

# Registered TransXChange Record

## Summary Information

File Creation Date: 27 April 2002  
 File Creation Time: 13:45

This file contains details as follows:

- 1 service
- 1 route

<b>SERVICE:</b>	aa1234567	<b>PUBLICLY KNOWN AS:</b>	525
<b>Service Type:</b>	Normal Stopping		
<b>Start Point:</b>	Newcastle Haymarket		
<b>End Point:</b>	Berwick		
<b>Start Date:</b>	23 October 2000		
<b>End Date:</b>	service to operate indefinitely		
<b>Registered Operator:</b>	X-Ray Yellow Zebra Bus Transport, also known as XYZ Buses, trading as Better Buses		
<b>Application Type:</b>	New		
<b>Registration Submission Date:</b>	20 September 2001		
<b>Registration Number:</b>	12345		
<b>Variation Number:</b>	1234		
<b>Traffic Area(s):</b>	North Eastern		
<b>Circulated Authorities:</b>	Northumberland and Nexus		
<b>Subsidy Details:</b>	Service is partially subsidised by Northumberland County Council and Nexus		

## Timetables

**Service Identifier:** aa1234567  
**Service Publicly Known As:** 525  
**Service Starts and End Points:** starting from Newcastle Haymarket, ending at Berwick  
**Service Dates:** service start date is 23 October 2000, service to operate indefinitely  
**Journey Pattern Exceptions:**

**outbound exceptions:**  
 Queen's Jubilee Bank Holiday - does not operate between 3 June 2002 and 4 June 2002

**inbound exceptions:**  
 Queen's Jubilee Bank Holiday - does not operate between 3 June 2002 and 4 June 2002

## Outbound

### Monday to Friday

	a b AT		ı	b	#	a b AT #	a	ı			
		every 7-8 mins from this journey	to this journey				every 5 mins from this journey	to this journey			
<b>Newcastle Haymarket Bus Stn (M) , Bay 7</b>	..	0945	1504	1545	1601	1620	1645	1714	1810	1835	1910
<b>Regent Centre Metro (M)</b>	..	0953	1512	1553	1609	1628	1653	1722	1818	1843	1918
<i>Stannington</i>	..	1004	1523	..	..	1639	..	..	..	1854	..
<b>Morpeth</b>	..	1015	1534	1615	1631	1650	1715	1744	1840	1905	1940
<i>Alnwick , Stop B</i>	..	1054	1613	1645	1701	1729	1745	1814	1910	1944	2010

<i>Belford</i>	0911	0931	1119	1638	1711	1727	1754	..	1840	1936	2009	..
<b>Berwick-upon-Tweed , Bay 8</b>	0942	0949	1152	1711	1744	1800	1827	1835	1913	2009	2042	2100

Vehicles are adapted for disabled passengers

Hail and Ride zones (where buses will stop, where it is safe to do so, by being hailed from the roadside) include the following: **Starts at** Regent Centre Metro (M), **ends at** Stannington. **Starts at** Felton, **ends at** Belford. **Starts at** Haggerston Castle, **ends at** Berwick-upon-Tweed.

General Interchanges include:

- Regent Centre Metro (M) (changing to Gosforth High Street) : related service ID is 678DFG , valid from 20 November 2001 until 20 June 2003 , interchange time is 5 mins (interchange mode is 'Walk' ) , type of interchange is 'Join'

Non-standard operations for this service include:

- will operate on 11 October 2001, 21 March 2002
- will NOT operate on 18 August 2001, 20 February 2002
- operation is indeterminate on 30 May 2002
- periods of suspension include the following (dates given are the last date of operation prior to suspension and the first date after suspension): **from** 28 October 2003 **until** 5 November 2003
- operates on the following Bank Holidays: Good Friday
- will NOT operate on the following Bank Holidays: May Day, Local Mid-Summer Holiday
- operation is indeterminate on the following Bank Holidays: Boxing Day

**a** ~ conductor aboard

**b** ~ smoking permitted on this journey

**#** ~ journey-specific layover points apply as follows:

- 16.20 departure from Newcastle Haymarket Bus Stn (M) has a layover point (Wideopen Station) lasting 2 mins
- 16.45 departure from Newcastle Haymarket Bus Stn (M) has a layover point (Scremerston Village Hall Car Park) lasting 2 mins

