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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO.	TOT CLAIMS	IND CLAIMS
61/389,000	10/01/2010		810	50224-00730 (CD00016)		

CONFIRMATION NO. 1009

UPDATED FILING RECEIPT

25231
MARSH, FISCHMANN & BREYFOGLE LLP
8055 East Tufts Avenue
Suite 450
Denver, CO 80237



Date Mailed: 04/21/2011

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Sanjiv Sirpal, Oakville, CANADA;
Alex DePaz, Burlington, CANADA;
Martin Gimpl, Toronto, CANADA;
Salvador German Soto Gutierrez, Toronto, CANADA;
Mo Selim, Oakville, CANADA;
Anthony Watts, Toronto, CANADA;
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Brian Reeves, Hamilton, CANADA;
Paul Reeves, Oakville, CANADA;
Brett Faulk, Houston, TX;
Rod Schrock, San Diego, CA;
Chris Tyghe, Burlington, CANADA;
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Eric Freedman, Austin, TX;
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Mistry Cripps, Austin, TX;
Amanda Martin, Austin, TX;
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Jennifer Harris, Austin, TX;
Rob Jones, Austin, TX;
Joseph Filani, Austin, TX;
Cristen Hayes, Austin, TX;

page 1 of 3

Janna Garza, Austin, TX;
Richard Pocklington, Burlington, CANADA;
Michael Flynn, Burlington, CANADA;

Power of Attorney:
Robert Crouch--34806

If Required, Foreign Filing License Granted: 10/21/2010

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/389,000**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No
Title

DUAL DISPLAY WINDOWING SYSTEM

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

page 2 of 3

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

**LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15**

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:	)	Group Art Unit: Not Yet Assigned
	)	
SIRPAL, et al.	)	Examiner: Not Yet Assigned
	)	
Serial No.: 61/389,000	)	<u>SUBMISSION OF MISSING PARTS</u>
	)	
Filed: October 1, 2010	)	
	)	
Confirmation No.: 1009	)	
	)	
Atty. File No.: 50224-00730 (CD00016)	)	
	)	
For: "DUAL DISPLAY WINDOWING SYSTEM"	)	



MAIL STOP MISSING PARTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir or Madam:

In response to the Notice to File Missing Parts having a mailing date of October 22, 2010, in connection with the above-identified application, included herewith please find a Replacement Provisional Cover Sheet and payment of fees. Applicants, through their attorneys, respectfully petition for an extension of time under 37 C.F.R. §1.136(a) of four (4) months in which to respond to the Notice to File Missing Parts of Application, with respect to the above-identified patent application, thereby extending the period for submission of missing parts from December 22, 2010 to April 22, 2011.

Payment is included in the amount \$1,780.00 which includes payment of the surcharge in the amount of \$50.00 and \$1,730.00 for payment of the four (4) months extension of time fee. Please credit any overpayment or debit any underpayment to Deposit Account No. 50-1419.

A copy of the Notice to File Missing Parts is also enclosed.

Respectfully submitted,

MARSH FISCHMANN & BREYFOGLE LLP

By: /ROBERT G. CROUCH/

Robert G. Crouch
Registration No. 34,806
8055 E. Tufts Avenue, Suite 450
Denver, CO 80237
Telephone: 720-562-5506

Dated: April 18, 2011

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

Provisional Application for Patent Cover Sheet					
This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c)					
Inventor(s)					
Inventor 1					Remove
Given Name	Middle Name	Family Name	City	State	Country
Sanjiv		Sirpal	Oakville	ON	CA
Inventor 2					Remove
Given Name	Middle Name	Family Name	City	State	Country
Alex		DePaz	Burlington	ON	CA
Inventor 3					Remove
Given Name	Middle Name	Family Name	City	State	Country
Martin		Gimpl	Toronto	ON	CA
Inventor 4					Remove
Given Name	Middle Name	Family Name	City	State	Country
Salvador	German	Soto Gutierrez	Toronto	ON	CA
Inventor 5					Remove
Given Name	Middle Name	Family Name	City	State	Country
Mo		Selim	Oakville	ON	CA
Inventor 6					Remove
Given Name	Middle Name	Family Name	City	State	Country
Anthony		Watts	Toronto	ON	CA
Inventor 7					Remove
Given Name	Middle Name	Family Name	City	State	Country
Charles		Sue-Wah-Sing	Mississauga	ON	CA
Inventor 8					Remove
Given Name	Middle Name	Family Name	City	State	Country
Brian		Reeves	Hamilton	ON	CA

Doc Code: **TR.PROV**

Document Description: Provisional Cover Sheet (SB16)

PTO/SB16 (11-08)

Approved for use through 09/30/2010 OMB 0651-0032

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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Inventor 9						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Paul		Reeves	Oakville	ON	CA	
Inventor 10						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Brett		Faulk	Houston	TX	US	
Inventor 11						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Rod		Schrock	San Diego	CA	US	
Inventor 12						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Chris		Tyghe	Burlington	ON	CA	
Inventor 13						Remove
Given Name	Middle Name	Family Name	City	State	Country	
David		Reeves	Ancaster	ON	CA	
Inventor 14						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Eric		Freedman	Austin	TX	US	
Inventor 15						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Jared		Ficklin	Austin	TX	US	
All Inventors Must Be Listed -- Additional Inventor Information blocks may be generated within this form by selecting the Add button.						Add
Title of Invention		DUAL DISPLAY WINDOWING SYSTEM				
Attorney Docket Number (if applicable)		50224-00730 (CD00016)				
Correspondence Address						

EFS - Web 1.0.1

Provisional Application for Patent Cover Sheet					
This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c)					
Inventor(s)					
Inventor 16					Remove
Given Name	Middle Name	Family Name	City	State	Country
Denise		Burton	Austin	TX	US
Inventor 17					Remove
Given Name	Middle Name	Family Name	City	State	Country
Mistry		Cripps	Austin	TX	US
Inventor 18					Remove
Given Name	Middle Name	Family Name	City	State	Country
Amanda		Martin	Austin	TX	US
Inventor 19					Remove
Given Name	Middle Name	Family Name	City	State	Country
Erin		Jacobs	Austin	TX	US
Inventor 20					Remove
Given Name	Middle Name	Family Name	City	State	Country
Gregg		Wygonik	Austin	TX	US
Inventor 21					Remove
Given Name	Middle Name	Family Name	City	State	Country
Emily		Miller	Austin	TX	US
Inventor 22					Remove
Given Name	Middle Name	Family Name	City	State	Country
Jennifer		Harris	Austin	TX	US
Inventor 23					Remove
Given Name	Middle Name	Family Name	City	State	Country
Rob		Jones	Austin	TX	US

Doc Code: **TR.PROV**

Document Description: Provisional Cover Sheet (SB16)

PTO/SB/16 (11-08)

Approved for use through 09/30/2010 OMB 0651-0032

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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Inventor 24						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Joseph		Filani	Austin	TX	US	
Inventor 25						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Cristen		Hayes	Austin	TX	US	
Inventor 26						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Janna		Garza	Austin	TX	US	
Inventor 27						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Richard		Pocklington	Burlington	ON	CA	
Inventor 28						Remove
Given Name	Middle Name	Family Name	City	State	Country	
Michael		Flynn	Burlington	ON	CA	
All Inventors Must Be Listed – Additional Inventor Information blocks may be generated within this form by selecting the Add button.						Add
Title of Invention		DUAL DISPLAY WINDOWING SYSTEM				
Attorney Docket Number (if applicable)		50224-00730 (CD00016)				
Correspondence Address						
Direct all correspondence to (select one):						
☒ The address corresponding to Customer Number				☐ Firm or Individual Name		
Customer Number				25231		

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.☐ Yes, the name of the U.S. Government agency and the Government contract number are:

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

Entity Status Applicant claims small entity status under 37 CFR 1.27					
☐ Yes, applicant qualifies for small entity status under 37 CFR 1.27					
☒ No					
Warning					
Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.					
Signature					
Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/ROBERT G. CROUCH/			Date (YYYY-MM-DD)	2011-04-18
First Name	Robert	Last Name	Crouch	Registration Number (if appropriate)	34806
This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. This form can only be used when in conjunction with EFS-Web. If this form is mailed to the USPTO, it may cause delays in handling the provisional application.					



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United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
61/389,000	10/01/2010	Sanjiv Sirpal	50224-00730 (CD00016)

CONFIRMATION NO. 1009

FORMALITIES LETTER

25231
MARSH, FISCHMANN & BREYFOGLE LLP
8055 East Tufts Avenue
Suite 450
Denver, CO 80237

RECEIVED



OCT 25 2010

Date Mailed: 10/22/2010

MARSH FISCHMANN &
BREYFOGLE LLP

NOTICE TO FILE MISSING PARTS OF PROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(c)

Filing Date Granted

An application number and filing date have been accorded to this provisional application. The items indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The provisional application cover sheet under 37 CFR 1.51(c)(1), which may be an application data sheet (37 CFR 1.76), is required identifying:
 - either city and state, or city and foreign country, of the residence of each inventor.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- To avoid abandonment, a surcharge (for late submission of filing fee or cover sheet) as set forth in 37 CFR 1.16(g) of **\$50** for a non-small entity, must be submitted with the missing items identified in this notice.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is **\$50** for a non-small entity

- **\$50** Surcharge.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/mkoroma/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Electronic Patent Application Fee Transmittal				
Application Number:		61389000		
Filing Date:		01-Oct-2010		
Title of Invention:		DUAL DISPLAY WINDOWING SYSTEM		
First Named Inventor/Applicant Name:		Sanjiv Sirpal		
Filer:		Robert G. Crouch/Maureen Sileo		
Attorney Docket Number:		50224-00730 (CD00016)		
Filed as Large Entity				
Provisional Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late provisional filing fee/cover sheet	1052	1	50	50
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 4 months with \$0 paid	1254	1	1730	1730
Miscellaneous:				
Total in USD (\$)				1780

Electronic Acknowledgement Receipt	
EFS ID:	9898149
Application Number:	61389000
International Application Number:	
Confirmation Number:	1009
Title of Invention:	DUAL DISPLAY WINDOWING SYSTEM
First Named Inventor/Applicant Name:	Sanjiv Sirpal
Customer Number:	25231
Filer:	Robert G. Crouch
Filer Authorized By:	
Attorney Docket Number:	50224-00730 (CD00016)
Receipt Date:	18-APR-2011
Filing Date:	01-OCT-2010
Time Stamp:	13:42:50
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1780
RAM confirmation Number	28
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Applicant Response to Pre-Exam Formalities Notice	SubmissionMissingParts.pdf	87234 eb7d47f1b23a025c29d09768353f6710ddc bf5b8	no	2
Warnings:					
Information:					
2	Provisional Cover Sheet (SB16)	ProvisionalSB.pdf	406024 9921eb8309215f94b234c102c20fc698a10b ae69	no	5
Warnings:					
This is not a USPTO supplied Provisional Cover Sheet SB16 form.					
Information:					
3	Miscellaneous Incoming Letter	NoticeFileMissingParts.pdf	88832 4dfdafd7ed10036c941cd72094e14c8af137 95df	no	2
Warnings:					
Information:					
4	Fee Worksheet (PTO-875)	fee-info.pdf	32545 282cc6e2c2dd04ddadcd4eb0b48ed082df1 d1368	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			614635		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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61/389,000	10/01/2010		760	50224-00730 (CD00016)		

CONFIRMATION NO. 1009

FILING RECEIPT



OC000000044136488

25231
MARSH, FISCHMANN & BREYFOGLE LLP
8055 East Tufts Avenue
Suite 450
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Applicant(s)

Sanjiv Sirpal, Residence Not Provided;
Alex DePaz, Residence Not Provided;
Martin Gimpl, Residence Not Provided;
Salvador Soto, Residence Not Provided;
Mo Selim, Residence Not Provided;
Anthony Watts, Residence Not Provided;
Charles Sue-Wah-Sing, Residence Not Provided;
Brian Reeves, Residence Not Provided;
Paul Reeves, Residence Not Provided;
Brett Faulk, Residence Not Provided;
Rod Schrock, Residence Not Provided;
Chris Tyghe, Residence Not Provided;
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Mistry Cripps, Residence Not Provided;
Amanda Martin, Residence Not Provided;
Erin Jacobs, Residence Not Provided;
Gregg Wygonik, Residence Not Provided;
Emily Miller, Residence Not Provided;
Jennifer Harris, Residence Not Provided;
Rob Jones, Residence Not Provided;
Joseph Filani, Residence Not Provided;
Cristen Hayes, Residence Not Provided;

page 1 of 3

Janna Garza, Residence Not Provided;
Richard Pocklington, Residence Not Provided;
Michael Flynn, Residence Not Provided;

Power of Attorney:
Robert Crouch--34806

If Required, Foreign Filing License Granted: 10/21/2010

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/389,000**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No
Title

DUAL DISPLAY WINDOWING SYSTEM

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

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page 2 of 3

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61/389,000	10/01/2010	Sanjiv Sirpal	50224-00730 (CD00016)

CONFIRMATION NO. 1009

FORMALITIES LETTER



OC000000044136489

25231
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Date Mailed: 10/22/2010

NOTICE TO FILE MISSING PARTS OF PROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(c)

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An application number and filing date have been accorded to this provisional application. The items indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The provisional application cover sheet under 37 CFR 1.51(c)(1), which may be an application data sheet (37 CFR 1.76), is required identifying:
 - either city and state, or city and foreign country, of the residence of each inventor.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- To avoid abandonment, a surcharge (for late submission of filing fee or cover sheet) as set forth in 37 CFR 1.16(g) of **\$50** for a non-small entity, must be submitted with the missing items identified in this notice.

SUMMARY OF FEES DUE:

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Attorney Docket Number (if applicable)		50224-00730 (CD00016)				
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Applicant claims small entity status under 37 CFR 1.27

☐ Yes, applicant qualifies for small entity status under 37 CFR 1.27☒ No**Warning**

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Signature	/ROBERT G. CROUCH/			Date (YYYY-MM-DD)	2010-10-01
First Name	Robert	Last Name	Crouch	Registration Number (If appropriate)	34806

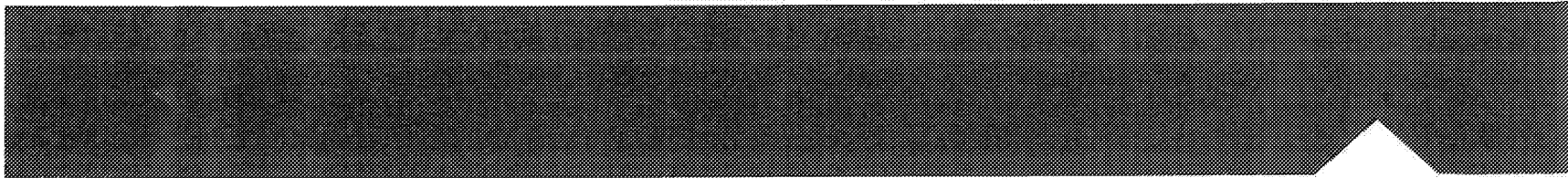
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FLEXTRONICS

Windowing Management

Interaction Design Specification

Version 0.1
Revised September 16, 2010 5:37 PM
Created by Mark's Group

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Version History

0.4	10-09-10	- Added information on the conceptual model of the window stack [4.1 Introduction to the window stack] - Added information on gestures that start as a drag, but end as a flick [2.11 Drag + flick gestures] - Added information on the sleep/awake system for WPC navigation [4.2.1 Application sleep and wake] - Added more information on reveal [4.3 Revealing the Desktop] - Added an example of quitting a dual-screen application [3.4 Quitting applications] - Fixed rules on modals when rotating dual-screen applications [5.3 Modals when rotating dual-screen applications]
0.3	10-09-03	- Changed rotation rules to keep maximized state when rotating from LD to PD [5.2 Rotating dual-screen applications] - Added more rotation examples (360 degree turn with two single screen applications) [5.1 Introduction to rotation rules] - Added rules on modals when rotating dual-screen applications [5.3 Modals when rotating dual-screen applications] - Added information on closing first app in stack when device is closed [3.4 Quitting applications]
0.2	10-08-27	- New rules for LD dual-screen application maximization and minimization [2.12 WPC rules in landscape orientation] - New rules for rotating parent-child dual-screen applications [5.2 Rotating dual-screen applications] - Added information on the window stack and triggering a desktop reveal [4.2 Navigating the window stack, 4.3.4 Revealing the desktop after reaching the end of the window stack] - Revised rules for opening and closing the device [4.4 Window stack behavior during device opening and closing] - Removed misleading minimization example [2.1 Introduction to maximization and minimization rules] - Fixed wire of a maximized parent-child dual-screen application [3.5 Launching and quitting applications in landscape orientation]
0.1	10-07-06	Initial release

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Introduction to WPC transitions

The transitions seen during WPC operations, like moving an application to the other screen, maximizing a dual-screen capable application to two screens, or minimizing one to a single-screen are generally performed with off-screen gestures.

Due to the nature of gestural interaction, it is paramount that the transitions respond immediately to the finger and maintain a high frame rate during the transition; failure to do so results in an immediate disconnect between the user and the system, making WPC interaction feel unresponsive and unreliable.

Motion inventory

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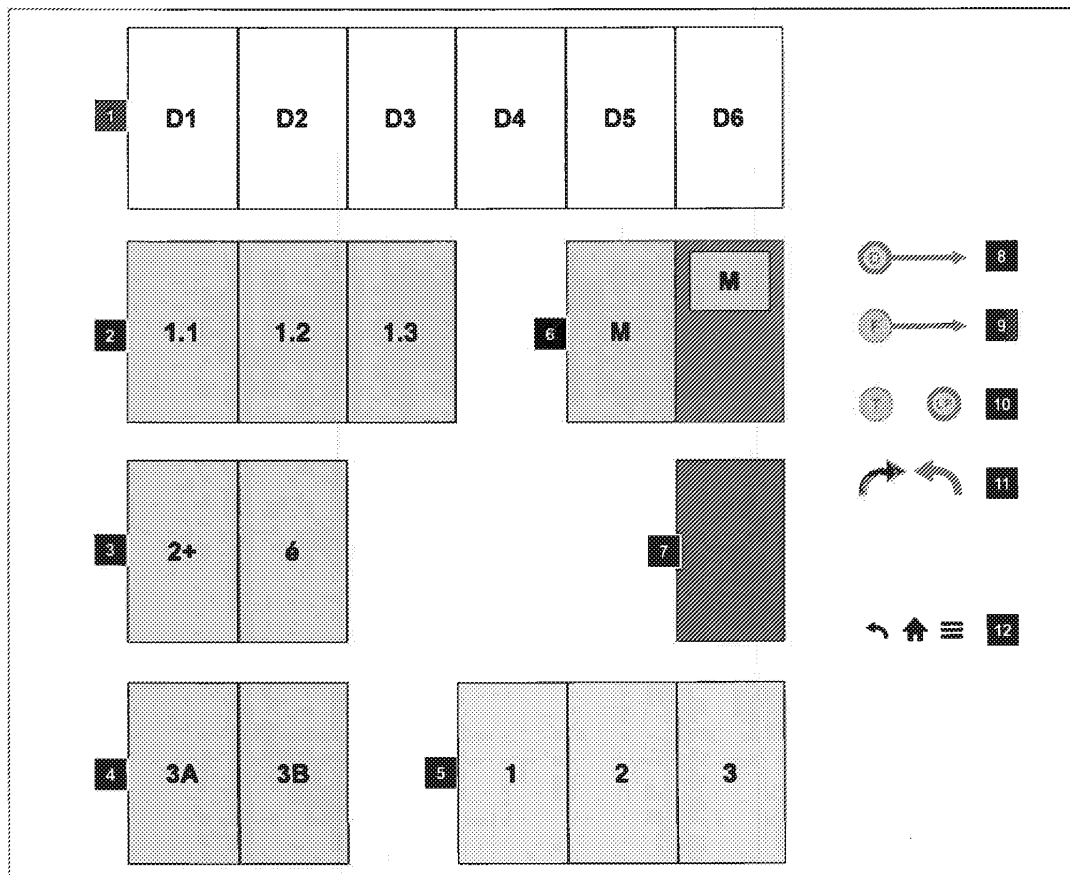
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Open issues

- WPC performance issues when navigating between applications.
- When launching new apps from within maximized apps, should we retain the triggering view after minimization?



1 Gestures

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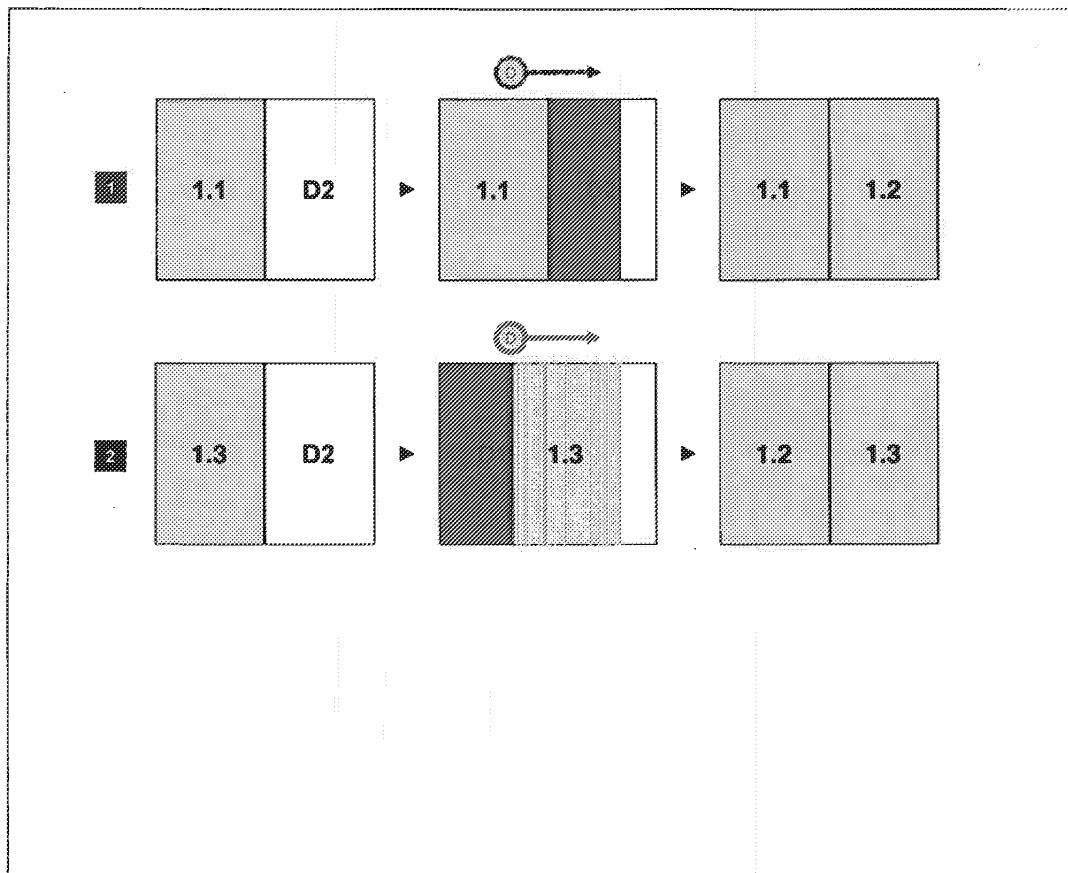
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The following off-screen gestures are supported by the WPC:

Tap	<i>Currently not utilized</i>
Long-press	<i>Currently not utilized</i>
Drag	1. Moves applications from one screen to another 2. Maximizes and minimizes dual-screen capable applications
Long-drag	Considered a sequence of continuous drag operations.
Flick	1. Moves applications from one screen to another 2. Minimizes dual-screen applications
Pin & drag	Holds the pinned application in place while moving the other applications in the application stack. The pinned application always remains in view.
Pinch	Displays the Application Manager
Spread	Reveals the Desktop

2 Maximization and minimization rules



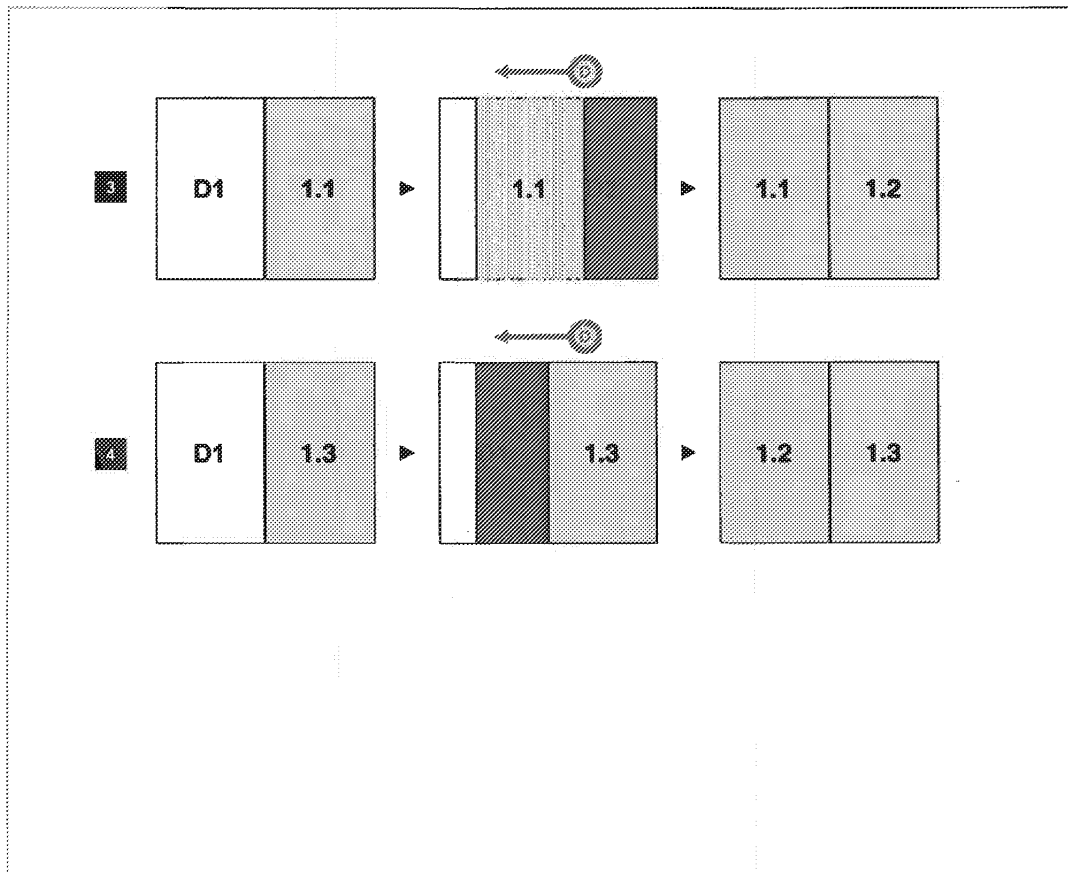
2.1 Introduction to maximization and minimization rules

From the point of view of the WPC system, applications are either maximized to span across two screens, or minimized to one screen; the application (and its internal structure) determines the details on that action, ie which of views moves during maximization, and which remains visible during minimization.

During a maximization action, due to technical restrictions it may not be possible to show the uncovered view. In these cases, an empty view is shown, instead.

Examples of maximization scenarios:

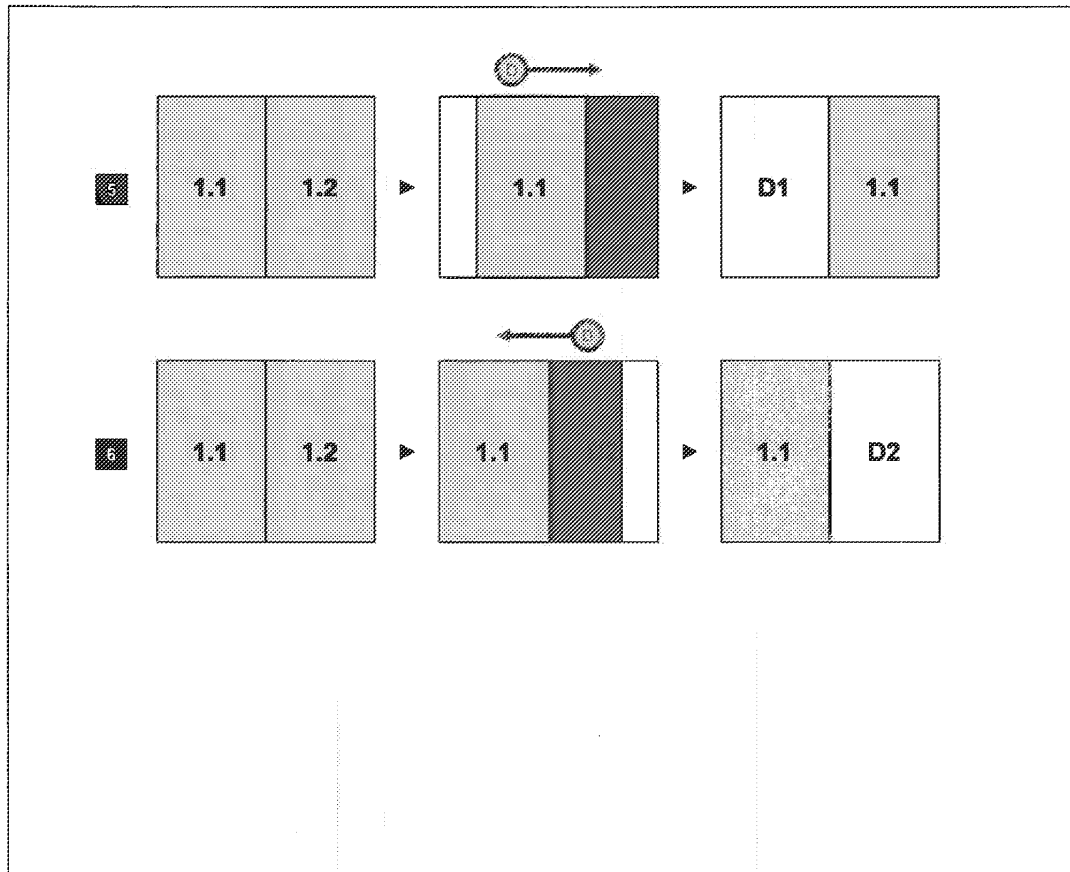
1. A root view on the left screen is maximized, sliding its child view on the right screen.
2. A leaf view on the left screen is moved to the right screen, and its parent is uncovered on the left screen.



3. A root view on the right screen is moved to the left screen, uncovering its child view on the right screen.
4. A leaf view on the right screen is maximized, sliding its parent view onto the left screen

The motion for maximizing a window is:

MOT.1.3 Maximize

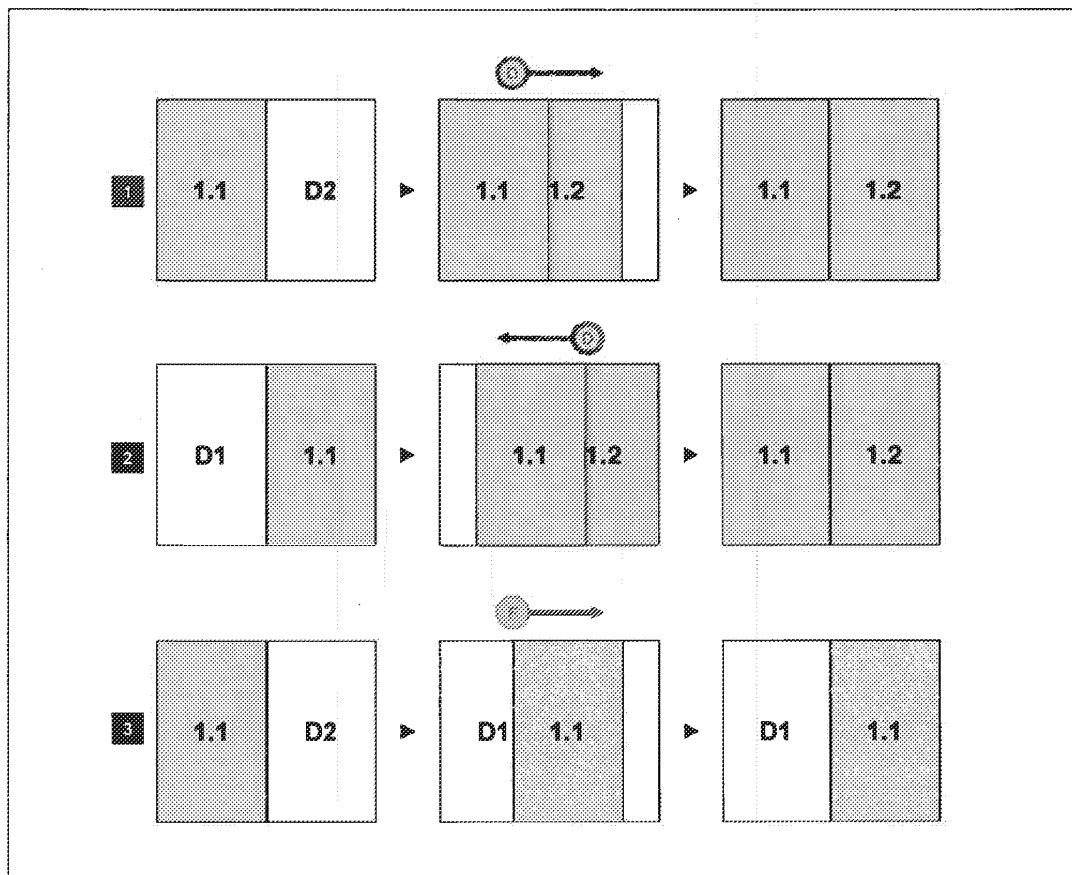


Examples of minimization scenarios:

5. A parent view on the left screen is moved on top of its child view on the right screen.
6. A child view on the right screen is moved underneath a parent view on the left screen.

The motion for minimizing a window is:

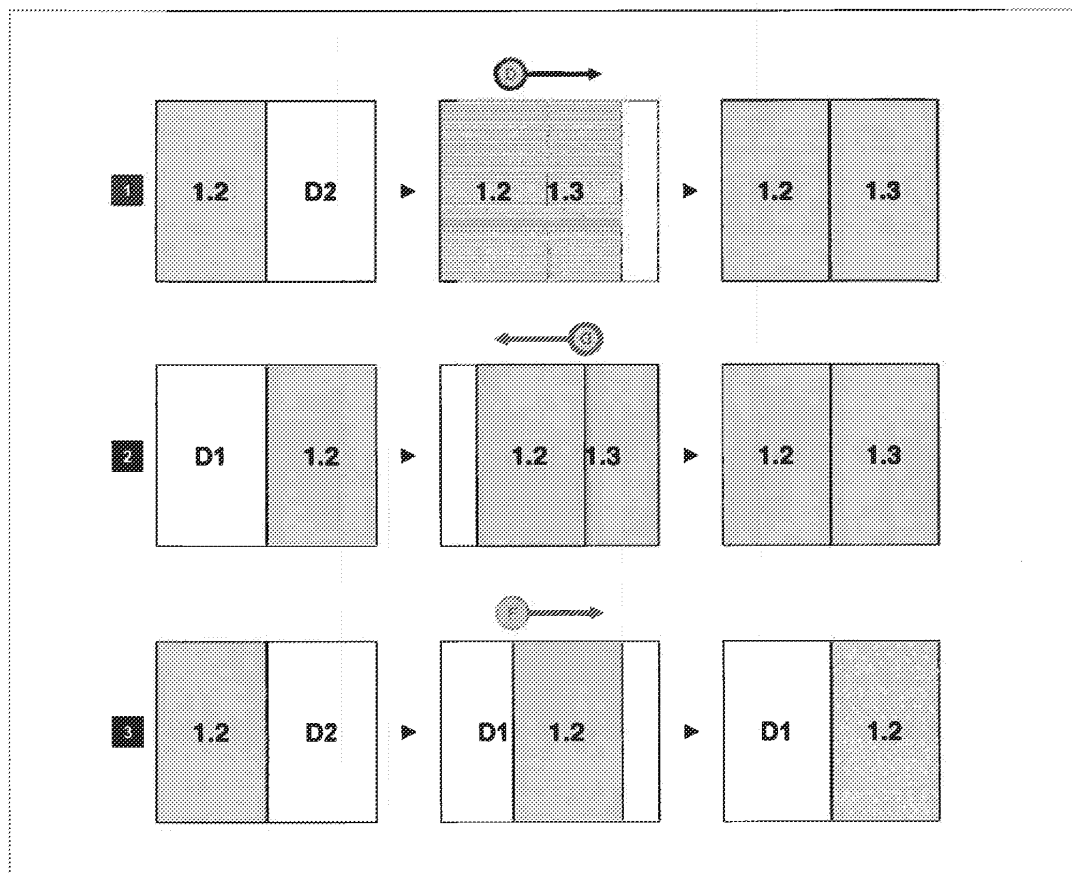
MOT.1.4 Minimize



2.2 Maximizing parent/child-views: root view

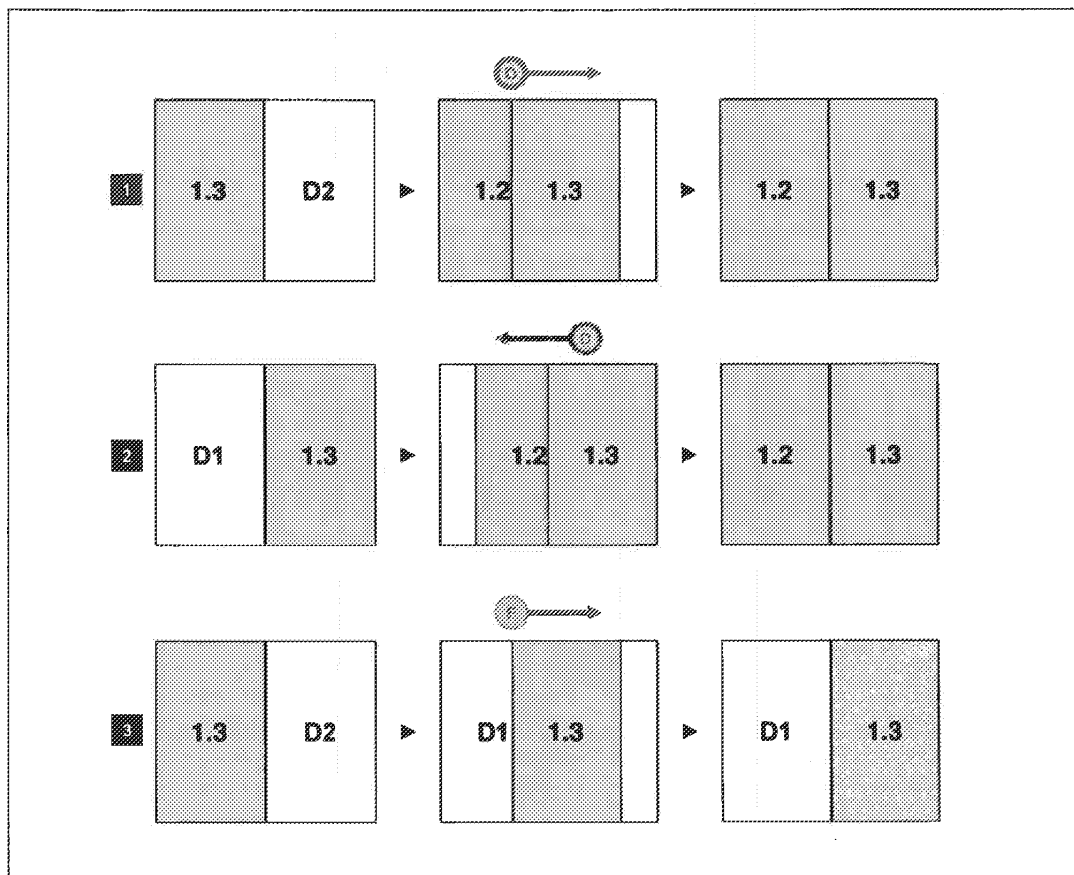
As a rule of thumb, whenever children exist, they are uncovered on the right screen.

1. Maximizing a root view from the left screen always uncovers the child view on the right screen.
2. Maximizing a root view from the right screen always moves it to the left screen, and uncovers its child on the right screen.
3. A flick will move the entire root view to the other screen.



2.3 Maximizing parent/child views: node views

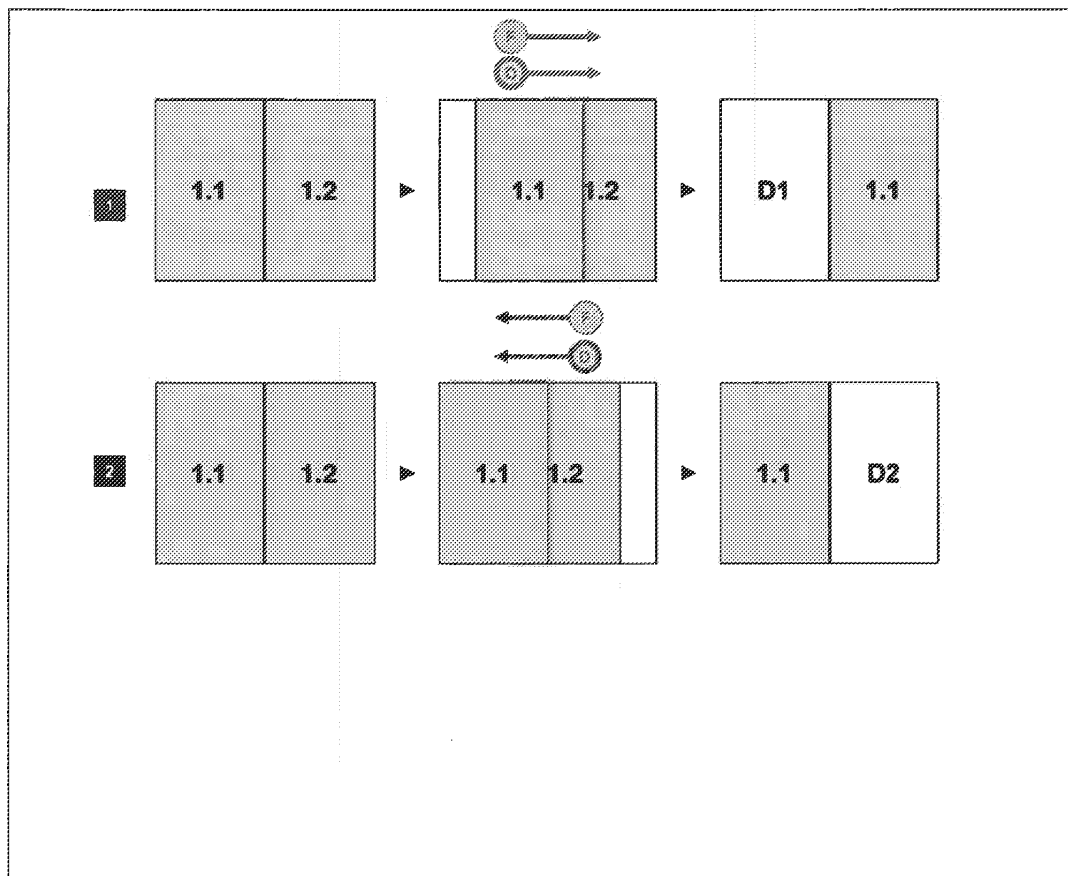
1. Maximizing a node view from the left screen will always uncover its child view on the right screen.
2. Maximizing a node view from the right screen will always move the node to the left screen and uncover its child on the right screen.
3. A flick will move the node view to the other screen.



2.4 Maximizing parent/child views: leaf view

As a rule of thumb, if no children exist, the leaf view is positioned on the right screen.

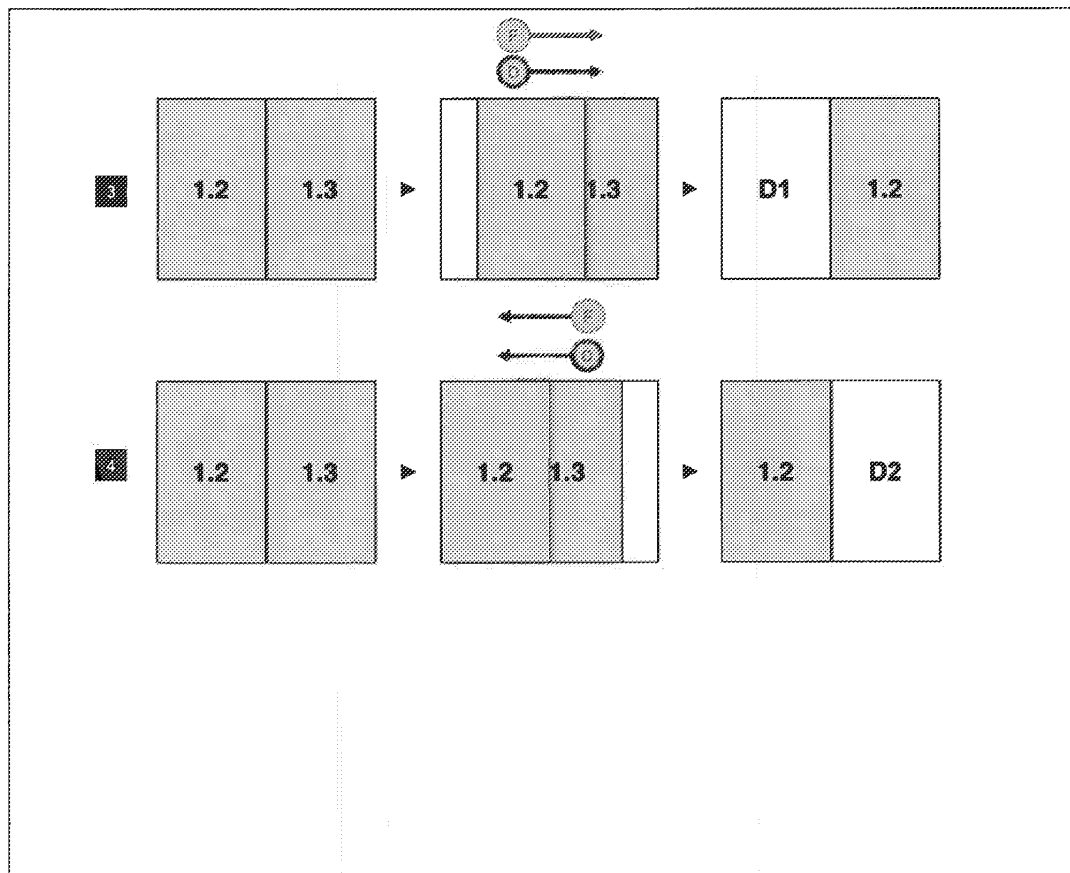
1. Maximizing a leaf view on the left screen will move the leaf to the right screen and uncover its parent on the left screen.
2. Maximizing a leaf on the right screen will uncover its parent on the right screen.
3. A flick will move the leaf to the other screen.



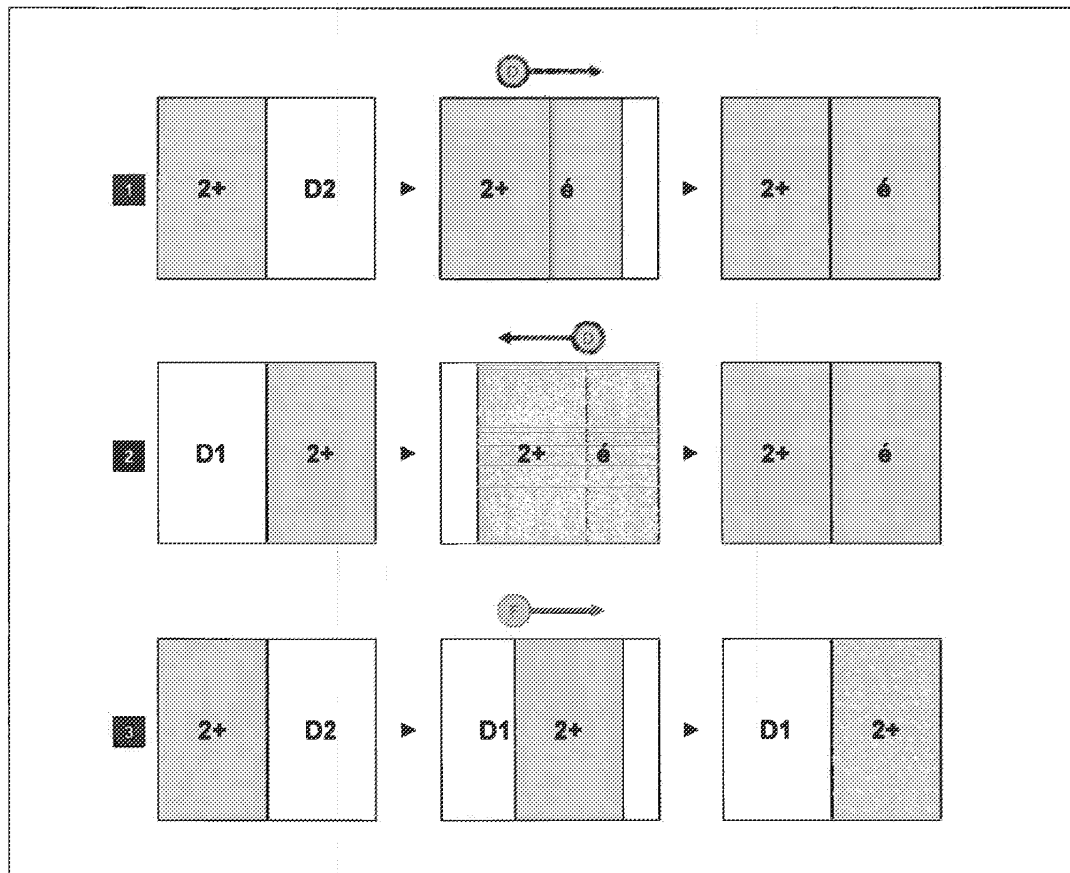
2.5 Minimizing parent/child views

As a rule of thumb, the parent view is retained whenever possible.

1. Minimizing a root+node view from the left screen moves the parent view to the right screen, covering the child view
2. Minimizing a root+node view from the right screen moves the child view to the left screen, sliding below the parent view



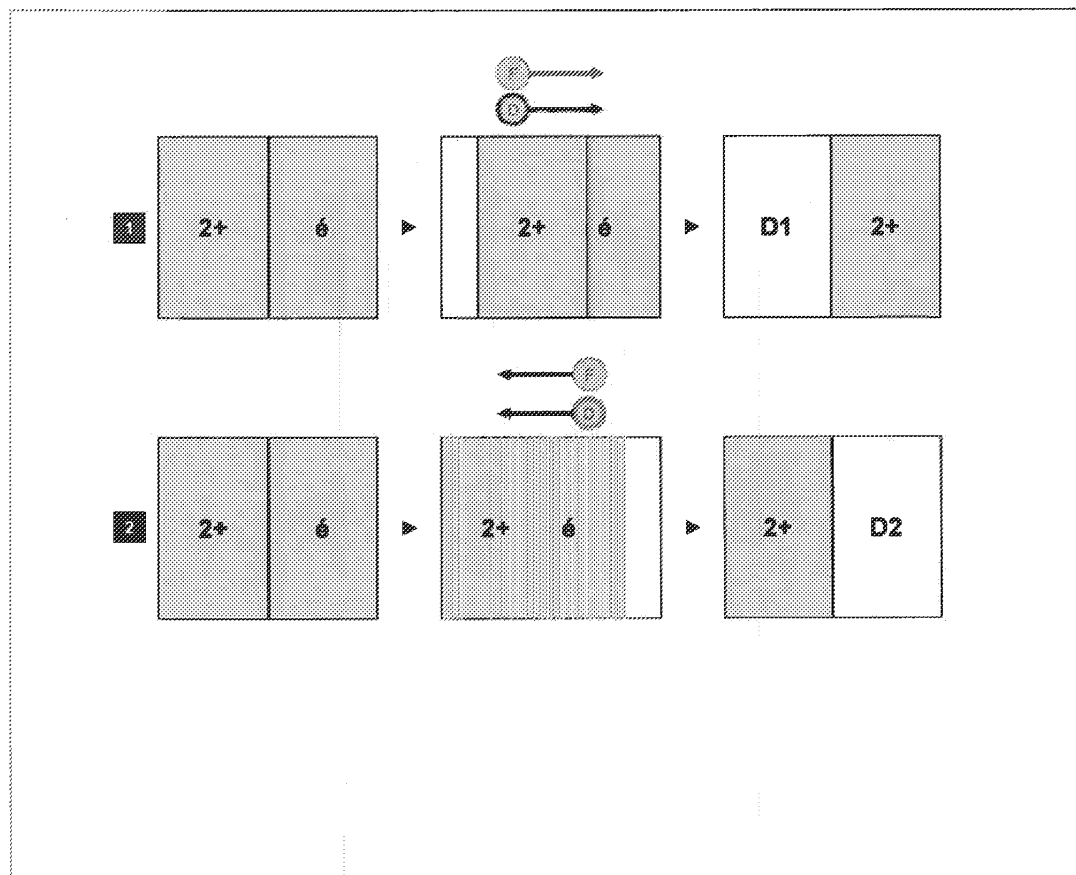
3. Minimizing a node+leaf view from the left screen moves the parent view to the right screen, covering the child view.
4. Minimizing a node+leaf view from the right screen moves the child view to the left screen, sliding below the parent view.



