

Innovations in Architecture and Technology to Enhance the Society

-Role of 3DVR, BIM and CIM-

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1. Introduction

Japan aims to become a role model for the world in the implementation of measures to achieve the SDGs and Forum8 actively Contributing to be part of this movement through Software development and considering SDG gaols in to the Business propaganda. Forum8 software development can fit in to the SDG goals.

In this paper we would like to discuss our Company principles, Vision, Actions and Tools in line with the SDGs and show how our solutions in 3D BIM/CIM, 3DVR and 3DCG contribute to the SDG Goals presenting some case studies using our products developed and provided by our Company that combine advanced design/analysis technology centered on VR, BIM/CIM, 3D modelling, Visualization and Simulation and Cloud services etc.

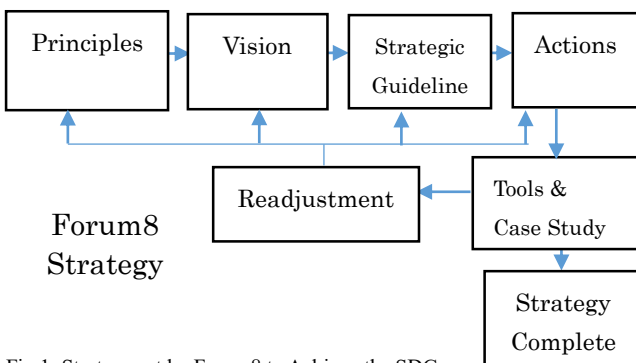
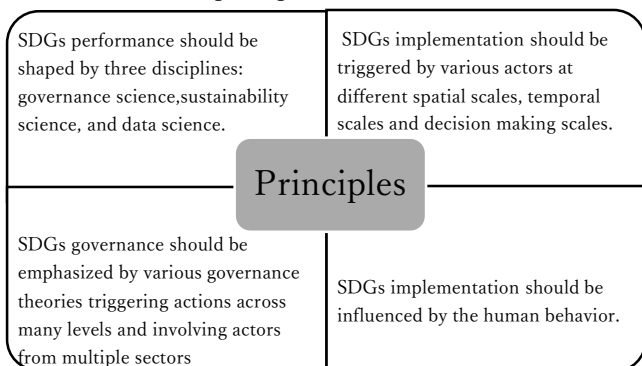


Fig 1: Strategy set by Forum8 to Achieve the SDGs.

2. Principles: Map the system

Forum8 follows the principles set in the ICT framework.



3. Forum8 Vision

Forum8's vision is to bring safety and security to society through engineering software development and service technology.

4. Strategic Guidelines

Forum8 main business is “VR/CG”, “FEM analysis”, “CAD” and “Cloud service”.

Civil engineering CAD UC-1 series products are being used in developing regions through projects such as JICA and ODA in addition to Japan, supporting local technical support and human resource education.

VR/CG is centered on UC-win/Road that supports design consultation and consensus building in roads and public works, leading research systems such as autonomous driving, earthquake simulators for disaster countermeasures, and various medical and educational applications. Widely used in domestic and overseas companies, local governments and research.

In addition, we are moving forward with cloud services space.

5. Actions

Concerning human resource development, through contests to disseminate technology, spread social contribution and community development practices, and foster young engineers and project leaders through design and analysis, VR, and various ICT initiatives Commendation business has been held every year.

- ◇ 3D VR simulation contest on cloud (from 2002)
- ◇ Student BIM & VR design contest on cloud (from 2011)
- ◇ Student cloud programming world cup (from 2013)
- ◇ National resilience design award (2014) Year ~)

6. Tools

6.1 Case study: 3DVR/CG and 3D BIM/CIM

As a 30th anniversary business, we have constructed a company dormitory in Takanawa, Tokyo. We have opened it within the company after conducting BIM/CIM and simulations such as landscape, sunshine, wind, energy, seismic, immersion, and fire evacuation etc. We also applied the design competition on cloud by Arcbazar to it. By picking up this study we will present how our solutions would touch the SDGs of “Industry Innovation Infrastructure”, “Sustainable Cities and Communities” and Decent work and Economic growth, Most importantly how would technology would help in Achieving the Environmental, Social and Economical aspects. Takanawa house provides One 4LDK room, six studio rooms, and a basement common lounge to the employees. Completion date is August 31, 2017.

