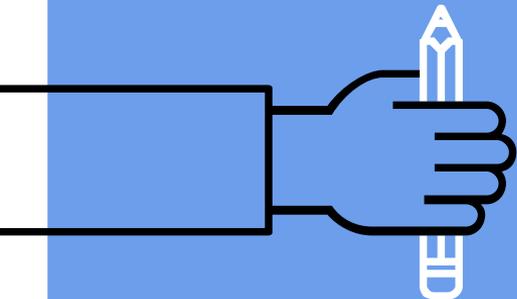
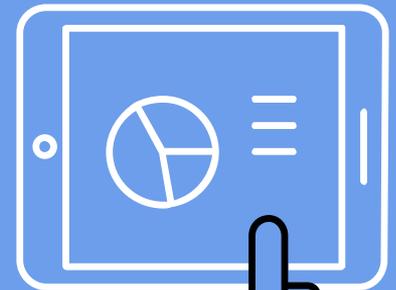
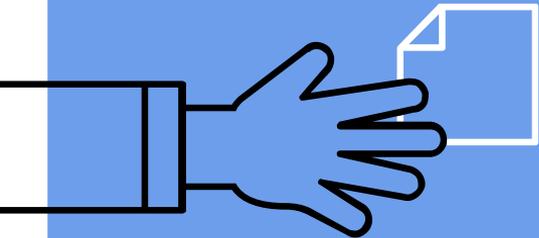
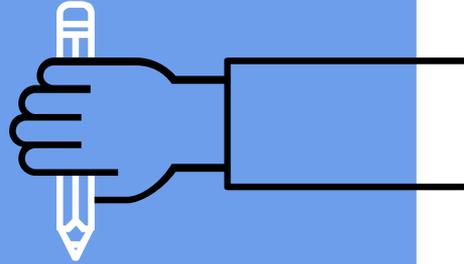


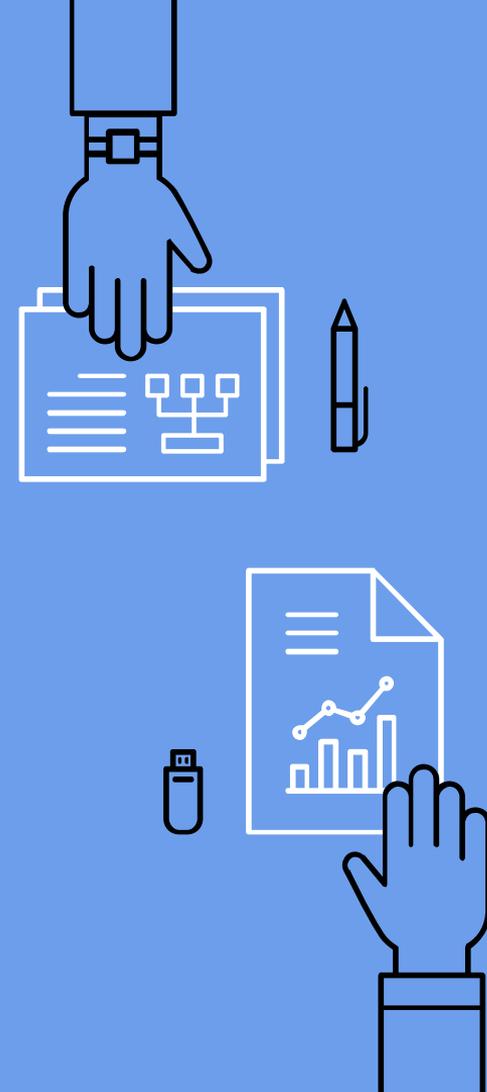
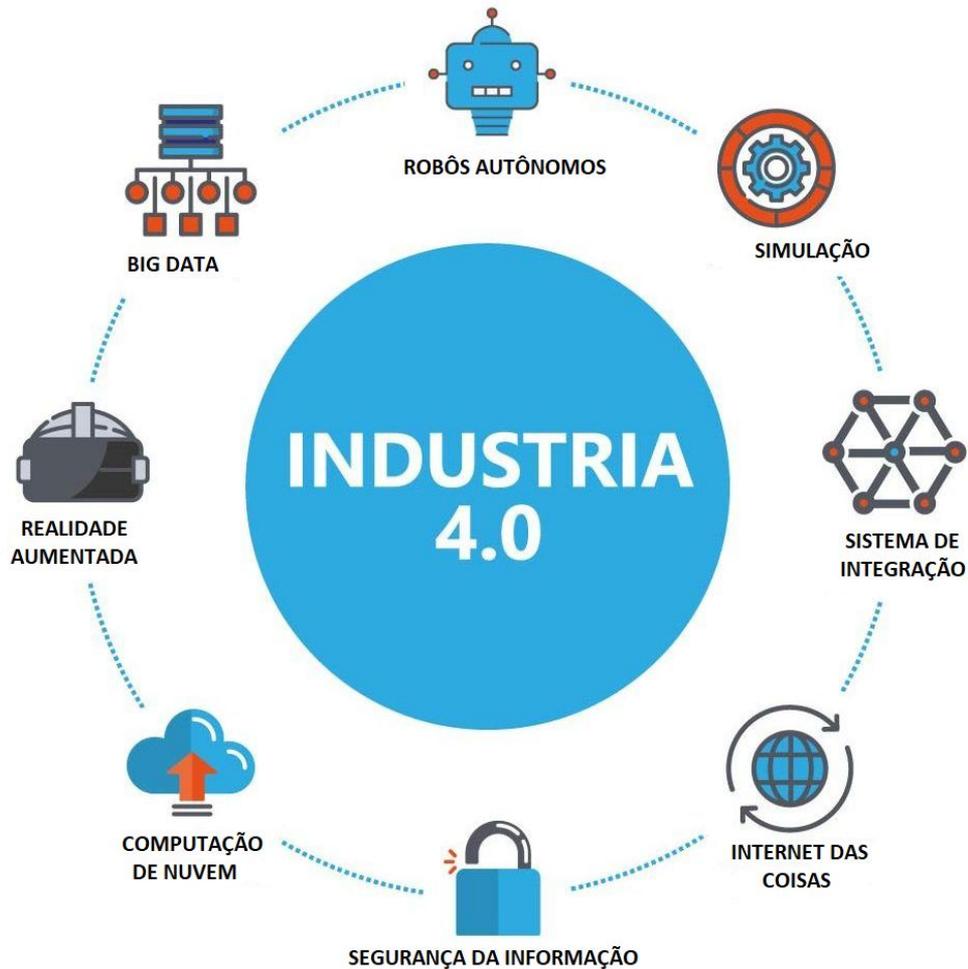
Qualidade na Indústria 4.0

Giovani Hidalgo Ceotto
Gregory Elster
Matheus Marques Araujo
Patricia Akemi Sekini Guenkawa
Thais Hanashiro Moraes