2.6 Maximizing exposé views

As a rule of thumb, exposé views are always on the right side of their parent views.

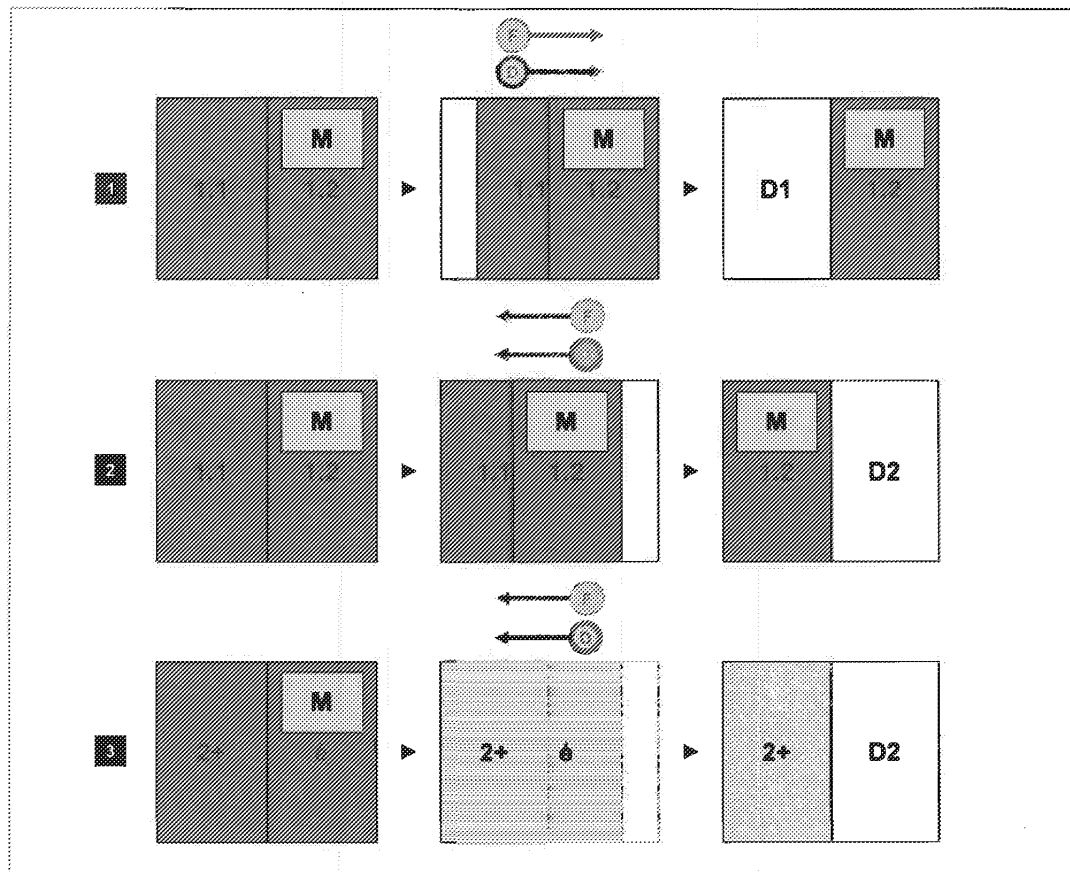
1. When maximizing an exposé view from the left, the parent stays on the left
2. When maximizing an exposé view from the right, the parent moves to the left
3. A flick will move the parent to the other screen.



2.7 Minimizing exposé views

As a rule of thumb, exposé views may not cover their parent view

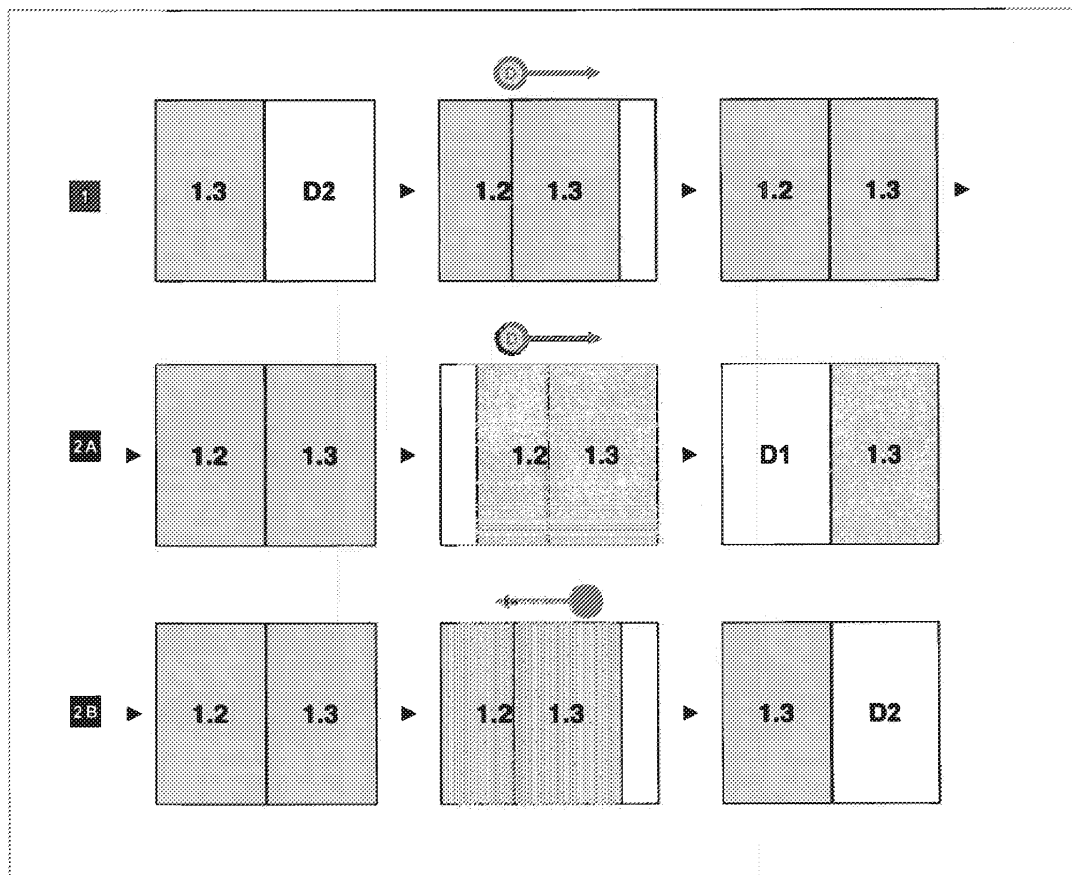
1. Minimizing an exposé view to the right will move the parent view to the right.
2. Minimizing an exposé view to the left will keep the parent view on the left.



2.8 Modal behavior during minimization

Dual-screen enabled applications can contain modal views on either screen. As a rule of thumb, the view containing the modal will always be visible after a minimization action whenever possible. This rule supersedes any other minimization rules.

1. Minimizing a parent+modal child view from the left will keep the modal view on the right screen and hide the parent view
2. Minimizing a modal parent+child view from the right will move the modal view to the left and hide the parent view
3. If the modal is a view that cannot be minimized to, like an expose view, the modal is cancelled upon minimization.

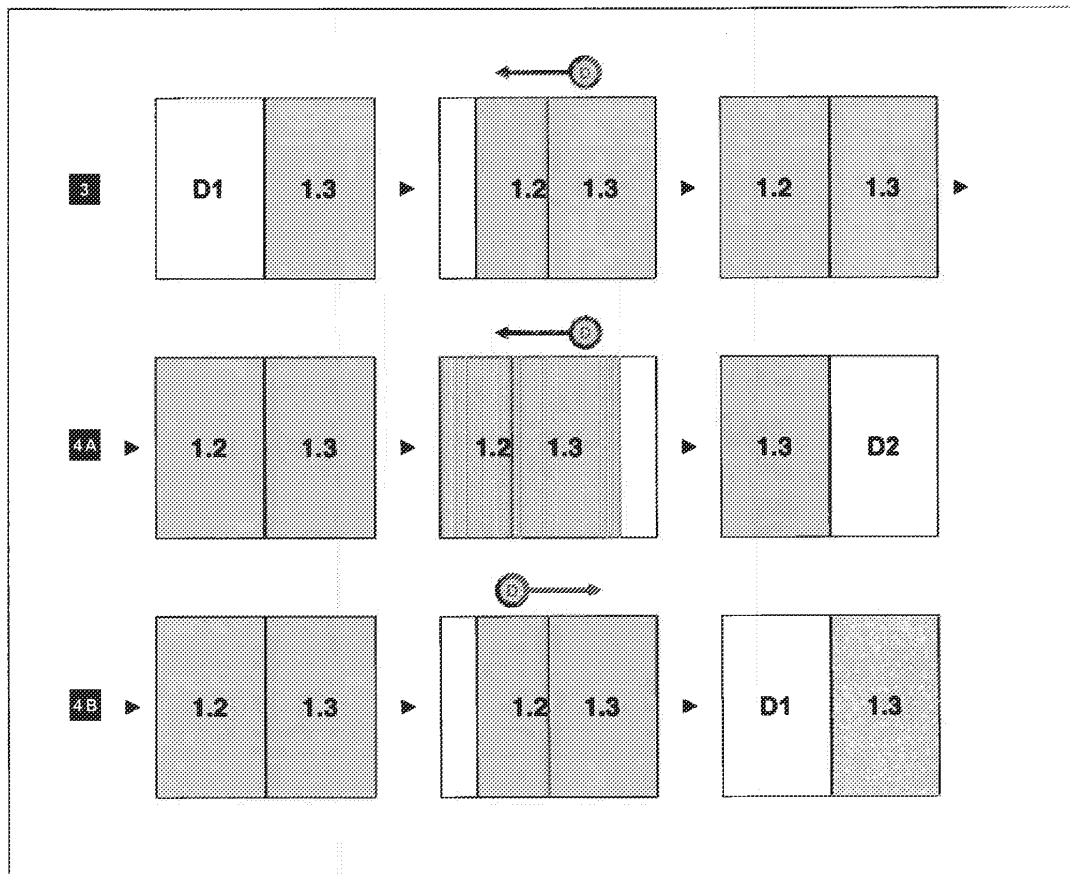


2.9 WPC navigation rules

When applications are being navigated via the off-screen gestures without any interaction with the applications themselves in between the gestures, different maximization and minimization rules apply.

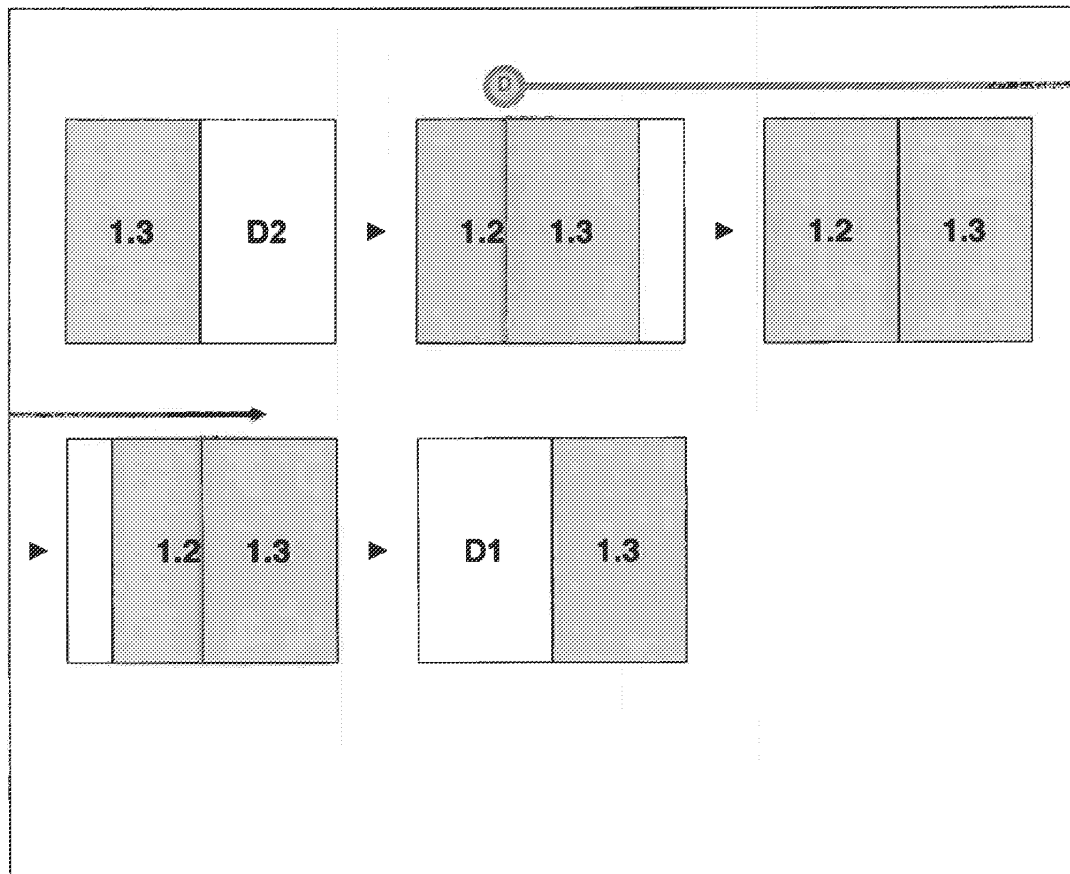
As a rule of thumb, whenever pure WPC navigation is performed, applications retain their original view when maximized and minimized consecutively.

1. Regular maximization rules apply.
2. When a consecutive minimization action is performed without interacting with the application, the original view is retained when minimizing the application.



3. Regular maximization rules apply.

4. When a consecutive minimization action is performed without interacting with the application, the original view is retained when minimizing the application.

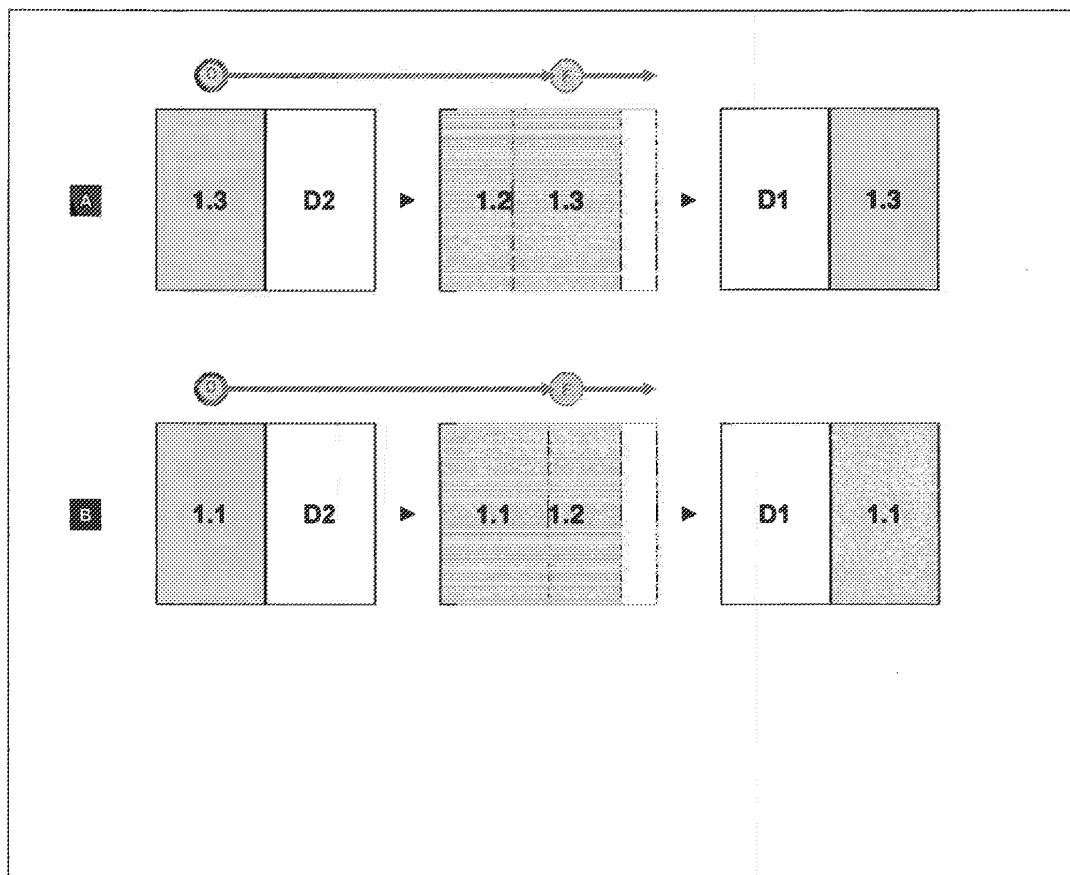


2.10 Long-dragging parent-child views

It is possible to perform a long-drag operation in order to first maximize, then minimize an application with one continuous gesture.

Essentially, the long-drag gesture equals several individual drag operations performed sequentially; thus, WPC navigation rules apply.

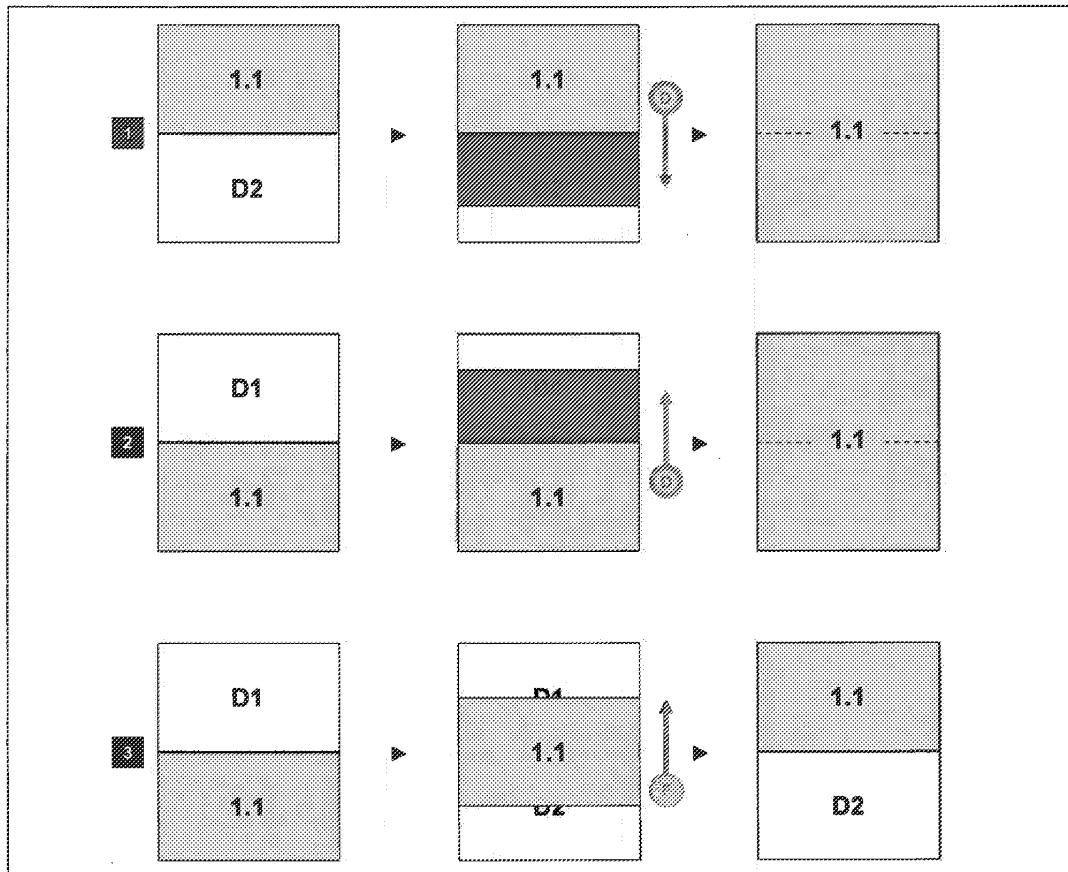
Therefore, using the long-drag, it is possible to move several single and/or dual-screen applications, depending on the length of gesture.



2.11 Drag + flick gestures

At any time during a WPC drag gesture, it is possible to initiate a flick gesture. As long as the drag flick gesture is not yet detected, the gesture is considered a drag and minimized dual-screen applications behave accordingly; as soon as a flick is detected, the ongoing maximization transition is retracted and the view is moved as per standard flick operations.

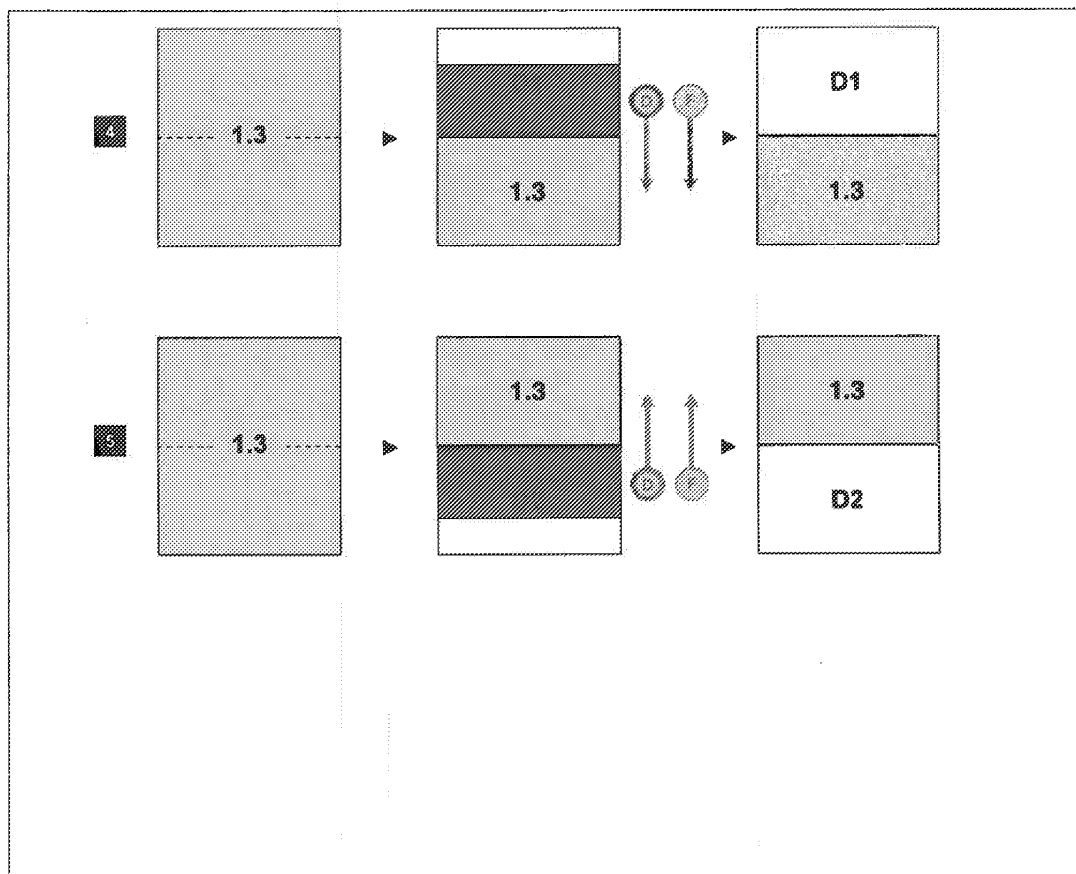
In the examples on the left, the operation starts as a drag, but half-way through a flick is initiated; the maximization operation is retracted at this point while the view moves to the other screen as per standard flick rules.



2.12 WPC rules in landscape orientation

In landscape orientations (LS, LD), the WPC rules apply similarly like in portrait orientations; the difference is that dual-screen applications in LD may present one view, not two, which in turns affects the maximization and minimization rules.

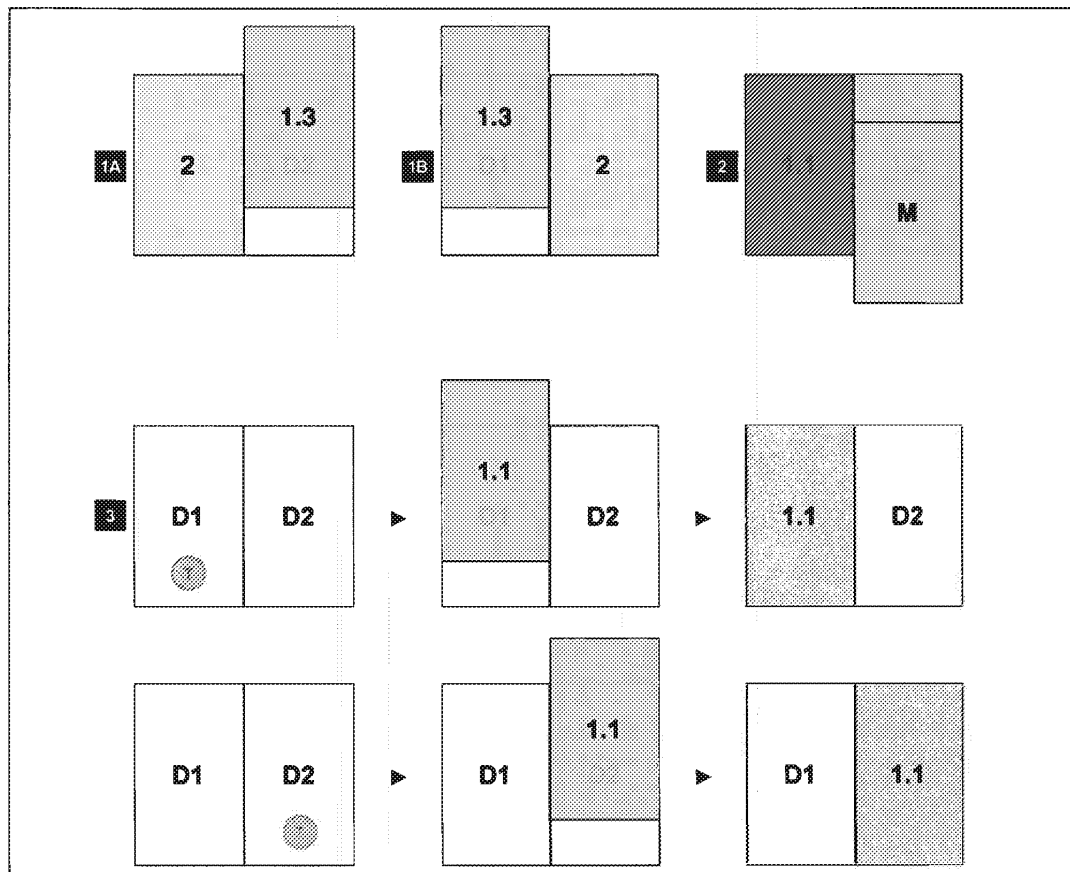
1. Maximization of a parent-child dual-screen application in LD orientation
2. Maximization of a parent-child dual-screen application in LD orientation
3. Flicking behavior in LD orientation for dual-screen applications



4. Minimization of a parent-child dual-screen application in LD orientation; note that minimization in LD retains the current view after minimization.

5. Minimization of a parent-child dual-screen application in LD orientation; note that minimization in LD retains the current view after minimization.

3 Application launching and quitting



3.1 Introduction to application launching and quitting

When new applications or application instances are launched, they are placed either on the left or the right screen.

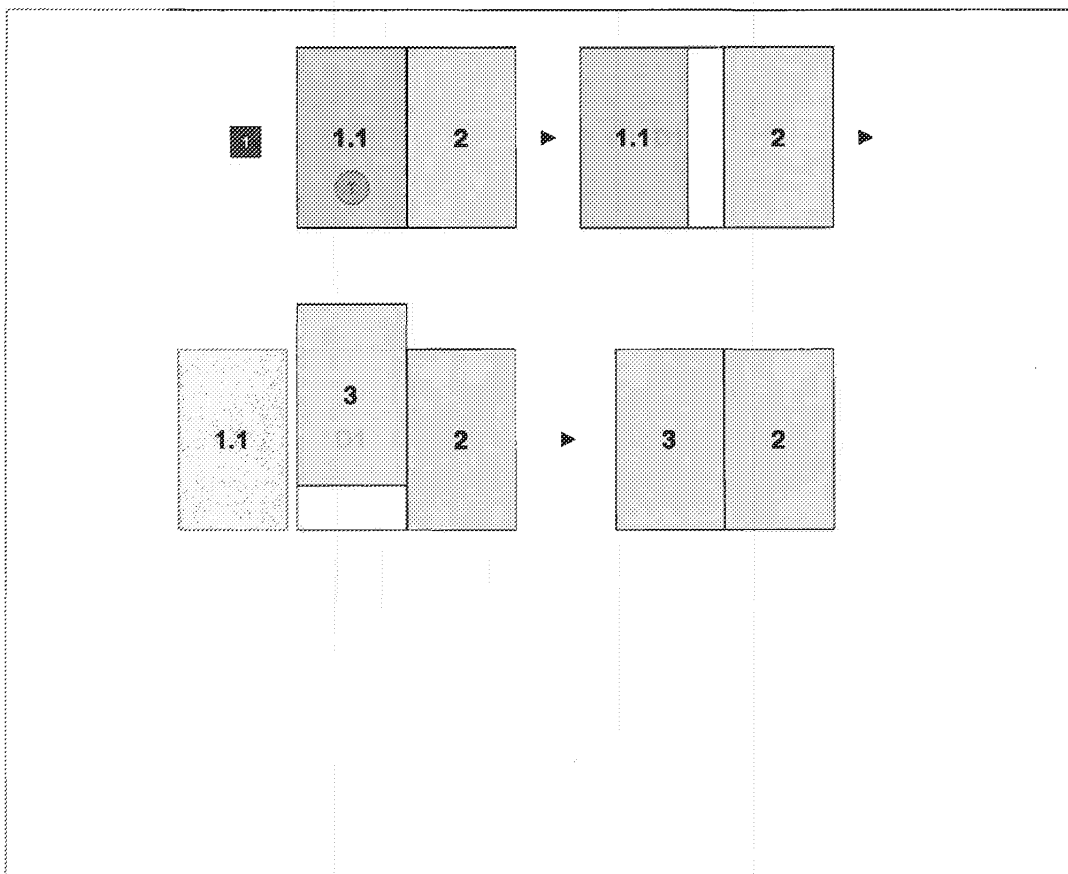
1. Applications can be launched to either screen.
 2. Full-screen modals are launched with a different transition, and dim out the other screen.
 3. Dual-screen capable applications are always launched in single-screen mode, on the view they were launched from.
- If a dual-screen application is quit and then relaunched, the view shown upon relaunch is the parent view of the two views seen upon quitting. Exposé views reemerge with their parent view.

The motion for launching a new application is:
MOT.3.3 Launch App

The motion for quitting an application is:
MOT.3.4 Quit App

The motion for launching full-screen modals is:
MOT.4.7 Full-Screen Modal Appear

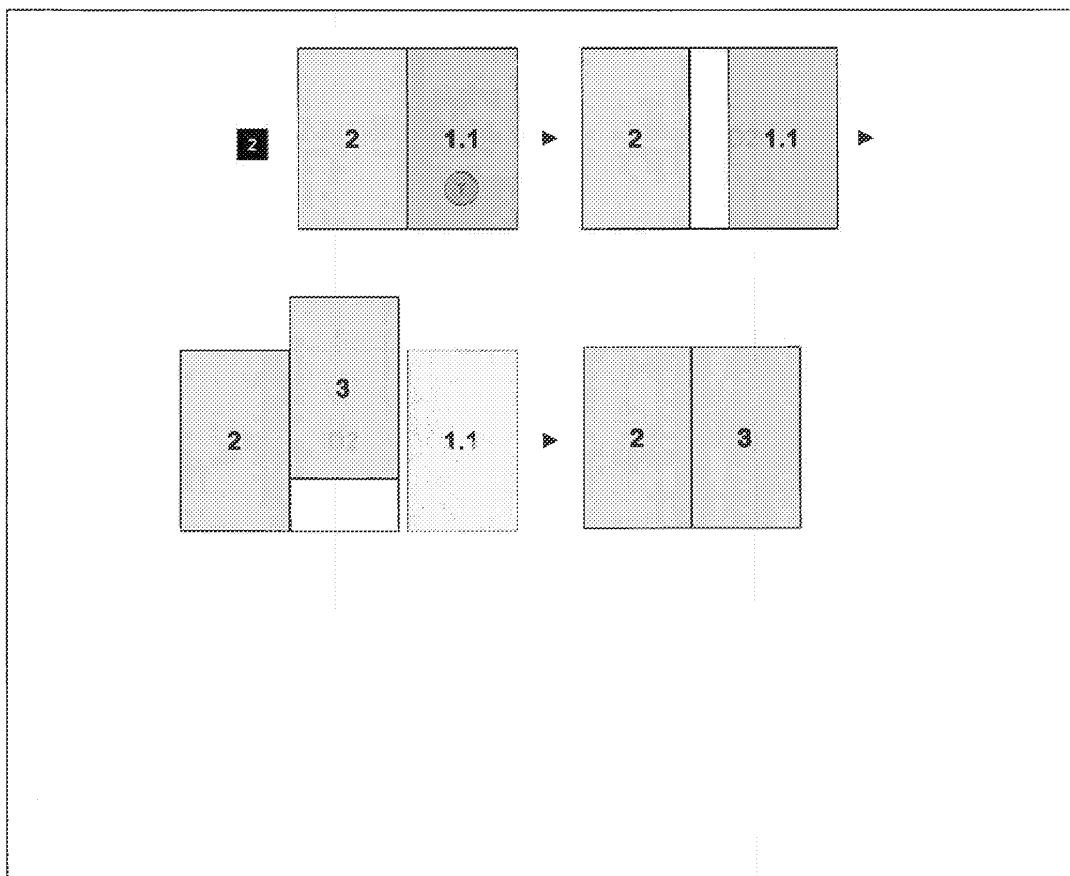
The motion for dismissing full-screen modals is:
MOT.4.8 Full-Screen Modal Disappear



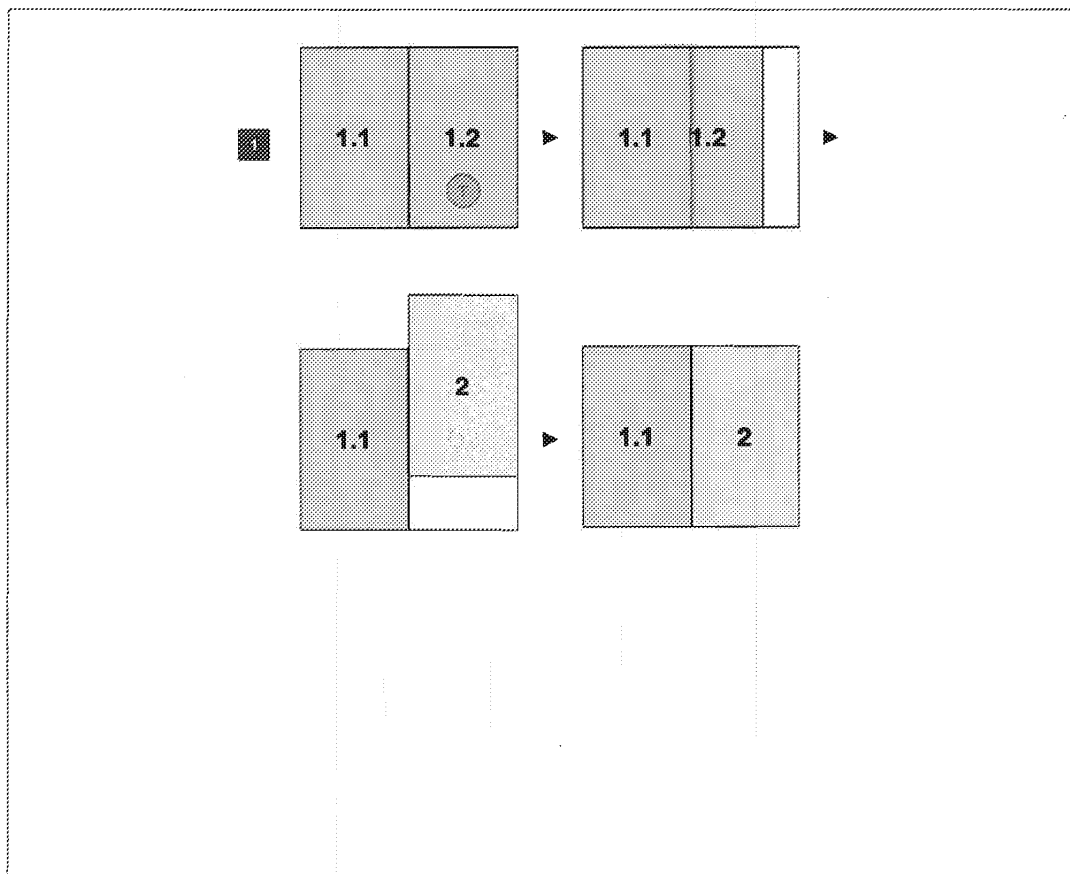
3.2 Launching applications

As a rule of thumb, new applications are always placed on the screen from which they were launched from. If necessary, the new application moves the view that occupied its spot towards the direction of the screen (applications on left move leftward, applications on the right rightward).

1. An new application is launched from the left screen; the application that initiated the launch is moved out of view towards the left, and the new application is placed on the left screen.



2. An new application is launched from the right screen; the application that initiated the launch is moved out of view towards the right, and the new application is placed on the right screen.



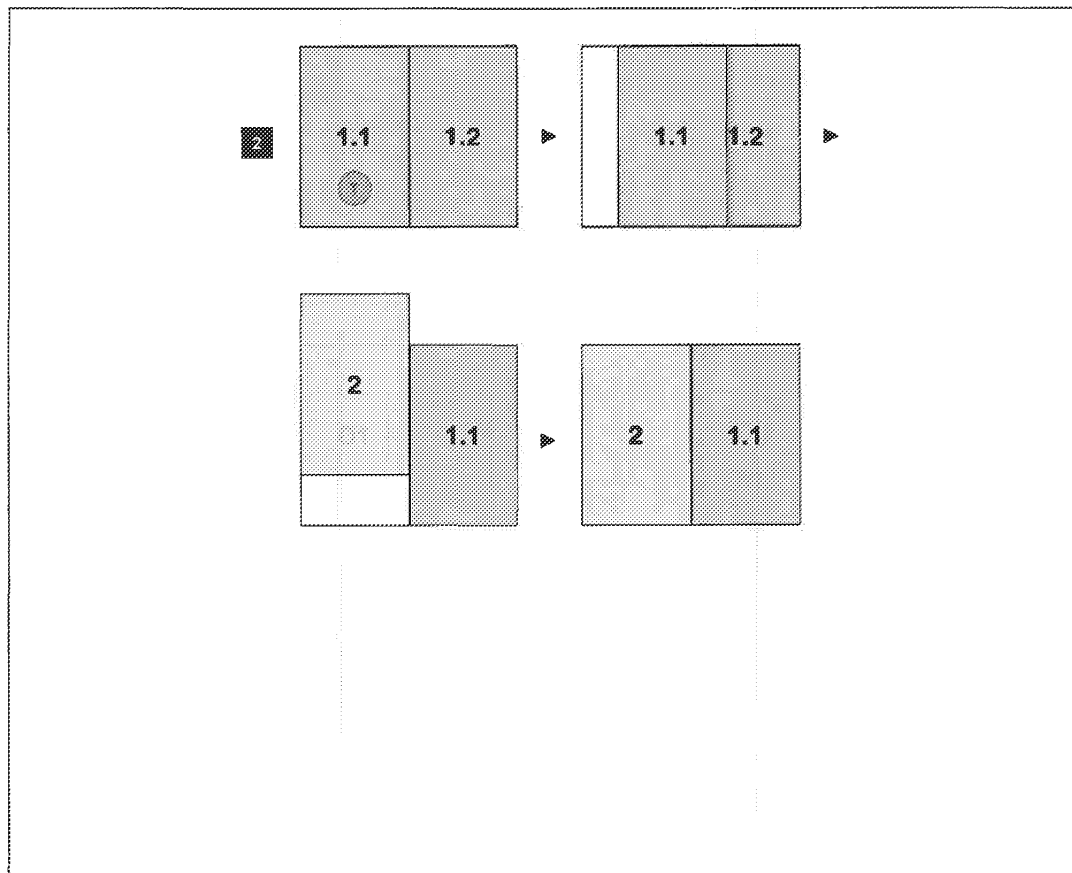
3.3 Auto-minimization during application launch

RULE SUGGESTION: PRESERVE VIEW THAT INITIATED APP LAUNCH

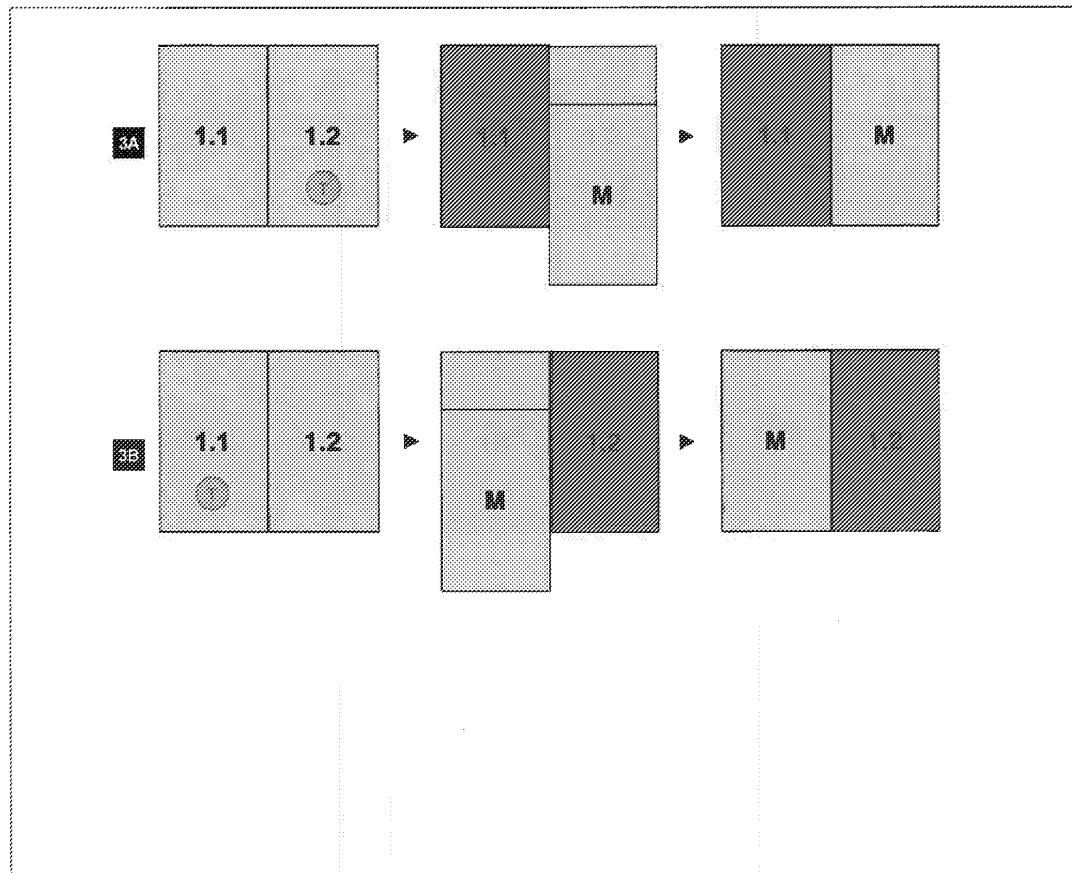
When new application windows are launched, dual-screen applications auto-minimize in order to make room for the newly launched window.

Because of the rules of application launching, the dual-screen application is minimized in such a manner that it occupies the opposite screen of where the new application is placed into.

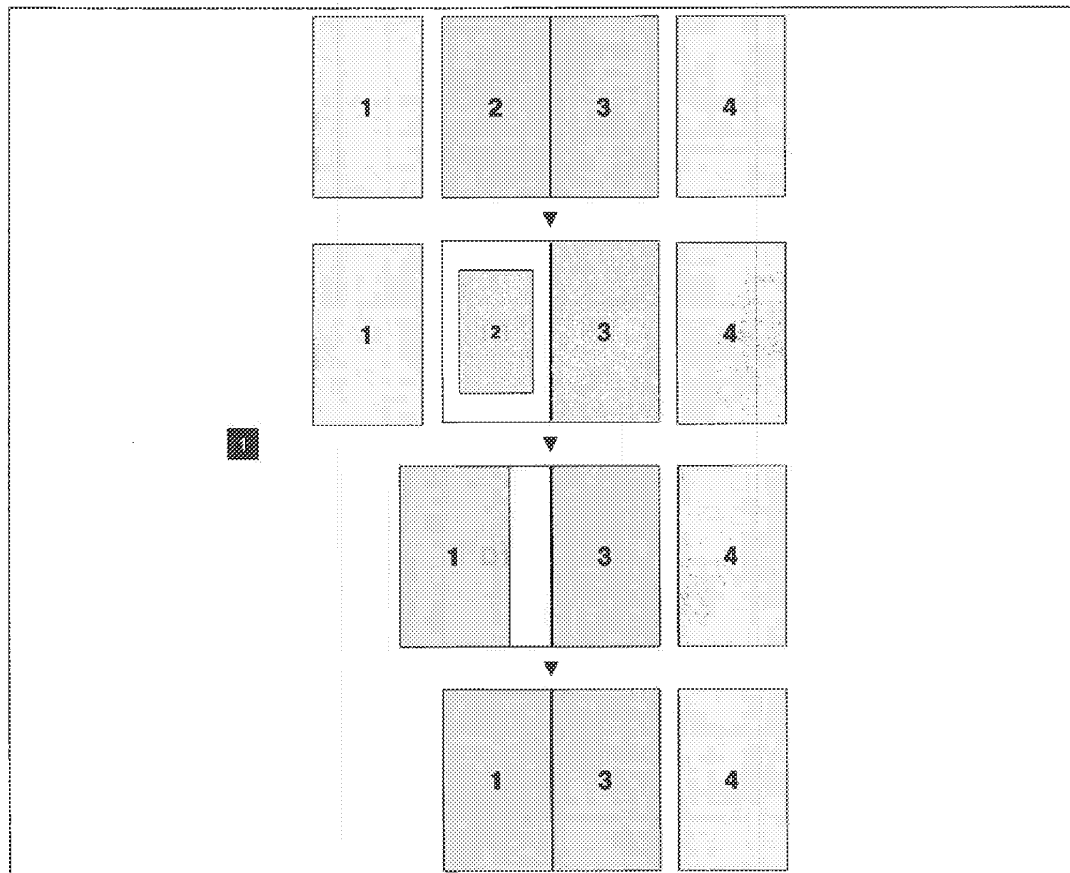
1. A new application is launched onto the right screen; the dual-screen application minimizes to the left according to standard minimization rules, and the new application is brought into the left screen.



2. A new application is launched onto the left screen; the dual-screen application minimizes to the right according to standard minimization rules, and the new application is brought into the right screen



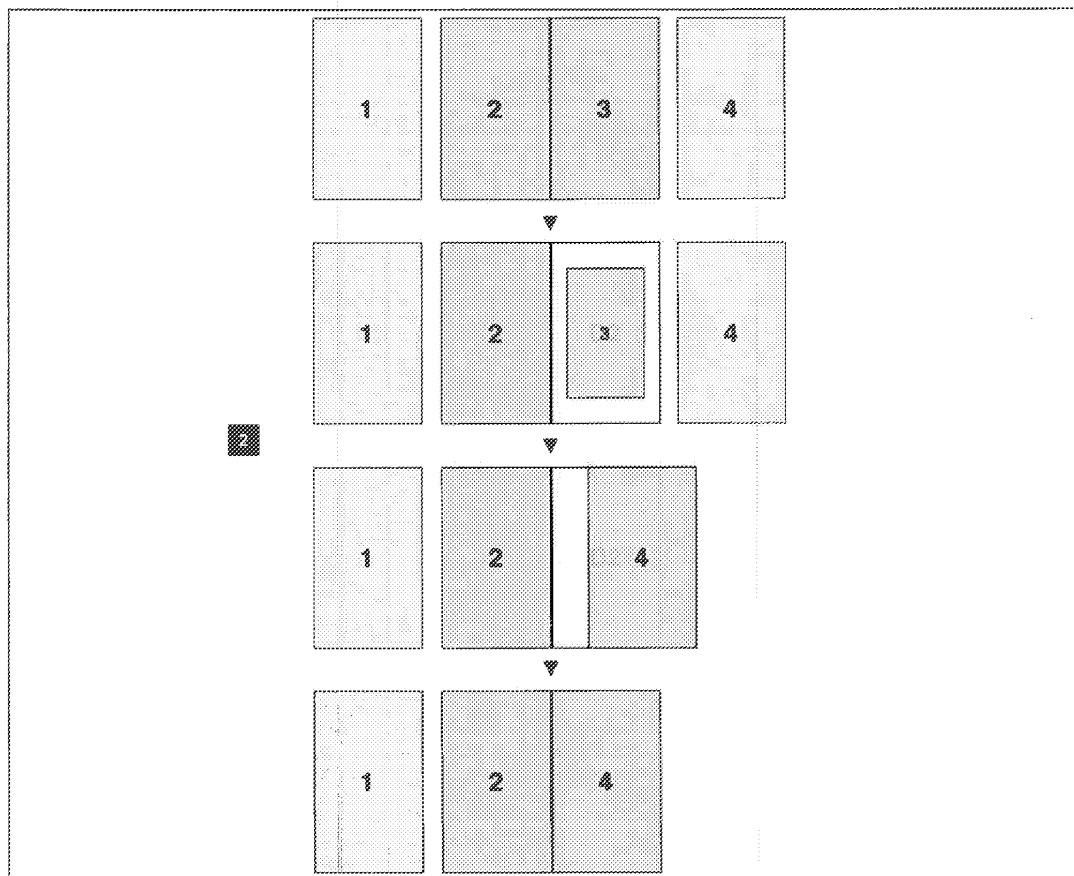
3. A full-screen modal is summoned from within the application; the modal appears on the side it was launched from, on top of the view, dimming out the other screen.



