

Pre-Presentation Notes

Slides and presentation materials are available online at:

karlwiegand.com/w4a2014

Intelligent Assistive Communication and the Web as a Social Medium

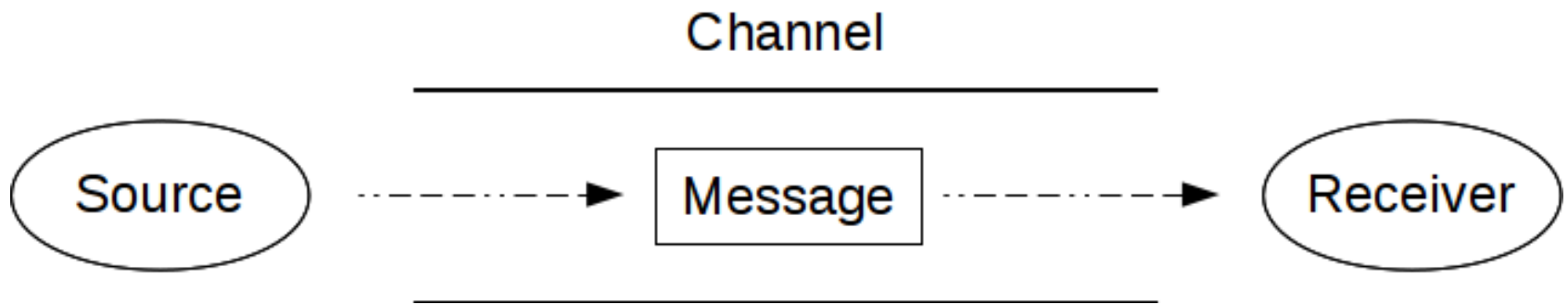


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Outline

1. Communication and AAC
 2. Common Assumptions
 3. Example Projects
 4. Towards Social AAC
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SMCR Model of Communication



- Affected by distortion to any component
 - What if there is distortion from the Source?
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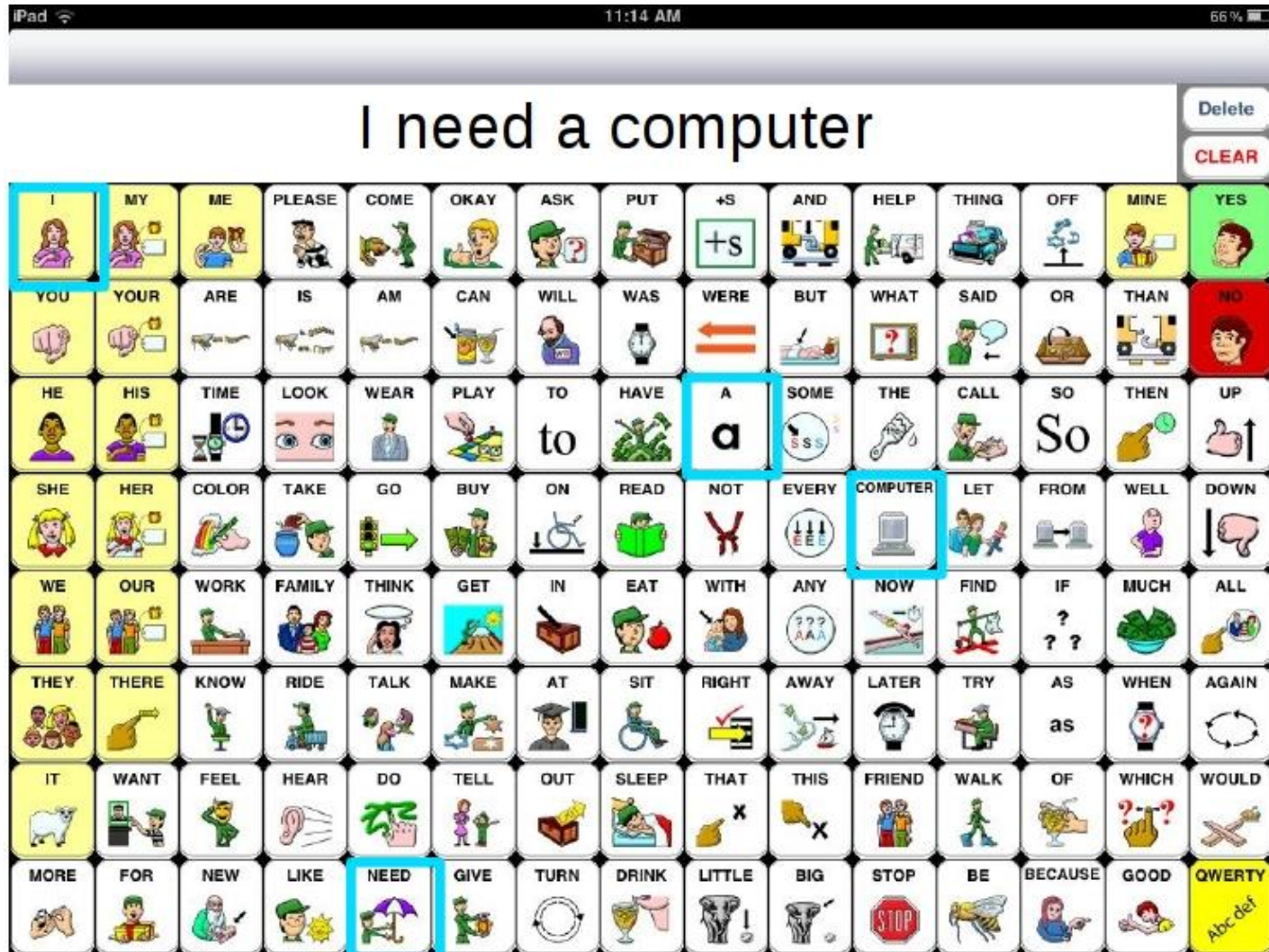
Who Uses AAC?

