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Advancing Research 2022
Advancing our Practice Theme
March 11

Improving Legacy Software: How Much Better Does it Have to Be?

Legacy Software

Keeping outdated software to perform a task, even though newer options are available.



Legacy Habit

Keeping a habit, even though updated software wants you to change it.



Two important ideas

1. Know legacy habit paths related to software change.
2. Know what you are measuring across that change.

What happens
when we learn how
to do our work
with software?



Habit path



Repetition for habit formation



Threshold for Habit Formation

4x per minute

4x per hour

4x per day

4x per week

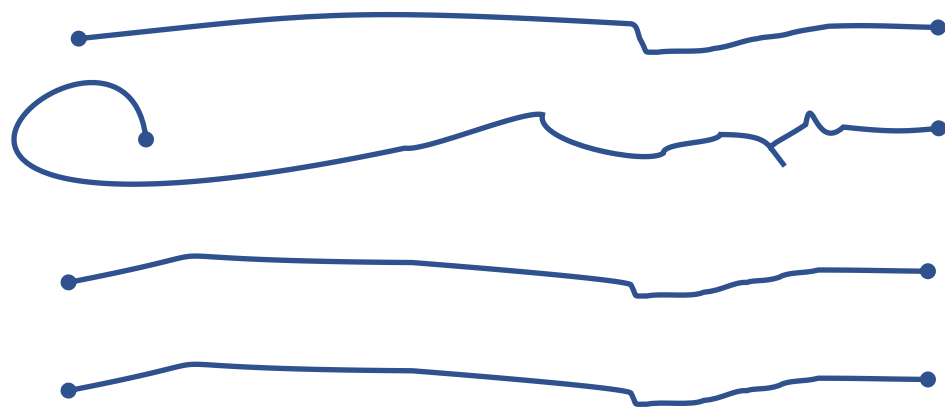
4x per month

4x per year

Habit path



Repetition for habit formation



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4x per year



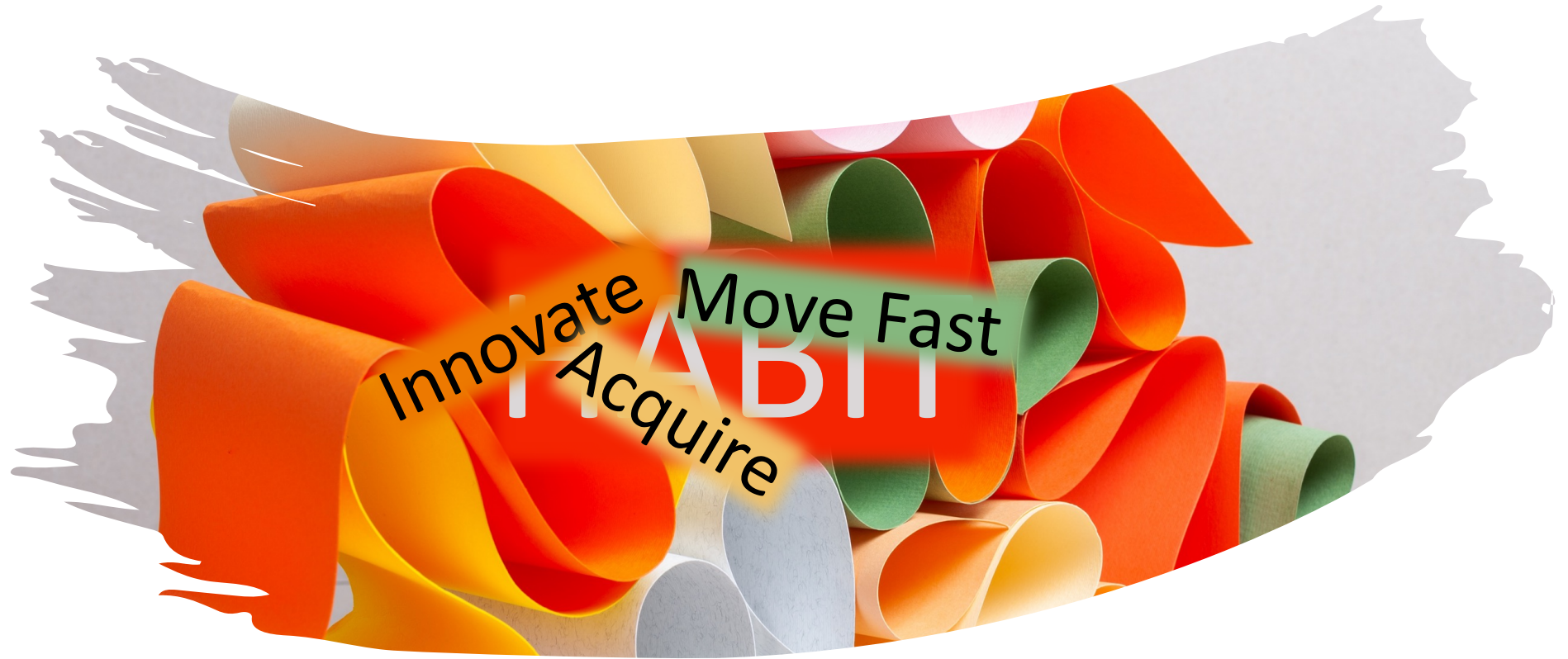
Repeating work tasks cements optimal and
non-optimal habits paths



