GF Piping Systems

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Services

90-days to get digital!

A business case for your construction site

Helping you save time and money with a fully digitized site.

A global digital trend

GF Piping Systems is the global expert for the safe and reliable transportation of water, chemicals, and gas. Our maintenance-free and durable piping systems made of plastic help implement vital applications more quickly, cost-effectively and sustainably. GF Piping Systems supports its customers throughout all phases of their projects from planning to commissioning. In keeping with the global trend, we offer a solution that allows your site to become fully digitized and up-to-date.

Construction sites left behind

Design has been digital for years, through conventional CAD or the latest push for Building Information Modelling (BIM). Sourcing and goods management have become digitized too with the Enterprise Resource Planning (ERP) softwares like SAP or Oracle and paper maps are gradually disappearing and being replaced by Geographical Information Systems (GIS). However, the missing step to make the full project circle digital still remains: contruction sites and field works are still resisting the trend.

However, being the only economic sector that witnessed a decrease in productivity over the past 25 years, it would be prudent for construction and field works to start utilizing the digital wave.

In this business case, we will focus on why you should digitize your field works (spoiler alert: to save money), and help you outline a 90-day plan to implement digital in the field. What if, in 12 weeks from now, you could experience a 15 % rise in productivity and a steep decrease in worksite accidents while addressing workforce management and social responsibility?

Contents

The problem with paper

An average office worker uses 10 000 sheets of paper every year, which costs more than € 500, amounting to considerable cost when multiplied by the amount of people working for a company. For organization purposes, paper needs to be stored in filing cabinets, and people have to maintain them. It is estimated that every 12 filing cabinets need one full-time employee to take care of them. This is happening at a time, when the same amount of information could be stored - dynamically - in the palm of your hand.

Now that paper documentation is created, stored and mantained, you also need to be able to find it again: we spend on average 10 minutes every day, looking for lost items. You will spend 6 months of your life looking for missing objects, three of the top five being paper-related.

Information is then scattered by the physical aspect of paper: 65 % of office workers in construction companies manage information in more than one location, while 44 % cite the printing, scanning and hand-signing of documents to be a major challenge to efficiency. From each of these locations, documents will then grow in different directions with many potential duplicates, making it difficult to know which is the definitive version.

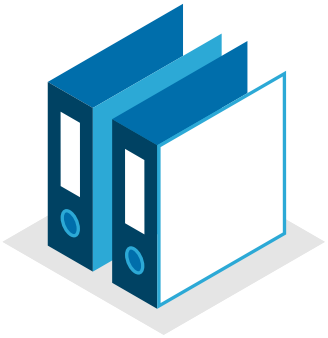
Even in companies that own a Geographical Information System (GIS), only 8 % of their employees store smart layers in the system, with the majority linking the medium to physical archives. Therefore, while data is kept mostly digital in the preparation phase, the paper procedures in between break the link and deplete the data, creating the so-called digital gap.

10 000

papersheets / worker / year

40

binders per employee per year



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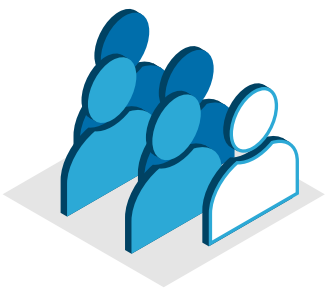
additional full-time employee needed to manage paperwork for every 10 office workers



Why should you digitize your field works?

Data collection for precision

While powerful tools linking geodata and information exist almost everywhere today, they still lack quality data to be fed with. Some relevant facts and statistics help better understand why it is so crucial to be precise.

On the around 4 500 000 km of aerial and underground networks registered in France, 65 000 damages are recorded every year. This equals 14 damages / year every 1 000 km. Of all these networks, 51 000 km are considered as highly sensitive (37 000 km of gas lines, 10 000 km of hydrocarbure lines and 4 000 km of chemical lines), with a damage rate of 3 000 per year, which comes to 58 damages per year every km. The damage rate is thus even higher on sensitive lines. The reason for this, is that these lines are mostly underground: invisible, harder to protect, they suffer from a lack of documentation and geopositioning. This endangers those networks each time construction works occurs directly on them or simply around them.