Indústria 4.0



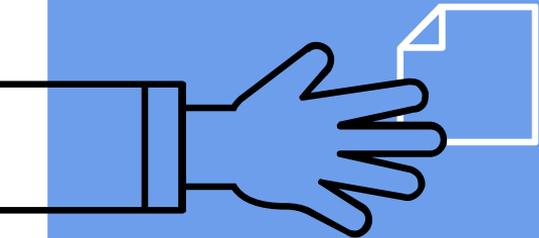
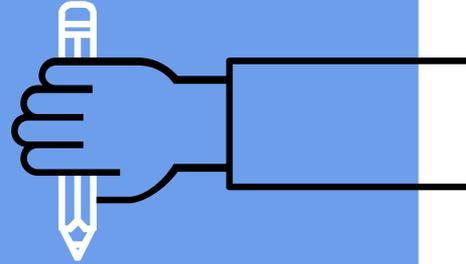


Alguns benefícios esperados

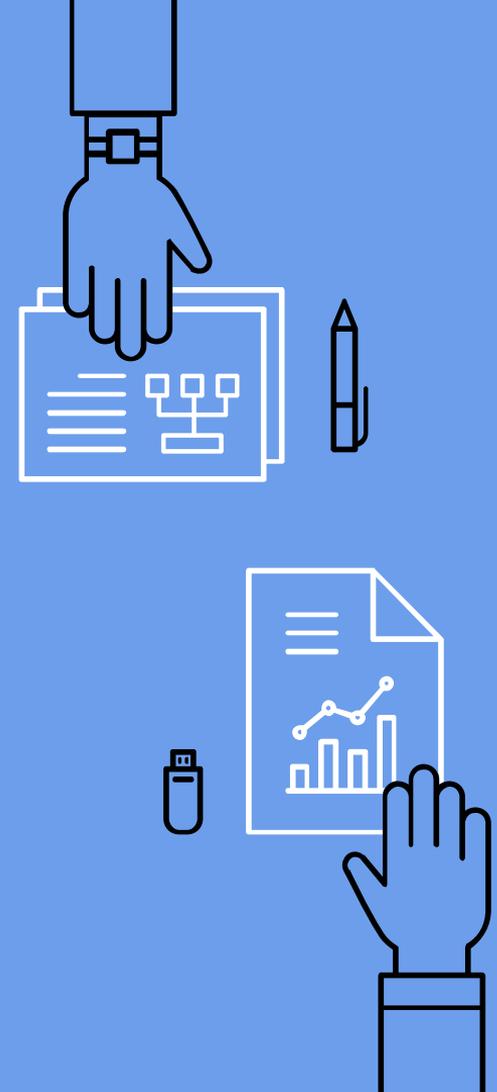
- Ganho de produtividade
- Manufatura enxuta
- Personalização em escalas sem precedentes
- Redução de custos
- Transparência nos negócios
- Redução de erros

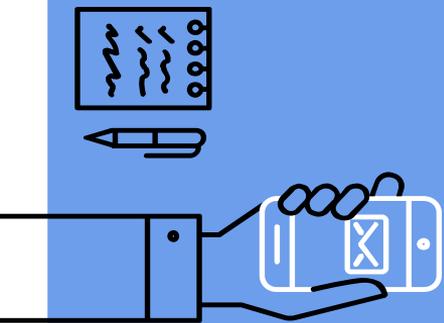


Indústria Inteligente



- ▶ Definição do NIST
- ▶ Influências e novos requisitos dos profissionais da qualidade
- ▶ Novas tecnologias digitais



