



the work processor

meeting the challenge of the
21st century



The problem

- In a 21st century business environment that is
 - Globalized
 - Decentralized
 - Insanely competitive
- How to combine
 - The **strategic** advantages of (say) balanced scorecard
 - The **management** advantages of workflow/BPM
 - The **operational** advantages of Internet collaboration tools
- And do it for low Total Cost of Ownership?



Why is this a problem?

- Imagine you are responsible for (1 or more) groups of people
 - Organizational staff
 - Project workers
 - Team members
 - Joint venture participants
 - Any other kind of collaborators
- You could be working in
 - Commerce
 - Health
 - Emergency services
 - Science
 - Law enforcement
 - Or absolutely anything else at all
- And someone asks you ...



Some basic questions

- What is each person working on **right now**?
- How is each person's work being **supported** and **controlled**?
- What **value** is added by each person's work?
- How does each person's work relate to overall **strategic aims**?



Could you answer?

- You might have
 - Organization charts
 - Project plans
 - Work breakdown structures
 - Status reports
 - Agreed targets
 - Meeting minutes
 - And all sorts of other information
- But in the end, this is just a mountain of documents
- Each of which is out-of-date by the time you read it
 - And even if it wasn't ...
 - No single source contains the information you need



The next big challenge

- The 19th century saw technology support for **production**
 - Making things to sell
- The 20th century saw technology support for **transaction**
 - Selling products and services
- The 21st century will see technology support for **collaboration**
 - Organizing both production and transaction



What **is** collaboration?

- Work done by 2 or more people
- Co-operatively
- To meet aims
 - Some shared
 - Some individual



Types of collaborative work

- Tacit interactions
 - “the searching, monitoring, and coordinating required to manage the exchange of goods and services” (McKinsey)
 - Company strategy
 - Marketing
 - Sales
- Other creative, innovative human activities fundamental to business operations
 - Research
 - Design
 - Project management
 - Negotiation with customers and suppliers
 - Merger, demerger, buyout, etc
- Then there is work less obviously connected to supply of goods and services
 - Healthcare
 - Controlling an epidemic
 - Government policy implementation
 - Political/social negotiation
 - Natural disaster prevention/handling
 - Election campaign management
 - Crime solving
 - Legal action
 - Military action



Process – but not program

- There are 2 types of process
- Collaborative work is **human-driven**
 - Involves uniquely human attributes such as creativity
 - Workflow depends on interactions
 - Each process instance is dynamically shaped by the participants
- Whereas conventional BPM supports only **mechanistic** work, where
 - Human involvement is limited to key decision and data entry points
 - Workflow is controlled via sequencing techniques
 - The process can (and should) be repeated with only minor variation



Mechanistic processes

- Compliance testing
- Facilities construction
- New product release
- Component sourcing
- Assembly line
- Logistics
- Invoicing
- Settlement
- Returns
- Stock level maintenance
- Purchase order approval
- Payroll
- Stock trading



A new type of software is needed

- **Production and transaction processes** (mechanistic) are well supported by enterprise software
 - ERP
 - Workflow
 - Business Process Management
- But none of these tools support **collaborative human work processes**, which
 - Involve innovation
 - Depend on interaction
 - Are dynamically shaped by the participants
- What about existing collaboration tools (knowledge management, content management, groupware ...)?
 - They do not provide a “joined up” view of human work processes
 - So you cannot use them to **manage** or **analyze** the work
 - McKinsey describes tacit interactions as “new territory” requiring new technologies for support



A joined up view of human work processes

- ... requires a **theory**
 - Of **human collaboration**
 - The fundamental principles and patterns
 - That fully describe any collaborative human work
- Such a theory must
 - Use insights from many scientific disciplines
 - Psychology, biology, social systems theory, learning theory ...
 - Encompass varied existing fields of business theory
 - Quality management, knowledge management, project management, business process management, ...
 - Have a formal basis
 - Logic, mathematics, computer science, ...
- Though all this must be **invisible in practice!**
 - Users of the theory just need a set of simple techniques
 - That they can relate to from common sense
 - And that can be leveraged by software tools



The theory required

- Came into being with publication of ...
- **“Human Interactions: the Heart and Soul of Business Process Management”**
 - “How people really work and how they can be helped to work better”
 - Keith Harrison-Broninski
Meghan-Kiffer Press, 2005
ISBN 0929652444
 - *“the breakthrough that changes the rules of business”* (Peter Fingar)
- The theory is now widely known, as ...
 - **Human Interaction Management (HIM)**
 - Focus of interest in HIM at present is in the IT world
 - Though HIM is not really about IT at all!
 - HIM is about human working behaviour
 - And how to **support** it with IT
 - www.human-interaction-management.info
 - Articles
 - Case studies
 - Reviews