3.4 Quitting applications

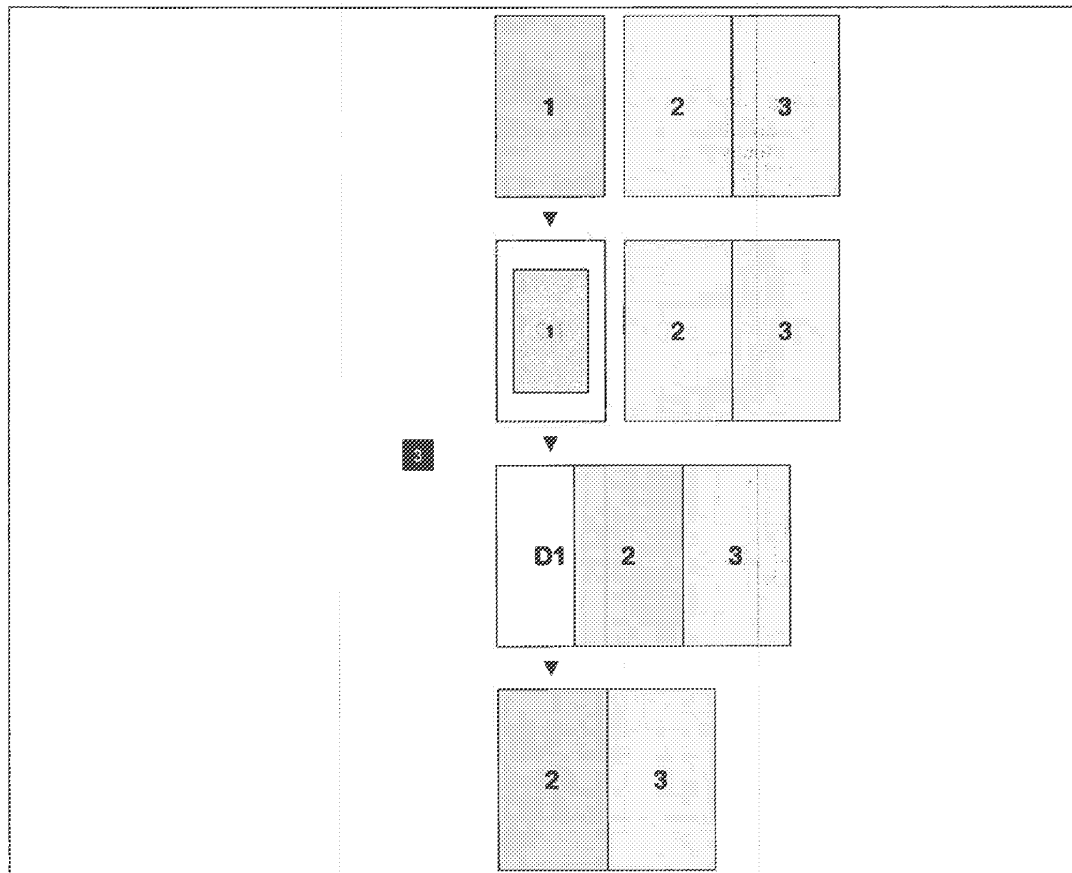
As a rule of thumb, when applications are quit the gap they leave behind in the stack is filled with the next application on the same screen.

1. The application on the left screen is closed
 - The closed application disappears
 - The gap created by the closed application is filled from the left: If there is an application located to the left of the closed application, it slides into view
 - If there is no application to the left of the closed application, the underlying desktop is shown.

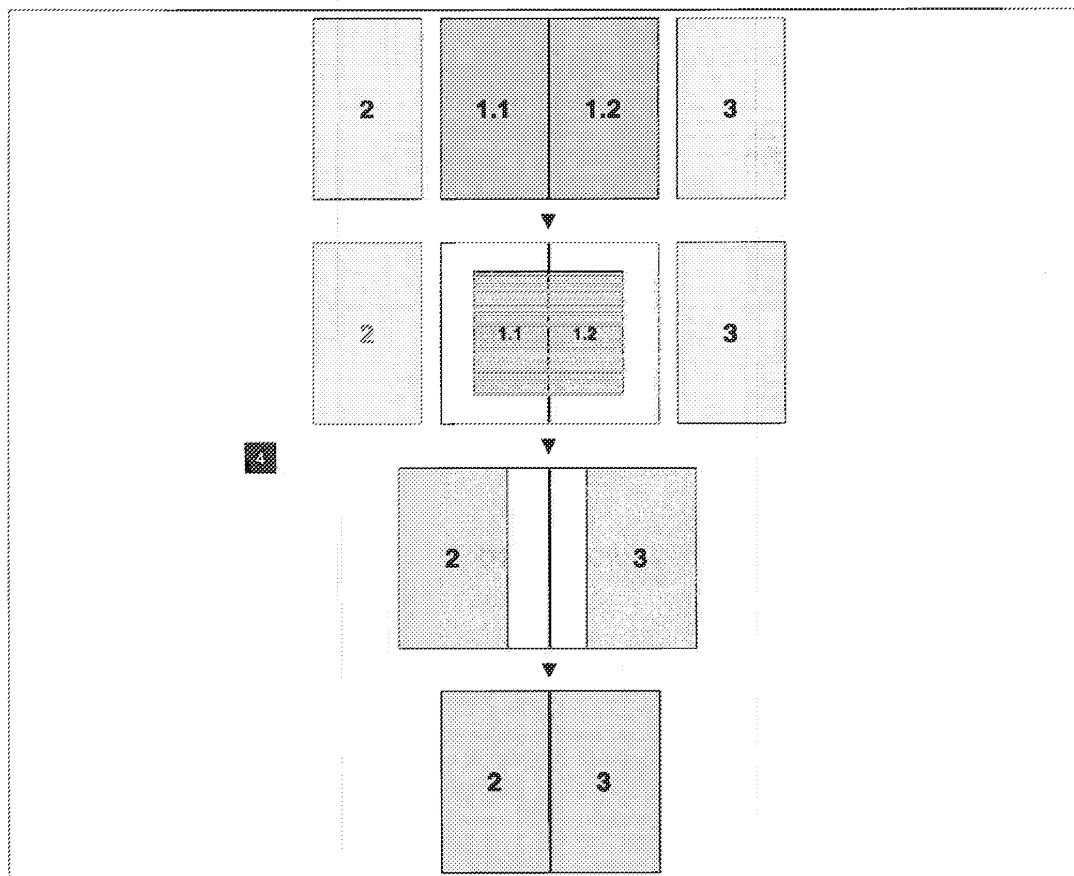


2. The application on the right screen is closed

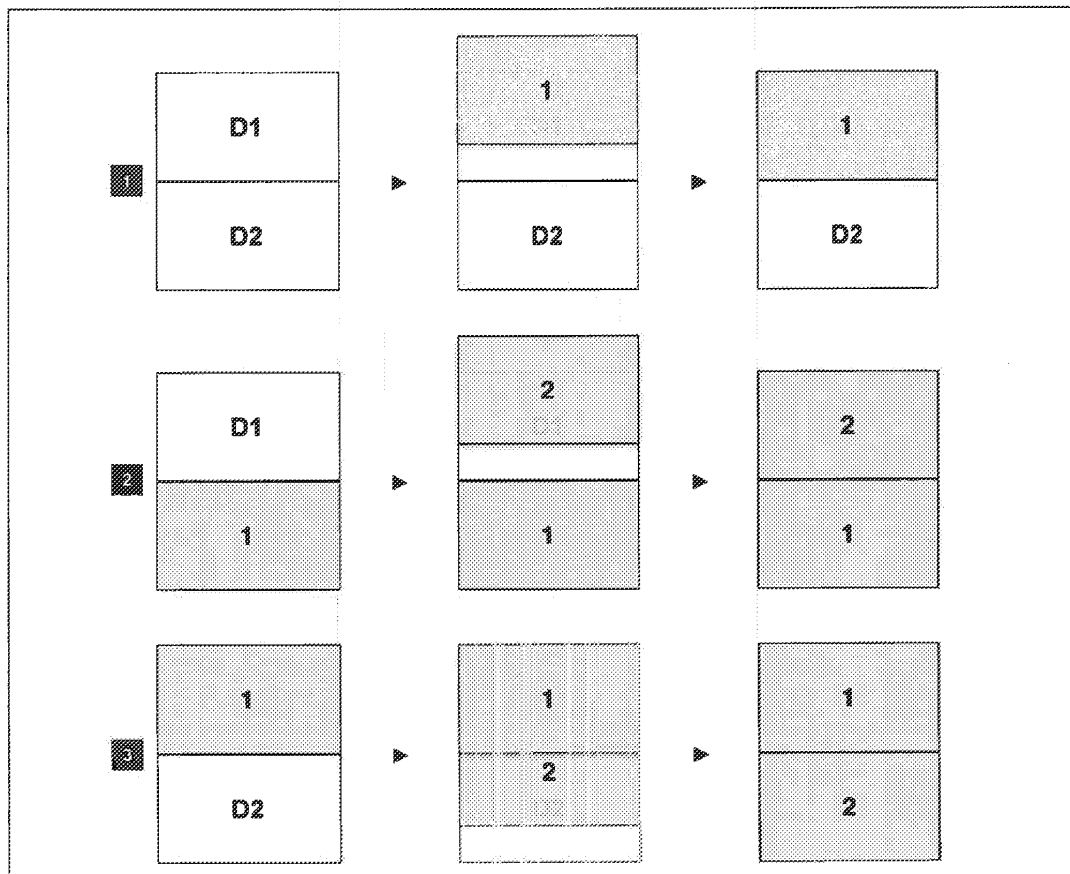
- The closed application disappears
- The gap created by the closed application is filled from the right; if there is an application located to the right of the closed application, it slides into view
- If there is no application to the right of the closed application, the underlying desktop is shown.



3. If the first application in the stack is quit when the device is closed, the remaining gap is filled from the right.



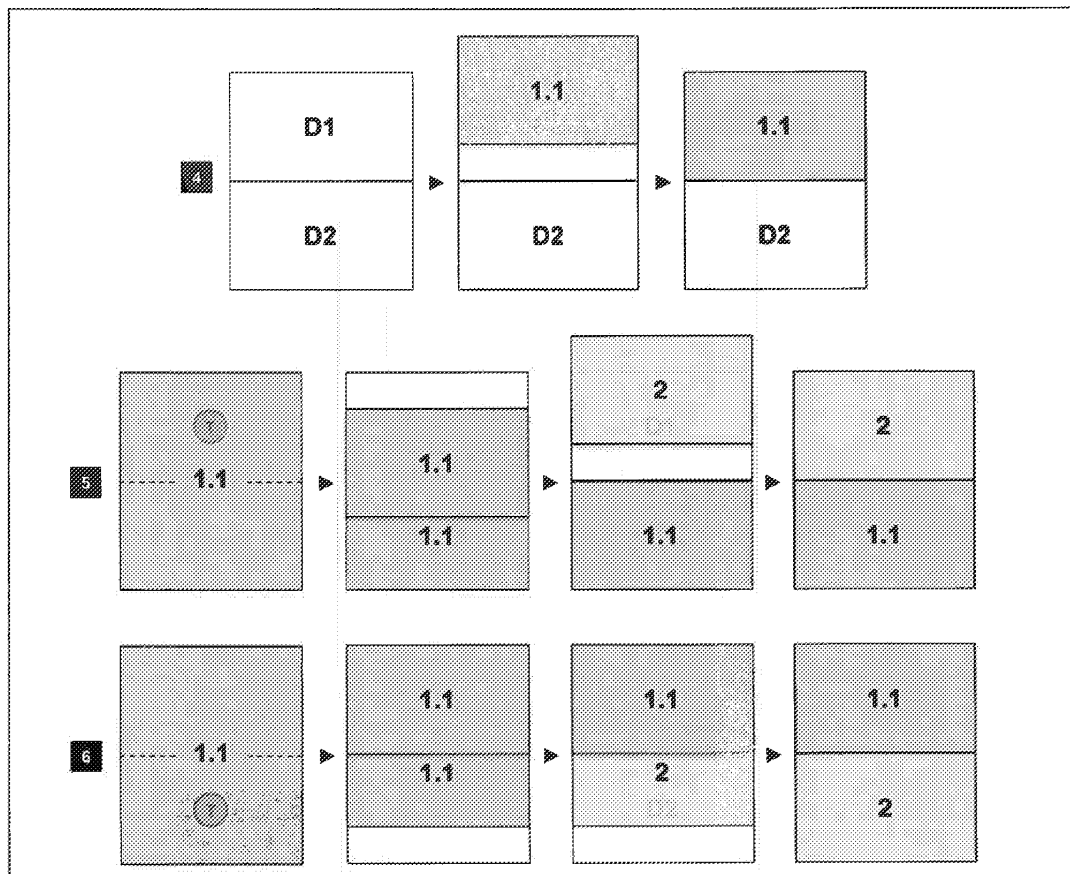
4. Quitting a maximized dual-screen application; the remaining gaps are filled (when possible) from both sides respectively.



3.5 Launching and quitting applications in landscape orientation

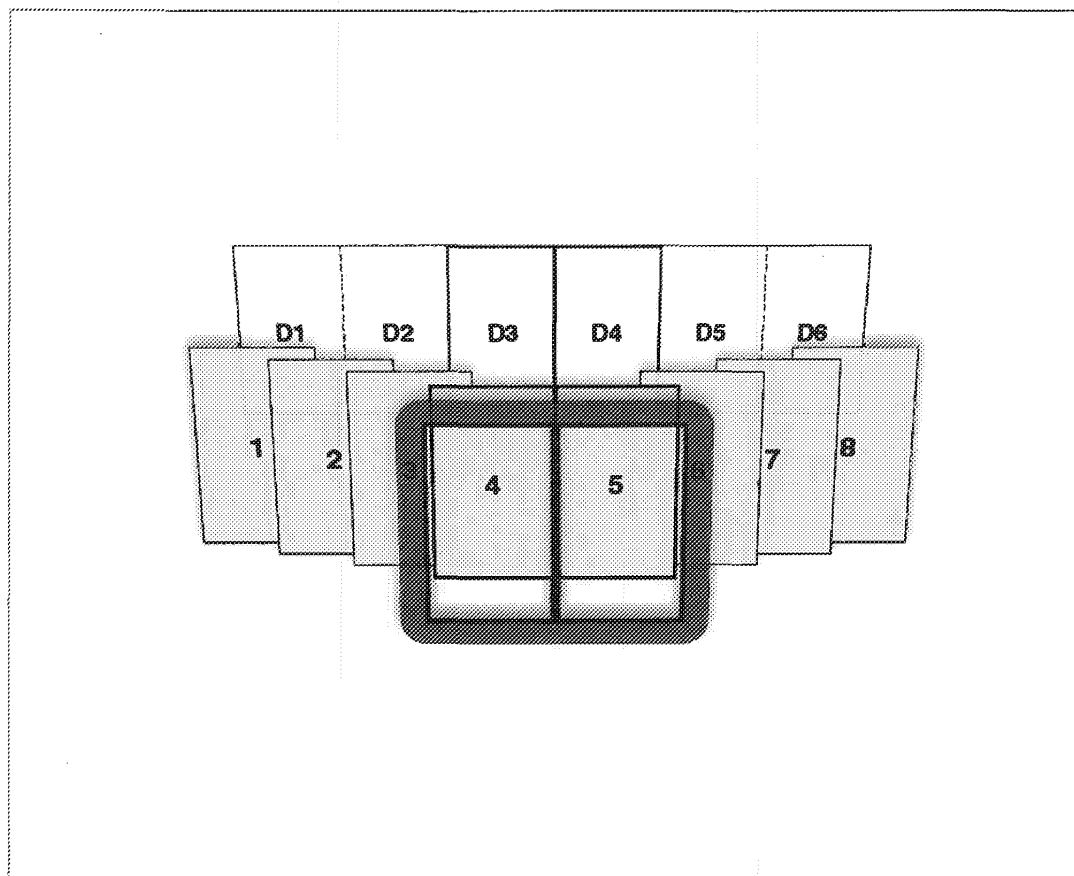
Launching and quitting applications in landscape orientation is very similar to portrait orientation.

1. The top screen is considered the primary screen, and applications launch there by default if the complete desktop is revealed.
2. An application is launched on the top screen.
3. An application is launched on the bottom screen.



4. A dual-screen application is launched in collapsed form. Gravity drop is not applied automatically.
5. A new application is launched from the top screen within a maximized dual-screen application; the dual-screen application is minimized, and the new application launched on the screen that it was initiated from.
6. A new application is launched from the bottom screen within a maximized dual-screen application.

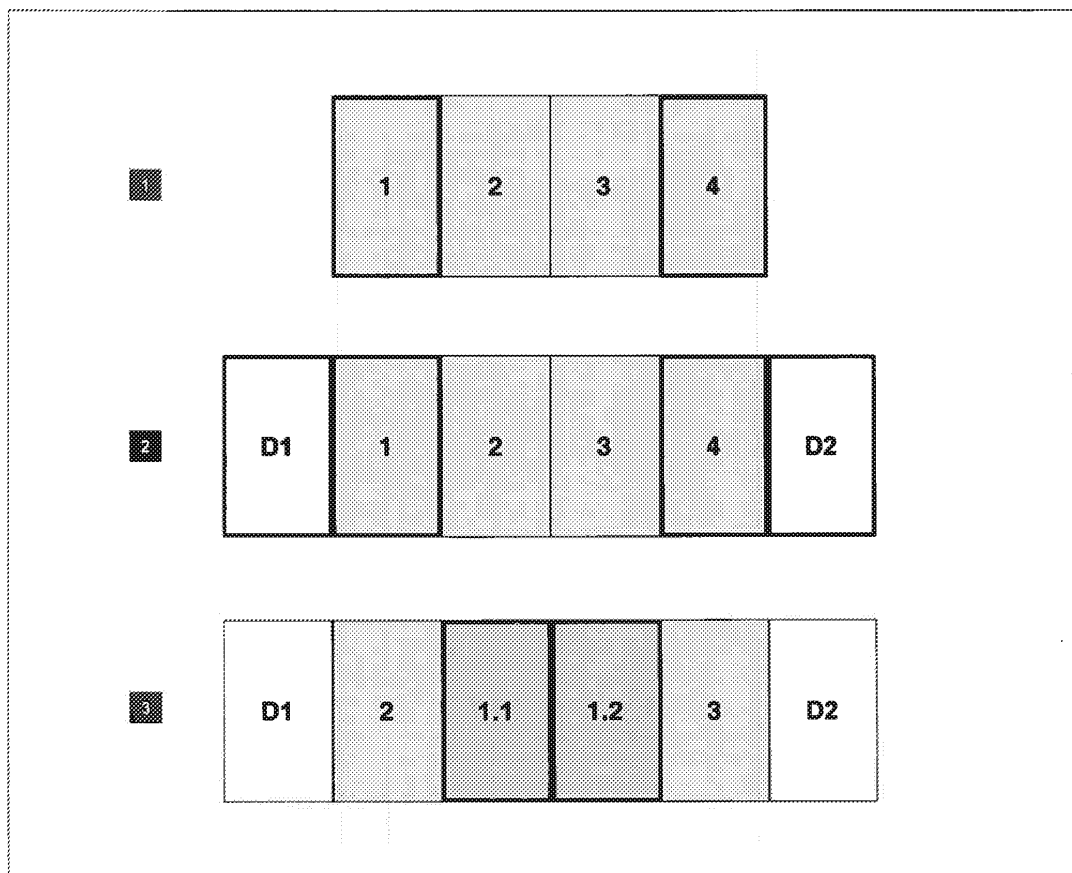
4 Window stack & opening and closing the device



4.1 Introduction to the window stack

Conceptually, application windows are represented in two stacks, one on each screen of the device. The Desktop lies underneath the window stack, as a large canvas divided into six sections of which two can be displayed on the screens. This is visualized in the example on the left.

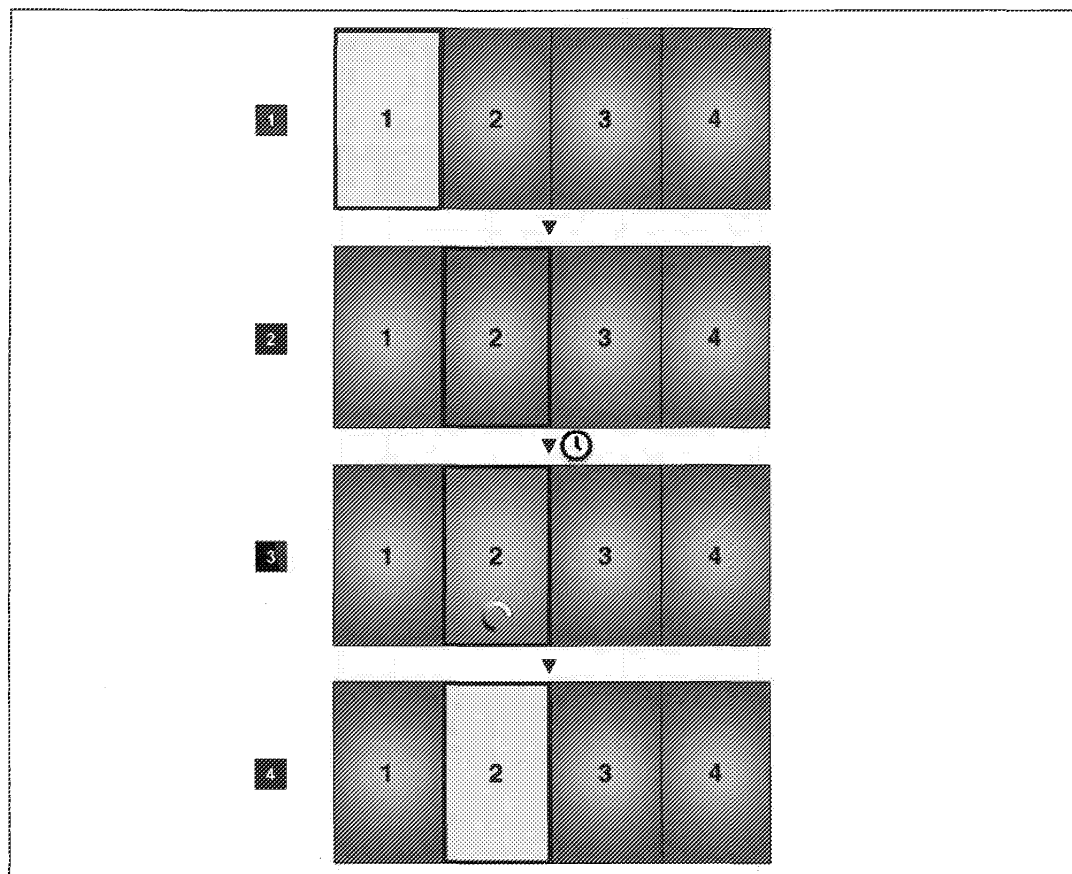
When the device is closed, the conceptual model persists. Only one stack can be seen (the one on the primary screen, left), but the other still exists on the right; it is simply not shown because the second screen is not available.



4.2 Navigating the window stack

Using WPC, the window stack can be navigated by dragging applications from the left screen to the right and vice versa.

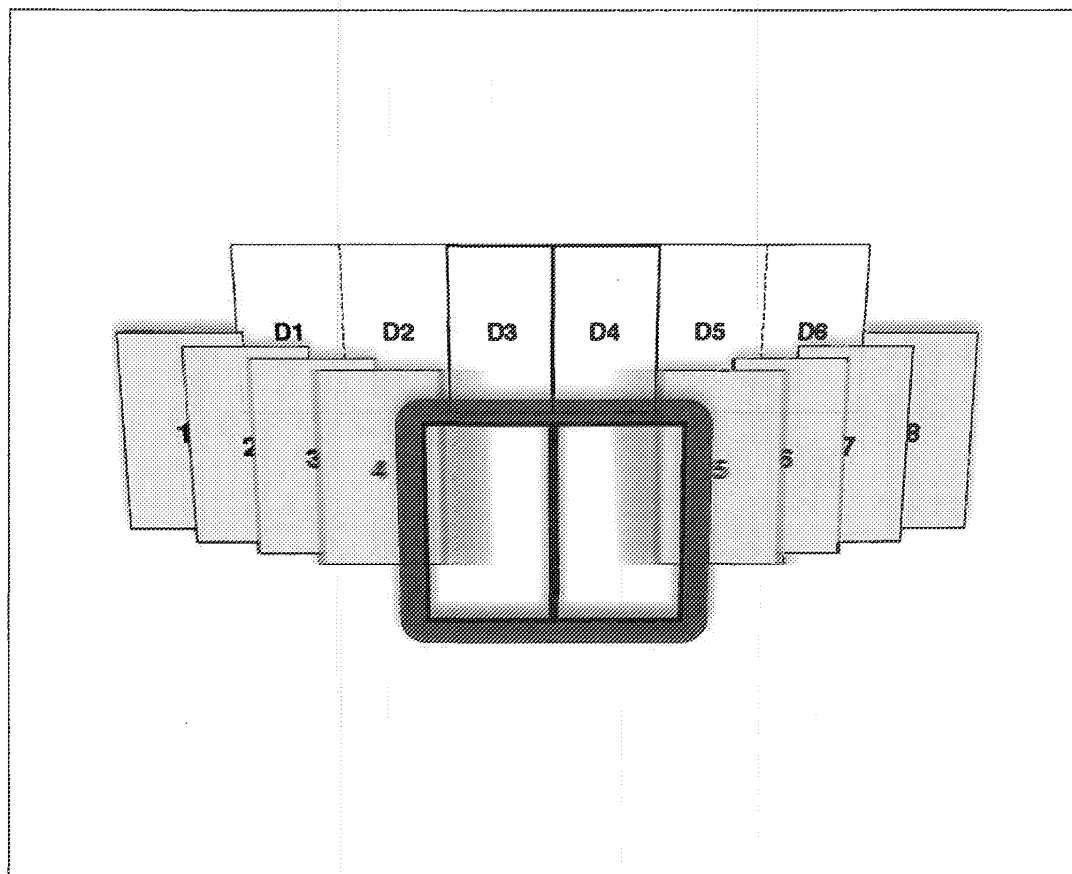
1. Device closed. Using WPC, the two ends of the window stack can be reached.
2. Device open. Using WPC, the two ends of the window stack can be reached, with a desktop shown on the second screen respectively.
3. A dual-screen application within the window stack. Dual-screen applications can only be maximized when in view.



4.2.1 Application sleep and wake

Due to performance considerations, applications that are not in view are put to a sleep state. This means that when WPC is used to navigate along the window stack, applications that come into view must be awoken before they can be used again.

1. Applications that are out of view are put in a sleep state.
2. When the WPC is used to navigate to another application in the stack, the application that comes into view is still asleep; its state is represented with a dimmed-out screenshot and possibly an icon/label. The application previously in view is now put asleep.
3. Once an application that is asleep comes into view, a timer sets off to trigger the awakening call for the application. This means that if WPC navigation operations continue without a delay, the application in view is not woken up. In this example, however, the timer runs out and the application is awoken; an indicator is shown to reflect this.
4. Once the application is awake, it is presented in view.



4.3 Revealing the Desktop

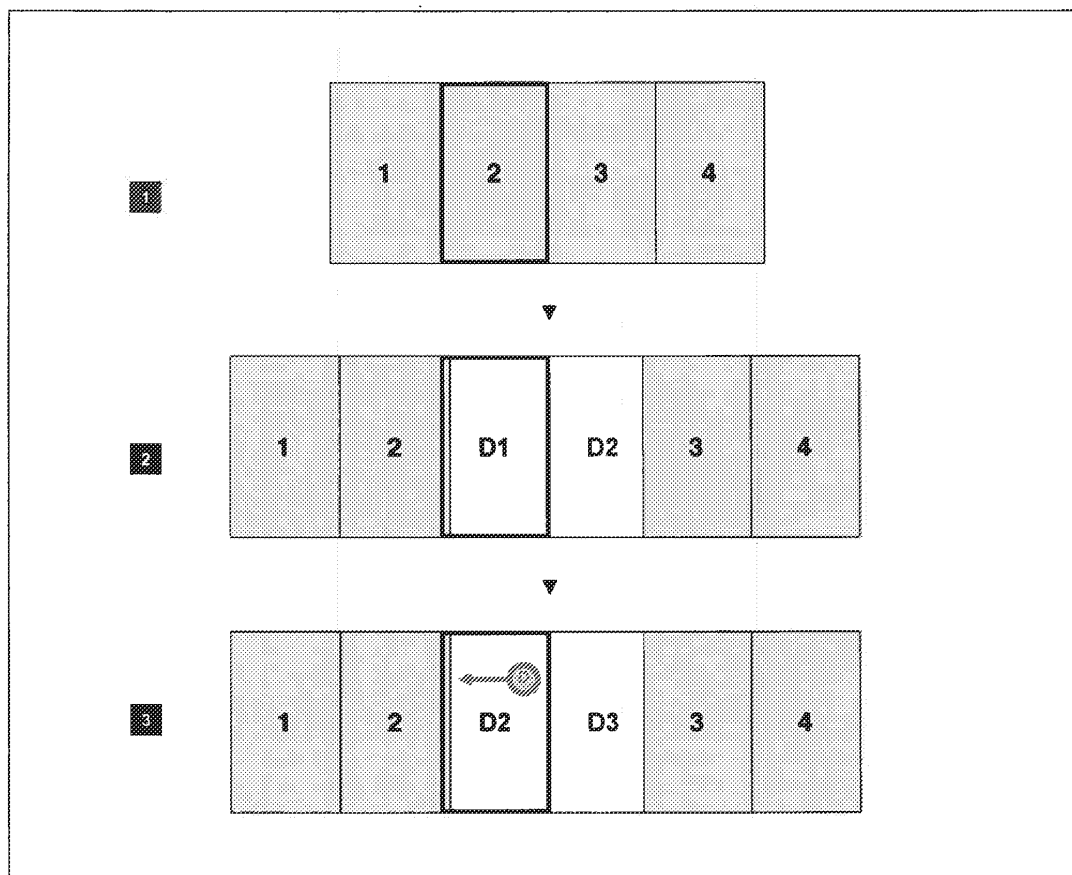
The Desktop can be reached by a *reveal* action. Conceptually, the reveal pushes the application stack out of the way (by moving the left stack out of view to the left, and the right stack out of view to the right).

The reveal is a *temporary* state; as a rule of thumb, whenever the user is not interacting with the Desktops directly, the reveal is cancelled. This includes WPC operations.

The reveal is initiated by pressing the hardware home-key.

The motion for the desktop reveal is:

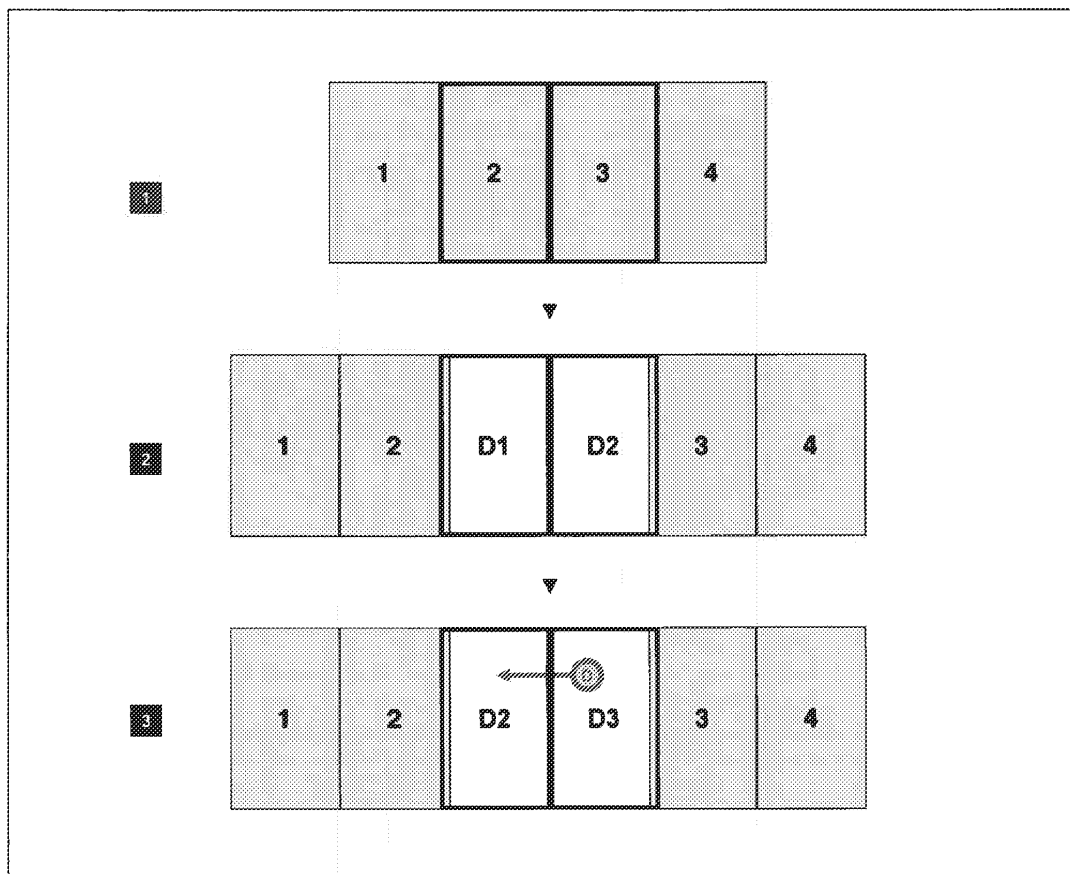
MOT.1.5 Reveal



4.3.1 Revealing the Desktop when the device is closed

The Desktop reveal can be initiated when the device is closed.

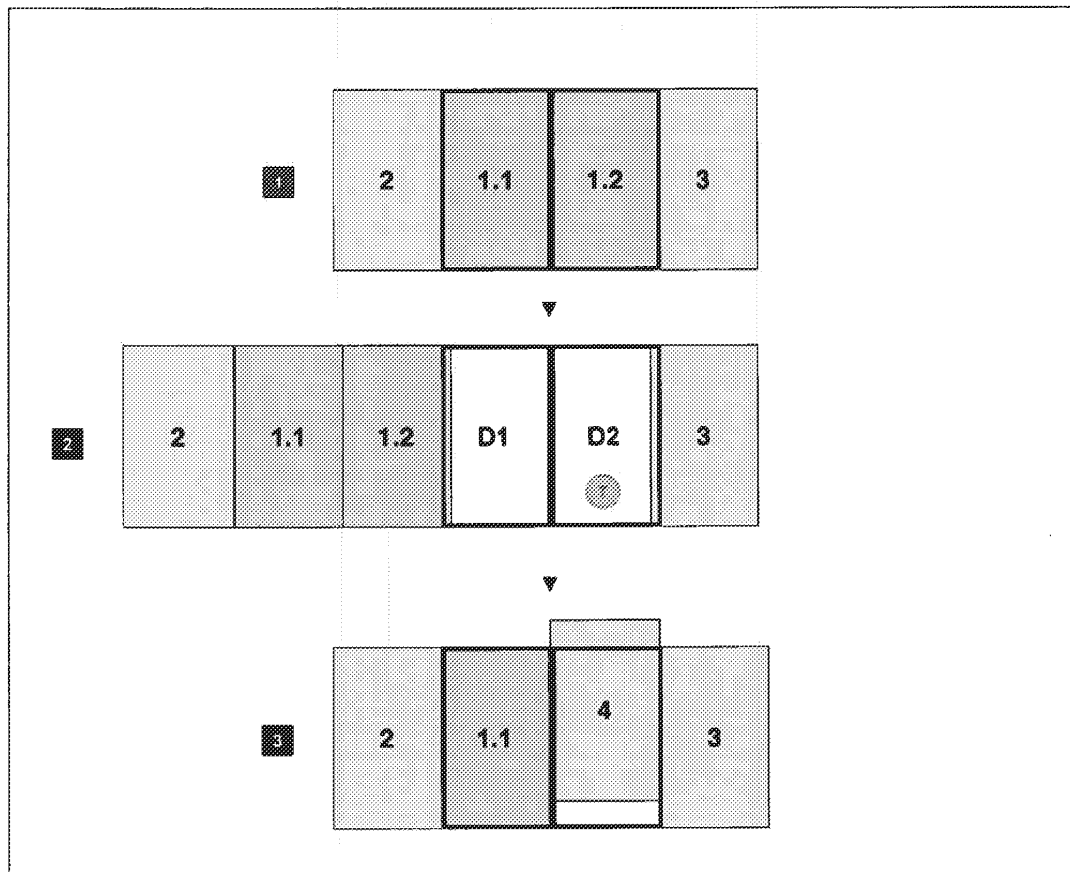
1. Applications 1 and 2 are on the left stack, with application 2 in view; applications 3 and 4 are on the right stack (out of view)
2. Reveal is initiated; the left stack moves out of view to the left. The right stack is pushed towards the right (this would only be visible if the device was suddenly opened while the reveal was initiated).
3. The Desktops can now be interacted with; it is possible to change the visible desktop by dragging gestures.



4.3.2 Revealing the Desktop when the device is opened

The Desktops can be revealed when the device is open.

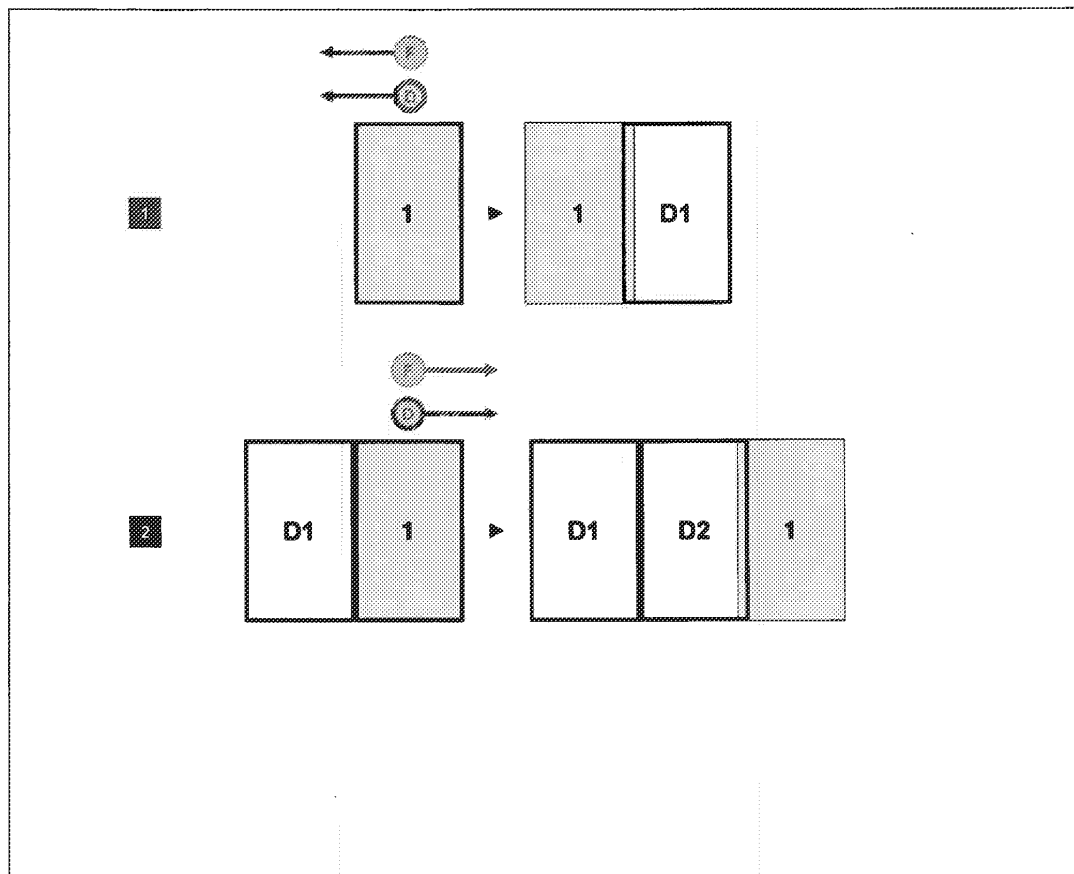
1. Applications 1 and 2 are on the left stack, with application 2 in view; applications 3 and 4 are on the right stack, with application 3 in view.
2. Reveal is initiated; the left stack is pushed towards the left, the right stack towards the right.
3. The Desktops can now be interacted with. In this example, the Desktops are navigated by an on-screen drag gesture.



4.3.3 Dual-screen applications and application launching during reveal

Maximized dual-screen applications can also be pushed aside by the reveal action. Their state is not affected unless a new application is launched.

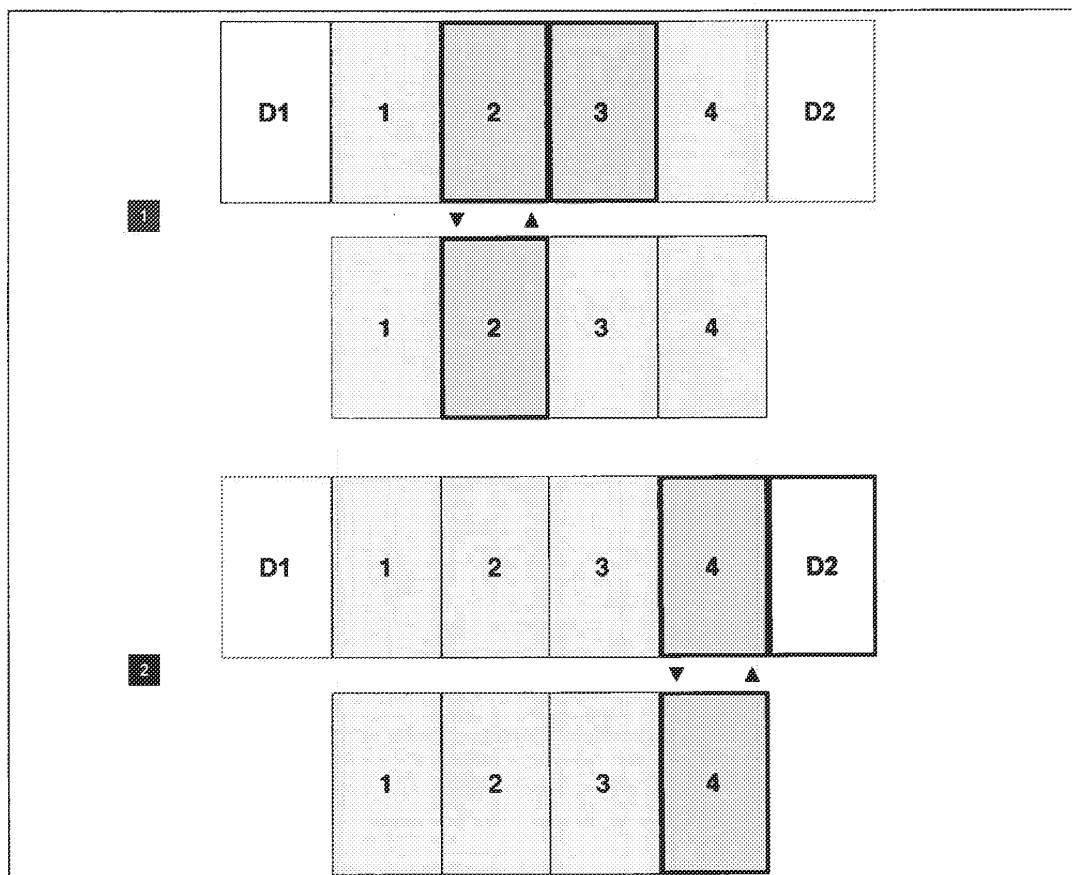
1. A maximized dual-screen application is in view.
2. Reveal is initiated; dual-screen applications are moved towards the primary screen (left).
- ... A new application is launched from Desktop 2 (right screen)
3. The newly launched application (number 4) comes into view.
- ... The reveal is cancelled.
- ... The new application is displayed on the screen it was launched from.
- ... The dual-screen application is minimized according to standard minimization rules.



4.3.4 Revealing the desktop after reaching the end of the window stack

It is possible to reveal the desktop(s) when the end of the window stack is reached on either side of the screen. This is accomplished by a drag or flick operation directed beyond the end of the window stack.

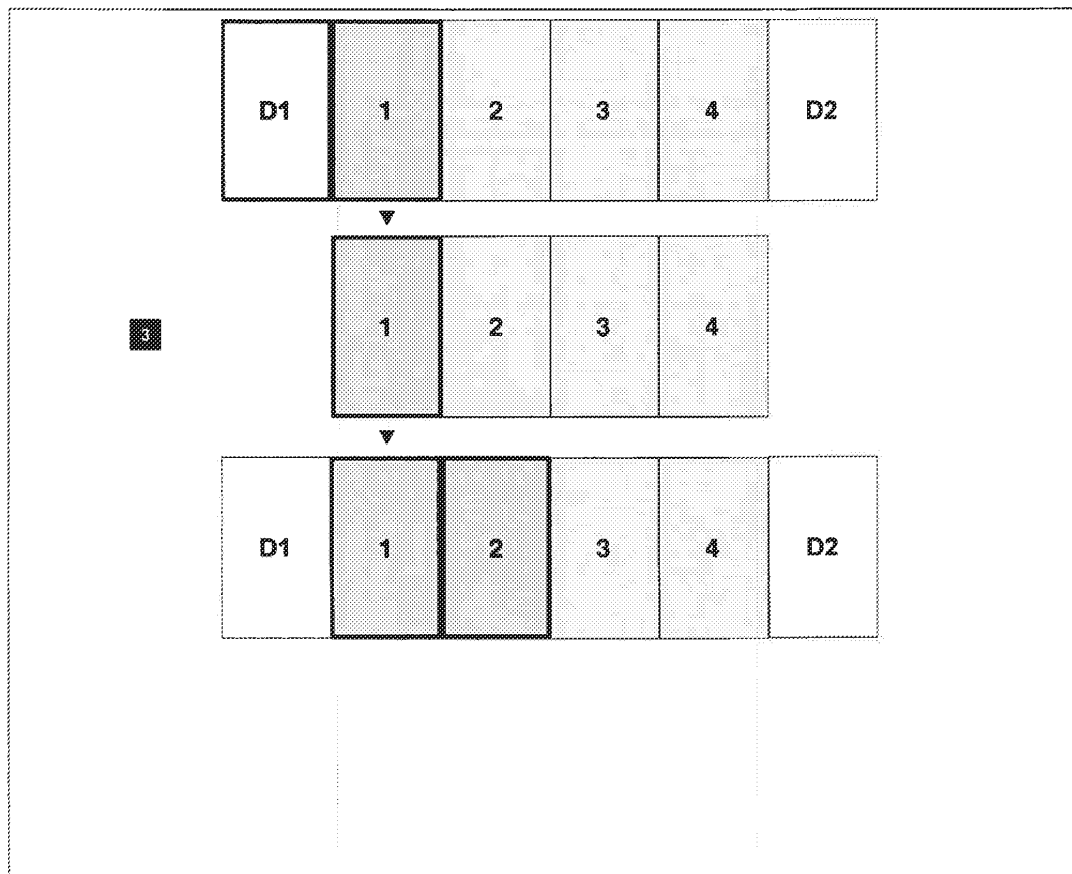
1. Device closed; the desktop is revealed when the first or last application in the stack is dragged or flicked to the right or left, respectively.
2. Device open; both desktops can be revealed by dragging or flicking the first or last application in the stack to the right or left, respectively.



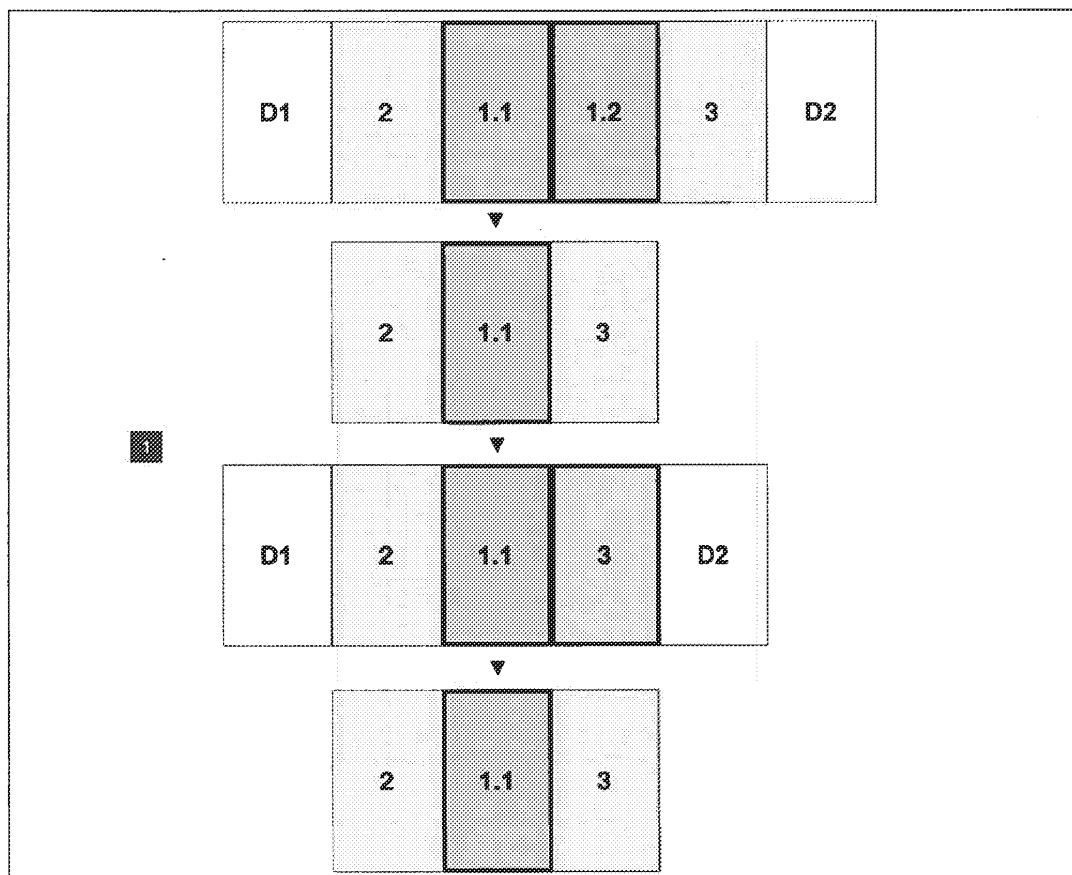
4.4 Window stack behavior during device opening and closing

When the device is opened and closed, the window stacking order is preserved whenever possible. The left screen of an open device is considered to be the sole screen of a closed device.

1. The current left screen is preserved in its location whenever the device is opened and closed.
2. The current left screen is preserved in its location whenever the device is opened and closed.



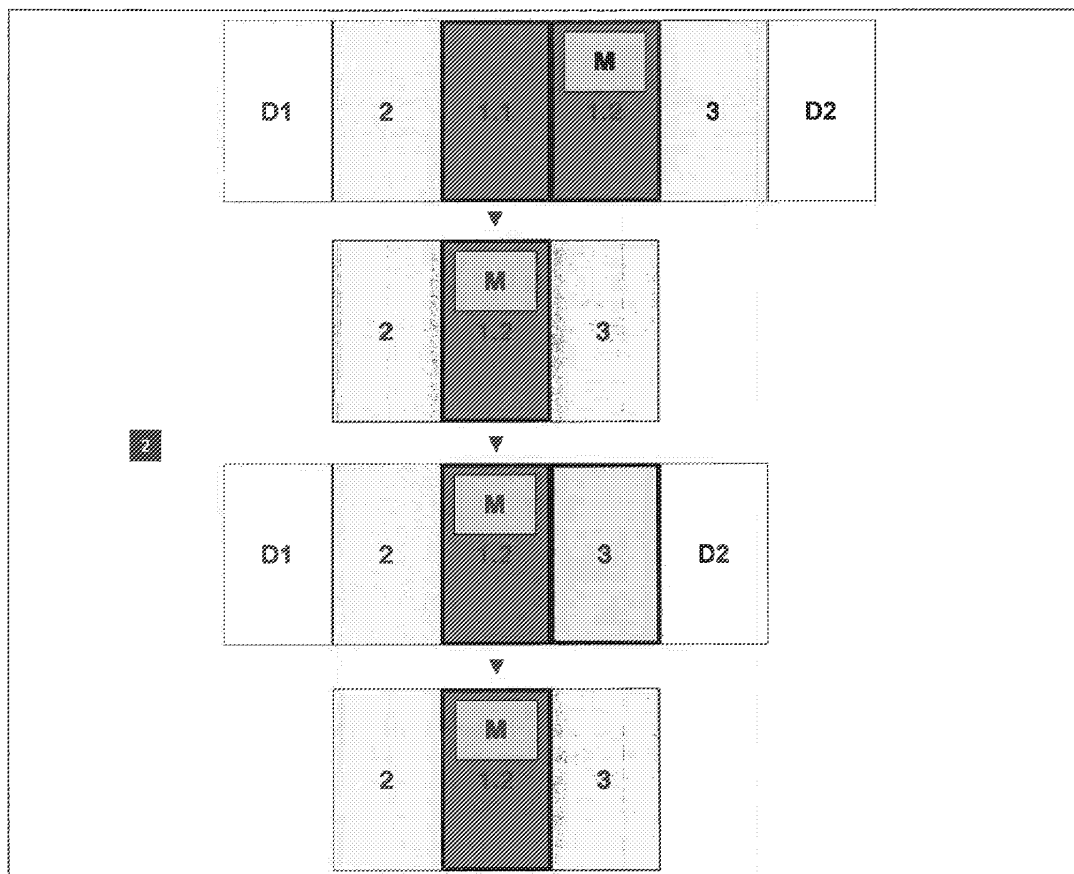
3. When viewing the first card in the stack on the right and a desktop on the left, closing the device will preserve the application on the screen, instead. Reopening the device will follow regular opening rules.



