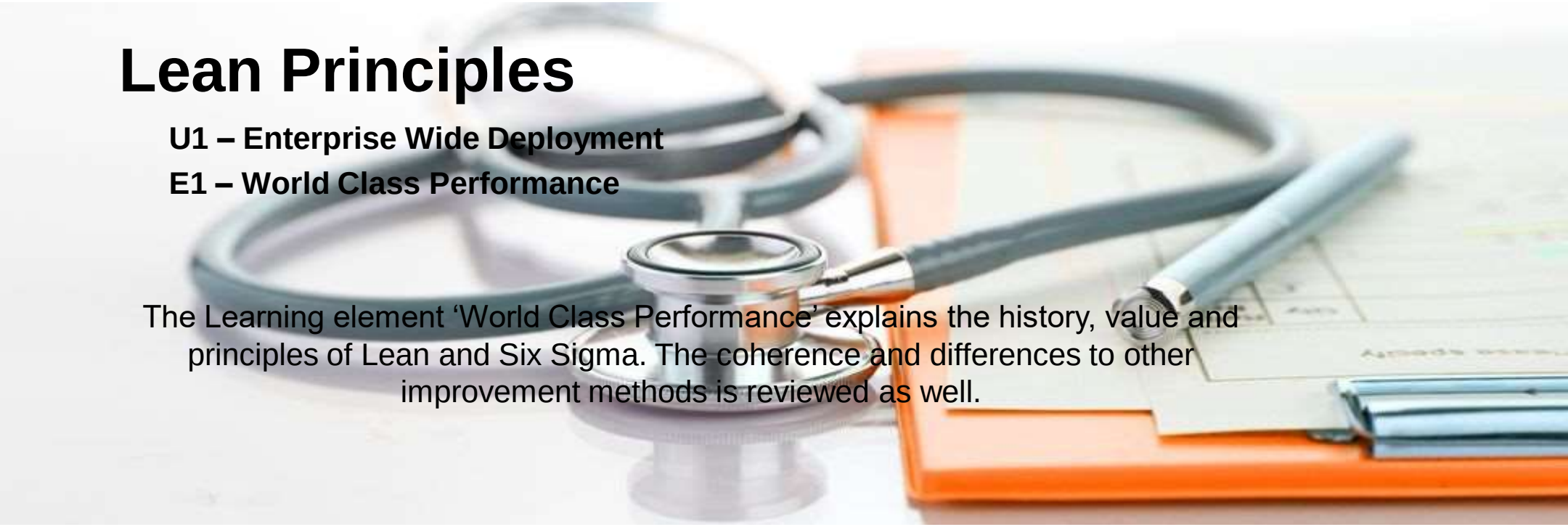
LSSH
lean six sigma for healthcare



Lean Principles

U1 – Enterprise Wide Deployment

E1 – World Class Performance

The Learning element ‘World Class Performance’ explains the history, value and principles of Lean and Six Sigma. The coherence and differences to other improvement methods is reviewed as well.

Lifelong Learning Programme

Yellow Belt

Lean Principles

Principle 1 – Long-term philosophy

Do the right thing for the organization, its employees, the customer, patients & the society as a whole

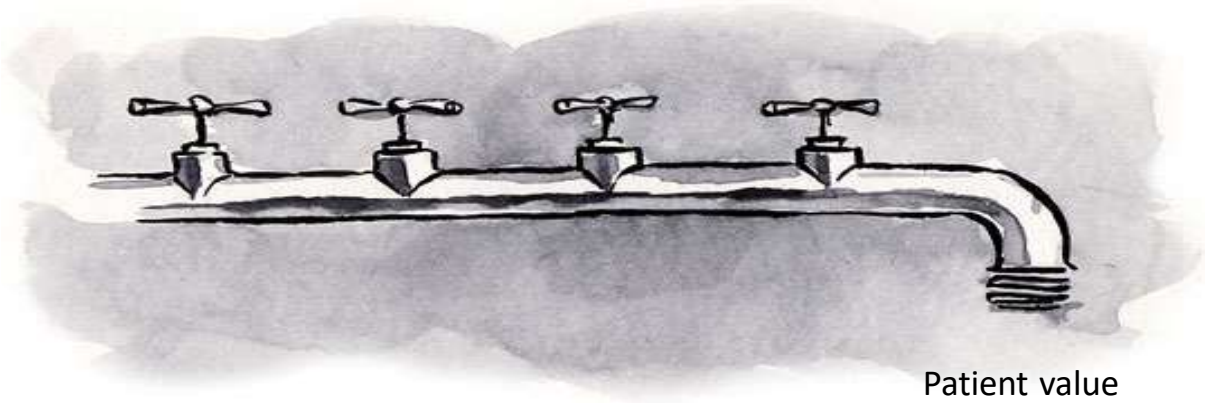
This long-term philosophy is the guiding post of the organization in its continuous quest to offer the best in quality & service to its customers, employees and society