The 5 foundations of HIM

1. Understand who is collaborating with whom, and why
 - The roles that people are taking
 - The knowledge and qualifications that they bring to the party
 - The information that is available to them
2. Describe the interactions between people
 - With enough structure and formality
 - To permit analysis of progress and direction
3. Recognise, support and encourage the work that people do in their heads
 - Mental work
 - That creates value without necessarily producing a tangible product
4. Support work rather than prescribe it
 - Management of humans must aim at empowerment
 - Help people make good decisions
 - Not tell them what to decide in advance
5. Assume that processes will be shaped and reshaped as they go along
 - Define some kind of objective at the start
 - Make some agreement about the approach
 - Expect both these to be reshaped by the process itself

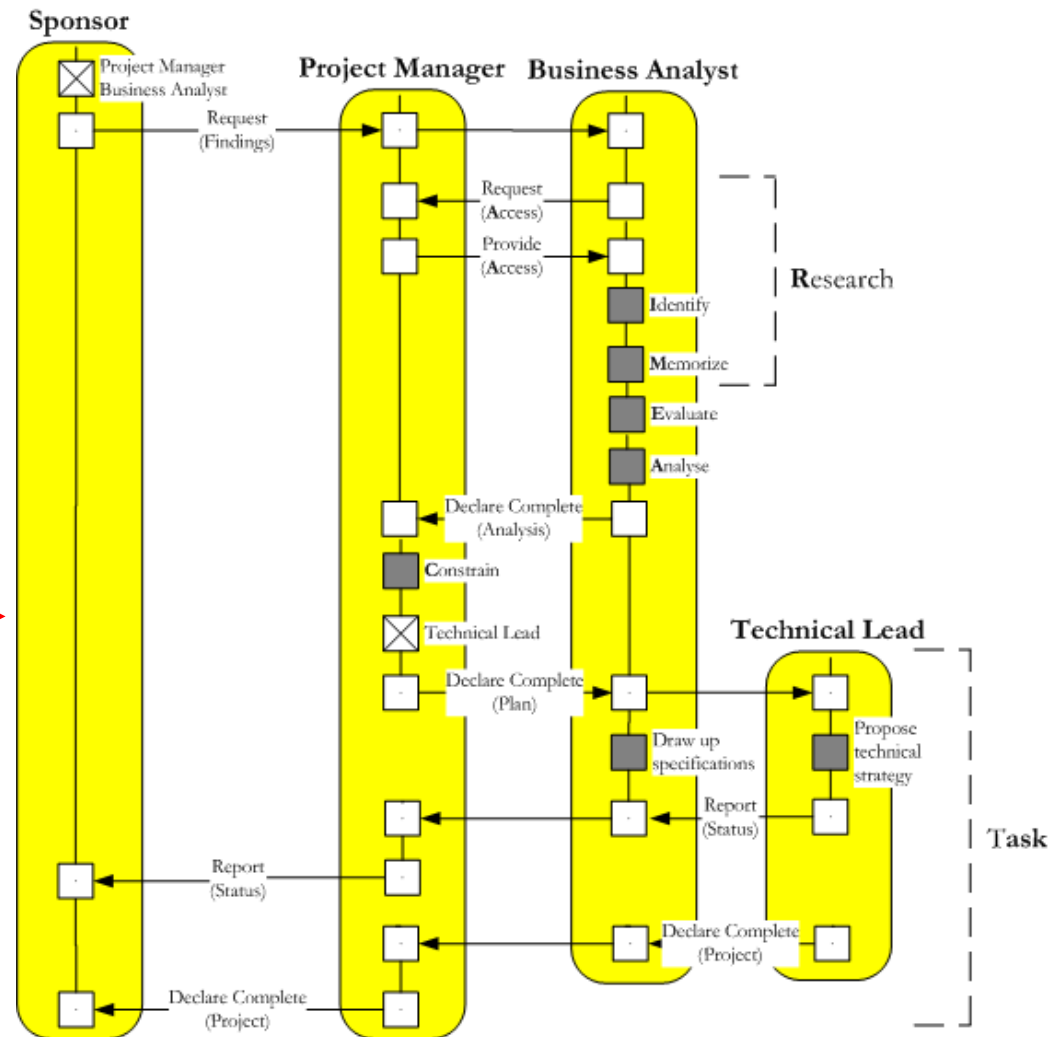


Core HIM techniques

- Describe processes simply yet powerfully
 - With an easy-to-use graphical notation
 - Derived from **Role Activity Diagrams (RADs)**
 - Enhanced and simplified to match the reality of human behaviour
- Structure collaborative work via patterns
 - Work activities
 - **REACT** – Research Evaluate Analyze Constrain Task
 - **AIM** – Access Identify Memorize
 - Process change
 - **Agreements**
 - Collaboration
 - A new concept of **transaction**
- Structure process management via **separation of control**
 - Strategic
 - Executive
 - Management

Initial RAD for a project

This diagram represents all we can say about the work at the start – the process will be extended and improved as the project progresses, via discussion among the key players





HIM is important!

