2016 PTI Convention
Long Beach, California

Technical Session 8

PT Foundations

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TENDON - New Educational Free Software for Post-Tensioned Structures

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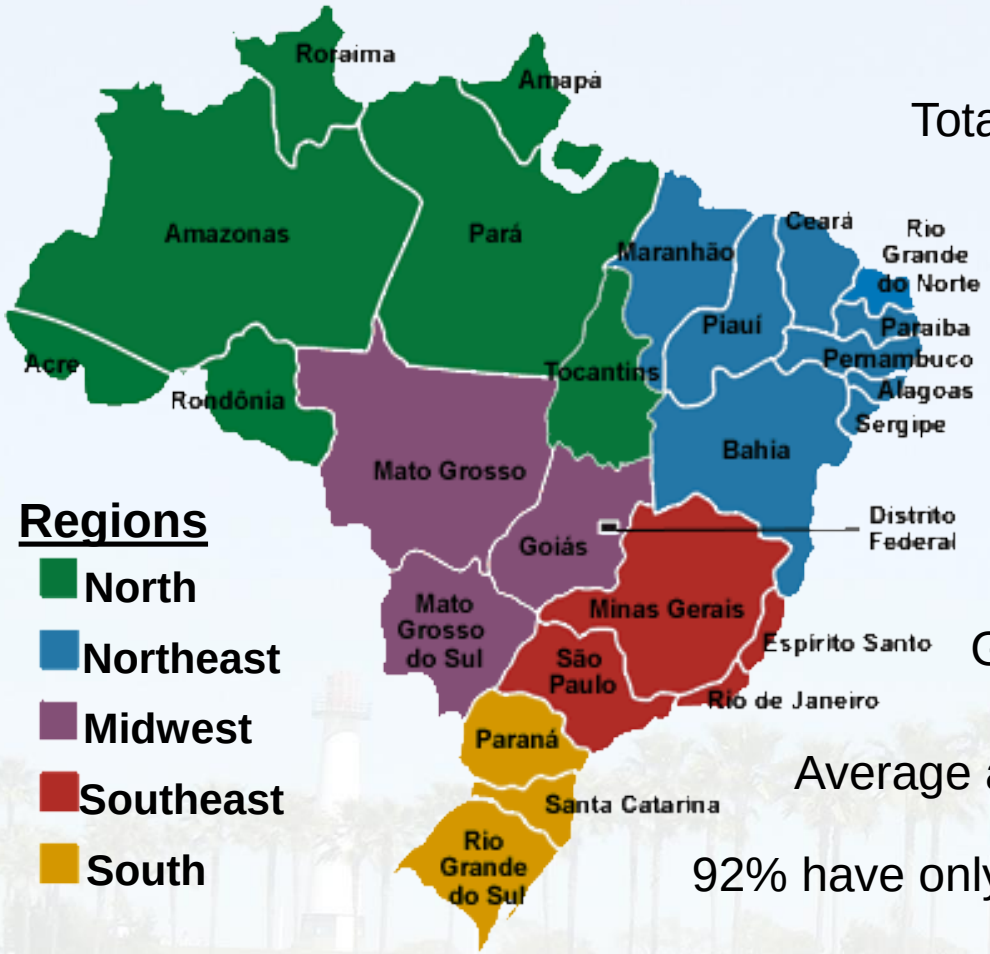
About Brazilian Civil Engineering



Regions

- North
- Northeast
- Midwest
- Southeast
- South

Demographic Census 2010

Total Resident Population = 190,732,694
Territorial Area = 8,515,767 Km^2

Number of engineers = 1,419,890

Number of civil engineers = 355,449

54% of civil engineers are in Southeast.

