


**Cognitive Curbcuts to Web 2.0: Accessible
Calendaring with Picture Planner**


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Cognitopia Software



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Session Outline


- Accessible calendaring as self-management: An icon-based personal organization application
- Interconnected self-management: Information sharing and Web 2.0
- Self-management of everyday tasks: Evaluation of an icon-based prototype



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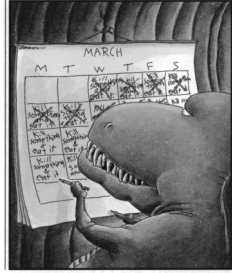
Background and Development Goals

1. Design of innovative personal organization and self-management software applications for users with cognitive disabilities.
2. Development grounded in direct experience.
3. Understanding elements of interface design that enhance cognitive accessibility.
4. Design for two end user groups: individuals with cognitive disabilities *and* social network.



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Why Personal Organization? Early Evidence of Importance



Jurassic calendars

Far Side Gallery 5
- Gary Larson



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More Recent Applications



"Dis new software makes our jobs simple! Right here is who ya gotta whack. Here is where ya gotta whack 'em. DIS is WHEN ya gotta whack 'em..."

Close to Home
- John McPherson



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Mothers of Invention

- Working in supported living environments: Impact of inadequate self-management skills
- Potential of technology to augment both sides of care support
- Personal control and the "machine effect": People would rather be told what to do by machines than people



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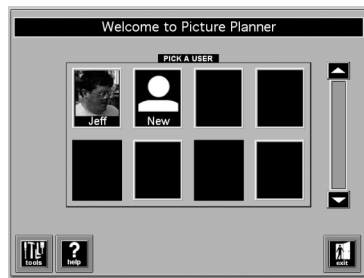
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Designing for Cognitive Accessibility

- All single click operation
- Clean interface with limited controls
- Tri-modal icons: graphic, text, TTS
- Customizable icons: photos, symbols
- “Hub and spokes” navigation vs. webbed
- Management of graphic transitions
- Metacognitive design approach
- Social connectability potential
- Intelligent features

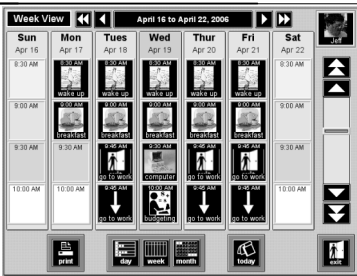


Multi-User Login



Week View

Gradient shaded rows



Familiar “media” type controls

Limited set of tri-modal tool buttons



Activity Builder

Meta-cognitive steps

4 viewable details

unlimited additions

8 printable

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Activity Builder

Filter by life area

Enter new items on the fly with onscreen keyboard

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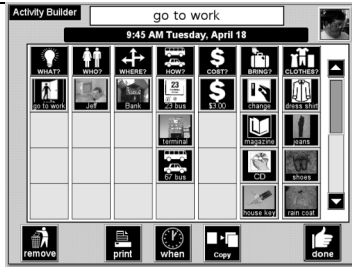
Onscreen Keyboard

Pronunciation confirmation box

Enables text entry for kiosk format and dwell software (no scanning...yet)

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Activity Builder

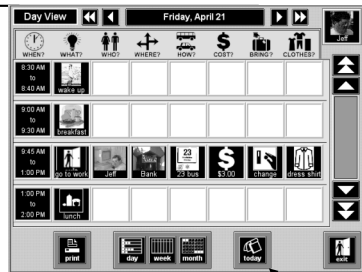


A completed activity

Day View

list view
by duration
(5 minute
minimum)

one row
of key info
(expandable)



"home" button

"When" details

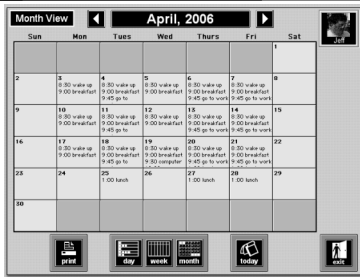


Persistent Pop-Up Reminders



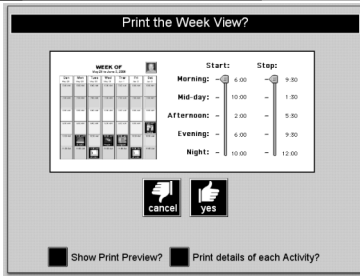
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Month View



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Print Dialog



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Admin Tools

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Group Scheduling

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User Settings

pick background colors add/change user photo

- spoken name
- security code
- TTS
- icon sharing
- kiosk mode
- reminder dismiss
- group identity