A study of the APISQ in Quebec shows that 6 damages on underground networks occur every day as a consequence of construction works around them (2 damages / year every 1 000 km), because of lack of information (presence, location). This happens despite the legal obligation to ask the public authorities for the registered networks in the construction site underground, and the statistic only covers the declared damages while it is estimated that about the same amount are not known.

80 % of the recorded damages are directly caused by excavation works, and 91 % lead to interruption of services. These damages lead to direct costs (replacement, materials, man-hours...) but also indirect costs (interruption of services, involvement of emergency departments, evacuations...) as shown on the infographic on the next page.

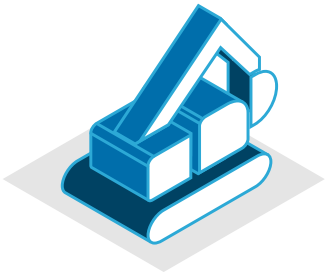
In addition to the material consequences, a US study shows that over the past decade, 14 construction workers were severely injured and 3 were killed every year when damaging underground networks during excavation works.

58

damages / 1 000 km / year on sensitive networks (gas, oil, chemicals)

14 %

of the damages are directly caused by excavation works



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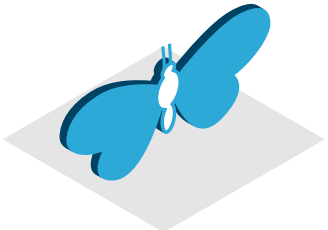
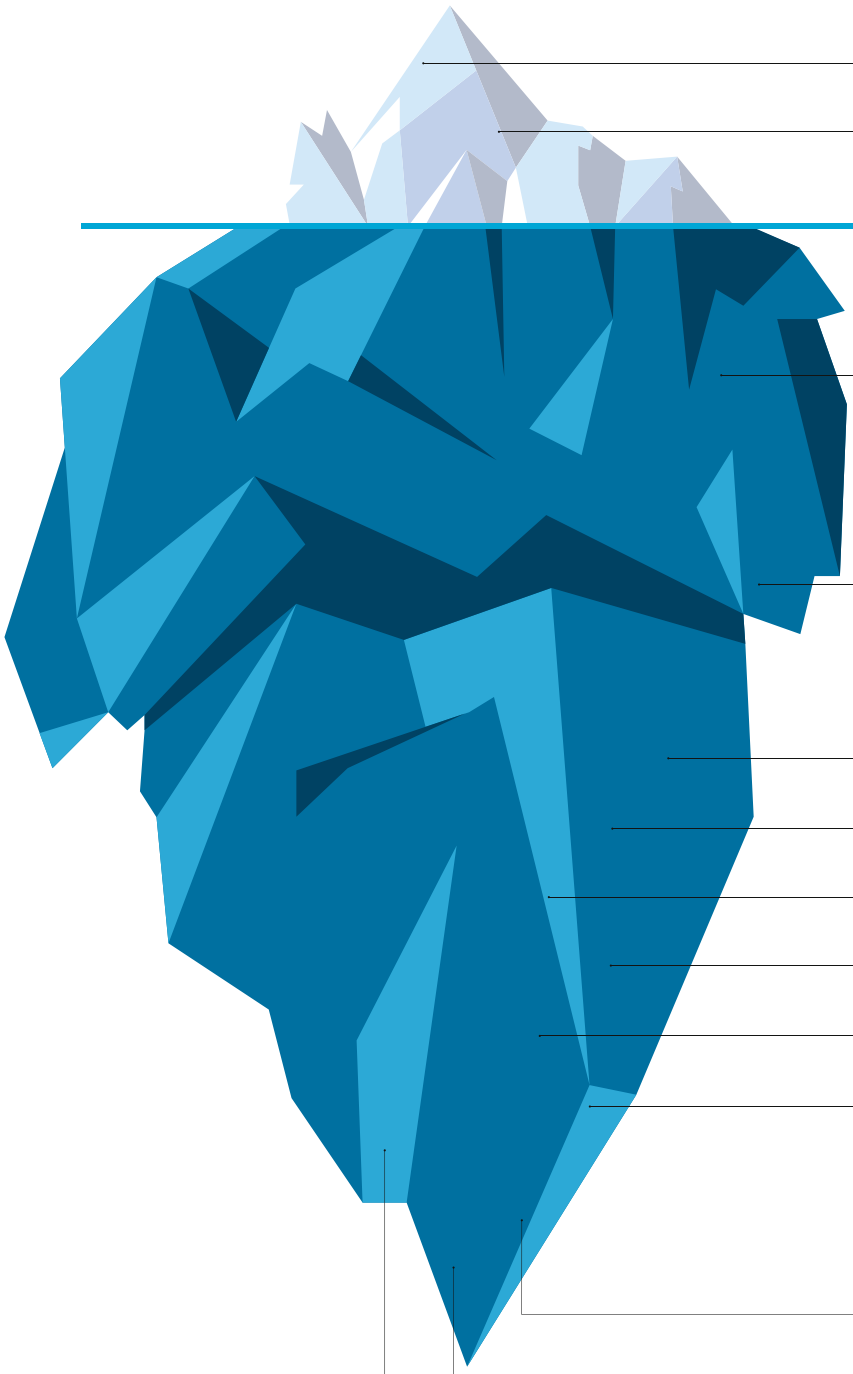
average damages on the water distribution network after 1 excavation damage on the transmission network