Gender = 12% Female and 88% Male

Average age of active professionals = 40 years

92% have only graduate course in civil engineering

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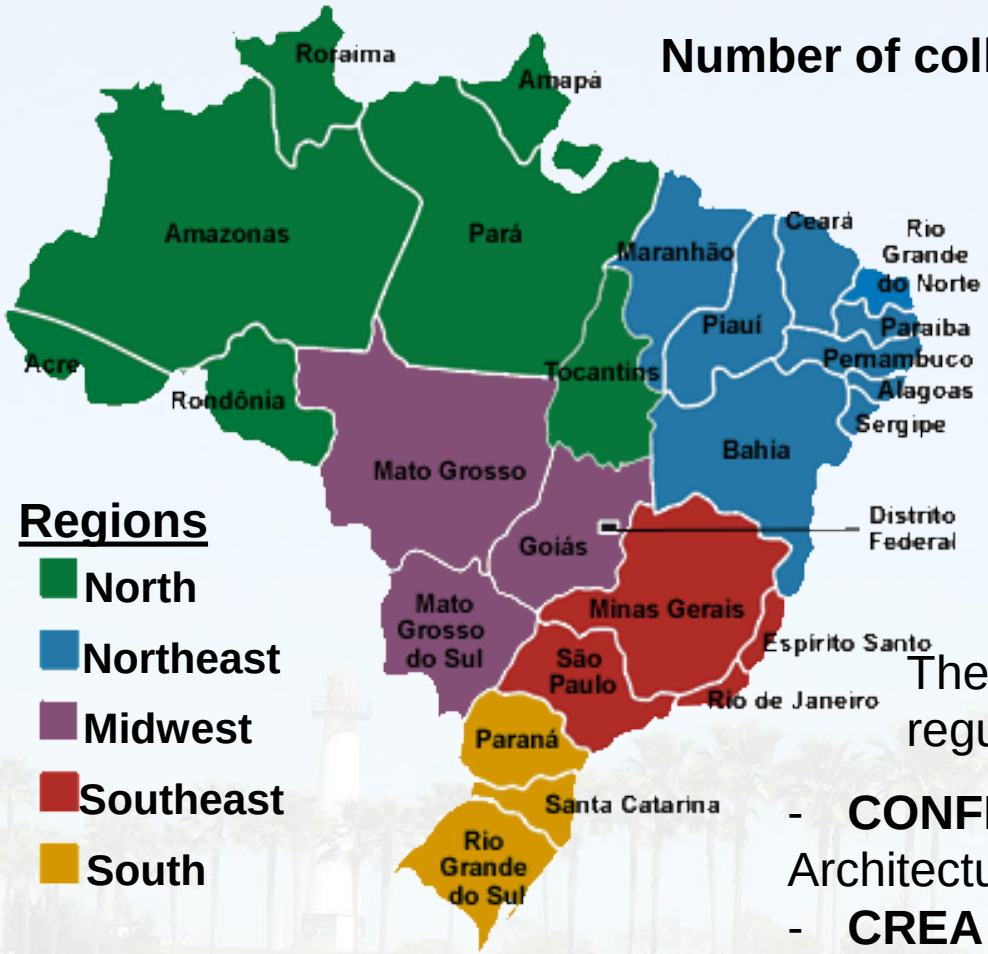
About Brazilian Civil Engineering



Regions

- North
- Northeast
- Midwest
- Southeast
- South

Number of colleges with civil engineering course:

2000 = 114 colleges

2015 = 357 colleges ⬆

Over the last years the average of new civil engineers is around 20,000/year.

But there is still a large deficit of civil engineers in Brazil.

There are two principles that organizations regulate the standards for civil engineers.

- **CONFEA** = Federal Council of Engineering, Architecture and Agronomy
- **CREA** =Regional Council of Engineering and Agronomy

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Introduction

Instead of only storing the information, it is necessary that people learn to manage information, distinguishing those that are really important to them. This new phase has received many labels, such as **"knowledge society".**

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Introduction

In Brazil there is a gap in the education of civil engineering because of the lack of integration between the content. **Knowledge is acquired disintegrated form**, often through courses that fail to show the student the day by day profession.

The government guidelines have the main characteristic a direction and **not laying on the courses.** In this sense, it leaves open the definition and the number of engineering areas to be defined by the colleges.

We have observed in the civil engineering course an **emphasis on basic areas such as physics and chemistry as well as the specific content of reinforced concrete, prestressed concrete and geotechnics is deficient.**

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Learning Styles

People learn in different ways and styles. **Each person prefers a way of thinking** and understand certain subject and that ultimately **interfere with their learning.**

The main dimensions are:

-Active / Reflective

-Sensory / Intuitive

-Visual / Verbal

-Sequential / Global

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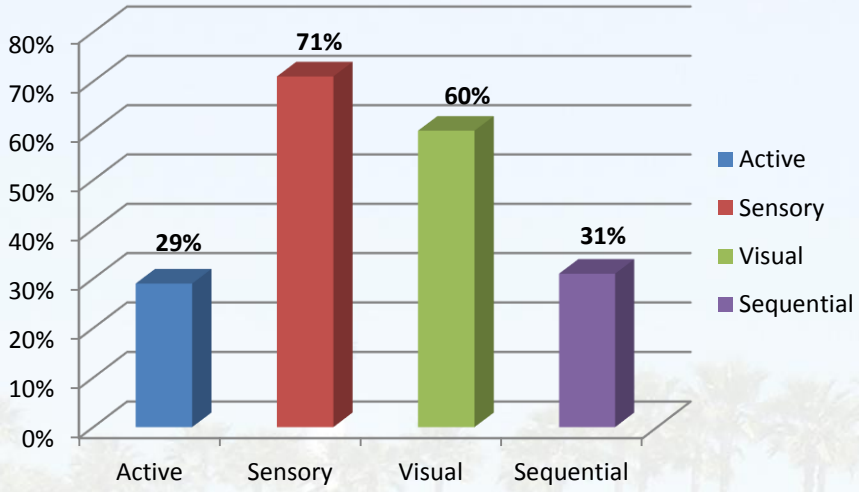
Learning Styles

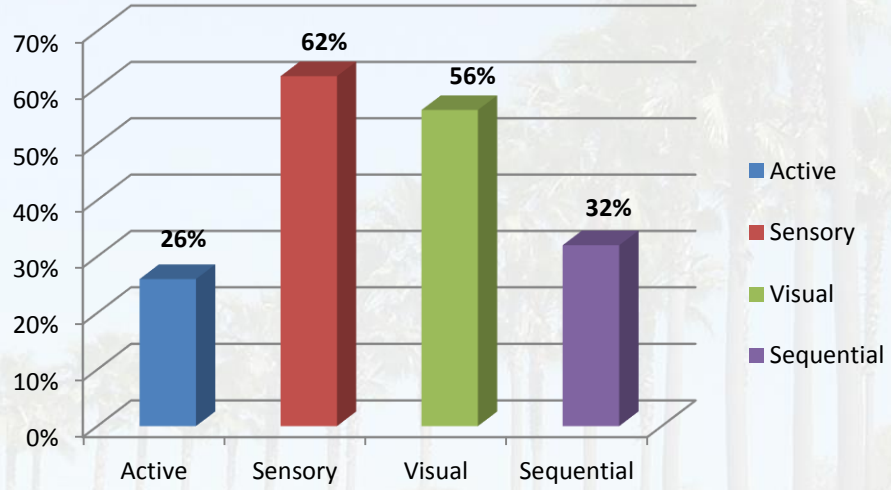
Professor Maria Hippert did pioneering work on **learning styles for civil engineering students** in which it was possible to obtain the profile of each student.

Adding to the number of students with high and moderate preference for each dimension considered the results below were obtained.



2007

37% Female
63% Male



2009

44% Female
56% Male

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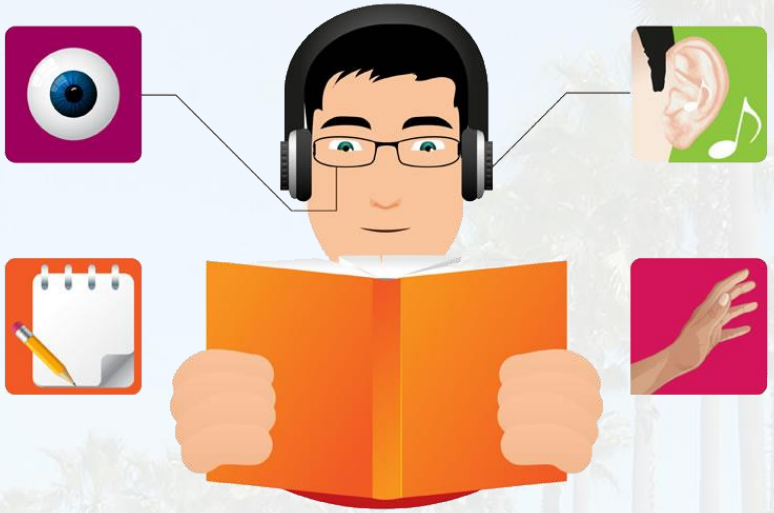
Learning Styles

Some features of the evaluated students.

Active - Include discussing certain subject, applying or explained to others; They want to test and see its operation. They prefer group work.



