Some Real-World Uses of Visual Programming Systems

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What kinds of practical uses are people making of visual programming today in the real world? To find this out, we gathered information about users of visual programming systems. The information came in response to a newsgroup posting asking people to report their uses of visual programming, primarily in the form of e-mail directly from users. This information was supplemented with publicly-available written accounts of people using visual programming, newsgroup postings describing people's uses of visual programming, and queries to vendors. The raw data, sources of information, and numeric summary of the data are presented in this report. We have omitted the names of all individuals and companies unless the information was already in the public domain or we obtained permission to publish their identities.

We learned about uses of visual programming by a wide variety of people who use visual programming both at home and at work. These users are in large corporations, in small companies, in universities, in government, and in the military. More than half of these particular users use visual programming languages (VPLs), and the rest use visual programming environments for textual languages (VPEs). Table 1 contains information about these users, which systems they use, and whether they use it for general-purpose programming or for a domain-specific purpose intended by the system they are using.

The users listed in this report are using visual programming systems—both VPLs and VPEs—for many purposes. Examples include general-purpose programming to create custom software for clients, to create shrink-wrapped software that is sold off the shelf in computer stores, for small domain-specific projects such as creating screens and menus, and for large domain-specific projects such as visualizing the results of large scientific programs. Table 2 presents the specific uses being made of these visual programming systems.

Table 1: General Uses of Visual Programming Systems by Company

	Kind of organization			Type of system		How used			
Company[1]	big company or military	small company	university	VPL	VPE	general purpose programming	special purpose system used within its intended domain	system	source
a Canadian accounting firm	1			1		1		Prograph	e-mail from Prograph
a Canadian research lab	1			1		1		Prograph	e-mail response to survey
a Canadian researcher			1		1		1	AVS	e-mail response to survey
a Canadian TV station		1		1		1		Prograph	e-mail from Prograph
a car dealer		1		1		1		Prograph	e-mail from Prograph
a chemistry researcher			1		1	1		Visual Basic	e-mail response to survey
a college student			1		1	1		Visual Basic	e-mail response to survey
a commercial software firm in Australia		1		1		1		Prograph	e-mail response to survey
a company with field representatives	1			1			1	PhonePro	fax from Cypress Research Corp.
a computer hardware device manufacturer		1		1		1		Prograph	e-mail from Prograph
a consultant		1		1		1		Prograph	e-mail from Prograph
a consultant	1			1			1	LabView	e-mail response to survey
a custom software developer		1		1		1		Prograph	e-mail response to survey
a Danish research lab	1			1			1	LabView	e-mail response to survey
a financial analyst	1			1		1		Prograph	e-mail from Prograph

[1]All are U.S. companies unless otherwise specified.

a forestry products research firm in Canada	1			1			1	LabView	e-mail response to survey
a geography researcher in Hong Kong			1		1		1	AVS	newsgroup posting
a hearing researcher at a medical school			1	1			1	LabView	e-mail response to survey
a high-school teacher		1			1	1		Visual Basic	e-mail response to survey
a Japanese commercial software writer		1		1		1		Prograph	e-mail from Prograph
a lab	1			1			1	LabView	e-mail response to survey
a lab in The Netherlands		1		1			1	LabView	e-mail response to survey
a large aircraft manufacturer	1			1		1		Prograph	e-mail from Prograph
a large automobile manufacturer	1				1	1		Visual Basic	e-mail response to survey
a large cardiology practice		1			1	1		Visual Basic, Visual C++	e-mail response to survey
a large chemical firm	1				1		1	AVS	e-mail response to survey
a large company	1				1	1		Visual Basic	e-mail response to survey
a large company	1			1			1	LabView	e-mail response to survey
a large company	1			1		1		Prograph	e-mail from Prograph
a large company	1			1		1		Prograph	e-mail response to survey
a large computer firm	1			1			1	LabView	e-mail response to survey
a large equipment lab	1			1			1	LabView	e-mail response to survey
a large manufacturer	1			1		1		Prograph	e-mail response to survey

