FarmerZone:
Distributed Machine Intelligence for Sustainble Development

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The impact of climate change is making traditional agriculture an increasingly risky proposition. Despite the successes of the Green Revolution, the agriculture sector is in distress with farmer suicides and young people migrating to cities. With India's growing population, shrinking agricultural land area and scarcity of water for irrigation, it is imperative that we increase agricultural productivity manyfold. This is possible with the introduction of precision agriculture, which requires access to diverse, real-time data.

In India, agricultural data is collected by many different agencies. It is held by many different organisations such as IMD, ISRO, State Governments, etc. Some data is online, some offline. It is not available in an accessible online repository amenable to big-data analytics. There are often cumbersome procedures for access.

To address the problems of agriculture, India's Department of Biotechnology (DBT) and IIT Mandi are proposing *FarmerZone,* a disruptive technology intervention. *FarmerZone* is a cloud-based service that will collect, collate and curate data from multiple sources. With vast amounts of local and global agricultural data, including weather, market demand and pricing, production, scientific data on crops, etc advances in machine learning make it is possible to provide specific advice targeted to the needs of individual farmers. Enterprising businesses could use the data to help farmers make the best real-time decisions to enhance their productivity. This could lead to a revival of farming as an attractive opportunity for young people. This vision is driven in part by the success of big-data technology in recent years in a plethora of areas.

In this talk, we detail the needs of the agriculture sector. Next, we give examples of disruptive technologies that have transformer India in the past. We then describe the FarmerZone concept and some of the technical challenges in its implementation. Finally, we outline the FarmerZone cloud envisaged by IIT Mandi for the Himachal/Punjab region.