Sensory - Prefer to solve problems through well-established methods, without many complications and surprises. They tend to be patient with the details and more easily memorize the facts making reports, they are careful practical.

Visual - remember better information when they see photos, diagrams, flowcharts.

Sequential - learn best through linear stages, each a logical step.

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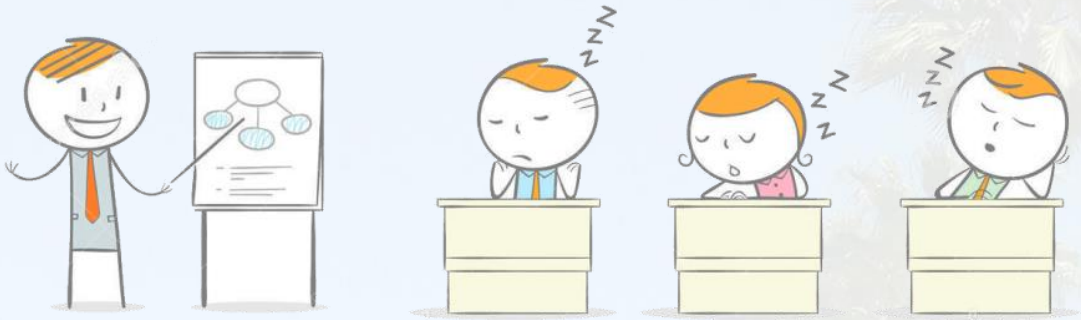
Why Create an Application

It is essential these days to **promote a dynamic and interactive environment** that motivate student interest for learning, giving you greater **involvement with content, essential fact for construction of knowledge.**



Fighting evasion: The engineering knowledge area showed an average 21% evasion. In public universities, the **average evasion is 30%.**

Many factors are responsible for the evasion but **34% are lack of motivation for the study by the use of traditional practices of teaching and learning difficulties.**

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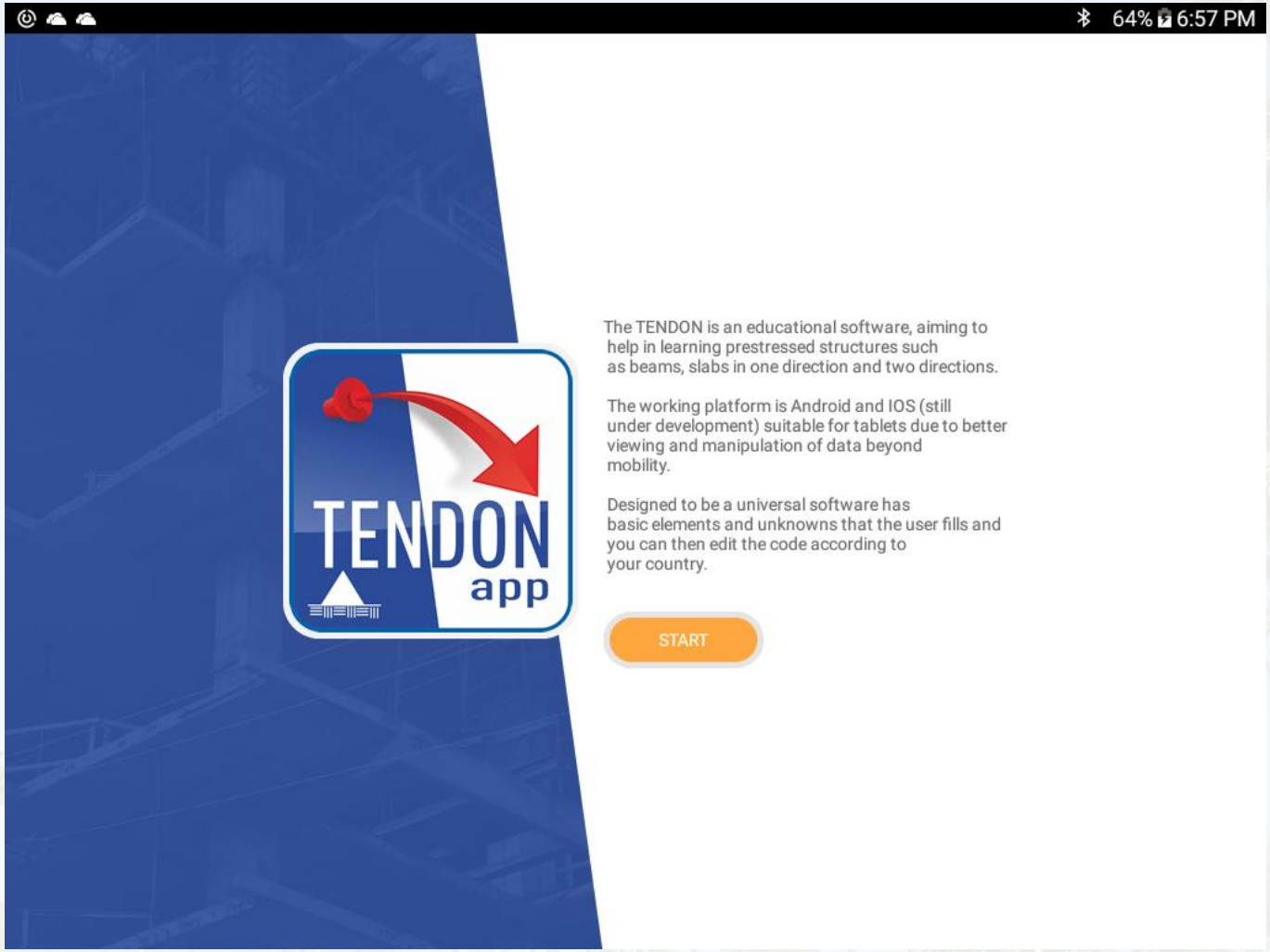
About Tendon



