

E-Commerce in Miniature:

The Network Connection Booking System
at Brunel University

Andrew Findlay

Skills 1st Ltd



Summer 1999

- One campus with wired rooms
- Three with non-wired rooms
- 1000 wired-up study bedrooms
- 380 more due in September
- 40% takeup
- Manual administration
- Phone company bidding to wire everything

The old process

- Student goes to network office:
- Fills in form with room number
- Pays money
- Collects instructions and software
- Office makes paper worklist for network staff
- Staff visit each plantroom almost every day
- Office tries to keep track of active connections

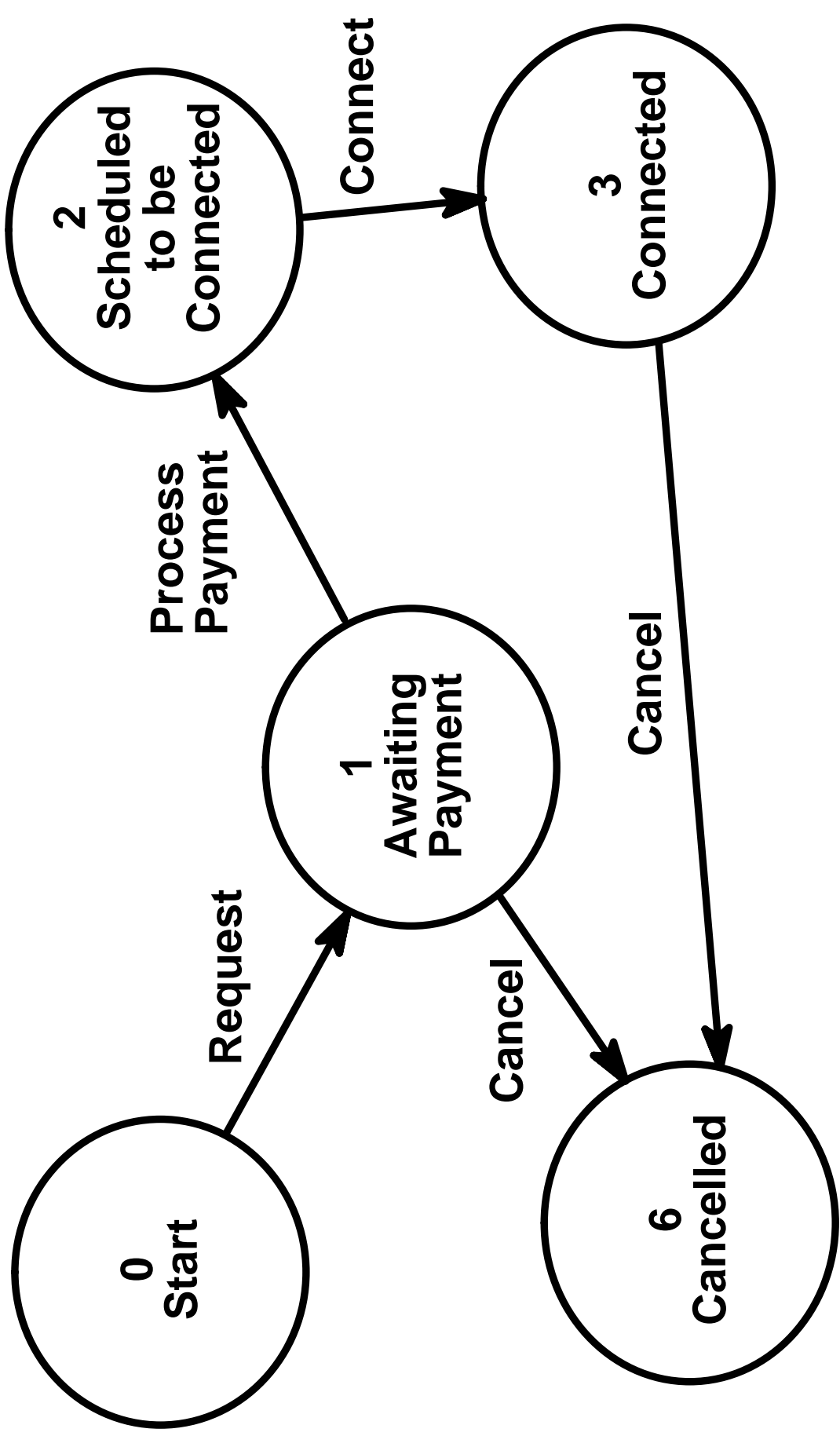
Problems

- Big queues at network office
- Can only serve one site
- Connection errors
- Records often wrong

