**CASE STUDY FOR BARCODE PAY ON FOOT AT UNITAS HOSPITAL & LIFESTYLE MEDICAL CENTRE FACILITIES**

**Introduction:**

Unitas Hospital, located in Centurion, South of Pretoria is the largest private hospital in Africa. Netcare , who operates Unitas Hospital, is the largest private hospital network in South Africa. The 470-bed facility is the flagship of the Netcare group's 54 private hospitals across South Africa, and offers world-class healthcare services enabled by the latest technology, a team of highly experienced medical professionals committed to rendering exceptional service to all of its patients.

Lifestyle Centre Medical Centre is a neighbor of Unitas Hospital. This specialist facility provides services for Renal Care and Prosthetic Solutions amongst others. The two hospitals share facilities and service providers including general parking and tenant parking.

Parking and access at Unitas and Lifestyle was becoming a headache and a challenge and this is where the management of these facilities asked Zeag South Africa for our assistance.

After an analysis and observation of facilities Zeag recommended the Barcode ticket system at Unitas Hospital and Lifestyle Hospital as the optimal solution for their paid parking requirements.

**Parking Challenges:**

The number of parking bays at Unitas (+/- 500) & Lifestyle (+/- 200) is limited to their needs, and the entry and exit lanes at the medical facilities are shared by visitors, service providers, staff and ambulances. With the third party Pay at Exit system the congestion during peak patient visiting times at the entry and exit lanes proved challenging. The congestion was realized (1) within the car park area and (2) the backup of vehicles onto the main road and up to the main set of traffic lights. Access for emergency service providers during these times proved difficult. Patient and visitor frustrations became evident through the number of increasing complaints at access and parking. The first main criterion was to identify a solution that would resolve congestion at the main entry exit plaza to the hospital. The preferred solution was to substantially reduce bottlenecks at the main entrances.

The increase in failure rate on the existing third party Pay at Exit equipment with lack of local support was further contributing to user frustrations. The second main criteria for Hospital Management was to engage with a reputable equipment supplier that had a sound and reliable system and capable and competent presence in the local market with swift response times and correct spares to complete call outs. The system should be quick and reliable in order to relieve congestion at the main entrance.

The system should also be able to allow service providers operating within the medical facilities to validate patient parking tickets. Medical and other suppliers delivering via the common car park were also to be considered in the paid parking environment.

The existing third party proximity access control system was to remain in operation, as this system was extended into the hospital facility, including theatre and wards. As the proximity access control at the main gate was a satellite system to the main third party access control system, the new equipment supplier was to include the upgrade of this hardware and software and incorporate the proximity access control in the maintenance proposal of the parking system.

For extending the security at the lanes, high resolution facial recognition covert CCTV cameras were to be installed in all entry and exit lane stations. On taking or inserting a ticket, the operator should have visual footage of the driver of the vehicle for identification purposes.

**Solution:**

Zeag's Orion$^{XB}$ Barcode solution was recommended as the optimal solution for both medical facilities based on the number of peripherals and the proximity of the equipment to operations.

For Unitas Hospital, the Orion$^{XB}$ included;

2 Barcode Lane Entry (LE) Stations with covert CCTV and retrofitted third party proximity access control in the UCD faceplate proximity cavity.
2 Barcode Lane Exit (LX) Stations with covert CCTV and retrofitted third party proximity access control in the UCD faceplate proximity cavity.
2 Barcode Automated Pay Stations (APS) with UCD printer functionality.
1 Barcode cashier station
1 ZMS

For Lifestyle Medical Centre the Orion$^{XB}$ included;

1 Barcode Lane Entry (LE) Station
1 Barcode Lane Exit (LX) Station
1 Barcode Automated Pay Station (APS) with UCD printer and Valiscan functionality
1 4 button Valiprint
1 Barcode cashier station
1 ZMS

The different needs for each of the facilities is evident in the configuration of the parking equipment and

solution provided for the two medical facilities, albeit the Barcode system was accepted as the overall solution.

**Third Party proximity access control system**

A Barcode system will need to use a proximity monthly parker solution in the absence of magnetic readers in the ticket reader.

Unitas insisted on retaining the services of one company as singularly responsible for all parking equipment at the main entrance, hence the inclusion of the third party access control and CCTV camera's. Lifestyles tenant access control is predominantly situated at the rear of the facility using an alternative access point.

Zeag SA made the recommendation that Unitas and Lifestyle use the Zeag AVI Nortech short range proximity access control system which is fully integrated to the ZMS. With over 3000 cards crossed linked between the two facilities already on an existing system this would prove disruptive to the facilities service providers and staff and therefore a conscious decision was made to retain the third party access control system at both medical facilities.

Using the proximity cavity in the lane stations to mount the third party proximity reader, certainly reduced confusion within the lane as the parker interacts with only one station. The third party proximity system was easily setup to run parallel with Zeag's Barcode Orion$^{XB}$. A cross reference of barrier openings is manually equated with the number of tenant openings on the third party system on a monthly basis by the operator.

