The Covid-19 pandemic that has lasted until now has forced changes in various sectors of life, for example, the use of masks on a daily basis has brought changes in the fashion sector, namely the addition of mask accessories to clothing where previously there were none. Likewise in the field of planning and building design which must adjust to the "new normal era", so that it can fulfill the function of space according to the needs of the "New Normal Era". The use of information technology in this case IoT (Internet of Things) and AI (Artificial Intelligence) is needed to support these changes, especially planning and building design will function more optimally if equipped with these technologies and take a role in responding to the needs of building users to feel safer, comfortable and guaranteed health. Some examples of previous research using IoT are the use of automation in architectural concepts and using AI to detect human presence in a room or building. Building design in the "New Normal Era" supported by the use of IoT and AI is needed so that the building meets the health protocol standards issued by the Ministry of Health, but still has to meet the aesthetic and beauty concepts as well as the function of the building. IoT which is a concept that uses connectivity from the internet network as a communication medium for all connected objects into a single unit of an integrated system and similarly the use of AI for artificial intelligence applied to these objects. This research aims to discuss how it is possible to use IoT and AI in building design in the "New Normal Era" as a result of the Covid 19 pandemic. The methodology used in this research is to use a descriptive qualitative methodology with the aim of being able to understand and then provide alternative building design solutions with the concept of automation using IoT and AI. This research resulted in scientific studies related to building designs that use IoT and AI which can be input for alternative design solutions in the "New Normal Era". This research is expected to answer the question of how the application of health protocols such as social distancing and hand washing that must be applied affects the design of buildings and the use of IoT and AI to support this. The limitation of the research study is on the design of the building with the concept of automation using IoT and AI in Indonesia. The existence of building locations in Indonesia also greatly influences differences in building design solutions, where the Health Protocol reference used can of course differ from one country to another, even though international standards can also be used in general. The concept of building design with the use of IoT and AI technology automation in buildings in Indonesia which is very widespread in the "New Normal Era" and is urgently needed can provide space design solutions that provide security, comfort and "health" for space users.

KEYWORDS
Internet of Things, Artificial Intelligence, New Normal Era, Building Designs, Pandemic Covid-19 Adaptation
planning and building design will function more optimally if equipped with these technologies and take a role in responding to the needs of building users to feel safer, comfortable and guaranteed health. Several previous studies using IoT are the use of automation in architectural concepts and using AI to detect human presence in a room or building.

Building design in the "New Normal Era" supported by the use of IoT and AI is needed so that the building meets the health protocol standards issued by the Ministry of Health of the Republic of Indonesia but must still meet aesthetic, functional, and safety standards. The New Normal Era means the building does not need to follow the rules that are aligned with the technical engineering in the form of setting the entry and exit paths or setting soap or using hand sanitizer, maintaining a minimum distance of 1 meter when leaving the house, cleaning hands regularly by washing hands with soap or using hand sanitizer, and maintaining a minimum distance of 1 meter when entering or leaving the house. In general, the health protocols regulated in this era are: wearing a mask that covers the nose and mouth to the chin and the face, washing hands regularly with soap or using hand sanitizer, maintaining a minimum distance of 1 meter when entering/leaving the house, and cleaning hands regularly using soap or hand sanitizer. The Indoor Things (IoT) is a result of the Covid 19 pandemic. The case studies in this study are classrooms and restaurants.

2. Literature Review

A New Normal Era is the phase where people need to adjust themselves responding to the Pandemic COVID19. The New Normal life is required to change with health becomes basic considerations more than others. By adopting all changes on behavior due to the new normal lifestyle, the space occupied will change in terms of forms and layout. One theory stated that Space Impact Behaviour and Behaviour Impact the Space (Indriyati, 2008). It confirms that the New Normal life behaviour will impact the space. Furthermore, the form and layout need to adjust to the new normal lifestyle, therefore the spatial programming need to be modified, and further design guidelines and rules should be reviewed. Emphasis on efficiency when referring to modern architecture is no longer used and the emphasizes on Psychological or emotional referring to postmodern architecture is no longer strong to consider.

