experience breakdown

A look at the PVR experience for Canadians and how it could be better.

Version 1.2
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## bell+rogers

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**Page 7 - The Rogers’ guide system**

**Page 16 - Bell’s recorded programs list**

**Page 32 - Our take on searching content**
We put the two most common PVR options for Canadians to the test. What kind of experience do they deliver to users?
We took some time to evaluate the two main Personal Video Recorders offered by Rogers and Bell ExpressVu. We tried to understand what kind of user experience both delivered. In the end, we were so disappointed that we designed our own.

**PVR: Paradigm shift for TV**

Everywhere we look people are talking about “Tivoing” programs. Among the media and marketing communities, there is speculation that Personal Video Recorders (PVRs) are contributing to a fundamental shift away from revenue schemes predicated on the venerable 30-second spot. Nielsen recently reported (March, 2004) that adoption rates for this technology have been accelerating more quickly than expected, largely because cable and satellite operators have begun to integrate PVR functionality into their set-top boxes. The media research firm is currently investigating how these trends might impact television economics at large.

For many, the fundamental paradigm shift that PVR technology represents—TV on demand—is an extremely compelling one: content becomes responsive to the demands of the consumer.

This document sets out to evaluate two major PVR offerings available to Canadians in terms of functional capability, usefulness, and the overall user experience. These are:

- The SA 8000, distributed by Rogers, Shaw and Videotron
- Bell ExpressVu's 5900

**Why we did it**

Increasingly, we as consumers are being asked to interact with a multitude of devices and interfaces. We believe it is important to critically look at these devices and evaluate the experience they deliver.

**This is NOT a usability study**

We didn’t apply methodologies of lab based usability studies, which typically involve highly focused experimental design and much analytical rigor. We were more interested in evaluating the two systems in terms of a range of experiential factors. We used these devices as any consumer would and tried to understand what made the experience good or bad.

**This is NOT a hardware review**

If you want a detailed spec of speeds and feeds or a subjective analysis of picture/sound quality this is not the report for you. We did not consider issues like picture quality in any great depth. There are web sites and reviews that compare these sorts of issues in more detail.
How we did the evaluation

We created a score sheet that broke down tasks and features we expected from a PVR. Over two days we put both PVRs though their paces in a series of common tasks. We used the same score sheet for both and graded them on a scale from 0 to 5.

Scoring was done independently. We did not bell curve the ratings. We believe these products should be held to a higher standard than each other.

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OEMs

It is important to mention that neither Bell nor Rogers actually make the PVRs they sell. Rogers is using a box from Scientific Atlanta while Bell purchases theirs from Dish Network.

Both companies need to be held responsible for the products they offer their customers. We expect them to take responsibility for the user experience of these products even if they did not manufacture or design them.

Why we chose the Bell and Rogers PVRs

The offerings from Bell and Rogers represent what is available to the majority of Canadians. We understand that there are other options such as the following:

- Microsoft XP Home Media Edition
- MythTV
- BeyondTV
- EyeTV
- Hacked Tivo boxes
- Other PC and Linux-based solutions

We decided not to include them in this report for the following reasons:

1. It is unreasonable to expect the average consumer to use these solutions (today).
2. Bell and Rogers/Shaw/Videotron will not recognize these devices on their network, which means you still need to run a cable or satellite box.
3. PVR functionality is only one part of these products. They offer additional features like MP3 and DVD playback, and are targeted at the media centres market space. It would therefore not be a level comparison to analyze these offerings along side the stand alone PVRs from Bell and Rogers.

“The offerings from Bell and Rogers represent what is available to the majority of Canadians.”
Getting started

In defining a positive user experience, first impressions matter. Ease of setup, helpful documentation, general clarity and overall thoughtfulness with respect to connection options add up to make a difference.

Plug and play. Sort of.

Although first time subscribers will likely take advantage of on-site personal assistance for initial set up, a majority of users will be upgrading existing satellite or cable packages. Many in this group will be more inclined to get things going on their own.

We found setting up both boxes to be fairly straight forward overall, with only one hurdle common to both systems (see Making the Call). Both systems leverage built-in intelligence and connectivity to the server, so if you’re already connected to either of the two services (and in Bell’s case, the satellite dish has been tuned into the signal), the process is largely hands-off and sequential.

“Users are paying close attention to the experience...they want to know what using the system is going to be like.”

First contact

From an experiential perspective, there are a few problematic issues that we’d like to see addressed. System initialization can be a positive experience, but this takes great care, sensitivity, and thoughtfulness on the part of designers. At such an early stage in the user’s interaction with the system, count on the following:

• Users are paying close attention to the experience— in absence of any substantial prior context, they want to understand and get a feel for what using the system is going to be like.

• Users want to play it safe. They are likely to be overly analytical and cautious. Forcing users to proceed by hitting “cancel,” which is normally associated with regressive (i.e. undo) system behaviour, is likely to cause confusion.

• Users don’t want to be confronted with any decisions at this point that imply trade-offs later on, or that require any special technical knowledge.

Making the call

With both services you need to call a 1-800 number to activate your subscribed programming. Oh ya, one problem: the on screen instructions never say to call the 1-800 number! Once the setup procedure has been completed, users are dumped...
unceremoniously into an empty guide and left to ponder over what they should do next.

We weren’t crazy about getting on the phone (we don’t see why a series of on screen menus couldn’t get you through the process), but both Bell and Rogers had us authorized fairly quickly.

We were watching TV inside of 25 minutes. That includes taking the systems out of their boxes, plugging them in and getting them authorised.

