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Abstract	<p>Over the past decades, software development methods for satellites have undergone several changes. As in many other industries today, a lot of the systems functionality is implemented in software since this is more flexible than hardware solutions in many cases. This increases the demands and requirements regarding software and its development life cycle. New concepts must be investigated for finding better ways to tackle these challenges while at the same time using available hardware resources effectively. EADS Astrium is conducting concept studies regarding future software architectures for distributed on-board systems. This paper introduces the concept of a "global data pool" that acts as a communication interface for interacting software components. This results in a component-oriented software architecture that is based on a data-centric middleware layer. This paper elaborates the general principles of data-centric architectures and the possibilities of applying model-driven engineering, and discusses the current results shown by prototype implementations.</p>