What are the costs of construction works damages to underground networks?

5€
/ km / year



0.16 % Material costs

0.72 % Administrative costs

4.36 % Labor costs

DIRECT COSTS

INDIRECT COSTS

2.14 % Firefighters

Mobilization on a gas leakage	
41	Firefighters involved
15	Intervention vehicles
88'19"	Cumulated Intervention time

0.05 % Police

Mobilization on a gas leakage	
22	Policemen involved
22'03"	Cumulated Intervention time

16.63 % Traffic congestion

0.96 % Fuel overconsumption

0.21 % Vehicles overusage

1.15 % Safety works (signalization)

0.82 % Pollution

35.76 % Electricity cut-off

Impacted by a gas leakage	
1201	Private Households
484	Small & Medium users
35	Major users

0.04 % Internet cut-off

0.03 % Water losses

36.95 % Claims / Compensations

90€
/ km / year

Why should you digitize your field works?

Safety on site

Construction workers are aging, with for instance an average age that jumped in the US from 36 in 1985, to 41,5 years in 2010. Simultaneously, there is a shift in age distribution of the construction labor force. Over this period, the proportion of workers between 45 to 64 years increased from 25.1 % to 38.7 %, representing a 54 % boost. The under 35s decreased by 71 % , by 50 % the 20- to 24-year portion, and 26 % in the 25- to 34-year age.

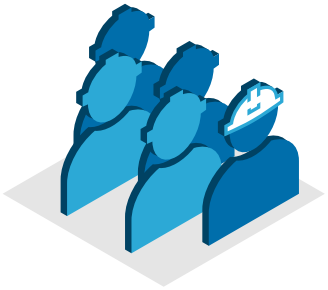
This means that a full generation of skilled and experienced workers are set to retire within the next decade. To react, 57 % of construction companies plan on hiring more employees in the next 6 months, while 57 % report having trouble finding skilled workers, and 90 % express being concerned over labor shortage.

This difficulty in finding the needed skills and resources has different consequences, the first one being an increase in accidents arising from personal factors (+13 % from 2013 to 2018). Among those accidents, while „carelessness" kept stable and „incorrect attitude" slightly decreased, „lack or knowledge or skill" almost doubled (+47 %) over the investigated period. To schematize, new workers are motivated but less skilled, thus being a danger for themselves (and others).

