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Smart email send scheduling

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Smart email send scheduling

ABSTRACT

Although users can select a time and date to schedule an email, such selection is currently done manually. The inconvenience of manual scheduling is accentuated when there are multiple recipients or when a slot for transmission of email is to be selected across time zones. This disclosure describes techniques that automatically schedule the transmission of email based on available information pertaining to the recipients, e.g., information available on recipient calendars, on office productivity software, etc.

KEYWORDS

- Email scheduling
- Smart send
- Calendar
- Email hour

BACKGROUND

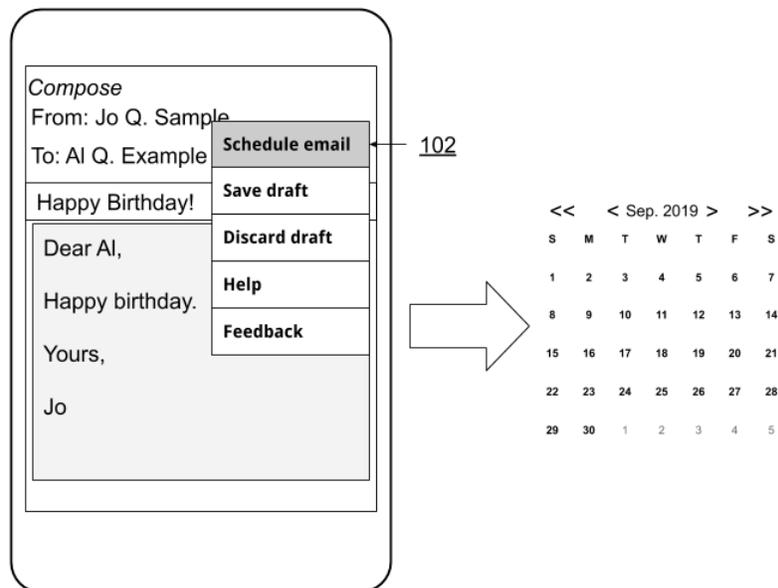


Fig. 1: Manual scheduling of email

As shown in Fig. 1, some email applications include features that enable a user to schedule the transmission of an email (102). However, such selection is currently done manually. Indeed, if the user does choose to schedule an email, then a calendar is displayed with a request to select a date and time for transmission of the email. The inconvenience of manual scheduling is accentuated when there are multiple recipients, when a slot for transmission of email is to be selected across time zones, or other factors that the user needs to take into account.

DESCRIPTION

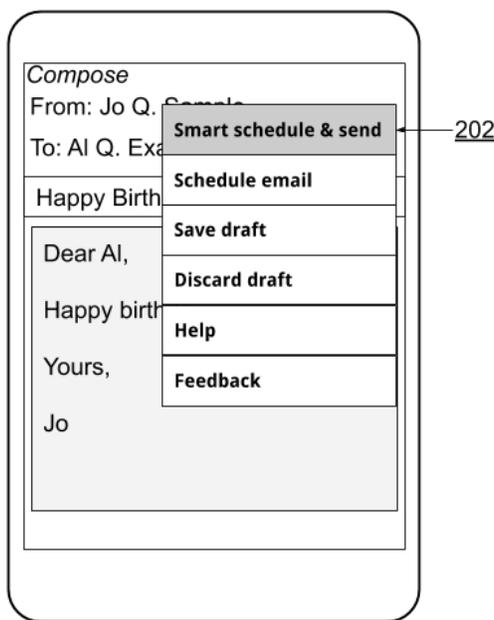


Fig. 2: Automatic scheduling of email

Per the techniques of this disclosure, illustrated in Fig. 2, a user can utilize an email application to smart-schedule (202), e.g., automatically schedule, the time at which an email is sent. A suitable slot is found for the email to be received by the recipient, e.g., a slot that optimizes the chance that the email will be read by the recipient with attention; a slot that optimizes the chance of non-urgent emails not interrupting recipients when they are on vacation,

or busy in meetings or travel; etc. If such a slot is not found, then the email is sent within a preset time-out window.

The techniques are described over two operating conditions, e.g., single recipient and multiple recipients.