123RF Stock Photo

Lean Principles

Principle 2 – Continuous flow

- **Create a continuous flow to identify problems**
- **Look at the process as a whole instead of focussing on separate activities**
- **All phases of the process are interdependent**



Patient value

- **Streamline company processes**
- **Everything focuses on the operational process and patient value**

Lean Principles

Define what is of value to the patient

Focus on the patient and customer

- Every process has a customer
- Every process is a customer

Determine what 'value' means to the customer or patient

- Listen to the customer/ patient
- What will the customer/ patient pay for?
- What will the customer/ patient NOT pay for?
- Measure every activity to the 'patient/ customer value'

123RF Stock Photo

Lean Principles

The Three M's

123RF Stock Photo

Muda: Non-Value Added

- Activities that don't add value to the process
- The eight types of 'Waste' that cause extra waiting time, movement, stock, etc.

Muri: Overburdening staff or equipment

- Pushing machines or staff beyond their natural limits
- Results in safety & quality problems and/or breakdowns & defects
- Muri can be avoided through standardized work

Mura: Unevenness

- Results from an irregular schedule or fluctuating patient volume due to internal problems such as downtime/missing equipment or errors
- Mura can be avoided by levelling out the work schedule: Heijunka

Lean Principles

The eight types of waste

1. **Transporting** — Documents/ moving patients between treatments

2. **Inventory** — Large packaging medicines/ to many patients between process steps

3. **Movement** — Searching, unnecessary movements

4. **Waiting** — Waiting on diagnostic results/ on treatment/ for beds

5. **Over-production** — Too many reports, too much medication

6. **Over-processing** — Taking unneeded steps to process documents/ asking questions again/ blood samples repeated

7. **Defects** — Incorrect or incomplete data input. Protocols incorrect

8. **Under utilisation of staff** — No use of knowledge from workforce. Not sharing information as needed/ expertise

Lean Principles

Principle 3 – Pull Principle: customer/ patient pulls first

Medications in one bin with
NO method of organization

Medications in two bin with FIFO
(first in first out) organization

Principle 4 – Heijunka: levelling out the work schedule

Achieving Heijunka is fundamental to eliminate Mura, which is fundamental to eliminate Muri and Muda

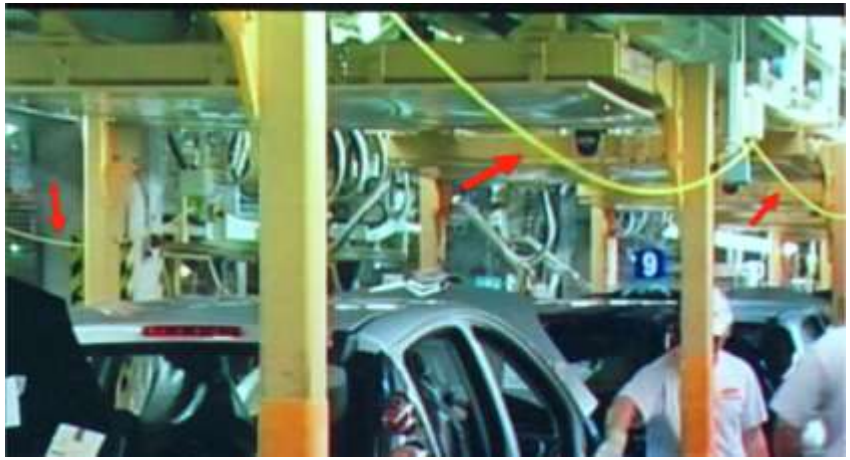
Example: processing pathology results in a lab is over target cycle time

- Courier's deliver samples from doctors labs all over the city mostly arriving in the evening
- Level loading implemented: couriers deliver earlier in day not just in evenings
- Processing of results starts earlier and procedures that take time carried out in one block

	Proportion of Tissue Processed after 4 PM	Proportion of Biopsies Received in Histology *before* 4 PM	Proportion of Biopsies Processed *before* 4 PM
Before	87%	8%	0%
After	77%	23%	23%

Principle 5 – Jidoka/ Autonomation

- Jidoka provides equipment and staff the ability to detect when an abnormal condition has occurred and immediately stops processes
- This enables processes or procedures to build-in quality at each process step instead of inspecting at the end of the process/procedure
- Every staff member has the permission to stop when a quality problem occurs