- In developed countries, most administrative and transactional work is being automated or outsourced
- **The jobs left over will be collaborative human work**
- Improving the way you do collaborative work
 - “opens up the possibility that companies can again create capabilities and advantages that rivals can't easily duplicate.” (McKinsey)
 - Is essential if we are to meet the social, political and environmental challenges of a globalized, industrialized society



Supporting collaborative work

- ... means **institutionalizing** better practices
 - It is not enough to do things well on a case-by-case basis
- Need to take a process-based approach to managing all operations
 - Not just the transactional work handled by ERP, Workflow and Business Process Management
 - But the collaborative human work too
 - Which needs new theory and new techniques
- A process-based approach must incorporate
 - Management theory
 - Accompanying software tools



The big picture

- In the 20th century, the Word Processor and Spreadsheet revolutionized office work
- In the 21st century, the **Work Processor** will use HIM to revolutionize business generally
- The Work Processor is
 - **A Human Interaction Management System (HIMS)**
 - Implemented as a client program (rather than a server application)



What is a work processor?

- The next generation of collaborative work support
- A free desktop client based
 - NOT on programs and data (like Windows)
 - NOT on Web browsing (like Google)
 - BUT on **the real-world work processes in which the user is engaged**



Technology basis

- The prototype system: **RADRunner™**
 - Server-based
 - Thin client Web interface
 - Powerful, robust, scalable
- The first ever Role-Activity process engine to be successfully “productized”
 - There have been many previous attempts
 - Some very well-funded
 - To succeed where all others failed, it was necessary to develop very advanced technology principles
- The work processor builds on RADRunner™ – not only these technology principles, but also the lessons learnt
 - Process management must be simple
 - Graphical tooling must be intuitive
 - TCO must be low, and cost of take-up must be close to zero



Using the work processor

- Use it anywhere:
 - Any machine: desktop, laptop, ultraportable, ...
 - Any operating system: Windows, Linux, Apple, ...
 - Any site: office, home, client, Internet café, ...
- The program can be
 - Carried around, e.g., on a keyfob storage device
 - Or downloaded when required
- Combines security and flexibility
 - The data representing your current work processes is a single encrypted file
 - Carry it around with you, e.g., again on a keyfob
 - Or store it on the Internet for download when required
 - Export it to XML at any time



Your working life is a Book of Stories

- A work processor data file is a **Book**
- A Book contains **Stories** ...
 - Work processes in which you may engage
 - A “live” Story is one you are engaged in right now
- ... and **Identities**
 - That tell other people and systems who you are
 - To let you use messaging, e.g., email or chat



Making a Story “live”

- **Design** it
 - In collaboration with other process workers
- **Agree** on it
 - In collaboration with other process workers
- **Use** it
 - In collaboration with other process workers



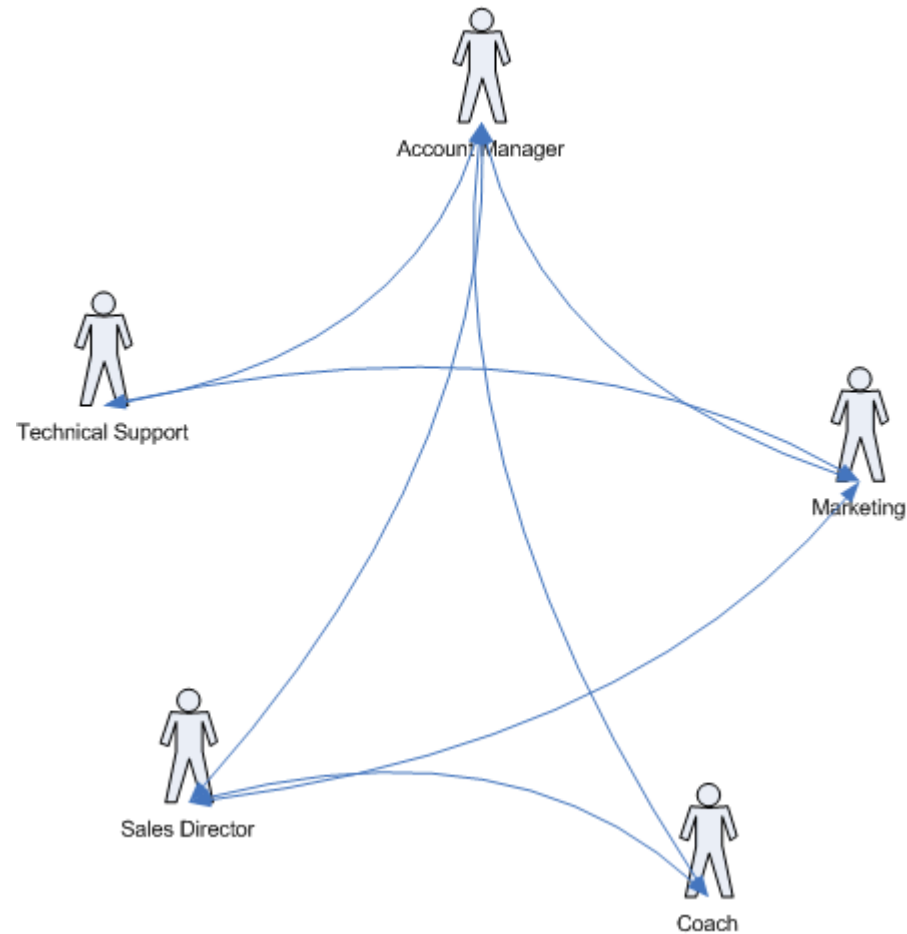
What can you do in a Story?