- People of all ages
 - Stephen Hawking and Roger Ebert
 - Cerebral palsy (CP) -- 53% use AAC
(Jinks and Sinteff, 1994)
 - Amyotrophic lateral sclerosis (ALS) -- 75%
use AAC (Ball et al, 2004)
 - Paralysis, stroke, and more...
-

Functional Definitions

- Target users are primarily non-speaking and may have upper limb motor impairments
 - Target users may also have developing literacy or language impairments
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Current AAC Application



On Speed of Communication

Speech is often **150 - 200** words per minute
(Beasley and Maki, 1976)

VS.

Typical AAC is **≤ 20** words per minute
(Higginbotham et al, 2007)

Passive vs. Active Channels

- Current AAC is relatively passive
 - Intelligent user interfaces (active channels) can reduce distortion and increase speed:
 - a. User-Specific
 - b. Adaptive
 - c. Context-Sensitive
-

Creating More Intelligent AAC

Many systems, especially AAC, assume:

1. Prescribed Order
 2. Intended Set
 3. Discrete Entry
-

Assumption 1: Prescribed Order

- Users will select items in a specific order, such as the syntactically "correct" one.
 - Requires lexical or semantic disambiguation
 - Users do not always select items in expected order (Van Balkom and Donker-Gimbrere, 1996)
 - Using AAC devices is slow (Beukelman et al, 1989; Todman, 2000; Higginbotham et al, 2007)
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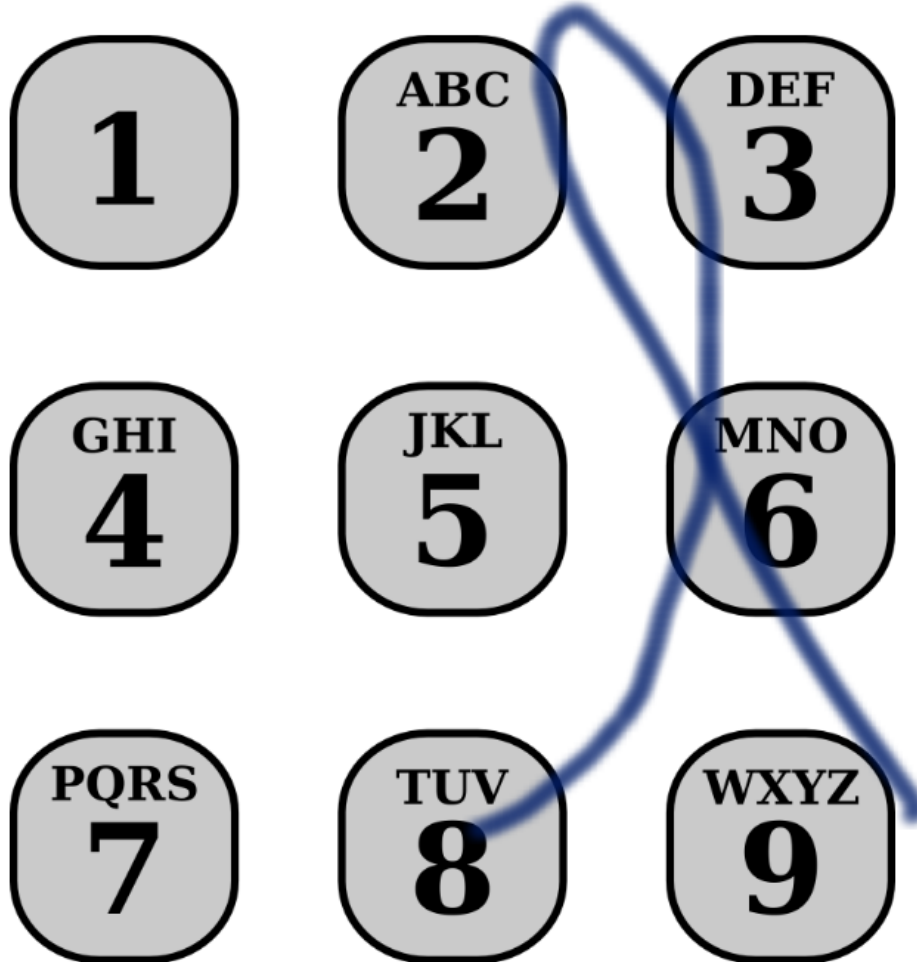
Assumption 2: Intended Set

