Comparing Web Applications with Desktop Applications: An Empirical Study

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Motivation and Objective

- **Drawbacks of desktop applications:**
  development done on multiple platforms,
  have to downloaded before their use,
  administration and maintenance.

- **Web applications:**
  thousands implemented in recent years,
  used by millions of users.

- **Usability of web applications compared with desktop applications.**

Definitions

- **Desktop application:**
  WIMP,
  direct manipulation.

- **Web application:**
  runs on a server and presents itself through a web browser.

  Examples: web based email, bookmark managers, personal information managers, web calendars, online banking.

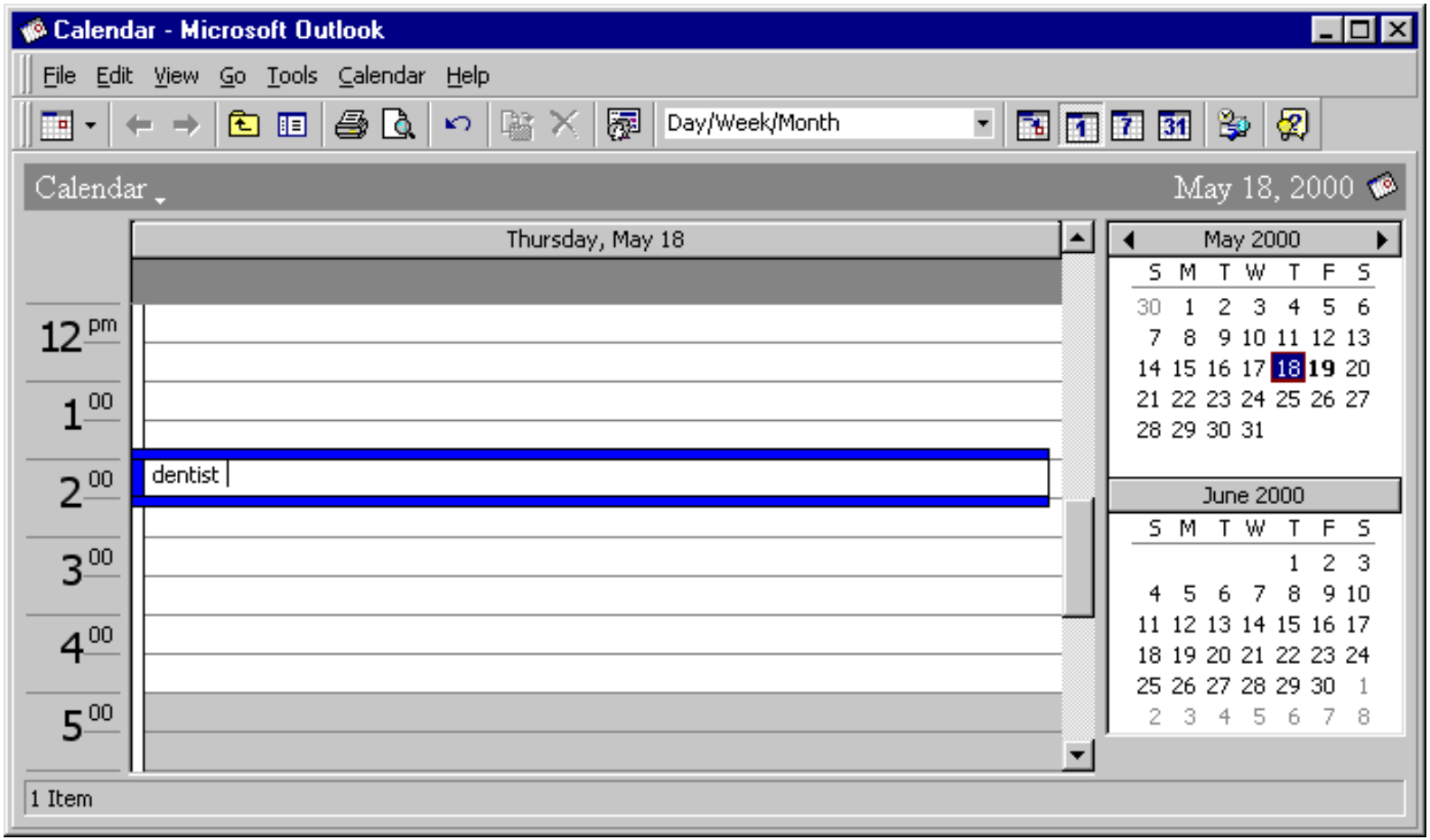
Calendaring Application

- Our **specifications** for an application: cost and size.

