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# Concept design report example

## Business Concept Paper for New Dimension Entertainment LLC DBA Rave-Nation.com

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### Problem

Ravers are people that actively attend Electronic Dance Music (EDM) Concerts AXA "techno concerts" or "raves". Ravers enjoy the electronic music played at these concerts and are influenced by the culture of electronic music genres. Ravers want unique and customized products that will make them stand out from others. They also want them for specific dates, usually the date of the next concert they are attending. These products are often rare so there are only a few suppliers. Many companies that do offer them do not offer a variety of different products, have poor customer service and a lack of customization. Also many of these companies are located outside the US, and they can take quite some time to ship out orders. Ravers often require their products by the date of their next concert. This is a big shortfall to ordering from overseas and from multiple companies.

### Products

Rave Nation.com offers rare and customizable products in one place. Ravers can find nearly everything they need for their next event at one website instead of multiple websites. Our customization allows customers to purchase just part of an outfit instead of the whole thing, make requests for specialized clothing, and provide custom options and additions to many products, such as adding spikes, extra lenses, and extra decals to goggles. Rave Nation has two product types: **Apparel** - Clothing and items not generally seen in everyday society such as Cyber fobs, and fluffy boot covers. **Accessories** - Products used at a rave, such as Glowsticks, LED Glowsticks, and LED Hula Hoops.

### Customer

Ravers can be defined as anyone that enjoys Electronic Dance Music (EDM) and frequently goes to EDM Concerts. These individuals want to be seen as unique and they express this uniqueness at raves through clothing and accessories. The majority of ravers are between the ages of 18 and 25, many of which are college students. There are three main types of ravers: **Kandi Ravers**- Dress in lots of colors and wear a lot of fur. They also wear beaded jewelry, and enjoy fast paced music. **Gogo Girls**- Typically paid dancers that work in groups with similar outfits of fluffier, clubwear, and hosiery. **Cyber Ravers** - Wear black clothes with bright colors. Interested in LED gas masks, LED goggles, and UFO pants.

### Market

**Market Size:** Actual market size is hard to determine. The largest EDM Concerts and festivals have attendances between 100k and 200k people. Below are estimates on the size of the largest Dance Parties in the US. Some of the below events happen multiple times in one year. The CEO of Insomniac Events, the promotion company in charge of the Electric Daisy Carnival stated: "We're doing 16 festivals in 2012." (Amber, 2011). Again it is hard to find list style statistics, but there are tons of DJs that have the ability to attract tens of thousands ravers with their name alone. These events are occurring every weekend and many weekdays of the year, across the entire US. The bigger events with attendances in the 200 thousands, happen frequently as well. Six of these largest events are listed below but this is not a complete list of 200 thousand+ person events.

Electric Daisy Carnival - 140,000 (Wolke, 2012)  
Ultra Music Festival - 150,000 (Wolke, 2012)

### Materials used in construction of the bridge

- ◊ Popsicle sticks
- ◊ Glue
- ◊ Paper
- ◊ Elmer's Wood Glue
- ◊ Weighing scale

### Factors considered

#### Structural Constraints

The size considered should be a maximum of 12 inches across considering that this is the intended length of the bridge. The bridge was also required to lie across the two points, and its joints should be on all four sides such that it only supports the weight. The weight of the bridge was capped at 4.05 pounds.

#### Construction Constraint

The weight of the used glue was considered negligible.

#### Quality Control Testing

The estimated weight of sticks with glue was almost equivalent to the weight of the sticks without glue. Two bridge models were considered in the project with the following specifications:

#### Bridge 1:

- ◊ 115 Popsicle sticks used
- ◊ The weight of the bridge is about 124.9 grams.
- ◊ The weight supported is 4.05 pounds, which is equivalent to 1837 gms.

### Approach and Process Description

#### Synopsis Unit Design

The design of the overall design of the Fischer-Tropsch reactor unit was to design the syn gas unit. Carbon dioxide, methane, steam, and oxygen are combined in an equilibrium reactor to produce syn gas. The three primary reactions that occur simultaneously in the reactor are as follows:

Steam reforming:  $CH_4 + H_2O \rightarrow CO + 3H_2$

Partial oxidation of methane:  $CH_4 + \frac{1}{2}O_2 \rightarrow CO + 2H_2$

Shift reaction:  $CO + H_2O \rightarrow CO_2 + H_2$

Two process units are involved in the Fischer-Tropsch process. Four streams (carbon dioxide, oxygen, oxygen and 25 nitrogen), methane and air are fed into a mixer at 200 °C. The methane is fed into a steam boiler to prevent cooling of the process equipment. The materials then feed directly into the equilibrium reactor. The only component flow rate that was definitively defined was methane. The component flow rates of carbon dioxide and air were given arbitrary values because the flow rates were optimized using the optimization package in Aspen to optimize the production of hydrogen.

