

Pervasive Computing Support for Market Trading

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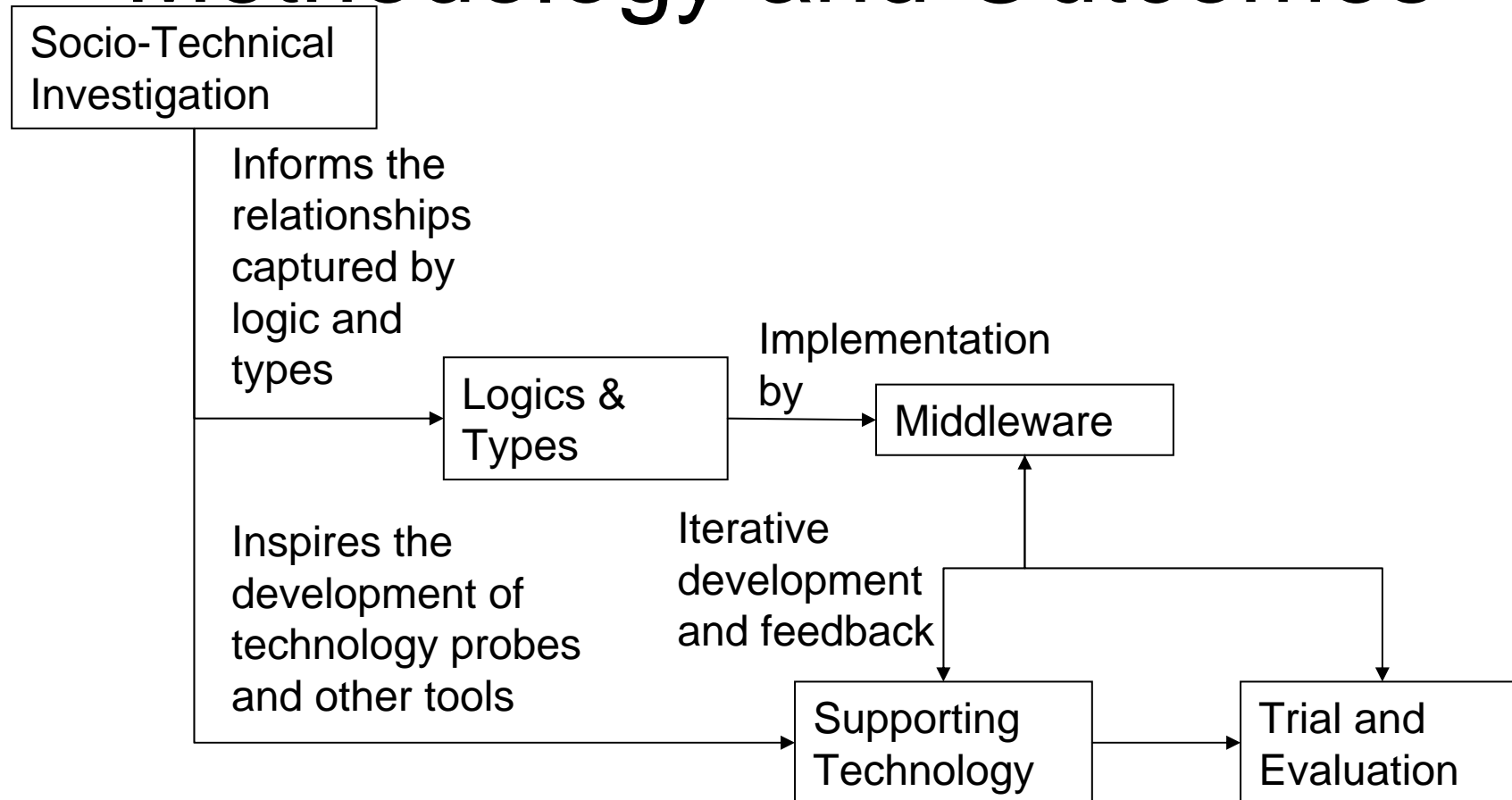
Overview

- How to provide support for trust within pervasive computing infra-structure:
 - Capture data and information to form computational model of trust
 - Well-founded middleware to implement policies
 - Make it apparent to users that the environment is acting on their trust policies
- Talk structure:
 - Work Packages and Research Outcomes
 - Activity Interaction

Task Breakdown

- Socio-technical investigation
- Logics and Types
- Middleware
- Supporting Technologies
- Trial and Evaluation

Methodology and Outcomes



Socio-technical investigation of market trading

- Analyse the process of trust relationship evolution within market transactions
- Capture the use of artifacts and exchanges to signify trust
- Discover the opportunities for technical enhancement of markets
- Develop methodologies for informing the design of pervasive technologies
- Use ethnography to examine a range of markets

Foundational logics and types

- Development of evidence-based model of trust relationships
- Declarative logics for expression of policies based on agent histories
- Type development for domain specific languages
- Game theory and process algebras

Middleware

- Adaptive Structures for ad hoc publish/subscribe
- Network level reliability and QoS adaptation
- Integration of trust logics and policies
- Ad Hoc Context Management
- Through simulation, prototypes and experimentation

