Reset your perspective about the Oil & Gas: it may be one of the most exciting industries from a technical perspective, but the magnitude of its challenges is dwarfed by the ones faced by its subset, the PetroTechnical Software industry. In this talk, we will explore what those challenges are, and why, and see how we are responding to them, in essence combining cutting-edge technologies and practices more traditionally expected from Silicon Valley with rich science developed in the last thirty years.