**AT** ~ vehicle description: Articulated

**¿** ~ journey-specific non-standard operations apply as follows:

**15.45** departure from Newcastle Haymarket Bus Stn (M)

- will operate on 11 October 2001, 21 March 2002
- will NOT operate on 18 August 2001, 20 February 2002
- operation is indeterminate on 30 May 2002, 22 June 2002
- periods of suspension include the following (dates given are the last date of operation prior to suspension and the first date after suspension): **from** 28 November 2001 **until** 8 December 2001, **from** 8 June 2003 **until** 30 June 2003
- operates on the following Bank Holidays: New Year's Day, Good Friday
- will NOT operate on the following Bank Holidays: May Day, Late Summer Bank Holiday (Not Scotland), Local Mid-Summer Holiday
- operation is indeterminate on the following Bank Holidays: Christmas Day, Boxing Day

**19.10** departure from Newcastle Haymarket Bus Stn (M)

- operates on school days of local education authority; Hogwarts Dotherbys
- does NOT operate on school days of local education authority;
- operation to be decided on school days for local education authority; Grange Hill Bog Standard

## Saturday

											#
<b>Newcastle Haymarket Bus Stn (M) , Bay 7</b>	..	0940	1021	1200	1310	1408	1515	1649	1809	1845	1922
<b>Regent Centre Metro (M)</b>	..	0948	1029	1208	1318	1416	1523	1657	1817	1853	1930
Stannington	..	0959	..	..	1329	..	..	..	..	1904	..
<b>Morpeth</b>	..	1010	1051	1230	1340	1438	1545	1719	1839	1915	1952
Alnwick , Stop B	..	1040	1124	1300	1410	1508	1615	1749	1909	1945	2022
Belford	0912	1106	..	1326	1436	..	1641	..	1935	2011	..
<b>Berwick-upon-Tweed , Bay 8</b>	0930	1139	..	1359	1509	1558	1700	1839	2008	2044	2112

Vehicles are adapted for disabled passengers

Hail and Ride zones (where buses will stop, where it is safe to do so, by being hailed from the roadside) include the following: **Starts at** Regent Centre Metro (M), **ends at** Stannington. **Starts at** Felton, **ends at** Belford. **Starts at** Haggerston Castle, **ends at** Berwick-upon-Tweed.

General Interchanges include:

- Regent Centre Metro (M) (changing to Gosforth High Street) : related service ID is 678DFG , valid from 20 November 2001 until 20 June 2003 , interchange time is 5 mins (interchange mode is 'Walk' ) , type of interchange is 'Join'

Non-standard operations for this service include:

- will operate on 11 October 2001, 21 March 2002
- will NOT operate on 18 August 2001, 20 February 2002
- operation is indeterminate on 30 May 2002
- periods of suspension include the following (dates given are the last date of operation prior to suspension and the first date after suspension): **from** 28 October 2003 **until** 5 November 2003
- operates on the following Bank Holidays: Good Friday
- will NOT operate on the following Bank Holidays: May Day, Local Mid-Summer Holiday
- operation is indeterminate on the following Bank Holidays: Boxing Day

# ~ journey-specific layover points apply as follows:

- 18.09 departure from Newcastle Haymarket Bus Stn (M) has a layover point (Scremerston Village Hall Car Park) lasting 2 mins

## Sunday

					§				i		
<b>Newcastle Haymarket Bus Stn (M) , Bay 7</b>	..	0950	1028	1200	1315	1410	1515	1645	1802	1835	1900
<b>Regent Centre Metro (M)</b>	..	0958	1036	1208	1323	1418	1523	1653	1810	1843	1908
Stannington	..	1009	..	..	1334	..	..	..	..	1854	..
<b>Morpeth</b>	..	1020	1058	1230	1345	1440	1545	1715	1832	1905	1930
Alnwick , Stop B	..	1050	1131	1300	1415	1510	1615	1745	1902	1935	2000
Belford	0925	1116	..	1326	1441	..	1641	..	1928	2001	..
<b>Berwick-upon-Tweed , Bay 8</b>	0943	1149	..	1359	1514	1600	1700	1835	2001	2034	2050

Vehicles are adapted for disabled passengers

Hail and Ride zones (where buses will stop, where it is safe to do so, by being hailed from the roadside) include the following: **Starts at** Regent Centre Metro (M), **ends at** Stannington. **Starts at** Felton, **ends at** Belford. **Starts at** Haggerston Castle, **ends at** Berwick-upon-Tweed.

