

*e-business tools*  
*Opportunities at CERN*

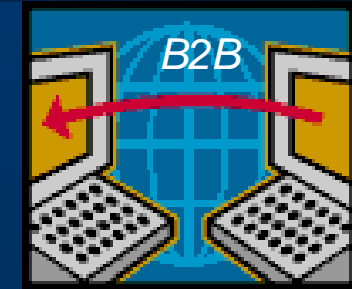
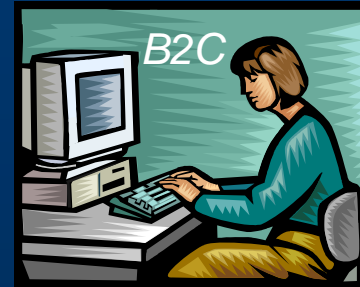
James Purvis

IT Department  
CERN – Geneva, Switzerland

# e-business vs e-commerce

- **e-commerce**

- outward-facing
- sales, marketing, customer service...
- revenue generating focus



- **e-business**

- internal processes (more complex)
- procurement, finance, hr, safety
- cost savings, improvements in efficiency & productivity



## World's leading particle physics research laboratory

- Annual budget of €600 million
- 2600 Staff
- 6500 visiting scientists
- Inventors of the World Wide Web
- Half the world's particle physicists researching matter and forces



# Challenge facing CERN today

Build the worlds largest scientific instrument...

Budget

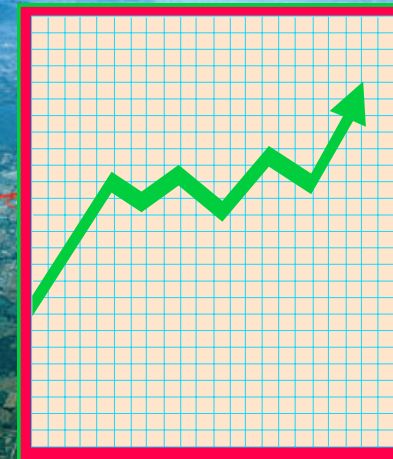


With less budget..

Staff



fewer staff...



for more scientists...  
with higher  
expectations...

# Internal processes

The image shows a collage of several CERN internal forms. The most prominent one is a 'DEMANDE DE CONGE/LEAVE REQUEST' form for De Jonghe JÜRGEN, with a total entitlement of 40 1/2 days. It lists several leave periods: 24/11/95 to 24/11/95 (1 day), 8/1/95 to 8/1/95 (1 day), 15/2 to 15/2 (1 day), and 09/19 A to 99/19 (1 day). Other forms visible include 'HOME LEAVE', 'DEMANDE DE REMBOURSEMENT FRAIS SCOLAIRES', and 'TRANSACTION INTERDIVISIONNAIRE'.

De/From Dates inclusives Inclusive dates	A/To	Jours ouv. working days	Adresse et no. téléphonique Address and telephone no.	Signature	Date	Autorisé Authorised	Solde C. annuel Balance annual I.
24/11/95	24/11/95	1					40 1/2
8/1/95	8/1/95	1			21/1/96		40 1/2
15/2	15/2	1					39 1/2
09/19 A	99/19	1					39

- Over 100 official procedures
- Used by all CERN personnel
- Over 250,000 documents per year
- Examples:
  - purchase orders
  - training request
  - holiday request
  - travel claim

*Goal :*  
*Enable employees to reduce overhead activities, increase efficiency and focus on core activities*