- **Act a Role in the process**, to:
 - Maintain private data
 - and access any external resources referenced
 - e.g., on the Web
 - Share data with others
 - Carry out a wide range of activities
 - Enabled and validated by **business rules**
 - Optionally automated by your **personal agent**
- Let's look at an example
 - We'll use **Complex Sales**



Example: Complex Sales

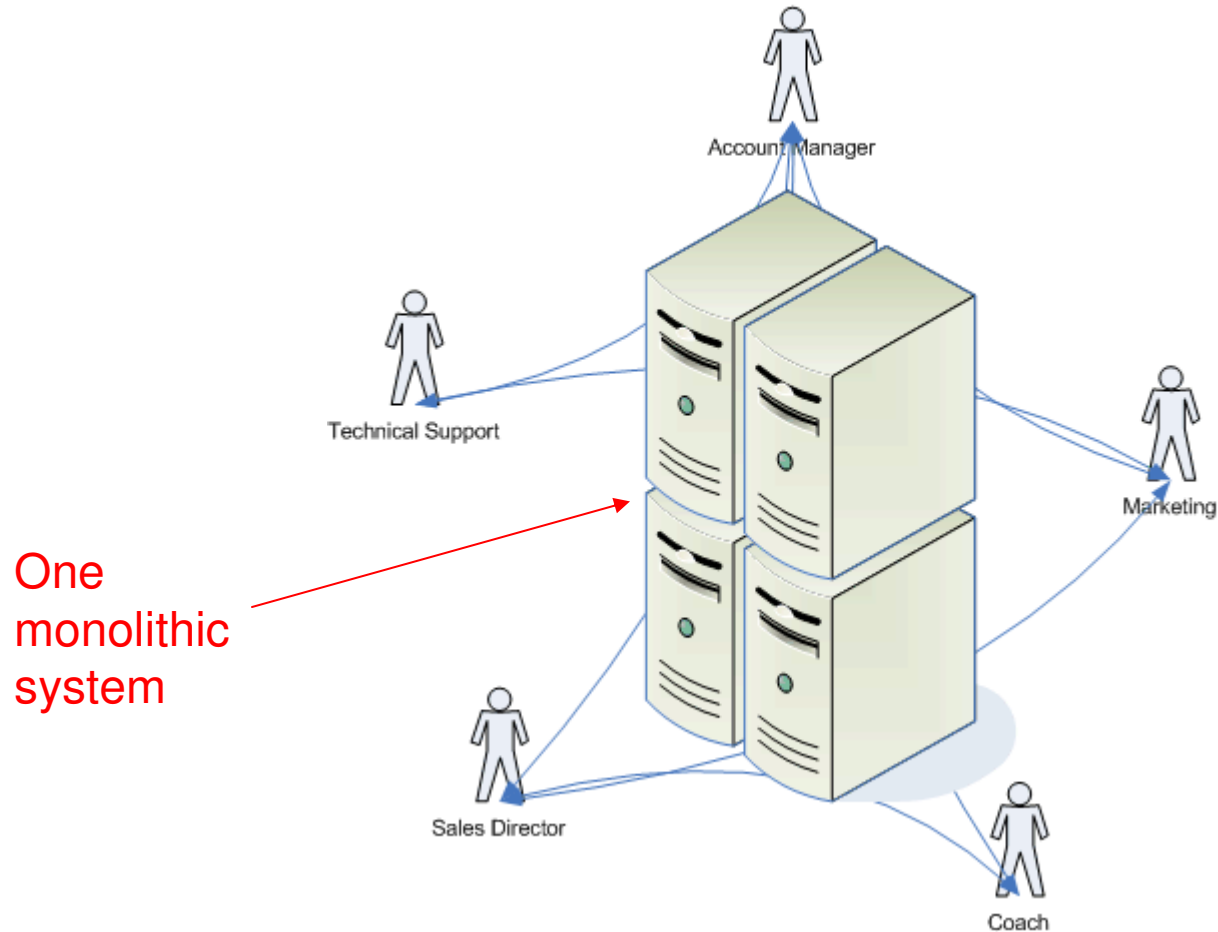
Some of the human interactions in a Complex Sales process





Usual IT support strategy

Conventional BPM/Workflow/CRM implementation of human interactions in a Complex Sales process





But is this right?

- Does a single organization “own” the process?
- How easy is it for all parties to access the system?
- Is everyone willing (or likely) to use it?