Second major consequence, as a consequence of (decreasing) offer and (rising) demand, an increase in costs of labor occurred, with a salary growth 1.9 times faster among construction workers than the average growth across the full workforce.

25 %

of construction workers are set to retire within the next 10 years



47 %

more jobsite accidents because of lack of skills or knowledge in 5 years

1:193

cost per unit ratio between construction and informatic segments, with a 1:1 base ratio in 1950

An efficient workforce

Communication occupies 90 % of construction project manager's time and yet, construction workers devote on average only 30 % of their working time to their principal activity, leaving the remaining 70 % to non-core tasks. Even worse, those same construction workers will simply spend 30 % of their time waiting to do their jobs, for reasons varying from materials that are not delivered to broken equipment through a precursor step which is delayed or simply instructions missing.

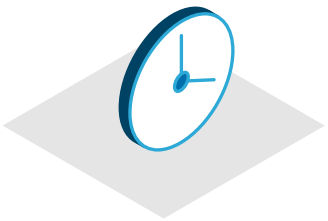
If we look at the bigger picture, productivity in manufacturing rose by 34.1 % on average over the past decade in Europe and doubled over the past 25 years in the world, while producitivty in the construction sector declined by 5 % per annum in countries like Italy and Spain, and decreased by 1 % on a world average. If productivity in construction was to catch up with that of the total economy, the sector's value added would increase by an estimated $ 1.6 trillion /year, adding about 2 percent to the global economy. Such a gain is equivalent to about half of the world's annual infrastructure need.

Only about 50 % of planned activities on a construction site are completed on schedule – no better than a coin toss. In the Middle East, capital projects reach completion on average 20 months behind schedule, with budgets exceeding original estimates by 80 %. The top five reasons for planning failure are incorrect time estimates (due to lack of data), weak execution (logistics issues), space conflict onsite and poor cordination.

Most construction companies, if they attempt to digitize at all, focus on digitizing high-level IT processes at the top of the organization, which certainly a worthy mid- to long-term goal. However focusing on the construction site itself would bring an estimated increase of productive hours by 15 %, cut process costs by 20 % and improve customer satisfaction by 10 %. This is possible simply by providing the employees with digital productivity tools. Companies embracing digital transformation could reap dramatic productivity gains and give themselves a competitive advantage.

50 %

of planned activities are late

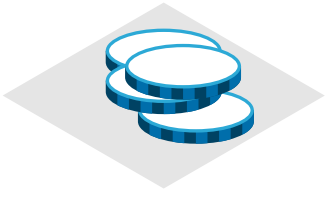


30 %

of their time, workers are waiting to do their job

240 000 000 000 $

potential yearly savings from digital productivity tools on the construction site alone



Why should you digitize your field works?

Summary

Digitizing your field works would allow you to work paperless, which might save you up to 10 000 sheets of paper per year and per worker, which would have been stored in 40 binders and required one additional full-time employee for every 10 workers you have in your team.

Go paperless for efficiency

We have learned how every year, 58 damages occur every 1 000 km of pipe network, of which 14 % are directly caused from excavation works alone, with a ratio of 18:1 between indirect and direct costs when it comes to any of those damages. We have also seen how digital could dramatically support you in solving this issue.

Data for precision

With 25 % of the construction workers set to retire within the next decade, a lot of field knowledge is disappearing, resulting in a steep increase in jobsite accidents directly linked with lack of skills (+47 %). Digitization will help you to easily provide skills to new-comers.

Safety and efficiency on site

While 50 % of planned field tasks are behind schedule and your workers simply spend 30 % of their time waiting on the construction site for various reasons, we've learned that digitizing the field works would bring a 15 % rise in productive hours.

„Field workers are not technology-compatible“: Stereotype?

