



# Change the Shape of Your Project

Processes of Integration Across the Supply Chain

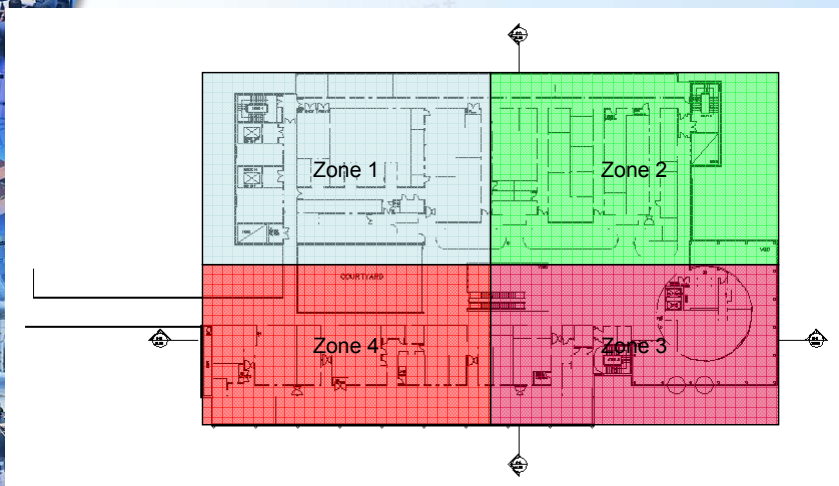
**Ken Gray**

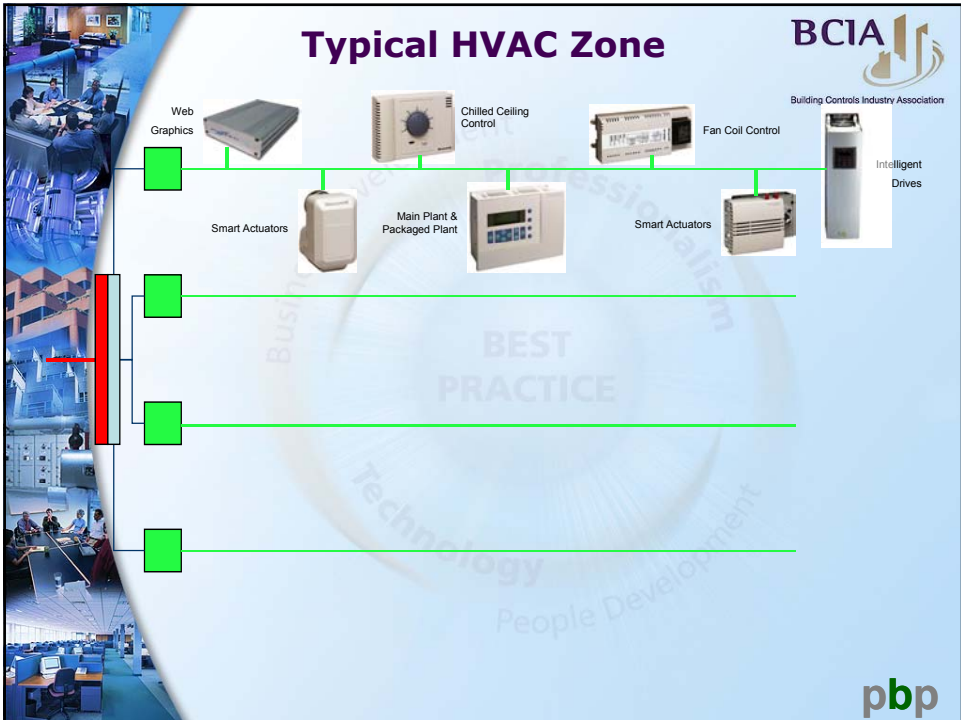
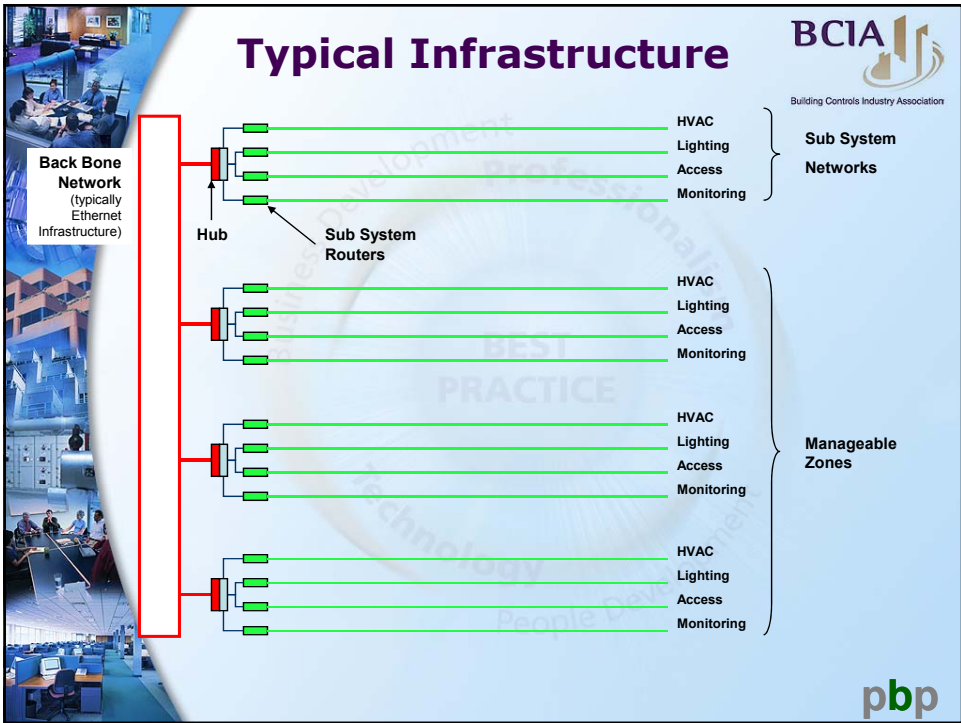
**Performance Building Partnership**

