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Constantine Algeria

Increasing Coordination Within a Maternity

Ward Through a CSCW-based Approach

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❑ **Introduction**

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Introduction

Hospital emergency wards are extremely complex to manage and pose serious health risks to patients

Related tasks which are mainly focused around patient management are basically achieved through a cooperative way that involves several health care professionals

A lack of coordination can sometimes lead to tragic situations for patients

Purpose

We wish to provide an effective support for medical activities enabling by the way :

- Finer planning features of the related tasks

- Providing real time mutual awareness around the occurring events.

Targeted context study

- We led a study within an Algerian maternity ward

  - ✓ To better understand the usual way under which tasks are effectively achieved

  - ✓ Identify the used artefacts

- Such an observation allowed us to highlight vital collaborative medical tasks that need to be designed

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Targeted context study

We started by :

- ✓ Analyzing the interactions among the medical staff members

- ✓ Attempting to understand how the medical staff may interact and collaborate

- ✓ Identify which users are implied in these processes

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Targeted context study

It is practically impossible to design a computer tool addressing all users' needs

Nevertheless, group work experiences provide us pertinent information to clarify some useful development ideas about the suitable support tools

Collaboration process

The meticulous analysis of healthcare activities reveals that patient care chain planning is a complex task that has an important impact on their quality and consequently on patients' safety

Such care process must be carefully managed since the patients' admission to the hospital until they recover and leave it

Collaboration process

Coordination breakdowns

- Surgeons

- Patients

- Medical staff

Collaboration process

When coordination breakdowns occur, schedule has to be adjusted:

- ✓ Reallocations of resources

- ✓ Update of priorities

- ✓ Notify involved medical staff....

Negative consequences can happen when the medical staff fails to act collaboratively to adjust the plan

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Collaboration process

Our analysis has revealed that coordination breakdowns can lead to:

- Delays in administration of medical care

- Delays lead to more work hours and additional costs, what reduces *profits margins*

- Trying to coordinate every time between team members; can generate stress and workload

- Delays can constrain the patient to come back another day, what disturbs their personal plans

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11
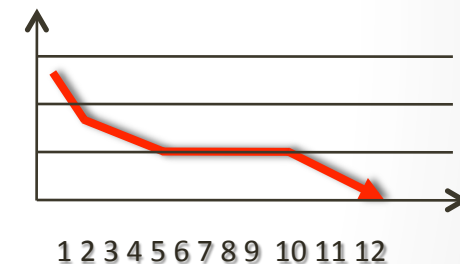
Used Artefactes

During patients' management, the involved team usually resorts for scheduling to a classical plan board or paper sheets.

To coordinate the work with people who are not available

This method requires from the team members to take part to the planning process and do nothing else at this moment

Used Artefacts

Because of their Ad-hoc nature and emergencies the medical activities :

- ✓ Continuous availability
- ✓ A high level of vigilance on the evolution of patients' conditions.

Therefore, these meetings which are necessary to achieve coordination should be minimized as much as possible

That is how **coordination breakdowns** arise and lead to the

disruption of the balance within the group

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Results

- Developing a tool that allows geographically separated users :

  ✓ Making a plan with a collaborative way

  ✓ To be aware about what the others are doing during a scheduling session in real time

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Synchronous groupware

A synchronous groupware is software that enables real-time collaboration among geographically-separated work group members

- Shared whiteboards

- Application Sharing

- Conversational tools

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Used technology

To provide an appropriate technical solution, we can exploit many technologies to develop this kind of real-time distributed mechanisms

