

## **BAB 2**

### **TINJAUAN TEORI DAN STUDI BANDING**

#### **2.1 Tinjauan Teori**

##### **2.1.1 Definisi *Astronomical***

Kata *Astronomical* atau astronomi berasal dari bahasa Yunani, yaitu kata astron (ἄστρον, “bintang”) yang kemudian diberi akhiran –nomi dari nomos (νόμος, “hukum” atau “budaya”). Secara harfiah astronomi bermakna “hukum / budaya bintang-bintang”. Astronomi secara etimologi berarti “ilmu bintang” adalah ilmu yang melibatkan pengamatan dan penjelasan tentang sesuatu yang terjadi di luar bumi dan atmosfernya. ilmu ini mempelajari asal-usul, evolusi, sifat fisik dan kimiawi benda-benda yang dapat dilihat di langit dan di luar bumi.

Astronomi adalah ilmu pengetahuan tertua. Wajar sekali bagi manusia purba untuk mempelajari gerak benda langit, karena matahari, bintang dan bulan berpengaruh pada cara mereka menyelenggarakan kehidupannya (Keith Wicks, Stars and Planets).

##### **2.1.2 Ruang Lingkup Astronomi**

###### **A. Planet**

Planet adalah benda langit yang mengelilingi matahari, dengan massa yang besar dan memiliki gravitasi sendiri. Planet sendiri terdiri dari Merkurius, Venus, Bumi, Mars, Jupiter, Saturnus, Uranus, dan Neptunus.

###### **B. Satelit, Meteroid, Asteroid dan Komet.**

- **Satelit** adalah benda yang beredar mengelilingi planet.
- **Meteroid** adalah benda padat yang terpisah dari komet.
- **Asteroid** adalah benda angkasa yang berupa pecahan kecil dan bergerak mengelilingi matahari.
- **Komet** adalah benda langit yang mengelilingi matahari dengan garis edar berbentuk lonjong, parabolis atau hiperbolis.

###### **C. Matahari dan Bintang.**

- **Matahari** adalah bintang di pusat tata surya.
- **Bintang** adalah benda langit yang dapat mengeluarkan cahayanya sendiri.

#### **D. Galaksi**

Menurut NASA, Galaksi adalah kumpulan gas, debu, dan miliaran bintang serta system tata surya yang disatukan oleh gravitasi. Galaksi tersebut adalah Bimasakti yang memiliki lubang hitam supermassive di tengahnya.

#### **E. Ruang Angkasa**

Ruang angkasa adalah system berisi milyaran galaksi alam semesta, atau dikenal dengan antariksa.

### **2.1.3 Cabang Ilmu Astronomi**

- A. Astronometri** adalah penelitian posisi benda di langit dan perubahan posisi mereka. Mendefinisikan system koordinat yang dipakai dan kinematika dari benda-benda di galaksi.
- B. Kosmologi** adalah penelitian alam semesta terkait dengan asal usul alam semesta, yang lebih mendalam mengenai segala fenomena yang ditampakkkan alam semesta.
- C. Fisika Galaksi** adalah penelitian struktur dan bagian galaksi kita dan galaksi lain.
- D. astronomi Estragalaksi** adalah penelitian benda (sebagian besar galaksi) di luar galaksi.
- E. Pembentukan Galaksi dan Evolusi** adalah penelitian pembentukan galaksi dan evolusi.
- F. Ilmu Planet** adalah penelitian planet dan tata surya.
- G. Fisika Bintang** adalah penelitian struktur bintang.
- H. Evolusi Bintang** adalah penelitian evolusi bintang dari pembentukan sampai akhir sebagai bintang sisa.

**I. Pembentukan Bintang** adalah penelitian kondisi dan proses yang menyebabkan pembentukan bintang di dalam awan gas dan proses pembentukan itu sendiri.

## **2.2 Tinjauan Teori Recreation Park**

### **2.2.1 Pengertian *Recreation Park***

Kata rekreasi berasal dari bahasa Inggris yaitu recreation yang berasal dari kata kerja “*to recreation*”. Rekreasi adalah semua kegiatan yang dilakukan pada waktu senggang baik secara individual maupun secara bersama yang bersifat bebas dan menyenangkan, sehingga orang cenderung untuk melakukannya. Park adalah area yang memiliki luasan yang besar serta terpelihara secara berkala.




### **2.2.2 Macam - Macam Rekreasi**

Rekreasi dapat diklasifikasikan berdasarkan bentuk pewardahannya, jenis kegiatan, lokasi dan objeknya.