# The Approach to Smart Hospitals in 2001




## Typical Zoning

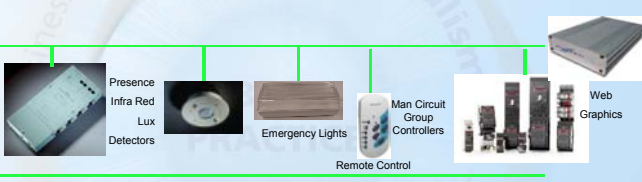




# Typical Lighting Zone



BCIA  
Building Controls Industry Association



Lighting  
Controllers


Presence  
Infra Red  
Lux  
Detectors

Emergency Lights

Man Circuit  
Group  
Controllers

Remote Control

Web  
Graphics



# Typical Access Zone



BCIA  
Building Controls Industry Association



Door Controllers

Guard Tour

Card Readers

Baby Tagging

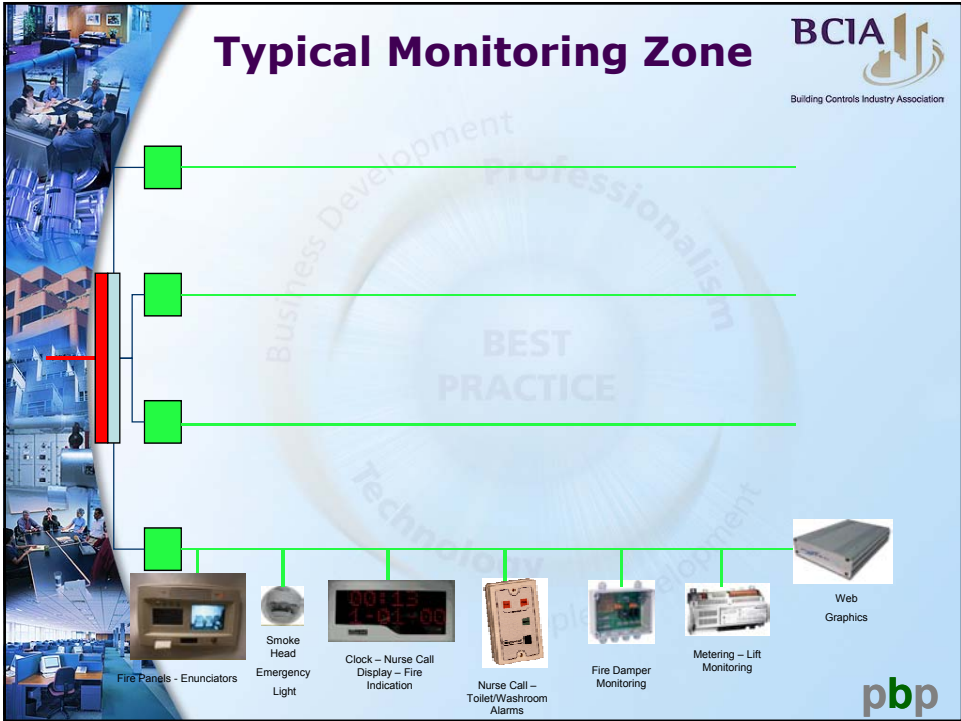
Intercom &  
Alarm Stations

Patient Alarm, Attack &  
Equipment badges

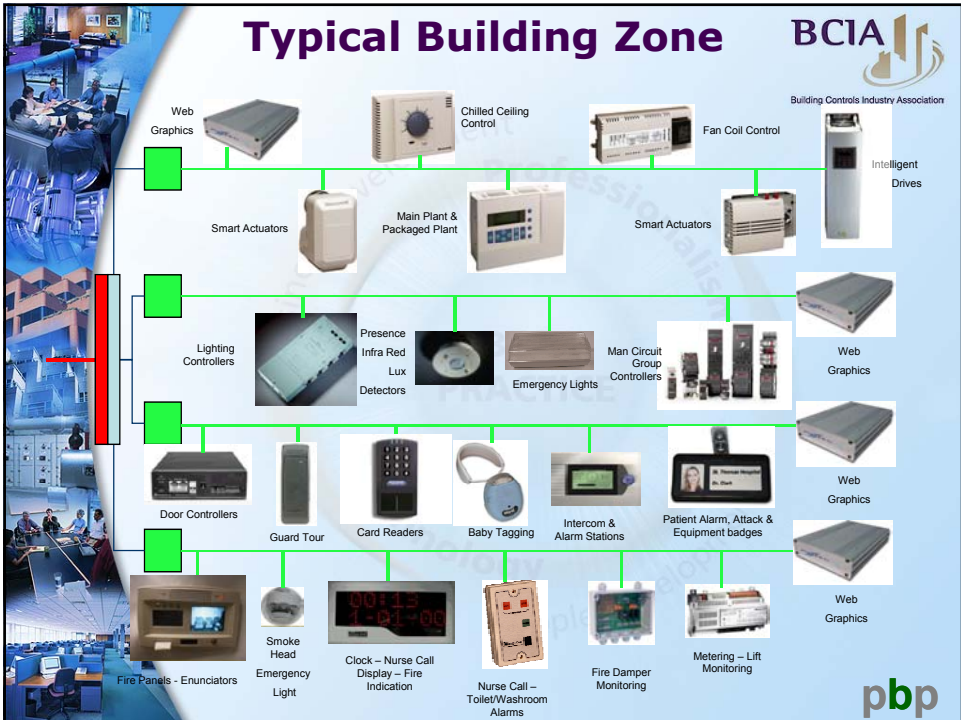
Web  
Graphics



# Typical Monitoring Zone



# Typical Building Zone



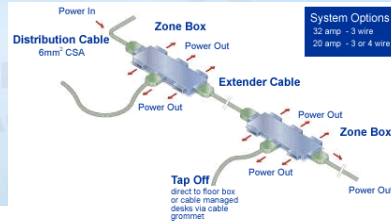
# Infrastructure Installation



Building Controls Industry Association

## Plug and play expandable infrastructure

- De-Skilling installation
- Rapid installation ensure every project is fast-track
- Suitable for
  - IT Infrastructures
  - Power
  - Lighting
  - Power & Control network
  - Lighting & Control Network
  - Structured Cabling
  - Fire & Life safety Systems



pbp

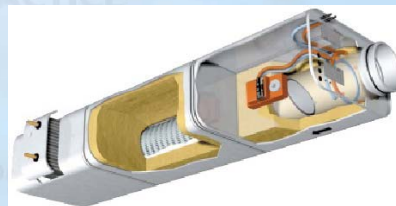
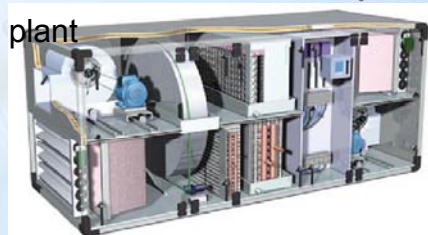
# Packaged Plant



Building Controls Industry Association

## Packaged set to work plant

- Pre-commissioned
- Factory tested
- Fixed Function controllers
  - Unitary Plant
  - Lighting
  - Nurse Call
  - Access & Security



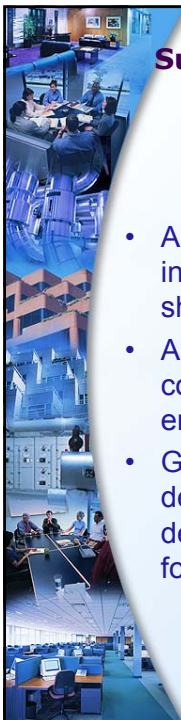
pbp



## Supervision Systems & Open Systems

Supervision can be common for all systems

- Can be separate
- Separate systems have the ability to share graphical pages
- Local zone web graphics - allow zones to come on line upon completion



## Supervision Systems & Open Systems

- Allows building information to be shared with users
- Allows people to control their own environment
- Graphics can be designed with help desk functionality for FM support





## Sharing information

Information from many systems can be viewed through one common window

- Making use of intranet and internet for the control and monitoring of systems and collaboration of information
- Making facility and help desk functions automated through the same management



