

# Introducing Ease of Access into IBM

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## Introduction

IBM has a long history of addressing the issues of employees and customers with disabilities through hiring and workplace practices, and through research and productisation of accessibility technologies. In 1999 IBM established an Accessibility Center with a focus on making our offerings accessible, exploiting accessibility technologies developed in IBM Research, and improving IBM's internal IT tools and work environment for employees with disabilities. IBM's product development organisations have made significant progress enabling their offerings and addressing some of the more difficult architectural issues associated with product accessibility.

However, making products accessible does not necessarily mean they are easy to use for users with disabilities. Access in this context, means just that: users with disabilities have been provided access to the function and information offered by a product. Mere access is the measure of success set by most accessibility standards such as Section 508. IBM development organisations have learnt this over the last three years and have begun to address this issue. IBM has started to deal with this issue by leveraging the overlap of its work on accessibility and user experience / ease of use. This convergence is referred to as Ease of Access.

## Ease of Use within IBM

Within IBM all major product development efforts employ a formalised user-centred design (UCD) process that integrates user input and user interface evaluation and design methods into the development process, and user and customer satisfaction is tracked over product releases and against competition. Including users with disabilities in this process, however, has been rare with a few notable exceptions.

Until recently, the practice of making products easy to use has focused on the average, or the most common, or most influential user of the product being designed. This has translated into testing and designing products for the most common human characteristics and thus excluding users with most disabilities. Even typical UCD selection methods (representative sampling of the user population) work against including users with disabilities because of the large under representation of persons with disabilities in the work force.

In response, IBM is undertaking efforts to include persons with disabilities in its product design and development process, to define sets of best practices for doing so, and to make its offerings easy to use for users with disabilities.

## Current accessibility guidance within IBM

As with most other companies in the IT industry, IBM's accessibility practices have been influenced heavily by recent legislation, such as Section 508 [1] and the Americans with

Disabilities Act [2]. Prior to 2004, IBM's accessibility efforts were focused on meeting accessibility standards which enables our products to work with assistive technologies used by people with disabilities.

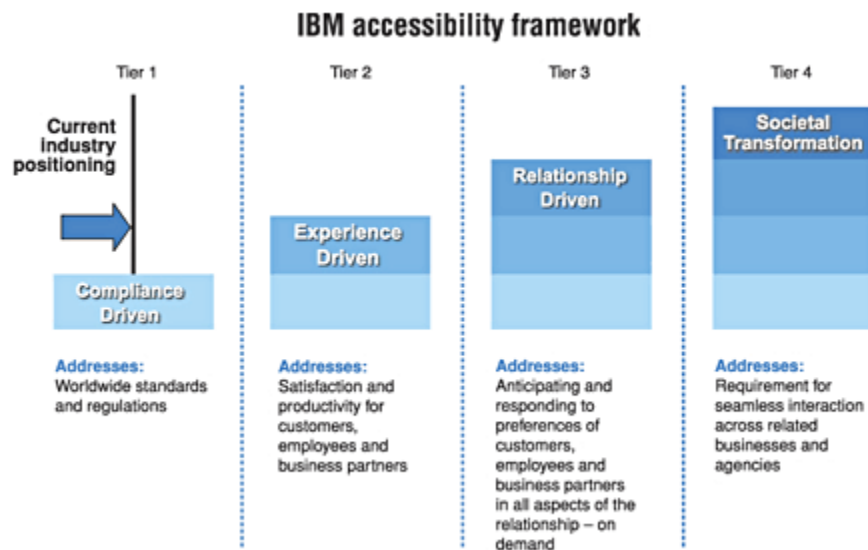
One of the consequences of the way that current legislation is framed is that accessibility issues have largely been reduced to “Is (X) accessible?” If it is, then the product passes that particular check, if not then it needs to be revised. In response to this, IBM has developed checklists for product developers covering the following topics:

- Software accessibility – e.g. (1) Keyboard access –
  - (1) Provide keyboard equivalents for all actions.
  - (2) Do not interfere with keyboard accessibility features built into the operating system.
- Web accessibility
- Java™ accessibility
- IBM Lotus Notes® accessibility
- Hardware accessibility
- Peripherals accessibility
- Documentation accessibility

These checklists are available via the Accessibility Center web-site at:  
<http://www.ibm.com/able/guidelines/index.html>

## Taking accessibility forward within IBM

IBM recognises that accessibility goes beyond issues of compliance and the adoption of a holistic approach is required. To this end, a four tier framework has been adopted – see Figure 1.



**Figure 1.** The 4 tier IBM accessibility framework

From the framework it can be seen that the current level of industry's response to accessibility is focused squarely on compliance (Tier 1). While meeting compliance requirements is of some use to end-users, the real benefit to the overall user experience comes when industry looks beyond compliance towards a person's total quality of life.

Implementing this framework begins with implementing accessible technology infrastructure and ends with business transformation. An important step on that way from IBM is the Ease of Access initiative.

## **What is Ease of Access?**

Ease of Access is a joint initiative of the accessibility and ease of use communities in IBM, chartered to focus on ease of use for people with disabilities. It is intended to bring together best practices from the fields of accessibility and usability into a single framework for implementing the goal of Ease of Access.

To address this issue, the Ease of Access work group was formed in 2004 as a cross-IBM team representing many areas in IBM that have been involved in accessibility and ease of use. Members of the team have been drawn from groups such as the Accessibility Center, Accessibility Research (based at TJ Watson), Software Group and hardware divisions.

