***The App Factory:***

***An innovative approach to development of mobile accessibility and assistive technology apps***

Presenter: Mike Jones and John Morris

Shepherd Center

# Text version of presentation for 2016 KT Conference: Communication Tools for Moving Research to Practice

Conference information: [https://ktdrr.org/conference2016](http://ktdrr.org/conference2016)

**Slide 0: Communication Tools for Moving Research to Practice**

Title slide template: Blue background with American Institutes for Research (AIR) logo in the background and a grey bar at the bottom.

**The App Factory:** An innovative approach to development of mobile accessibility and assistive technology apps

Hosted by AIR’s Center on Knowledge Translation for Disability and Rehabilitation Research (KTDRR)

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Image of American Institutes for Research (AIR) logo

Image of National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) logo

**Slide 1:** **The App Factory: An innovative approach to development of accessibility and assistive technology mobile apps**

Mike Jones, PhD and John Morris, PhD

Wireless RERC and LiveWell RERC

Logo of wirelessRERC rehabilitiaotn engineering research center

Logo of LiveWell RERC for ICT Acess

**Slide 2: Presentation Overview**

* 1. Challenges of tech development and transfer in an era of rapid advancement
  2. Background of the App Factory
  3. The App Factory process and history to date
  4. Examples:
     + Pay for performance: Contracts and milestones
     + App Factory products (videos)

**Slide 3: Wireless RERC**

* Founded in 2001
* Partnership between Georgia Tech & Shepherd Center
* Mission of the Wireless RERC –
  + promote access to and use of wireless technologies by people with disabilities
  + encourage adoption of Universal Design approaches in future generations of wireless technologies.

**Slide 4: LiveWell RERC**

* Founded in 2015
* Partnership between Duke University, Shepherd Center, and Northeastern University
* Mission:
  + Promote access to existing and emerging ICT for people with disabilities
  + to develop and validate ICT applications to improve the capacity for independent living and community participation

**Slide 5: The challenge**

* + Forecasting technology developments and changing user needs over a multi-year funding cycle
  + The rise of application programming interface (APIs) and mobile “apps” as a means for rapid technology development of specialized assistive technology AT solutions

**Slide 6: The App Factory model**

* Two primary goals:
  1. Bring highly-talented and prolific private-sector developers into the process of designing apps that address AT user needs
  2. Establish a “pay for performance” mechanism to encourage successful commercialization of useful apps.

Complementary objective: create a model for consumer engagement in the development process

**Slide 7: App Factory criteria**

* App must address an important accessibility or assistive technology need
* App is unlikely to be developed in the commercial marketplace (e.g., “orphan” app)
* App is technically feasible
* Projected “lifetime” or impact of the app justifies the investment
* App does not duplicate existing apps

**Slide 8**: **App Factory Proposal**

* Must demonstrate:
  + Need: importance of app for consumer
  + App doesn’t already exist
  + Feasible with available tech, time and money
  + Developer has the technical capability to build it
  + Efforts to make sure:
    - app is usable by consumer
    - consumers like it
    - it will have lasting impact

**Slide 9: LiveWell REREC – App Factory (D2-A) Tech Transfer Process**

Flowchart from Step 1 to 5 with an arrow connecting each step and going back to Step 1.

Step 1. Identify App Needs

* User research (R1/R2)
* Tech/policy watch (D1)
* Input from subject matter experts

Step 2. Solicit App Proposals

* Justification of needs
* Competitive landscape
* Technical feasibility and capability
* Budget, timeline and milestons
* Plan for maintenance & follow up

Step 3. App Project Selection

* Review by App Council and subject matter experts
* Priority ranking
* Negotiation of budget and milestones

Step 4. Project Management

* Award notification and contract execution
* Project monitoring
* Payment against milestones

Step 5. App Launch and Maintenance

* Publish App in marketplace
* Track use, satisfaction, and impact
* Maintain app (3 years)

**Slide 10: App Factory outputs first 3 years**

* Funded 4-6 app projects a year
* Budgets range between $5,000-$30,000
* Roughly 70/30 split of private-sector vs. academic developers
* 11 of 16 funded projects produced commercially available apps
* 7 accessibility apps; 9 assistive apps
* Over 600,000 downloads in 4 years

**Slide 11: Table with three columns- Project Title, Developer and Direct Cost, and Downloads**

Row 1: Year 1.

Row 2: Project Title- braille touch, Developer- brailleTouch, Inc/GA Tech and Direct Cost $16000, and Downloads, 18,616.

Row 3: Project Title Georgia Read More ASL, Developer GA Tech/GA Public Television and Direct Cost- $9,000, and Downloads-Beta.

Row 4: Project Title- IDEAL Group Reader, Developer-IDEAL Group and Direct Cost, $14,500, and Downloads-14,535.

Row 5: Project Title- IDEAL Group Accessible App Installer, Developer- IDEAL Group and Direct Cost $10,000, and Downloads 535,160

Row 6: Project Title Mobile Assistive Listening System, Developer- Inclusive Technologies and Direct Cost- $3,500, and Downloads- Exploratory

Row 7: Year 2

Row 8: Project Title- Access Note, Developer- Am Foundation for the Blind and Direct Cost- $19,000, and Downloads- 6,050

Row 9: Project Title- Citra, Developer- Tony Wells Foundation/Ohio State U. and Direct Cost- $15,000, and Downloads-200

Row 10: Project Title- Ideal Currency Identifier, Developer- IDEAL Group and Direct Cost $5,000, and Downloads- 6381

Row 11: Project Title- IDEAL Group Reader- Mathwriting Recognition, Developer- IDEAL Group and Direct Cost $7,500, and Downloads- 11,015