There are three constraints for the system. First, the ratio of hydrogen production to carbon monoxide production must be 2:1. Second, the equilibrium constant must be 1. Third, the molar ratio of steam to methane flow rates is greater than or equal to 1.2. The parameters being varied using the optimization package are the temperature (500–1900 °F) and pressure (20–50 psig) of the reactor, the flow rates of air (10–100 MCFD), carbon dioxide (10–1,000 MCFD), and steam (20–500 MCFD). The product of the syn gas unit was then fed into a Fischer-Tropsch reactor. Figure 111 is the process flow diagram of the syn gas unit and Table 10 provides the stream tables and mass balance of the unit.

## Sustainability Approach

**Sustainable Design** is the philosophy of designing physical objects, the built environment, and services to comply with the principles of social, economic and ecological sustainability.

Principles 26 & 27 sustainable approach applied to all three (2) design intensity levels. The differentiation between the 3 categories will be design intensity and material quantities.

The sustainable approach encompasses seven (7) primary methods to obtain the desired goals and targets:

**1. Intensity/Connectivity**  
Intensity refers to urban connectivity, which suggests that future urban development should take place adjacent to existing urban structures. When the concept is applied to existing urban structures, it refers to the concentration of further growth, rather than the suburban or the present sprawl. Connectivity of urban space can improve transport of energy, water, materials, products and people.

**2. Sustainable Transportation**  
A sustainable urban transportation system finds vehicles and ways to deliver the user's ability to relocate. It is governed by renewable energy sources, recycles its components, and encourages the use of small, privately accessible modes for people and their goods and helps achieve a healthy and desirable quality of life in each generation and a necessary affordable, operation of maximum efficiency and supports a vibrant economy.

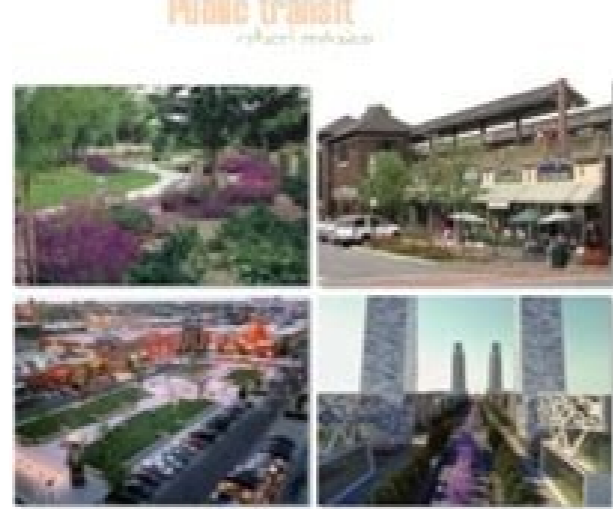
**3. Density**  
The ratio of people or dwelling units to land area. The relationship between density and urban character is also based on the concept of walkable threshold. At certain densities (threshold), the number of people within a given area becomes sufficient to generate the interactions needed to form a vibrant urban form or activate a viable.

**4. Mixed Land Use**  
Mixed land use indicates the diversity of functional land use. Each residential, commercial, industrial, public, and other uses related to transportation. Reducing the need for travel is on the agenda of all healthy sustainable urban form, and mixed land use the government can encourage it. Mixed land use reduces the probability of using a car for commuting, shopping, and leisure. Also, mixed jobs, shops, and leisure facilities are located nearby.

**5. Diversity**  
Diversity refers to the diversity of people into communities for almost all their needs. Diverse development captures a mixture of land uses, building and housing types, architectural styles, and forms.

**6. Passive Solar Design**  
Passive solar design is similar to sustainable urban form. Generally, the idea of the design is to reduce the demand for energy and to provide the best use of passive energy in sustainable cities through specific design measures. The design reflects the form of the built environment through, for example, the orientation of buildings and urban densities.

**7. Greening**  
Greening refers to sustainable urban form as a strategy to reduce the need for energy into the life of cities through a diversity of urban landscapes. Greening of the city makes urban and suburban places appealing places to live and work. Greening (Urban and Green Center 1998, Hargrove 1995) and more sustainable.



## Sustainability



- The design shall also follow the guidelines listed herein:
- Intakes shall be at an adequate distance away from stack vents, equipments vents, and cooling towers.
  - Adequate vertical distance from ground level shall be insured to avoid contamination (0.9m to 1.2m FFL).
  - Adequate access to outside air intake plenums shall be insured in the design process. Also, measures to minimize the possibility of access by unauthorized personnel shall be taken into considerations for security purposes.

### Exhaust of Contaminants and Odors

The design shall provide exhaust systems for the removal of contaminants and odors, preferably as close to the source of generation as practically possible (Refer to AGS system section 6.0). Some major source exhaust in a hospital facility include:

- Chemical fume hoods and biological safety cabinets (typically used in laboratories)
- Trunk ducts in surgical applications (removes anesthetic gases and aerosols)
- "Wet" X-Ray film development machines (chemical fumes)
- Cough inducement booths or hoods (as used in contagious respiratory disease therapy)

When contaminants and odors cannot be practically captured at the source, the space of generation shall be exhausted (eg. laboratories, soiled laundry, waste storage, dirty process, anesthesia storage, and disease isolation spaces).

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