The goal of the work group is to develop Ease of Access best practices that can be deployed by IBM development teams. These Ease of Access best practices will be used to expand the focus of User Centred Design and User Engineering methods to be inclusive of all users and to expand the focus of accessibility from product enablement and interoperability with assistive technology (AT) products to include ease of use.

While work has been done in some academic and research labs, this focus on Ease of Access is relatively new within commercial product development organisations. As IBM develops and enhances its Ease of Access methods, best practices will be published and integrated into its User-Centred Design and User Engineering methods and tools.

## **Ease of Access best practices**

The root cause of industry producing products that are difficult to access even when they are accessible is twofold. First, people with disabilities are not normally included in the product user-centred design process and the typical user interface designer does not understand the unique characteristics of people with disabilities. Second, the general approach to making products accessible pose challenges to designing ease of use for people with disabilities. Product designs that assume one set of input/output capabilities (e.g., visually oriented GUIs) are difficult to retrofit for easy use by users with different sensory and manual capabilities (e.g., screen reader based non-visual interfaces).

Based on these considerations focus was placed on the following areas:

- Product evaluations with users with disabilities
- User interface design and implementation techniques for people with disabilities
- Use of personae of users with disabilities
- Complex visualisation applications
- Hardware enablement issues
- Lessons learned from developing IBM assistive technologies

The first two areas represent a great deal of experience across IBM, industry, and academia that could be leveraged and documented. The use of personae is a user-centred design technique in IBM that could easily be adapted for use with people with disabilities.

Complex visualisation applications, such as visual editors, are an increasingly important technique used in the industry to provide significant enhancements to a user's ability to create new applications and deal with very large amounts of data. Visually impaired users, however, not only cannot take advantage of these enhancements, they are also prevented from participating in work where teams of fellow workers use these visual tools to do their work. Therefore, the Work Group decided to initiate work to understand how to make such applications fully accessible and easy to use.

Much of the ease of access work described above focused on software products, and so the Work Group initiated a focus on unique hardware products issues. Finally, IBM has a long history of developing assistive technologies, such as IBM Home Page Reader and the IBM Java Self-Voicing Development Kit. Through the development of these technologies and through supporting interoperability with individual product teams a number of important lessons have been learned about making product user interfaces easier to use through assistive technologies.

## **Output of the work group**

Sub-groups of topic specialists were formed to address each of the areas identified above (user evaluations, use of personae, etc.). Each sub-group in turn produced a white paper that summarised the state-of-the art of existing best practice and also how such practice should be applied with the product development process within IBM. Where appropriate and available, specific examples of the best practice in use were given. For example, sample personae were described in the personae paper.

The white papers produced were reviewed at both the sub-group and work group levels and revised iteratively. In November 2004, the white papers were then made available to other groups within IBM as part of a wider consultative phase to determine whether product development teams were able to use them in the format provided.

As a second-phase step of the consultative process, the white papers are being prepared for externalisation, i.e. making them available to people outside of IBM. It is expected that the white papers will complete this process shortly.

## **Expanding the focus**

Looking beyond the existing white papers, future work will focus on:

- validating this early work,
- including an even broader range of user evaluation techniques,
- providing further enhancements to the user interface design methods,
- integrating with user engineering methods and tools

The IBM Accessibility Center has developed a Strategic Framework which views the development of this confluence of accessibility and ease of use as a natural evolution of the IT industry's focus on accessibility. Our industry is moving to this focus now. It is imperative that from a business point-of-view that IBM leads this development.

## Summary and conclusions

Despite an increased focus on the accessibility of Information Technology offerings, IT products are typically not easy to use for users with disabilities, even when they are “accessible”. One of the major root causes for accessible, but difficult to use, products is, simply put, ignorance of the requirements and characteristics of people with disabilities.

Recently IBM has undertaken efforts to change this, by defining a set of relevant best practices and integrating a focus on users with disabilities into its product design and development processes. This issue is being addressed by providing guidelines for incorporating users with disabilities into usability and user-centred design evaluations, by providing guidance and a set of templates for developing personas for users with disabilities, and by providing a set of user interface design and implementation guidelines.

Obtaining feedback from users about product design through sessions that allow current and prospective users to exercise early product prototypes is critical to making products easy to use.

While testing individual products is critical, translating feedback into useful designs will be enhanced by the user interface design guidelines and techniques that have been developed under this initiative. As user interface designers employ these guidelines, and temper their designs with the input from usability evaluations with users with disabilities, IBM will gain the additional knowledge needed to improve and extend the current set of guidelines.

It is recognised that this is just the beginning of this work and it is expected that there will be a period of intensive learning over the next few years where the guidance needs to be improved. Support mechanisms will be established with the dual purpose of helping IBM user experience and accessibility professionals employ these guidelines, and collecting the data needed to make continuous improvements. As part of this areas will be identified to improve deployment, particularly in the area of tools, and to develop more advanced best practices in ease of access.

As the IBM internal methods improve and products come to embody Ease of Access principles, it is expected that IBM’s ability to provide not only exemplary product user experience but also consulting services to our full range of customers will be enhanced. The potential impact on the lives of persons with disabilities is significant.

## References

1. 1998 Section 508 of the Rehabilitation Act (29 U.S.C. 794d) – as amended by the Workforce Investment Act of 1998 (US Public Law 105-220). Available at: <http://www.section508.gov>
2. 1990 Americans with Disabilities Act (US Public Law 101-336). Available at: <http://www.usdoj.gov/crt/ada/adahom1.htm>