



MISSION REPORT - Rwanda

21 - 25 November 2022

*Second training mission
in the innovative 3D CAD/CAM Technology Department
at HVP Gatagara Orthopedics & Rehabilitation Hospital in Nyanza*

The Mission

From November 21-25, 2022, SwissLimbs organized the second training mission in the innovative 3D cad/cam technology department at HVP Gatagara Orthopedics & Rehabilitation Hospital in Nyanza, Rwanda in which occasion an event of the launch of the technology was held seeing the importance at a country level, with the presence of the Ministry of Health of Rwanda, the director of the United Nations Development Program – Rwanda and the director of HVP Gatagara.

Between this and the first training mission, SwissLimbs and the OP team at HVP Gatagara had the opportunity to exchange some technical aspects and cases virtually, this is now feasible thanks to the 3D technology that facilitates and enables the transmission of 3D files / images and protocols through the web in a very easy and quick way. The same team of four orthopaedics technicians, all working at HVP Gatagara Orthopaedics & Rehabilitation Hospital in Nyanza, participated in the training. The invitation to the 3D training was extended to these selected technicians so that their performance and output during the week would be optimal aiming to their independency in this technology.

Now that the orthopaedics technicians are starting to master the technology, they will also be responsible for imparting training to their colleagues at other orthopaedics workshops in the region.

Three patients were visited during this training. Patient case histories were also carefully selected so that the training program on the use of 3D cad/cam technology could be best implemented. Thus, the training focused on the creation of prostheses, two trans-tibia (below knee amputees) and one trans femoral (above knee amputee), although of course 3D technology can also be used for the fabrication of almost all type of prostheses and orthoses.

This mission was attended by President Filippo Nishino and senior orthopaedic technician Hervé Schmidt. At the last day an important event was held by the above-mentioned representatives to bring awareness at country level seeing that Rwanda is benefitting and keeping up with digitalizing the orthopaedic sector thanks to this technological transfer program.



FOCUS ON THE EVENT

3D Computer Aided Design and Manufacturing Technology Launch

Concept Note

Globally, access to prosthetic care where is limited. The World Health Organization estimates that 30 million people need prostheses and orthotics. Yet, fewer than 20 percent of the people in need have access to them, and more than 75 percent of developing countries do not have a prosthetic and orthotic training program in place. Therefore, this leads to limited clinical coverage of patients. According to the most recent report by the National Council of Persons with Disabilities in Rwanda, the estimated number of needed prostheses and orthotics in Rwanda is 42,458 devices.

The production of prosthetics and orthotics in Rwanda started in 1962. Initiated by Father Joseph Fraipont NDANGIJIMANA, He founded HVP Gatagara, a center that assists persons with disabilities by providing orthopaedic care, assistive technology products, physiotherapy, community-based rehabilitation, and inclusive education for persons with disabilities. Currently, HVP Gatagara has opened 5 branches in Rwanda and two centres among the five provide prosthetic/orthotic care, notably: HVP Gatagara Nyanza and Gikondo. In line with UNDP's continuous efforts towards inclusive digital transformation, UNDP Rwanda Accelerator Lab has been working with HVP Gatagara to establish a 3D Computer Aided Design and Manufacturing (3DCAD/CAM) technology in collaboration with SwissLimbs, a swiss non-pofit organization specialised in orthopaedic projects, to improve access to quality prosthetics and orthotics in Rwanda, and significantly reduce the processes it takes to produce artificial limbs compared the existing manual standards that were used before.

This partnership was established to cement UNDP's 2030 Agenda for Sustainable Development and the principles of universality and equality underlined by the "leaving no one behind" commitment.

Through UNDP support, modern and innovative technology machines in 3D CAM/CAD have been provided and installed at HVP Gatagara and a series of trainings to 4 local technicians have been conducted to ensure local technicians are well equipped with the right skills and tools to use the machines.