93 %

use Smartphones every day, 80 % Laptops & 62 % Tablets

64 %

give a rating of 8 / 10 or higher when asked how confident they are with new technology

Literature and source list:

- 6 Ways Intelligent Information Management Streamlines Oil & Gas Operations (M-Files Oy, Tampere – Finland)
- 10 predictions for the Oil & Gas Industry – Chris Niven (November 2016)
- Evaluation des coûts socio-économiques liés aux bris des infrastructures souterraines au Québec (Polytechnique Montréal, Cirano) – Rapport de recherche, 2015
- Costs of infrastructure failure - Cromwell, J. E., & Pearson, N. (2002)
- An analysis of the direct and indirect costs of utility and right-of-way conflicts on construction roadway projects – Goodrum, P., M., Kari, F., Smith, A., Slaughter, B., and Jones, C.,N. (2006)
- Managing utility cuts: Issues and considerations. – Khogali, W.E., & Mohamed, E.H. (1999)
- 2018 ConTech Report – JBKnowledge (2018)
- 2017 ConTech Report – JBKnowledge (2017)
- Etat des bris au Québec – Alliance pour la protection des infrastructures souterraines du Quebec (2014)
- Canalisations et Réforme anti-endommagement – Ministère de la Transition écologique et solidaire (2018)

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10 questions to write your 90-day plan

Getting started

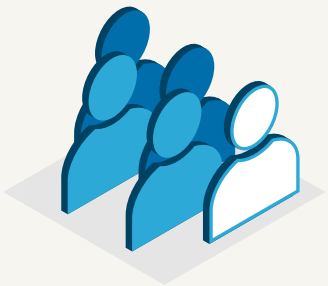
Having worked with numerous utility companies over the past two years in Europe , North America and Asia, we have developed a methodology on how to implement digital tools in the field, and which steps build the road to successful digital transformation. Yet, every case has its unique characteristics, and the human factor is never to be neglected. This is why we won't propose an absolute recipe, but rather a sequence of questions, steps and stages that will feed your thoughts and allow you to define your plan.

Why 90 Days?

Many companies work with yearly plans, however, this long time-period can be discouraging and can create complications. 90 days or twelve weeks is the ideal compromise.

1. Where is your digital gap?

Review the different types of projects you face in your company, from the beginning until the end. Make sure to cover all steps, from planning to commissioning and operation, through tendering, preparation and implementation. Identify which steps are already digital, and which ones are not. Usually, early stages will be covered by ERPs (SAP, Oracle...) and late steps will fall into GIS Systems (ArcGIS, QGIS, Intergraph, etc. but make sure to describe your reality and not a market average.



2. Who should you involve?

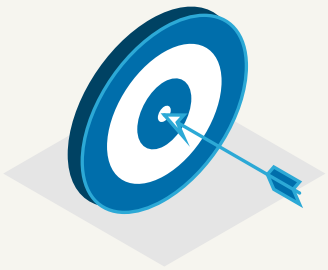
The answer to the first question provides you directly with the required information for the second one. Make sure to build a project team covering all departments intersecting with the digital gap(s) you identified previously. Even if company policies and tones might vary, being disruptive at this stage might harm your project outcomes: make sure to involve department managers in order to prevent anybody from getting in the way of your digitalization effort later on.

3. What is your vision?

Determine your vision for implementing digital transformation: rather than looking at the problems you're trying to solve with innovations, focus on your end goal. What do you want to achieve? Consider long-term goals and concentrate more on the experience you want to create for your employees. The key is to come up with the global vision that addresses the future. On the other hand, this vision should deal with reality. So, build your strategic vision on the short-term objectives and resources available to your business today.

4. What is your elementary step?

Look into your digital gap(s) and chose a part of it to be the foundation stone of your digitizing effort. Don't try to solve everything at once, rather focus on building a consistent entity that can be supplemented in the future. Ideally, this first stage should enable you to turn down a paper procedure if successful, to ensure you a quick win which will reinforce the company's adhesion to your initiative.