# Progress

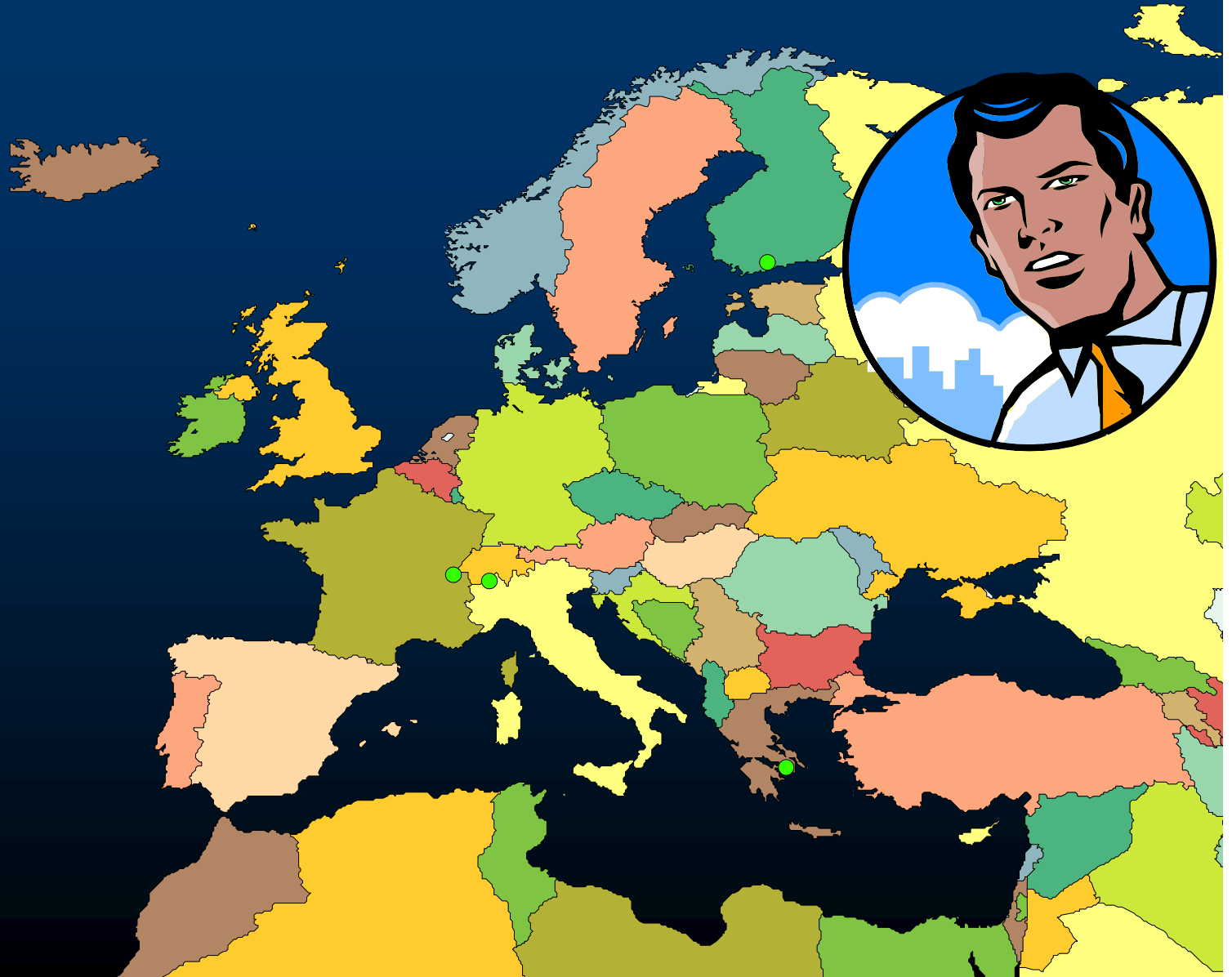


1954  2004

*CERN - fifty years of progress*



# Workflow in Action



# Workflow in Action

**Material Request - Netscape**

File Edit View Go Communicator Help

Bookmarks Netsite: <https://edh.cern.ch/Document/MAG>

**Material Request** Clone Pr.View Catalog Delay? Lines Save Send Help

Fields with asterisks (\*) are obligatory and must be filled in.

General Description:  ?

Requestor\*:  ?

Delivery Location\*:  ?

Requested Delivery Date:  ?

Delivery Comments:  ?

