League of Friends Heatherwood

Proposal to install Wi-fi & Intranet to deliver Hospital Radio Service

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Survey for the introduction of Wireless Streaming for Reception by Mobiles/Ipad's/internet radio's

Since the introduction of the patient power terminals for entertainment, all the previous methods of listening to the hospital radio service have gone.

The music service at Heatherwood will not survive if we don't look at some alternatives to the current situation.

Currently ward 10 has no services and the former ward 4 has also had all the equipment removed by Hospicom.

The remaining wards have terminals above the beds which more often than not do not have headphones on, for the patient to listen.

Hospicom will be a thing of the past at some point and we should not think they will develop or re-install any services in the ward areas.

History Ward 10 Music Services

Ward 10 was built in the 1980's and the old stethoscope bed head system was provided in the dado services. It never worked properly at the start and in 1987 the cable was cut which provided the service and despite numerous attempts for it to be re-instated it never materialized.

The am inductive loop service was installed in 1988 and loan radio's provided by the radio station enabled patients to listen once again. The service was turned off at the end of 2010.

Hospicom installed their system in 2003/4 but when the ward closed all services were removed and are not to be re-installed.

Ward 10(new ward 4) patients, now have no access to any music or entertainment services whatsoever.

Music Listening Future

The future of personal listening is more likely to be undertaken on a mobile phone or the emergence of ipads/tablets, Pda's.

Our Project Aim

To deliver Radio Heatherwood on mobile devices which includes smart phones tablets or internet radios for patients, visitors and staff on ward 10(New ward 4)

Ward 10(New ward 4)would be a trial for the service and if successful, we would extend the service to other parts of the hospital.

This method of delivery is called Wi-fi. This would be achieved with a combination of a wired Ethernet intranet, supporting wireless access points.

The following notes and observations give an outline to what would be involved and an estimate of the cost.

How Do Listeners Tune Into The Radio Service?

On mobiles or Ipad's etc, a listener would select their internet browser, when Radio Heatherwood receives a request to join their network a web page is sent to the device asking the listener to accept the terms and conditions. A click on yes would then direct their browser to a dynamic web page with details of currently playing songs on the radio.

Listeners would not have access to the internet, as all services would be delivered by our closed intranet service.

The internet portable radio's provided, would have the web page address programmed on a preset, switching on the radio would go to the preset music stream from the Radio Heatherwood intranet.

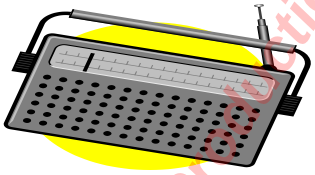
The service on the intranet would use the common Wi-Fi frequency band of 2.4 GHz, currently used on all routers in the home or businesses.

Mobile Devices

All mobile types would have access to the radio station intranet

Touch pads & Mobiles

Internet Radio



Internet radios would be purchased to provide listening for ward areas.

Preset

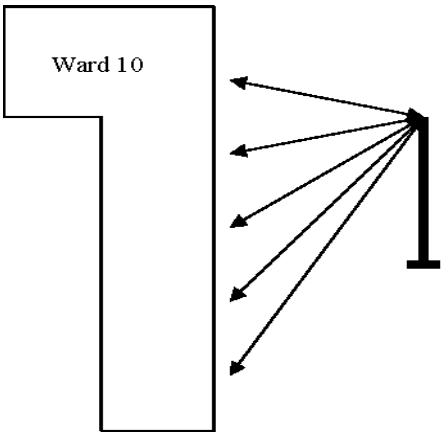
Wireless What Method?

The frequency of Wi-fi radio signals does not provide good service if obstructions are in the way. The signals will pass through windows, but not solid objects like walls. Wi-fi signals are also poor if passing through water.

There are four potential options for delivering the service to the patient areas.

- **Option 1** External Aerial to radio studio

Option 1 External Omni-directional Aerial



Signal must pass through windows to link to devices

Is the signal strong enough to penetrate the ward using the windows?

- Pro's:- No equipment installed in the ward
- Con's:- Poor signal possible in areas furthest from aerial side of ward. Wet weather could affect the signal.

