IPRO 309
Orthotics and Prosthetics in Latin America

H.O.P.E

Human Orthotic and Prosthetic Education

agenda

- IPRO 309 Background
- Project Goal
- Team Organization / Deliverables
- Subgroup Goals
  - Technical
  - Business
  - Impact
- Results
- Recommendations
- Summary
- Acknowledgements

H.O.P.E
Human Orthotic and Prosthetic Education

background

agenda

•Orthotic: Devices that support or correct musculoskeletal deformities/ abnormalities of the human body.

•Prosthetic: Artificial extension that replaces a missing body part.

• 2.5 million people in need of Orthotic and Prosthetic care in Latin America

• IPRO 309 started in spring 2006

• Only 50 International Society for Prosthetics and Orthotics (ISPO) Certified Orthotic and Prosthetic practitioners in Latin America

• Only 1 ISPO accredited program in Latin America (Don Bosco University, El Salvador)

• Centro Don Bosco, Laboratorio Gilete

H.O.P.E
Human Orthotic and Prosthetic Education

IPRO objective

background

Orthotic Services

orthotic services	clinical facility	shop
"off the shelf"	○	X
"custom made to measurement" (not available in Colombia)	X	○
"custom fabricated"	○	○

H.O.P.E
Human Orthotic and Prosthetic Education

IPRO objective

background

- Investigate possible alternative production methods for temporary cost-efficient Orthotic and Prosthetic Devices

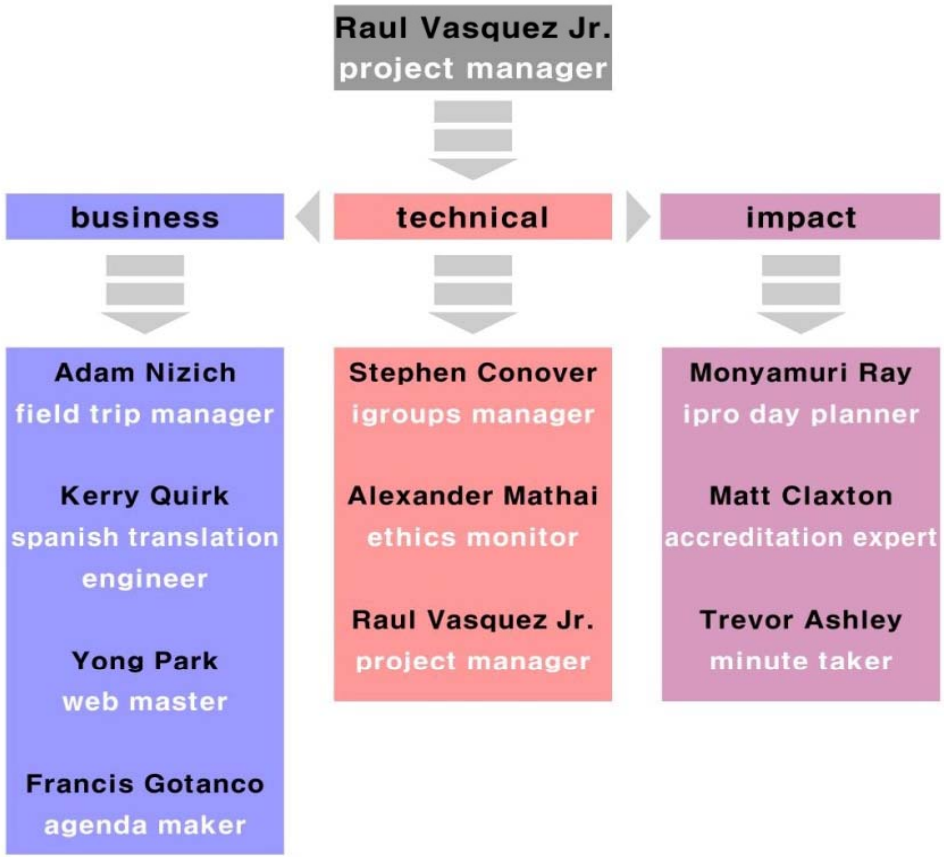
- Create a business model to be considered by an Orthotic and Prosthetic facility in Bogotá, Colombia to provide custom made to measure lower limb orthotics

