Project Characteristics …

*Projects are uncertain and complex with too many moving parts*

Projects uncertainty can't be tamed by planning.

The best way to manage uncertainty:

- *Accept and embrace it;*
- *Shorten the feedback loop;*
- *Engage all the stakeholders in a collective approach. The system has wisdom. Listen for it, listen to it.*

...Project Characteristics...

- *It isn't possible to predict the time and cost.*
- *Most projects continue to run late and over budget in spite of digitalisation and offsite.*
- *Projects on average lose some time every day and no one measures this.*
- *Time accounts for around 80% of the project cost*
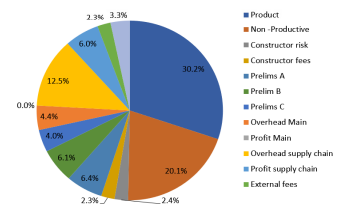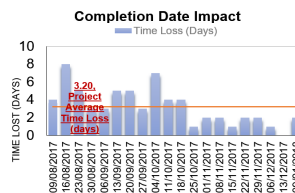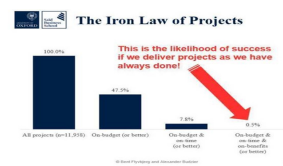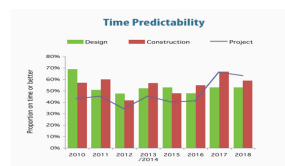
LIPD Journey

P&G has been implementing systems aimed at increasing the predictability of our manufacturing and our overall Supply Chain, in order to increase efficiency, reduce inventories, increase Quality and Safety, etc.

IWS and Reliability Engineering (1990's)

Continuous Improvement (Zero losses – 100% employee involvement)	Reduce number of stops of our manufacturing systems

LIPD Journey

KEY ELEMENTS:

- *INTEGRATED SYSTEMS*
- *DATA DRIVEN*
- *CONTINUOUS MONITORING*
- *CONTINUOUS IMPROVEMENT (KAIZEN)*
- *USE FOR DAILY DIRECTION SETTING*

Adopting LIPD methodology to deliver construction of new buildings and major capital projects is the natural extension of that journey!

London Bridge (Reading) is the first project in the UK using LIPD & The APD (Accelerating Project Delivery) System

8

London Bridge
P&G

9

LIPD Journey

- *LONDON BRIDGE - LIPD APPROACH*

- *LIPD contract*
  - *Partners: Graham Construction and Michael J. Lonsdale*
  - *Shared risks and profits scheme ("Skin in the game" for all 3 partners)*

- *Collaborative Design Sessions*
  - *Aimed at achieving an affordable Target Cost*
  - *Key Sub-contractors early involvement*

© Copyright **LEAN THINKING LTD**

**How we Began
Ali Mafi &
Hamied Ghadimi**

Working on the Relationships

Workshops on how to be with each other

Dealing with the 4 toxins:
blame, defensiveness, stonewalling and contempt

*Creating mutual understanding by getting the individuals to see the world through the eyes of others*

© Copyright   LEAN THINKING LTD

12

	Accelerating Project Delivery System			
	Project Constraint Validation Form	Sign off when complet		
		Graham	P&G	MJL	L'
Collective (all the supply chain) validation of the program and compliance with the wing criteria:				
• Master Program – Only one Master Program				
• Complete – All activities are built in (incl. procurement, design and scope allowances/risk pot)				
• Detailed – To an appropriate level where needed	✓	✓	✓	✓
• Fully logic linked:	✓	✓	✓	✓
o Finish to start links with Lags and leads as appropriate				
o Water fall logic sequence (for ease of review)				
o Summary bar links: None				
• Robustness of all the logic				
• All ssumptions surfaced and validated				
• Milestones – None	✓	✓	✓	✓
• Task description: Concise and clear				
• Task prefix – All tasks to have prefix relating to their heading/Summary bar				
• Structure: As few summary bars as possible				
• Date setting: Standard	✓	✓	✓	✓
• Robust: All the logic is 100% robust				
• Resourced: Fully				
• Contains none of the 5 types of arbitrary time risk allowances/delay protections:				
o Task padding	✓	✓	✓	✓
o Batching				
o Constraint dates	✓	✓	✓	✓
o Monday starts	✓	✓	✓	✓
o Bogus tasks				
• All time risk allowance to be aggregated in one transparent place. The project buffer	✓	✓	✓	✓
• Tasks allocated to each delivery manager				
• Baselined – When buffered	✓	✓	✓	✓
supprort complinance with these validation steps of the system: e completed by:				