4.5 Dual-screen applications during device opening and closing

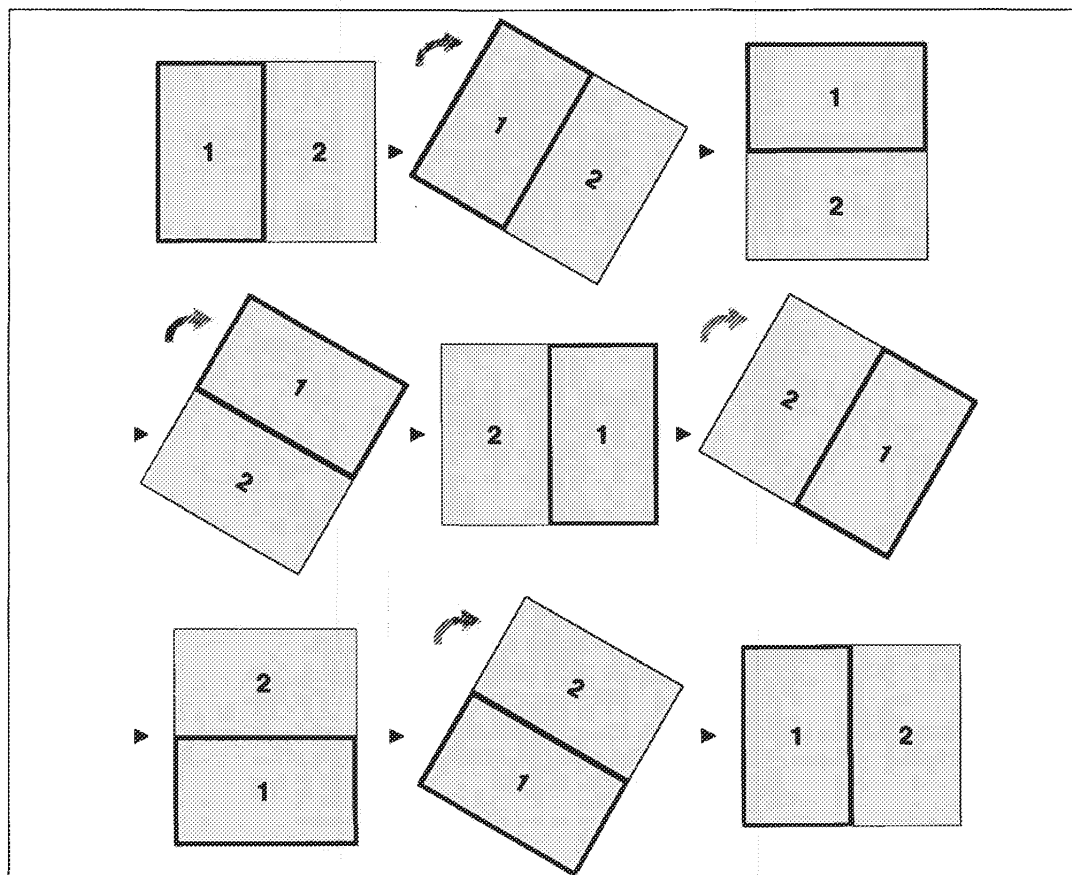
Maximized dual-screen applications are auto-minimized when the device is closed using the standard minimization rules. However, upon opening the device, an application is not automatically maximized.

1. A maximized application is minimized when the device is closed; once minimized, the application is not maximized when the device is opened again.



2. Modal views behave according to standard modal minimization rules; upon reopening the device, the view is not maximized automatically.

5 Rotation



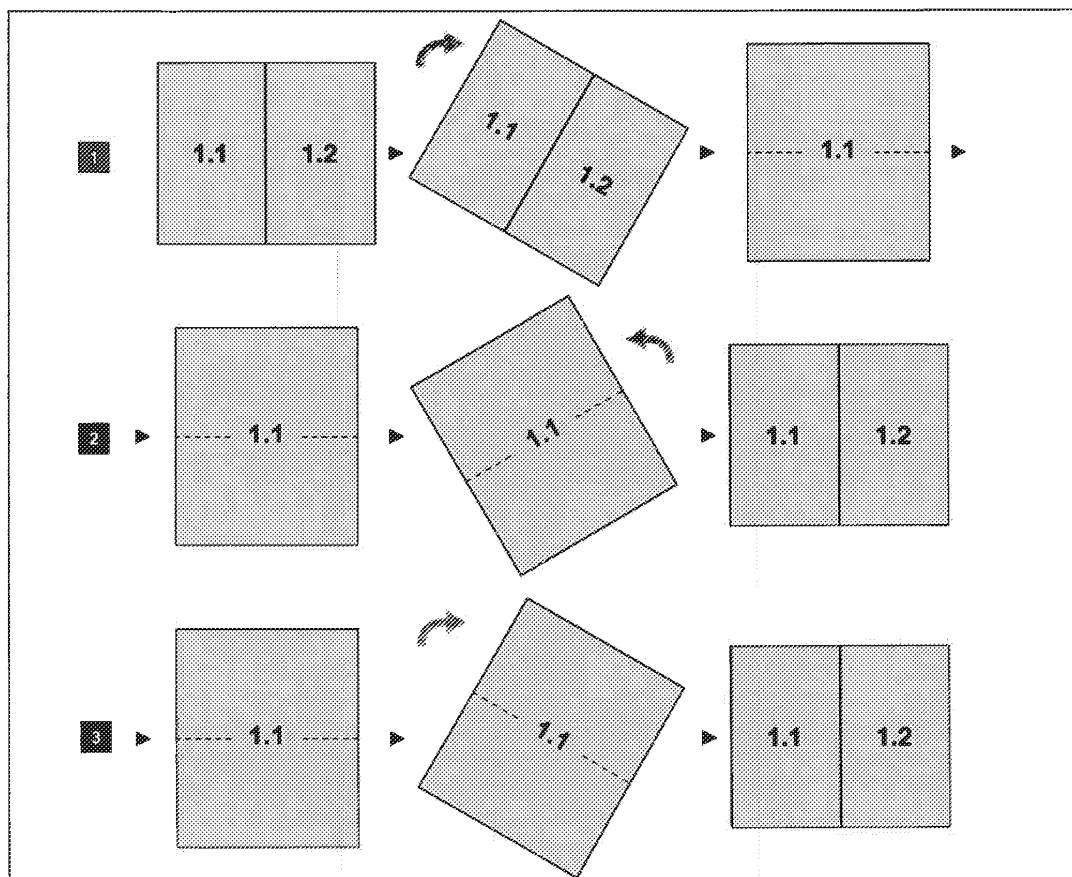
5.1 Introduction to rotation rules

Whenever rotation takes place, the applications try to preserve their state and position in the window stack.

In the example on the left, two single-screen applications are rotated 360 degrees. The primary screen is outlined. Note that after a rotation of 180 degrees, the device is upside down but the applications are rotated within their respective screens.

The motion for rotating the device is:

MOT.1.1 Rotate device



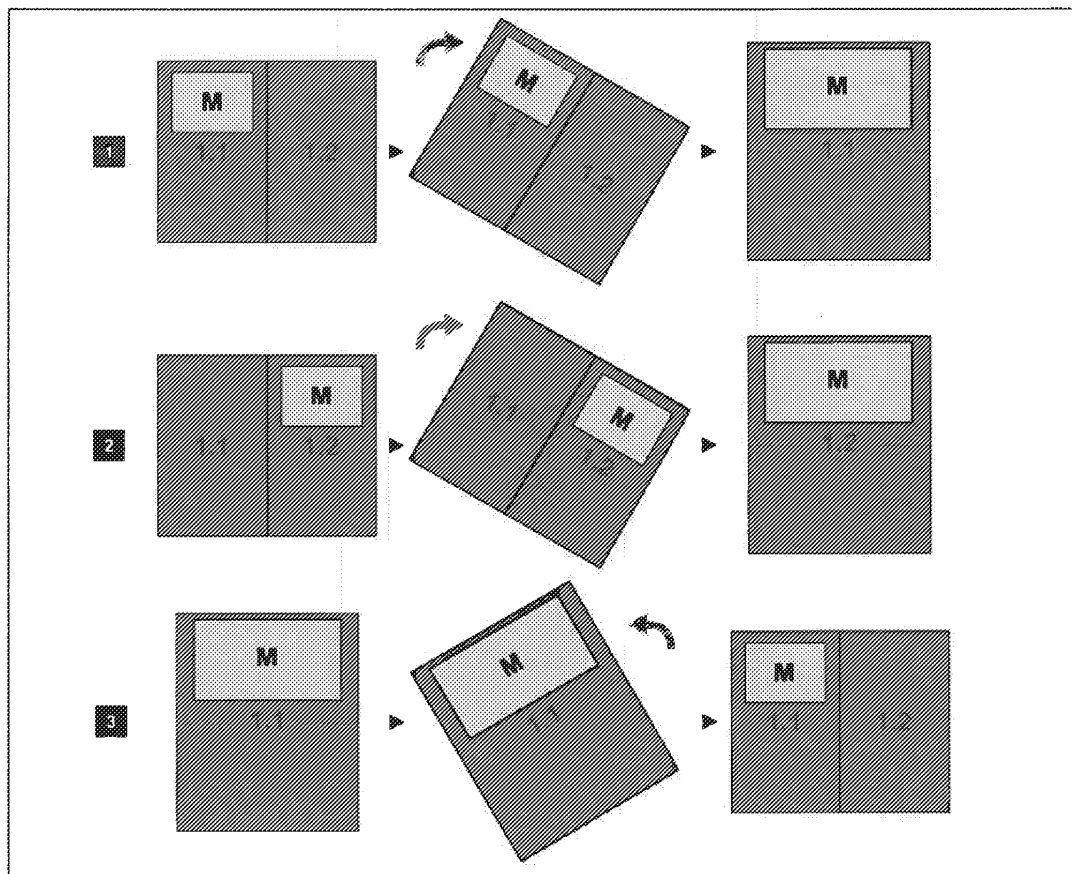
5.2 Rotating dual-screen applications

Parent-child dual-screen applications maximize across both screens when the device is rotated to LD orientation. When rotating back to PD, the maximized view is retained whenever possible.

1. A dual-screen parent-child application is rotated from PD to LD. The top view is maximized across both screens. This is known as the *Gravity drop*.
2. The device is rotated back to PD. The top view retains its position on the primary screen (left) and the application is kept in a maximized state. In this example, the parent-child application follows the maximization rules as defined.
3. The device is rotated further to PD. The top view retains its position on the primary screen (right — the device is now upside down) and the application is kept in a maximized state. In this example, the parent-child application follows the maximization rules as defined.

The motion for the Gravity drop is:

MOT.1.2 Gravity drop

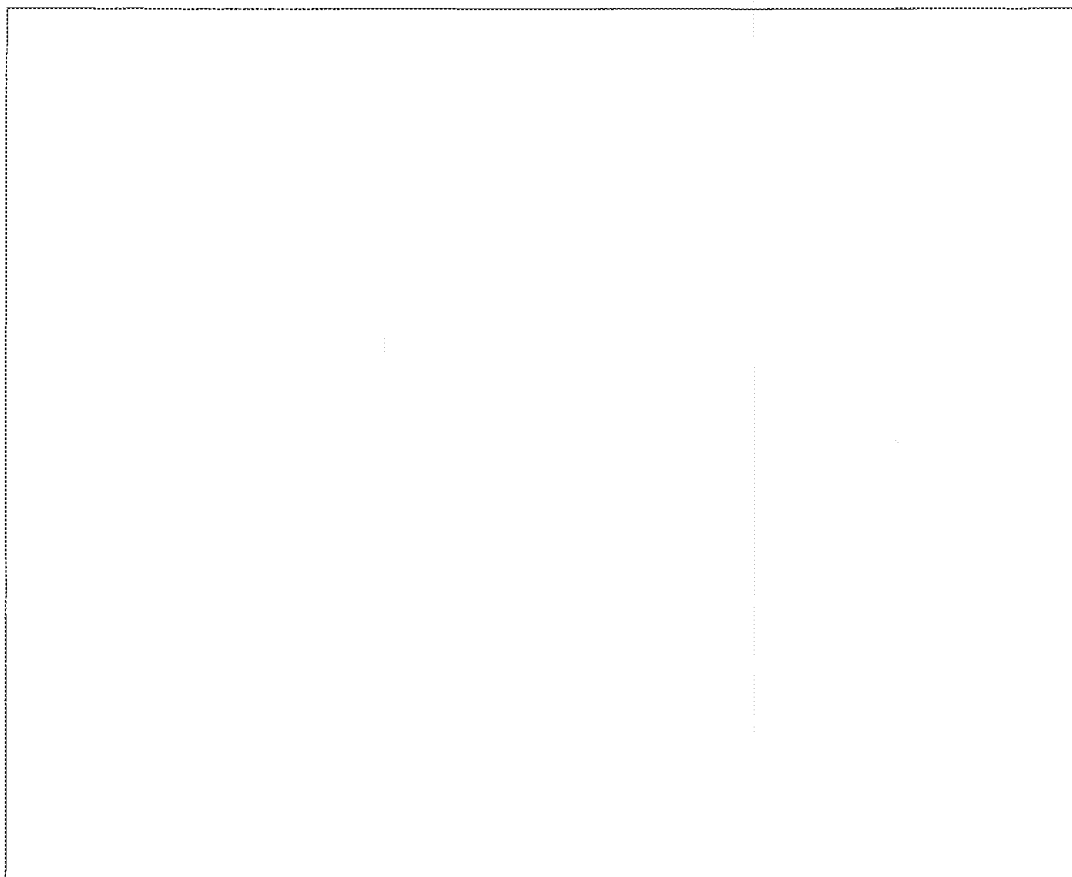


5.3 Modals when rotating dual-screen applications

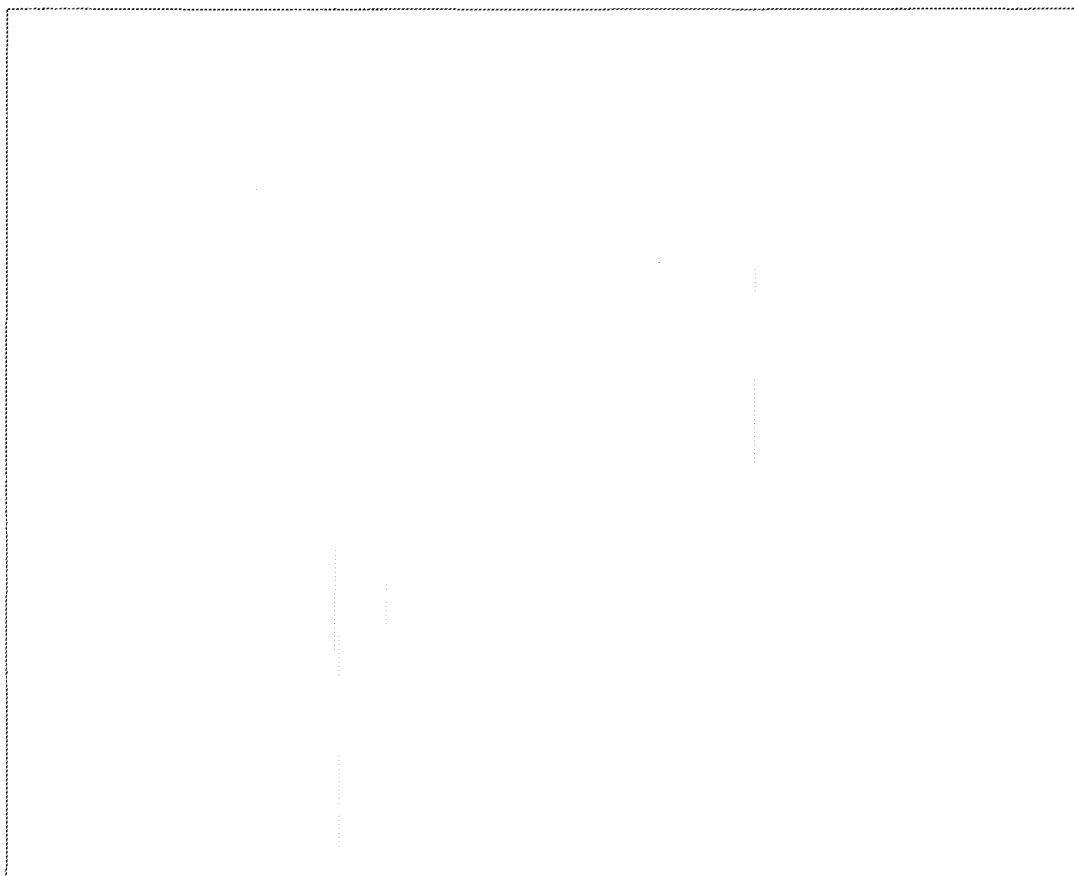
As a rule of thumb, modals remain on the screen they were launched on during and after rotation, whenever possible.

1. A modal on the top screen of a dual-screen application after rotation remains on the maximized view.
2. A modal on the bottom screen of a dual-screen application alters the behavior by forcing the bottom screen to expand. If the bottom screen cannot exist alone, or the view changes completely, the modal is cancelled.
3. A modal on a maximized LD dual-screen application remains on its respective view after rotation to PD.

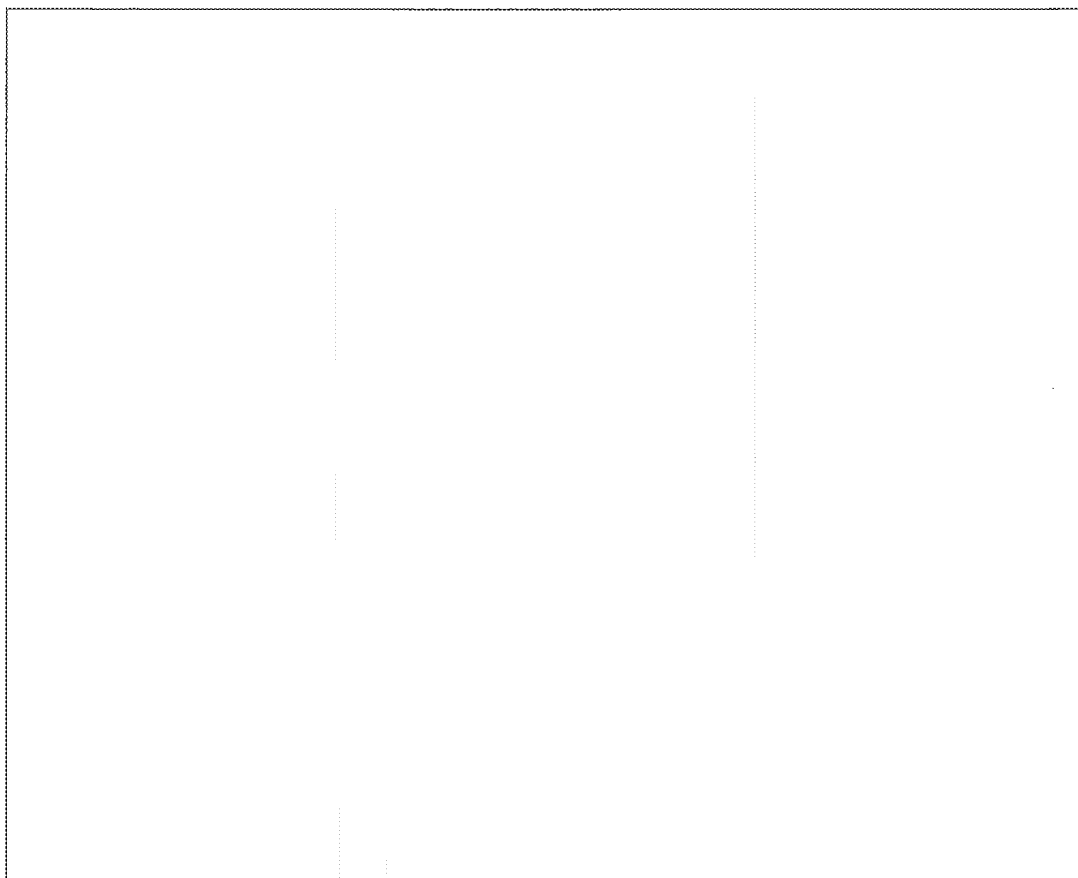
6 Keyboard



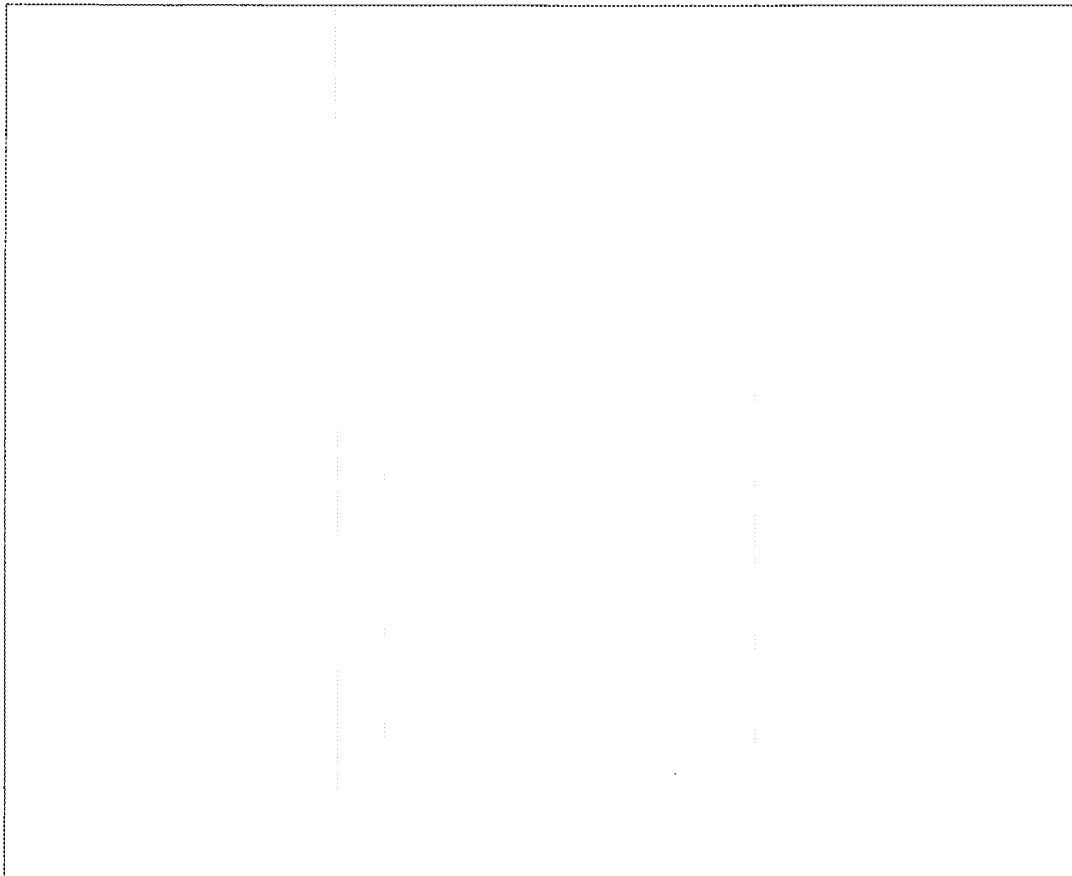
6.1 PD keyboard behavior during WPC events



6.2 PD keyboard during minimization

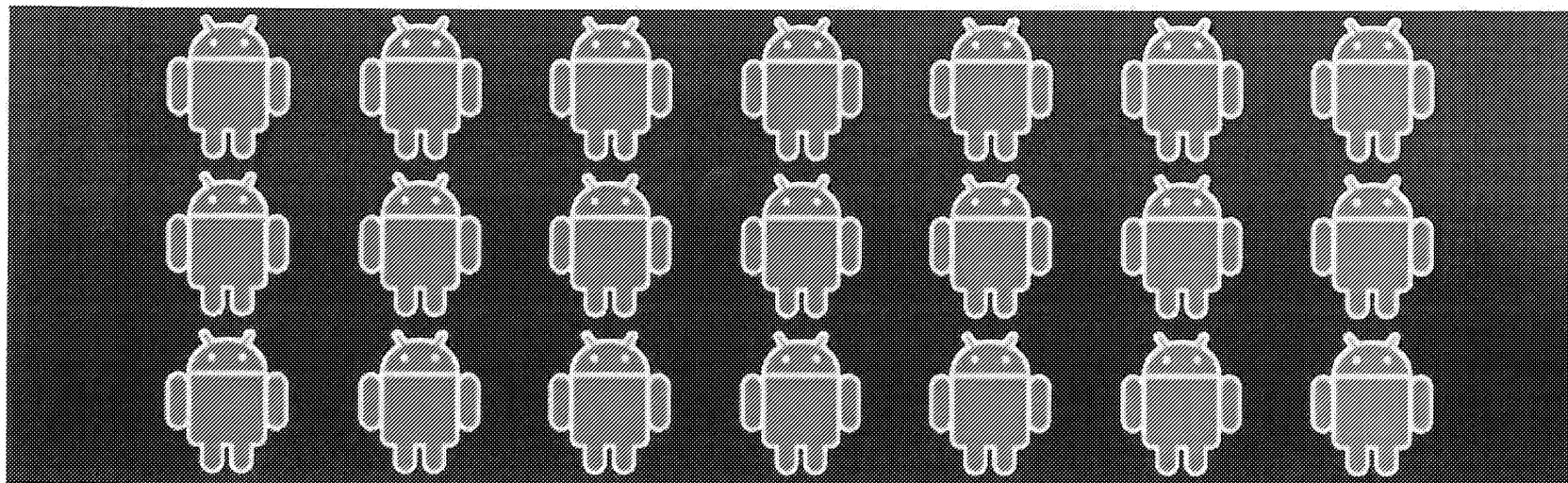


6.3 LD keyboard behavior during WPC events



6.4 Keyboard rotations

TBD



FLEXTRONICS

frog design

**Flextronics Phase I
Interaction Guide**

April 9, 2010

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Introduction

This document is intended to rationalize the high-level, yet systematic approach taken to both overall interaction concepts and application designs. This document should assist developers in extending the work frog has done to other screens, flows, and will remain a living document through future design activities.

The document is not a specification; instead, it acts as a set of heuristics, or guidelines, that can be used to make informed design decisions.

01 :: Windowing Model

The Windowing Model section captures our current thinking on the dual screen model. It includes areas still to be explored, concerns, and possible risks to the solutions presented.

Use this section within the Interaction Guidelines to code the user experience and use the Rules section to create QA requirements.

02 :: Application Model

The goal of this section is to identify and provide overarching Application Model concepts with specific application examples that show how the models can be extended to other applications.

03 :: Interaction Patterns

The beginning documentation for a set of key interaction patterns for the Flex Android experience such as Text Entry, Copy/Paste, Drag and Drop, Universal Clipboard, and Manage.

04 :: Transitions & Gestures

This section describes the gesture language including new gestures such as Pinch, Spread, and Pin & Drag. It also describes four of the key transitions for the Dual Screen experience.

05 :: Orientation Guidelines

A high-level description of orientation guidelines based on the core principles—simplicity, a crafted experience, and intuitive interactions—along with "gravity" functionality.



1 :: WINDOW POSITIONING CONTROLS

1.0 :: Introduction

The Windowing Model section captures our current thinking on the dual screen model. It includes areas still to be explored, concerns, and possible risks to the solutions presented.

Use this section within the Interaction Guidelines to code the user experience and use the Rules section to create QA requirements. Use the Explore section for aspects to user test and review as code takes shape on the device.

The Windowing Dual Screen Model is a high-level model that manages the positioning of windows in single (closed :: front-back) and dual (open :: side-by-side) modes. See the WPM Flash Demo 005 to see all the rules in action.

The Application Dual Screen Model defines the different ways an application can use the Windowing Model.

1.1 : Design Approach

Design Principles

We consider several principles as we design such as Direct Manipulation, Feedback, Task Optimization, Consistency, Visual Hierarchy, Subtractive Design, Affordances, Forgiveness, and Metaphors/Affordances. The following are especially important to this device.

Simplicity

The experience needs to be simple and intuitive so the user can work in a robust manner without confusion or having to think about what to do.

User in Control

From Ray Chapman (HFI)

"Allow users, not your application, to initiate and control actions. Keep actions simple and straightforward so users can easily understand and remember them. Whenever possible, use standard controls and behaviors that users are already familiar with.

Provide ample opportunity to cancel operations before they begin, and be sure to get confirmation when the user initiates a potentially destructive action. Whenever possible, allow users to gracefully stop an operation that's underway."

The underlying system can be very complex; however as designers, we make well-thought-out decisions to remove system complexity from the user; yet allow them to feel in control. When there are two equally good options we rule in favor of the user.

Aesthetic Integrity

From the iPhone HIG

"Appearance has a strong impact on functionality: An application that appears cluttered or illogical is harder to understand and use.

Aesthetic integrity is not a measure of how beautifully your application is decorated. It's a measure of how well the appearance of your application integrates with its function. For example, a productivity application should keep decorative elements subtle and in the background, while giving prominence to the task by providing standard controls and behaviors.

An immersive application is at the other end of the spectrum, and users expect a beautiful appearance that promises fun and discovery. Although an immersive application tends to be focused on providing diversion, however, its appearance still needs to integrate with the task."

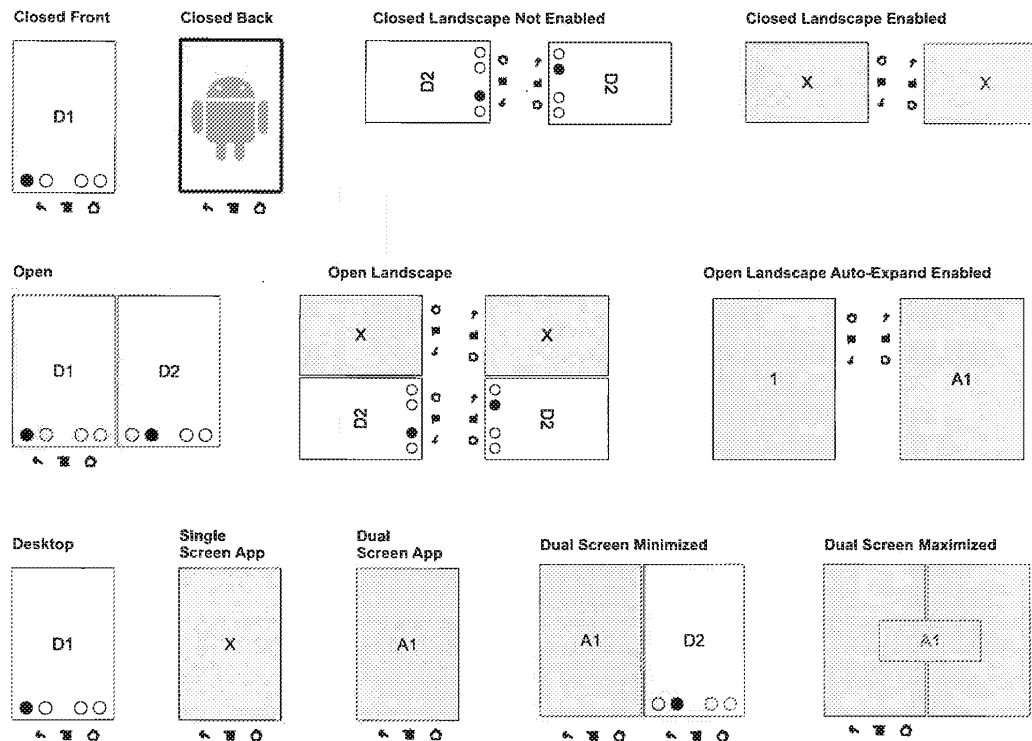
Design Philosophy

There are so many options, and lots of clever things that we as designers can do; however, we want the experience for the user to be easy-to-use. So we took a strong point of view on how to take advantage of the dual screen and we carefully crafted the experience so the user will have a rich, robust experience without cognitive overload. We carefully consider not just what to put in, but what to take away.

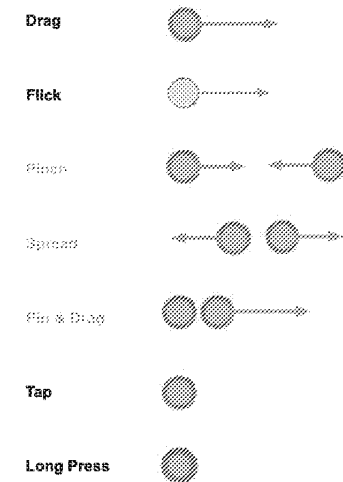


1.2 :: Design Key

Wireframe Key



Gesture Key



NOTE: Flick has the same behavior as drag unless noted.

1.2.1 :: Open :: Reposition

Rules

Desktop 1 docks to the left on startup (base home).

Desktop is below the applications and it can not be repositioned.

Flick or drag left "bunks" if a desktop pane, or one single or dual application is in left screen.

Flick or drag right "bunks" if a desktop pane, or one single or dual screen application is in right screen.

Flick or drag right with a single-screen application in the left screen will move that application to the right screen.

Flick or drag left with a single-screen application in the right screen will move that application to the left screen.

The annunciator is full screen.

Buttons on the right are either all on or all off. Left buttons are always on.

Right buttons are off when a dual screen application is in full screen mode or the desktop is showing in both screens.

Explore

Tech: performance - the defined gestures and transitions need to be very quick and responsive. Test and refine once you get the code on the target device.

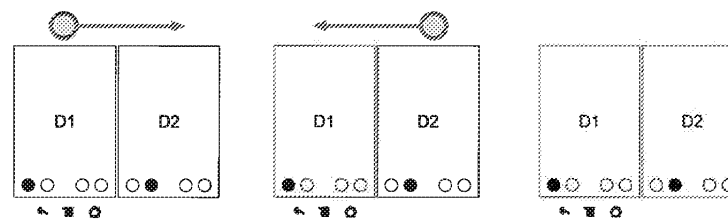
Android Variation

Desktop is a carousel

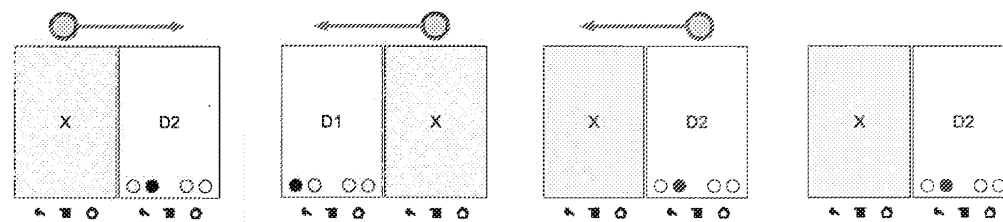
Flash Demo

See the WPM Flash Demo 005 or the Video to see all the rules in action.

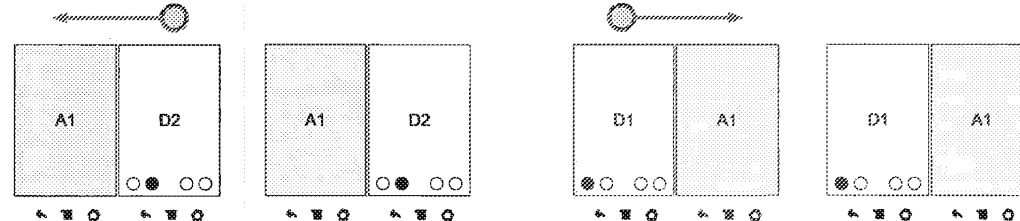
Desktop



Single Screen Application



Dual Screen Application



1.2.2 :: Open :: Maximize, Minimize, and Reposition Dual Screen Application

Rules

Dual screen applications open in minimized mode.

Drag and release when a dual-screen minimized application is half way across the second screen will snap it to maximized.

Drag a dual-screen minimized application all the way to the other edge will maximize the screen.

If the user continues to drag after the app is fully expanded, the application will pull away from the other edge and once that edge is halfway across that screen the application will reposition in minimized mode.

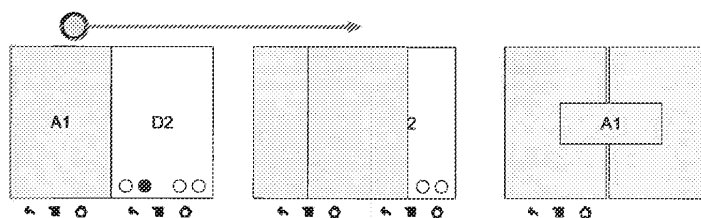
Flick will not maximize a dual-screen application. Flick will reposition a minimized application.

Flick will minimize a maximized application.

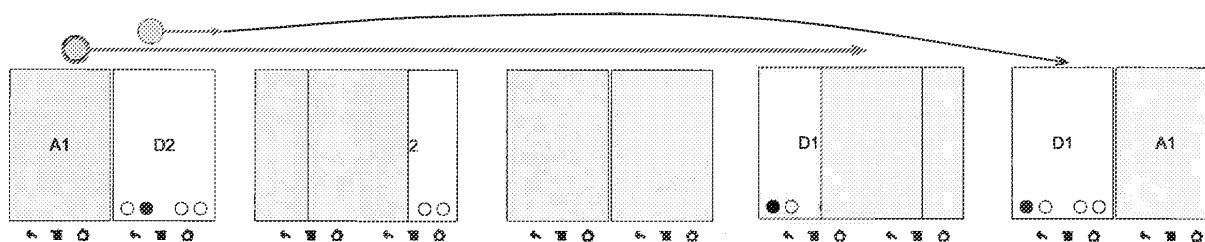
Test

Flick is a way to quickly move through all cards whether dual or single screen. Drag is used to maximize. Test to be sure they are clearly different and are valuable to a large range of users. If the variation between drag and flick is not valuable, then tweak flick to jump from min to max.

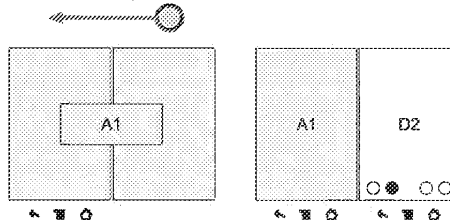
Maximize Dual Screen Application - drag only



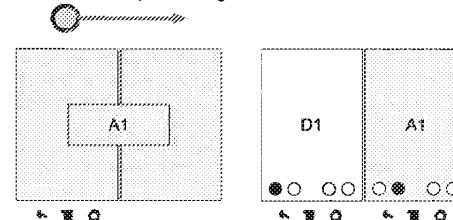
Reposition Dual Screen Application - flick jumps from 1 to 5



Minimize and Reposition Left



Minimize and Reposition Right



1.2.3 :: Open :: Repositioning Stacked Application "Cards"

Rules

When apps are moved to an available screen, they are "stacked" in the mind of the user.

Apps may suspend or close, so the apps that are moved are screen captures (pngs).

Apps that suspend or end remain in the stack of "cards" until the user closes them (via back or in the Application Manager).

There is a defined lag time during browsing the cards before the screens are loaded.

If the screen that is loaded, is an application that has closed, then show the loading overlay until the app launches.

Explore

Once we test on the device, we may want to use title overlays on cards to help users know what cards they are moving through. The same overlay can show loading feedback on pause as the app is launched (resumed or restarted—open apps should open so fast you don't need the loading indicator).

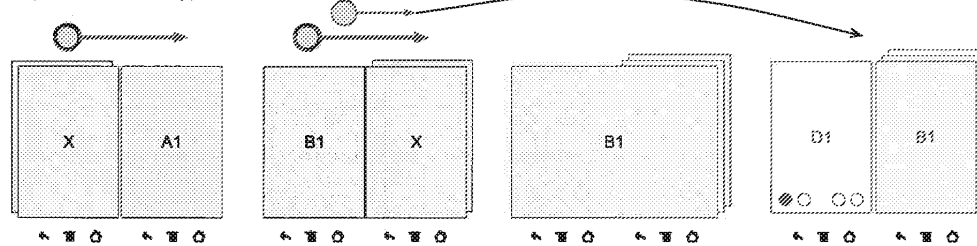
Need understand user intention during move—how long is a pause so the app is opened versus a pause during move. Need to tweak on device to get the best experience.

User Test: Determine the gesture pause time before an application is loaded during a move.

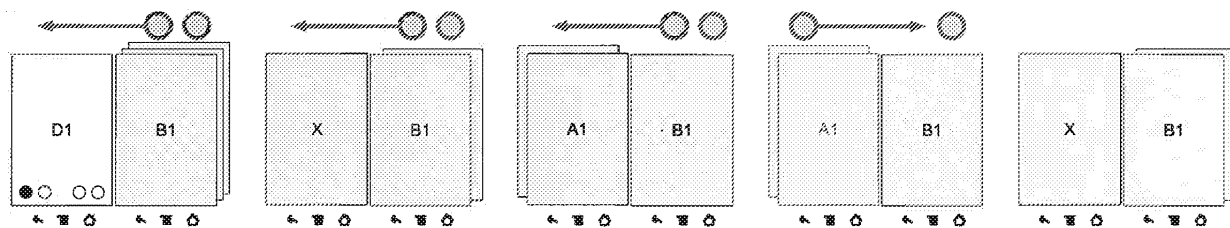
Tech: Test and refine on the device to make this a fluid experience during move, pause, and load.

Tech: Determine the limit of "cards" open at a time. Since cards do not have to be running apps, hoping the number can be quite high.

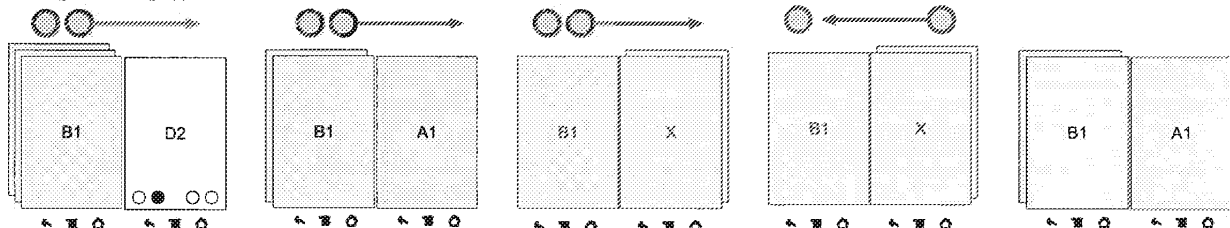
Reposition "stacked" application cards



Pinning and Moving Application Cards



Pinning and Moving Application Cards



1.2.4 :: Open :: Pinch :: Swap Screens

Rules

Pinch swaps the left and right cards.

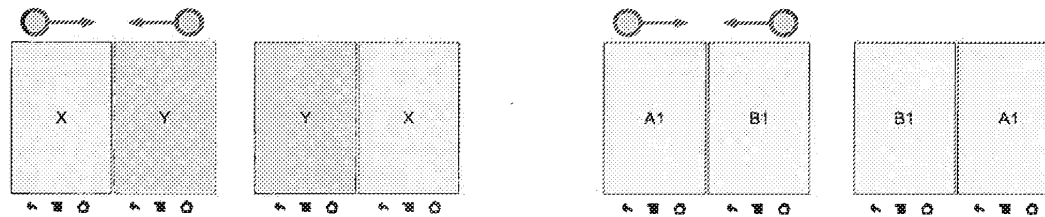
No swap on a maximized dual-screen application.

No swap with Desktop in both screens.

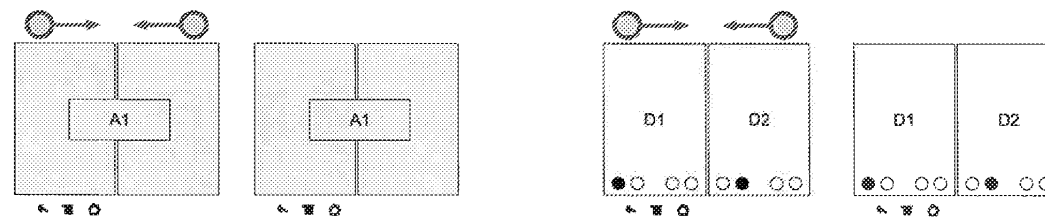
Swap one app open moves it from side to side.

See *gesture_swap.flv*, the flash demo, for details on this gesture.

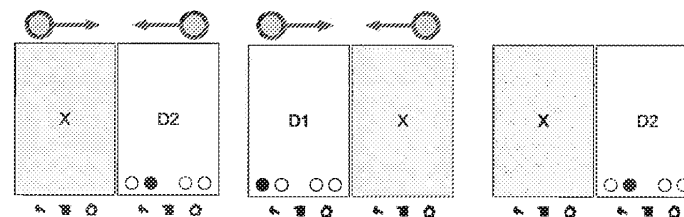
Swap 2 Applications



Swap Full Screen - bonk



Swap Single Screen



1.2.5 :: Open :: Spread :: Application Manager

Rules

Long press on Home or Spread will open the Application Manager.

The App Manager contains icons representing all open apps in both screens. The list is navigated by swiping left or right.

Applications can be closed by tapping on the close icon. This closes the app and removes it from the Application Manager.

The apps are represented in the App Manager according to their position in the stack. The first icon represents what is at the bottom of the stack, and the last icon represents what is at the top of the stack (under the currently displayed application).

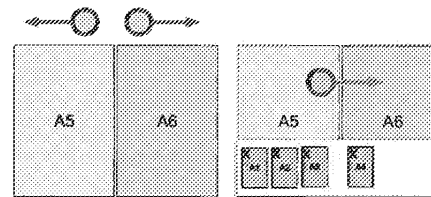
The currently visible apps on screen do not appear in the App Manager.

The Desktop does not appear in the App Manager. In order to exit the App Manager and return to the desktop, the user presses Home. The reveal gesture will also close the App Manager and display the desktop.

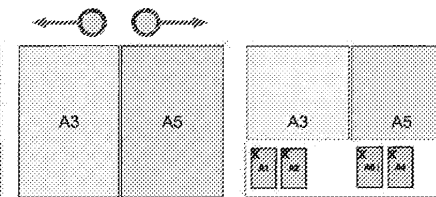
The App Manager can be closed via: pressing the Back button, tapping on one of the full screen apps, or dragging the App Manager drawer down.

The stack on each screen is represented in the App Manager on the left or the right, depending upon in which screen the app is open. Tapping the app in the App Manager will open the app in the screen, and close the App Manager tray. Apps can also be dragged to either screen from the App Manager tray.

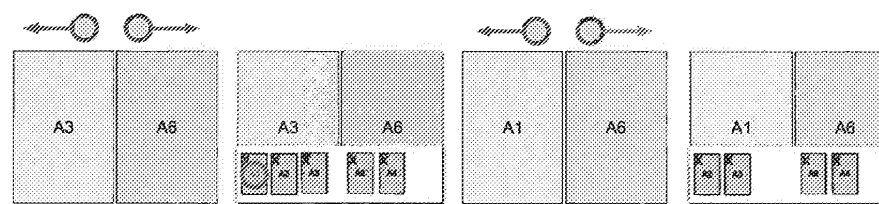
Open Application Manager



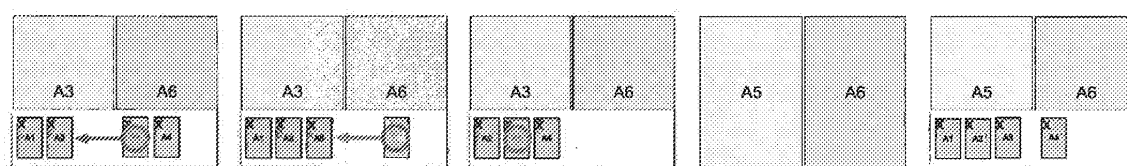
Move an Application



Select an App to Open from App Manager



Dragging apps in App Manager



1.2.5.1 :: Open :: Spread :: Application Manager (cont'd)

Rules

Long press on Home or Spread will open the Application Manager.

The currently visible apps on screen do not appear in the App Manager.

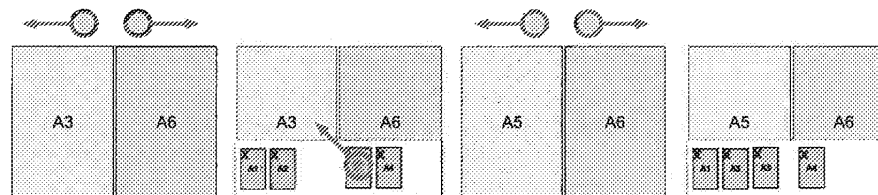
The Desktop does not appear in the App Manager. In order to exit the App Manager and return to the desktop, the user presses Home. The reveal gesture will also close the App Manager and display the desktop.

The App Manager can be closed via: pressing the Back button, tapping on one of the full screen apps, or dragging the App Manager drawer down.

The stack on each screen is represented in the App Manager on the left or the right, depending upon in which screen the app is open. Tapping the app in the App Manager will open the app in the screen, and close the App Manager tray. Apps can also be dragged to either screen from the App Manager tray.

See *gesture_spread.fx*, the flash demo, for details on the gesture.

Dragging an app to a screen from App Manager



1.2.6 :: Open :: Bottom Buttons : Press Back & Home

Rules

Back rules apply here the same way they apply in Android.

Back key press is back in app in that screen. If a 0 Android Task Stack, the application is closed.

Home key press (left or right) reveals the desktop.

When in Reveal, Tap on Back, Home, or in the capacitive strip above closes the reveal.

User can interact with Desktop, but once an application is launched from a desktop, the reveal closes and the application is launched in the screen it was launched from.

Explore

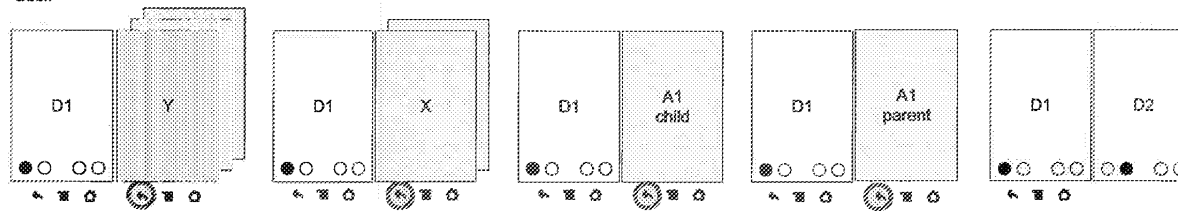
One Home key. Other key could be the Call key. LED lights change from white to red when in a call. Press Call once to go to Call Log, press 2 times to call first item in Call Log (dial last call).

Create a visual for Reveal that provides a hint that the cards are still there to the left and right. Could be capture of the current screens with just the edges showing.

Android Variation

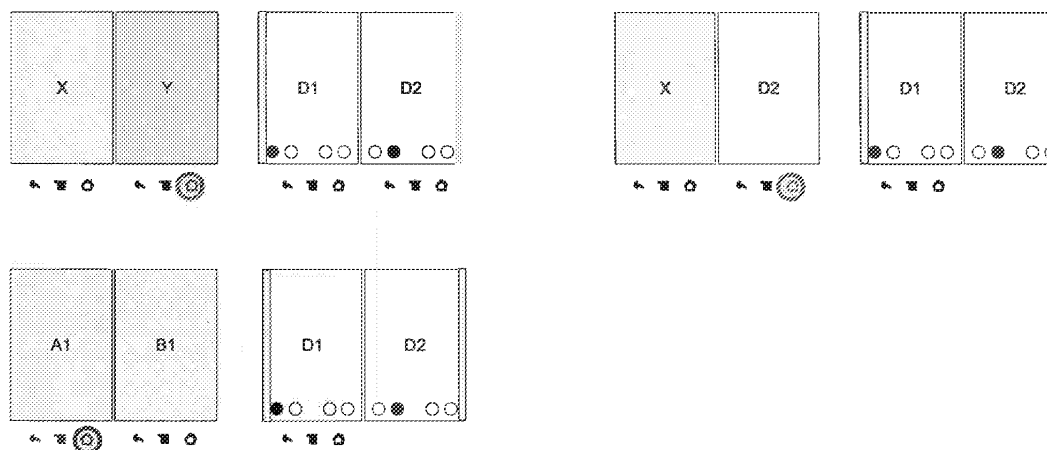
Press Home does not suspend all applications. That is done by Close All in the Application Manager.

