rgeos: spatial geometry predicates and topology operations in *R*

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rgeos is a package that implements functionality for the manipulation and querying of spatial geometries using the Geometry Engine - Open Source (GEOS) *C* library. This package expands on existing spatial functionality in *R* through integration with **sp** spatial classes and transparently replaces **gpclib** which is encumbered by a licensing agreement allowing only non-commercial use. Additionally, **rgeos** includes functionality for spatial predicates and topology operations for non-polygon geometries like points, lines, linear rings, and heterogeneous geometry collections. Previously, these operations were not possible within *R* and required the use of external GIS tools like GRASS, PostGIS, or ArcGIS which significantly complicate spatial workflows.

This talk will discuss the basic usage of this package with a focus on real world use-cases from the R-sig-Geo mailing list. Additionally, we will cover some of the finer details of the GEOS library which will give insight into the most efficient approaches for employing **rgeos**. Finally, we will discuss future directions for the package with plans for additional features such as spatial indexes using GEOS' `STRtree` functionality and the addition of improvements made in GEOS 3.3.0.