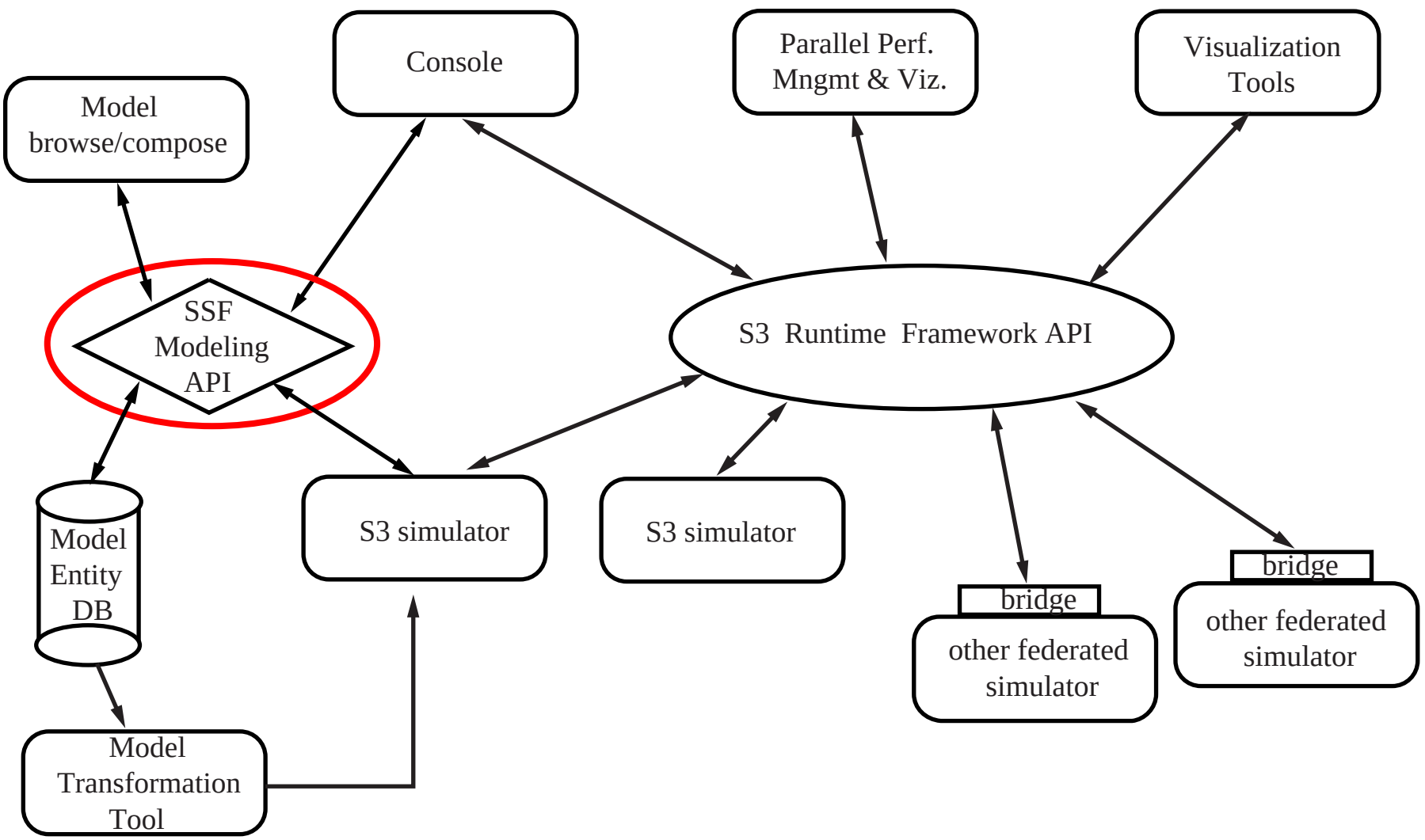S3 Software Architecture