Budget Code\*:  ? **Total: SFr. 398.00**

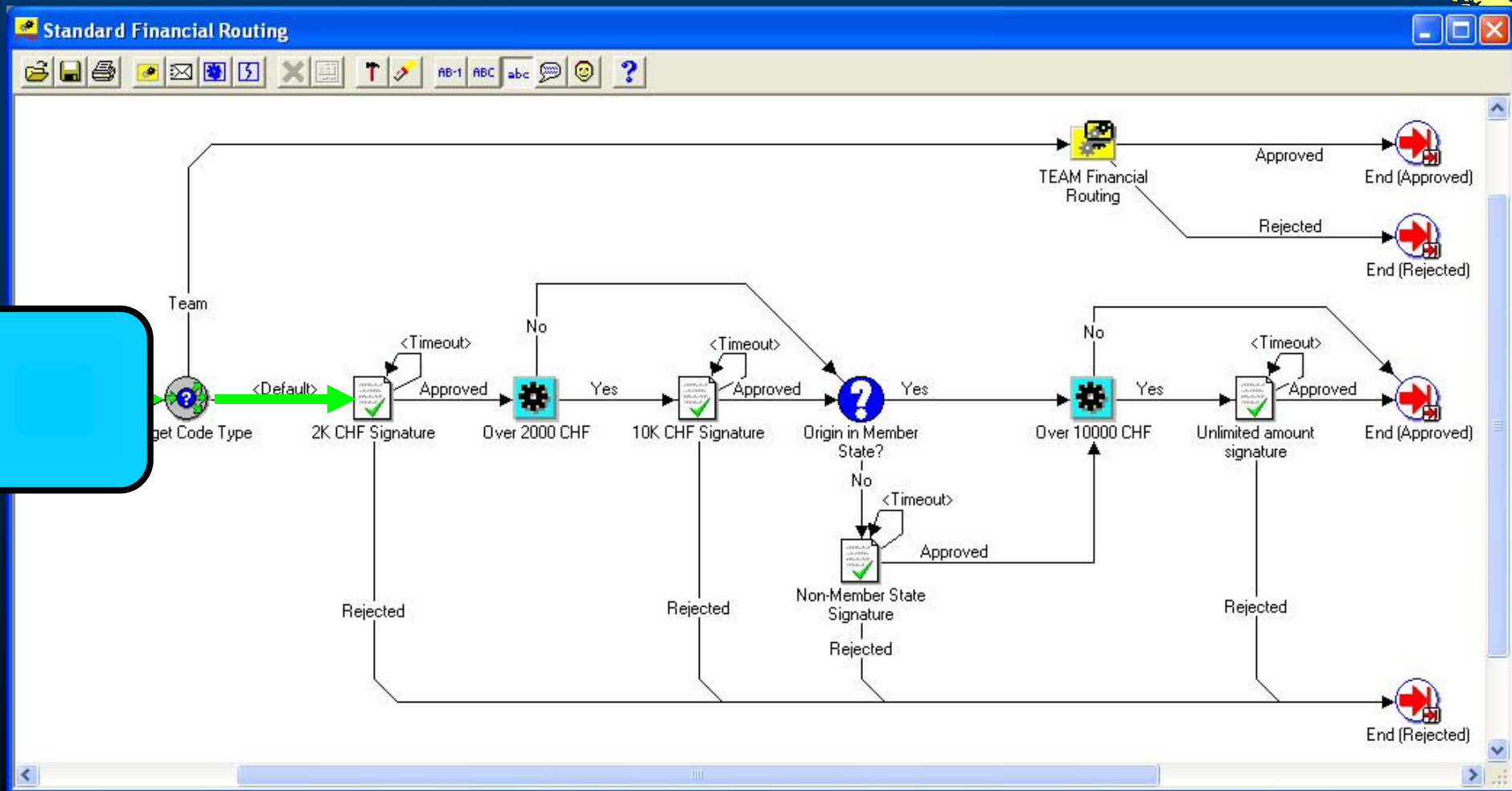
Pos	Qty ?	Unit	SCEM ?	Comments	Subtotal
1	<input type="text" value="1"/>	pc	<input type="text" value="59.70.20.410.0"/>	<input type="text" value="ARGON P.+GIFT REGUL.300bar/16l"/> Item in stock, you will be served within 1 working day.	214.00
2	<input type="text" value="1"/>	pc	<input type="text" value="59.70.50.220.9"/>	<input type="text" value="ST.OXYGEN REGULATOR 300/20 bar"/> Item in stock, you will be served within 1 working day.	184.00
					<b>Total: SFr. 398.00</b>

Document: Done





# Workflow in Action



# Workflow in Action

Material Request 769838 - Netscape

Authorise Document - Netscape

**Authorise Document**  
769838

Please enter your authorisation password:

Authorisation Password : \*\*\*\*\* OK

Routing Comments:

