Using software agents

to personalize access to e-offices

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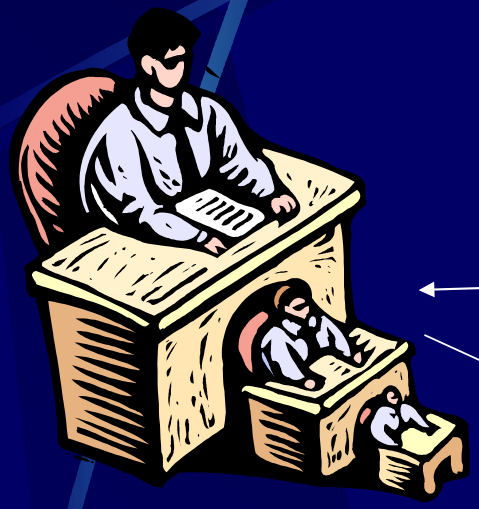
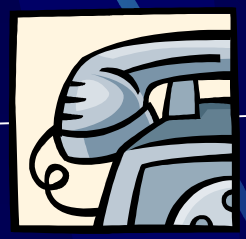
Traditional office – passive off-line questioning



Office

human activity



Supplicants

human activity

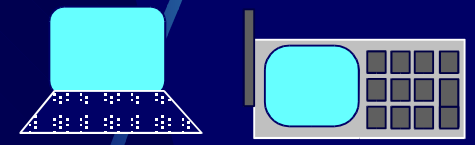
s-mail

human activity

E-office – passive questioning

E-office

automatization



WWW/WAP

human activity

human activity

s-mail

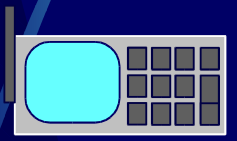
e-mail

Main limitations

- On-line access is not enough
  - Delays
  - Manual backoffice activities
- Mixed interface
  - WWW for questioning the office
  - E-mail for sending back some info and alerts
- Too complicated for non-advanced users
- User activity needed
  - Requests
  - Monitoring by polling

Idea – active, personalized alerting

E-office
automated activity



WWW/WAP

Case & personalization

Redirection

Sending alerts

E-mail
SMS/MMS

Main advantages

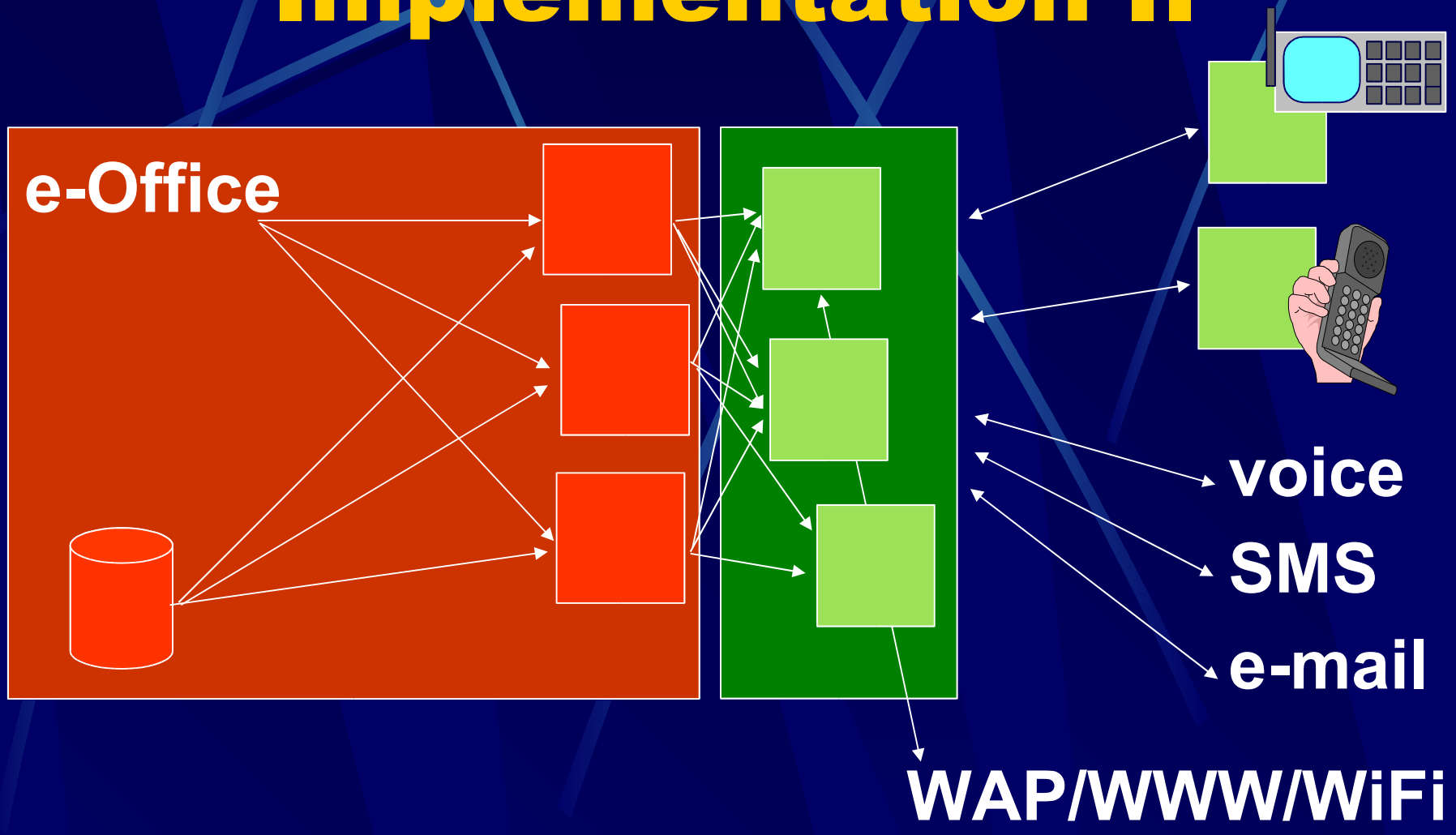
- „Human-like” contacting
  - Natural language
  - Phone
  - E-mail
- Pushing instead of polling
- That’s the e-office that is calling to the user if „something interesting” happens
  - Voice gateways, PTT
  - SMS/MMS, e-mail