- **Test result 12th May 2012**

An external aerial temporarily erected proved the signal was able to be received in the main corridor of the ward with the single rooms closest to the aerial able to receive signal. Rooms furthest away from the aerial, the signal dropped to nothing as you moved halfway across these rooms. This included the day room.

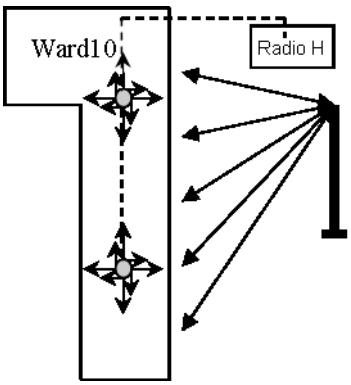
This test was carried out on a bright sunny day. This will be different during wet days.

A further test will be carried out with a full music link to verify the stability of this signal.

Option 2 Two access point radios provided in the ward, Powered by Power over Ethernet.

This would link to external aerial in addition pull its feed signal from the Ethernet cables. The external aerial offers a signal fill in for individual rooms along the length of the ward.

Option 2 Internal Access Points & External Omni-directional Aerial



Signal must pass through windows to link to devices

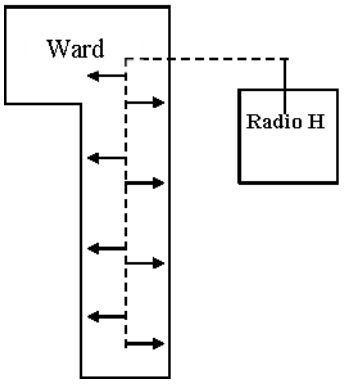
Internal Access point x 2
size of Smoke detector
Dimensions Diameter:120mm
Height: 50mm

- Pro's:- Strong signal in ward, resilience with both supplies of signal.
- Con's:- Equipment access during failure. Cabling costs for installation. Poor signal possible in areas furthest from access point in ward. Wet weather could affect the external signal.

Option 3 Leaky Feeder Coaxial Cable

A coaxial cable type; which allows radio signal to leak out into the area, in which the cable is placed, would be used. The cable would be run from the radio studio into ward 10 loft area and the leaky feeder part of the cable would be laid the length of the building through the loft.

Option 3 Leaky Feeder Coaxial



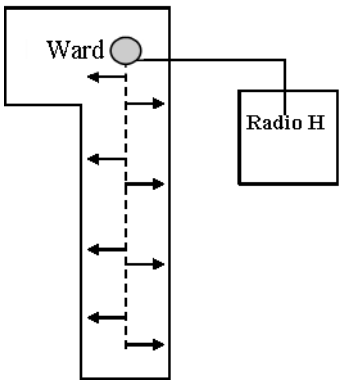
Signal escapes into area surrounding cable

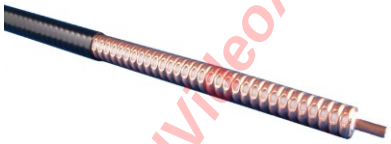
- Pro's:- Strong signal in ward.
- Con's:- Access to cable equipment during failure. Cabling costs for installation. Damage to cable by future works on the ward.

Option 4 Leaky Feeder Coaxial Cable Plus Access Point

An Ethernet cable type; would be run from the radio studio to the location of the access point location in ward 10. The coaxial leaky feeder cable would be used. The cable would be run from the access point into ward 10 loft area and the leaky feeder part of the cable would be laid the length of the building through the loft.

Option 4 Leaky Feeder Coaxial





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Studio Equipment

Initially we would need to install the following:-

- Network switch with 8 ports 4 with (Poe).
- New PC, solely providing server software for the web page and audio functions.
- Earth rod for external aerial.
- Hot spot access box generating captive web page for first log on.
  All other interface services are already in place.

Pros

A number of benefits:-

- Where there is no entertainment for patients, they will have access to two music sources initially either via their own device or listening on the portable internet radio operated by the ward staff.
- All equipment would be maintained and serviced by the league, No third party to rely on.
- Easy expansion of system.
- Possible unlimited music sources can be programmed.
- No imposed technology on patients, to come to grips with.

