Functional Programming boosting scientific and industrial research

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I have been working for the past 10 years in applied computer graphics research, almost exclusively in two projects: PRo3D, a 3D visualization tool to allow planetary scientists to work with high-resolution 3D reconstructions of the Martian surface and TSID, a 3D visualization tool for high-resolution tunnel surface inspection and documentation. While PRo3D primarily supports planetary geologists in conducting their science, TSID has a strong industrial focus and is part of a commercial application. In this talk I will give an overview of these two exciting projects and their domain specific use cases. I will put a special emphasis on what they have in common with respect to past, present, and future developments despite their fundamentally different purposes. For instance, both have recently undergone a complete functional rewrite after 7 years of OOP development and are now part of the Aardvark Platform, but that is only one of many topics.