



@advancingresrch #AR2022
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Improving Legacy Software: How Much Better Does It Have to Be?

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USUALLY BOUNDED BY TECHNICAL CONSTRAINTS AND ITS USERS TO CHANGE INGRAINED HABITS

KEEPING OUTDATED SOFTWARE TO PERFORM A TASK, EVEN THOUGH NEWER OPTIONS ARE AVAILABLE

The latter is known as a

LEGACY HABIT

Even when newer software is available, people don't want to change their learned habits.

AT MICROSOFT
Our product teams often ask if users will like a **DESIGN CHANGE** to an existing piece of software
BETTER? SAME? WORSE?

THIS TALK OUTLINES IDEAS FOR HOW TO GET SOME ANSWERS

TWO IMPORTANT IDEAS

1. KNOW LEGACY HABIT PATHS RELATED TO SOFTWARE CHANGE

PEOPLE FORM HABITS NECESSARILY TO GET THEIR WORK DONE.



the threshold for **HABIT FORMATION?**

- 4x per minute 4x per week
- 4x per hour 4x per month
- 4x per day 4x per year

The complexity and frequency of the software workflow determines how quickly habit forms and how cemented it is.

SOME HABIT PATHS ARE NON-OPTIMAL.

BUT COMPANIES MUST INNOVATE AND CHANGE

- ACQUIRE NEW USERS
- GET AHEAD COMPETITIVELY
- FIX BAD EXPERIENCES

This is what I know

change is a hassle and will slow me down

AS PEOPLE CEMENT THESE PATHS and GET GOOD AT THEIR WORK, THEY BECOME INGRAINED... DIFFICULT TO UNRAVEL.

RESPECT LEGACY HABITS



who moved cheese?!

Collides with habits and creates cognitive overload in users [BAD DAY!]

CONCRETE EXAMPLE

THE Windows Operating System (OS) is 27 YEARS OLD

The path to opening the control panel has changed **NINE** times; in several cases, breaking years-old habits!

So, how do we measure the IMPACT?



2. KNOW WHAT YOU ARE MEASURING ACROSS THAT CHANGE

- USABILITY • Time on task
- COGNITIVE LOAD • Struggle?
- ADOPTION • Number of repetitions
- EMOTION • Facial expression
- ATTITUDE • Attitudinal studies
- CONTEXT • Realistic tasks

THE KEY IS TO DO A BEFORE/AFTER ANALYSIS WITH WHATEVER MEASURE YOU NEED

PAULA WALKS US THROUGH A BEFORE/AFTER STUDY ABOUT TAB SWITCHING THAT VALIDATED THE PROPOSED CHANGE BY SEVERAL MEASURES

I hope this has gotten you thinking about the potential of this approach

CHALLENGES

- POWER** we need a big sample (study size)
- PEOPLE** Need the right people to explore paths and habit formation
- PAIN** Motivation to change and self efficacy
Measure impact or size of pain itself
- CONTEXT** The more complex the work, the more ecological validity counts (versus simulated environment)
- PATHING** Should be added to the prototype to capture switching and on software for habit paths
- TOOLING** prototypes are key for capturing paths and differences
If path is not too complex
- SETTING UP TEST ENVIRONMENT IN-HOUSE
- HARD TO GET DATA TO TRIANGULATE BEHAVIOR, ATTITUDE, EMOTION
- JOIN EVENTS INTO PATH
THINK OF TELEMETRY IN SYSTEMS

PAULA WALKS US THROUGH THE HISTORY, SHOWING US THE CHANGES TO HABIT PATH