Technology configuration inventory

Name: **Muhammad Hamza Shahab, Syed Haider Abbas Naqvi**

Community & UN SDG(s): **SaskTel network engineers and architects**

UN SDG(s):

- SDG#7: Affordable and clean energy
- SDG#11: Sustainable cities and communities
- SDG#12: Responsible consumption and production
- SDG#13: Climate action

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Instructions

It is useful to inventory the current technology configuration of the community, i.e., the current technology that the people working, learning, advancing knowledge (etc.) in the specific area you are engineering software for are using, as a way to understand the community better and what matters to them better. If yours is a new community, it may not have any specific technology yet, but even for brand new communities, the current configuration may not be empty, for instance if general tools like email or phone are going to be used. You can use a version of the table on the next page to inventory and analyze the current configuration of your community:

1. Get the big picture. Research the area and make a list of all the platforms and stand-alone tools in your community's configuration as best you can
2. For each platform, list the tools and check the ones that are being used. Why are some not being used? Are there duplicates? Are there issues around integration between tools?
3. To the left, make a note of which community activities/orientations the tools currently support in your community
4. To the right, identify the key features of tools. Are some of these features commonly or rarely used? What are the reasons for that?
5. Assess actual tool use if you can. Identify which are dominant and which are only used by smaller groups and individuals.

NOTE: Add new rows as needed below. Please know your search should be as exhaustive as possible given the area you are researching

Platform	**Network Management System (NMS)**		
Supported activities	**Tools**	**Key features**	**Usage notes**
• Projects • Content • Access to Expertise • Service Context	• Network Monitoring (e.g., SolarWinds, PRTG, Nagios) • Configuration Management • Performance Reporting • Fault Management	• Real-time monitoring of network devices, • Performance dashboards, • Alerting, historical data analysis, • Configuration backup and restore, • Reporting.	A core platform used extensively by network engineers for daily operations and troubleshooting. High usage of monitoring and alerting features. Configuration management features are crucial for

			maintaining consistency and stability.
Platform	**SDN Controller (Software-Defined Networking)**		
Supported activities	**Tools**	**Key features**	**Usage notes**
• Projects • Access to Expertise • Service Context	• OpenDaylight • ONOS • Vendor-Specific (e.g., Cisco DNA Center, Juniper Contrail)	• Centralized network control, • Automation, • Programmability, • Network virtualization, • Traffic engineering, • Policy enforcement.	Used for specific parts of the network. Usage is limited to more advanced engineers and architects. Could be a key integration point for the project in the long term.
Platform	**Cloud Platform (Public/Private)**		
Supported activities	**Tools**	**Key features**	**Usage notes**
• Projects, • Content, • Service Context	• AWS • Azure • Google Cloud • VMware vSphere (for private cloud)	• Infrastructure as a Service (IaaS), • Platform as a Service (PaaS), • Virtual machine management	Used for hosting some applications and services. The extent of cloud usage will vary. The project would help optimize the placement of networks (virtual machines) within this cloud environment.
Platform	**NFV Orchestrator (Network Functions Virtualization)**		
Supported activities	**Tools**	**Key features**	**Usage notes**
• Projects, • Content, • Service Context	• ETSI MANO compliant orchestrator • Vendor-specific (Cisco NSO, etc.) • Open-Source MANO	• Resource Orchestration, • Service Orchestration, • VNF Lifecycle Management	VNF onboarding, service chaining, scaling, healing, monitoring. Centralized management of virtualized network functions. In use as SaskTel virtualizes more functions. This will be a key system.
Platform	**Ticketing/Project Management System**		
Supported activities	**Tools**	**Key features**	**Usage notes**
• Meetings, Projects, • Open-ended conversation, • Community cultivation, • Access to Expertise	• Jira • ServiceNow • Remedy • Custom solutions	• Service Request Fulfillment • Incident Management • Problem Management • Change Management	Tracks and manages requests. Manages workflows.

		• Knowledge Management • Reporting and Analytics	Used by all employees in the organization to log/track issues and requests.

Stand-alone tool	**Simulation Framework (Project)**		
Supported activities	**Tool**	**Key features**	**Usage notes**
• Projects, • Content, • Access to Expertise	• CloudSim Framework	• Network topology modeling, • SFC request modeling, • VNF resource consumption modeling, • Embedding policies • Optimization algorithms	Used for developing and evaluating the network optimization algorithms. Will not be directly used by SaskTel engineers initially, but the outputs will inform their decisions.
Stand-alone tool	**Programming Languages (Project)**		
Supported activities	**Tool**	**Key features**	**Usage notes**
• Projects	• Python	Python: Versatile, extensive libraries • NetworkX, • NumPy, • Pandas, • DEAP	Used for developing the simulation framework and implementing algorithms.
Stand-alone tool	**Data Visualization Tools (Project)**		
Supported activities	**Tool**	**Key features**	**Usage notes**
• Content, • Access to Expertise	• Matplotlib, • Seaborn, • Plotly	Creating graphs, charts, and other visualizations to present simulation results and analysis.	Used for analyzing and presenting the results of the simulations.
Stand-alone tool	**Network Monitoring Tools (SaskTel)**		
Supported activities	**Tool**	**Key features**	**Usage notes**
• Meetings, • Projects, • Content, • Access to Expertise, Service Context	• SolarWinds • PRTG • Nagios • Zabbix • WhatsUp Gold	• Real-time monitoring of network devices, • Performance dashboards, • Alerting,	Used extensively by network engineers for daily operations and troubleshooting. Provides real-time visibility into

		• Historical data analysis.	network health and performance.
Stand-alone tool	**Packet Analyzers (SaskTel)**		
Supported activities	**Tool**	**Key features**	**Usage notes**
• Access to Expertise, • Projects	• Wireshark • tcpdump	Capture and analysis of network traffic for troubleshooting and security analysis.	Used by network engineers for in-depth analysis of network problems.
Stand-alone tool	**Documentation Tools (SaskTel & Project)**		
Supported activities	**Tool**	**Key features**	**Usage notes**
• Content	• Microsoft Word, • Excel, • PowerPoint, • Confluence, • SharePoint	Creation and management of: • Documents, • Spreadsheets, • Presentations, and • Wikis.	Used for creating reports, documenting network configurations, and sharing information.
Stand-alone tool	**Documentation Tools (SaskTel & Project)**		
Supported activities	**Tool**	**Key features**	**Usage notes**
• Projects, • Community Cultivation, • Content	• Git, • GitHub	Manages codebase and tracks revisions.	Critical for project collaboration, version control.
Stand-alone tool	**Documentation Tools (SaskTel & Project)**		
Supported activities	**Tool**	**Key features**	**Usage notes**
• Projects	• VS Code • PyCharm • JetBrains IntelliJ	Integrated Development Environments and text editors used for writing and managing code	Essential for any coding, scripting.