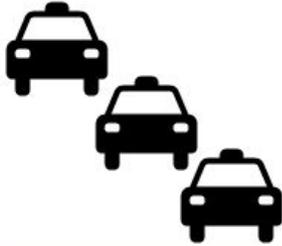


Qualidade 3.0 → 4.0



Revoluções Industriais

- Evolução dos sistemas de qualidade



1ª

2ª

3ª

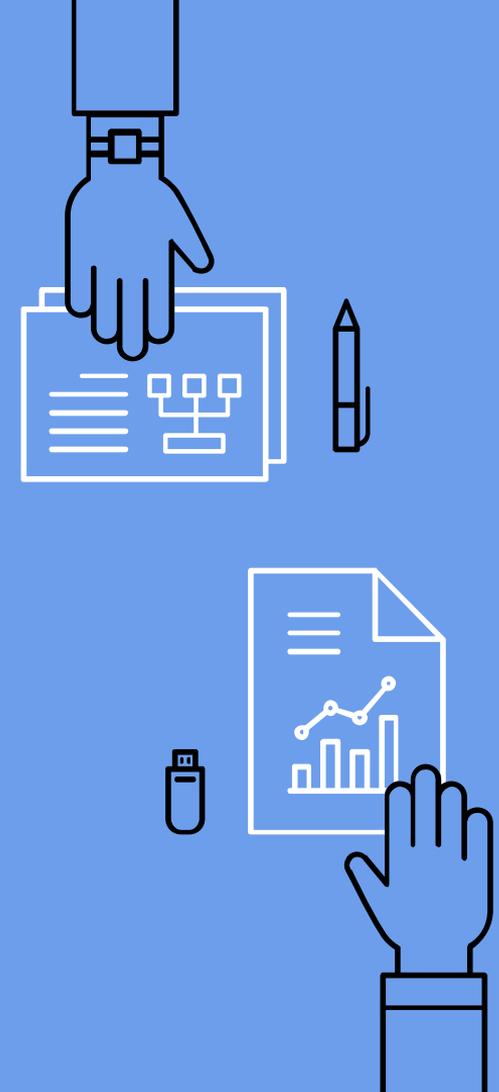
4ª

- Auto inspeção

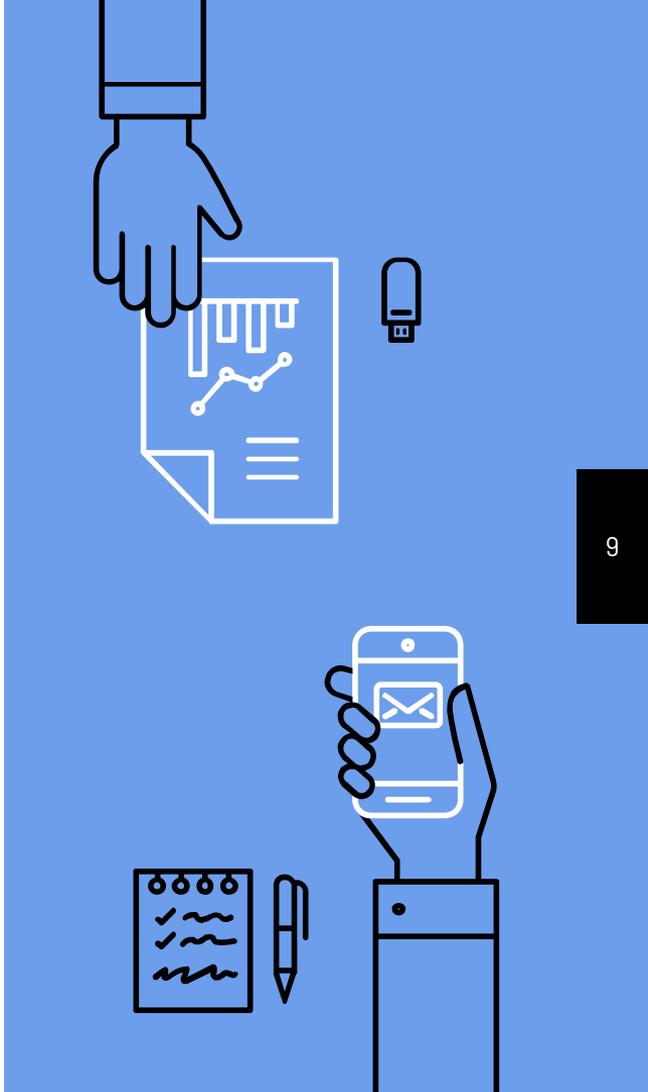
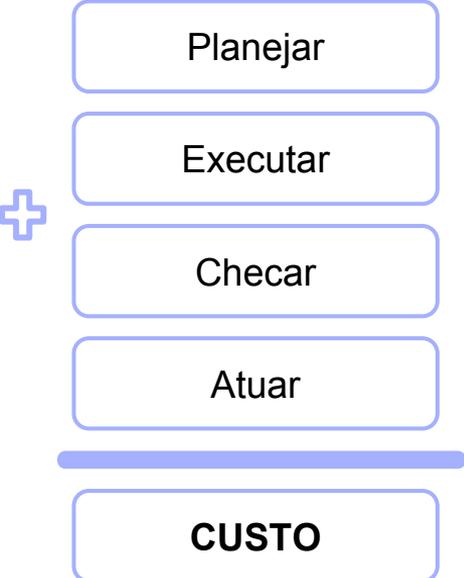
- Inspeção
- Controle de Qualidade
- Garantia
- Mil 9858

- Software para gerenciamento de qualidade
- CQ, MQ, PQ

- Sistemas digitais interconectados



Controle de Qualidade



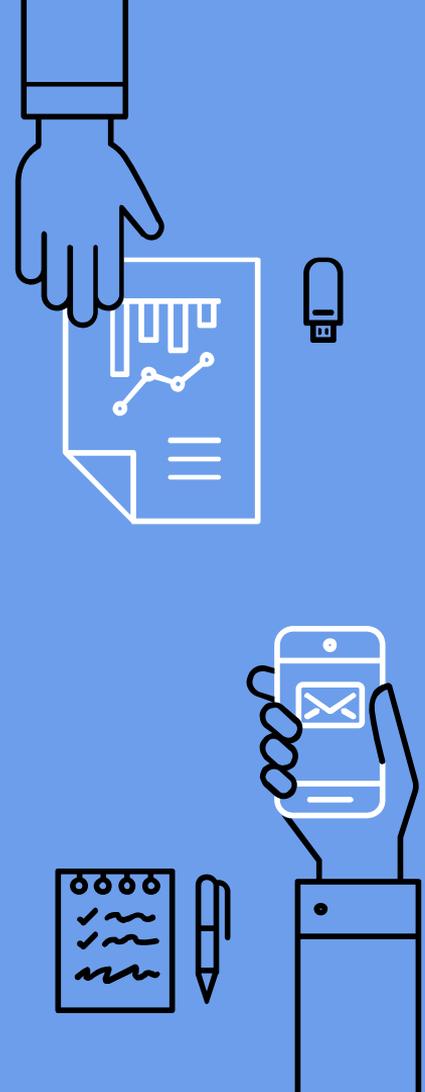
Custos de Qualidade

Prevenção

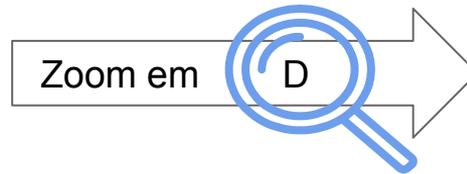
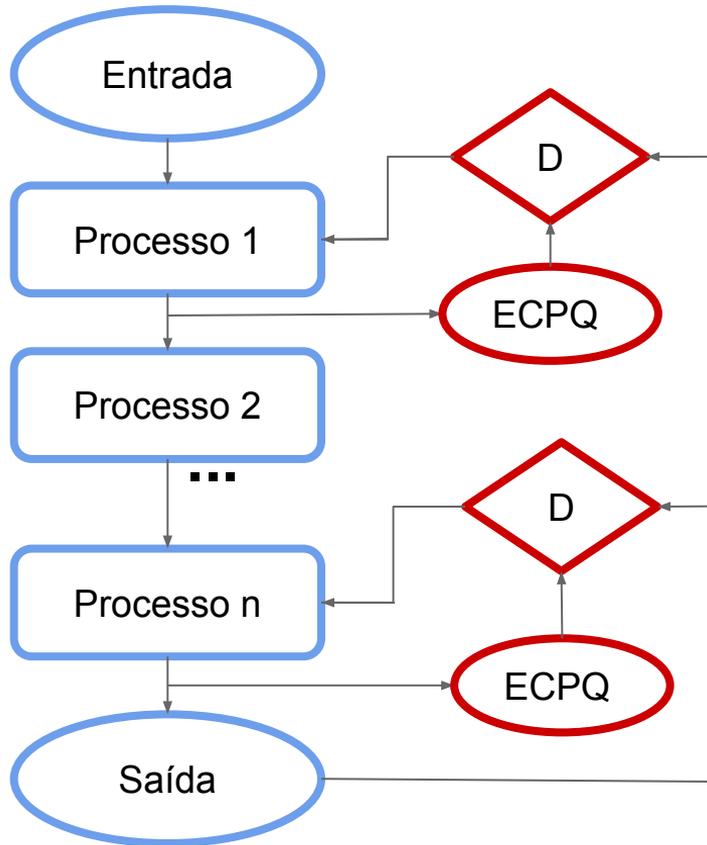
Avaliação