Digital audio connection options

Both boxes offer standard connection options but there are some oddities. Wiring up the systems is no more or less difficult than with any other home entertainment consumer electronic devices. This isn’t necessarily a good thing, but until single cable interfaces like HDMI become available its as good as its going to get.

The Bell box offers audio connection through Optical (aka Toslink) connection while the Rogers box offers Coaxial (aka S/PDIF).

There is an ongoing debate among audiophiles concerning which connection option is sonically superior. We won’t enter into that discussion here. Instead we would recommend that both boxes should maximize consumer choice by including multiple digital audio output options.

AV receivers have limited capacities with respect to digital audio inputs. If all your Optical (in the case of Bell) or Coaxial inputs (in the case of Rogers) are being used, you may be out of luck in connecting your PVR to your AV receiver. Both boxes should feature optical and coax connections.

Video connections

Both Bell and Rogers offer S-video and composite connections. Since these boxes aren’t HDTV compatible they offer acceptable connections. We look forward to future implementations that offer true digital picture support, such as DVI connectivity.

Mystery ports

Rogers has 2 USB ports and one Firewire port. This would be a great feature if you could plug in devices like DVD burners, external hard drives or your computer but they aren’t enabled.

Bell’s box has this massive port that looks like a printer port circa 1984. What can you plug into it? Well, nothing we can find. In theory this could be used to plug in add-on devices but we’re not holding our breath.

Key insights

GET THINGS OFF TO A GOOD START

System setup is a great place to reassure the user by delivering a solid experience.

AUTOMATE THE PROCESS

We have the technology! Users should be able to sit back while the system calibrates itself.
Guide

Most modern cable and satellite systems use an on-screen guide to help users find programming. The guide is where most users start their television viewing experience.

Display

Both Bell and Rogers have adopted the standard guide layout scheme where content is plotted on a grid with time along the horizontal and channels along the vertical.

Bell also allows for the ability to filter the guide based on channel favourites (more on this later).

Rogers lets you change the colour scheme of the entire menu system, including the guide. You can choose from a number of equally garish colour combinations.

Rogers shows you every station available even if you don't subscribe to it. Given the expanding channel universe this can make it difficult to move through the guide and find programming you can actually access.

Customise the guide

Bell allows you to choose whether or not the guide screen includes live programming in a window. By removing this window you get more listings on screen which some users may prefer.

Navigating through channels

Interacting with Bell’s and Rogers’ guide systems is a similar experience. Using the 5 way controller on the remote, you can scroll through the channels (up and down) and go forward or back in time (right and left).

Roger’s guide has a nice scroll feature. If you hold down the “CH DWN” key for more

“Both Bell and Rogers have adopted the standard guide layout scheme where content is plotted on a grid with time along the horizontal and channels along the vertical.”

ExpressVu’s guide with (top) and without a video window (bottom).

Take your pick. Rogers’ Guide and Menu buttons both activate the online guide. One of the many instances where software and hardware don’t quite fit.
than 2 seconds, the guide begins to scroll. Since you can only view 4-6 stations on the guide screen at once, this makes it hard to get from channel 7 to 201 quickly. The same behaviour allows you to easily traverse the guide by time.

Bell offers a PG UP PG DN feature that jumps 4 channels at a time (6 if the video window is deactivated). Even with this feature, moving 100 channels in the guide requires between 16 to 25 key presses.

If you wanted to go to another day you would need to figure out how many hours ahead it was (How many hours in 5 days?). Bell needs to offer a more efficient means to change the date in the guide.

Rogers allows you to quickly jump to a given date by pressing the “B” button on the remote and which calls up a browsable list. More helpful shortcuts like this would greatly benefit both systems.

Jumping back and forth in time

In Bell’s guide you can move ahead in time by going to a channel in the guide and entering the number of hours forward you want to move and then press the right arrow key. So if it was 2 PM and you wanted to see what was on at 7 PM, you would press “5” + “Right Arrow”.

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Key insights

**LAY IT OUT**

Guide systems need to walk a fine balance between displaying enough information and too much information.

**DON’T INTERRUPT**

Remember that people are watching TV. Keeping live television playing in a preview window is better than removing it completely.

**JUMP AROUND**

Provide the user with mechanisms to move quickly through the guide.
Responsiveness

Both Bell’s and Rogers’ system performance ranges from poor to virtually intolerable, resulting in all sorts of frustration in terms of user experience. Faster hardware and smarter software are absolutely essential.

We’ll begin with the obvious: the hardware used in both of these systems needs to be a lot faster. PVR functionality is computationally intensive. Scientific Atlantic’s dual 164Mhz StrongARM processors are barely adequate—in fact, the system is reputed to be the slowest DVR available—and Bell’s box isn’t much better.

As we spent time using both Bell’s and Rogers’ systems, we discovered that a slow menu system is impossible to hide. Menus that don’t react when you press a button on your remote is very frustrating.

Both Bell and Roger’s menu systems are very slow. Bell’s is consistently slow. Absent immediate feedback for common events (even a “working” animation would have helped), our instinct was to retry the action. Often, the system would ‘catch-up,’ registering multiple redundant button presses all at once, sending us into unwanted menus or making unintended selections on our behalf.

Rogers’ had a worse issue. When in the guide, the menu system was more responsive than Bell’s. However, PVR functions were noticeably slower. This irregular latency tended to make things even more frustrating. In ExpressVu you adapt to the latency and compensate by pausing between remote control clicks. On Rogers’ system the inconsistency makes it harder to develop coping behaviours like this.

Changing channels

Some people like to flip channels, instead of using the guide. Although it can be argued that a PVR provides such a paradigm shift in television viewing that channel flipping is no longer necessary, we think that people still like to channel surf.