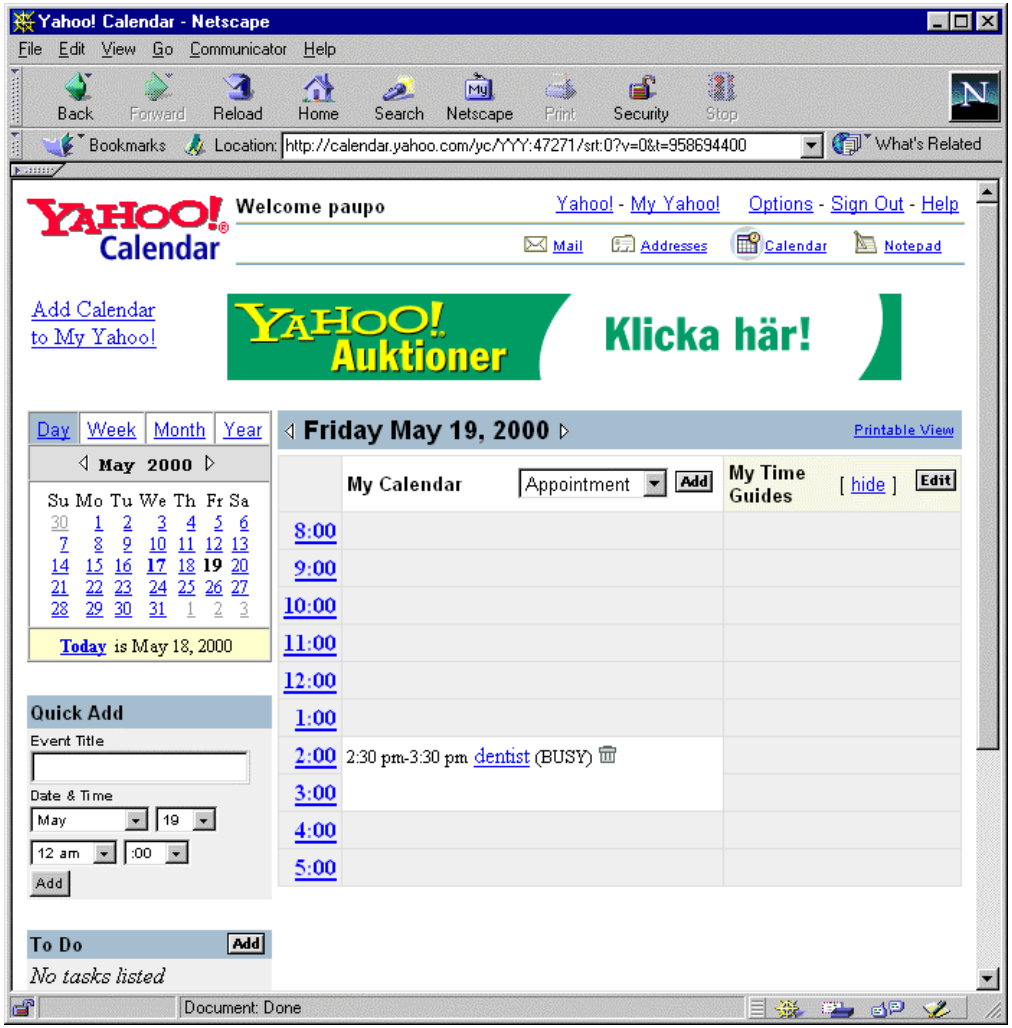
- **Calendaring applications**:
  overview of a day, week, year;
  add, delete and move events;
  find free slots and events;