Back



Home Press

Tap either home button to reveal full desktop



1.2.7 :: Open :: Bottom Buttons : Press Menu

Rules

Press Menu opens the menu in the screen above the Menu button.

If another menu is open, press Menu closes the open menu and opens the menu above the Menu button.

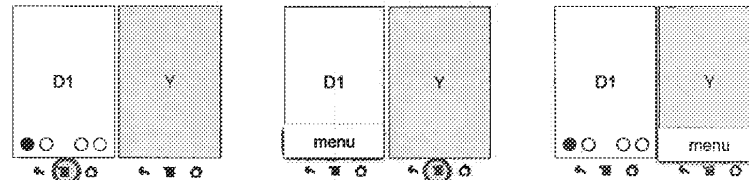
Menus are dismissed according to current Android rules.

Explore

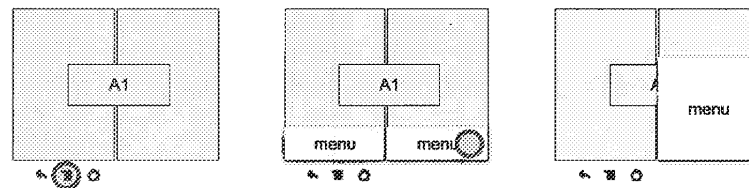
Other options to close menu (swipe down, tap menu bar)

Other options for menu in dual screen (action bar/menu).

Single Screen



Dual Screen



Tap "More" in a menu will open an "options expanded" menu

Note

Press and Hold on Back can be captured by an application. For example, press and hold on Back in the Browser opens the Bookmark/History tab page. We should continue to support this feature and should test to be sure it works as expected in dual screen.

Press and Hold on the Menu opens the Keyboard across both screens.

Explore

See the keyboard specification for more details.

	D1	D2
4		
3		

A diagram showing a 2x2 grid of squares. A central box labeled 'A1' is positioned in the center, overlapping the four squares. The box is labeled 'A1' in the center.

A diagram showing a 2x2 grid. The top-left cell is labeled 'D1' and the top-right cell is labeled 'D2'. Below the 'D1' cell, there is a circular icon with a keyboard symbol inside, followed by the text 'keyboard'.

A diagram of a window with a keyboard and a button labeled A1. The window has a title bar with a close button (X) and a maximize button. The keyboard is at the bottom, and the button A1 is in the center. A mouse cursor is pointing at the button A1.

Diagram illustrating a keyboard layout with two columns labeled D1 and D2, and a label 'keyboard' below them.

The diagram shows a top-down view of a keyboard. The keys are arranged in a grid. The 'A1' key is located in the second row from the top, in the middle column. It is a rectangular key with the label 'A1' in the center. The keyboard is shown with a dashed border, and the label 'keyboard' is written below it.

A diagram of a keyboard layout. A specific key is highlighted with a white background and a black border, labeled 'A1'. The rest of the keyboard is shown in a grey, textured pattern. Below the keyboard, there are three small circular icons: a left-pointing arrow, a right-pointing arrow, and a circular arrow.

The screen does not have to have an input field to accept keyboard input (e.g. Contacts). The focus goes first to the left screen. Tap the right screen to move focus to that screen. If a screen has an input field, the focus will jump to the first field on that screen and the input buttons will appear.

1.2.9 :: Open :: Bottom Buttons : Press & Hold Home

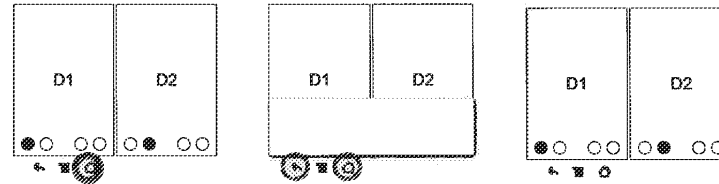
Rules

Press and Hold on Home opens the Application Manager.

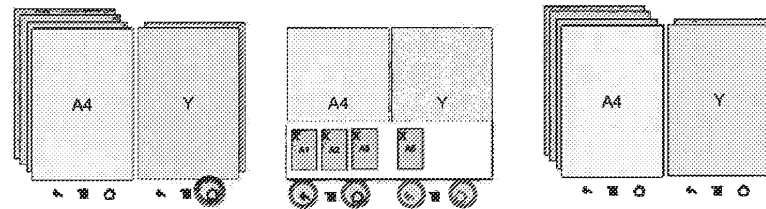
Press Home or Back to close the Application Manager

See: Open :: Spread :: Application Manager for more details.

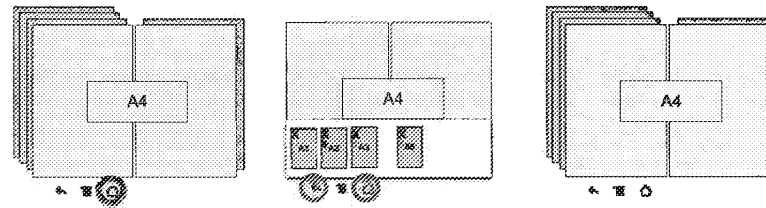
Desktop



Two Apps



Dual Screen



1.2.10 :: Open :: Launching an Application

Rules

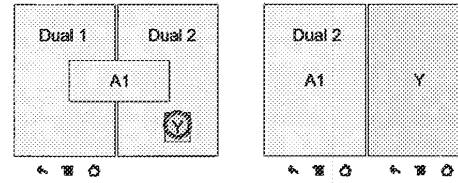
Launch opens the application in the screen it was launched from.

If launched from a dual screen application, the screen auto-minimizes to the left and the screen opens in the screen it was launched from.

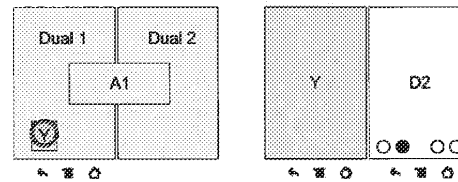
If an application is open, launch brings it to the front of the screen it was launched from.

Opening a screen that is contained in the application's hierarchy does not follow these rules. See the Parent Child Model in Application Models.

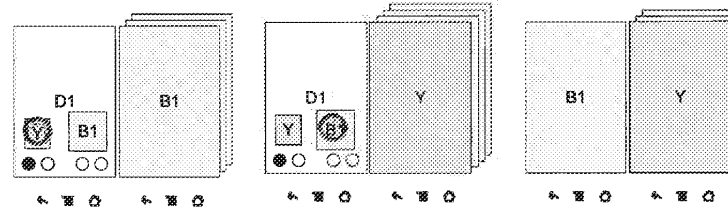
Launch on right of dual screen



Launch on left of dual screen



Relaunch an open application



1.2.11 :: Open :: Desktop Carousel

Rules

Desktop is a carousel. This allows the user to put a desktop in the left or right screen.

A dividing screen separates Desktop 1 from Desktop 4.

Android Variation

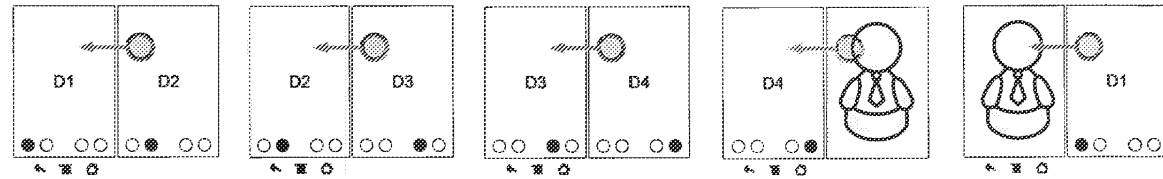
Desktop is a carousel.

Explore

Exploring using an image, the back of screen application, communication stream, file manager, or user specified application between D1 and D4.

The desktop will be covered in Phase 2. This flow will go into the desktop document.

Desktop Carousel



1.2.12 :: Open :: Annunciator and Status Bar

Rules

The annunciator is full screen.

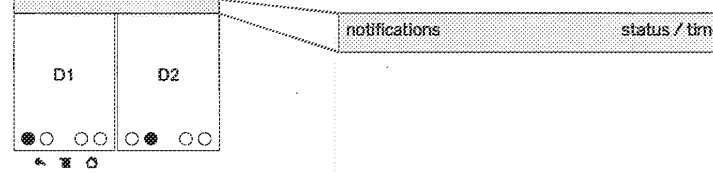
Notifications are left aligned and phone stuff and time are right aligned (like in Android today).

A dual screen application includes a visual indicator (the wave) to illustrate that it can be minimized or maximized.

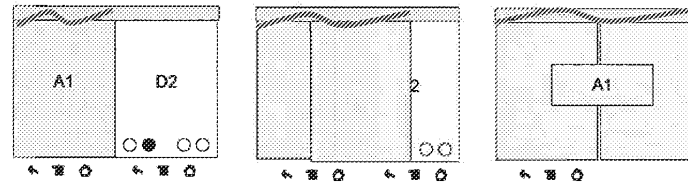
Notification drawer opens on the side it is invoked from.

This will be explored in more detail in Phase 2.

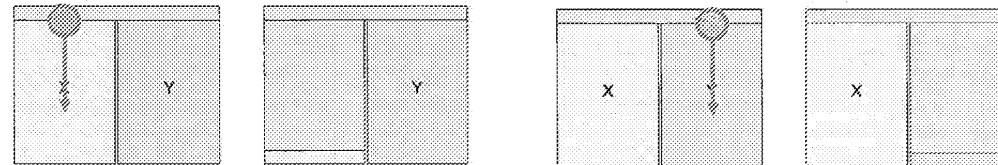
Annunciator spans the screens



Wave extension



Drawer opens either side



1.2.13 :: Open :: Application Menu

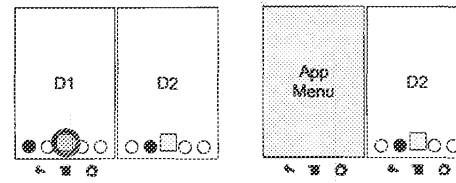
Rules

Available from all desktops.

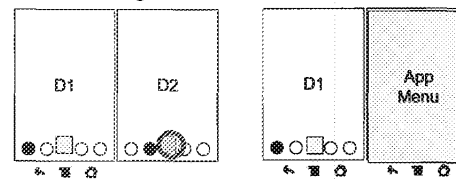
Opens over desktop it is launched from.

This will be explored in more detail in Phase 2.

Launched on left



Launched on right



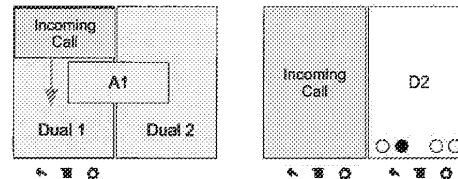
1.2.14 :: Open :: Incoming Call or Notification

Rules

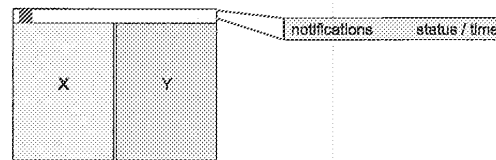
Call comes down over left screen

Notification appears over left screen.

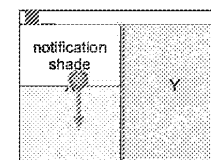
Incoming Call Transition



Notification Displayed in the Status Bar

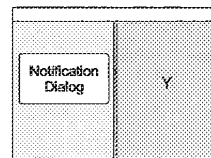


Notification icon is displayed
Example: New Message



User may drag notification
shade down to access more
details

Notification Displayed as Dialog



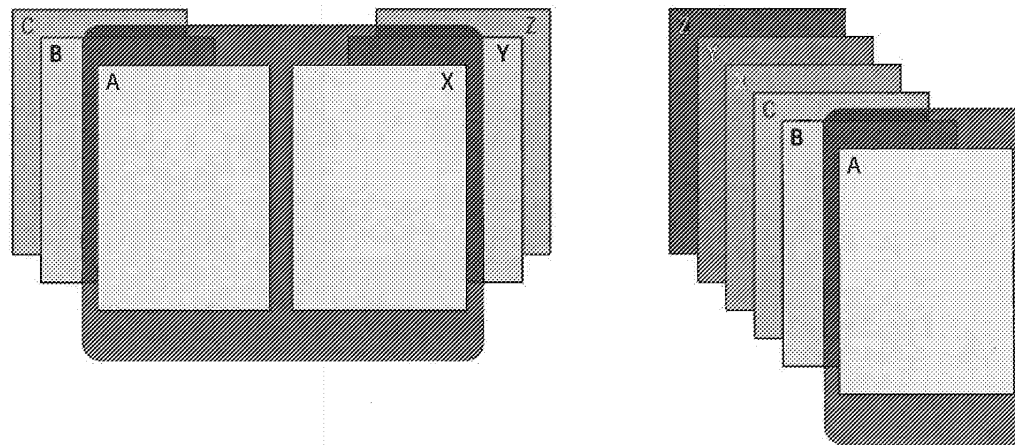
Notification Dialog is displayed
over the left screen content.

1.2.15 :: Open to Closed

Rules

Closing from dual to single screen, collapses the applications into one "stack". The "stack" order is shown in the diagram to the right.

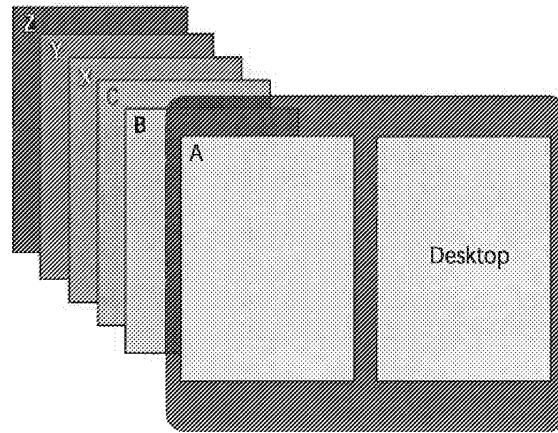
If the user has not navigated the single application stack before re-opening the device, then the applications will return to their previous locations and order.



1.2.16 :: Closed to Open

Rules

On open the applications remain stacked in their current order with the top screen appearing in the left screen.



1.2.17 :: Closed :: Reposition Screens

Rules

Pin and move is not supported in single screen.

Reposition is not circular. The desktop is at the back of the stack - drag right on the desktop does nothing.

Pinch swaps the first and next card in the "stack."

Spread or long press Home reveals the App Manager.

Home key press reveals the desktop.

When in Reveal App Manager or Reveal Desktop, Tap on Back, Home, or in the capacitive strip above closes the reveal.

User can interact with Desktop, but once an application is launched from a desktop, the reveal closes and the application is launched above the top screen when reveal was invoked.

Back rules apply here the same way they apply in Android.

Back key press is back in app in that screen. If a 0 Android Task Stack, the application is closed.

Press Menu Opens the menu. Long press Menu opens the keyboard.

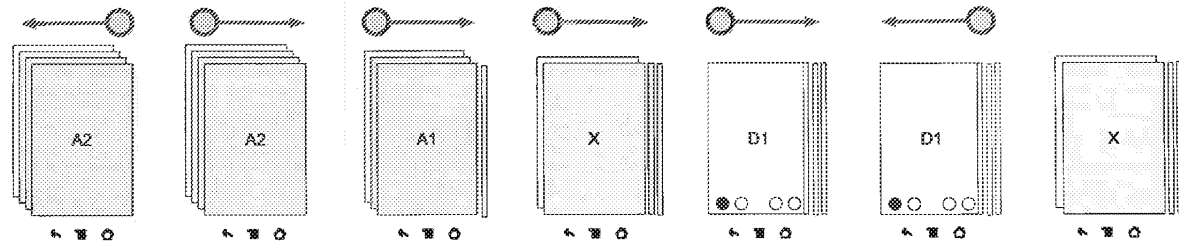
Explore

Create a visual for Desktop Reveal that provides a hint that the cards are still there to the right. Could be capture of the current screens with just the edge showing.

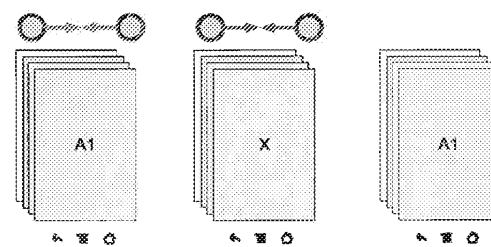
Android Variation

Press Home does not suspend all applications. That is done by Close All in the Application Manager.

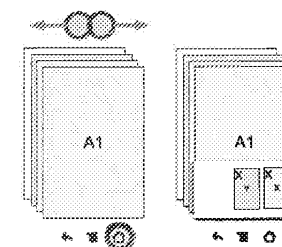
Reposition Screens



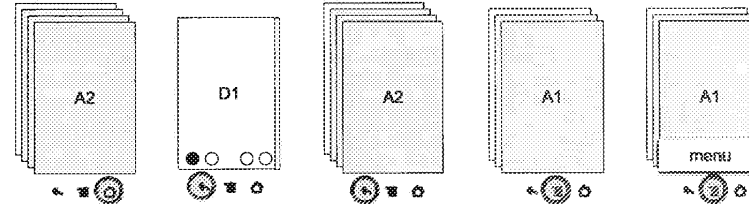
Swap Screens



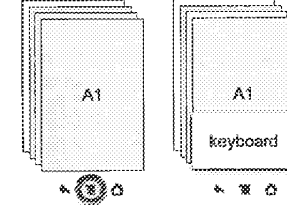
Reveal App Manager



Tap Home (Reveal Desktop) and Back (Close App)



Long Press Menu



1.2.18 :: Closed:: Back of Phone Explorations

Rules

Not full function. If it were, it would require yet another model and could introduce a lot of confusion.

Could be a special picture that you can turn over your phone to see at any time other than when in a call. This image could be the divider screen when navigating the desktop.

Back is a red thread - has special uses:
When in a call, the back is a billboard when the phone is at the ear. When in a call and phone is flipped over, the back has your application stack so you can move through screens and keep the call on the front.

Explore

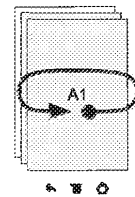
Next phase we will see if there are other special cases for the back of the phone in single screen.

Concerns

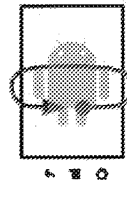
Battery life.

Can phone discern front and back when held in different angles.

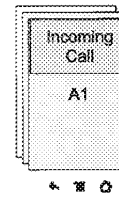
In Call



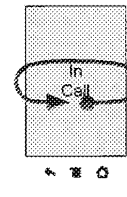
Front



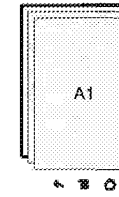
Back



Front



Front



Back

OR



Back

2.0 :: Introduction

The goal of this section is to identify and provide overarching Application Model concepts. In most cases, each concept is described with a base set of guidelines that can be applied to other applications. Application flow examples show how the models are applied to different applications.

Screen layouts and details shown within screens to be addressed in future design phase. See the Application Model Flash Simulations to see some of the flows covered in this document.

2.1 :: Parent Child Model

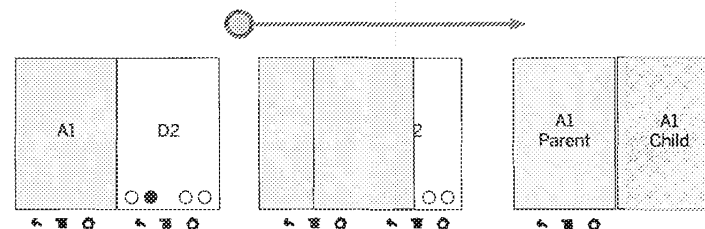
Hierarchical Navigation

2.1.1 :: Parent Child : Guidelines

Regardless of viewing mode—single screen mode, dual screen mode minimized, or dual screen mode maximized—the overall hierarchy and context of parent child relationships within an application should be preserved by launching each lower level or child in an additional secondary “window” rather than simply loading child content in the same window.

In dual screen mode the user must maximize the application to enable the side by side viewing of the parent and child, essentially viewing the hierarchy as a linear progression, the top most view on the left and the lowest or deepest level view on the right. This is supported by the use of directional transitions conveying the navigation direction and location of a view in relation to its launching point.

If there is more than one level of navigation, the application developer must choose the starting level to launch the application into. For example, Email is launched into the second level, Inbox. The application can save state and return the user to last level.



Maximizing the application launches child from the Parent "starting point" view, child displays in right pane of maximized view.

2.1.2 :: Generic Sample Flow

This flow diagram depicts a generic workflow for launching, maximizing then navigating the hierarchy within a dual screen application.

Note: The view shown on launch (the user's starting point) in the hierarchy, may or may not be representative of the app.

1.0 User clicks a shortcut on the desktop (D1) to launch the application (A1).

2.0 The application (A1 LX) opens to the defined parent in the screen it was launched from, in the case, the left screen of the device.

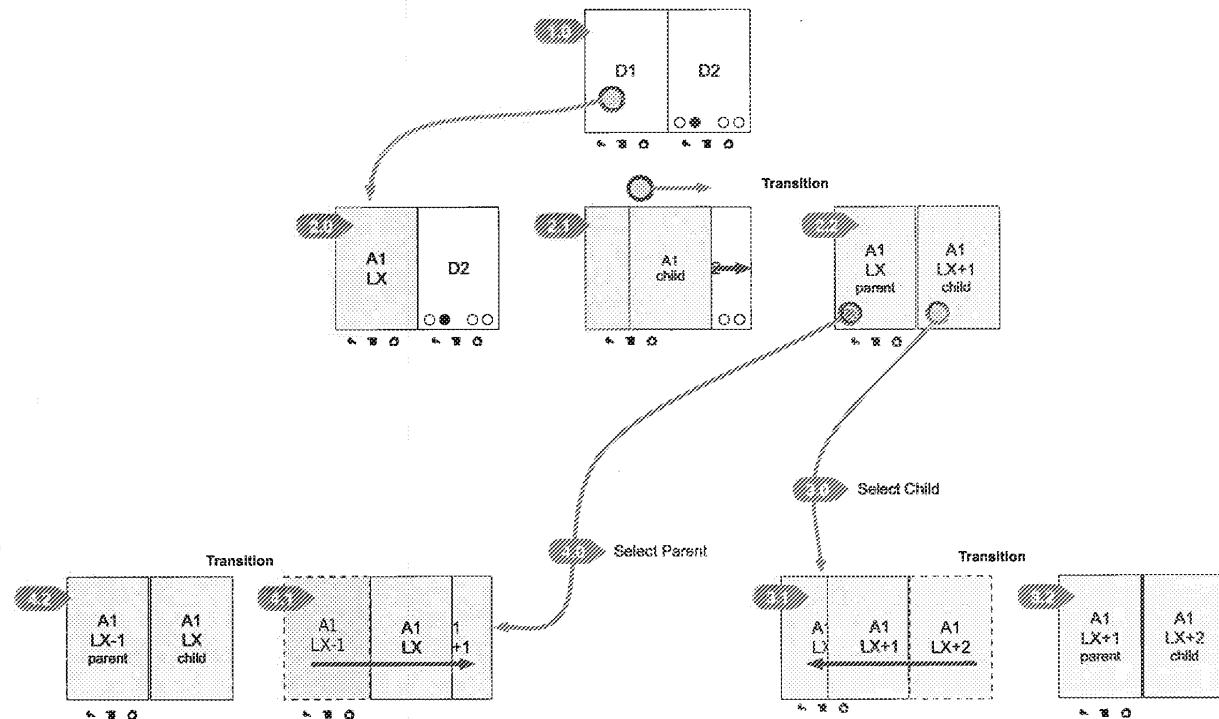
2.0-2.2 The user expands the application to dual screen to see the parent (A1 LX) and the child (A1 LX+1).

2.1 Illustrates the TRANSITION, see, Workings model run, animation.

2.2 Once expanded, the child appears based on rules set by application. E.g. first item in the parent's list.

3.0-3.2 The user selects a child from A1 LX+1. TRANSITION: A1 LX slides left offscreen followed by A1 LX+1, which is followed by A1 LX+2. A1 LX+1 takes the parent position on the left and A1 LX+2 moves into the child position on the right.

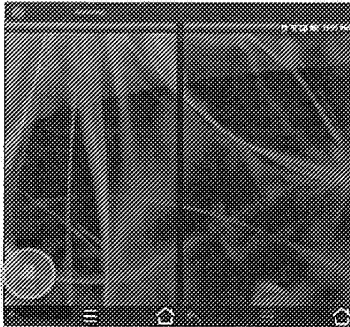
4.0-4.2 The user chooses to launch the parent (A1 LX-1) to A1 LX. TRANSITION: A1 LX+1 slides right offscreen followed by A1 LX, which is followed by A1 LX-1. A1 LX takes the child position on the right and A1 LX-1 moves into the parent position on the left.



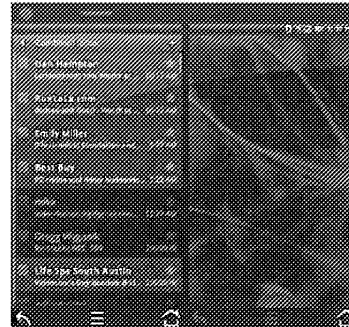
2.1.3 :: Application Flow :: Email

Parent Child Model

2.1.3.1 :: Example Application Flow :: Email



User launches email from the shortcut on the desktop



The application launches at the default "starting point" the email inbox (as shown, combined inbox).

If the user was to change device orientation at this point, the inbox would expand over both screens in landscape view.



The user drags along the top edge of the device to maximize the application window. The inbox remains in the primary position on the left side and the child opens to the right.

On initial launch, the first email opens. On resume, what is shown is "sticky".



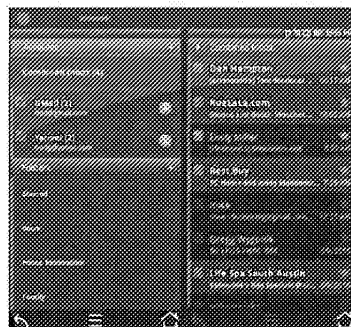
The user taps to select another email which opens in the "child" position replacing the previously shown email.

Note: Screen Layouts and details to be addressed in future design phase.

2.1.3.2 :: Example Application Flow :: Email



The user taps on the "breadcrumb" button within the email inbox header to view the Accounts/Folder view.



The Accounts/Folder view slides in from the left, pushing the inbox view to the right screen.

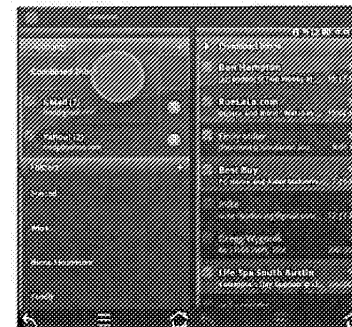
The blue highlight indicates that the combined inbox is the account for the folders below. The inbox folder would also have a blue highlight.

Note: The Account/Folder view is a unique view that contains a parent (Accounts) and a child (Folders).

A parent can also be used to manage content for a child. In this example the user can drag an email to a folder in the folders pane.

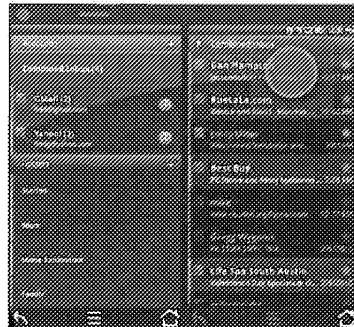


The user taps on the Gmail item which is now selected as indicated by the blue highlight. The inbox view shown on the right is updated to show only Gmail messages. The folder list below will filter to show only Gmail folders.



The user taps the combined inbox filtering the view on the right to show email from all accounts.

2.1.3.3 :: Example Application Flow :: Email



The user taps to select an email within the combined inbox view.

The inbox view transitions to the left, and the manage view slides out of view to the left.

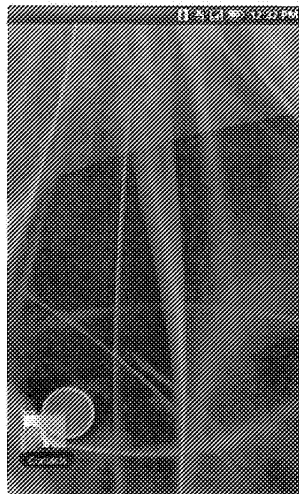


The inbox view transitions back to the left taking the parent position in the left screen, followed by the email read view which comes to rest on the right child position.

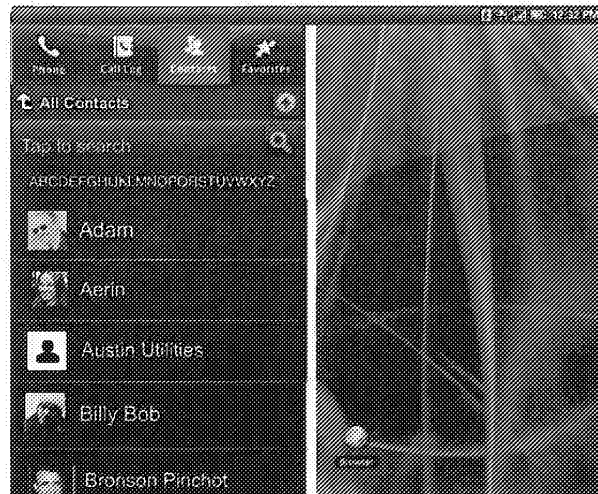
2.1.5 :: Application Flow :: Contacts

Parent Child Model

2.1.5.1 :: Example Application Flow :: Contacts

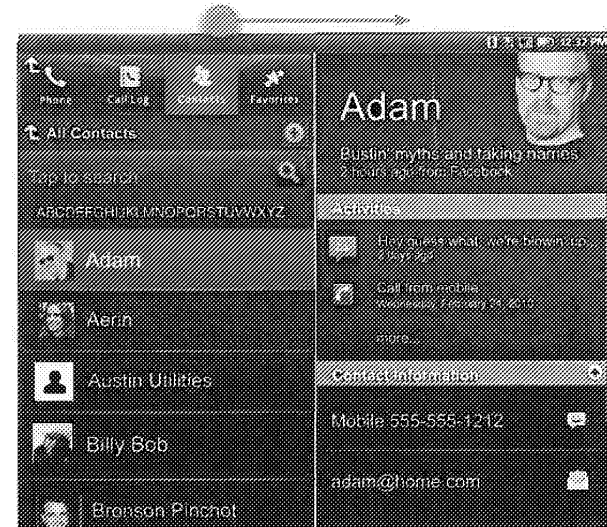


User launches contacts from the shortcut on the desktop



The app opens at the default launching point, the list of All Contacts, A-Z. The user opens the phone.

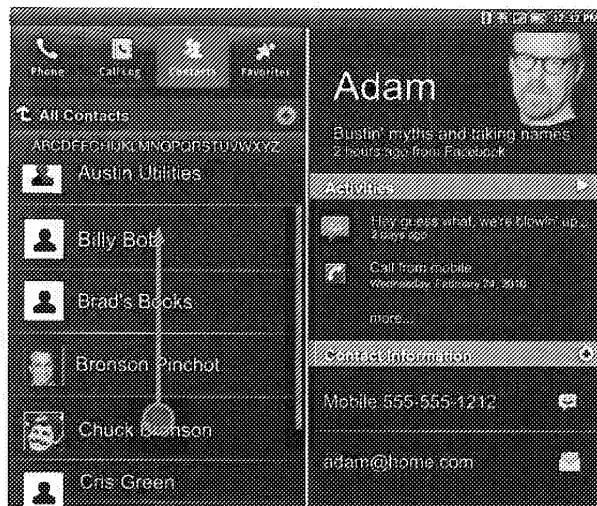
Note: If the user had previously selected the contacts view to only contain a certain set of contacts, gmail only for example, that would be the default view at application launch.



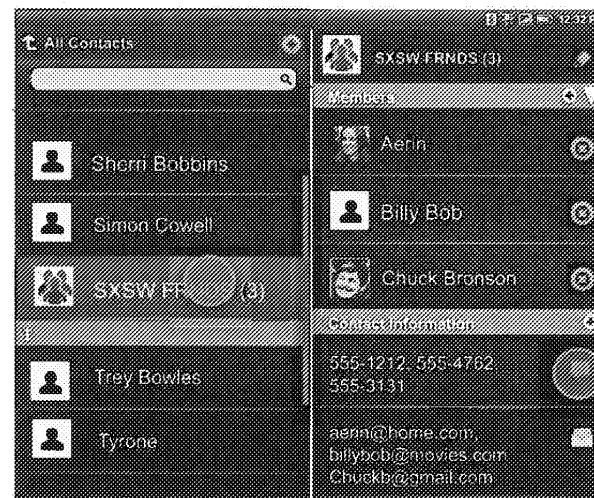
The user maximizes the application. The contact list is the parent and remains on the left. By default, the child—the contact card for the first contact in the list—is shown on the right.

Note: This could be a "Sticky" point and when maximized the child shown would be the contact card of the selected contact the user last left off on.

2.1.5.2 :: Example Application Flow :: Contacts

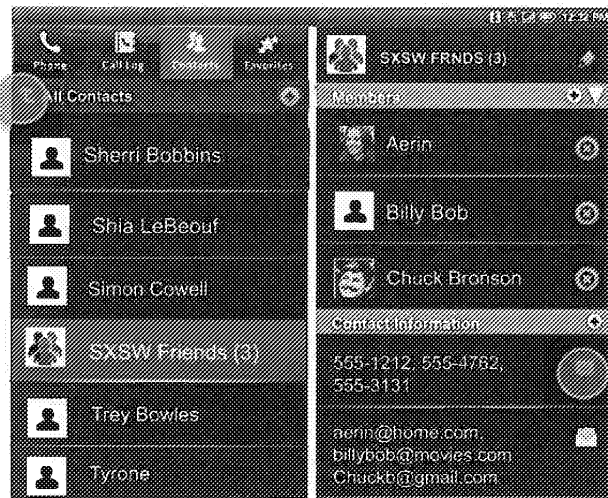


The user scrolls up to scroll the list of contacts. The contact card or child shown at launch is shown until the user selects another from the list or chooses to perform another action.

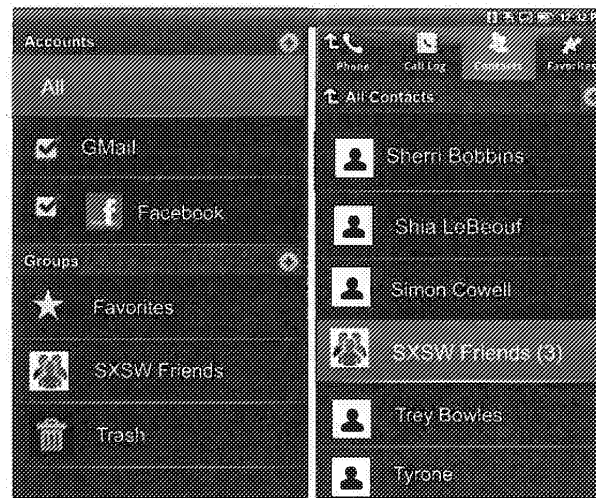


The user selects a contact group, SXSX FRNDS from the contact list and the contact detail of the new selection replaces the previous "child" contact card shown.

2.1.5.3 :: Example Application Flow :: Contacts



The user taps to invoke the "control panel" which in the case of contacts, as in email, is considered a parent.



The "great-grandparent", Accounts, and the "grandparent", Groups, are displayed within the Contacts control panel view.

Each are separated by headers that contain the inline actions to add additional accounts or groups directly from the within the screen. Default groups present on initial use would include favorites and trash, and as the user creates custom groups these would then populate the list as well.

The user can easily add contacts to favorites or existing groups by simply dragging them to the left over the desired item in the list, or delete contacts by dragging them to the trash group.

2.1.5.4 :: Parent/Child Appendix

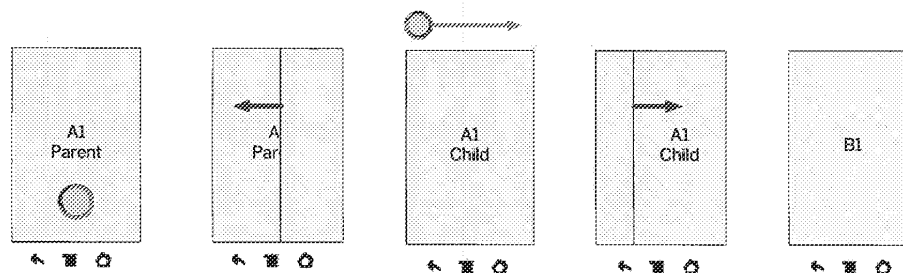
2.1.5.5 :: Parent/Child : Single Screen Mode Guidelines

Regardless of viewing mode—single screen mode, dual screen mode minimized, or dual screen mode maximized—the overall hierarchy and context of parent/child relationships within an application should be preserved by launching each lower level or child in an additional secondary “window” rather than simply loading child content in the same window.

In single screen mode, the parent/child hierarchy is not apparent. The parent launches the child, and the user has to select back to get the parent and launch another child.

If the user drags across the top capacitive strip, the child will move off to show another application below.

A child slides in from the right, a parent slides in from the left.



2.2 :: Parallel View Model

Unique views of the same content side by side

2.2.1 :: Parallel View : Overview

In the current Android experience, a user is limited to a single viewing experience forcing them to toggle from view to view reducing both the richness and efficiency of the experience; and in some cases reducing value.

We want to optimize application viewing area in as many areas as possible by taking advantage of the opportunity for utilizing dual screen mode. The concept of parallel viewing offers the user extra value and efficiency by enabling them to view the same information in different views simultaneously.

2.2.2 :: Application Flow :: Maps

Parallel View Model

2.2.2.1 :: Example Application Flow :: Maps



User launches the Google maps application from the shortcut on the desktop.



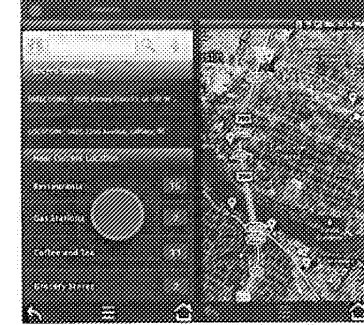
The application launches to the map view.



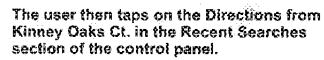
The user drags along the top edge of the device to maximize the application window.

The map view moves to the right screen and the Control Panel* slides into the left position from the left.

*This is Exposé Application Model

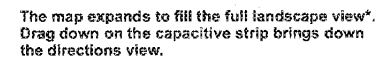
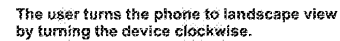


The user presses on gas stations to see all gas stations near the current location shown in the map.



The control panel view on the left is replaced by the turn by turn directions list. The map view on the right is updated to show the path as shown in the directions. The left is a text view of the directions, the right is a map view of the directions.

Note. We are exploring how other views, such as the Parallel view, are launched from the control panel. The Control Panel may slide up or down to reveal the new view, so the user can quickly return to the Control Panel.



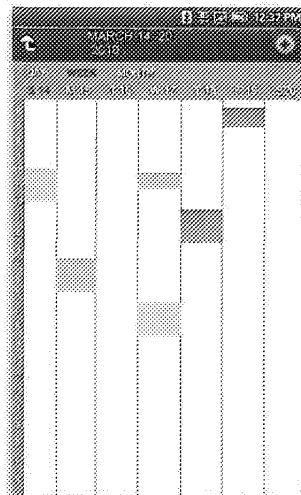
2.2.3 :: Application Flow :: Calendar

Parallel View

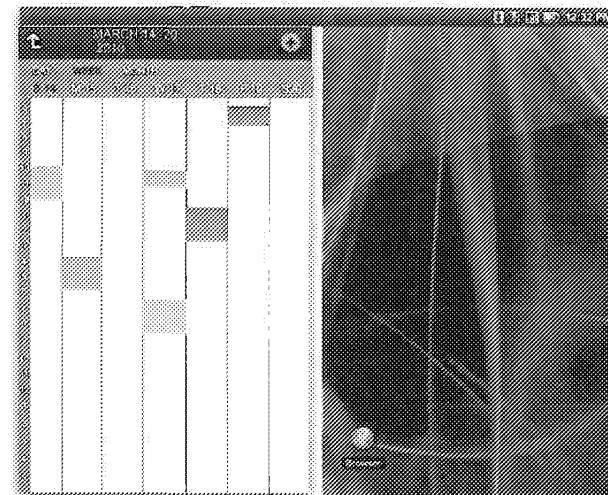
2.2.3.1 :: Example Application Flow :: Calendar



User launches calendar from the shortcut on the desktop

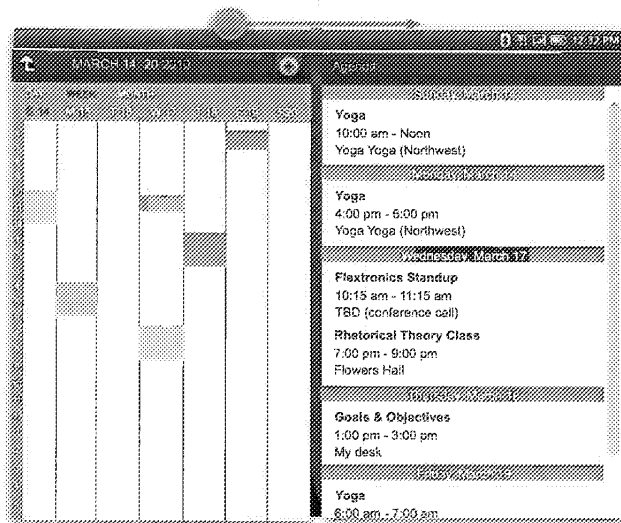


The application launches at the "starting point" in this case, the user selected week view.



The user opens the phone.

2.2.3.2 :: Example Application Flow :: Calendar



User expands Calendar to full screen mode, displaying the calendar week view in screen 1 and the agenda view of the week in screen 2. The Agenda view is filtered to show the events for that week.

This is the primary example and the key differentiator we are calling Parallel View. The experience is enriched enabling the user to view both a full view of the calendar at a glance on the left, along with a richer view (Agenda view) on the right.

2.3 :: Exposé Model

Easy access to features/functionality, and increased efficiency

2.3.1 :: Exposé : Overview

In the current Android experience, content is key and what limited screen real estate that is available is dedicated to accessing, creating and viewing content. Therefore, functionality and features are hidden in menus and additional management screens within the application.

We want to surface the actions and shortcuts to key tasks and management functionality in a unique way that does not overtake screen real estate needed for viewing or already populated with content. This results in an improved experience in dual screen, that still works in single-screen mode.

2.3.2 :: Exposé Guidelines

Exposé mode is unique to the dual screen viewing experience, and the position of the "Control Panel" should be consistent always displaying in the left screen in portrait mode and on the top when viewing in dual screen landscape mode.

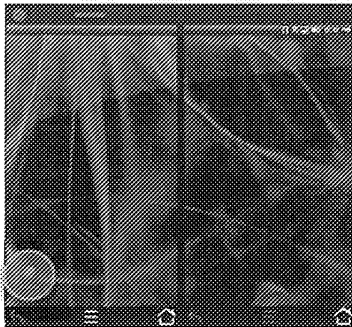
Dual screen may provide an exclusive feature, not available in single mode; however this should be an exception as a guiding principle is to support features in both modes.

The Control Panel should surface primary features and functionality for both performing tasks as well as content management. Typically, these features shown in the left act on the screen in the right.

2.3.2.1 :: Example Application Flow :: Browser

Exposé Model

2.3.2.2 :: Example Application Flow :: Browser



User launches the browser from the shortcut on the desktop



The application launches at the default "starting point" the browser window.



The user drags along the top edge of the device to maximize the application window.

The browser window moves to the right exposing the functionality and features associated with it on the left in the Control Panel view.

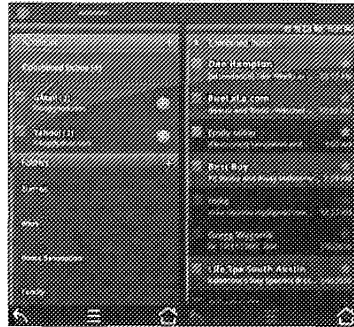
Note: The URL or address bar remains on the left while the rest of the Browser moves to the right. This optimizes the screen real estate solely for viewing web page content.

Design of and Content in Control Panel is TBD.



The user taps on Engadget within the bookmarks section, the url is shown in the address bar and in the history and the page loads within the browser window on the right.

2.3.2.3 :: Example Application Flow :: Snapshots



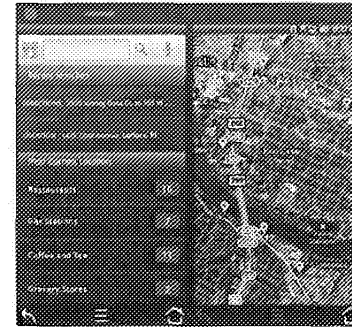
Email

The control panel view within email enables users to access and view accounts and the folders associated with all and each account.



Calendar

The control panel view enables users to access and view accounts and the custom calendars they have created. They may also use the "+" controls displayed inline to add accounts or create new custom calendars.



Maps

In the Maps application, the control panels surfaces search functionality, enables users the access recent searches, and quickly search for places or services near the current location shown in the map on the right.

3 :: INTERACTION PATTERNS

3.1 :: Text Entry

On-Screen Keyboard

3.1.1 :: Text Entry/On-screen Keyboard Overview

Provide an optimized text-entry experience—customized for the device and prosumer audience while leveraging existing Android 2.1 features.

An improved keyboard layout: offset keys, more space between keys in the dual screen view; make it easier to hit the correct characters and improve typing speed.

An optimized input experience: the framework's multi-touch support ensures that key presses aren't missed while typing rapidly with two fingers.

An integrated auto-suggestion bar with a smarter dictionary: an auto-suggestion bar shown as the user types that provides smart suggestion—learning from common word usage and automatically including contact names as suggestions.

Utilization of Contextual keyboards optimized for the users current context: Email Subject, Email To, Search, SMS, Symbols and 123, emoticons, etc.

Inclusion of valuable shortcuts: Voice to text key (replaces comma on some keyboards) is a useful feature for the prosumer audience. Long press shortcuts on specific keys such as ?123 could provide access to emoticons, extended symbol sets.

Optimization of input experience when in dual screen compose modes: a clear visual highlight to the screen in focus and dimming of the screen not active provides additional clarity to cursor location and expected behavior so that users are comfortable tapping back and forth.

Note: Keyboard layout and dimensions to be defined in the detailed design phase.

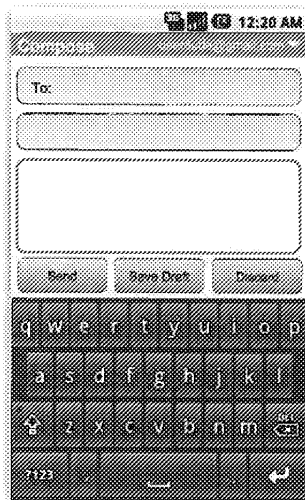


-  Common Key
-  Keyboard Switcher Key
-  Contextual Key

QWERTY same on all
Delete - row 3 on right
Shift or ALT - row 3 on left
Space bar - bottom center, or right of center
Action (if exists) - bottom right
Keyboard switcher - bottom left
Voice input - bottom left of space bar
Period - right of space bar

3.1.2 :: Recommended Keyboard Layouts

Single Screen portrait

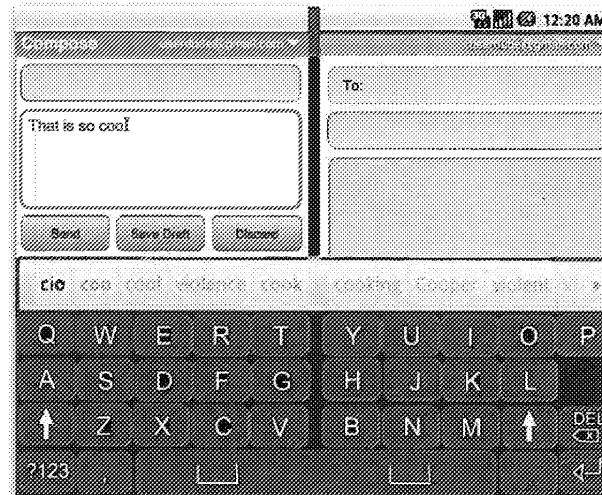


In this model, the user has tapped a field, which has invoked the keyboard. This is the standard Android keyboard today.

We suggest the continued use of standard Android behaviors and contextual keyboards unless noted otherwise. This is the keyboard used for the content field in an email.

Android 2.0 offers some improvements to the keyboard such as an improved layout and multi-touch support for better touch accuracy and a smarter dictionary for word usage including contact names for suggestions.

Dual screen, portrait, two apps, one keyboard that spans both apps and operates within an app depending on focus



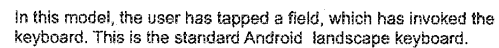
In this model, the user has the device open to display dual screens. On each screen is displayed an application. The keyboard spans across both screens.

As shown by the highlight around the entry field in the compose view on the left and the colored title bar, the user has placed focus in the composer on the left. Therefore typing on the keyboard will input in the field on the left.

The user can tap the right screen to move the focus to that screen. If the user taps a field, that field will get the focus and the title bar will change to orange. The right screen will compress and the action bar will appear. The focus state and title in the left will return to the off state; however, the action bar will remain. This allows the user to tap back and forth to enter text in both screens in a seamless fashion.

Turn to landscape will position the app in focus on the top screen and the keyboard in the bottom screen overlaying the other app.

Single screen, landscape, one app with keyboard (Legacy)



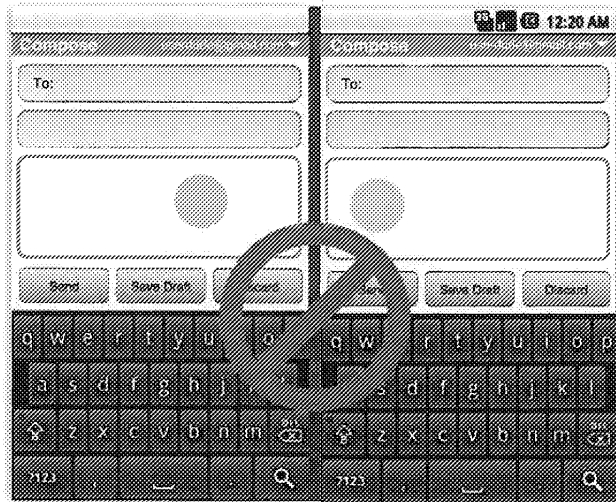
Procedures: Student Observation Guide

Note: Keyboard layout and dimensions to be defined in the detailed design phase.

Tap a field in the top screen, and the keyboard will slide over the app in the bottom screen. Tap a field in the bottom screen and the app will slide up to the top screen as the keyboard slides up over the bottom screen.

3.1.4 :: Not Recommended Keyboard Layouts (add'l explorations)

Dual screen, portrait, two apps each with keyboard

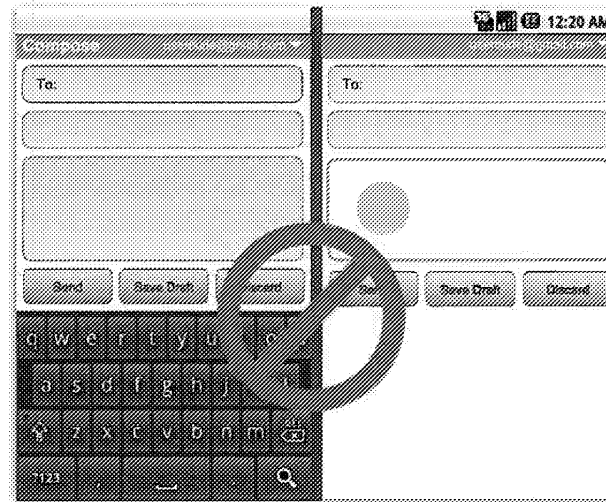


In this model, the user has opened two applications, one on each screen. When the user places focus on a field, the keyboard opens to display on the screen from which it was invoked. In this model, two keyboards could ostensibly be open at the same time.

As this wireframe shows, the user has tapped the compose field on each email, thus two keyboards (one per screen) have been opened.

This model is not recommended because the presence of two duplicate keyboards is likely to cause confusion, as well as the focus of multiple fields simultaneously.