a large oil company	1				1		1	AVS	e-mail response to survey
a large UK oil company	1			1		1		Prograph	e-mail from Prograph
a management service company		1			1	1		Visual Basic	e-mail response to survey
a medical lab	1			1			1	LabView	e-mail response to survey
a medical products consultant in The Netherlands		1		1		1		Prograph	e-mail from Prograph
a medical products manufacturer		1		1			1	LabView	e-mail response to survey
a medical researcher in Japan			1		1		1	AVS	e-mail response to survey
a medical school			1		1		1	AVS	e-mail response to survey
a medical school			1		1		1	AVS	e-mail response to survey
a military R&D center	1			1			1	LabView	e-mail response to survey
a museum		1		1		1		Prograph	e-mail from Prograph
a national lab	1			1			1	LabView	e-mail response to survey
a one-man consulting firm		1		1			1	LabView	e-mail response to survey
a firm in Paris, France		1		1		1		PhonePro	fax from Cypress Research Corp.
a pharmacological lab in Norway			1	1			1	LabView	e-mail response to survey
a PhD student		1		1			1	TFLEX	e-mail response to survey
a physics researcher			1	1			1	LabView	e-mail response to survey
a power company	1			1		1		Prograph	e-mail from Prograph
a professor in a medical school			1	1		1		Prograph	e-mail from Prograph

a professor in the UK			1	1		1		Prograph	e-mail response to survey
a psychology researcher			1	1			1	LabView	e-mail response to survey
a radiation facility in France	1			1			1	LabView	e-mail response to survey
a Regional Bell Operating Co.	1				1	1		Visual Basic	e-mail response to survey
a researcher at a biological lab in Japan	1				1		1	AVS	e-mail response to survey
a researcher at Michigan Technological University			1		1	1		Visual Basic	e-mail response to survey
a researcher in Canada			1	1		1		Prograph	WWW page on Prograph
a securities trading firm		1		1		1		Prograph	e-mail from Prograph
a shareware author		1			1	1		Visual Basic	e-mail response to survey
a small company		1			1	1		Visual Basic	e-mail response to survey
a small company		1			1	1		Visual Basic	e-mail response to survey
a small company		1		1			1	LabView	e-mail response to survey
a small consulting firm		1		1		1		Prograph	e-mail response to survey
a small software firm		1		1			1	LabView	e-mail response to survey
a small software firm		1		1		1		Prograph	e-mail from Prograph
a space researcher lab			1	1			1	LabView & VEE	e-mail response to survey
a Swiss bank firm	1				1	1		Visual Basic	e-mail response to survey
a UK commercial software writer		1		1		1		Prograph	e-mail from Prograph
a UK commercial software writer		1		1		1		Prograph	e-mail from Prograph

a UK consumer electronics firm	1				1	1		Visual C++	e-mail response to survey
a university			1	1			1	LabView	e-mail response to survey
a university			1	1		1		Prograph	e-mail from Prograph
a university			1	1		1		Prograph	e-mail from Prograph
a university			1	1		1		Prograph	e-mail from Prograph
a university			1	1		1		Prograph	e-mail from Prograph
a university			1	1		1		Prograph	e-mail from Prograph
a university biological research lab			1	1			1	LabView	e-mail response to survey
a university in Belgium			1	1			1	LabView	e-mail response to survey
a university in Germany			1	1			1	LabView	e-mail response to survey
a university physics lab			1	1			1	LabView	e-mail response to survey
a university researcher			1		1		1	AVS	e-mail response to survey
a university researcher in Canada			1	1		1		Prograph	e-mail from Prograph
a vision research center in France	1			1			1	LabView	e-mail response to survey
a writer of educational software in Canada		1			1	1		Visual Basic	e-mail response to survey
Acme Mining and Software, a consulting firm		1		1		1		Prograph	e-mail from Prograph
Alaska Ididerod		1		1			1	PhonePro	fax from Cypress Research Corp.
all Regional Bell Operating Cos	7			7			7	PhonePro	fax from Cypress Research Corp.
American Airlines	1				1	1		VisualWorks	e-mail from ParcPlace Systems

