Developments in PGC Mindanao Bioinformatics Digital Infrastructure

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ABSTRACT

One of the major challenges that was identified for bioinformatics in PGC Mindanao was its underdeveloped digital infrastructure. Fortunately, there was an ample portion from the grant to fund the fiber optic structured cabling for the internet connectivity of the sequencers and laboratory workstations. The other portion of this allotment was used to upgrade the workstations used for bioinformatics analysis in the center and purchase additional peripherals such as RAM expansions and external hard drives (SSD and HDD) to expand memory and storage capabilities in the center, respectively.

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1 Abstract/Introduction

One of the major challenges that was identified for bioinformatics in PGC Mindanao was its

underdeveloped digital infrastructure. Fortunately, there was an ample portion from the grant to fund the fiber optic structured cabling for the internet connectivity of the sequencers and laboratory workstations. The other portion of this allotment was used to upgrade the workstations used for bioinformatics analysis in the center and purchase additional peripherals such as RAM expansions and external hard drives (SSD and HDD) to expand memory and storage capabilities in the center, respectively.

The protocol below shows the photos of the developments in the digital infrastructure of PGC Mindanao, starting from the installation of peripherals for the setup of structured cabling to establish internet connectivity in the sequencing and bioinformatics laboratories (Section 2), setup of cabling to establish internet connectivity of the sequencers (Section 3), testing of internet connectivity of sequencers and workstations (Section 4), and procurement of RAM expansions and external hard drives and installation of the RAM expansions (Section 5).

2 Structured cabling of Sequencing and Bioinformatics laboratories

This section shows the structured cabling of the sequencing and bioinformatics laboratories.

Figure 1 shows the cabling that connects the sequencing and bioinformatics laboratories to the university's internet system via one of the internet server rooms.

Figure 1. Connection to the university's internet system via server room

A data cabinet was set up near the bioinformatics laboratory, which connects it to the university's internet system. Figure 2 shows the installation of peripherals, such as the switch, within the data cabinet. Figure 3 shows the same data cabinet finished with the installed and functioning peripherals. Figure 4 shows the added wifi router inside the Bioinformatics laboratory to provide the wifi signal in the room as well as the workstations inside.

