Materials DX Platform Initiatives in Japan

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Abstract

We are now in an era where data is paramount, and data-driven research leveraging large datasets is anticipated to spur new innovations in materials development. Over the years, we have amassed extensive materials data and built a suite of regulated, reference databases called MatNavi [1], which serve as vital resources for data-driven materials research.

Equally critical is capturing and utilizing data generated in everyday research activities. Since 2017, we have been developing and applying foundational technologies to collect these daily datasets. Through numerous trials, we concluded that immediate structuring and registration at the point of data generation is most effective. This realization led us to create RDE [2], a system dedicated to on-the-spot data structuring and registration.

Building on these practices at NIMS, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) initiated the Materials DX Platform Initiatives across Japan around 2022, as depicted in Fig. 1. The initiatives comprise three national projects: the Advanced Research Infrastructure for Materials and Nanotechnology (ARIM), which facilitates shared use of facilities and data; the Materials Data Platform, which provides infrastructure for accumulating and utilizing data; and the Data creation & utilization-type MaTerial R&D project (DxMT), which advances data-driven materials research. In this presentation, I will outline Japan's Materials DX Platform efforts, focusing on NIMS's role in these initiatives.

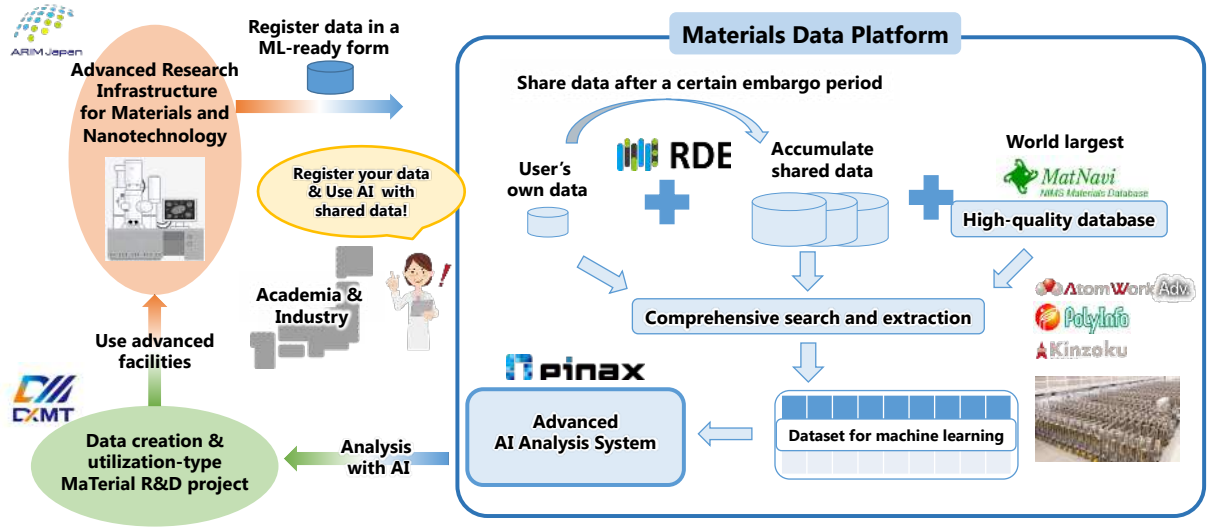

Figure 1. The concept of Martials DX Platform in Japan.

References

[1] MatNavi. https://mits.nims.go.jp. [2] RDE. https://dice.nims.go.jp/services/RDE/