Dual screen, portrait, two apps, one keyboard that operates depending on focus



In this model, the user has opened two applications, one on each screen, but the keyboard will only ever be displayed on the first screen.

Notice in the wireframe above that the user has placed focus on the message field of the email on the right screen, which invokes the keyboard on the left screen. If the user had tapped the message field of the email on the left screen, the keyboard would be invoked on the same side. The keyboard will always be displayed on the left side, no matter which application on which screen invoked the keyboard.

This model is not recommended because having a keyboard present on one side only may lead to confusion about which application is in focus.

3.1.5 :: Not Recommended Keyboard Layouts (add'l explorations cont'd)

Dual screen, landscape, one app w/keyboard occupying second screen



In this model, both screens are open, but the keyboard uses the entire real estate of the second screen, with the open application occupying screen one. The user could have two applications open, one each on screen one and screen two. The keyboard appears on the opposite screen of the application in which the user has placed focus.

This keyboard is a logical extension of the recommended dual screen keyboard, but for obvious usability concerns, it doesn't work when displayed in Screen 1.

Dual screen, landscape, two apps w/one keyboard that appears depending on focus

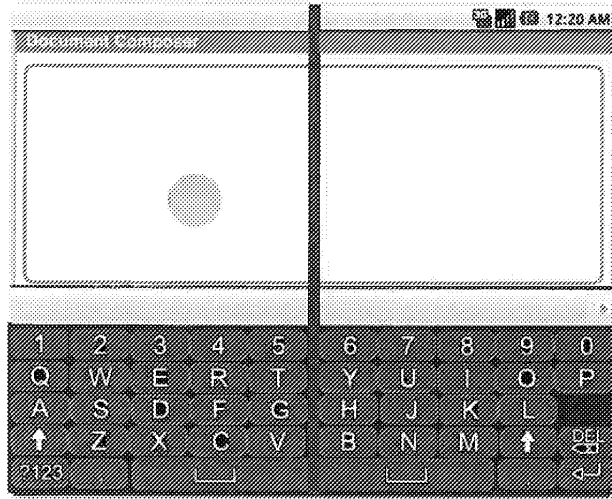


In this model, the user has tapped a field, which has invoked the keyboard. This is the standard Android keyboard. As is represented in the wireframe, this keyboard configuration can make text entry difficult because most of the screen is obscured by the keyboard. If the user had tapped a field in the application in screen two, then the keyboard would appear in the second application.

Although this model follows current keyboard conventions when in landscape mode, this model isn't the best use of phone real estate.

3.1.6 :: Additional Explorations

Dual screen, portrait, one app spans across both screens, with keyboard doing same



In this model, one application (such as Word or another text editor type application) has been opened across both screens. The keyboard expands across both screens.

The keyboard here functions the same way in which it functions in single screen portrait mode. Tapping a field places focus on that field, and then allows the user to use the keyboard for text input.

Note: We have not seen a case for this, but want to leave this as an option in case an expanded compose view does occur. Turning the phone to a landscape view is the more optimal choice.

3.2 :: Copy/Paste

Copy & Paste Text, Links and Universal Clipboard

3.2.1 :: Introduction

In the current Android model, users can copy and paste the contents of a text message from one app to another via press and hold to get a copy/paste menu.

In the current Android model, users can copy and paste a URL from any application to another via press and hold to get a copy/paste menu.

*In the current Android model, users select text in a text field via press and hold, which invokes a contextual menu allowing users to put the field in 'select' mode, touching and dragging a chunk of text, then press and hold again to take field out of 'select' mode, which then copies the selected text.

*In the current Android model, users can copy/paste plain text via invoking a contextual menu, putting the device into 'select' mode, and touching and dragging a chunk of text, then press and hold to paste the text into another app.

We want to normalize the methods of copy/paste in the dual screen model, as well as to allow more efficient copy via drag and drop, direct manipulation, and better cursor placement and text selection, all while still allowing for the retention of the current Android pattern of copy and paste via menus as additional methods of performing these functions.

3.2.2 :: Functions

COPY

- *Select a link
- *Select a chunk of text
- *Select all text (and images) on a page
- *Select a text message
- *Select a text conversation
- *Select an image (or image and text)
- *Any text in a field
- *Smart Objects (calendar event, contact, etc.)

FROM

- *Email
- *Text Message
- *Webpage
- *IM
- *Document
- *Image
- *Folder
- *Text Field

PASTE

- *Paste a link
- *Paste a chunk of text
- *Paste a message
- *Paste a conversation
- *Paste an image (or image and text)
- *Paste a Smart Object

TO

- *Email
- *Text Message
- *IM
- *Document
- *Folder

3.2.3 :: Copy and Paste Rules

What can be copied?

There are two different classes of items that can be copied and pasted. The first class of items don't require the user to place the cursor to select a piece of the item; the item is selected in its entirety. Items that fall into this class are Links, Images, Documents (such as music files or document files) and Text Messages.

The second class of items require the user to place the cursor and make a selection of a piece of the item. In this mode, the user can also elect to 'select all' to copy everything within the item. Items that fall into this class are Chunks of text on a page, Chunks of text and images on a page, and Contents of a text field.

Users may copy from web pages, emails, text messages, documents, emails, fields, etc.

How are items copied?

For items that are copied in their entirety, such as links or images, users press and hold the item to display a menu. The menu gives the user the option to copy the item to the clipboard. Users may also use a two finger press and hold gesture, which puts the item in move mode, and allows the user to move/paste the item to any available drop zone (This includes images, links, paragraphs of text, messages, etc).

For items that require the user to make a selection of what they want to copy, such as a chunk of text from a web page or the contents of a text field, users press and hold the item to display a menu. The menu gives the user the option to copy the item to the clipboard. Users also have the option to copy the entire web page, field contents, etc (copy all) to copy that item to the clipboard. Once the user has chosen how to copy, they are able to place the cursor and select what is to be copied.

Where are items copied and how are they pasted?

For anything that has been copied, users have the option to either just paste the last copied item or to select an item from the Universal Clipboard to paste. Copying and pasting the item as one task is likely the most common use case. Users copy something with the intention of pasting it immediately into another location. Selecting 'paste text' will paste the last copied item. Selecting 'paste from clipboard' will display the Universal Clipboard. From there, users can drag and drop the item to the current cursor position. Selecting 'place cursor' allows the user to first place the cursor in a different position, and then paste the item.

3.2.3.1 :: Copy and Paste Rules (cont'd)

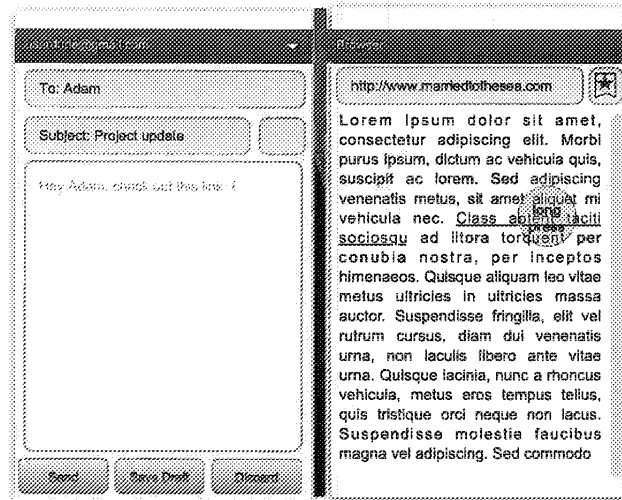
How are items removed from the Clipboard?

The Clipboard should be able to contain up to (x) number of items in a scrolling list. As users reach the maximum number of items the Clipboard can contain, the oldest item(s) will be removed from the Clipboard so that it contains only the maximum number of items. Users can allow Clipboard items to automatically 'expire' and be removed, or users can manually remove items from the Clipboard. Automatic expiration and removal rules do not apply to items that have been pinned to the Clipboard (though users can manually remove these items). Items are not automatically removed from the Clipboard upon pasting the item. They can only be removed manually or via expiration.

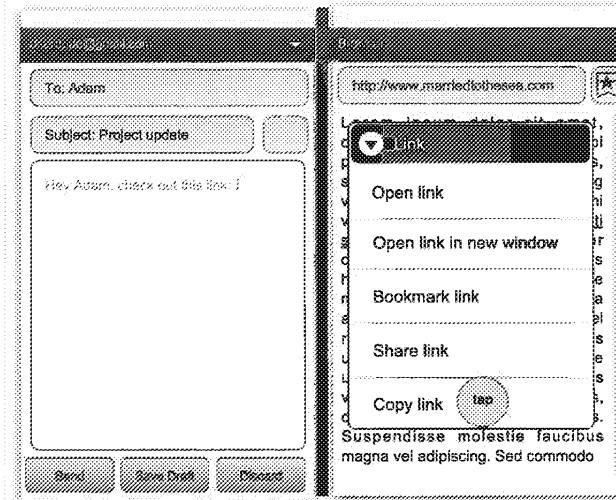
The Universal Clipboard allows the user to reuse the item, as well as the option to take advantage of some of the Clipboard features, such as being able to save things on the Clipboard into a 'scrapbook'/folder.

3.2.4 :: Copy and Paste Link from Clipboard

3.2.4.1 :: Copy and Paste Link from Clipboard

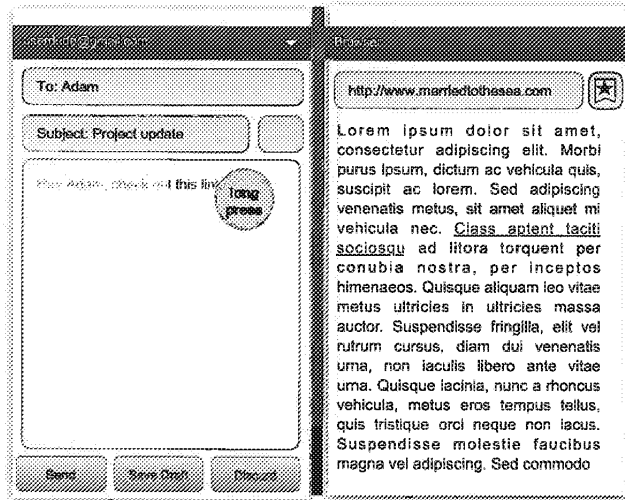


The user presses and holds a link on a web page.

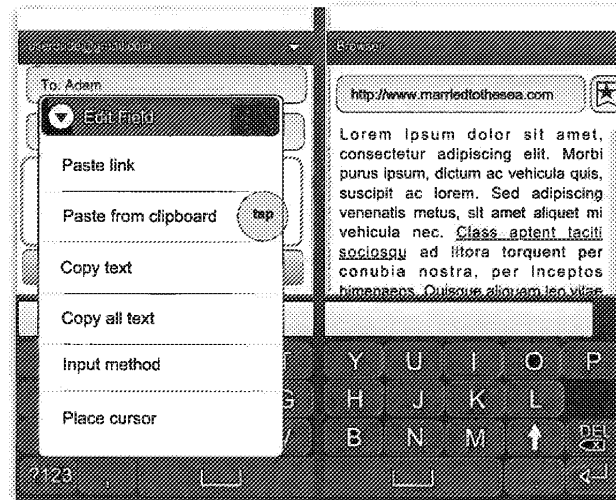


A menu is displayed with an option to 'Copy link'. User taps 'Copy link'. The has been copied to the Universal Clipboard. Both the text of the link, and the URL are copied. E.g., if the text of the link was "Check this out!" and the URL was <http://marriedtothesea.com>, what would be copied would be "Check this out!" <<http://marriedtothesea.com>>

3.2.4.2 :: Copy and Paste Link from Clipboard

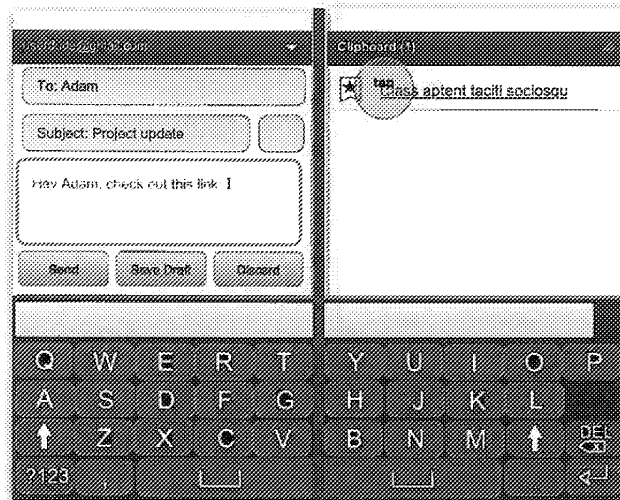


The user presses and holds the compose field in an email.

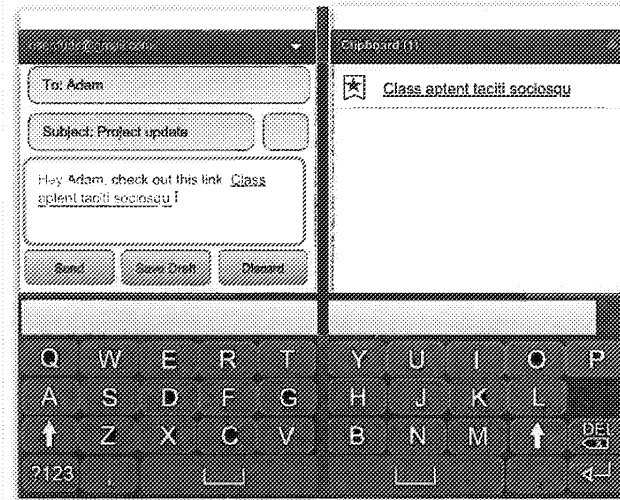


A menu is displayed with two options for pasting. 'Paste Link' would paste the last copied item at the current cursor position. 'Paste from clipboard' displays the Universal Clipboard, from which the user could paste the just copied link, in addition to other items in the Clipboard. The user taps 'Paste from clipboard'. The user could have also single tapped the field before invoking this menu to place the cursor. Single tapping the field will place the cursor where the user had tapped. The user could then press and hold to get this menu to paste the link in the newly selected location.

3.2.4.3 :: Copy and Paste Link from Clipboard



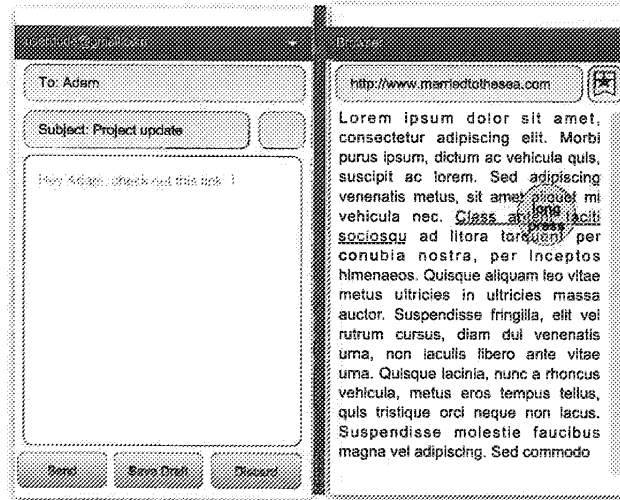
The Universal Clipboard is displayed in Screen 2. The user can either drag items to fields from here, or tap an item to insert it into the field with focus at the current cursor position. The user taps the link on the Universal Clipboard.



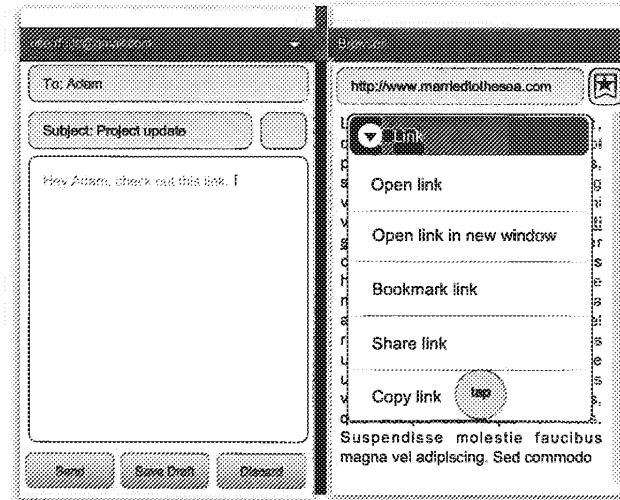
The link is displayed in the field with focus at the current cursor position.

3.2.5 :: Copy and Paste Link

3.2.5.1 :: Copy and Paste Link

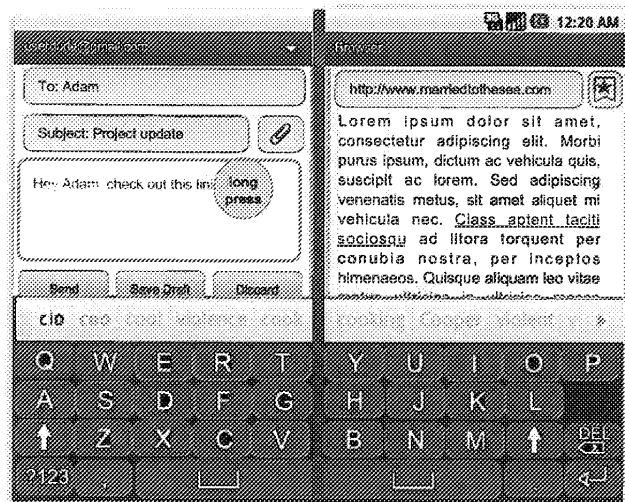


The user presses and holds a link on a web page.

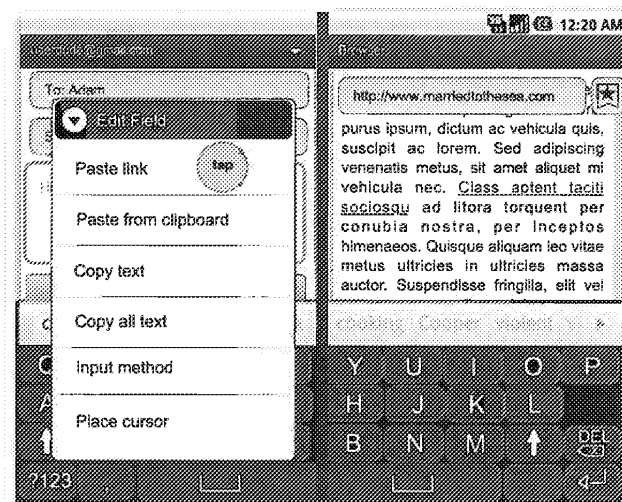


A menu is displayed with an option to 'Copy link'. User taps 'Copy link'. This has been copied to the Universal Clipboard.

3.2.5.2 :: Copy and Paste Link

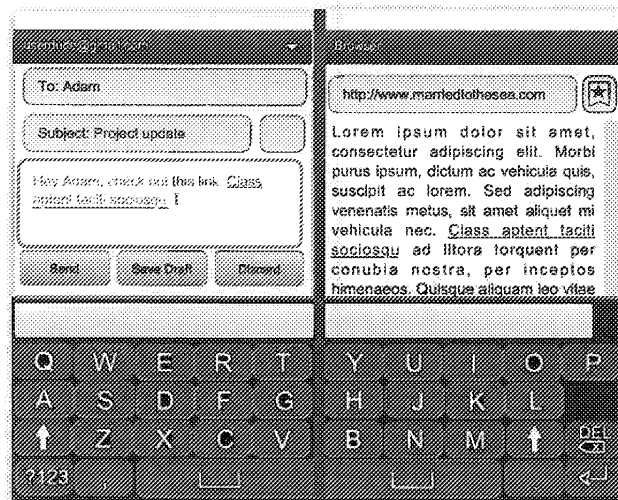


The user presses and holds the compose field in an email.



A menu is displayed with two options for pasting. 'Paste Link' would paste the last copied item at the current cursor position. 'Paste from clipboard' displays the Universal Clipboard, from which the user could paste the just copied link, in addition to other items in the Clipboard. The user taps 'Paste link'.

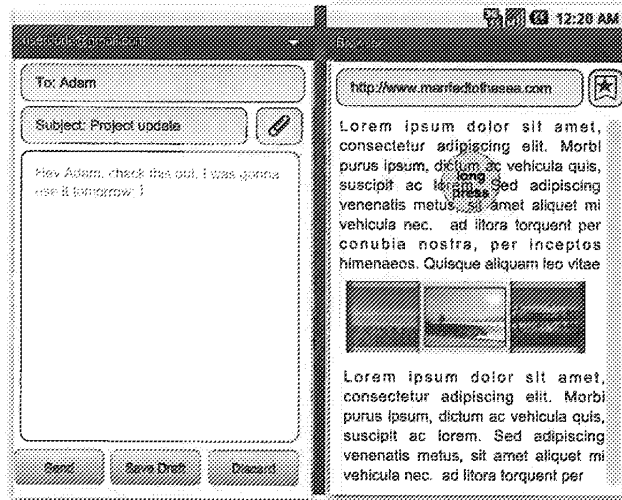
3.2.5.3 :: Copy and Paste Link



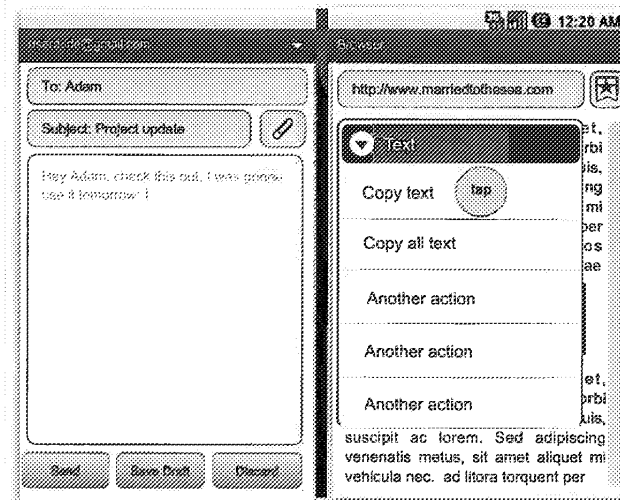
The link is displayed in the field with focus at the current cursor position.

3.2.6 :: Copy/Paste Text & Image from Clipboard

3.2.6.1 :: Copy/Paste Text & Image from Clipboard

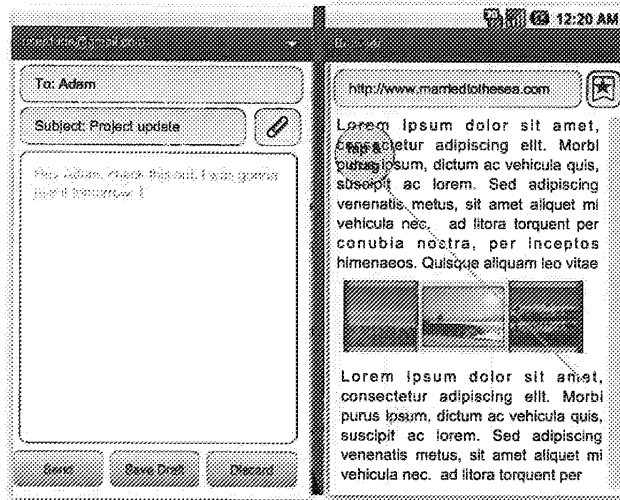


The user presses and holds a section of text on a web page.

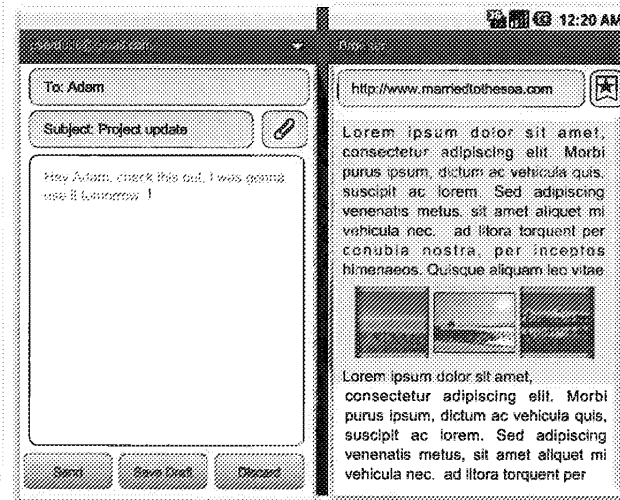


A menu is displayed with an option to 'Copy text', which allows the user to select the text to copy. 'Copy all text' would copy all displayed text to the Clipboard. User taps 'Copy text'.

3.2.6.2 :: Copy/Paste Text & Image from Clipboard

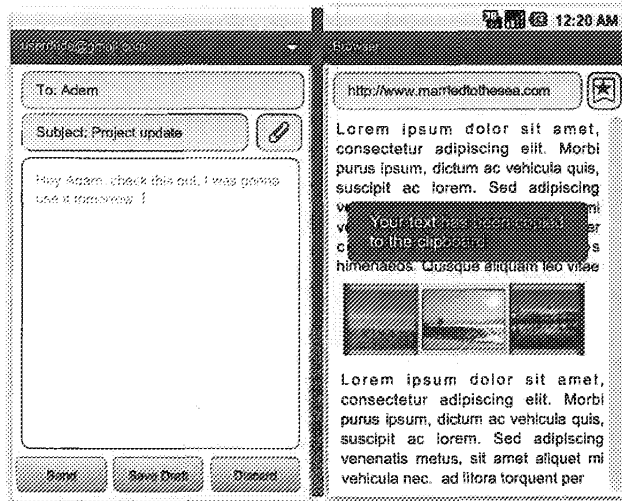


The user can now tap and drag anywhere on the page to select text and/or images to copy. As the user is dragging his finger, individual words are selected as he goes left to right horizontally. If the user is dragging vertically or across the page, entire sentences and paragraphs are being selected. As the user drags, the pages scrolls as the user holds his finger near the bottom of the screen, selecting text.

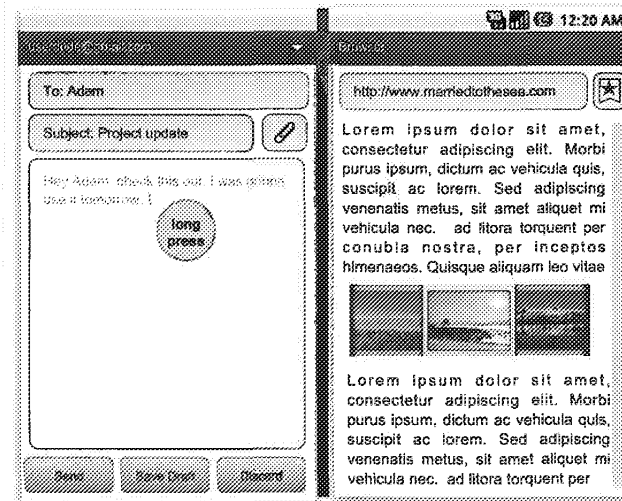


The selection to be copied is highlighted as the user drags their finger down the page.

3.2.6.3 :: Copy/Paste Text & Image from Clipboard

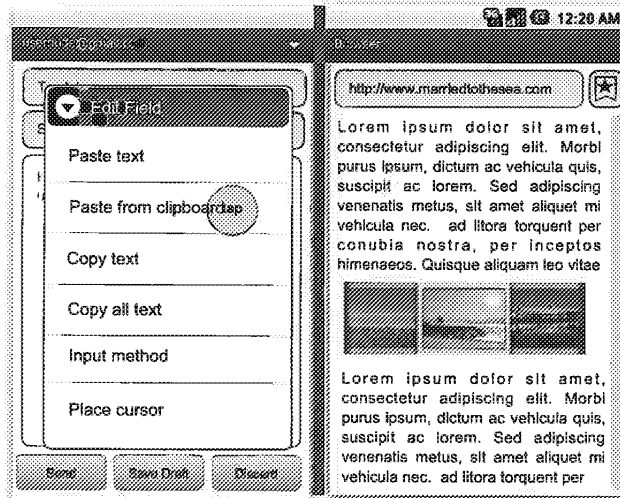


Once the user removes their finger from the screen, the items highlighted are copied to the Clipboard.

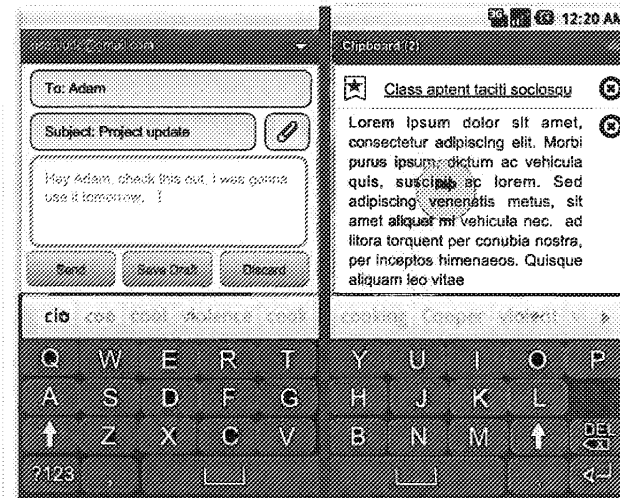


The user presses and holds the compose field in an email.

3.2.6.4 :: Copy/Paste Text & Image from Clipboard

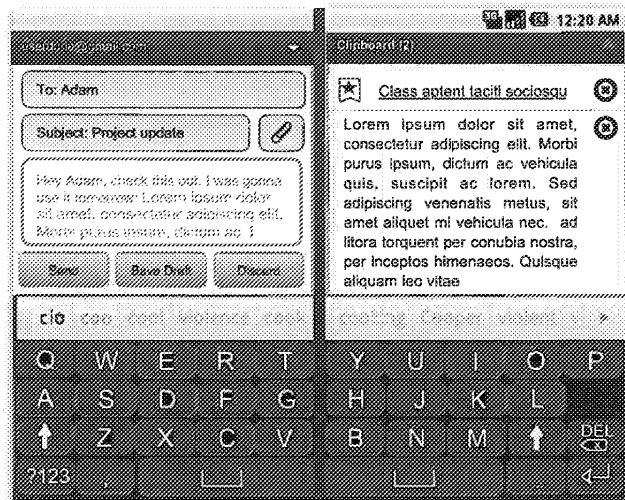


A menu is displayed with two options for pasting. 'Paste text' would paste the last copied item at the current cursor position. 'Paste from clipboard' displays the Universal Clipboard, from which the user could paste the just copied text and images, in addition to other items in the Clipboard. The user taps 'Paste from clipboard'.



The Universal Clipboard is displayed in Screen 2. The user can either drag items to fields from here, or tap an item to insert it into the field with focus at the current cursor position. The user taps the text and image on the Universal Clipboard.

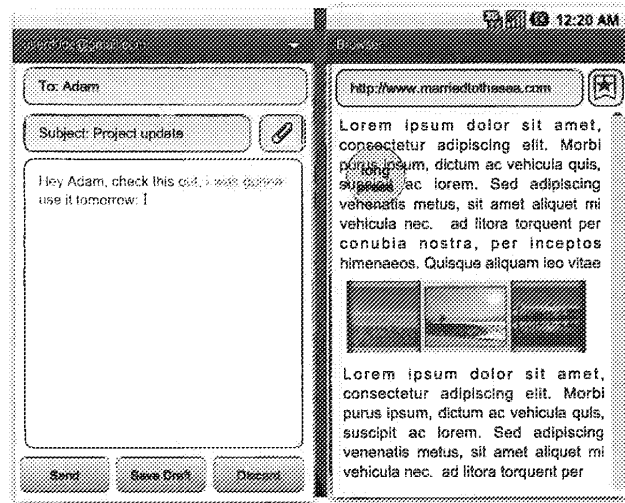
3.2.6.5 :: Copy/Paste Text & Image from Clipboard



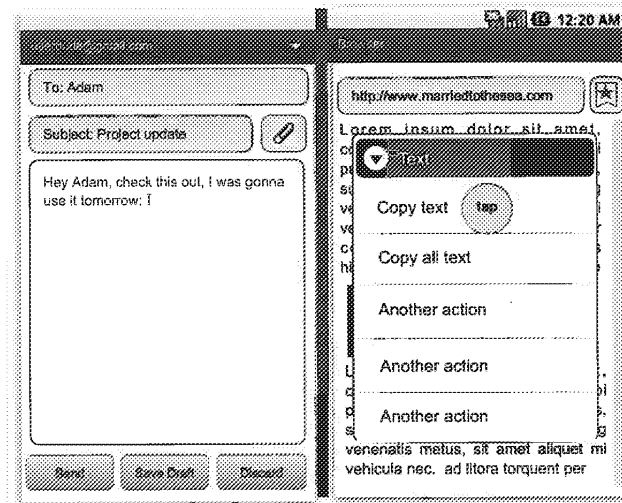
The text and image are displayed in the field with focus at the current cursor position.

3.2.7 :: Copy/Paste Text & Image

3.2.7.1 :: Copy/Paste Text & Image

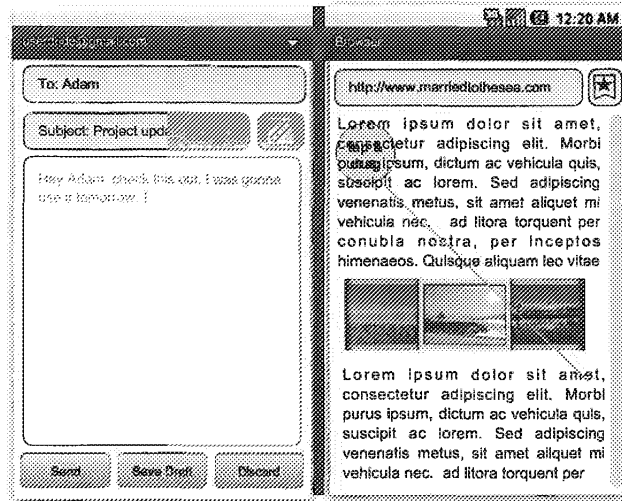


The user presses and holds a section of text on a web page.

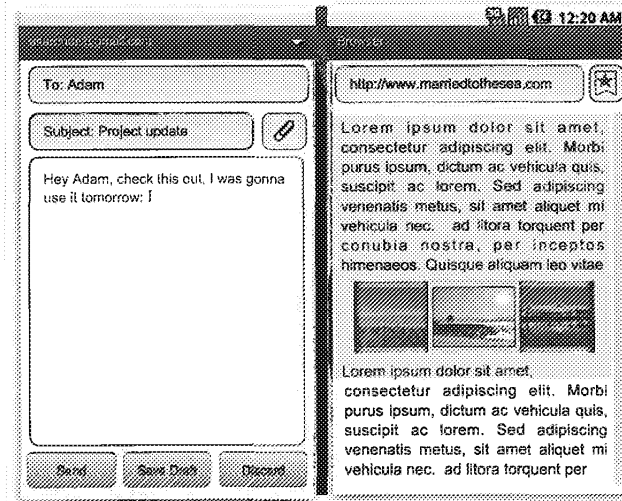


A menu is displayed with an option to 'Copy text', which allows the user to select the text to copy. 'Copy all text' would copy all displayed text to the Clipboard. User taps 'Copy text'.

3.2.7.2 :: Copy/Paste Text & Image

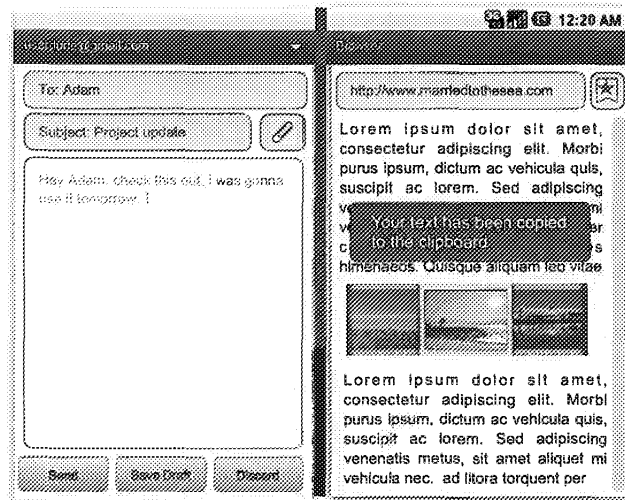


The user can now tap and drag anywhere on the page to select text and/or images to copy.

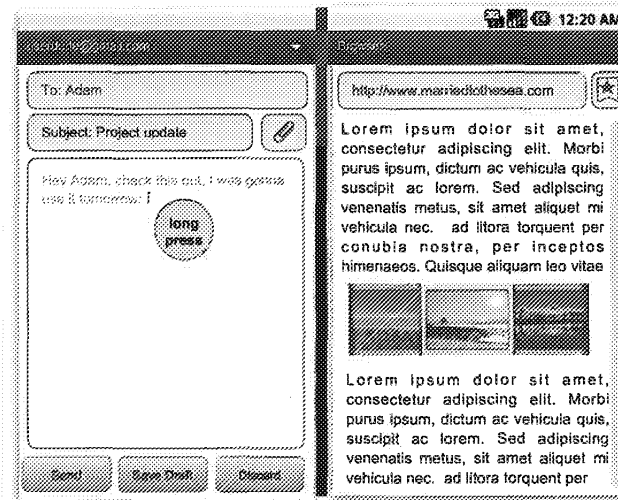


The selection to be copied is highlighted as the user drags their finger down the page.

3.2.7.3 :: Copy/Paste Text & Image

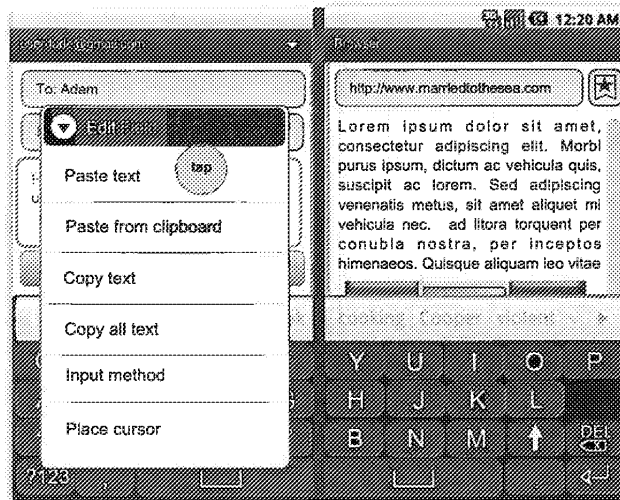


Once the user removes their finger from the screen, the items highlighted are copied to the Clipboard.

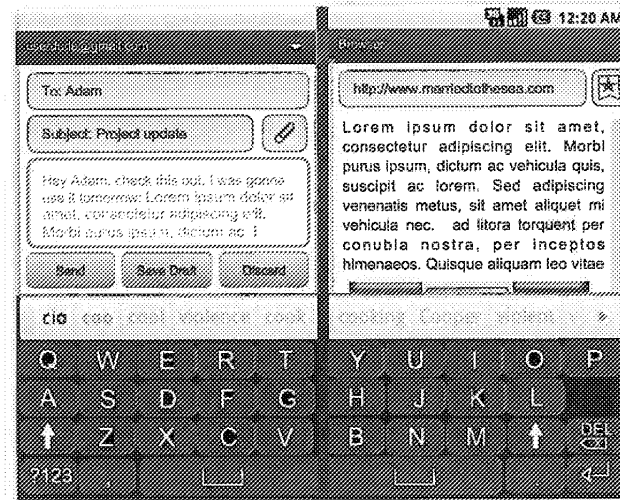


The user presses and holds the compose field in an email.

3.2.7.4 :: Copy/Paste Text & Image



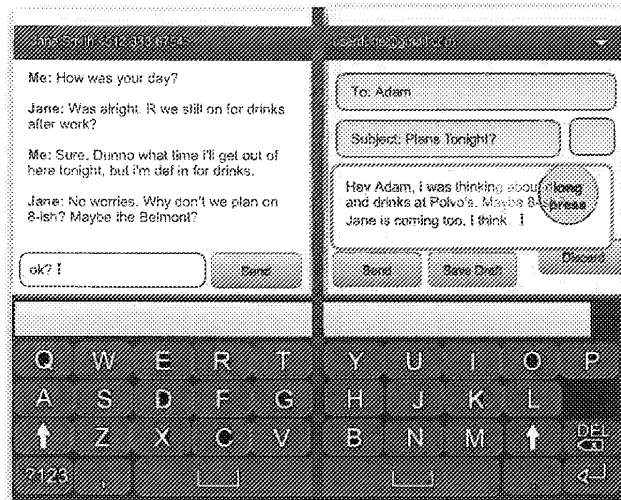
A menu is displayed with two options for pasting. 'Paste text' would paste the last copied item at the current cursor position. 'Paste from clipboard' displays the Universal Clipboard, from which the user could paste the just copied text and image, in addition to other items in the Clipboard. The user taps 'Paste text'.



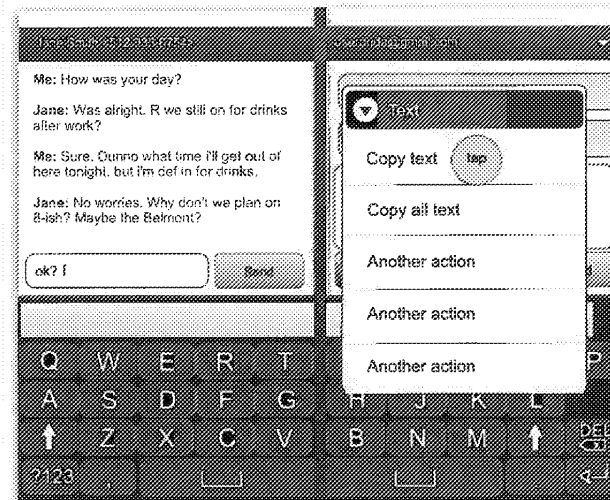
The text and image are displayed in the field with focus at the current cursor position.

3.2.8 :: Copy and Paste from a Field

3.2.8.1 : Copy and Paste from a Field

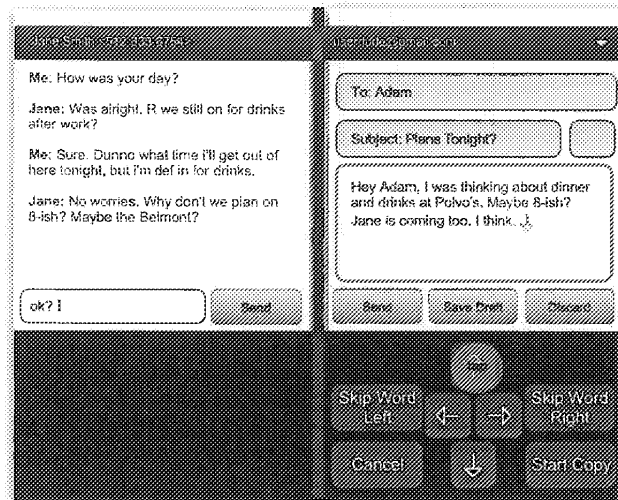


User presses and holds in a field.

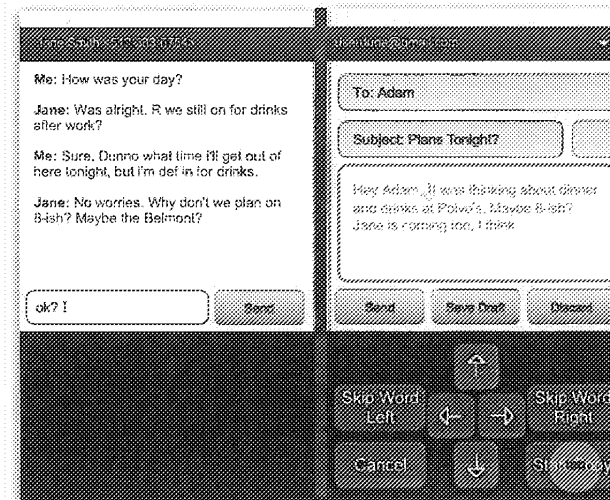


A menu is displayed with two options for copying. 'Copy text' allows the user to position the cursor to select a chunk of text. 'Copy all text' copies all text in the field. The user taps 'Copy text'.

3.2.8.2 :: Copy and Paste from a Field

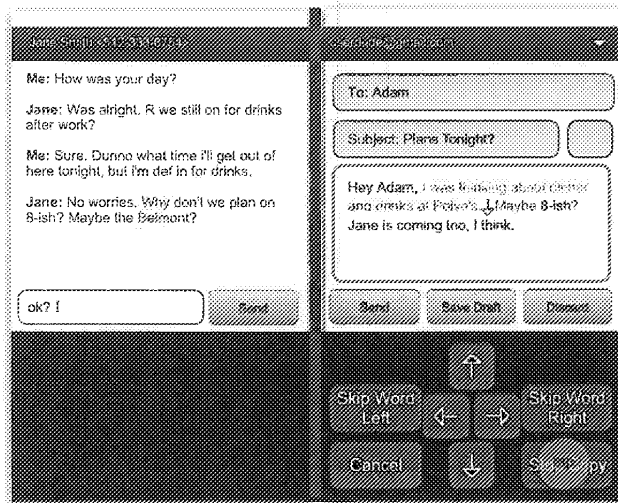


A cursor placement keyboard is displayed. The arrows allow the user to move the cursor up/down/left/right to position the cursor. 'Cancel' stops the copy process and returns the cursor to regular mode. The user taps the up arrow to position the cursor.

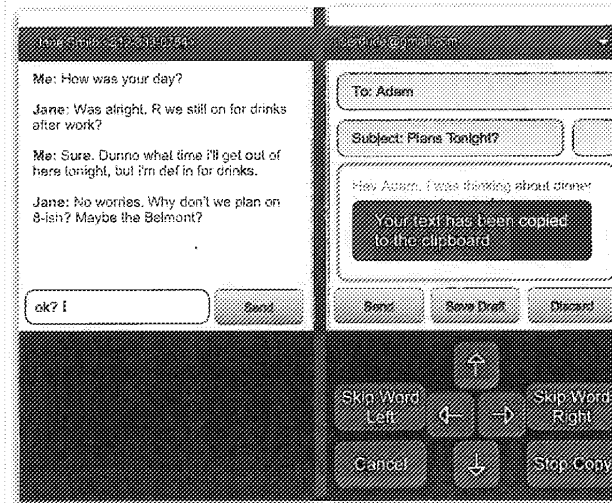


With the cursor in the desired position, the user taps 'Start Copy', which starts the copy of text from the current cursor position.

3.2.8.3 :: Copy and Paste from a Field

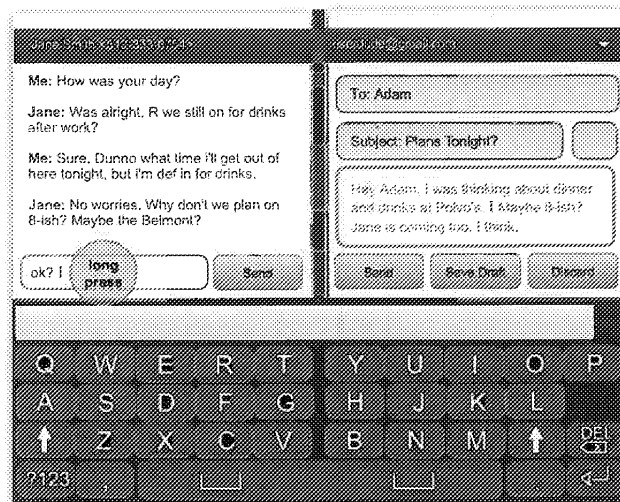


The user uses the arrows to select text/position the cursor at the end of the desired chunk to be copied, and taps 'Stop Copy'. This copies the selected text to the clipboard.

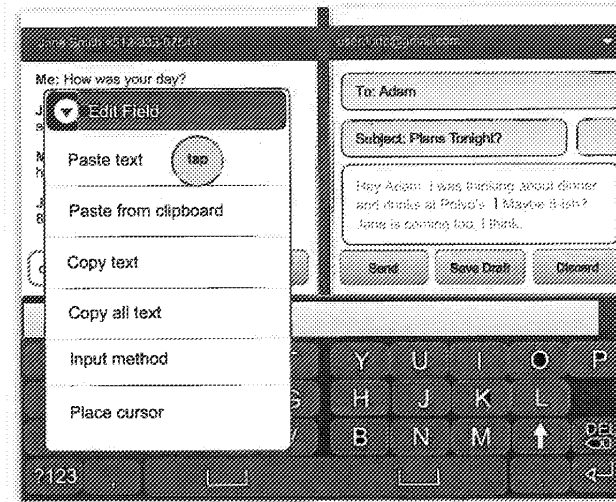


The user receives a notification that the selection has been copied to the clipboard.

3.2.8.4 :: Copy and Paste from a Field

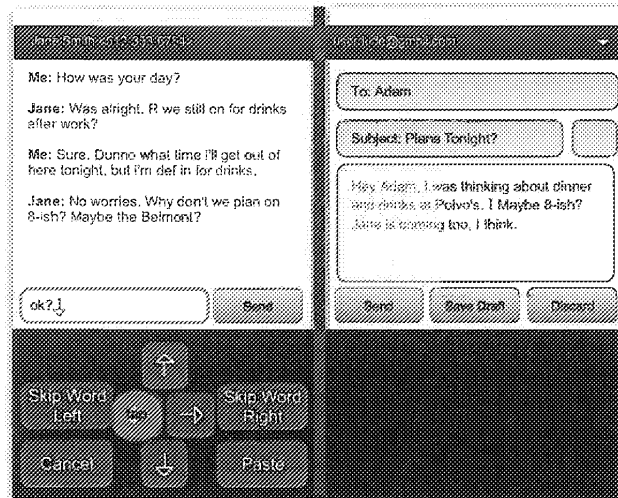


User presses and holds the text message compose field.

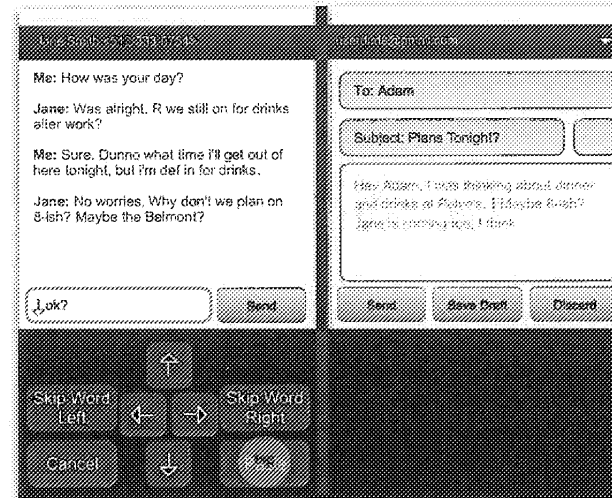


A menu is displayed with two options for pasting. 'Paste text' would paste the last copied item at the current cursor position. 'Paste from clipboard' displays the Universal Clipboard, from which the user could paste the just copied text, in addition to other items in the Clipboard. There is also an option for the user to place the cursor in a different position in the field. The user taps 'Paste Text'.

3.2.8.5 :: Copy and Paste from a Field

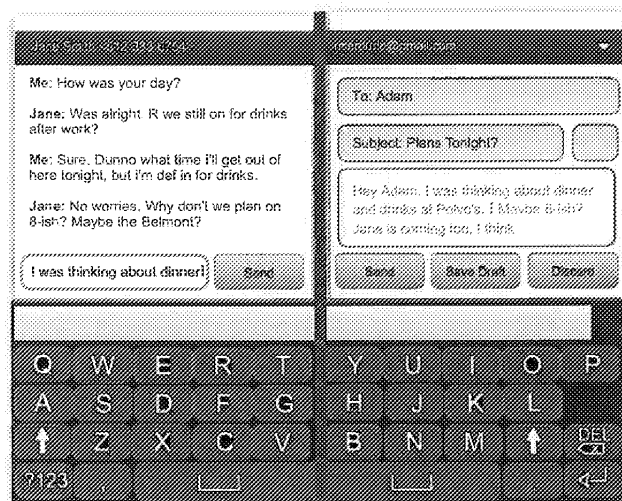


A cursor placement keyboard is displayed. The arrows allow the user to move the cursor up/down/left/right to position the cursor. "Cancel" stops the paste process and returns the cursor to regular mode. The user taps the left arrow to position the cursor.



The user taps "Paste" to paste the text at the current cursor position.