Both boxes are so slow that changing channels is an act of futility. Don’t even bother on the Bell system or on Roger’s digital channels (80-999). The analog channels on Rogers change a little faster.

Key insights

MAKE IT FAST

These devices should be lightning fast. Changing channels, navigating menus needs to be effortless.

CHANNEL SURF

Support well established human behaviours like channel surfing.
Search

More content means greater choice. That’s the good news. The question now becomes how to design mechanisms for connecting viewers to this content. Providing advanced search functionality without sacrificing ease of use is a fundamental design challenge.

Finding your show

As the number of available channels increases, the traditional time-based guide becomes difficult to use. Browsing by time or channel is useful if you want to know what is on right now. Keyword searching is essential for a PVR, especially for easily finding programs to record in the future. That said, if you don’t know the time or channel (roughly) for a given show, the guide isn’t a very useful discovery mechanism.

Searching on the 5900

Bell ExpressVu offers relatively powerful search functionality, although this is generally limited by a cumbersome interface. Users can input queries through either an on-screen alphabetical keyboard (resembling, more or less, the same text entry scheme you used back in 1980 to save your Frogger high score) and the equally awkward numerical keypad on the remote control.

Getting to the search screen requires you to go through two screens in the menu system or finding the “Search” button located at the very bottom of the remote control.

Another oddity is that when you select a character on screen it will show any accented versions of that character. This can be frustrating. It is also unusual since the whole system is in English and suddenly this screen has French language requirements. The system should be smart enough to search without using accented characters. Or provide a way to turn this “feature” off.

Search results

For each item in the results list, channel, time, and name are given. Additional information may include program availability (with respect to the current subscription package), and pay-per-view status.

Search results are organized by time. So results that occur closest to the current time appear at the top of the list.

Searches are fairly thorough, and return items based on a range of metadata. This

“Keyword searching is essential for a PVR, especially for easily finding programs to record in the future.”

Your fingers get a workout trying to type out a search query.

The search button is tucked away in the bottom-right corner of the remote.
makes it possible to search for content that features particular actors, directors, plot elements, etc. For example, searching for “Cruise” will return not only programs with Tom Cruise the actor but also programs; Cruise Control, a car show.

"As hard drives get bigger this problem (finding content) gets bigger. Today it is relatively easy to keep track of your hard drive since its capacity is limited."

We would like to see an indication of whether a program has already been viewed or recorded to the hard drive.

For example, say you watch The Sopranos every week and want to record this week’s episode. Searching for The Sopranos will return several results because the previous episode is replayed through the week. It is impossible to understand which Sopranos you have previously recorded or have on your hard drive.

You need to weed through the results and remember which episodes you have recorded, when they were on and what it was about. As hard drives get bigger this problem gets bigger. Today it is relatively easy to keep track of your hard drive since its capacity is limited.

Search results need to do a better job getting you the right information to find the program you are looking for.

Rogers’ search
Rogers has no keyword searching ability. Boo.

Key insights
RETURN RESULTS ON THE FLY
Modern search mechanisms begin delivering results with a single letter. Don’t make users type more than they have to.

SEARCHING IS ESSENTIAL
As content options grow keyword searches become more important to PVRs.
Scheduling recordings

The guide is the main way you will set up recordings. See a program you want, press the ‘select’ button on the remote and you can set the PVR to record it. Sounds simple? It should be.

For both systems, highlighting a program in the online guide and pressing “Rec” or Select brings up a recording options screen. Press Select again to confirm the recording session and you’re all set.

Bell operates on the metaphor of “Event Timers,” treating future recordings as a type of ‘event.’ There are other event types like “Auto Tune,” which will change the channel to the desired channel at the specified time. A “Reminder” which will display an on-screen notification at the appointed time.

Recording and watching

Bell’s box features only one tuner so you can’t simultaneously watch a program and record another. It will let you record a program while watching another that has been saved onto the hard drive.

It is pretty disappointing that Bell’s PVR, now in its 3rd generation, has not added a second tuner. Even VCRs were able to record a show while you watched another.

Rogers has 2 tuners allowing a user to watch a program while recording another. You can even record 2 programs simultaneously while watching a previously recorded program.

Recording multiple episodes

A feature that would seem baseline for a PVR is the ability to record an entire series. However, both boxes do a poor job at this.

When scheduling a recording, Rogers offers you the ability to record “All Episodes” or “One Episode.” Selecting All Episodes will find all unique instances of the program title and record it.
So recording “All Episodes” of *Pop Up Video* will record every instance of that show that appears in the guide. Since *Pop Up Video* broadcasts the same episode twice a day the Rogers system is supposed to be able to identify repeats and not record them. Unfortunately, this feature doesn’t work.

Bell handles recurring programming differently. When setting up an event timer you can set the timer to repeat. If you wanted to record *West Wing* on Wednesdays at 9 p.m. you could set an event timer that executes Wednesday at 9 p.m. every week. If *West Wing* is preempted that week by some other programming, Bell will still record whatever is on Wed at 9 p.m. In other words, it has no real intelligence about the show, only the time slot. If a show moves for a week (gets preempted) or shifts in the schedule, the event timer is effectively useless.

**Time padding**

Despite the guide’s relative accuracy it is sometimes necessary to pad the recording time around programs. The best example of this is sporting events. While the guide may claim that they are scheduled to end at a specific time, games can run late or go into overtime. It is essential for recordings like these to go beyond the time stated in the guide.

Rogers gives complete control allowing you to begin and end the recording whenever you want.

Bell only offers the option to begin “1 min.” before. No wonder “missing content” is such a prominent issue for Bell’s PVR customers.