**CCTV Camera mounting**

The steel monitor panel within the lane station was identified as the preferred position for the covert camera. A 16mm hole was punched in this plate allowing the covert camera to be mounted. The camera is located behind the display window, eliminating direct human contact to the camera from outside the station. The display window further conceals the camera in this position. Not having to mount the camera on the front panel or the housing of the station meant that the IP rating and specification integrity of the station was not compromised.

**Barcode Lane Entry Station**

The time to dispense a ticket at the LE is remarkably a similar speed as experienced with the magnetic stripe ticket. The feel and process of ticket dispensing at the Barcode LE station is identical as a magnetic stripe system. There is an additional dedicated “Doctor's” entry lane with third party proximity at Unitas. This is included as part of the installation and refurbishment of the lane equipment and will be maintained by Zeag SA. The defining advantage of the Zeag Barcode Lane Entry Station is that it has the capacity to dispense up to 5000 thermal tickets, double that of our local competitor.

**Barcode Automated Pay Station**

At Unitas, there are two APS's installed alongside each other, one is on a paraplegic plinth. The benefit of the Barcode UCD at the APS is that the ticket can be inserted in either direction as long as the barcode is facing up. The payment transaction process and time is similar to that of the magnetic stripe solution. The additional and optional print functionality on the Barcode UCD for Orion$^{XB}$ only will be available in third quarter 2010. The first hour parking at Unitas is free; however management have requested that each ticket be presented at the APS for validation as an additional security measure.

Lifestyle has paid tariffs within the first hour. Parking is paid at the APS mounted on a paraplegic plinth in the reception area of the main building. Due to the building configuration at Lifestyle and patients with prosthetic limbs, a cashier at exit can be used for exceptional cases. The main control room for security and parking is located at the main entry to the facility. A dual direction service lane barrier is linked to the Zeag cashier station, allowing the operator to open this barrier for deliveries through justification on the ZMS.

The APS at Lifestyle Medical Centre is fitted with a Valiscan Validation module situated below the ticket reader on the front of the APS. The barcode validation slip is presented to this reader, the ticket is validated to zero charge and returned to the parker to allow them to exit with a minimum of fuss. The barcode voucher cannot be inserted into the ticket reader in error.

**Barcode Lane Exit Station**

The Barcode Lane Exit station transaction process is identical to the magnetic stripe system. The defining advantage of the Zeag Barcode Lane Exit station in comparison to other products in the South African Market, is that the ticket is retained at the exit station, i.e. there is no external waste paper bin mounted onto the station housing for used tickets. There is a separate dedicated “Doctors” lane for exit with the third party proximity access reader.

**Valiprint**

Lifestyle Medical Centre has a number of service providers, doctors practices and other medical specialists offering their services from this facility. Some of the service providers have opted to absorb the cost for payment of parking for their selected repeat patients. The validation used was the 4 button Valiprint solution offering 4 different discounts for the service providers. As there are over 20 service providers within the facility, it was not economically feasible to have a Valiprint at each of the service provider's receptions. The solution was to have a 4 button Valiprint at the main reception. Each doctor or service provider would use their practice stamp and the parker could claim their voucher at reception. To consolidate voucher allocations the receptionist would record each voucher to the service providers name and this would be billed back to the service provider at the end of the month.

**Barcode Cashier Station**

The barcode cashier station at Lifestyle and Unitas is used for exceptional transactions only. This includes lost ticket. Both the Barcode Scanner and Barcode UCD are included peripherals at the cashier stations. The barcode ticket is read using the barcode scanner and the necessary transaction is completed. Future releases for Orion$^{XB}$ will allow the Barcode UCD to produce pre-validated tickets at the cashier station.

**Zeag Management Station (ZMS)**

The proximity of all equipment to the ZMS is short & direct in distance. RS 422 communications is used on 4 and 8 pair mylar cable using common polling groups for Pay Stations and common polling groups for entry exit lanes. The time delay experienced for the peripheral to interrogate the ZMS is evident, however minimal and generally unnoticed by the user when measured against the duration of the entire transaction period.

The standard ZMS version 4.1 for both Lifestyle and Unitas is used.

**UPS**

Due to the nature of hospitals operating 24/7 all peripherals and the ZMS were installed with Uninterrupted Power Supply congruent to the power demand of the device. The main feed to these UPS's is linked from the facilities generator and backup UPS's. Each week power tests are performed on the power supply to the Zeag system. To date we have experienced no issues directly related to power down time. A parking system at a hospital must be operational 24/7. Having the equipment supplied by uninterruptible power supplies secures permanent operations.

**Tickets**

The standard Zeag SA thermal ticket is used. The ticket is identical to the design of the SA magnetic stripe ticket, less the magnetic stripe. Approximately 100K tickets have been processed through both facilities parking systems and there has been no unreadable ticket complaints reported back to Zeag support.

**Lightning Protection**

The surrounding area of Centurion is well known for the intensity and frequency of lightning strikes. With the importance of communication on a Barcode Parking system, Zeag SA installed lightning protection on all of the parking equipment. The lightning protection isolates the communication link and power link to the peripheral in the event of a lightning strike by diverting the surge to common ground.

**Intercoms**

The LEF 10 Aiphone analogue intercom system was installed for voice communications between peripherals and control rooms at both facilities.

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