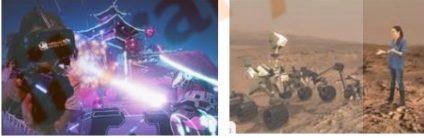
1. Berdasarkan bentuk pewardahannya, rekreasi dapat dibedakan menjadi 2 macam:
  - Rekreasi tertutup; rekreasi yang dilakukan di dalam ruang tertutup.
  - Rekreasi terbuka; rekreasi yang dilakukan di ruang terbuka.
2. Berdasarkan jenis kegiatannya, rekreasi dapat dibedakan menjadi 2 macam yaitu:
  - Rekreasi aktif; rekreasi yang disertai dengan kegiatan aktif (orang yang melakukan terlibat langsung dalam kegiatan objek), misal olahraga.
  - Rekreasi pasif; rekreasi yang dilakukan dengan tidak melibatkan diri dengan kegiatan objek misalnya menikmati pemandangan, menonton
3. Berdasarkan tempatnya rekreasi dapat dibedakan menjadi 3 macam yaitu :
  - Rekreasi di darat; rekreasi yang kegiatannya dilakukan di darat.
  - Rekreasi di laut; rekreasi yang kegiatannya dilakukan di laut.
  - Rekreasi di udara; rekreasi yang kegiatannya dilakukan di udara.





### 2.2.3 Fasilitas Wahana Rekreasi

Area	Jenis Kegiatan	Nama Wahana
Outdoor	Roller Coaster adalah salah satu wahana taman hiburan yang banyak diminati oleh pengunjung dan populer.	Mini Roller Coaster 
	Family Rides adalah wahana yang cocok untuk segala usia.	Family Rides 
	Transportation Rides adalah wahana perjalanan yang menawarkan pengunjung untuk berkeliling.	Transportation Rides 

Area	Jenis Kegiatan	Nama Wahana
Outdoor	Kiddie Rides adalah wahana yang dikhususkan untuk anak-anak tetapi wahana ini memiliki batas ketinggian.	Kiddie Rides 
	Merupakan ayunan yang berbentuk mesin yang dibuat untuk menampung banyak.	Pirate Ship 
	Wahana rekreasi di atas air untuk perorangan .	Sepeda Air 





Area	Jenis Kegiatan	Nama Wahana
Indoor	Merupakan pertunjukan digital	Cinema 
	Wahana/ hiburan yang dapat memberikan kesan terkejut, menakutkan, dan Bahagia dalam waktu yang bersamaan.	Thrills 





Area	Jenis Kegiatan	Nama Wahana
Indoor	Membuat pengunjung berinteraksi dengan lingkungan fiktif melalui alat yang disimulasikan oleh computer. Menggabungkan 2D dan 3D kedalam sebuah lingkungan nyata 3D.	Virtual & Augmented Reality 
	Merupakan seni digital dengan teknologi proyektor video mapping yang ditampilkan pada layar 360 derajat di ruang seluas 200 m <sup>2</sup>	Digital Art / Video Mapping 

Area	Jenis Kegiatan	Nama Fasilitas
<b>Indoor</b>	Memamerkan even tentang teknologi yang sedang berkembang dan diminati oleh banyak orang.	Exhibition 
	Merupakan seni digital dengan teknologi proyektor video mapping tentang planet, galaxy, dan hal tentang luar angkasa ditampilkan pada layar 360 derajat di dalam ruangan.	Digital Space 
	Merupakan pertunjukan video mapping tentang pengetahuan dasar planet yang disajikan dengan teknologi agar terkesan tidak membosankan.	Auditorium 
	Tempat menjual barang untuk dijadikan hadiah tangan.	Marchandise Shop 

