Work Plan and Methodology

I will propose a video streaming architecture based on overlay multicast, to fulfill the requirements mentioned, we propose an innovative two-tier framework based on overlay multicast and caching mechanisms.

- The proposed Overlay Dynamic Multicast Protocol (ODMP) framework, as one of the first systematic proposals in this research field, addresses the scalability, efficiency and deployability issues in the existing approaches.
- ODMP could be regarded as a hybrid approach of the application layer multicast and overlay multicast, which attempts to support one-to-many real-time streaming applications over the Internet
- This proposed protocol focuses upon overcoming the problem of serving multimedia files to a large number of end hosts distributed across the Internet. A key challenge is to design a system that is scalable, more efficient and reliable, in the sense of being able to efficiently serve a large number of concurrent clients with relatively high inbound bandwidth and low start-up delay. In some circumstances, adaptiveness to available resources along the path from the server is required, as well as resilience to dynamic changes (e.g., network condition changes, membership changes).
- To make ODMP a reality, we decouple the proposed solution into the following parts.
  i) ODMP constructs an on-demand overlay core by which it can achieve the optimal performance.
  ii) ODMP distributes the burden of group management and data delivery to a few nodes instead of the source.
  iii) The self-organizing protocol scales well to at least hundreds of nodes without sacrificing the quality of the overlay network.
  iv) ODMP achieves the scalability by limiting group management within locality so that it can dramatically reduce the overhead and complexity of the overlay maintenance.