This problem is becoming even more prominent as networks are beginning to monkey with start and finish times as an incentive for viewers to watch shows live. Good padding controls are essential.

**“Better programming intelligence is needed including warnings of pre-emptions or shifts in schedule.”**

To make matters worse, if you see that a recurring event is going to be preempted, you can’t just postpone the event timer for a week. Your only recourse is to delete the event timer and create a new one it after the event has passed.

Better programming intelligence is needed including warnings of preemptions or shifts in schedule.

**Key insights**

**ADD INTELLIGENCE**

PVRs should be able to distinguish between first runs and repeats. Smarter recording prevents frustration.

**TUNE IN**

Flexibility is key. A modern PVR needs more than 1 tuner. 2 is good, 4 is ideal.
Recording a program while watching it

Recording a program while watching it should be as simple as hitting the “record” button. Proper options and good on-screen feedback help enrich this experience.

Recording options

If you are watching a program and decide to begin recording you press the REC button on both remotes. On the Rogers’ box you get dumped into a screen that gives you some options. You need to press the SELECT button to begin recording. This two-step process is annoying and unnecessary.

Also, pressing record causes the SA 8000 to freeze—it takes a second for the options screen to come up. After pressing Select, the screen flickers and freezes some more before taking you back to the show you wanted to record. The entire process takes about 5-10 seconds to complete at a minimum.

Bell’s system is completely seamless. Pressing record brings up a small icon showing that the system is recording and you just keep watching show, uninterrupted. Just as it should be.

While Rogers may argue that the ability to have more recording options is a positive, chances are, if you are a watching a program and press record, you are interested in capturing what is happening ‘right now’ to the hard drive. If the system were more responsive the extra steps may not be so frustrating.

Rogers and channel 950

When you begin recording a program it moves you to Channel 950. If you decide you want to watch something else and let your recording proceed pressing CH UP will take you to channel 998 (which is normally reserved for security camera feeds). This is very disorienting since you began by recording your program on another channel. You would expect that pressing CH UP would take you to Channel 33. This is obviously a technical limitation that is being placed on the user.

While Bell’s feedback is a little underwhelming, pressing record doesn’t interrupt the viewing experience.

When you press record while watching a show you get put into this screen. The process is disruptive and unnecessary.

Key insights

HIDE TECHNICAL CHALLENGES
Exposing users to technical short comings is placing the problem on their shoulders.

MAKE IT FLOW
Don’t take viewers away from watching TV. Basic actions like recording should be seamless.
Controlling Television

One of the most popular features of PVRs is the ability to pause, fast forward and rewind live television.

Controlling live television

You pause live television on both systems by pressing pause on the remote. On-screen icons show you that you have paused television. Rogers’ progress bar does a good job of visually showing you what the system is doing. Bell’s system shows you a pause icon and how far behind live television you are.

When you pause television you need to understand a few things.

- How far behind live television am I?
- Am I recording this show? If so, how long ago did I begin to record?
- What is my current status (am I paused, rewinding, fast-forwarding, etc.)?
- Where am I in the context of the show?

Rogers’ progress bar does a better job of communicating all of this information. Why Bell chose to only display status and time buffered is odd since they have a progress bar available to the system.

Program caching (buffering)

Whenever you tune to a channel, the PVRs immediately kick in and buffer whatever you are watching. This allows you to rewind back up to an hour of the channel you are watching. When you change channels it dumps the buffer and begins the process over.

Buffering is the kind of feature that makes instant sense, causing you to wonder how you lived without it.

“Buffering is the kind of feature that makes instant sense, causing you to wonder how you lived without it.”

Fast forward and rewind

Both systems allow for multiple speeds of fast forward and rewind. Bell allows for fast forward increments of 4x, 15x, 60x, 300x. It also allows for a skip forward feature of 30 secs and a skip back of 10 secs. Skip forward is designed to skip through commercials.

Rogers only allows for a maximum fast forward and rewind speeds of 30x. This is inadequate for moving through a long recorded program. It also has no 30 second skip making commercial skipping difficult since you need to use fast forward which inevitably means you will overshoot the program after a commercial break.
Controlling Recorded Television

Orientation in a recorded block of programming is subtly different than in live TV. For example the forward-most limit of the viewable material is static (in Live TV, this moves along with real time). Both Bell and Rogers have decided to play down these differences by sticking to their same progress bar schemes. Effectively, both favour consistency over accuracy. The net result is that progress bars communicate subtly different information in different contexts. We suspect that this approach will cause more confusion than it saves.

Rogers’ does a good job showing you what the PVR is doing when you pause a show.

Rogers 30x rewind and fast forward is not enough for long programs.

Key insights

RAISE THE BAR
Progress bars need to relay a lot of information quickly and simply.

SKIP THE ADS
We know advertisers hate it but consumers want it.

FAST FAST FORWARD
Give users fast rewind and forward abilities
Managing your Hard Drive

Recorded shows exist on the hard drive. This content needs to be managed. Shows can be viewed or deleted. How these systems do these two simple tasks is important to the overall experience.

The PVR list

The list of recorded shows on your PVR can be accessed by pressing the “LIST” button on the Rogers remote or the “PVR” button on the Bell remote.

Both systems list your recorded shows but give no indication of which shows have been viewed.

Since the lists only show the program title, you can have multiple programs and not know which is which. Looking at the date has no relevance since it won’t tell you which episode it is. For example, you have recorded 6 different episodes of Seinfeld and have watched 4 of them. Determining which episodes haven’t been viewed yet involves manually selecting each item in the list and pressing INFO. The slow menu performance in both systems makes this a painful exercise.