**Tabel 2.1** Fasilitas Wahana Rekreasi  
 Sumber : [www.google.com/](http://www.google.com/), diolah


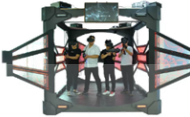

### 2.2.4 Jenis Wahana

Nama Wahana	Detail	Technical Parameter																																																												
<p>Roller Coaster</p>  <p>Price: \$20,000.00 – \$25,000.00 / Set</p>	<p>Place of Origin: China                      Brand Name: Beston                      Model Number: BNRC                      Type: Roller Coaster                      Track Length: 500 m                      Height: 25.2 m                      Cabin: 3/4/6                      Speed: 70 km/h                      Power: 75 kw                      Time: 90 s                      Area: 90 x 40 m</p>	<table border="1"> <thead> <tr> <th>Model</th> <th>BTRC-12</th> <th>BTRC-16</th> <th>BTRC-20</th> <th>BTRC-24</th> </tr> </thead> <tbody> <tr> <td>Capacity(seats)</td> <td>12</td> <td>16</td> <td>20</td> <td>24</td> </tr> <tr> <td>Cabins(No.)</td> <td>3</td> <td>4</td> <td>10</td> <td>6</td> </tr> <tr> <td>Track length(m)</td> <td>330</td> <td>500</td> <td>780</td> <td>725</td> </tr> <tr> <td>Area Size</td> <td>43*22</td> <td>90*40</td> <td>145*70</td> <td>150*90</td> </tr> <tr> <td>Speed(km/h)</td> <td>50</td> <td>70</td> <td>80.4</td> <td>80</td> </tr> <tr> <td>Power(KW)</td> <td>40</td> <td>75</td> <td>160</td> <td>120</td> </tr> <tr> <td>Power supply</td> <td colspan="4">380V-50HZ/50HZ-3Phase</td> </tr> </tbody> </table>	Model	BTRC-12	BTRC-16	BTRC-20	BTRC-24	Capacity(seats)	12	16	20	24	Cabins(No.)	3	4	10	6	Track length(m)	330	500	780	725	Area Size	43*22	90*40	145*70	150*90	Speed(km/h)	50	70	80.4	80	Power(KW)	40	75	160	120	Power supply	380V-50HZ/50HZ-3Phase																							
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<p>Mini Ferris Wheels</p>  <p>Price: \$9,555.00 – \$25,550.00 / Set</p>	<p>Place of Origin: China                      Brand Name: limeiqi                      Model Number: F-07                      Type: Ferris Wheel                      Certificate: ISO9001                      Warranty: 12 Months                      Material: FRP                      Voltage: 220V/380V                      Size: Customized Size                      Power: 6kw</p>	<table border="1"> <thead> <tr> <th>Height</th> <th>Capacity</th> <th>Structure</th> <th>Cabins</th> <th>Each Cabin Capacity</th> </tr> </thead> <tbody> <tr> <td>30m</td> <td>72</td> <td>Truss-type</td> <td>18</td> <td>4</td> </tr> <tr> <td>30m</td> <td>80</td> <td>Basket-type</td> <td>20</td> <td>4</td> </tr> <tr> <td>32m</td> <td>80</td> <td>Truss-type</td> <td>20</td> <td>4</td> </tr> <tr> <td>34m</td> <td>80</td> <td>Truss-type</td> <td>20</td> <td>4</td> </tr> <tr> <td>36m</td> <td>80</td> <td>Basket-type</td> <td>20</td> <td>4</td> </tr> <tr> <td>38m</td> <td>88</td> <td>Truss-type</td> <td>22</td> <td>4</td> </tr> <tr> <td>42m</td> <td>96</td> <td>Truss-type</td> <td>24</td> <td>4</td> </tr> <tr> <td>45m</td> <td>112</td> <td>Truss-type</td> <td>28</td> <td>4</td> </tr> <tr> <td>46m</td> <td>112</td> <td>Truss-type</td> <td>28</td> <td>4</td> </tr> <tr> <td>49m</td> <td>128/136</td> <td>Truss-type</td> <td>32/34</td> <td>4</td> </tr> <tr> <td>52m</td> <td>144</td> <td>Truss-type</td> <td>36</td> <td>4</td> </tr> </tbody> </table>	Height	Capacity	Structure	Cabins	Each Cabin Capacity	30m	72	Truss-type	18	4	30m	80	Basket-type	20	4	32m	80	Truss-type	20	4	34m	80	Truss-type	20	4	36m	80	Basket-type	20	4	38m	88	Truss-type	22	4	42m	96	Truss-type	24	4	45m	112	Truss-type	28	4	46m	112	Truss-type	28	4	49m	128/136	Truss-type	32/34	4	52m	144	Truss-type	36	4
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<p>Miami Train Ride</p>  <p>Price: \$6,000.00 – \$12,000.00 / Set</p>	<p>Place of Origin: China                      Brand Name: MODERN                      Model Number: HCT02                      Type: Electric Train                      Material: FRP+steel                      Product name: train                      Product type: MDT529                      Warranty: 12 Months                      Certificate: ISO CE                      MOQ: 1 Set</p>	<table border="1"> <tbody> <tr> <td>power</td> <td>3kw</td> </tr> <tr> <td>speed</td> <td>7km/h</td> </tr> <tr> <td>battery</td> <td>8pcs 6v220AH</td> </tr> <tr> <td>seat capacity</td> <td>24Rides</td> </tr> </tbody> </table>	power	3kw	speed	7km/h	battery	8pcs 6v220AH	seat capacity	24Rides																																																				