Lean Principles

Principle 6 – Standard operating procedure or protocol

- **Standardised tasks and processes are the foundation for continuous improvement and employee empowerment**
- **There are many ways to do something. There is only one optimum way. Define this way and make it the standard for everybody!**
- **If someone determines a better way, this will become the new standard**
- **It is impossible to improve a process until it is stabilized and standardized**

Lean Principles

Principle 7 – Visual management

- Organised work environment (5S programs, labelling)
- Visualisation of objectives and Key Performance Indicators (plan boards)
- Standardised work instructions
- Amount of work in process (Kanban)
- Autonomous maintenance
- Use of Poka Yoke to prevent mistakes

No organised method to store IV-bags. Quantity on hand doesn't match usage

Organised storage method
Inventory based on usage

Lean Principles

Principle 8 – Reliable technology

- **Supporting procedure & process**
- **New technology should support people, the process and the organisation as a value stream**
- **New technology must be tested and proven before use**
- **Reliable products**
- **Maintenance**

Principle 9 – Grow Leaders

Grow leaders who thoroughly understand the work, live the philosophy, and teach it to others

- **Good leaders know how to get their hands dirty (go to the Gemba or source)**
- **Good leaders understand the daily work (worked their way up)**
- **Good leaders follow the long term organisation philosophy**

Lean Principles

Principle 10 – Employee development

Develop exceptional people and teams who follow the company's philosophy

Respect

- Respect employees
- Safety is the number one priority

Team work

- Use multidisciplinary teams
- Involve hands on staff in early phases of process development

123RF Stock Photo

Continuous improvement

- Staff drive continuous improvement (bottom up)
- Management should continuously challenge staff (top down: facilitation)

Lean Principles

Principle 11 – Supplier Development

Respect your extended network of partners and suppliers by challenging them and helping them to improve supplier development

An organisation cannot eliminate all waste, its suppliers must also eliminate waste!

- **Treat partners as an extension of your own organisation**
- **Find solid partners and grow together to mutually benefit in the long term**
- **Challenge partners to grow and develop**
- **Set challenging targets and assist in meeting them**

Lean Principles

Principle 12 – Go to the Gemba

- Go to the source to observe and verify data
- Don’t theorize on the basis of what people and computers tell you
- Every high-level manager should spend at least 30 min/day on the floor
- Every activity is subordinate to the operational process

Principle 13 – Nemawashi

Make decisions slowly by consensus, thoroughly considering all options and implement decisions rapidly (Nemawashi)

- **Consent for proposed changes**
- **Slowly lay the foundation**
- **Talk to the people concerned**
- **Gather feedback and support**

123RF Stock Photo

Principle 14 – Learning Organisation

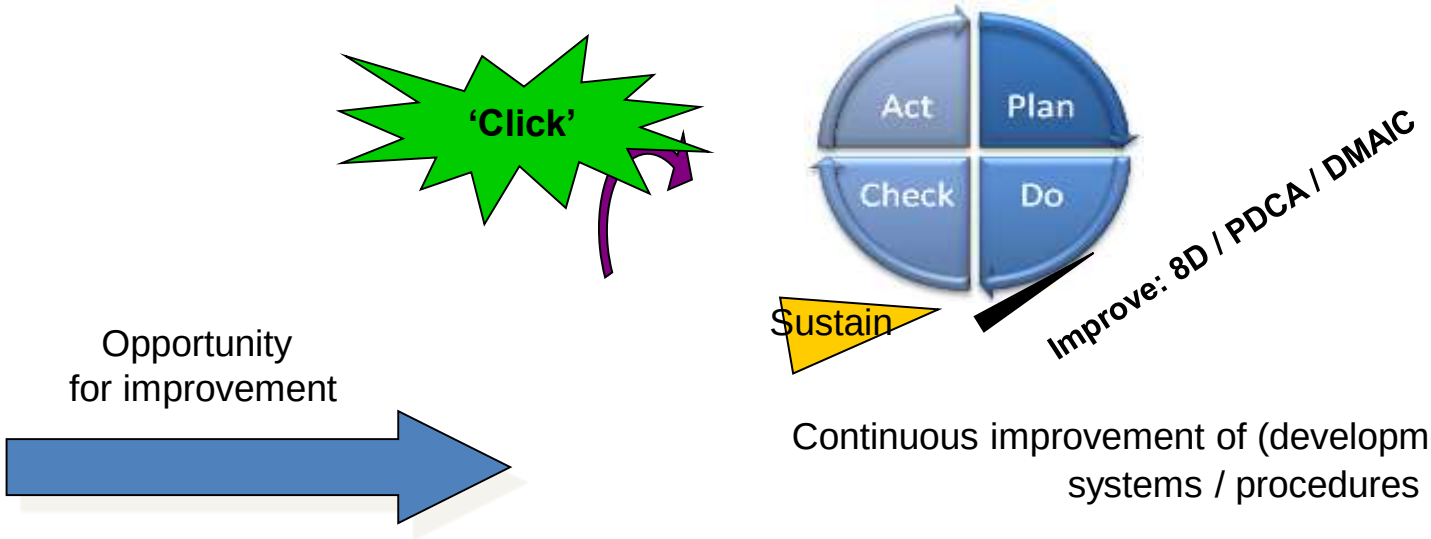
Become a learning organization through relentless reflection (Hansei) and continuous improvement (Kaizen)