Defeitos Internos

Defeitos Externos



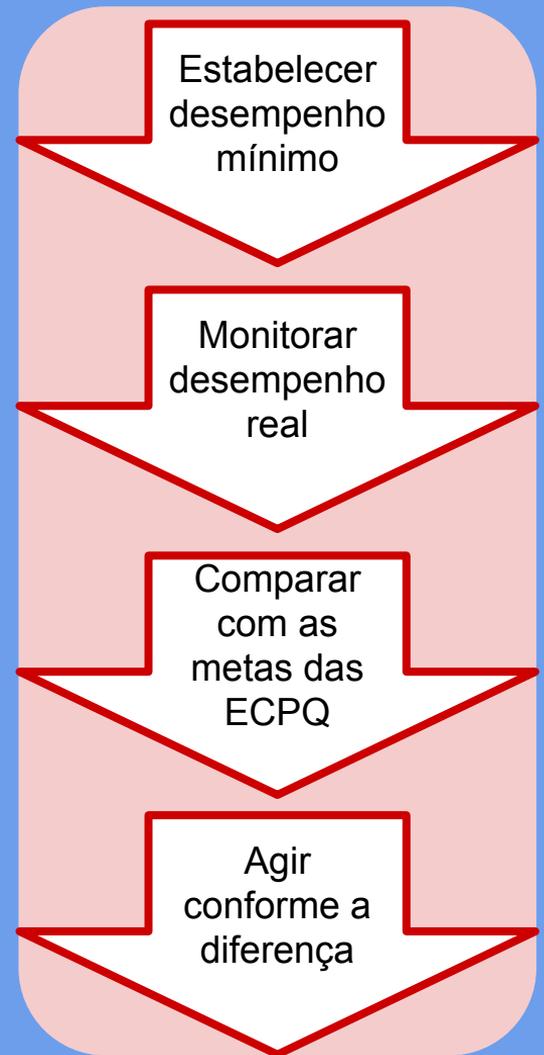
Etapas de produção



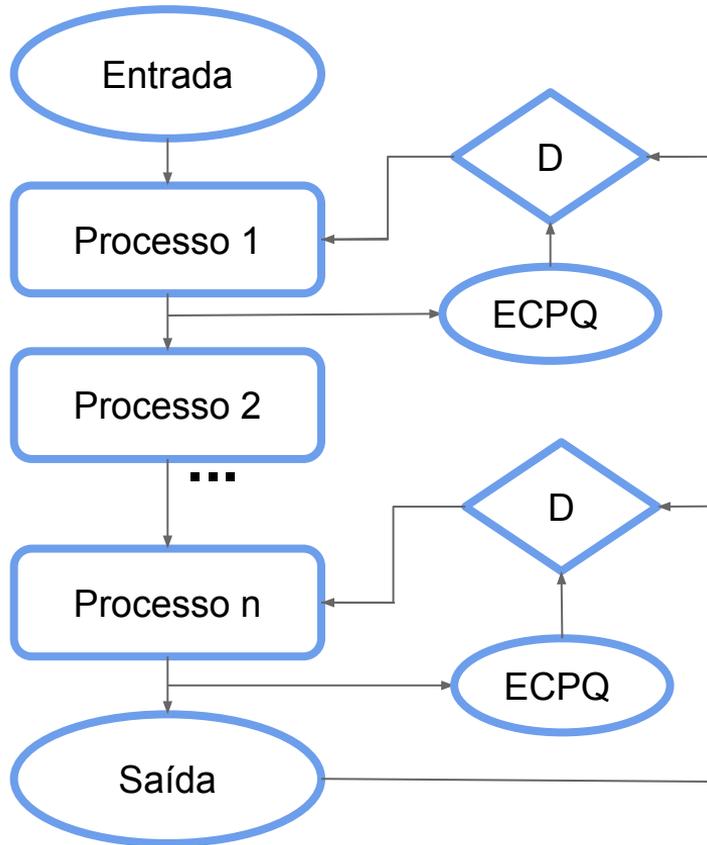
■ Qualidade

■ Operações

ECPQ: Etapa crítica para a qualidade

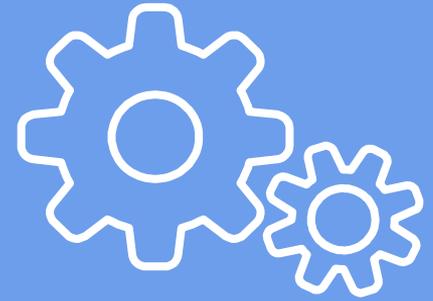


Etapas de produção 4.0

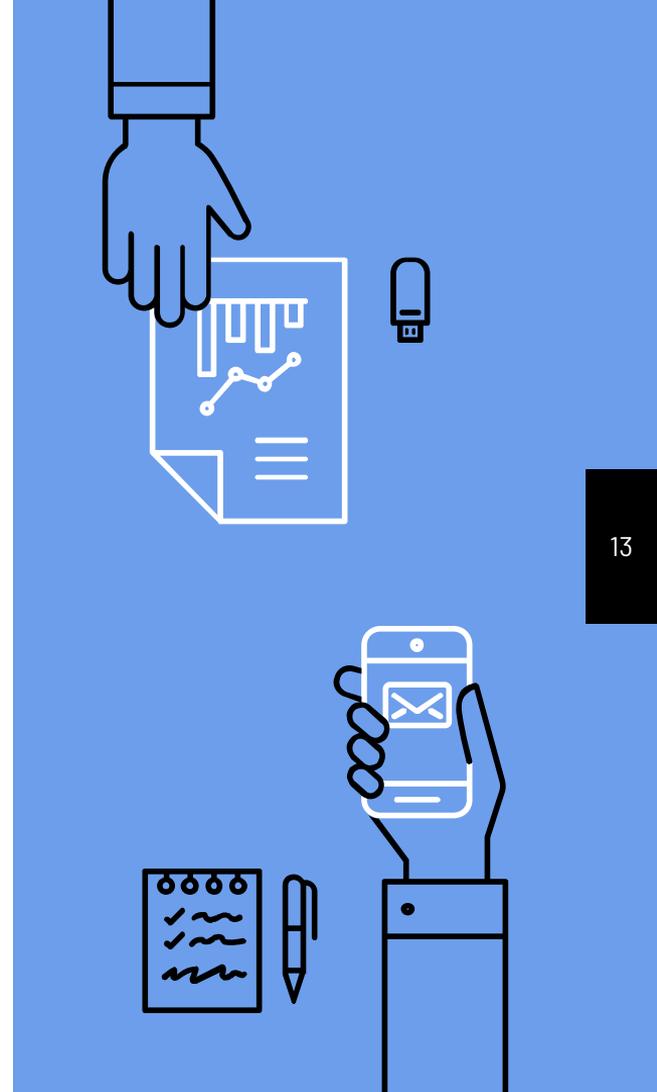
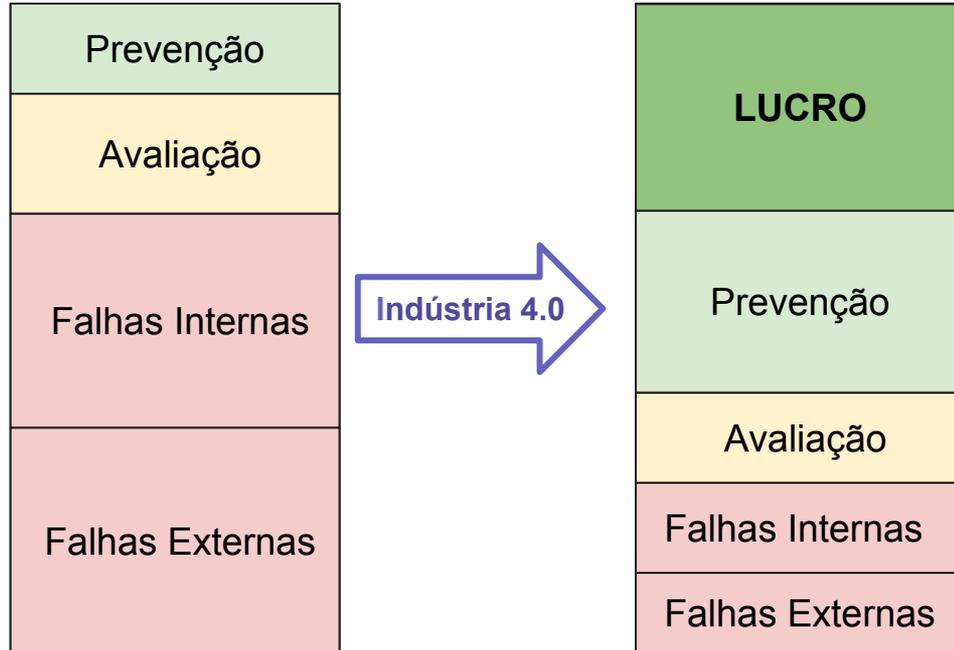


