

# Recommendation Systems at Work: Opportunities and Challenges

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The workplace witnessed a generational transformation in the last few years. This rapid transformation of the workplace, where remote work, geo-distributed teams, asynchronous work timings and explosion of SaaS tools are more norms than exception, has introduced several new challenges for the organization, with ‘productivity of organization’ being at the core. We, at [Dashworks Technologies, Inc.](#), interviewed CIOs, CISOs, Heads of IT, & employees from more than hundred enterprises, ranging in number of employees from 25 to 5000, and identified top problems they are facing which can help them improve individual productivity.

In this position paper, we briefly present a few opportunities, where recommendation systems and information retrieval techniques can have an impact followed by challenges in realizing them at scale.

**Opportunities:** i) New Employee Onboarding Assistant: Onboarding new employees is a huge and growing challenge in remote teams since new hires need to ramp up on existing company know-how, but lack tools to effectively do so. Recommending personalized bite sized information according to the role, experience, department etc. of the new hire can make them productive from Day 0 without making them overwhelmed. ii) Resolving Issues: Helping employees resolve issues faced in their day to day job quicker is one of the core challenges in improving individual productivity by leaps. When faced with an issue, for e.g “vpn not working” or an error from the internal framework/tool the team has built, the employee posts in their preferred communication system hoping for someone to answer. Recommendation systems can help in fetching past similar issues posted, conversations, documents etc. leading to a quicker resolution and also saving time for the employee. iii) Expert Recommendation: For teams starting on a new project, recommending other teams or employees with expertise in that particular subject area can significantly improve the chances of the success of that project. This also helps with de-duplication of projects and better collaboration in large organizations. Another potential application of expert recommendation is intra organization hiring. On iv) Unified Search: “[The High Cost of Not Finding Information](#)” quantifies the effect of poor quality internal search on success and productivity of an organization. This

becomes even more critical in remote settings where tap on colleagues shoulder taps and occasional water cooler discussions are amiss. v) Personalized Dashboard: A common ask from organizations we interviewed has been a dashboard with aggregated information across all SaaS apps. To be effective, this dashboard has to be highly tailored to the employee. This problem can also be formulated as recommender systems, which filters highly relevant information for that particular employee which demands immediate attention from a large and extremely heterogeneous stream of information.

**Challenges:** i) Heterogeneity: Enterprise corpus comprises extremely heterogeneous data. For e.g. messages, e-mails, documents, databases, IT tickets, contact cards. This lack of homogeneity makes it difficult to come up with a scalable solution of representing and understanding information across different formats. ii) Data in Silos: Information at organizations are highly fragmented and is present in silos. This problem has been worsened by the explosion of SaaS apps being used within an organization, termed as [SaaS sprawl](#). Enterprises today use more than [650 apps on average](#), and this is growing [10% YoY](#). This lack of a central index of information makes querying data and building intelligent features on top of it challenging. iii) Each organization is different from other. For e.g.: The vocabulary used between two organizations differs significantly owing to internal names of products, teams, employee names etc. Developing a scalable solution for e.g. for intelligent search, which works out of the box without significant custom engineering is challenging. iv) It’s challenging to come up with an evaluation test set or methodology which captures whole ranges of variations across different employee personas and differences across ALL the organizations. v) Privacy is of utmost importance when dealing with enterprise data. Systems solving the above problems have to work with privacy as a strict constraint. vi) Metric for Productivity: It’s challenging to come up with a unifying definition of productivity and thus the metric. For e.g. is productivity proportional to lines of codes written, messages exchanged, or mental well being of employees. The lack of metric makes it extremely difficult for organization leaders to measure the impact and thus justify the investment on productivity tools.