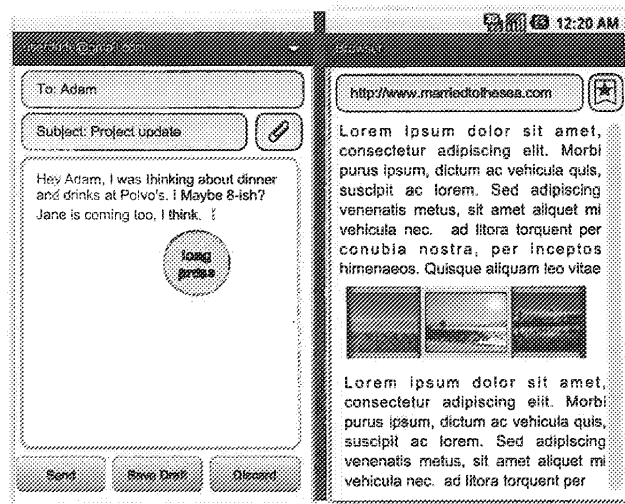
3.2.8.6 :: Copy and Paste from a Field



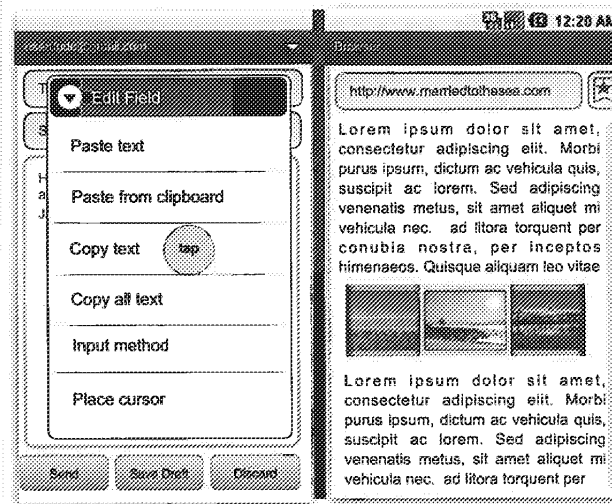
The pasted text is displayed in the field.

3.2.9 :: Place Cursor with Direct Manipulation

3.2.9.1 :: Place Cursor with Direct Manipulation

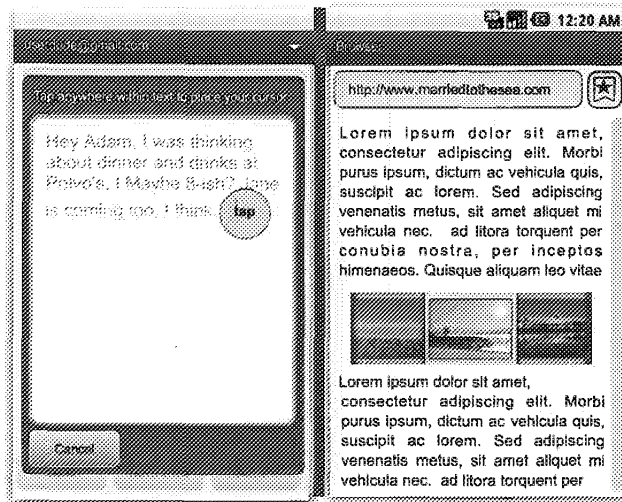


User presses and holds in a field.

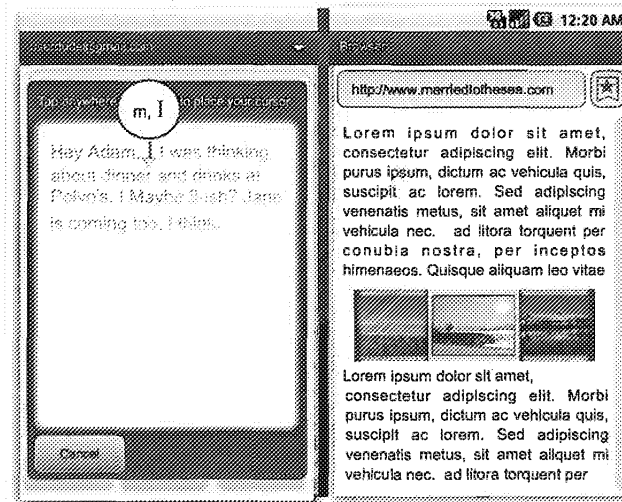


A menu is displayed with two options for copying. 'Copy text' allows the user to position the cursor to select a chunk of text. 'Copy all text' copies all text in the field. The user taps 'Copy text'.

3.2.9.2 :: Place Cursor with Direct Manipulation

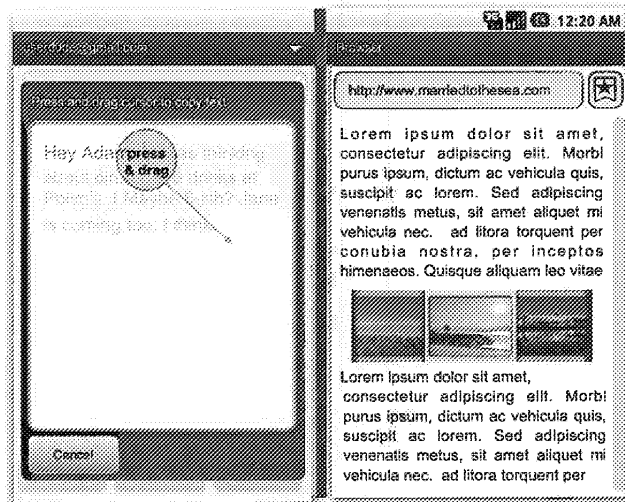


The field and the text within grow larger to allow for easier cursor placement. The user taps within the field to position the cursor. Tapping Cancel will take the user out of this mode.

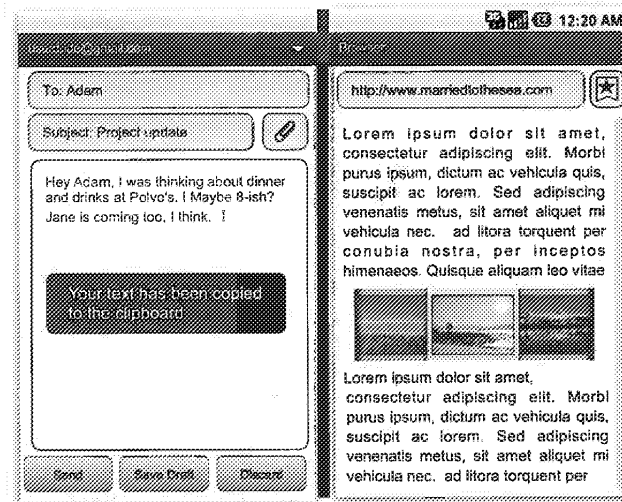


The cursor can be moved by moving a finger across the text. As the user is moving to position the cursor, a magnifier appears to allow for precise cursor placement.

3.2.9.3 :: Place Cursor with Direct Manipulation

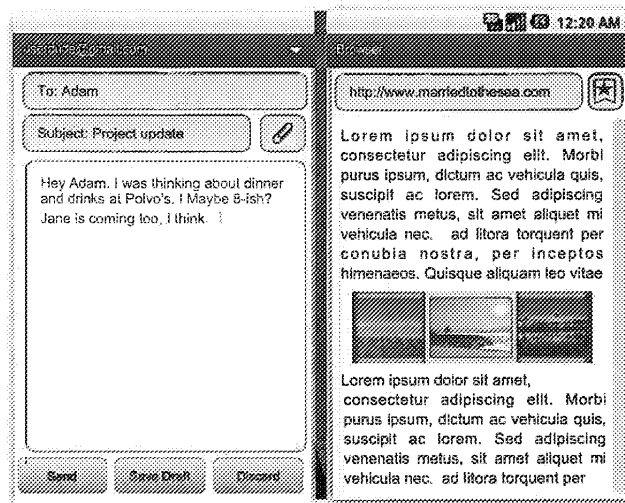


Once the user has the cursor in the desired position, they remove their finger to place the cursor. Pressing the cursor initiates the copy process, so that now the user can press and drag to select text. Once the user removes their finger, the selected text is copied to the clipboard.



A notification is displayed informing the user that the text has been copied.

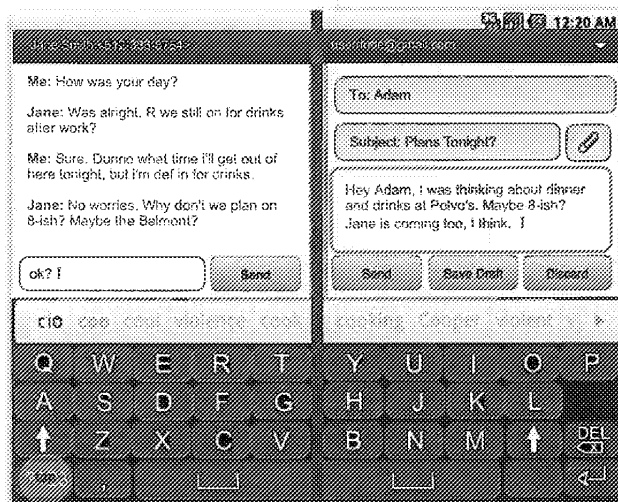
3.2.9.4 :: Place Cursor with Direct Manipulation



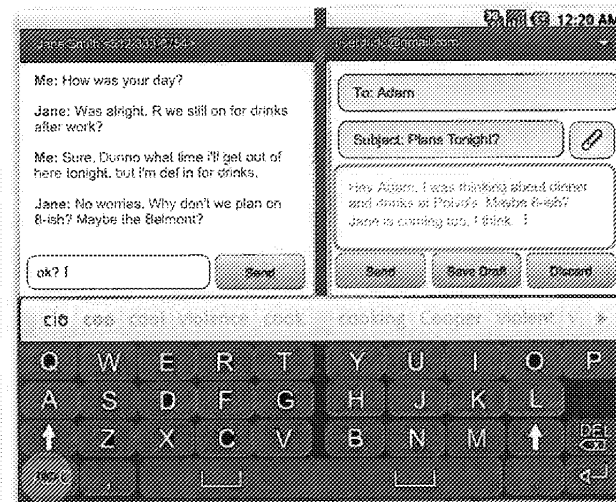
The field is returned to its original state.

3.2.10 :: Place Cursor with Keyboard

3.2.10.1 :: Place Cursor with Keyboard Manipulation

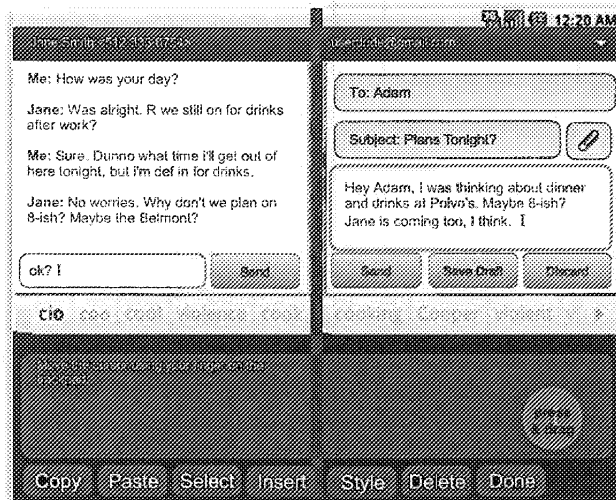


User taps the keyboard toggle key...

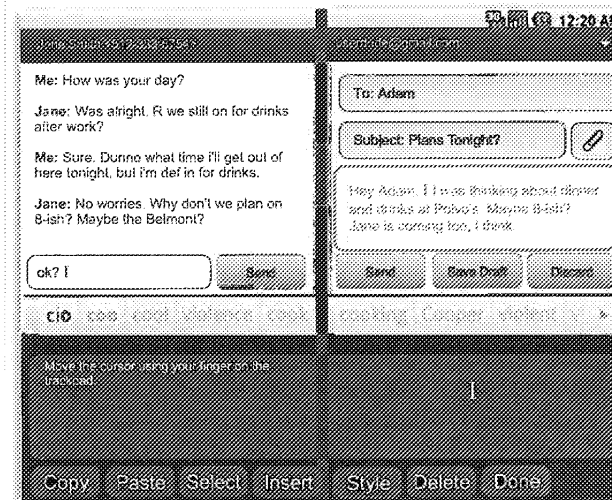


...to get to the cursor placement/copy & paste keyboard.

3.2.10.2 :: Place Cursor with Keyboard Manipulation



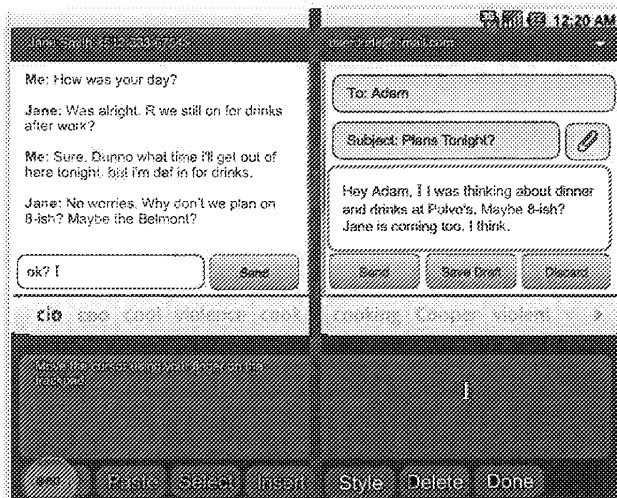
The cursor placement keyboard is displayed. The trackpad displays a cursor, which the user presses and drags around the trackpad in order to place the cursor in the field. The buttons at the bottom are actions that can be applied to the selected text. In this example, the user wants to copy a selected piece of text within the field. The user presses and drags the cursor on the trackpad to a new position. While the user is moving the cursor on the trackpad, the cursor is moving simultaneously within the field.



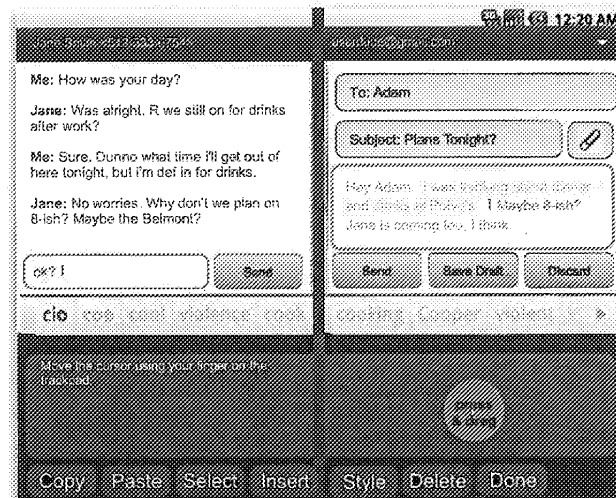
The user has positioned the cursor and has removed his finger from the trackpad. The cursor remains on the trackpad so that the user could continue to reposition the cursor.

*There are numerous additional functions this keyboard could handle outside of copy/paste. Text chunks could be selected in order to be deleted, text could be selected in order to be styled/apply formatting, etc.

3.2.10.3 :: Place Cursor with Keyboard Manipulation

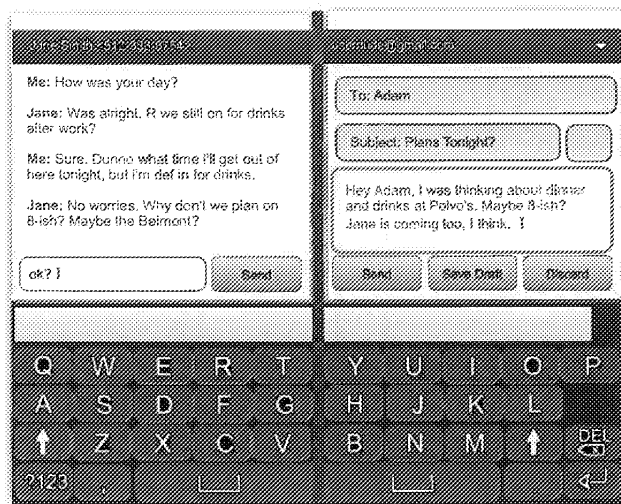


Now that the user has the cursor where he wants it, he taps 'Copy' in order to put the field in copy mode.



Using the cursor indicator on the trackpad, the user presses and drags it to select a chunk of text. As the user is moving the cursor on the trackpad, the selected text is highlighting in the field.

3.2.10.5 :: Place Cursor with Keyboard Manipulation



The keyboard is back to standard display.

3.3 :: Drag & Drop

3.3.1 :: Drag and Drop Rules

What can be dragged and dropped?

Any item that can be selected as a discrete chunk (e.g. an image, text message, link, paragraph of text, file, etc.) and does not require cursor placement, can be dragged and dropped. Users can also drag and drop 'smart items' such as contacts, files, etc. These items will give the user additional options for how and what to paste.

How are items dragged and dropped?

Using a two finger gesture, users press and hold on the item they wish to drag and drop. Pressing and holding with two fingers selects the item and activates it so that it can be moved. As the user moves the item, drop zones are indicated.

One difference to note in terms of selecting an item via drag and drop versus selecting via copy and paste is that drag and drop does not allow for discrete selection or cursor placement. Only discrete chunks of data (e.g. an image, text message, link, paragraph of text, file, etc.) may be selected.

To select a paragraph to drag and drop, the user would two-finger press and hold on the paragraph. The paragraph would change state visually to indicate it can be dragged.

Where can items be dropped?

Items can be dropped into input fields (e.g. dropping an image, document, link into an email or text message), into documents, and to the Universal Clipboard. Once the user has acquired the target, they let go of the item, and it is dropped/pasted to the selected location.

Users may drop items into the Universal Clipboard by dropping the item on the annunciator bar. The annunciator bar then displays an icon to represent that items have been added to the Clipboard. Users can tap the Clipboard displayed on notification list in the annunciator bar in order to access the Universal Clipboard.

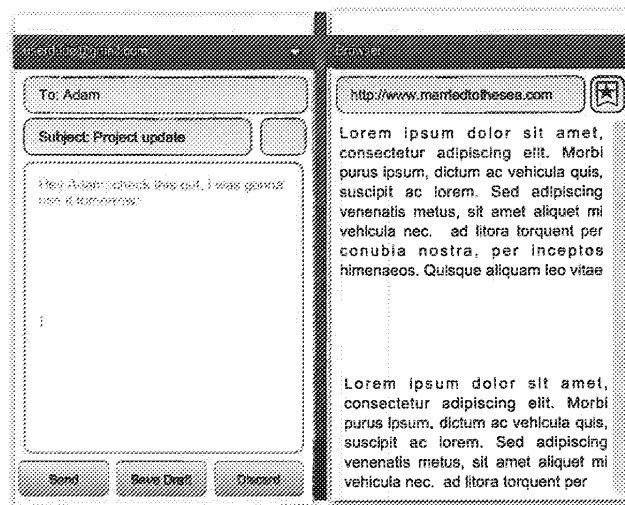
How does the user get out of this mode?

Once an item is dropped to an appropriate drop zone, the device is no longer in 'drag and drop' mode. If a user tries to drop an item to an inappropriate drop zone, the dragged item should snap back to its original location. If the user wants out of this mode, he can drop the item to its original location.

3.3.2 :: Drag and Drop an Image



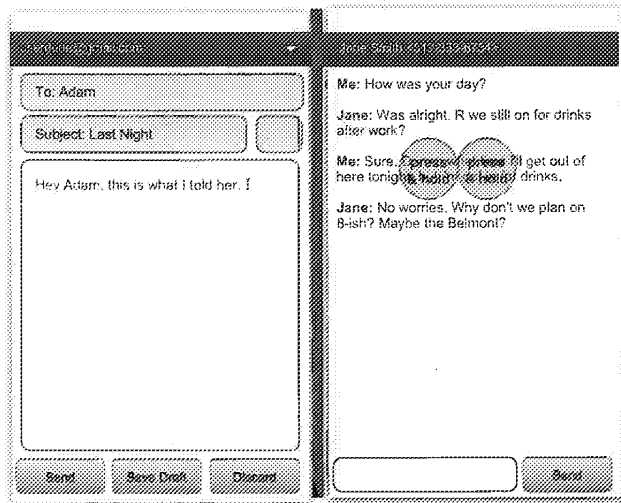
3.3.2.2 :: Drag and Drop an Image



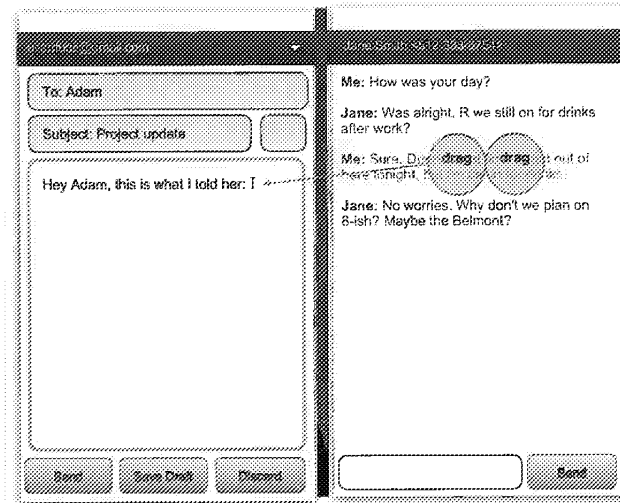
The image has been dropped into the email.

3.3.3 :: Drag and Drop Text Message

3.3.3.1 :: Drag and Drop Text Message

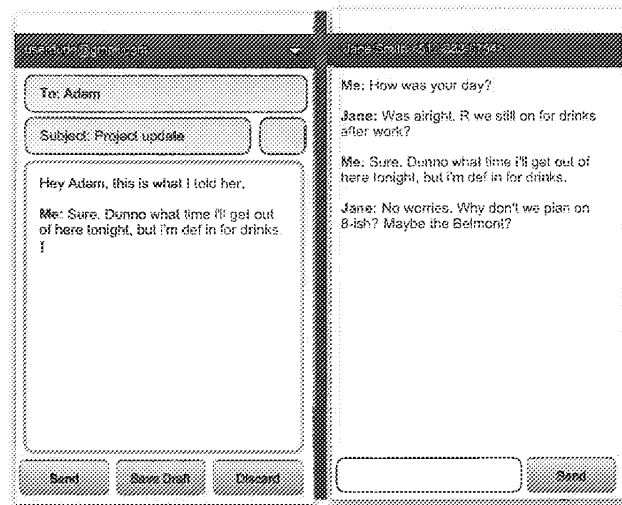


The user presses and holds on a text message with two fingers.



The text message is now in 'drag' mode, and can be dropped into a target. As the user moves the message around, acceptable targets will be highlighted. The user drags the message to the compose field of the email.

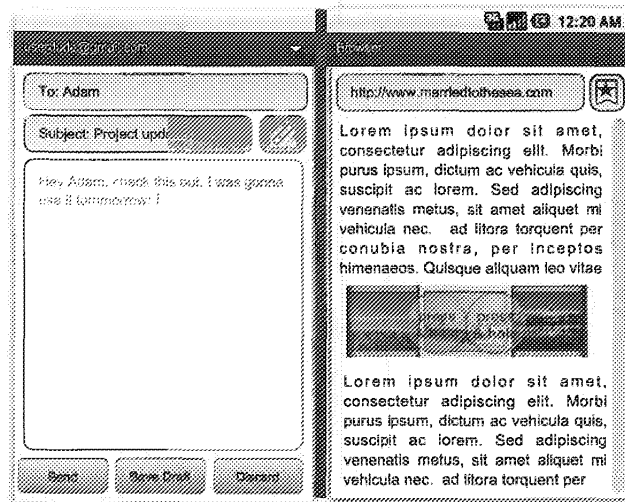
3.3.3.2 :: Drag and Drop Text Message



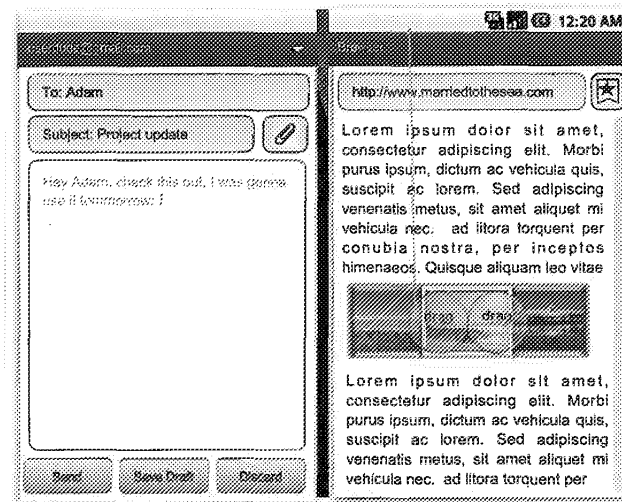
The image has been dropped into the email.

3.3.4 :: Drag and Drop to the Clipboard

3.3.4.1 :: Drag and Drop to the Clipboard

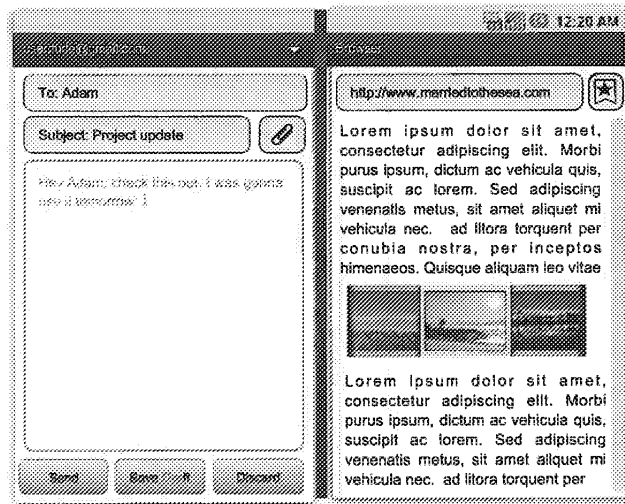


The user presses and holds on an image with two fingers.

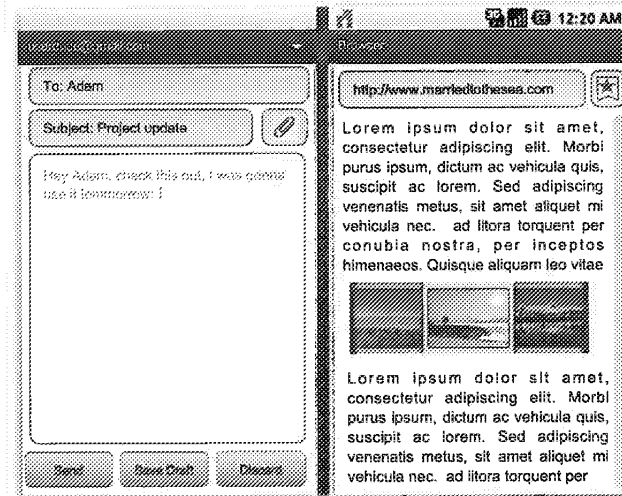


The image is now in 'drag' mode, and can be dropped into a target. As the user moves the message around, acceptable targets will be highlighted. The user drags the image to the annunciator bar.

3.3.4.2 :: Drag and Drop to the Clipboard

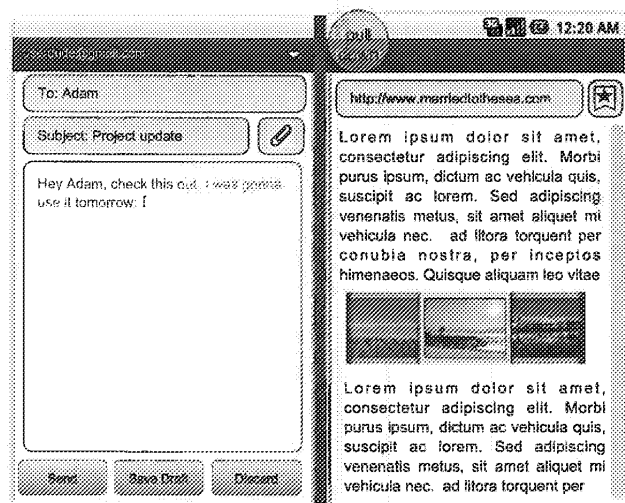


The annunciator bar is highlighted as an acceptable drop zone. The user drops the image.

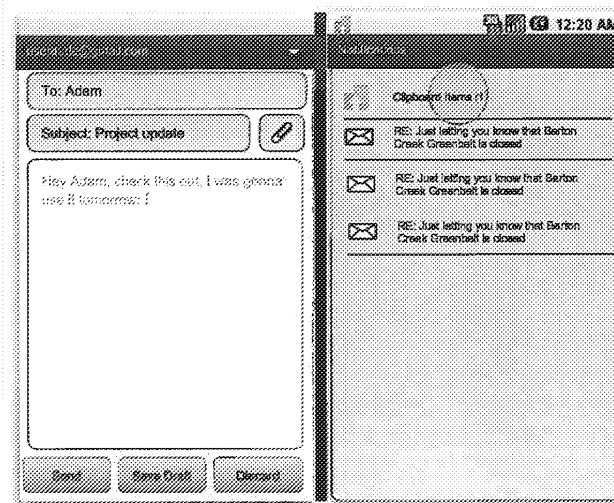


An icon appears in the annunciator bar to indicate items have been copied to the Universal Clipboard.

3.3.4.3 :: Drag and Drop to the Clipboard

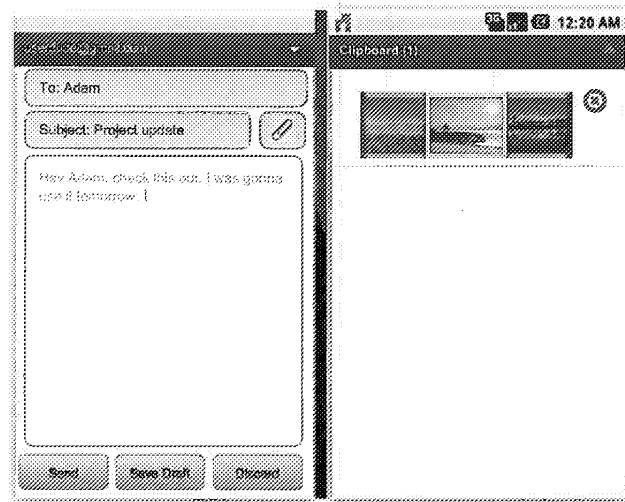


The user pulls down the annunciator bar.



The first item in the annunciator bar is a link to the Universal Clipboard. This link displays the number of items currently in the Clipboard. The user taps the link.

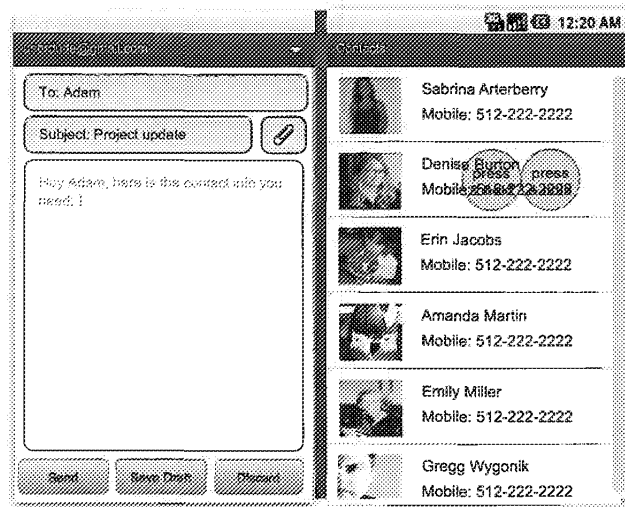
3.3.4.4 :: Drag and Drop to the Clipboard



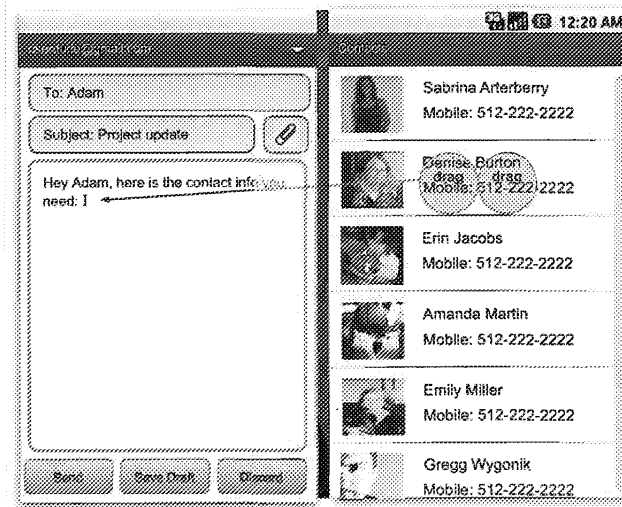
The Universal Clipboard is displayed.

3.3.5 :: Drag and Drop Smart Items

3.3.5.1 :: Drag and Drop Smart Items

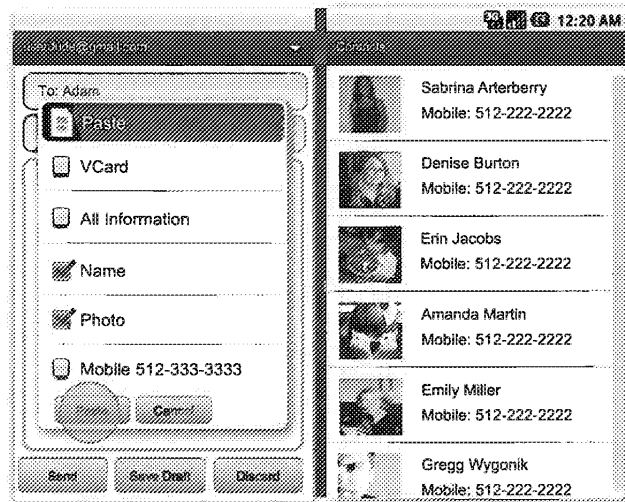


The user presses and holds on a contact with two fingers.

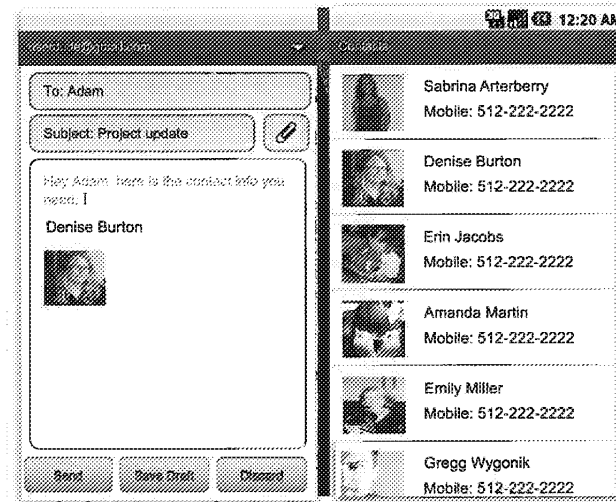


The contact is now in 'drag' mode, and can be dropped into a target. As the user moves the message around, acceptable targets will be highlighted. The user drags the contact to the compose field of the email.

3.3.5.2 :: Drag and Drop Smart Items



Because the user is dragging and dropping a smart object, once the item is dropped to the target, the user will have additional options for pasting. The contact can be pasted into the field, or the user can select just a subset of information to paste. In this case, the user has selected only name and photo. If the user had selected 'all information', all of the field level information selections below it would be disabled. Tapping 'paste' pastes the selections, while tapping 'cancel' cancels the paste.



The name and image have been pasted into the compose field of the email.

Psychology for Health Care Professionals

3.4.1 :: Universal Clipboard Rules

How is the Universal Clipboard invoked?

The Universal Clipboard can be invoked via pasting an item. The user presses and holds in a field, document, etc., which displays a menu with an option to paste from the Clipboard. The Clipboard is displayed, and the user can then drag items into the target into specific positions, or can tap a Clipboard item to insert it at the current cursor position.

The Clipboard can also be accessed in the Main Menu. Opening the Clipboard from the Menu displays the Clipboard on the screen from which it was invoked. The user can then grab items from the clipboard to insert into fields, documents, etc. Users can also manage items in the Clipboard when accessed in this manner.

The last way the Clipboard can be invoked is via the shortcut on the annunciator bar. There is a persistent 'clipboard' item in the annunciator which displays the number of items in the Clipboard. Users can tap this item to display the Clipboard.

What is displayed on the Clipboard, and for how long?

Anything that has been copied from a field, document, etc. as well as anything that has been dragged and dropped into the annunciator is displayed on the Clipboard.

Hierarchy of what is displayed on the Clipboard:

There is a hierarchy of items displayed on the Clipboard. The last item copied is always displayed in first position on the Clipboard. Next, are any items that have been 'pinned' to the Clipboard by the user. Next, every item that has been copied to the Clipboard is displayed in chronological order, from most recent to least recent. There should be a time period after which items 'expire' and then drop off the Clipboard. The Clipboard is not intended to permanently hold items.

Managing the Clipboard

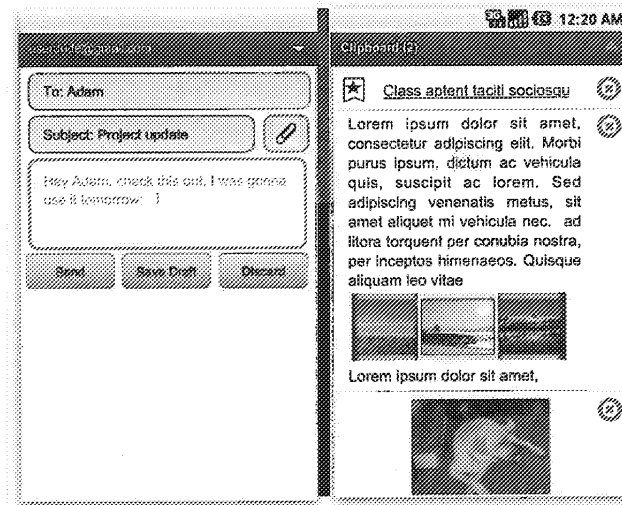
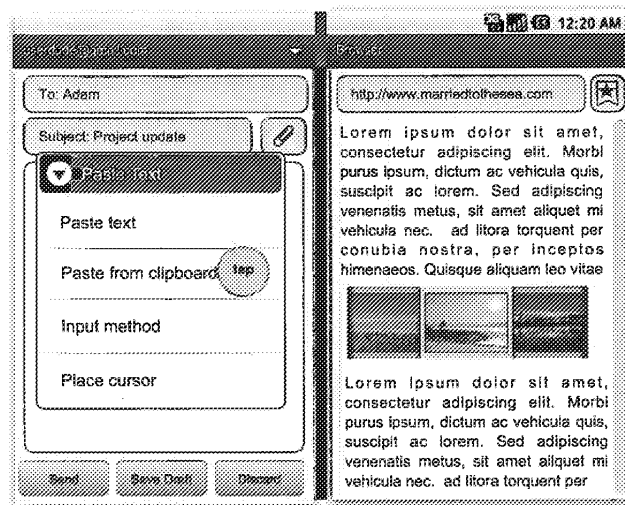
Users may remove any item from the clipboard. In 'manage' mode, users may multi-select to delete many items at once.

In 'manage' mode, users may 'pin' items to the Clipboard. Pinning items permanently holds those items on the clipboard until the user removes them. These items are not subject to expiration rules. Users may also multi-select to pin many items at once.

In 'manage' mode, users may select items to 'save as...', which provides differing functionality depending upon the items selected. For example, if a user had selected text and image items from the Clipboard, they could choose to save those items to a Word doc or a pdf, which would create a document containing the selected items. Users could also choose to create a new email or text message into which the selected items are automatically placed. Lastly, users could choose to place a group of items into a folder, which would appear in the Universal File Manger.

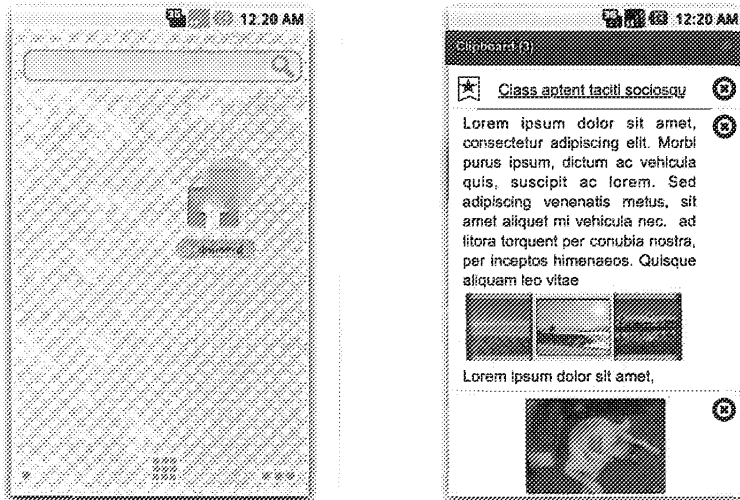
3.4.2 :: Invoking the Universal Clipboard

3.4.2.1 :: Invoking the Universal Clipboard



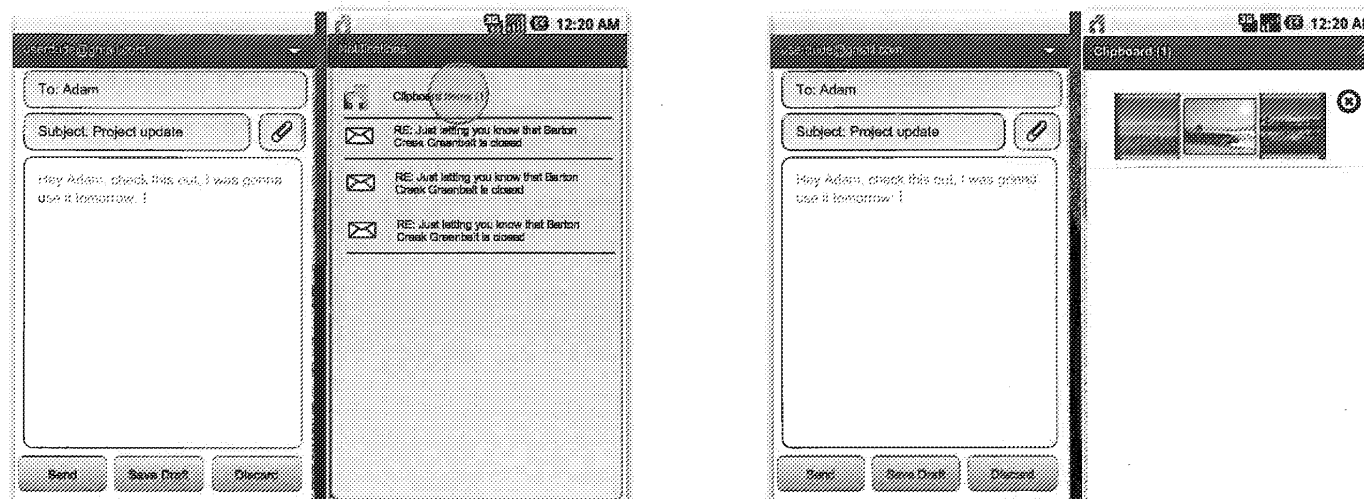
When pasting an item, selecting the option to 'Paste from clipboard' will display the Universal Clipboard.

3.4.2.2 :: Invoking the Universal Clipboard



The Universal Clipboard can be accessed from the Menu or Phonetop.

3.4.2.3 :: Invoking the Universal Clipboard



The Universal Clipboard can be accessed via selecting 'Clipboard items' from the Notifications menu in the annunciator bar. The Clipboard can also be displayed in single screen mode. The interaction is the same as in dual screen.

3.4.3 :: Managing the Universal Clipboard

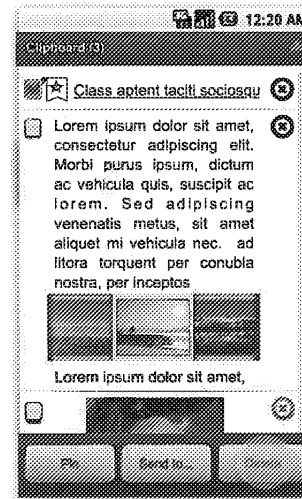
3.4.3.1 :: Managing the Universal Clipboard



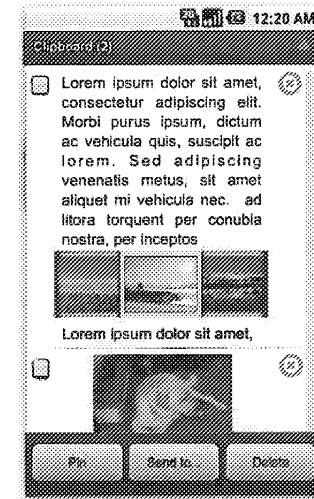
The user presses the menu key.



A menu is displayed with 'Manage' option. User taps 'Manage'. The 'Clear All' option in this menu removes any item from the Clipboard that is not pinned. The 'Settings' option allows users to adjust settings for things like max number of items in Clipboard, etc.



The Clipboard is now in manage mode. Users can pin, save as..., and multi select delete items. User selects the first link and then taps 'Delete'.



The link has been removed from the Clipboard.

3.4.3.2 :: Managing the Universal Clipboard



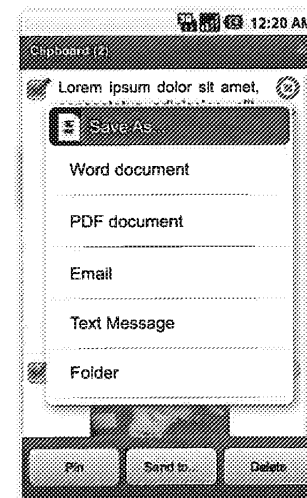
The user selects another item and then taps 'Pin'.



The pinned item is displayed with a visual indication that it has been pinned to the clipboard. This item will not be deleted because it has expired, and will appear at the top of the clipboard.



The user selects two items and taps 'Save As...'.

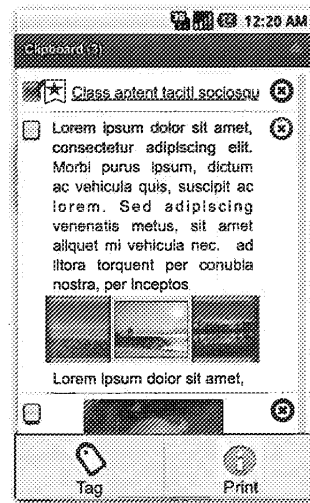


A menu is displayed which provides differing functionality depending upon the items selected. In this example, they could choose to save those items to a Word doc or a pdf, which would create a document containing the selected items. Users could also choose to create a new email or text message into which the selected items are automatically placed. Lastly, users could choose to place a group of items into a folder, which would appear in the Universal File Manager.

3.4.4 : Additional Actions

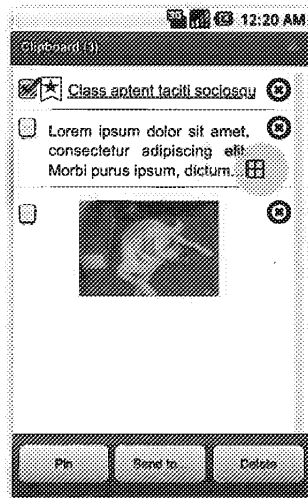


The user presses the menu key.

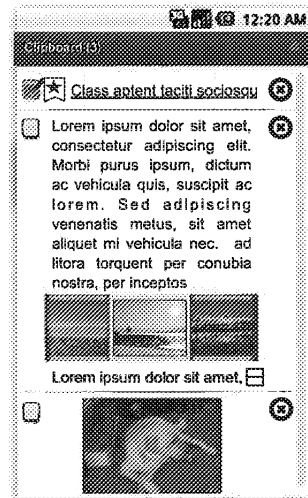


Additional actions are displayed in the menu.

3.4.5 :: Truncating Copied Items



In the event the user copies a large amount of text to the clipboard, it may be necessary to truncate it in the Clipboard display. A truncated version of the item would be displayed on the Clipboard, along with an expand icon. Tapping the expand icon would display the entire item.



Pressing the collapse icon would return the item to the truncated view.

3.5 :: Manage

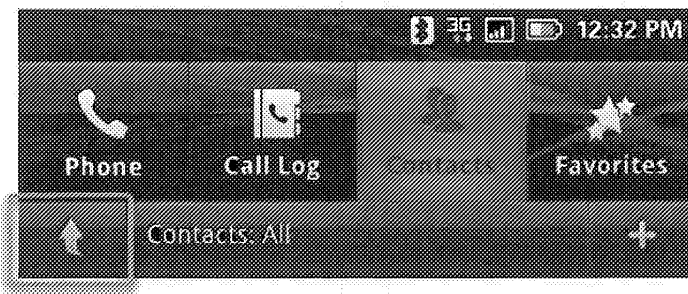
Manage & Create

3.5.1 : Overview

Content and Task Management, Data Organization, Experience Customization, Personalization, Data Creation

In the current Android experience, there is functionality available for user customization and management—however considering both the opportunities in the dual screen experience and the needs of the prosumer audience, the UI must provide for a more robust, richer experience.

Easily accessible from the "home" application screen, or simply by maximizing the application such as in Maps or Browser—a control panel view surfaces both management and organizational functionalities that provide familiar defaults as well as being scalable to support user customizations that were previously hidden in menus.



Users can access the control panel through the "up" arrow icon contained in app headers.

3.5.1 :: Manage

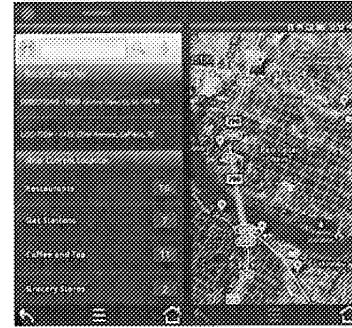
3.5.2.1 :: Manage :: Application Examples



Email
The control panel view within email enables users to access and view accounts and the folders associated with all and each account.



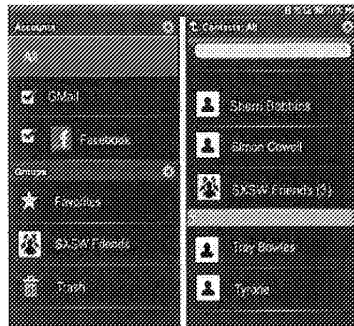
Calendar
The control panel view enables users to access and view accounts and the custom calendars they have created. They may also use the "+" controls displayed inline to add accounts or create new custom calendars.



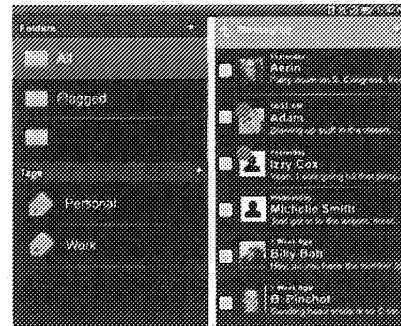
Maps
In the Maps application, the control panels surfaces search functionality, enables users the access recent searches, and quickly search for places or services near the current location shown in the map on the right.



Browser
The browser window moves to the right exposing the functionality and management features associated with it—URL Bar, Bookmarks, History, and possibly open pages or tabs—on the left in the Control Panel view.



Contacts
Accounts and Folders enable users to customize their contacts view and organize contacts into groups or flag them as favorites.

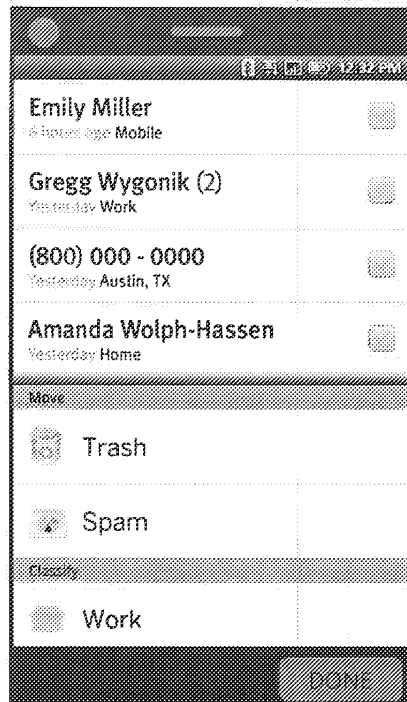


Messaging
In messaging, users can organize threads in folders or tag them,

For additional examples see:
2.1.5 Example Application Flow :: Email
2.1.5 Example Application Flow :: Contacts
2.2.2 Example Application Flow :: Maps
2.3.2.1 Example Application Flow :: Browser

In the Appendix Document:
Messaging Home Flow 2

3.5.2.2 :: Manage :: Single Screen



Split screen control panel management view
Note: The visual and design is TBD. This will be explored further in phase 2.