- Users will select exactly the items that are desired -- no fewer or more.
 - Complete subsets and prune supersets
 - Motor and cognitive impairments may result in missing or additional selections (Ball, 2004)
 - Letter-based text entry systems detect accidental and deleted selections
-

Assumption 3: Discrete Entry

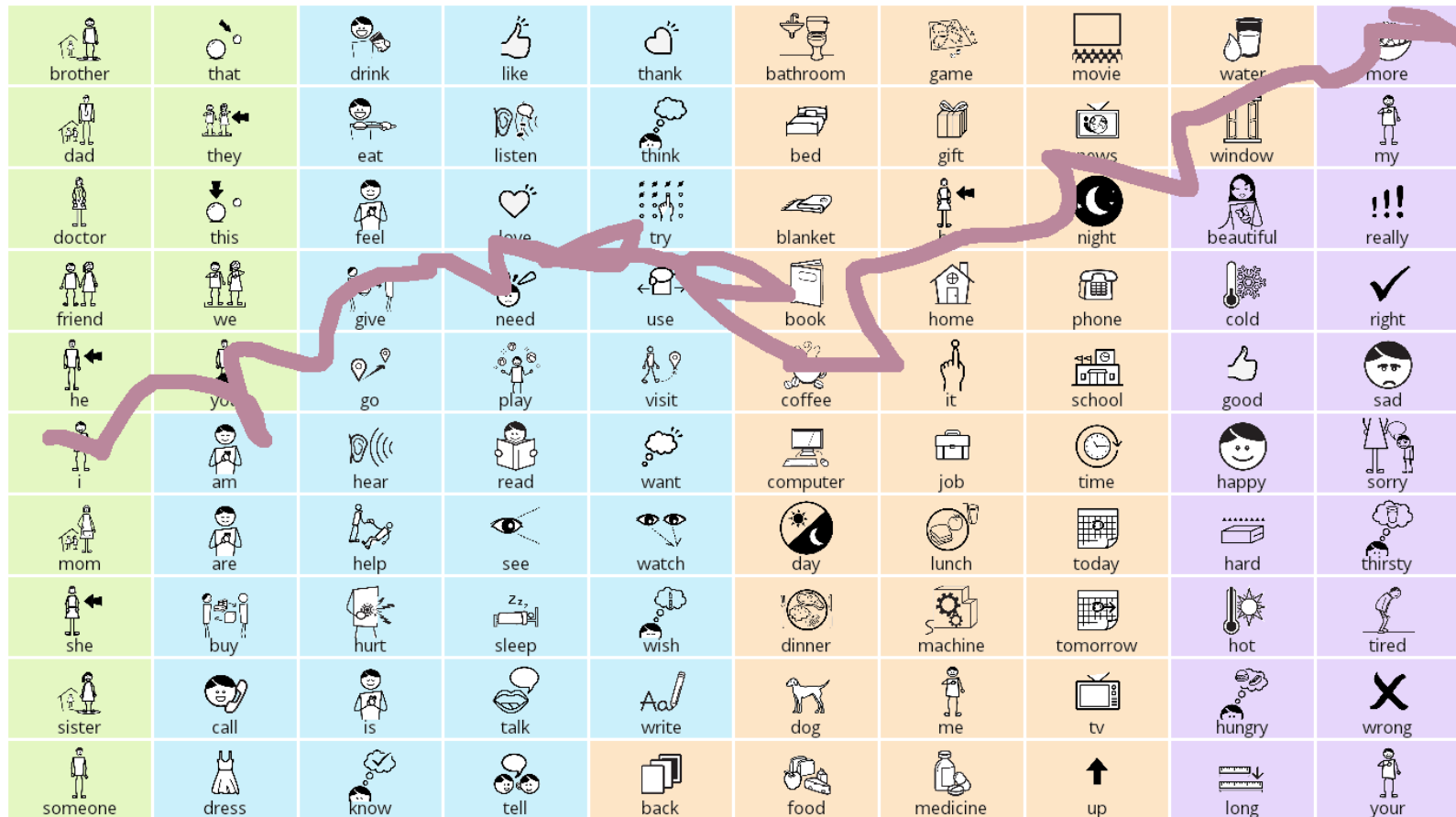
- Users will make discrete movements or selections, either physically or with a cursor.
 - Selection is important; path is irrelevant
 - Recent letter-based systems have started to remove this assumption (Goldberg, 1997; Kristensson and Zhai, 2004; Kushler and Marsden, 2008; Rashid and Smith, 2008)
 - Some input methods are naturally continuous
-