General Interchanges include:

- Regent Centre Metro (M) (changing to Gosforth High Street) : related service ID is 678DFG , valid from 20 November 2001 until 20 June 2003 , interchange time is 5 mins (interchange mode is 'Walk' ) , type of interchange is 'Join'

Non-standard operations for this service include:

- will operate on 11 October 2001, 21 March 2002
- will NOT operate on 18 August 2001, 20 February 2002
- operation is indeterminate on 30 May 2002
- periods of suspension include the following (dates given are the last date of operation prior to suspension and the first date after suspension): **from** 28 October 2003 **until** 5 November 2003
- operates on the following Bank Holidays: Good Friday
- will NOT operate on the following Bank Holidays: May Day, Local Mid-Summer Holiday
- operation is indeterminate on the following Bank Holidays: Boxing Day

§ ~ journey-specific interchanges apply as follows:

- 13.15 departure from Newcastle Haymarket Bus Stn (M) interchanging at Gosforth High Street (changing to Regent Centre Metro (M)) : related service ID is 321CBA, publicly known as 525 , valid from 22 October 2001 until 9 January 2002 , facilities for interchange - Lay-by , interchange time is 3 mins (interchange mode is 'Walk' ) , type of interchange is 'Join'

i ~ journey-specific non-standard operations apply as follows:

- **18.02** departure from Newcastle Haymarket Bus Stn (M)
- operates on school holidays of Hogwarts Dotherbys
- does NOT operate on school holidays of St.Trininans Local Comp

## Inbound

### Monday to Friday

			AT	a								
	every 7-8 mins from this journey	to this journey		b								
<b>Berwick-upon-Tweed , Bay 8</b>	..	..	0925	0955	1020	1055	1130	1200	1225	1355	1430	1505
<i>Belford</i>	..	..	1009	1038	1105	1138	1215	1245	1309	1440	1515	1550
<i>Alnwick , Stop A</i>	..	..	1035	1104	1131	1204	1241	1311	1335	1506	1541	1616
<b>Morpeth</b>	0922	0947	1116	1140	1207	1240	1317	1347	1416	1542	1617	1652
<i>Stannington</i>	..	..	1126	..	..	..	..	..	1426	..	..	..
<b>Regent Centre Metro (M)</b>	0957	1022	1136	1159	1226	1259	1336	1406	1436	1601	1636	1711
<b>Newcastle Haymarket Bus Stn (M) , Bay 3</b>	1005	1030	1144	..	1234	..	1344	1414	1444	1609	1644	1719

	#		#		
	every 6 mins from this journey	to this journey			
<b>Berwick-upon-Tweed , Bay 8</b>	1535	1710	1745	1815	1855
<i>Belford</i>	1619	1754	1828	1859	1940
<i>Alnwick , Stop A</i>	1645	1820	1854	1925	2006
<b>Morpeth</b>	1726	1901	1930	2006	2042
<i>Stannington</i>	1736	1911	..	2016	..
<b>Regent Centre Metro (M)</b>	1746	1921	1949	2026	2101
<b>Newcastle Haymarket Bus Stn (M) , Bay 3</b>	1754	1929	..	2034	2109

Vehicles are adapted for disabled passengers

Hail and Ride zones (where buses will stop, where it is safe to do so, by being hailed from the roadside) include the following: **Starts at** Berwick-upon-Tweed, **ends at** Haggerston Castle. **Starts at** Felton, **ends at** Stannington. **Starts at** Seaton Burn, **ends at** Gosforth High Street.