Hitting play doesn’t actually play

When in Rogers “Recorded List” (see below) highlighting a program and hitting “Select” brings up options (see right). You need to press select again to watch the show. Pressing “Play”, which should begin the playing the program, doesn’t work.

To add to the confusion, if a show is in progress and being recorded, pressing “Select” takes you right to the show and not to the options screen. This inconsistent behaviour can be very confusing.

Deleting programs - Bell

When Bell’s hard drive fills up, it will (without warning) begin to overwrite content, beginning with the oldest items. The only way to prevent this is to “protect” a show. A show that is protected will only be erased when the user is finished with it.

The Bell PVR shows the user approximately how much time is left on the hard drive so that the user can manage the hard drive as needed. This is good feedback and allows the user to make decisions about which shows to protect. Ideally the PVR should indicate which shows are at risk of being deleted.

Both systems list your recorded shows but give no indication of which shows have been viewed.

Rogers’ recorded shows list. Which have I watched before? You don’t know? I don’t know.

Selecting a show lets you choose some options

You can choose to watch a show from where you left off or start again. We don’t know why you would want to “Skip to end”. For those of you keeping track that was 3 clicks to play a recorded show.
Deleting programs - Rogers

Rogers gives you more save functions. By default, programs are kept for 14 days then deleted. You can keep programs on the hard drive “Until Erased”, 1 day, 2 days or 7 days.

When the SA 8000 runs out of room it just stops recording, without warning. If it runs out of space while recording the process is brought to a halt. This is unsettling since there is no indication of which shows could be deleted if additional space is needed, nor is there any indication of how much hard drive space remains.

Users are left to wait for a recording to fail or set the auto erase feature to less than 14 days. (This option causes the SA 8000 to delete shows regardless of whether it needs the space or not.)

Hard drive capacity

Bell has 120 Gigs (80 hours recorded television) (one of the biggest available in any PVR).

Rogers has 80 Gigs (30-50 hours of recorded television). The range depends on if you are recording analog television (channels 2-79) or digital channels (80 and up). Analog channels require more hard drive space. This issue of the mixture of digital and analog channels makes you wonder how Rogers can market this product as “Digital Cable”.

Key insights

GIVE WARNING

Before deleting a show or failing to record due to lack of space users should be warned of actions the system will do.

KEEP IT SIMPLE

The play button should just play the program.
Channel Favourites

As the channel universe expands, cable and satellite subscribers will require more flexible ways to manage their programming content. One traditional—if baseline—approach has been to give viewers control over which channels appear in their guide through customizable favourites.

How Bell does it

Bell’s implementation of favourites is fair overall. The guide system’s display includes the currently active ‘favourites list’—the default being “All Channels,” which includes all programming available (but not necessarily purchased) on the ExpressVu system. This listing may be exchanged for one that shows only the channels that are included in the current subscription (“All Sub”).

Of course, you can create your own customized subsets as well. This process, however, can be very difficult. It requires going through several steps requiring you to manually check which channels you would like to add to the list. Since many channels have cryptic names like “XPRS” you spend time moving between the Modify Favourites List and the guide. It would work a lot better if this feature were integrated in the guide system.

While in the guide, pressing the “Guide” button toggles between available favourites lists on the fly. It is very easy to accidentally move to the wrong favourites list since the slowness of the Bell menu system means making accidental double clicks.

How Rogers does it

While Rogers’ implementation of favourites is relatively easy to learn and use, it doesn’t really work.

Rogers designates each channel favourite with a blue ribbon icon. Pressing the “Fav” button on the icon lets you move through your “Favourites” list one channel at a time. The guide still lists all the channels in Rogers system regardless of if you subscribe to them or not.

Rogers lets users add and remove favourites on the fly, through pop-up dialogues.

Bell uses colour coding to reinforce which favourites list is currently active.

Key insights

**GIVE ME CONTROL**

The 500 channel universe is exciting and daunting. Give users tools to create program guides relevant to them.
Conflict Resolution

Inevitably a user will try to do something the system is unable to do. How the system handles these events is important since they need to be able to explain what went wrong and how the user can fix the situation.

**When do conflicts occur?**

Most often a conflict will occur because the user is trying to record more shows simultaneously than the box can handle.

Since Bell only has one tuner, there is a greater chance that users will run into this sort of conflict and need to decide how the system should resolve the conflict.

**Bell's Error Handling**

When you try to record two shows simultaneously, Bell gives you a clear indication that something has gone wrong. You need to carefully read the error message to understand your options. The three options provided are Yes, No and Cancel. Using the left right arrow buttons on the 5 way controller, the user selects one of the options. Cancel and No do exactly the same thing.

Adding this third useless option (cancel) is both confusing and unsettling. The user will never be sure that she has made the right choice.

**Roger's Error Handling**

Rogers does a slightly better job of handling errors by providing clear actions the user can take and assigning them to hard buttons on the remote.

“Most often a conflict will occur because the user is trying to record more shows simultaneously than the box can handle.”

**Key insights**

**BE CLEAR**

Conflicts need to:
1) Communicate what’s gone wrong.
2) Provide a clear path for the user to fix it.

**AVOID CONFLICTS**

Avoidance is preferable to resolution. Adding more tuners will reduce potential conflicts.
The Remotes

The remote control is the primary input device for these systems. A good remote control should feel natural in your hand, with the most frequently used buttons within easy reach. Buttons should be well spaced and distinct shapes. These remotes are decent and have some well thought out features.
Themes

Being able to view programs by theme is a great feature to help users find programming. But a sparse selection of sub-categories makes finding the right show difficult.

How Bell does it

Themes are accessed by selecting the Right Arrow key when watching TV. It can also be accessed through the main menu.