Project: NumCHAT



"Today"

Project: SymbolPath



"I need more coffee."







From Assistive to Social

- Most AAC systems are for face-to-face interaction: slow and need-based
 - What about social interaction?
 - Many AAC users live at home or in small communities
 - Turning to the Web to make new friends and keep in touch with family
-

Search ▾

Applications

edit

-  Page Manager
-  Photos
-  Groups
-  Events
-  Video
-  Marketplace

▾ more

You.
The road.
Nothing else.

The all-new
BMW 1 Series.

[View Photos of Mark \(35\)](#)[View Videos of Mark \(58\)](#)[View Mark's Friends \(4,991\)](#)[Send Mark a Gift](#)[Message Mark](#)[Poke Him!](#)

▾ Friends

4991 friends.

[See All](#)Adam
Wygle

Erin Berger

Rob
Maxfield

Mark Driscoll


Networks: Seattle, WA
Sex: Male
Relationship Status: Married
Hometown: Seattle, WA
Religious Views: Religion Sucks

▾ Mini-Feed

Displaying 10 stories.

[See All](#)

Today


 Mark created an event. 10:06am**Mars Hill Men's Advance**

Author and Perfecter


When: 6:00PM Friday, May 16th

Where: Warm Beach Christian Camp

April 3

 Mark joined the group [Mars Hill Church Downtown Seattle Campus](#). 8:36am Mark joined the group [Mars Hill Church|Wedgwood Campus](#). 8:36am Mark added a video to their favourites. 8:33am[Interview with Art Alexakis](#)

April 2

 Mark added a video to their favourites. 10:40am[Trinitarian Life](#)

April 1

 Mark posted a note. 8:30am[Share](#) +**The Trinity**

By

[Continue Reading...](#)

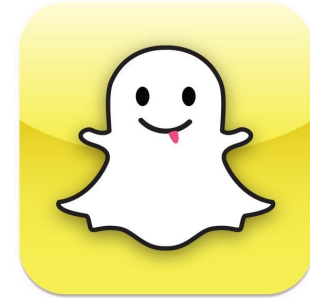
The Web as a Channel

- Composition speed is irrelevant (sort of)
 - Many social barriers go away
 - Remaining issues:
 - Navigation complexity or standardization
 - Information (cognitive) overload
 - Uniform interfaces or simplification (APIs)
-

Ontological Engineering

- Some say, "Mobile first."
 - How about, "Semantics first?" (Ha!)
 - <Post>, <User>, <Profile>?
 - <Message ReadingLevel=5>?
 - Problems: <Ad>, <Affiliate_Link>
(might as well have "display: none")
-

On Semantics and Wishful Thinking



TL;DL

The Web is a communication channel.

Assistive technology and Web accessibility standards can reduce noise/distortion and facilitate communication.

Sometimes for those who have difficulty communicating at all.



Thank you for listening!

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