## So where are all the smart hospitals and other smart buildings?

**BCIA**  
Construction Industry Association

**They are glued to the unravelling drama of Multiplex's battle to complete the troubled stadium. The men on site, however, feel somewhat differently. "The workers are putting the hours in, but half the time they're just wandering around because they're so fed up," says one source. "I've been working in the industry for 25 years and I've never seen anything like this."**

**Whittington hospital in north London, one of the contractor's final PFI projects, is delayed for second time**

**Bovis Lend Lease has handed over the first phase of its £380m Manchester PFI hospital three months late after technical problems**

**Why in the 21<sup>st</sup> century do so many projects encounter such problems?**

**hit on PFI schools**

**Directors of Wembley firm charged with kidnapping**

**Government faces huge bill for wasted design at Barts**

**The Scottish Parliament building, which opened three years late and at £431m cost 10 times over budget, has won the Stirling Prize for architecture**

Source: Building Magazine Jan 2006

**BCIA**  
Construction Industry Association

**Amec quits construction after £90m writedown**

**Multiplex loses Wembley claim**  
Multiplex has lost a battle in its attempt to tie a key subcontractor at Wembley stadium to a fixed completion date.

**£10m remedial work for Ascot**  
Ascot racecourse has ordered a £10m programme to rectify problems with last year's refurbishment project.

**T5 struggles with M&E costs and leaking roof**  
Heathrow Terminal 5 was beset by problems this week as it emerged that remedial work was being carried out on the building's roof and the project is exceeding its M&E budget by £56,000 an hour.

**Olympic village will fail to hit government's carbon target**  
Westfield admits that Stratford City will not meet upper levels of Code for Sustainable Homes

**Heart unit opens three months late at Bovis' Manchester hospital**  
A key facility at a £380m joint hospitals PFI in Manchester, which is being built by Bovis Lend Lease, opened three months late in December.

