Evolution of Mine Geology in RTIO including the use of geological domains to drive improvements in Orebody knowledge and value

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ABSTRACT

300 word abstract here
RioTinto Iron Ore (RTIO) has sustained significant growth over fifty years. Our complex operational system has grown from a single site to 15 mine operations delivering over 338 Million Tonnes during the 2018 calendar year.
Through the expansion, organisational design changes have changed the capacity and capability of the resulting mine geology team and their ability to deliver orebody knowledge and value. The current structure is lean and centred on productivity; essential to meet the complexity and tonnes required. Our mine geology teams strive to ensure that grade control practices and mining take into account the unique geological features of the orebody.
The current best practice uses geological domains as a key input to drive grade control models known as Dynamic Integrated Geology (DIG) models. The process ensures that up-to-date mapping, material type logging, sampling, and localised product predictions are used in the estimation process; directly informing the mine block ore delineation.
Building DIG models increases practitioner's skill development and enables orebody knowledge transfer across teams as an auditable and transparent process. The models also drive increased orebody knowledge through ensuring that essential data capture occurs.
Immediate value benefits are dig outlines that align more appropriately with the unique features of the orebody as well as improved product quality predictions for blending and throughput. This is of increasing importance with the recent shift from a tonnes driven, to a quality/ grade focussed market. Subsequent value benefits include blast outline planning and future bench planning as the DIG models capture and summarise the interpretations about the definitive geometry and grade for reconciliation.
Evolution of mine geology in RTIO will continue with teams engaged to assess and share options to meet the future of mining; including incremental improvements, advancements in technology, automation and data science.