



Work Process Vision & Trends*

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The Last 5 Years.... Technology

- The last 5 years have been pivotal in the development of technologies for the organization & use of information & knowledge
 - These technologies include:
 - Middle & client tier component models (JxEE/EJB, .NET) & their associated programming models & application servers
 - Service-based architectures & their associated application models (initially web services)
 - Various distributed information management models (federation, local & web caching, P2P...)
 - Extension & integration of relational, O/R, OO & other information models
 - Preliminary development of knowledge management models
 - These technologies (& others) provide the foundation for developments in the next 5 years...



Timeframe for Work Process Evolution

- We are looking at a very large series of changes in the way people work over the next 10 years!
 - These changes are not driven by the availability & evolution of new technologies – such changes may (or may not) act to facilitate work process evolution
 - These changes ARE driven by the associated changes in business needs & the general work environment
- There are three phases to this evolution:

Current – 24 mos.	2-5 years	5-10 years
Mainly content based	Content & process based	Knowledge & model based
Focus is problem solving	Work process & collaboration	Design model (see next slides)
Basis is: content, individual work, deduction	Process innovation, group work, mixed & model logics	Personal & group intuition, organizational memory, induction
Content driven	Group & technology driven	Intuition & relationship driven



Content-Driven Phase - Current to 2 Years

- Creation, management & use of content drives this phase
- Work is mainly done by individuals & small (relatively isolated) teams
- Focus is individual & small teams working to solve business problems
 - Feature needs revolve around integration of content management & collaboration with organization of projects/programs, budgets etc. also important
- Technology is primarily program based, i.e. based on algorithms & deductive (formal) reasoning
- It's 2004 - Early adopters have already moved on to the next phase



Group Work Phase – 2 to 5 Years (really now!)

- **Deep integration of Content & Process drives this phase**
- **Work is done by distributed teams**
- **Focus is on collaborative problem solving in the work process context**
- **Process innovation & group decision making become important**
- **Technology enables work process & collaboration, algorithms become less formal, more based on people's work process**
- **Advances made in both how people work with (“Big C”) content & collaboration as well as context-based problem solving enable a move to the next phase**



Knowledge & Design Work Phase – 5 to 10 Years

- Large-scale use of knowledge & models drive this phase
- Work, i.e. what people do, takes on characteristics of the design work model (see next slide)
- Work is done by a range of individuals, collaborative teams & collaborations among teams
- Focus is on knowledge & context-based problem solving to address business issues
- Technology provides means of creating & maintaining context (organizational memory), large-scale km capability, problem solving assistance & ability to deal with very large-scale (Big C) content
- Models of work & business problems create context for problem solving & business decision making

Design Work Model

- **Work has been done recently to describe how designers & other creative people work.* Characteristics of this description include:**
 - **Episodic & iterative, work context must be preserved between episodes**
 - **Knowledge based – deep historical, technical & contextual knowledge is necessary**
 - **Underconstrained – incomplete or poorly specified conditions & constraints**
 - **Eclectic – uses a wide range of problem solving techniques**
 - **Intuitive – even in highly constrained situations**
 - **Nontextual – must be able to reason about nontextual information**
 - **“nonlogical” – inductive, analogic**
 - **Fueled by tensions**
 - **Theoretic/pragmatic**
 - **Context/content**
 - **Intuitive/logical**

* Rowe, P.G. 1987. Design Thinking. MIT Press.



Trends... Work & Technology

- How people work & the technology that supports this work tends to co-evolve, that is, sometimes the development of new technology enables new ways of working & sometimes the development of new work models & work processes requires new technology. The context for this co-evolution is business needs (& in some cases socio-cultural needs)
- Three large business trends are currently the most important business drivers (other than profitability), of this co-evolution - these are:
 - Simplification – work & business process, & the technology that supports them, have become very complex in the past ~20 years, simplification is required not only for cost reduction, but in order to get anything done...
 - Distribution – business is no longer limited to your local area, work & business process & the people & systems who do them are now geographically highly disbursed...
 - Heterogeneity – work & business process must span information types, applications & software systems, architectures & hardware systems, & finally (& most difficult) organizations & companies

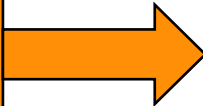


Responses to Trends...

- **Recent responses to these trends have tended to confuse or further complicate matters. These responses include:**
 - **Web services standards & products**
 - **Middleware based on different & incompatible component models**
 - **Database-centered approaches to non-data centric problems**
 - **& many more...**
- **Productive responses to these trends, & especially on the need for simplification, need to be based on a different context for understanding work that businesses do & providing systems, products & tools to facilitate this work.**

Responses to Trends 2...

