# Instant Knowledge: Project Brief

IK Concept

Instant Knowledge enhances the value of any organisation's most important asset—the information held by its employees. Rather than requiring staff to fill out skills profiles, which are very general, become outdated, and require significant effort, IK uses an application on employees' smart phones and laptops to gather information on what they are doing and who they are communicating with. This context is used to build dynamic skills profiles along with a social network map for the enterprise, which provides a resource to proactively offer recommendations to participants. Using IK, staff can always find the best person for the job.
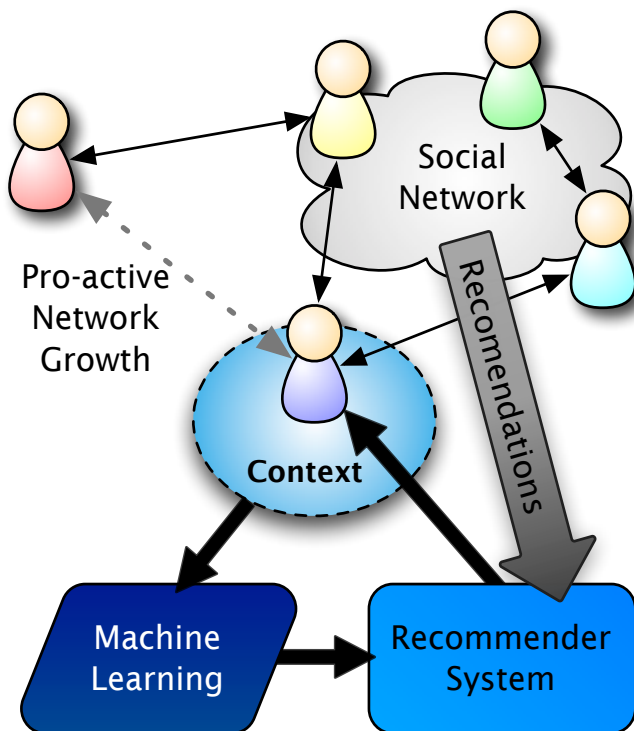
IK Concept: It's not what you know, it's who you know, and who they know...

Instant Knowledge Components

Instant Knowledge brings together 6 different technology strands for its operation: context monitoring, profiling, social network estimation, recommendation, privacy and security, and user interaction for the results.
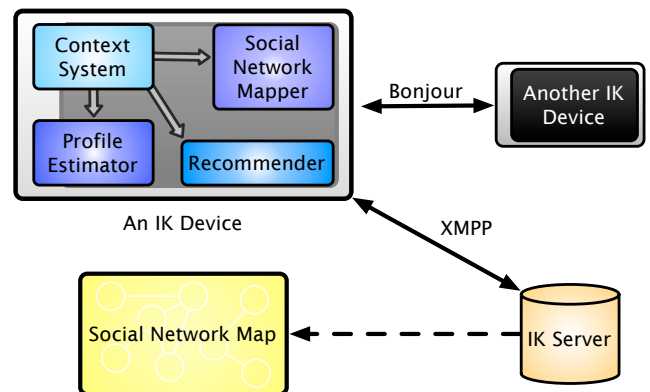
An overview of the IK system: separate components are contained on each device; devices communicate with each other via bonjour, and with the server over XMPP.

Novelty & Contribution

At the heart of the system is a context gatherer. This component sits on the user's device and monitors activities, communications, applications and device state. The resulting context is used by the other components in the system: by a profile generator to estimate the skill set of the user; by the social network mapper to find who users are communicating with, and how well they know them; and by the recommender in order to find useful information within the enterprise which can be used to make proactive recommendations.

The profiler takes raw context from applications and device state and processes it along with wider enterprise

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context to evaluate relevance and to build up a dynamic skills profile for the user automatically.

The social network mapper takes communications metadata and uses this to estimate tie values to other users in the system. Communications are divided into different classes depending on whether they are 'mediated'—intended for an individual—or co-present—obtained as part of a group or community. The type and frequency of communication is used to build a model of the user's social network within the enterprise. This model can then be used by applications on the device such as Socialstream, or combined with other users' models by the IK server to provide an enterprise-wide map.

The recommender takes application context and constantly uses the user's profiles and social network map to identify other users within the system who could be relevant to the user's task. By using the social network map, recommendations are made first from people the user knows, but enterprise policy can control this to allow recommendations from across the entire system. The recommender can be explicitly queried by the user, but an indicator proactively signals the user if a particularly relevant match has been found for the current context, which the user can chose to click on if desired. By this means, users can be prompted to find information they did not realise they required.

Making the system both easy to use and non-invasive were priorities for development. To assess the effectiveness of the proposed user interface, a user interface monitor tool was developed, which also links to the context gatherer. This monitoring tool can be used in a stand alone fashion to evaluate any smart phone application.

Application Scenarios

IK can provide easy access to information in any enterprise setting, but is perhaps most suited to medium to large enterprises which have grown to the point where it is impossible to keep track of all employees' skills. This also applies where an enterprise is distributed or located in a number of sites. Information-reliant organisations, such as police, social work or any form of consultancy will also benefit from the fact that IK can gather skills profiles at a level of detail which a manual process could not hope to do.

As well as giving employees access to information when they search for it, or proactively offering recommendations, the social network mapper and profiler can be used to identify key individuals and skills in the enterprise for management functions, while the recommender can be used to identify skills which are required but which may be lacking within the enterprise.

Demonstration Results

Each of the individual technology components of the Instant Knowledge system – context gatherer, profiler, social network mapper, recommender, along with security functions and the user interface monitor have been implemented as separate components with their own demonstrators. The initial test device was the Nokia N810, and the context gather and social network mapper have been implemented for that platform. As the project has developed, Android has become a platform of choice for open source smart phone development, and the context gather has been ported to that platform, along with security demonstrations. The profiler and recommender are implemented as web applications on the IK server and as such are platform independent.

Conclusions

The MVCE Instant Knowledge service addresses a key demand of modern, nimble enterprises—easy access to their most important assets: their employees' skills. While there have been a number of other social network tools which have attempted to give enterprises this access, none have combined autonomic application and communication context awareness with proactive recommendation and security to deliver a user friendly, low overhead way of accessing key information in the enterprise.

Further Information

Videos and Technical Reports for all of the Instant Knowledge research outcomes are available to members on the Mobile VCE web site. For non-members the Instant Knowledge overview sheet is available at:

www.mobilevce.com/infosheets/InstantKnowledge.pdf

For further information and to register for information about future MVCE IK events please email Jerry Horton: **jerry.horton@mobilevce.com**

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