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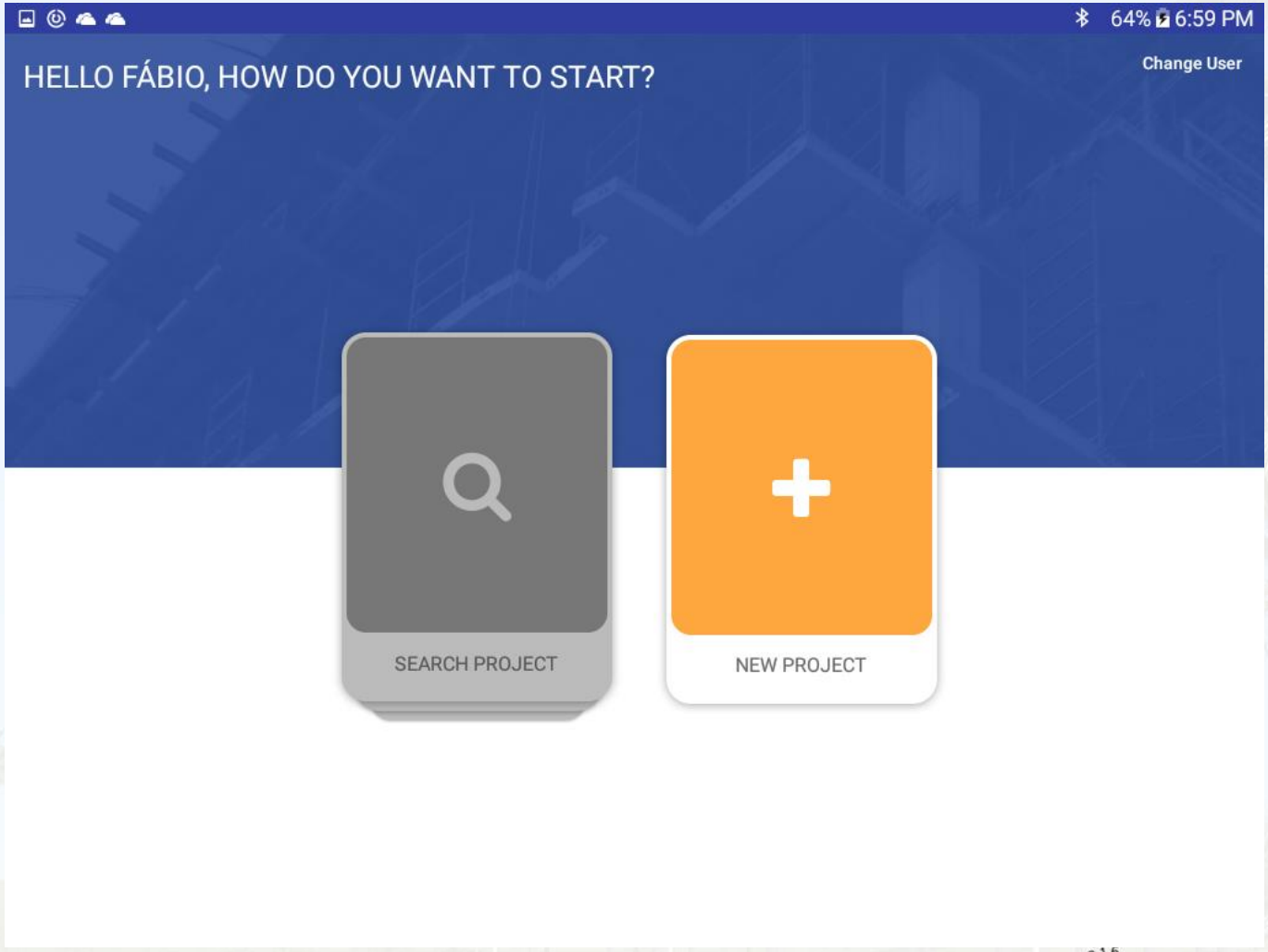