- Design self-sustaining funding sources for the technical school at Centro Don Bosco

- Inquire into the social and economical impact created by future improvements in Orthotic and Prosthetic availability and awareness in Latin America

H.O.P.E
Human Orthotic and Prosthetic Education

team organization



H.O.P.E
Human Orthotic and Prosthetic Education

sub group goals

team orga

Technical

•To develop feasible method for fabrication of temporary orthoses. The group will also develop a product line for the business model and understand all other technical aspects of Central Fabrication.

Business

• To develop a model for implementation of a Central Fabrication program at Centro Don Bosco. This program will cover organization, management, work study program, marketing, etc.

Impact

• To focus on promoting Telemedicine in Colombia with local clinics. The group will also research methods of promoting orthotic and prosthetic care and careers in Latin America

H.O.P.E
Human Orthotic and Prosthetic Education

s technical sub group goals

temporary orthosis

- The production of a temporary orthotic onsite could allow the patient to receive immediate orthotic care.
- This would also allow the patient to have an orthosis while waiting for the delivery of the permanent orthosis.

Prototype 1:

Soccer shin guards – Some shin guards can be heated and molded to fit.

H.O.P.E
Human Orthotic and Prosthetic Education

s technical sub group goals

temporary orthosis

Prototype 2:

Friendly Plastic – small beads which are heated in water and create a moldable plastic.

This would allow for a more freeform method of orthosis fabrication. However, this method proved infeasible.

H.O.P.E
Human Orthotic and Prosthetic Education

technical sub group goals

central fabrication

Central Fabrication can be implemented to handle the heavy workload of production for orthotics that small clinics cannot. The program will be the first of its kind in Bogotá.

1) A patient meets with a clinician and a orthometry form is filled out listing the complete measurements of the part of the body needing the orthosis.

2) The measurements can be called in, faxed, or e-mailed over to the Central Fabrication Lab.

3) The orthosis is delivered to the patient in a few days. Generally, for a typical knee ankle foot orthosis the turnover time can be as low as 2-3 days.

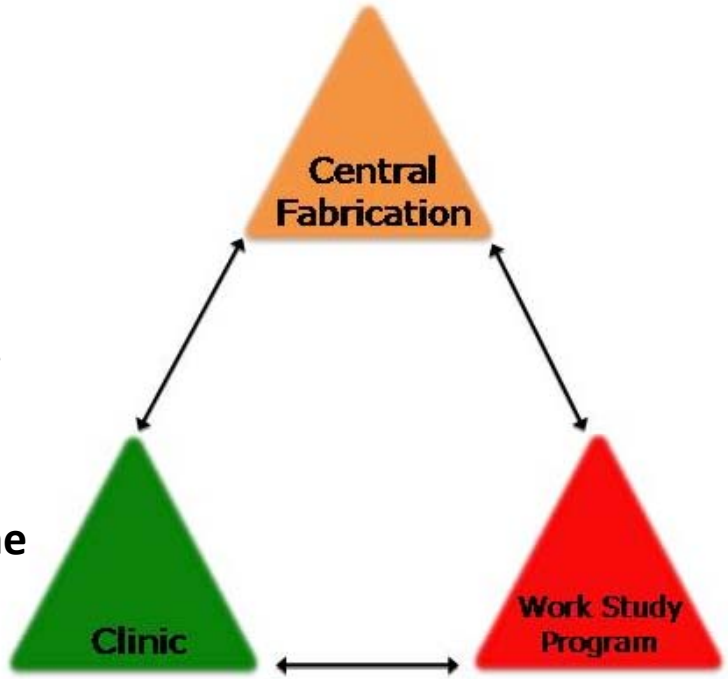
H.O.P.E
Human Orthotic and Prosthetic Education

business | technical | deliver

work study program

- Experience for Students
- ISPO Certified Training
- Production of Quality O&P Products

This flow chart to the right shows how the clinic, work study program, and central fabrication would interact with and depend on each other



