

## Planetarium replacement options

Earlier this year, the Besser Museum Planetarium suffered a setback to our overall capability in the form of a malfunctioning projector. This malfunction has left me with only one projector to run the planetarium with. While I have been able to continue running shows and programs inside the planetarium, there is a bit of an issue with what can be seen on the dome at any given time, which is inconvenient, but manageable. Ultimately though, the main issue is not a handicapped planetarium, but the aging digital infrastructure which keeps it running. For now, I was able to make the planetarium work with just one projector, but it is only a matter of time before the other projector or the computer system running it fails too, leaving the museum without its digital planetarium.

As a worst-case scenario outcome, the old auto mechanical SPITZ star ball still works in a limited capacity and can be used to lightly discuss the night sky and its contents. This in itself would only be a temporary measure though, as the star ball and the equipment that runs it is likely older than I am, and the increased reliance on this system will only serve to accelerate its decay. This means that if the Besser Museum wishes to keep the tradition of its planetarium running, then there will need to be a replacement for the projection system sometime in the next few years. I would also add that acting sooner rather than later will give the museum time to assemble a solution, as waiting for a full collapse of the system before acting is only going to create more problems. While there are several options available for replacing the planetarium equipment, none of them are especially cheap, and I believe that searching for best solution and funding for it is something that the museum should begin right away.

Further on in this document I have put forth a list of available options for replacing the current digital system, I have looked at multiple organizations and companies that provide digital projectors and computers to operate them. For a lot of companies there is the option between one or more projectors. While using one projector may seem like the more economical decision, it would likely mean that the Museum's old SPITZ star ball would need to be removed to make room for a single projector. This is because the center of the dome is the only location in the planetarium that a single projector would be capable of projecting to the whole dome. On top of that, having only one projector would also greatly reduce the visual quality in comparison to the current dual projector setup. Between removal of the old system and the disposal of it, the museum might not save much if any money by going with a single projector system instead of a dual system.

### **Warped Media (Ash Enterprises):**

Warped Media is the cheapest and most bare-bones replacement that the museum could go with. The cost of equipment and installation is advertised as being just under **\$40k** for the computer, projector, installation, setup, and training. While this is the cheapest option, it is also the cheapest option in terms of quality. We would be changing into a system with only one projector, which would ultimately reduce the image quality that we have in the dome. For comparison, it would be like going from a HD TV to a non-HD one, except the image is also being stretched over the same screen size which would further reduce the visual quality. While this is an option, I would ultimately recommend against going this route, especially as the general public becomes increasingly more comfortable with high-definition visuals from TV, movies, and video games.

As a side note, every organization from here on out only sells laser projectors, in contrast to a lamp-based projector that we have now. Laser projectors do not require as much upkeep, and do not need regular lamp replacements as a result, allowing them to last longer. I would also add that most of the planetarium systems being presented have similar software and applications to each other, with only a few minor differences on how they are run. The best way I can think of explaining this situation is by using the difference between an iPhone and an Android phone. Both phone systems have their pros and cons, but ultimately, they do the same thing. As far as the main decision-making criterion goes for this situation, I believe that minor details like this should only be considered once the main circumstances of initial and long-term price are decided upon. Once a clear candidate or candidates are in view, I can then add extra details on which system would perform better from my point of view.

### **Digitstar (Formerly SPITZ):**

The company Digitstar has become the replacement system for a lot of SPITZ systems across the US, as the parent company that bought out SPITZ, has canceled the SciDome software that we use now, and decided that they will only be adding Digitstar software from here on out. This is actually the reason why we are searching for new companies to replace the dome's hardware instead of just upgrading with SPITZ.

As far as an actual system goes, the Digistar system seems to have the most bells and whistles, as in, there are more features, both physically and digitally to enhance the overall presentation quality of the planetarium, such as domecasting and a larger number of built-in visuals to work with. As a personal aside, I can't help but feel a little weary of this new company merger between SPITZ's parent company and whoever bought them out, especially as our interactions with the remnants of SPITZ have put us in this difficult situation to begin with. Ultimately, they may be expensive, but Digistar provides a quality project that uses some of the newest technology available.

The minimum cost for a Digistar replacement will be **\$200k**, which includes the price for installation, setup, and training. This price only includes one projector though, and the price for two projectors is **\$230k**, which is 15% more, but provides a more comprehensive visual for the dome.

### **Digitalis:**

Digitalis, not to be mixed up with Digistar, which is a completely separate organization. The system that digitalis sells is similar to that of Digistar's, with there being some technical differences their primary software applications and the astronomical content loaded into it. The company seems reliable and trustworthy so far, and I have had nothing but pleasant interactions with them. I also find their warranty system to be a bit more fair than Digistar's.

As far as price is concerned, Digitalis states that the cost for one brand new projector is **\$97,730**, which, assuming that there is no discount for buying two projectors, would mean that cost of purchasing two projectors, a computer system, and all of the installation fees and warranties would be around **\$200k**. I cannot say for sure though, as I am still waiting to hear back on an official quote.

### **Sky Scan:**

Sky Scan is an old company that has been in the planetarium industry for over 50 years and has gained a reputation for their reliability. This long-lived company has Warranties and service plans as default, with extended versions available for purchase. As far as equipment goes, their site mentioned a lot of the same assets as other planetariums, but without a demo from them, I have no idea how well all their products work in in real life. Price for Sky Scan is also a mystery, as there weren't any prices listed online, and I have yet to hear back from the company after requesting a quote. I can assume that their products are going to cost a similar price as Digistar and Digitalis though.

### **RSA Cosmos:**

I don't actually know a lot about this company as they are relatively new to the states. Cosmos is a French company that has predominantly sold and built planetariums in Europe and other

nations in the Eastern hemisphere. Cosmos touts the largest community of planetariums in the world, and access to the community is given when a system is purchased. While the other systems have their own communities too, having access to such a large wealth of knowledge and planetarium resources is a good selling point. Cosmos has also mentioned being affordable, so this likely means that their price will be a bit lower than others, but still likely between **\$100k** and **\$200k**. I have no quote at this time as I am still waiting to hear back after requesting a quote. Another aspect to consider is that as a French company, how difficult would it be to contact and receive support from Cosmos going forward in the future. Without having heard back from Cosmos, I have no idea if their services to the states are as adequate as they would be in France. This is information that I will hopefully be able to provide if I am ever able to get in touch with them.