Repeating work tasks cements optimal and
non-optimal habits paths

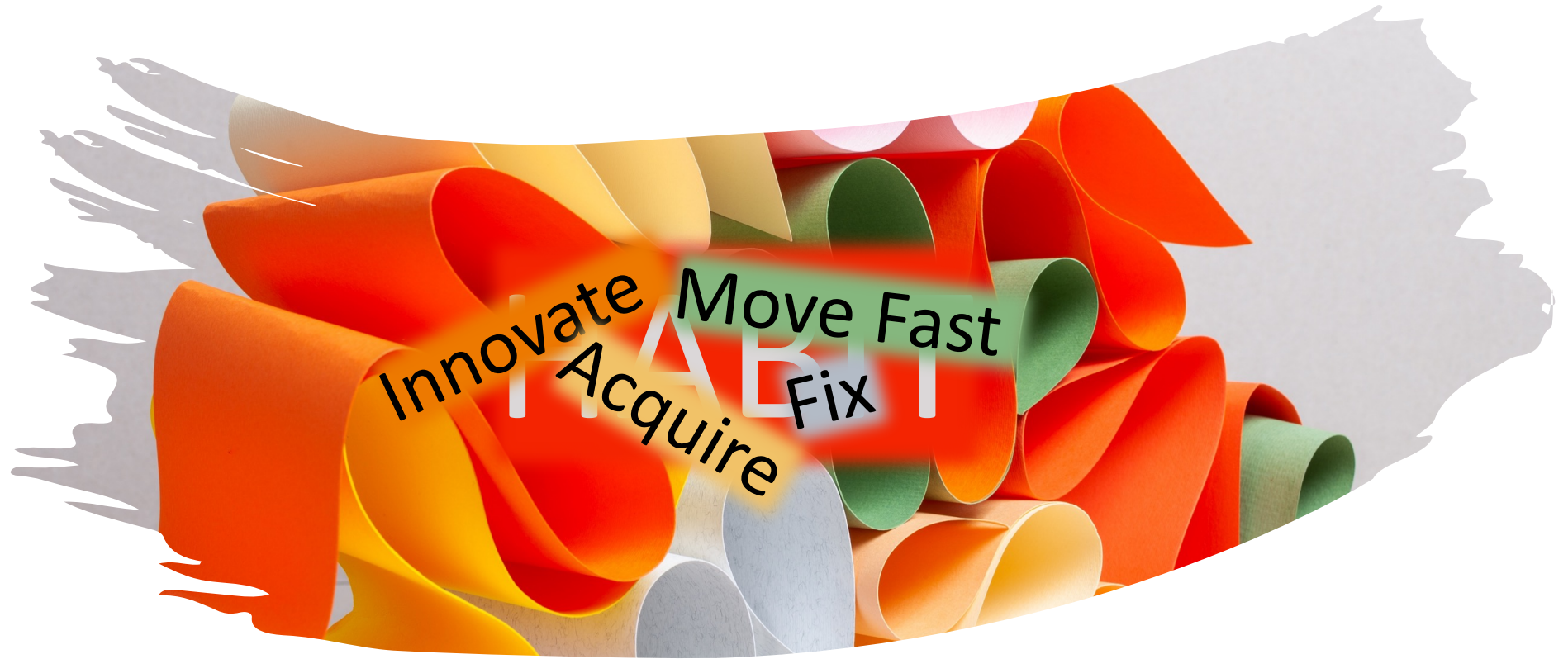






Innovate Move Fast
Acquire

ABII



Innovate Move Fast
Acquire Fix

ABT



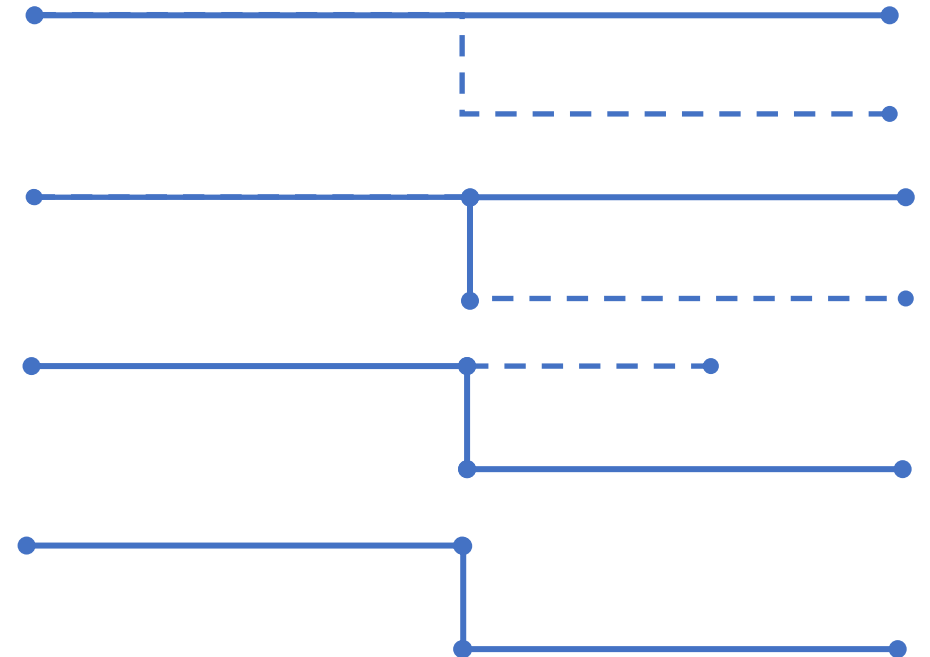
Respect Legacy Habits

Formed Legacy habit



Change in
software

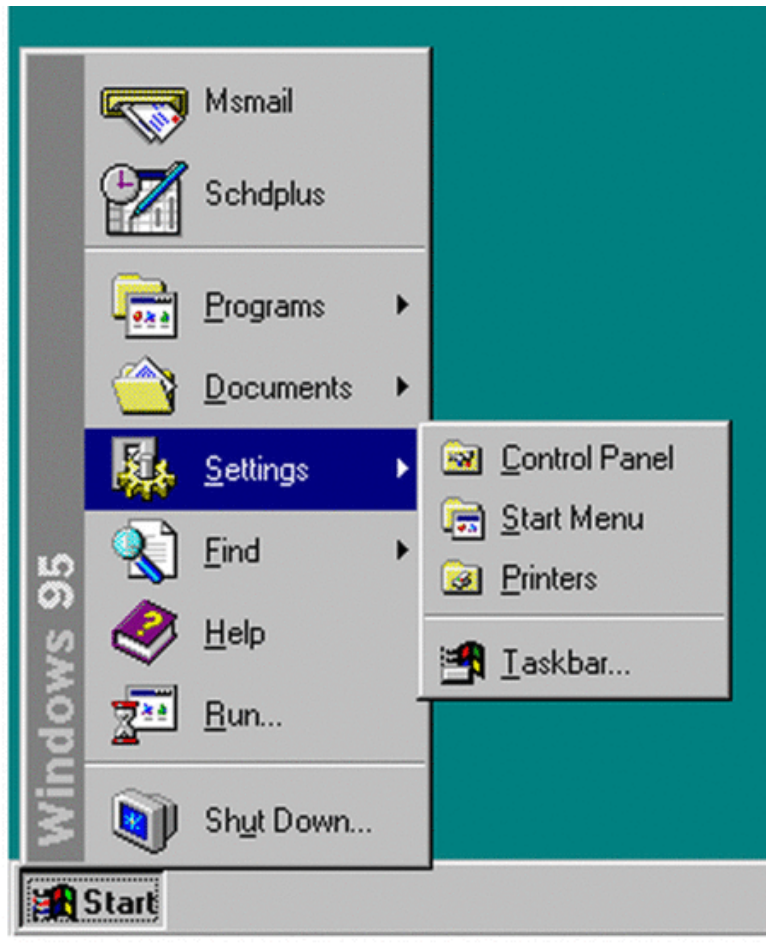
New habit not easily formed



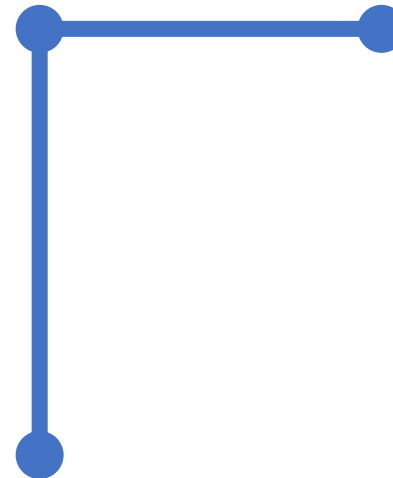
An Example

The Windows Operating Systems is
27 years old.