Central Fabrication Project Overview

H.O.P.E
Human Orthotic and Prosthetic Education

business

technical

deliver

pay & experience

- Funds earned from sale of made to measurements O&P Products
- Students earn pay for work
- Part of Financial Aid Package

H.O.P.E
Human Orthotic and Prosthetic Education

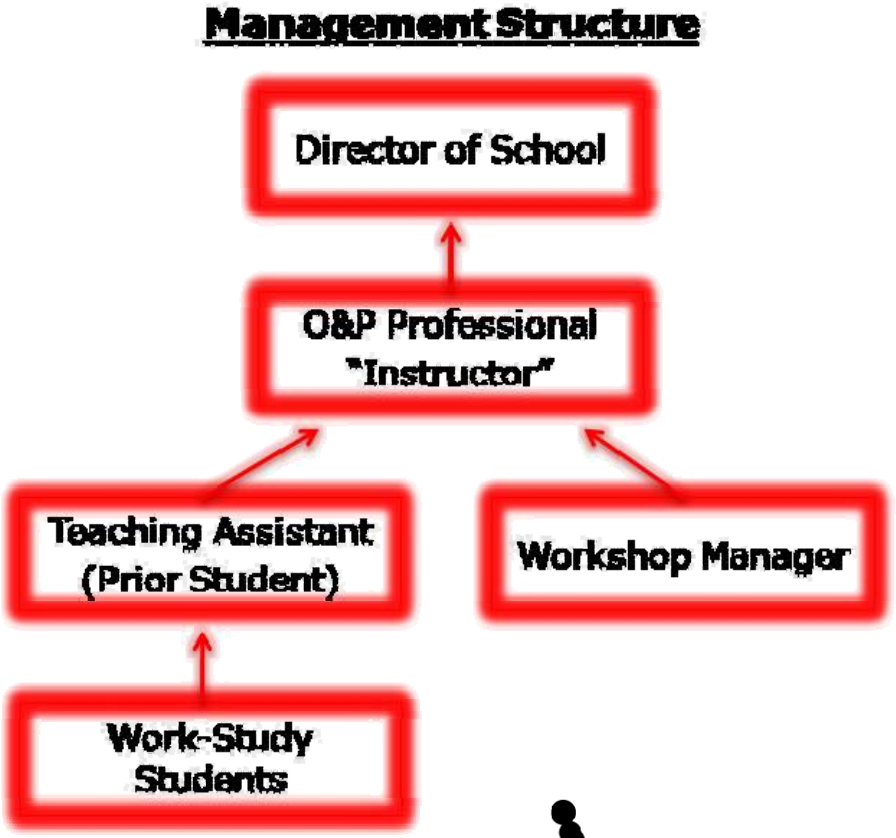
business

technical

deliver

program management

- Focus on Quality Control
- Review of work
- Cash Flow Management



H.O.P.E
Human Orthotic and Prosthetic Education

ult | **impact** | business | technica

make o & p as profession:

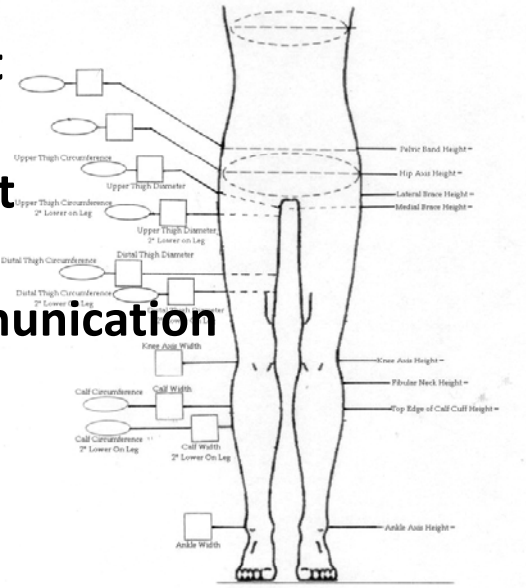
- Expected Orthotics use by 2020=7.3 million (Approx)
- Expected Prosthetic use by 2020=2.4 million (Approx)
- Out of 5484 Practitioners , 1100 are 55 or older

