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STARTING WITH A HOLE IN THE GROUND

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ONTARIO DRIVE & GEAR TAKES A GIANT STEP FORWARD IN THE MOON ROVER PROJECT

Ontario Drive & Gear is best known for its reliable and popular off-road amphibian ATVs, the ARGO and the Centaur. The ARGO is the best-selling vehicle of its kind in the world. ODG also manufactures superior quality gears and transmissions.

But ODG is also making a name for itself in an unexpected field – the company is involved in designing a vehicle that could well provide transportation for astronauts visiting the moon.

ODG is part of Neptec Rover Team, which brings together the industry's leading technology experts to develop the new Light Exploration Lunar Rover (LELR) – a new generation of space exploration technology. This highly experienced team has been working together to develop rover technology for the Canadian Space Agency for the past four years. Other members that are part of the \$ 11.5 million project include Com Dev Canada, McGill University, NGC Aerospace and Northern Centre for Advanced Technology. ODG's moon rover group is known as the Space Robotics Division.

Recently, it was announced that ODG has moved up an important step in this ambitious R&D project. The New Hamburg company has achieved a major milestone in winning a Canadian Space Agency contract to continue the development program.

Joerg Stieber is President and CEO of ODG. At the announcement of the contract, he said, "We've always said that our all-season ARGO vehicles can handle any terrain. ODG has more than forty years of experience building off-road vehicles for the most hostile environments on earth – the frozen Hudson Bay, the deserts in Africa, flooded areas in Mississippi, the Russian tundra and volcanoes in Chile. We are planning on proving it on the moon."

The Lunar Rover will be designed to carry equipment, cargo and astronauts during moon exploration planned in the upcoming decade. The vehicle will have a unique, eight-wheeled ski-steer locomotion system designed to help it navigate the moon's rugged, steep slopes. Depending on the technology and tools it carries, it will be able to map the lunar surface, drill for water, perform excavation and prepare landing sites. It will be equipped with a vision system, communication system and software that will allow it to be operated remotely from Earth or the moon and perform some activities without human intervention.

A statement from ODG notes, "The Canadian Space Agency leverages the best Canadian technologies with international partners to generate world-class industrial development. Participation in this project will allow ODG to transfer the knowledge, processes, and technologies developed to their consumer and industrial operations."

Stieber noted that while ODG is building a better moon rover, they will also be learning to build a better ARGO.

Data Backup: Your hard drive will fail

Here is an alarming thought: Your data – documents, email, photos – are stored on a hard drive that will fail. It might not fail tomorrow, this week, or even this year, but eventually it will succumb to the nature of all mechanical devices and become inaccessible. In most cases it will happen without any warning, and everything it stores will be lost.

If you have no data that you care to preserve, no photos from special occasions, documents you've invested hours into creating, or mission critical records your business needs to function, you're in luck – hard drives are dirt cheap to replace.

On the other hand, data recovery from a failed hard drive is hugely expensive and never a sure thing. There are multitudes of ways any hard drive can fail and some are more recover-

able than others. The key, of course, is to never need data recovery services.

Given that every hard drive will fail, the only solution is backup, backup, backup. Think of it like insurance for your data.

First of all, a backup is a copy of your data. More to the point, if your data doesn't exist on two separate devices at once, it's not backed up. Many people will store their data on an external hard drive or memory stick, assuming that should their computer fail their information will be safe. We've all heard of computers failing, so at first this makes sense.

But of course, it's not that simple. An external hard drive is just as vulnerable to failure – if not more so – as the one inside your computer, not to mention that it is more easily lost or stolen. External hard drives should only be



Shown at ODG moon rover tests at the bottom of an old volcanic crater in Hawaii are, from left, James Kutshaw, Peter Woolfrey, Tom Atwell, Peter Visscher and Marcel Viel.

used as a means of storing a copy (backup) of your data or as a means of transporting a copy of it, rather than a sole repository.

On hand for the announcement were all members of the Space Robotics Division, including engineer Peter Visscher, as well as area politicians. MP Harold Albrecht demonstrated an apt hand at guiding the Rover by remote control. Previous ODG involvement in the Rover project involved designing and building a fleet of utility rovers (Juno Rovers) that were tested in the mountains of Hawaii, at NASA's Johnson Space Center in Houston, and at the Canadian Space Agency in St. Hubert. Other ODG contributions include a metallic wheel and an advanced drive track concept that will be able to withstand the moon's harsh environment. For the upcoming rover contract, ODG is responsible for the concept generation, design, and fabrication of the rover platform. This includes the frame, drive system, suspension, and wheels. This is a two-year contract that will result in delivering two complete rovers and participate in field testing.

used as a means of storing a copy (backup) of your data or as a means of transporting a copy of it, rather than a sole repository.

If you already keep backups of your data, that's great! But how often is it being done? When it comes to mission critical data, an old backup is often only marginally better than no backup at all. "I back up whenever I think of it" doesn't cut it if you can't afford to lose a month's worth of accounting records, business proposals or contracts.

Automating your backup process is the best way to take human error out of the equation. Of course, your backups should still be tested regularly to ensure everything is in working order.

So now you've got your data on at least two devices and it's being backed up regularly without anyone needing to lay a finger on it. There is no way you'll lose any data now!

That is, until you consider that your automated backup device is probably sitting right beside the computer you're backing up. We're fortunate in this area not to have to worry about earthquakes or tornadoes; but there are other lesser catastrophes that can still render your backup procedure entirely

ineffective. A few of the more common would be fire, flood or theft.

The next level of protection is off-site backup: a copy of your data that's in a different building than the original – ideally, some distance away. Of course, if your memory is no better than mine, then remembering to regularly take that external copy home or to another office is going to be a challenge at best, and automating the transport of a physical drive won't be possible until we all have robot helpers.

My personal preference, and a service I've found absolutely invaluable, is on-line backup. Online backup services are a secure means of backing up your data as frequently as you'd like to a distant location without any human intervention. From experience, I can say that the small monthly fee is well worth the absolute peace of mind it brings.

While there are many online backup services out there, I would recommend contacting a company that uses the same service they're selling.

Most people approach data loss from a "that'll never happen to me" mentality. If you take one thing away from this article, let it be this: It will happen to you eventually, so why not be prepared for it? – Adam Smith