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<p>Chair Rides</p>  <p>Price: \$6,800.00 / 1 Set</p>	<p>Place of Origin: China                      Brand Name: Modern                      Number: MFC12Z03                      Type: Swing                      Material: FRP+steel                      Warranty: 12 Months                      Color: Customized                      Voltage: 380/220v                      Power: 1.1kw                      Certificate: CE Certificate                      Technics: Assemblage</p>	<table border="1"> <tbody> <tr> <td>Power</td> <td>1.1kw</td> </tr> <tr> <td>Diameter</td> <td>4.5m</td> </tr> <tr> <td>Area</td> <td>6m</td> </tr> <tr> <td>Rated Load</td> <td>12 Persons</td> </tr> <tr> <td>Height</td> <td>3.2m</td> </tr> <tr> <td>Voltage</td> <td>380/220v</td> </tr> </tbody> </table>	Power	1.1kw	Diameter	4.5m	Area	6m	Rated Load	12 Persons	Height	3.2m	Voltage	380/220v																																																
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<p>Augmented Reality Climbing Wall</p>  <p>\$3,599.00 1-9 Set</p>	<p>Place of Origin: China                      Brand Name:Z S                      Model Number:ZS-AR-C1                      Name:Interactive Climbing Game                      Size:3.5m*2.2m                      Games:10pcs challenges games                      Usage: Indoor amusement                      MOQ:1 SET                      Warranty:1 Year</p>	<table border="1"> <tr> <td>Software</td> <td colspan="3">10 pcs games &amp; interactive system software</td> </tr> <tr> <td>Hardware</td> <td colspan="3">Industrial-grade dedicated inter 15 server, supporting multi-level output, quad-core processor, 64g memory, solid state drive</td> </tr> <tr> <td>Projector</td> <td>BenQ model: MX811ST</td> <td>brightness</td> <td>3000 lumens (including) - 4000 lumens (excluding)</td> </tr> <tr> <td>resolution (dpi)</td> <td>1024*768dpi</td> <td>Contrast</td> <td>10000:1-20000:1</td> </tr> <tr> <td>Screen ratio</td> <td>4:3, 16:9</td> <td>Projection ratio</td> <td>0.9-1.08</td> </tr> <tr> <td>Sensor</td> <td>2 infrared capture cameras</td> <td>accessories</td> <td>wireless mouse and keyboard, speaker</td> </tr> <tr> <td>Other</td> <td colspan="3">Warranty card, power cord, 1.5 m VGA cable, user guide CD, remote control</td> </tr> </table> <div style="text-align: center;"> <p>EPSON PROJECTOR</p> <p>Computer Host</p> <p>Camera Catcher</p> <p>Infrared light</p> </div>	Software	10 pcs games & interactive system software			Hardware	Industrial-grade dedicated inter 15 server, supporting multi-level output, quad-core processor, 64g memory, solid state drive			Projector	BenQ model: MX811ST	brightness	3000 lumens (including) - 4000 lumens (excluding)	resolution (dpi)	1024*768dpi	Contrast	10000:1-20000:1	Screen ratio	4:3, 16:9	Projection ratio	0.9-1.08	Sensor	2 infrared capture cameras	accessories	wireless mouse and keyboard, speaker	Other	Warranty card, power cord, 1.5 m VGA cable, user guide CD, remote control		
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<p>AR- game interactive silhouette particle</p>  <p>\$2,800.00/ 1-9 Bags</p>	<p>Place of Origin:China                      Model Number:ZS-AR-PH1                      Size:150inch                      Voltage:220V                      Projector:1 pcs                      Projector Lumens:3000 Lumens                      MOQ:1 Set                      Sensor:Kinect                      Warranty:1 Year</p>	<p>Selling Units :Single item                      Single package size: 42X40X39 cm                      Single gross weight:15.000 kg                      Package Type:Carton</p> <table border="1"> <tr> <td>Product name</td> <td>interactive silhouette particle</td> </tr> <tr> <td>Size</td> <td>150inch</td> </tr> <tr> <td>EPSON Projector</td> <td>1 pcs</td> </tr> <tr> <td>Projector bracket:</td> <td>1 pcs</td> </tr> <tr> <td>Business</td> <td>Theme park/Amusement park etc</td> </tr> <tr> <td>Warranty</td> <td>1 year</td> </tr> </table>	Product name	interactive silhouette particle	Size	150inch	EPSON Projector	1 pcs	Projector bracket:	1 pcs	Business	Theme park/Amusement park etc	Warranty	1 year																