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Change Icons

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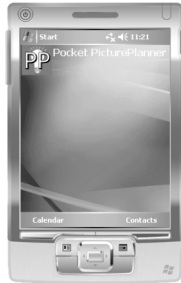
Edit Icon Details

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Backup and Exporting Utility

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Windows Mobile Device Desktop



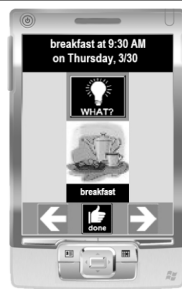
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Daily Schedule View



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Activity Viewer



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Week View



Implementation Research

- Students aged 16-21 with mild to moderate intellectual disabilities such as mental retardation, autism, traumatic brain injury, as well as students with cerebral palsy and learning disabilities (N= 28)
- Two secondary school community transition/apartment living skills programs:
 - One large urban school district
 - One mid-size district
- 5 point rating of level of prompting needed for user actions required to schedule a complex activity

Findings

- Surprising levels of independent skill: 54% independence with 8 weeks of 1/2 hour instruction. (verbal reminders only for activity details; Range: 29-82%)
- *Interdependence is key*: Independence is great but not the Holy Grail. Software design should address staff support factors (e.g. level of skill, assisted use, usability)
- Accessible software applications can be important tools for development of self- management and self-determination. Choices = Control

Findings

- The gap between available technology and its implementation is significant and formidable. *Has to be easy to use for changing staff.*
- There are implementation challenges with even the seemingly simplest of technologies; e.g. awareness, staff training, community settings, technical support. *Again, has to be easy to use with minimal setup.*
- Time and schedule management are central to life skills because they're key to intensity of supports, vocational success, and level of independence in adult settings.

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Cognitive Augmentation in PP 2.5

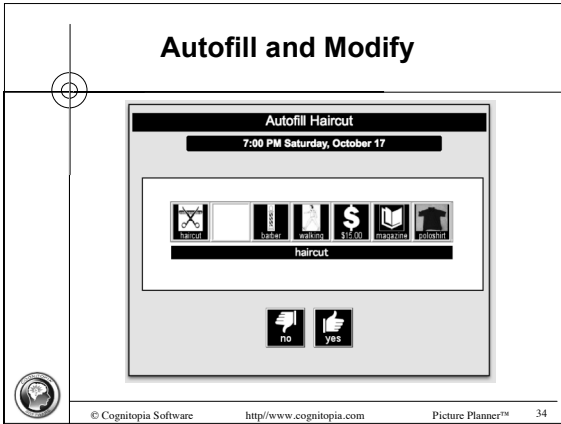
- Auto-completion of new activities based on prior similar events
- Usage reporting to document application use, activities scheduled and completed to support IEP goals and documentation
- Expanded customization options (e.g. multiple item selection)
- Review mode similar to handheld "slideshow" prompting mode
- Completion indicators allow user to mark activities as completed
- Augmented text-to-speech features
 - TTS Activity notes allow addition of supplementary information
 - Pocket PP uses longer spoken labels
- Web 2.0/Social networking: Shared calendar information and social networking features
- And soon....
 - Context aware reminding: Smart activity and task prompting based on user activity and location.

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Smart Tab Shows Prior Events

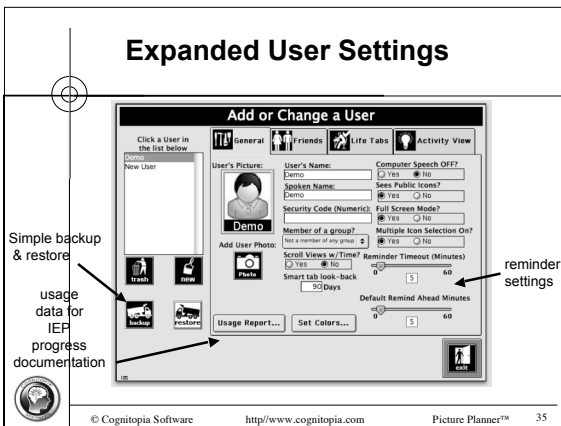
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Autofill and Modify