**Forward (optional)**

Forward to:

+ Add  
X Delete

If absent, delegate to:

+ Add  
X Delete

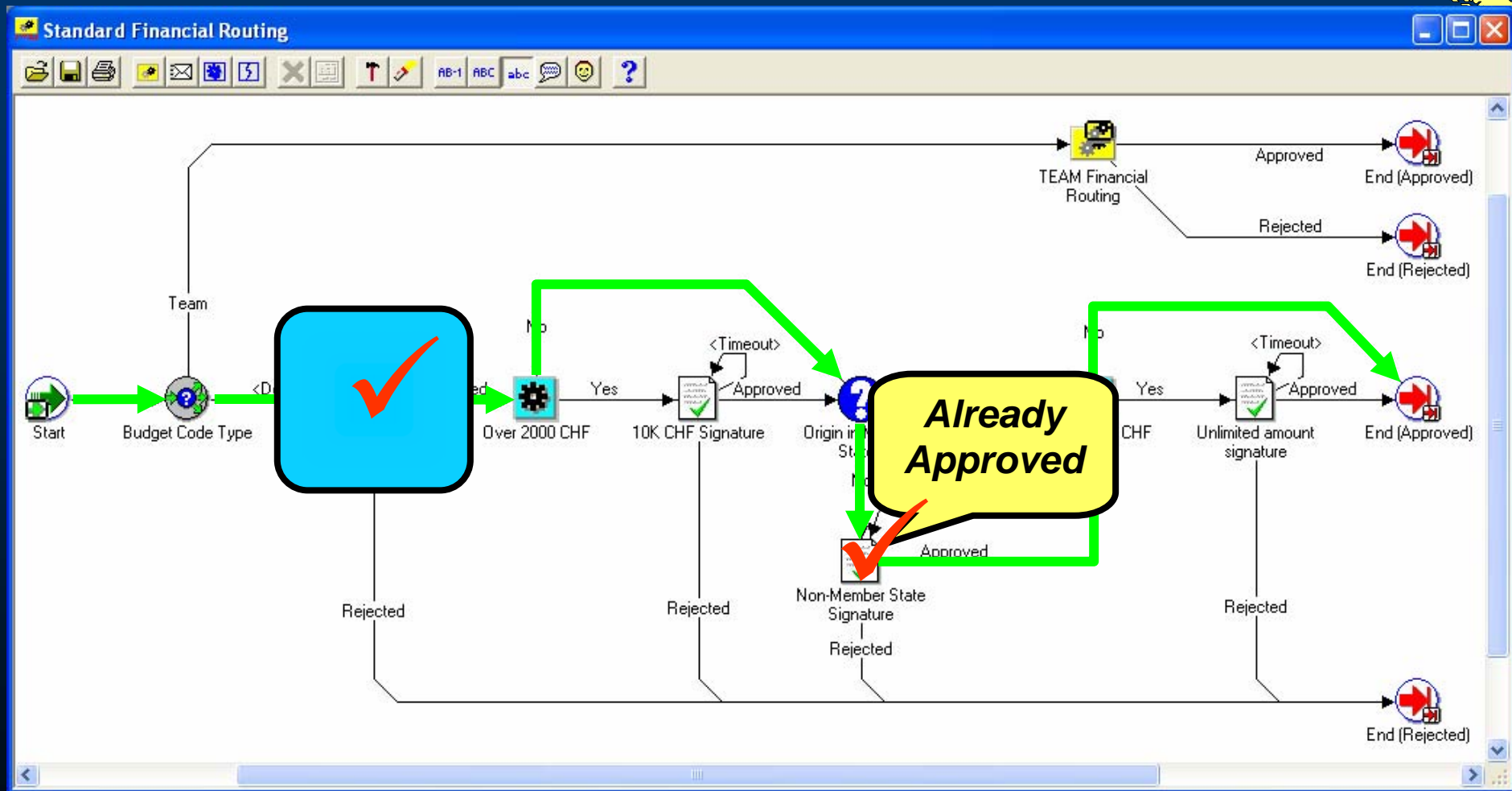
Forward for information only  
 Forward in Parallel  
 Re-sign after these approvals