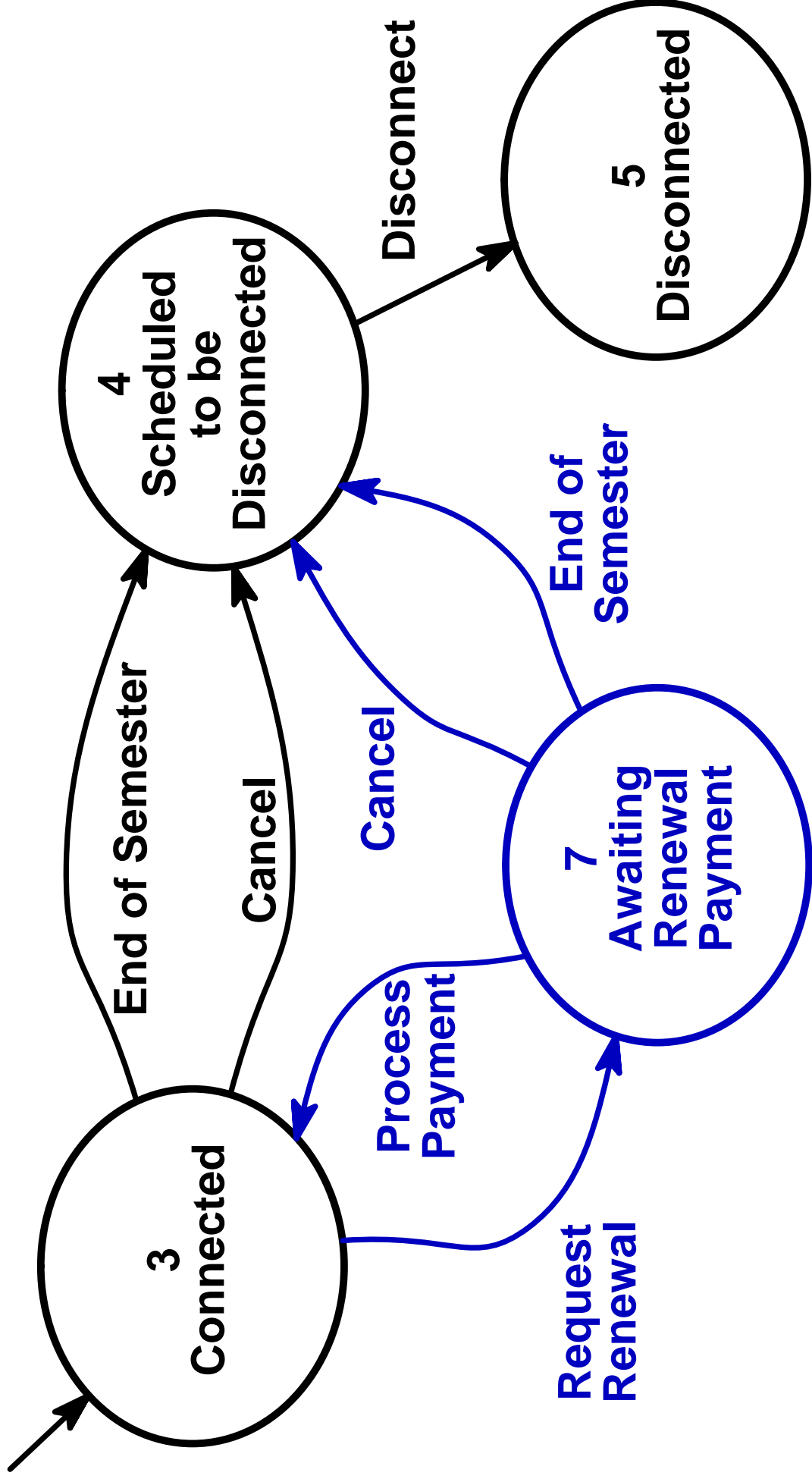
New System Required

- Web based
- Secure
- Use existing usernames and passwords
- Collect all required information at once
- Verify input where possible