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<p>7d Hologram Projector.</p>  <p>Price: \$2,000.00 - \$2,800.00/ Piece</p>	<p>Place of Origin: China                      Brand Name:Movie Power                      Style: Electric                      Material:Glass Beaded                      Warranty(Year):1                      Certification: CE TUV Rohs                      Material: Projector Device                      Size::320*350*240mm                      Power Supply::110v~220v                      Glasse:110v~220v                      Resolution:1024*768</p>	<table border="1"> <tr> <td>Software</td> <td>Magic Wall Interaction software with 10effects</td> </tr> <tr> <td>Specification</td> <td>                     --AIO Projector Device integrated with PC, Projector and Kinect                      --Windows 7OS                      --Wireless Keyboard+Mouse                      --Audio box                      --10m power line+3.5mm audio line                      -- Remote-controller of Projector                      --Free SDK Guide(WPF, Flash,C++)                      --User Manual&amp;warranty                 </td> </tr> <tr> <td>Projection Area</td> <td>Projection area: 2.4m*1.8m--Adjustable based on Distance from Device to Wall</td> </tr> </table> <p>Installation Drawing--AIO Projector Device integrated with PC, Projector and Kinect</p>	Software	Magic Wall Interaction software with 10effects	Specification	--AIO Projector Device integrated with PC, Projector and Kinect --Windows 7OS --Wireless Keyboard+Mouse --Audio box --10m power line+3.5mm audio line -- Remote-controller of Projector --Free SDK Guide(WPF, Flash,C++) --User Manual&warranty	Projection Area	Projection area: 2.4m*1.8m--Adjustable based on Distance from Device to Wall																						
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Nama Wahana	Detail	Technical Parameter																																																							
<p>Cinema Simulator</p>  <p>Price: \$9,000.00/ 4 pcs</p>	<p>Place of Origin:China                      Brand Name:Owatch                      Model Number:OF 3001                      Name:360 ° motion chair                      Voltage:110-240V                      VR headset:Deepoon E3                      Games:19 pcs                      Warranty:12 Months                      Size:L 1.78 * W 1.04 * H 2.3M                      Certificate:CE RoHs                      Weight:NW : 400KGS ,                      GW : 600KGS</p>	<table border="1"> <tr><td>Product name</td><td>360 Degree VR Motion Chair</td></tr> <tr><td>Model</td><td>OF 3001</td></tr> <tr><td>Person</td><td>1</td></tr> <tr><td>Voltage / Power</td><td>110 - 240V / 3000W</td></tr> <tr><td>VR headset</td><td>Deepoon E3</td></tr> <tr><td>Games quantity ( included )</td><td>19 pcs</td></tr> <tr><td>Playing time</td><td>2-5 mins</td></tr> <tr><td>Screen</td><td>24 inch HD LED Screen</td></tr> <tr><td>Weight</td><td>NW: 400 kgs   GW: 600 kgs</td></tr> <tr><td>Size ( L*W*H )</td><td>L 1.78 * W 1.04 * H 2.3M</td></tr> <tr><td>List of goods</td><td>1X whole platform, 1X VR glass, 1X 32 inch TV</td></tr> <tr><td>POWER &amp; PC PARTS</td><td>CPU : i5-7400S Intel USA Graphic card : 1050 - 207AC Hongkong Main board : 8250M- GIGABYTE Taiwan Hard disk : SSD 240G - GALAX Hongkong Memory card : 8GB DDR4</td></tr> <tr><td>Application</td><td>Shopping mall, theme park, resort, zoo, school, hotel, museum, etc</td></tr> </table>	Product name	360 Degree VR Motion Chair	Model	OF 3001	Person	1	Voltage / Power	110 - 240V / 3000W	VR headset	Deepoon E3	Games quantity ( included )	19 pcs	Playing time	2-5 mins	Screen	24 inch HD LED Screen	Weight	NW: 400 kgs   GW: 600 kgs	Size ( L*W*H )	L 1.78 * W 1.04 * H 2.3M	List of goods	1X whole platform, 1X VR glass, 1X 32 inch TV	POWER & PC PARTS	CPU : i5-7400S Intel USA Graphic card : 1050 - 207AC Hongkong Main board : 8250M- GIGABYTE Taiwan Hard disk : SSD 240G - GALAX Hongkong Memory card : 8GB DDR4	Application	Shopping mall, theme park, resort, zoo, school, hotel, museum, etc																													