22.06.2000 12:39 Susan FOFFANO is absent from 20.06.2000 until 26.06.2000  
22.06.2000 12:39 With Ivica Dobrovicova for 500 CHF signature on 16152 awaiting approval

Document: Done



# Workflow in Action



# Workflow in Action



# Almost any procedure...

'CERN'  
perso  
activ  
overhe

EDH - Tasks (James PURVIS) - Microsoft Internet Explorer

Address: https://edh.cern.ch/Desktop/dir.jsp?-4

Welcome James PURVIS, click here to [LOGOUT](#)

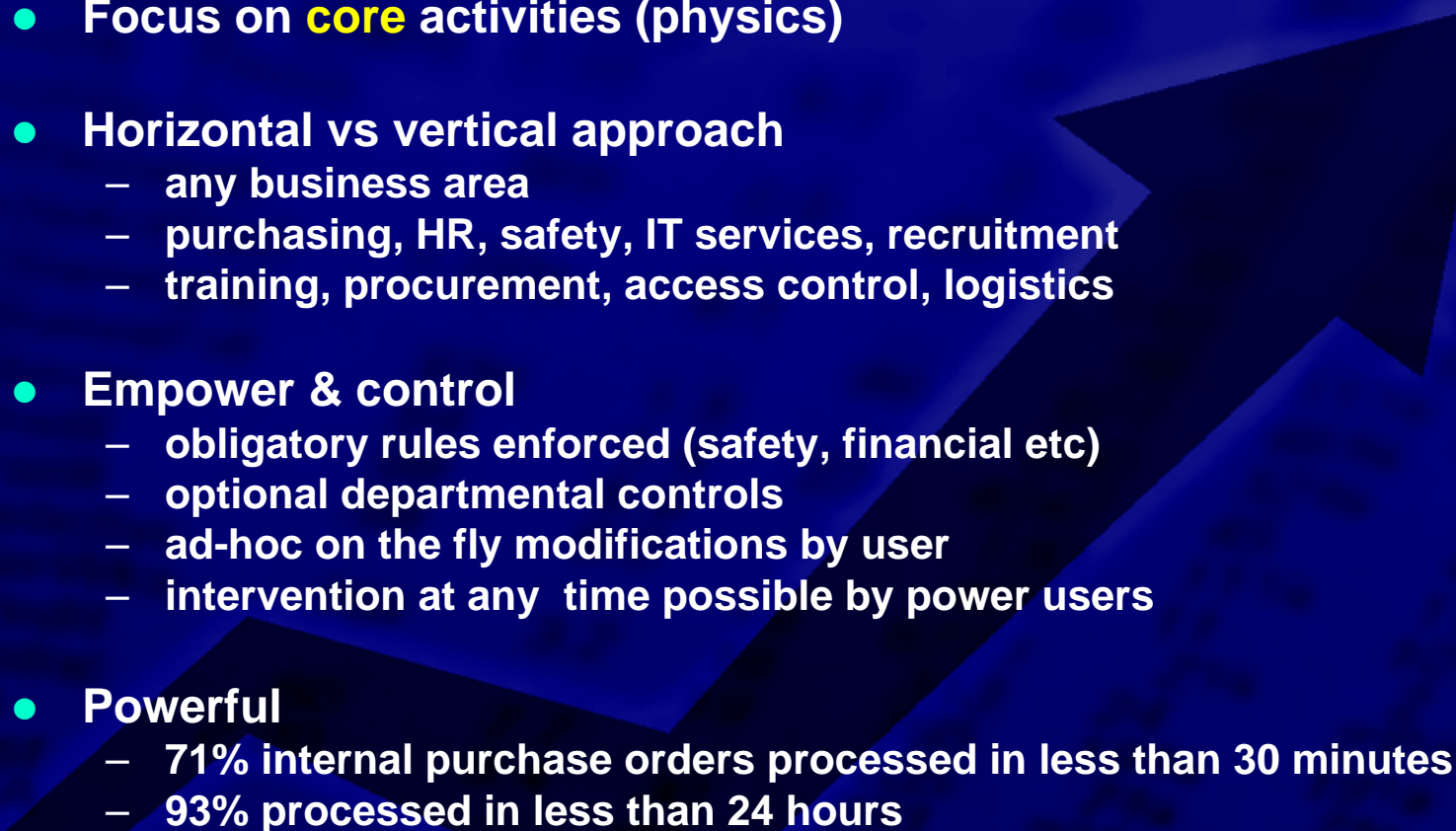
Home Search News Settings About Help

Administration	Claims	HR & Training	Leave
<a href="#">EDH Admin</a>	<a href="#">Advance</a>	<a href="#">External Training Request</a>	<a href="#">Leave Cancellation</a>
<a href="#">LeaveAdmin</a>	<a href="#">Home Leave(all)</a>	<input checked="" type="checkbox"/> <a href="#">PAF Summary</a>	<a href="#">Leave Overview</a>
<a href="#">Reroute Document</a>	<a href="#">Installation</a>	<input checked="" type="checkbox"/> <a href="#">Request for opening a post</a>	<a href="#">Leave Request</a>
	<a href="#">School Fees</a>	<input type="checkbox"/> <a href="#">Training Catalogue</a>	<a href="#">Leave Transactions</a>
	<a href="#">Subsistence</a>		<a href="#">List of Leaves</a>
	<a href="#">Sundry Expenditure</a>		<input type="checkbox"/> <a href="#">Overtime Request</a>
	<a href="#">Third Party Claim</a>		<input type="checkbox"/> <a href="#">Overtime Summary</a>

Logistics	Other Services	Purchasing	Safety
<input type="checkbox"/> <a href="#">Snipping Request (Arrival)</a>	<input type="checkbox"/> <a href="#">Access Request</a>	<input type="checkbox"/> <a href="#">Departmental Request (DR)</a>	<input type="checkbox"/> <a href="#">AOC Overview</a>
