finally ordered in June 2011.

**At the moment you are the first urologist worldwide who has a 3D system in his endourology suite.**

**How does it feel to be a pioneer?**

In the beginning you are definitely impressed with being a pioneer, especially after three years of planning and convincing many people that this way is the right way.

However, that feeling passed quickly. We are a university hospital that is doing routine patient care. We have started a scientific concept but certainly don't feel extraordinary. We do our job and it is a very nice system to work

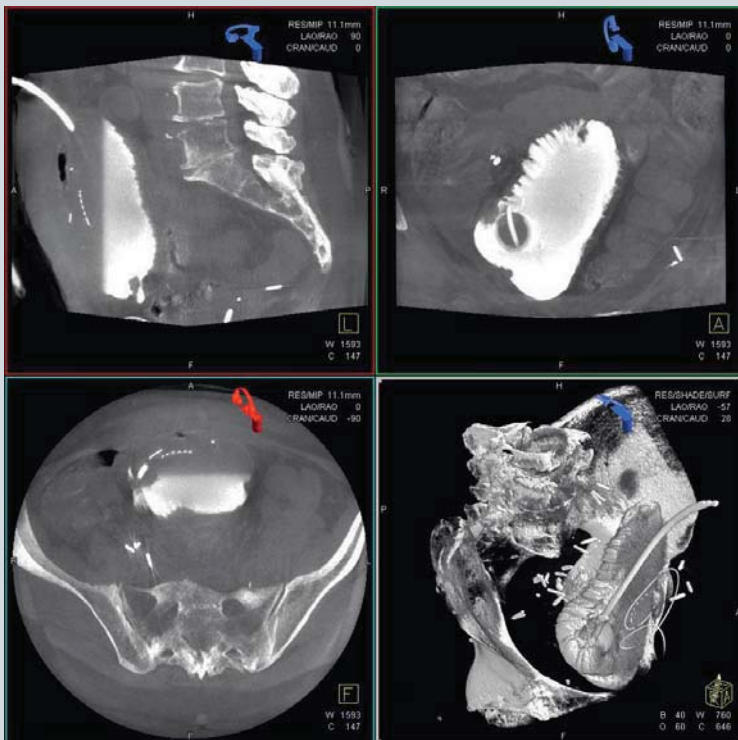
with. That is what we are happy about. Now we want to see the facts and see in what way the system is beneficial for the patient. That's all that matters in the end.

**What are the clinical indications to use 3D imaging? Where do you see the advantages?**

The highest goals are patient safety, minimal radiation dose and best therapeutic outcome. One of the main targets is to find the lowest possible radiation dose with the Artis zee ceiling for the patient. Without

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3D reconstruction of urinary bladder



Placement of a catheter into the kidney

scientific proof we have initially achieved very good results with the new Artis zee regarding radiation dose and image quality when we compare it with the old system for identical procedures.

#### So you have initiated clinical trials?

Yes, exactly. This is very important. Besides the radiation dose for the patient we are also investigating radiation exposure for the surgeon. Ideally radiation dose must be reduced for the urologist, too.

Furthermore, we will have trials for the different interventions, like stone therapy, catheter placement in the kidney-urinary bladder and reconstructions of the urinary tract.

Another important topic is the imaging of pathologies with respect to better detection along with interventions of carcinomas in the upper urinary tract. If you look at cost-effectiveness, measuring radiation dose does not appear. Not for the doctor or the patient. However, if you can avoid second treatments through optimized procedures,

then it is definitely one factor in improving cost-effectiveness as well as patient satisfaction. The way we see it, the patient is clearly in the focus.

We are a university hospital, therefore it is our responsibility to calculate risks and benefits before introducing new technologies worldwide.

The whole world is covered with da Vinci® systems for cancer surgery in urology. Here we missed collecting good prospective scientific data. Now there are many patients who want to be taken care of.

**What is your vision in general? You mentioned an MRI system in the OR and just now the da Vinci system, which is a minimally invasive surgical robot. Where do you see imaging in a few years?**

With a very thorough view on radiation dose. I see a quick, uncomplicated interventional imaging X-ray system with 3D reconstruction possibilities, with individualized radiation dose in regard to special interventions for the individual patient. The goal should be to have customized low radiation programs for standard procedures.

Additionally, intelligent imaging that can show molecular processes in the tissue for special tumor biological questions and tumor detection is definitely very interesting and important. However, this means not only diagnostics but also interventions with minimally invasive procedures like biopsies.

**And maybe being able to fuse different imaging modalities?**

Yes, absolutely.

**Systems that can be handled easily and that are user-friendly?**

Yes, I see specialized smaller systems for specialized questions. Especially for frequently asked questions like prostate biopsies. We do 600,000 biopsies in Germany per year. There you can definitely start thinking about an appropriate system.

**That is a considerable number!**

Definitely, as we have to consider that 600,000 are the ones taken to find the 50,000 carcinomas.

**What is your interim result after having used the new Artis zee system for about two months?**

First of all, I need to say that it was a big adjustment for all co-workers. The technological leap from the old Uroskop systems to the new 3D imaging system is huge. Probably as huge as adjusting from a 1970 VW Golf to a fully equipped 2013 Mercedes sports car.

If you imagine someone from 1970 driving a car like that, he would be rather overstrained. He could drive it without question, but would probably drive a little too fast because he would have trouble evaluating the speed.

What I am saying is that we approach the new technology very diligently and carefully because we especially want the radiation dose to be monitored closely. All in all, we are very happy with the new system.

We will find a way together with Siemens to evaluate the system regarding urology needs, and in the foreseeable future we will reach a good solution.

Conclusively, I would definitely decide that way again. Anyone considering a system like that is responsible for precisely evaluating its use. I would recommend coming to Mannheim to take a close look at the system and to discuss the use of the system critically. Technical advances often lead to uncritical use and this should not be the case, especially with radiation dose.

I am looking forward to seeing the scientific results and then re-evaluating.



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Professor Maurice Stephan Michel, M.D., Head of the Urology Department at University Hospital of Mannheim, Mannheim, Germany

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