■ Operações

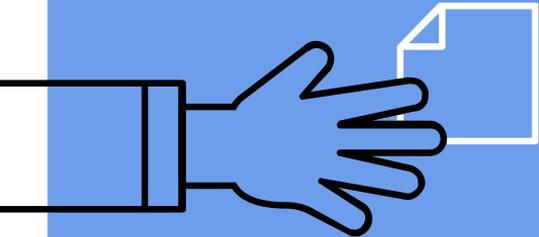
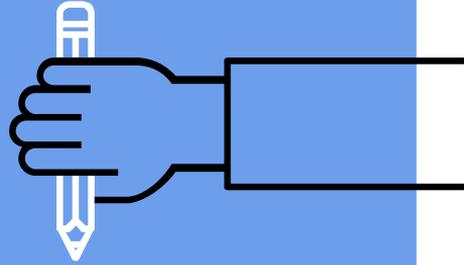
ECPQ: Etapa crítica para a qualidade



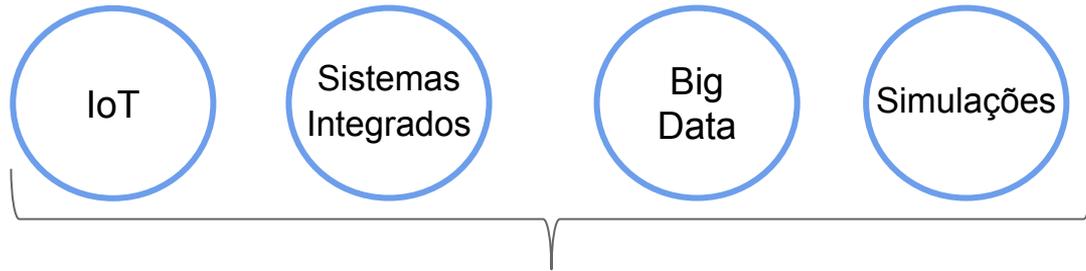
Impacto da Indústria 4.0 nos Custos de Qualidade



O que muda?