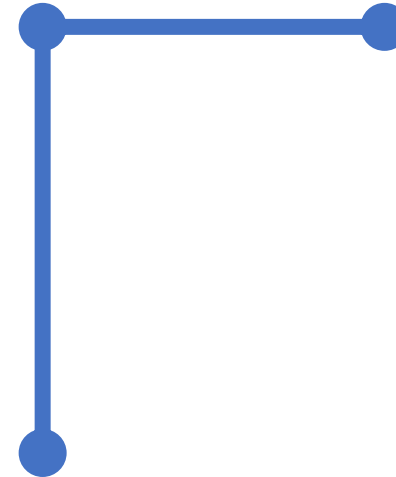


Windows 95 Start Menu



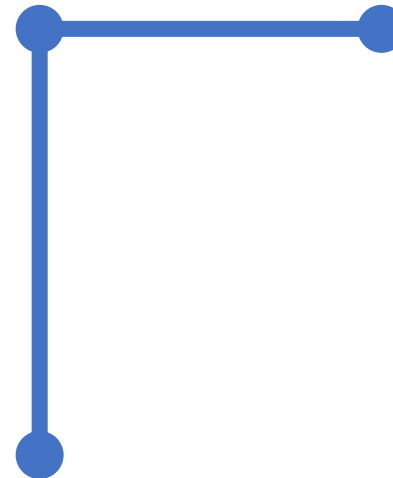
Settings habit path

Windows 98 Start Menu



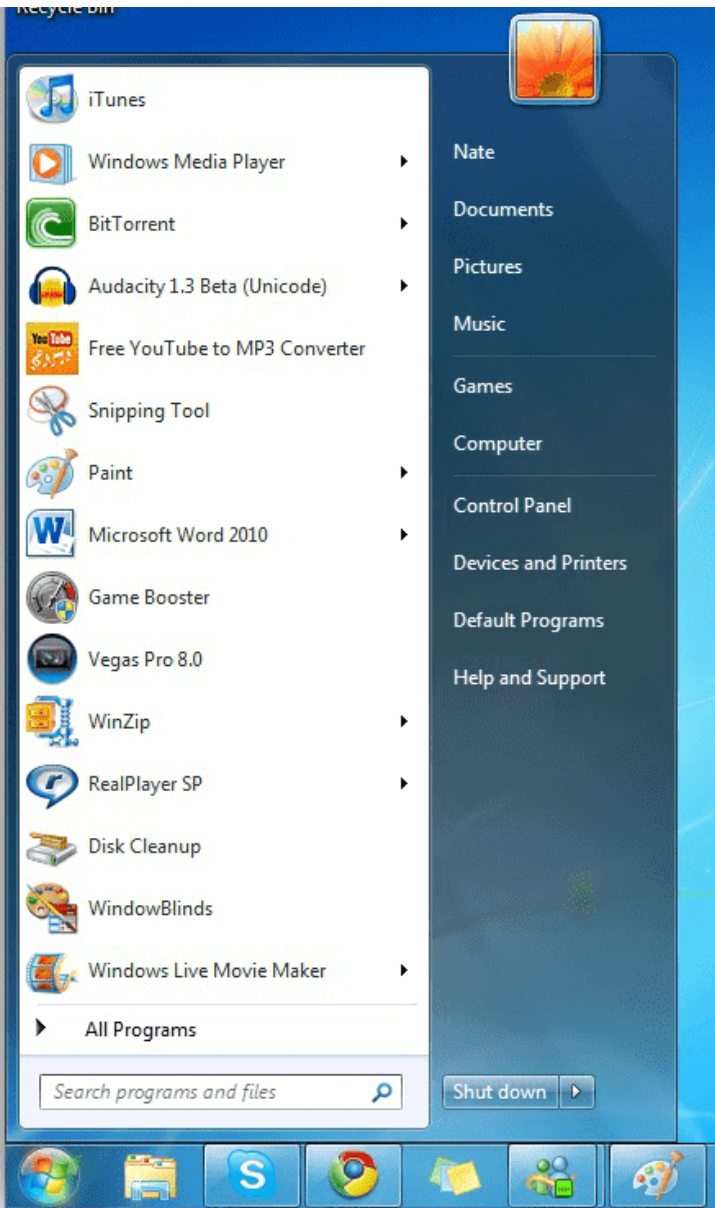
Settings habit path
3 years

Windows 2000 Start Menu

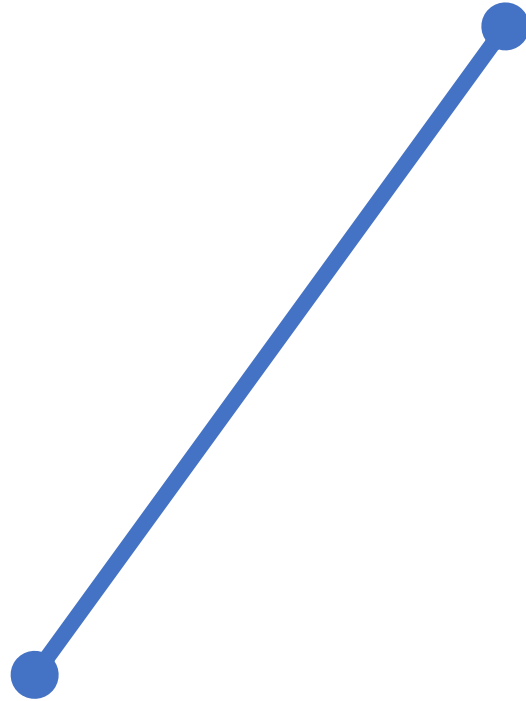