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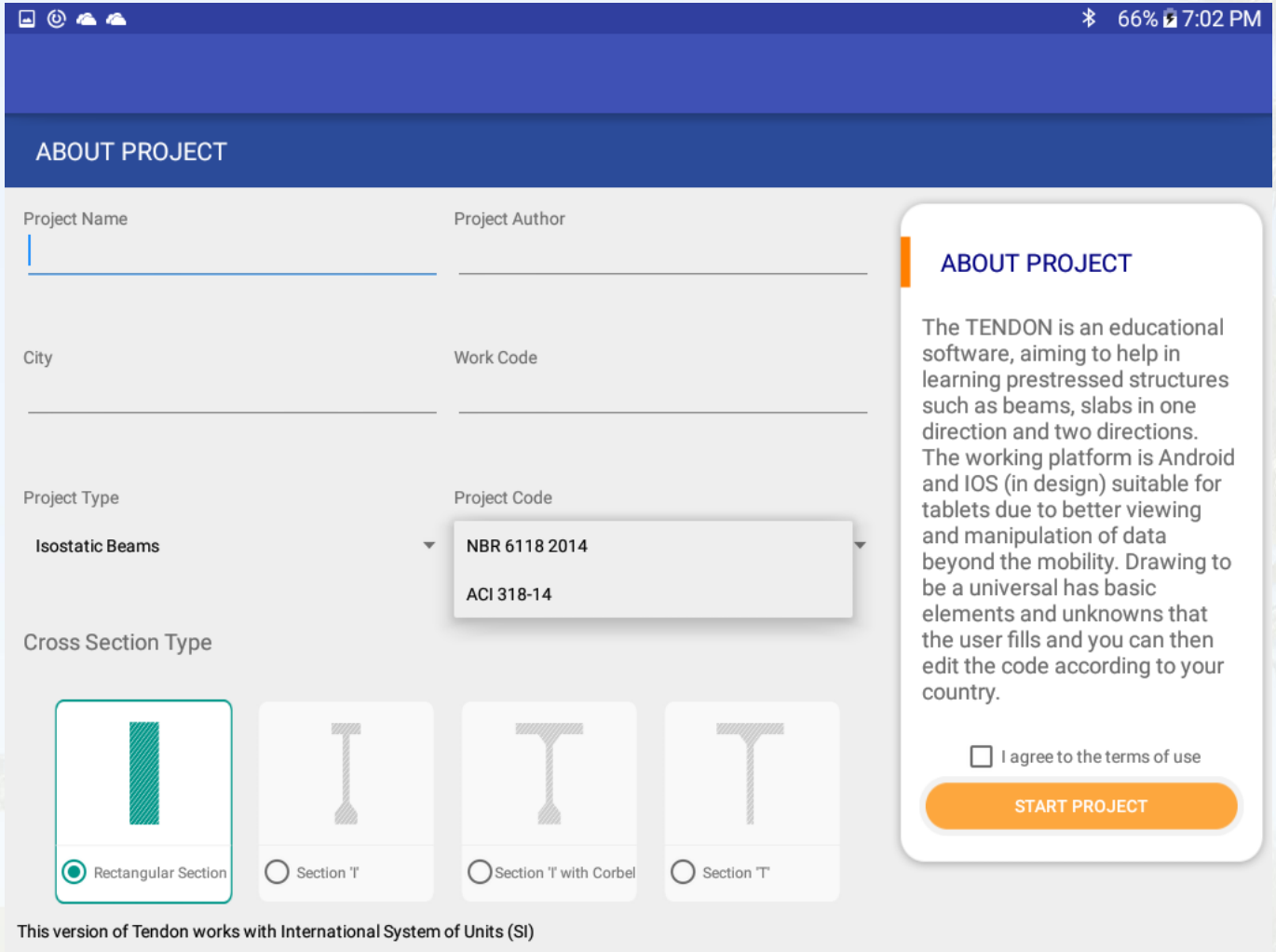