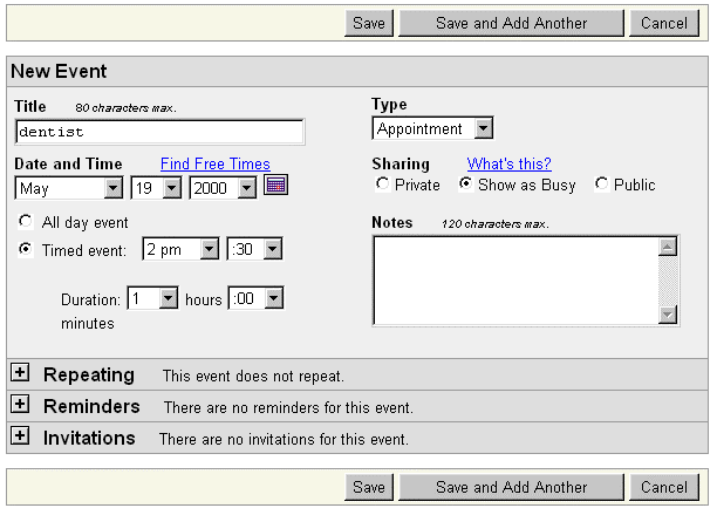
  reminders, meeting planners, sharing, “to do” lists.

Microsoft Calendar



Yahoo!Calendar





Study Setup: Tasks

- Training tasks.
- Tasks:

Go To	From today, go to July 17.
Add	Add “Buy tickets” from 2pm, for 30 min.
Move	Move two consecutive events 1 hour.
Undo	Undo the previous move task.

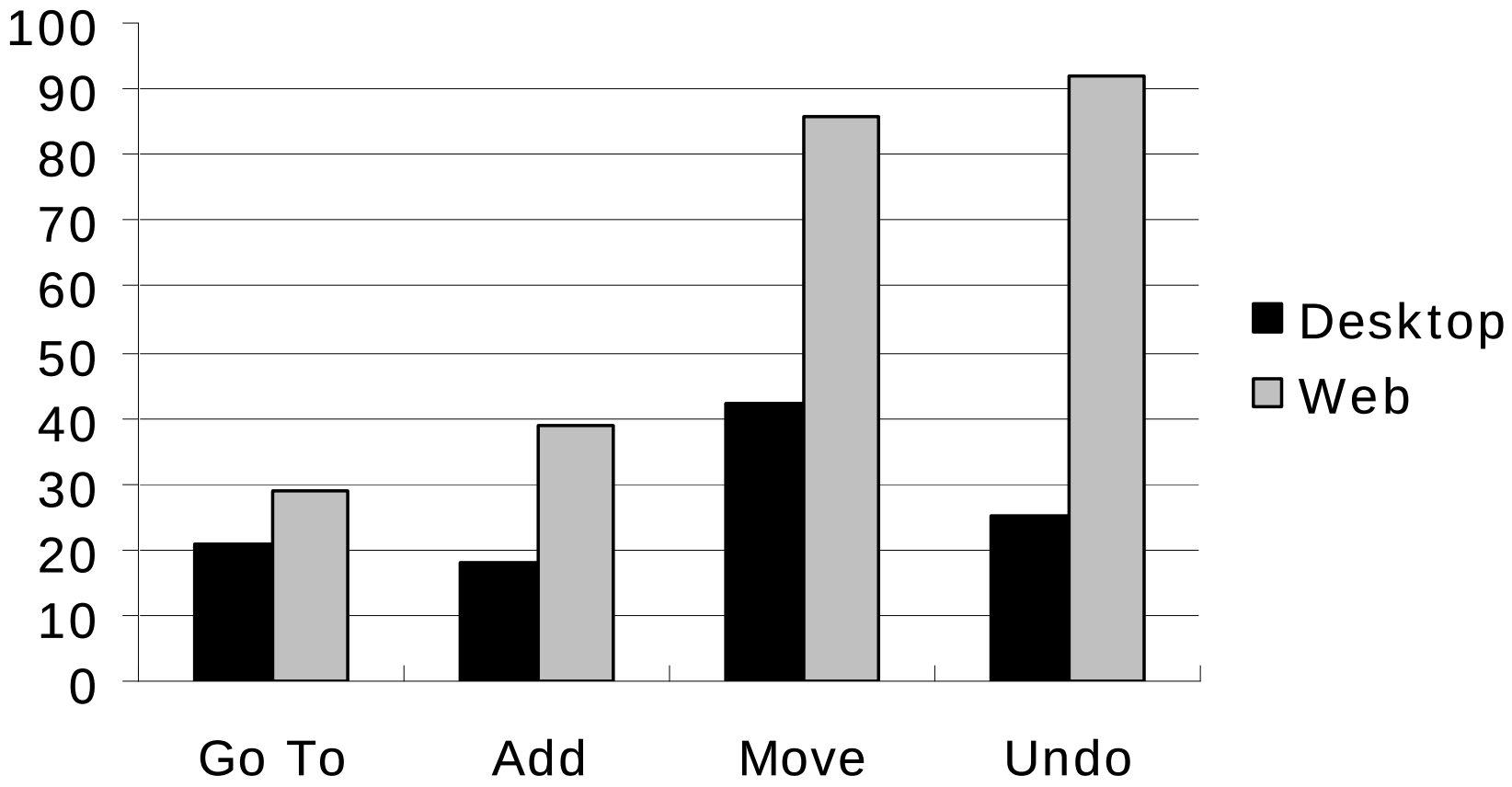
- Time per task in seconds, errors.
- Small pilot study.
- Record and Playback: ScreenCorder.

