An email based issue-tracking workflow system that is extensible across organizational boundaries.

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ABSTRACT: There is a demand for improved communication within the workplace. As emails are generally used more than issue tracking systems, this paper will investigate a way of integrating the main features of email with those of an issue tracking system. This will be done by creating an issue in an issue tracking system that is linkable to an email so as to track tasks that need to be done and follow the task through until completion.

I. INTRODUCTION
Organisational Semiotics (OS) is seen as a discipline that enables us to understand the inter-working and interactions between individuals and within the society, between human and technology [5]. “OS opens up the prospect of theory-building and the development of new methods and techniques to gain insights into organised behaviour and enacted social practices, in the presence and absence of various technologies.” [11] It opens up ways of understanding the functioning of information and information resources in organised behaviour. “The Activity Theory is a philosophical and interdisciplinary framework ‘for studying different forms of human practices as development processes, with both individual and social levels interlinked at the same time’ (Nardi, 1996), the key ideas of which include studying human activity.” [8]. If these could be analysed and understood more clearly and improved, individuals and organisations would benefit.

If “intelligent emails” were a reality, they would know their content and what to do when they contain particular content. So when one individual requests a task from another individual, with the aid of the email, members or automatic agents of an organisation could make sure that the task has been completed. If it has not, the email could assist and find the reason, inform the sender and remind the receiver after a particular time has gone by about the outstanding task. This would be in essence an email based issue tracking system without the explicit overhead of using current issue tracking systems on the market. The system will integrate the stateless emails with the state-full tasks in an issue tracking system to come up with a system that takes the best of both and puts them together.

II. ISSUE TRACKING SYSTEMS CURRENTLY AVAILABLE
This is an issue tracking system unlike the ones available on the market. A large number of the issue tracking systems available are web-based application that are used in projects for communicating as well as sharing files and other resources[1][2][3]. These systems tend to be out of scope for the proposed issue tracking system which falls more in the direction of groupware. “Groupware is technology designed to facilitate the work of groups. This technology may be used to communicate, cooperate, coordinate, solve problems, compete, or negotiate” [10], an example of which keep track of requested tasks within a group of people [4]. The above mentioned systems have disadvantages for example exclusion from the rest of the organization if you are not explicitly signed-up to use it, inability to use across organizational boundaries, inconvenience compared to email and having to use the application in a “foreign environment” outside emails.

III. PROPOSED SYSTEM
The proposed system will emphasise the use of existing high-level components and services, so that the key activity in the development will centre on assembling and tying together existing components, rather than building them from the ground.

What is proposed is marking an email that is to be associated with a trackable issue in a tracking system. This email will be intercepted, the associated issue will be created on behalf of the sender, and the email will be annotated with explicit issue-tracking reference URLs before it is sent to the recipient. The back-end tracking system will take over, overseeing to the issues and ensuring that they are completed. The system will generate emails to inform all the involved persons of any delays to the task, any new developments to it, and its closure.

This system initially will track simple one-step workflows, e.g. an email to the secretary saying “Please book a hire car…” can simply become an issue in the system, and the secretary can
click on a “Completed” button in the mail to show that the item has been done.

In a second phase it will be extended to manage multi-step workflows where, for example, a document may need to move from one person to another. This will be useful when a document or process needs the approval or input of many individuals and thus will make it easy to see who has the document at any given time.

At present, a prototype is being built in order to see if the proposed system is viable. Firstly a mail server was set up with a few accounts. This is the MailEnable mail server standard version [6]. The mail server has a functionality called the mail transfer agent (MTA), which can be used to access email before it is delivered to the individual mailboxes [7] so that email can be linked to issues in the issue tracking system.

At present the system can create an issue in the issue tracking system of an email when an email is marked to be tracked. When the task is completed, the issue tracking system is updated and the issue closed. If the issue is incomplete, then the receiver informs the issue tracking system of the reason why it is incomplete and sets a time for a reminder email to be sent. The reminder email is sent after the specified time has passed.

After the prototype has been built, another version of the system will be built but this time it will not force individuals to pass through one mail server. It will be brought down to the client level. Because the email will be accessed from the client side, the plug-ins that will be developed will be suitable for most of the clients if not all. The plug-ins to be developed will be for Microsoft Outlook, Outlook Express and Pegasus as these are quite common email clients. This will ensure that the final system is extensible across organisational boundaries.

**IV. CONCLUSION**

“Organisations and the people who work within these organisations are all self-organising systems, continually adjusting in order to survive in their worlds.” [8]. A prototype is being built currently to see how viable the email-based issue tracking system is and, if necessary, make improvements.

**REFERENCES**


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Biographical Note: Z.N. Kwinana is currently doing her Masters in Science in Computer Science at Rhodes University, Grahamstown.

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