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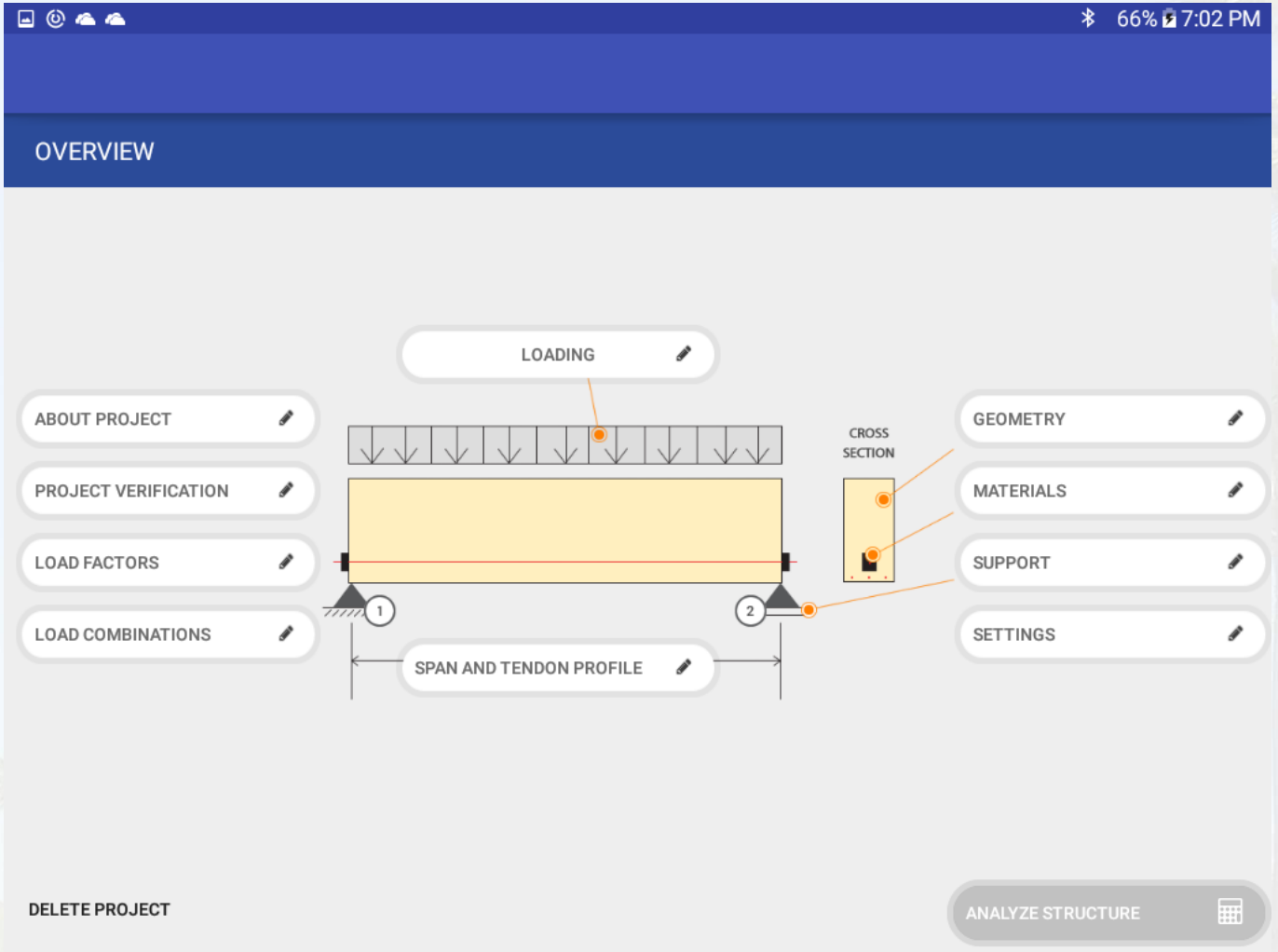