Source: Building Magazine Jan 2007

## Fundamental thinking on Processes and Projects

Processes may be:-

**Highly repetitive**  
e.g. filling beer bottles

**One-off**  
e.g. construct the first channel tunnel

Containing **Physical inventory**  
e.g. car assembly line

Containing **Intellectual inventory**  
e.g. conducting a technical audit

Repetitive processes usually possess characteristics such as:-

Short and repeated cycles of learning – even if you get it “wrong” from time to time, there will be still many opportunities to get it right.

They tend to continue indefinitely in time – for the whole life of a product. – for example the “build a Volkswagen Beetle” process repeated through millions of cycles!!

There is constant opportunity for learning, improvement and innovation – the “build a Volkswagen Beetle” cycle is probably very different from the last

**High  
repe**

Combine these axis ....

Physical inventory

Intellectual inventory

*The clear implication of the above is that management approaches and techniques which work well in a repetitive process may not work in a project process. Rather, we must use tools, approaches and philosophies of management which are appropriate to the process in which we are working.*

By contrast, the Once-through end of the continuum is the **world of the Project**. Here other characteristics are

bounded in time – often with a line – thereafter, the project to exist

happen only once – the vast projects have an element of risk – whilst this does not learning from other projects, it means that the opportunity to continuously learn is very different from that in repetitive processes

There is a serious consequence to getting them wrong – since they happen only once they **must** be right first time – the only time!

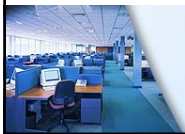
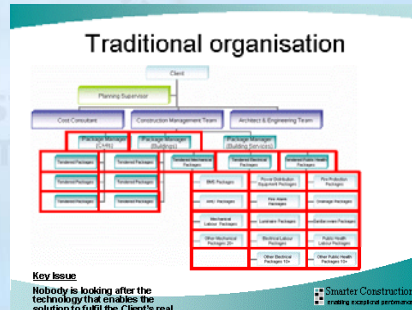


# Traditional Scientific Management thinking

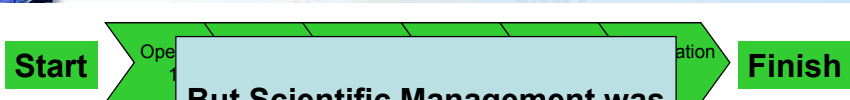
- Adam Smith in the *Wealth of Nations* (1776) introduced the concept of specialisation

- In the Industrial Revolution Frederick Winslow Taylor showed how work could be improved by scientific structuring work

Leads us to structure work into logical routings by specialist functions



# Traditional Scientific Management thinking leads us to seek efficiency improvements by squeezing the specialist functions



But Scientific Management was introduced at times of rapid industrialisation to enable unskilled labour to be deployed in repetitive physical inventory processes!!

- Supervise people to work harder

We believed this would optimise performance





## Key Message:-

- Designing & improving work processes for 21<sup>st</sup> century 'knowledge intensive' projects following scientific management thinking may not be helpful !!!



**Now consider that in the world of projects  
- when we start on a new project:-**

At the **start** the **end point** may be  
**very clear**

or

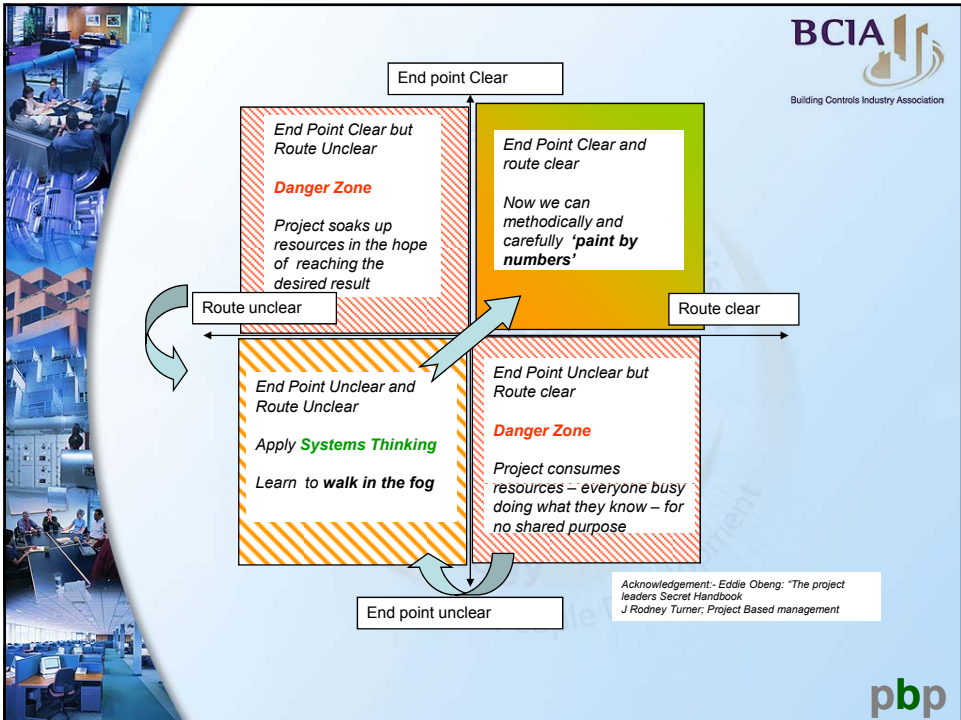
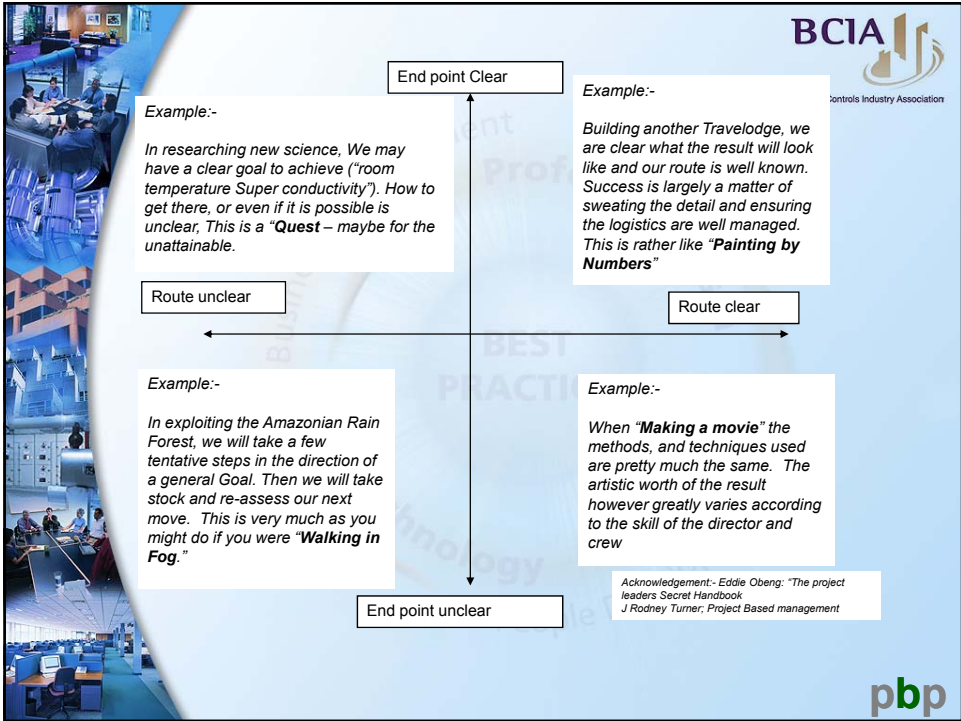
**very unclear & 'foggy'**