- Encourage credit-card payment
- Manage the entire workflow
- Keep student informed by e-mail

The life of a connection (1)



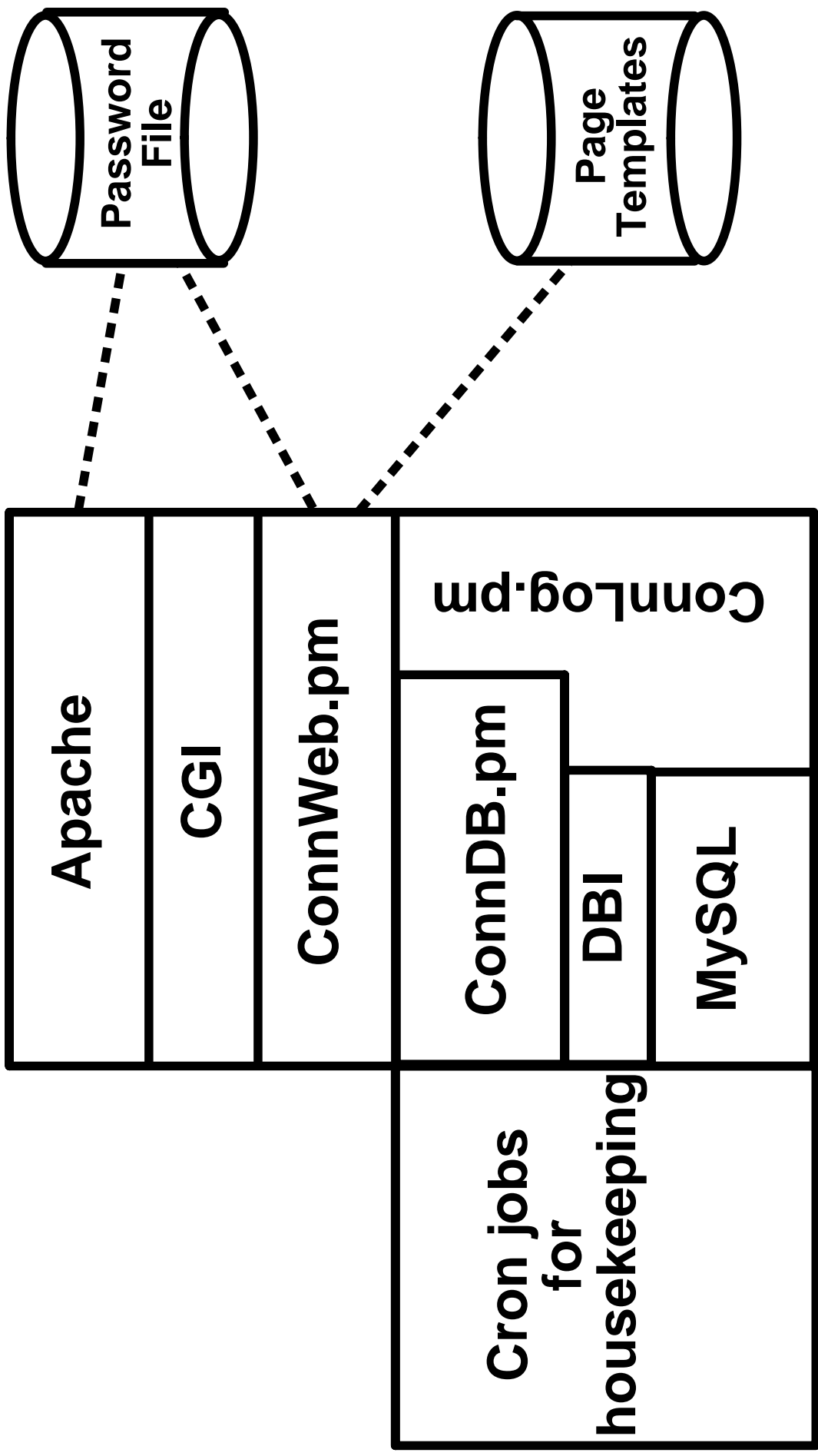
The life of a connection (2)