Row 12: Project Title- Impromptu Upgrade, Developer- Ohio state university and Direct Cost- $12,973, and Downloads- 2,764

Row 13: Project Title- PicTalker, Developer- Duke University and Direct Cost- $11,600, and Downloads- Beta

Row 14: Project Title- Smart Steps, Developer- Smart Steps, Inc. and Direct Cost 19,742, and Downloads- 2401

Row 15: Year 3

Row 16: Project Title- continuous Tongue Drive, Developer- GA Tech Bionics Lab and Direct Cost $28,269, and Downloads- Beta

Row 17: Project Title- IDEAL Document Knowledge Minor, Developer- IDEAL Group and Direct Cost- $15,002, and Downloads 259

Row 18: Project Title- RheumMate, Developer- GA Tech/Emory University and Direct Cost- $10,000, and Downloads Beta

Row 19: Project Title- ZyroSky Switch Accessible Game, Developer-Zybrotics and Direct Cost- $17,752, and Downloads- 2,779

**Slide 12: App Factory outputs - Last 2 years**

**Wireless RERC**

* Funded 9 app projects (8 completed)
  + Hearing, dexterity, cognitive, developmental disabilities
  + Budget range: $12,000 - $24,500

LiveWell RERC

* Year 1 – Funded 3 app projects:
  + 2 cognitive assist, 1 manual-dexterity rehab
* Year 2 – External proposals currently under review

**Slide 13: Advantages of this approach**

* Rapid development and deployment
* Leverages existing app marketplaces
* Pay for performance provides incentives to get the product to market
* Encourages development of “orphan” apps
* Consumer engagement improves relevance and impact of apps
* Secondary dispersal of $ a model for others?

**Slide 14: Potential limitations of approach**

* Some apps less successful in terms of downloads (but that may be okay)
* Limited shelf-life of apps in general
* Notable differences in success of private-sector vs. academic developers

**Slide 15: Challenges measuring impact**

* Downloads do not indicate use – average monthly users or average monthly use time might be better indicators, but still indirect measures
* Potential user base may be small – downloads may be relatively few, but impact could be high
* For projects developed by external teams, the RERC must ask each team individually to provide download data

**Slide 16: Pay for performance – Contracts and milestones**

***ZyroMath* by Zyrobotics (Contract value = $17,620)**

*Integrated switch-accessible runner-game for children that keeps them motivated while learning basic math.*

* **Milestone 1:** $5000 - Completion of user interface development
* **Milestone 2:** $4000 - Development of full functionality of app, including:
  1. a tool for automatic assessment of each child’s motor abilities (with respect to interaction) for creation of a near-optimal set of parameters to configure the app's settings, and
  2. a graphical interface for parents, clinicians, and teachers that provides long-term reporting on the child’s progress and performance
* **Milestone 3:** $4000 - Completion of user testing & usability fixes
* **Milestone 4:** $4620 - Product launch and availability on both Android and iOS operating systems

**Slide 17: Pay for performance – Contracts and milestones**

***Smart Steps* enhancements (Contract value=$23,475)**

*Mobile application for individuals with cognitive disabilities to reduce anxiety, solve everyday problems, and increase independence using decision trees and personalized backup support.*

* **Milestone 1:** $7500 - Add private and public decision tree database; License management for groups; admin portal to associate files so that trees can be assigned and to buy a set of licenses; ability to store cell numbers for texts messaging
* **Milestone 2:** $7500 –Read aloud button in the app; customize colors for the text boxes and tips; enhance login workflow; payment portal for credit card processing
* **Milestone 3:** $8475 – Beta testing and release: availability through Google Play, Amazon apps

**Slide 18: Examples of App Factory Outputs**

* Tetra Alarm **Chillaxing Software- Image of a red clock in the shape of a heart.**
* Pow!r Mount **BlueSky Designs- Two interconnecting arrows with a red solid circle in the middle.**
* BreatheWell on Watch **Shepherd Center- Image of a watch.**

**Slide 19: Examples of App Factory Outputs**

<https://youtu.be/qK0Ae9sA3ek>

Pow!r Mount **BlueSky Designs**

Image of a two blue arrows in a circle. Red solid circle in the middle.

The Pow!r Mount App controls the Pow!r Mount motorized mounting system developed by BlueSky Designs.

* Pow!r Mount is a configurable system of motorized joints that includes dual powered arms, single powered arm, or hybrid system with a single manual and single motorized arm
* The app is accessible via touch or switched access (single switch or 2-switch)
* App allows pre-set target positions or custom adjustment
* Mounting system accommodates tablets, smartphones, etc.

**Slide 20: Examples of App Factory Outputs**

Video!

BreatheWell on Watch **Shepherd Center**

Image of a watch

Android Wear smart watch app to assist individuals with mild traumatic brain injury (mTBI) and posttraumatic stress disorder (PTSD) to manage stress through diaphragmatic breathing.

* Smart watch platform allows for **quicker access and more discreet use of a breathing therapy aid** than is currently provided by apps running on smartphones and tablets.

**Slide 21: Examples of App Factory Outputs**

Video!

Tetra Alarm **Chillaxing Software**

Image of a red clock in the shape of a heart.

Tetra Alarm allows you to easily set reminders for periodic, daily events. Alarms are easy to set and intuitive.

* Multiple alarms can be set to signal a user to complete necessary tasks throughout their day.
* Alarms can be signaled by various methods – audible, visual or tactile – and can be customized to attract your keenest senses.

**Slide 22: App Factory RFP (currently closed)**

**Assistive and Accessible Mobile Applications Call for proposals**

Paragraph too small to read.

<http://www.livewellrerc.org/2016appfactoryrfp>

**Slide 23: Thank you!**

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**Slide 24: Disclaimer**

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