Bell only offers 8 themes (Movies, Sports, News/Business, Education, Serials/Specials, Music/Arts, Religious). This hierarchy is not enough to breakdown the guide since there is no secondary division of themes (i.e. Movies - Kids). Selecting sports shows you all sports which on some weekends can be quite overwhelming.

How Rogers does it

Rogers offers many more themes. However, these are not categorized in any way, leaving the user to sort through a list of 37 undifferentiated items. Accessing this menu is not very intuitive. When in the guide, pressing “A” allows you to choose “Browse by: Themes” from a drop-down menu. This is a handy feature, and we think it deserves its own button on the remote.

The same mechanism allows you to “Browse By: Title,” which rearranges all the guide data alphabetically. While this seems useful at the outset, searching for shows that begin with the letter “T” is next to impossible, especially since Rogers’ system doesn’t ignore common prefixes like “The” when it sorts alphabetically. Since it also lists repeats you will find 40 or 50 shows called “News”. Browsing to a show displays further information in the upper-left of the screen so you don’t have to press Select to find out more about it.

Key insights

IMPLEMENT SUB-THEMES

Viewing all movies is handy but being able to extract comedies or Oscar winners is a better experience.
We decided to design the PVR we would like to own.
The PVR we want

It's easy to sit back and make comments from the cheap seats. But we decided to design the PVR we wish we could have.

Considerations

Some caveats and assumptions before we get into it.

1) Contextual choices are useful.
Wherever possible we only wanted to present users with the right options at the right time. Defaults try to anticipate the predominate action.

2) Visual appeal is important.
We wanted a visual design that was much more mature.

3) The remote control is essential.
This is as much a part of the user experience as the menu system (see next section for more)

4) Flow matters.
We tried to design a system that has a natural flow to it. We wanted it just “to work the way it should,” and tried to make its functionality as self-evident as possible.

5) We’re talking PVRs here.
This is not a media center so we haven’t shown features like DVD playback or pictures.

6) This is a design exercise.
As much as we would like to build this (we’re working on it) we were not able to practically test all our ideas. We have put these screens on our TVs at home and have tried to validate were possible.

Our PVR is 16:9 HD

4:3 TVs are a dying breed. At CES 2004 this year you had to look hard to find a 4:3 television and even harder to find one with a tube.

We designed our PVR for HD displays. 16:9 1280x720.

By eliminating 4:3 and using a higher resolution we were able to have more screen to work with and better rendering.

DVI versus Analog

Our PVR will have a DVI output allowing everything to remain in the digital domain. No conversion to analog will mean crisper graphics and the ability to use smaller fonts that will remain legible.
Our Remote

Yes, there’s a keyboard, a backlight, even a speaker so you can “page” the remote when you can’t find it. But the heart of this remote is the multi-function pressure sensitive 5-way.

Remote control

We very quickly realized that to create the PVR we wanted we had to create a custom remote control. The remote control is your primary input device it needs to work effortlessly with the on-screen menus.

Cross section of pressure sensitive 5-way cluster

No Action

Single Press

Slow Action

Fast Action

Our remote control. Commonly accessed buttons are grouped together in the middle making it easy to access with your thumb.
Keyboard

Typing with a number pad sucks. We wanted the ability to be able to rename folders and execute efficient searches. All of this meant adding a keyboard. We took design cues from RIM’s Blackberry and integrated a small keyboard at the top of the remote.

Less buttons

With the exception of the keyboard we tried to minimize buttons wherever possible relying heavily on the 5 way control wheel which is a very logical input control.

To access less frequent menus we relied on press-and-hold actions.

Layout

People use remotes without looking at them. Buttons need to be identifiable to the touch. We tried to use different shapes and sizes so your fingers could do the work without taking your eyes off the screen. We also tried to leave ample room on the remote to prevent “fat fingering” the wrong button.

Feel and weight

The size and weight of this remote is similar to other remotes. It is designed as a one handed remote with major buttons located in easy thumb reach.

The 5 way controller

The 5 way controller is context sensitive (see below). Depending on what you are doing it will have different functions. Pressing right always moves forward in time whether you are in the guide or playing back a recording. Pressing left goes back in time. How much pressure and for how long you press controls the speed. You should be able to control most PVR actions without removing your thumb from the 5 way.
Our Guide: Browsing

Responsive, pressure sensitive 5-way and integrated program information make for quick and easy guide-based browsing.

1 Current time is shown using this line and colour effect
2 Current channel favourite list shown
3 Highlighted program clearly indicated with high contrast colours.
4 Live television always present in preview window.
5 Interstate font used for readability. Interstate was derived from the glyph shapes and spacing published in the Manual on Uniform Traffic Control Devices (MUTCD).

CSI: Crime Scene Investigation
“Eleven Angry Jurors”
(Crime) A holdout juror is murdered behind closed doors during deliberations. TV14 CC Stereo (Repeat)

REC Thurs 5/18 8:00 pm - 9:00 pm (5 min. until start)

Browse: “Geoff’s Favorites”

Thurs 5/18 7:30 pm

<table>
<thead>
<tr>
<th>Channel</th>
<th>Time</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>214 - CBS</td>
<td>7:30 pm</td>
<td>60 Minutes</td>
</tr>
<tr>
<td>215 - NBC</td>
<td>7:45 pm</td>
<td>Dateline NBC</td>
</tr>
<tr>
<td>216 - ABC</td>
<td>8:00 pm</td>
<td>NYPD Blue</td>
</tr>
<tr>
<td>217 - FOX</td>
<td>8:15 pm</td>
<td>Simpsons</td>
</tr>
<tr>
<td>218 - CBC</td>
<td>8:30 pm</td>
<td>Diana Krall: Live in Paris</td>
</tr>
<tr>
<td>220 - CITY</td>
<td>8:45 pm</td>
<td>Wag The Dog</td>
</tr>
</tbody>
</table>

1 Current time is shown using this line and colour effect
2 Current channel favourite list shown
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4 Live television always present in preview window.
5 Interstate font used for readability. Interstate was derived from the glyph shapes and spacing published in the Manual on Uniform Traffic Control Devices (MUTCD).