Development Process

- Mockup using static webpages
- Used in discussions with staff
- Aid to refining design
- Tools and components
 - Apache, mod_ssl, AuthSystem
 - MySQL
 - Perl, DBI, Date::Manip, HTML::Template, CGI, Mail::Send, Business::CreditCard

System Structure



Database Tables

- service_request
- service_req_item
- connection
- sites
- buildings
- outlets
- devices
- devports
- user
- billing_details
- privs
- permissions
- semesters
- service_states

HTML Templates

- HTML::Template
- Separate appearance from program logic
- e.g. fragment to build a building-selector menu:

```
<SELECT NAME="building">  
  <OPTION value=""></OPTION>  
  <TMPL_LOOP NAME=building>  
    <OPTION value="<TMPL_VAR NAME=bldg_id">  
      <TMPL_VAR NAME=bldg_name>  
    </OPTION>  
  </TMPL_LOOP>  
</SELECT>
```

In use: Application for Service

Connection details

Applicant: **Andrew Findlay (andrew)**

Hall of Residence

Flat or Block (if any)

This is a **letter** for Saltash, and a **number** for Isambard Close, Fleming, and Faraday.

Room number:

Network outlet number (if known):

Which Semester do you want service in?

Brunel University, Uxbridge, Middlesex UB8 3PH, United Kingdom
Telephone: (01895) 274000 (UK); +44 1895 274000 (International)

In Use: Verification and Payment

TEST
database

Home Page

Search

Payment for network service

You are applying for network service to be provided as follows:

Applicant	Andrew Findlay
Username	andrew
Hall	Faraday Hall
Flat/Block number	3
Room	42
Outlet	T317
Start date	20 Jan 2001
End date	9 Jun 2001
Connection fee	£10.00
Semester fee	£35.00

Total cost: £ 45.00

Payment options

You must choose one of the payment options listed below. When you click on one of the 'Apply for service' buttons your application will be recorded, though the connection will not be made until payment has been received.

By applying for this service you are accepting the [terms and conditions](#) that apply to it.

In Use: Payment Options

Payment options

You must choose one of the payment options listed below. When you click on one of the 'Apply for service' buttons your application will be recorded, though the connection will not be made until payment has been received.

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Option 1

The quickest option is to pay by credit card or debit card using the form below. We can accept most MasterCard, Visa, Switch and Solo cards, but *not* American Express or Diners. The card details will be encrypted when they pass across the network, and will be deleted from our database when the payment has been processed. Payments are processed manually by Computing Services staff.

Card Number:

NOTE: This is the large number printed across the middle of the card (usually 16 or 18 digits). Please put spaces in just as they appear on your card.

Account name:

Expiry Date:

Issue Number (if any):

Option 2

If you prefer, you can send card details or a cheque by post. You can use Brunel internal post (free)

In Use: Application Complete

TEST
database

.....
[Home Page](#)

Application Complete

Your application for halls network service has been recorded:

Applicant	Andrew Findlay
Username	andrew
Hall	Faraday Hall
Flat/Block number	3
Room	42
Outlet	T317
Start date	20 Jan 2001
End date	9 Jun 2001
Connection fee	£10.00
Semester fee	£35.00
Service request ID	589
Date submitted	6 Feb 2001 17:25:07

Total cost: £ 45.00

You have supplied card details online, so your application will be processed in the next few days.

New connections usually take 6–8 working days for the whole process. We will inform you by E-mail when the connection has been made.