<input type="checkbox"/> <a href="#">Shipping Request (Export)</a>	<input type="checkbox"/> <a href="#">Automatic Callbank / CC) Request / Modification</a>	<input type="checkbox"/> <a href="#">Electronic Invoice</a>	<input type="checkbox"/> <a href="#">AOC Task Overview</a>
<input type="checkbox"/> <a href="#">Transport Request (CERN site)</a>	<input type="checkbox"/> <a href="#">General Insurance Request / Modification</a>	<input type="checkbox"/> <a href="#">Electronic Invoice Overview</a>	<input type="checkbox"/> <a href="#">Disable/Enable Alarm (IS37)</a>
		<input type="checkbox"/> <a href="#">Inter Departmental Transfer (TID)</a>	<input type="checkbox"/> <a href="#">Fire Permit</a>
		<input type="checkbox"/> <a href="#">Material Request (Stores)</a>	<input type="checkbox"/> <a href="#">IS37 Overview</a>
		<input type="checkbox"/> <a href="#">OSVC</a>	<input type="checkbox"/> <a href="#">Work Request (AOC/IS39)</a>
		<input type="checkbox"/> <a href="#">Purchase Requisition (DAI)</a>	
		<input type="checkbox"/> <a href="#">Stores Catalogue</a>	
		<input type="checkbox"/> <a href="#">Temporary Labour</a>	

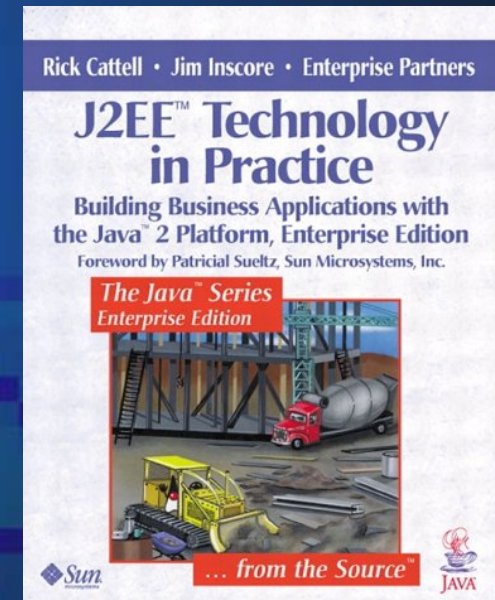
Local intranet

# Benefits

- Do more with less (productivity, efficiency, morale...)
  - Focus on **core** activities (physics)
  - Horizontal vs vertical approach
    - any business area
    - purchasing, HR, safety, IT services, recruitment
    - training, procurement, access control, logistics
  - Empower & control
    - obligatory rules enforced (safety, financial etc)
    - optional departmental controls
    - ad-hoc on the fly modifications by user
    - intervention at any time possible by power users
  - Powerful
    - 71% internal purchase orders processed in less than 30 minutes
    - 93% processed in less than 24 hours
- 