- **The manager takes the blame in public and the department works on solving the problem**
- **Hansei is seen as a learning process - one gets better and stronger**

Lean Principles

Continuous improvement – Kaizen

- **Sustain what has been achieved!**
- **Today let's do something better than yesterday**
- **Turn every employee into a quality inspector**



Lean Principles

Common Vision
We all want the same

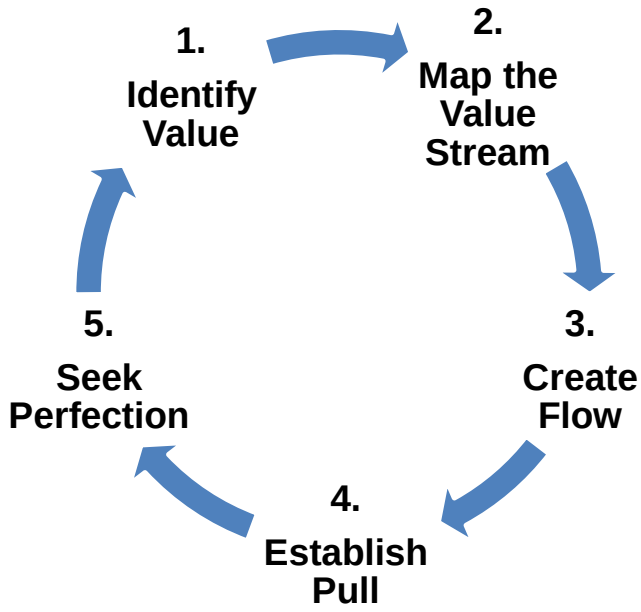
Principles
Same set of rules for everyone

Tools
The correct instruments

Execution
Cooperation & discipline

Lean Principles

1. **Value:** define what is of value to the patient
2. **Value Stream:** identify the value stream/ eliminate waste
3. **Flow:** create a constant flow
4. **Pull:** produce based on demand
5. **Perfection:** continuous improvement