Web 2.0

- Software and storage facilities, through the browser

- Data sharing

- Social web

Web 2.0

Rich Internet Applications
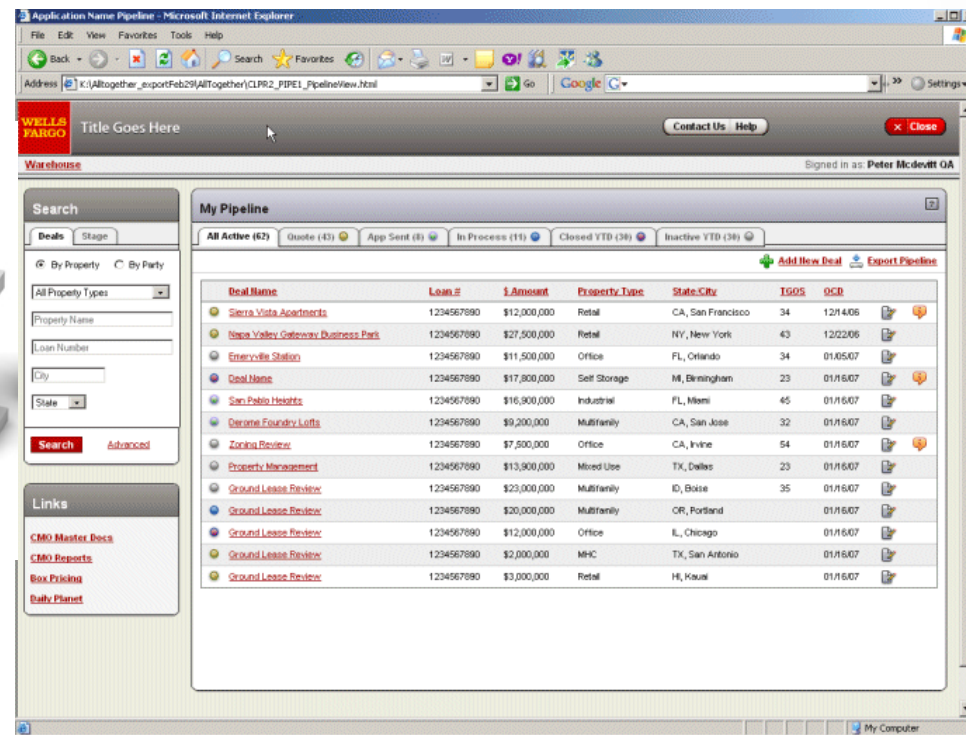
Early web

Uses Client/Server with HTTP protocol.

SERVER CAN'T NOTIFY ANYTHING TO A CLIENT.

WHILE THIS BI-DIRECTIONAL COMMUNICATION IS ESSENTIAL FOR SYNCHRONOUS GROUPWARE.

Reloading the
hole page for update

AJAX

Browser fetch a specific data that is needed to be updated, rather than fetch a whole page and update the whole display

THE CLIENT HAS TO SEND A REQUEST TO RECEIVE
AN ANSWER FROM THE SERVER

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Reloading only a
part of the page
for update