Settings habit path

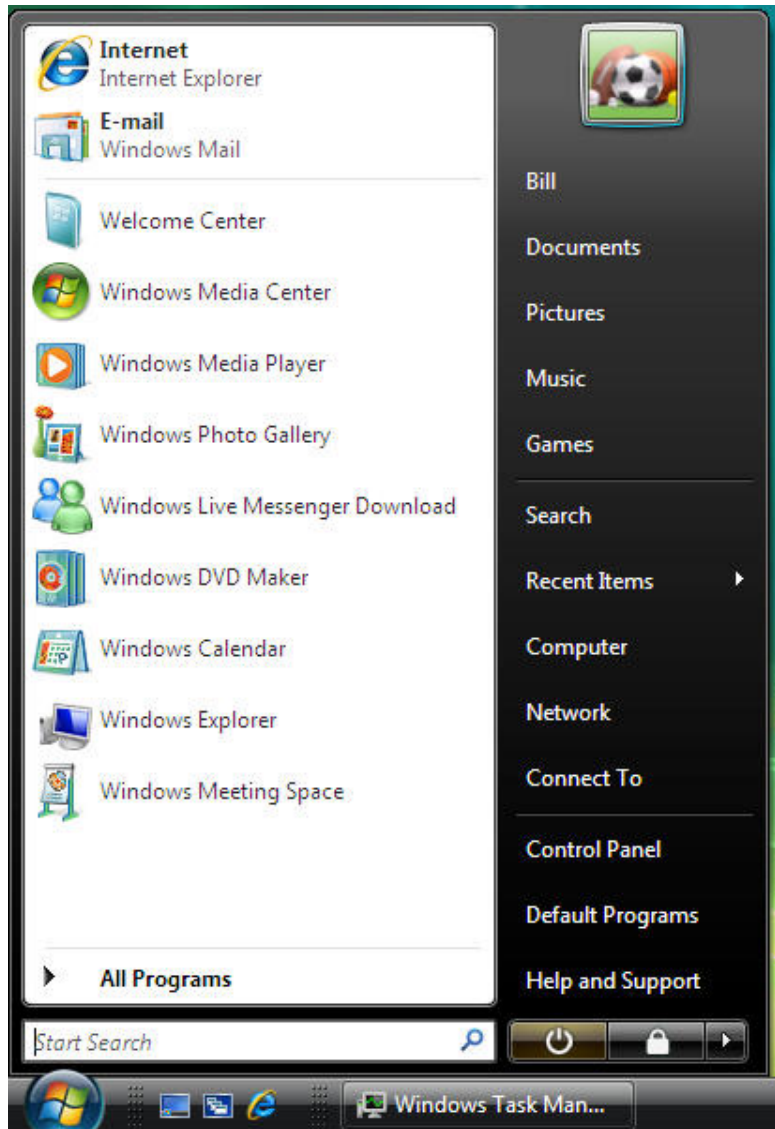
5 years



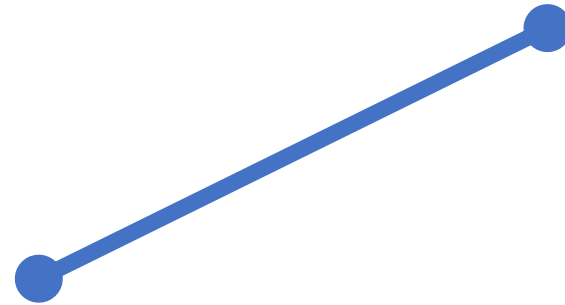
Windows XP Start Menu



Settings Control
Panel habit path
5-year habit broken

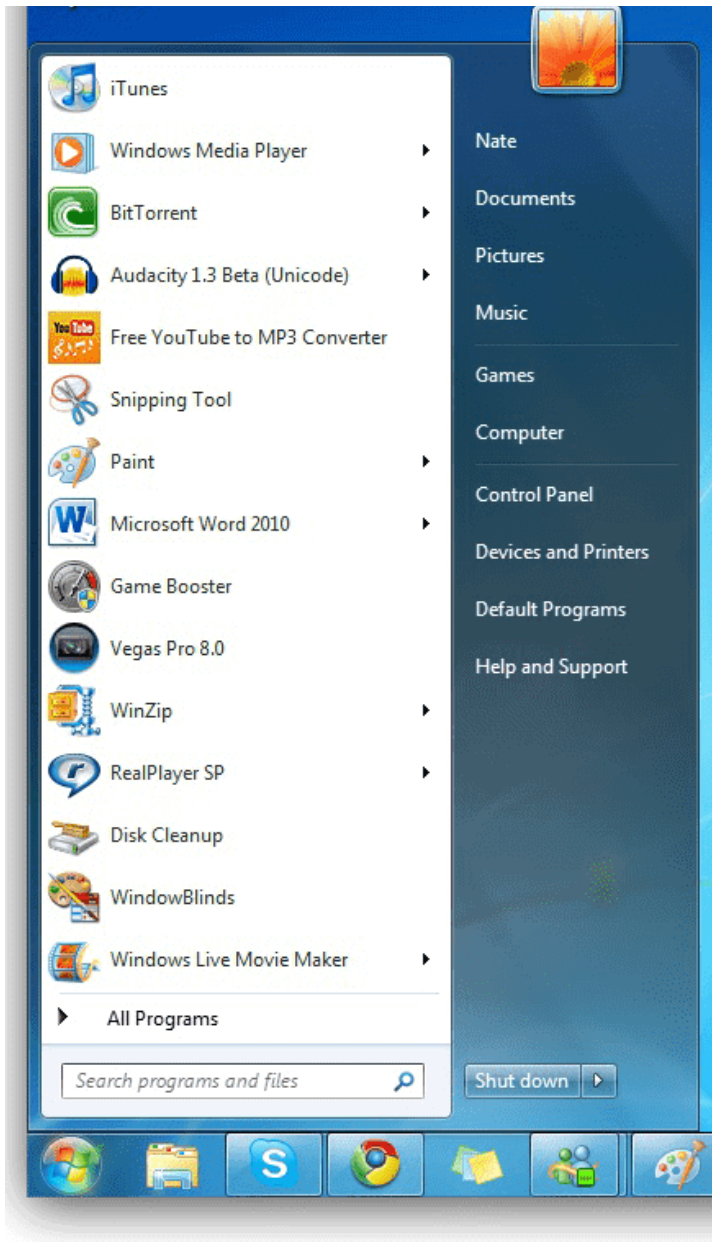


Windows Vista Start Menu

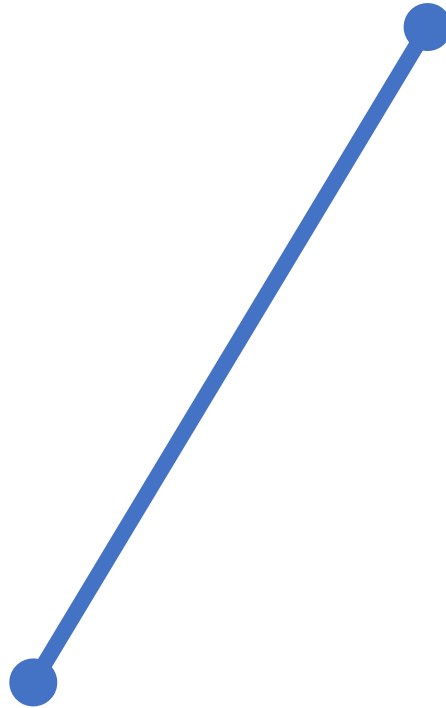


