Resource Allocation in Big-Data-Enabled Software Defined Cellular Network

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- The increasing burden on network management (traffic, devices, BSs)
- More information for resource allocation (big data analysis, SDN)
- Research gaps
  - Data collection
  - Big data analysis
    - What can we get?
    - Algorithms?
  - Network deployment
    - How to use the results?
    - Any traditional problems can be solved in new ways?

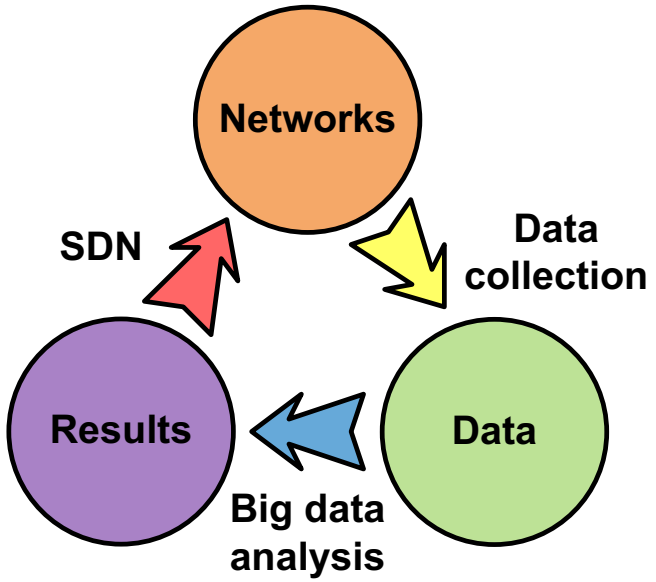

Fig. 1. The circle of data collection, analysis and deployment.

Architecture

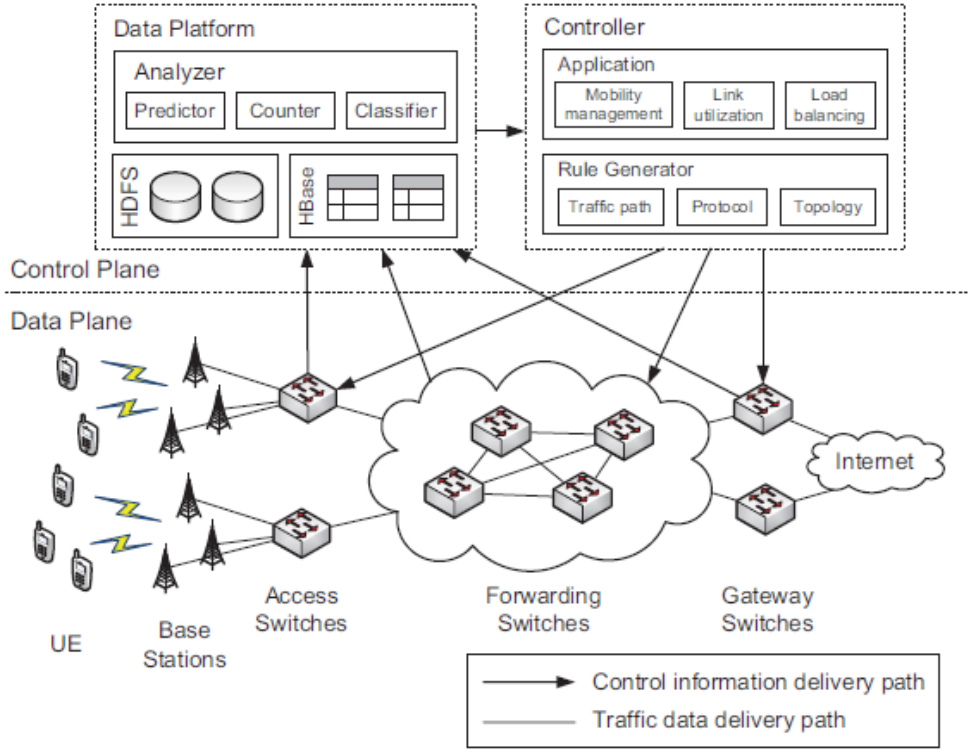

Fig. 2. The Big-Data-Enabled SDCN Architecture [1].

[1] J. Wen and V. O. K. Li, "Big-Data-Enabled Software Defined Cellular Network Management", in Proc. 2016 International Conference on Software Networking, Jeju Island, Korea, May 2016, pp. 11-15.

Applications

- Seamless mobility management
  - Data prefetching to reduce handover delay [2]
    (mobile user location prediction)
- Base station load balancing and energy saving
  - Base station selection
    (spatio-temporal traffic distribution)
- Link resource allocation
  - Congestion and peak control
    (spatio-temporal traffic distribution, priority management)

[2] J. Wen and V. O. K. Li, "Data prefetching to reduce delay in Software-Defined cellular networks", in Proc. IEEE 26th International Symposium on Personal, Indoor and Mobile Radio Communications, Hong Kong, Aug 2015, pp. 1845-1849.