The basic guideline of architectural design of spaces today is no longer limited to economic interests but is now more or less related to: (1) Space capacity allowed; (2) Effectiveness of doing indoor activities; (3) Mobilization of comfort between spaces; and (4) The emotional satisfaction of the space for the user related to the identity and symbols in the space. Design is the result of designing an object that is carried out through certain stages and involves considering the parameters attached to a particular design object (Ariyanto, 2012). The definition of a building in the sense of a building according to Government Regulation No. 36 of 2005 concerning Implementing Regulations of Law No. 28 of 2002 concerning Buildings is a physical form of construction work that is integrated with its domicile, partially or wholly located above and/or in the ground and/or under it, which functions as a place for human to carry out their activities, whether for shelter or residence, religious activities, business activities, social activities, culture, or special activities.

Internet of Things is an ICT development where a device communicates with other devices in real time (ubiquitous communication) and has computing capabilities (pervasive computing) and has the ability to analyze and record changes that occur around it and can interact actively in the computing process (ambient intelligence) (Adhie et al., 2020). Artificial Intelligence is the use of computing for activities that require intelligence like humans do, where there is a section that observes the situation through sensors and takes intelligent action on these conditions (Intelligent agent) by reasoning conditions by analyzing and processing according to the knowledge base (inference engine).

2.1 Regulation Health Protocol

In facing the adaptation of new habits towards a productive and safe society against COVID-19, it is necessary to organize the implementation of various activities with public health priorities, for that the Minister of Health of the Republic of Indonesia issued Decree Number HK.01.07/MENKES/382/2020 concerning Protocols for Public Health in Public Places and Facilities for the Prevention and Control of Corona Virus Disease 2019 (COVID-19). In general, the health protocols regulated in this decision are: wearing a mask that covers the nose and mouth to the chin when leaving the house, cleaning hands regularly by washing hands with soap or using hand sanitizer, maintaining a minimum distance of 1 meter from other people and avoiding crowds, Another alternative if you can not keep your distance is by administrative engineering in the form of limiting the number of people or setting a schedule. Other engineering is by way of technical engineering in the form of setting the entry and exit paths or making partitions. National regulations must be considered also aligned with Regional regulations related to PPKM (limited mobility and community activities) that apply in each region. Each PPKM also has characteristics and standards separately, so type the building also becomes different type building one with others.

3. Methodology

The methodology used in this study is a descriptive qualitative methodology with the aim of understanding and then providing alternative solutions for building design with automation concepts using IoT and AI. This research outlines scientific studies related to building designs that use IoT and AI which can be input for alternative design solutions in the "New Normal Era". This research activity includes data collection, data analysis, data interpretation, and in the end a conclusion is formulated that refers to the data analysis. This study will answer the question of how health protocols are translated into a space design supported by IoT and AI technology, such as the capacity of the number of people in the room, the distance between individuals in the room, the maximum time duration of room users, detection of room temperature and detection of human body temperature in the room. The application of IoT and AI in space will affect the design of architectural buildings that are functional, comfortable and safe from health point of view in an effort to prevent the spread of the covid-19 virus. The limitation of the research study is on the design of the building with the concept of automation using IoT and AI in Indonesia. The existence of building locations in Indonesia also greatly influences differences in building design solutions, where the Health Protocol reference used can of course differ from one country to another, even though international standards can also be used in general.

4. Result and Discussion

The concept of building design with the use of IoT and AI technology automation in buildings in Indonesia which is very widespread in the "New Normal Era" and is urgently needed. It is expected that this can provide space design solutions with security, comfort and "health" for space users is prioritizing. The Design conceptual case focussing on the Pandemic Design solutions, which consists of: (1) The number of people’s capacity in the room connected by maintaining distance; (2) The distance between people doing activities; (3) The temperature in the room and the temperature of the human body. The case study in this research is chosen for the classroom and restaurant.