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<p>Cinema Simulator</p>  <p>Price: \$1,000.00/ 1 pcs</p>	<p>Place of Origin:China                      Brand Name:Movie Power                      Model Number:MP- vr                      Type:vr shooting                      Product name:Virtual reality simulator                      Size:L1800*W1100*H1780mm                      Weight:156KG                      Power:0.8KW                      load-bearing:90KG                      Voltage:220V                      Certificate:CE Certificate                      Warranty:12 months</p>	<table border="1"> <tr><td>Product name</td><td>Vr game machine</td></tr> <tr><td>Material</td><td>Steel</td></tr> <tr><td>Size</td><td>L1750*W830*H2000mm</td></tr> <tr><td>Weight</td><td>195kg</td></tr> <tr><td>Power</td><td>1.0kw</td></tr> <tr><td>Voltage</td><td>220V</td></tr> <tr><td>Max load</td><td>150kg</td></tr> <tr><td>Player</td><td>1 player</td></tr> <tr><td>Tyle</td><td>Vr shooting game</td></tr> <tr><td>Usage</td><td>Theme park,Game center</td></tr> </table>	Product name	Vr game machine	Material	Steel	Size	L1750*W830*H2000mm	Weight	195kg	Power	1.0kw	Voltage	220V	Max load	150kg	Player	1 player	Tyle	Vr shooting game	Usage	Theme park,Game center																																			
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<p>cinema Simulator equipment</p>  <p>Price: \$23,000.00/ 4 pcs</p>	<p>Place of Origin:China                      Brand Name:Owatch                      Model Number:5D Cinema                      Type:5D Cinema                      Movies:Over 108 movies for free                      Effects:Wind, rain, snow, lightning, bubble,sweep leg , face wind , push back                      Dynamic system:6-dof electric / hydraulic platform                      Warranty:12 Months                      Voltage:110V/220V/380V</p>	<table border="1"> <tr><td>Product Name:</td><td>5D &amp; 7D cinema</td></tr> <tr><td>Model:</td><td>7D cinema - 6 seats</td></tr> <tr><td>Voltage/Power</td><td>220V / 5500W</td></tr> <tr><td>VR Headset</td><td>3d glasses</td></tr> <tr><td>Movie quantity ( included )</td><td>4 pcs shooting games + 100 pcs high definition movies</td></tr> <tr><td>Playing time:</td><td>3-7mins</td></tr> <tr><td>Weight:</td><td>NW: 130kgs   GW: 230kgs</td></tr> <tr><td>Special effects</td><td>Wind, rain, snow, bubble, lightning, fire, smoke,vibration, leg sweep, back pulse</td></tr> <tr><td>Color</td><td>Can be customized</td></tr> <tr><td>Screen Size</td><td>150 inch (16:9)</td></tr> </table> <table border="1"> <tr><td colspan="7">1 set 6 seats 5D / 7D cinema operation analysis monthly</td></tr> <tr> <th>working day / weekend</th> <th>days</th> <th>operation time daily ( hour )</th> <th>batches of customers / hour</th> <th>total seat</th> <th>ticket / seat</th> <th>income</th> </tr> <tr> <td>working day</td> <td>22</td> <td>8</td> <td>3</td> <td>6</td> <td>\$3</td> <td>\$9,504</td> </tr> <tr> <td>weekend</td> <td>8</td> <td>10</td> <td>6</td> <td>6</td> <td>\$3</td> <td>\$8,640</td> </tr> <tr> <td colspan="5"></td> <td>total (monthly):</td> <td>\$18,108</td> </tr> </table>	Product Name:	5D & 7D cinema	Model:	7D cinema - 6 seats	Voltage/Power	220V / 5500W	VR Headset	3d glasses	Movie quantity ( included )	4 pcs shooting games + 100 pcs high definition movies	Playing time:	3-7mins	Weight:	NW: 130kgs   GW: 230kgs	Special effects	Wind, rain, snow, bubble, lightning, fire, smoke,vibration, leg sweep, back pulse	Color	Can be customized	Screen Size	150 inch (16:9)	1 set 6 seats 5D / 7D cinema operation analysis monthly							working day / weekend	days	operation time daily ( hour )	batches of customers / hour	total seat	ticket / seat	income	working day	22	8	3	6	\$3	\$9,504	weekend	8	10	6	6	\$3	\$8,640						total (monthly):	\$18,108
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Nama Wahana	Detail	Technical Parameter																														