**&**

our **route to that end point** may be  
**very clear**

or

**very unclear & 'foggy'**





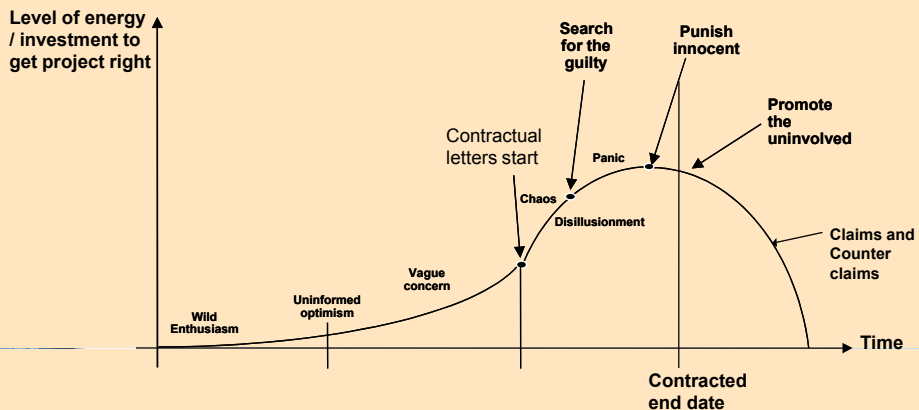
## Systems Thinking

- Inherent to **Systems Thinking** is the concept that it is the **relationship between the parts** of the real-life complex situation, rather than the parts themselves, that are **essential to the outcome**.
- Any activity that adds cost and not value creates waste

More than a toolkit – it is a completely different way of thinking about the design and management of work