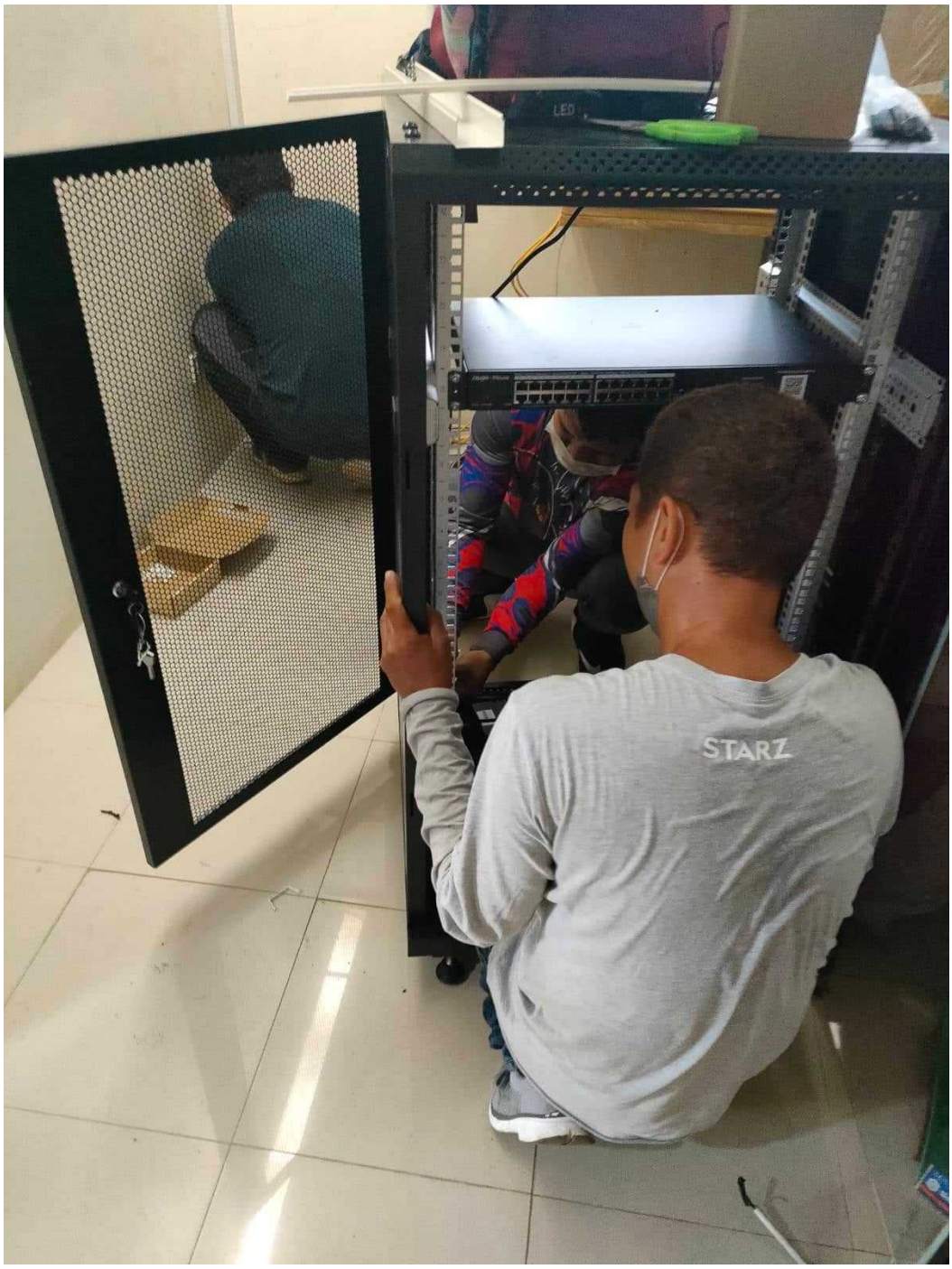

Figure 2. Installation of data cabinet (with peripherals) near Bioinformatics laboratory

Figure 3. Finished data cabinet (with functioning peripherals) near Bioinformatics laboratory

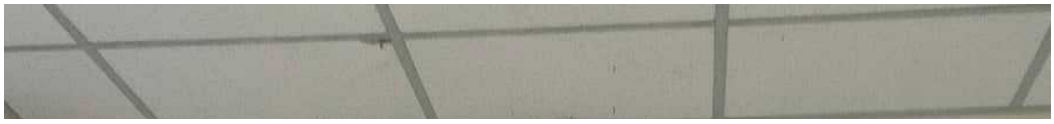

Figure 4. Added wifi router in the Bioinformatics laboratory

Another data cabinet was set up near the sequencing laboratory that connects it to the university's internet system, which is shown in Figure 5.

Figure 5. Finished data cabinet (with functioning peripherals) near sequencing laboratory

3 LAN cabling of sequencers

This section outlines the connection of the sequencers through the structured LAN cabling within the laboratory.

Figure 6 shows the structured LAN cabling of Illumina NextSeq 1000 and iSeq 1000 sequencers, and Figure 7 shows the structured cabling within the room to enable internet connection in the sequencers and within this area.

Figure 6. LAN Cabling of Illumina NextSeq 1000 and iSeq 100 sequencers

Figure 7. Structured cabling for the internet connectivity of the sequencers and computers in the laboratory

4 Testing of internet connectivity of sequencers and workstations

This section shows the tests performed to check the internet connectivity of the sequencers and workstations.

As mentioned in the previous sections the structured cabling in the sequencers and laboratory was put in place to enable internet connectivity, as evidenced in Figures 8-10.