Study Setup, Continued

- Six subjects: five male and one female.
- On average 48 minutes with the study.
- Allowed to abort tasks.
- Questionnaire:
  age from 25 to 27 years, median of 26.3 years,
  more than 5 years experience with computers,
  used computers more than 20 hours per week,
  three used the web applications,
  one used calendaring applications before.

- **Limitations: subjects, statistical analysis.**

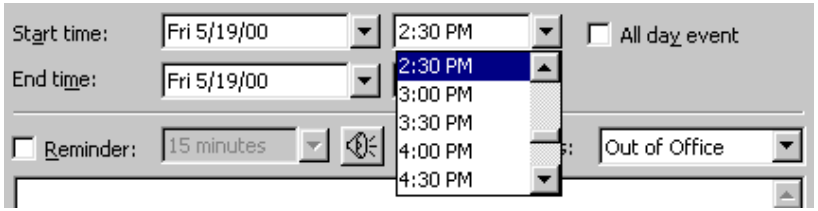
Average Time per Task

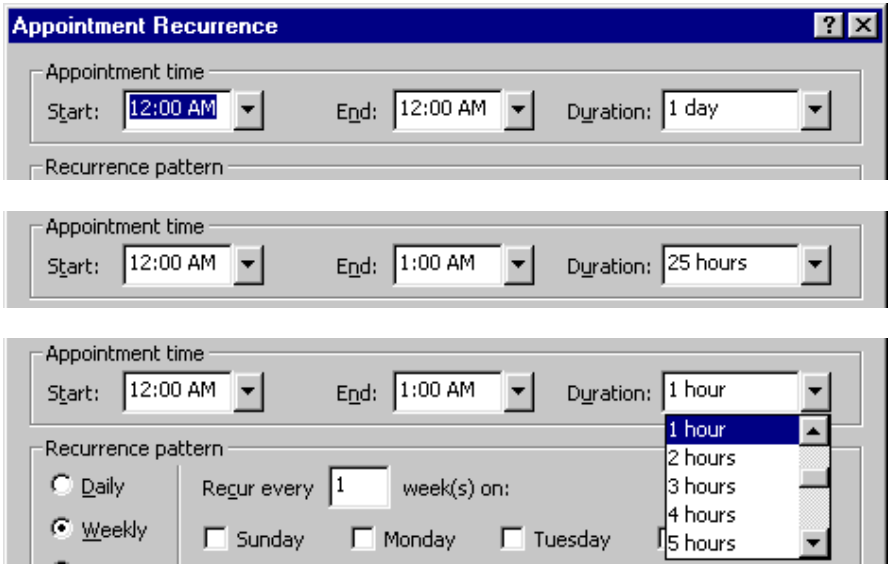


Error Rates

	Go To		Add		Move		Undo	
	MC	YC	MC	YC	MC	YC	MC	YC
OK	6	6	6	6	5	5	6	3
Error	0	0	0	0	1	1	0	2
Abort	0	0	0	0	0	0	0	1

Usability Problems





Discussion

- **Hypothesis** (confirmed):

  the performance of users will be significantly reduced.

- **3 factors:**

  limited interaction mechanisms provided by web browsers,

  mismatch: user's mental model and the application,

  delays from downloading the web pages.

Conclusions and Future Work

- Users are **twice as slow** when using web applications:
  interaction mechanisms provided by the web browsers,
  lack of delimitation between browsers and web applications.

- Future work:
  predicting the performance degradation,
  guidelines for web applications,
  mapping existing desktop applications to web.