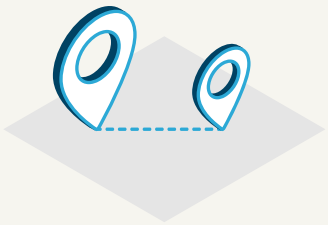


5. What are your objectives?

Don't fall in the trap of considering these obvious. Define clear objectives and describe them as key performance indicators (KPIs). These metrics will demonstrate the effectiveness of your project and will also guide the future decision making. You will need to set up smart goals that have a clear achievable figure. These goals will guide and optimize the entire execution and ensure that the team does not lose focus.

6. What will be your weapons?

This is the step where you have to start looking for tools, technologies and partners. Remember that within the boundaries of your 90 days plan, you don't want to reinvent the wheel: let this risk rely on others and target existing tools, proven track records and off-the-shelf items that can be brought to your construction site quickly. You will always have the time later on to tailor something to your needs, should the standard not suit you perfectly. But for now, your focus should be to run a proof of concept (POC).



7. What is your roadmap?

You have a vision (your long-term goal), a team, clear objectives, KPIs and goals and you know which tools you want to implement. Now, write the canvas to this, and define over the next 12 weeks what, how and when you will to achieve. This will be an important management but also communication tool, it will also outline the resources (human and tools) that are needed and by when they are. You will also be able to prevent therewith parts of your project to collide, as this would appear on your planning by now.

8. Who will sponsor you?

A thorny patch you are likely to encounter is securing buy-in from senior stakeholders within your organisation. Whether through a lack of understanding of the benefits of going digital, or sometimes out of personal interest (some stakeholders will cling to the status quo on which their careers were built), you are likely to meet some opposition in your work to drive digital transformation. Make sure to balance change and continuity, use your roadmap and your KPIs to make clear where all of this is heading and demonstrate return on investment (ROI).

9. How will you start?

Being agile is key. You now have everything at your disposal: the tool(s) to start with, the team to implement it, a vision, KPIs, a roadmap and management buy-in. Now bring it to your construction site as quickly as possible. Start with short sequences (a couple of weeks) a simple scope (see question 4) and a motivated testing team. Let it run, and collect user feedback: make the necessary corrections and iterate. Then, expand the scope and enlarge the user circle. Finally, keep on iterating until you reach your targeted scope.

10. What comes next?

Stick to two easy principles: first, user experience will be the key. Studies show that it contributes to 88 % to the success of digital initiatives. Second, strive for the win-win-win. If everybody finds an advantage in the digital transformation, nothing will stay in the way: field users, project managers and top management have to see the added value. This is where your KPIs will support you and give you clear metrics.

How can GF help you?

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Building the lifelines of the world

Customers in more than 100 countries are already working with plastic piping systems from GF Piping Systems, first introduced more than 60 years ago. These systems, with their non-corrosive nature, excellent chemical resistance, and longevity, support your efforts to reduce maintenance requirements and cut costs. Compared to traditional metal solutions, the plastic pipes are much lighter, reducing static requirements and making installation faster and easier.

Every day, we support customers who are converting their piping systems from metal to plastic with our knowledge and local expertise – throughout all phases of your project.

Track and Trace

Track & Trace is a cloud-based asset manager for piping systems. It registers the precise position of all your components and monitors the installation progress and quality in real time. The Track & Trace service collects the data via the app for iOS and Android, with all the data stored centrally and securely in the cloud. Project owners can access this information conventiently via the web interface.

Using Track & Trace eliminates paperwork, saves time, and reduces costs. You can schedule deliveries and work remotely and receive instant updates, meaning you always have the most current information. Trouble spots are easily located, which ensures reliable operations and the best installation quality. Worksite statistics are available any time, meaning trips to jobsites can be reduced by at least 30 %. Track & Trace enables effective installation management and simplifies your workflows. Interacting with your onsite team is made exponentially easier and more efficient.

Would you like to test the tool and benefit from our customer feedbacks and lessons learned in the field for your 90 days digitalization plan? Let's get in contact and discuss how GF can support you in bridging the digital gap!

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