The APD set up

- *The Road Map (Programme):*

  - *Collective validation of:*
    - *Completeness – activities, links*
    - *Robustness – logic*
    - *Assumptions*

  - *Aggregation of all the traditional built in time protections such as:*
    - *Task paddings*
    - *Monday starts*
    - *Milestone deadlines*
    - *Batching of work*
   - *Spurious buffer tasks.*

13

LIPD Journey

- *The APD System:*
  - *Weekly update*
    - *Direct elapsed time input form supply chain*
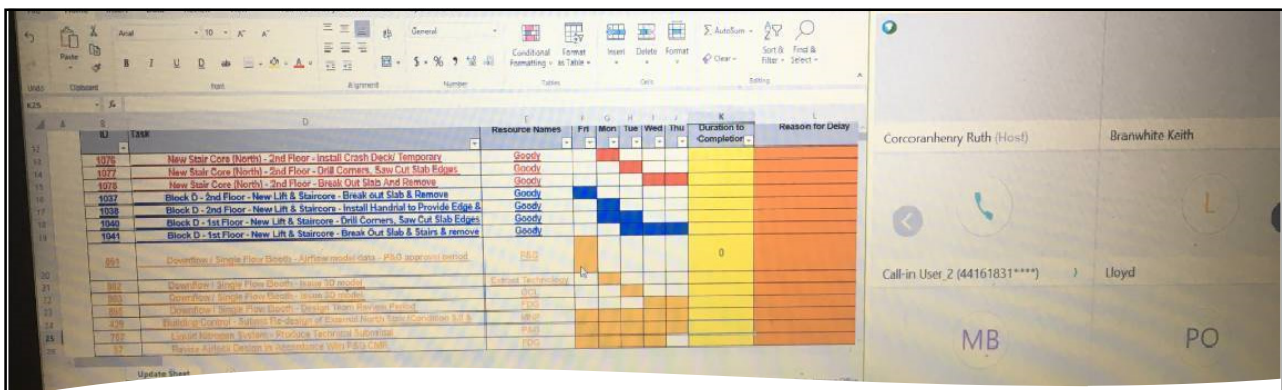   - *Establish impact on the end date and buffer consumption.*

14
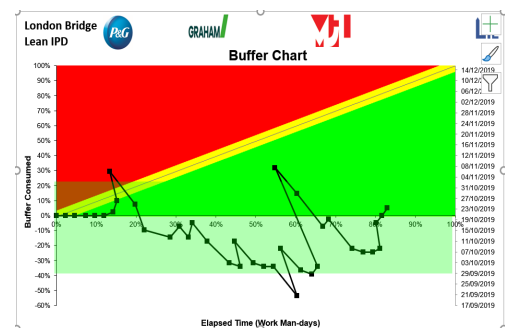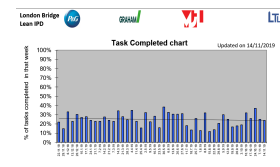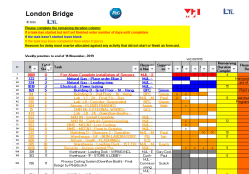
LIPD Journey

- *The APD System:*

  - *Weekly session (3 – 4 hr)*
    - *Including:*
      - *Client (project management and technical resources)*
      - *Partners' supervisors*
      - *Key sub-contractors' black hats*
    - *Review impact on End-Date, Opportunities and challenges*
    - *6-week look ahead*
    - *New Weekly plan with prioritisation of tasks (Red/Blue/Orange/Grey)*
    - *Walk around to review critical tasks*
    - *Assessing opportunities for offsite*
    - *Use of BIM to assess better and short of sequence of work.*