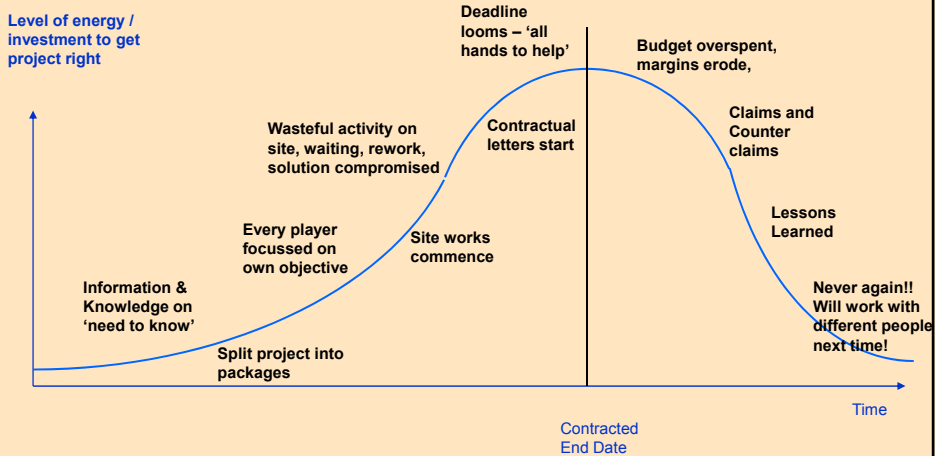


## The Feelings in a Typical Project



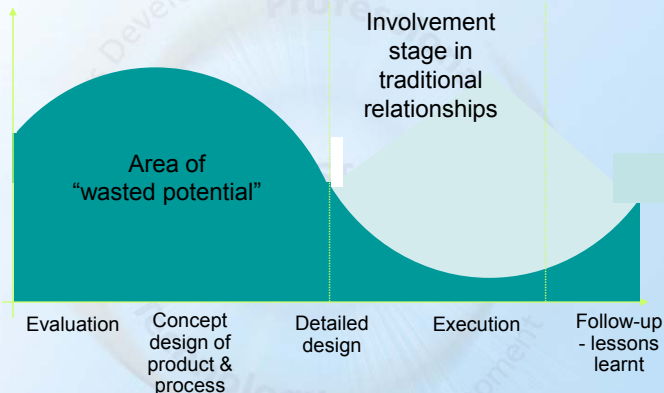


## The Events in a Typical Project



## The Opportunity Curve

Potential to add value via integration



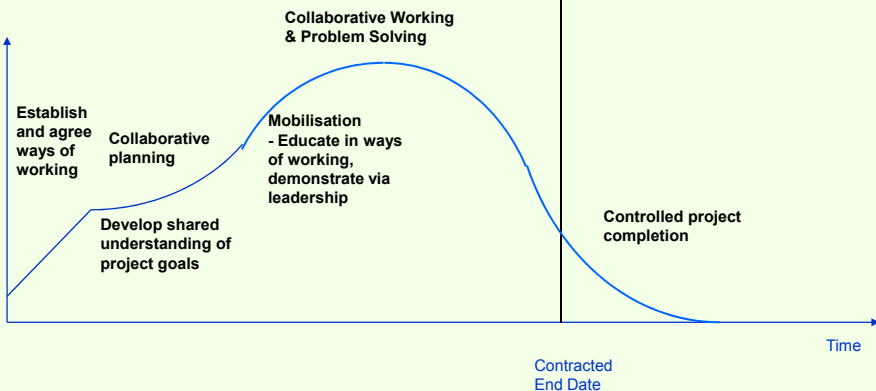
Adapted from Baker Hughes Inteq



## Change the Shape of the Project via Integration



Level of energy / investment to get project right

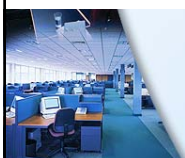


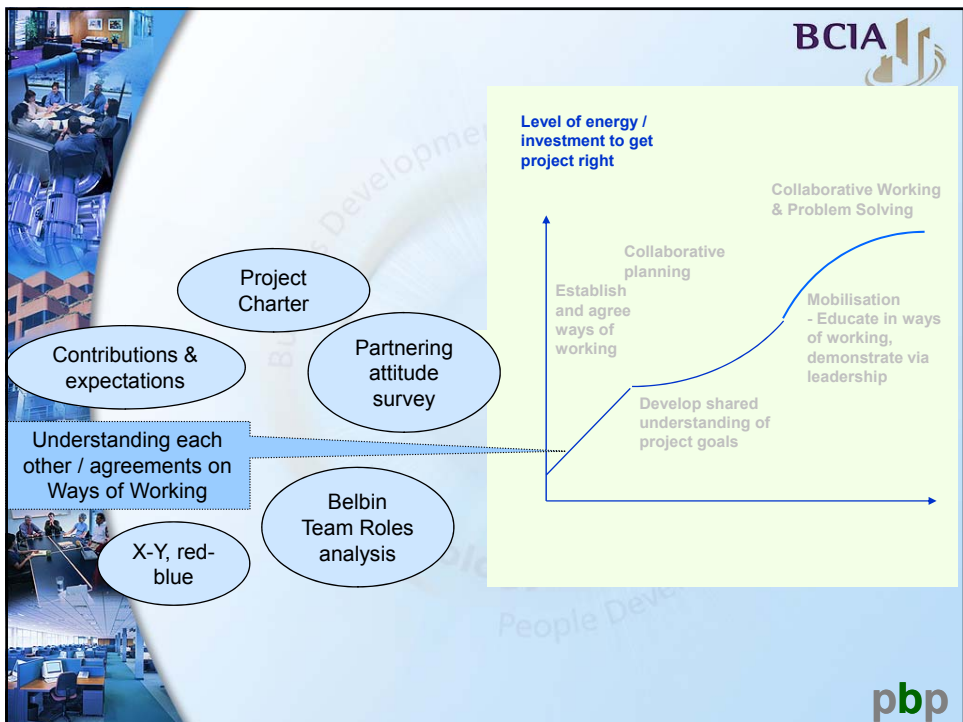
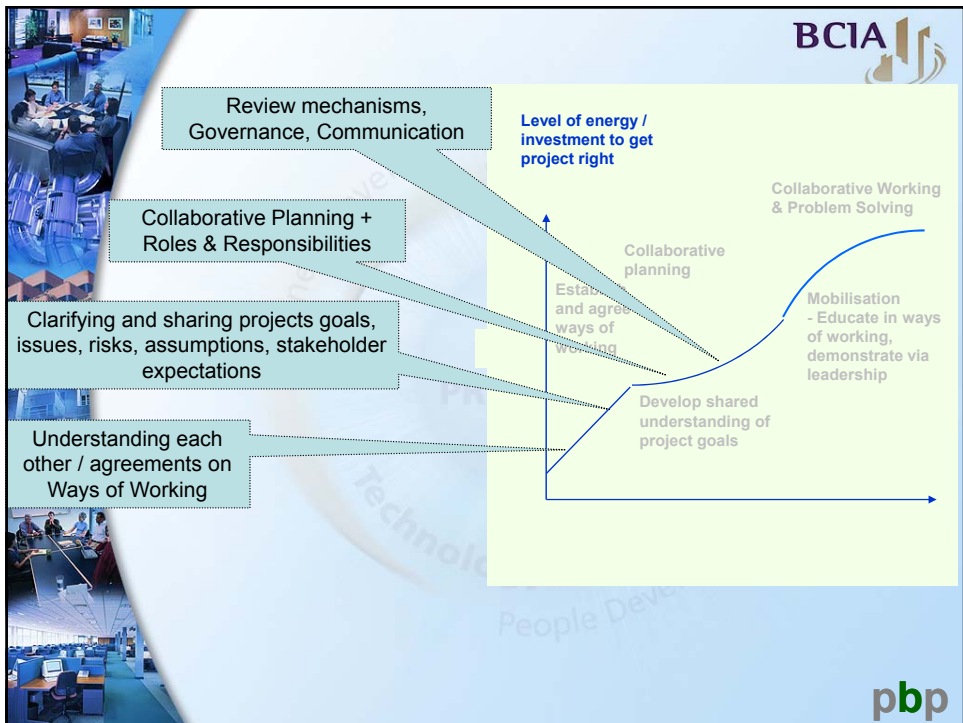
### Rapid Establishment of a High Performance Project Team