General Interchanges include:

- Shilbottle : related service ID is 456DEF , valid from 20 November 2001 , facilities for interchange - neighbouring bays in bus station , interchange time is 10 mins (interchange mode is 'Walk' ) , type of interchange is 'Join'

Non-standard operations for this service include:

- will operate on 11 October 2001, 21 March 2002
- will NOT operate on 18 August 2001, 20 February 2002
- operation is indeterminate on 30 May 2002
- periods of suspension include the following (dates given are the last date of operation prior to suspension and the first date after suspension): **from** 28 October 2003 **until** 5 November 2003
- operates on the following Bank Holidays: Good Friday
- will NOT operate on the following Bank Holidays: May Day, Local Mid-Summer Holiday
- operation is indeterminate on the following Bank Holidays: Boxing Day

**a** ~ conductor aboard

**b** ~ smoking permitted on this journey

**#** ~ journey-specific layover points apply as follows:

- 17.10 departure from Berwick-upon-Tweed has a layover point (Scremerston Village Hall Car Park) lasting 2 mins
- 18.55 departure from Berwick-upon-Tweed has a layover point (Scremerston Village Hall Car Park) lasting 2 mins

**AT** ~ vehicle description: Articulated

## Saturday

		b				b				
<b>Berwick-upon-Tweed , Bay 8</b>	..	0916	1010	1127	1224	1332	1514	1642	1809	1900
<i>Belford</i>	..	1000	1053	1211	1308	1416	1558	1725	1853	1944
<i>Alnwick , Stop A</i>	..	1026	1119	1237	1334	1442	1624	1751	1919	2010
<b>Morpeth</b>	0930	1107	1155	1313	1415	1518	1700	1827	2000	2046
<i>Stannington</i>	..	1117	..	..	1425	..	..	..	2010	..
<b>Regent Centre Metro (M)</b>	1000	1127	1214	1332	1435	1537	1719	1846	2020	2105
<b>Newcastle Haymarket Bus Stn (M) , Bay 3</b>	1007	1135	..	1340	1443	1545	1727	..	2028	..

Vehicles are adapted for disabled passengers

Hail and Ride zones (where buses will stop, where it is safe to do so, by being hailed from the roadside) include the following: **Starts at** Berwick-upon-Tweed, **ends at** Haggerston Castle. **Starts at** Felton, **ends at** Stannington. **Starts at** Seaton Burn, **ends at** Gosforth High Street.

General Interchanges include:

- Shilbottle : related service ID is 456DEF , valid from 20 November 2001 , facilities for interchange - neighbouring bays in bus station , interchange time is 10 mins (interchange mode is 'Walk' ) , type of interchange is 'Join'

Non-standard operations for this service include:

- will operate on 11 October 2001, 21 March 2002
- will NOT operate on 18 August 2001, 20 February 2002
- operation is indeterminate on 30 May 2002
- periods of suspension include the following (dates given are the last date of operation prior to suspension and the first date after suspension): **from** 28 October 2003 **until** 5 November 2003
- operates on the following Bank Holidays: Good Friday
- will NOT operate on the following Bank Holidays: May Day, Local Mid-Summer Holiday
- operation is indeterminate on the following Bank Holidays: Boxing Day

**b** ~ smoking permitted on this journey

## Sunday

	a	AT	AT	AT	AT	AT	AT	AT	AT	AT
<b>Berwick-upon-Tweed , Bay 8</b>	..	0922	1015	1130	1225	1330	1510	1635	1800	1840
<i>Belford</i>	..	1006	1046	1216	1309	1416	1556	1706	1844	1924
<i>Alnwick , Stop A</i>	..	1032	1115	1242	1335	1442	1622	1735	1910	1950
<b>Morpeth</b>	0942	1113	1148	1318	1416	1518	1658	1808	1951	2026
<i>Stannington</i>	..	1123	..	..	1426	..	..	..	2001	..
<b>Regent Centre Metro (M)</b>	1012	1133	1207	1337	1436	1537	1717	1827	2011	2045
<b>Newcastle Haymarket Bus Stn (M) , Bay 3</b>	1019	1141	..	1345	1444	1545	1725	..	2019	..

Vehicles are adapted for disabled passengers

Hail and Ride zones (where buses will stop, where it is safe to do so, by being hailed from the roadside) include the following: **Starts at** Berwick-upon-Tweed, **ends at** Haggerston Castle. **Starts at** Felton, **ends at** Stannington. **Starts at** Seaton Burn, **ends at** Gosforth High Street.

