There are fantastic challenges in integrating speech technologies into search. The power of web search relies overwhelmingly on keyword spotting and distributed information retrieval over large, unstructured databases. Syntactic and semantic models contribute very weakly to this picture. In contrast, the success of speech technologies has been driven to a large extent by the recognition that strong language models are essential to designing accurate systems. Reconciling these two pictures is an enormous opportunity, which enables both worlds to significantly leverage each other's assets: indexing spoken content broadens the reach of search engines, while exposing indexed content to voice interfaces contributes significantly to making the world's information more accessible to everyone. To illustrate both points, the speaker will discuss the computational and algorithmic challenges of transcribing and indexing the huge amounts of spoken data available online. He will also examine how GOOG-411, Google's business search by phone, leverages both spoken and online data to bring a consistent, useful search experience to every phone user.