Simplification



- New organizational & work context: work process & its associated business process & logic:
- increasing presence & connectivity, synchronous collaboration: IM integration
 - asynchronous collaboration: email integration & disconnected work function
 - analysis & decision support function
 - work process control: program/project management, work process modeling ("IDE")
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Distribution



- Locational transparency of data & function:
- full use of modern component model (.NET first)
 - full use of web services for A2A & data integration
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Heterogeneity



- Data & functional independence:
- functional support of broad range of content types
 - support of multiple, heterogeneous repositories (federation)
 - unified indexing, classification & search across federated repositories
 - leverage of component model & web services to support multiple platforms (app servers, O/Ss, etc.)



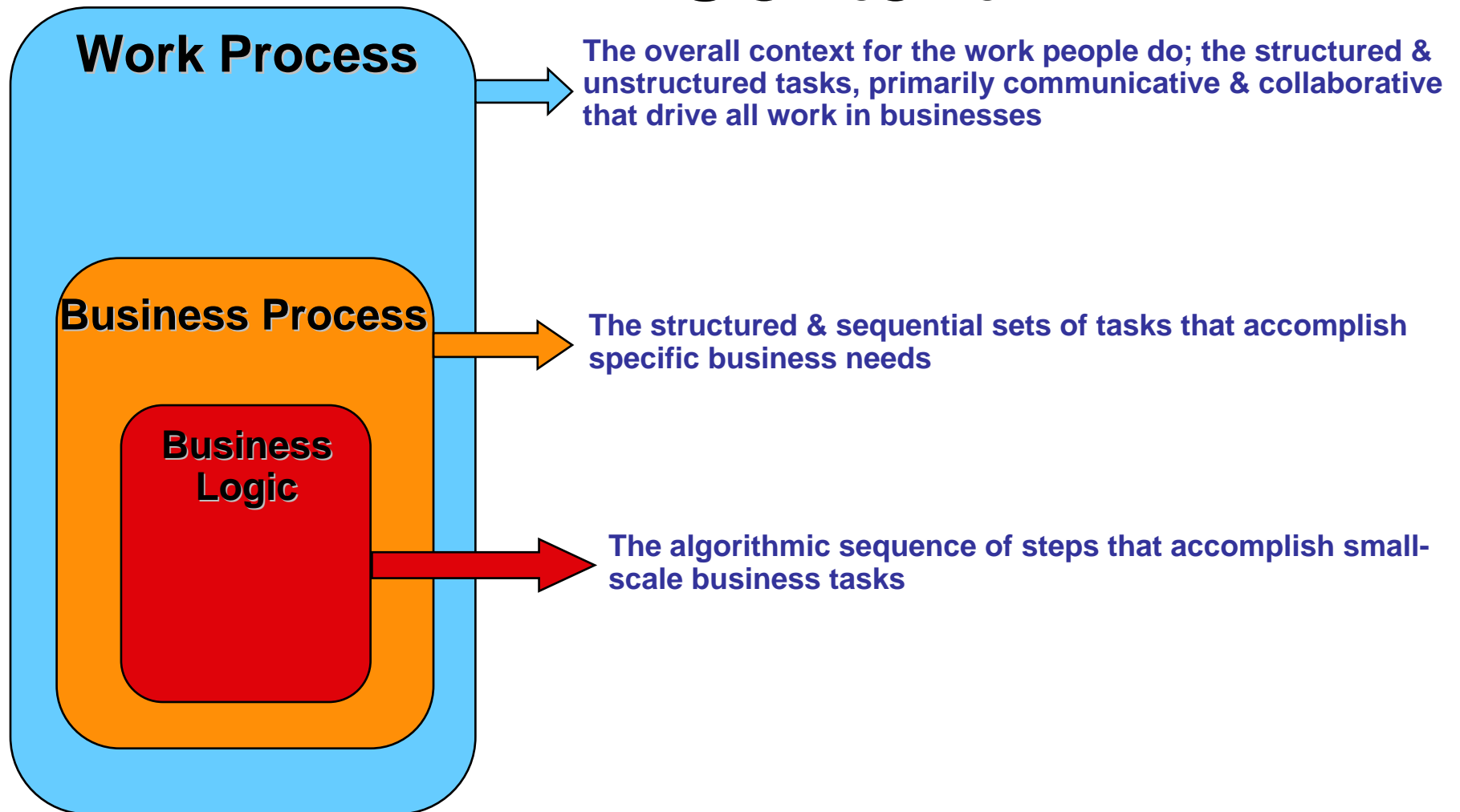
The Context for Simplification (Work Process)...