# Technology

- **Well-written**
  - Blueprint by Sun (inventors of Java) & Oracle as “industry best practice”
  - Rigorous quality assurance procedures (business critical).
  - ⇒ Consequences = low support, low IT maintenance cost
- **Portable / proven technology transfer**
  - Multilingual
- **Reusable**
  - components, procedures & technology
- **Scalable**
  - 150,000 procedures per year
  - 29 currencies
  - 6,500 active users, 2000/day
  - new doc every 30 seconds
  - 360,000 signatures per year
  - used in 49 countries
  
  - over 2 billion CHF of money committed
- **Mature**
  - evolved : mainframe (1990) -> client/server(1992) -> Web (1998)
  - 15 years electronic process experience
  - 6 years e-business experience



# Opportunities

## Frequently Asked Questions on WWW

### FREQUENTLY ASKED QUESTIONS ON W3

An FAQ list is really a cop-out from managed information. You should be able to find everything you want to know by browsing from the WWW project page, as everything should be arranged in a logical way. Here though are things which maybe didn't fit into the structure, with pointers to the answers which maybe did. Its an experiment, started May 92. The questioners are anonymous.

I am just starting: how do I find out more? [1]

How does www keep track of the available servers? [2]

How does W3 compare with WAIS and Gopher? [3] ?

How do I create my own server? [4] ?

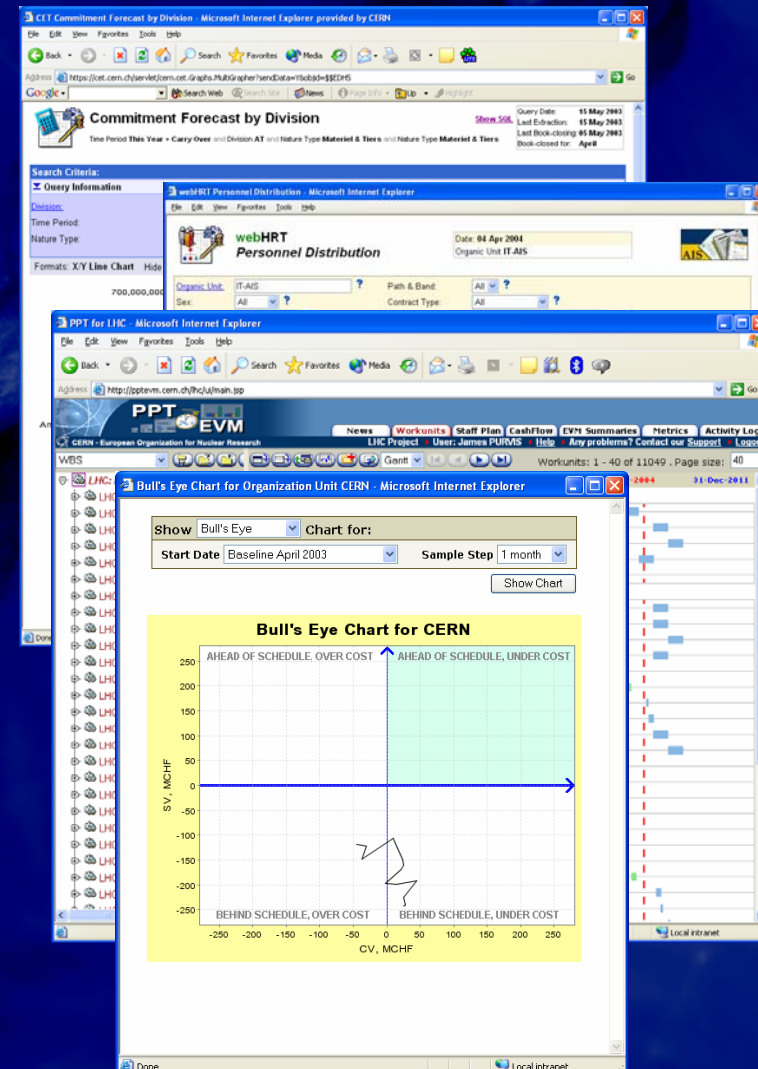
1-10, Up, <RETURN> for more, Quit, or Help: ■