Control Panel habit
path

5-year habit
adjustment



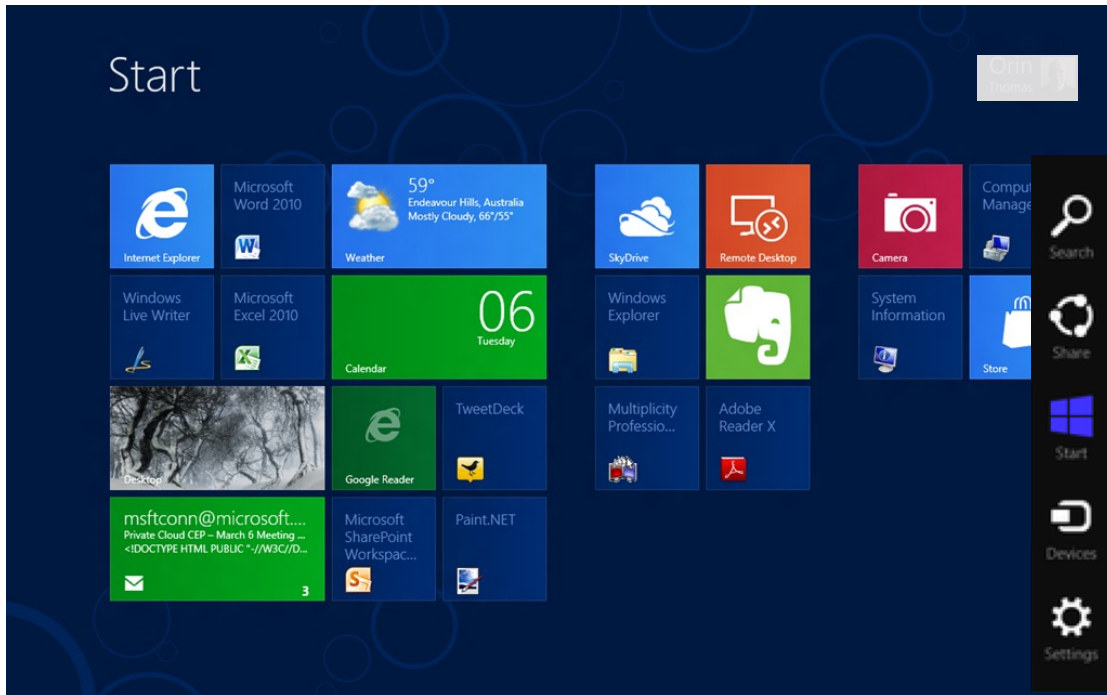
Windows 7 Start Menu



Control Panel habit
path

2-year habit
adjustment

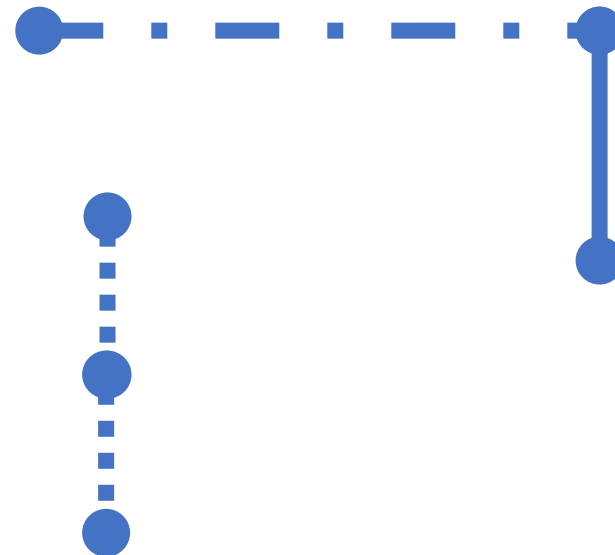
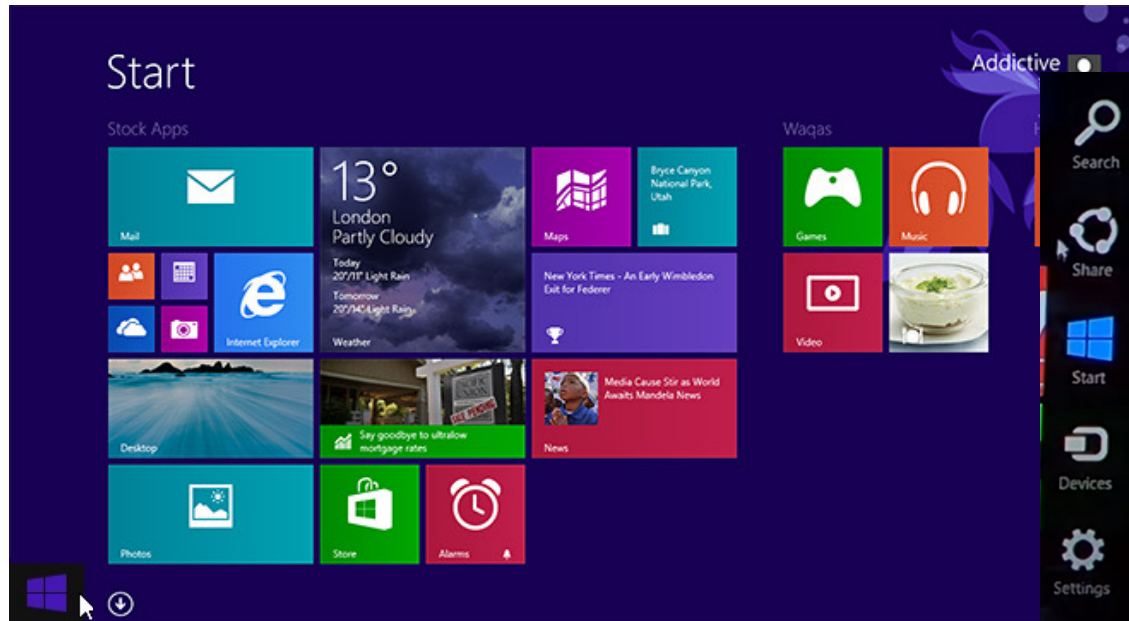
Windows 8 Start Menu