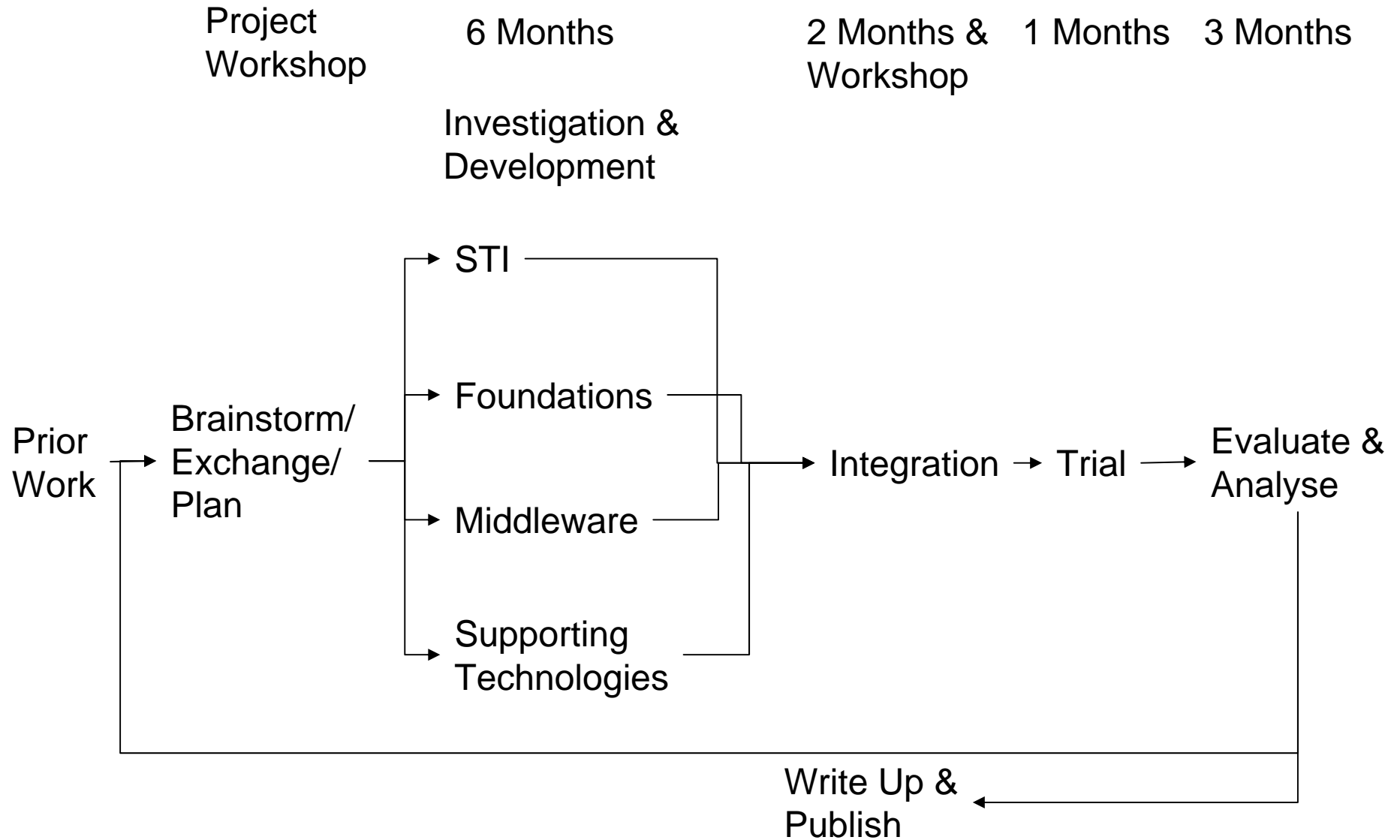
Supporting technologies

- Provide tools to capture and demonstrate trust policies within environment
- Iterative development in response to socio-technical promptings
- Technology probe within “friendly” environment, based on prior auction work
- Data capture and analysis
- Development and deployment of market support – smart inventories etc

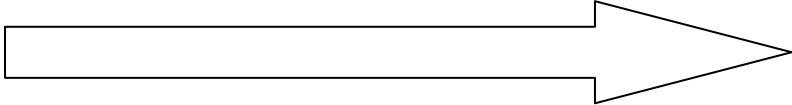
Market support assessment

- Each phase of the project will be driven by a situated study
 - Friendly study, testing technology within an environment where disruptive effects are not problematic eg school promise auction
 - Laboratory Study, deployment and testing within large controlled environment
 - Natural Setting, real market setting

Research Methodology Annual Cycle



Chronological Development Of Major Research Themes

	Year 1	Year 2	Year 3
	Friendly & base studies	Lab Study	Field Study
STI	Ethnographic Studies in markets		
Foundations	Declarative Policy Logics for evidence	Domain Specific Languages & Models Of Trust	Concurrency & Game Theory
Middleware	QoS & Network Adaptive approaches	Ad Hoc structures For Pub/Sub & Context	Trust & Policy
Supporting Technology	Technology Probe development	Artifacts to support interactions	