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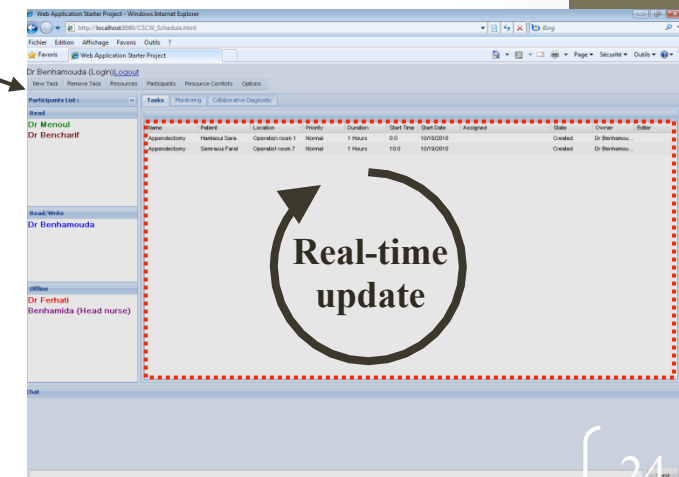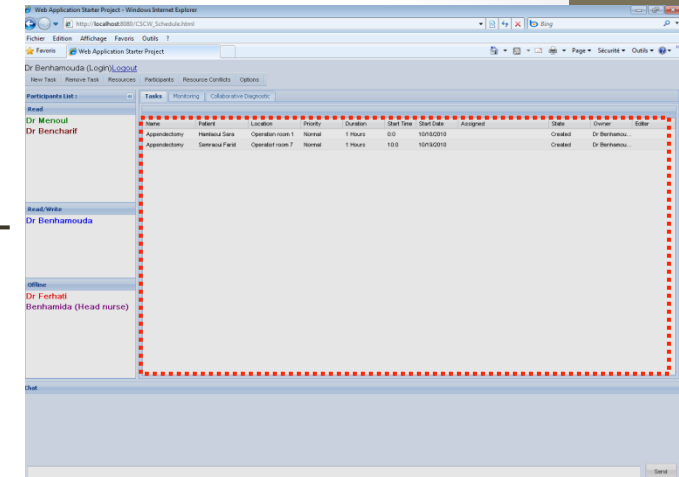# AJAX PUSH
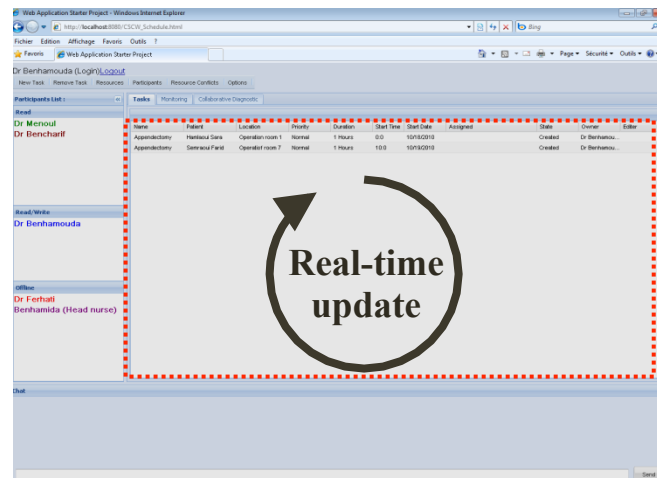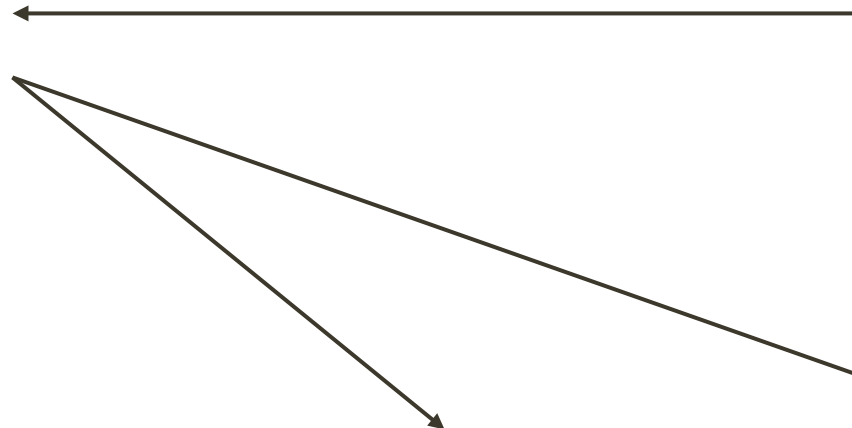
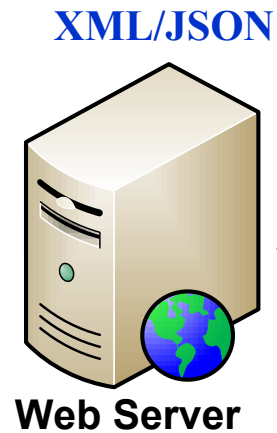AJAX Push or Comet : Pushing data to clients
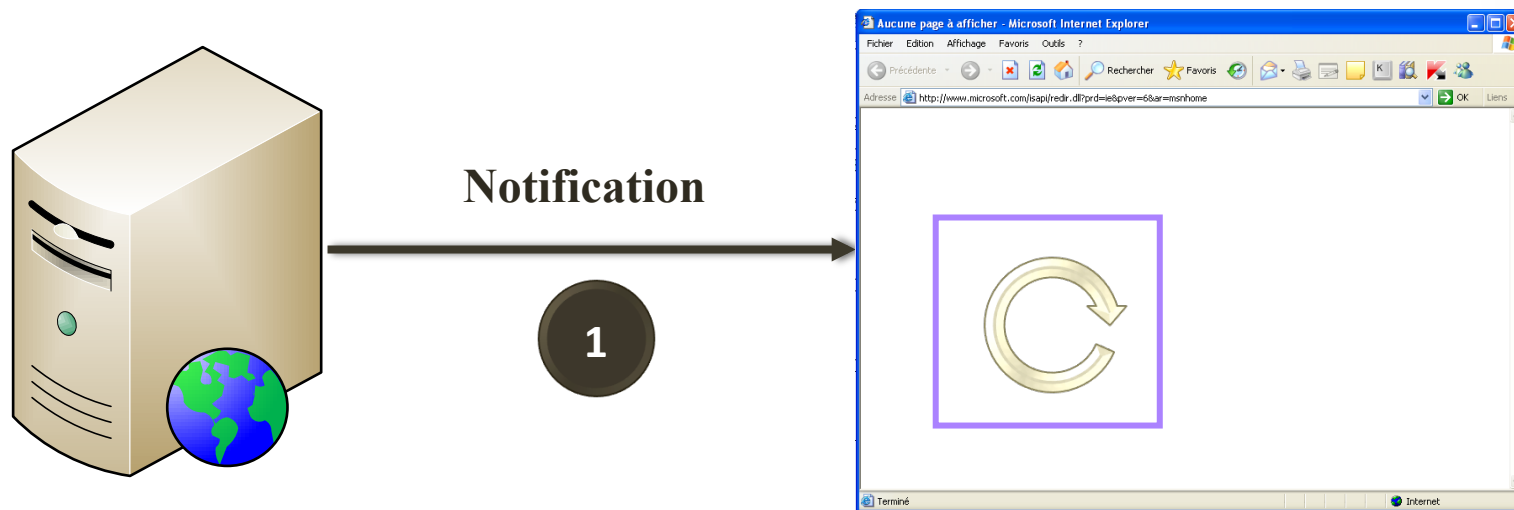
Software Architecture
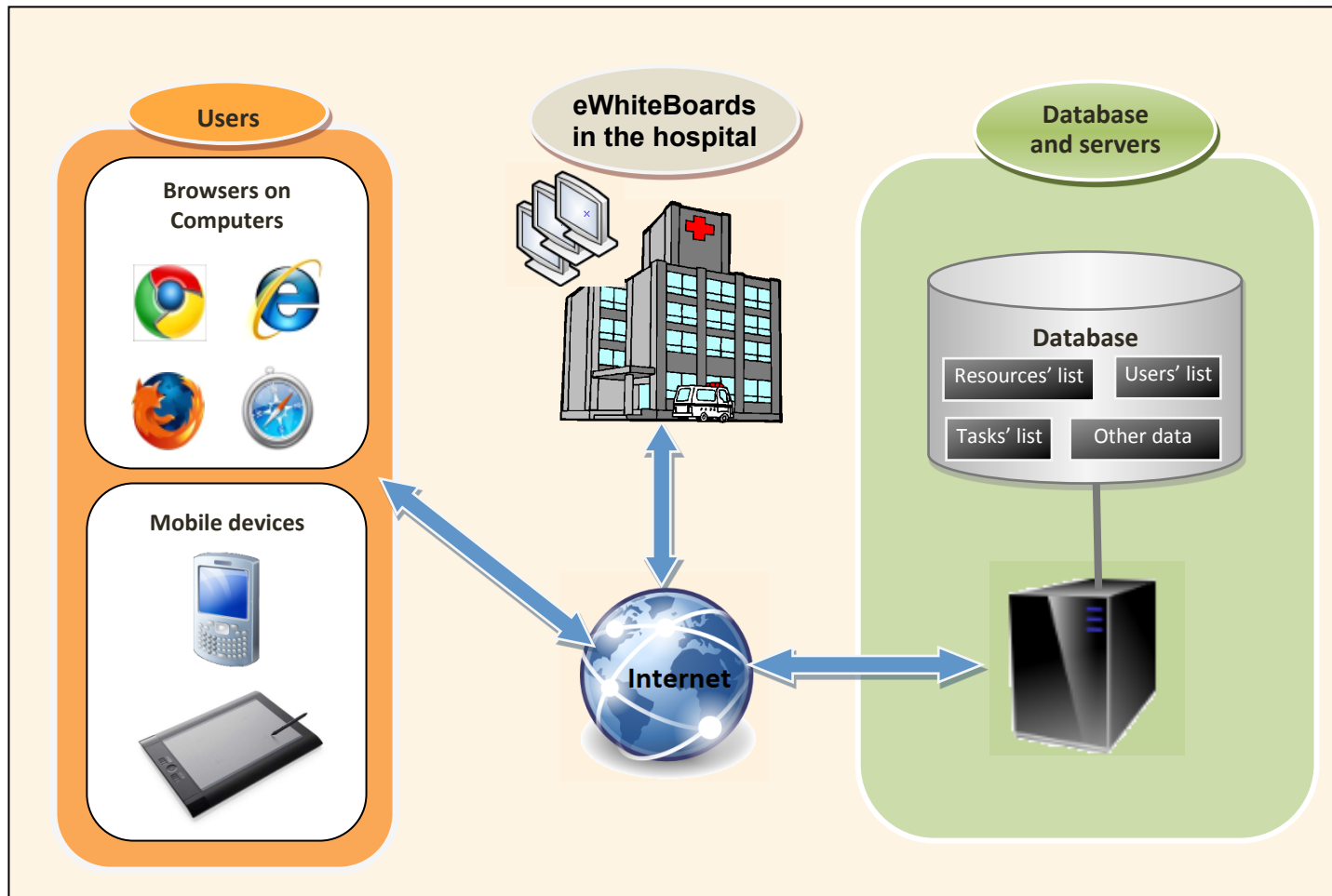