The failure rate of CRM, for instance, is often quoted as 70%



The reality (1 of 2)

- There are likely to be several organizations involved
 - Vendor
 - Subcontractors
 - PR company
 - Outsourced IT
 - Consultants
 - Organizations
 - Individuals
 - Even the client



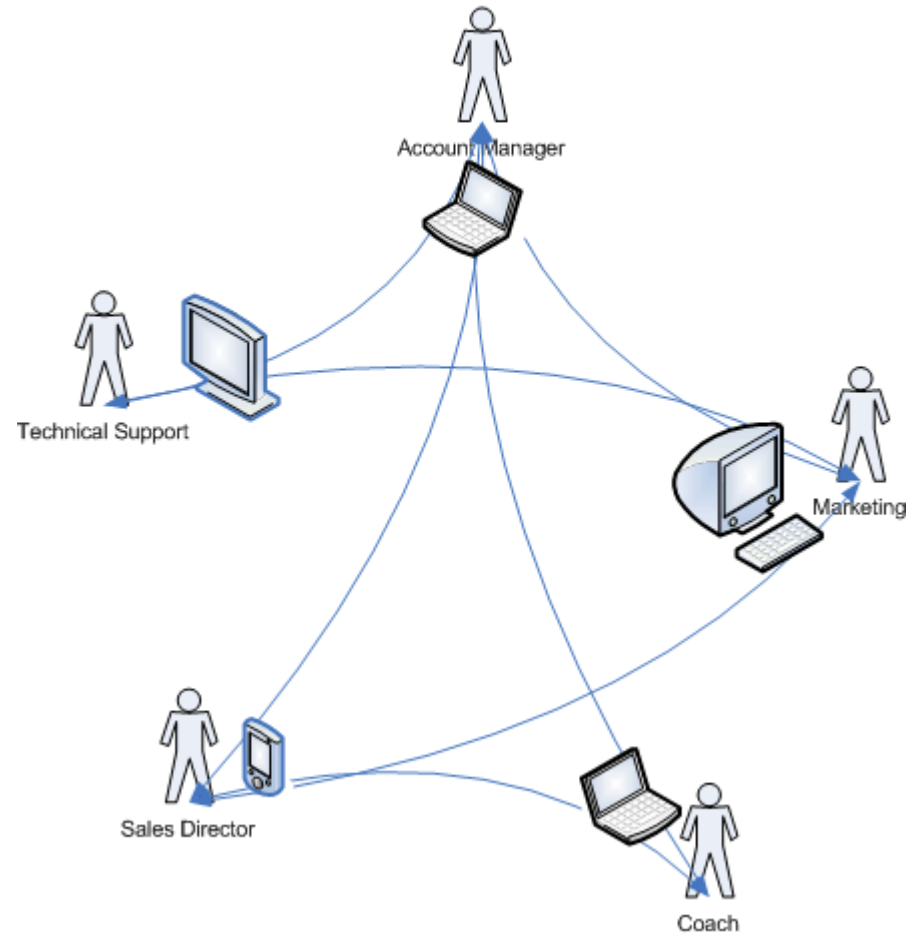
The reality (2 of 2)

- People will not use a system unless it makes their life easier
 - **Facilitates** their work
 - Rather than **adding to it**
 - Requiring the user to “do everything twice” – first do it, then enter it online
 - Or **making it clunkier**
 - Imposing a cumbersome, heavyweight interface with a long learning curve