General Interchanges include:

- Shilbottle : related service ID is 456DEF , valid from 20 November 2001 , facilities for interchange - neighbouring bays in bus station , interchange time is 10 mins (interchange mode is 'Walk') , type of interchange is 'Join'

Non-standard operations for this service include:

- will operate on 11 October 2001, 21 March 2002
- will NOT operate on 18 August 2001, 20 February 2002
- operation is indeterminate on 30 May 2002
- periods of suspension include the following (dates given are the last date of operation prior to suspension and the first date after suspension): **from** 28 October 2003 **until** 5 November 2003
- operates on the following Bank Holidays: Good Friday
- will NOT operate on the following Bank Holidays: May Day, Local Mid-Summer Holiday
- operation is indeterminate on the following Bank Holidays: Boxing Day

**a** ~ conductor aboard

**AT** ~ vehicle description: Articulated



## Service

### General Service Details

Service **aa1234567** publicly known as **525**:

- classified as **Normal Stopping**
- starting from **Newcastle Haymarket**, ending at **Berwick**
- service start date is **23 October 2000**, service to operate **indefinitely**
- service **does not use all stops**
- service requires additional stops - **Dinnington, Chathill and Spittal**

*Registration Details Include:*

- registration application submitted by **Mr Fred Bloggs (CEO)**
- type of registration application is **New**, date of registration submission is **20 September 2001**
- registration number is **12345**, variation number is **1234**
- traffic area identified is **North Eastern**; authorities circulated are **Northumberland and Nexus**
- service is partially subsidised by **Northumberland County Council and Nexus**

*Short Notice Registration Details Include:*

- timetable change for all or part of the week which includes 24 and 25 December, Good Friday or any bank holiday
- the new service/change will replace a substantially similar service which another operator has stopped or intends to stop operating - **The Flyer** operated by **ABCD**
- the service to be changed or cancelled is either not available to the general public or is not generally used by them - **to be used by a closed group**
- the police, or traffic authority have requested the change/cancellation of this service on road traffic or safety grounds - **requested by local Police**
- the new service/change will cater for the additional demands of a special occasion or event - **XYZ In Concert**
- the service timetable will be changed in timings no more than 10 minutes earlier or later than registered - **this is a very minor change**
- the service timetable will be changed to match the service with an altered connecting rail, ferry or air service - **X33 Northern Express**
- the change will last for a period of 14 days or less which is a local public holiday or a holiday widely observed in the area - **Local factory holiday change**
- the service is to be changed solely to comply with traffic regulation conditions or a road traffic order made by a local authority - **Northumberland County Council Alnwick Town Centre TRC, June 2002**
- the new/changed/cancelled service is requested for reasons which could not have been foreseen at 42 days notice - **need to avoid roadworks along registered route**

Stops Served:

## Outbound Stops Served

Newcastle Haymarket Bus Stn (M) , Bay 7  
Town Centre , Newcastle  
Marked , a105108HAYQS

Regent Centre Metro (M)  
Gosforth , Newcastle  
Marked , a120808REGF

Stannington  
Stannington , Northumberland  
Marked , a627750059

Morpeth  
Morpeth , Northumberland  
Marked , a638950173

Alnwick , Stop B  
Alnwick , Northumberland  
Marked , a624050019

Belford  
Belford , Northumberland  
Marked , a622850006

Berwick-upon-Tweed , Bay 8  
Berwick-upon-Tweed , Northumberland  
Marked , a622450001

## Inbound Stops Served

Berwick-upon-Tweed , Bay 8  
Berwick-upon-Tweed , Northumberland  
Marked , a622450001

Belford  
Belford , Northumberland  
Marked , a622850007

Alnwick , Stop A  
Alnwick , Northumberland  
Marked , a624050020

Morpeth  
Morpeth , Northumberland  
Marked , a638950174

Stannington  
Stannington , Northumberland  
Marked , a627750060

Regent Centre Metro (M)  
Gosforth , Newcastle  
Marked , a120809REGF

## Registered TransXChange Record

Newcastle Haymarket Bus Stn (M) , Bay 3  
Town Centre , Newcastle  
Marked , a105109HAYQS

