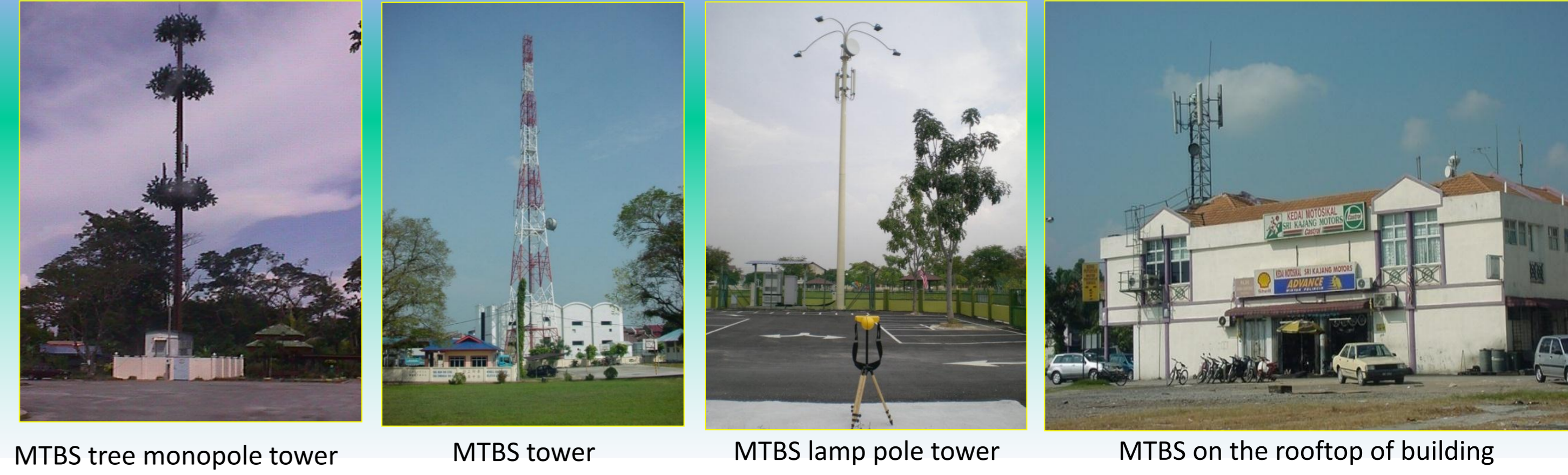


DEVELOPMENT OF TECHNIQUE FOR RF ASSESSMENT USING PREDICTION METHOD

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Introduction

Radiofrequency radiation is categorized as low energy of non-ionising radiation. RF radiation is mainly used in telecommunication technology. It is normally used in Mobile Telephone Base Stations (MTBS) system and wireless broadband network. People are worried about the RF radiation exposure that the radiation from this facility may have an adverse effect on their health. Therefore, RF radiation level need to be measured and it should provide information of the radiation level around the MTBS.



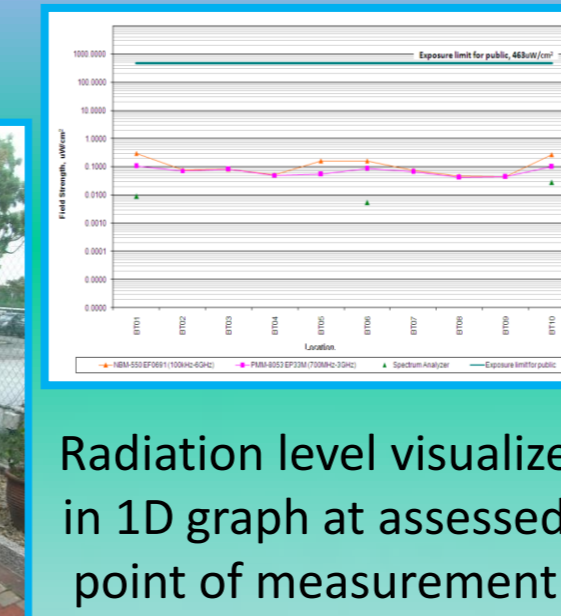
Problem Statement

On site RF measurement is a long process that need a lot of time and resources such as :

1. Need to bring a lot of equipment to conduct RF assessment
2. Need at least 3 personal to complete the task
3. Involve high logistic cost
4. Involving travelling days and long period of time for measurement
5. Result of measurement valid only at the present time of reading.
6. Radiation level can only be presented in 1D
7. Radiation cannot be measured at inaccessible area and in bad weather.