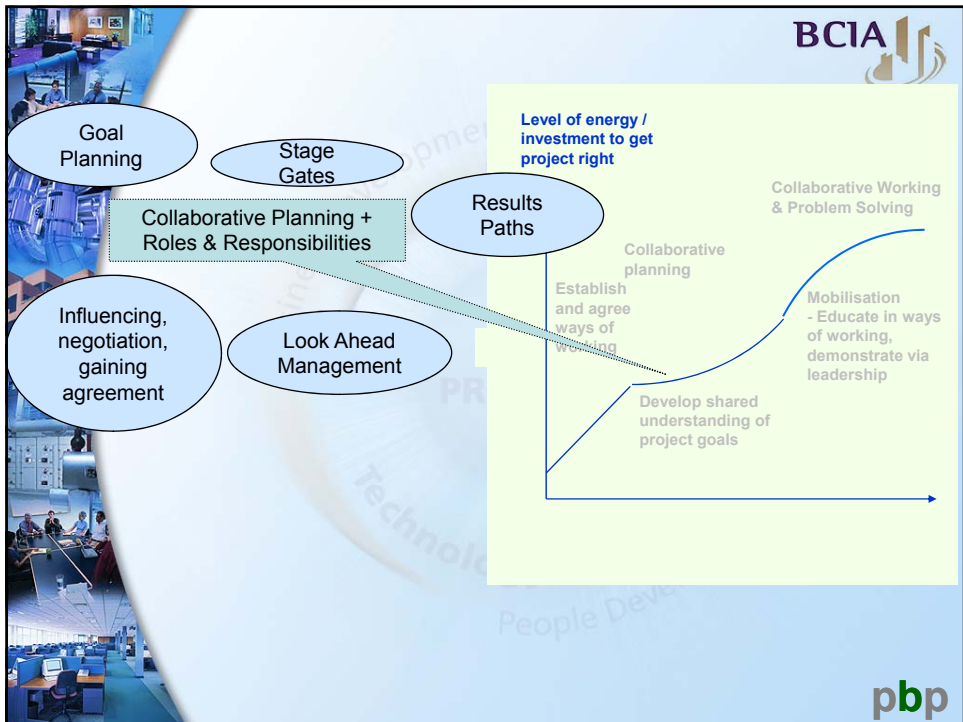
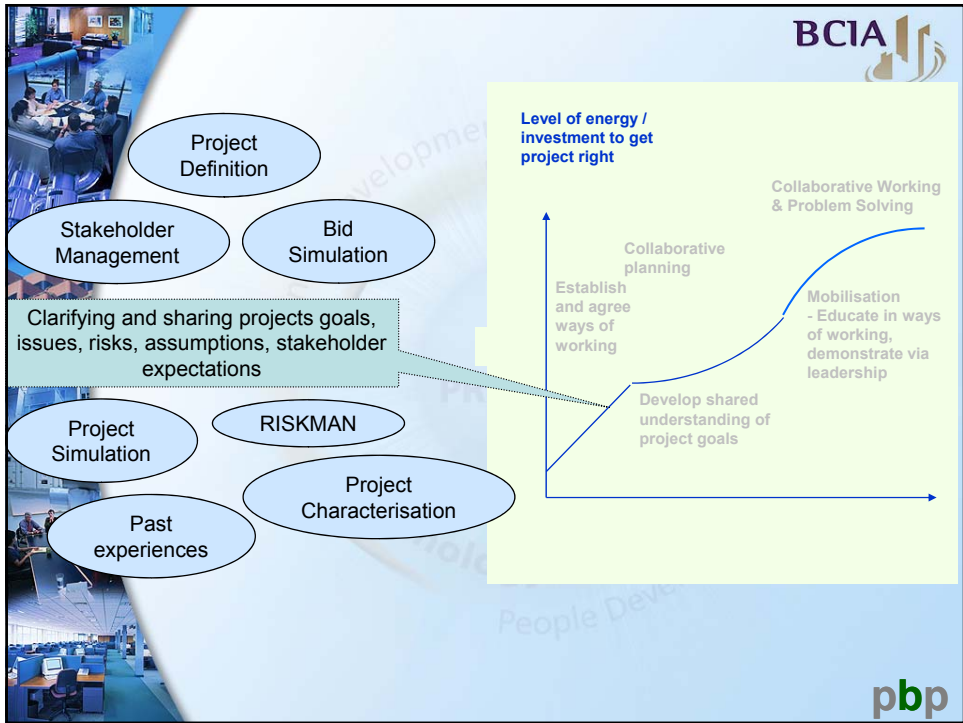