Personalization

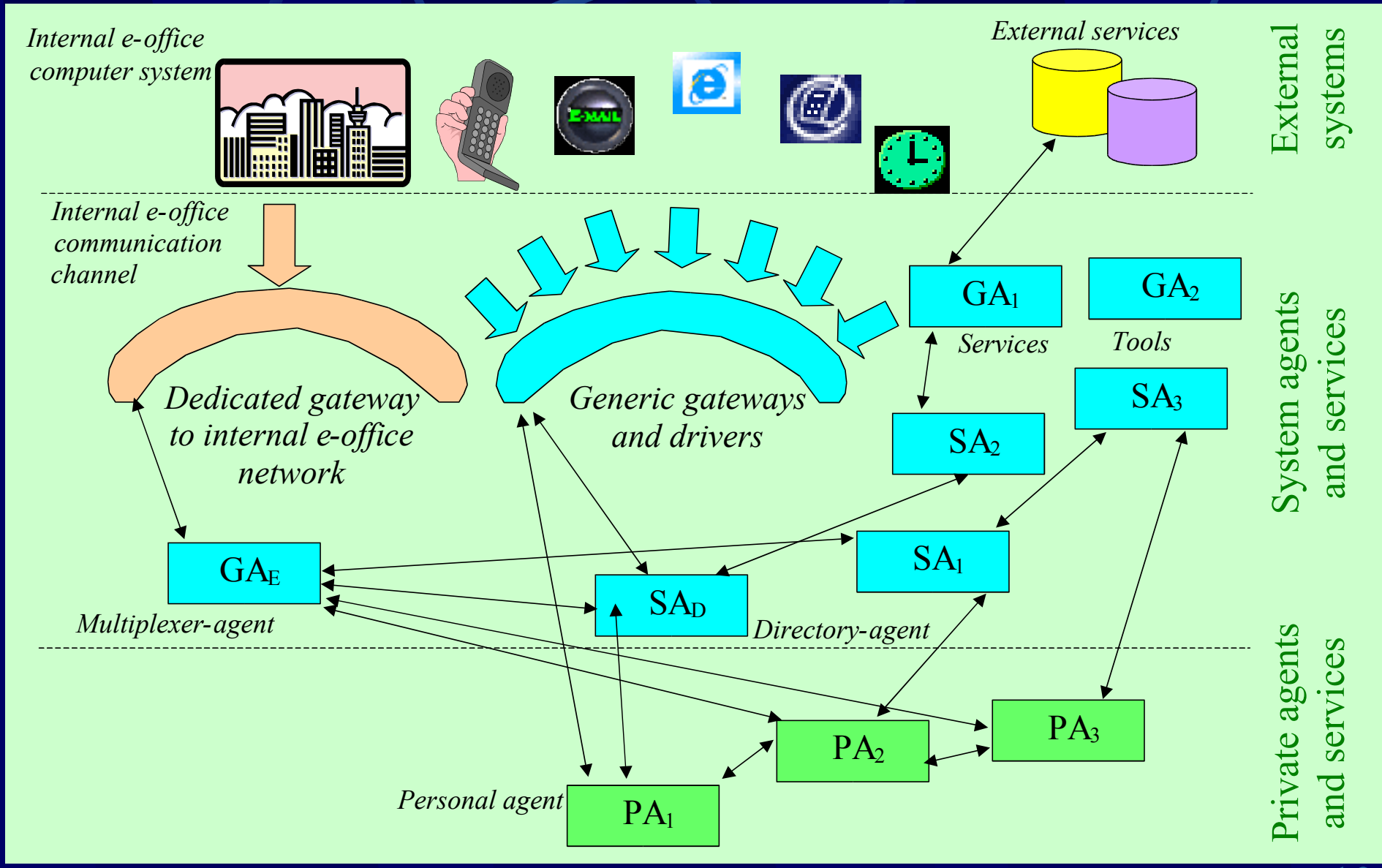
- Each case is different
- Each user is different
  - Hardware
  - Software
- Users are changing
  - Communication means
  - Personal requirements and expectations
  - Evolution of users' cases
- Continuous monitoring of „critical" changes
- Pipelining and merging different services