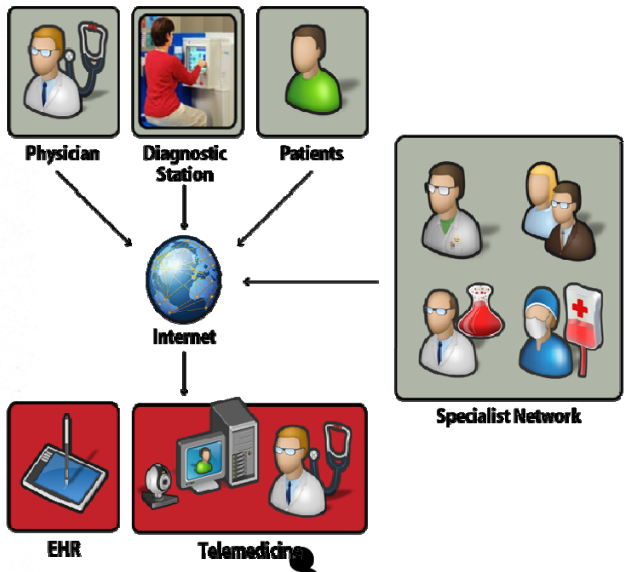
H.O.P.E
Human Orthotic and Prosthetic Education

ult | **impact** | business | technica

telemedicine

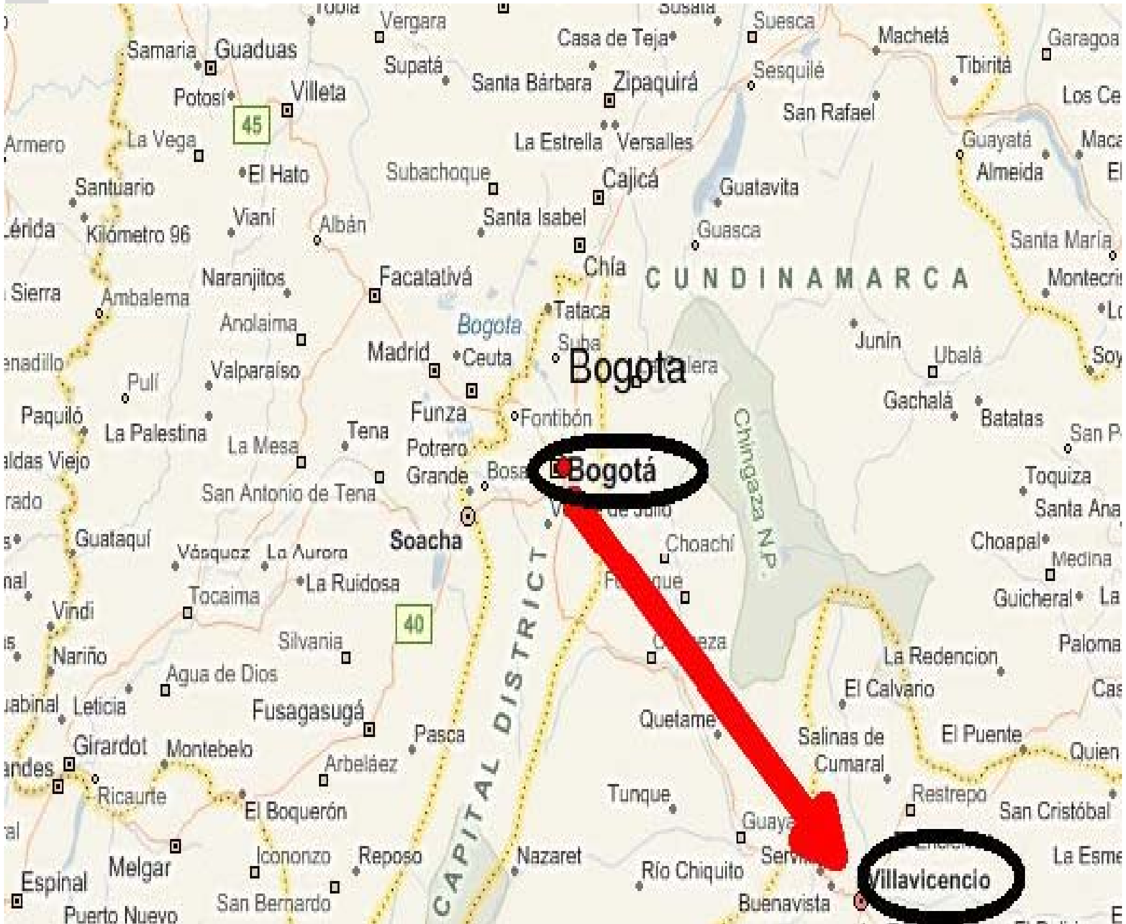
- "Remote applied medicine", including diagnosis, treatment and education
- Reduces Cost
- Time efficient
- Global Communication