LTL
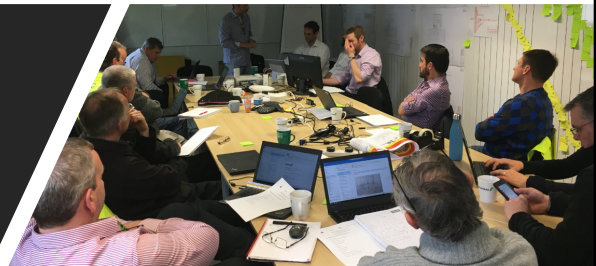
Resource Names	Supervisor	Start	READY	Make Ready Categories													Actions Required
				Drawings and design	Accuracy of information	Method Statement & Risk Assessment	Approval	setting out	Temporary Works	Resource available	Sub-contract order	Material	Plant	H&S, QA	Sub. Contractor Certifi	Neighbourhood noise	Coordination req. with	
BPC	Simon Stone	Tue 26/11/2019																
MJL - Commissioning		Fri 10/01/2020																
MJL - Commissioning		Thu 28/11/2019																
MJL - Commissioning		Tue 03/12/2019																
MJL - Commissioning		Wed 04/12/2019																
MJL - Commissioning		Wed 11/12/2019																
LLY- NORTH	ICS	Fri 29/11/2019																
NI WEST		Mon 02/12/2019																

15

LIPD Journey Using the APD System

- **The APD System:**
  - *Daily Morning Direction Setting (30 mon)*
    - *Construction partners and sub-contractors*
    - *Review critical activities for the day*
    - *Confirm resources readiness, barriers, etc.*

16

- **The APD System:**
  - *Daily Check-in (15-30 min)*
    - *Client and Construction partners supervisors*
    - *Input Red, Blue and Orange activities of the day (remaining time to complete)*

The APD System

© Copyright   **LEAN THINKING LTD**

The APD System

- **The System:**
  - *Daily walks*
    - *Supervisors*
    - *Assessing the system*
      - *One Piece Flow*
      - *Awareness of the priorities*
      - *Awareness of the remaining durations*
      -

© Copyright   LEAN THINKING LTD

18

London Bridge – Batch v One Piece Flow

ID	Total Slack	Task Name	Resourc Names	Remaining Duration	Start	Finish
1545	22 days	⊿LABS		132 days	08/03/2019	16/09/2019
1546	108 days	▷ WORKS WITHIN RISERS		71 days	03/04/2019	16/07/2019
1572	22 days	▷ **Lab - LEVEL 00 - Traditional - Large Batch**		**132 days**	08/03/2019	16/09/2019
1648	22 days	▷ Lab - LEVEL 01		122 days	22/03/2019	16/09/2019
1723	22 days	▷ LEVEL 01 CORRIDOR		31 days	12/07/2019	23/08/2019
1728	31 days	▷ **Lab - Fit-Out - Level 00 - One Piece Flow**		**83 days**	25/03/2019	23/07/2019
2074	31 days	▷ Lab - Fit-Out - Level 01		83 days	05/04/2019	05/08/2019
2420	0 days	Project Buffer		41 days	21/10/2019	16/12/2019

© Copyright   LEAN THINKING LTD

19

- *Key Benefits of APD System*
  - *Clear daily task prioritisation (Red/Blue/Orange/Grey tasks)*
  - *Helps focus all the team on supporting the people owning the Critical task(s) of the day (Red activities)*
  - *"GPS-like" system to predict End Date daily*
  - *Fosters collaboration and use of collective knowledge versus individual or company interests*
  - *Focuses the team on the system (here and now) not the outcome in the future. Less stress and greater well being*

-

- *Challenges*
  - *Counter-intuitive for Construction Industry practices (maximising individual subcontractor efficiencies and cash-flow versus overall project effectiveness)*
  - *Reluctance to try new things ("Know-all syndrome") or Already doing it*

LIPD Journey

© Copyright   **LEAN THINKING LTD**

20