an educational software writer		1		1		1		Prograph	Prograph Conference
an energy lab	1			1			1	LabView	e-mail response to survey
an energy lab in Switzerland			1	1			1	LabView	e-mail response to survey
an engineer		1		1			1	LabView	e-mail response to survey
an engineering lab in the UK			1	1			1	LabView	e-mail response to survey
an individual who uses VP at home		1			1	1		Visual Basic	e-mail response to survey
an industrial research firm		1		1			1	LabView	e-mail response to survey
an instruments manufacturer in Finland		1		1			1	LabView	e-mail response to survey
Apple	1			1		1		Prograph	Prograph Conf.
Atlanta Olympic Committee	1			1			1	PhonePro	fax from Cypress Research Corp.
BellSouth	1				1	1		VisualWorks	e-mail from ParcPlace Systems
Chrysler Corporation	1				1	1		VisualWorks	e-mail from ParcPlace Systems
Delft Univ of Technology, Netherlands			1		1		1	AVS	e-mail response to survey
Federal Express	1				1	1		VisualWorks	e-mail from ParcPlace Systems
GeoQuery Inc.		1		1			1	PhonePro	fax from Cypress Research Corp.
George Farcus, Tend-a-Pet		1		1			1	PhonePro	fax from Cypress Research Corp.
Governor of Alaska's office	1			1			1	PhonePro	fax from Cypress Research Corp.

HBO & Company	1				1	1		VisualWorks	e-mail from ParcPlace Systems
James Roberts Computer Consulting		1			1	1		Visual Basic	e-mail response to survey
Jet Propulsion Laboratory, California Institute of Technology	1			1			1	VEE and LabView	*Visual Object-Oriented Programming* Prentice-Hall, 1995.
MacWorld Holland	1			1			1	PhonePro	fax from Cypress Research Corp.
Microsoft	1				1	1		Visual Basic	12/1/94 phone conversation with Microsoft's PR firm
MTV Europe, UK	1			1		1		Prograph	e-mail from Prograph
Naval Command Control and Ocean Surveillance Center	1			1			1	LabView	e-mail response to survey
Northern Telecom	1				1	1		VisualWorks	e-mail from ParcPlace Systems
Pepper Tree Design under contract with Apple	1			1		1		Prograph	e-mail response to survey
Prudential Insurance	1				1	1		VisualWorks	e-mail from ParcPlace Systems
researchers at Univ. Colorado			1	1			1	NoPumpII	e-mail response to survey, CHI'90
Southern California Edison	1				1	1		VisualWorks	e-mail from ParcPlace Systems
Strata Flotation, Inc.		1		1			1	PhonePro	fax from Cypress Research Corp.
Sussex Univ., UK			1	1			1	Poplog HipWorks	e-mail response to survey
Tangent Systems, a software firm		1		1		1		Prograph	e-mail from Prograph
Tektronix	1			1			1	LabView	e-mail response to survey

Texas Instruments	1				1	1		VisualWorks	e-mail from ParcPlace Systems
US West	1			1			1	Repenning's AgentSheets	e-mail response to survey, also VL94
VTM (commercial TV station in Belgian)		1			1	1		VisualWorks	e-mail from ParcPlace Systems
	58	40	33	94	37	66	65		
Totals	131			131		131			

Table 2: Specific Uses by System

Visual Programming System	Kinds of Applications Reported[1]
a special-purpose visual programming language created with Agentsheets	to develop voice dialog applications
AVS	3D basin modeling system
	3D reconstructions of medical data from CT and MRI scans
	3D visualization of biologically generated signals
	a 3D GIS application
	medical imaging
	general scientific visualization and animation
	to develop and test new visualization techniques
	to process the output of a microscope
LabView	acquisition of, process, and graph data on moving trucks
	control instruments and collect data in bench test circuits
	custom software for control of chemical instrumentation and data acquisition, process, and display
	data acquisition and control of spectrometers; visualization of scientific data
	data acquisition and processing, pattern recognition, curve fitting, figure preparation
	data acquisition in a electrophysiology research environment
	custom software for clients
	data acquisition, process control, data analysis, image processing, file conversion, and to create commercial applications for instrumentation control
	environmental control
	for semi-automatic measurement of electroluminescent thin films and analysis, extracting physical parameters
	laboratory and quality control custom applications
	production and design verification testing of satellite antennas and circuit boards for radar program
	real time breath by breath analysis of several pulmonary parameters
	to control psychoacoustic experiments using human listeners; signal analysis; generating and summarizing data
	to control, monitor, and validate an RF net
	to create interactive visual and numeric simulations of experiments and processes for teaching engineering freshmen
	to experiment on the use of electronic signals produced by electric fish for communication and electrolocation
	to monitor and control high energy electron beam linear accelerators
	to program data acquisition and data visualization for the laboratory. Also measurement setups and instrumentation communication
	to write custom software for use in manufacturing medical devices
	to write instrumentation control software and data logging programs with easy GUIs