To enable fast scrolling the 5-way has been built to be pressure sensitive - the harder the press the faster the scroll. Left and right manipulates time, up and down changes channel.
Our Guide: Recording Options

Sensible defaults and useful options that work.

1. We often just wanted to record a show, so “Record” is defaulted. You can also hit the ‘REC’ button on any program in the guide for single-press-recording.

2. If you want more options for the recording just press down on the 5-way and press select.

3. Often we found ourselves browsing the guide 2 minutes before a show started. We wanted a way to tune to the channel immediately, while waiting for the next program to begin.
Our Guide: Advanced Options

You should be able to do more with a show than just watch it or record it. Advanced options open new possibilities.

1. Reminders can auto-tune to a channel or place a reminder on screen. You choose.

2. See something your friend would like. Send them a reminder. If they accept, it will set the PVR to record it for them. Think of it as a meeting notice for television.

3. Pick your favourite show and see what other shows you might like. Works for Amazon, why not for television?

Press and hold “Select” to get Advanced Options or use the Record Menu on the previous screen.
Our Themes

Themes are an easy way to organize guide data by subject.

Select a theme from the list below to begin browsing.

1. Most commonly accessed themes appear on this screen. Our system would dynamically create this screen based on usage patterns. This list could also be customized in the settings.

2. Alternate way to get to search. You could also use the hard button on the remote.

3. Theme selections can be accessed using the 5-way controller or the keypad.
Our Themes

Sub-categories allow for breaking large lists of programming down into smaller, easier to scan bits.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Movies</td>
<td>Current programming selection</td>
</tr>
<tr>
<td>Drama</td>
<td>Sub-categorical programming selection</td>
</tr>
<tr>
<td>Action</td>
<td>Sub-categorical programming selection</td>
</tr>
<tr>
<td>Comedy</td>
<td>Sub-categorical programming selection</td>
</tr>
</tbody>
</table>

1. Themes have sub-categories.
2. Programs that you already have scheduled to record or have recorded are noted so you don’t create conflicts.
3. PPV shows are noted with an icon.
Our Search

A keyboard on the remote, instant winnowing and relevant results.

As soon as you use the keyboard remote (on this screen), the search box will begin to populate. Typing a single character will begin to create a list of results on the right.

Search results are organized by time and relevancy. More relevant search results appear first. Your search term is highlighted in the results.

Past searches are stored for easy retrieval.

Shows currently in progress show time remaining so you can decide if you want to tune in.

The integrated keyboard and close proximity of the Search button makes for quick searches and eliminates the need for on-screen input which takes up valuable space.
Our Guide: Favorites + Themes

Instantly winnow the guide data by changing Channel Favourites orThemes.

1. Change channel favourites using the 5 way controller.
2. Selecting themes here will let you view the guide using the theme as a filter (see next page).

Press and hold “Guide” for 2 seconds to access guide-based Favorites and Themes.
Our Guide: Favorites + Themes

After selecting a theme your Guide will only show you programs that match.

1. The Guide only lists movies that are playing in your favourites.
2. Fox is only showing a movie starting at 8 PM so this area is not active.
Our Home

Pressing the Home button gives you a starting point for discovering and watching content.

We believe the killer app for PVRs is recommendations. Our device would be able to go out and record content on your behalf. TiVO has this ability and while people complain that the recommendations aren’t always perfect they are pretty good. Without the ability to act as a content gathering agent, PVRs are just souped up VCRs.

This where you can view reminders that your friends have sent you.
Our Home: Recommendation info

The homepage features a list of system generated recommendations that are based on your viewing habits.

Pressing “Info” on a highlighted program brings up this screen. Since the system has recorded this show for you thinking you might like it, you can watch it, save it for later, delete it or see what else the system might recommend to you based on this recommendation.
My Shows

“My Shows” allows users to view and manage all the programming on the hard drive.

1. Shows with same title are automatically organized into folders.
2. Build smart folders that take keywords or criteria to store programs.
3. Quickly see how much room is left on your hard drive.
4. Date formats (mm.dd.yyyy) are difficult to read and decode. Using X days ago is easier to understand.
5. Folders tell you if they have new, unwatched content.
6. Deleted shows aren’t removed until the system absolutely needs the space. Users can retrieve accidentally deleted shows.
7. Icon warns user which shows are at risk of being deleted.
Recording Live Television

Time can be very confusing when watching and recording a show on a PVR. Designing an efficient info graphic requires communicating the right information.

1. Shows when you began recording.
2. Playback heads indicate that user is 4x fast forward mode.
3. Shows where the recording is in relation to the total program length.
4. Blue bar indicates buffer/what is viewable.
5. Programs before and after appear in the timeline as well. In this case we started watching this channel a few minutes before Law and Order actually started.

Interacting with the 5-way controller during playback will reveal the progress bar. All playback actions are controlled using the 5-way.
Info

Program info should be available without taking over the whole screen.

1. Program Info presented using a banner overlay.
2. Progress bar shows how much buffer has been collected by the system.
3. Playback head indicates play time of the show.
4. Pressing right on the 5-way controller while in Info will advance to the next program in the guide and display its info. In this example pressing right would advance the info to the Simpsons while keeping Law and Order on screen.
Watching a Recorded Show

A recorded program progress bar has a definitive beginning and end.