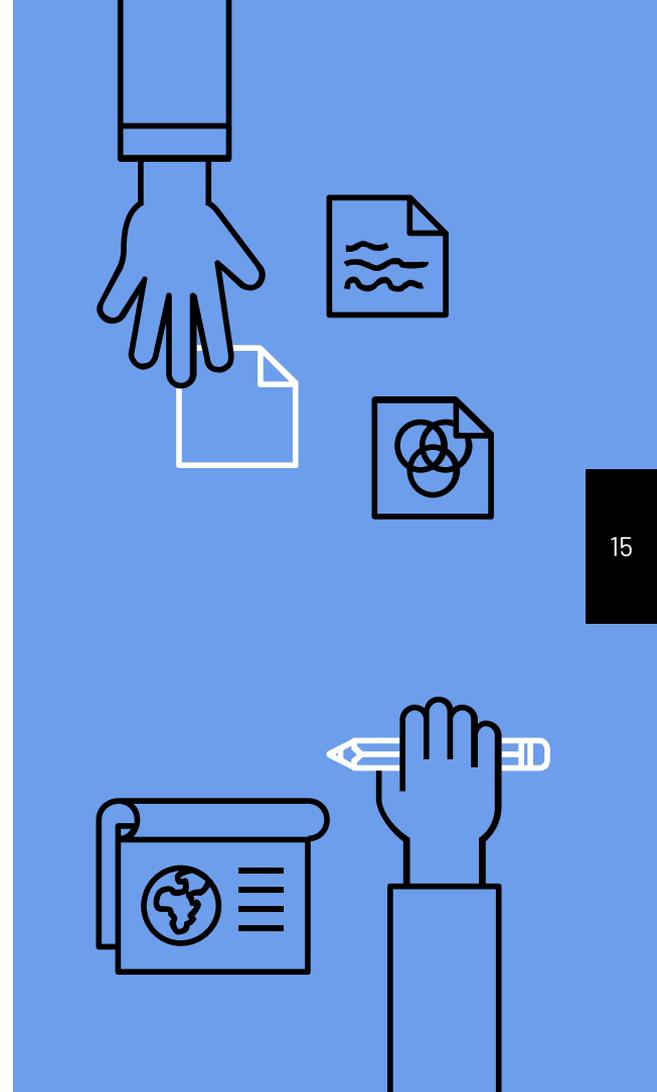
● Instruções operacionais



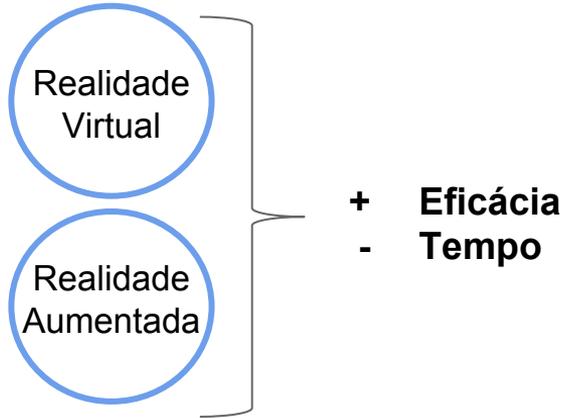
Conectividade
+
Personalização

Fácil Visualização

Fácil Atualização



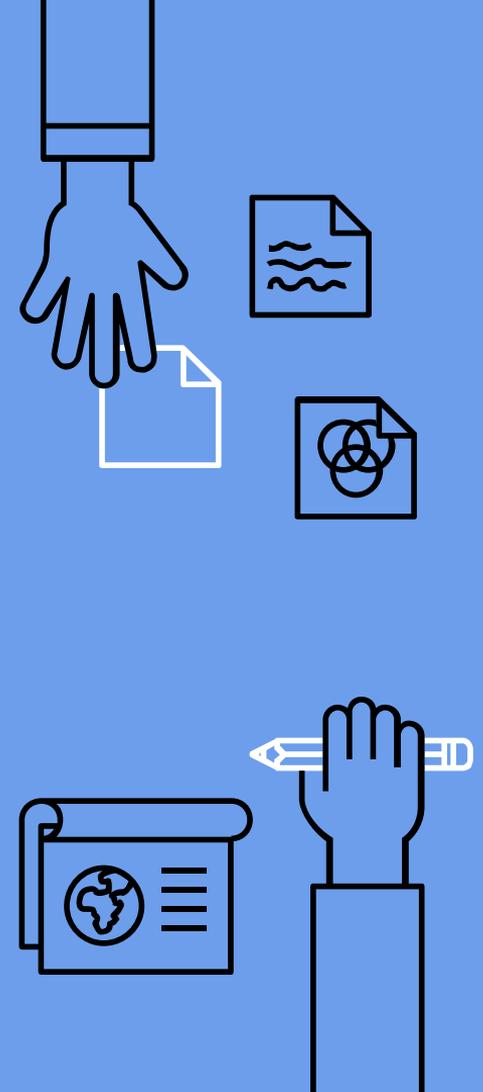
● Treinamento



● Auditorias

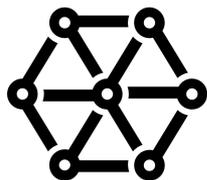
Menor Frequência

Maior Eficácia



● Monitoramento

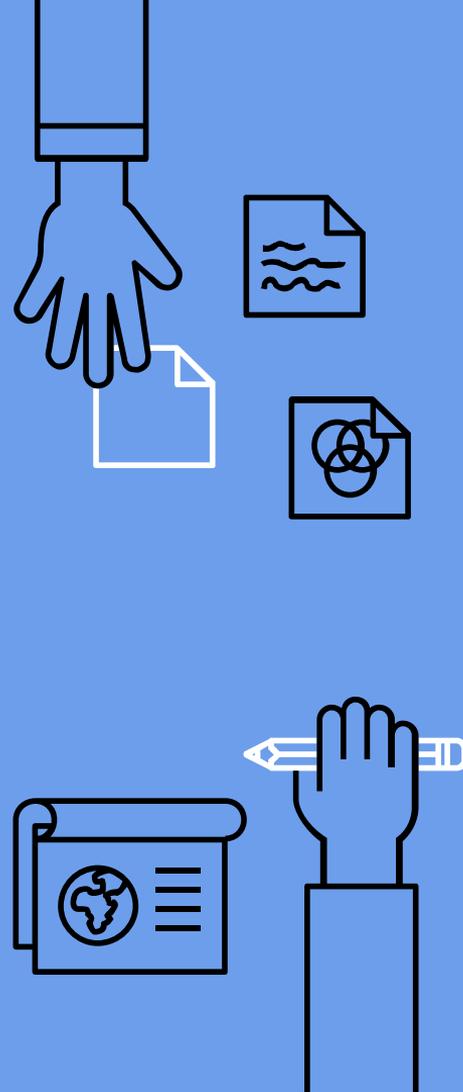
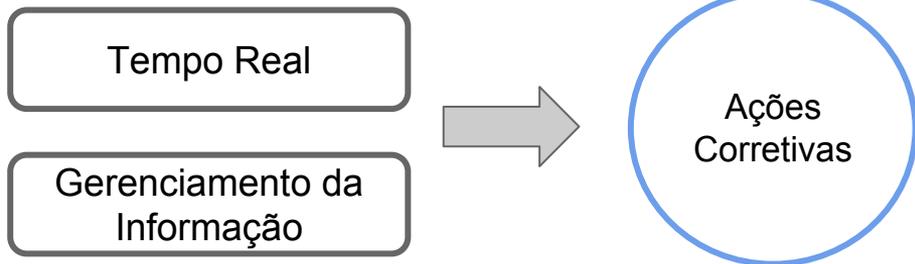
- ▶ Monitoramento das Máquinas
- ▶ Sensores → Tempo Real
- ▶ Caráter Preventivo



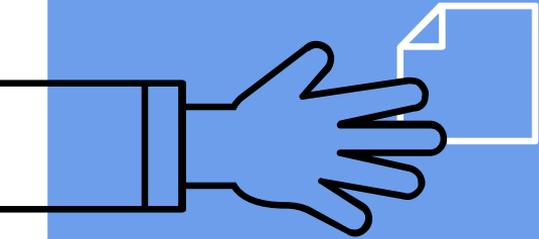
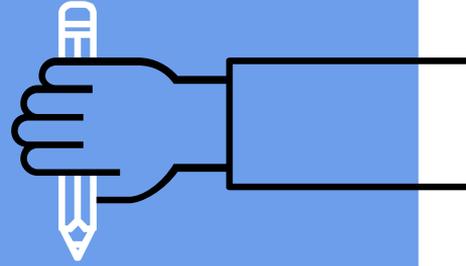
● Rastreamento

- ▶ Integração de Processos
- ▶ Feedback

● Aplicativos Enxutos



Impactos



Impactos



Fluxo de Dados

- Organizado
- Em Tempo Real
- Descentralizado

Gerenciamento da Qualidade

- Menos Atividades Operacionais
- Controle → Produção
- Foco → Prevenção e Melhoria

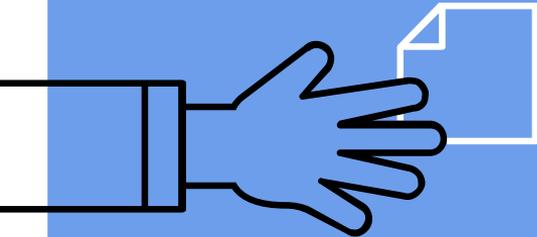
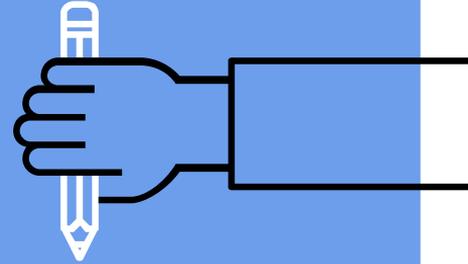
Perfil dos Profissionais