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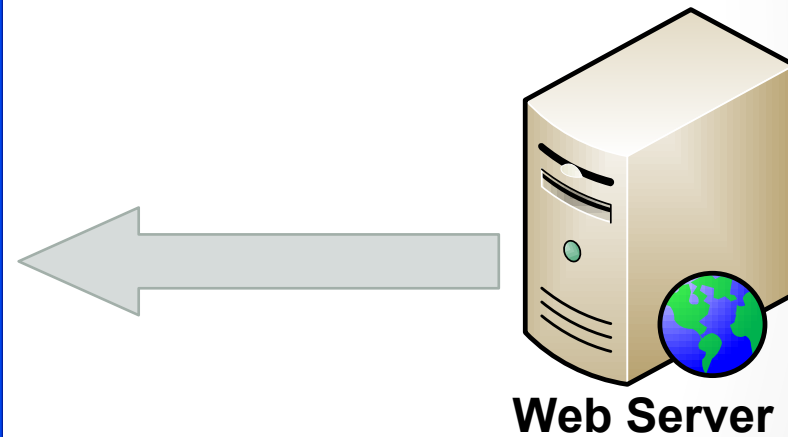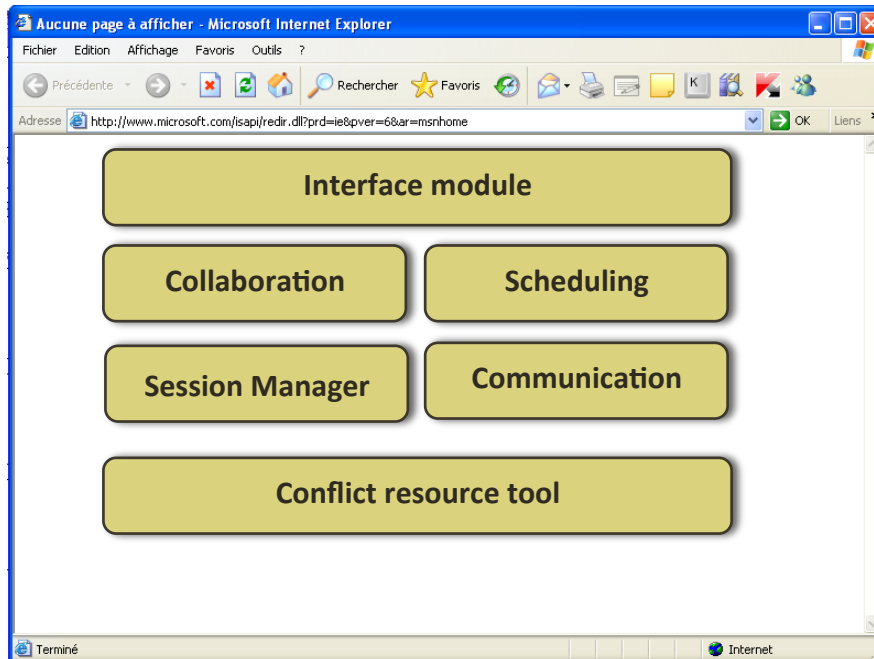
Event Notification

Conclusion

- In this presentation we have attempted to show that it allows several participants to collaborate within a shared workspace

- The sharing of the planning scheduling allows users to inform other participants on their mutual actions

- At the visual level, a simplified and rich web interface shows explicitly the shared plan phases and significantly reduces participants' cognitive loads

Conclusion

- We plan in the next step of our research work to experiment the developed system in a real situation :

    ✓ To determine with more precisions the appropriated adaptations we should apply to the supports provided

    ✓ To validate or improve some technical choices among those we made for implementation

Thank you