Training times

On Monday, November 21st, the orthopaedic technician Hervé Schmidt began by reviewing the last 3D models performed by the HVP Gatagara team. After clarifying the challenges, they had and the doubts the team started to visit 3 new patients, to whom SwissLimbs donated 2 below-knee and one above-knee prosthetic limbs, so that he could show the orthopaedic technicians-in-training in a practical way, step-by-step how to go through the entire cycle from scanning until production.

Firstly the 2 below-knee patients were scanned and the above-knee measures were taken. The scanning was also accompanied by taking manual measurements, after that 3D modelling started. All the orthopaedic technicians had the opportunity to practice scanning and modelling.

On Tuesday, November 22nd, it was the turn of milling and additional 3D modelling training. Hervé Schmidt first gave theoretical training on the use of the system, while also giving a practical demonstration of how to model a trans-tibial and trans-femoral prosthetic limb with the software. The technicians were then divided into two groups to learn how to practically use the program. On Wednesday, November 23rd, all three devices were produced and fitted to the patients with success. On Thursday, 24th, the orthopaedic technicians-in-training continued practicing 3D. All trainees did the entire process from scanning, to modifying until milling again and finally also scanned a third patient in need of an ortho-prosthesis.

Finally, on Friday, November 25th, they thermoformed the models for splint and corset fabrication. This was followed by the delivery of certifications for the technicians-in-training.



Presentation of certificates

At the end of the training, the orthopaedic technician Hervé Schmidt and the SwissLimbs President Filippo Nishino presented the certificates to the technicians in training, **at the presence of UNDP Rwanda representatives.**

*Congratulations to all for this first major milestone in the export of 3D technology to the Global South by SwissLimbs!
A first step that will soon become the progenitor of a long march.*



*The 4 participants:
Jean Pierre Hakizimana,
Aline Niyonkuru, Emile Niyonkuru,
Isaac Rukundo*

The SwissLimbs technical trainer

Hervé has been working in the orthopaedic branch since 1996 and is currently employed as an orthopaedic technician at Ortotecnica SA in Lugano. He graduated in 2001 by attending courses at the Ecole Professionnelle EPSIC in Lausanne and has a particular passion for information technology applied to the orthopaedic branch. Hervé is a volunteer for SwissLimbs and the mission to Rwanda is his first mission to Africa.



The beneficiaries



Gasana Delice is 9 years old and lives in Nyamagabe district together with one brother and one sister. She is a primary school student: she really enjoys learning English and would like to become a doctor. She suffers from a below knee amputation of her right leg, a condition that Delice has had since one year age due to a motorcycle accident. Her prosthesis is becoming old and therefore, during the mission, she was fabricated a trans-tibial leg prosthesis through the 3D cad/cam system.



Nkurunziza Hertier is 18 years old and lives in Nyamagabe district. He lives together with his parents, and his 5 sisters and 3 brothers. He studies at primary school at 6th year, he is a good student and would like to become a health worker or doctor. He has suffered from an above knee amputation of his right leg due to a car accident 4 years ago. His prosthetic limb is worn out and now he received during the SwissLimbs mission his second trans-femoral prosthesis through the 3D cad/cam system.



Akarabo Naomie is 9 years old and lives in Ruhango, Ruhango District, north of Nyanza District. She lives together with her parents, and her 3 brothers. She studies at primary school in HVP Gatagara, is a good student and her dream is to become a doctor. She has suffered from an below knee amputation of her right leg, when she was 4 months old, due to an accident, where a pig bit her leg. She was brought to the hospital but the condition worsened and she had to undergo an amputation. During the mission, she was fabricated a trans-tibial leg prosthesis through the 3D cad/cam system.



Tumusabimana Luice is 20 years old and lives in Nyamagabe District. She studies at primary school in HVP Gatagara. She has a congenital deformation of her right leg which is significantly shorter than the left side and needs a corrective ortho-prosthesis. During the mission, we had time only to scan and produced the 3D model in order to fabricate her a device, which will be delivered after our departure directly by the technicians of the centre.