4.1 Classroom

In terms of Physical Distancing as defined by Health Protocols, it impacts the room capacity. For example, based on Neufert Architecture Data, the room capacity for big classroom of 100 people needs about 0.80 sqm for each student. It means the classroom size will require about 80 sqm. In the situation while Health Protocols are adopted, the classroom is only allowed to be occupied by half capacity (50% capacity). While room’s occupation is reduced, it will then impact the room temperature due to less numbers of students accommodated. The lower temperature of room is usually resulted from the lower human body temperature of each occupying the space.

Figure 1: The classroom management in the new era

Other impact resulted for Pandemic Design, such as:
- Impact on Administrative Management Academic, like Settings turn student enter class; Hybrid Learning Methods required
- Impact on Economy toward the Capacity on maximum student number recruitment (if no Hybrid learning solutions)
4.2 Restaurants

In terms of Physical Distancing as defined by Health Protocols, it impacts the room capacity. For example, based on Neufert Architect Data, the room capacity for a restaurant of 80 people needs 0.53 m² for each visitor. It means the restaurant size will require about 42.5 sqm adds on circulation for 30% which is 12.75 sqm. The total room size is 55.25 sqm. In the situation while Health Protocols are adopted, the restaurant is only allowed to be occupied by half capacity (50% capacity). While room’s occupation is reduced, it will then impact the room temperature due to less numbers of students accommodated. The lower temperature of room is usually resulted from the lower human body temperature of each occupying the space.

Impact resulted from Pandemic Designing for Restaurants, such as:

- Impact Menu Order Management, such as QR Menu in order to limit the mobilization of visitors and the waiters. Other than that, the use of QR Menu is an example of using IoT and AI where it is equipped with features that are connected to other devices in the waiter’s room or kitchen.

- Impact Economy toward capacity visitors a maximum of 50% - so that the revenue gained only for 50%.

- Solution: Time limits for each occupied table. In the pandemic era, the minimum length of time of the visitors staying in one space will minimize the virus spreaded over in the room. This arrangement will help to optimize the turning over of visitors come to the restaurant, which is then will keep the revenue sustainable and has no impact.

- Impact Economy toward Maintenance Building Materials used as the use of Disinfectant - resistant floors, walls, benches, tables

- Impact Economy toward the use of touchless equipment’s to avoid the Virus-spreaded over

The use of QR menus in restaurants, this is an example of using IoT and AI if the QR Menu is equipped with features that are connected to other devices, such as a refrigerator or food stock storage area, so if the stock of foodstuffs for certain foods runs out, automatically that food is not on the menu. In addition, the refrigerator automatically sends a message to the food supplier to send the food that is running out. In the "New Normal Era" there are small changes to the design of the space, including the use of automatic doors and non-touch buttons on all buttons used in general, such as elevator buttons, parking ticket buttons.

New Normal Era Building Designs has a significant impact to several things, such as:

- Health Protocol highlighting the Physical Distancing requirement is one a strongest impact on the space design in this pandemic era;

- The Architecture standards on space ratio and calculations are not able to use the universal ones like Architect Data by Neuferts or Time Saver Standards. The new standards must be created and dynamically used based on the level of pandemic situation;

- The change of space design in this New Normal era leads to the challenge on economics (building design cost; building/equipment cost), managements (which impacts on revenue) as well as psychological impact on over-self protected to the pandemic situations.

Although New-Normal Era Building designs and re-organizing space are certainly costly, however, it needs to be overcome, concerning health is now a first priority in this Pandemic era. The use of IoT and IA technology automation in the building will support this disadvantaged Pandemic situation where technology is optimized to have less mobilization and personal contact no longer needed today.
5. CONCLUSION

This research identifies the new space standard used for building design in New Normal Era and in addition to that the concept of using IoT and AI technology automation in buildings in Indonesia are introduced where physical distance, body and room temperature were assessed and easily monitored. This new spatial design completed with IoT and AI technology performances can provide integrated spatial and technology design solutions in response to the current Covid-19 pandemic conditions. The use of IoT and AI technology must strongly support the building’s functions itself for the sake of meeting the Health Protocol requirements, other than the building aesthetic and architectural standard’s perspective only.

REFERENCES