BIM on Cloud

Introduction of Global BIM

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## 1. Kajima Company Profile

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Kajima Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established</td>
<td>1840 (last days of Edo period)</td>
</tr>
<tr>
<td>Head Office</td>
<td>3-1, Motoakasaka 1-chome, Minato-ku, Tokyo 107-8388, Japan</td>
</tr>
<tr>
<td>Capital</td>
<td>Over ¥81,400 million</td>
</tr>
<tr>
<td>Number of Employees</td>
<td>9,737 (As of March 31, 2013)</td>
</tr>
</tbody>
</table>
1. Kajima Company Profile (Sales by Region)

- Shifting to Global Market
- Using Global Workforce
- Accelerating Global Collaboration

- Japan: 85%
- North America: 6%
- Europe: 1%
- Asia: 8%
- Others: 0%

2012

15% of sales is from Foreign Market
2. Number of BIM projects

![Graph showing the number of BIM projects in R&D and Business from 1994 to 2013.](image)
2. BIM software: ArchiCAD

BIM Software 「ArchiCAD」

BIM Server 「TEAMWORK」
2. Collaboration with TEAMWORK

Up to 40 People work together

Work Share by Floors, Parts…
2. Collaboration with TEAMWORK

BIM internal LAN
2. Human Network

Okinawa Kajima BIM Center
2. Production Network

BIM (Global BIM)

Okinawa Kajima BIM Center

Basic Planning
Detail Planning
Construction
Maintenance

HCL
aidena

Kajima Corporation

Layout
Detail
Design
Engineering
Process Management
FM

Customers
Design Companies
Construction Companies
2. BIM Centric Data Flow
3. Problem(1): Exchanging BIM Data

- **Customer**
- **BIM Modeler**
- **BIM Manager**
- **Engineering Company Special Contractor**
- **Construction Site**

Order for Changing Model

Confirmation

Order for Updating Model
3. Problem(1): Exchanging BIM Data

Customer

BIM Modeler

BIM Manager

Engineering Company
Special Contractor

Construction Site

Confirmation

Exchanging BIM Data
3. Problem(1): Exchanging BIM Data

- Read File (PLN/IFC file)
- File Transfer
- Read File (PLN/IFC file)
- Modeling, Updating
3. Problem: TEAMWORK VS FireWall

『a port is an application-specific or process-specific software construct serving as a communications endpoint in a computer's host operating system.』

『A port is identified for each address and protocol by a 16-bit number, commonly known as the port number.』

From Wikipedia

<table>
<thead>
<tr>
<th>TCP Port</th>
<th>Service Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>ftp</td>
</tr>
<tr>
<td>23</td>
<td>telnet</td>
</tr>
<tr>
<td>25</td>
<td>smtp</td>
</tr>
<tr>
<td>80</td>
<td>http</td>
</tr>
<tr>
<td>443</td>
<td>https</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>1023</td>
<td>...</td>
</tr>
<tr>
<td>1024</td>
<td>...</td>
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<td>...</td>
<td>...</td>
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<td>...</td>
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<td>...</td>
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<td>49152</td>
<td>...</td>
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<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>65535</td>
<td></td>
</tr>
</tbody>
</table>

Well Known Ports

Reserved Ports

High Ports

TEAMWORK

ArchiCAD

UDP XYZ

TCP XXXX
TCP YYY
TCP ZZZZ
3. Problem(2): TEAMWORK VS FireWall

- UDP: XYZ
- TCP: XXXX
- TCP: YYYY
- TCP: ZZZZ
3. Problem(2): TEAMWORK VS FireWall

「Open some high ports on Firewall」

NG for Security Reason
3. Problem(2): TEAMWORK VS FireWall

- Kajima Intranet
- Internet

Fire Wall
3. Problem: TEAMWORK vs FireWall

- Kajima Intranet
- Internet

TEAMWORK
3. Problems

• Limited access for TEAMWORK Only internal company use
• Time consuming for data transfer Downloading/Uploading BIM file
• Hard to update BIM file Many derived BIM files

➤ Inefficiency of BIM use
4. Required Specification of Global BIM

- Share BIM data with person from outside the company
  - Shorten time for modeling
  - Reduce time for file management
- Store BIM data safely for the long term
  - Robust Server & Network
  - Flexible and Expandable

Open & Secure
Sharable BIM platform for construction projects
4. Deployment of Global BIM
4. Deployment of Global BIM (Configuration)
4. Deployment of Global BIM (Configuration)
4. Deployment of Global BIM on Cloud

- Easy Management of server resources
- Earthquake Protection
- Stable Supply of Electricity
- Open to Global Network
- Standardized Service Provided globally

Biz Hosting Enterprise Cloud
5. Benefits of Global BIM

- BIM platform for project members
  - Transfer BIM data safely, efficiently

- Shared Platform for internal/external users
  - Shorten time for Modeling

- No limit by Place and Time
  - Accelerating usage of BIM globally
  - Accelerating collaboration with modelers

- Integrated Management of BIM Data
  - Anytime available updated BIM data
  - Using BIM data for FM & Renewal.
6. Future Works

- Global Backup of Project data
- Project based licensing (Deployment of Team Client)
- BIM for Tablet (Mobile tools)
- Cultivating BIM Manager
- Expanding Global Collaboration network
6. Future Works

Expansion of usage of Global BIM
BIM on Cloud

Introduction of Global BIM

Thank you!

KAJIMA