Single recipient

Information about the recipient that is publicly available, or permitted for use for email scheduling, is accessed with recipient permission, to determine a suitable slot to schedule the transmission of the email. For example, when the email is to be sent from a member of a group, enterprise, or organization to another member of the group, internally-shared information about the recipient and their schedule is taken into account. Recipient information can be obtained from permitted information sources such as internal calendars, office productivity software tools, etc.

Some examples of information that can be utilized to schedule email sending are:

- Time-off: The recipient may have included his time-off publicly on his calendar, or in a vacation auto-responder. The vacation auto-responder can be parsed to determine that the recipient has no access to email at the current time. In such a case, the smart scheduler schedules the email for delivery after the recipient returns from vacation. In another example, the recipient may have a pattern of checking email at specific times. In such a case, the pattern can be determined based on past email access times, obtained with the recipient's permission, e.g., using machine learning techniques. A prediction can then be generated regarding predict when the recipient is likely to check email next and the email can be scheduled to be sent based on such predictions. Such machine-learning based predictions can also take into account factors such as seasonality, etc.

- *Travel*: If the recipient is traveling, e.g., on business to another office, conference, etc., and such travel information is made available to members of her organization, the smart scheduler sends emails based on the recipient's travel information, the recipient's new working hours, etc., such that the recipient receives email in an optimal time slot, e.g., the new working hours. The recipient's travel information can be obtained, e.g., from their calendar, from emails previously sent by the recipient announcing travel plans, etc.
- *Email hour*: If the recipient has a publicly announced an email hour on their calendar, then the smart scheduler sends email such that the recipient receives email during the email hour. Alternately, a time of day and/or day or week when the recipient is active on email can be predicted using machine learning techniques. With recipient permission, non-urgent emails can be scheduled to be sent based on such prediction.
- *Meetings*: Certain meetings, e.g., one-on-one meetings, are best attended with full attention. At other meetings, e.g., staff meetings, all-hands meetings, meetings where a single or small number of individuals talk to a relatively larger audience, it is common for attendees to unobtrusively check email. The type of meeting that a recipient is attending can be determined using permitted calendar information of the recipient and analysis of the recipient's email-checking or email-responding patterns during the meeting, performed with recipient permission. Non-urgent emails can be scheduled to be received by a recipient during such meetings when the recipient is predisposed to email activity.

Multiple recipients

When the email has two or more recipients, the above factors are evaluated for each recipient, by accessing information for which each recipient has provided permission. An intersection set of the slots available for each individual recipient is determined. If the first

available slot is outside of a certain time window, preference can be given to organizational hierarchy, e.g., the email can be scheduled to be sent to all recipients in slots favorable to individuals on the recipient list that are higher in the organizational hierarchy.

In this manner, manual intervention by the sender to ascertain the time to schedule non-urgent emails to recipients is obviated. For example, a sender need not scan recipients' calendars or other available information, guess if a meeting attendee is inclined towards receiving email, or coordinate the available slots of multiple recipients to determine when a recipient is inclined towards receiving email at particular times.

The techniques unify the ubiquity of email in business communications with common features of businesses, e.g., time-off details, travel schedules, calendar announcements, meeting schedules, hierarchy, etc. to deliver email at a time that is suitable for both sender and recipient. If no slot is identified, the email can be sent based on a preset time slot, e.g., immediately, or as a fallback, the sending user may be requested to manually select the time at which the email is to be sent.

In what follows, "user" refers to both senders and recipients of an email. Users can select to send individual email messages to be sent using the smart schedule feature. Users can also disable smart scheduling. Further, participants in email communications can select what information is made available to the smart scheduling techniques for their correspondents, e.g., within the same organization, outside the organization, etc., including not sharing any information.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs or features described herein may enable collection of user information (e.g., information about a user's social network, social

actions or activities, profession, a user's preferences, or a user's current location), and if the user is sent content or communications from a server. In addition, certain data may be treated in one or more ways before it is stored or used, so that personally identifiable information is removed. For example, a user's identity may be treated so that no personally identifiable information can be determined for the user, or a user's geographic location may be generalized where location information is obtained (such as to a city, ZIP code, or state level), so that a particular location of a user cannot be determined. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

CONCLUSION

This disclosure describes techniques that automatically schedule the transmission of email based on available information pertaining to the recipients, e.g., information available on recipient calendars, on office productivity software, etc.