Settings habit path

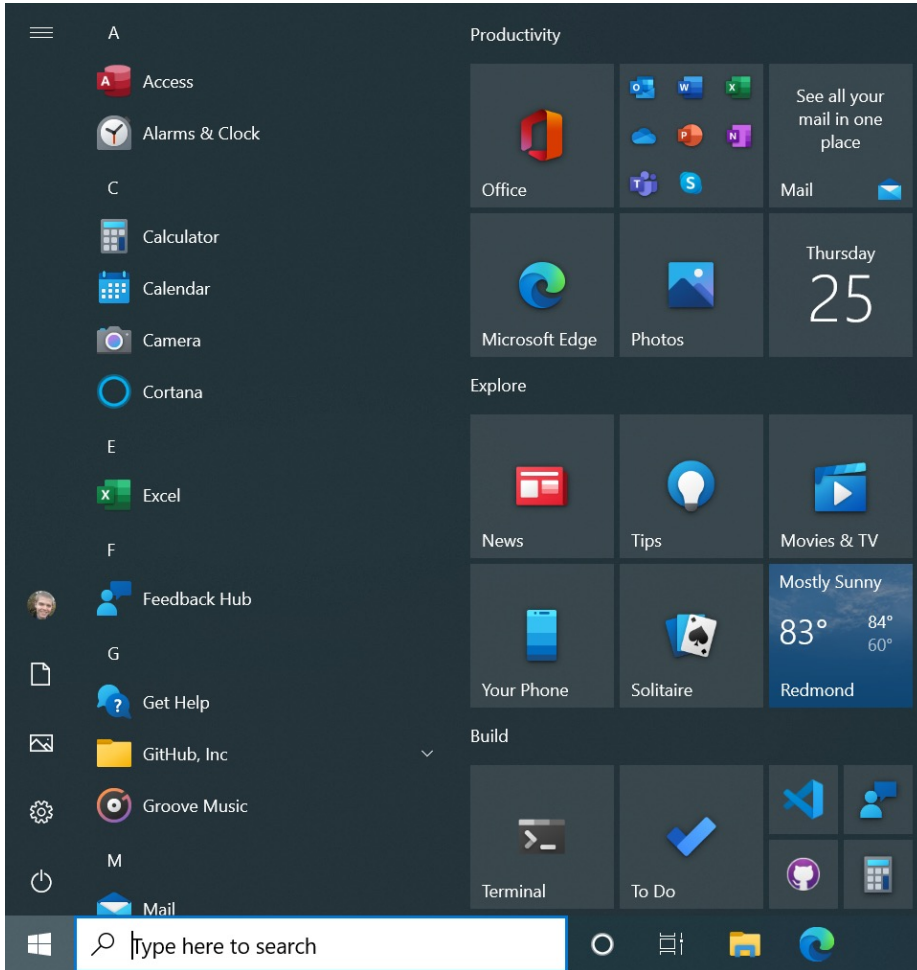
15-year habit path
broken

Windows 8.1 Start Menu



Settings habit path

1-year habit path
broken



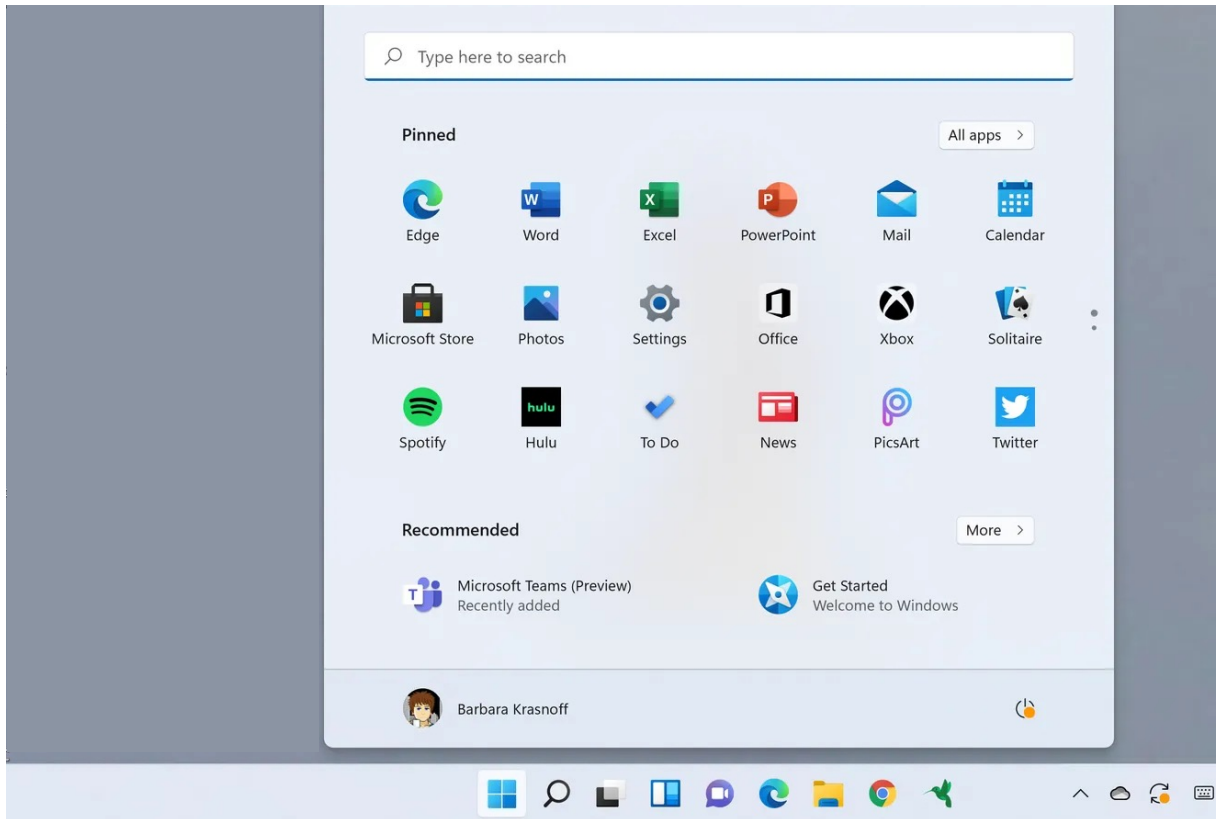
Windows 10 Start Menu

Settings habit path

3-year habit path
broken

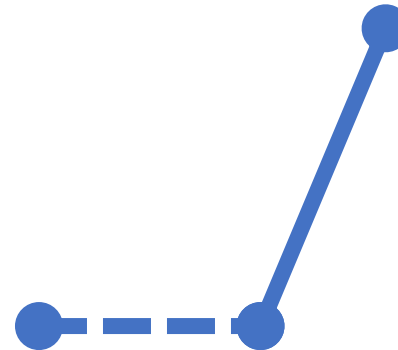


Windows 11 Start Menu



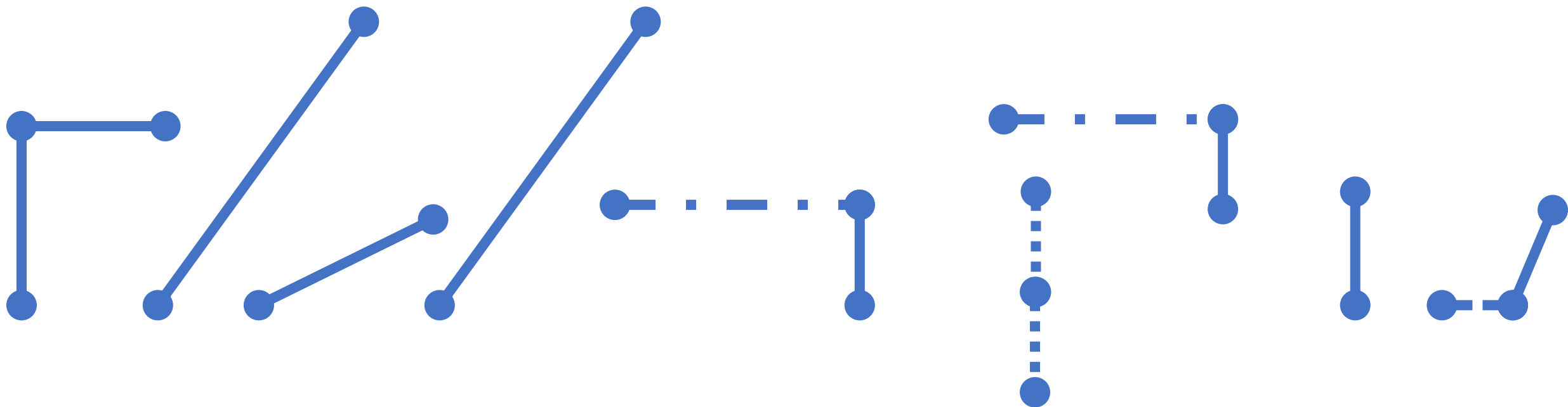
Settings habit path

6-year habit broken



27 years

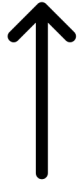
9 habits paths





Measure the impact to habit change

How do we measure the habit paths when changes are proposed?