Extensions to existing connections are valid as soon as payment has been received.

You may wish to print this page for your records.

Admin: Payment List

Halls Network Payment Processing

6 Feb 2001 17:31:16

Card Payments

These users have supplied credit-card details on-line. When payment has been processed the card details will be deleted.

[andrew](#) Andrew Findlay

Other Payments

These users have elected to send payment by post or to pay in cash.

[fe99ccs](#) Christopher See

[fi99mna](#) Nicholas App

[\[Return to main admin page\]](#)

Brunel University, Uxbridge, Middlesex UB8 3PH, United Kingdom
Telephone: (01895) 274000 (UK); +44 1895 274000 (International)

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[Home Page](#)

Admin: Payment Processing

Service request #589
submitted by andrew on 6 Feb 2001 17:25:07

Charge: £45.00 Amount paid: £0.00

1234 5678 9012 3452

12/01

A N Other

Accept payment of £

Notes:

	Requested	Actual
Building	Faraday Hall	
Flat/Block number	3	
Room	42	
Outlet	T317	
Device		
Port		
Requested on	6 Feb 2001	
Paid on		
Service start date	20 Jan 2001	
Connected by		
Service end date	9 Jun 2001	
Disconnected by		
State		awaiting payment before connection
Notes		

Cancel this item

Write "cancel" here to confirm:

Network Administration

TEST
database

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Network Administration

Connection Job Sheets

Site (optional)

Building (optional)

Make job sheet

Clear form

Connection Checklists

Building

Flat or Block number (if data for a single block is required)

Make checklist

Clear form

Check User Account

Username

Network Job List

TEST
database

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Network Connection Jobs

6 Feb 2001 17:44:43

Faraday Hall

Action	Room	Outlet	Device	Port	User	Full Name
Dis	1/05	G107	faraday-72-hub-01	14	ee96ddz	Dimitrios Ziakas
Con	1/1	<input type="text" value="c107"/>	<input type="text" value=""/>	<input type="text" value="!"/>	andrew	Andrew Findlay
Dis	1/12	F108	faraday-72-hub-01	6	ec96kks	Kekul Shah
Dis	1/137	T111	faraday-72-hub-01	5	ca96ral	Rebekah Abimbola Latunji
Dis	1/15	F111	faraday-72-hub-01	22	me96agr	Alexander Gracian Ratheesh
Dis	1/18	F115	faraday-72-hub-01	15	cs96jcp	Jason Christian Peters
Dis	1/32	S118	faraday-72-hub-01	21	lw96rru	Raphael Uzor
Dis	1/33	T107	faraday-72-hub-01	16	ec96mmm2	Mahbub Miah
Dis	1/34	T108	faraday-72-hub-01	17	bb96mac	Monique Anthea Chery
Dis	1/35	T109	faraday-72-hub-01	13	cs96cct	Constantina Tsiambaou
Dis	1/40	T115	faraday-72-hub-01	3	hs96lsm	Lisa Samantha Morgan
Dis	1/43	T118	faraday-72-hub-01	4	hs96mms	Melvin Sargeant

Connected at Last!

Service request #589 submitted by andrew on 6 Feb 2001 17:25:07

Charge: £45.00 Amount paid: £45.00

CARD DETAILS DELETED

Notes:

Building	Requested	Actual
Faraday Hall	Faraday Hall	Faraday Hall
Flat/Block number	3	3
Room	42	42
Outlet	T317	T318
Device		faraday-72-switch-03
Port		27
Requested on	6 Feb 2001	
Paid on	6 Feb 2001	
Service start date	20 Jan 2001	6 Feb 2001 17:55:23
Connected by		ccopmjs
Service end date	9 Jun 2001	
Disconnected by		
State	connected	
Notes		

Cancel this item

Write "cancel" here to confirm:

Reason:

Summary

- Single product e-commerce system
- Open source components
- Available from:
 - www.skills-1st.co.uk/papers/connections.html
- Contact:
 - andrew.findlay@skills-1st.co.uk