Implementation

Implementation II



Layered system architecture



External connections

- Firewall/proxy to internal services
- Gateways to external systems/Internet
- Telco gateways: SMS/MMS, voice
- *Continuous control over connections* to/from back-office systems
- *Multiplexing and synchronizing requests*
- *Access standardization*

System-defined tools and services

- Provided by e-office staff
- For mass usage by user agents
- Detailed functionality depends on given application area
- Caching frequently accessed information
- Generating user- and source-specific alerts
- Examples:
  - wrappers, formatters, cache utilities
  - preprocessors, analyzers

Directory agent

- Catalogue of system agents
  - Info for users
  - Data ontology/format for agents
- Broker to external software systems
  - Directory Server
  - LDAP
  - Proprietary e-office server

Private agents

- Client-side agents
  - Mobile phone
  - Home PC
  - Information filtering and presentation
  - Auto-adjustment to hardware/communication means
- Server-side agents
  - Continuous monitoring
  - User-defined brokerage
  - No costs of permanent (on-line, periodic) communication

Personal agent

- Main communication point
- Dispatcher for user requests and incoming alerts
- Mass usage of telco gateways
  - SMS/MMS
  - Voice
  - „Handicapped” and non-advanced users
- Interface personalization for different e-offices

Scenario of system usage

- Supplicant case – details, personal data
- Set of server-side agents proposed for the case
  - System agents („black boxes”)
  - Private agents („full control”)
  - Serving the case in an ordinary manner
- End-user device analysis
  - Proposals for client-side private agents
  - User choice
- Case-specific variables of agents
- Activation and continuous monitoring/alerting
- User self-adjustment (private agents and connections)
  - By the user
  - At request, by e-office staff

Security discussion

- System point of view
  - Trusted system agents in internal e-office network
  - Run-time inspection for private agents in internal network
  - No problem of private agents in private networks
- User point of view
  - Trusted system agents
  - Private agents in trusted environment:
    - E-office network
    - Personal devices/networks
- No (psychological) anxiety for private data

Conclusions

- Agent Computing Environment
  - System agents in LAN
  - Private agents at server- and client-side
- Personalization:
  - Variables & behavior
  - (Auto-)adjustment for different communication channels
- Virtual e-offices and services
- No security-related anxiety
- Flexibility & scalability
- Low costs

Thank you

Questions?