better



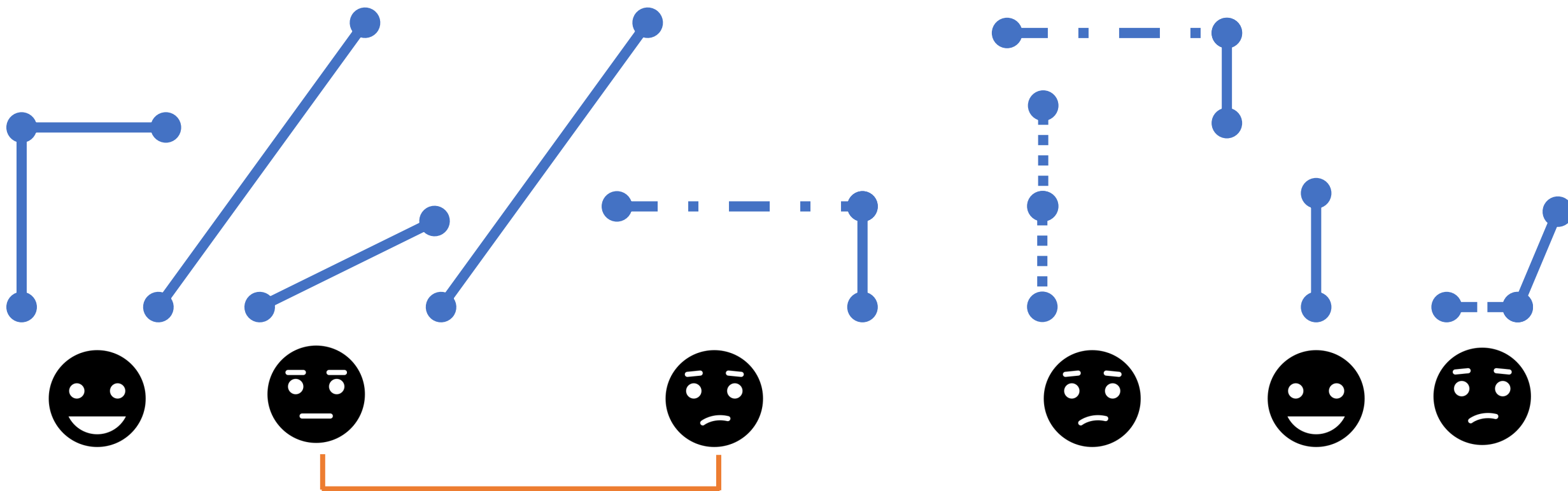
same



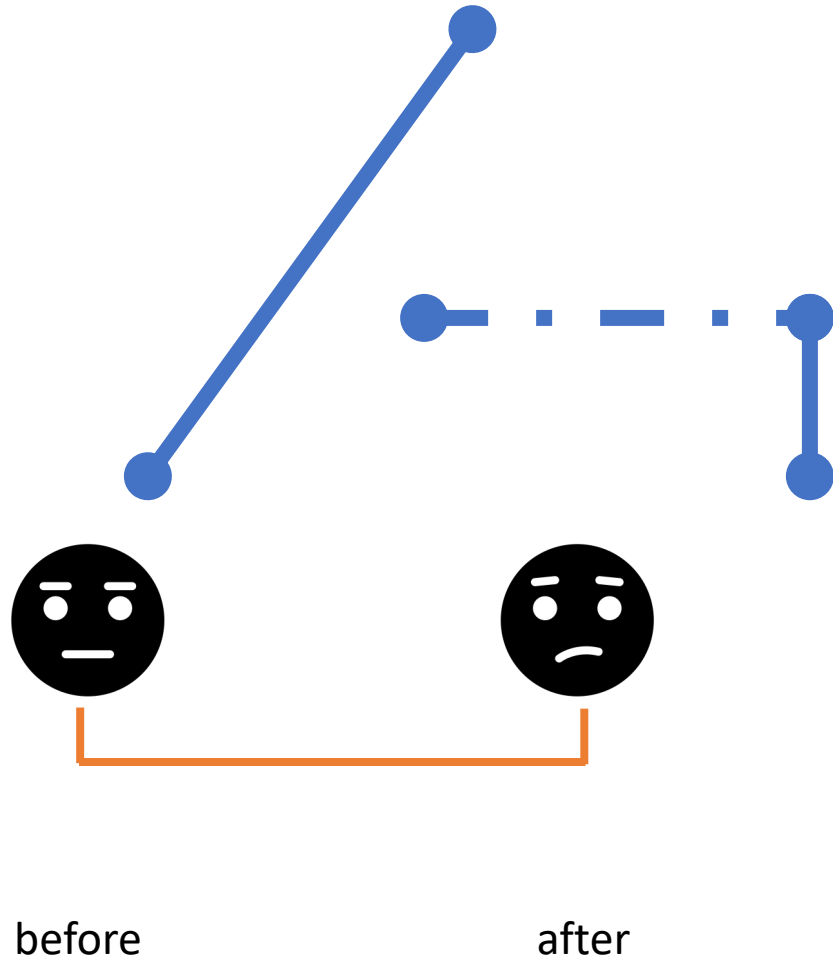
worse

27 years

9 habits paths



How to measure habit change



Usability

Cognitive Load

Adoption speed

Emotion

Attitudes

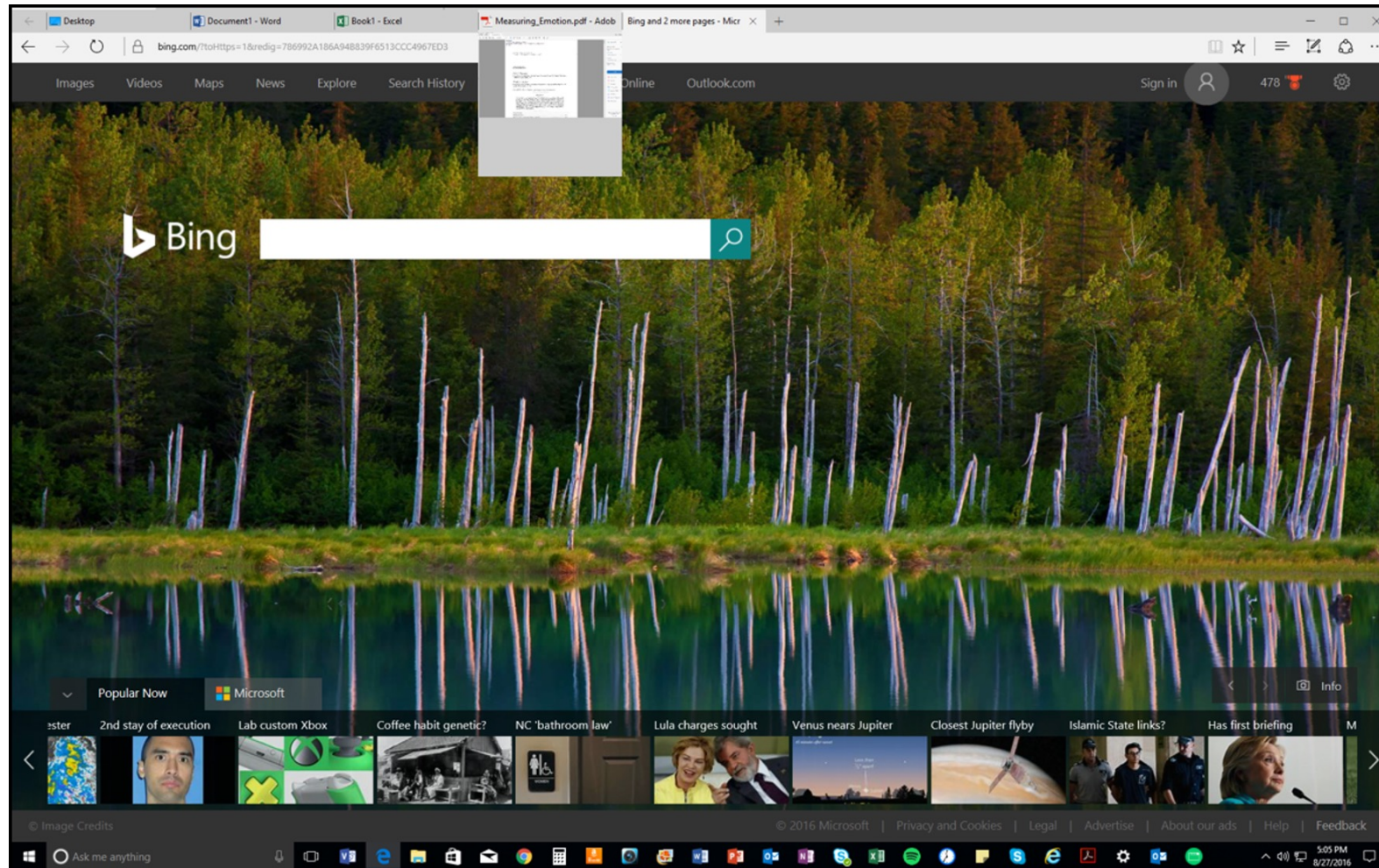
Context

Switching habit paths

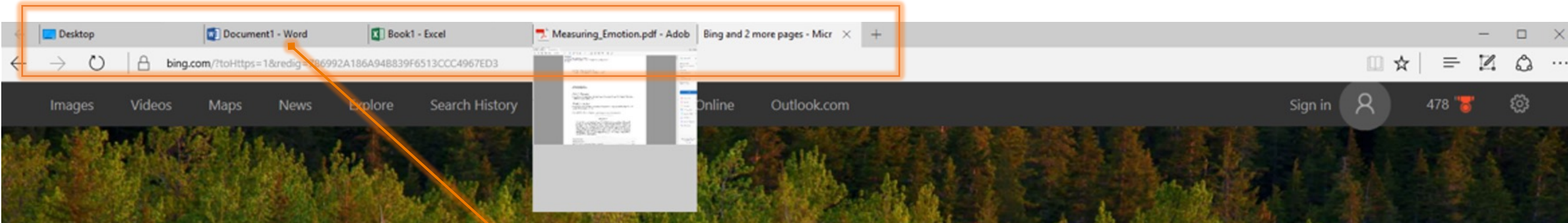
Taskbar and tab switching habits



Tab switching study



New habit path: application switching with heterogeneous tabs

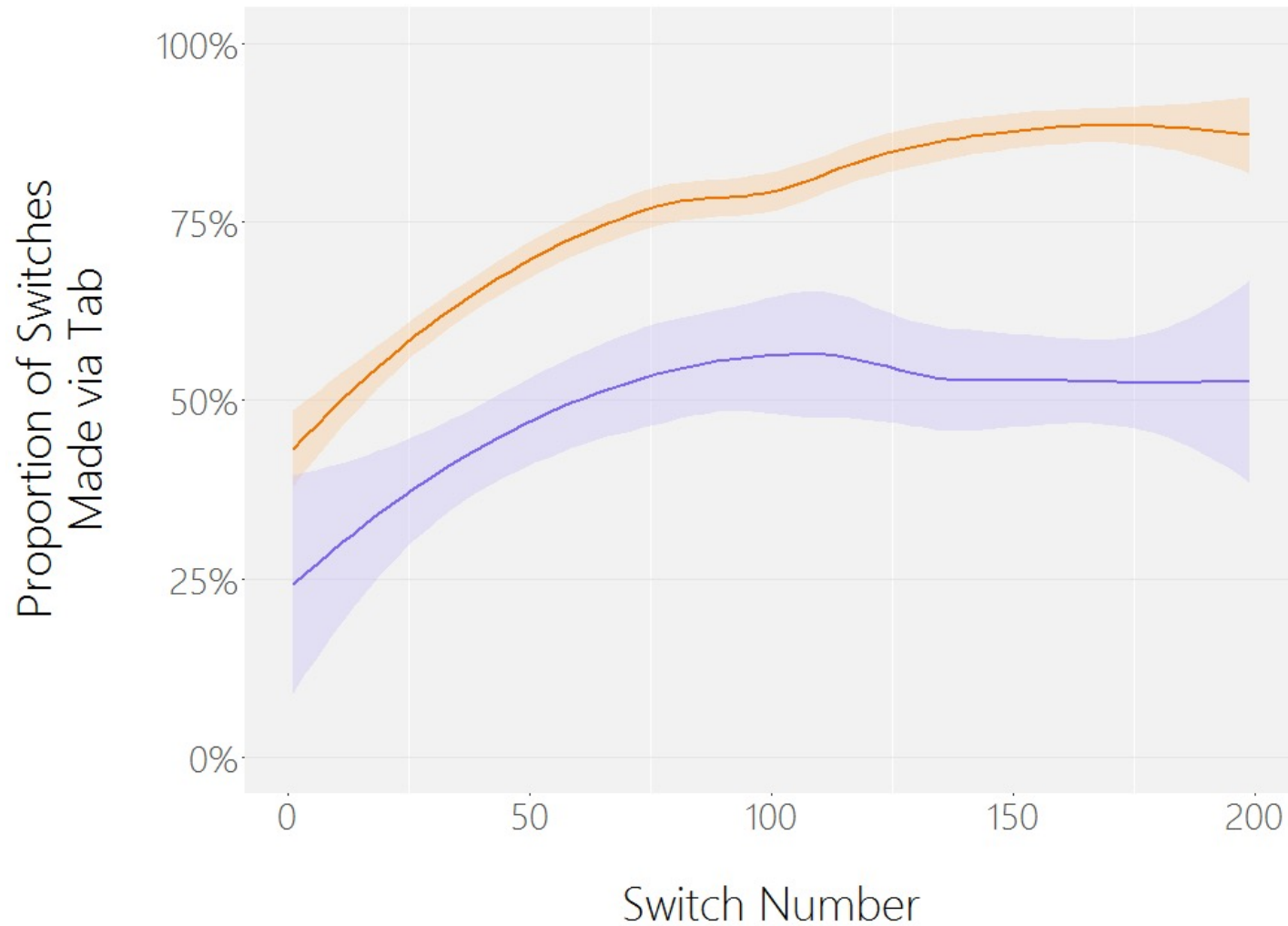


Existing habit path : website switching with tabs



Existing habit path : application switching on the on taskbar

Heterogeneous Tab Adoption

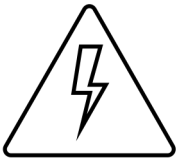


"I just went with what I'm used to doing, which is the icons at the bottom [taskbar]. And then when I noticed those links are the top, I thought, this makes it so much easier. So I stopped using the taskbar." - 8

A collection of colorful wooden Tetris blocks, including I, O, T, L, and Z shapes, scattered on a wooden surface. The blocks are in various colors like purple, blue, green, orange, red, pink, yellow, and brown. The word "Challenges" is overlaid in white text in the center.

Challenges

Challenges with legacy habit identification and measurement



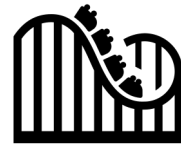
power



people



pain



context



pathing
telemetry



tooling

Two important ideas for respecting legacy habit

1. Know legacy habit paths related to software change.
2. Know what you are measuring across that change

How Much Better Does it Have to Be?

Changes to software must keep the same or similar habit path.
Changes to legacy habit paths must be measured.





Thank you!