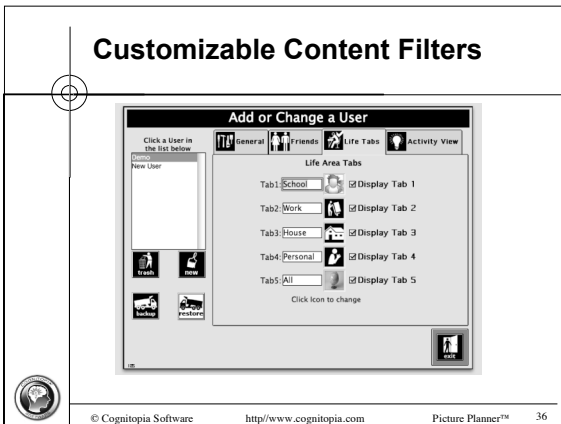
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Expanded User Settings



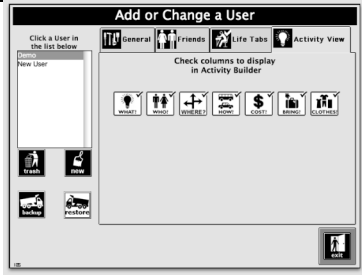
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Customizable Content Filters



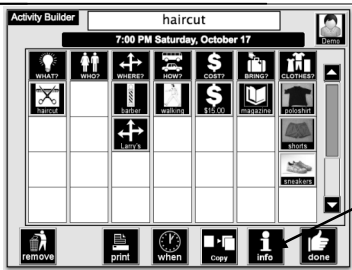
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Column Display Options



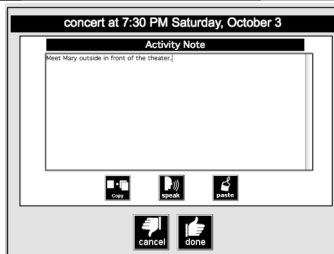
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Add Supplemental Info



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Info Notes with TTS



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Review Mode

click here for full Activity view

mark as complete

Provides slideshow prompting view

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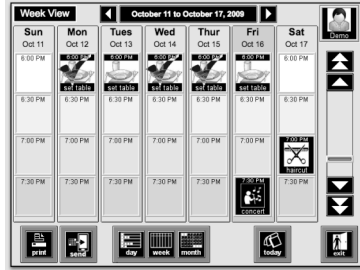
Completion Indicators

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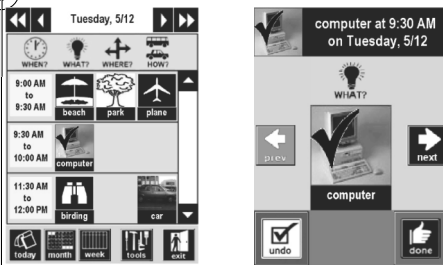
Day View with Completion

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Week View with Completed Events



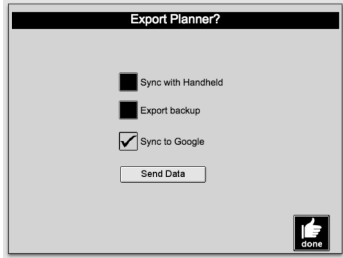
Pocket Picture Planner Update



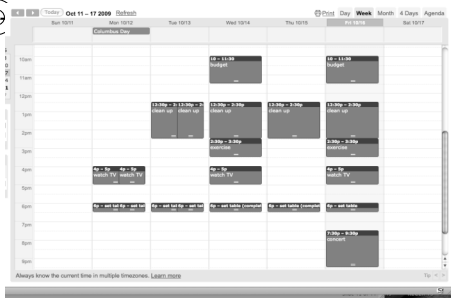
Web 2.0: Social Information Networking

- Information retrieval vs. information sharing
- "Circle of friends" 2.0
- Leverages existing social relationships, regardless of location
- Offers inclusion in lives of family and friends
- Provides avenue for support
- Cool factor

Enabling Web 2.0 with Google Sync



PP Events on Google Calendar



Benefits and Limits

- Two-way data flow provides cognitively accessible portal, a “cognitive curbcut”
- Provides platform for shared information management
- Independent of location or distance
- Operates only from desktop; has to go mobile
- Google is powerful and flexible but text-based



Next Steps: Data-Sharing and Context Aware Prompting

The screenshot displays the 'Picture Planner' software interface. On the left, a 'Day View' calendar shows a grid of time slots from 8:00 AM to 10:05 AM. Each slot contains a small icon representing an activity, such as 'WAKE UP', 'get up', 'shower', 'brush teeth', and 'go to work'. A 'Reminder: shower' window is overlaid on the right side of the calendar, showing the date 'Friday, March 24' and a large icon of a person showering. The interface includes navigation arrows and a 'done' button. At the bottom left, there is a globe icon and copyright information: '© Cognitopia Software http://www.cognitopia.com Picture Planner™ 49'.

Further Information

Contact me at: tkeating@cognitopia.com

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