Abstract: The existence of dark matter (DM) in the universe is strong evidence that new physics beyond the Standard Model is needed to explain relevant phenomenology. As we know not much about DM properties, many well-motivated new physics models consider the minimal dark/hidden sector scenario, "forgetting" other members in the hidden sector. Furthermore, DM experiments are designed and results are interpreted in the context of the minimal hidden-sector scenario. In this talk, I will discuss some interesting DM phenomena under non-minimal hidden-sector framework which would not emerge in the minimal setup and point out that they may alter the existing DM search paradigm and offer a new avenue towards understanding DM phenomenology. As concrete examples, I will discuss the DM "collider" as a form of DM direct detection experiments and a DM "transporting" mechanism to explain cosmic positron excesses reported by satellite-based DM indirect detection experiments.