Equipment and personal during the measurement



Radiation level visualize in 1D graph at assessed point of measurement

Objective

To develop technique for RF assessment using prediction method

RF Prediction Technique

- The prediction method is based on ray tracing computational method recommended by International Telecommunication Union (ITU)-T (Telecommunication Standardization Sector of ITU)
- Technique of RF assessment using the prediction tool can be performed in the office itself without going to the site.
- The technique developed using IXUS software.
- RF Prediction Technique follow on step below:



- Information of the MTBS system have to be keyed in such as antenna type, transmitting frequency, height from the ground, orientation of the antenna.

The detail of RF assessment using RF prediction tool is shown in the **Flowchart 1**.

Advantages of RF prediction method

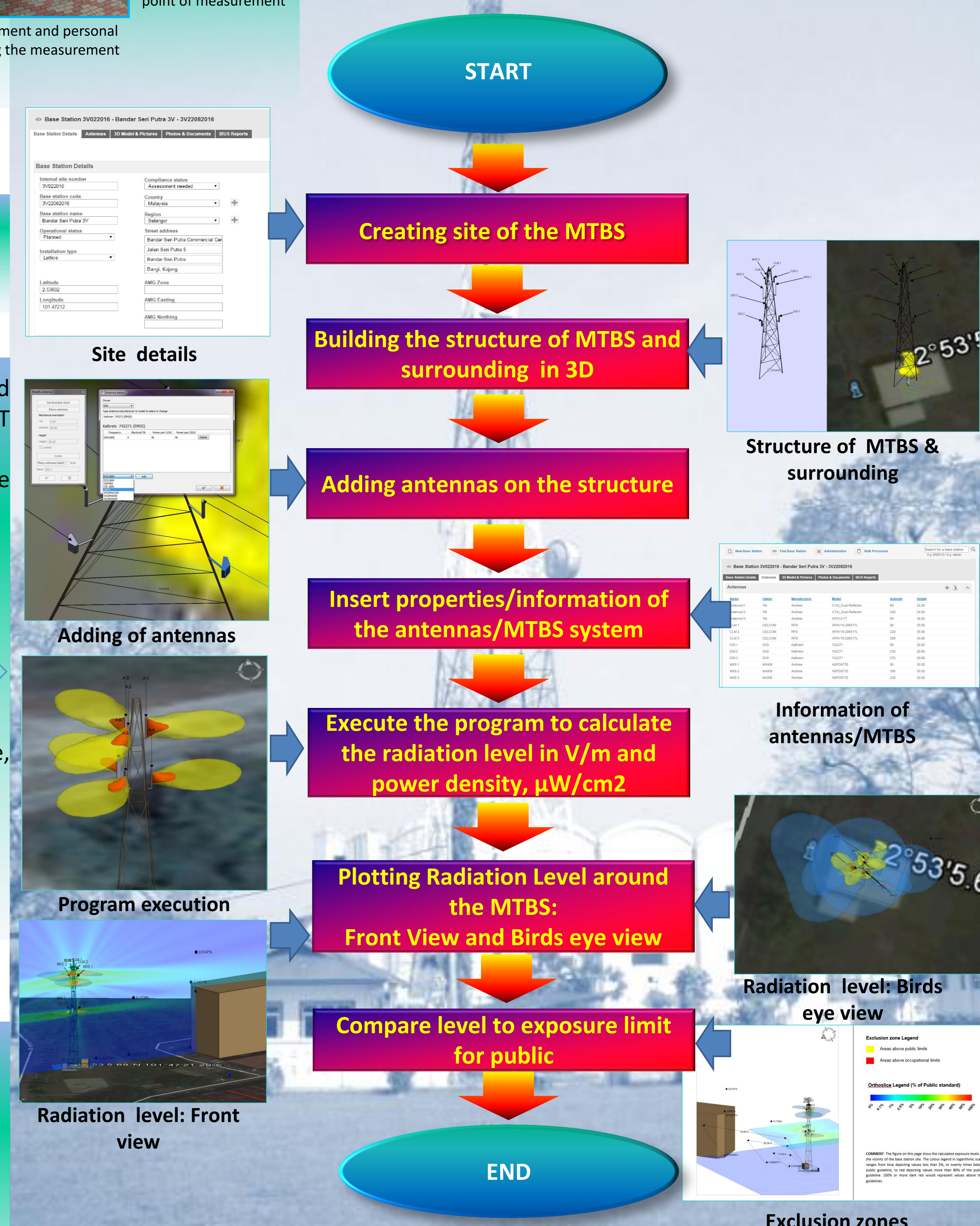
The advantages of the prediction technique are:

1. It can reduce the logistic cost because there is no need to go to the site,
2. Minimize manpower involved,
3. It can reduce time
4. RF radiation can easily be foreseen when the transmitter power of the antenna is changed.
5. The RF radiation pattern can be visualised in 2D or 3D
6. Simulation can be done for worst case scenario
7. RF radiation can be measured in inaccessible areas
8. RF radiation level of MTBS can be predicted on existing and new MTBS to be built

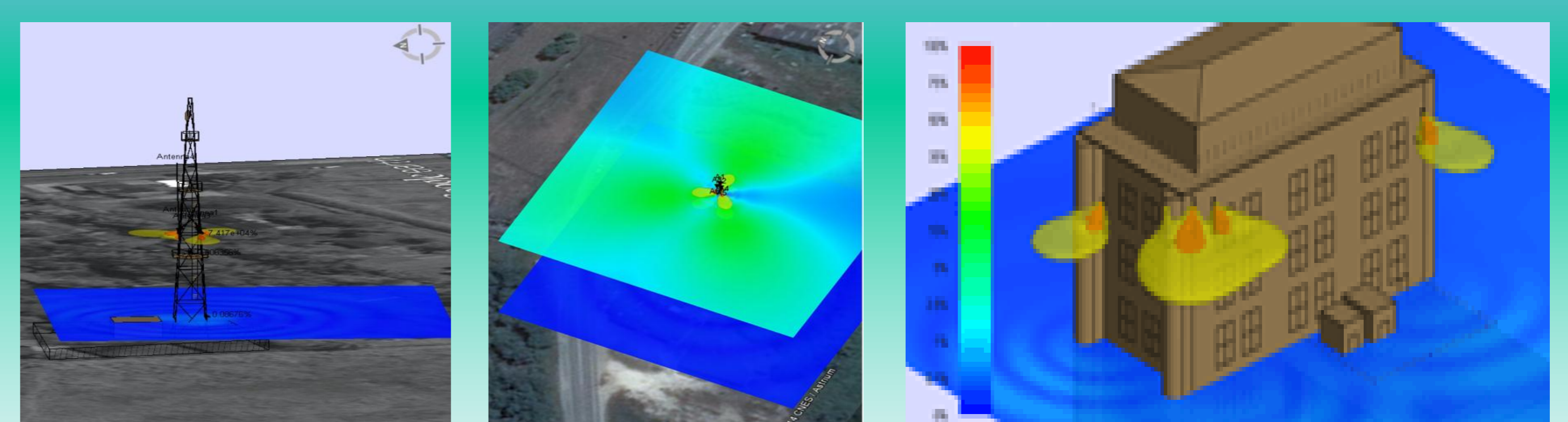
Conclusion

RF radiation prediction method is an effective and efficient way for RF assessment as the method simplifies work, saves time, energy and money.

Flow chart 1: Process using RF prediction tool



Results of prediction method



Radiation level can be visualised at the ground level, at the height of antenna and outside the building

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