<p>5D 7D 8D 9d 10d cinema with car game and max flight simulator 360 degree</p>  <p>Price: \$5,500.00 - \$18,000.00/Set</p>	<p>Place of Origin: China                      Brand Name: Smile                      Model Number: 5D Cinema, 5D Motion cinema                      Color: Customized                      Material: Metal                      Voltage: 380V                      Power: 3.75KW                      Certificate: CE SGS TUV                      seats: 6/9/12-150 available</p>	<p style="text-align: center;"><b>5D 7D Cinema</b></p> <table border="1"> <thead> <tr> <th>Time</th> <th>Unit price</th> <th>times/hour</th> <th>Working time/hour</th> <th>Total income</th> </tr> </thead> <tbody> <tr> <td>Daily</td> <td>US\$6</td> <td>12</td> <td>8</td> <td>US\$3,456</td> </tr> <tr> <td>Month</td> <td>US\$6</td> <td>12</td> <td>240</td> <td>US\$103,680</td> </tr> <tr> <td>Three Months</td> <td>US\$6</td> <td>12</td> <td>720</td> <td>US\$311,040</td> </tr> <tr> <td>Six Months</td> <td>US\$6</td> <td>12</td> <td>1440</td> <td>US\$622,080</td> </tr> <tr> <td>One Year</td> <td>US\$6</td> <td>12</td> <td>2880</td> <td>US\$1,244,160</td> </tr> </tbody> </table>	Time	Unit price	times/hour	Working time/hour	Total income	Daily	US\$6	12	8	US\$3,456	Month	US\$6	12	240	US\$103,680	Three Months	US\$6	12	720	US\$311,040	Six Months	US\$6	12	1440	US\$622,080	One Year	US\$6	12	2880	US\$1,244,160
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<p>Space game machine vr multiplayer shooting simulator</p>  <p>Price: \$24,000.00/2 set</p>	<p>Place of Origin: China                      Brand Name: Jishi                      Model Number: JS-SS001                      Type: 9d vr                      Name: shooting simulator                      Size: 4*4m or customized                      Voltage: 110/220/380V                      Player: 1-5 players                      Game: more than 50 games, update monthly                      Time: can be set                      Warranty: 12 Months                      Certificate: CE SGS TUV</p>	<p style="text-align: center;"><b>Best earn money 9d vr space game machine vr multiplayer shooting simulator amusement park items for sale</b></p> <table border="1"> <tbody> <tr> <td>Color</td> <td>Picture or customized</td> </tr> <tr> <td>Voltage</td> <td>110V/220V/380V</td> </tr> <tr> <td>Size</td> <td>4.5*4.5*2.4M, or customized</td> </tr> <tr> <td>Player</td> <td>1-5players</td> </tr> <tr> <td>VR glasses</td> <td>HTC VIVE Glasses</td> </tr> <tr> <td>GUN</td> <td>Simulator gun with vibration effects</td> </tr> <tr> <td>Effects</td> <td>Bottom with vibration effects</td> </tr> <tr> <td>Certificate</td> <td>ISO9001, CE, RoHS</td> </tr> <tr> <td>Warranty</td> <td>1 Year</td> </tr> </tbody> </table>	Color	Picture or customized	Voltage	110V/220V/380V	Size	4.5*4.5*2.4M, or customized	Player	1-5players	VR glasses	HTC VIVE Glasses	GUN	Simulator gun with vibration effects	Effects	Bottom with vibration effects	Certificate	ISO9001, CE, RoHS	Warranty	1 Year												
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<p>Machine Flight</p>  <p>Price: \$7,700.00/1 set</p>	<p>Place of Origin: China                      Brand Name: Guangzhou Zhuoyuan                      Type: 9D VR                      Brand Name: Guangzhou Zhuoyuan                      Model Number: ZY-VR                      Product name: Eagle Flight                      Size: 1560*1540*2440mm                      Warranty: 1 year                      Material: Sheet metal                      Feature: Stand-up flight shooting VR</p>	<table border="1"> <tbody> <tr> <td>Type</td> <td>Attracting type</td> </tr> <tr> <td>Product Name</td> <td>Eagle Flight VR</td> </tr> <tr> <td>Voltage</td> <td>AC220V</td> </tr> <tr> <td>Power</td> <td>0.5KW</td> </tr> <tr> <td>Electric Servo System</td> <td>Electric crank System (New generation)</td> </tr> <tr> <td>Product Size</td> <td>1560*1540*2440mm</td> </tr> <tr> <td>VR Glass</td> <td>Deepoon E3</td> </tr> <tr> <td>VR Glass Quantity</td> <td>1 PCS</td> </tr> <tr> <td>Game Quantity</td> <td>125 Games</td> </tr> <tr> <td>Special Feature</td> <td>Flight shooting VR</td> </tr> <tr> <td>Player</td> <td>1 Player</td> </tr> <tr> <td>Market People</td> <td>Kids, students, teenagers, middle age</td> </tr> </tbody> </table>	Type	Attracting type	Product Name	Eagle Flight VR	Voltage	AC220V	Power	0.5KW	Electric Servo System	Electric crank System (New generation)	Product Size	1560*1540*2440mm	VR Glass	Deepoon E3	VR Glass Quantity	1 PCS	Game Quantity	125 Games	Special Feature	Flight shooting VR	Player	1 Player	Market People	Kids, students, teenagers, middle age						
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**Tabel 2.2** Jenis Wahana  
 Sumber : [www.alibaba.com/](http://www.alibaba.com/) diolah