A better way

work processor implementation of human interactions in a
Complex Sales process





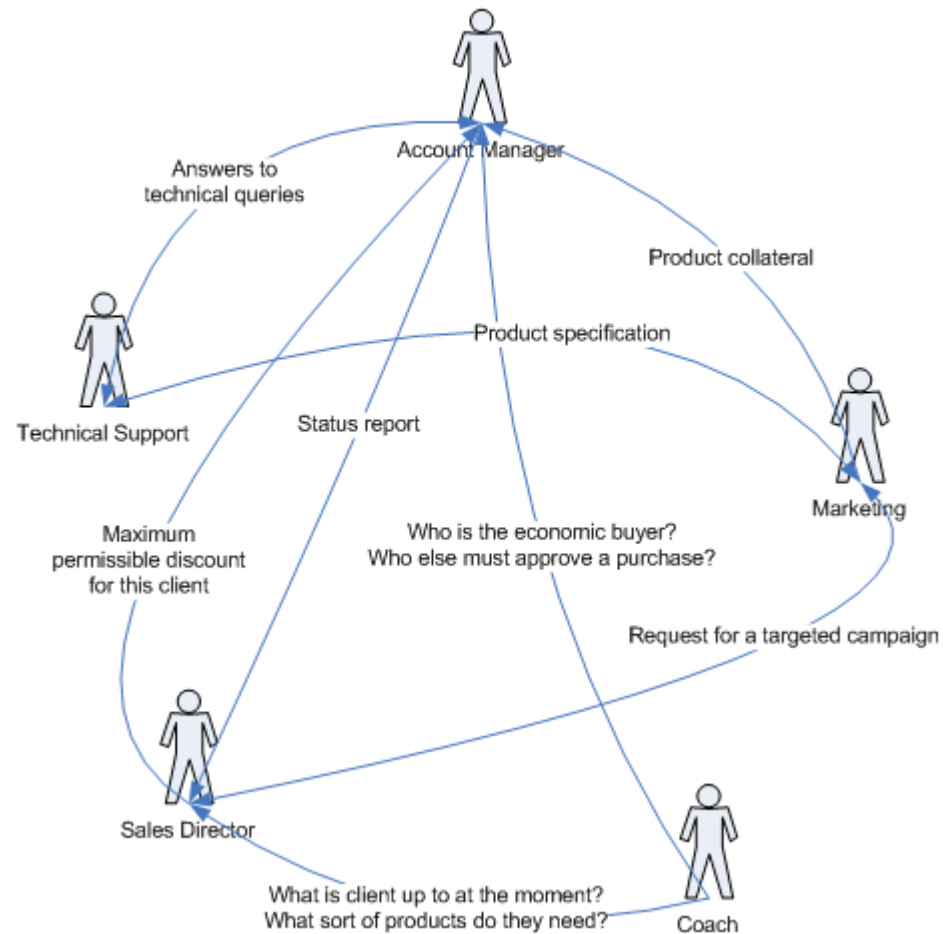
Before going into more detail

- ... some things to bear in mind
- The diagramming technique used above is informal
 - Not a **Role Activity Diagram (RAD)**
 - As used in the work processor
 - RADs are simple to understand and use, but ...
 - Let's not get side-tracked here by notation!
- The diagram is not **complete**
 - Other people are involved
 - In particular, the various client buyers
 - Other activities take place
 - Work items not specific to communication
 - Other interactions are necessary
 - The diagram just shows a few for illustrative purposes



What messages are sent?

Some detail of the human interactions in a Complex Sales process





How are messages sent?

- A Role in a Story contains **Activities**
- An Activity contains **Tasks**
- A Task may be a part-interaction, to
 - Make/take a telephone call
 - Send/get email
 - Use network chat
 - Call a Web service
 - Send, or receive and scan, a fax
 - ... or use any other form of communication



When are messages sent?

- Activities may be **enabled**
 - To make them ready for use
 - According to business rules
 - And may then be invoked
 - Manually by the Role user
 - Automatically, if desired
- All this is defined in the Story
 - Which will probably change as the work is carried out
 - Such change is controlled using HIM techniques
 - Process users make **agreements** on “how the work is to proceed from now on”
 - Agreements are made via Interactions between Roles
 - Then each person’s copy of the Story is automatically changed to match



Tasks can do a lot more ...

- Carry out any work item
 - Not just Interactions
- Invoke other applications
 - Office productivity tools
 - Back-end systems
 - Web sites or services
- Maintain the data private to a Role
 - Use forms
 - Open documents
 - Run scripts



Activities are regulated

- By business rules
- That validate Activity results
 - Undoing the effects if necessary
- That start (and stop) Roles as necessary
 - Users can be assigned automatically
 - Or by hand



Interactions are regulated

- The 3 'A's of security
 - **Authentication**
 - Who can do things
 - **Authorisation**
 - What they can do
 - **Administration**
 - Implementing, maintaining and auditing the above
- You won't get the 3 'A's from technology alone!
 - How could any encryption technique (say) provide them on it's own?
 - True security is fundamentally about **process**
 - And not just any approach to process ...
 - “the policy model getting the most attention at present from researchers is **role-based access control**” (“Security Engineering”, Ross Anderson)
- As well as encryption, Role-based process management via HIM is needed
 - For secure business dealings
 - For secure usage of government resources
 - For secure collaboration of any kind



Another example

- A non-commercial process this time
 - Drawn from **Crisis Management**
 - A field unsupported by current software tools
 - *“workflow systems do not provide the flexibility required by the Incident Command environment to deal with, e.g., event-driven changes, a diverse and distributed workforce, integration with a variety of tools and on-the-fly verification”*
- Introduction to the **International Conference on Information Systems for Crisis Response and Management (ISCRAM2006)** special session on **Incident Command Systems Workflow Management**
- Suppose there has been
 - An earthquake
 - Affecting a major city
 - And other smaller conurbations nearby – towns, villages, etc
- Various organizations and individuals must respond
 - Interact on-the-fly
 - To handle the crisis
 - Ideally, making the best possible use of combined resources ...



Who is involved?

- Emergency services
 - Ambulance services
 - Paramedics
 - Fire brigade
 - Police force
 - Coast guard
 - Armed forces
- Co-ordinators
 - Councils
 - Mayors
 - National political bodies and figures
- Supporting institutions
 - Utility companies
 - Transport agencies
 - Hospitals
 - Prisons (for looters)
- Temporary shelter for victims and emergency workers
 - Stadiums
 - Concert halls
 - Barracks
- Relief workers
 - Aid agencies
 - Social services
 - Missing persons
- And probably many more ...



