Welcome
The Tech for Global Good Design Challenge
Black Rhinos
**Introduction**

Terms to know:

**The Tech for Global Good**

The Tech for Global Good is an initiative that will create the next generation of innovators ready to tackle the toughest challenges facing our planet.

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**Smart Parks**

Smart Parks combines conservation with innovation and technology to protect some of the world’s most threatened animal populations.

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**Innovation Design Process**
Design Challenge
You and your team run an animal conservation foundation based out of San Jose that develops innovative technology and policy plans to help save endangered and threatened animals. Your team will use your skills as communicators, researchers, collaborators and creative problem-solvers to assist governments and communities in developing plans to help create more sustainable environments for animals and humans.

1. Research the problem:
   - Understand the design challenge.
   - Read the background material.

2. Brainstorming:
   - Write each idea (text/image/both) on a sticky note and put it on the whiteboard.
   - Be creative! Think of as many wild ideas as possible.
   - Develop questions and search out answers.

3. Create a solution:
   - Each member shares their sticky notes and post them on the board.
   - Group together similar ideas.
   - Choose a few ideas to focus on or combine into your team’s solution.

4. Refine your solution:
   - Get feedback from peers on your solution.
   - Edit your solution and improve how it addresses the problems your team is focusing on.

5. Design a project and presentation:
   - Get feedback on your solution from others.
   - Please show:
     - The specific problem your team is going to address.
     - Your team’s solution for this problem.
     - Story of how someone is impacted by your work.

What do you already know about rhinos?
Draw or write about your ideas (complete sentences are not necessary).

Designing a solution for the black rhino in the Moremi (More-em-e) National Park and Game Reserve (Botswana) (Bots-wan-uh)
Your team is working directly with the Moremi National Park and Game Reserve to innovate in black rhino conservation. As a company, your team has the ability to create policy and new technologies to help maintain and protect rhino populations in Botswana.

On the following pages you will receive more information about the challenges of protecting critically endangered rhinoceroses. Think about the different issues presented to help inspire your solution. As a company it is okay to design solutions where you collaborate with other organizations and governments, and where you can create new or innovate on current technologies. What will you do to create a change in Botswana that will ripple out into the world?

Changing Savannas
Savannas are large grassy areas with few or sparsely placed trees. Botswana is primarily a desert (70%) with some savannas and forests.

Botswana is currently experiencing changes in their country due to climate change, these changes include:
- Higher temperatures
- Longer draughts
- Changes in rainfall
- Decrease in water overall
All of these changes are leading to a decrease in savannas and an increase in desert regions. There is another pressure on the savannas: humans. Savannas are where most people farm or graze cattle. If the land isn’t managed very carefully, farming and grazing can further damage the savannas.

Black Rhinos
Black rhinos are 1,700 to 3,000 pound mammals that live on savannas and largely eat brush and other plants. Black rhinos are identified by their two horns and prehensile upper lip that helps them grab and chew on leaves and branches.

Rhinoceroses (rahy-nos-er-es) are crucial to protecting the savanna ecosystem. They prevent the overgrowth of scrub plants and small trees, plow the ground through digging, and they have a symbiotic relationship with some species of birds.
There are four subspecies of black rhinos and if all the subspecies were combined there are just over 5,000 total today. Compare that with the 65,000 black rhinos in the wild in 1970. Black rhinoceroses are now considered critically endangered because of the 96% decrease in population over the last 40 years.

There are a number of challenges in helping black rhino numbers rebound, including:
- Predation: this happens infrequently, though sometimes baby rhinos are eaten by hyenas.
- Slow reproduction rate: rhinoceros females will only breed every 2.5 to 3 years while they carry and then raise their young.
- Delicate system: many programs for breeding these rhinoceroses in captivity have failed because they have a body system delicately balanced with their surroundings.
- Poaching: the most significant cause of the decline in black rhinos is from poaching. Poachers kill the rhino to take their horns. The current price associated with the horns on the black market are $60,000 per kilogram.

Moremi Game Reserve

Located on the eastern side of the Okavango (Oak-a-van-go) Delta is the world’s largest inland delta. This 1,900 square mile park was created in 1963 by the Batawana (Bat-a-wan-a) people of Ngamiland (Game-a-land). In 1970, the government took over the park and operations, including: negotiating with outside tourist groups reintroducing animals with conservationist groups, and protecting the animals with the military. However, the Batawana people continue to manage the park and land rights. Through the efforts of all of these groups Moremi Game Park preserves the beauty of the savanna and brings about $6 million dollars of tourist profits to Botswana a year. Currently, the park is home to a wide variety of birds and mammals, including: elephants, white rhinos, black rhinos, giraffe, lions, leopards, hyenas and hippos.