- Analítico
- Crítico

Integração

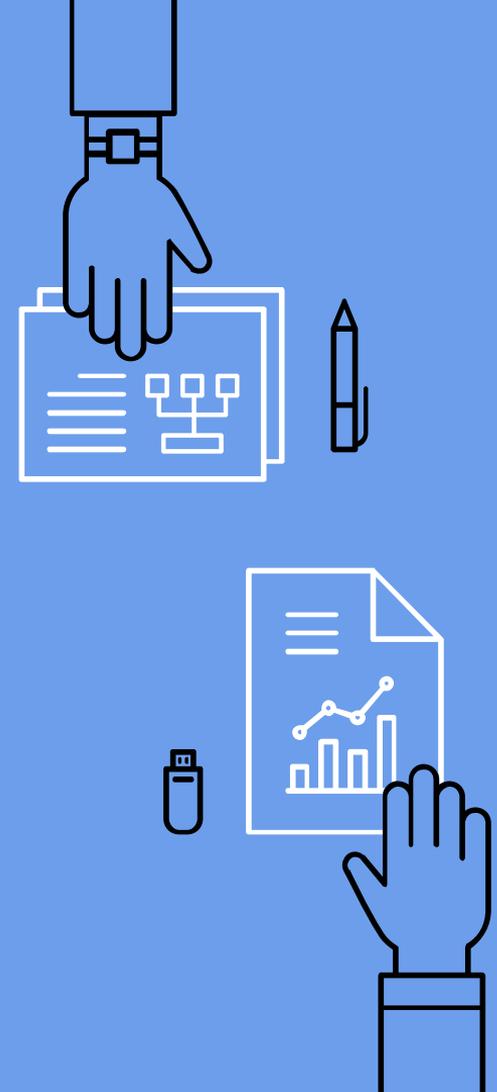
- Vertical
- Horizontal
- Ponta a Ponta

Impactos para Profissionais de Qualidade



Mudanças nas Atividades

- Controle de Qualidade (QC) e Ação Corretiva por Causa Raiz
- Garantia de Qualidade (QA)



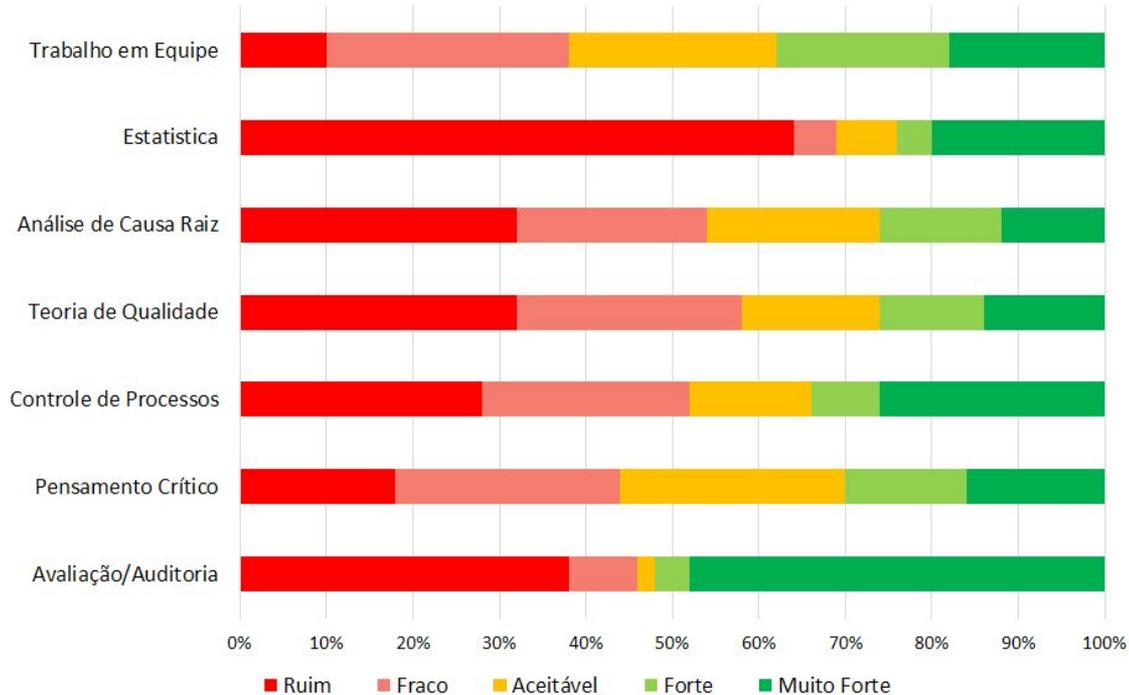
Mudanças nas Atividades

- Melhoria de Qualidade (QI)
- Planejamento de Qualidade (QP)