H.O.P.E
Human Orthotic and Prosthetic Education

Case Study-Clinic in Villiavicencio

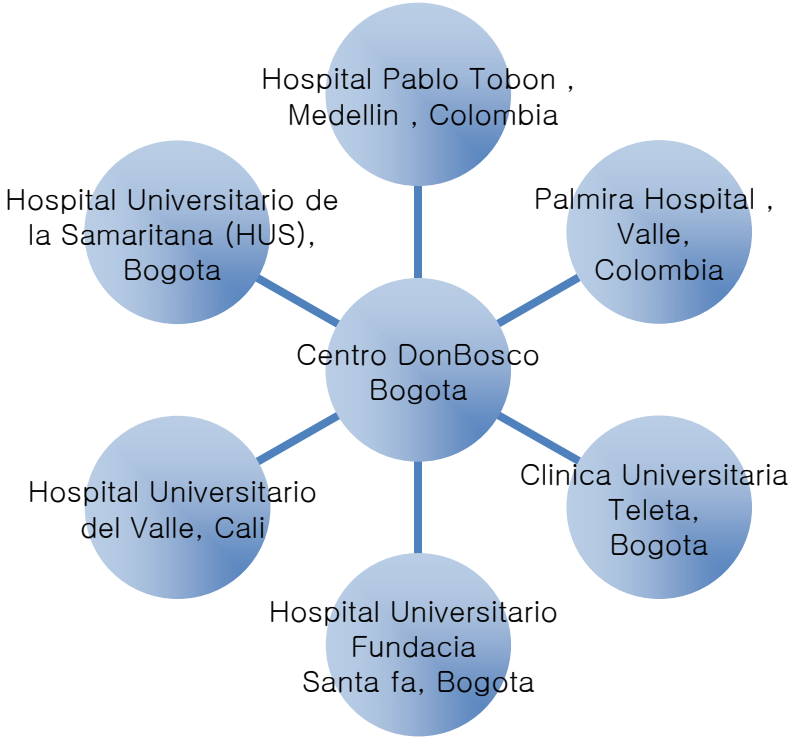


1.Integrated with Laboratorio Gilete

2.Once a month visit fo r outpatients.

H.P.E
Human Orthotic and Prosthetic Education

ult **impact** business technica



Market Analysis for Central Fabrication for Centro Don Bosco with clinical facilities around Bogotá.

H.O.P.E
Human Orthotic and Prosthetic Education

recommendation

- Further exploration of thermoplastics materials for fabricating a temporary orthoses

- There needs to be more work done in revising and designing a beta prototype of the Central Fabrication program

- Orthotics and Prosthetics education in Latin America, is in need of a revolution. There is still only one third of patients getting the proper orthotic and prosthetic care.

H.O.P.E
Human Orthotic and Prosthetic Education

?

summary

acknowledgement

H.O.P.E

Human Orthotic and Prosthetic Education

acknowledgement

Kevin Meade – Faculty Advisor

Dr. Gomez - Director, Laboratorio Gilete

Jennifer Keplinger – IPRO Program Coordinator

Tom Jacobius – Director of IPRO

Thomas Gavin, C.O. – BioConcepts, Inc.

H.O.P.E
Human Orthotic and Prosthetic Education

H.O.P.E
Human Orthotic and Prosthetic Education