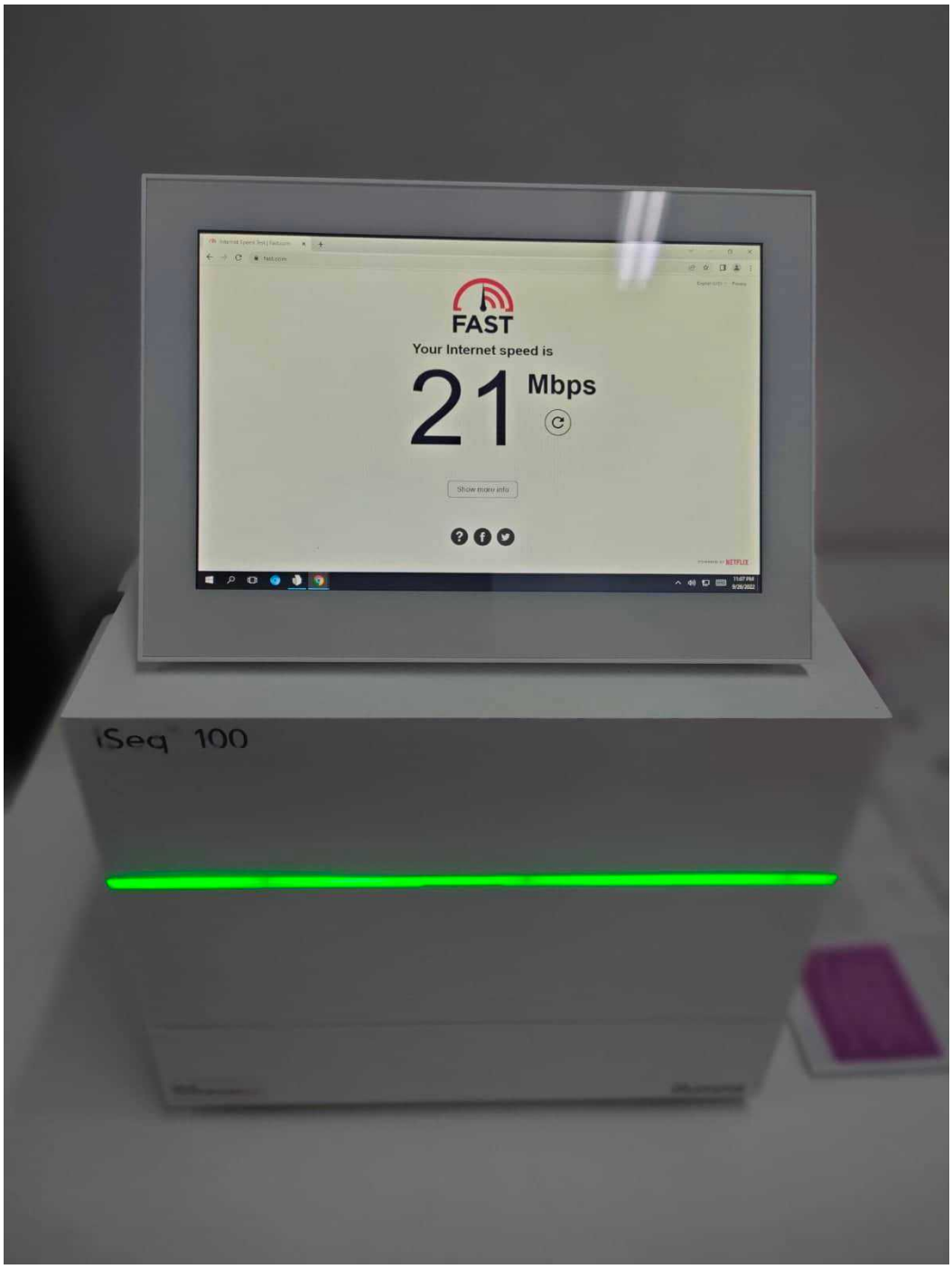

Figure 8. Illumina iSeq 100 sequencer showing internet connection speed during a test