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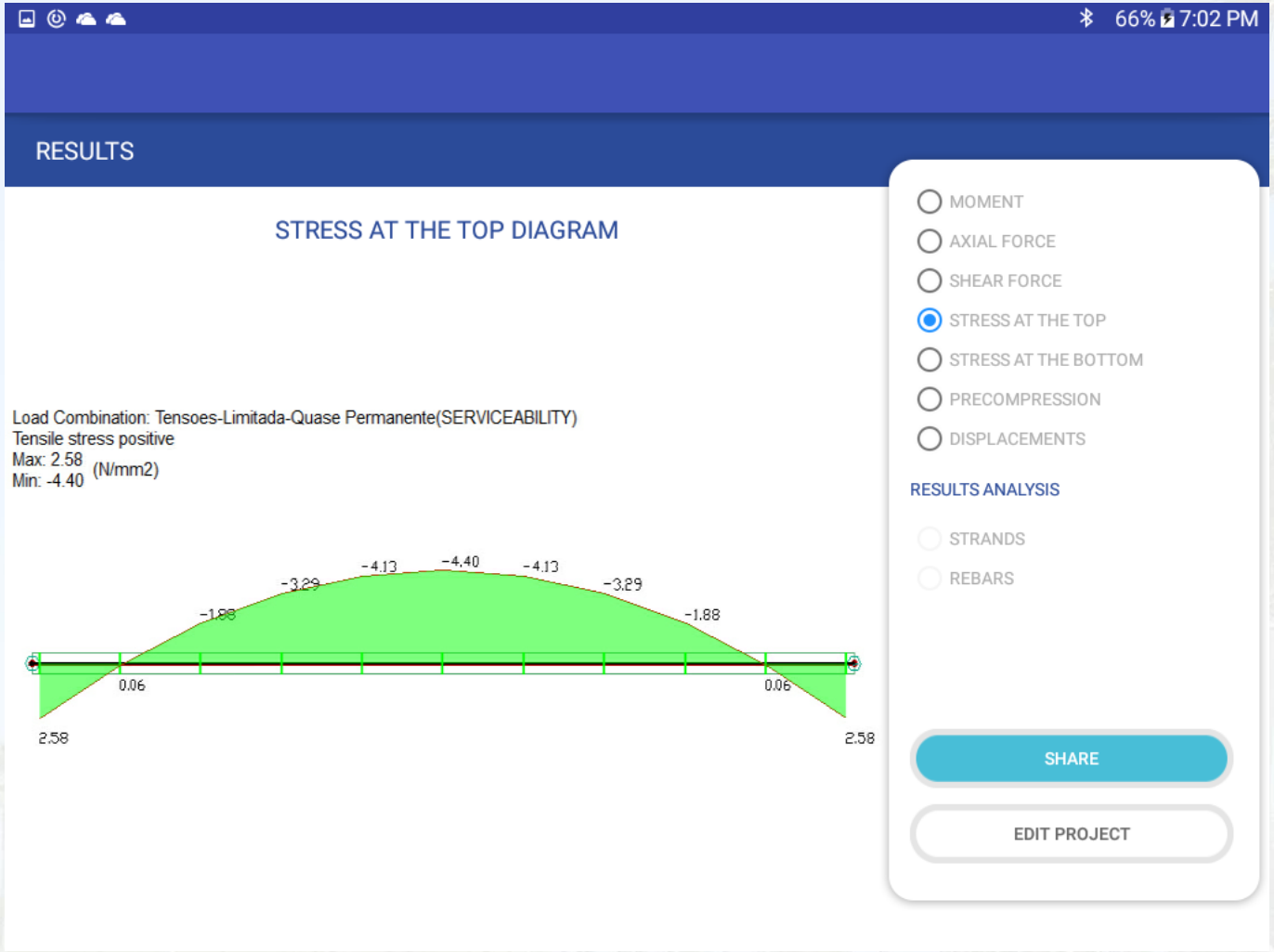

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Questions & Answers

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Obrigado!

Thank you !!!

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