

Analysis

Background

Every year millions of pounds are spent on construction for the Education Sector. Institutions are constantly developing their sites and to do so, work will be outsourced to building contractors. The contractor manages the construction from start to finish, organising each stage of the construction before finally handing the building over to the institution.

When the building is near completion it is checked for defects in the construction and furnishings before being handed over to the client. This process, called “snagging” involves checking each individual room on a regular basis for defects such as cracked paintwork, a damaged bed or the tap not working. These “snags” are then tracked to see that they are fixed.

Currently, there are few software packages for recording and tracking the “snags”. The most widely used system is based on paper and a Microsoft Excel or Word document. This means that that only one person may edit or add information. Further limitations are that all changing of information or calculations must either be done manually or semi-manually which takes a great deal of time. The current system also makes the tracking of who has found the snags and when they are fixed very difficult and time consuming. Another problem with the current solution is that each system must have at least Microsoft Word and also possibly Microsoft Excel also.

The current system is also not user-friendly, requiring a decent amount of knowledge of Microsoft Word and Excel in order to use the system. The system is also very confusing as it can be difficult to tell if a snag has been solved or not.

A Bespoke piece of software that is specifically built for this purpose would greatly reduce wasted time, make the tracking of snags much simpler and make the use of the entire system friendlier.

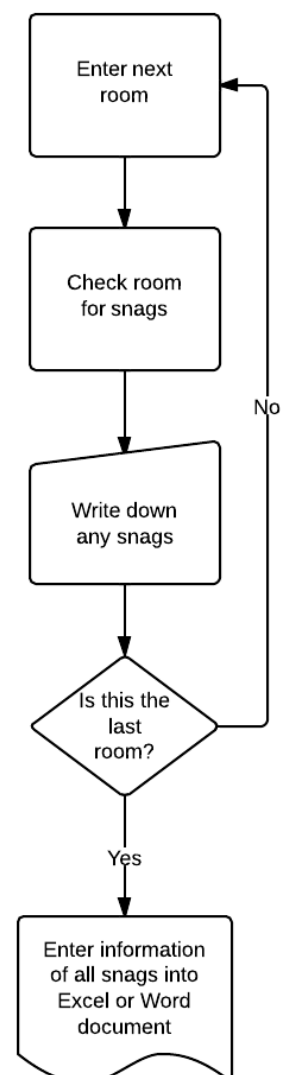
Investigation and Analysis of Current System

In the current system, on a regular basis, the project managers will go to each room of the building and check for any defects.

There are three types of defect:

- Building Works
- Fittings, Furniture, Equipment (FFE)
- Mechanics and Electrics (M and E)

In the construction of student accommodation, for each bedroom, they would check each part of the room in turn. For example: First they would turn on the light to see if it works, then they would enter the en-suite bathroom and turn on that light. Then they might flush the toilet, check the taps work, check the shower works etc. The rest of the room would be checked. Making sure the furniture is not broken, that the paint is not cracked, that the window is not broken. Once the entire room has been checked, if there are any problems, these would be recorded down on a sheet of paper. They would then move onto the next room and repeat the process. Once this has been done for each room, all the defects (“snags”) are then recorded into a word or excel document.



When a snag is found, several things are recorded. The room where the defect is, a description of the defect, the type of the defect, the urgency of the defect, when it was found and when it was fixed.

Below is an example of a form used. This is both an input and an output form. It is used as an input form to record the defects and as an output form to see which defects are left to be solved.

Example

DEFECTS SCHEDULED

Generic School Sports Centre – 9 August 2010

Originator: Generic School

Employer's Company A
Agent:

To Company B
Contractor:

Project Title: New Sports Centre

Project 053441
Reference:

Date of Issue: 11 August 2010

Issued By: John Smith

Defect No.	Room	Description	Status	Complete
1	Foyer	power socket in entrance lobby near PE corridor is not working	G	
2	Squash Corridor	The pool hall locking mech on the squash court doesn't work properly	B	
3	North Sports Store	the shelves in the sports hall north store room have been positioned over the access hatches for the sports hall underfloor heating – can these shelves switch to the other side of the store (north wall of the store) so these access hatches are accessible?	G	
4	Disabled Change	disabled changing rm hand dryer u/s	B	
5	Resource	resource room has no lock from changing rm end	B	

Status:	Yellow – Critical ASAP / Same Day	Y		
	Red – Emergency within 24 hours	R	Brown – Urgent within 5 days	B
	Green – Within 30 days	G	White – End of Defects Period	W

Interview

I decided to use an interview as my method of data gathering as it allows more complex questions to be asked and gives more detailed information than other forms of data gathering. It also allows you to ask further questions based on the answers to previous questions. I interviewed a senior project manager for a building contractor.

What current system do you use?

"It is almost entirely paper-based. It will all be recorded on paper in longhand. It is then typed up afterwards. Each week, there is a manual calculation to find out what proportion of defects are being solved per week."

Have you ever had any problems with your current system?

"The whole system is a problem. It is very labour intensive. Someone has to type information up after it has been written down and there is not categorising or sorting available."

Have you ever lost any information which should have been entered onto the system?

"Misplacing information is quite common. Losing a notebook would be a big problem"

Do you create back-ups of your information?

"Once typed up, it is saved to a shared drive which is backed up. Before that, there are no backups"

How often do you update your system?

"Near the end of a project, we perform snagging and update the system weekly"

How many people generally perform snagging?

"There are two groups, the contractor and the client. Both groups generally have one person looking for building defects and one person for mechanical defects"

What would the most important requirement of a new system be?

"For all the defects to be stored in a database and for the information to be able to be manipulated in real-time. Also for the database to be available for both the client and the contractor"

Problem Definition

The created program will:

- Allow multiple user accounts including Admin accounts.
- Allow information about multiple rooms to be stored and allow each room to correspond with its separate defects
- Allow multiple defects be recorded for each room.
- Give outputs including calculations such as percentage of defects being solved per week.
- Provide an editable, graphical floor plan.

Limitations

- The database will not be secure against non-authorized users. It is up to the user to ensure their computer is secured.
- The Software will only work on Windows machines of Windows 7 or higher.

Objectives

- Include multiple user accounts including admin accounts with basic password protection.
- Allow for new accounts to be created by an admin.
- Give admin accounts access to more options and controls than standard users.
- Be able to store and manipulate information about a large number of different rooms.
- Be able to store and manipulate information about several defects for each room. Using relational databases.
- To perform validation on information entered by the users to preserve data validity.
- Be able to sort and search data from the database. Searching will be implemented through filtering
- Be able to create multiple reports which perform several calculations such as percentage of resolved defects.
- These reports will sort defects so that defects linked to the same room are grouped together.
- To include an interactive floor plan that will help to display information including room layout.
- Each room on the floor plan will be moveable and resizable in realtime.
- When manipulating rooms, information on rooms should be displayed on screen.
- New rooms can be added by admin accounts.
- New defects can be added by all accounts.