## 2.3 Studi Banding

### 2.3.1 Taman Mini Indonesia Indah



**Gambar 2.1** Pusat Peragaan IPTEK Taman Mini Indonesia  
Sumber : Hasil Survey, 2020

#### Deskripsi Bangunan :

Pusat Peragaan Ilmu Pengetahuan dan Teknologi yang disebut adalah Science Center pertama di Indonesia didirikan pada tanggal 20 April 1991 diatas lahan 40.000 m<sup>2</sup> dengan bangunan seluas 23.400 m<sup>2</sup>. PP-IPTEK merupakan sumber belajar iptek non formal untuk melengkapi sarana Pendidikan iptek formal. PP-IPTEK memiliki lebih da400 alat peraga yang menjelaskan berbagai fenomena iptek.

#### A. Fasilitas.

- **Alat peraga iptek interaktif.**

- |                         |                        |
|-------------------------|------------------------|
| - Digital World         | - Transportasi Udara   |
| - Wahana Inovasi        | - Transportasi Darat   |
| - Ruang Eksplorasi Anak | - Lingkungan           |
| - Self Balancing Sains  | - Taman Jurassic       |
| - Stereo Visual         | - Matematika           |
| - Petualangan Sains     | - Optik                |
| - Telekomunikasi        | - Ilusi                |
| - Antariksa             | - Ozon                 |
| - Robotik               | - Flu Burung           |
| - Mekanika              | - Pandemi Influenza    |
| - Getaran & Gelombang   | - Peneliti Cilik       |
| - Magnet & Listrik      | - Gyro Extreme         |
| - Fluida                | - Sepeda di atas kabel |
| - Tesla Coil            | - Simulasi Gempa       |

- **Aneka program sains.**
  - Peneroponan Matahari
  - Science Cinema (Berbayar)
  - Demonstrasi Peluncuran Roket Air
  - Game Board Pandemi Influenza (Setiap Hari)
  - Bird Flu Corner (Setiap Hari)
- **Parkir dan halaman**
- **Ruang layanan pengunjung**
- **Auditorium (kapasitas 130 kursi)**
- **Mushola**

## B. Struktur Bangunan



**Gambar 2.2** Konstruksi Ramp dan Kolom  
Sumber : Hasil Survey, 2020



**Gambar 2.2** Konstruksi Atap  
Sumber : Hasil Survey, 2020



**Gambar 2.4** Fasad Pusat Peragaan IPTEK Taman Mini Indonesia  
Sumber : Hasil Survey, 2020

Bangunan yang terdiri dari 4 (empat) lantai ini struktur utamanya adalah kolom-kolom beton yang diikat dengan balok - balok beton. Sedangkan pada atap kubah menggunakan struktur konstruksi baja yang diekspos dengan finishing cat.

### 2.3.2 Shanghai Planetarium



*Gambar 2.5 Shanghai Planetarium*  
Sumber : [www.archdaily.com](http://www.archdaily.com)



*Gambar 2.6 Shanghai Planetarium*  
Sumber : [www.archdaily.com](http://www.archdaily.com)

#### Data Bangunan :

- Arsitek = Ennead Architects
- Lokasi = Shanghai Shi, China
- Tinggi Bangunan = 40.902 m<sup>2</sup>

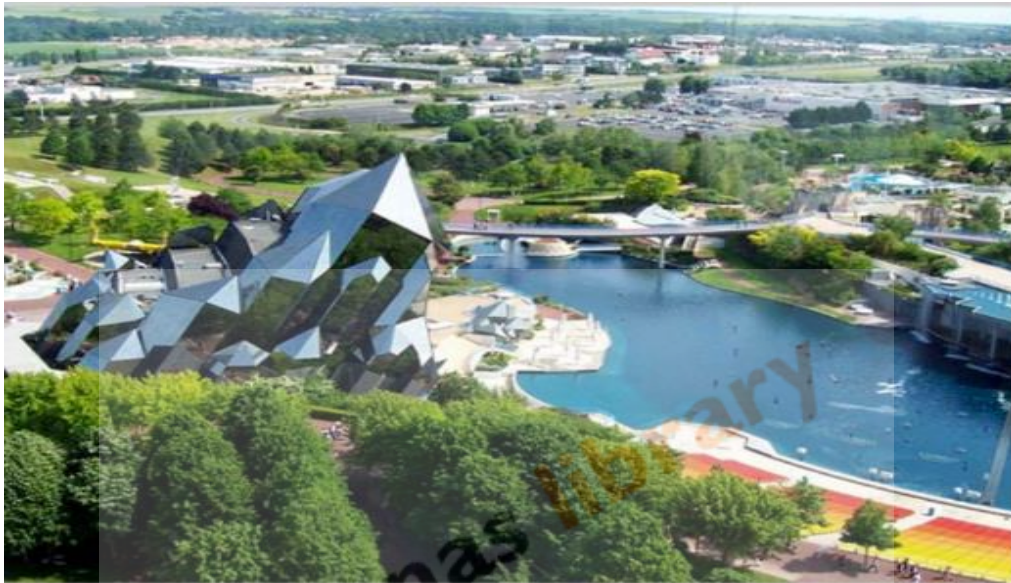
#### Deskripsi Bangunan :

Desain merujuk pada referensi dari prinsi-prinsip astronomi, membangkitkan pengalaman gerakan orbital. Masing-masing dari tiga bentuk bangunan utama –



oculus, kubah terbalik dan bola sebagai instrument astronomi, matahari, bulan, dan bintang. Dari tiga bentuk bangunan bertindak sebagai instrument astronomi karena menghubungkan museum.

### 2.3.3 Futuroscope Theme Park



**Gambar 2.7** *Futuroscope Theme Park*

Sumber : [www.archdaily.com](http://www.archdaily.com)

#### **Data Bangunan :**

- Arsitek = Denis Laming
- Lokasi = Perancis
- Tinggi Bangunan = 20 Ha

#### **Deskripsi Bangunan :**

Futuroscope theme park adalah taman tematik yang menampilkan pertunjukan 3D, 4D, robotic dan multimedia. Konsep Futuroscope Theme Park adalah futuristic, asli, dan berbeda dari taman lainnya, terlihat dari fasad-fasad beberapa bangunan yang menggunakan material kaca dan baja.