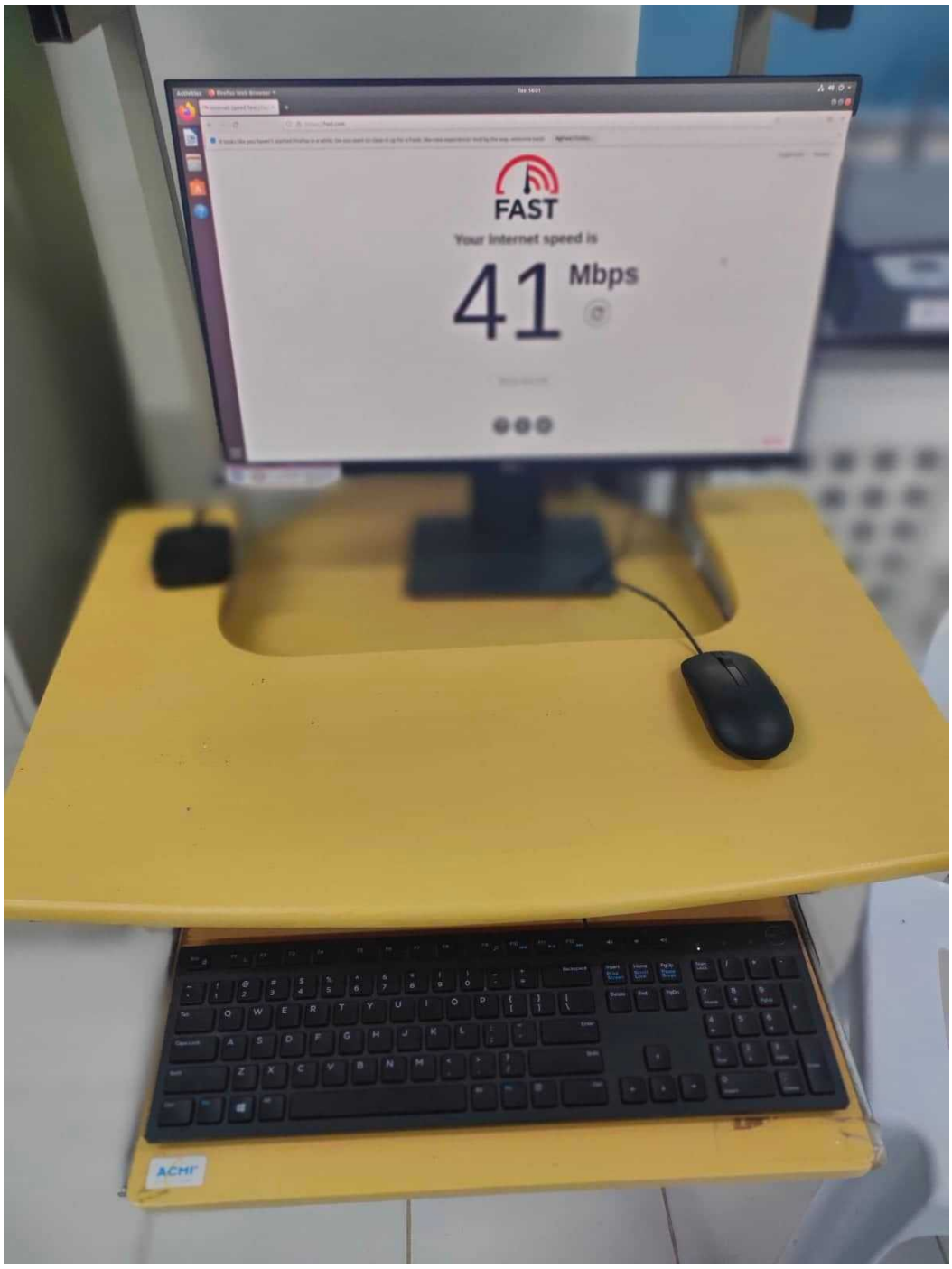

Figure 9. Computer within the laboratory showing internet connection speed during a test