Journey Pattern Exceptions:

Outbound Exceptions:

Queen's Jubilee Bank Holiday - does not operate  
between 3 June 2002 and 4 June 2002

Inbound Exceptions:

Queen's Jubilee Bank Holiday - does not operate  
between 3 June 2002 and 4 June 2002

Registered Operator Details:

**X-Ray Yellow Zebra Bus Transport**, also known as **XYZ Buses**, trading as **Better Buses**

Licence Number: **LKJ1234567**

Licence Type: **Standard\_National**

Contact Tel: **1112345679**

Correspondence Address:

42 Station Road  
Othertown  
Anyshire  
EF3 4GH  
UK

Timetable for Service aa1234567 publicly known as 525 is provided in the timetable section

# Registered TransXChange Record

## Route

### General Route Details

Route Description:	Berwick-Newcastle_Newcastle-Berwick
Manoeuvres Identified:	Scremerston (Outbound) Reverse Round Corner, 3 Point Turn
	Barras Bridge (Inbound) Reverse Round Corner

The Following Documents Are Associated With The Registration  
Submission

CAP GEMINI UK PLC  
Cap Gemini House  
1 Avenue Road  
Aston  
Birmingham B6 4DU  
Tel: +44(0)121 333 3536  
Fax: +44(0)121 333 3308

Clerk to the Traffic Commissioners  
Midlands Traffic Area  
Cumberland House  
200 Broad Street  
Birmingham  
B15 1TD

Dear Sir

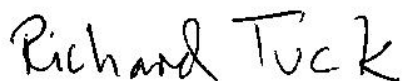
**LOCAL BUS SERVICE X80 – Ansley to Birmingham**

I am writing to support the application made by Lionspeed Ltd. to register local bus service X80 with effect from Monday 6<sup>th</sup> September 1999.

The late registration is due to the operator that had originally been awarded the service, deciding to withdraw from the contract. Lionspeed Ltd. tendered for the service initially and were the next lowest bidder.

The service is financially supported by Warwickshire County Council

Yours Sincerely,



**Richard Tuck**  
**Passenger Transport Officer**  
**Transport Operations**

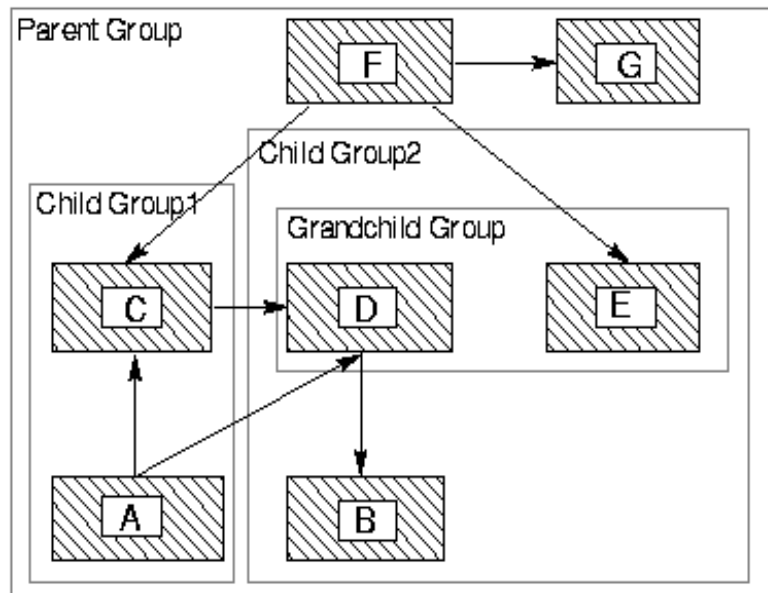


Figure 9: Groups visualized as nested regions

Dealing with multiple visual representations for grouped objects requires only a small extension to our approach of Sections 2 and 3. In particular, each individual group has its own current and anchored configurations of its (immediate) members. At any point, a single group is the focus, and actions on objects *within* the group (object creation, deletion, movement, or visual representation change) cause local layout decisions by following the exact same algorithm described earlier. Of course, many layout changes in a group imply a visual representation change for it within its parent group and, therefore, recursively trigger the configuration-change part of the algorithm for the parent.