Incredible complexity

- Not only would it be impossible to draw such a process using conventional techniques ...
 - How would you “sequence” the myriad interactions and activities?
- But every crisis is different
 - Both from every preceding crisis
 - And from day to day
 - Since crisis situations change constantly
- Nevertheless, process-based management is a vital tool ...



Learning from the past

- *“Those who cannot remember history are condemned to repeat it”*
George Santayana, 1905
- Each crisis brings hard-won knowledge
 - To those who handled it
 - That should be leveraged in future emergencies
 - But too often the same mistakes are made
- To re-use such knowledge ...
 - It must be captured as **template processes**
 - For use as a basis when responding to future crises
 - Either singly or in combination



Template Crisis Management processes

- Rescue
 - Freeing victims of the disaster
 - Evacuation procedures
- Property Damage
 - Flood control
 - Fire control/prevention
- Services
 - Emergency utilities supply
 - Transport arrangement
- Relief
 - Temporary housing
 - Emergency provisioning
 - Missing person support
- Crime
 - Looting control
 - Re-establishing the rule of law

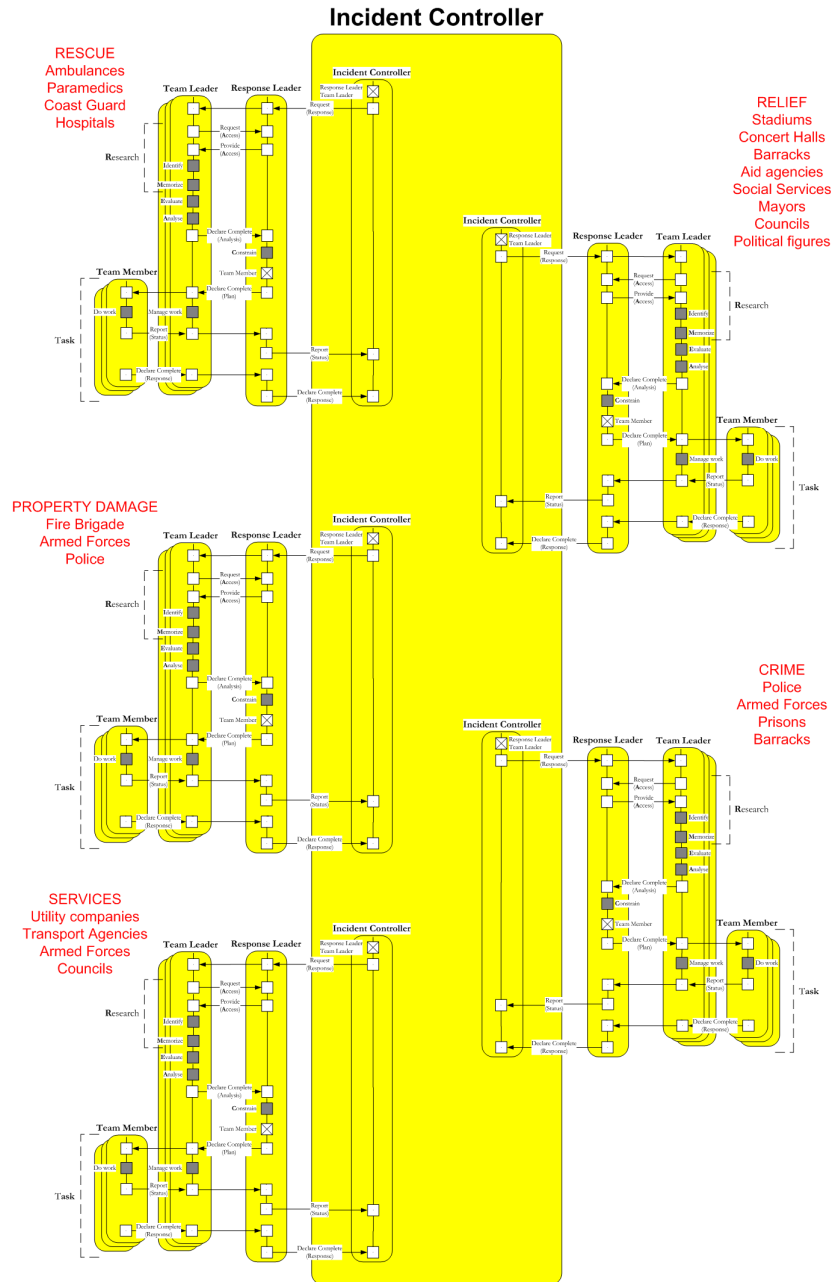


Process-based response

- The work processor permits such template process to be created easily
 - Even **automatically**, from previous emergencies
- Incident controllers can then create a new process for each situation
 - Picking the templates that seem most appropriate
 - Combining them into a unified response
 - Assigning them to responsible bodies and persons
- And manage this process as it executes
 - Tracking it via feedback mechanisms in software tools
 - Identifying bottlenecks and loopholes
 - Amending the process on-the-fly as required

