Approximating the Standard Essentiality of Patents
A Semantics-Based Analysis

Motivation
Assessing the standard essentiality of patents (SEPs) poses considerable challenges for scholars and practitioners. The lack of transparency in standard-setting leads to strategic incentives for firms to declare SEPs or to delay patenting.

Strategic behavior of firms
• SEP over-declaration (Bekkers et al. 2011)
• Just-in-time patenting (Kang & Bekkers 2015)

Engineering studies assessing true essentiality of SEPs
• 21% of declared SEPs for 3G (Goodman & Myers 2005)
• 35% of declared SEPs for LTE (Stitzing et al. 2017)

Methodology
Semantic comparison of full text for all patents and standard documents

Validation
• Logit framework to construct predictors of standard essentiality
• Manual assessments of patents based on the U.S. court case TCL v. Ericsson
• Similarity score is strongest predictor

Use Case
• Predicting share of true SEPs in firm patent portfolios for LTE standard
• Firm-level differences are statistically and economically substantial

Conclusion
• Automated large-scale comparison of more than 36,000 standard documents from ETSI (4.5 million pages of text) with practically the entire patent universe
• First evidence for the identification of truly standard-essential patents based on semantic similarity
• Semantic similarity correlates with technical experts’ manual assessments of standard essentiality
• SEP firm portfolio predictions suggest substantial firm-level differences

Selected References