6.1.1 BIM of Takanawa house using *3D BIM software* including the detailed plans, sections, Façade design and Others.



Fig 2: Images showing the Takanawa house Plans,Sections,Façade details.

6.1.2.Enhancing the Rendings and ligtings in CGI using the *Integrated 3DCG software*

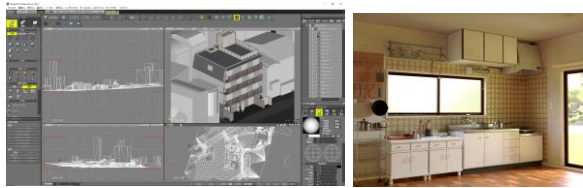


Fig3: Images showing the Takanawa house model imports and Renderings in CGI.

6.1.3 Conducting the Energy simulation, Sun path, Annual Day lighting and CFD analysis using the *Energy simulation Software*.

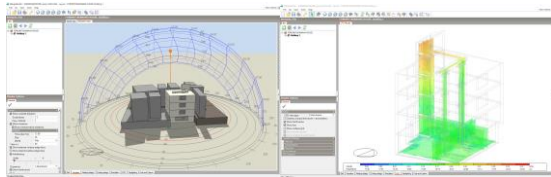


Fig4:Images showing the Takanawa house Simulation and CFD analysis.

6.1.4 FEM modelling, Load bearing, external forces and Displacement using the *Engineer studio Software* of Takanawa House.

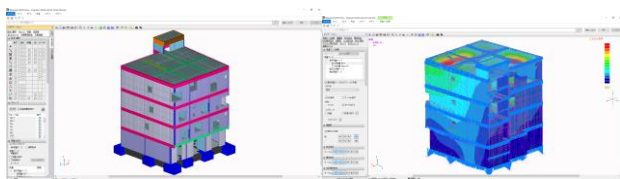


Fig5: Images showing the Takanawa House FEM modelling.

6.1.5 CIM (Civil information modelling) Takanawa house using the *3DCIM software*.

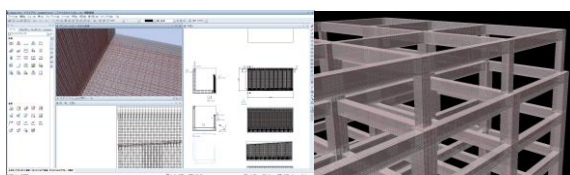


Fig6: Images showing the Reinforcement bars arrangement of Takanawa house

6.1.6 Micro Climate Shadow Analysis of Takanawa house using *3DVR simulation software*.



Fig7: Images showing the shadow analysis of Takanawa house.

6.1.7 Dynamic fluid Wind Analysis of Takanawa house using the *3DVR simulation software*.

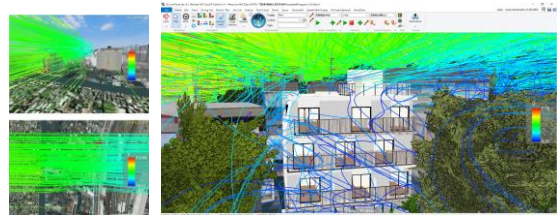


Fig8: Images showing the Wind analysis of Takanawa house.

6.1.8 Fire evacuation simulation of Takanawa building using *3DVR simulation*.



Fig9: Images showing the Fire Evacuation simulation of Takanawa house.

7. Conclusion

The conclusion of this paper is to raise the consciousness of the sustainable development goals in Japan and worldwide that is addressing the global issues and concerning from the social development as well technological advancement in Forum8 and see how society and technology can appreciate each other. As we presented some of our Actions and case examples how forum8 is contributing to SDGs though software development and hosting annual events which is still minimal and need a much more effort to delve in to each and every Goal through our business model, This is just a beginning and we are seriously directing our future advancement in the ITC towards achieving SDG 2030 agenda.

Acknowledgement

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References

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