Assembling template processes

- Incident controller chooses appropriate templates
 - Building up a complete response
 - From pieces of the picture
- Some templates may actually be process **instances** from previous incidents
 - Appropriate to the current situation
 - That can be re-used
 - Perhaps with minor changes
- Then assembles the templates into a unified process
 - Assigning people to each Role (yellow rectangle)
 - And making the unified process "live"





Decentralized control

- In such complex situations, some aspects of response must be delegated to those on the ground
- But this must be done
 - Effectively
 - Without the situation degenerating into chaos
 - Safely
 - Without contravening policies and regulations
 - Accountably
 - Without those in overall charge losing track of the situation
- Only software tools can provide such delegation
 - In highly complex situations
 - That are fraught with tension and danger
 - Where there is no time to read and respond to detailed status reports



Crisis Management software

- Must permit **re-use of knowledge**
 - Not just in mountains of documents
 - But as template processes
 - That can be used actively to deal with crises
- Must be **adaptive**
 - To situations that are different every time
 - And change from moment to moment
- Must be **decentralized**
 - Leveraging the skills and experience of those on the ground
 - Yet retaining the necessary overall controls
 - Even in situations where no network connectivity is available



The software required ...

- Must ...
 - Be based on collaborative human processes
 - Support change to process definition during execution
 - Run without needing server access
- The proof of concept
 - Humanedj (humanedj.com)



Other typical uses

- Project management
- Management of outsourcing contracts
- Product Lifecycle Management
- Negotiation of B2B processes
 - And their implementation via choreography
- To improve productivity by reducing email inbox bloat
 - And the stress-inducing blame culture that results from everyone CCing everyone else



Extendable via plugins

- Standard version
 - Freeware
 - Fully functional
 - All you need to participate in processes
 - Anyone can download it
 - And get going straight away
- New features can be added via **plugins**
 - Standard OSGi plugin model
 - As used in Eclipse
 - Open API
 - Open XML storage format



Summary





Why a work processor?

- To **facilitate** collaborative work processes
 - Help things get done when necessary
 - Quickly and efficiently
 - Automating as much as possible
- To **control** collaborative work processes
 - As a manager
 - As a responsible executive
 - As an organizational leader
- To make the process **visible**
 - To all concerned
 - Participants
 - Others in the organizations involved
 - Not just at the time, but later as well
 - Analysis of what is actually going on (went) on
 - Reuse of the process definition



No barriers to usage

- Each party uses the same software
 - However and wherever they like
 - Not only for this process
 - But for any other processes too
- **You can join the process without it**
 - But it will help you work better
 - And it is trivial to install
- There is no loss of centralized control
 - Only empowerment of individuals
 - Centralized process monitoring can be enabled if desired
 - Without impacting users



Everyone can use the work processor

- Any market segment
- Any type of organization
 - Commercial
 - Governmental
 - Non-profit
- Any size of organization
 - Blue chips
 - SMEs
 - Independent consultants



Private sector

- Competitive edge
 - Vital in a globalized economy
 - To survive against the “4 billion new capitalists”
 - Unhampered by legacy infrastructure
- Longer-lasting relationships with existing customers
 - Always the most profitable business
 - But they are only 1 click away from your competitors
 - So you need to **engage with their processes**
 - Not just sell to them
- Strategic adaptiveness
 - Mergers
 - Demergers
 - Joint ventures



Public sector

- Accountability
 - Track how and why decisions were made
 - Track the impact of each decision
 - e.g., on the environment
 - Where few objective measures exist
- Respond more quickly
 - To political decisions
 - To current events
 - To social changes
- Flexibility
 - Separate **operation** from **organization**



User

- A personal process assistant
 - To help with your activities and interactions
- No more grappling with
 - Program configuration
 - Remote system access
 - Complex file systems
 - And a bewildering variety of Web resources
- Let the work processor do it all for you



The virtual operating system for the Internet

... coming soon is software that could solve some of the most nagging challenges to the systematic organization of the workforce. As personal and handheld computers reach a critical mass in the workplace, workforce-management software will probably become ubiquitous.

[The McKinsey Quarterly](#)



Get involved!

- Find out more
 - human-interaction-management.info
 - humanedj.com
- Join the beta program
 - No obligations
 - Just use the software
 - And give us your feedback
- Work with us to make it happen
 - Become a partner
 - **Join us ...**



We are hiring

- Our vision:
 - To bring about a healthier, happier, saner, and more productive society
 - By helping people in all walks of life collaborate better with each other
- We are looking for:
 - Friendly, creative software developers
 - With experience of Eclipse EMF and RCP
- Join us and get:
 - The chance to work with like-minded people
 - The working environment everyone dreams of
 - To be part of the next major Internet phenomenon



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