Cons

- Access to ward units during faults.
- Signal on devices would have a delay, so two signals close together being listened would appear out of sync. Should only affect ward radio's close together or personal devices being listened on in close proximity with say a ward radio.

Move Project Forward

If we were to move this forward, we have a number of pre installation tasks and questions to be resolved.

In addition get approval from trust to support the project and offer assistance where they can.

- Funding. (League of friends) Attached to this report a summary of the equipment costs.
  The figures shown do not include the labour costs for the fitting side of the project.
  Is the fitting done in-house by works dept or do we ask contractor?
  In addition add some peripheral costs for unexpected expenses and the base figure without labour costs:-£4000
- Set up test rig in studio to demonstrate to staff and interested parties, what the system could do. Iron out any technical issues. Cost would be part of the equipment required.
- All programming and setup will be carried out by the radio engineer.
- All units would be programmed in the studio, prior to installation in ward.

Summary

The league will provide its own dedicated Wi-fi /intranet with access for patients and staff to listen to the hospital radio service. There are four options identified to deliver the service to ward 10 and options 2, 3 or 4 are likely to be the most reliable.

Being in hospital can be an isolating experience, particularly in the modern world when most people are used to be constantly connected to their networks. Now that the restrictions on use of mobile phones in hospitals have been lifted, and many hospitals have closed Wi-fi networks for staff use, many of the arguments against hospital Wi-fi no longer apply.

Availability of Wi-fi in hospitals would allow people to stay connected during their stay, and aid their recovery by maintaining their spirits. It's a well known fact, conclusive studies on the use of music to aid recovery, all show it can shorten the recovery time for patients receiving treatment.

We feel the patient experience will be greatly enhanced by this service and will also bring kudos for the league of friends and allow promotion of its services, enabling future support for development of the hospital.

Future

The development of the Wi-fi network would be expanded into new areas of the hospital as and when funds allow.

The radio could provide access to broadband at a later date, giving users either access to email or access to email and the internet.

As the system would be operated on the same policy as you would find in a coffee shop you could also charge for access to the internet?

1) Appendix

Wi-fi hotspot usage

Statistics from the office of national statistics shows in 2007 just 700,000 people used a Wi-fi hotspot by 2011 this has risen to 5 million, fuelled by the demand from smart phone users and ipad users.

Hospitals Already Using WI-fi for Patients

Bradford Teaching Hospitals NHS Foundation Trust
Chelsea And Westminster Hospital NHS Foundation Trust
King's College Hospital NHS Foundation Trust
Newcastle Upon Tyne Hospitals NHS Foundation Trust
Taunton & Somerset NHS Foundation Trust
Burton Hospitals NHS Trust
Epsom and St Helier University Hospitals NHS Trust
Royal National Orthopaedic Hospital NHS Trust
University Hospitals of Leicester NHS Trust
Cambridgeshire and Peterborough NHS Foundation Trust
Hertfordshire Partnership NHS Foundation Trust
Liverpool Heart and Chest NHS Foundation Trust
North East London NHS Foundation Trust
Aintree University Hospitals NHS Trust
Croydon Health Services NHS Trust
Lewisham Healthcare NHS Trust
St George's Healthcare NHS Trust
Somerset Primary Care Trust

All of these hospitals are actually charging for the service.
Epsom Charges:-
Prices start at £3 for three hours, a day's access costs £5.75, a week £11.50 and a full month £14.50 - a receipt will be emailed to the user's email address.

The private hospitals group Spire Bupa and Bmi private hospitals already offer Wi-fi access for their patients.

2) Appendix

Wi-fi is taking off at other hospitals:-

The use of Wi-fi at other hospitals is already gaining momentum as the benefits can be seen by the patients and the staff.

Below some information from other sites:-

Press release from Bradford Teaching Hospitals NHS Trust

Free Wi-Fi for Bradford Teaching Hospitals patients

August 10, 2011

A new Wi-Fi network service for patients and visitors has recently been launched at Bradford Teaching Hospitals.