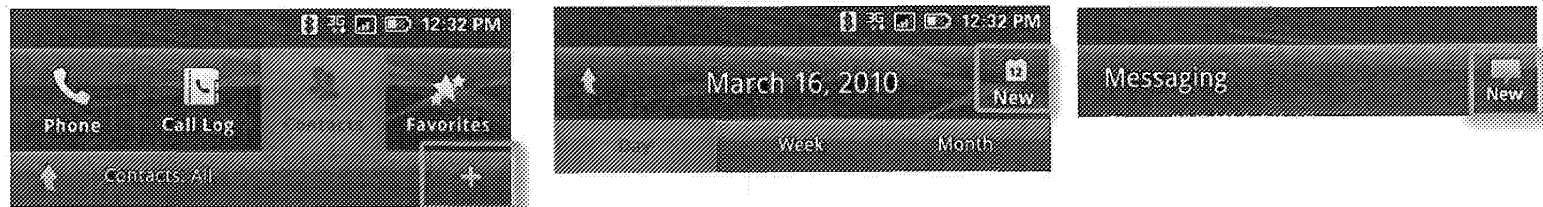
However, a possible single screen solution for management while maintaining the robust aspects of organization and customization would be to incorporate both the control panel and the content view in scrollable split panels.

3.5.2 :: Create

3.5.3.1 :: Create

Create: Create a New Calendar Event, Compose an SMS or Email, Add a New Contact, Add an Account

Again, easy access promotes task completion. The ability to create in various contexts is promoted through a consistently placed icon included in the screen header.

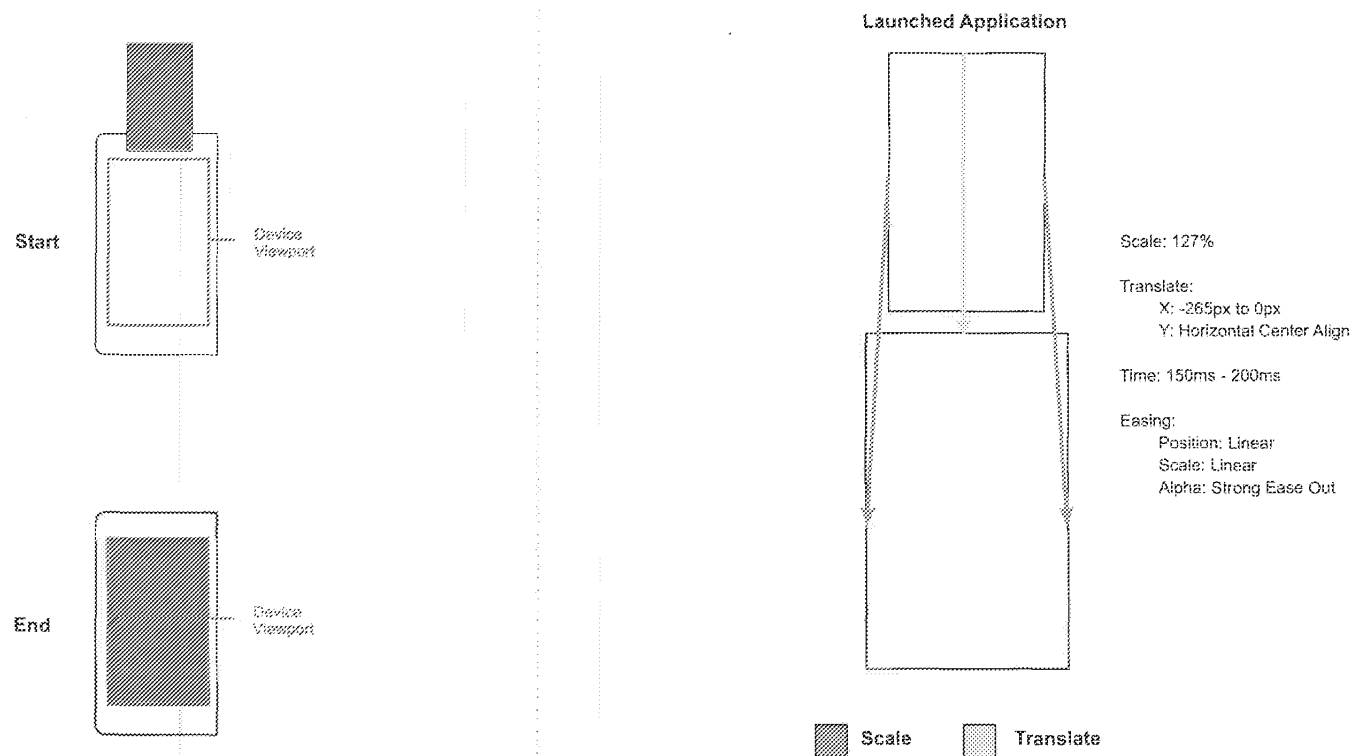


For additional examples the Appendix Document:
5.1.1.2 Contacts :: Create Group and Send Group SMS

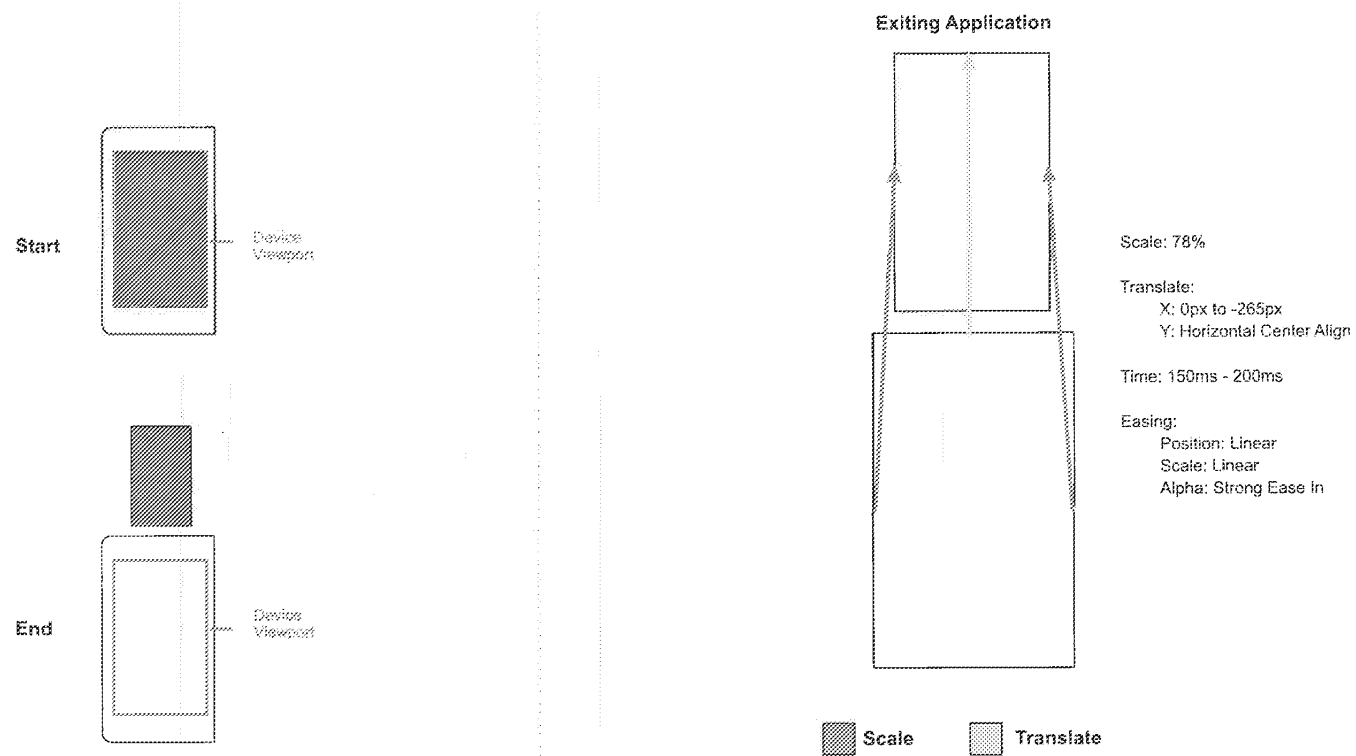
4 :: TRANSITIONS & GESTURES

4.1 Application Launch/Exit

4.1.1 : Application Launch

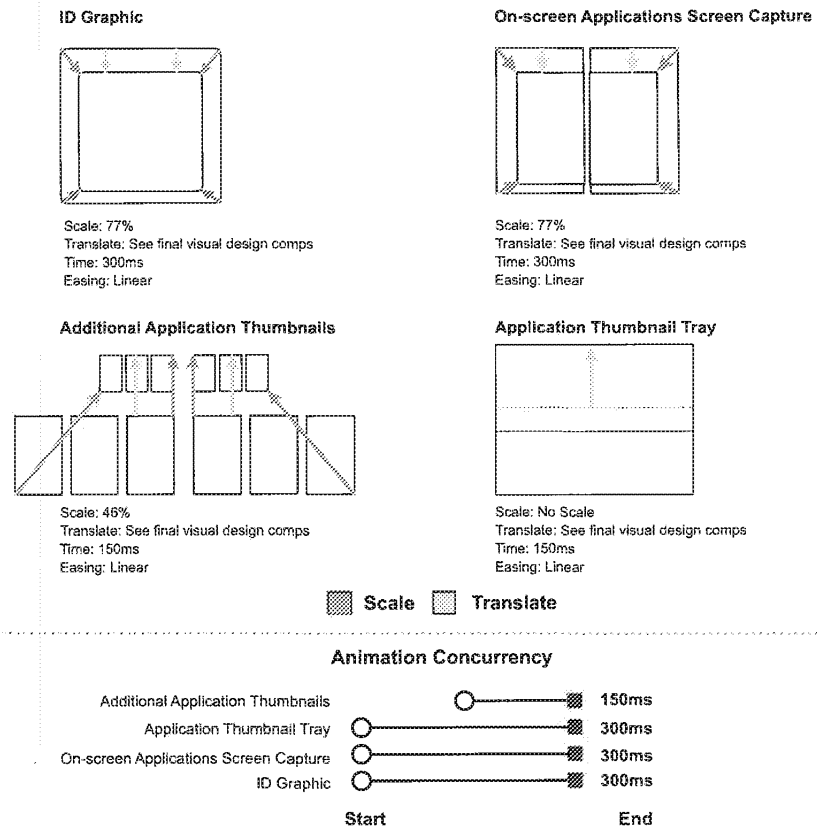
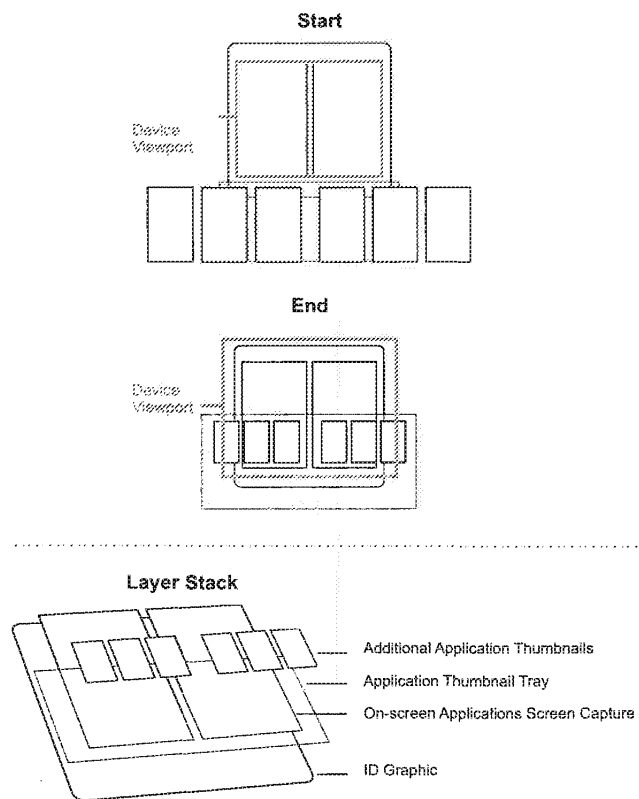


4.1.2 :: Application Exit

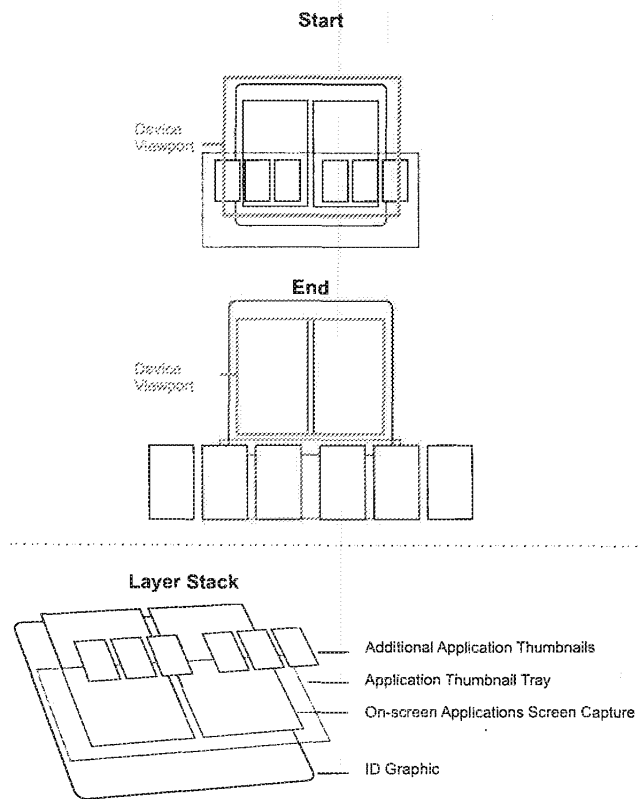


4.2 Application Manager Launch/Exit

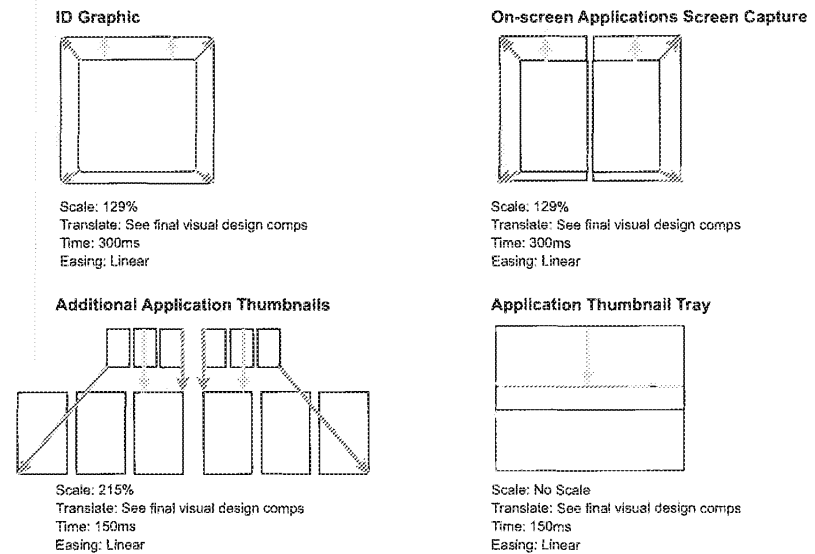
4.2.1 :: Application Manager Launch



4.2.2 : Application Manager Exit



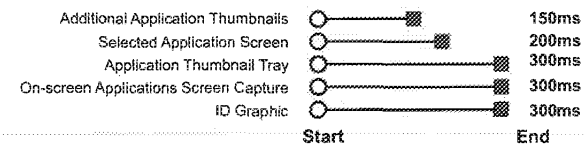
Therese Ann B. Boudreau, M.D., M.Sc., is an associate professor of medicine and a senior research advisor at the University of Toronto, Canada.



 Scale **Translate**

Animation Concurrency

Note: If an application is selected to replace an existing application, the new application truncated will move to the output of the desired screen (highlighted) and system to match the expansion of the "On-screen Applications Screen Capture" upon opening of the "Selected Application Screen" screen. This will give the impression of the screen being "changed" by the expanding ID Graphic before then "telling the screen, Set Focus animation.



2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811 2812 2813 2814 2815 2816 2817 2818 2819 2820 2821 2822 2823 2824 2825 2826 2827 2828 2829 2830 2831

4.3 Gestures

4.3.1 :: Device Gesture Language

We are trying to limit the overall number of gestures in the system to avoid cognitive overload. Tap, Double Tap, Long Press, Drag, and Flick are standard Android gestures. We are introducing three new gestures, Swap, Spread, and Pin & Drag to support advanced windowing actions in the capacitive area above the screen. We are adding Two Finger Long Press and Two Finger Drag to support drag and drop in the screen.

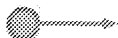
Our term	Symbol	Definition*
Tap		Fired after first tap, but before timeout of double-tap check, and is confirmed after timeout of double-tap passes without a second press
Double Tap		The first down event of a gesture after a user has already single-tapped, and release is confirmed.
Long Press		When a press event is held for a specific amount of time (.5s - 1.65s)
Two Finger Long Press		Initiate copy/paste mode (See Drag and Drop documentation for behaviour implementation)
Drag		Press, move, and release longer than a certain time threshold
Two Finger Drag		Press with 2 fingers, move, and release longer than a certain time threshold
Flick		Press, move, and release within a certain time threshold
Pinch		Multi-touch - drag 2 fingers together <i>See Gesture_Swap.fx for more details</i>
Spread		Multi-touch - drag 2 fingers apart <i>See Gesture_Spread.fx for more details</i>
Pin & Drag		Multi-touch - hold one finger down and drag with the other finger left or right.

Custom Name	Nearest One	Moto Droid	Android Core Event(s)
Tap	Touch	Touch	Single Tap Confirmed
Double-Tap	Double-Tap	Double-Touch	Double Tap Event (Up Event)
Press and Hold	Touch and Hold	Touch and Hold	Long Press
Flick	Swipe	Flick	Fling
Drag	Slide	Drag	Scroll

4.3.2 :: Gesture Language for Window Positioning

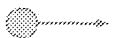
The following are used in the capacitive area **above** the screen (in portrait).

Drag



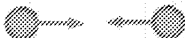
Dual Mode: Move card(s) to the left or right or extend a dual-screen app.
Long drag moves 1-2.5 cards, or maximizes, then minimized dual-screen app.
Single Mode: View the next card in the "stack."

Flick



Dual Mode: Fling one card left or right.
Single Mode: View the next card in the "stack."

Pinch



Dual Mode: Swap the left and right cards. *See Gesture_Swap for more details.*
Single Mode: Swap the first and next card in the "stack."

Spread



Dual Mode: Open Application Switcher. *See Gesture_Spread for more details.*
Single Mode: Open Application Switcher.

Pin & Drag



Dual Mode: Pin card on one side, move cards from under that card to other side or move cards from other side under that card.
Single Mode: Disabled.

The following are used in the capacitive area **below** the screen (in portrait).

Tap



Dual Mode: Select and perform action.
Single Mode: Select and perform action.

Long Press



Dual Mode: Perform alternate action. E.g. Press and hold Menu to open the keyboard, Press and Hold Home to open the Application Switcher.
Single Mode: Same as above, only opens single screen version of App Manager.

5 :: ORIENTATION GUIDELINES

5.1 : Orientation Change Guidelines

In an effort to make the dual-screen landscape mode of the mobile device a unique, market-differentiating, "red-thread", we have gone through many exploratory phases. We have kept the following core principles in mind: simplicity, a crafted experience, intuitive interactions, and features that make sense. We have adopted the "gravity" functionality requested by the client into frog's viewpoint, and have come up with the following guidelines.

First and foremost, landscape mode is meant to be used *only* as a "special view" for dual-screen applications *only in dual-screen mode*. This concept immediately pushes the device past what is currently available in other phone devices. This guideline, however, does not exclude a dual-screen application to use a single-screen landscape view, but that should only be done when appropriate (video player, camera/photo app). One of the most common points for use of single-screen landscape mode on current devices is a wider keyboard. However, our device will have a much richer keyboard enabled in dual-screen portrait mode—coupled with being able to see the context in which the user is engaged—than what is possible with Android by default which fills the landscape screen with keyboard and non-contextual text-entry field.

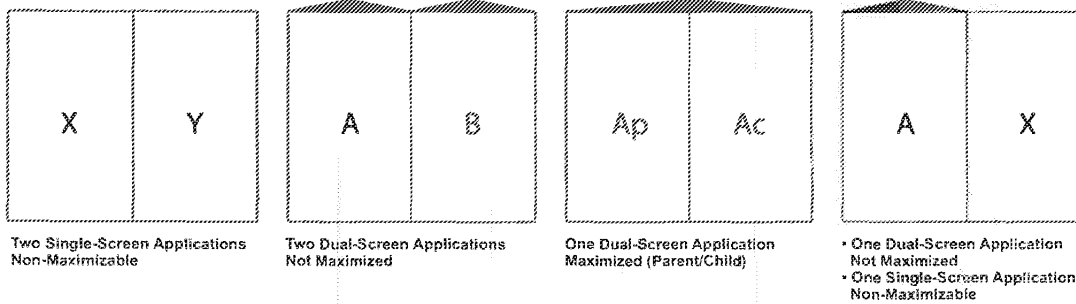
Secondly, navigation in dual-screen landscape mode is limited to a combination of what was on the user's screens prior to rotation, and which application is "on top" after rotation. For example, if there is a single, dual-screen application expanded across both screens when the user rotates the device, then the user can only navigate within the dual-screen landscape special views of this single application; if there are two dual-screen applications — non-expanded — on the screen prior to rotation then the user can navigate only within the application that is "on top" after rotation and gravity kicks-in. While this seems limiting, what this does is two-fold: it reinforces the uniqueness of the mode, and it removes possible confusion from the user as to what other applications are which direction from the current view, which application model is being used in each application, and a reversal of navigation direction upon entering certain application models. This potential for confusion is further increased should a user could walk away from the device for an extended period of time and have to think about not only where applications are, but also about which orientation the device is in to use as a spacial-model compass (the orientation changes the perceived location of other apps to the current one by having to think about how did right/left translate to up/down). Should an application that ends up on top not be dual-screen expandable, the bottom application does not become inactive. Should that bottom application be a dual-screen landscape capable application with text-entry abilities, tapping an editable text area in this app will slide the application to the top screen, place it in its special landscape view, and show the keyboard. This does not allow the user to use the full special landscape mode navigation however; closing the keyboard will return the application to its single-screen mode.

A side-effect of the limited navigation is the non-need for the Application Manager in the dual-screen landscape view. The user cannot jump outside of the one, possibly two, applications they have on-screen, therefore showing others doesn't make sense.

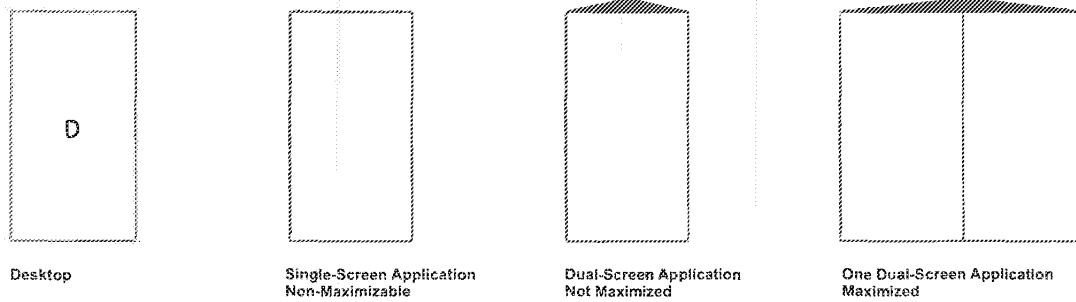
These two guidelines and all associated side-effects, have the benefit of allowing "gravity" to take effect during orientation change while keeping the experience simple and intuitive. All of these features based on model exploration combine to show that the experience has been crafted and meant to be the way it is. Additionally, this allows for future expansion easier than future contraction of feature set. Developmentally, these guidelines allow for only having to code for two orientation views (portrait single/dual, and landscape dual), not three (landscape single).

5.1.1 : Orientation Change Guidelines Legend

Legend

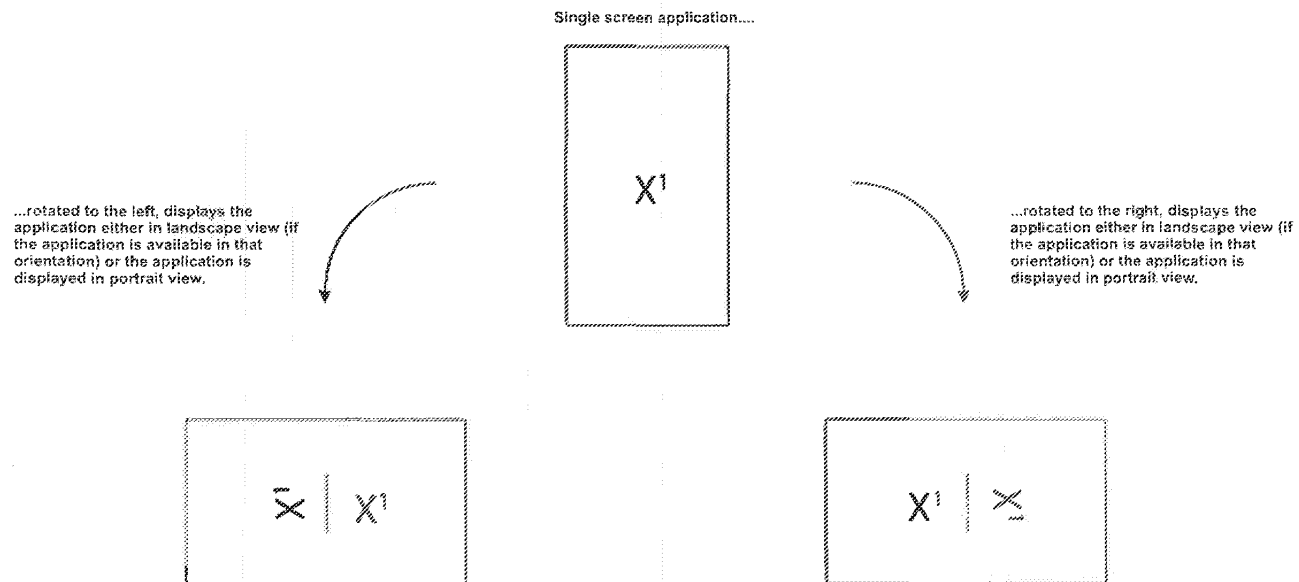


Examples



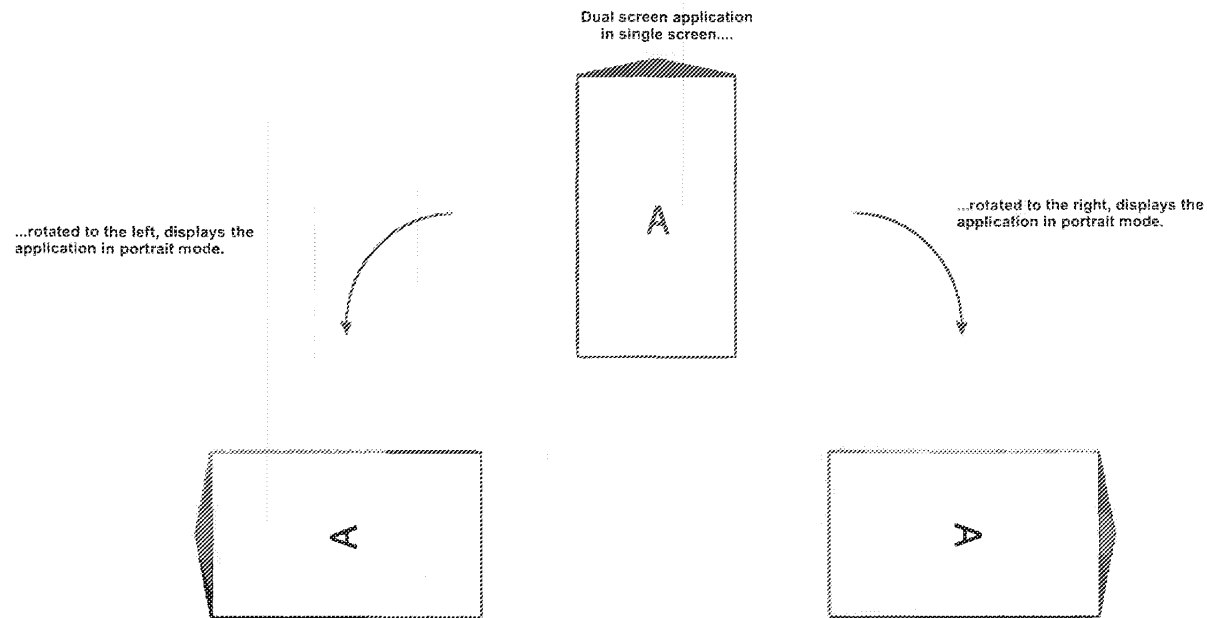
5.2 :: Orientation Change Guidelines :: Single Screen Mode

Single Screen Mode: Single Screen Application



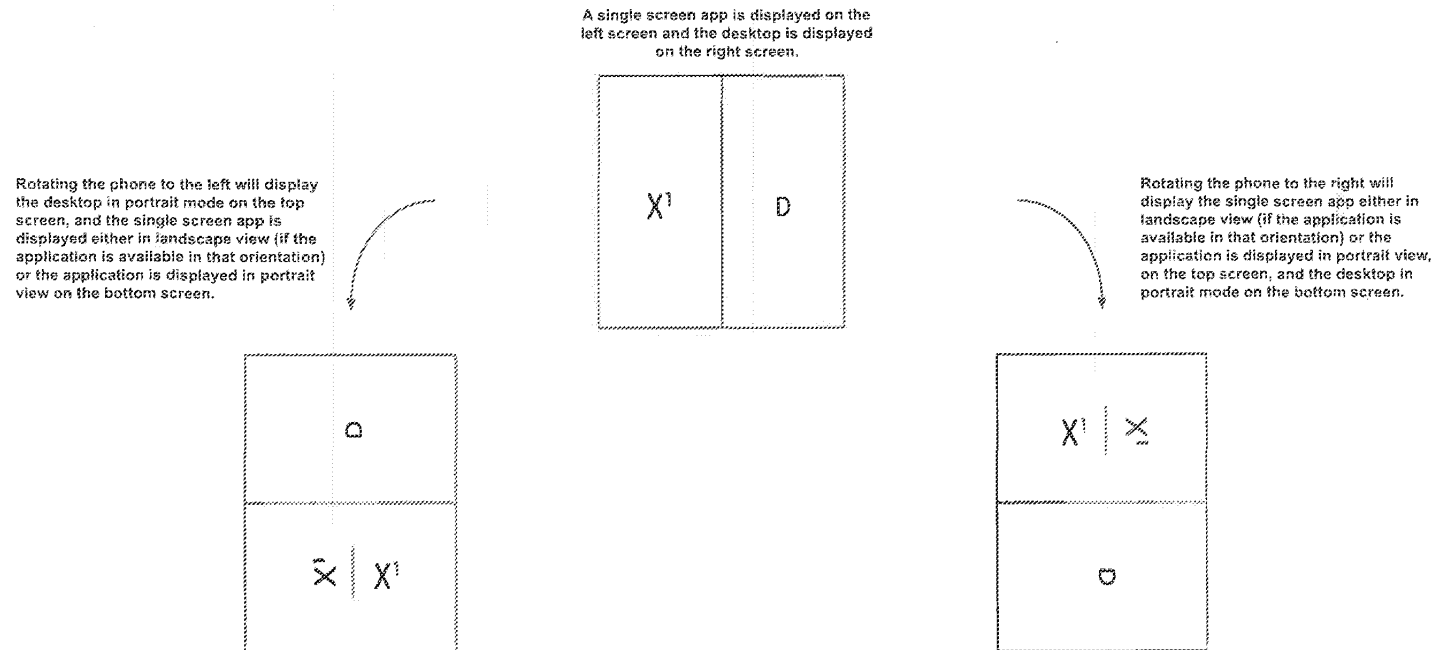
5.2.1 :: Orientation Change Guidelines :: Single Screen Mode

Single Screen Mode: Single Screen Application



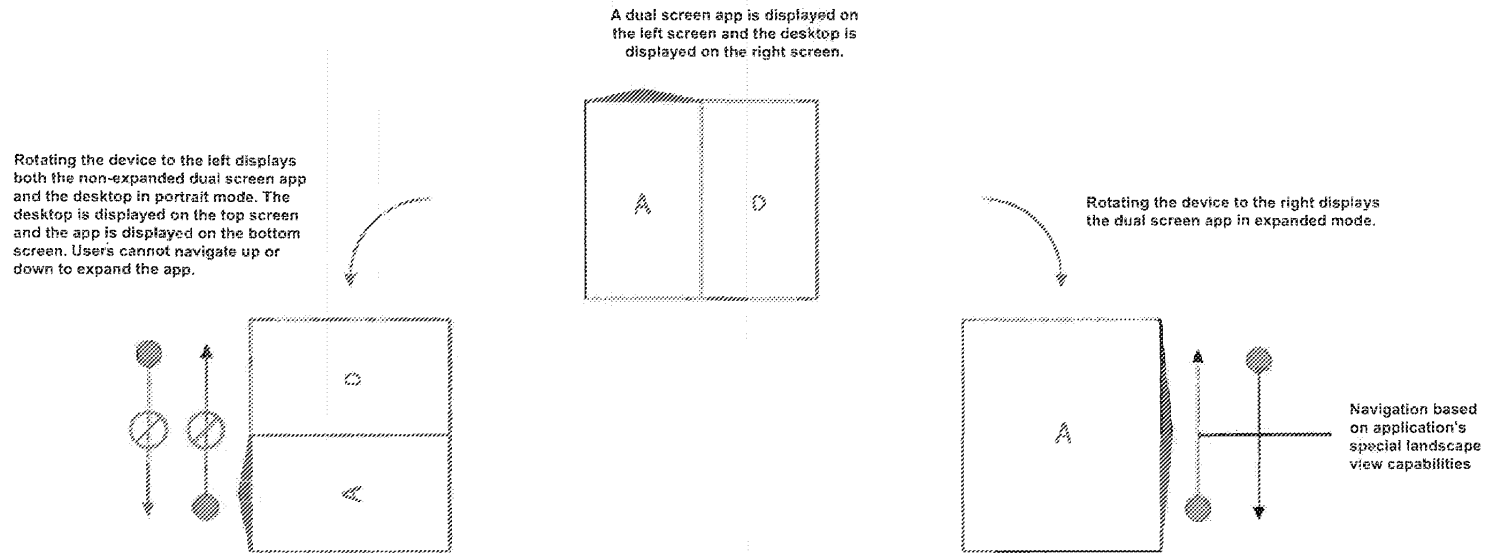
5.3 :: Orientation Change Guidelines :: Dual Screen Mode

Dual-Screen Mode: Single Screen Application and Desktop



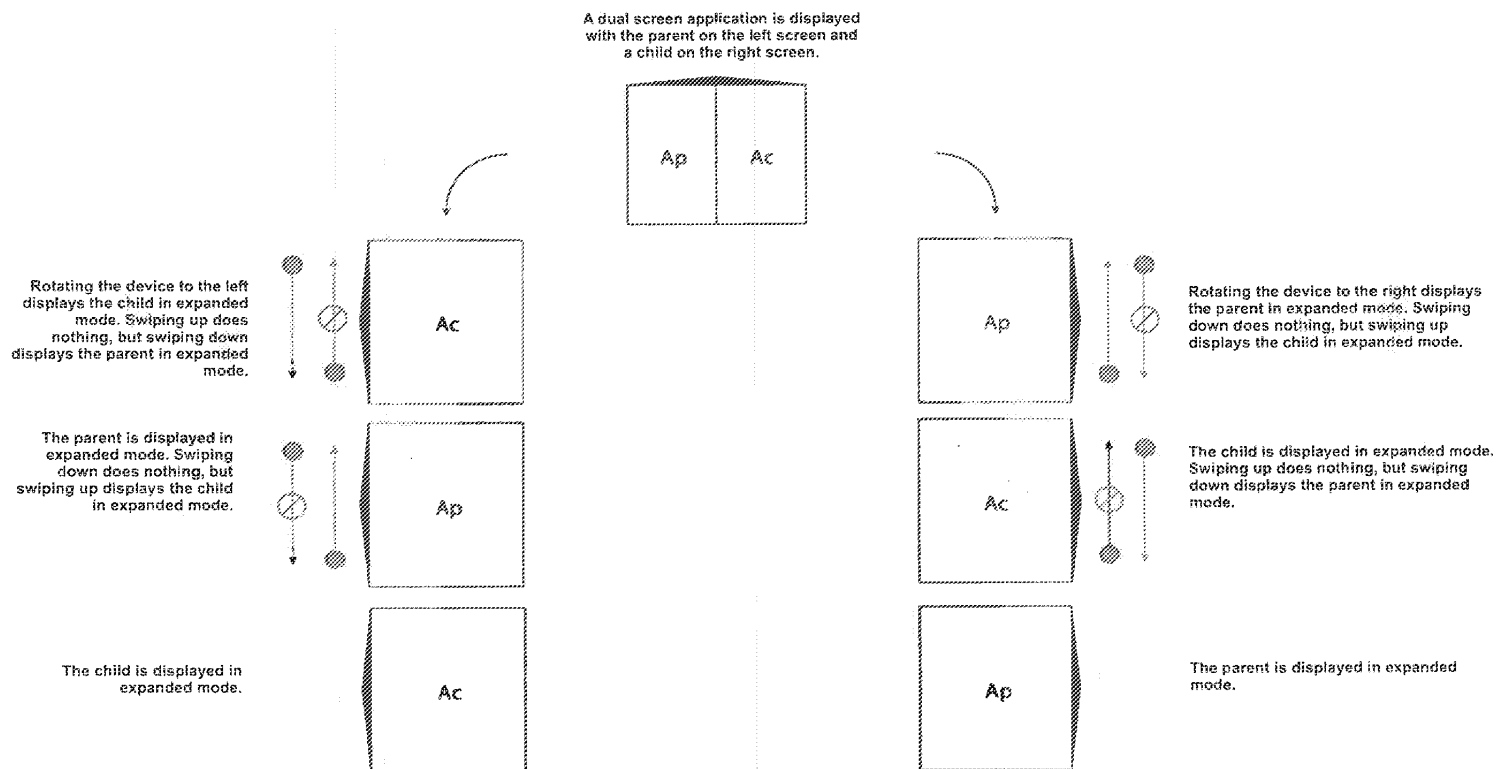
5.3.1 :: Orientation Change Guidelines :: Dual Screen Mode

Dual-Screen Mode: Dual-Screen Application (Not Maximized) and Desktop



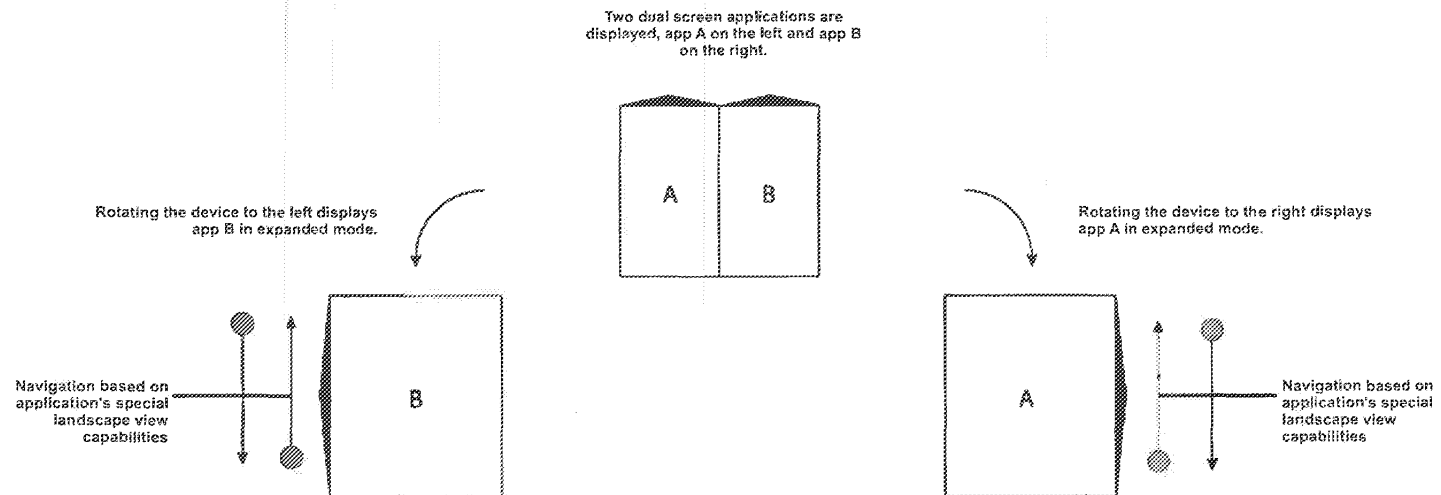
5.3.2 :: Orientation Change Guidelines :: Dual Screen Mode

Dual-Screen Mode: One Dual-Screen Application (Maximized, Parent/Child)



5.3.3 :: Orientation Change Guidelines :: Dual Screen Mode

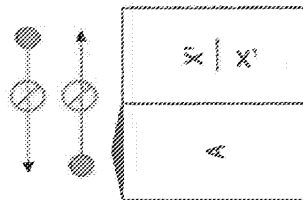
Dual-Screen Mode: Two Dual-Screen Application (Not Maximized)



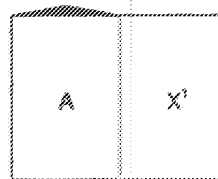
5.3.4 :: Orientation Change Guidelines :: Dual Screen Mode

Dual-Screen Mode: One Dual-Screen Application (Not Maximized), One Single Screen Application

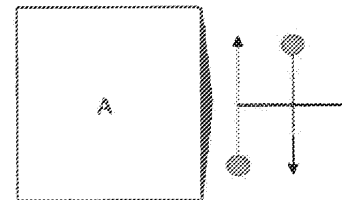
Rotating the device to the left displays the single screen app in landscape or portrait mode on the top screen and displays the dual screen app in portrait mode on the bottom screen.



One dual screen app is displayed on the left and a single screen app is displayed on the right.



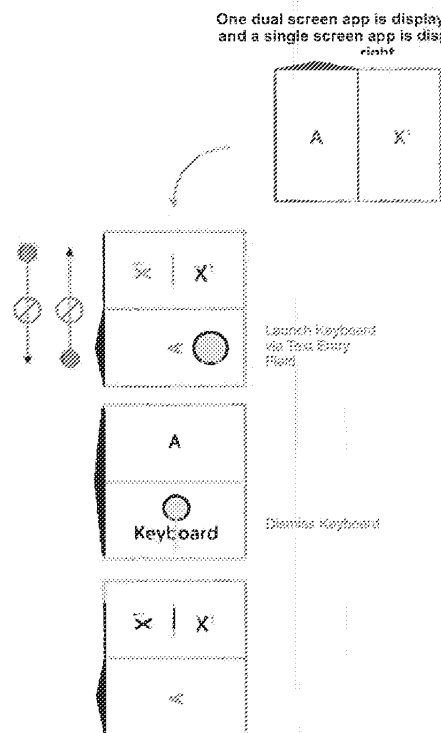
Rotating the device to the right displays the dual screen app in expanded mode.



Navigation based on application's special landscape view capabilities

5.3.5 : Orientation Change Guidelines : Dual Screen Mode

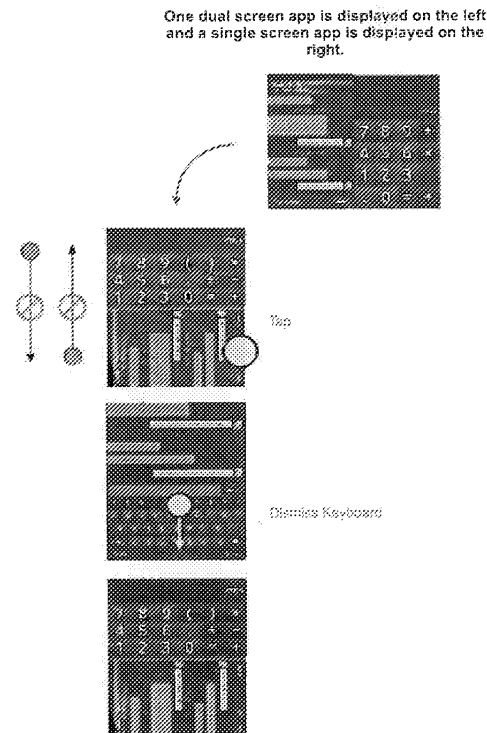
Dual-Screen Mode: One Dual-Screen Application (Not Maximized), One Single Screen Application Keyboard Usage for Dual-Screen Application, Not Focused



Rotating the device to the left displays the single screen app in either landscape or portrait view on the top screen and displays the full screen app on the bottom screen. The user cannot navigate up or down. User launches the keyboard in the full screen app by tapping a text entry field.

The dual screen app is now displayed in expanded mode, with the keyboard displayed on the bottom screen. The user dismisses the keyboard (via swipe down, back hard-key, etc)

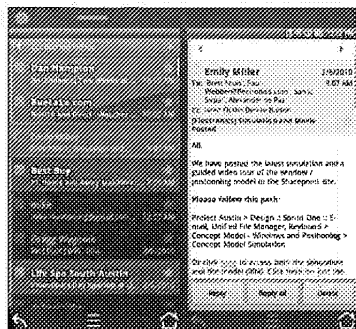
The single screen app is displayed in either landscape or portrait view on the top screen and the full screen app is displayed on the bottom screen.



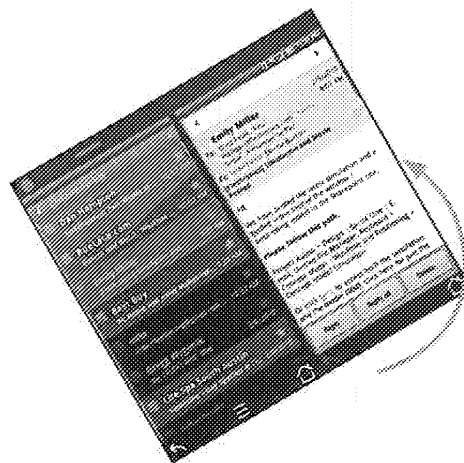
5.4 :: Orientation Change :: Application Examples

Email, Maps & Browser

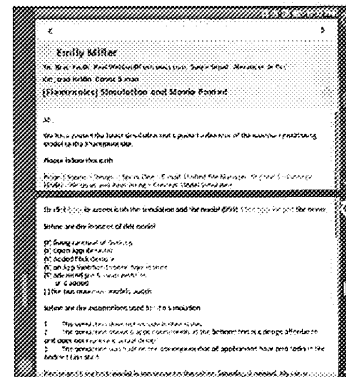
5.4.1 :: Orientation Change :: Email



The inbox view transitions back to the left taking the parent position in the left screen, followed by the email read view which comes to rest on the right child position.

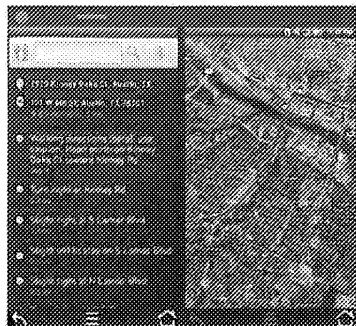


The user turns the phone to landscape view by turning the device counter clockwise (or clockwise).



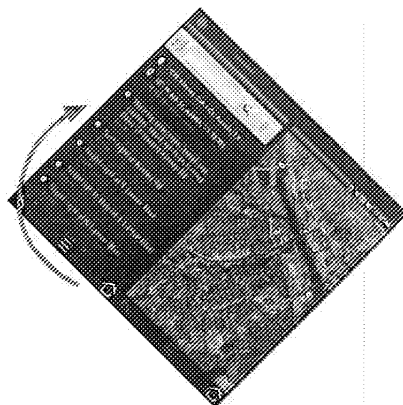
The email auto-expands to fill the full landscape view. Drag down on the capacitive strip brings down the inbox view.

5.4.2 :: Orientation Change :: Maps

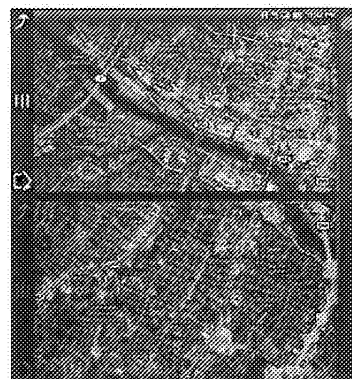


The left is a text view of the directions, the right is a map view of the directions.

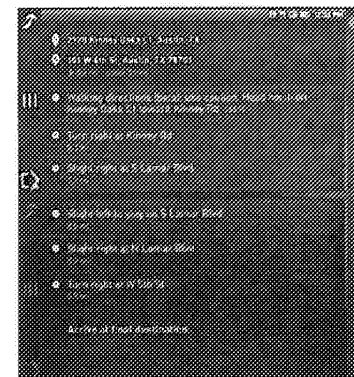
(see Parallel View Model)



The user turns the phone to landscape view by turning the device clockwise (or counter clockwise).

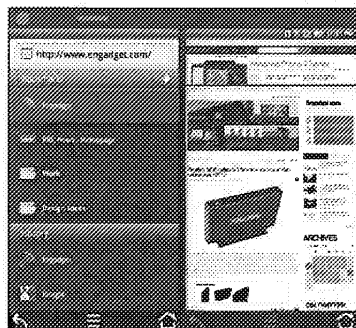


The map auto-expands to fill the full landscape view. Drag down on the capacitive strip brings down the directions view.

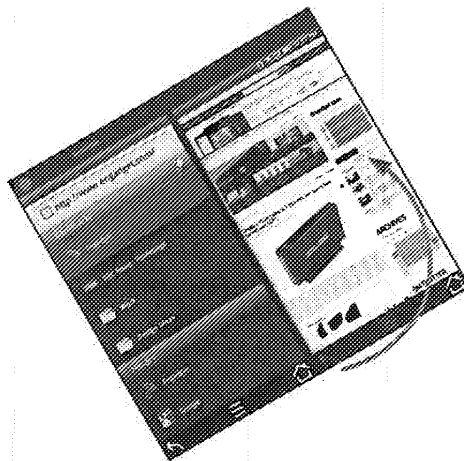


Drag up the capacitive strip will bring back up the map view.

5.4.3 :: Orientation Change :: Browser



Control panel shown in left and browser in right.

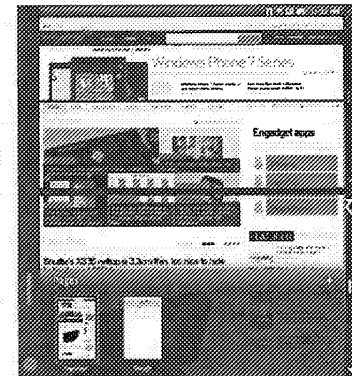


The user turns the phone counter clockwise (or clockwise).



The browser window/webpage view expands to fill both screens in landscape orientation.

The Pages bar (similar to tabs in a browser) is displayed along the bottom of the bottom screen. The user can tap the bar or slide it up.



Tap on the bar causes it to slide up providing access other pages or tap the "+" control to open a new tab/window.

Thanks



Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		DUAL DISPLAY WINDOWING SYSTEM		
First Named Inventor/Applicant Name:		Sanjiv Sirpal		
Filer:		Robert G. Crouch/Maureen Sileo		
Attorney Docket Number:		50224-00730 (CD 000016)		
Filed as Large Entity				
Provisional Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Provisional application filing	1005	1	220	220
Pages:				
Prov. Appl Size fee per 50 sheets >100	1085	2	270	540
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				760

Electronic Acknowledgement Receipt	
EFS ID:	8547403
Application Number:	61389000
International Application Number:	
Confirmation Number:	1009
Title of Invention:	DUAL DISPLAY WINDOWING SYSTEM
First Named Inventor/Applicant Name:	Sanjiv Sirpal
Customer Number:	25231
Filer:	Robert G. Crouch/Maureen Sileo
Filer Authorized By:	Robert G. Crouch
Attorney Docket Number:	50224-00730 (CD 000016)
Receipt Date:	01-OCT-2010
Filing Date:	
Time Stamp:	17:24:44
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$760
RAM confirmation Number	3366
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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This is not a USPTO supplied Provisional Cover Sheet SB16 form.					
Information:					
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