# Further opportunities

- Management reporting
  - Financial
  - HR
- Staffing simulation
- Project & earned value management (EVM)

	Paid (Charted to Budget Code CBF)	Annual Commitment (CFP)	Annual Open Commitment (CFP)	Payment Budget (CFP)	Pipeline (CFP)	Commitments Incl. Pipeline	Balance (Including Pipeline)	Percentage Budget Used (Including Pipeline)	Balance (Excluding Pipeline)	Percentage Budget Used (Excluding Pipeline)	Chart
16150	42,513.46	42,751.46	238.00	40,000.00		42,751.46	-2,751.46	107	-2,751.46	107	
16151	7,684.10	7,684.10		20,000.00		7,684.10	12,315.90	38	12,315.90	38	
16152	111,491.82	111,491.82		100,000.00		111,491.82	-11,491.82	111	-11,491.82	111	
16153	21,696.00	22,073.50	377.50	20,000.00		22,073.50	-2,073.50	110	-2,073.50	110	
16640	48,246.10	48,246.10		35,000.00		48,246.10	-13,246.10	138	-13,246.10	138	
Grand Total	233,631.58	232,247.86	615.50	215,900.00		232,247.86	-17,247.86	108	-17,247.86	108	



# Thank You

**For More Information**

**Browse to:**

**<http://ais.cern.ch>**

**or Email:**

**[james.purvis@cern.ch](mailto:james.purvis@cern.ch)**

# Question : Build vs Buy?

- **Best of Breed**

- Buy best solution for each business unit
- We manage the integration & customisation
- We provide transparent layer for end-users
- E.g. Financials, HR, Payroll, e-recruitment

- **Be-spoke development**

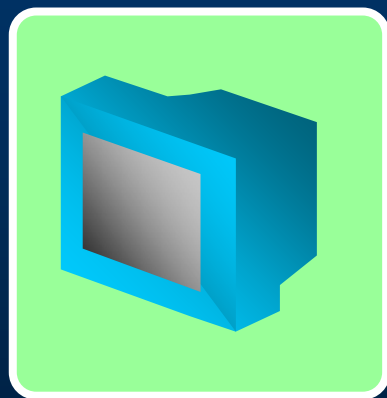
- Where market availability doesn't meet CERN needs
- E.g. Workflow, Reporting, Earned Value Management, Contract Management

# Question : ROI?

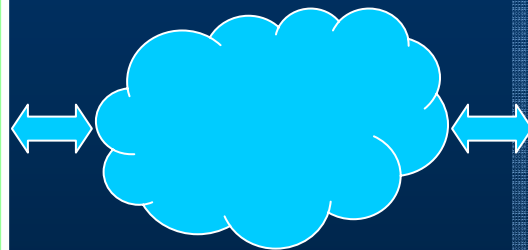
- Investment Cost :
  - 8-10 person years initial development
  - 4 wks per business process
  - 1 FTE support & operations
- Return
  - FTE savings (see <http://ais.cern.ch/>)
  - “Traditional ROI metrics not always applicable with e-business solutions”

# Question : Architecture

## 'Classical' 3-tier



'Thin'  
Web Client

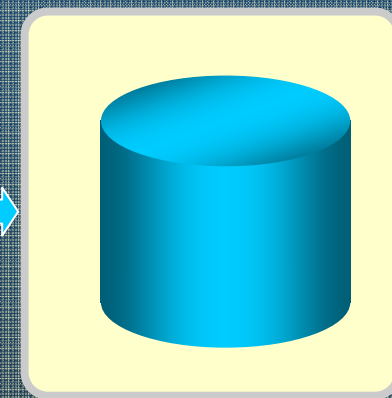


Network  
Intra / Internet



9i Application  
Server

App Server 9.0.2  
Sun Enterprise 450  
4 CPU  
2Gb Ram  
250Gb RAID Disk



Oracle Database

Oracle 8.1.7.4  
Sun Enterprise 420R  
4 CPU  
4Gb Ram  
300Gb RAID Disk