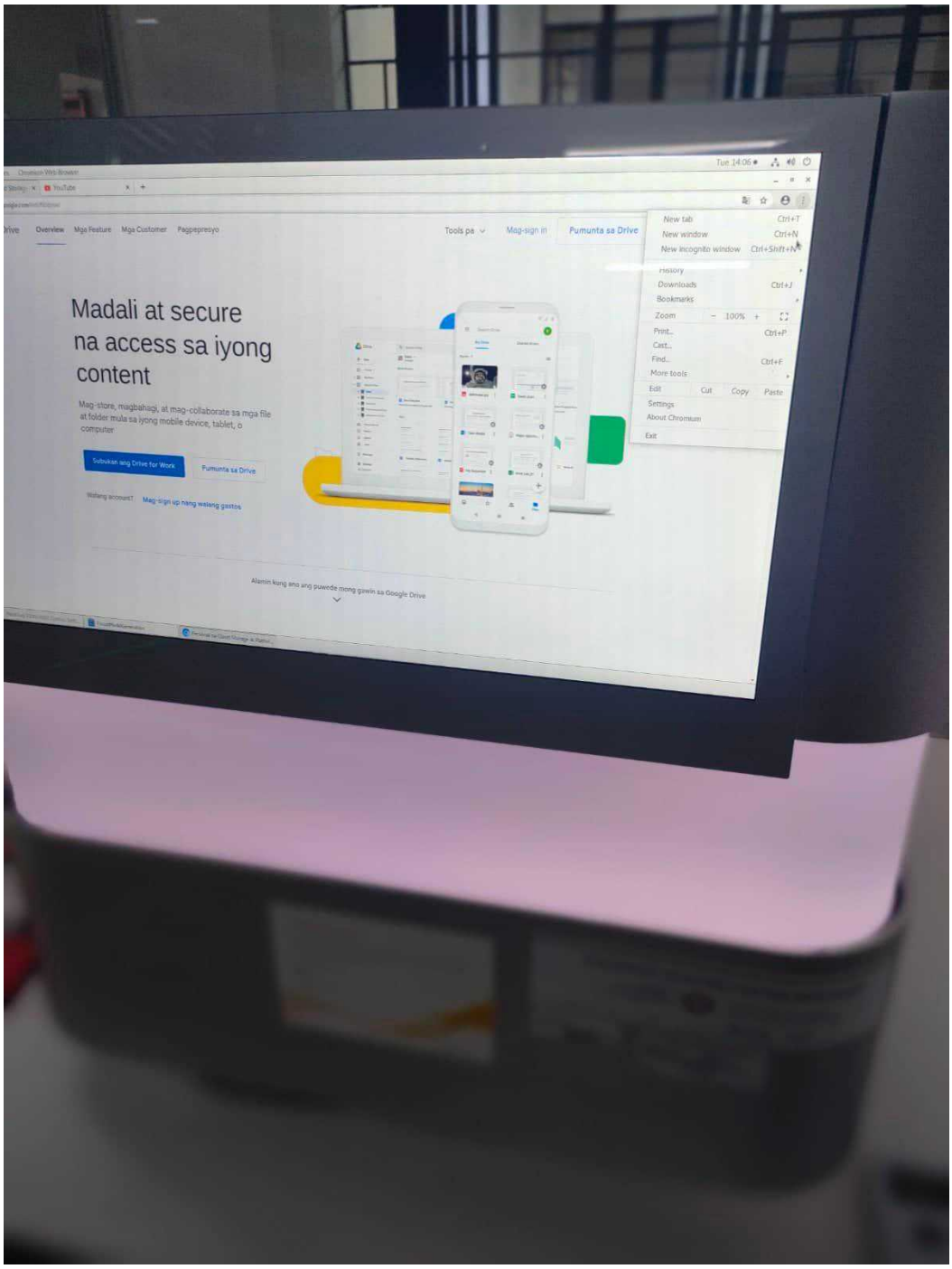

Figure 10. Illumina NextSeq 1000 sequencer capable of accessing internet

5 Procurement of RAM expansions and external hard drives and installation of the RAM expansions

This section present the procurement of RAM expansions and external hard drives, and the installation of the procured RAM expansions.

Figures 11 and 12 show the procured external HDDs and RAM, which would augment current storage and memory needs. Figure 13 shows the installation of the RAM expansion to extend the memory of the current workstations.

Figure 11. Procured external HDDs and RAM expansion

Figure 12. Procured RAM expansion

Figure 13. RAM expansion being installed in one of the current bioinformatics workstations