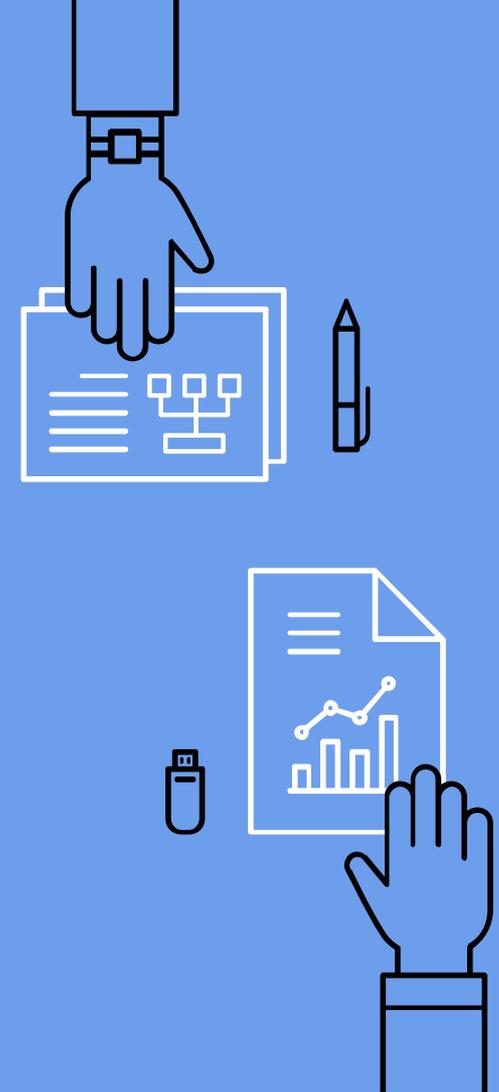


Principais Conhecimentos

Capacitação Atual em Cada Área de Conhecimento

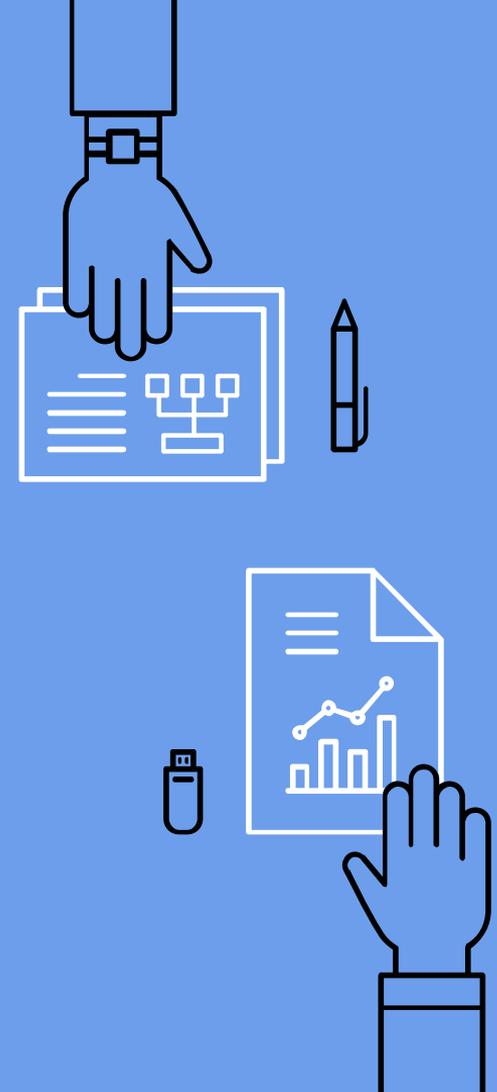


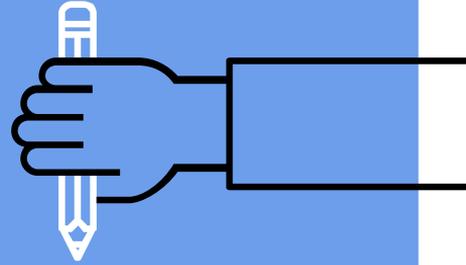
Fonte: Juran Institute, 2017



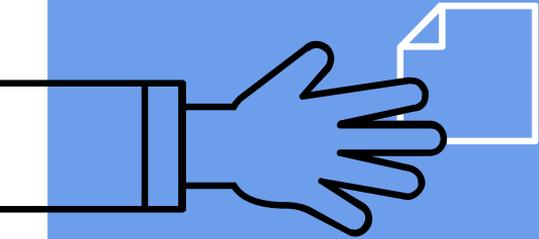
Novas Habilidades Mais Importantes

- Colaboração
- Análise de Dados
- Trabalho Digital
- Auditoria Menos Freqüente e Mais Eficiente
- Desenvolvimento dos Fornecedores

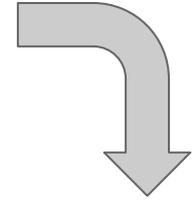
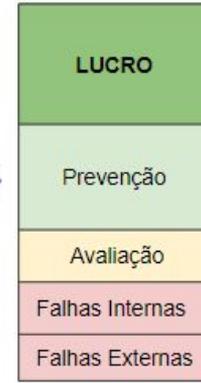
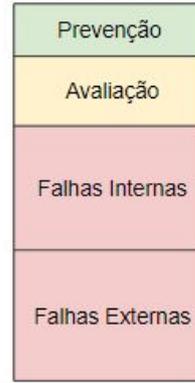
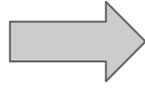




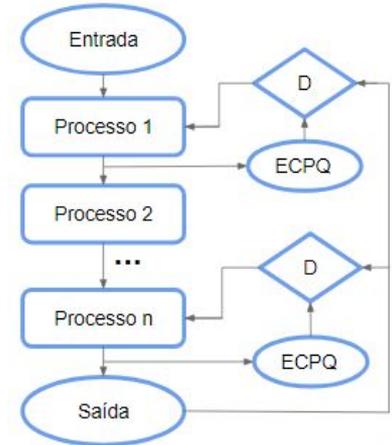
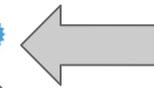
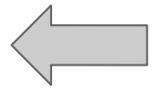
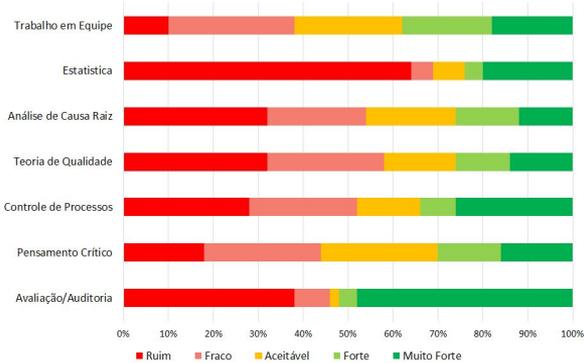
Revisão da Apresentação



Revisão



Capacitação Atual em Cada Área de Conhecimento

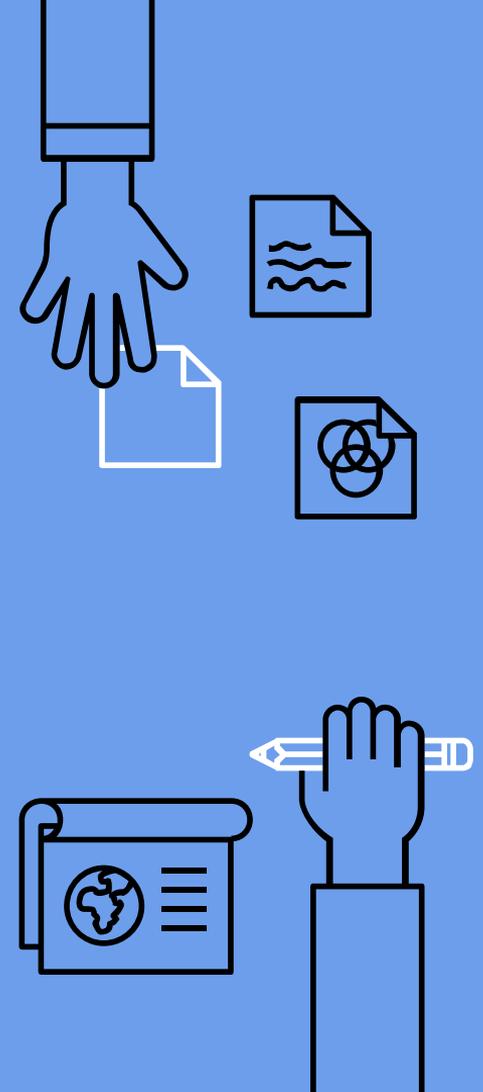


Bibliografia

The Smart Factory, Industry 4.0 and Quality. Apresentador: Dr. Joseph A. DeFeo. Produção: Juran Institute. Webinar: 54'49". Disponível em <<https://www.juran.com/webinars/the-smart-factory>> . Acesso em Maio de 2018.

OIAN, Carlos,;CESAR, Francisco.;MAKIYA, Ieda. Contribuição da Indústria 4.0 para a Gestão da Qualidade. Disponível em: <<http://www.aprepro.org.br/conbrepro/2017/down.php?id=2719&q=1>> Acesso em Maio de 2018.

FOIDL, H.; FELDERER, M. Research Challenges of Industry 4.0 for Quality Management. Innovations in Enterprise Information Systems Management and Engineering, p. 121-137, 2016.



Obrigado!

Perguntas?