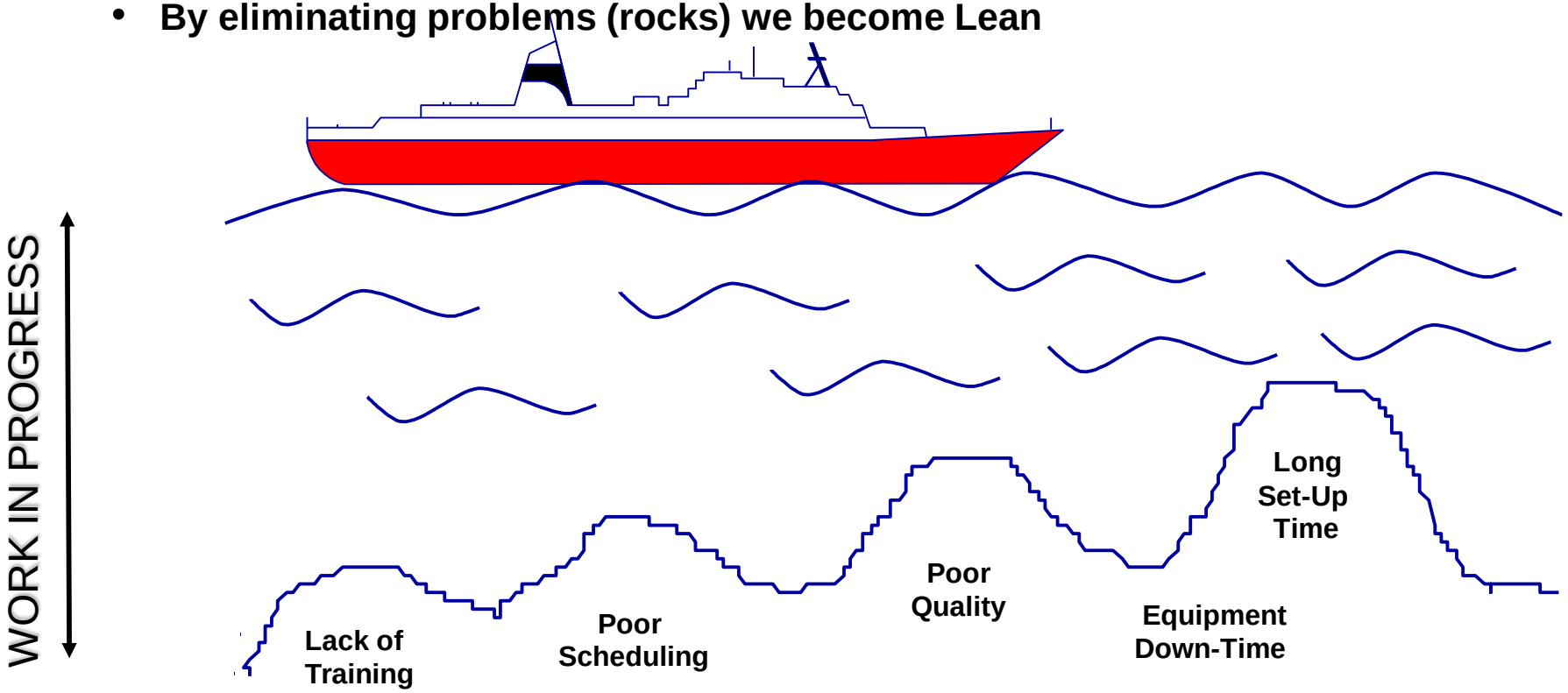


Lean Principles

If an organization is not Lean…

Problems are hidden in a 'sea of resources'

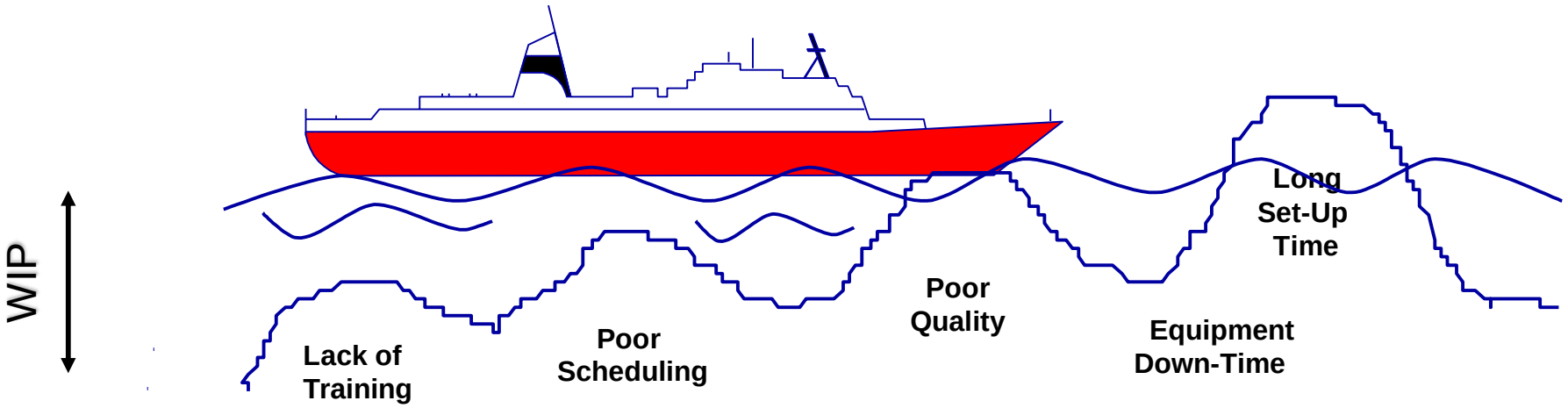
- **By eliminating problems (rocks) we become Lean**



Lean Principles

When implementing Lean…

- The water level needs to drop to shorten lead-time
- Problems are exposed by ‘lowering the water level’
- By eliminating problems (rocks) we become Lean



Where to start

5S

1 – Structure

- Work environment
- Procedures & instructions
- Abnormalities visible

Kaizen

2 – Overview & Insight

- Visual Management KPI's
- WIP control
- Continuous improvement culture

Lean

3 – Stability

- Stable processes
- Eliminating Waste
- Flow & Pull

6 Sigma

4 – Capability

- Reducing variation
- Process control
- Statistical tools

DfSS

5 – Robustness

- Robust processes
- Design for Six Sigma
- Quality Function Deployment