A major reason for grouping objects is abstraction, so that users may be able to view the details (members) of a group or simply view a single object representing the group and ignoring its details. This is naturally achieved within our framework by treating groups as first-class objects that must satisfy Requirements R1-R4, and associating with them two visual representations, one “collapsed” and one “expanded”, with the obvious meaning. Any change of a group from one representation to the other is simply a configuration change for the parent group and the earlier layout algorithm is directly applicable. Continuing on with the example of grouping of subgraphs of a graph, Figures 11 and 12 show two consecutive collapses of a group and its parent and the resulting layouts.

One complication that arises in the presence of groups is that the user may change group membership or create groups at any level of an existing grouping hierarchy. Both types of actions, especially group creation, may result in extensive changes in group membership and, therefore, configuration structures and location origins. Nevertheless, each such action may be analyzed into individual object creations and deletions, which can then be dealt with directly by the general algorithm.

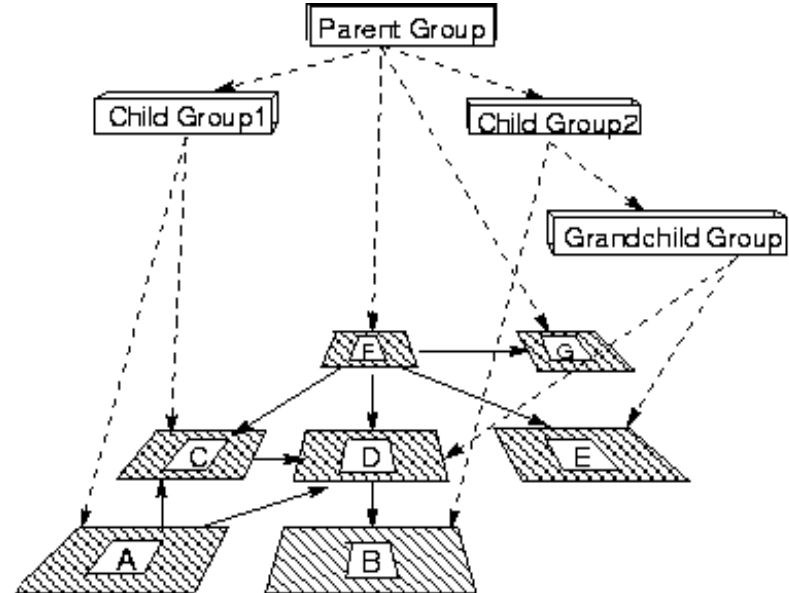


Figure 10: The grouping hierarchy, orthogonal to graph structure

## 5 Implementation and Experience

### 5.1 Implementation

The entire framework and algorithms described above, including the generalizations of Section 4, have been implemented in the OPOSSUM visualization tool [6], which is part of the user interface of the ZOO Experiment Management System [8]. ZOO is a system under development whose goal is to allow scientists from arbitrary disciplines manage all phases of their experimental studies using a single tool. One of the key issues in ZOO is providing a user interface that is primarily visual (so that it is intuitive to users who are not experts in computer science), relatively generic (so that it can be used for different styles of visualization and serve the needs of many disciplines), and able to deal with large numbers of visual objects (which is common in these applications).

OPOSSUM is part of the ZOO interface that deals with visualization of database schemas and also forms the basis for other parts of the interface. It is a generic tool that accepts as input descriptions of a data model, a visual model (capturing the structure of some class of visualizations, e.g., graphs, tables, rectangles contained into each other), and a visual metaphor that maps some of the elements of the visual model to elements of the data model. Thus, given a visualization on the screen the metaphor assigns meaning to its individual visual objects with respect to some underlying schema.

One may define mixed metaphors, where a single concept in the data model may be visualized in different ways, using different concepts in the visual model. The input file describing the metaphor includes information about which types of objects should satisfy Requirements R1-R2 and also a size-based total order  $\preceq$  on each one of these object types. The heuristic algorithm of Section 3.2 has been implemented in OPOSSUM in a generic fashion, without any reference to specific types of visual objects or kinds of visual representation. During any OPOSSUM session, all these are instantiated based on the contents of the input model and metaphor