Botswana currently has the lowest poaching numbers of any country in Africa as they use their military to protect natural resources from poachers. It has become a place where conservationists work to breed and protect animals. This helps with the tourist industry as people travel from all over the world to see the pristine savanna and the world’s largest inland delta. However, with the significant decrease in rhinoceroses overall there is concern about how to protect the animals of Moremi Game Park.
<table>
<thead>
<tr>
<th>Persona &amp; Approaches</th>
<th>Technology</th>
<th>Organizations</th>
<th>Opinions</th>
<th>International Approaches</th>
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<tbody>
<tr>
<td><strong>Biologist &amp; Geneticist</strong></td>
<td>- Rhino DNA Index System (RhODIS®) to help plan and breed rhinoceros to maintain genetic diversity.</td>
<td>- Rhino Conservation Botswana is working to support rhino conservation in the Okavango Delta, report.</td>
<td>- There are other species that are more important to protect. The rhino is very difficult to save due to the small herd numbers and sensitivity in environmental changes.</td>
<td>- Pembient makes 3D printed rhino horns to combat the need for 'real' rhino horn. Some are concerned this will increase desire for the product and it is hard to tell the difference between real and fake to stop poachers.</td>
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<tr>
<td><strong>Soldier in the Botswana Defense Force (BDF)</strong></td>
<td>- Tracking skills to monitor rhinoceros from a distance and spot potential poachers.</td>
<td>- Rhino Conservation Botswana works with people from all over Botswana to protect the animals on the savanna.</td>
<td>- Rhinos are considered one of the &quot;Big five&quot; and are a huge boost in safari tourism. BDF is too much force to protect rhinos, they often shoot to kill and have killed fishers and poachers indiscriminately.</td>
<td>- DNA testing of horns taken from poachers to help authorities identify where a rhinoceros was poached from.</td>
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**From Your Reading**

Below are some questions to help you process what you read:

- What are some problems that affect rhino populations?
- What would you like to know on this topic?
Brainstorm Notes

Problem

• Why is this a problem?
• What region(s) are we going to focus on?
• What other problems does it remind you of?
• Often larger problems need to be broken down into smaller pieces. What part(s) of this problem does your team want to address?

Solution

• How could you combine these ideas to create a new solution?
• What ideas do you have that are nothing like what you have researched? (Wild ideas are welcome!)
• Who will help your team solve this problem? Which organizations, governments, etc.?
• How do these ideas help solve the problem?
• What is needed to implement or enforce your solution?

Impact

Pick one of the following identities:

• Tourist
• President of Botswana
• High school student

Based on one of the above identities think about how they will be impacted by your team's solution to this problem.

• How will this person's life change because of your solution?
• What would they think or say about your solution?
• How will this change impact someone with a similar identity that lives 2,000 miles away?
Listen and Help

STEP 1

Team A presents their design solution. 3 min
- Team B cannot speak.
- Team B can take notes.

Team B writes questions. 1 min
- Quiet minute for thinking.

Team B asks clarifying questions. 2 min
- Team A can answer.
- Team A can take notes.

Team B provides feedback. 2 min
- Team A should take notes.

STEP 2

Team B presents their design solution. 3 min
- Team A cannot speak.
- Team A can take notes.

Team A writes questions. 1 min
- Quiet minute of thinking.

Team A asks clarifying questions. 2 min
- Team B can answer.
- Team B can take notes.

Team A provides feedback. 2 min
- Team B should take notes.

Sharing Our Solution

Our solution
- The problem as we see it is:
- Our solution is to:
- We plan to tell a story about how our solution helped this person:

Requesting/Focusing Feedback
- Was the part about ___________ easy for you to understand?

Giving Feedback to Other Team

- What problem are you solving? Is it:
- Who will benefit from this solution?
- Can you explain how ___________ will help solve this problem?
- A question I have about your design solution is:
- One thing I like about your solution is:
- I think it is important that you include:
- I wonder what would happen if:
- I heard you say:
Design a Project and Presentation!

Pick a project:
- Business plan
- Advertising campaign
- Demo of potential device
- Slideshow
- Infographic

Project and presentation:
- Describe a focused problem
- Explain a solution to this problem
- Show how your solution will impact one person (tour boat operator, scuba diver or high school student)

Notes