The free service is designed to enhance the experience of both patients and visitors by enabling them to stay in touch with the outside world during their time at the Bradford Royal Infirmary or St Luke's Hospital.

"The new Wi-Fi service for patients will provide them with a way to communicate with family and friends during their stay" said David Hollings, Head of Information Technology.

"We understand that getting better involves more than just medical treatment as being in hospital can sometimes be an isolating experience, especially in a modern world where most people are used to constantly being connected to their family and friends.

"We hope that by providing Wi-Fi in our hospitals it will allow patients and their visitors to stay connected, aid recovery by maintaining their spirits, and even allow 'virtual visiting' via Skype for those who cannot otherwise get into the ward to see the patient."

Wi-fi has been used on the Foundation Trust's wards for the last five years and has been proven to be safe when used in clinical settings throughout the world.

Hospital chiefs also hope the new Wi-Fi service will ensure that people, for whom hospitalisation is an interruption to a busy schedule, can keep up-to-date with their work, while other groups like students will be able to continue with their studies uninterrupted.

"Bradford Teaching Hospitals aims to provide the best service possible to patients and guests, and providing free internet access will enable patients to stay connected with family and friends at all times," added Director of Planning and Performance, Dr Dean Johnson.

Visitors or patients wishing to use the service must bring their own Wi-Fi enabled computers and software with them to hospital where they will be able to detect a Wi-Fi SPARK hotspot. After following a simple registration process they will be able to obtain full internet access.

The service is being provided by Wi-Fi Spark Ltd whose telephone contact details can be found on the home page if users experience any difficulty with logging on and require technical support.

3) Appendix

Ward 4 Staff

Whilst carrying out the first test on 13th May the ward staff, were very happy about what we were trying to achieve and were impressed with a signal for smart phones.

One member of staff even tried testing her own phone for signal.

4) Appendix

PPL Element

The current broadcasting licences from the ppl do not cover the use of music being delivered by closed intranets. After a number of exchanges with ppl they have agreed to our request.

On 23/04/2012 14:30, Todd, Charlotte wrote:

Hello Peter,

Many thanks for further clarification of what service you wish to licence with PPL. As you are fully aware, this type of transmission is not covered in your current Hospital Radio Licence, and is not entirely suited to the Webcaster Licence PPL offer. However, we are prepared to take a pragmatic approach on this occasion.

PPL is prepared on a non-precedential and without prejudice basis, to cover Radio Heatherwood's radio stream to its bed head system under the current Hospital Radio Licence agreement for no additional cost on the condition that the stream is broadcast via a closed intranet system as has been described and is not available outside of the hospital premise.

Please let us know if this is favourable to you.

Kind regards,

5) Appendix

Proposed Costs

The costs of items shown are correct at the time of review. This cost would be for the more expensive option 2.

If options 3 or 4 are taken up, the costs for cabling and equipment would be slightly lower than the cost in the figures shown.

Supplier	Item	Qty	Price	Vat	Total inc Vat	Notes & info
	Web Page PC Server	1	£1,500.00		£1,500.00	
BroadbandBuyer	Netgear GS108P ProSafe 8-Port Gigabit Switch w/ 4x PoE Ports	1	£143.32		£143.32	
Solwise	Net-WAS-150	1	£175.02		£175.02	Captive Portal Generator
NCH Software	Broadwave	1	£82.69		£82.69	Stream Server software
Jamcast	Software	1	£30.00		£30.00	Stream Server software
Solwise	NET-LIGKIT	1	£16.82		£16.82	Lightening kit
Solwise	NET-WL-58LIG	1	£16.12		£16.12	Arrestor
Solwise	NET-WL-ETHLIG	1	£15.20		£15.20	Lan arrestor
Solwise	NET-EL-M36 Smoke Detector Access point	2	£84.71		£169.42	Internal Access Points
Roberts radio	Model 106	2	£85.00		£170.00	Ward radio's
	Misc Costs inc cabling ? Additional Hardware	1	£1,600.00		£1,600.00	Various

£3,918.59