[1]Some kinds of applications were reported by more than one user. Duplications not shown.

	to write quick programs for lab, control programs, and analysis/visualization packages for publication
	to write software for instrumentation control to be packaged with products
	to write software to test and use an in-house memory storage system
	data acquisition and analysis of experiments on magnetic fusion
PhonePro	audiotex information services, such as homework hotlines, real estate information lines, etc.
	call attendant software to answer an incoming call and route it to the appropriate extension
	order entry
	simple voice-mail or answering services
	telemarking services
Poplog HipWorks	to build a graphical user interface for CSCW research
Prograph	3-D simulation and rendering
	A/D data gathering, display, visualization, and analysis
	academic campus networks and client/server systems
	aircraft design simulation
	AS/400-based securities trading system
	case-based pathology teaching system for use in medical school course, integrated image and text databases for use in interactive simulations
	CD-ROM and other multimedia applications
	client/server software for live online scheduling, scripting, and display support
	communication and client software for enterprise-wide shop-floor support
	contact management system
	distribution engineering workstation software for GIS style navigation and data display
	enterprise-wide human resources management system
	environmental simulations modeling the impacts of toxic substances on the ecosystem
	financial market analysis software
	HTML editor
	interactive public-access media information, retrieval, and scheduling system
	Medical product development, a medical imaging application, and a serial communication package
	multimedia database and construction kit for CD-ROMs
	multimedia, virtual reality, and interactive CD-ROM applications
	real-time data acquisition for integrated manufacturing shop-floor control and inventory control
	recording and analysis of data on tadpoles swimming in a tank on the Space Shuttle
	staff scheduling
	to create a horizontal market application for commercial sale
	to create a multimedia educational application
	to create an engineering simulation tool
	to create client/server database applications
	to create custom applications for clients and develop tools for other developers
	to develop a commercial visual programming product for children

	to prototype a graphical front end for a debugger for the Harmony multiprocessor OS
	to write software to support statistical process control for printed circuit boards
TFLEX	to program a Macintosh to act as an answering service
VEE	to develop turnkey data acquisition and analysis applications for R&D projects
Visual Basic	as an interface for computer graphics programs
	general-purpose programming
	multimedia, software demonstrations, electronic publications, electronic catalogs, computer based marketing and training
	ported a custom PC marketing presentation tool for financial products
	shop floor data collection and activity tracking, shop floor process simulation
	to compare incremental economic and environmental consequences in conceptual process design
	to create a program to help students practice skills
	to create an online phone directory, report request form, and auto-install PC programs
	to create applications which integrate terminal emulations, and also independent software engineering projects
	to develop software for scientific and spectral data collection, visualization and manipulation
	to make data file conversion programs
	to prototype new software products, write database oriented applications for internal use, and to write production GUI and database code
	to teach students how to program
	to translate a D&D game from Turbo Pascal
	to collect environmental data
Visual C++	to create the next release of a rapid prototyping tool for user interfaces of embedded systems
	to give doctors access to data in a non-threatening way and to write simple DB applications (also uses Visual Basic for this purpose)
VisualWorks	customer billing
	customer workstation support
	manufacturing systems
	hospital patient management
	order management
	payroll systems
	TV scheduling: programs, movies, commercials, annoucements
	utility tracking