Pressing left, right or Select on the 5-way will bring up the progress bar.
Conclusion

The PVR offerings from Bell and Rogers are not very good. While they provide baseline functions they do not deliver a great experience.

Quality vs. Control

After completing preliminary reviews of both systems we were shocked at how dysfunctional they were. We began to wonder why consumers weren’t more upset that these two products were their only choices for PVRs.

We spent a lot of time trying to understand this phenomenon. As we spoke to people who owned PVRs we found many ardent fans. These people were adamant that the PVR was one of the best purchases they had made.

We came to the conclusion that people found the value the PVR delivered far outweighed its flaws. That is to say, that the ability to record shows to a hard drive and control live television was so compelling and valuable they were prepared to overlook the experiential flaws.

People were prepared to trade quality of experience for the control the PVR offered them. In fact, users had created elaborate workarounds to compensate for the flawed systems and were not even aware that they had until we analyzed their actions.

Users adapted to the slowness of menus finding the longer they put up with it, the less annoying it became. Unnecessary button actions became part of their muscle memory. In other words, users adapted to the system. Of course, we believe that technology serves the user and we should not have to adapt to bad design.

In the short term this does not bode well for getting Bell and Rogers to release better, more elegantly designed PVRs into the channel. Since users adapt and few return their systems there is not a compelling business reason to make these systems better. When we returned the Rogers system the CSR didn’t even ask why we were returning it. The Bell box, which is its 3rd generation, has not had a single UI improvement.

In the long term, these interfaces will collapse on themselves. As users come to demand more from their PVRs the current interfaces will fail. As we have shown throughout the report, just increasing hard drive size will make the current interfaces and menus very difficult to use.

Some choice words about choice

We began thinking about PVRs after returning from CES in Jan. 2004. We saw many great products down there and were really interested in trying them up here. As we began to investigate these options we quickly learned that Rogers and Bell would not allow a device they did not sell on their networks. This meant that in order to use a product of our choice we would need to run a satellite or cable box and negotiate some tricky hacking and tweaking to get these solutions to work.

It is unfortunate that we, as consumers, are unable to choose better products than those offered by Rogers and Bell. While you have a choice in service (satellite or cable) you have no choice in hardware. We couldn’t even buy these same boxes on eBay and get Rogers or Bell to authorize them.

It is sad that Rogers and Bell hide behind their monopoly status granted to them by the CRTC to not deliver better product to their customers.

As companies like Microsoft, Dell, HP and others begin to offer software and hardware solutions that compete with the PVR
offerings will Canadians be deprived of using these solutions unless blessed by Rogers and Bell?

**Some hope**

With Bell’s recent application to offer cable service in some markets this may introduce some more competition in the cable market. Rogers is part of the CableCard initiative (there is a card reader on the front of the SA 8000). This could, in theory, enable you to get a smart card (like Bell’s) and activate a box of your choice that was CableCard compliant. While Rogers has said they will support this, they have provided few details.

**What else do we have planned**

These screens are just a small sampling of what we have planned. Here are some other features and ideas we need to build screens for.

- Video On Demand (V.O.D.) Interface
- DVD Library
- Audio Library
- Web interface to allow for remote programming of PVR
- iTunes Music Store integration
- Interface for downloadable movies from companies like NetFlix and iFilm
- IMDB lookups
- Amazon integration - be able to buy DVDs of programs or movies from Amazon
- Software interface - Manage your PVR better including organizing your hard drive and archiving shows through a proper software interface.
- Ratings to help perfect recommendations.
About teehan+lax

A user experience consultancy that specializes in defining and designing customer experiences in the digital channel.

Teehan+Lax work with companies whose business relies on creating meaningful and profitable experiences for their customers. Clients include many Fortune 500 companies both in Canada and the United States. Based in Toronto, teehan+lax has considerable experience in evaluating and designing for the digital channel.

Geoff Teehan

Geoff began in graphic design in the early '90s, he studied Design Arts at Seneca College in Toronto. In 1995 he was working as a designer for an Internet startup building some of the first Flash sites on the Web. In 1998 Geoff cofounded Templar3, an interactive firm specializing in Flash Development.

Geoff went to Modem Media in 1999, where he became Associate Creative Director. During his tenure he helped implement an information architecture process that ensured client objectives were realized with intuitive User Experiences.

Geoff has done award-winning work for many Fortune 500 clients like Maritime Life, General Motors, LCBO, ManulifeDirect, Wendy’s, Scotiabank and Coca-Cola.

Jon Lax

Jon has been working in digital media since 1994. He started at Shift Magazine in 1994 where he helped develop the first ad supported site in Canada. In 1995 he received a National Magazine Award Nomination for his writing in the magazine. Jon went on to Grey Interactive in 1996, where he became Sr. Copywriter.

Jon was Creative Director at Modem Media Canada from 1998 to 2002. During that time he worked for many Fortune 500 clients, helping them develop applications, marketing initiatives and strategies in the digital channel.

Jon has worked with clients like Coca-Cola, Indigo Books, Scotiabank, General Motors, Canadian Pacific Hotels, Wendy’s, IBM, LCBO and Maritime Life.

He has won Cannes Lions, CMA RSVP Awards, Marketing Magazine and Advertising & Design Club of Canada Awards for his work. He has sat as a judge for Marketing Magazine, CMA RSVPs, London International Advertising Awards and Applied Arts Awards.

In 2002 Jon was named one of “30 to Watch: Marketing’s Next Generation” by Marketing Magazine.