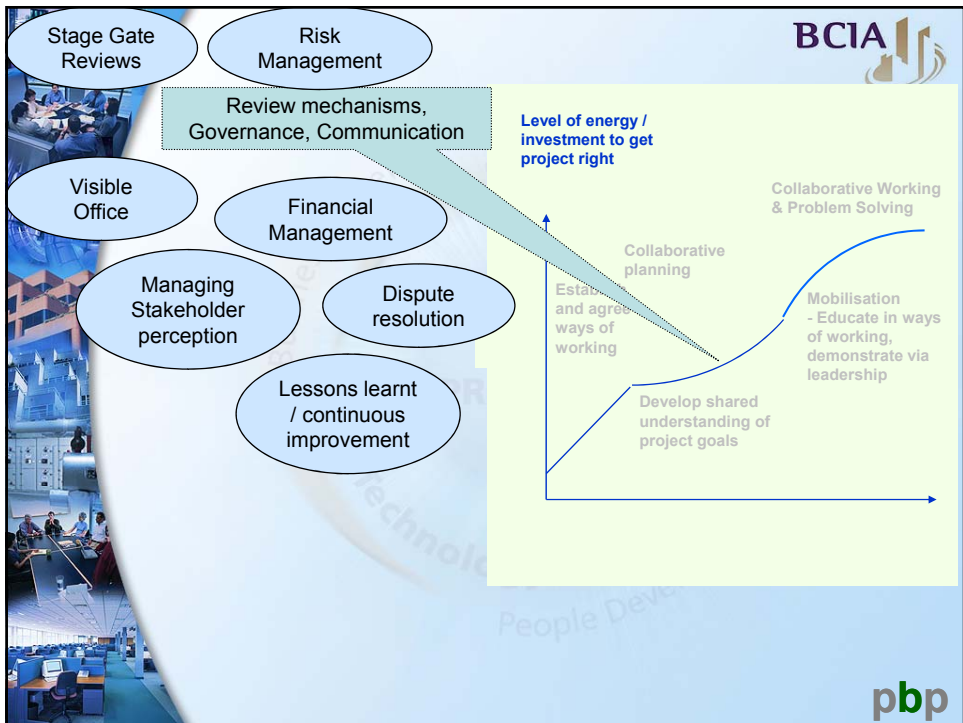
### Integration Processes MUST bring:

- Immediate pace and focus for the project
- Early identification & visibility of issues, risks, assumptions at a stage when influence can be exercised
- Shared understanding of the project objectives
- Clear agreements on roles and responsibilities
- Insights into this project teams strengths and weaknesses + coping strategies
- Common language for relating to typical project challenges
- Environment for people to work together creatively, operating with clarity and cohesion
- Framework for the project team to communicate with stakeholders









**Actions, outputs and agreements for appointing parties and achieving deliverables for each stage of PFI process**

**BCIA** Building Controls Industry Association

	QREC	PQQ	PITN	FITN	BAFO	LAFO	Preferred Bidder	Financial Close	Construction	Commissioning	
<b>Stage 1 actions &amp; outputs</b>	Long term partners notified or Short list, brief and interview potential scheme designers, technology partner & installation Define roles and responsibilities Assemble the team	Pre-qual documentation Brainstorm ideas General approach	Provisional Cost Plan Conceptual Design Outline specs & scope of work for each package Provisional Programmes & Method Statements Provisional Risk Register Contract Condition principles agreed	<b>Stage 2 actions &amp; outputs</b>			Detailed Cost Planning for life cycle Outline/Scheme Design developed 1:200 & 1:50 drawings Performance Specifications developed & scope defined for each work package Room Data Sheets prepared Detailed Programmes and Method Statements prepared for each package Develop Risk Register Contract Conditions negotiated	Agree Cost Plan Develop Detailed Design 1:50 Agree scope of work & specification for each package Agree Room Data sheets Agree programme Agree Risk Register Agree contract conditions	<b>Stage 3 actions &amp; outputs</b>	Secured costs & control Complete detailed design and working drawings Quality Control Spec & Quality Plan Monitor programme Monitor Risk Register Health & Safety Control	Introduce Service processes and procedures O&M's and as fitted drawings Validation of design/installation Training service staff Introduce service CDM Safety procedures
<b>Gateway 1 Agreements</b>	Opportunity to influence cost value		<b>Gateway 2 Agreements</b>				<b>Gateway 3 Agreements</b>				
	Appoint scheme designer & tech partner agree design & cost modelling fees and incentives. Short list or appoint installation sub-cons	Constructive Partnering Workshop	Agree Pre-lims & OH&P % Target costs Pain/Gain share with appointed or shortlisted installation sub-cons	Integrated Design Value Management Lean Construction Supplier Frameworks			Sign sub-contracts with installation sub-cons. Agree scope and specification Convert to GMP or Fixed price Agree risk Agree programme	Continuous Improvement & Lessons Learned			

pbp