- **John Seely Brown* has stated (HBR, 8/02): “... (we must go) beyond the typical view of technology as an artifact – hardware & software – to explore its potential for creating new & more effective ways of working”**
- **We need to understand how work gets done & how to apply technology to create new & more effective ways of doing it**
- **The set of ideas & approaches centered around the concept of “work process” & its relationship to other “business process” allow us to begin to create this new context**

*Chief Scientist (now Emeritus) at Xerox PARC



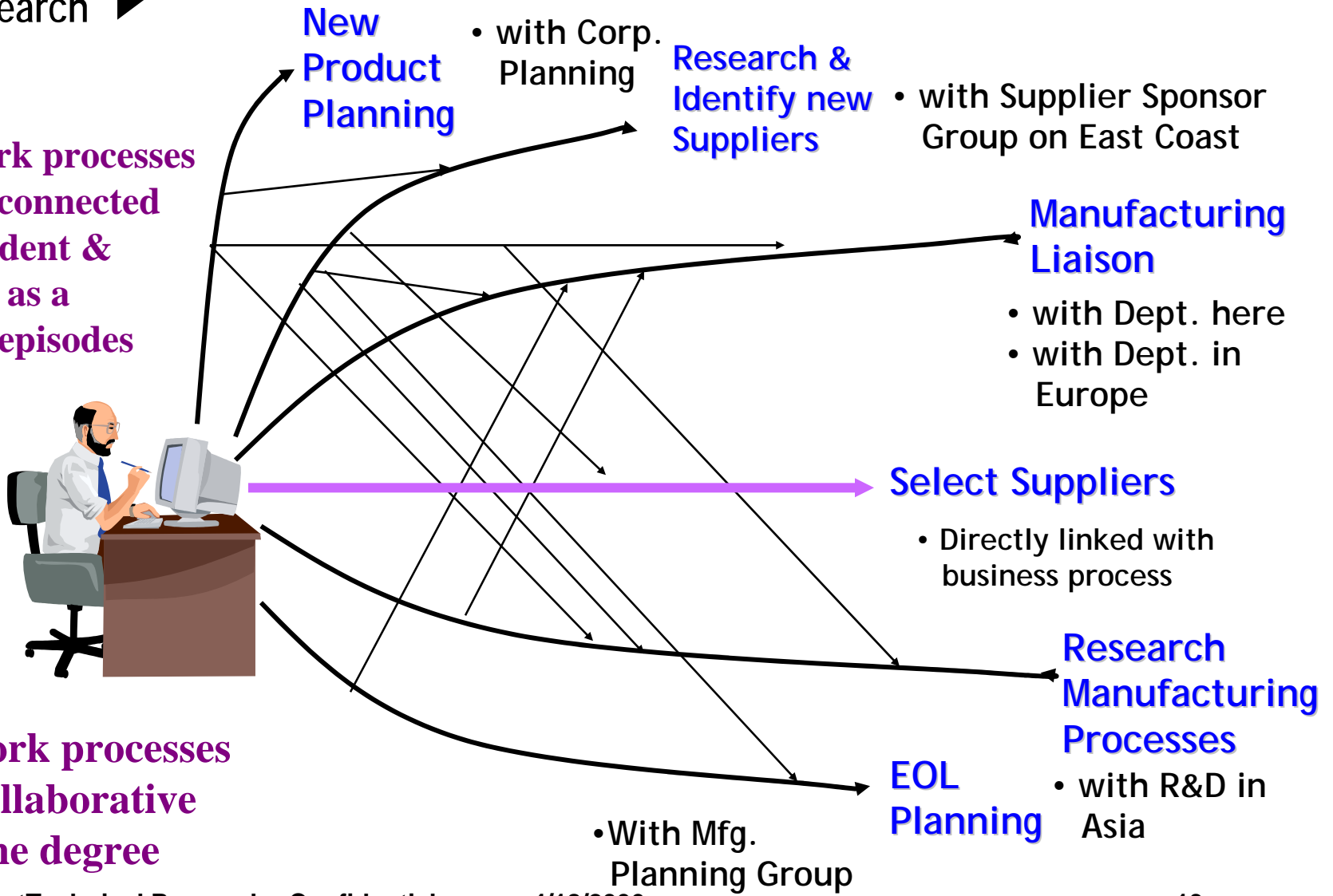
Work Process in Context





Work Process – One Example...

Most work processes are interconnected or dependent & executed as a series of episodes



All work processes are collaborative to some degree



Support of Work Process Requires:

- Further work on understanding the nature of work process & its relationship to achieving business goals
- Integration of unstructured work process tasks with associated business process & business logic
- Ability to integrate &/or interoperate work process & associated business process/logic with external processes, logic or content
- More & improved connectivity & collaboration
 - Integration of enterprise & personal IM with work process
 - Email integration with work process
 - Integration of unified messaging with work process
 - Provision of effective program & project management capabilities
 - Provision of offline & disconnected work process capabilities
 - Development of modeling capabilities & “IDEs” for work process
- Access to & deeper use of all data & content relevant to work process
 - Unified classification & search against multiple, heterogeneous repositories
 - Ability to include all relevant data & content in process workflows
 - Transparency of all relevant data & content including associated lifecycles & workflows
 - Support for these lifecycles & workflows



A Product that Supported Work Process Would...

- Have an appealing & useful User Experience
- Be easy to deploy, administer & program against
- Provide a wide variety of connectivity & collaboration mechanisms
- Allow for a broad & deep use of all relevant data & content types
- Provide modeling & transparency at work & business process levels
- Allow for straightforward integration with other systems, data & content in the business environment
- Provide a useful context for “doing your work”



remember –
entropy
requires no
maintenance